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IFB NO. Y20-727-RC **ISSUED: October 28, 2019**

INVITATION FOR BIDS

FOR

ORANGE COUNTY CORRECTIONS CASSADY BUILDING ROOF REPLACEMENT

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PART H
TECHNICAL SPECIFICATIONS

****

PART H
Volume II

ORANGE COUNTY CASSADY BUILDING ROOF REPLACEMENT

2450 33rd STREET, ORLANDO FL 32839

Orange County, Florida

FOR CONSTRUCTION/PERMITTING

SPECIFICATIONS

Divisions 01, 02, 06, 07, 08, 09, 22, 23 and 26

rhodes + brito
ARCHITECTS

605 E. Robinson Street, Suite 750 Orlando, FL 32801 . 407.648.7288 phone . www.rbarchitects.com . AA0002809

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

OrangeCountyFL.net
ORANGE COUNTY GOVERNMENT, FLORIDA

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SPECIFICATION LIST

Division 1 - General Requirements

Section 01 09 00	Reference Standards
Section 01 11 00	Summary of Work
Section 01 26 00	Contract Modification Procedures / Change Orders
Section 01 26 13	Request for Information
Section 01 29 00	Payment Application Procedures
Section 01 30 00	Project Management and Coordination
Section 01 33 00	Submittal Procedures
Section 01 40 00	Quality Requirements
Section 01 45 00	Cutting and Patching
Section 01 50 00	Temporary Facilities and Controls
Section 01 63 00	Product Requirements/Options/Substitutions
Section 01 70 00	Project Closeout Requirements

Divisions 2 – Existing Conditions

Section 02 25 29	Existing Condition Assessment
Section 02 41 19	Selective Demolition

Divisions 6 – Wood, Plastics and Composites

Section 06 10 00	Rough Carpentry

Divisions 7 – Thermal and Moisture Control

Section 07 51 00	Preparation for Re-Roofing
Section 07 54 16	Thermoplastic Single-ply Membrane Roofing
Section 07 62 00	Sheet Metal Flashing and Trim
Section 07 63 00	Roof Penetration Flashing
Section 07 90 00	Joint Sealers

Divisions 8 – Openings

Section 08 63 00	Metal Framed Skylight

Divisions 9 – Existing Finishes

Section 09 90 00	Minor Painting

Divisions 22 – Plumbing

Section 22 07 19	Piping Insulation
Section 22 14 13	Plumbing Piping
Section 22 14 26	Roof Drains

Divisions 23 – Heating, Venting and Air-conditioning (HVAC)

Section 23 00 00	Mechanical Equipment

Divisions 26 – Electrical

Section 26 05 00	Basic Electrical Requirements
Section 26 41 13	Lightning Protection

Drawings and Details

Plans

C01	Cover Sheet, Site Plan, Vicinity Map General Notes and Drawing Index
A01	Roof Plan, Physical Characteristics Schedule, Repair Legend and Specific Notes
A02	Partial Roof Plan – Northwest Quadrant, Partial Roof Area 1/B & 2/B, Repair Legend and Specific Notes
A03	Partial Roof Plan – Northeast Quadrant, Partial Roof Area 1/B & 2/B, Repair Legend and Specific Notes
A04	Partial Roof Plan – Southwest Quadrant, Repair Legend and Specific Notes
A05	Partial Roof Plan – Southeast Quadrant, Partial Roof Area 3/B, Repair Legend and Specific Notes
B01	General Roofing Notes, Roof Component Fastening Schedule and Abbreviations
B02	Parapet and Edge Flashing Details
B03	Area Divider and Base Flashing Details
B04	Edge Metal Fabrication Details
B05	Edge Fabrication and Skylight Flashing Details
B06	Fabrication and Curb Flashing Details
B07	Mechanical Flashing and Pipe Support
B08	Pipe Flashing and Roof Drainage Details
B09	Roof Drainage and Lightning Protection Details
B10	Typical Flashing Details

PROJECT DRAWING INDEX

1. Perimeter Edge Details

B02.1 Typical Parapet Detail at Upper Roof Areas
B02.2 Typical Parapet Detail at Lower Roof Areas
B02.3 Parapet Flashing Detail at Roof Area 'B'
B02.4 Parapet Flashing Detail at Metal Panel Transition
B02.5 Parapet wall transition flashing detail Roof Area '1/E'
B02.6 Exterior Parapet wall flashing detail Roof Area '1/E'

2. Wall Flashing and Area Divider Curbs & Transition Details

B03.1 Typical Area Divider curb at Upper Roof Area
B03.2 Existing Area Divider Flashing Detail at Roof Area 'F' & 'H'
B03.3 New Area Divider and flashing detail at Roof Area 'F'
B03.4 Expansion joint flashing between Roof Area 'A' & 'B'
B03.5 Typical Base Flashing w/ 2-piece reglet & counterflashing Detail
B03.6 Base flashing Detail at Window and Shutter Framing
B04.1 Typical edge flashing fabrication detail
B04.2 Typical Edge Metal and Splice Joint Assembly Detail
B04.3 Typical Edge Metal Outside Corner Fabrications
B04.4 Typical Edge Metal Inside Corner Fabrications
B04.5 Two-piece Reglet Termination at Edge metal Detail
B04.6 Edge Metal Termination w/ Inside Corner Trim Detail
B05.1 Edge metal termination at upper wall detail
B05.2 Reglet and window surface mount receiver transition detail
B05.3 Expansion Joint at Inside Corner Transition Fabrication
B05.4 Skylight curb w/ two-piece flashing at slope
B05.5 Skylight curb w/ two flashing at Gable side
B05.6 Screen Enclosure support flashing detail at divider curb

3. Metal Fabrications & Transitions

B06.1 Reglet Receiver and Counterflashing Detail
B06.2 Surface Mounted Counterflashing at Column
B06.3 Skylight Pan Flashing Receiver Fabrication Detail
B06.4 Screen Enclosure Support Column Flashing at Deck
B06.5 Large HVAC flashing at Existing Curb Detail
B06.6 Roof Hatch Flashing Detail

4. Mechanical Penetrations

B07.1 Small Weatherhead and Curb Flashing Detail
B07.2 Small Weatherhead and Curb Fabrication
B07.3 Typical Equipment Curb & Anchorage Detail
B07.4 Existing Large Weatherhead Curb Flashing Detail
B07.5 Chiller Pipe Support Detail

B07.6 Typical Condensate Drain Support Block Detail

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

5. Plumbing Penetrations & Lightning Protection

B08.1 Typical Pipe Flashing Detail at Upper Roof Areas
B08.2 Typical Pipe Flashing Detail at Lower Roof Areas
B08.3 Deck In-fill at Existing Opening at Upper Roof Deck
B08.4 Deck In-fill at Existing Opening at Lower Roof Deck
B08.5 Typical Roof Drain Replacement at Upper Roof Deck
B08.6 Typical Roof Drain Replacement at Lower Roof Deck
B09.1 Typical Overflow Drain at Upper Roof Deck
B09.2 Typical Overflow Drain at Lower Roof Deck
B09.3 Supplemental Roof Drain Support Framing Below Deck
B09.4 Typical Flat Air Terminal Details
B09.5 Lightning Conductor Anchorage
B09.6 Terminal Base Attachment Detail

6. Miscellaneous Details

B10.1 Typical Termination Bar Detail

Plans (24 x 36 format)

CS Cover Sheet, Site Plan, Vicinity Map General Notes and Drawing Index
A01 Overall Roof Plan, Roof Schedule and Code Data
A02 Partial Roof Plan – Upper Roof Areas, Symbol Legend and Specific Notes
A03 Partial Roof Plan – Lower Roof Areas, Symbol Legend and Specific Notes
B01 General Roofing Notes, Roof Component Fastening Schedule and Abbreviations
B02 Parapet and Edge Flashing Details
B03 Area Divider and Roof Flashing Details
B04 Edge Metal Fabrications Details
B05 Edge Fabrications and Skylight Flashing Details
B06 Fabrication and Curb Flashing Details
B07 Mechanical Flashing and Pipe Support Details
B08 Pipe Flashing and Roof Drainage Details
B09 Roof Drainage and Lightning Protection Details
B10 Typical Flashing Details

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 Orange County Sheriff's Office Annex / Cassidy Bldg. located at 2450 33rd St., Orlando, FL 32839

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. <u>Existing Conditions:</u>

1. Upper Roof Areas (A/1-A/18 & B/1) - Existing Single-ply membrane fastened thru an insulation system composed of non-tapered perlite over tapered isocyanurate insulation (ISO) on structural metal deck.
a. Large Skylight (Kalwall) Structure

2. Lower roof Areas (D/1, E/1, F/1, F/2, G/1 & H/1) – Existing Single-ply membrane fastened thru an insulation system composed of gypsum coverboard over tapered isocyanurate rigid insulation (ISO) on metal deck.

B. <u>Proposed Work - (A/1 thru H/1) :</u>

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 edge metal, expansion joint bellows, metal flashings, moisture relief vents and counterflashings. Skirt metal to remain in place.
3. Replace damaged or deteriorated pressure treated wood blocking along perimeter edge or roof system. Include 100 linear feet of 2x4 blocking and 150 linear feet of 2x8 blocking replacement in base bid.
4. Remove abandoned curbs and in-fill deck per details.

C. Existing Large Skylight (Upper Roof Area ‘A’) :

1. Remove existing skylight system and replace with new on existing curb. Coordinate with specification **08 63 00** for engineering and design. Fabricate new pan flashing receiver at curb prior to new skylight installation.

D. Upper Roof Areas (A/1 thru B/1) :

1. Remove existing Single-ply membrane and perlite insulation down to existing tapered rigid isocyanurate. Replace damaged or deteriorated rigid ISO with new, matching slope. Include replacement of 150 SF of tapered rigid insulation in base bid
2. Mechanically fasten a base sheet thru existing ISO board down to structural metal deck.
3. Replace existing roof drains with new in existing locations, create a new 4/0 x 4/0 x ¾” 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.
4. Adhere 1.75” of non-tapered rigid ISO to the base sheet adhere per the manufacturer approved adhesive patterns for the project design pressures to the preliminary roof.
5. Apply a 1/4" gypsum roof cover board over the rigid insulation, and secure with an approved insulation adhesive.
6. Raise vent stacks to a minimum of 8" above finished roof as necessary.
7. (Roof Area A/2) –
   a. Install new weather head curbs & fabrications. Reroute conduit below deck and re-attach to large HVAC units.
   b. Existing roof hatch to be raised at existing curb.
8. (Roof Area A/14) –
   a. Relocate primary drain a minimum of 24” from existing screen enclosure support. Connect to existing leaderline below deck.
   b. Install new bellow at existing expansion joint curb.
9. Fully adhere a thermoplastic flashing strip along the roof edge and mechanically fasten edge metal system, (PVC coated aluminum over existing skirt metal), per the project details.
10. 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.

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.
12. Re-install and inspect rooftop lightning protection system per project specifications, provide U.L. “Letter of Findings”.
13. Roof system manufacturer to provide a 20 year, no dollar limit (NDL) weather tightness warranty with a wind uplift rider for (actual) 112 mph and (ultimate) 144 mph winds.

E. Lower Roof Areas (D/1 thru H/1) :

1. Remove existing Single-ply membrane and insulation system down to structural metal deck. Replace damaged or deteriorated metal deck. Include 30 SF of metal deck replacement in base bid.
2. Mechanically fasten a new ¼” per foot tapered rigid ISO insulation system to metal deck.
3. Replace existing roof drains with new in existing locations, create a new 4/0 x 4/0 x ¾” 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.
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. Install two-piece reglets and receiver’s fabrications per details. Saw-cut where indicated and grind smooth block surface as required.
7. (Roof Area E/1) –
   a. Add tapered edge strip along curbs at base of wall.
8. (Roof Area F/1 & F/2) –
   a. Construct new area divider curb.
9. Fully adhere a thermoplastic flashing strip along the roof edge and mechanically fasten edge metal system, (PVC coated aluminum), per the project details.
10. 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.
11. Install the set on accessories and flash in accordance with project details.
12. Re-install and inspect rooftop lightning protection system per project specifications, provide U.L. “Letter of Findings”.
13. Roof system manufacturer to provide a 20 year, no dollar limit (NDL) weather tightness warranty with a wind uplift rider for (actual) 112 mph and (ultimate) 144 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. This is identified 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
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
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21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

INTERIOR INSPECTION FORM

ROOM NO.	CEILING TILE CONDITION			LIGHT LENSE STAINS	WALL CONDITION	CARPET CONDITION
	BROKEN	STAINED	CRACKED			

EXTERIOR INSPECTION FORM

ROOF AREA	SIDEWALK CONDITION			GRASS	SHRUBBERY CONDITIONS	MISC. CONDITIONS
	BROKEN	STAINED	CRACKED			

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Architect's Supplemental Instructions
2. Construction Change Directives
3. Proposal Requests
4. Change Orders

B. Related Sections:
1. Agreement Form, General Conditions and Supplementary Conditions
2. Section 01 29 00 – Payment Application Procedures
3. Section 01 33 00 – Submittal Procedure
4. Section 01 63 00 – Product Requirements/Options/Substitutions
5. Section 01 70 00 – Project Closeout Requirements

1.2 DEFINITIONS

A. **Architects Supplemental Instructions:** Supplemental instructions or interpretations of an order for minor modification in the Work wherein there is **no** change in the Contract Time or Contract Price.

B. **Construction Change Directive:** Authorizes a change based upon an understanding concerning changes in Contract Time and/or Contract Sum which is issued expeditiously to avoid delay.

C. **Proposal Request:** Requests an itemized quotation for proposed changes in Contract Sum or Contract Time but which is neither a directive, or authorization nor a change order.

