WASTE TO ENERGY FACILITY HARDENING
ROOF REPLACEMENT

PROJECT MANUAL

10500 Buckingham Road,
Fort Myers, Florida
Project: CN220230BAG

PREPARED FOR:
Lee County Board of County Commissioners
Fort Myers, Florida

PREPARED BY:
PBA DESIGN GROUP, INC.
2742 JASON STREET
TAMPA, FLORIDA, 33619

PBA Design Group

CONSTRUCTION
DOCUMENTS
January 24, 2024

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STATE OF FLORIDA
RALEIGH J. BECKHAM
AR97270
REGISTERED ARCHITECT

Raleigh J. Beckham
Digitally signed by Raleigh J. Beckham
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SECTION 01 11 00 SUMMARY OF WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

Work includes the replacement of low slope roofing systems and related work at selected areas of the Facility and hurricane panels at the Scale Houses. Related work includes raising the height of curbs to comply with code, tie-down of mechanical equipment, and removal/replacement of the lightning protection system.

Special note: This is a grant-funded project. The County will engage a consultant to monitor compliance with the terms of the Grant. The Contractor shall provide data as indicated in the Solicitation package, including, but not limited to, labor data for Davis Bacon wages.

1.3 PROJECT INFORMATION

Project Team:

1. Owner: Lee County Board of County Commissioners (“The County”)
   Representative: Jason Fournier, Operations Manager
   Solid Waste Department
   JFournier@leegov.com

2. Design Professional: PBA Design Group, Inc.
   2742 Jason Street, Tampa, FL 33619
   813-626-2540
   Representative: Howard Piper
   HPiper@PBADesignGroup.com

3. Consultants: TLC Engineering Solutions
   7370 Cabot Court, Suite 103, Melbourne, FL 32940
   321-636-0274

1.4 WORK COVERED BY THE CONTRACT DOCUMENTS

A. Project Description: Roof replacements as indicated on the drawings. The work includes removal of the existing roofing systems to the decks, installation of new insulation and new roofing systems, and related work.

B. Contract Documents: All contracting Terms, Conditions and Form of the Contract will be provided by Lee County Procurement.

C. The Contract template is available for review on the Lee County website.

1.5 WORK RESTRICTIONS AND SCHEDULING OF THE WORK

A. The Contractor shall plan and schedule the work to avoid disrupting operations at the facility. Scheduling requires the input of the site administrator and Facilities Operations Representative. Contractor understands that he may be asked to stop any work activity if the activity proves to be of a nuisance during hours of operation.

B. Construction shall not interfere with the 24/7 operation of this facility. The Contractor shall closely coordinate with the on-site Facility Manager to identify potential staging and storage areas, crane locations, safety protocols, and site access paths.

C. The facility is staffed 24 hours per day, 7 days per week. The work of this Contract may be performed during operating hours as well as after hours, with advance notification. Operating hours are Monday – Friday from 6 a.m. - 6 p.m. and Saturday from 6 a.m. - 12 p.m.

D. **The Baghouse Roof Areas 1 and 2 cannot begin until after March 1, 2025. The Contractor shall sequence the work accordingly and to maintain the overall project duration**.

E. Construction Schedule:

1. **The full Construction Schedule is to be submitted no later than 20 days after commencement of the Work on site. The Schedule is to identify the critical path activities, showing start and finish dates for each, and available float time.**

2. **An updated Construction Schedule is to be submitted with each Pay Application.**

3. **The duration of the project is based on normal weather conditions and includes normal weather-related delays.**

F. Work by Others: refer to the Drawings for information related to Work being performed concurrently under separate contracts.

G. The Contractor will not interrupt access to the site, access to the buildings, or use of any facility, driveway or parking area except as permitted by The County.

H. Keep all corridors, walkways, emergency exits, gates, and ramps free of obstructions, tools, equipment and debris. Provide temporary directional signage when necessary.

I. The Contractor will not interrupt power, lighting, low voltage systems, safety systems, and plumbing, telephone, or HVAC services without advance written approval from The County.

J. Staging and storage areas are to be fenced with 6’ high temporary chain link fencing unless otherwise noted on these plans or approved in writing, in advance of construction. Temporary fencing and barricades are to be maintained through substantial completion. The Contractor is responsible to ensure that the work area is secure, and to ensure the safety of The County’s staff and visitors.

K. Work may be performed and materials may be delivered ONLY during times when the Construction Superintendent is on site. The Construction Superintendent is defined as a direct employee of the Contractor. This role may not be delegated.

The Superintendent shall coordinate material and equipment delivery times with the Facility Manager a minimum of 24 hours in advance of the planned delivery. Without proper notice, construction deliveries may be turned away to avoid delaying normal facility operations.

L. Communications: Construction Workers and delivery personnel are prohibited from communicating with The County’s staff at the job site unless specifically authorized. All communication is to be routed to the Design Professional with the following exception:

In the event of an emergency at the site, the jobsite superintendent is to communicate the concern to the designated point of contact and immediately follow up with the Design Professional.

M. Deliveries are to be made directly to the jobsite and signed for by the Construction Superintendent. The County's staff will not be responsible for accepting deliveries.

N. Any work required to be performed outside of the designated construction area in order to accomplish the Work of the project shall be **prior approved** and scheduled so as to avoid disrupting the facility operations.

O. Construction Workers are prohibited from smoking on The County's property, no exceptions.

1.6 CONSTRUCTION AND SEQUENCE SCHEDULING

A. In addition to the construction schedule described in the Contract, the contractor is to submit a sequencing schedule a **minimum of 14 days prior to starting work on the site**. The schedule is to list each roof area and describe each task and it's proposed start date and finish date.

The schedule shall incorporate any special scheduling requirements such as restrictions on start dates for individual areas.

B. **A single substantial completion date will be established for the project, regardless of the Contractor's sequencing.** The Substantial Completion date will commence the specified Warranties. The bid is to include any additional costs as may be required to protect the completed roofs until the entire project is complete and accepted.

1.7 PROTECTION OF WORK AND ADJACENT PROPERTY

A. Buildings and other property may be damaged as a result of construction operations. The Contractor shall restore existing buildings, fencing, landscaping, turf, parking facilities, sidewalks, etc., to **like-new** condition. The Contractor is REQUIRED to retain subcontractors to perform restoration work. Acceptable subcontractors shall specialize in the respective trade and shall be pre-qualified by The County prior to beginning work. Refer to Drawing Notes Sheets A1.1 and A1.2.

B. In addition to requirements of the Contract for Construction, the Contractor shall:

1. Notify the Design Professional, in writing, when The County's equipment or property interferes with the Work and arrange for disposition of such property.

2. When appropriate, cover inlets, area drains, drywells, etc. to prevent soil and construction debris from running into the storm system. In the event of a failure of a covering, the Contractor shall to clean the affected piping and structure(s) prior to substantial completion.

3. Provide protection from rain, wind, and extreme temperatures to protect new work, materials, equipment, fixtures and adjacent areas from damage.

4. Provide temporary protection around openings through floors, roofs and other openings.

C. The Contractor shall submit photographs of existing conditions to the Design Professional prior to starting work on site. Sufficient photos with adequate detail to thoroughly document existing conditions shall be provided. Refer to the Photographic Documentation section of this Specification.

1.8 CONSTRUCTION ACCESS AND FACILITIES

A. Construction access path, contractor parking area(s), dumpster locations, temporary office location, and material storage/staging areas are to be provided as indicated on the construction drawings or if not shown shall be approved by The County's Representative in advance of starting work. Construction access and facilities may not adversely impact The County's operations.

B. Refer to the Drawing Notes for roof access for manpower, equipment and materials.

1.9 WORK BY THE COUNTY

A. The County may concurrently perform construction work at the Project site. The Contractor shall cooperate fully so as not to interfere with the work performed by The County under separate contracts.

B. When required by these documents, schedule and coordinate the work of The County's separate Contractors.

C. The County may furnish products indicated on the Contract Documents. Where noted, the Contractor is required to coordinate delivery times, handle, store, protect and install the products.

1.10 COUNTY ACCEPTANCE

A. Upon Substantial Completion of the project The County will assume responsibility for normal maintenance.

B. Access to the facility and work area will be controlled by The County beginning at Substantial Completion. Refer also to the Close Out Procedures section.

END OF SECTION 01 11 00

SECTION 01 25 00 SUBSTITUTION PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes administrative and procedural requirements governing substitutions.

B. The materials, products and equipment specified in these Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

C. Definition of “Substitution”: A product which is substituted for a specified product where “no substitution” is specifically stated OR when the specified requirements are so restrictive as to limit the product to a single source.

1.3 PROCESS

A. Requests for substitutions will be considered by The County and the Architect until fourteen calendar days **prior to the Bid Due date**. Notice of all approved substitutions will be set forth in an Addendum. Decisions which are conveyed in any other manner are invalid.

Substitution requests will be considered when a specific manufacturer of a product is specified and the documents do not indicate that equal or equivalent products will be considered.

B. Where the specification allows “equivalent” products to be proposed, these products will be judged during the normal submittal process. These are not considered to be substitutions.

C. **Substitution requests will not be considered after the award of Contract unless the specified product or system has been discontinued or determined to be defective or hazardous**. Notice of approval will be set forth in the form of a Change Order. Decisions which are conveyed in any other manner are invalid, including approval of construction submittals and shop drawings which may include the substituted product or system.

Substitution Requests after award of contract are to be submitted immediately on discovery of the need for change, but no later than 15 days prior to the time required for preparation and review of related submittals.

D. Requests for substitutions are to be considered “rejected” unless specifically approved.

E. All substitution requests are to be submitted directly to The County.

1.4 SUBMITTALS

A. Substitution requests are to include the following information:
   1. Coordination information, including a list of potential impacts to other parts of the Work.
   2. Comparison of the qualities of the substituted product with those specified, to include an annotated copy of applicable Specification Section.
   3. Product Data, including drawings and descriptions of products, fabrication and installation procedures.
   4. Samples, where applicable or requested.
   5. Certificates and qualification data, where applicable or requested.
   6. Material test reports indicating compliance with specified requirements, where applicable or requested.
   7. Confirmation that the proposed substitution has no negative impact on the construction schedule.
   8. In addition: for substitution requests after award of contract, submit the following:
      a. Evidence that the specified product has been discontinued or determined to be defective or hazardous.
      b. Evaluation of schedule impacts using proposed substitution, including the effect on the overall Contract Time.

B. Architect's Actions:
   1. The County and/or Architect will notify the Contractor of acceptance or rejection of the proposed substitution within 7 calendar days of receipt of initial submittal or within 7 calendar days of receipt of additional information, if requested.

   2. Conditions: the Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, the Architect will return requests without action, except to record noncompliance with these requirements:

      a. Requested substitution is consistent with the Contract Documents.
      b. Requested substitution will not adversely affect project cost or schedule.
      c. Requested substitution is compatible and coordinated with other portions of the Work.
      d. Requested substitution will provide the intended results.
      e. Requested substitution will provide the specified warranty.

1.5 FORMS OF ACCEPTANCE

Substitutions will be approved by Addenda or Supplemental Instructions. Decisions conveyed in any other manner are invalid.

PART 2 – PRODUCTS

Not Applicable

PART 3 – EXECUTION

Not Applicable

END OF SECTION 01 25 00

SECTION 01 26 00 CHANGE AND CLARIFICATION PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

This section includes administrative and procedural requirements governing contract changes and clarifications.

1.3 CLARIFICATIONS

A. Definition: Clarification: additional information which further defines, or which resolves conflicting information within the Contract Documents. The Design Professional will issue clarifications to the contract documents by one of the following means:

1. AIA Document AIA G710, Architect's Supplemental Instructions
2. Written response entered into the Contractors Request for Information form (RFI).

B. Clarifications, by definition, do not change or modify information provided in the Contract Documents.

1.4 CHANGES

A. Definition: Change: change to the Contract Documents. Changes will be issued via one of the following means and are valid ONLY when issued by The County:

1. Change Order
2. Emergency Field Change Order or Change Directive
3. Other written means as agreed.

B. Changes made by any other means are invalid unless expressly approved by The County, including but not limited to:

1. Annotations by the Design Professional on submittals and shop drawings
2. Response to the Contractor's Request for Information (RFI)
3. Field directive or report
4. Verbal Approval, Verbal Directive
5. Meeting Minutes
6. Architect's Supplemental Instruction

C. Changes are to be incorporated into the field marked as-builts and Record Documents.

1.5 PROCESS

A. The Contractor is required to transmit all documents as PDF files EITHER by e-mail OR by means of an FTP Site specifically established for the project. The Design Professional will distribute responses in .pdf format which the Contractor may, at his option, upload to his construction management software. **The Design Professional will not retrieve or upload documents directly to/from the Contractor's construction management software.**

A. Contractor initiated:

1. Upon discovery that a clarification or change is needed to proceed with the work, the Contractor is required to submit a Request for Information (RFI) to the Design Professional. Requests for information are to include:

    a. Date, Project Name, Project Number, RFI number
    b. Requestor's name
    c. Originating party, if applicable - subcontractor or supplier
    d. Date by when the response is needed in order to avoid a delay to a critical path task. The RFI must be submitted a minimum of 7 calendar days prior to the response-needed date.
    e. Applicable references details and drawing sheet numbers, specification sections, and/or construction submittals as appropriate to convey the request.
    f. Sketches, photos, and other information as appropriate.
    g. The Contractors proposed solution.
    h. A statement as to whether the Contractor's proposed solution will impact the construction cost or schedule.

2. Design Professional's Action: upon evaluation, the Design Professional will determine whether the Contractor's proposed solution is acceptable or will issue an alternate solution.

3. In the event that the RFI response involves a change to the Contract, and such change may impact the construction cost or schedule, the Design Professional will issue the RFI response to the Contractor along with a Proposal Request (PR).

B. Initiated by The County:

1. The County may elect to modify the Work as provided for in the Construction Contract, with the Contract sum being adjusted accordingly.

2. Upon request by The County, the Design Professional will issue a Proposal Request to the Contractor in order to establish the impact of the proposed change, if any, on the construction cost and schedule.

1.4 PROPOSAL REQUESTS

A. The Contractor is required to submit a Change Order Proposal within seven (7) calendar days of issuance of a Proposal Request.

B. Change Order Proposals are to include the following minimum information:

1. Summary of costs, broken down into general costs and by trade
2. Detailed breakdown as described in the Construction Contract and this Section.
3. Supporting proposals from subcontractors and suppliers
4. Schedule impact, supported by a CPM schedule showing the effect of the change on critical path tasks.

C. Failure to provide a proposal with complete back-up within fourteen (14) calendar days will indicate the Contractor's acceptance of the Design Professional's estimated value of the change.

D. In the event that the Contractor and The County do not agree on the cost and/or schedule impact of a proposed change, or when sufficient documentation cannot be provided timely, The County may issue written direction to implement the change based on the Design Professional's estimate of the cost and/or schedule impact. Upon completion of the work, the Contractor may appeal the value as estimated by the Design Professional by following the procedures described in the Construction Contract.

1.5 CHANGE ORDERS AND CHANGE DIRECTIVES

A. Change Orders:

1. The Architect will prepare and issue Change Orders to the Contractor for execution and transmittal to the Owner.

2. In the event that the Contractor fails to execute and transmit the Change Order to the Owner within 10 days, the Owner may elect to process the Change Order in accordance with the Construction Contract and associated Conditions.

3. Change Orders are to include, at a minimum, the following:
   a. Description of the change
   b. Time extension, if appropriate, associated with the change
   c. Summary page listing each change and its associated value, numbered sequentially, with the total dollar amount shown at bottom
   d. Complete back up for each item, cross referenced by item number with the Summary page.

B. Change Directives:

1. The Owner may direct changes to the Work in the case of an emergency in accordance with the terms of the Construction Agreement. Such Change Directives shall be issued in a format approved by the Owner and will include an estimated adjustment in the Contract Sum and Time to the extent that the adjustment can be estimated at that time.

2. Change Directives are effective immediately upon issuance. The conditions of the Construction Agreement provide for detailed documentation and accounting of costs as the work progresses.

3. Change Directives will be processed by standard Change Order at such time that the final adjustment is determined.

PART 2 – PRODUCTS
Not Applicable

PART 3 – EXECUTION
Not Applicable

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes administrative and procedural requirements governing the preparation and processing of Applications for Payment.

B. This is a Grant-Funded project. The Contractor shall strictly adhere to the requirements outlined in the Construction Contract for required documentation, including reports, data and documentation of Davis Bacon wages. The County will retain a consultant to monitor compliance with terms of the Grant.

C. Payments will be made for **work in place** and for **materials stored on site**. In limited cases where, at the sole discretion of The County, payment may be released for materials stored off site.

D. Application for Payment: the term as used herein includes the following:
   1. AIA document G702, latest version OR form provided by The County
   2. AIA G703 (Schedule of Values), OR form provided by The County
   3. Supporting documentation specified herein
   4. Releases and waivers as may be contractually required

E. Schedule of Values: A breakdown furnished by the Contractor allocating the Contract Sum to various portions of the Work and used as the basis for reviewing the Contractors Applications for Payment.

1.3 APPLICATIONS FOR PAYMENT

A. Each progressive Application for Payment shall be consistent with previous Applications and shall accurately reflect previous payments. The initial Application for Payment, Application for Payment following Substantial Completion, and the Final Application for Payment invoke additional requirements as specified herein.

B. Submittal Requirements:
   1. Certification Page (County-provided form):
      a. Complete every entry on form.
      b. Notarize and execute by a person authorized to sign legal documents on behalf of the Contractor
      c. Entries shall match the data on the Schedule of Values.
      d. Approved Change Orders shall be shown and accounted for. Pending and proposed change orders are **not** to be shown and, if shown, processing will be delayed.

   2. Supporting documentation:
      a. Schedule of Values, as described in detail elsewhere in this Section.
      b. For materials stored on site: documentation of quantities stored on site, issued by the Supplier, signed by the Subcontractor and Contractor
      c. For materials stored off site when the Contract allows payment for off-site materials:
         1) Inspection report from 3rd party inspector verifying material type, quantity, and proper protection. Inspection to be performed at Contractor's expense.
         2) Evidence of insurance coverage for the specific facility where the materials are stored, listing The County as additional insured
         3) Supplier invoices for the stored materials

4) Consent of Surety to release payment for the stored materials for bonded projects

d. Subcontractor releases, waivers, and other documentation as may be required by The County to show that payments for material and labor and all prior payments have been released to subcontractors and suppliers.

e. Updated Construction Schedule in the format specified in the Construction Contract and the Summary of Work section of these specifications.

f. Updated Submittal Schedule in the format specified in the Contract Documents.

g. Weekly Progress Reports for the period covered by the Pay Application as required on Sheet A1.2, Weekly Report Section.

h. Other supporting documents as may be reasonably required by the Design Professional or The County.

3. Submit a complete and notarized copy of each Pay Application to the Design Professional for the work performed, covering the portion of the work completed as of the date indicated.

C. Retainage shall be held and released in accordance with the terms of the Construction Contract. Failure by the Contractor to properly account for retainage may result in delayed processing of the Application for Payment. In the event of over-billing, the corrective adjustment is to be made on the Pay Application immediately following.

D. **Initial Application for Payment**: In addition to the above requirements, provide the following:
1. List of subcontractors
2. Detailed construction schedule in the format required
3. Manufacturer's Certification stating their intent to warrant and to accept the details and other requirements of the Contract Documents, per Drawing Sheet A1.1., Base Bid – Low Slope Roofing section.
4. Projects where the contract sum is based on a not-to-exceed amount (i.e., Guaranteed Maximum Price Agreements), submit all subcontractor bids and bid scoping sheets

E. **Application for Payment following Substantial Completion**: include the following:
In addition to the above supporting documentation, submit an accounting statement itemizing all changes to the Contract Sum.

F. **Final Application for Payment**: include the following:
1. Updated schedule of values showing all approved changes to the Contract Sum.
2. Notice of Final Acceptance signed by the Design Professional verifying that all contractual obligations have been satisfied, including but not limited to completion of work on site and submittal of close out documents.
3. Final Consent of Surety, when required by these documents.
4. Final and Unconditional Subcontractor releases, when required by these documents.
5. Evidence that all claims have been settled.

Note: in the event that the Final Application for Payment is received by The County before all project close out requirements have been met, including receipt of acceptable close out documents, the Pay Application will be returned without action.

1.4 SCHEDULE OF VALUES

A. Format and Content:

1. Use form provided by The County.

2. Include the following general information on each page of the Schedule of Values:
   a. Project Name and Project Number
   b. Name of Design Professional
   c. Name of Contractor
   d. Date of Submittal
   e. Date range covered by the Application for Payment

3. Break down costs in sufficient detail to allow the Design Professional to accurately evaluate the invoice.

4. The cost for each trade or subcontract is to show the following minimum level of breakdown to the extent that these apply to the specific item:
   a. Mobilization
   b. Cost of producing engineered signed/sealed drawings and calculations, when required by these specifications (delegated design)
   c. Materials
   d. Labor
   e. Equipment rental
   f. Change Orders and directives

5. Provide line item amounts for each item of work where the Base Bid quantity is given on the Drawings, e.g.: painting of 200 sf of rusted metal decks as required on Sheet A1.1 under Existing Metal Deck Section.

6. In addition to work completed during the period covered by the Pay Application, show as completed any work invoiced under previous pay applications, whether payment has been received or not.

7. Invoice only for work completed before the end of the Pay Application period. Do not project past the end date of the period.

8. Show all approved Change Orders and directives issued before the end date of the Application for Payment period, whether invoiced or not.

9. **Provide a separate line item in the Schedule of Values for each Allowance. As work progresses, itemize each approved adjustment to each allowance and indicate the remaining balance in each Allowance**.

10. Record change orders and directives on the first Schedule of Values following issuance of the change order or directive.

11. <u>For projects delivered under a lump sum Construction Contract</u>:
    a. Use the Project Manual table of contents as a guide to establish the line items for the Schedule of Values. Provide a section on the Schedule of Values for each specification section or subcontract.

    b. Further break down each section into individual trades and specific items of work for which progress payments will be requested.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

4.1 SUBMITTAL TO DESIGN PROFESSIONAL:

A. The Contractor is required to transmit Applications For Payment as .pdf files EITHER by e-mail OR by means of an FTP Site specifically established for the project. The Design Professional will take appropriate action and distribute Applications For Payment in .pdf format which the Contractor may, at his option, upload to his construction management software. **The Design Professional will not retrieve or upload documents directly to/from the Contractor's construction management software.**

B. Schedule a meeting time to review the work in place with the Design Professional, concurrently with reviewing the application for payment.

C. In accordance with the Design Professional/Engineer's Agreement with The County, after appropriate observation of the progress of the work, the Design Professional shall certify to The County the amount due and shall forward the Application for Payment and supporting documents to The County for processing.

   If the Design Professional is unable to certify all or portions of the amount requested due to the absence or lack of supporting documentation, the Design Professional shall advise the Contractor of the deficiency. If the deficiency is not corrected at the end of three (3) days, the Design Professional may return the Application For Payment to the Contractor for revision along with a written explanation.

D. Payments may be withheld or reduced for reasons cited in the General Conditions of the Contractor's Agreement.

E. The Design Professional will take appropriate action to process the Application For Payment within seven (7) days of receipt.

4.2 PROCESSING OF PAYMENTS:

The County will process and release amounts due within the time allowed in the Construction Contract.

END OF SECTION 01 29 00

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. The photographs and videos listed herein are required to document the existing conditions and the progress of the work. Submittal is required for review of Contractor Applications for Payment and to achieve final completion status. These requirements are in addition to any requirements set forth in the Construction Contract.

B. Section includes administrative and procedural requirements for the following:
   1. Aerial photographs
   2. Preconstruction video recordings
   3. Construction photographs

1.3 QUALITY ASSURANCE

Aerial Photographer Qualifications: An individual with experience in producing professional aerial construction photographs for a minimum of 5 years.

1.4 INFORMATIONAL SUBMITTALS

Submit qualification data for the aerial photographer.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC REQUIREMENTS

A. Aerial Photos: provide photos in .jpg format, minimum resolution 3300 x 2550 pixels

B. Preconstruction Videos: Provide digital video in format acceptable to Design Professional.

C. Construction Photos: Provide images in .jpg format, minimum 12 megapixels, and at an image resolution of not less than 4080 x 3060 pixels.

PART 3 - EXECUTION

3.1 GENERAL EXECUTION REQUIREMENTS

A. Submittal:
   1. Aerial Photographs: submit three (3) aerial photos by e-mail no less than monthly. Submit the first set prior to beginning work to record pre-construction conditions, and then no less than monthly with each application for payment. Submit the final set of photographs after all punch list and site restoration work is complete.

   2. Preconstruction Videos: At least 7 days prior to starting ANY work on site, submit videos existing conditions.

   3. Construction Photographs: submit photos no less than 1x per month to the Design Professional. Submit by e-mail attachment, usb storage media, or by link to a file transfer site which allows bulk download.

      Construction photographs are dated and titled descriptively to indicate the roof area and direction of the photograph.

B. General:
   1. Aerial Photographs:
      a. One view in each set of aerial photographs is to be an overall view including all buildings, filling the frame to the extent possible.

      b. Include the project name and the date taken on the front of each photograph.

   2. Construction Photographs:
      a. Submit photographs to document progress of the work and to document work performed under unit costs, when applicable.

      b. Date stamp each photograph on the front. Also include the date and time taken in file name for each image.

      c. Submit images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

      d. Take photographs using the maximum depth of field, and that clearly show the subject matter.

   3. Preconstruction and other Videos:
      Show existing conditions, including any damage which might later be attributed to construction activities. Videos must include enough context to clearly identify the location. Include existing items to remain in the construction area during construction, from different vantage points to document the condition of the items.

   4. Additional Photographs:
      The Design Professional or The County may require photographs in addition to the photographs specified above.

      1. Three days' notice will be given, where feasible.
      2. In emergency situations, take additional photographs within 24 hours of request.
      3. Circumstances which could require additional photographs include, but are not limited to, the following:

         a. Immediate follow-up when on-site events result in construction damage or losses.
         b. Substantial Completion of a major phase or component of the Work.
         c. Extra record photographs at time of final acceptance.

END OF SECTION 01 32 33

SECTION 01 33 00 SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

Section includes the requirements for the submittal schedule and administrative and procedural requirements for submitting shop drawings, product data, samples and other submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require action and response by the Design Professional and Contractor. Requirements for Action Submittals are described in individual Specification Sections.

