

Item 7.1 - Load Chart

No Comments

Item 7.2 - 30 yr Warranty - edge to edge NDL **SEE REVISED SAMPLE WARRANTY**

1. Warranty must outline all warranty requirements as stated within the project SOW, spec section 07 52 00, and UFC 3-110-03, inclusive of:

A. Must indicate coverage up to 130 MPH wind uplift.

B. Must indicate warranty for full system water-tightness.

C. Provision for "No dollar limit". Please provide explicit language indicating such (currently stated in the title but not in the warranty provisions). Should also indicate that warranty is not pro-rated for clarity.

Must clarify that it is a total roof system warranty, including flashing, curbs, lightning protection attachments, snow guards, and other accessories (regardless of the manufacturer).

D. Must include warranty for hail up to 2" in diameter.

E. Exclusions indicate that leaks caused by deteriorated or failing sealants are not covered. UFC prohibits warranties requiring periodic inspections or repairs at the Government's expense. Since these sealants and pitch pans will be part of the full-system warranty, this provision conflicts and should be removed or revised.

F. Must state the following: "If within the warranty period the roof system, as installed for its intended use in the normal climatic and environmental conditions of the facility, becomes non-watertight, shows evidence of moisture intrusion within the assembly, blisters, splits, tears, delaminates, separates at the seams, or shows evidence of excessive weathering due to defective materials or installation workmanship, the repair or replacement of the defective and damaged materials of the roof system assembly and correction of defective workmanship are the responsibility of the roof membrane manufacturer. All costs associated with the repair or replacement work are the responsibility of the roof membrane manufacturer."

G. "Owner Responsibilities" section currently indicates that emergency repairs can be performed only with Garland approval and only after 72 hours from inspection timeframe. Specs must be followed, inclusive of:

- Emergency repair timeline of 72 hours must be based on time of notification to the manufacturer, not based on inspection date.

- Emergency repairs after this period must NOT void the warranty, regardless of manufacturer approval. "Notification" is the only Government responsibility, by specifications.

2. Wind pressures contained within the warranty do not reflect the requisite wind pressures generated by 130 mph winds, nor does the warranty identify design ideology driving the wind pressures derived. The Gov't has provided wind pressure requirements in the SOW and drawings consistent with LFRD design ideology. Should Garland choose to continue to use ASD wind pressures for design of components, the warranty should identify design ideology, and

Garland should provide separate documentation validating that the ASD derived wind pressures are commensurate with the LRFD wind pressures provided in the SOW. Additional comments pertaining to structural calculations are contained in item 7.6 below.

Item 7.3 - 30 yr Warranty - Metal roof **Item 7.3 - SEE REVISED SAMPLE WARRANTY**

See comments in item 7.2 above.

Item 7.4 - REVISED ANALYSIS W/O VAPOR RETARDER

Item 7.4 - WUFI Hygrothermal analysis **Item 7.4 - REVISED ANALYSIS INCLUDING VAPOR RETARDER**

1. Short-wave radiation absorptivity of 0.6 (both sets of analysis) appears to be high for a white flood coat. Please adjust accordingly.
2. Polyiso insulation listed as 5.0", but product data indicates that minimum 5.2" would be required for R-30 required thermal value.
3. For Vapor Retarder analysis, VaporSmart SA is listed as both an assembly material and with its performance characteristics. VaporSmart SA is not in the product data, but R-Mer Seal is. Please clarify this inconsistency and adjust accordingly.
4. Relative Humidity profile for both assemblies (pg 42 & 22) do not appear to reflect an accurate representation of true psychrometrics for temperature drop across the assembly. In the case of the non-vapor retarder assembly, profile seems to be indicating the opposite effect of what would be expected (RH drop with temperature drop). Is there an input parameter set incorrectly that may be throwing off the results, or is there some anomaly creating this profile? Please validate all input criteria and data and provide updated analysis for both schemes.
5. Analysis has been provided for Assembly with VR and Assembly without VR, but no assembly has been evaluated for reduced R-Value, IAW SOW 2.14.23.2. Please provide analysis of any assemblies that will require less than R-30 insulation for validation.