D. **Change Order:** Authorizes a change to the Contract which may involve a change in Contract Sum or Contract Time.

1.3 SUBMITTALS

A. Submit the name of the individual authorized to accept changes and who is responsible for informing others in Contractor's employ of the Changes in Work.

B. Revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust Contract Sum and re-submit.

C. Revise Progress Schedules to reflect any change in Contract Time, revise subcontractor schedules to adjust times for other items of work affected by the change and re-submit.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS

A. The Architect may issue supplemental instructions, interpretations or minor modifications in the Work, with supplementary or revised Drawings and Specifications, for acceptance by the Contractor pursuant to Definitions.

B. Should later circumstances produce changes to Contract Sum or Contract Time, procedures for a Change Orders shall be followed.

C. The Architect will advise the Contractor of minor changes by issuing supplemental instructions on **AIA Form G710, "Architect's Supplemental Instructions"**.

3.2 CONSTRUCTION CHANGE DIRECTIVE

A. The architect may issue a Construction Change Directive signed by the Owner, with supplementary or revised Drawings and Specifications, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

B. The Directive will describe changes in the Work and will designate method of determining any change in Contract Sum or Contract Time.

C. The Architect will substantiate instructions on **AIA G714, "Construction Change Directive**".

D. Contractor shall promptly execute changes.

3.3 CHANGE ORDER PROPOSALS

A. The Architect may submit a "Proposal Request" which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, projected time for executing the change, a stipulation of any overtime work required, and period of time during which requested price will be considered valid.

B. The Architect will initiate the proposal request on **AIA Form G709, "Proposal Request"**.

C. The Contractor may propose changes by submitting a request for change to the Architect describing the reason for the proposed change and its full effect on the Work. Include a statement describing the effect on the Contract Sum and Contract Time with full documentation. Document any substitutions requested in accordance with Section 01 60 00 Product Requirements (Substitutions).

3.4 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME

A. Document each quotation for a change in contract cost or time with sufficient data to allow evaluation of the quotation by the Owner and the Architect.

B. On request, provide additional data to support computations:
   1. Quantities and costs of products, labor and equipment.
   2. Taxes, insurance and bonds.
   3. Overhead and profit.
   4. Justification for any change in Contract Time.
   5. Credit for any deletions from Contract, similarly documented.

3.5 CHANGE ORDER

A. The Change Order amount/time will be based upon one or more of the following:
   1. (Change in Scope) Stipulated sum based upon an approved “Proposal Request”.
   2. (Change in Scope) Stipulated sum or Unit Cost sum resulting from Construction Change Directive.
   3. (Change in Scope) Time and Material
      a. Contractor to submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of Contract.
      b. Architect will determine change allowable in Contract Sum and Contract Time as provided in Contract Documents.
   4. (Reconciliation of Unit Costs) Fixed unit price basis for unit costs or quantities of units of work which are reconciled upon substantial completion of the contract work.

B. Execution of Change Order
   1. The Architect will issue the change order on **AIA Form G701, “Change Order”** for signatures of parties as provided in the Conditions of the Contract.

C. Correlation of Contractor Submittals
   1. Upon execution of Change Order the Contractor shall promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum.
   2. Contractor shall promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
   3. The Contractor shall promptly enter changes in Project Record Documents.

END OF SECTION

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.

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

rhodes + brito ARCHITECTS
605 E. ROBINSON STREET, SUITE 750, ORLANDO, FL 32801
407.648.7288 www.rbarchitects.com AA0002809

RFI NO._____	R+B PROJECT NO: 18019.05 . A/R/C PROJECT NO: 18049**.00** OWNER'S PROJECT NO: _____
PROJECT**:** **Orange County Cassady Building Roof Replacement**	ISSUE: _____ DATE: _____
SUBJECT:	

REQUIRED RESPONSE DATE: _____ REF: SPEC SECTION: _____
DWG NO:_____ 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.

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 25th 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 dumber 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.

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

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 :

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

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

SUBMITTAL NO.	R+B PROJECT NO.: A/R/C PROJECT NO:

PROJECT: **Orange County Bassiday**

Building Roof Replacment

OWNER'S PROJECT NO:

ITEM:	DATE:

SPEC. SECTION: _____ PARAGRAPH NO: _____

PRIME CONTRACTOR: _____.

CHECKED AND APPROVED FOR SUBMISSION
BY:_____ DATE:

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
	Date: _____ By: _____ Approved **APP** ( ) Approved as Corrected **A/C** ( ) If checked above, fabrication MAY be undertaken. Approval does not authorize changes in contract Sum unless stated in separate letter or Change Order. If checked below, fabrication MAY NOT be undertaken. Resubmit corrected copies for final approval. Correction shall be limited to items marked. Revise and resubmit **R/R** ( ) Not Approved **REJ** ( ) _____ 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.

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)

Action Code — **APP** - Approved **A/C** - Approved with Comments **R/R** - Revise and Re-submit **REJ** - 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: Orange County Cassidy Building Roof Replacement

ARCHITECT'S PROJECT NO: 18049.00

CONTRACTOR:

Notice to proceed issued:

Substantial Completion Date:

Spec. Section	Submittal No.		Title/Description	Date Rec'vd	No. of Copies Rec'vd	ACTION	Date Returned	Comments
00 61 00			**Bonds and Certificates**					
	001		Bonds:					
		-1	Bid Bond					
		-2	Performance Bond					
		-3	Labor and Materials Payment Bond					
		-4	Certificate of Liability Insurance					
01 11 00			**Summary of Work**					
	001		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)					
01 33 00			**Submittals**					
	001		Schedules:					
		-1	Construction Progress Schedule					
		-2	Schedule of Values					
01 63 00			**Substitutions**					
	001		Product Substitution					
		-1	Product Substitution Request Form/Product Information Form					
01 77 00			**Project Closeout**					
	001		Substantial Completion					
		-1	Request for Substantial Inspection					
		-2	Certificate of Substantial Completion - AIA Document G704					
		-3	Contractor's Certification of Project Completion					
	002		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					
	003		Final Application for Payment					

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SUBMITTAL RECORD
(checklist / log)

Action Code
APP - Approved **A/C** - Approved with Comments
R/R - Revise and Re-submit **REJ** - 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: **Orange County Cassidy Building Roof Replacement**
ARCHITECT'S PROJECT NO: **18049.00**

CONTRACTOR:
Notice to proceed issued:
Substantial Completion Date:

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					
06 10 00			**Rough Carpentry**					
	001		Product Data:					
		-1	Wood Preservative Materials, Application Instructions					
		-2	Fasteners/Anchors					
07 54 16			**Thermoplastic Single Ply Roofing**					
	001		Product Data (Sheet Materials)					
		-1	PVC					
		-2	Elvaloy					
	002		Fastening System					
		-1	Mechanical Fasteners					
		-2	Adhesive					
	003		Insulation System					
		-1	Polyisocyanurate					
		-2	EPS					
		-3	Roof Coverboard					
		-4	Tapered Layout					
		-5	Insulation Fasteners/Adhesives					
	004		Accessories:					
		-1	Prefabricated curbs					
		-2	Prefabricated supports					
		-3	Sealants					
	005		Engineering Certifications / Product Approvals					
	006		Samples:					
		-1	Only as directed by the Architect					
	007		Qualifications:					
		-1	Applicator's Experience					
	008		Warranties:					
		-1	Manufacturer's Notice of Intent to Issue Warranty					
		-2	Applicator's Warranty					
07 62 00			**Sheet Metal Flashing and Trim**					
	001		Product Data:					
		-1	Sheet Materials:					
		-2	Accessories: Fasteners, Primer, Plastic Cement, Solder/Flux/Cleaner					
	002		Shop Drawings:					
		-1	Any Condition Not Shown on the Drawings					

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SUBMITTAL RECORD
(checklist / log)

Action Code — **APP** - Approved **A/C** - Approved with Comments **R/R** - Revise and Re-submit **REJ** - 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: **Orange County Cassidy Building Roof Replacement**

ARCHITECT'S PROJECT NO: **18049.00**

CONTRACTOR:

Notice to proceed issued:

Substantial Completion Date:

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

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SUBMITTAL RECORD
(checklist / log)

Action Code
APP - Approved **A/C** - Approved with Comments
R/R - Revise and Re-submit **REJ** - 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: **Orange County Cassidy Building Roof Replacement**

ARCHITECT'S PROJECT NO: **18049.00**

CONTRACTOR:

Notice to proceed issued:

Substantial Completion Date:

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					
	002		Shop Drawings:					
		-1	Assembly and Support Requirements (As Required)					
23 00 00			**Mechanical Equipment**					
	001		Equipment Data:					
		-1	Exhaust Fan Performance Log Data Sheet					
		-2	Air Conditioning Equipment Performance Log Data Sheet					
26 05 00			**Basic Electrical Requirements**					
	001		As May Be Directed by the Architect/Engineer					
26 41 13			**Lightning Protection**					
	001		Product Data:					
		-1	Product Information: Dimensions and Materials of each Component. Indicate UL 96 listing					
	002		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.					
	003		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.

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.

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.

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.

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.

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.

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

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.

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.

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:	For use by the Owner:
___ Recommended ___ Recommended as Noted	___ Approved
___ Not Recommended ___ Received too late	___ Not Approved
___ Insufficient data received	___ Approved as noted
By _____	By _____
Date _____	Date _____

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.

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 substitution s 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 withy 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.

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

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

PROJECT CLOSEOUT DOCUMENTATION
(checklist)

PROJECT:	**Orange County Cassidy Building Roof Replacment**	**OWNER'S PROJECT NO.**		**A/R/C PROJECT NO.**	**18049.00-**
CONTRACTOR:					

Closeout Submittal Checklist

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

PROJECT CLOSEOUT DOCUMENTATION
(checklist)

PROJECT:	**Orange County Cassidy Building Roof Replacment**	**OWNER'S PROJECT NO.**		**A/R/C PROJECT NO.**	**18049.00-**
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 October 26, 2018 (Roof Area A/1), 1 page
   b. Test Cut Data from October 26, 2018 (Roof Area D/1-H/1), 5 pages
   c. Thermal Calculations at Roof Areas A/8 (Upper Roof), 1 page
   d. Thermal Calculations at Roof Areas D/1 – H/1 (Lower Roofs), 4 pages
   e. 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 Juvenile Justice Center was conducted by A/R/C Associates, Incorporated on October 26, 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.

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, six (6) test cuts were performed at various locations on the three roof areas of the Warehouse 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/3q2t2xu20w8qgnv/AABvRn6M03B_uJD0JOOzIXbLa?dl=0

Contact A/R/C Associates for link: 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

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Roof Consulting
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A/R/C Associates Incorporated

601 North Fern Creek Avenue
Suite 100
Orlando, Florida 32803-4899
(407) 896-7875
FAX (407) 898-6043

Project Name: Sheriff's Annex / Cassidy Bldg. Project No.: 18049.00

Roof Area A/8

	Material	Resistance	Existing	Proposed
1.	**Outside Surface (air film**			
	Winter-Heat Flow Up-Wind 15 mph	**0.17**		
	Summer-Heat Flow Down-Wind 7 ½ mph	**0.25**	0.25	0.25
2.	**Built-up Roofing (¾ ") 3 ply**	**0.33**	0.33	0.33
3.	**Roof Insulation**			
a.	Perlite: 1.5" (E) x 2.8 R/Inch		4.20	
b.	Isocyanurate: 2.7"(E) Avg./ 1.75" Thk. x 5.56 R/Inch [15.01+9.73]		15.01	24.74
c.	Other: (Add) 1/4" Gypsum cover Board	**0.45**		0.45
4.	**Preliminary Roof – Two mopped No. 15 felt**	**0.12**		
	One Layer No. 43 coated base sheet	**0.06**		
5.	**Roof Deck/Materials**			
a.	Structural Concrete: ____ x .08 R/Inch			
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: _____ 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**		
6.	**Dead Air Space-Not Vented**	**0.85**	0.85	0.85
7.	**Ceiling**			
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**		
8.	**Inside Surface – Still Air (air film)**			
	Winter-Heat Flow Up	**0.61**		
	Summer–Heat Flow Down	**0.92**	0.92	0.92
		R_T	19.21*	25.19*

* 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
AA C000932

A/R/C Associates Incorporated

601 North Fern Creek Avenue
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Orlando, Florida 32803-4899
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Project Name: Sheriff's Annex / Cassidy Bldg. Project No.: 18049.00

Roof Area D/1 & E/1

	Material	Resistance	Existing	Proposed
1.	**Outside Surface (air film**			
	Winter-Heat Flow Up-Wind 15 mph	**0.17**		
	Summer-Heat Flow Down-Wind 7 ½ mph	**0.25**	0.25	0.25
2.	**Built-up Roofing (¾ ") 3 ply**	**0.33**	0.33	0.33
3.	**Roof Insulation**			
a.	Perlite: 2.5" (E) Avg. x 2.8 R/Inch		7.00	
b.	Isocyanurate: 4.5" (P) Avg. x 5.56 R/Inch			25.02
c.	Other: (Exist) ½" / (P) 1/4" Gypsum cover Board	**0.45**	0.90	0.45
4.	**Preliminary Roof – Two mopped No. 15 felt**	**0.12**		
	One Layer No. 43 coated base sheet	**0.06**		
5.	**Roof Deck/Materials**			
a.	Structural Concrete: ____ x .08 R/Inch			
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: _____ 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**		
6.	**Dead Air Space-Not Vented**	**0.85**	0.85	0.85
7.	**Ceiling**			
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**		
8.	**Inside Surface – Still Air (air film)**			
	Winter-Heat Flow Up	**0.61**		
	Summer–Heat Flow Down	**0.92**	0.92	0.92
		R_T	7.90*	25.47*