B. Informational Submittals: Written and graphic information and physical samples that do not require action and response by the Design Professional and Contractor. Submittals may be rejected for not complying with requirements. Requirements for Informational Submittals are described in individual Specification Sections.

1.4 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order, coordinated with activities on the construction schedule. Include time required for review, ordering, manufacturing, fabrication and delivery when establishing submittal dates. Include sufficient time for Contractor's review of subcontractor submittals, time required for making corrections to submittals as noted by the Contractor and Design Professional, and time to process submittals required by those corrections.

B. Coordinate the Submittal Schedule with the subcontracts, the schedule of values, and the Construction Schedule.

C. Initial Submittal Schedule: Submit no later than the initial Application for Payment. Show that all submittals will be submitted within the first 30 days of construction.

D. Updated Submittal Schedule: Submit an updated submittal schedule reflecting changes in status and timing of submittals. Submit with each Application for Payment.

E. Format: Arrange the following information in a tabular format:
   1. Scheduled date for first submittal
   2. Specification Section number and title
   3. Submittal category: Action or Informational
   4. Name of Subcontractor
   5. Description of the Work covered
   6. Scheduled date for Design Professional's final release or approval
   7. Scheduled date of fabrication
   8. Scheduled dates for procurement
   9. Scheduled dates for installation
   10. Activity name or number as indicated on Construction Schedule

1.5 ADMINISTRATIVE REQUIREMENTS

A. Design Professional's Digital Data Files: The Design Professional will allow the use of Adobe .PDF drawing files of the Contract Drawings for use in preparing Shop Drawings and other submittals.

1. Overall Plan view drawings for each discipline may be used by the Contractor in the preparation of Shop Drawings and other submittals.

2. Use of large scale drawings, details, sections and schedules prepared by the Design Professional are expressly disallowed for preparing Shop Drawings and other submittals.

B. Coordination: Coordinate preparation and processing of submittals with construction activities.
   1. All submittals shall be submitted within 30 calendar days of the date of the Notice to Proceed.

   2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

   3. Submit all items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on the approved submittal schedule.

   4. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

   5. Coordinate transmittal of different of submittals for related parts of the work so that processing will not be delayed because of the need to review submittals concurrently for coordination. The Design Professional has the right to withhold action on a submittal which requires coordination with other submittals until all related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence upon receipt of submittal by the Design Professional. No extension of the Contract Time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to allow for processing, including resubmittals.
   1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Design Professional will advise Contractor within 48 hours of receipt when review of a submittal must be delayed pending receipt of related submittals.

   2. Intermediate or Supplemental Review: if intermediate or supplemental submittal is necessary, process it in the same manner as initial submittal.

   3. Resubmittal Review: Allow 7 days for review of each resubmittal.

   4. Sequential Review: where sequential review of submittals by the Design Professional and The County is indicated, allow 14 days for total review time unless otherwise indicated herein.

D. Paper Submittals: place a permanent label or title block on each submittal item for identification.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
   1. Assemble each submittal package into a single bookmarked .pdf file incorporating the transmittal form as page 1. Submittals from different spec sections are to be submitted as separate packages with separate transmittal forms.

   2. Name file as follows; no exceptions: Project identifier; Specification Section number; submittal name, revision identifier. Example: WTE-075213-Roofing System-R0

   3. Include Contractor’s review stamp and annotations on each submittal.

F. Transmittal Form: provide the following information on each transmittal form:
   1. Project Name (Example: "Waste to Energy Roof Replacement")
   2. Date
   3. Name of Design Professional
   4. Name of Contractor
   5. Name of entity that prepared the submittal
   6. Names of Subcontractor, supplier, and manufacturer
   7. **Type of Submittal: Action or Informational**
   8. **Type of Submittal: Shop Drawings, Product Data, Testing, Certifications, Samples, etc.**
   9. Specification Section
   10. Description of Material or System being submitted
   11. Related submittals
   12. Submittal number, to coordinate with the Submittal Schedule
   13. Distribution list
   14. Remarks

G. Options: identify options requiring selection by the Design Professional

H. Deviations and Additional Information: Submit on attached separate page, prepared on Contractor's letterhead, record relevant information, requests for information, revisions other than those requested by the Design Professional on previous submittals, and deviations from the requirements in the Contract Documents, including minor variations and limitations. Include the same information on related submittals.

I. Resubmittals: Make resubmittals in the same form as original submittal. Unless otherwise indicated, resubmit the entire document. In addition:
   1. Note the date and content of the previous submittal
   2. Note the date and content of the revision in the title, and indicate the extent of the revision
   3. Resubmit until submittals are marked as "reviewed" by the Design Professional.

J. Use for Construction: Retain complete printed copies of submittals on Project site. Use only final submittals that are marked with the approval notation from the Design Professional's Action Stamp.

K. General Submittal Procedural Requirements:
   Prepare and submit submittals as required in individual Specification Sections.
   1. Electronic Submittals:
      a. Transmit submittals as PDF files EITHER by e-mail OR by means of an FTP Site specifically established for the project. The Design Professional will return an annotated .pdf file which the Contractor may upload to ProCore, Ebuilder or similar construction management software. **Direct use of the Contractor's construction management software by the Design Professional is solely at the option of the Design Professional**.

   2. Shop Drawings:
      a. Prepare project-specific information, drawn accurately to scale. Do not submit reproductions of the Contract Documents or standard printed data as shop drawings.

      b. Include the following information, as applicable:
         1) Identification of products
         2) Schedules
         3) Evidence of compliance with specified standards
         4) Notation of coordination requirements
         5) Notation of dimensions established by field measurement
         6) Relationship and attachment to adjoining construction clearly indicated
         7) Seal and signature of Professional Engineer when required

3. Product Data:
    a. Collect information into a single submittal for each element of construction and type of product or equipment. Note: if the information is specially prepared for the project because the Manufacturers published data is not suitable for use, submit as Shop Drawings, not as Product Data.

    b. Submit Product Data before or concurrent with samples, where samples are required.

    c. Submit Product Data in PDF electronic format.

    d. Mark product data to show which products and options are applicable.

    e. Include the following information as applicable:
        1) Manufacturers catalog cuts
        2) Manufacturers product specifications
        3) Color charts (full line of available colors unless otherwise specified)
        4) Statement of compliance with specified referenced standards
        5) Testing by recognized testing agency
        6) Application of testing agency labels and seals
        7) Notation of coordination requirements
        8) Availability and delivery time information

    f. For equipment, include the following in addition to the above, as applicable:
        1) Wiring diagrams showing factory-installed wiring
        2) Printed performance curves
        3) Operational diagrams
        4) Clearances required to other construction, if not indicated on accompanying Shop Drawings
        5) Access and service panel locations

4. Samples:
    a. Submit three (3) samples of each material for review of kind, color, pattern and texture, for review of these characteristics with other new and existing materials, and for final comparison between the submitted sample and the actual material as delivered and installed.

    b. Submit manufacturer's full range of available colors, patterns and textures unless otherwise specified. The Contractor is responsible for delays and extra costs resulting from submittal of incomplete samples.

    c. Samples for selection of color, pattern and texture will be held pending receipt of all such samples. Complete array of samples must be provided to the Design Professional no later than 3 weeks from issuance of the Notice to Proceed, or earlier if needed to allow time for color selection by The County and to avoid delaying a critical path activity.

    d. Allow 3 weeks for The County color selection process, commencing when all samples have been submitted to the Design Professional.

    e. Submit full-size units or samples of size indicated, prepared from the same material to be used for the Work, cured and finished in the manner specified, and physically identical with the material or product proposed for use

    f. Submit the sample quantity and size necessary to exhibit the full range of color and texture variations expected.

g. Maintain a set of approved samples at the Project Site, available for quality-control comparisons throughout the course of the construction. Sample sets may be used to determine final acceptance of construction.

5. Where specified, provide the following:
   a. Certificates and Certifications Submittals:

      1) Provide a statement that includes the signature of the entity responsible for preparing certification. Certificates and Certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

      2) Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.

      3) Provide a notarized statement on original paper copy certificates and certifications where indicated.

   b. Qualification Data: Prepare written information that demonstrates capabilities and experience of the firm or person. Include lists of completed projects with project names and addresses, contact information of Design Professional and The County, and other information specified.

   c. Welding Certificates: Prepare written certification that welding procedures and personnel comply with the requirements of the Contract Documents.

   d. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with the requirements in the Contract Documents.

   e. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that the manufacturer complies with the requirements in the Contract Documents.

   f. Product Certificates: Submit written statements on manufacturer's letterhead certifying that the product complies with the requirements in the Contract Documents.

   g. Material Certificates: Submit written statements on manufacturer's letterhead certifying that the material meets the requirements of the Contract Documents.

   h. Product Test Reports: Submit written reports indicating that current product produced by the manufacturer complies with the requirements of the Contract Documents. Statement is to be based on evaluation of tests performed by the manufacturer and witnessed by a qualified testing agency or on comprehensive tests performed by a qualified testing agency.

   i. Design Data: Prepare and submit written and graphic information, including but not limited to, performance and design criteria, calculations, and list of applicable codes, standards and regulations.

   j. Layout Drawings: Prepare and submit drawings showing layout and locations of items where specified. Layout drawings are to record actual existing conditions which affect the work and which have been physically confirmed by the Contractor.

k. Delegated Design Services
   1) Performance and Design Criteria: Where professional design services or certifications by a Design Professional are specifically required of the Contractor in the Contract Documents, provide products and systems complying with specific performance and design criteria as indicated.

   2) If criteria indicated are not sufficient to perform services or to provide the certification required, submit a request for additional information to the Design Professional.

PART 2 – PRODUCTS

Not Applicable

PART 3 – EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work and for compliance with the Contract Documents. Note corrections and mark field dimensions as verified.

B. Mark with approval stamp before submitting to the Design Professional. Approval stamp is to include a statement certifying that the submittal has been reviewed, checked and approved for compliance with the Contract Documents, the Project Name indicator, specification section number, title of submittal, name of reviewer, and date of Contractor's approval.

3.2 DESIGN PROFESSIONAL'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required to bring the submittal into compliance, and return it. Design Professional will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Informational Submittals: Design Professional will review each submittal and will not return it.

C. Incomplete submittals will be considered non-responsive and will be returned for resubmittal without review.

D. Submittals which are not required by the Contract Documents may be returned without action.

END OF SECTION 01 33 00

SECTION 01 45 00 - QUALITY CONTROL REQUIREMENTS

PART 1 – GENERAL

1.1 GENERAL

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. All testing, inspections and observations which are necessary to ensure compliance with these specifications are the responsibility of the Contractor. Contractor is required to include costs in the contract sum for testing, inspections and observations by independent companies.

C. Testing services are to be performed by independent 3rd party agencies. Manufacturers of the installed products do not meet this definition.

D. Requirements indicated on the Contract Documents may be more stringent than Manufacturer requirements. By participating in this Project, Manufacturers agree to accept and enforce the more stringent requirements.

E. Inspections and Observations are required as specified and are intended to ensure code and contract compliance. Individual requirements are provided within the applicable Sections of this specification.

F. Code inspection requirements are further described on the Building Permit.

1.3 DEFINITIONS

The definitions below are in addition to the basic definitions provided in the General Conditions of the Contract.

A. Quality Assurance Services: Activities, actions and procedures performed before and during execution of the Work to guard against defects and to ensure that the finished construction will comply with the specified requirements.

B. Quality Control Services: Tests, inspections, procedures and related actions during and after execution of the Work to evaluate that the completed construction is compliant with specified requirements.

C. Mockups: Full size physical assemblies that are constructed on site. Mockups are required in order to verify material selections, to demonstrate aesthetic effects, to show interface between dissimilar materials, and to demonstrate compliance with specified installation tolerances. Approved mockups establish the standard by which the Work will be judged.

D. Product Testing: Tests and inspections that are conducted by an independent organization or agency qualified to conduct such testing/inspection, and acceptable to authorities having jurisdiction, for the purpose of establishing product performance and compliance with specified requirements.

E. Source Quality Control Testing: Tests and inspections that are performed at the source, e.g. plant, mill, factory or shop.

F. Field Quality Control Testing: Tests and inspections that are performed on site during installation and of completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing Laboratory shall have the same meaning as Testing Agency.

H. Installer/Applicator/Erector: A contractor or entity engaged by the General Contractor as a vendor, subcontractor or sub-subcontractor to perform a particular construction operation.

I. Experienced: When used to describe an entity of individual, experienced means having successfully completed a minimum of five (5) previous projects similar in nature, size and scope to this Project, being familiar with special requirements indicated, and having complied with the requirements of the Authorities Having Jurisdiction (AHJ).

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with more than one standard is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the greater quantity or more stringent standard of quality. When the requirements of standards differ, but otherwise appear to be equivalent, defer to the Design Professional for a decision before proceeding with the Work.

B. Specified Requirements: If the plans and specifications cite different or conflicting requirements for minimum quantities or quality levels, comply with the greater quantity or more stringent standard of quality. When the requirements of the documents differ, but otherwise appear to be equivalent, defer to the Design Professional for a decision before proceeding with the Work.

1.5 SUBMITTALS

A. Quality Control Plan: Submit a quality control plan within 10 days of the Notice to Proceed and not less than 5 days prior to the Preconstruction Meeting. The plan is to include the following:

1. Personnel, procedures, controls, instructions, and forms to be used to carry out the Contractor’s quality assurance and quality control responsibilities

2. Procedure and name of responsible party to ensure compliance with specified requirements through review of submittals and shop drawings. Indicate qualifications of personnel responsible for review of submittals and shop drawings

3. Written qualifications for:
   Contractor’s quality control personnel
   Testing Agency(s)
   Independent inspectors, when required by these specifications

4. Schedule of Tests and Inspections, including both Contractor-provided and County-provided, as required by the Contract Documents.

B. Shop Drawings: For mockups, provide plans, sections and elevations indicating materials and size of mockup. Indicate manufacturer and model number of individual components.

1.6 REQUIREMENTS

A. Mandatory - the Contractor is required to provide a full-time Superintendent. This individual must be a direct employee of the prime Contractor whose sole duty is to oversee the work. This role may not be delegated to a subcontractor or working crew member. Materials may not be delivered and work may not be performed when the Superintendent is not on site.

B. The Superintendent is to be experienced in implementing quality-assurance / quality control procedures. The proposed individual's qualifications and relevant experience are to be documented and approved by The County.

C. The Superintendent will be required to:
   1. Communicate daily with The County's Facility Manager to coordinate material deliveries and to resolve logistical issues.

   2. Continuously inspect the Work for compliance with the Contract Documents, shop drawings and other submittals.

   3. Maintain testing and inspection reports including a log of approved and rejected results. .

   4. Maintain an ongoing log of work that the Design Professional and Code Inspectors have indicated as nonconforming or defective.

   5. Maintain daily job-site sign-in sheets and provide copies to the Design Professional and The County at regular intervals to exhibit that the requirement for full time supervision is met, and proper manpower is provided to meet schedule milestones.

1.7 REPORTS AND DOCUMENTS

A. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

   1. Name, address and telephone number of the technical representative making report.

   2. Statement on condition of substrates and their acceptability for installation of product.

   3. Statement that products at Project site comply with requirements.

   4. Summary of installation procedures being followed whether they comply with requirements and, if not, what corrective action was taken.

   5. Results of operational and other tests and a statement of whether observed performance complies with requirements.

   6. Statement whether conditions, products, and installation will affect warranty.

   7. Other required items indicated in individual Specification Sections.

B. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

   1. Name, address and telephone number of factory-authorized service representative making report.

2. Statement that equipment complies with requirements.

3. Results of operational and other tests and a statement of whether observed performance complies with requirements.

4. Statement whether conditions, products, and installation will affect warranty.

5. Other required items indicated in individual Specification Sections.

C. Permits, Licenses, and Certificates: For The County's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE

A. Qualifications below establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

1. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

2. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

3. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

4. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

5. Specialists Qualifications: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

6. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections.

7. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

8. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

B. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by the Design Professional.

2. Notify the Design Professional seven days in advance of dates and times when mockups will be constructed.

3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.

4. Demonstrate the proposed range of aesthetic effects and workmanship.

5. Obtain Design Professional’s approval of mockups before starting work, fabrication, or construction. Allow seven (7) days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

7. Demolish and remove mockups when directed unless otherwise indicated.

C. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.

D. Factory Mockups: Comply with requirements of individual Specification Sections.

1.9 QUALITY CONTROL

A. Contractor Responsibilities: Tests and inspections not explicitly assigned to The County are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

3. Contractor shall not employ same entity engaged by The County, unless agreed by The County.

4. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.

5. Where quality-control services are indicated as Contractor's responsibility, submit a written report of each quality-control service.

6. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

B. The County's Responsibilities: Where testing services and code inspection services are specifically indicated as The County's responsibility, The County will engage a qualified testing agency and qualified Building Code Inspector to perform these services.

1. The County will furnish the Contractor with contact information for the testing agencies and Building Code Inspector.

2. The Contractor is responsible to coordinate, schedule and observe third party testing and inspections which are contracted directly by The County, if any.

3. The Contractor is responsible to coordinate directly with the Permitting Official to schedule Building Code Inspections.

4. Payment for these services will be made by The County.

5. Costs for retesting and reinspection of construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

C. Design Professional Responsibilities: basic services include the following:

1. Design Professional and each sub-consultant shall observe the Work at appropriate intervals and shall exercise due diligence to safeguard The County's interests.

2. Design Professional shall distribute field reports to The Countyand Contractor within 7 days of each observation. Field Reports will note defects, deficiencies, noncompliance with the Contract Documents and/or unsatisfactory workmanship.

3. In addition to regularly scheduled field observations, the Design Professional will specifically observe and report on the following components of the project. The Contractor is required to schedule these observations directly with the Design Professional a minimum of 48 hours in advance:

   Structural, Mechanical, Plumbing, Fire Protection, Electrical and Communications work following its installation and prior to its being covered or enclosed

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

F. Retesting/Reinspecting: Regardless of whether original tests or inspections are the Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced non-compliant Work.

G. Testing Agency Responsibilities: Cooperate with Design Professional and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Design Professional and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report of each test, inspection, and similar quality-control service through Contractor.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

6. Do not perform any duties of Contractor.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

PART 2 – PRODUCTS
Not Applicable

PART 3 – EXECUTION

3.1 TESTING AND INSPECTION LOG

A. Testing and Inspection Log: Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Design Professional.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to testing and inspection log for Design Professional's reference.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

   Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

   Protect construction exposed by or for quality-control service activities.

B. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 45 00

SECTION 01 51 00 TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

This section Includes:

Basic requirements for temporary services and utilities
Requirements for facilities which will indirectly enable adequate construction progress and processes
Facilities which will accommodate other necessary activities at the project site except as otherwise indicated
Cost of providing and using temporary services

1.3 QUALITY ASSURANCE

Comply with governing regulations and utility company requirements and recommendations for the construction of temporary facilities, including but not limited to: code compliance, permit conditions, inspection requirements and industry standards.

1.4 SITE REQUIREMENTS

A. The Contractor is required to arrange and pay for temporary utilities, except where otherwise allowed by the Construction Contract.

B. Provide temporary facilities and services at the time first needed at the site, and maintain, expand and modify the facilities as needed throughout the construction period.

C. Use qualified tradesmen for the installation of temporary facilities and, to the extent possible, locate facilities where they will serve for the entire project duration and will result in minimum interference with the performance of the work.

D. Temporary facilities are to remain in place until no longer needed.

1.5 SPECIFIC REQUIREMENTS

A. Field Office: when shown, the Contractor shall provide and maintain a suitable temporary field office for his own use. Office(s) and all other temporary appurtenances shall be removed from the site upon completion of the work.

B. Sanitary Facilities: comply with governing regulations and codes for the type, number, location, operation and maintenance of fixtures and facilities. Install sanitary facilities in available locations which will best serve the needs of the personnel at the project sites.

C. Toilet rooms in existing buildings may not be used without written approval by The County.

D. Temporary Heat and Ventilation: provide such OSHA approved heat and fuel, heating units, and equipment as necessary to provide the required environmental conditions and to protect the work from damage due to extreme temperatures. Maintain equipment in clean, dry, safe environment.

E. Ladders, ramps, and temporary stairs: provide for access to all levels of the construction for general access by all trades. Individual contractors and subcontractors shall furnish their own stepladders, scaffolds, staging, work platforms, and other facilities for use of their workmen and as necessary for safety of all personnel.

F. Protection: comply with recognized standards and code requirements for the erection of substantial and structurally adequate barricades wherever needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs to inform personnel at the site and the general public of the hazard. Provide lighting where appropriate and necessary for the recognition of the facility, including flashing red lights where appropriate.

G. Fire Extinguisher(s): except as otherwise indicated or required, comply with the applicable recommendations of NFPA No. 10 “Portable Fire Extinguisher” for each area of each construction activity whenever combustible materials, flammable liquids and similar exposures to possible fires are present.

H. Locate extinguisher(s) where most convenient and effective for the intended purposes.

I. Store combustible materials in recognized fire-safe locations and containers.

J. Temporary Enclosures: where required, provide temporary enclosure of materials and equipment, work in progress and completed portions of the work, so as to afford protection for the work, the workers, school staff, and the occupants of the facility.

K. Temporary enclosure must be stable and adequate to prevent unauthorized entry into the protected area, and must consist of 6’ high temporary fencing unless approved otherwise.

L. Whether specifically indicated or not, provide temporary enclosures to protect open trenches and excavations and similar work in progress that would represent a hazard if left unprotected.

M. Temporary water service: where available, connect to existing water source at location designated by The County.

N. Temporary power: arrange and pay for temporary construction power except where the Construction Contract allows use of permanent power.

O. Temporary telephone service: provide, maintain and pay for telephone service to field office at time of mobilization.

P. When a mobile phone is designated as the field office phone, it shall be a local number.

1.6 MAINTENANCE AND TERMINATIONS

A. Enforce strict discipline in the use of temporary facilities at the project sites. Limit availability of facilities to essential and intended uses, so as to minimize waste and possibility of abuses and the resulting unsanitary and hazardous or dangerous conditions.

B. Maintenance: Operate and maintain temporary facilities in good condition through the time of use and until removal.

C. Termination and removal: At the time the need has ended for each temporary facility, or when it has been replaced by authorized use of a permanent facility, or at the time of Substantial completion, promptly remove the facility. Complete or restore permanent work which may have been delayed or otherwise affected by the temporary facility. Replace work which cannot be satisfactorily restored.

END OF SECTION 01 51 00

SECTION 01 56 90 ASBESTOS MATERIALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

A. The Contractor is required to obtain testing services from a recognized environmental consultant to sample materials on the roof. Testing of materials is required for all construction projects in accordance with State and Federal Environmental requirements.

B. If any regulated asbestos containing material (ACM) is identified through testing, and if those materials will be disturbed in the course of this project, the Contractor is required to notify The County and await direction.

C. If any non-regulated asbestos-containing roofing material (ACRM) is identified through testing, the Contractor is required to perform the Work in accordance with the appropriate guidelines, regulations, laws, statutes including Federal, State, and Local requirements. Documentation of compliance is required.

1.3 REFERENCES

Refer to the appropriate guidelines, regulations, laws, statutes including Federal, State, and Local concerning the removal of ACRM's.

1.4 ENVIRONMENTAL REQUIREMENTS

D. Comply with all regulations as set forth by EPA and OSHA. Where conflicts occur between agencies, the more stringent requirements will apply.

E. Should removal and disposal of ACRM be required, provide documentation as required by The County showing proper removal, transportation and disposal. The documentation will be required on an on-going basis throughout the project and submitted with each application for payment.

1.5 SEQUENCING AND SCHEDULING

Coordinate the work of this section with all other sections.

1.6 WARRANTY

For new work, the Contractor is required to submit an Asbestos Free Warranty at the conclusion of the project. Such warranty guarantees The County that new materials which have been incorporated into the work do not contain asbestos fibers. Refer to the Warranties section of this Specification.

PART 2 PRODUCTS - Not required of this section.

PART 3 EXECUTION

3.1 All work will be performed in accordance with the guidelines, regulations, laws or statutes as set forth by appropriate governing agencies including EPA and OSHA.

END OF SECTION 01 56 90

SECTION 01 75 00 WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

The following items are to be submitted to the Design Professional as part of this section:

1. Contractor's written five (5) year Roofing Installer's warranty covering all materials and workmanship. **Refer to the Roofing Specification sections for additional information regarding warranty-related submittals, and to Specification Section 07 50 01 for the Warranty Form**.

2. Roofing Manufacturer's Twenty (20) year NDL type warranty covering materials and labor. **Refer to the Roofing Specification sections for additional information regarding warranty-related submittals, and to Specification Section 07 50 02 for the Warranty Form**.

3. Asbestos free warranty. Upon completion of work, and prior to final payment contractor shall submit and obtain from each subcontractor, material supplier and equipment manufacturer and submit an asbestos free warranty properly executed by same. The asbestos free warranty shall be the form included herein, properly notarized.

4. Other warranties as specified in individual specification sections.

5. Submit all required documentation upon completion of the work and prior to final payment.

PART 2 - PRODUCTS

2.1 FORMAT

All required documentation shall be submitted in .pdf format.

PART 3 - EXECUTION

Not used

END OF SECTION 01 75 00

WARRANTY THAT MATERIALS ARE FREE OF ASBESTOS

Project Name: _____ Job No. _____

Project Description: _____

Date of Completion: _____

Owner: Lee County Board of County Commissioners ("The County")

Architect:
PBA Design Group, Inc.
2742 Jason Street
Tampa, FL 33619

KNOW ALL MEN BY THESE PRESENTS that we, (contractor, subcontractor, Material Supplier or Equipment Manufacturer) having furnished labor, materials, equipment or supplies; removed roofing, roof insulation, vapor retarder, flashings, and/or miscellaneous roof system components; accomplished certain repairs to existing roof systems; and/or installed new roofing, roof insulation, vapor retarder, flashing and/or miscellaneous roof system components; from to and or on Building(s), Roof Area(s) as described below under Contract between (THE COUNTY and CONTRACTOR), (Contractor and/or Sub-contractor, Material Supplier, or Equipment Supplier), do hereby warrant to THE COUNTY and PBA Design Group, Inc. with respect to said work that no materials containing asbestos fibers were incorporated into the work, and that, to our knowledge and belief, no materials containing asbestos remain in or are covered by the work, except as follows as described in the contract documents. We further agree to indemnify and hold harmless THE COUNTY and PBA Design Group, Inc. from and against any loss, damages, costs, suits, or liabilities with respect to this warranty, and will defend any suit brought against THE COUNTY or PBA Design Group, Inc. out of claims concerning asbestos in the materials at this project including and will pay the costs and attorney's fees associated therewith.

