



**CITY OF NOVI CITY COUNCIL  
JANUARY 10, 2022**

**SUBJECT:** Approval to purchase materials and labor provided by Garland Industries for the restoration of the roof at Fire Station No. 2 under the OMNIA purchasing agreement in the amount of \$83,260.

**SUBMITTING DEPARTMENT:** Integrated Solutions – Facilities Management Division

<b>EXPENDITURE REQUIRED</b>	<b>\$83,260</b>
<b>AMOUNT BUDGETED</b>	<b>\$83,260</b>
<b>APPROPRIATION REQUIRED</b>	<b>\$0</b>
<b>LINE ITEM NUMBER</b>	<b>101-265.00-976.061</b>

**BACKGROUND INFORMATION:**

The roof at Fire Station No. 2 is original to the building, from 1981. This asset requires regular repairs to correct ongoing leaks and prevent future leaks penetrating to the interior, specifically inside the weight room and apparatus bays. The roof structures were infra-red scanned in 2017, showing that the roof decking and structural supports are sound enough to accept a restoration product. Failure to address this issue now could result in water damage to interior furnishings, in addition to decking structure issues, which would require extensive and costly repairs, at which point a restoration is no longer viable. Replacing the roof would be a major disruption to Fire Operations and creates excessive amounts of material waste. The proposal is to restore the roof using a liquid-based topcoat, resulting in less production of material waste, and allowing Fire Operations to continue running out of Station No. 2 during construction. This restoration is rated for 15 years.

**RECOMMENDED ACTION:** Approval to purchase materials and labor provided by Garland Industries for the restoration of the roof at Fire Station No. 2 under the OMNIA purchasing agreement in the amount of \$83,260.



since 1895

# THE GARLAND COMPANY, INC.

## PERFORMANCE ROOFING AND FLOORING SYSTEMS

3800 EAST 91 STREET • CLEVELAND, OHIO 44105-2197  
PHONE: (216) 641-7500 • FAX: (216) 641-0633  
NATIONWIDE: 1-800-321-9336

11-9-21

Marcus Kull  
Facilities Manager  
City of Novi  
45175 W. Ten Mile Rd.  
Novi, MI 48375

Mr. Marcus Kull,

The City's Roofing assets are routinely inspected to establish a priority list for future capital funding and required scopes of work. Over the past several years, multiple older roofing assets have been professionally assessed, repaired and/or replaced using this process. Previous inspections and budgetary figures were established for larger Scopes of Work on roofing assets at Fire Station #2 and #3. Technical specifications based on design constraints, environment, roof access and longevity were established to generate a base-line for roof work; ensuring consistent bid quality and raising standards to current building code where possible. Pre-qualified roofing contractors were contacted for interest and a pre-bid has been completed.

### Bid Results

The project-specific Bid Set including scope of work, technical specifications, construction details and detailed installation instructions for bids was provided to the roofing contractors. Each of the responsive bids received were from reputable roofing firms who have demonstrated the capability and capacity of completing the scope of work in a safe and timely manner. We recommend proceeding with the award to low responsive bidder, Royal Roofing, for both the Fire Station #2 & #3 Project with the low responsive bid of \$149,856. (Utilizing the largest Public Purchasing Co-Op, Omnia Partners, resulted in additional discounts for the City of Novi.)

	<b>Lutz Roofing</b>	<b>Royal Roofing</b>	<b>Schreiber Roofing</b>
<b>F.S. #2</b>	\$108,583	\$83,260	\$130,845
<b>F.S. #3</b>	\$89,619	\$66,598	\$104,821

Over the past six months, we've noticed the pandemic creating inconsistent bid results and uncertainty in the construction industry. This uncertainty along with contractor back-log, material cost increases and extremely long material lead-times, has resulted in the need for most municipalities to secure contractor scheduling six to twelve months ahead of the project start date. Since Royal's responsive bid is significantly more economical than other responsive bids, we recommend proceeding with the low responsive bid at this time, even though the work shall not be completed until the Spring/Summer of 2022. Providing acceptance now eliminates additional material cost increases set for 2022 (anticipated at \$10,000+ specific to this project) and establishes a project time-line to allow contractors to secure material lead-times which have fluctuated between 2 and 6 months or more. Delaying acceptance will prevent this project from completion in the 2022 calendar year and ensure additional material cost increases for the City of Novi.