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Architecture
Roof Consulting
Construction Technology
AA C000932

A/R/C Associates Incorporated

601 North Fern Creek Avenue
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Orlando, Florida 32803-4899
(407) 896-7875
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Project Name: Sheriff's Annex / Cassidy Bldg. Project No.: 18049.00

Roof Area F/1

	Material	Resistance	Existing	Proposed
1.	**Outside Surface (air film**			
	Winter-Heat Flow Up-Wind 15 mph	**0.17**		
	Summer-Heat Flow Down-Wind 7 ½ mph	**0.25**	0.25	0.25
2.	**Built-up Roofing (¾ ") 3 ply**	**0.33**	0.33	0.33
3.	**Roof Insulation**			
a.	Perlite: 4.5" (E) Avg. x 2.8 R/Inch		12.60	
b.	Isocyanurate: 4.5" (P) Avg. x 5.56 R/Inch			25.02
c.	Other: (Exist) ½" / (Add) 1/4" Gypsum cover Board [0.90+0.45]	**0.45**	0.90	0.45
4.	**Preliminary Roof – Two mopped No. 15 felt**	**0.12**		
	One Layer No. 43 coated base sheet	**0.06**		
5.	**Roof Deck/Materials**			
a.	Structural Concrete: ____ x .08 R/Inch			
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: _____ 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**		
6.	**Dead Air Space-Not Vented**	**0.85**	0.85	0.85
7.	**Ceiling**			
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**		
8.	**Inside Surface – Still Air (air film)**			
	Winter-Heat Flow Up	**0.61**		
	Summer–Heat Flow Down	**0.92**	0.92	0.92
		R_T	13.50*	25.47*

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Roof Consulting
Construction Technology
AA C000932

A/R/C Associates Incorporated

601 North Fern Creek Avenue
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Orlando, Florida 32803-4899
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Project Name: Sheriff's Annex / Cassidy Bldg. Project No.: 18049.00

Roof Area G/1

	Material	Resistance	Existing	Proposed
1.	**Outside Surface (air film**			
	Winter-Heat Flow Up-Wind 15 mph	**0.17**		
	Summer-Heat Flow Down-Wind 7 ½ mph	**0.25**	0.25	0.25
2.	**Built-up Roofing (¾ ") 3 ply**	**0.33**	0.33	0.33
3.	**Roof Insulation**			
a.	Perlite: 2" (E) Avg. x 2.8 R/Inch		5.60	
b.	Isocyanurate: 4.5" (Add) x 5.56 R/Inch			25.02
c.	Other: (Exist) ½" / (Add) 1/4" Gypsum cover Board [0.90+0.45]	**0.45**	0.90	0.45
4.	**Preliminary Roof – Two mopped No. 15 felt**	**0.12**		
	One Layer No. 43 coated base sheet	**0.06**		
5.	**Roof Deck/Materials**			
a.	Structural Concrete: ____ x .08 R/Inch			
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: _____ 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**		
6.	**Dead Air Space-Not Vented**	**0.85**	0.85	0.85
7.	**Ceiling**			
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**		
8.	**Inside Surface – Still Air (air film)**			
	Winter-Heat Flow Up	**0.61**		
	Summer–Heat Flow Down	**0.92**	0.92	0.92
		R_T	6.50*	25.47*

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Architecture
Roof Consulting
Construction Technology
AA C000932

A/R/C Associates Incorporated

601 North Fern Creek Avenue
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Orlando, Florida 32803-4899
(407) 896-7875
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Project Name: Sheriff's Annex / Cassidy Bldg. Project No.: 18049.00

Roof Area H/1

	Material	Resistance	Existing	Proposed
1.	**Outside Surface (air film**			
	Winter-Heat Flow Up-Wind 15 mph	**0.17**		
	Summer-Heat Flow Down-Wind 7 ½ mph	**0.25**	0.25	0.25
2.	**Built-up Roofing (¾ ") 3 ply**	**0.33**	0.33	0.33
3.	**Roof Insulation**			
a.	Perlite: 3.5" (E) Avg. x 2.8 R/Inch		9.80	
b.	Isocyanurate: 2.5" (Add) x 5.56 R/Inch			13.90
c.	Other: (Exist) ½" / (Add) 1/4" Gypsum cover Board [0.90+0.45]	**0.45**	0.90	0.45
4.	**Preliminary Roof – Two mopped No. 15 felt**	**0.12**		
	One Layer No. 43 coated base sheet	**0.06**		
5.	**Roof Deck/Materials**			
a.	Structural Concrete: ____ x .08 R/Inch			
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: _____ 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**		
6.	**Dead Air Space-Not Vented**	**0.85**	0.85	0.85
7.	**Ceiling**			
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**		
8.	**Inside Surface – Still Air (air film)**			
	Winter-Heat Flow Up	**0.61**		
	Summer–Heat Flow Down	**0.92**	0.92	0.92
		R_T	10.70*	25.47*

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Architecture
Roof Consulting
Construction Technology

601 North Fern Creek Avenue
Suite 100 Orlando, FL.32803-4899
Tel. (407)896-7875 Fax. (407)898-6043

ROOF CUT DATA

PROJECT NAME: CASSIDY OFFICE BLDG
33RD STREET JAIL

PROJECT # 18049.00 DATE: 10/26/18

ROOF CUT NO.: 1 & 2

ROOF AREA : A/8

MEMBRANE:

SINGLE-PLY MEMBRANE

SEPARATOR / SLIP SHEET

INSULATION :

(RC #1) 1½" PERLITE/4½" ISO. BD.

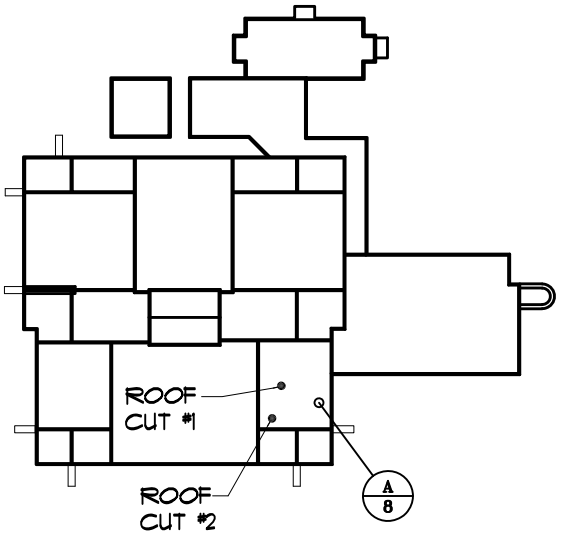
(RC #2) 1½" PERLITE/2½" ISO. BD.

DECK :

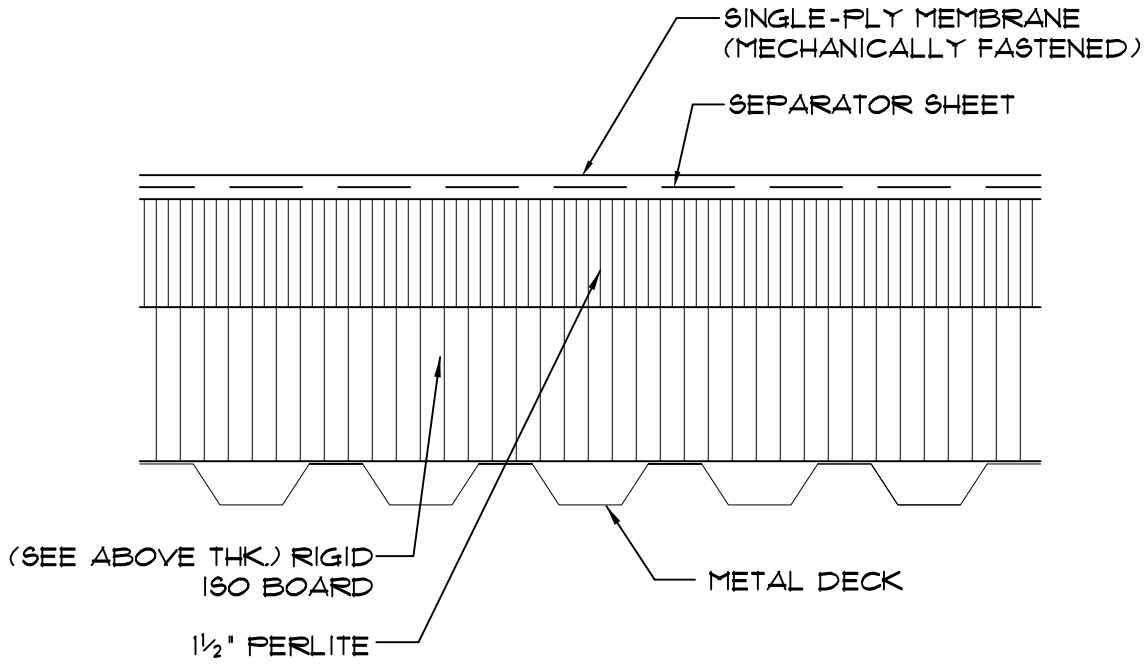
METAL DECK

REMARKS :

MECH. FASTENED SINGLE-PLY



OVERPLAN PLAN
NOT TO SCALE



A/R/C Associates Incorporated

Architecture
Roof Consulting
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601 North Fern Creek Avenue
Suite 100 Orlando, FL.32803-4899
Tel. (407)896-7875 Fax. (407)898-6043

ROOF CUT DATA

PROJECT NAME: CASSIDY OFFICE BLDG
33RD STREET JAIL

PROJECT # 18049.00 DATE: 10/26/18

ROOF CUT NO.: 3 & 4

ROOF AREA : G/1

MEMBRANE:

SINGLE-PLY MEMBRANE

SEPARATOR / SLIP SHEET

INSULATION :

(RC #3) ½" GYP. BD./3½" PERLITE

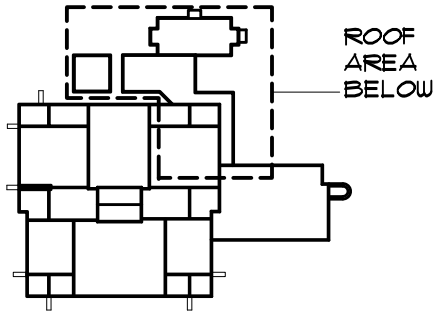
(RC #4) ½" GYP. BD./ ½" PERLITE

DECK :

METAL DECK

REMARKS :

MECH. FASTENED SINGLE-PLY



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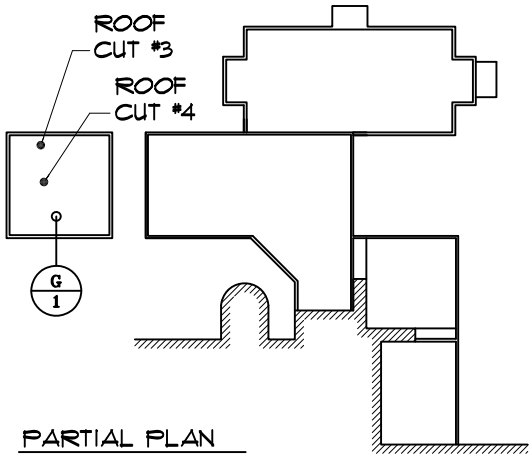
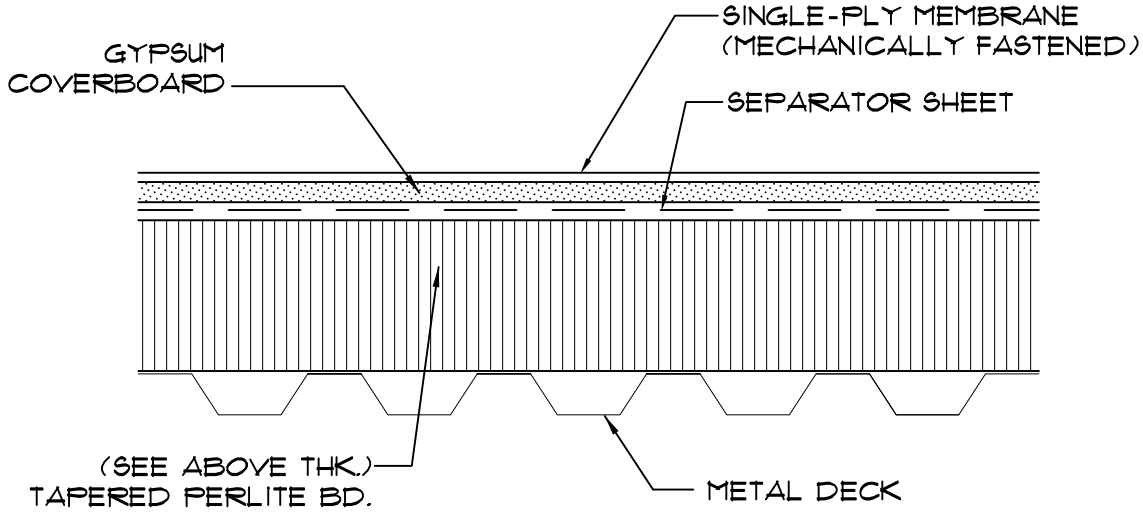


PARTIAL PLAN
NOT TO SCALE



A/R/C Associates Incorporated

Architecture
Roof Consulting
Construction Technology

601 North Fern Creek Avenue
Suite 100 Orlando, FL.32803-4899
Tel. (407)896-7875 Fax. (407)898-6043

ROOF CUT DATA

PROJECT NAME: CASSIDY OFFICE BLDG
33RD STREET JAIL

PROJECT # 18049.00 DATE: 10/26/18

ROOF CUT NO.: 5 & 6

ROOF AREA : H/1

MEMBRANE:

SINGLE-PLY MEMBRANE

SEPARATOR / SLIP SHEET

INSULATION :

(RC #5) ½" GYP. BD./5½" PERLITE

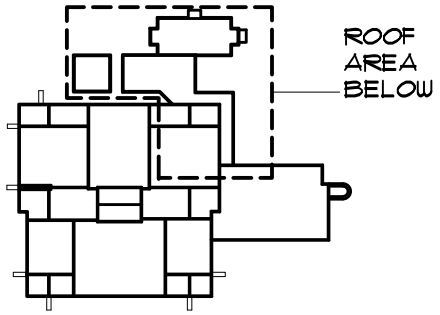
(RC #6) ½" GYP. BD./2" PERLITE

DECK :

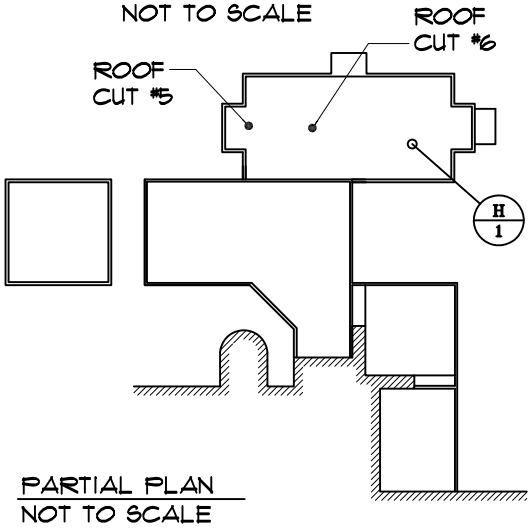
METAL DECK

REMARKS :

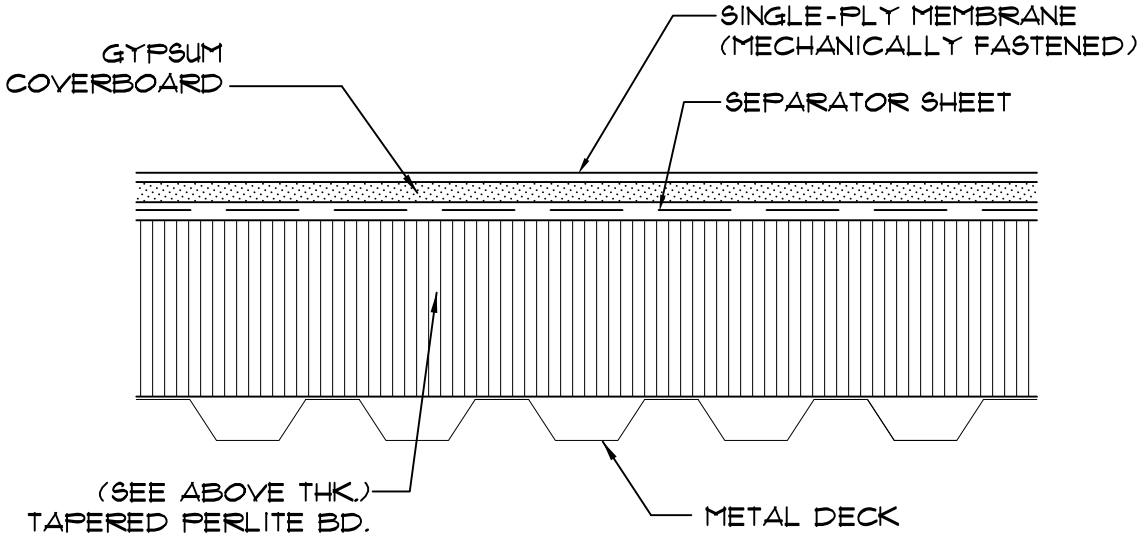
MECH. FASTENED SINGLE-PLY



OVERPLAN PLAN
NOT TO SCALE



PARTIAL PLAN
NOT TO SCALE



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ROOF CUT DATA

PROJECT NAME: CASSIDY OFFICE BLDG
33RD STREET JAIL

PROJECT # 18049.00 DATE: 10/26/18

ROOF CUT NO.: 7 & 8

ROOF AREA : F/1

MEMBRANE:

SINGLE-PLY MEMBRANE

SEPARATOR / SLIP SHEET

INSULATION :

(RC #7) ½" GYP. BD./7" PERLITE

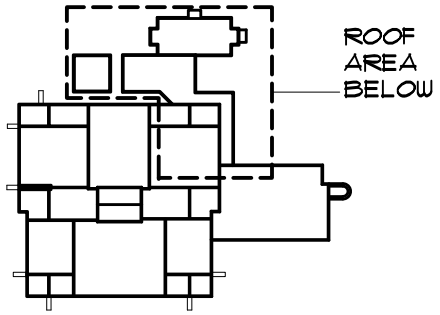
(RC #8) ½" GYP. BD./1¾" PERLITE

DECK :

METAL DECK

REMARKS :

MECH. FASTENED SINGLE-PLY



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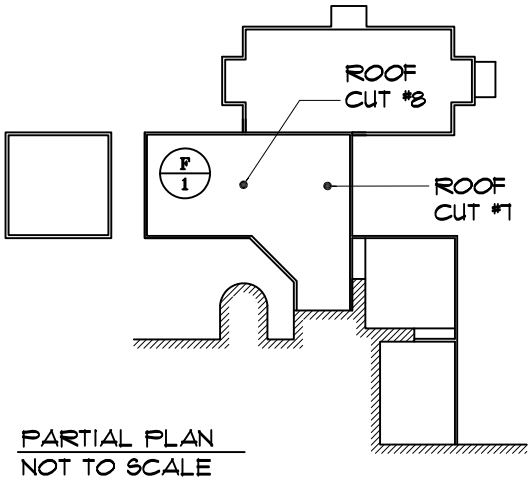

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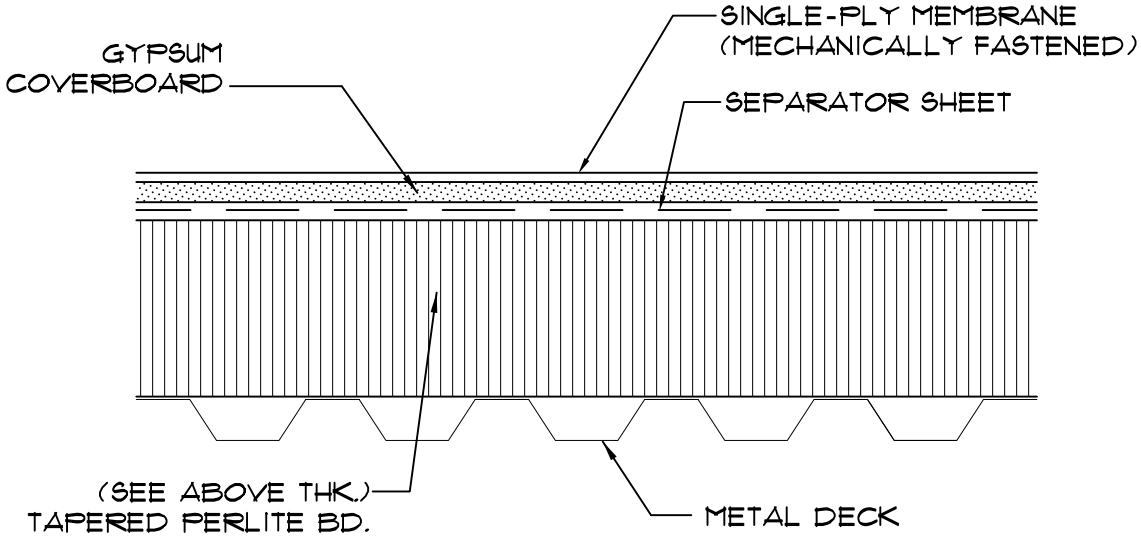


A/R/C Associates Incorporated

Architecture
Roof Consulting
Construction Technology

601 North Fern Creek Avenue
Suite 100 Orlando, FL.32803-4899
Tel. (407)896-7875 Fax. (407)898-6043

ROOF CUT DATA

PROJECT NAME: CASSIDY OFFICE BLDG
33RD STREET JAIL

PROJECT # 18049.00 DATE: 10/26/18

ROOF CUT NO.: 9 & 10

ROOF AREA : E/1

MEMBRANE:

SINGLE-PLY MEMBRANE

SEPARATOR / SLIP SHEET

INSULATION :

(RC #9) ½" GYP. BD./4" PERLITE

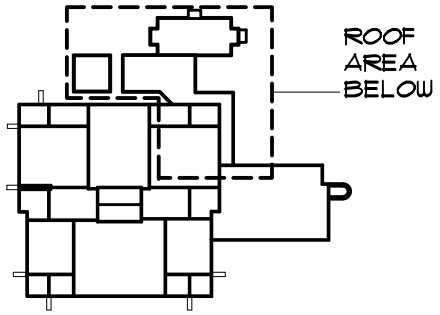
(RC #10) ½" GYP. BD./½" PERLITE

DECK :

METAL DECK

REMARKS :

MECH. FASTENED SINGLE-PLY



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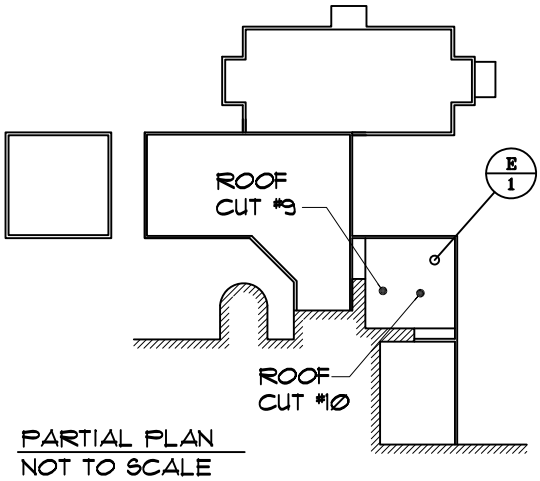

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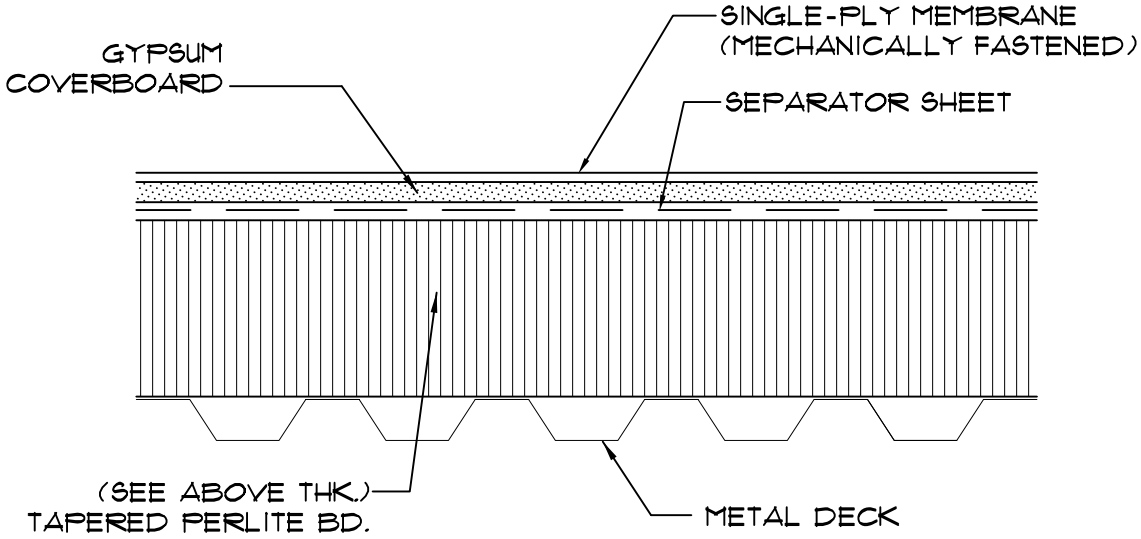

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ROOF CUT DATA

PROJECT NAME: CASSIDY OFFICE BLDG
33RD STREET JAIL

PROJECT # 18049.00 DATE: 10/26/18

ROOF CUT NO.: 11 & 12

ROOF AREA : D/1

MEMBRANE:

SINGLE-PLY MEMBRANE

SEPARATOR / SLIP SHEET

INSULATION :

(RC #9) ½" GYP. BD./3" PERLITE

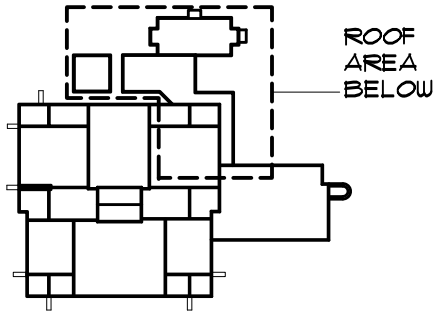
(RC #10) ½" GYP. BD./1" PERLITE

DECK :

METAL DECK

REMARKS :

MECH. FASTENED SINGLE-PLY



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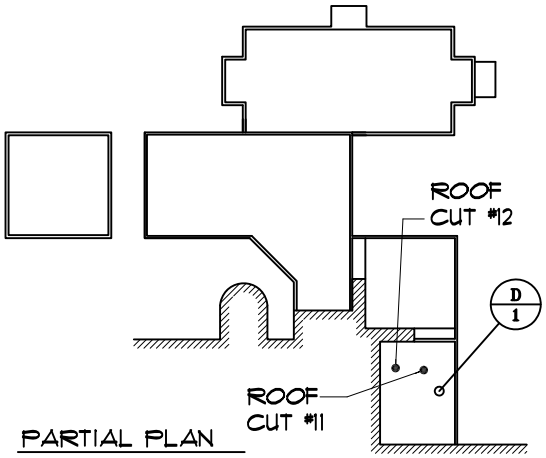