IN WITNESS WHEREOF, we have caused this instrument to be duly executed, this _____ day of _____, 20___.

Contractor (Material Supplier, Subcontractor)

ATTEST: ( )

_____

By:
Title:
Date:

The foregoing Warranty That Materials Are Free of Asbestos was SWORN AND SUBSCRIBED before me this

_____ day of _____, 20__.

Notary Public

My commission expires:

SECTION 01 77 00 – PROJECT CLOSE OUT PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes procedures and requirements for Contract Close Out, including:

1. Substantial Completion procedures
2. Final Completion procedures
3. Close Out Documents
4. Final Cleaning

B. Related Requirements:

1. Refer to the Construction Contract Terms and Conditions for general requirements related to Contract Close Out.

2. Refer to individual specification sections for specific requirements related to Close Out documentation, extended warranties, training and extra stock requirements.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

To achieve Substantial Completion status, the Project must be complete including fully functioning mechanical, electrical, communication, safety/ security, and other systems. Each component and system of the Work must be complete to the extent which will allow the Contractor and Design Professional to inspect and list specific deficiencies on the Punch List.

A. Substantial Completion Inspection:

1. Prior to the requested Substantial Completion Inspection date, complete the following:

a) Removal of temporary facilities and temporary utilities from the jobsite

b) Removal of mockups

c) Final cleaning as described in detail elsewhere in this Section.

d) Touchup painting

2. A minimum of 10 calendar days prior to the requested Substantial Completion Inspection date, submit the following to the Design Professional:

a) Written request for Substantial Completion Inspection stating that the work is complete.

b) Contractor’s Punch List, as described elsewhere in this Section.

3. Scheduling:

   a) Upon receipt of the above, the Design Professional will either notify The County that the Project, in their professional opinion, is ready for inspection OR will advise the Contractor of unfulfilled requirements.

   b) When the Project is deemed ready for inspection, the Design Professional and Contractor will agree on a mutually acceptable date and time for the inspection and will notify The County's representative a minimum of 7 days prior to the inspection date. The facility operations must be considered in scheduling the inspection so as to avoid disruption.

   c) The appropriate Subcontractors, as determined by the Contractor, shall be present at the Substantial Completion inspection to demonstrate operation of systems to Design Professional and The County.

   d) In the event that the Contractor has not met the requirements to achieve Substantial Completion status, re-inspection is to be requested in accordance with the same procedures described above. Costs associated with re-inspection will be borne by the Contractor. Partial or Preliminary Punch Lists will not be issued.

B. Substantial Completion Acceptance and Punch List:

   1. When the Design Professional has determined that the Work is Substantially Complete, the Design Professional will issue the Certificate of Substantial Completion with attached Punch List within seven (7) days after the Substantial Completion inspection.

      Note: Where the Contract requires the work to be phased, acceptance forms shall clearly note which areas and systems were inspected. It is the responsibility of the Design Professional to ensure that remaining areas and systems are inspected following the same procedures above and documented on a separate Certificate of Substantial Completion prior to issuance of the Certificate of Final Inspection.

   2. In the course of the inspection if the Design Professional determines that areas, systems or components of the Work are not ready for inspection, an Inspection Report will be issued in lieu of a Punch List. Components and Systems which were not inspected will be listed as "not ready". The official Punch List will be issued when all areas have been inspected and deemed ready for Acceptance. See previous item regarding responsibility for costs associated with reinspection.

      Note: "Not Ready" is defined as Work which is EITHER too incomplete to identify specific deficiencies OR which is non-compliant to the extent that major re-work is required.

C. Post Substantial Completion Deficiency List:

   1. In the event that non-compliant work is discovered AFTER the Punch List is issued, the Design Professional will report these via a **Post Substantial Completion Deficiency list**, which will be continuously updated as work is performed and additional deficiencies are discovered, including any unacceptable corrective work performed under the original punch list.

   2. **Items on the Post Substantial Completion Deficiency List must be corrected/completed within the original Punch List period. To ensure that adequate time is allowed to correct deficiencies and to avoid delaying final completion, the Contractor is encouraged to report all non-compliant work and unacceptable workmanship on the Contractor's punch list**.

3. Within seven (7) days after the date of Substantial Completion, the Contractor shall return all door keys, gate keys and card keys directly to The County's representative, where applicable.

   Note: beginning at Substantial Completion, access to the site and facility will be controlled by The County.

D. Contractor's Punch List:

1. The Contractor's Punch List is to encompass the entire project, or the entire phase of the project if the Contract requires phasing. The Punch List is to include, but is not limited to site work, exterior building envelope, interior work, mechanical, electrical and plumbing systems and close out requirements.

2. Organization and format of Contractor's Punch List:

   a) Submit Punch List to the Design Professional in MS Excel format.

   b) Include Building numbers, room names and numbers, and each area affected by construction. Describe each item needing correction in sufficient detail. List areas disturbed by construction operations that are outside the limits of construction when applicable.

   c) Organize the list in sequential order by building and room number, starting with sitework then exterior areas, then interior areas, then close out requirements.

   d) Organize items into separate categories for each area, such as exterior work, interior work, and mechanical, electrical and plumbing systems.

1.4 FINAL COMPLETION PROCEDURES

To achieve Final Completion status, all contractual obligations must be 100% complete, including the submittal of Close-Out Documents and resolution of accounting issues.

A. Final Completion Inspection

1. Prior to the requested Final Completion Inspection date, the Contractor is required to submit the following:

   a) Statement that all work is complete, including Punch List work and any deficiencies which were discovered and reported after issuance of the Punch List.

      Attached to the above Statement, submit a copy of the Punch List and any subsequent Post Substantial Completion Deficiency Lists issued by the Design Professional, with each item initialed by the Contractor and noted to be "complete".

   b) Acceptable Close Out Documents as follows:

      1) Submit the documents and perform the related tasks listed on the attached standard Close-Out Document Checklist (attached).

      2) Review the individual specification sections carefully and submit any additional Project-specific Close Out documents and extra stock, and perform any additional training required, whether or not listed on the attached Close-Out Document standard checklist.

c) Specified extra stock materials.

d) Actual cost documentation for changes which were approved on an estimated cost basis during construction.

e) Additional accounting information, as required by The County and Design Professional.

2. Scheduling:

a) Upon receipt of the above, the Design Professional will either notify The County that the Project, in their professional opinion, is ready for inspection or will advise the Contractor of unfulfilled requirements.

b) When the Project is deemed ready for inspection, the Design Professional and Contractor will agree on a mutually acceptable date and time for the inspection and will notify the facilities Operations representative a minimum of 7 days prior to the inspection date. School operations must be considered in scheduling the inspection so as to avoid disruption.

c) In the event that the Contractor has not met the requirements to achieve Final Completion status, re-inspection is to be requested in accordance with the same procedures described above. Costs associated with re-inspection will be borne by the Contractor.

B. Final Completion Acceptance:

When the Design Professional has determined that the work has achieved Final Completion status, a Certificate of Final Inspection will be issued within seven (7) days of the Final Completion date.

1.5 CLOSE OUT DOCUMENTATION

A. Submit the documentation listed on the attached Contractor's Close Out Document Checklist.

B. The Contractor is required to transmit Close Out Documentation as PDF files EITHER by e-mail OR by means of an FTP Site specifically established for the project. The Design Professional will review and return annotated .pdf files which the Contractor may upload to ProCore, Ebuilder or similar construction management software. **Direct use of the Contractor's construction management software by the Design Professional is solely at the option of the Design Professional.**

PART 2 - PRODUCTS

Not applicable

PART 3 - EXECUTION

A. Final Cleaning:

1. Final Cleaning is to be completed prior to requesting a Substantial Completion inspection.

2. Conduct final cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

3. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with product manufacturer's written instructions.

4. Complete the following cleaning operations **at all areas affected by construction** before requesting the inspection for Substantial Completion.

5. Clean Project site, yard, and grounds in areas disturbed by construction activities, including landscape areas, of rubbish, waste material, litter, and other foreign substances.

6. Sweep paved areas broom clean. Remove spills, stains, and other foreign deposits.
7. Use magnetic sweeper and a metal detector during removal of all construction debris. Do not install sod and do not release paved areas to The County until all areas have been cleaned. See Drawing Notes for requirements.

8. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

9. Clean concrete and masonry surfaces of excess mortar, grout, and splatter. Final appearance is to show no evidence of stains or the cleaning process.

10. Clean metal railings, walkway columns and other metals of splatter and overspray. Final appearance is to be like-new.

11. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

12. Sweep concrete floors broom clean in unoccupied spaces.

13. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

B. Restoration:

Refer to the Drawing Notes for Restoration requirements.

Appendix: Close Out Document Checklist

END OF SECTION 01 77 00

CONTRACTOR'S CLOSE-OUT DOCUMENT CHECKLIST

CONTRACTOR'S CLOSE-OUT DOCUMENTS

The Contractor is required to submit a single copy of the documents listed below to the Design Professional. Documents are to be submitted in electronic format, unless noted otherwise below. Complete documents must be submitted in order to achieve Final Completion status.

Prior to Substantial Completion, Contractor is to submit the following to the Design Professional:

- ☐ Red-marked field Drawings and Specifications for Design Professional's use in preparing Record Drawings
- ☐ Documentation of semi-final sweep of grounds per Drawing Notes

Prior to Final Completion, Contractor is to submit the following documents to the Design Professional:

- ☐ List of subcontractors including telephone numbers and contact names
- ☐ Receipt showing quantities of any specified extra stock materials, signed by recipient
- ☐ Documentation of final sweep of grounds per Drawing Notes
- ☐ Punch List and Post-Substantial Completion Deficiency List, each item signed off by the Contractor

Warranties, Test Results and Certifications:

- ☐ Manufacturer's Roof Warranty **with building no(s) printed**, commencing on the date of Substantial Completion
- ☐ Roof Installer Warranty, **with building no(s) printed**, commencing on the date of Substantial Completion
- ☐ Specified extended warranties, commencing on the date of Substantial Completion
- ☐ Asbestos Free Warranty

Accounting Data:

- ☐ Consent of Surety to final payment for Bonded Projects, .pdf and **original** hard copy
- ☐ Documentation of actual cost of changes implemented on a not-to-exceed basis, if not previously submitted
- ☐ Final documentation related to Davis-Bacon wages as required by the Construction Contract
- ☐ Other documentation of compliance with Grant Terms as indicated in the Construction Contract

DESIGN PROFESSIONAL'S CLOSE-OUT DOCUMENTS (listed here for convenience)

- ☐ Record Drawings in .pdf format
- ☐ Submittals and shop drawings with Design Professional's review stamp, .pdf format

SECTION 02 06 00 DEMOLITION - (Roofing and Sheet Metal)

PART 1 - GENERAL

1.1 WORK INCLUDES

A. Removal of existing roofing system components including fasteners, roofing membrane, aggregate surfacing, metal flashings, base flashings, drains and obsolete equipment such as obsolete pitchpan, flashings, etc. as shown on the construction drawings.

B. Refer to drawings for locations of roof replacements and roof membrane removal.

1.2 DEFINITIONS

Definitions of terms, as they are used in these documents, are described in the ASTM D-1079 Standard Definitions of Terms relating to Roofing, Waterproofing, and Bituminous Materials and are made apart of these documents as though included herein.

1.3 QUALITY ASSURANCE

A. Traffic: Conduct demolition operations and removal of debris to ensure minimum interference with adjacent, occupied, or used facilities. Do not close or obstruct passage to adjacent, occupied, or used facilities without permission from The County.

B. Protection: Ensure safe passage of personnel around areas of demolition. Conduct operations to prevent injury to adjacent, occupied, or used facilities. Protect interior of building including interior finishes. Damage to the facility, contents and interior finished will be the responsibility of the roofing contractor.

C. Damage: Promptly repair damage caused to adjacent facilities or surfaces at no cost to The County. Match adjacent surfaces in material and finish.

D. Do not interrupt existing utilities serving occupied or used facilities. Provide temporary connections to avoid interrupting services.

1.4 COLLECTION AND DISPOSAL REQUIREMENTS

The Contractor is responsible to load and haul demolition materials across the scales and dispose of such materials at the appropriate on-site disposal facility as directed by the County. Disposal location will either be the WTE Facility, CD&D Recycling Facility, or Transfer Station. Waste disposal fees will be paid directly by the County and not charged to the Contractor.

PART 2 - PRODUCTS

Not applicable

PART 3 – EXECUTION

3.1 SCOPE OF WORK

A. The roofing contractor is responsible for all interior cover up, exterior finish protection and cleanup during the demolition phase of this project. Cover up includes protection of interior finishes and equipment.

B. The roofing contractor shall provide all necessary equipment, labor, and materials to remove the existing membrane to the insulation and/or the roofing system including aggregate surfacing, and base flashings to the existing deck.

C. The scope of the demolition is indicated on the Contract Drawings. In summary, demolition includes removal of existing roofing, insultation, base flashings, metal work, and obsolete equipment and accessories as shown.

END OF SECTION 02 06 00

06 10 00 ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

This Section includes carpentry which is not specified elsewhere and which is generally not exposed, except as otherwise indicated. Types of work in this Section include but are not necessarily limited to, rough carpentry for nailers and blocking.

1.3 REFERENCES

The following publications form a part of this Specification and, where referred to by basic designation only are applicable to the extent indicated.

A. Federal Specifications (Fed. Spec.)
   1. FF-S-107C(2) Screws, Tapping and Drive
   2. FF-S-111D Screw, Wood
   3. MMM-A-125C Adhesive, Casein Type, Water and Mold Resistant

B. United States Department of Commerce-Product Standards (PS)
   1. PS-1 Construction and Industrial Plywood
   2. PS-20-70 American Softwood Lumber Standard

C. American Plywood Association (APA) - APA Registered Grade Marks.

D. National Lumber Manufacturers Association (NLMA) - National Design Specification for Stress-Grade Lumber and its Fastenings.

E. Southern Pine Inspection Bureau, Standard Grading Rules.

F. West Coast Lumber Inspection Bureau, Grading Rules.

G. American Wood Preservers Association (AWPA) - C2-80 Standard for Preservation Lumber, Timber, Bridge Ties, and Mine Ties by Pressure Treatment.

H. American Wood Preservers' Bureau (AWPB) Publications
   1. LP-2 (1980) Standard for Softwood Lumber, Timber, and Plywood Pressure Treated with Waterborne Preservatives for Above Ground Use
   2. LP-3 (1978) Standard for Softwood Lumber, Timber, and Plywood Pressure Treated with Light Hydrocarbon Solvent-Penta Solution for Above Ground Use
   3. LP-4 (1978) Standard for Softwood Lumber, Timber, and Plywood Pressure Treated with Volatile Hydrocarbon Solvent (LPG) - Penta Solution for Above Ground Use

I. American Society for Testing and Materials (ASTM)
   1. D907-88 Definitions of Terms Relating to Adhesives
   2. D2559-84 Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions

K. Factory Mutual Engineering Corporation - All securement shall comply with the requirements of Factory Mutual Engineering Corp.

L. RAS111 - Roof Application Standard which is part of the Florida Building Code.

1.4 QUALITY ASSURANCE

A. The workmen performing the work of this Section shall be thoroughly trained and experienced in the proper installation and securement of the materials listed in this Section.

B. The completed installation shall meet the minimum recommended installation practices of the referenced association, agency bureau or department.

C. Lack of skill or experience on the part of workmen will not be considered when evaluating work of this Section.

D. All work shall be securely attached, straight and plumb. Field-applied preservative is to be applied to saw cut surfaces of pressure treated wood.

1.5 SEQUENCING AND SCHEDULING

Coordinate the work of this Section with all other sections.

1.6 WARRANTY

Work of this Section shall be included in the Contractor's roofing warranty.

1.7 SUBMITTALS

Manufacturer's certificate stating that all lumber used in this project has been pressure treated in accordance with one of the methods specified. State which method was used.

1.8 DELIVERY, STORAGE AND HANDLING

Delivery and Storage- Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood, and provide air circulation within stacks.

PART 2 - PRODUCTS

2.1 LUMBER MATERIALS

General - All lumber, except as otherwise specified, shall be S4S Southern Yellow Pine, well-seasoned, sound stock, free from sap, shakes and/or other defects which may impair the appearance, utility or strength of the materials.

A. All lumber, concealed, in contact with concrete, concrete masonry, stucco, plaster or roofing, shall be pressure treated. See paragraph "Wood Treatment" for treatment methods.

B. Kiln dry all lumber to a maximum moisture content of fifteen (15) percent. When incorporated into the work, lumber shall have a maximum moisture content of 17 percent.

C. Each piece of lumber shall be grade marked indicating that the lumber meets the grading rules of the Southern Pine Inspection Bureau or the West Coast Lumber Inspection Bureau. All lumber shall be grade marked at mill of origin, with grade and mill clearly identified.

D. Stress-Grade Lumber - In addition to the requirements for lumber, general stress grade lumber shall be of a grade meeting stresses stated, each piece grade marked.

E. Lumber for concealed blocking and furring shall be No. 1 Common or better.

2.2 PLYWOOD

General - Each panel of softwood plywood shall be identified with the APA grade-trademark of the Engineered Wood Association (APA), and shall meet the requirements of the latest edition of one of the following- U.S. Department of Commerce, Product Standards-PS-1 or applicable APA Standards. All plywood which has any edge or surface permanently exposed to the weather shall be of the exterior type. Panel thickness shall be as indicated on the Drawings. Where thickness is not indicated, the minimum shall be 5/8 inch thick and pressure treated. Use pressure treated plywood where indicated in the construction drawings. Use CDX plywood for decking where indicated.

2.3 WOOD TREATMENT

A. Preservative Treatment:
   1. Lumber less than 5 inches in thickness and plywood specified to be painted shall be treated in accordance with AWPB LP-4.
   2. Lumber less than 5 inches in thickness and plywood used in conjunction with built-up roofing shall be treated in accordance with AWPB LP-2.
   3. Do not incise surfaces of lumber that will be exposed. Brush coat areas that are cut or drilled after treatment with the preservative used in the original treatment or with copper naphthenate solution.

B. All wood and plywood used on the project shall be pressure treated.

2.4 FASTENERS

Except as otherwise specifically shown or specified, the following guide shall be used in the selection of all fasteners:

A. Fasteners shall conform to Florida Building Code (FBC-Latest Edition) Part 2304.9.1. All fasteners shall be hot-double-dipped galvanized or stainless steel, ring shank, except as otherwise specified. Electro-plated fasteners are not acceptable.

B. Screws shall be hot-dipped galvanized or stainless steel. Wood screws shall conform to FF-S-111. Self-tapping screws shall conform to FF-S-107.

C. Steel anchor bolts (and nuts) shall conform to the requirements of the Section "Miscellaneous Metal" (if required).

D. Steel anchor bolts (and nuts) to be embedded in concrete shall be ASTM A 36, ASTM A 307 steel of the size and shape indicated.

E. All other fasteners including machine bolts (through-bolts), toggle bolts, steel expansion shields, and powder actuated fasteners shall be selected from catalogs of recognized manufacturers. The selection of the type of fastener shall be based on the manufacturer's recommendation for the particular application and the size shall be based on the published load tables of the manufacturer, using a safety factor of three.

F. Fasteners used to attach nailers to concrete surfaces shall be stainless steel bolts set in epoxy or use stainless steel Rawl "Spikes".

PART 3 - EXECUTION

3.1 GENERAL

A. All work shall be performed by skilled craftsmen under the direction of an experienced and competent Superintendent.

B. Carpentry work consists of all temporary work, layout, forming, framing, bracing, nailing strips, furring strips, backup and lumber and blocking as required to perform the Work as required on the Construction Documents.

3.2 LUMBER AND PLYWOOD USED IN CONJUNCTION WITH WATERPROOFING WORK

A. All cuts in lumber and plywood shall be neat and square to provide hairline joints where two pieces butt.

B. Fasten with galvanized bolts or other as indicated.

C. Joints in lumber shall be staggered when lumber is stacked, i.e. perimeter nailers and coping caps.

3.3 MOUNTING AND FASTENING REQUIREMENTS

Except as otherwise specifically shown or specified, the various items of the work shall be fastened or secured as follows:

A. Wood to wood with nails, screws, bolts or timber connectors as shown or specified.

B. Wood to metal studs with self-tapping screws.

C. Wood to masonry with toggle bolts (where voids occur in masonry only), or machine bolts set in epoxy, or stainless steel "Rawl Spike" type fasteners.

D. Plastic shields or wood plugs shall not be used for any purpose.

E. Fastening and connections of wood members shall be in accordance with the Florida Building Code Part 2304.9.1 Fastening Schedule.

3.4 EXISTING ITEMS

A. Carefully remove existing items, indicated to be reinstalled in the project, inspect for damage and repair same in an acceptable manner. If the item cannot be repaired, immediately notify the Design Professional.

B. Modify existing items if indicated, and reinstall where indicated.

3.5 FIELD QUALITY CONTROL

As part of the work of this Section, establish and maintain quality control for all work normally assigned to the carpentry trade. Quality control shall include but not be limited to the following:

A. Verify that all work is laid out accurately to dimensions shown. Double-check all overall dimensions.

B. Notify facility personnel prior to starting work over occupied areas.

C. Resecure existing blocking shown to remain. Ensure that it is properly secured and that the surface is smooth with surrounding work.

D. Necessary measures shall be taken in attaching nailers to concrete so as to prevent spalling of the concrete or finish.

3.6 CLEANUP

All debris shall be disposed promptly and the construction area left clean daily.

END OF SECTION 06 10 00

07 22 01 ROOF INSULATION FOR SINGLE PLY ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

Section includes rigid roof insulation board for installation over roof decks to provide a substate for the new roofing membrane installation, positive slope for drainage and to provide thermal insulation. Insulation includes:

A. Flat and Tapered Polyisocyanurate Roof Insulation
B. Flat or tapered perlite board
C. Fiberglass reinforced gypsum board

1.3 REFERENCES

The following publications form a part of this Specification and, where referred to by basic designation only, are applicable to the extent indicated.

A. ASTM C 209 - Methods of Testing Insulating Board, Structural and Decorative.
B. ASTM C472 Standard Test Methods for Physical Testing of Gypsum Panel Products.
C. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
D. ASTM C728 - 05(2010) Standard Specification for Perlite Thermal Insulation Board.
E. ASTM C1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
F. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Thermal Insulation Board.
G. ASTM C 1303 - Standard Test Method for Estimating the Long Term Change in the Thermal Resistance of Unfaced Closed Cell Plastic Foams by Slicing and Scaling Under Controlled Laboratory Conditions.
H. ASTM D 1621 - Test Methods for Compressive Properties of Rigid Cellular Plastics.
I. ASTM D 2126 - Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
J. ASTM E 84 - Surface Burning Characteristics of Building Materials.
K. ASTM E 96 - Test Method for Water Vapor Transmission of Materials.
L. ASTM E 108 - Standard Tests Method for Fire Tests of Roof Coverings.
M. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
N. CAN/ULC S770 - Standard Test Method for Determination of Long Term Thermal Resistance of Closed Cell Plastic Thermal Insulating.
O. FM Approval Guide - FM 4450 Approval Standard - Class I Insulated Steel Roof Decks.
P. FM Approval Guide - FM 4470 Approval Standard - Class I Roof Covering.
Q. UL 263 - Fire Tests of Building Construction and Materials.
R. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
S. UL 1256 - Fire Test of Roof Deck Constructions.

1.4 QUALITY ASSURANCE

A. Roof Board Insulation: Provide products that comply with the following:
    1. ASTM standards specified.
    2. Underwriters Laboratories Inc. (UL) classifications specified.
    3. Florida Building Code

B. Additionally, polyisocyanurate Insulation is to meet the following UL standards:
    1. Component of Class A Roof System – UL 790.
    2. Hourly Rated P series roof assemblies (UL 263 foam core only) P 225, 230, 232, 259, 508, 510, 514, 519, 701, 713, 717, 718, 719, 720, 722, 723, 724, 727, 728, 729, 730, 732, 734, 735, 739, 801, 814, 815, 818, 819, 823, 824, 826, 827, 828, 832.
    3. Insulated metal deck assemblies - UL 1256 (nos. 120, 123).

1.5 SUBMITTALS

Submit the following according to the provisions of Section 01 33 00.

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Shop Drawings showing roof slopes, layout of boards and fastening patterns.

C. Samples: IF REQUESTED, provide two samples of the following products:
   1. Submit 6 by 6 inch samples of each board type required.
   2. Submit samples of each fastener type required.

D. Manufacturer's certification that materials meet or exceed specification requirements.

1.6 WARRANTY

Work of this Section shall be included in the Roofing Warranties.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Stack insulation on pallets above ground or roof deck.

C. Slit or remove packaging to permit ventilation and cover with breathable tarpaulin or other suitable waterproof coverings.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Do not install insulation on roof deck when water of any type is present. Do not apply roofing materials when substrate is damp or wet or when proper adhesive temperature cannot be maintained.

1.9 COORDINATION

Coordinate work with installation of roof covering and associated roof penetrations and counterflashings installed by other sections as work of this section proceeds.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Polyisocyanurate Roof Insulation:
   1. Manufacturer: use Roofing System Manufacturer’s recommended insulation product to the extent that specified requirements are met.

   2. Rigid insulation board composed of closed cell polyisocyanurate foam core laminated to fiber reinforced black non-asphaltic organic facer as recommended by the Manufacturer of the selected Roofing System. Roof system is to provide a minimum R-value of R-25.

   3. UL Assemblies:
      a. Component of Class A Roof System – UL 790.
      b. Hourly Rated P series roof assemblies (UL 263 foam core only) P 225, 230, 232, 259, 508, 510, 514, 519, 701, 713, 717, 718, 719, 720, 722, 723, 724, 727, 728, 729, 730, 732, 734, 735, 739, 801, 814, 815, 818, 819, 823, 824, 826, 827, 828, 832.

4. Physical properties:
    a. Flat or tapered insulation minimum thickness 1.5” (unless thicker insulation is required by the construction drawings) and minimum slope of ¼” in 12”.
    b. Compressive Strength: ASTM D 1621 and ASTM C 1289, Type II, 20 psi (138 kPa) minimum for Grade 2 and 25 psi (172 kPa) for Grade 3.
    c. Dimensional Stability: ASTM D 2126, 2 percent linear change (7 days).
    d. Moisture Vapor Transmission: ASTM E 96, < 1 perms ((57.5ng/ (Pa s m2)).
    e. Water Absorption: ASTM C 209, < 1 percent by volume.
    f. Service Temperature: Minus 100 degrees to 250 degrees F (Minus 73 degrees C to 122 degrees C).