Should you have any additional questions, please do not hesitate to call us directly.

Sincerely, your Garland Team,

Brad Konvolinka  
The Garland Company, Inc.



**Garland/DBS, Inc.**  
**3800 East 91<sup>st</sup> Street**  
**Cleveland, OH 44105**  
**Phone: (800) 762-8225**  
**Fax: (216) 883-2055**



## **ROOFING MATERIAL AND SERVICES PROPOSAL**

**City of Novi**

**Fire Department Station #2**  
**1919 Paramount**  
**Novi, MI 48377**

**Fire Department Station #3**  
**42785 9 Mile Rd**  
**Novi, MI 48375**

**Date Submitted: 11/09/2021**  
**Proposal #: 25-MI-211069**  
**MICPA # PW1925**

Purchase orders to be made out to: Garland/DBS, Inc.

**Please Note:** The following budget/estimate is being provided according to the pricing established under the Master Intergovernmental Cooperative Purchasing Agreement (MICPA) with Racine County, WI and OMNIA Partners, Public Sector (U.S. Communities). The line item pricing breakdown from Attachment C: Bid Form should be viewed as the maximum price an agency will be charged under the agreement. Garland/DBS, Inc. administered an informal competitive process for obtaining quotes for the project with the hopes of providing a lower market-adjusted price whenever possible.

### **Scope of Work: Fire Station 2 and 3 - Restoration**

1. Infrared Scan Roof Sections; Remove areas of wet insulation as identified in the infrared roof scan map, down to the tectum decking. Replace in kind with polyisocyanurate insulation and cured 60 mil membrane; making permanent tie-ins surrounding the affected area. Additional wet insulation found, during installation, shall be replaced at the predetermined bid price provided on the Bid Form.
2. Repair any existing ridges, splits, punctures or tears to the existing membrane roofing where necessary.
3. Remove and replace all existing pipe boots with neoprene pipe boots throughout.
4. Adding crickets or saddles, correct areas of negative slope with properly tapered insulation to promote positive drainage.

5. Roof surface and flashings to be cleaned using power washer (2,000 psi) and 10% SimpleGreen or TSP solution. Soft bristle brooms will be used to remove areas of heavy dirt, debris, oil and scale. Contractors should anticipate a minimum of two cleanings prior to a final rinse. If the roof surface becomes contaminated at any time during the application, additional cleaning will be required.
6. Install high-performance, fatigue resistant, self-priming, 100% solids seam tape to existing field seams, flashing base and roof penetration transitions, (at 90 degrees) throughout.
7. Apply base coat of elastomeric coating at a rate of two gallons per square over self-adhering seam tape through the field and flashings. (low-lying areas in which drainage cannot be feasibly corrected require a reinforcement fabric to be embedded in the base coat prior to installing a top coat)
8. Apply top coat of elastomeric coating at a rate of two gallons per square over all roof sections, including previously areas which received the base coat.
9. Drain Areas Only: Sump existing assembly and replace with cured EPDM. Apply 3 gallons per square Liquitex, embed reinforcement fabric, apply top coat at 2 gallons per square.
10. Apply Seal-a-Pore masonry sealant to horizontal wall at elevation change and caulk control joint.
11. Primary roofing manufacturer to provide quality assurance inspections per specifications.
12. Clean up all debris and damage done to grounds, building and roof top (if any). Charcoal filters to be utilized at intakes the duration of the project.
13. Provide 2-year workmanship warranty.
14. Manufacturer direct warranty to be provided to owner upon completion.