Item 7.5 - Rev1 Low Slope Roof Cert **Item 7.5 - SEE REVISED CALCULATIONS**

1. Clip spacing based on incorrect roof pressure calculations. Spacing to be revised upon revision to pressure calculations.

Item 7.6 - ASCE - Hazard Report

1. Wind speed for ASCE report noted as 113 Vmph, but SOW requires 130 MPH wind speed. Please be sure all calculations and design criteria are aligned with SOW requirements.
2. Occupancy Group noted as B Business, but facility is split between S-1 storage and B Business. Please reconcile.
3. Both wind calculations fail to comply with the minimum wind speed of 130 mph required for warranty.
4. Portion of facility to receive low slope roof is considered partially enclosed and is not calculated using the correct GCpi

5. Low slope roof calculations do not accurately reflect the overall structure of the facility. Facility contains stepped roofs on either side of the main roof structure, which design drawings capture. Wind pressure zones selected are inconsistent with actual building conditions.
6. SOW and drawings provide minimum LRFD design wind pressures. Expectation is to see commensurate ASD pressures upon adjustments to calculations as indicated above.

Item 7.7

NOT APPLICABLE

Item 7.7 - Concealer: Screws

**VAPOR RETARDER NOT REQUIRED PER
HYGROTHERMAL ANALYSIS (SEE REPORT)**

1. If Vapor Retarder is used, contractor shall validate with VR manufacturer that fasteners are acceptable for use under VR membrane without concern for puncture.

Item 7.8 - Roof Measurement Report

No comments

Item 7.9 - Densdeck Storm X

No comments

Item 7.10 - FlexBase 80mil membrane

No comments

Item 7.11 - Garla-Flex

No comments

Item 7.12 - Glaral-Block 2K Primer

No comments

Item 7.13 - Green Lock Plus

No comments

Item 7.14 - Insul-lock HR Insulation Adhesive

1. Insulation adhesive is being proposed, and shop drawings indicate mechanical fastening patterns. Is the insulation fully adhered, mechanically fastened, or both?

Item 7.14

**THE INSULATION IS MECHANICALLY FASTENED IN ACCORDANCE WITH
GARLAND'S REQUIRED FASTENING PATTERNS. FOAM ADHESIVE WAS INLCUED
IN THE SUBMITTALS ON AN AS-NEEDED BASIS.**

Item 7.15 - Roof Contractor Workmanship Warranty

No comments

Item 7.16 - OptimMax Membranes

No comments

Item 7.17

PYRAMIC PLUS LO IS USED FOR VERTICAL FLASHINGS ONLY. NO CONDITIONS <1/2" SLOPE WILL OCCUR.

Item 7.17 - Pyramic Plus LO - Roof Coating

1. Product states that it shall not be used on roofs with less than 1/2" slope. Contractor to ensure that 1/2" slope will be met everywhere (unlikely based on SOW 2.14.23.2), or provide documentation indicating the product will be acceptable for lower slope applications.
2. Product states maximum 1.0 gal/100 SF single coat coverage, with 2.0 gal/100 SF max total coverage. SOW requires 4.0 gal/100 SF total coverage. Is this product being used as a finish coating over another adhesive, such as greenlock plus?