B. Cover Board for installation over polyisocyanurate insulation board in adhesive or mechanically attached, for use in torch applied roofing systems.
    1. Fiberglass reinforced gypsum board:
        a. Thickness: 3/8-inch or 1/2 inch
        b. Width: 48-inch, length: 48 inches
        c. Core: reinforced moisture resistant gypsum
        d. Surfacing: coated fiberglass mat
        e. Permeance: Not less than 50 perms
        f. R Value: Not less than 0.28
        g. Compressive Strength: 900lb per square inch

    2. Approved products:
        a. Securock by USG
        b. Equivalent product approved by the Manufacturer and Design Professional

2.2 ACCESSORIES

A. Fasteners:
    1. Coated corrosion-resistant fasteners as recommended by the insulation manufacturer and meeting the requirements of FM A/S4470 and FM P/7825c for Class I roof deck construction and the wind uplift resistance specified. For fastening of insulation to wood or steel decks.

    2. Provide mechanical fasteners specifically approved by Factory Mutual for use on roofs of specified class with specified wind uplift and as appropriate for type of roof deck material.

    3. Metal Plates: Flat corrosion-resistant round stress plates as recommended by the roofing manufacturer’s printed instructions and meeting the requirements of FM A/S4470; not less than 3” in diameter for insulation attachment. Discs shall be formed to prevent dishing or cupping.

B. Base Ply: As recommended by membrane manufacturer. Refer to the Roofing Section of these specifications.

C. Adhesive for Insulation and Gypsum Boards: Manufacturer approved adhesives for adhering rigid perlite, polyisocyanurate insulation and gypsum board.

D. Cant Strip and Tapered Edge Strip: Standard machine cut perlite strips in sizes indicated or required.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean, and free of foreign material that will damage insulation installation.

C. Verify that roof drains, scuppers, roof curbs, nailers, equipment supports, verts, and other roof accessories are secured properly and installed in conformance with drawings and submittals.

D. Verify that deck is structurally sound to support installers, materials, and equipment without damaging or deforming work.

E. If substrate preparation is the responsibility of another installer, notify Design Professional of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install specified insulation in accordance with manufacturer's latest printed instructions and as required by governing codes.

B. Do not leave installed insulation exposed to weather. Cover and waterproof immediately after installation.

C. Seal exposed insulation joints at the end of each day. Remove seal when work resumes.

D. Insulation which is left uncovered at the end of a work day shall be removed to the deck and new insulation installed.

E. Remove installed insulation that has become wet or damaged and replace with new solid and dry insulation material immediately or no later than the following work day. Do not wait to make repairs.

F. Installation:
   1. Secure each insulation panel to the roof deck with Factory Mutual approved fasteners and plates (appropriate to the deck type).

   2. Adhere maximum 4 foot by 8 foot panels of insulation to a prepared concrete deck or mechanically attached insulation board with a ribbon application of cold adhesive.

   3. Butt edges and stagger joints of adjacent panels.

   4. Multi-layer systems: Adhere subsequent layers with a ribbon application of cold adhesive.

   5. In multi-layer installations, stagger joints in top and bottom layers. Do not align joints in insulation. Stagger insulation joints a minimum of 6" from joints in a previous layer of insulation.

   6. Install the roof covering according to the project specifications.

   7. All polyisocyanurate insulation shall be covered with a minimum 3/8" thick gypsum cover board.

3.4 CLEANING

Remove trash and construction debris from insulation before application of roofing membrane.

END OF SECTION 07 22 01

SECTION 07 50 10

ROOFING SYSTEM
INSTALLER'S FINAL FIVE (5)-YEAR WARRANTY

WARRANTY No.: _____

OWNER INFORMATION

Name: Lee County Board of County Commissioners
ATTN: Solid Waste Department

Address: _____

_____

Telephone: _____

PROJECT INFORMATION

Project No.: CN220230BAG Total Cost of Installed Roofing: $ _____

Name: Waste to Energy Facility Hardening – Roof Replacement

Address: 10550 Buckingham Road
Fort Myers, Florida

Roof areas covered by this warranty include the following:
(Use Area Names provided on the Construction Documents. Indicate area in square feet. Attach roof plan(s) or aerial photo(s) depicting all included roof areas.)

Area Name: _____ Sq. Ft: _____ Area Name: _____ Sq. Ft: _____

Area Name: _____ Sq. Ft: _____ Area Name: _____ Sq. Ft: _____

Area Name: _____ Sq. Ft: _____ Area Name: _____ Sq. Ft: _____

Area Name: _____ Sq. Ft: _____ Area Name: _____ Sq. Ft: _____

Area Name: _____ Sq. Ft: _____ Area Name: _____ Sq. Ft: _____

WARRANTY TERM

Commencement Date: _____ Expiration Date: _____
(Official Date of Substantial Completion)

INSTALLING CONTRACTOR

Name: _____ Tel.: _____

Address: _____ E-mail: _____

_____

SECTION 07 50 10

ROOFING SYSTEM
INSTALLER'S FINAL FIVE (5)-YEAR WARRANTY

WARRANTY ACCEPTANCE

Owner	**Contractor**
By: _____	By: _____
(Signature of duly authorized representative)	*(Signature of duly authorized representative)*
_____	_____
(Printed name of duly authorized representative)	*(Printed name of duly authorized representative)*
Title: _____	Title: _____
Date: _____	Date: _____

A. **WARRANTY COVERAGE:**

1. The roofing **Contractor** named above warrants to **The Lee County Board of County Commissioners ("The County" - OWNER)** to repair or have repaired **Covered Roof Leaks** or other roof defects described herein which occur during the warranty period stated above subject to the terms and conditions of this warranty. In addition, the **Contractor** warrants that the **Covered Roofing System** will remain free of defects, **Premature Deterioration** or failure of the materials to provide effective service other than normal expected aging of the materials for the term of the warranty. Excessive repairs due to deterioration or failure of materials will be considered failure of the entire **Covered Roofing System** and permanent replacement or corrective measures will be made to the satisfaction of **The County**. In addition, the roofing **Contractor** warrants to **The County** the roofing system shall provide a complete watertight assembly without detachment, wrinkles/distorted membrane, or otherwise damaged roofing system components resultant of gale force winds and windstorms below hurricane force wind speeds of 74 mph. The **Contractor** shall warrant watertight performance for all aspects of the roof system installation including all roof membrane components, sheet metal flashing, sealant (caulking) and pourable sealer for the term of the warranty.
2. The roofing Contractor will pay all costs for labor and materials to make repairs to Covered **Roof Leaks** which will include any associated costs for shipping, travel expenses etc. during the **Warranty** term.
3. Coverage shall include all materials of the **Covered Roofing System** and all related materials of the project including sheet metal, wall flashings, penetration flashings etc.
4. Authorize **The County** to make emergency repairs to **Covered Roof Leaks** if the **Contractor** is unavailable to make repairs within **24 hours**.
5. Arrange for and make temporary or permanent roof repairs within 24 hours of notification of a **Covered Roof Leak** or other roofing defect defined in Item A.1 above. If temporary repairs are made, permanent repairs will be made within 3 business days.
6. Provide written documentation to **The County** of the date and time of roof repairs.
7. Any repairs made will meet the requirements of the roofing materials manufacturer and the **Roofing Standards** of **The County** at the time of the installation.
8. There will be no limitation on the amount of funds the **Contractor** must spend to repair the **Roofing System** during the term of the **Warranty**.
9. **Contractor** shall conduct 1 roof inspection per year on each roof section throughout the duration of the contractor's five (5) year warranty. The contractor shall be required to produce a roof inspection report (on the contractor's letterhead) for each inspection which identifies all items in need of attention, any repair work performed, etc., which shall be furnished to **The County** within 5 working days of the inspection.

B. OWNER OBLIGATIONS:

1. **The County** will notify the roofing **Contractor** within 30 days of discovery of any **Covered Roof Leak** or other roof defects and cooperate with the roofing **Contractor** during repairs.
2. Properly and regularly maintain the **Covered Roof System** to keep the roof surfaces drains and gutters clean and free of debris and working properly.
3. Allow the roofing **Contractor** access to the covered roofing systems during normal business hours.
4. Pay for any roof repairs performed which are not **Covered** or for work outside of the **Contractor**'s scope of work on the project. Payment will be for customary and reasonable repair costs and shall not exceed a total of a 25% markup for overhead and profit.

C. **EXCLUSIONS**

1. Leaks or other defects in the **Covered Roofing System** resulting from or caused by the following:
    a. Fire, lightning, acts of God, explosion, riot, civil commotion, hail, falling or blown objects, aircraft, vehicles and floods.
    b. Winds greater than **74mph**.
    c. Damage to the roofing system from water that stands on the roofing membrane for longer than 48 hours resultant of structural settlement or unless specifically approved by the roofing materials manufacturer.
    d. Insects, animals or vermin.
    e. Defects, movement, settling, warping, cracking, corrosion, rot, moisture, rust, mildew, or failures of any structure or material in the covered roof area or building other than the **Covered Roofing System.**
    f. Repairs or modifications to the **Covered Roofing System** not approved by the **Contractor** in writing beforehand or not completed by a **Contractor** except for **Temporary Emergency Situations.**
    g. Damage resultant of installation, maintenance, repair, movement, placement, storage or deterioration of any **Extraneous Roof Components** or **Rooftop Objects**.
    h. Traffic across and extraordinary wear of the **Roofing System** surface as a result of traffic on the **Covered Roofing System** beyond that considered common to the installation, maintenance and repair of **Covered Roofing Systems** and related **Covered Roofing System** components.
    i. **Third Parties**, except for an approved **Contractor** or inspector on **Covered Roofing System.**
    j. Acts of negligence, abuse, misuse or vandalism.
    k. Damage to the **Covered Roofing System** due to pollutants.
    l. Cost of removing and/or installing **Extraneous Roofing Components** or **Rooftop Objects.**

D. SUSPENSION OF WARRANTY

1. If **The County** does not perform all of its warranty obligations and comply with the terms and conditions required of it under the Warranty, this Warranty and the **Contractor**'s obligations under it shall be suspended. Notice of suspension shall be in writing and submitted to **The Lee County Board of County Commissioners (OWNER).**
2. **Warranty** coverage may be reinstated by performing the required actions and notifying the **Contractor** that the work has been completed or addressed.

E. DEFINITIONS:

1. **Approved Contractor**: The roofing contractor responsible for the installation of the **Covered Roofing System** and related components and that can make repairs that will be covered under **Manufacturer's** warranty.
2. **Building** – The facility and roof area where the work covered by this warranty was performed.
3. **Building Code**: any law, statute, rule, regulation, ordinance or order of a Federal, State, County, local government Florida Department of Education relating to the design, specifications, materials or construction of any **Covered Roofing System**.
4. **Claim** – **The County** request(s) for corrections to **Covered Roof Leaks** or other roof defects defined in A.1 above under this warranty.
5. **Contractor Costs** – all costs and expenses **Contractor** will incur relating to any **Covered Roof Leak** or warrantable repair including costs of labor and materials to make repairs or perform maintenance, costs of evaluating, investigating, defending, negotiating, settling and mediating; and costs of **Third-Party** assistants including attorney fees, expenses etc.
6. **Covered Roof Leak and Roof Defects** – any intrusion of water into the **building** or other roof defects defined in A.1 above related to the **Covered Roofing System** including **Extraneous Roofing Components** except those excluded.
7. **Covered Roofing System** – the full roofing system covered by this warranty which includes the flexible or semi-flexible roof covering or waterproofing, including all new membrane materials, insulation (including lightweight insulating concrete), cover boards, base flashing, fasteners and any other roof system component from the roof deck to the finished roof membrane wearing surface whether supplied by the manufacturer or by others.
8. **Excessive Repairs** – are considered any reoccurring similar defect(s) which **The County** cannot reasonably expect a final and acceptable solution which resolves the defect.
9. **Extraneous Roofing Components** – drains, drain lines, nailers, roof deck, counterflashing, walkways (except when part of the roofing membrane) and sheet metal work.
10. **Manufacturer** – The roofing materials manufacturer that produces or sells the primary roofing materials used on the project and underwrites this warranty covering those materials.
11. **MANUFACTURER'S Costs** – all costs and expenses **MANUFACTURER** will incur relating to any Covered Roof Leak or other roof defects as defined in A.1 above including costs of labor and materials to make repairs or perform maintenance, costs of evaluating, investigating, defending negotiating, settling and mediating; and costs of **Third-Party** assistants including attorney fees, expenses etc.
12. **OWNER** – **Lee County Board of County Commissioners ("The County" - OWNER)**
13. **Pollutants** – solid, liquid or gaseous irritants or contaminates, including, but not limited to, petroleum products, animal fat, smoke vapors, soot, fumes, acids, alkalis, corrosive chemicals and other materials defined as damaging to the roof system as defined by the manufacturer's published information.
14. **Premature Deterioration** – deterioration of the roofing system or components which could be considered excessive and uncommon considering the age of the roofing system.
15. **Roofing System** – the full roofing system covered by this warranty which includes the flexible or semi-flexible roof covering or waterproofing, including all new membrane materials, insulation (including lightweight insulating concrete), cover boards, base flashing, fasteners and other roof system component from the roof deck to the finished roof membrane wearing surface whether supplied by the manufacturer or by others.
16. **Roof Top Objects** – mechanical, electrical, plumbing, heating, and air conditioning equipment, lightning protection components, sprinklers, antennas, frameworks, signs, traffic surfaces (other than those which are intentionally part of the roofing system), water towers, structures, equipment, materials (other than related to the **Covered Roofing System**), and other objects on or through the **Roofing System**.

17. **Third Party** – any person, firm, partnership, corporation, company, or other entity or group other than **The County, Contractor,** or **Manufacturer**.
18. **Warrantable Repair** – repairs to any defect in materials or workmanship of the roofing **Contractor** for work performed under their contract for services for the warranted project.

DISTRIBUTION *[Provide two (2) originals and two (2) copies]:*

ORIGINAL: Lee County Board of County Commissioners (Owner)
ORIGINAL: Installing Contractor
COPY: Owner–Project Manager
COPY: Design Professional

INSERT HERE ROOF PLAN(S) OR AERIAL PHOTO(S) DEPICTING ALL ROOF AREAS COVERED BY THIS WARRANTY

07 50 20 – MANUFACTURER'S TWENTY (20) YEAR ROOFING SYSTEM WARRANTY

MANUFACTURER'S GUARANTEE NO.: _____

GUARANTEE TERM: _____

Date of Substantial Completion[1] _____ Term Expiration Date: _____

[1]*As certified by Design Professional*

OWNER INFORMATION:

Name: Lee County Board of County Commissioners ("The County")

Address: _____

_____

_____

_____

Telephone: _____ Email: _____

ROOFING MANUFACTURER INFORMATION:

Name: _____

Address: _____

_____

_____

_____

Telephone: _____ Email: _____

INSTALLING CONTRACTOR INFORMATION:

Name: _____

Address: _____

_____

_____

_____

Telephone _____ Email: _____

PROJECT INFORMATION:

Project Name: Waste to Energy Facility Hardening – Roof Replacement

Address: 10550 Buckingham Road

Fort Myers, Florida

_____

Roof areas covered by this Guarantee include the following:
(Use Area Names provided on the Construction Documents. Indicate area in square feet. Attach roof plan(s) or aerial photo(s) depicting all included roof areas.)

Area Name:		Sq. Ft:	Area Name:		Sq. Ft:
Area Name:		Sq. Ft:	Area Name:		Sq. Ft:
Area Name:		Sq. Ft:	Area Name:		Sq. Ft:
Area Name:		Sq. Ft:	Area Name:		Sq. Ft:
Area Name:		Sq. Ft:	Area Name:		Sq. Ft:

ROOF SPECIFICATION:

OWNER Project Number: CN220230BAG Total Cost of Installed Roofing: $

Roof Systems Installed: *(Check all that apply):*

- ☐ **2-Ply Modified Bitumen Roof System over Non-Nailable Roof Deck – torch applied**
- ☐ **2-Ply Modified Bitumen Roof System over Nailable Roof Deck – torch applied**
- ☐ **2-Ply Modified Bitumen Roof System – cold-applied adhesive**
- ☐ **Single-Ply PVC, TPO or KEE**

ROOFING MANUFACTURER AUTHORIZATION:

By: _____
(Signature of duly authorized representative)

_____
(Printed name of duly authorized representative)

Title: _____

Date: _____

A. GUARANTEE COVERAGE:

1. The **Roofing Manufacturer** hereby guarantees to the **The County**, subject to the terms, conditions and limitations stated herein, that the **Covered Roofing System** at the above referenced **Building** will remain in a watertight condition, free of **Roofing Defect(s)**, **Premature Deterioration**, or failure of the materials supplied by the **Roofing Manufacturer**, for a period of twenty (20) years, commencing on the date hereof. The **Roofing Manufacturer** agrees to repair or have repaired all **Covered Roof Leaks** caused by normal weathering, manufacturer defects, and **Roofing Defect(s)** in the application of the **Covered Roofing System**. **Excessive Repairs** due to the deterioration or failure of roofing materials within a Roof Section will be considered failure of the **Covered Roofing System** for that entire Roof Section and permanent replacement or corrective measures will be made to the satisfaction of **The County**. In addition, the **Roofing Manufacturer** guarantees that the **Covered Roofing System** will provide a complete watertight assembly without detachment, or otherwise damaged roofing system components resultant of gale force winds and windstorms below hurricane force wind speeds up to 74 mph. The **Roofing Manufacturer** guarantees watertight performance for all aspects of the **Covered Roofing System** installation and including all roof membrane components, metal **Strip-In Flashings**, liquid flashings, approved sealants and pourable sealers for the **Term** of the Guarantee.
2. The **Roofing Manufacturer** shall be responsible for all covered **Repair Costs** during the Guarantee Term.
3. In the event an emergency condition exists which requires immediate repair to avoid damage to the **Building**, its contents or occupants, **The County** or its designated roofing contractor may perform reasonable, essential temporary repairs without affecting the Guarantee coverage. The **Roofing Manufacturer** will reimburse **The County** for those reasonable repair expenses only to the extent such expenses would have been the responsibility of **Roofing Manufacturer** under this Guarantee.

B. NOTICE:

1. **The County** shall notify the **Roofing Manufacturer** in writing within 30 days of discovery of any leaks or other Roofing Defect(s).
2. In response to timely notice, Roofing Manufacturer or its designee will investigate all reported leak or Roofing Defect(s) claims under this Guarantee.
    a. Should the investigation reveal that the leak or **Roofing Defect(s)** is excluded under the terms, conditions, and limitations set forth herein, the **Roofing Manufacturer** will advise **The County** within a reasonable time of the minimum repairs that **Roofing Manufacturer** believes are required to return the **Covered Roofing System** to a watertight condition or to remedy the **Roofing Defect(s)**. If **The County**, at his expense, promptly and timely makes such repairs to the **Covered Roofing System** then this Guarantee will remain in effect for the unexpired portion of its **Term**. Failure to make any of these repairs in a timely and reasonable fashion will void any further obligation of the **Roofing Manufacturer** under this Guarantee as to the damaged portion of the **Covered Roofing System** as well as any other areas of the **Roofing System** impacted by such failure.
    b. If, upon investigation, **Roofing Manufacturer** determines that the leak or **Roofing Defect(s)** is not excluded under the terms, conditions, and limitations set forth herein, then the **Roofing Manufacturer** will take prompt appropriate action to repair all **Roofing Defect(s)** or return the **Covered Roofing System** to a watertight condition

3. Any action by the **Roofing Manufacturer** to repair Roofing Defect(s) or a Covered Roof Leak shall be performed in accordance with the Manufacturer's installation requirements and the Roofing Standards of **The County** at the time of the installation.

C. PREVENTATIVE MAINTENANCE AND REPAIRS

1. **The County** agrees to perform regular inspections and maintenance and keep records of this work.
2. To keep this Guarantee in effect, **The County** must repair any conditions in the building structure or Covered Roofing System that are not covered by this Guarantee and may be threatening the integrity of the roofing materials. Any such repairs must be performed by an **Approved Contractor**.

D. EXCLUSIONS FROM COVERAGE

1. This Guarantee does not obligate the **Roofing Manufacturer** to repair or replace the Covered Roofing System, or any part of the Covered Roofing System, for leaks, Roofing Defect(s) or appearance issues resulting, in whole or in part, from one or more of the following:
   a. Natural disasters, including, but not limited to, the direct or indirect effect of lightning, tornadoes, hurricanes, earthquakes, flood, hail, storm, fire or other acts of God.
   b. Wind speeds greater than or equal to 74 mph, as recorded by the data collection point that reports to the National Weather Service (whether official or unofficial) located nearest to the **Building**.
   c. Act(s) of civil insurrection, war, terrorism, riot, explosion, vandalism or malicious mischief.
   d. Damage from impact of foreign objects, aircraft, vehicles, wind-blown debris or physical damage caused by any intentional or negligent acts, accidents, misuse, abuse or the like.
   e. Damage caused by ponding water or inadequate drainage, unless specifically approved, for no longer than 48 hours after the end of a precipitation event, or other similar conditions resulting from improper drainage.
   f. Damage from insects, animals or vermin.
   g. Damage or exposure to **Pollutants**, or the reactions between them.
   h. Deterioration to metal materials and accessories caused by marine salt water, atmosphere, or by the regular spray of either salt or fresh water.
   i. Damage resultant of installation, maintenance, repair, movement, placement, storage or deterioration of any **Accessory Roof Components** or **Roof Top Objects**.
   j. Settlement, deflection, movement, moisture content, inadequate attachment, or other deficiencies of the roof deck, pre-existing roof system, walls, foundations or any other part of the building structure, insulation or other materials underlying the **Covered Roofing System**.
   k. Inaccessible leaks concealed below rooftop equipment, overburden, and all other products applied to or through the **Covered Roofing System** or flashing materials.
   l. Construction generated moisture, condensation, or infiltration of moisture in, from, through or around the walls, copings, rooftop hardware or equipment, skylights, building structure or underlying or surrounding materials.
   m. Damage caused by unauthorized repairs, alterations or modifications or subsequent work on or through the **Covered Roofing System** done without prior written approval by the **Roofing Manufacturer** of the methods and materials to be used.

n. Damage or extraordinary wear of the roof surface as a result of traffic beyond that considered common to the installation, maintenance and repair of **Covered Roofing Systems** and related components, including the use of the roof as a storage area or recreational surface or for any other similar purposes.

o. Defects in or faulty/improper architectural, engineering or design flaws of the **Covered Roofing System** or **Building**, including, but not limited to, design issues arising out of improper climate or **Building Code** compliance, improper selection of materials for the assembly, or the failure to accurately calculate wind uplift and/or applicable design loads.

p. Failure by **The County** to use reasonable care in maintaining the **Covered Roofing System**.

2. The **Roofing Manufacturer** does not undertake any analysis of the architecture or engineering required to evaluate what type of system, installation or material is appropriate for a building and makes no warranty express or implied as to the suitability of its products for any particular structure. Such a determination is the responsibility of the architect, engineer or design professional.
3. During the entire Term of the Guarantee and subject to the visitor access restrictions required at each facility, **Roofing Manufacturer's** designated representatives or employees shall have coordinated access to the installation location(s) for inspection, audit, or repair purposes during regular business hours, or as mutually agreed.

E. SUSPENSION OF GUARANTEE

1. If **The County** does not perform all of it guarantee obligations and comply with the terms and conditions required of it under the Guarantee, this Guarantee and the Roofing Manufacturer's obligations under it shall be suspended. Notice of suspension shall be in writing and submitted to The Lee County Board of County Commissioners ("The County").
2. Guarantee coverage may be reinstated by performing the required actions and notifying the Roofing Manufacturer that the work has been completed or addressed.

F. DISPUTES:

1. The parties agree that, as a condition precedent to litigation, any controversy or Claim relating to this Guarantee shall be first submitted to mediation before a mutually acceptable mediator. In the event that mediation is unsuccessful, the parties agree that neither one will commence or prosecute any lawsuit or proceeding other than before the appropriate state or federal court in the State of Florida. This Guarantee shall be governed by the laws of the State of Florida, without regard to principles of conflicts of laws. Each party irrevocably consents to the jurisdiction and venue of the above identified courts.

G. LIMITATION OF LIABILITY:

1. **Roofing Manufacturer** shall be liable, without limitation of cost, for the repair or replacement of the Covered Roofing System and any Roofing Defect(s) by an **Approved Contractor** during the Guarantee Term.
2. **Roofing Manufacturer** shall not be liable for any consequential, special, incidental, or other damages including, but not limited to loss time or profits or inconvenience, or damages to the building or its contents, substrates, or the roof deck.

3. **The County** shall be responsible for the costs associated with the removal and replacement, as well as any damage caused by the removal and replacement, of any overburden, super-strata or overlays, either permanent or temporary, which include but are not limited to: structures or assemblies added after installation, fixtures or utilities on or through the Covered Roofing System or material, support platforms or bases for Photovoltaic (PV) Arrays (a.k.a. – Solar Panels), garden roofs, decks, patios or any other obstacles that impede access, clear observation, investigation or repairs to the roof system or materials, excluding ballast or pavers accepted by Roofing Manufacturer or overburden specifically included as part of the roofing assembly.