**Fire Station #2 - Line Item Pricing Breakdown**

Item #	Item Description	Unit Price	Quantity	Unit	Extended Price
15.11	RESTORATIONS - RECOATING OF EXISTING ROOF SYSTEMS : RESTORATION OF SMOOTH-SURFACED BURs/MODIFIED BURs ROOF SYSTEMS WITH SINGLE-COMPONENT URETHANE & REINFORCED SEAMS Prepare Roof Surface by Cleaning with TSP or Simple Green, Use Portable Blowers to Clear the Roof Surface of Moisture; Reinforce Seams by Applying a Single-Component, Aliphatic Urethane 2 Gallons per Square / Reinforcement / 1 Gallon per Square (3 Gallons per Square on Seams) USE SEPARATE LINE ITEM, Wait 24-48 Hours, Apply Single-Component, Aliphatic Urethane as a Base Coat at a Rate of 2 Gallons per Square and a Top Coat of 1.5 Gallons per Square Over the Entire Roof According to Manufacturer's Specifications.	\$ 6.84	5,200	SF	\$ 35,568

15.30	RESTORATIONS - RECOATING OF EXISTING ROOF SYSTEMS : REINFORCING SEAMS WITH SINGLE-COMPONENT URETHANE Reinforce Seams by Applying a Single-Component, Aliphatic Urethane 2 Gallons per Square / Reinforcement / 1 Gallons per Square (3 Gallons per Square on Seams)	\$ 8.66	1,400	LF	\$ 12,124
19.03	WALL COATINGS FOR COATING WALL SYSTEMS: ELASTOMERIC COATING FOR CMU WALL SYSTEM - Base Coat of Coating @ 1 Gallon per Sq. / Top Coat @ 1 Gallon per Sq. Applied as Specified	\$ 6.51	300	SF	\$ 1,953
<b>Sub Total Prior to Multipliers</b>					<b>\$ 49,645</b>
22.01	MULTIPLIER - DIFFICULT ROOF OR BUILDING ACCESS Multiplier is applied when labor production is effected by roof or building access. Situations that can cause roof access to be more difficult include, but are not limited to: no access for lifts or cranes, access is dependent upon road closure, access point requires the closure of a building entrance, roof level is not accessible from the ground, roof area is interior to adjacent roofs or roof materials and materials and equipment must be loaded to one roof area and carried to another roof area, roof materials and equipment must be carried to the roof through an interior building access point, no or limited staging areas on the ground, etc.	24	\$ 49,645	%	\$ 11,915
22.06	MULTIPLIER - ROOF OR WALLS HAVE LARGE AMOUNT OF PENETRATIONS / ROOF TOP OBSTRUCTIONS Multiplier is applied when labor production is effected a large number of roof penetrations, a limited amount of open roof areas or low overhead clearance requiring more hand work. Situations include, but are not limited to rooftop penetrations like: soil stacks, sky lights, roof drains, exhaust vents, HVAC equipment, etc. or rooftop obstructions such as: pipes, duct work, electrical wires, hoses or raised equipment, etc.	30	\$ 11,915	%	\$ 14,894
22.20	MULTIPLIER - ROOF SIZE IS GREATER THAN 5,000 SF, BUT LESS THAN 10,000 SF Multiplier is applied when Roof Size is greater than 5,000 SF, but less than 10,000 SF. Situation creates the fixed costs: equipment, mobilization, demobilization, disposal, & set-up labor to be allocated across a smaller roof area resulting in fixed costs being a larger portion of the overall job costs	15	\$ 49,645	%	\$ 7,447
<b>Total After Multipliers</b>					<b>\$ 83,900</b>

**Fire Station #2:**

**Total Maximum Price of Line Items under the MICPA:** \$ 83,900

**Proposal Price Based Upon Market Experience:** \$ 83,260

**Garland/DBS Price Based Upon Local Market Competition:**

<b>Royal Roofing</b>	<b>\$ 83,260</b>
<b>Lutz Roofing</b>	<b>\$ 108,583</b>
<b>Schreiber Roofing</b>	<b>\$ 130,845</b>
<b>Schena Roofing</b>	<b>Incomplete Bid</b>

**Unforeseen Site Conditions:**

Additional Insulation Replacement \$ 25.08 per Sq. Ft.