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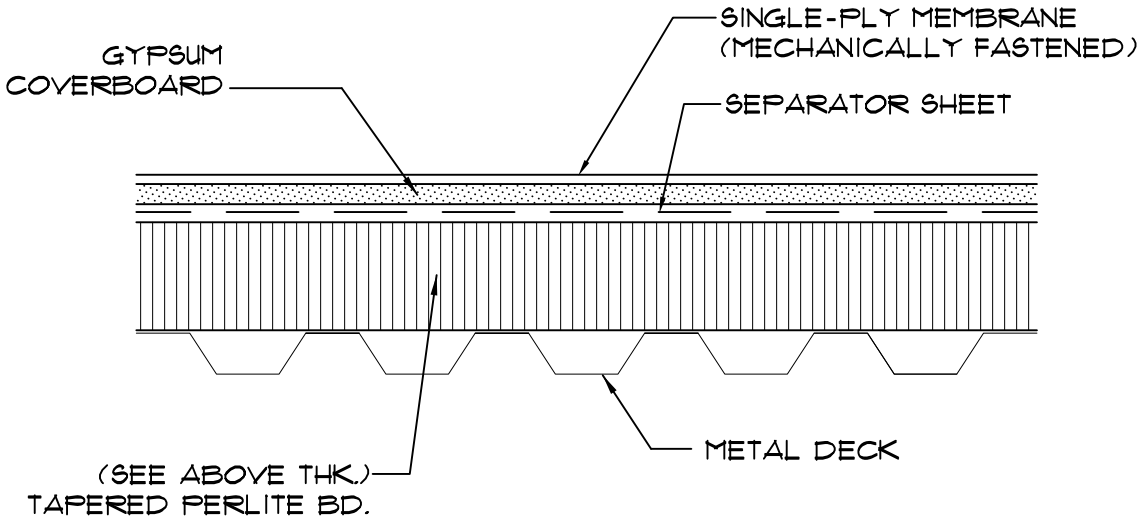

PART 1 GENERAL

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 Membrane Roofing
3. Section 07 62 00 – Sheet Metal Flashing and Trim
4. Section 09 90 00 – Minor Painting

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 Membrane Roofing

1.2 DESCRIPTION OF WORK

A. Roof Areas “A” 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.

B. Roof Areas “B” where indicated: Remove existing roof membrane system, copings, perimeter flashings, base flashing, counter-flashings, edge metal, vent stack flashing down to the existing metal 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:
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.

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

END OF SECTION

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

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 (A1-B/A) Non-tapered rigid polyisocyanurate insulation adhered to mechanically attached base sheet. (D/1-H/1) Tapered rigid polyisocyanurate insulation ¼” per FT slope, mechanically fastened to metal deck.
   2. 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.

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.)

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.

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.

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.

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.

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 Sarnifil — 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.
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.

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 Roofs) Non-tapered board, 1.75” starting thickness.
      b. (Lower Roofs) ¼” 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.
   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.

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

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 112 mph;** Ultimate **144 mph** wind up-lift resistance.

3.4 PREPARATION OF EXISTING CONCRETE OVER CEMENTITIOUS WOOD FIBER 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 APPLICATION OF BASE SHEET (UPPER ROOF AREAS)

A. Venting Base Sheet:
1. Start with 18" width at the low edge, followed by full width sheets.
2. Lap the venting base sheet 4 inches at edges and ends.
3. Mechanically fasten base sheet in accordance with the prescribed attachment requirements as detailed within the project documents, or as determined by the roof system manufacturer due to the project wind uplift criteria (most stringent to govern).
4. At parapet walls, extend the venting base sheet up and over the wall covering and wood blocking where necessary for venting.
   a. Nail venting base sheet to the wall at 8" on center in each direction.
   b. Apply flashing adhesive at side laps (or end laps) and over nail heads to keep wall flashing watertight until the multiple ply flashing and modified bitumen flashing is installed.

3.6 APPLYING BOARD INSULATION SYSTEM

A. System descriptions:
1. Roof Areas A/1-A/18 & B/1: 1.75" thick Non-Tapered Rigid Insulation.
2. Roof Areas D/1-H/1 : ¼" per foot sloped Tapered insulation with a 3½" thick base layer.

B. General:
1. The Contractor shall confirm all field dimensions for proper sizing of board in relation to the existing deck, cut board as required to fit in between.
2. Install only as much board insulation in any one day as can be covered by the completed membrane in the same day.
3. Ensure preliminary roof membrane is clean and dry.

C. Rigid Board Insulation Attachment and Gypsum Roof Board Installation:
1. (A/1-A/18 & 1/B) Adhere insulation boards with adhesive over the base sheet and existing rigid board on metal deck, mechanically fasten to the existing metal roof deck below only if necessary to secure temporarily.
2. (D/1-H/1) Mechanically fasten non-tapered polyisocyanurate insulation to metal deck using the approved fastening pattern. Install 1/2" per foot finish slope tapered insulation at cricket locations shown in the plans provided.

3. 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.
4. 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.
5. Contractor shall insure that slopes indicated on the drawings are "finish" slopes, regardless of irregularities and deviations in the roof deck or substrate.
6. Upon completion of insulation placement, adhere 1/4" gypsum roof board over insulation, (stagger joints), mechanically fasten to the existing metal roof deck below only if necessary to secure, or required by the roofing manufacturer.
7. Prior to roof membrane application, remove excess dust from surface of board insulation by brooming, blowing and/or vacuuming.

3.7 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.
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 us 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 save operation of the automatic welder.
   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.

3.8 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.

3.9 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.

3.10 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.

3.11 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.

3.12 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

3.13 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.

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:

		Upper Roof / Lower Roof
a)	Interior of Roof (Zone 1):	- 49 psf / - 29 psf
b)	Perimeter of Roof (Zone 2):	- 74 psf / - 45 psf
c)	Corners of Roof (Zone 3):	- 106 psf. / - 64 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.

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^{nd}), and fifth (5^{th}), 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

Whereas _____

of (Address)_____

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

Owner:_____

Address:_____

Name and Type of Building:_____

Address:_____

Area of Work:_____

Date of Acceptance:_____
Warranty Period: **Three (3) Years** Date of Expiration:

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.

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

   _____ (SEAL)
   Title

   Witness:

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 Membrane Roofing
3. Section 07 90 00 – Joint Sealers
4. Section 09 90 00 – Minor Painting: Prime and finish painting.

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.

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.

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. Zinc-Coated Steel: Commercial quality with 0.20% copper, ASTM A 525 except ASTM A 527 for lock-forming, G90 hot-dip galvanized, 24 gage except as otherwise indicated.

D. Aluminum: ASTM B 209, alloy 3003, Temper H14, AA-C22A41 mill finish.

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: ¼ inch diameter screw x 2 inch penetration or 1½ inch annular ring stainless steel roofing nail.
2. Concrete: ¼ inch “zamac” nail-in x 1½ inch penetration.
3. Concrete Block: ¼ inch “zamac” nail-in x 1½ inch penetration.

D. Fastener Schedule: Anchorage for below assumed to be into wood blocking. See details for other specifics.
1. Continuous Cleats: 1½ inch annular ring stainless steel roofing nails at 6 inches on center maximum.
2. See Fastener Schedule sheets included as part of the project documents.
3. For all conditions not covered, refer to fastener specifications above or consult with Architect.

E. Dry-in Membrane: Forty (40) mils thick, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet 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).
   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).
   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).
   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).
   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.

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. Pretin 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.

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.	Counterflashing Receiver	Stainless Steel	24 gage	Mill finish
C.	Counterflashings	Stainless Steel	24 gage	Mill finish
D.	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:
1. Section includes fabrication and installation of flashings for: pipes, conduits and other round items, angle irons, channels and similar penetrations; irregular shapes such as "Uni-strut"; and similar items penetrating, resting on, or anchored to the roof.
2. Metal roof penetration flashing assemblies are considered an integral part of the roofing system(s) and shall be covered under the roofing membrane manufacturer's and roofing installer's guarantees and warranties.
3. All roof penetrations shall be flashed using materials, methods and details appropriate for each condition encountered, as described in this section, or if not described in this section, as recommended by S.B.C. Industries and accepted by the Design Professional.

B. Related Sections:
1. Section 06 10 00 – Rough Carpentry:
2. Section 07 54 16 – Thermoplastic Single-ply Membrane Roofing
3. Section 07 62 00 – Sheet Metal Flashing and Trim
4. Section 07 90 00 – Joint Protection

1.2 REFERENCES

A. AISI (American Iron and Steel Institute)
1. AISI American Iron and Steel Institute - Stainless Steel - Uses in Architecture.

B. ASTM International
1. ASTM A 167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet & Strip.
2. ASTM A 653 - Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process - Commercial Quality/
3. ASTM B 32 - Solder Metal.
4. ASTM B 486 - Paste Solder.
5. ASTM D 226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
6. ASTM D 4586 - Asphalt Roof Cement, Asbestos-Free.

C. FS Federal Specifications
1. FS O-F-506 - Flux, Soldering, Paste and Liquid

D. NRCA (National Roofing Contractors Association)
1. NRCA National Roofing Contractors Association - Roofing Manual.

E. SMACNA (Sheet Metal and Air Conditioning Contractors National Association)
1. SMACNA - Architectural Sheet Metal Manual.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Provide membrane repair materials Product Data, have the Contractor submit material samples only when the Construction Manager requires such.

C. Manufacturer's Installation Instructions: Indicate special precautions required for seaming the membrane.

D. Manufacturer's Field Reports: Submit under provisions of Section 01 63 00.

1.4 QUALITY ASSURANCE

A. General:
1. All flashings shall be designed to comply with or exceed the following:
a. National Roofing Contractors Association (NCRA) - “Roofing and Waterproofing Manual” (latest edition) except where other editions are specifically referenced.
b. Sheet Metal and Air Conditioning Contractors Association (SMACNA), Architectural Sheet Metal Manual (latest edition).
c. Manufacturer’s standard details as accepted by the Design Professional.
d. Project details as issued for bidding and construction.

B. Manufacturer Qualifications:
1. All set-on penetration flashings shall be shop fabricated by a single manufacturer whose specialty is the fabrication of roof penetration flashings of the type specified in this section and who has been in business for a minimum of 5 years. More than 80% of the business shall be devoted to the fabrication of roof penetration flashing.

C. Installer Qualifications:
1. Installers shall be qualified and approved by the roof penetration flashing manufacturer prior to commencement of the work.

1.5 REGULATORY REQUIREMENTS

A. Provide materials complying with governing regulations and codes installed to comply with the following:
1. UL Listing: Provide roofing system materials and component materials that have been tested for application and slopes indicated and are listed by Underwriters Laboratories, Inc. (UL) for Class A external fire exposure.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver to site, store, protect from potential damage, and handle products under provisions of Section 01 63 00.

B. Deliver material in manufacturer's original, unopened containers with manufacturer's labels intact and legible.

C. Deliver material requiring fire resistance classification to the job with labels attached and packaged as required by labeling service.

D. Store 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. Direct sunlight.
5. Mud, dust, sand, oil and grease.

E. Comply with fire, safety, and environmental protection regulations.

F. Take special precautions against traffic on roofing when ambient temperature is above 80 degree F. Avoid heavy traffic on the work during installation.

1.7 PROJECT CONDITIONS

A. Existing Conditions:
1. The roofing repair applicator shall verify existing conditions prior to Bidding.
2. Report conflicts and problems to Procurement Division of Orange County 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.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not apply roofing membrane during inclement weather ambient temperatures below 40 degrees F.

B. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

C. Proceed with roofing work when existing and forecasted weather conditions permit work to be performed in accordance with requirements of this section and warranty compliance requirements.

1.9 COORDINATION

A. Coordinate work under provisions of this Section.

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 MANUFACTURERS

A. Subject to compliance with requirements specified in this section, provide metal roof penetration flashing systems from one of the following manufacturers:
1. S.B.C. Industries - P. O. Box 610397, North Miami, FL 33261, Phone: 1-800-228-2580 or (305) 685-6350 FAX: (305) 686-6360 E-Mail: sbcindust@shadow.com
2. Thaler Metal USA, 1902 Common Street, Suite 500, New Braunfels, Texas 78130, (866) 583-6001 FAX:(830) 626-6010 E-Mail: rena@thalermetal.com
3. DMI- 1700 East Street, N. Ft Myers, FL 33917, Phone 239 599-8527 / 855 800-8878 - Email orders@directmetalsinc.com

2.2 COMPONENTS

A. Metal: Stainless steel, type 304, 2B, ASTM A-240.

B. Solder: ASTM B32, 50% tin - 50% lead; if lead-free solder is required, tin-silver, ASTM 96.5TS.

C. Foam Tape: Closed cell foam, PSA on one side, 1/4" or 3/8" x 1" wide, ASTM D-1056.

D. Backer Rod: Open cell polyurethane.

E. Sealant: Single part urethane, ASTM C920-79.

F. Asphalt Primer: As recommended and approved by the roofing membrane manufacturer and conforming to ASTM D-41 requirements.

G. Modified Asphalt Roof Cement: As recommended and approved by the roofing membrane manufacturer.

2.3 FABRICATION

A. General:
1. All deck flanges shall have full rounded corners
2. Collar or stack portions of flashing assemblies and sealant covers for square or round pipes larger than 3" in diameter shall be fabricated from 24 gauge stainless steel. Unless noted otherwise, all other metal flashing assemblies shall be fabricated from 26 gauge stainless steel.
3. Gauges for custom fabrications not specifically described herein shall be as recommended by the roof penetration flashing manufacturer and accepted by the Design Professional.