H. DEFINITIONS:

1. Accessory Roof Components: Drains, drain leaders, wood nailers, roof decks, counter flashing, mechanical curbs and supports, guards, walkways (except when part of the roofing membrane) and sheet metal work.
2. Approved Contractor: A roofing contractor authorized by the Roofing Manufacturer to install the Covered Roofing System and perform all warranted and non-warranted (routine maintenance) repairs to the Covered Roofing System and all related components, without jeopardizing coverage.
3. Building: The facility and roof area where the Work covered by this Guarantee was performed.
4. Building Code: Any law, statute, rule, regulation, ordinance or order of a federal, state, county, local government, or the Florida Department of Education, including those County-specific requirements relating to the design, specifications, materials or construction of any Covered Roofing System.
5. Claim: County request(s) for corrections to Covered Roof Leaks or other Roofing Defect(s) defined in A.1 (above) under this Guarantee.
6. Covered Roof Leaks: Any intrusion or admission of water through an opening, separation or other similar defect into the Building, or within the Covered Roofing System, or other roof defects defined in A.1 (above) related to the Covered Roofing System, including water intrusion through Strip-In Flashings.
7. Covered Roofing System: The entire roofing assembly or roofing system covered by this Warranty, to include: the flexible or semi-flexible roofing components or waterproofing, all new membrane materials, insulation, cover boards, base flashings up to 12” high, wall flashings up to 60” high, liquid flashings, sealants, fasteners and plates, walkway membranes, and any other roof system component from the roof deck to the finished roof membrane wearing surface supplied by the Roofing Manufacturer, including materials not supplied by the Roofing Manufacturer but pre- approved for use within the Covered Roofing System.
8. Excessive Repairs: Any reoccurring similar defect(s) which The County cannot reasonably expect a final and acceptable solution which resolves the defect.
9. Installing Contractor: The Approved Contractor responsible for the installation of the Covered Roofing System and all related components and that can make repairs that will be covered under Roofing Manufacturer’s Guarantee.
10. Owner: Lee County Board of County Commissioners.
11. Pollutants: Solid, liquid or gaseous irritants or contaminates, including, but not limited to, petroleum products, animal fat, smoke vapors, soot, fumes, acids, alkalis, corrosive chemicals and other materials defined as damaging to the Covered Roof System as defined by the Roofing Manufacturer’s published information.

12. Premature Deterioration: The extraordinary wear or uncommon deterioration of the exposed roofing membranes and base flashings due to excessive granule loss or similar manufacturing defect(s) under normal weathering, maintenance, and traffic conditions.
13. Repair Costs: All costs and expenses relating to the repair of any Covered Roof Leak, including costs of labor and materials without monetary limitation to effect all necessary Warrantable Repairs.
14. Roofing Defect(s): Workmanship and installation errors by the Installing Contractor.
15. Roofing Manufacturer: The roofing materials manufacturer, stated above, that produces or sells the primary roofing materials used on the project and underwrites this Guarantee covering those materials.
16. Roof Section: A separating or division of a roof area by existing expansion joints, parapet walls, flashing (excluding valley), difference of elevation (excluding hips and ridges), roof type or legal description; not including the roof area required for a proper tie-off with an existing system.
17. Roof Top Objects: Mechanical, electrical, plumbing, heating, and air conditioning equipment, lightning protection components, sprinklers, antennas, frameworks, signs, traffic surfaces (other than those which are intentionally part of the Covered Roofing System), water towers, structures, equipment, and other objects on or through the Covered Roofing System (other than those which are intentionally part of the Covered Roofing System).
18. Strip-In Flashings: Metal strip-in flashings installed per Roofing Manufacturer's installation instructions and per SMACNA standards.
19. Term: The term of this Guarantee shall be for the period set forth above, not less than twenty years.
20. Third-Party: Any person, firm, partnership, corporation, company, or other entity or group other than The County, Installing Contractor, or Roofing Manufacturer.
21. Warrantable Repair: Repairs to any defect in materials or workmanship of the Installing Contractor
22. for work performed under their contract for services for the warranted project.

DISTRIBUTION: *[Provide one (1) original and two (2) copies]:*

ORIGINAL and one (1) Copy: Owner
COPY: Design Professional

INSERT HERE ROOF PLAN(S) OR AERIAL PHOTO(S) DEPICTING ALL ROOF AREAS COVERED BY THIS WARRANTY

ECTION 07 52 00 SINGLE PLY ROOFING SYSTEM

PART 1 – GENERAL

1.1 RELATED DOCUMENTS
Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY
Work includes the replacement of existing roof systems and related work in selected areas at the Facility.

1.3 WORK COVERED BY THE CONTRACT DOCUMENTS
Project Description: Roof replacements as indicated on the drawings. The work includes removal of the existing roof systems to the metal decks, and installation of new insulation and single ply mechanically attached roof systems.

1.4 WORK RESTRICTIONS AND SCHEDULING OF THE WORK
Refer to the Summary of Work section of these specifications for information related to work hours, restrictions, and scheduling.

1.5 REFERENCES
A. ASTM International (ASTM):
ASTM D6754 - Standard Specification for Ketone Ethylene Ester Based Sheet Roofing

B. American Society of Civil Engineers (ASCE):
ASCE 7 - Minimum Design Loads for Buildings and Other Structures

C. FM Approvals (FM):
1. FM Standard 4470 - Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.
2. Loss Prevention Data Sheets 1-28, 1-29

D. FBC - Florida Building Code incl FBC Florida Product Approval database

E. UL - Fire Resistance Directory:
UL-790 - Standard Test Method for Fire Tests of Roof Coverings

1.6 SUBMITTALS:
A. Process: Refer to the Submittal Procedures section of these specifications

B. Miscellaneous Submittals
1. Roofing Manufacturer's written statement confirming that the information in the Contract Drawings and Specifications are accepted by the Manufacturer with no exceptions, and that the full warranty will be issued as specified.

Note: Bidders are required to provide this statement with the Bid.

2. Most recent published technical literature and guide specifications issued by the roofing system Manufacturer.
3. Preparation instructions and recommendations
4. Storage and handling requirements and recommendations
5. Safety Data Sheets (SDS) relating to all products, chemicals and solvents.
6. Certification that the proposed roofing system complies with building code requirements.

C. Shop Drawings:
   1. Include details of materials, construction and finish. Include relationship with adjacent construction. Details are to match the construction documents, without exception. **See item B.1 above**.
   2. Dimensioned plans showing slopes, crickets, drains, scuppers, etc.
   3. Complete list of accessories or materials which are not manufactured or expressly authorized for use in the roofing Manufacturer's literature

1.7 QUALITY ASSURANCE:

A. Roofing Systems shall be installed only by a Contractor authorized by the roofing system Manufacturer (hereinafter "Contractor" or "Installer").

B. Authorized Contractor's personnel shall have received specialized training by the roofing system Manufacturer.

C. Roofing Systems shall be installed in accordance with these documents and the roofing Manufacturer's installation instructions.

D. There shall be no deviations from approved Contract Specifications and Drawings without prior written approval by The County or their representative.

E. Any work found to be substandard or in violation of the Manufacturer's specifications shall be subject to rejection including complete removal and replacement with new materials at the expense of the Contractor.

F. Manuracturer Inspections:
Quality assurance inspections of the roof system shall be performed by the roofing system Manufacturer for acceptance and approval. These inspections shall be performed at (minimum) 10% completion, 50% completion and upon certification by the Contractor that the roofing system is 100% complete in accordance with the Contract Drawings and Specifications, and all field welds have been probed and inspected.

All field seams shall be visible at the time of final inspection.

1.8 COORDINATION:

Subsequent to submittal approval and prior to starting any work on site, the Contractor is required to coordinate and schedule a pre-roofing conference. Contractor, subcontractors, The County's Representative, and Architect are to be invited to attend. The Contractor is required to distribute meeting minutes to all invitees within 3 days after the meeting.

1.9 DELIVERY, STORAGE AND HANDLING:

A. Deliver all materials to the job site in Manufacturer's original, unopened containers, with legible labels and in sufficient quantity to allow for continuity of work.

B. Store and handle in strict compliance with Manufacturer's written instructions and recommendations.
   1. Store rolls of membrane lying down, elevated above the roof deck and completely protected from moisture with tarpaulins. Manufacturer's packaging is not considered adequate for outdoor storage.
   2. Elevate insulation and cover board materials on pallets and fully protect from moisture with tarpaulins. Manufacturer's packaging is not considered adequate protection from moisture.
   3. Store adhesives and sealants between 50 and 80-degrees F (10 and 26.7 degrees C) prior to use.

4. Store flammable materials in cool dry areas away from sparks and open flames.
5. Follow all precautions as outlined in Manufacturer's material safety data sheets.

C. Materials, having been determined by The County or their representative to be damaged, shall be immediately removed from the construction site and replaced at no cost to The County.

1.10 JOB CONDITIONS

A. Safety:
1. Take necessary precautions regarding worker health and safety.
2. Comply with OSHA requirements for roof construction and fall protection.
3. Store flammable liquid and materials away from open sparks, flames and extreme heat.
4. Take necessary precautions when using solvents and adhesives.
5. Daily site cleanup is required to minimize debris and hazardous congestion.

B. Protection:
1. Schedule installation sequence to limit access and utilization of installed membrane for material storage, construction staging, mechanical and excessive foot traffic.
2. Provide proper protection on newly completed roofing.
3. Minimize traffic on freshly laid roofing.
4. Protect walls, rooftop equipment, rooftop piping and conduit, and other building components and site features during installation.

C. Additional Precautions:
1. Adverse weather conditions, e.g. extreme temperature, high winds, high humidity and moisture, could have a detrimental effect on adhesives, general production efforts and the quality of the finished installation.
2. Daily production schedules shall be limited to what can be made 100 percent watertight at the end of each day, including flashing and night seals.
3. All surfaces to receive the new roof system, including insulation and flashing, shall be free from all dirt, debris and be thoroughly dry.
4. Comply with local EPA requirements as published by local, state and federal authorities.
5. During the construction process temporary ballast, especially in the perimeter and corner areas may be required to provide protection against high winds.

1.11 DESIGN CONDITIONS

A. Roofing Manufacturer’s Project Registration must be completed, signed by the Contractor, submitted to and approved by the Manufacturer before any consideration for warranty or the release of any materials can be authorized.

B. Exterior Fire Test Exposure: Roof system shall achieve a FM or UL Class rating for roof slopes indicated as follows:
1. FM Approvals Class A Rating.
2. Underwriters Laboratory Class A Rating

C. Design Requirements:
1. Uniform Wind Uplift Load Capacity:
Installed roof system shall withstand negative (uplift) design wind loading pressures complying with Design Code: ASCE 7, Method 2 for Components and Cladding.
2. Dead Load:
Installation of new roofing materials shall not exceed the dead load capacity of the existing roof structure.

1.12 WARRANTY

A. Execute and submit the Roofing Installer and Manufacturer Warranties provided in this Project Manual.

B. Refer to the Warranties section of these Specifications.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Basis of Design Manufacturer: FiberTite, Seaman Corporation, located at: 1000 Venture Boulevard; Wooster, OH 44691-9360; Toll Free Tel: 800-927-8578; Tel: 330-262-1111; Fax: 800-649-2737 Email: (marketing@seamancorp.com); Web: https://www.fibertite.com

Basis of Design System: Fibertite FL4930-R21 Assembly S-340. The system is to be designed to resist 180 mph wind speed. Contractor is required to provide site-specific engineering for the mechanical attachment.

Equivalent products by other manufacturers will be considered for approval.

2.2 GENERAL

A. Roofing system is required to have Florida Product Approval.

B. Refer to the Structural Drawings for existing conditions.

C. All products and components for the roofing system shall be supplied by the roof membrane manufacturer to the extent possible.

D. Other components provided by other manufacturers shall be submitted to the roofing manufacturer for review for warranty considerations.

E. Contact the roofing system manufacturer for information regarding compatible substrates such as insulation and coverboard.

2.3 MEMBRANE

A. Standards Compliance: ASTM D6754 - 15 Standard Specification for Ketone Ethylene Ester (KEE) Based Sheet Roofing.

B. Physical Properties: See associated data sheets.

C. Acceptable Substrates include:
   1. Rigid insulation or cover board approved by the membrane manufacturer.
   2. Insulated Steel Decking.

D. Membrane:
   Basis of Design: FiberTite-XT 50-mil Membrane: Nominal 50 mil ketone ethylene ester (KEE) membrane reinforced with 6.5 oz per sq. yd knitted polyester fabric.

E. Sheet Flashing:
   Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness and color as roofing membrane. Include factory pre-formed inside and outside corners, pipe boot flashings, "T" lap patches and other factory fabricated sheet flashing accessories.

2.4 ANCILLARY MATERIALS

A. Roof Drains:
   Basis of Design: Smith 1010, CID, locking type

B. Flashing Adhesive: as recommended by the roof membrane manufacturer.

C. Fasteners:
   1. Securing membranes to steel decks:
      Equivalent to Basis of Design: FiberTite MAGNUM Series: No. 15-13, buttress threaded, No. 3 Phillips head fastener constructed of case-hardened carbon steel with a reduced diameter drill point and corrosion resistant coating.
   2. Securing insulation to steel decks:
      Equivalent to Basis of Design: FiberTite-HD: No. 14-13, heavy duty threaded steel No. 3 Phillips truss, self-tapping corrosion resistant fastener.
   3. Secure insulation, base sheet or membrane to decks.:
      Equivalent to Basis of Design: FiberTite Peel Rivets: Threadless, high magnesium alloy fastener.
   4. Secure membrane to existing metal roofing system's structural members.
      Equivalent to Basis of Design: FiberTite Purlin Fasteners.

D. Stress Plates used to anchor membranes: as recommended by the roofing system manufacturer

E. Additional Components:
   1. Flashing Terminations Sealant: roof system Manufacturer’s single-component gun-grade polyether.

   2. Sealant for Pitch Pans (where pitch pans are specifically approved): roof system Manufacturer’s single -component self-leveling polyether.

   3. Fabricated Metal Flashing where indicated to be Membrane-coated metal: Membrane-coated 24-gauge hot dipped G-90 laminated with a 0.02 inch polymeric coating.

   4. Pre-molded vinyl compound flashings: Injection molded vent stack, split Flash and inside / outside corner flashings.

   5. Non-Reinforced Membrane: Field fabrication membrane, 60 mil (1.5 mm) non-reinforced vinyl membrane.

   6. Primer: A blend of synthetic polymers, solvents and resins, low VOC primer for use with self-adhered vapor retarder.

   7. PMMA: rapid-curing formulation of polymethyl-methacrylate (PMMA) liquid flashing resin. Use in combination with reinforcing fleece to form a flexible, monolithic, reinforced membrane for aberrant flashing and detail applications.

   8. Metal Primer: An acrylic primer used with various metal substrates to promote adhesion of PMMA waterproofing and surfacing components

   9. Fleece: non-woven polyester reinforcement used in PMMA liquid flashing applications.

   10. Walkway and Protection Pads: roof system manufacturer’s high grade walkway and protection material with slip-resistant design.

   11. Termination Bar: Membrane flashings restraint and termination seals. 0.125 x 1 x 120 inch 6060-T5 extruded aluminum bar with pre-punched slots, 8 inches on center.

   12. Metal Fascia System: Two piece "Snap-on" pre-formed, architectural Kynar metal edge systems (if indicated)

   13. Insulation: Polyisocyanurate

14. Adhesive: roofing system manufacturer's dual component, single bead (ribbon applied), non-solvent, elastomeric, urethane adhesive, specifically designed for bonding single or multiple layers of roof insulation and insulation composites or cover boards to structural roof decks and base sheets.

15. Seam Cleaner: roofing system manufacturer's seam cleaner to be used with clean white cotton cloths or rags to clean contamination from the seam areas of the membrane prior to welding.

16. T Joint Covers: Pre-cut 4 x 4 inch 60 mil non-reinforced membrane to reinforce areas where three overlapping sheets of membrane intersect.

2.5 INSULATION

A. Insulation shall be installed to provide a suitable surface for the roofing system and to meet the specified thermal value.

B. Products must be pre-approved in writing by the roofing system manufacturer and comply with minimal characteristics and classification listed for the products below:
   1. Polyisocyanurate Rigid Insulation (ASTM C1289)
   2. Gypsum Core Cover Board: USG Securock or approved equivalent product.

PART 3 EXECUTION

3.1 GENERAL

A. Authorized Contractor: see Paragraph 1.7 Qualify Assurance.
B. Application of materials constitutes an agreement that the Contractor has inspected and determined that the substrate is suitable for installation of the roofing system.

3.2 SUBSTRATE PREPARATION (REROOFING)

A. Type of Deck: Steel, existing. Refer to the Structural Drawings and Fastener Testing for more information. Fastener Testing is provided at the end of this Project Manual.

B. Examine surfaces for inadequate anchorage, low areas that will not drain properly, foreign material, unevenness or any other defect which would prevent the proper execution and quality application roofing system as specified.

C. Prepared substrate shall be smooth, dry, and free of debris or any other irregularities which would interfere with proper installation.

D. Do not proceed with any part of the application until all defects and preparation work have been corrected.

E. Removal of Existing Roof Systems:
   1. Remove all existing roofing materials, insulation, flashing, metal and deteriorated wood blocking and legally dispose.
   2. Remove only enough roofing to accommodate the day's work and ensure the exposed area can be made 100 percent watertight at the end of the day or first sign of inclement weather.

F. Steel Deck:
   1. Deteriorated decking shall be removed and replaced with like kind, refer to the Drawings and Unit Cost Allowances section of this specification.
   2. Areas of structurally acceptable steel decking exhibiting slight surface rust shall be properly cleaned, primed and painted prior to installing the approved insulation, refer to the Drawings and Unit Cost Allowances section of this specification.
   3. All decking shall be inspected for proper attachment and excessive deflection that would compromise the uplift performance of the new mechanically attached roofing system.

4. Attachment and deflection deficiencies shall be repaired and brought into compliance with current, local building code requirements.

3.3 WOOD NAILERS

A. Refer to Division 06 specifications.

B. Install treated lumber level with insulation layer or adjacent construction plus or minus 0.25 inch. Install continuous treated wood nailers at all perimeters, around roof projections and penetrations as shown in approved details.

C. Wood Nailers Installed Directly on the Substrate: Carefully examine substrates to confirm the entire area provides a suitable fastening surface. Repair defects by appropriate trades prior to installation.

D. Nailers (W x H): Size 3.5 x 1.5 inches minimum, or as indicated on the Drawings. Installed and anchored in such a manner to resist a force of 250 lbs per linear foot of wood blocking in any direction.

E. Nailers for parapets, curbs and expansion joints: refer to the Contract Drawings for details.

3.4 ROOF INSULATION AND COVERBOARD INSTALLATION

A. General:
   1. Roof insulation and coverboards shall be installed whereby the long dimension of the boards run in parallel alignment and the short dimensions are staggered.

   2. Insulation and coverboards shall be installed with minimum joint dimensions and shall be tightly butted where possible. Maximum joint widths shall be 0.375 inch.

   3. Damaged corners shall be cut out and replaced with an insulation piece a minimum of 12 x 12 inch. Pieces that are cut from larger panels and are smaller than one square foot are not acceptable.

   4. Install no more than can be covered during the same working day.

   5. Where required, taper roof insulation to drain sumps using tapered edge strips. If an insulation layer is 1.5 inches or less, taper 12 inches from the drain bowl. If insulation thickness exceeds 1.5 inches, taper 18 inches from the drain bowl. All taper boards or pieces must be adhered or mechanically fastened with a minimum of two fasteners per board.

   6. When a coverboard or multiple layers are installed each layer shall be offset from the previous layer a minimum of 12 inches on center.

   7. At the end of each working day, provide a watertight cover on all unused insulation as to avoid moisture penetration.

B. Preliminary Attachment of Insulation for Mechanically Attached Roofing Systems:
   1. Insulation and coverboard shall be applied to or installed over properly prepared and preapproved substrates, free of any debris, dirt, grease, oil or moisture.

   2. All fasteners and stress plates for the mechanical attachment of insulation and cover board materials shall be provided by or approved by the roofing system manufacturer.

   3. All fasteners and stress plates shall be FM approved for mechanical attachment of insulation and comply with FM Standard 4470 for corrosion resistance.

4. General 1-90 attachment criteria require preliminary attachment for insulation and cover boards for mechanically attached membrane roofing systems. Insulation and cover board within the field of the roof requires 6 fasteners and stress plates per 48 x 96 inches insulation board.

5. Perimeter areas do not require an increase in the fastener density when the membrane is mechanically attached.

6. Corner areas do not require an increase in the fastener density when the membrane is mechanically attached.

7. Fasteners shall be installed straight, tight and perpendicular to the decking complying with minimum penetration requirements of specific deck types. Do not over-torque fasteners.

8. Fasteners shall be installed using depth sensing tool attachments to ensure proper installation.

3.5 INSTALLATION OF MEMBRANES

A. Quality Control:
   1. It is the responsibility of the Authorized Contractor to initiate and maintain a Quality Control program to govern all aspects of the installation.

   2. The project foreman and or supervisor will be responsible for the daily execution of the Quality Control program which will include but is not limited to the supervision, inspection and probing of all heat welded seams incorporated within roofing system.

   3. If inconsistencies in quality of the application of the composite, membrane or welds are found, work shall cease until corrective actions are taken to ensure the continuity of the installation.

B. General:
   1. Coordinate work ensuring that sequencing of installation promotes a 100 percent watertight installation at the end of each day.

   2. Roofing systems to be designed in compliance with the procedures outlined within the current publication of ASCE 7. Alternative designs may be determined using the criteria within FM Loss Prevention Data.

   3. Roofing system may utilize either 74-in or 100-in roll goods.

   4. Restrictions regarding outside ambient air temperature are relative only to the exposure limits of the workers or adhesives when necessary.

C. Membrane Mechanically Attached (Class 1 Decks):
   1. Rolls of roof membrane are to be positioned and installed straight and snug but not taut. Stretching of the membrane places undue stress on the mechanical fasteners.

   2. The properly positioned membrane shall be attached using the proper fasteners and stress plates installed through the membrane and insulation assembly and engaging the structural decking.

   3. The stress plates shall be installed straight and parallel to existing structural purlin members. All stress plates must set completely on the membrane allowing a minimum of 0.5 inch (13 mm) from the edge and allow sufficient room to facilitate welding.

4. Fastener row spacing, and intervals shall be established to resist design pressures, determined in compliance with procedures outlined within the current publication of ASCE Standard 7. Alternative designs may be determined using the criteria within Factory Mutual Research Loss Prevention Data.

5. Table MA 01/21-1 lists general default attachment requirements for the field of the roof, as applied to structural roof decks referred to as Class 1; minimum 3/4-inch (19 mm) plywood, minimum 22-gauge steel or minimum 3,000 psi (20684 kPa) concrete.

6. Perimeter zone and corner zone enhancement is required on all mechanically fastened roofing systems. Perimeters and corners zones are defined on the Contract Drawings.

7. Projects having variable roof levels shall treat the outer boundary of each level as a perimeter. Internal expansion joints, firewalls or adjoining building walls higher than 3 feet are not considered perimeter areas.

8. Perimeters and corners may be enhanced by:
   a. Installing half rolls of membrane fastened as prescribed by project requirements.
   b. Adding additional rows of fasteners through the top of the membrane system within the perimeter at prescribed intervals area and sealing with a 6-inch strip.

9. Confer with the roofing system manufacturer for assistance with determining acceptable fastener patterns.

10. Table MA 01/21 - 1:
    a. Steel: 22 Gauge Greater:
       1) Design Pressure: ≤ -30 psf. (1.436 kPa) FM 1-60.
          a) Steel Deck: 80 ksi (551.6 mPa).
             Row Intervals / Lap Structure: 95 inches (2413 mm) on center - open.
             Lap Fastening: 18 inches (457 mm) on center.
          b) Steel Deck: 33 ksi (227.5 mPa).
             Row Intervals / Lap Structure: 95 inches (2413 mm) on center - open.
             Lap Fastening: 12 inches (305 mm) on center.
       2) Design Pressure: > -30 but ≤ -45 psf. (2.155 kPa) FM 1-90
          a) Steel Deck: 80 ksi (551.6 mPa).
             Row Intervals / Lap Structure: 95 inches (2413 mm) on center - open.
             Lap Fastening: 12 inches (305 mm) on center.
          b) Steel Deck: 33 ksi (227.5 mPa).
             Row Intervals / Lap Structure: 69 inches (1753 mm) on center - open.
             Lap Fastening: 12 inches (305 mm) on center.

D. Welding:
   1. General:
      a. Welding work requires coordination with and approval by the on-site Facility Manager to evaluate fire risks associated with errant sparks or flames due to flammable materials within the buildings. The Contractor shall schedule a meeting specifically for the purpose of coordination with the Facility Manager before starting work.
      b. Field seams exceeding 10 ft in length shall be welded with an approved automatic welder.
      c. Field seams must be clean and dry prior to initiating any field welding.
      d. Remove foreign materials from the seams (dirt, oils, etc.) with the Manufacturer's Seam Cleaner or authorized alternative.
      e. Use clean white cotton cloths and allow approximately five minutes for solvents to dissipate before initiating the automatic welder. Do not use denim or synthetic rags for cleaning.
      f. Welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.

g. Contaminated areas within a seam will inhibit proper welding and will require a membrane patch or strip.

2. Hot Air Hand Welding:
   a. The lap or seam area of the membrane may 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 handheld hot air welder shall be inserted into the lap at a 45-degree 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 1.5 inch (38 mm) wide nozzle, to create a homogeneous weld, a minimum of 1.5 inch (38 mm) in width.
   d. Smaller nozzles may be used for corners, and another field detailing, maintaining a minimum 1-inch (25 mm) weld.

3. Automatic Hot Air Machine Welding:
   a. Proper welding of the roofing membrane can be achieved with a variety of automatic welding equipment.
   b. Follow all Manufacturers' instructions for the safe 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 ensure a consistent electrical supply, without fluctuations that can interfere with weld consistency.
   e. Properly welded seams shall utilize a 1.5 inch (38 mm) wide nozzle, to create a homogeneous weld, a minimum of 1.5 inch (38 mm) in width.

E. Inspection:
1. The job foreman or supervisor shall initiate daily inspections of all completed work which shall include but is not limited to, the probing of all field welding with a dull pointed instrument to assure the quality of the application and ensure that any equipment or operator deficiencies are immediately resolved.

2. Ensure all aspects of installation (sheet layout, attachment, welding, etc.) are in strict accordance with the Manufacturer’s most current Specifications.

3. Excessive patching of field seams because of inexperience or poor workmanship will not be accepted.

4. Any deviation from pre-approved specifications and details requires written authorization from roof system Manufacturer prior to application to avoid any warranty disqualification.

5. It is the Contractor, job foreman, supervisor, or quality control personnel's responsibility to perform a final self-inspection on all seams prior to requesting the substantial completion inspection.

F. T-Joint Cover Installation:
1. Installation of T-Joint Covers is mandatory on membrane systems greater than nominal 50 mil or where T-Joints have not been properly sealed to exhibit a minimum 1.5 inch defined crease along the T-Joint.

2. Install T-Joint Covers, centered and aligned so edges are parallel to roof system seams.

3. The T-Joint Cover shall be 100 percent welded.

3.6 FLASHING

A. Adhesives
   1. When using adhesives outside ambient air temperature shall be above 40 degrees F (4.4 degrees C). Curing or drying time of the adhesive will be affected by ambient temperatures and must be taken into consideration.