Item 7.18 - R-Mer Span Standing Seam

1. Product finish samples to be provided for selection. **SAMPLES PROVIDED**

Item 7.19 - R-Mer I-SPAN Anchor Clip

No comments

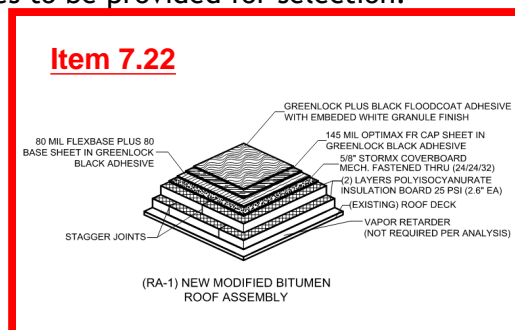
Item 7.20 - R-Mer SS flat stock

1. Product finish samples to be provided for selection. **SAMPLES PROVIDED**

Item 7.21 - R-Mer Seal

No comments

Item 7.22 - Drawings



1. Vapor retarder membrane is missing from New Modified Bitumen Roof Assembly. Per SOW, this VR membrane must be included until both validated by a completed/approved Hygrothermal analysis and removed from the contract requirements through Bid Option.
2. Greenlock plus black floodcoat is noted in assembly information, but Pyramic Plus LO is submitted for a flood coat application. Please clarify the use of the products and clear the conflicts. See more comments in item 7.17. **1. ASSEMBLY IN THE SHOP DRAWINGS HAS BEEN UPDATED TO SHOW THE V/R, LISTED AS NOT REQUIRED.**
2. PYRAMIC PLUS LO IS FOR VERTICAL FLASHINGS ONLY. GREENLOCK PLUS BLACK WILL BE USED FOR THE FLOODCOAT.

- 3. NOTED N/A** 3. Any fasteners used for insulation board or cover board attachment shall be verified with Vapor Retarder manufacturer for acceptability and self-gasketing ability within system (unless VR membrane is removed from Contract). Any missed or improperly placed fasteners shall not be backed out of the vapor retarder, subsequently creating perforations in the material reducing performance metrics.
- 4. NOTED** 4. Contractor to ensure sufficient overlap of edge metal with existing wall panels/fascias. Some details appear to barely extend to existing finish. Larger edge metal vertical faces shall be provided where needed to sufficiently overlap.
- 5. SEE RESPONSE** 5. Detail 3/R-2, is manufacturer accepting of this condition? Would it make more sense to extend flashing plies onto the steel channel and provide a termination bar just beneath the existing metal flashing with treated joints/seams to ensure a higher termination point?
- SEE REVISED SHOP DWGS (ITEMS 6-9)** 6. Detail 5/R-2, please clarify that this is for premanufactured curbs only, and that a separate detail applies to lumber-constructed curbs with roof membrane extending up and over curb. Please verify that the curbs this detail applies to have premanufactured flashing or other water control methodology, or provide new drip flashing with backdam at these curbs to avoid water intrusion.
7. Detail 1/R-4 and 2/R-4, please clarify in detail that ice dam membrane is being provided full length onto existing wall substrate IAW UFC 3-110-03, 5-4.1.1.2. Detail is unclear on termination point of underlayment.
8. Detail 3/R-4 and 4/R-4, please indicate underlayment extending as high as possible behind headwall/sidewall flashing.
9. Where are snow retention devices? See SOW 2.14.23.1.17 and UFC 3-110-03, 5-2.10.1. Please provide locations and details.
10. Please provide fabrication details and mounting details for roof ladder replacements. **10. SEE DWG**
- 11. SEE REVISED SHOP DWG G-3** 11. Missing tapered insulation and cricket plans/shop drawings. Please provide.
12. Clarify fastener pattern locations and intended fastener.

12. APPROVED FASTENERS

APPROVED PLATES

Item 7.23 - Tuff-Flash Plus LO

No comments

Item 7.24 - Tuff-Stuff MS Adh Sealant

No comments

Item 7.25 - Viking VPG Flat Rigid Roof Insulation

1. Repeat Comment: Contractor to confirm that 25 PSI insulation will be provided/installed IAW the SOW. (nothing highlighted/circled)

Miscellaneous & Missing

1. Repeat comment - Provide proposed sheathing product data for decking replacement.
2. Contractor shall coordinate above-roof snow loading, and alternating tread device fabrication with roof thickness and slope expectations.
3. Missing stamped drainage calculation IAW SOW 2.14.23.2.6. Please provide. **3. SEE CALCS**

**Item 7.25
PRODUCT DATA
HIGHLIGHTED,
CONFIRMED 25
PSI ISO. HOLCIM
ELEVATE
APPROVED PER
GARLAND**

1&2. OLGONIK?