4. Pitch pans are not to be used in lieu of any other penetration flashing in these specifications. Exceptions require special written approval by the Design Professional and will only be granted where, in the judgment of the Design Professional, no other means of positive flashing is feasible. In such cases where pitch pans are specifically approved by the Design Professional, said pitch pans shall conform to the following:
   a. Fabricate from 24 gauge stainless steel, using 7-3/4" stock x girth required, forming a hemmed 3" high side with a 1/4" - 3/8" inside return at the top and a 4" deck flashing flange. Provide 2" clearance from protrusion. If pitch pan can be slipped over penetration, shop solder four corners 4-1/2" with radial corners in place. If pitch pan cannot be slipped over penetration, wrap pitch pan around penetration, and solder corners and vertical seam.

B. Fabrication of flashings for pipes, conduits and other round items penetrating, resting on or anchored to roof which allows a tubular flashing to be slipped over.
   1. Form tubular flashing sleeve no less than 9" high and of proper diameter to provide 1/8" minimum - 1/4" maximum clearance from pipe or conduit.
   2. Fabricate square flashing deck plate to a size 7-1/2" larger than protrusion. Punch hole of appropriate size in center and extrude surrounding material upward 1/4" providing a continuous vertical soldering flange and solder 9" high tubular flashing sleeve. Cut 1" minimum radius on flashing plate corners.
   3. Fabricate counterflashing 5" high with a diameter ½" greater than pipe or conduit.
   4. Provide a conical sealant cover, sloped outward and downward at 30 degrees to 45 degrees from the horizontal plane with an inside diameter equal to pipe or conduit size and an outside diameter 1" to 2" larger.
   5. Shop solder all seams watertight.
   6. Provide Model P/S or C/S with standard accessory sealant cover as manufactured by S.B.C. Industries or Design Professional accepted equal product from one of the listed manufacturers.

C. Fabrication of flashings for connected pipes, conduits and other round items not allowing a tubular flashing to be slipped over.
   1. Form semi-cylindrical tubular flashing sleeves (180 degrees) not less than 9" high, tightly seam intersecting halves to mate snugly. Provide a split flashing deck plate with radial corners and being formed upward to provide a continuous soldering flange for semi-cylindrical sleeve engagement. Size each unit to allow for vibration and thermal movement of pipe or conduit with 1/8" minimum x 1/4" maximum.
   2. Form cylindrical counterflashing 5" high with seamed edge to a diameter 1/4" larger than 9" high sleeve.
   3. Provide conical sealant cover, sloped outward and downward at 30 degrees to 45 degrees from a horizontal plane, with an inside diameter equal to pipe or conduit size and an outside diameter 2" larger.
   4. Provide Model P/D or C/D with standard sealant cover as manufactured by S.B.C. Industries or Design Professional accepted equal product from one of the listed manufacturers.

D. Fabrication of flashings for angle irons, “H” beams, channels and square tubing.
   1. Form a 6" high two piece angular configuration similar to penetration, but allowing 3/16" minimum to 3/8" maximum clearance in any direction. Fabricate flashing deck flanges in two pieces and shop solder to 6" angular stacks. Provide an umbrella type counterflashing conforming to protrusion which extends 3/4" at 45 degrees outward from angular stack flashing.
   2. Provide Model A/D, H/D, CH/D or SQT/D, with standard sealant cover as manufactured by S.B.C. Industries or Design Professional accepted equal product from one of the listed manufacturers.

E. Fabrication of flashings for ribbon or coaxial cable for lightning protection, T.V. antennas, satellite dishes, telephone wire and similar penetrations:
   1. Consult S.B.C Industries for fabrication of gooseneck type cable flashing or provide Design Professional accepted equal product from one of the listed manufacturers.

F. Fabrication of flashings for "Uni-strut" members and other irregular shaped roof membrane penetrations:
   1. Consult S.B.C. Industries for fabrication of "Uni-strut" and custom or irregular shaped metal flashing assemblies. Design Professional accepted equal products from one of the listed manufacturers will be acceptable.

PART 3 EXECUTION

3.1 INSTALLATION

A. General:
   1. All deck flanges shall be primed, set in a full fresh bed of flashing cement and stripped-in in accordance with membrane manufacturer’s recommendations and related specifications and drawings.
   2. All flashings shall be shop fabricated from field measurements.
   3. Clearances between penetrations (including flashing sleeves) and between penetrations and the leading edge of cants at wall or equipment base flashings shall be a minimum of 18" in compliance with NRCA Table 4 - Guide for Clearance Between Pipes/Walls/Curbs, as found in the NRCA Roofing and Waterproofing Manual (Fourth Edition).

B. Installation of flashing for pipes, conduits and other round items penetrating, resting on, or anchored to roofing.
   1. Slide flashing unit over penetration and firmly embed flashing plate in full bed of mastic.
   2. Counterflashing and sealant cover: Using a solvent with a rapid evaporation rate and leaving no residue, clean area of pipe directly above flashing. Wrap a single layer of 1/4" to 3/8" x 1" wide closed cell tape around pipe, 1/4" above top of base sleeve. Wrap cap flashing around allowing top to extend 1/4" above top of tape. Apply sealant into channel at top and tool for positive runoff. Apply conical sealant cover directly above sealant.

C. Installation of flashing for connected pipes, conduits and other round items penetrating roofing or resting on roof not allowing a tubular flashing to be slipped over.
   1. Base sleeves: Mate shop fabricated half sections together around pipe and solder vertical and horizontal seams watertight. Embed flashing flange in full bed of mastic.
   2. Counterflashing and conical sealant cover: Using a solvent with a rapid evaporation rate and leaving no residue, clean area of pipe directly above flashing. Wrap a single layer of 1/4" to 3/8" x 1" wide closed cell foam tape around pipe 1/4" above top of base sleeve. Install cap flashing. Solder vertical seam. Apply sealant into channel and tool for positive runoff. Apply conical sealant cover directly above sealant.

D. Installation of flashing for angle, “H” beams, channels and square tubing.
   1. Around the protrusion, snap or slide nesting flashing sections together, and embed flashing flange in full bed of mastic. Solder all seams and neutralize flux. At area of clearance between protrusion and top of stack flashing, insert backer rod 3/8" below top of stack flashing. Apply a liberal amount of sealant and tool for positive drainage. Install sealant cover directly above stack flashing in wet sealant.

E. Installation of flashings for ribbon or coaxial cable for lightning protection, T.V. antennas, satellite dishes, telephone and similar penetrations:
   1. Follow manufacturer’s instructions for installation of cable flashing.

3.2 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Division 1.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

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 Membrane Roofing
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

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

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
F.	Base Sheet	Type: Ethicone	Color to match Membrane

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Related Documents
   1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Work Included:
   1. Design, manufacture and installation of translucent insulating glazing system. An assembly of extruded Nano-Cell polycarbonate glazing panels incorporated into a complete aluminum framed system that has been tested and warranted by the manufacturer as a single source system.
   2. All anchors, brackets, and hardware attachments necessary to complete the specified structural assembly, weather-ability and water-tightness performance requirements. All flashing up to but not penetrating adjoining work are also required as part of the system and shall be included.
   3. Trained and factory authorized labor with supervision to complete the entire panel installation.

C. Related sections include the following:
   1. Section 02 41 16 – Selective Demolition.
   2. Section 07 54 16 – Thermoplastic Single-ply Membrane Roofing
   3. Section 07 62 00 – Sheet Metal Flashing and Trim.
   4. Section 07 90 00 – Joint Sealers.

D. Requests for substitutions must be approved in writing or by addendum no later than 10 days prior to bid date and in keeping with Division 01 of the specification.

1.2 PERFORMANCE REQUIREMENTS

A. Deflection of entire system shall be no more than L/180, unless otherwise indicated.

B. Structural Loads: Provide system capable of handling the following loads when supporting full dead load:
   1. Live Load: 20 PSF
   2. Wind Load: 144mph

1.3 SUBMITTALS

A. Product Data: Submit shop drawings and color samples of face sheets and finishes according to Division 01.

B. Design Data: 1/4 inch scaled drawings showing panel layout with details.

C. Samples: Submit product sample showing thickness, face sheets, colors and insulation 7” x 12”.

D. Test Reports: To be furnished by systems manufacturer in accordance with Division 01, Submittals. The manufacturer shall submit certified test reports by an independent testing organization for each type and class of panel system. Reports shall verify that the material will meet all performance requirements of this specification. Previously completed test reports will be acceptable if by current manufacturer and indicative of products used on this project. Test reports required are:
   1. Flame Spread and Smoke Developed (ASTM E 84 by UL 723)
   2. Burn Extent (ASTM D 635)
   3. Color Difference (ASTM D 2244)
   4. Impact Strength (UL 972)
   5. Tensile Bond Strength (ASTM C 297 after aging by ASTM D 1037)
   6. Shear Bond Strength (ASTM D 1002) after 5 different aging conditions
   7. Beam Bending Strength (ASTM E 72)
   8. Insulation "U" Factor (by NFRC 100; ASTM C 236; ASTM E 1423 and ASTM C 1199)
   9. NFRC Certification
   10. Condensation Resistance Factor (AAMA 1503)
   11. Class B Roof Covering Burning Brand (ASTM E 108)
   12. UL Listed Class C Roof System (UL 790)

E. Proof of regular, independent quality control monitoring under a nationally recognized building code review and listing program shall be submitted.

F. Complete energy and structural calculations and all above data must be submitted with any request to be included as an approved product to bid this section certified by a State of Florida Registered Engineer.

G. State of Florida Product Approval Numbers.

H. Manufacturer's Installation Instructions.

I. Manufacturer's Certificate.

J. Manufacturer's Field Reports.

1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents.

B. Operation and Maintenance Data

1.5 QUALITY ASSURANCE

A. Skyight system must be evaluated and listed by recognized building code authorities: Florida Building Code (latest edition).

B. Materials and products shall be manufactured by a company continuously and regularly employed in the manufacture of skylights using polycarbonate (not glass) panel systems for a period of at least ten (10) years. Manufacturers shall provide a list

of at least ten (10) projects having been in place a minimum of ten (10) years, with similar size, scope, climate and type.

C. Erection shall be by a factory-approved installer which has been in the business of erecting similar material for at least five (5) consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

D. The manufacturer shall be responsible for the configuration and fabrication of the complete panel system, and will ensure that it fully meets all requirements of this specification.

E. Product Options: Drawings indicate size, dimensions and profile to structural translucent panel system. Specifications indicate performance required. Other manufacturers that can meet portions of this specification and wish to be considered alternates must comply with Division 1, Substitutions and Alternates, and can offer alternate bids for consideration using those guidelines.

1.6 DELIVERY, STORAGE, AND HANDLING

A. If site storage is required, store panels on long edge, several inches above the ground, blocked and under cover to prevent damage.

B. Follow manufacturer's storage and handling instructions.

1.7 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.

B. Field Measurements: Verify dimensions in system installation areas and indicate if dimensions on shop drawings are actual or guaranteed dimensions.

1.8 APPROVED MANUFACTURERS:

A. All manufacturers acceptable for use on this project under this section must be approved prior to bid. Manufacturers must submit evidence of compliance with all performance criteria specified herein. This evidence must include proof of conformance and test reports as specified below. Any exceptions taken from this specification must be noted on the approval request. If no exceptions are noted and approval is given, product performance will be as specified. Should non-compliance be subsequently discovered, the previously given approval will be invalidated and use of the product on the project will be disallowed. Requests for approval, with all appropriate submittal data and samples must be received no less than 15 days prior to bid date. No other manufacturers will be acceptable. No verbal approval will be given.

1.9 SUBMITTALS:

A. Submit shop drawings and color samples in accordance with Division 01.

B. The manufacturer shall submit shall submit written guarantee accompanied by substantiating data, stating that the products to be furnished are in accordance with or exceed these specifications.

C. The manufacturer shall submit certified test reports made by an independent organization for each type and class of panel system. Reports shall verify that the material will meet all performance requirements of this specification. Previously completed test reports will be acceptable if they are current and indicative of products used on this project. Test reports required are:

1. Self Ignition Temperature (ASTM 1929-3)
2. Smoke Density (ASTM D-2843)
3. Burning Extent (ASTM D-635)
4. Interior Flame Spread (ASTM E-84)
5. Color Difference (ASTM D-2244-85)
6. Weathering (ASTM D-4364)
7. Yellowing Index (ASTM D-1925)
8. Weathering Evaluation before and after exposure to 300°F, 25 minutes include Light Transmission, Color Change, and Yellowing Index, per ASTM E-1175, ASTM D-2244 and ASTM D-1925 respectively.
9. Shatter Resistance (ASTM D-3841/SPI Method B)
10. Large Missile Test - Impact Resistance per SFBC PA 201-94
11. Insulation “U” Factor per NFRC100 test methods & procedures
12. Water Penetration (ASTM E-331)
13. Load Bearing Capability (ASTM E-330-97)
14. OSHA Life Safety Fall and Walk Through Protection for 300 lb. point load per STD 29 CFR 1910.23 (e)(8)
15. OSHA Life Safety STD 29 CFR - Impact loading by blunt object of 500 ft. lbs. per ASTM E-695-03
16. Performance of exterior windows, curtain walls when impacted by wind-borne debris per ASTM E 1996-02, Level D
17. IES LM-44-90 Testing for Total and Diffused Reflectometry (Diffused Light Transmission)
18. ASTM E108 and UL 790 - Class C Roof Construction
19. [Hurricane Zone Panel System - shall meet wind uplift resistance requirements per ASTM E 1996 and / or Dade County test protocols PA 201, PA 202, PA 203 when required by local codes.]