   2. Humidity can affect the drying time of solvent borne adhesives or cause condensation to form on the newly applied adhesive.

   3. No moisture may be present on the adhesives prior to mating or application of membranes.

B. Clean vents, pipes, conduits, tubes, walls, and stacks to bare metal. Protrusions must be properly secured to roof deck with approved fasteners. Remove and discard lead pipes and drain flashing. Flash penetrations according to approved details.

C. Remove loose or deteriorated cant strips and flashings.

D. Flash curbs, parapets and interior walls in strict accordance with the details on the Contract Drawings.

E. All flashing shall be adhered to properly prepared, approved substrates with the roofing system manufacturer's approved bonding adhesive, applied in sufficient quantity to ensure total adhesion.

F. The base flange of all membrane flashing shall extend out on to the plane of the deck, beyond the wood nailers to a maximum width of 8 inches.

G. 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.

H. When using adhesive on vertical wall flashings, height shall not exceed the manufacturer's limit without supplemental mechanical attachment of the flashing between the deck and the termination point of the flashing.

I. Complete all inside and outside corner flashing details with preformed corners or an approved field fabrication detail.

J. Probe all seams with a dull, pointed probe to ensure the weld has created a homogeneous bond.

K. Install penetration accessories in strict accordance with approved details. Ensure penetration accessories have not impeded in any way the working specification.

3.7 METAL FLASHING

A. Refer to the Sheet Metal Flashing and Trim section of these Specifications and the Contract Drawings.

B. Fasten all metal flashing to wood nailers or approved substrate with fasteners approved by the roofing system manufacturer.

C. Break and install membrane coated metal, where shown, in accordance with approved details, ensuring proper attachment, maintaining 1/2-inch expansion joints and the installation of a minimum 2-inch bond breaker tape where required.

D. Roof Drains:
   1. Flash all roof drains in accordance with the Contract Drawings and membrane manufacturer requirements.
   2. Replace all worn or broken parts that may cut the membrane or prevent a watertight seal. This includes the clamping ring and strainer basket.
   3. Replace all drain bolts or clamps used to hold the drain compression ring to the drain bowl.
   4. Non-reinforced 60 mil membrane shall be used for flashing the drain assembly.
   5. The drain target sheet should be sized and installed to provide for a minimum of 12 inches of exposed 60 mil on all sides of the drain.

E. PMMA Liquid Flashing
   For aberrant penetrations and pitch pan avoidance, follow the manufacturer's guidelines and details for substrate preparation and installation of PMMA liquid flashing on pre-authorized aberrant penetrations.
   1. Proper mechanical restraint is required for the roof membrane around the penetration(s) prior to the installation of the PMMA liquid Flashing.

   2. Metal Primer: is required for all metal tie-ins and applications with high mechanical stresses, on detail work with small contact areas, metal components with large linear thermal expansion or edge metal terminations.

F. Pitch Pans:
   1. Pitch Pans are disallowed except where specifically approved. Where approved comply with the following:

   2. Fabricate pitch pans from membrane-covered metal, installed in accordance with the manufacturer's details, ensuring proper attachment and maintaining a minimum of 2-inch clearance around the penetration.

   3. Fill with non-shrinking grout to within 1 inch of the top of the pan. Allow the grout to dry and fill remainder of the pan with manufacturer-approved pourable sealant.

3.8 EXPANSION JOINTS

Flash expansion joints in accordance with the Contract Drawings and membrane manufacturer requirements. Fasten all expansion joint material according to roof system Manufacturer's Specifications. Ensure the expansion material has sufficient material to expand to the widest point in expansion without causing undue stress on the expansion joint material.

3.9 SEALANTS

A. Apply Manufacturer-approved sealants where shown and required. Sealants are to shed water. Follow the roofing system Manufacturer's instructions and installation guides.

B. Use primer when recommended by the roofing system Manufacturer.

3.10 TEMPORARY SEALS

A. At the end of each working day or at the sign of rain, install temporary, 100 percent watertight seals where the completed new roofing adjoins the uncovered deck or existing roof surface.

B. The Contractor shall create and maintain the temporary seal in such a manner to prevent water from traveling beneath the new or existing roof system.

C. If water is allowed to enter beneath the newly completed roofing, the affected areas shall be removed and replaced at no additional expense to The County.

D. Prior to recommencing the work, cut out and dispose of any contaminated membrane, insulation, sealant and other materials.

3.11 WALKWAYS

A. Provide and install manufacturer's walk pads where shown on the Contract Drawings.

B. Walk Pad Installation:
   1. Roofing membrane to receive walkway material shall be clean and dry.

   2. Cut and position the walk pad material as shown.

   3. Hot air weld, the entire perimeter of the walk way to the previously cleaned roofing membrane. Avoid excessive heating of the walk way material to prevent scorching the underlying roofing membrane.

3.12 LIGHTNING PROTECTION

A. The lightning protection must be reinstalled in such a manner that base plates, air terminals and cables do not penetrate the roofing membrane without the use of pre-approved flashing details.

B. Cables and air terminals may be attached to the membrane using base plates and roofing manufacturer-approved sealant. Contact the roofing system manufacturer for specific adhesive recommendations.

C. Recommendations regarding the selection of adhesives or alternative affixing of lightning protection systems to the roofing membrane does not in any way imply a warranty covering their performance or ability of the adhesives to remain affixed to the roofing membrane.

3.13 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 ensure a 100 percent watertight installation.

3.14 FINAL INSPECTION FOR WARRANTY

A. At 100% completion, the Contractor is required to schedule the Substantial Completion inspection with the Roofing System Manufacturer's Technical Services Department to review the installation and verify compliance with the Manufacturer's requirements.

   The Substantial Completion inspection is the third and final inspection by the Roofing System Manufacturer. Refer to paragraph 1.7 Quality Assurance. It is the Contractor's responsibility to ensure that these inspections are performed and that reports are produced by the Manufacturer's inspection team for inclusion in the Project Close Out Documents.

B. Any corrections necessary for compliance with the specifications and acceptance for warranty will be noted on the Substantial Completion Inspection Report.

C. Upon completion of all punch list items and final acceptance of the installation, a warranty will be issued.

END OF SECTION

ECTION 07 52 00 SINGLE PLY ROOFING SYSTEM

PART 1 – GENERAL

1.1 RELATED DOCUMENTS
Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY
Work includes the replacement of existing roof systems and related work in selected areas at the Facility.

1.3 WORK COVERED BY THE CONTRACT DOCUMENTS
Project Description: Roof replacements as indicated on the drawings. The work includes removal of the existing roof systems to the metal decks, and installation of new insulation and single ply mechanically attached roof systems.

1.4 WORK RESTRICTIONS AND SCHEDULING OF THE WORK
Refer to the Summary of Work section of these specifications for information related to work hours, restrictions, and scheduling.

1.5 REFERENCES
A. ASTM International (ASTM):
ASTM D6754 - Standard Specification for Ketone Ethylene Ester Based Sheet Roofing

B. American Society of Civil Engineers (ASCE):
ASCE 7 - Minimum Design Loads for Buildings and Other Structures

C. FM Approvals (FM):
1. FM Standard 4470 - Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.
2. Loss Prevention Data Sheets 1-28, 1-29

D. FBC - Florida Building Code incl FBC Florida Product Approval database

E. UL - Fire Resistance Directory:
UL-790 - Standard Test Method for Fire Tests of Roof Coverings

1.6 SUBMITTALS:
A. Process: Refer to the Submittal Procedures section of these specifications

B. Miscellaneous Submittals
1. Roofing Manufacturer's written statement confirming that the information in the Contract Drawings and Specifications are accepted by the Manufacturer with no exceptions, and that the full warranty will be issued as specified.

Note: Bidders are required to provide this statement with the Bid.

2. Most recent published technical literature and guide specifications issued by the roofing system Manufacturer.
3. Preparation instructions and recommendations
4. Storage and handling requirements and recommendations
5. Safety Data Sheets (SDS) relating to all products, chemicals and solvents.
6. Certification that the proposed roofing system complies with building code requirements.

C. Shop Drawings:
   1. Include details of materials, construction and finish. Include relationship with adjacent construction. Details are to match the construction documents, without exception. **See item B.1 above**.
   2. Dimensioned plans showing slopes, crickets, drains, scuppers, etc.
   3. Complete list of accessories or materials which are not manufactured or expressly authorized for use in the roofing Manufacturer's literature

1.7 QUALITY ASSURANCE:

A. Roofing Systems shall be installed only by a Contractor authorized by the roofing system Manufacturer (hereinafter "Contractor" or "Installer").

B. Authorized Contractor's personnel shall have received specialized training by the roofing system Manufacturer.

C. Roofing Systems shall be installed in accordance with these documents and the roofing Manufacturer's installation instructions.

D. There shall be no deviations from approved Contract Specifications and Drawings without prior written approval by The County or their representative.

E. Any work found to be substandard or in violation of the Manufacturer's specifications shall be subject to rejection including complete removal and replacement with new materials at the expense of the Contractor.

F. Manuracturer Inspections:
Quality assurance inspections of the roof system shall be performed by the roofing system Manufacturer for acceptance and approval. These inspections shall be performed at (minimum) 10% completion, 50% completion and upon certification by the Contractor that the roofing system is 100% complete in accordance with the Contract Drawings and Specifications, and all field welds have been probed and inspected.

All field seams shall be visible at the time of final inspection.

1.8 COORDINATION:

Subsequent to submittal approval and prior to starting any work on site, the Contractor is required to coordinate and schedule a pre-roofing conference. Contractor, subcontractors, The County's Representative, and Architect are to be invited to attend. The Contractor is required to distribute meeting minutes to all invitees within 3 days after the meeting.

1.9 DELIVERY, STORAGE AND HANDLING:

A. Deliver all materials to the job site in Manufacturer's original, unopened containers, with legible labels and in sufficient quantity to allow for continuity of work.

B. Store and handle in strict compliance with Manufacturer's written instructions and recommendations.
   1. Store rolls of membrane lying down, elevated above the roof deck and completely protected from moisture with tarpaulins. Manufacturer's packaging is not considered adequate for outdoor storage.
   2. Elevate insulation and cover board materials on pallets and fully protect from moisture with tarpaulins. Manufacturer's packaging is not considered adequate protection from moisture.
   3. Store adhesives and sealants between 50 and 80-degrees F (10 and 26.7 degrees C) prior to use.

4. Store flammable materials in cool dry areas away from sparks and open flames.
5. Follow all precautions as outlined in Manufacturer's material safety data sheets.

C. Materials, having been determined by The County or their representative to be damaged, shall be immediately removed from the construction site and replaced at no cost to The County.

1.10 JOB CONDITIONS

A. Safety:
1. Take necessary precautions regarding worker health and safety.
2. Comply with OSHA requirements for roof construction and fall protection.
3. Store flammable liquid and materials away from open sparks, flames and extreme heat.
4. Take necessary precautions when using solvents and adhesives.
5. Daily site cleanup is required to minimize debris and hazardous congestion.

B. Protection:
1. Schedule installation sequence to limit access and utilization of installed membrane for material storage, construction staging, mechanical and excessive foot traffic.
2. Provide proper protection on newly completed roofing.
3. Minimize traffic on freshly laid roofing.
4. Protect walls, rooftop equipment, rooftop piping and conduit, and other building components and site features during installation.

C. Additional Precautions:
1. Adverse weather conditions, e.g. extreme temperature, high winds, high humidity and moisture, could have a detrimental effect on adhesives, general production efforts and the quality of the finished installation.
2. Daily production schedules shall be limited to what can be made 100 percent watertight at the end of each day, including flashing and night seals.
3. All surfaces to receive the new roof system, including insulation and flashing, shall be free from all dirt, debris and be thoroughly dry.
4. Comply with local EPA requirements as published by local, state and federal authorities.
5. During the construction process temporary ballast, especially in the perimeter and corner areas may be required to provide protection against high winds.

1.11 DESIGN CONDITIONS

A. Roofing Manufacturer’s Project Registration must be completed, signed by the Contractor, submitted to and approved by the Manufacturer before any consideration for warranty or the release of any materials can be authorized.

B. Exterior Fire Test Exposure: Roof system shall achieve a FM or UL Class rating for roof slopes indicated as follows:
1. FM Approvals Class A Rating.
2. Underwriters Laboratory Class A Rating

C. Design Requirements:
1. Uniform Wind Uplift Load Capacity:
Installed roof system shall withstand negative (uplift) design wind loading pressures complying with Design Code: ASCE 7, Method 2 for Components and Cladding.
2. Dead Load:
Installation of new roofing materials shall not exceed the dead load capacity of the existing roof structure.

1.12 WARRANTY

A. Execute and submit the Roofing Installer and Manufacturer Warranties provided in this Project Manual.

B. Refer to the Warranties section of these Specifications.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Basis of Design Manufacturer: FiberTite, Seaman Corporation, located at: 1000 Venture Boulevard; Wooster, OH 44691-9360; Toll Free Tel: 800-927-8578; Tel: 330-262-1111; Fax: 800-649-2737 Email: (marketing@seamancorp.com); Web: https://www.fibertite.com

Basis of Design System: Fibertite FL4930-R21 Assembly S-340. The system is to be designed to resist 180 mph wind speed. Contractor is required to provide site-specific engineering for the mechanical attachment.

Equivalent products by other manufacturers will be considered for approval.

2.2 GENERAL

A. Roofing system is required to have Florida Product Approval.

B. Refer to the Structural Drawings for existing conditions.

C. All products and components for the roofing system shall be supplied by the roof membrane manufacturer to the extent possible.

D. Other components provided by other manufacturers shall be submitted to the roofing manufacturer for review for warranty considerations.

E. Contact the roofing system manufacturer for information regarding compatible substrates such as insulation and coverboard.

2.3 MEMBRANE

A. Standards Compliance: ASTM D6754 - 15 Standard Specification for Ketone Ethylene Ester (KEE) Based Sheet Roofing.

B. Physical Properties: See associated data sheets.

C. Acceptable Substrates include:
   1. Rigid insulation or cover board approved by the membrane manufacturer.
   2. Insulated Steel Decking.

D. Membrane:
   Basis of Design: FiberTite-XT 50-mil Membrane: Nominal 50 mil ketone ethylene ester (KEE) membrane reinforced with 6.5 oz per sq. yd knitted polyester fabric.

E. Sheet Flashing:
   Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness and color as roofing membrane. Include factory pre-formed inside and outside corners, pipe boot flashings, "T" lap patches and other factory fabricated sheet flashing accessories.

2.4 ANCILLARY MATERIALS

A. Roof Drains:
   Basis of Design: Smith 1010, CID, locking type

B. Flashing Adhesive: as recommended by the roof membrane manufacturer.

C. Fasteners:
   1. Securing membranes to steel decks:
      Equivalent to Basis of Design: FiberTite MAGNUM Series: No. 15-13, buttress threaded, No. 3 Phillips head fastener constructed of case-hardened carbon steel with a reduced diameter drill point and corrosion resistant coating.
   2. Securing insulation to steel decks:
      Equivalent to Basis of Design: FiberTite-HD: No. 14-13, heavy duty threaded steel No. 3 Phillips truss, self-tapping corrosion resistant fastener.
   3. Secure insulation, base sheet or membrane to decks.:
      Equivalent to Basis of Design: FiberTite Peel Rivets: Threadless, high magnesium alloy fastener.
   4. Secure membrane to existing metal roofing system's structural members.
      Equivalent to Basis of Design: FiberTite Purlin Fasteners.

D. Stress Plates used to anchor membranes: as recommended by the roofing system manufacturer

E. Additional Components:
   1. Flashing Terminations Sealant: roof system Manufacturer’s single-component gun-grade polyether.

   2. Sealant for Pitch Pans (where pitch pans are specifically approved): roof system Manufacturer’s single -component self-leveling polyether.

   3. Fabricated Metal Flashing where indicated to be Membrane-coated metal: Membrane-coated 24-gauge hot dipped G-90 laminated with a 0.02 inch polymeric coating.

   4. Pre-molded vinyl compound flashings: Injection molded vent stack, split Flash and inside / outside corner flashings.

   5. Non-Reinforced Membrane: Field fabrication membrane, 60 mil (1.5 mm) non-reinforced vinyl membrane.

   6. Primer: A blend of synthetic polymers, solvents and resins, low VOC primer for use with self-adhered vapor retarder.

   7. PMMA: rapid-curing formulation of polymethyl-methacrylate (PMMA) liquid flashing resin. Use in combination with reinforcing fleece to form a flexible, monolithic, reinforced membrane for aberrant flashing and detail applications.

   8. Metal Primer: An acrylic primer used with various metal substrates to promote adhesion of PMMA waterproofing and surfacing components

   9. Fleece: non-woven polyester reinforcement used in PMMA liquid flashing applications.

   10. Walkway and Protection Pads: roof system manufacturer’s high grade walkway and protection material with slip-resistant design.

   11. Termination Bar: Membrane flashings restraint and termination seals. 0.125 x 1 x 120 inch 6060-T5 extruded aluminum bar with pre-punched slots, 8 inches on center.

   12. Metal Fascia System: Two piece "Snap-on" pre-formed, architectural Kynar metal edge systems (if indicated)

   13. Insulation: Polyisocyanurate

14. Adhesive: roofing system manufacturer's dual component, single bead (ribbon applied), non-solvent, elastomeric, urethane adhesive, specifically designed for bonding single or multiple layers of roof insulation and insulation composites or cover boards to structural roof decks and base sheets.

15. Seam Cleaner: roofing system manufacturer's seam cleaner to be used with clean white cotton cloths or rags to clean contamination from the seam areas of the membrane prior to welding.

16. T Joint Covers: Pre-cut 4 x 4 inch 60 mil non-reinforced membrane to reinforce areas where three overlapping sheets of membrane intersect.

2.5 INSULATION

A. Insulation shall be installed to provide a suitable surface for the roofing system and to meet the specified thermal value.

B. Products must be pre-approved in writing by the roofing system manufacturer and comply with minimal characteristics and classification listed for the products below:
   1. Polyisocyanurate Rigid Insulation (ASTM C1289)
   2. Gypsum Core Cover Board: USG Securock or approved equivalent product.

PART 3 EXECUTION

3.1 GENERAL

A. Authorized Contractor: see Paragraph 1.7 Qualify Assurance.
B. Application of materials constitutes an agreement that the Contractor has inspected and determined that the substrate is suitable for installation of the roofing system.

3.2 SUBSTRATE PREPARATION (REROOFING)

A. Type of Deck: Steel, existing. Refer to the Structural Drawings and Fastener Testing for more information. Fastener Testing is provided at the end of this Project Manual.

B. Examine surfaces for inadequate anchorage, low areas that will not drain properly, foreign material, unevenness or any other defect which would prevent the proper execution and quality application roofing system as specified.

C. Prepared substrate shall be smooth, dry, and free of debris or any other irregularities which would interfere with proper installation.

D. Do not proceed with any part of the application until all defects and preparation work have been corrected.

E. Removal of Existing Roof Systems:
   1. Remove all existing roofing materials, insulation, flashing, metal and deteriorated wood blocking and legally dispose.
   2. Remove only enough roofing to accommodate the day's work and ensure the exposed area can be made 100 percent watertight at the end of the day or first sign of inclement weather.

F. Steel Deck:
   1. Deteriorated decking shall be removed and replaced with like kind, refer to the Drawings and Unit Cost Allowances section of this specification.
   2. Areas of structurally acceptable steel decking exhibiting slight surface rust shall be properly cleaned, primed and painted prior to installing the approved insulation, refer to the Drawings and Unit Cost Allowances section of this specification.
   3. All decking shall be inspected for proper attachment and excessive deflection that would compromise the uplift performance of the new mechanically attached roofing system.

4. Attachment and deflection deficiencies shall be repaired and brought into compliance with current, local building code requirements.

3.3 WOOD NAILERS

A. Refer to Division 06 specifications.

B. Install treated lumber level with insulation layer or adjacent construction plus or minus 0.25 inch. Install continuous treated wood nailers at all perimeters, around roof projections and penetrations as shown in approved details.

C. Wood Nailers Installed Directly on the Substrate: Carefully examine substrates to confirm the entire area provides a suitable fastening surface. Repair defects by appropriate trades prior to installation.

D. Nailers (W x H): Size 3.5 x 1.5 inches minimum, or as indicated on the Drawings. Installed and anchored in such a manner to resist a force of 250 lbs per linear foot of wood blocking in any direction.

E. Nailers for parapets, curbs and expansion joints: refer to the Contract Drawings for details.

3.4 ROOF INSULATION AND COVERBOARD INSTALLATION

A. General:
   1. Roof insulation and coverboards shall be installed whereby the long dimension of the boards run in parallel alignment and the short dimensions are staggered.

   2. Insulation and coverboards shall be installed with minimum joint dimensions and shall be tightly butted where possible. Maximum joint widths shall be 0.375 inch.

   3. Damaged corners shall be cut out and replaced with an insulation piece a minimum of 12 x 12 inch. Pieces that are cut from larger panels and are smaller than one square foot are not acceptable.

   4. Install no more than can be covered during the same working day.

   5. Where required, taper roof insulation to drain sumps using tapered edge strips. If an insulation layer is 1.5 inches or less, taper 12 inches from the drain bowl. If insulation thickness exceeds 1.5 inches, taper 18 inches from the drain bowl. All taper boards or pieces must be adhered or mechanically fastened with a minimum of two fasteners per board.

   6. When a coverboard or multiple layers are installed each layer shall be offset from the previous layer a minimum of 12 inches on center.

   7. At the end of each working day, provide a watertight cover on all unused insulation as to avoid moisture penetration.

B. Preliminary Attachment of Insulation for Mechanically Attached Roofing Systems:
   1. Insulation and coverboard shall be applied to or installed over properly prepared and preapproved substrates, free of any debris, dirt, grease, oil or moisture.

   2. All fasteners and stress plates for the mechanical attachment of insulation and cover board materials shall be provided by or approved by the roofing system manufacturer.

   3. All fasteners and stress plates shall be FM approved for mechanical attachment of insulation and comply with FM Standard 4470 for corrosion resistance.

4. General 1-90 attachment criteria require preliminary attachment for insulation and cover boards for mechanically attached membrane roofing systems. Insulation and cover board within the field of the roof requires 6 fasteners and stress plates per 48 x 96 inches insulation board.

5. Perimeter areas do not require an increase in the fastener density when the membrane is mechanically attached.

6. Corner areas do not require an increase in the fastener density when the membrane is mechanically attached.

7. Fasteners shall be installed straight, tight and perpendicular to the decking complying with minimum penetration requirements of specific deck types. Do not over-torque fasteners.

8. Fasteners shall be installed using depth sensing tool attachments to ensure proper installation.

3.5 INSTALLATION OF MEMBRANES

A. Quality Control:
   1. It is the responsibility of the Authorized Contractor to initiate and maintain a Quality Control program to govern all aspects of the installation.

   2. The project foreman and or supervisor will be responsible for the daily execution of the Quality Control program which will include but is not limited to the supervision, inspection and probing of all heat welded seams incorporated within roofing system.

   3. If inconsistencies in quality of the application of the composite, membrane or welds are found, work shall cease until corrective actions are taken to ensure the continuity of the installation.

B. General:
   1. Coordinate work ensuring that sequencing of installation promotes a 100 percent watertight installation at the end of each day.

   2. Roofing systems to be designed in compliance with the procedures outlined within the current publication of ASCE 7. Alternative designs may be determined using the criteria within FM Loss Prevention Data.

   3. Roofing system may utilize either 74-in or 100-in roll goods.

   4. Restrictions regarding outside ambient air temperature are relative only to the exposure limits of the workers or adhesives when necessary.

C. Membrane Mechanically Attached (Class 1 Decks):
   1. Rolls of roof membrane are to be positioned and installed straight and snug but not taut. Stretching of the membrane places undue stress on the mechanical fasteners.

   2. The properly positioned membrane shall be attached using the proper fasteners and stress plates installed through the membrane and insulation assembly and engaging the structural decking.

   3. The stress plates shall be installed straight and parallel to existing structural purlin members. All stress plates must set completely on the membrane allowing a minimum of 0.5 inch (13 mm) from the edge and allow sufficient room to facilitate welding.

4. Fastener row spacing, and intervals shall be established to resist design pressures, determined in compliance with procedures outlined within the current publication of ASCE Standard 7. Alternative designs may be determined using the criteria within Factory Mutual Research Loss Prevention Data.

5. Table MA 01/21-1 lists general default attachment requirements for the field of the roof, as applied to structural roof decks referred to as Class 1; minimum 3/4-inch (19 mm) plywood, minimum 22-gauge steel or minimum 3,000 psi (20684 kPa) concrete.

6. Perimeter zone and corner zone enhancement is required on all mechanically fastened roofing systems. Perimeters and corners zones are defined on the Contract Drawings.

7. Projects having variable roof levels shall treat the outer boundary of each level as a perimeter. Internal expansion joints, firewalls or adjoining building walls higher than 3 feet are not considered perimeter areas.

8. Perimeters and corners may be enhanced by:
   a. Installing half rolls of membrane fastened as prescribed by project requirements.
   b. Adding additional rows of fasteners through the top of the membrane system within the perimeter at prescribed intervals area and sealing with a 6-inch strip.

9. Confer with the roofing system manufacturer for assistance with determining acceptable fastener patterns.

10. Table MA 01/21 - 1:
    a. Steel: 22 Gauge Greater:
       1) Design Pressure: ≤ -30 psf. (1.436 kPa) FM 1-60.
          a) Steel Deck: 80 ksi (551.6 mPa).
             Row Intervals / Lap Structure: 95 inches (2413 mm) on center - open.
             Lap Fastening: 18 inches (457 mm) on center.
          b) Steel Deck: 33 ksi (227.5 mPa).
             Row Intervals / Lap Structure: 95 inches (2413 mm) on center - open.
             Lap Fastening: 12 inches (305 mm) on center.
       2) Design Pressure: > -30 but ≤ -45 psf. (2.155 kPa) FM 1-90
          a) Steel Deck: 80 ksi (551.6 mPa).
             Row Intervals / Lap Structure: 95 inches (2413 mm) on center - open.
             Lap Fastening: 12 inches (305 mm) on center.
          b) Steel Deck: 33 ksi (227.5 mPa).
             Row Intervals / Lap Structure: 69 inches (1753 mm) on center - open.
             Lap Fastening: 12 inches (305 mm) on center.