**Fire Station #3 - Line Item Pricing Breakdown**

Item #	Item Description	Unit Price	Quantity	Unit	Extended Price
15.11	RESTORATIONS - RECOATING OF EXISTING ROOF SYSTEMS : RESTORATION OF SMOOTH-SURFACED BURs/MODIFIED BURs ROOF SYSTEMS WITH SINGLE-COMPONENT URETHANE & REINFORCED SEAMS Prepare Roof Surface by Cleaning with TSP or Simple Green, Use Portable Blowers to Clear the Roof Surface of Moisture; Reinforce Seams by Applying a Single-Component, Aliphatic Urethane 2 Gallons per Square / Reinforcement / 1 Gallon per Square (3 Gallons per Square on Seams) USE SEPARATE LINE ITEM, Wait 24-48 Hours, Apply Single-Component, Aliphatic Urethane as a Base Coat at a Rate of 2 Gallons per Square and a Top Coat of 1.5 Gallons per Square Over the Entire Roof According to Manufacturer's Specifications.	\$ 6.84	4,100	SF	\$ 28,044
15.30	RESTORATIONS - RECOATING OF EXISTING ROOF SYSTEMS : REINFORCING SEAMS WITH SINGLE-COMPONENT URETHANE Reinforce Seams by Applying a Single-Component, Aliphatic Urethane 2 Gallons per Square / Reinforcement / 1 Gallons per Square (3 Gallons per Square on Seams)	\$ 8.66	950	LF	\$ 8,227
<b>Sub Total Prior to Multipliers</b>					<b>\$ 36,271</b>

22.01	MULTIPLIER - DIFFICULT ROOF OR BUILDING ACCESS Multiplier is applied when labor production is effected by roof or building access. Situations that can cause roof access to be more difficult include, but are not limited to: no access for lifts or cranes, access is dependent upon road closure, access point requires the closure of a building entrance, roof level is not accessible from the ground, roof area is interior to adjacent roofs or roof materials and materials and equipment must be loaded to one roof area and carried to another roof area, roof materials and equipment must be carried to the roof through an interior building access point, no or limited staging areas on the ground, etc.	24	\$ 36,271	%	\$ 11,915
22.06	MULTIPLIER - ROOF OR WALLS HAVE LARGE AMOUNT OF PENETRATIONS / ROOF TOP OBSTRUCTIONS Multiplier is applied when labor production is effected a large number of roof penetrations, a limited amount of open roof areas or low overhead clearance requiring more hand work. Situations include, but are not limited to rooftop penetrations like: soil stacks, sky lights, roof drains, exhaust vents, HVAC equipment, etc. or rooftop obstructions such as: pipes, duct work, electrical wires, hoses or raised equipment, etc.	30	\$ 11,915	%	\$ 14,894
22.19	MULTIPLIER - ROOF SIZE IS GREATER THAN 3,000 SF, BUT LESS THAN 5,000 SF Multiplier is applied when Roof Size is greater than 3,000 SF, but less than 5,000 SF. Situation creates the fixed costs: equipment, mobilization, demobilization, disposal, & set-up labor to be allocated across a smaller roof area resulting in fixed costs being a larger portion of the overall job costs	17	\$ 36,271	%	\$ 8,440
<b>Total After Multipliers</b>					<b>\$ 71,519</b>

**Fire Station #3:**

**Total Maximum Price of Line Items under the MICPA: \$ 71,519**

**Proposal Price Based Upon Market Experience: \$ 66,598**

**Garland/DBS Price Based Upon Local Market Competition:**

<b>Royal Roofing</b>	<b>\$ 66,598</b>
<b>Lutz Roofing</b>	<b>\$ 89,619</b>
<b>Schreiber Roofing</b>	<b>\$ 104,821</b>
<b>Schena Roofing</b>	<b>Incomplete Bid</b>

**Unforeseen Site Conditions:**

Additional Insulation Replacement \$ 25.08 per Sq. Ft.

Please Note – The construction industry is experiencing unprecedented global pricing and availability pressures for many key building components. Specifically, the roofing industry is currently experiencing long lead times and significant price increases with roofing insulation and roofing fasteners. Therefore, this proposal can only be held for 30 days. DBS greatly values your business, and we are working diligently with our long-term suppliers to minimize price increases and project delays which could effect your project. Thank you for your understanding and cooperation.

**Clarifications/Exclusions:**

1. Permits are excluded.
2. Bonds are included.
3. Plumbing, Mechanical, Electrical work is excluded.
4. Interior Temporary protection is excluded.
5. Any work not exclusively described in the above proposal scope of work is excluded.