D. MAINTENANCE DATA: The manufacturer shall provide recommended maintenance procedures, schedule of maintenance and materials required or recommended for maintenance.

1.10 WARRANTY

A. Provide a single source skylight / wall light / walkway / canopy system manufacturer warranty for glazing panels and framing system – third party warranty for glazing panels shall not be acceptable.

B. Provide manufacturer 10 year warranty to include:
1. Change in light transmission of no more than 6% per ASTM D-1003
2. No delamination shall occur to a panel that is subjected to a load of 10 pounds per square foot in a manner that would tend to cause delamination of the face.
3. Thermal aging - the light transmission and the color shall not change after exposure to heat of 300°F for 25 minutes. (When measured per ASTM D-1003 and ASTM D-2244 respectively).

PART 2 PRODUCTS

2.1 TRANSLUCENT INSULATING INTERLOCKING NANO-CELL GLAZING TECHNOLOGY:

A. The design and performance criteria of this job are based on products manufactured by CPI Daylighting, Inc., Phone: (800) 759-6985, Fax (847) 816-0425
Website: www.cpidaylighting.com

And as locally represented by: Copeland Architectural Systems, (Clyde Copeland), (813) 831-3344, ccopeland@cas-corp.com .

Substitute products must be proven equal and approved by addenda prior to the published bid date per specification section 1.04 E. Fiberglass skins are unacceptable.

2.2 TRANSLUCENT PANEL PERFORMANCE

A. Nano-Cell Panel Technology – Longevity and Resistance to Buckling and Pressure:
1. Translucent Panels must be of Nano-Cell technology. Wide Cell technology (cell size exceeding 0.18”) shall not be acceptable.
2. The translucent panel shall include an integral extruded Nano-Cell structural core. The panel’s exterior skins shall be connected with supporting continuous ribs, perpendicular to the skins, at a spacing not to exceed 0.18” (truss-like construction). In addition, the space between the two exterior skins shall be divided by multiple parallel horizontal surfaces, at a spacing not to exceed 0.18”.

B. Appearance:
1. Panel assembly thickness shall be a minimum Quadwall 2 panel system with concealed interlocking U battens.
2. Panel Width: Shall not exceed 2’ to ensure best performance for wind uplift, vibration, oil canning and visual appearance. Panels over 2’ wide will not be approved.
3. The panels shall be uniform in color with an integral Nano-Cell core. In a cross section, the core shall be constructed of Nano-Cell not to exceed 0.18” x 0.18”.

The appearance should be equal to CPI's Pentaglas Panel. Wide cell panel configurations greater than 0.18" x 0.18" shall not be accepted.

C. Thermal and solar performance:
   1. Insulation Value ("U") per NFRC 100 test methods & procedures - 0.23 without batt insulation.
   2. Light Transmission: per ASTM E972, E1175 or D-1003
   3. SHGC / SC per NFRC/ASTM Calorimeter Standard: 0.46 / 0.53.
   4. Color: To be selected by Owner without any impact on cost assumed for bidding and above performance specifications.

D. Translucent Panel Joint System:
   1. Panel shall be extruded in one single formable length. Maximum panel width shall not exceed 2'. Transverse connections are not acceptable.
   2. The panels should be manufactured with grip-lock double tooth upstands that are integral to the unit. The upstands shall be 90 degrees to the panel face (standing seam dry glazed concept). Welding or gluing of upstands or standing seam is not acceptable.
   3. The U or H battens shall have a grip-lock double tooth locking mechanism to ensure maximum uplift capability.
   4. The metal retention clip shall be configured with a 0.4" wide top flange that extends continuously across the web from end to end and from side to side. To allow a safety factor, the clip must be tested to meet a wind uplift standard of 90 psf per ASTM E330.
   5. The panel system U connection shall meet wind load performance requirements without deterioration after 100 months of Florida outdoor exposure. This performance must be demonstrated by providing independent lab comparison test reports for a weathered vs. a new panel assembly. As a standard for all systems, provide test reports for a Quadwall panel assembly, 6' wide x 12' long that have been exposed to Florida weather conditions for 100 months per ASTM E-330-97 for loading, ASTM E 1886-97 for cycling and ASTM E-1996-02 for missile impact at design load of 70 PSF.
   6. Water Penetration: No water penetration of the panel U / H joint connection length at test pressure of 10.0 PSF per ASTM E-331
   7. Free movement of the panels shall be allowed to occur without damage to the weather tightness of the completed system.

E. Flammability
   1. The exterior and interior faces shall be an approved light transmitting panel with a CC1 fire rating classification per ASTM D-635. Flame spread no greater than 25 per ASTM E-84. Smoke density no greater than 75 per ASTM D2843 and a minimum self-ignition temperature of 1000°F per ASTM 1929. The panel shall be self-extinguishing.
   2. Interior flame spread classification of Class I per ASTM E84.
   3. The standard Pentaglasl configuration shall be rated Class C per ASTM E108 and UL 790 roof construction.
   4. The translucent panel shall be successfully evaluated for fire from exterior exposure per ASTM E108 and UL 790 to meet Class C rating. The panel must be listed by an independent recognized listing laboratory.

F. Impact Resistance - the panels shall pass the following tests:
   1. ASTM D-3841/SPI - Impact and Shatter Resistance of 200 ft. lbs.
   2. SFBC – PA 201-94, impact resistance of 350 ft. lbs.
   3. ASTM E-1996 - Must comply with standard specification for performance of exterior windows or curtain walls when impacted by windborne debris at level D and after cyclic wind loading at the specified design load.

G. OSHA Life Safety Standards 29 CFR 1926.502 (i)(2) and 29 CFR 1910.23 (e)(8):
   1. Panel assembly shall withstand impact loading by blunt object of 500 ft. lbs. per ASTM E695-03
   2. Panel assembly shall withstand a 300 lb. point load at 5' span per OSHA standard 29CFR 1910 23e8.

H. Hurricane Zone Panel System shall meet wind uplift resistance requirements per ASTM E 1996 and / or Dade County test protocols PA 201, PA 202, PA 203 when required by local codes.

I. Cyclic Wind Load – Translucent Panels shall be tested for cyclic wind loads and impact resistance per ASTM E 1886-97 and ASTM E 1996-02 at test load to verify the positive and negative design loads and level D impact.

J. Weatherability:
   1. The light transmission as measured by ASTM D1003, shall not decrease more than 6% over 10 years, or after exposure to temperature of 300°F for 25 minutes (thermal aging).
   2. The panel shall be tested by recognized laboratory for weathering evaluation per ASTM D4364-84 (EMMAQUA, UNBACKED), after exposure to minimum concentrated natural sunlight radiation of 56000 MJ/M^2 (1540 MJ/M^2 of UV, 200 – 385 N.M). The panel shall not change in color more than 4.0 units Delta E, 5.0 units Delta L and Delta B.
   3. The panel shall not change color more than 4.0 units (DELTA-E by ASTM D2244) after 60 months outdoor weathering in Arizona determined by an average of at least two samples.
   4. Thermal aging - the interior and exterior faces shall not change color in excess of 0.75 Delta E by ASTM D2244 and shall not darken more than 0.3 units (Delta L by ASTM D2244) and 0.2 units Delta Y (YI) by ASTM D1925 and shall not show cracking or crazing when exposed to 300°F for 25 minutes.
   5. The faces shall not become readily detached when exposed to temp of 300°F and 0°F for 25 minutes.
   6. Panels shall consist of a polycarbonate resin with a permanent, co-extruded, ultra-violet protective layer. Post-applied coating or films of dissimilar materials are unacceptable. Fiberglass skins are unacceptable.
   7. UV Maintenance: The system shall require no scheduled re-coating to maintain its performance or for UV protection.
   8. Panel shall be factory sealed at the sill to restrict dirt ingress.

K. Diffused Light Transmission:

As a reference for measuring the quality of the diffused light through the panel assembly, the IES (Illuminating Engineering Societies) LM-44-1990 Approved Method for Total and Diffuse Reflectometry procedure shall be used. Results for a Clear over Clear Quadwall panel assembly shall be provided as a base standard for comparison.

For Quadwall / Double Glazed systems with total illuminator flux output at 54 lumens diffused light transmission requirements are:

Zonal Zone	% of transmittance from the maximum total lumens transmitted through the panels
0-3	66.0
0-40	78.5
0-60	94.0
0-90	100.0

L. The minimum ratio of the panel weight to the panel thickness should be 0.91 LB. per square foot

2.3 METAL FRAME STRUCTURE

A. To meet ANSI / ASCE 7 building design load, design criteria shall be as defined by the Florida Building Code and the project documents.

B. The skylight framing is designed to be self-supporting between the support constructions. The deflection of the Structural framing members in a direction normal to the plane of the glazing, when subjected to a uniform load deflection, shall not exceed L/60 for the unsupported span. The skylights will impose reactions to the support construction. All adjacent and support construction must support the transfer of all loads including horizontal and vertical, exerted by the skylights. Design or structural engineering services for the supporting structure or building components not included in the skylight scope are not included under this section.

C. Water Penetration: The metal framed skylight shall allow no water penetration at a minimum differential static pressure of 6.24 lbs. per sq. ft. per AAMA 501-94 pressure difference recommendations and as demonstrated by prior testing of typical framing sample per ASTM E-331

D. Water test of Metal Frame Structure shall be conducted according to procedures in AAMA 501.2

2.4 METAL MATERIALS

A. Extruded Aluminum shall be ANSI/ASTM B221; 6063-T6: 6063-T5 or 6005-T5.

B. Flashing:
1. 5005 H34 aluminum 0.04” minimum thickness.
2. Sheet metal flashings/closures/claddings are to be furnished shop formed to profile - when lengths exceed 10 ft. in nominal 10-ft lengths. Field trimming of

the flashing and field forming the ends is necessary to suit as-built conditions.

3. Sheet metal ends are to overlap at least 6-in. to 8-in., set in a full bed of sealant and riveted if required.

C. All Fasteners for aluminum framing to be stainless steel or cadmium plated steel, excluding the final fasteners to the building.

D. All exposed ALUMINUM FINISH shall be finished to match the existing skylight framing to remain, which we believe to be AAMA 2605 2 coat kynar – Bronze color – with a 20 year warranty, this must be verified by the bidder in the field.

PART 3 EXECUTION

3.1 EXAMINATION

A. General Contractor to verify when structural support is ready to receive all work in this section and to convene a Pre-Installation Conference at least one week prior to commencing work of this Section. Attendance required of General Contractor, skylight installer and all parties directly affecting and effected by the work of this section.

B. All submitted opening sizes, dimensions and tolerances are to be field verified by general contractor unless otherwise stipulated.

C. Install to examine area of installation to verify readiness of site conditions. Notify general contractor about any defects requiring correction. Do not work until conditions are satisfactory.

3.2 PREPARATION

A. The general contractor shall prepare openings including isolating dissimilar materials from aluminum system which may cause damage by electrolysis, and shall provide temporary enclosures if required.

3.3 INSTALLATION

A. The installer shall erect translucent panel system in strict accordance with approved shop drawings as supplied by manufacturer, including fastening and sealing. All surfaces shall be cleaned before sealants are applied.

B. Install components in strict accordance with manufacturer’s instructions and approved shop drawings. Use proper fasteners and hardware for material attachments as specified.

C. Use methods of attachments to structure allowing sufficient adjustment to accommodate tolerances.

D. Remove all protective coverings on panels immediately after installation.

E. After other trades have completed work on adjacent material, inspect translucent panel installation and make any adjustments necessary to ensure proper installation and weather-tight conditions.

F. All staging and lifts required for the complete panel system installation and field measuring shall be provided by and maintained by the general contractor.

3.4 CLEANING

A. Follow manufacturer's instructions when washing down exposed panel surface using a solution of mild detergent in warm water that is applied with soft, clean wiping cloths.

B. Follow strict panel manufacturer guidelines when removing foreign substances from panel surfaces requiring mineral spirits or any solvents that are acceptable for use.

C. Installers shall leave panel system clean at completion of installation. Final cleaning is by others upon completion of project, following manufacturer's cleaning instructions.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Surface preparation and field application of paints for use in touching up existing surface

1.2 REFERENCES

A. ASTM D 16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products

B. PDCA (Painting and Decorating Contractors of America) - Painting - Architectural Specifications Manual

C. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual

1.3 DEFINITIONS

A. Conform to ASTM D 16 for interpretation of terms used in this Section.

1.4 SUBMITTALS

A. Submit under provisions of Division 01

B. Product Data: Provide data on all finishing products

C. Samples: Submit manufacturer's color chart illustrating range of colors available for each surface finishing product scheduled

D. Manufacturer's Installation Instructions: Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum five years' experience.

B. Applicator: Company specializing in performing the work of this section with minimum 3 years documented experience.

1.6 REGULATORY REQUIREMENTS

A. Conform to code for flame and smoke rating requirements for finishes.

1.7 MOCK-UP (FIELD SAMPLES)

A. Provide field sample of paint under provisions of Division 01.

B. Provide field sample panel, fascia edge metal, illustrating special coating color, texture, and finish. Locate where directed.

C. Accepted samples may remain as part of the Work.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver to site, store, protect and handle products under provisions of Division 01.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

C. Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

D. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.9 PROJECT CONDITIONS

A. Existing Conditions
1. The Bidder shall verify existing conditions prior to Bidding.
2. Conflicts and problems shall be reported to 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.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Do not apply exterior coatings during rain or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.