D. Welding:
   1. General:
      a. Welding work requires coordination with and approval by the on-site Facility Manager to evaluate fire risks associated with errant sparks or flames due to flammable materials within the buildings. The Contractor shall schedule a meeting specifically for the purpose of coordination with the Facility Manager before starting work.
      b. Field seams exceeding 10 ft in length shall be welded with an approved automatic welder.
      c. Field seams must be clean and dry prior to initiating any field welding.
      d. Remove foreign materials from the seams (dirt, oils, etc.) with the Manufacturer's Seam Cleaner or authorized alternative.
      e. Use clean white cotton cloths and allow approximately five minutes for solvents to dissipate before initiating the automatic welder. Do not use denim or synthetic rags for cleaning.
      f. Welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.

g. Contaminated areas within a seam will inhibit proper welding and will require a membrane patch or strip.

2. Hot Air Hand Welding:
   a. The lap or seam area of the membrane may 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 handheld hot air welder shall be inserted into the lap at a 45-degree 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 1.5 inch (38 mm) wide nozzle, to create a homogeneous weld, a minimum of 1.5 inch (38 mm) in width.
   d. Smaller nozzles may be used for corners, and another field detailing, maintaining a minimum 1-inch (25 mm) weld.

3. Automatic Hot Air Machine Welding:
   a. Proper welding of the roofing membrane can be achieved with a variety of automatic welding equipment.
   b. Follow all Manufacturers' instructions for the safe 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 ensure a consistent electrical supply, without fluctuations that can interfere with weld consistency.
   e. Properly welded seams shall utilize a 1.5 inch (38 mm) wide nozzle, to create a homogeneous weld, a minimum of 1.5 inch (38 mm) in width.

E. Inspection:
1. The job foreman or supervisor shall initiate daily inspections of all completed work which shall include but is not limited to, the probing of all field welding with a dull pointed instrument to assure the quality of the application and ensure that any equipment or operator deficiencies are immediately resolved.

2. Ensure all aspects of installation (sheet layout, attachment, welding, etc.) are in strict accordance with the Manufacturer’s most current Specifications.

3. Excessive patching of field seams because of inexperience or poor workmanship will not be accepted.

4. Any deviation from pre-approved specifications and details requires written authorization from roof system Manufacturer prior to application to avoid any warranty disqualification.

5. It is the Contractor, job foreman, supervisor, or quality control personnel's responsibility to perform a final self-inspection on all seams prior to requesting the substantial completion inspection.

F. T-Joint Cover Installation:
1. Installation of T-Joint Covers is mandatory on membrane systems greater than nominal 50 mil or where T-Joints have not been properly sealed to exhibit a minimum 1.5 inch defined crease along the T-Joint.

2. Install T-Joint Covers, centered and aligned so edges are parallel to roof system seams.

3. The T-Joint Cover shall be 100 percent welded.

3.6 FLASHING

A. Adhesives
   1. When using adhesives outside ambient air temperature shall be above 40 degrees F (4.4 degrees C). Curing or drying time of the adhesive will be affected by ambient temperatures and must be taken into consideration.

   2. Humidity can affect the drying time of solvent borne adhesives or cause condensation to form on the newly applied adhesive.

   3. No moisture may be present on the adhesives prior to mating or application of membranes.

B. Clean vents, pipes, conduits, tubes, walls, and stacks to bare metal. Protrusions must be properly secured to roof deck with approved fasteners. Remove and discard lead pipes and drain flashing. Flash penetrations according to approved details.

C. Remove loose or deteriorated cant strips and flashings.

D. Flash curbs, parapets and interior walls in strict accordance with the details on the Contract Drawings.

E. All flashing shall be adhered to properly prepared, approved substrates with the roofing system manufacturer's approved bonding adhesive, applied in sufficient quantity to ensure total adhesion.

F. The base flange of all membrane flashing shall extend out on to the plane of the deck, beyond the wood nailers to a maximum width of 8 inches.

G. 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.

H. When using adhesive on vertical wall flashings, height shall not exceed the manufacturer's limit without supplemental mechanical attachment of the flashing between the deck and the termination point of the flashing.

I. Complete all inside and outside corner flashing details with preformed corners or an approved field fabrication detail.

J. Probe all seams with a dull, pointed probe to ensure the weld has created a homogeneous bond.

K. Install penetration accessories in strict accordance with approved details. Ensure penetration accessories have not impeded in any way the working specification.

3.7 METAL FLASHING

A. Refer to the Sheet Metal Flashing and Trim section of these Specifications and the Contract Drawings.

B. Fasten all metal flashing to wood nailers or approved substrate with fasteners approved by the roofing system manufacturer.

C. Break and install membrane coated metal, where shown, in accordance with approved details, ensuring proper attachment, maintaining 1/2-inch expansion joints and the installation of a minimum 2-inch bond breaker tape where required.

D. Roof Drains:
   1. Flash all roof drains in accordance with the Contract Drawings and membrane manufacturer requirements.
   2. Replace all worn or broken parts that may cut the membrane or prevent a watertight seal. This includes the clamping ring and strainer basket.
   3. Replace all drain bolts or clamps used to hold the drain compression ring to the drain bowl.
   4. Non-reinforced 60 mil membrane shall be used for flashing the drain assembly.
   5. The drain target sheet should be sized and installed to provide for a minimum of 12 inches of exposed 60 mil on all sides of the drain.

E. PMMA Liquid Flashing
   For aberrant penetrations and pitch pan avoidance, follow the manufacturer's guidelines and details for substrate preparation and installation of PMMA liquid flashing on pre-authorized aberrant penetrations.
   1. Proper mechanical restraint is required for the roof membrane around the penetration(s) prior to the installation of the PMMA liquid Flashing.

   2. Metal Primer: is required for all metal tie-ins and applications with high mechanical stresses, on detail work with small contact areas, metal components with large linear thermal expansion or edge metal terminations.

F. Pitch Pans:
   1. Pitch Pans are disallowed except where specifically approved. Where approved comply with the following:

   2. Fabricate pitch pans from membrane-covered metal, installed in accordance with the manufacturer's details, ensuring proper attachment and maintaining a minimum of 2-inch clearance around the penetration.

   3. Fill with non-shrinking grout to within 1 inch of the top of the pan. Allow the grout to dry and fill remainder of the pan with manufacturer-approved pourable sealant.

3.8 EXPANSION JOINTS

Flash expansion joints in accordance with the Contract Drawings and membrane manufacturer requirements. Fasten all expansion joint material according to roof system Manufacturer's Specifications. Ensure the expansion material has sufficient material to expand to the widest point in expansion without causing undue stress on the expansion joint material.

3.9 SEALANTS

A. Apply Manufacturer-approved sealants where shown and required. Sealants are to shed water. Follow the roofing system Manufacturer's instructions and installation guides.

B. Use primer when recommended by the roofing system Manufacturer.

3.10 TEMPORARY SEALS

A. At the end of each working day or at the sign of rain, install temporary, 100 percent watertight seals where the completed new roofing adjoins the uncovered deck or existing roof surface.

B. The Contractor shall create and maintain the temporary seal in such a manner to prevent water from traveling beneath the new or existing roof system.

C. If water is allowed to enter beneath the newly completed roofing, the affected areas shall be removed and replaced at no additional expense to The County.

D. Prior to recommencing the work, cut out and dispose of any contaminated membrane, insulation, sealant and other materials.

3.11 WALKWAYS

A. Provide and install manufacturer's walk pads where shown on the Contract Drawings.

B. Walk Pad Installation:
   1. Roofing membrane to receive walkway material shall be clean and dry.

   2. Cut and position the walk pad material as shown.

   3. Hot air weld, the entire perimeter of the walk way to the previously cleaned roofing membrane. Avoid excessive heating of the walk way material to prevent scorching the underlying roofing membrane.

3.12 LIGHTNING PROTECTION

A. The lightning protection must be reinstalled in such a manner that base plates, air terminals and cables do not penetrate the roofing membrane without the use of pre-approved flashing details.

B. Cables and air terminals may be attached to the membrane using base plates and roofing manufacturer-approved sealant. Contact the roofing system manufacturer for specific adhesive recommendations.

C. Recommendations regarding the selection of adhesives or alternative affixing of lightning protection systems to the roofing membrane does not in any way imply a warranty covering their performance or ability of the adhesives to remain affixed to the roofing membrane.

3.13 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 ensure a 100 percent watertight installation.

3.14 FINAL INSPECTION FOR WARRANTY

A. At 100% completion, the Contractor is required to schedule the Substantial Completion inspection with the Roofing System Manufacturer's Technical Services Department to review the installation and verify compliance with the Manufacturer's requirements.

   The Substantial Completion inspection is the third and final inspection by the Roofing System Manufacturer. Refer to paragraph 1.7 Quality Assurance. It is the Contractor's responsibility to ensure that these inspections are performed and that reports are produced by the Manufacturer's inspection team for inclusion in the Project Close Out Documents.

B. Any corrections necessary for compliance with the specifications and acceptance for warranty will be noted on the Substantial Completion Inspection Report.

C. Upon completion of all punch list items and final acceptance of the installation, a warranty will be issued.

END OF SECTION

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

This Section includes sheet metal flashing and trim as follows:

A. Exposed trim and gravel stops
B. Coping covers
C. Wall Flashings
D. Expansion Joint Covers

1.3 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.

B. Comply with RAS No. 111 for the fabrication and installation of perimeter wood blocking and sheet metal.

C. Wind Loads – Refer to the structural drawings for required wind loads and show attachment patterns that satisfy these requirements.

1.4 SUBMITTALS

A. General: Submit product data for each sheet metal fabrication according to the Division 1 Specification Sections.

B. Product Data to include manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.

C. Shop Drawings / Layout Drawings of each item specified showing layout, profiles, methods of joining, and anchorage details if different than specified. Use copies of details provided in the project construction documents with markings to show suggested changes.

D. Samples of sheet metal flashing, trim, and accessory items, in the specified finish. Submit 8-inch square Samples of specified sheet materials to be exposed as finished surfaces.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experience Installer who has completed sheet metal flashing and trim work similar in material, design, and extent required for this Project. Lack of skill or experience of those performing the work of this section will not be considered when approving or rejecting the fabrication or installation of sheet metal products.

B. Mockups: Prior to installing sheet metal flashing and trim, construct mockups to verify selections made under sample submittals and to demonstrate the workmanship of the final product. Mockups are to comply with the specified requirements.

Notify Architect one week in advance of the dates and times when mockups will be constructed.

1. Construct mockups for the following type of sheet metal flashing and trim:
   a. Exposed trim and gravel stops
   b. Copings
   c. Metal Wall Flashings
   d. Expansion Joint Covers

2. Obtain Architect's approval of mockups before proceeding with the Work. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

   Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

1.6 PROJECT CONDITIONS

A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

B. Warranty – Contractor shall furnish a fully executed five (5) year maintenance warranty covering the completed sheet metal fabrication and installation. Refer to the Roofing Installer's Warranty section of these specifications.

PART 2 - PRODUCTS

2.1 METALS

A. GENERAL: Provide aluminum metal work in the thickness described on the Drawings.

B. Aluminum:

1. Provide Mill-Finished Aluminum Sheet except where otherwise indicated: ASTM B 209 3003-H14, with a minimum thickness of 0.032 inch except where other thickness is indicated.

2. Provide Pre-finished Aluminum Sheet where indicated: ASTM B 209 3003-H14, with a minimum thickness of 0.032 inch except where other thickness is indicated, color to match existing.

   Finish shall be a PVDF fluoropolymer based polymer coating applied to the top side on a continuous coil coating line. Dry film thickness to be 0.75 ± 0.05 mil over 0.20 ± 0.05 mil prime coat, to provide a total top side dry film thickness of 0.95 ± 0.10 mil.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Fasteners: as indicated on the Drawings.

B. Sealants: Refer to Specification Section 07 90 00.

C. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.

2.3 FABRICATION, GENERAL

A. The final appearance of the installed sheet metal components is a critical component of this project. All sheet metal shall be installed in a neat uniform manner in accordance with the Drawings.

B. Select sheet metal gauges based on wind loads and fascia width in compliance with RAS111 and the wind loads of the project. Minimum gauges/thicknesses of metal are listed above.

C. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.

D. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

E. Form exposed sheet metal Work that is without oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.

F. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams, and solder.

G. Fabrication
   1. Expansion Provisions: Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

   2. Sealed Joints: nonexpansion, but movable, joints in metal are to be formed so as to accommodate elastomeric sealant to comply with SMACNA standards.

   3. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.

   4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.

   5. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.

2.4 SHEET METAL FABRICATIONS

A. General: Fabricate sheet metal items in thickness needed to comply with performance requirements but not less than the minimum thickness specified herein or indicated on the Drawings, whichever is greater. Compliance with RAS 111 is required.

B. Fabricate from mill-finished aluminum or pre-finished aluminum, as noted on the Contract Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.

A. Install exposed sheet metal Work that is without oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

B. Roof-Edge Flashings including Coping Caps: Secure metal flashings at roof edges according to RAS No. 111 for specified wind zone.

C. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

D. Welded Joints: Clean surfaces to be welded, removing oils and foreign matter.
Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant. Use joint adhesive for nonmoving joints specified not to be soldered.

E. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

F. Separations: Separate metal from noncompatible metal, wood, cementitious or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

G. Roof-Penetration Flashing: Refer to Specification Sections 07 52 16 and 07 52 17.

3.2 INSTALLATION

A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.

B. Install exposed sheet metal Work that is without oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

C. Roof-Edge Flashings including Coping Caps: Secure metal flashings at roof edges according to RAS No. 111 for specified wind zone.

D. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

E. Welded Joints: Clean surfaces to be welded, removing oils and foreign matter.
Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant. Use joint adhesive for nonmoving joints specified not to be soldered.

F. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

G. Separations: Separate metal from noncompatible metal, wood, cementitious or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

H. Roof-Penetration Flashing: Refer to Specification Sections 07 52 16 and 07 52 17.

3.3 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes as well as marks which distract from the appearance.

B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION 07 62 00

07 72 00 ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

This Section includes the following:

A. Factory fabricated safety rails for existing roof hatches
B. Custom fabricated guard rails for fall protection

1.3 PERFORMANCE REQUIREMENTS

A. General: Installed roofing accessories shall remain watertight, shall not permit the passage of water, and shall resist specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Uniform Wind Uplift Load Capacity: Installed roof accessories shall withstand negative (uplift) design wind loading pressures complying with the criteria set forth on the Structural Drawings.

C. Florida Product Approvals Listing: provide roof accessories that are listed as approved on the Florida Product Approval System Website http://www.floridabuilding.org/pr/.

D. Fire Classification: UL 790 Class A.

1.4 SUBMITTALS

A. Procedure: Submittals shall be in accordance with Division 1 requirements, and as follows:
   1. Submittals specified herein shall be submitted at one time directly to the Design Professional for review and approval in PDF format.
      Product data
      Sample warranties
      Fastener pull testing reports
      Other information as requested to exhibit compliance with these specifications.

   2. Allow ten (10) calendar days for submittal review.

   3. Where submission of samples, shop drawings, or other items are required from suppliers or subcontractors, it shall be the Contractor’s responsibility to see that such submittal items are complete, properly submitted and, if required, corrected and resubmitted so as not to delay the progress of the Work. All submittals shall be made by the Contractor. Submittals received from sources other than through Contractor will be returned "without action," (not reviewed and not approved).

   4. Submittals for products that are not deemed to be equivalent to the basis of design shall be rejected.

B. Content: Submittals shall contain the following minimum information:
   1. Product Data: Manufacturer's latest edition of technical product data for each roof accessory specified. Include data substantiating that materials comply with requirements. Mark proposed products clearly by circling, underlining or highlighting with a highlighter color that will reproduce when copied.

   2. Manufacturer’s Instructions: Detailed installation instructions for the roof accessories being installed, to include general and specific recommendations, and product storage and handling.

3. Florida Product Approvals: Provide documentation substantiating that all products submitted are approved for use in Florida.

4. Shop Drawings: Include plans and elevations with dimensions, profiles, locations, accessories and attachments to other work for all specified products. Indicate on the drawings that measurements have been field verified.

5. Samples for Verification: If requested, Manufacturer to provide samples of all material finishes and hardware.

6. Manufacturer's Certificates: Certify that products of this section meet or exceed specified requirements.

7. Maintenance Data: For roof accessories, for inclusion in The County's maintenance manuals.

8. Roof Accessory Manufacturer's Warranty: Provide manufacturer's standard warranty

1.5 QUALITY ASSURANCE

A. Coordinated Installation: Coordinate layout and installation of roof accessories with roof membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure and noncorrosive installation. Ensure all new or existing roof system warranties remain in full effect.

B. Except as otherwise indicated, perform roof accessory work as a single integrated unit of work, without division of responsibility between separate installers. Single installer responsibility required.

C. Manufacturer Qualifications: Provide primary products from manufacturers, which have produced specified products successfully for not less than 5 years. Provide secondary products only as recommended by manufacturer of primary products for use with roof accessories specified.

D. Installer Qualifications: A single installer must perform the work of this Section and have not less than 5 years of successful experience in installation of roof accessories similar to those specified for this project, and which be acceptable to and approved by manufacturer of primary roof accessories.

E. Installer shall maintain full-time, non-working supervisor/foreman on job site during times that installation is in progress. Installer's supervisor/foreman shall have minimum of 5 years of experience in work of similar nature.

F. Reference Standards: In addition to applicable regulations of authorities having jurisdiction, comply with the following:
   1. Florida Building Code (FBC) – Current Edition
   2. ANSI/SPRI ES-1 – Standard Field Test procedure for determining the withdrawing resistance of roofing fasteners
   3. NFPA 241 – Standard for Safeguarding Construction, Alteration and Demolition Operations
   4. OSHA 2207 – Occupational Safety and Health Administration Construction Industry Standards
   5. OSHA Regulation 29 CFR 1929 - Occupational Safety and Health Administration Construction Industry Regulation

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roof accessory materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.

B. Store all material in a dry, protected, well-ventilated area elevated above grade.

C. Handle and store roof accessory materials and place equipment in a manner to avoid permanent deflection of roof deck.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verified required openings for each type of roof accessory by field measurements before fabrication and indicate measurements on Shop Drawings.

B. Existing Construction: Prior to commencement of installation, Contractor shall verify condition of existing construction, including:
   1. Roof deck and/or substrate condition as being acceptable for Work specified in this Section.

   2. Varying deck and wall thickness for length of required anchoring devices.

C. Environmental Limitations
   1. Do not install roof accessories during rain or start installation if rain is probable during installation.

   2. Do not install roof accessories when there is ice, frost, surface moisture, or dampness visible on the surface to which accessories are to be applied.

1.8 WARRANTIES

A. Roof Accessory Manufacturer’s Warranty Requirements:
   Roof Hatch: Materials shall be free of defects in material and workmanship for a period of five years from the date of substantial completion for the project. Within this time period, manufacturer shall replace defective components at no charge to The County.

   1. Roof Hatch Safety Rail System: Materials shall be free of defects in material and workmanship for a period of five (5) years from the date of Substantial Completion for the project. Within this time period, manufacturer shall replace defective components at no charge to The County.

   2. Guard Rail System: Materials shall be free of defects in material and workmanship for a period of twenty (20) years from the date of Substantial Completion of the project. Within this time period, manufacturer shall replace defective components at no charge to The County.

B. Roof Accessory Installer’s Warranty: Submit Roof Accessory Installer's warranty, signed by Installer, covering the Work of this Section. The roofing installer’s warranty shall guaranty aspects of performance for each of the aforementioned roof accessory components for a period of five (5) years from the date of Substantial Completion of the project.

PART 2 - PRODUCTS

2.1 ROOF HATCH SAFETY RAIL SYSTEM

A. Roof Hatch Safety Rail System: Steel tube railing system mounted on roof hatch providing an ergonomically correct power grip in a safe upright egress and ingress through roof hatches in addition to protection from accidental falls through roof opening while roof hatch is open. Includes top and mid-rail and wrap around self-closing gravity gate mounted with heavy duty hinges acting as a ladder extension.

1. Basis of Design: Bilco. – Bil-Guard 2.0 Roof Hatch Safety Rail System
   Products by other manufacturers will be approved if equivalent to the Basis of Design.
   Note: provide custom railing configuration at Tipping Floor Roof Hatch to allow for side exit.

2. Construction:
   a) Posts and rails: 1¼” schedule 40 pipe in 6061 T6 aluminum alloy.
   b) Curb mounting brackets: 3/8” thick extruded aluminum. Pivoting post guides with compression fittings and latching mechanism shall be cast aluminum. Self-closing hinges and all fasteners shall be type 316 stainless steel.
   c) Locking mechanism: Type 316 stainless steel
   d) Spring hinges and all fasteners: Type 316 stainless steel.
   e) Finish: Safety yellow powder coat paint
   f) Gate System: Gravity self-closing, non-collapsible full wrap around tubing, welded construction.

3. Labels: manufacturer’s standard labels containing safety warnings, fall dangers, “No Hoisting” warning and manufacturer identification

4. Size: Formed to fit roof hatch size (field verify) and installed 42 inches above the roof surface when mounted on roof hatch cap flashing.

5. Performance Requirements: Meets or exceeds OSHA Standard CFR 29 1910.29 and OSHA strength requirements.

B. GuardRail Fall Protection System: Steel tube railing system mounted on roof hatch providing an ergonomically correct power grip in a safe upright egress and ingress through roof hatches in addition to protection from accidental falls through roof opening while roof hatch is open. Includes top and mid-rail and wrap around self-closing gravity gate mounted with heavy duty hinges acting as a ladder

2.2 ROOF EDGE SAFETY GUARDRAIL SYSTEM

Permanent structural tubular guardrail for roof edges where indicated.

A. Basis of Design Manufacturer:
   Kee Safety, Inc., located at: 100 Stradtman St. ; Buffalo, NY 14206; Toll Free Tel: 800-851-5181; Tel: 716-896-4949; Fax: 716-896- 5696; Email: info@keesafety.com; Web: www.keesafety.com

   Equivalent products by other manufacturers will be considered.

B. Product:
   KeeGuard non-penetrating modular guardrail
   Galvanized with PVC bases

C. Requirements:
   1. Freestanding counterweighted guardrail system, 42 inch minimum height, able to withstand a minimum load of 200 lb. applied in any direction to the top rail
   2. Meeting OSHA Regulation 29 CFR 1910.23.
   3. Pipe: Steel, 1-1/2 inches schedule 40, galvanized.
   4. Tube: Galvanized tube, 12 gauge, 1-1/2 inches OD
   5. Rails and Posts: Galvanized Tube, 12 gauge, 1-1/2 inches diameter.
   6. Counterweight Levers: Galvanized Tube, 12 gauge, 1-1/4 inches diameter.
   7. Mounting Bases: Steel bases are galvanized and are supplied with a rubber pad on underside of the component.
   8. Counterweights: Molded recycled PVC with one fixing collar per counterbalance. 8. Fasteners: stainless steel or galvanized

D. Install railings in the locations shown on the Drawings.

E. Refer to the Mechanical drawings for length and locations of safety rails at mechanical equipment. Safety rails at roof openings, not associated with mechanical equipment, are indicated on the Architectural Roof Plans.

F. Flash the legs of the railing to the roofing system with liquid applied flashing system and reinforcing mat for modified asphalt roofing systems.

G. Finish: powder coated

2.2 CONDUIT, CABLE AND CONDENSATE LINE SUPPORTS

A. Rubber base with strut channel pipe support, 5” high x 6” wide x 4.8” long minimum.

B. Manufacturer: Dura-Block DB5, DB10 or approved equivalent by other manufacturer.

C. Select model and spacing for proper support of the conduit, cable or pipe being supported.

D. Provide clamps and fasteners to secure conduit, cable or pipe to the support.

PART 3 - EXECUTION

3.1 EXAMINATION

Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 INSTALLATION

A. Install products in strict accordance with manufacturer’s instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work.

B. Test and adjust units for proper function.

3.3 ADJUSTING AND CLEANING

Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION 07 72 00

SECTION 07 90 00 - JOINT SEALANTS

PART 1 – GENERAL

1.1 WORK INCLUDES

The extent of the Work is indicated on the drawings and described in this section. The Work includes sealant for metal trim, wall flashings and other locations shown on the drawings.

1.2 DEFINITIONS

Definition of terms, as they are used in these documents, are described in the ASTM D-1079 Standard Definitions of Terms relating to Roofing, Waterproofing, and Bituminous Materials and are made a part of these documents as though included herein.

1.3 QUALITY ASSURANCE

A. Installer:

1. A single installer shall perform the Work of the section and shall be a subcontractor who has specialized in sealant work for at least five (5) years, capable of showing successful installations similar to work required for project.

2. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work in this section.

B. Manufacturer:

1. Provide primary products, including required type of sealant materials produced by manufacturers, which have produced that type of product successfully for not less than five years.

2. Provide secondary products that are acceptable to manufacturers of primary products.

C. Provide materials and component materials which have been tested in accordance with ASTM Standards, unless otherwise noted, and comply with the minimum standards therein.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not install primers, sealants, and solvents without proper ventilation.

B. Dispose of primers, sealants, or solvents in a manner which will not adversely affect the environment and in keeping with local, state, and federal laws and regulations.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate the Work of this section with the work of the other sections, if any.

1.6 WARRANTIES

A. Contractor’s Installer’s Warranty: Furnish a two-year warranty covering labor and materials.

B. Manufacturer’s Warranty: Furnish a manufacturer's warranty for a ten-year term covering materials to repair leaks or replace defective sealant.

1.7 SUBMITTALS

A. Product Data: Submit list of products and specifications, installation instructions and general recommendations from the sealant manufacturer.

B. Sample mock-up, on site, 12 inches long, illustrating a clear understanding of the requirements and the quality of workmanship required. Work is not to proceed until the mock-up is approved by the Design Professional.

1.8 PRODUCT HANDLING

A. Protect materials from damage before, during, and after installation.

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

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

   3. Deliver enough material to allow continuous work.

C. Storage:
   1. Store and handle materials to protect them from :
      a. Moisture, whether due to rain, or condensation.
      b. Damage by construction traffic.
      c. Temperature over 110^{o}F.
      d. Direct sunlight.
      e. Mud, dust, sand, oil, grease and dirt.

D. Handling:
   1. Select and operate materials handling equipment and store materials to keep from damaging existing construction or applied sealant.