1.11 EXTRA MATERIALS

A. Provide 1 gallon of each color and type to Owner.

B. Label each container with color, type, texture, locations, in addition to the manufacturer's label.

PART 2 PRODUCTS

2.1 PAINTING PRODUCTS

A. Manufacturers:
1. Benjamin Moore
2. Devoe and Reynold
3. PPG Industries
4. Porter Paint
5. Pratt & Lambert
6. Sherwin-Williams

B. Manufacturers - Primer: Manufacturer's specified primer for use with metals, stucco, wood and other building materials

C. Substitutions: Under provisions of Division 01

2.2 MATERIAL REQUIREMENTS

A. Coatings: Ready mixed, lead free, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.

B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.3 FINISHES

A. Refer to schedule at end of section for surface finish schedule.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions under provisions of Division 01

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Test shop applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

A. Correct defects and clean surfaces which affect work of this section.

B. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

C. Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints are cleaned. Prime and paint after repairs.

D. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items.

3.3 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish. Apply each coat slightly darker than preceding coat unless otherwise approved.

D. Allow each coat to dry before applying next coat. Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.

3.4 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Division 01.

3.5 CLEANING

A. Clean work under provisions of Division 01.

B. Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.6 SCHEDULES

A. Exterior Plaster (Stucco touch up):
   1. One Coat of masonry primer.
   2. Two coats of acrylic masonry paint. Color to match existing wall.

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 combustible 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 Membrane Roofing
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

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.
   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.

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

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:

_____

_____

_____

_____

_____

_____

_____

_____

_____

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: _____

_____

_____

_____

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.

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

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.

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

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Air terminals and interconnecting conductors.
   2. Grounding and bonding for lightning protection.

B. Related Sections:
   1. Section 07 54 16 – Thermoplastic Single-ply Membrane Roofing
   2. Section 07 62 00 – Sheet Metal Flashing and Trim
   3. Section 23 00 00 – Basic Mechanical Equipment Requirements
   4. Section 26 05 00 – Basic Electrical Requirements

1.2 REFERENCES

A. Lightning Protection Institute
   1. LPI-175 - Lightning Protection Installation Standard.
   2. LPI-176 - Lightning Protection System Material and Components Standard.
   3. LPI-177 - Inspection Guide for LPI Certified Systems.

B. National Fire Protection Association
   1. NFPA 780 – Standard for the Installation of Lightning Protection Systems.

C. Underwriters Laboratories
   1. UL 96 - Lightning Protection Components
   2. UL 96A - Installation Requirements for Lightning Protection Systems.

1.3 SYSTEM DESCRIPTION (SCOPE)

A. The existing rooftop lightning protection system located on all roof areas within the scope of this project is to be removed and new system installed. Existing undamaged and non-deteriorated conductors and air terminals may be reused in the new system installed. Thru-structure assemblies, and all other accessories required for proper installation and functioning of a completed system shall be new. The existing down leads and grounding systems if undamaged and in usable condition are to remain.

B. The new rooftop system shall be compatible with existing building system and comply with LPI, NFPA and UL requirements.

C. Work shall be accomplished by a certified lightning protection contractor as required by article 1.8 of this Section.

D. Upon completion of the roofing and flashing replacement, obtain the services of Underwriters Laboratories, Inc. to provide an inspection and a new “Master Label” for the lightning protection system in accordance with UL 96A. If obtaining a “Master Label” would require modification of building components and/or systems outside of the scope of work of this project, then a “Letter of Findings” is to be provided.

E. Preparation of the new roof surface membrane to receive the above system shall be the responsibility of the roofing contractor. Installation of the new rooftop lightning protection system and connection to the existing down lead system shall not affect the roof system warranty in any way.

F. It will be the responsibility of the roofing contractor to coordinate and schedule the lightning protection work under this section.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittals: Procedures for submittals.

B. Shop Drawings: Indicate layout of air terminals, grounding electrodes, and bonding connections to structure and other metal objects on roof top. Include terminal, electrode, and conductor sizes, and connection and termination details.

C. Product Data: Provide dimensions and materials of each component, and include indication of listing in accordance with UL 96.

D. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.5 PROJECT CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Contract Closeout.

B. Record actual locations of air terminals, grounding electrodes, bonding connections, and routing of system conductors in project record documents.

C. Submit certificate of compliance from Underwriters' Laboratories indicating approval of lightning protection systems.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with NFPA 780.

B. Perform Work in accordance with UL 96A.

C. Perform Work in accordance with LPI-175 and provide LPI Certification.

D. The contractor shall furnish a UL Master Label or Letter of Findings upon completion of the installation.

E. Perform Work under the supervision of an LPI Certified Master Installer, and the LPI System Certification shall be delivered upon completion of the installation.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in lightning protection equipment with minimum three years documented experience.

B. Installer: Authorized installer of manufacturer with minimum three years documented experience. The installing contractor company shall be listed with the Lightning Protection Institute, and Underwriters' Laboratories, Inc. The installation contractor shall have personnel on staff Certified by the LPI as a Master Installer or Master Installer – Designer of lightning protection systems. LPI qualified staff shall provide supervision of the installation to ensure conformance to the Standards.

1.8 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.
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.

1.9 REGULATORY REQUIREMENTS

A. Product Listing: UL 96 and LPI-176.

1.10 PRE-INSTALLATION CONFERENCE

A. Section 01 30 00 - Coordination and Meetings: Pre-installation meeting.

B. Convene one week prior to commencing work of this section.

1.11 FIELD MEASUREMENTS

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

1.12 COORDINATION

A. Section 01 30 00 - Coordination and Meetings.

B. Coordinate work with roofing installations.

PART 2 PRODUCTS

2.1 MATERIALS

A. All materials used in the installation shall be new and shall comply in weight, size and composition as required by UL 96A and NFPA 780 and shall be labeled or listed by Underwriters Laboratories Inc. for use in lightning protection systems. The system furnished under this specification shall be the standard product of a manufacturer regularly engaged in the production of lightning protection equipment. The manufacturer shall be listed by UL as a recognized manufacturer of lightning protection components.

B. Manufacturers:
1. East Coast Lightning Equipment, Inc.
2. ERICO International Corporation (lightning protection equipment)
3. Harger Lightning Protection, Inc.
4. Heary Brothers Lightning Protection, Inc.
5. Robbins Lightning, Inc.
6. Thompson Lightning Protection, Inc.
7. Section 01 60 00 – Product Requirements: Product options and substitutions. Substitutions permitted per Division 1.

2.2 COMPONENTS

A. Class I materials shall be used on structures that do not exceed 75 feet in height and Class II materials shall be used on structures that are 75 feet or higher above average grade.

B. Copper materials shall not be mounted on aluminum surfaces including Galvalume, galvanized steel and zinc; this includes these materials that have been painted.

C. Aluminum materials shall not come into contact with earth or where rapid deterioration is possible. Aluminum materials shall not come into contact with copper surfaces.

D. Air Terminals: Air terminals shall be 1/2” by 12” for Class 1 installations and 5/8” by 12” for Class 2 installations solid aluminum (matching existing) and shall extend at least 10 inches above the object to be protected. All air terminal bases shall be cast bronze. The air terminals shall be spaced so as not to exceed 20’ apart around the outside perimeter of the roof or the ridge and not over 50’ apart through the center of flat roof areas. The air terminals in the center roof area shall be 5/8” by 24” solid aluminum. All “field” air terminal bases shall be of the “non-penetrating” adhesive type. Perimeter coping air terminal bases shall be mechanically attached as indicated by project details.

E. Decorations: None

F. Grounding Rods: Copper

G. Ground Plate: Copper

H. Conductors: Aluminum (match existing).

I. Cable Connections: Bolted pressure clamp type shall be used. Crimp type connections shall not be used. All connectors to be compatible with aluminum conductor cables.

J. Anchor Plates for Conductors: Aluminum with adhesive bases for flashing and roof-top installations.

K. Sacrificial Membrane: Provide an additional layer of modified bitumen cap sheet membrane over the newly installed roof membrane at all anchor points of the lightning protection system.

L. Sealant: Ethicone adhesive/sealant per section 07 92 00, which is compatible with the SBS modified bitumen roof membrane being installed when in contact with roofing system. Use silicone sealant per section 07 92 00 when in contact with other materials and surfaces.

M. Roof Membrane Adhesive: SBS modified asphalt adhesive; such as; "Matrix SB" by US Intec, or roof manufacturer-approved equivalent.

N. Epoxy Adhesive is to be used to adhere any base plates to metal surfaces, approved product is as follows: SciGrip SG300 Series methacrylate adhesive, 2 component system. Contact: SciGrip Americas, 600 Ellis Road, Durham, North Carolina 27703; (877) 477-4583, www.scigrip.com . Available locally through North American Composites, of Lakeland, Florida.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with NFPA 780, UL 96A, and LPI-175.

B. Connect conductors using mechanical connectors and/or an exothermic welding process. Protect adjacent construction elements and finishes from damage.

C. Bond exterior metal bodies on building to lightning protection system and provide intermediate level interconnection loops 60 feet (18 m) on center.

D. During installation, no penetration is permitted of the parapet coping, roofing membrane and/or flashing components by mechanical fasteners unless specifically detailed within the project documents; adhesive attachment of the base and anchor plates is required otherwise.

E. Where any part of the protection system is exposed to mechanical injury, it shall be protected by a nonconductive material. If metal pipe or tubing is used for protecting conductors, the conductor shall be electrically connected to the pipe or tubing at both ends. Conceal down conductors in PVC (Schedule 40) conduit.

F. Where necessary, connect copper equipment to aluminum surfaces using UL recognized bimetal transition fittings. Lead coating is not acceptable as a bimetal transition fitting.

G. Roof Conductors: A perimeter cable shall be installed around the entire main roof areas, and all penthouses. Each perimeter cable shall be connected to at least (2) down leads, providing a two-way path to ground for each air terminal. All center roof air terminals shall be interconnected with conductors to the outside perimeter cable. Conductors on the flat roof areas may be run exposed. Ground connections shall be made around the perimeter of each roof and to the main down conductor at a maximum distance of 100'-0" on center.

H. Down Conductors: Existing shall be used where properly tested and approved for UL labeling. New down conductors, if required, shall be concealed and installed in 1" PVC (Schedule 40) conduit. Each perimeter roof cable shall be connected to at least two down leads. The average distance between down leads shall not exceed 100' from upper roof to lower roof, or from roof to ground terminals. Irregularly shaped structures may require extra down conductors to provide a two-way path to ground from each air terminal.

I. Interconnection of Metals: All metal bodies within 6' of the conductor shall be bonded to the system with proper fittings and conductor. Connections between dissimilar metals shall be made with UL recognized bimetallic connections.
   1. Bonding of all metallic objects and systems at roof levels and elsewhere on the structure shall be complete. Primary bonds for metal bodies of conductance shall be bonded with appropriate fittings and full-size conductor; and shall consist of, but not limited to the following: Roof exhaust fans, HVAC units with related piping ductwork, exhaust vents and any other roof piping systems, cooling towers, and rail systems, window washing tracks, antenna mast for TV, radio or microwave, flag poles, roof handrails and/or decorative screens, roof ladders, skylights, metal plumbing stacks, etc. Exterior architectural metal fascia and/or curtain walls or mullions, which extend the full height of the structure shall also be bonded, if not inherently bonded thru the building frame.
   2. Metal bodies of inductance located within 6' of a conductor or object with secondary bonds, shall be bonded with secondary cable and fittings. Typical of these are: roof flashings, parapet coping caps, gravel guards, isolated metal building panels or siding, roof drains, down spouts, roof insulation vents and any other sizeable miscellaneous metals, etc.

J. Concealed Conductors: All concealed conductors shall be installed in 1" PVC (Schedule 40) Conduit.

K. Fasteners: Conductor fasteners shall be UL recognized adhesive type of non-corrosive metal, have ample strength to support conductors and shall be spaced not to exceed 3'-0" centers.

L. Roof Penetration: Utilize existing thru-roof conductor down leads, but install new thru-structure assemblies as detailed within the project documents, the lightning protection installer shall furnish the “approved” thru-structure assemblies for installation by the roofing contractor. All work related to the installation and sealing of the thru-structure assemblies shall be furnished by the roofing contractor.

M. Grounding: The system shall be connected to the existing grounding terminals located at the base of the structure. Where ground terminations do not exist, the contractor is to provide. Ground connections shall be made around the perimeter of the structure and in no case shall average over 100'-0" apart. Ground terminals shall be 5/8" in diameter and shall be driven to a minimum depth of 32'-0". One ground shall have connection to the water system where the water supply enters the building. In case of rock ledge or other conditions making it impossible to comply with the above, trenching or a copper ground plate will be permitted; providing it will meet UL requirements.

N. Common Grounding: Provide necessary common grounds between the lightning protection system and the electric and telephone service entrance cables, TV and radio antenna grounds.

O. Coordination of Lightning Protection Work and Re-roofing Work: Provide removal of existing rooftop system and installation of new rooftop system as required to perform roof replacement work. Provide temporary connections required to maintain existing lightning protection affected by new construction. Permanently bond together any existing systems to new system.

P. Sacrificial Membrane: An additional layer of single-ply membrane is to be heat welded to the newly installed roof membrane by the roofing contractor at all anchor points of the lightning protection system. Lightning protection contractor is to coordinate the location of these membrane “pads” with the roofing contractor in the field.

3.2 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Assurance: Field inspection, testing, and adjusting.

B. Upon completion of equipment installation, obtain the services of Underwriters Laboratories, Inc. to provide an inspection and a new “Master Label” for the lightning protection system in accordance with UL 96A. If obtaining a “Master Label” would require modification of building components and/or systems outside of the scope of work of this project, then a “Letter of Findings” is to be provided.

C. Perform inspection and testing in accordance with LPI-177.

3.3 PROJECT COMPLETION AND CLOSEOUT

A. Provide to Owner three (3) copies of the As-built Drawings.

B. Attach label to the building per Owner's direction, or provide a UL "Letter of Findings".

END OF SECTION