   2. Immediately remove and dispose of damaged or out of date materials.

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

   4. Liquids and/or materials such as thinners and cleaners shall be stored in areas away from sparks, open flames and excessive heat.

PART 2 - PRODUCTS

2.1 MANUFACTURER

Provide products from the Manufacturers specified as Basis of Design in the following section. Other products will be considered if shown to have the same physical properties and to meet the same performance criteria.

2.2 SEALANT MATERIALS

A. Sealant for Existing Metal-to-Metal applications:
   Provide butyl rubber-based sealant, equivalent to SikaLastomer-511

B. Sealant for New Metal-to-Metal applications, pre-finished metal:
   Provide polyether sealant, equivalent to M-1 by Chemlink

C. Sealant for Metal-to-Stucco/concrete applications:
   Provide polyether sealant, equivalent to M-1 by Chemlink

PART 3 – EXECUTION

3.1 TESTING

A. Prior to beginning Work, a test sample is to be applied by the sealant manufacturer's representative or a third party testing agency.

B. The test is to include adhesion testing as well as elasticity. Samples shall comply with the Manufacturer's requirements prior to beginning construction.

C. Test results are to be submitted to the PBA Design Group, Inc. prior to beginning construction.

3.2 QUALITY CONTROL

B. Field adhesion testing of new sealant shall be performed and documented by an **independent third party** acceptable to the Owner. The Manufacturer's representative does not meet this criterion. Report is to be submitted to the PBA Design Group, Inc. Perform ten (10) tests for the first 1,000 lineal feet of sealant and, if all are acceptable, one test per 1,000 lineal feet thereafter or one test per floor for each elevation.

C. Record all testing on a Log. Submit the log to PBA Design Group, Inc. for inclusion in the project records.

3.3 SURFACE CONDITIONS – PREPARATION

A. Surfaces shall be free of any moisture, dust, dirt, existing coatings, existing sealants and debris

B. Completely remove any existing sealants and backer rod to the substrate. Surfaces shall be completely clean.

C. Prepare surfaces using the sealant manufacturer's recommended cleaning products and methods.

D. Prepare concrete surfaces by abrasion using grinding or sanding wheels wire brushes or other removal technique to completely remove existing sealants.

E. Mask the substrate to provide a straight, even, neat application of sealant. Masking is at the Contractor's option unless workmanship is unacceptable due to lack of skill on the part of the applicators. The PBA Design Group, Inc. will not consider the lack of skill or experience on the part of the applicators in acceptance or rejection of the Work.

3.4 SEALANT APPLICATION

A. Apply sealant in a continuous ribbon, using the proper joint proportions. Apply sealant with positive pressure to properly distribute sealant and tool to a smooth finish.

B. Use bond breaker tape over the sealant to prevent adhesion of joint covers or other flashings which are designed to allow movement.

C. Install new backer rod, where required, and set to proper depth in the joint.

D. Apply sealant without voids. To ensure complete joint fill, tooling shall be performed within 10-20 minutes of sealant application. Remove masking materials immediately after tooling.

E. Tool the sealant to a smooth continuous application without voids or streaks with a positive pressure. The ribbon is to be concave so that water will not stand on the sealant.

F. Sealant which is improperly applied or which is not neat and smooth will not be accepted.

E. Remove and replace any sealant installations which do not meet the Manufacturer's published recommendations.

END OF SECTION 07 90 00

SECTION 09 91 23 – EXTERIOR PAINTING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. In addition to any minor painting required under the Base Scope of the project, the Contractor may be required to restore surfaces which have been marred or damaged by construction operations. To the extent that such restoration is required, this Section includes paint systems on the following substrates:
   1. Masonry, Stucco, and Concrete
   2. Steel, Galvanized steel
   3. Aluminum (not anodized or otherwise coated)
   4. Wood
   5. Plastic

B. **All work of this section shall be subcontracted to a Painting Contractor who specializes in the trade, and shall be performed by experienced, professional workmen**.

1.3 SUBMITTALS

A. Material List: An inclusive list of required coating materials. Indicate each specific coating. Identify each material by manufacturer's catalog number and general classification.

B. Product Data:
   Submit Produce Data for each type of product to include:

   1. Preparation requirements and application instructions
   2. VOC content
   3. Material Safety Data Sheets

C. Manufacturer’s Standard Warranty Form for each product.

D. Samples for Initial Selection: For each type of finish-coat material indicated.
   After color selection, Architect will furnish color chips for surfaces to be coated.
   Submit four (4) Samples.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Manual: Provide coating maintenance manual including a description of each coating system and a plan indicating the locations where each coating system was applied.

B. Product data

C. Care and cleaning instructions

D. Manufacturer’s standard warranty

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Paint: 1 gal. of each coating in the sheen and color applied.

B. Furnish extra stock in new, unopened containers with original labels. **Containers which have been opened shall not be left on site.**

1.6 QUALITY ASSURANCE

A. Applicator Qualifications: A Painting Contractor, experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance. Work of this section may not be self-performed by the Prime Contractor.

B. Source Limitations: Obtain primers for each coating system from the same manufacturer as the finish coats

C. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

2. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.

3. Final approval of color selections will be based on approved mockups.

4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

E. Inspections and Reporting: The Contractor is responsible to schedule the following quality-control inspections by a representative of the Paint Manufacturer and to include any associated cost in the Bid.

1. Inspection reports are required for each type of substrate.

2. Inspections are to be performed at the following milestones:
   a. Completion of prep work for each substrate
   b. Completion of primer application
   c. Completion of finish coat application
   d. Completion of final finish coat application

3. Reporting requirements are as follows:
   a. Reports are to include photos showing the surrounding context to the extent that the location is clear.
   b. Reports are to include a list of deficiencies
   c. Reports are to be submitted to the Architect within 3 days of the inspection. Failure to provide inspection reports within 3 days may result in the need for testing to confirm compliance with these specifications, the cost of which will be borne by the Contractor.
   d. Inspection reports submitted after the subsequent coat has been applied will not be accepted.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Handling: Deliver products to Project site in an undamaged condition in manufacturer's original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Packaging shall bear the manufacturer's label with the following information.
   1. Product name and type (description).
   2. Batch date.
   3. Color number.
   4. VOC content.
   5. Environmental handling requirements.
   6. Surface Preparation requirements.
   7. Application instructions.

B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply coatings only when temperature of surface to be painted and ambient air temperatures are between 50 and 90 deg F.

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company products indicated or comparable product from one of the following:
   1. PPG Industries, Inc. (Pittsburg Paint)
   2. Glidden
   3. Other approved equivalent

2.2 GENERAL

A. Material Compatibility:
   1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

   2. For each coat in a system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

C. Elastomeric Patching Compound: Provide materials recommended by the manufacturer of the paint products.

D. TYPICAL: Paint colors are to match existing. The Contractor is required to use a physical sample to achieve the proper color mix. New paint which does not match the surrounding surfaces will require repainting to a corner or other natural break. The final result must be unnoticeable.

2.3 EXTERIOR PAINTING SCHEDULE

The following are based on Sherwin Williams Co. Equivalent products by other manufacturers are acceptable.

A. Exterior Concrete, Masonry and Stucco (previously painted and new):
   1. 1st Coat: SW Loxon Acrylic Conditioner Primer LXO2W0050 applied to achieve a minimum of 3.0 mils DFT.
   2. 2nd Coat: Emerald Exterior Acrylic Satin, K48 Series, applied to achieve minimum 2.1 mils DFT.
   3. Additional coats as required to achieve manufacturer's recommended total dry film thickness

B. Exterior Rusted Metal (exterior):
   1. Clean rusted areas in accordance with the recommendations of the finish coat manufacturer
   2. 1st Coat: Macropoxy 6A6 Fast Cure Epoxy applied to achieve minimum 3 mils DFT or as recommended by manufacturer for the specific application
   3. 2nd Coat: Macropoxy 6A6 Fast Cure Epoxy applied to achieve minimum 3 mils DFT or as recommended by manufacturer for the specific application
   4. Additional coats if required to achieve manufacturer's recommended total dry film thickness

C. Exterior Ferrous and Galvanized Metal (exterior):
   1. Clean surface in accordance with the recommendations of the finish coat manufacturer
   2. 1st Coat: Pro Industrial Pro-Cryl Primer B66-310
   3. 2nd Coat: Pro-Industrial High Performance Acrylic,B66-650 series, Egg-Shell, applied to achieve minimum 2.1 mils DFT.
   4. 3rd Coat: Pro-Industrial High Performance Acrylic,B66-650 series, Egg-Shell, applied to achieve minimum 2.1 mils DFT
   5. Additional coats if required to achieve manufacturer's recommended total dry film thickness

D. Exterior Aluminum:
   1. Clean surface in accordance with the recommendations of the finish coat manufacturer
   2. 1st Coat: Pro Industrial Pro-Cryl Primer B66-310
   3. 2nd Coat: Pro-Industrial High Performance Acrylic,B66-650 series, Egg-Shell, applied to achieve minimum 2.1 mils DFT.
   4. 3rd Coat: Pro-Industrial High Performance Acrylic,B66-650 series, Egg-Shell, applied to achieve minimum 2.1 mils DFT
   5. Additional coats if required to achieve manufacturer's recommended total dry film thickness

E. PVC, Plastic, Fiberglass:
   1. Clean surface in accordance with the recommendations of the finish coat manufacturer
   2. 1st Coat: As recommended by manufacturer of finish coat
   3. 2nd Coat: Pro-Industrial High Performance Acrylic,B66-650 series, Egg-Shell, applied to achieve minimum 2.1 mils DFT
   4. 3rd Coat: S-W Pro Industrial Acrylic Semi-gloss Interior/Exterior Coating B66-650(6.0-12.0 mils wet, 2.1-4.2 mils dry per coat)

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. Where acceptability of substrate conditions is in question, apply samples and perform in-situ testing to verify compatibility, adhesion, and film integrity of new paint application.

   Report, in writing, conditions that may affect application, appearance, or performance of paint.

B. Substrate Conditions:
   1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

      a. Concrete: 12 percent
      b. Masonry (Clay and CMU): 12 percent
      c. Wood: 15 percent
      d. Gypsum Board: 12 percent
      e. Plaster/Stucco: 12 percent

   2. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
   3. Plaster Substrates: Verify that plaster is fully cured.

C. Proceed with coating application only after unsatisfactory conditions have been corrected; application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. General:
   1. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

   2. When coatings are fully cured, reinstall devices and hardware that was removed. Door hardware and electrical devices are to be reinstalled by workers skilled in the respective trades. Remove surface-applied protection if any.

   3. Before applying the first coat, Contractor is responsible to schedule an inspection of the substrate by the manufacturer's representative, see Quality Assurance requirements in Part 1 of this section.

   4. In general, substrates shall be dry, clean and slightly rough. Surfaces to be painted shall be free of dirt, oil, release agents, grease, rust, mill scale, efflorescence, laitance and other surface imperfections and contaminants or any substance which may adversely affect the performance of the coating before the application process begins.

   5. Carefully follow the paint manufacturer's recommendations for minimum surface acceptability and the recommendations of recognized trade associations.

   6. Exterior caulks and sealants shall not be applied until primers and sealers have been properly applied and allowed to cure.

7. For previously-painted items being recoated as part of this project, prepare surfaces to the extent that the final result is a like-new finish.

8. Note: In the event that existing paint finishes are damaged during construction, the Contractor is required to restore these finishes to like-new condition. Submit a Request for Information for product selection. Requirements of this specification apply to any additional work, including submittals, quality assurance inspections, and close out requirements.

B. Substrate Preparation Requirements:
   1. Concrete, masonry, stucco, plaster and similar surfaces shall be pressure cleaned with minimum 2500 psi, 8"-wide pattern water stream prior to the application of coating systems. Surface shall then be water-bead tested to assure that contaminants have been removed. Surfaces must be allowed to dry a minimum of 48 hours prior to priming or painting.

      Manually scrape surface to remove loose paint, sealant, glue, tape and other foreign materials.

      Apply elastomeric patching compound to cracked stucco and concrete surfaces prior to applying new coatings. Application of sealants or exterior caulking to cracked stucco and concrete surfaces is unacceptable.

   2. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

      a. SSPC-SP 2, "Hand Tool Cleaning."
      b. SSPC-SP 3, "Power Tool Cleaning."
      c. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
      d. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

   3. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

   4. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

   5. Aluminum Substrates: Remove surface contamination by steam or high-pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

   6. Wood Substrates:
      a. Scrape and clean knots and apply coat of knot sealer before applying primer.
      b. Sand surfaces that will be exposed to view and dust off.
      c. Prime edges, ends, faces, undersides, and backsides of wood.
      d. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations.
   1. Use applicators and techniques suited for paint and substrate indicated.
   2. Paint surfaces behind movable equipment same as similar exposed surfaces.

3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Finish coats shall not be applied over inadequately cured primers or intermediate coats.

E. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections.

F. Cut in sharp lines and color breaks. Failure to neatly cut in sharp straight lines will require corrective action by the Contractor which may include replacement of sealants, extensive masonry cleaning and the like.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: The County may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore pointed surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations and these specifications, Contractor shall pay for testing and apply additional coats as needed to achieve compliance.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing point application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 09 91 23

SECTION 10 71 13 FABRIC HURRICANE PROTECTION PANELS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

Work includes new hurricane protection panels for the two Scale Houses as shown on the Contract Drawings.

1.3 GENERAL REQUIREMENTS

A. Product is required to have Florida Product Approval for attachment to concrete and concrete masonry
B. Adequacy for impact, deflection and fatigue resistance verified in accordance with the Florida Building Code, 2020, TAS 201, TAS 202 ,TAS 203 Protocols and ASTM E330-02, ASTM E1886-05 and ASTM E1996-05.
C. No minimum separation from glass required for proper function
D. Must be capable of maximum projection from building face of .5” or less
E. Capable of both horizontal and vertical mounting and 3-side or 4-side attachment.
F. Each panel to bear the manufacturer’s label in a readily visible location.
G. Mounted with permanent wall anchors with removeable fasteners

PART 2 - PRODUCTS

2.1 MATERIALS

Basis of Design: Astroguard, as supplied by Hurricane Fabric LLC, www.hurricanefabric.com
Products by other manufacturers will be allowed if determined to be equivalent.

A. Fabric:
Fiber content: textile fabric, 20 x 20 weave
Finish: resin coated
Weight (ASTM D-3776): 9.0 oz / square yard
Tensile Strength (grab method, ASTM D-4632): Warp-570 lbs, Weft-570 lbs
Burst Strength (ASTM D-3786): 1000 psi
Abrasion Resistance (ASTM D-4886): 95% strength retained
Color: as selected from manufacturer’s full range

B. Panel Construction:
Sewing only at splices, in accordance with manufacturer detail. No sewing at edges

C. Clips:
High performing plastic such as Polyamide 66 by Rhodia Engineering Plastics.

D. Anchors and Fasteners:
Use anchors and fasteners as recommended by the panel manufacturer for the specific installation, and compliant with the Florida Product Approval 15208.1. Use lead anchors and sidewalk bolts at masonry/concrete walls if feasible.

Fasteners are to be removable. Wall anchors are to be non-removable.

At metal framed walls, use removeable fasteners recommended by the panel manufacturer.

NOTE: No part of the mounting hardware, including fasteners and anchors, shall protrude past the face of the existing building when the fabric panels are not installed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor is required to examine existing conditions and measure for new panels according to the manufacturer's instructions.

B. Special Instructions for the metal framed portion of Scale House 1:Installation of panels on the metal framed portion of the building will not comply with the Florida Product Approval criteria.

C. The Contractor is required to investigate and locate framing members at the top, sides and sill of each opening and use fasteners recommended by the panel manufacturer. All fasteners must be removeable

3.2 INSTALLATION

A. Measure and order panels for windows and door openings in accordance with the Manufacturer's publication titled "Measure for Hurricane Fabric Panels. Overlap openings by 4".

B. Where a sill protrudes from the face of the wall, overlap the sill with the fabric panel and install the anchors at the proper distance below the sill to allow the clip to lay flat on the wall surface.

C. Ensure that the fabric panels cover door thresholds to prevent wind driven rain from entering the structure.

D. Pre-paint fasteners and allow coating to completely cure sure before threading the fasteners into the wall anchors, where they will stay until needed. Closely match the wall color to avoid the need to paint larger areas.

END OF SECTION 10 71 13

SECTION 26 41 13 – LIGHTNING PROTECTION SYSTEM

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

B. This section pertains to the removal and reinstallation of an existing lightning protection system (LPS).

1.2 STANDARDS

The following specifications and standards of the latest issue form a part of this specification:

A. Underwriters Laboratories, Inc.,
Installation Requirements for Lightning Protection Systems, UL 96A.
Lightning Protection Components, UL 96

B. National Fire Protection Association
Standard for the Installation of Lightning Protection, NFPA 780

C. Lightning Protection Institute (LPI)
The Standard for the Installation of Lightning Protection for the LPI-IP Certification
LPI Standard LPI 175

1.3 SCOPE

A. The **Base Scope** of the project includes:

1. The Contractor is required to survey existing conditions **prior to bid** and include in the base bid the cost of any additional components needed to meet all requirements herein.

2. Removal and reinstallation of the existing lightning protection system.

3. Add new and replacement of damaged components at roof level and above as needed to meet the above listed standards.

4. Upon completion, verify through testing that the system is functional and compliant with the above listed standards.

5. Provide a UL Master Label Certificate or UL Lightning Protection Inspection Certificate verifying compliance with the above listed standards.

A. Installer:
The lightning protection installation company shall be listed by UL Laboratories, Inc. and shall employ LPI Certified Master Installers for the removal, reinstallation, testing and certification of the final installation.

1.4 SUBMITTALS

A. Submit LPS design drawings showing any new/replacement components and any changes to the existing system as may be needed to meet the requirements of the Lightning Protection Institute (LPI) and to achieve the specified certification.

The lightning protection system design drawings s**hall bear the seal of an LPI Certified Master Installer/Designer**. The seal shall be current at the time of submission and shall be signed by the Master Installer/Designer.

B. Submit product data for any new components.

C. Submit certification that roof adhesive used for air terminals is approved by the manufacturers of both the terminal assembly and the roofing manufacturer.

PART 2 - PRODUCTS

2.1 PRODUCTS

A. All new and replacement lightning protection materials and components shall comply in weight, size and composition with UL 96 and lightning protection material requirements for this type of structure. Materials shall be UL listed and properly UL labeled.

B. All new and replacement materials shall be matched in design and composition to the existing materials to the extent possible.

C. Aluminum components shall be used in locations where system components are mounted to aluminum, zinc and galvanized surfaces to avoid galvanic corrosion of dissimilar metals.

D. Class II materials shall be used.

PART 3 – EXECUTION

3.1 GENERAL

A. Coordination: the lightning protection installer is required to work with other trades to ensure a correct, neat, and watertight installation.

B. The roofing contractor is responsible for sealing penetrations at walls, for applying liquid flashing at any roof membrane penetrations, and for installing slip pads, liquid flashing and other waterproofing in accordance with the roofing system manufacturer’s recommendations.

C. Components which are removed and awaiting reinstallation are to be properly stored on site in a weatherproof container.

D. Submit as-built Drawings and narrative upon completion.

END OF SECTION 26 41 13

SUPPORTING DOCUMENTS

1. Fastener Testing Reports.

The documents listed above were not prepared by PBA Design Group, Inc. (PBA) and only are provided as a convenience to the bidder only. PBA assumes no responsibility for the content, completeness, or accuracy of the information. Any questions concerning this testing will be forwarded to the appropriate firm and any responses provided to the bidders.

FORM A PULLOUT TEST REPORT

Refer to the **Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners** for full documentation

Job name: Lee County Solid Waste		
Location: 10500 Buckingham Rd., Ft. Myers, FL 33905		
Test date: 7/6/2023	**Ambient temperature**: 88°	
Roof area: 60,130 sq. ft.	**Tester mfg**: DMD FORCE MEASURMENTS	
Max. cap. of tester: 2000	**Select one:** ☒ lbf ☐ Kn	
Date of last calibration: 4/20/2023	**Number of pulls recorded on Form B**: 4	
Fastener tested: #14 HD	**Fastener manufacturer**: Trufast	
Fastener tested:	**Fastener manufacturer**:	
Fastener tested:	**Fastener manufacturer**:	
Test performed by: Evan Evans / Trufast		
Witnessed by: Howard Piper – PBA Design Group	**Test cut areas repaired by**: Crowther Roofing	
Project type (select one): ☐ New construction ☒ Tear off ☐ Retrofit		

Deck type (select one):		
☒ Steel	Gauge:	
☐ Structural concrete	Thickness:	Select one: ☐ Poured in place ☐ Precast
☐ Lightweight concrete	Thickness:	
☐ Insulating concrete	Thickness:	
☐ Cementious wood fiber	Thickness:	
☐ Gypsum	Thickness:	Select one: ☐ Poured in place ☐ Precast
☐ Wood	Thickness:	Select one: ☐ OSB ☐ Plywood ☐ Plank
☐ Fiberglass	Thickness:	
☐ Other:	Thickness:	
Embedment or protrusion: 1”		
Drill bit diameter, where applicable:		

Optional Information		
Test time: 10:00 am	**Building height**: 30 – 70 ft.	**Thickness of existing roof assembly**: 2 ¼” – 3”
New system manufacturer: Fibertite		

Roof cover type (select one):	
☐ Mechanically attached single-ply	☐ Modified bitumen
☐ Ballasted single-ply	☐ Built-up roofing
☐ Adhered single-ply	☐ Other:
New insulation: Type: Thickness:	

Disclaimer: Manufacturer’s installation requirements shall be followed when using any of the tested fasteners. Neither the technician performing the pullout tests not his/her company is responsible for the waterproofing integrity of the repairs. This test report does not certify the structural integrity of the roof deck

TRUFAST

Form B PULLOUT TEST REPORT

Report all test results and units of measure.

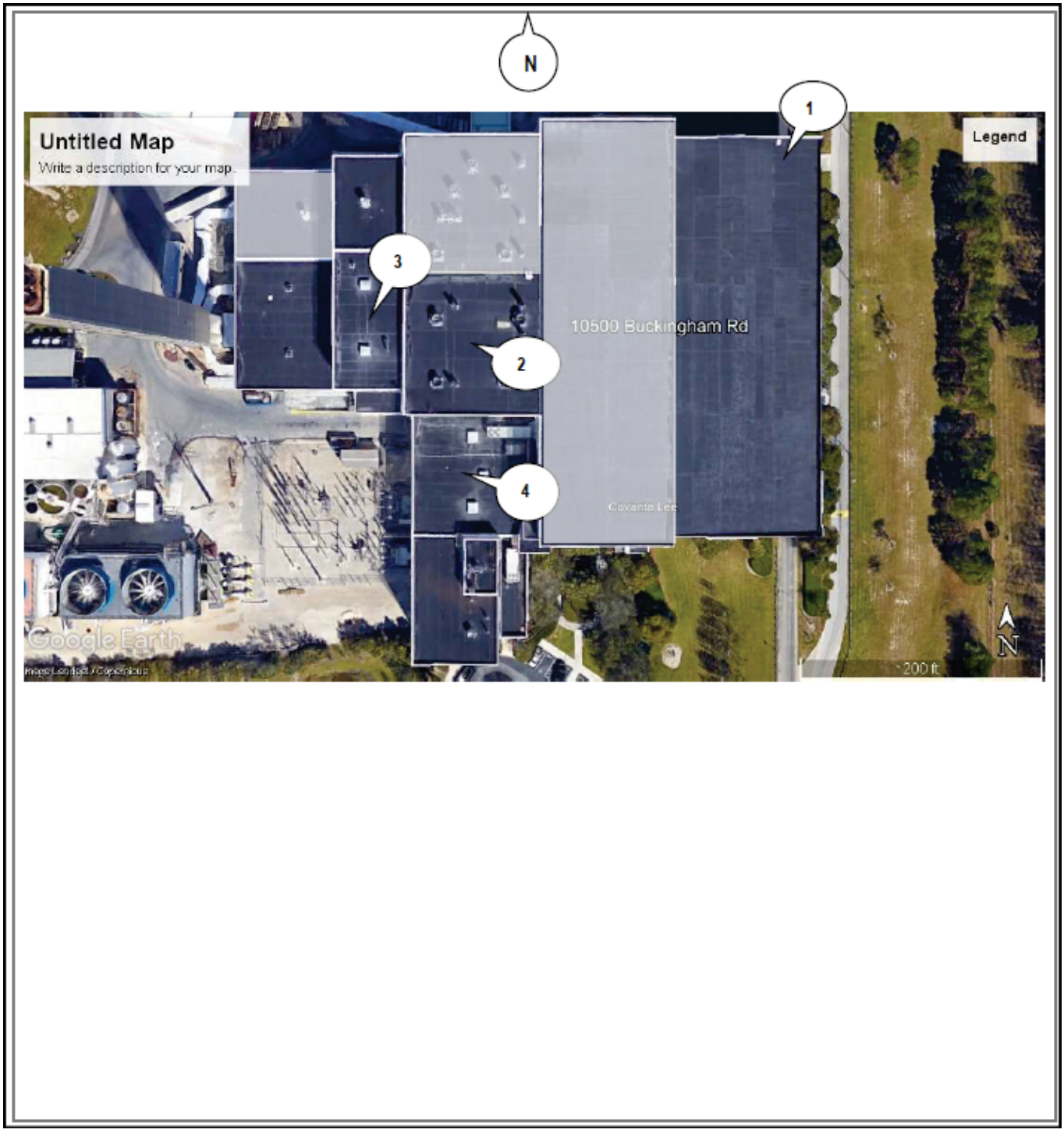
Conversion formulas			
lbf × .00448222 = KN × 224.8089431 = lbf			
1. 400	6.	11.	16.
2. 451	7.	12.	17.
3. 412	8.	13.	18.
4. 385	9.	14.	19.
5.	10.	15.	20.
Pullout Results of Additional Tests Performed (See C4.5.)			
21.	26.	31.	36.
22.	27.	32.	37.
23.	28.	33.	38.
24.	29.	34.	39.
25.	30.	35.	40.
41.	46.	51.	56.
42.	47.	52.	57.
43.	48.	53.	58.
44.	49.	54.	59.
45.	50.	55.	60.

Deviation from standard procedure authorized by:

Reason for deviation: Per Howard Piper's request, I only preformed 4 pulls.

Form C PULLOUT TEST REPORT

Roof plan not to scale. Identify where the pullouts were performed with corresponding test number



Comments:

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