If you have any questions regarding this proposal, please do not hesitate to call me at my number listed below.

Respectfully Submitted,

*Matt Egan*

Matt Egan  
Garland/DBS, Inc.  
(216) 430-3662



# ROOF REPLACEMENT SPECIFICATIONS

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## ROOF PROJECT 2021/22

### Roof Restoration Project

Note:

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**Site Meeting #1:**            **Thursday, October 21<sup>st</sup>, 2021 @ 10AM**  
Fire Station #2  
1919 Paramount  
Novi, Mi 48377

**Site Meeting #2:**            **(Immediately Proceeding)**  
Fire Station #3  
42785 9 Mile Rd.  
Novi, Mi 48375

**Quotes Due:**                **Friday, October 29<sup>th</sup> @ 5PM**  
Garland/DBS, Inc.

**Emailed Quotations will be accepted by:**

Garland/DBS, Inc.

[DBSBids@garlandind.com](mailto:DBSBids@garlandind.com)

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SECTION 00 10 00 .001

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Attached SUMMARY OF WORK, INTENT OF THE SPECIFICATIONS, PROTECTION, HOUSEKEEPING, forms a component part of this section.

1.2 SUMMARY OF WORK: Fire Station 2 and 3 - Restoration

- A. Infrared Scan Roof Sections; Remove areas of wet insulation as identified in the infrared roof scan map, down to the tectum decking. Replace in kind with polyisocyanurate insulation and cured 60 mil membrane; making permanent tie-ins surrounding the affected area. Additional wet insulation found, during installation, shall be replaced at the predetermined bid price provided on the Bid Form.
- B. Repair any existing ridges, splits, punctures or tears to the existing membrane roofing where necessary.
- C. Remove and replace all existing pipe boots with neoprene pipe boots throughout.
- D. Adding crickets or saddles, correct areas of negative slope with properly tapered insulation to promote positive drainage.
- E. Roof surface and flashings to be cleaned using power washer (2,000 psi) and 10% SimpleGreen or TSP solution. Soft bristle brooms will be used to remove areas of heavy dirt, debris, oil and scale. Contractors should anticipate a minimum of two cleanings prior to a final rinse. If the roof surface becomes contaminated at any time during the application, additional cleaning will be required.
- F. Install high-performance, fatigue resistant, self-priming, 100% solids seam tape to existing field seams, flashing base and roof penetration transitions, (at 90 degrees) throughout.
- G. Apply base coat of elastomeric coating at a rate of two gallons per square over self-adhering seam tape through the field and flashings. (low-lying areas in which drainage cannot be feasibly corrected require a reinforcement fabric to be embedded in the base coat prior to installing a top coat)

- H. Apply top coat of elastomeric coating at a rate of two gallons per square over all roof sections, including previously areas which received the base coat.
- I. Drain Areas Only: Sump existing assembly and replace with cured EPDM. Apply 3 gallons per square Liquitex, embed reinforcement fabric, apply top coat at 2 gallons per square.
- J. Apply Seal-a-Pore masonry sealant to horizontal wall at elevation change and caulk control joint.
- K. Primary roofing manufacturer to provide quality assurance inspections per specifications.
- L. Clean up all debris and damage done to grounds, building and roof top (if any). Charcoal filters to be utilized at intakes the duration of the project.
- M. Provide 2-year workmanship warranty.
- N. Manufacturer direct warranty to be provided to owner upon completion.

### 1.3 LIQUIDATED DAMAGES

- A. All work as required in these specifications and drawings shall be completed by provided completion date, or as agreed upon by all parties.
- B. Unless work is hampered by long period of inclement weather, by due proof of material unavailability, or by strike, the Owner will assess a penalty in the amount of \$300.00 a day for each day beyond the agreed completion date.

### 1.4 INTENT OF THE SPECIFICATIONS

- A. The intent of these specifications is to describe the material and methods of construction required for the performance of the work. In general, it is intended that the drawings shall delineate the detailed extent of the work. When there is a discrepancy between drawings, referenced specifications, and standards and this specification, this specification shall govern.

### 1.5 PROTECTION

- A. The contractor shall use every available precaution to provide for the safety of the property owner, visitors to the site, and all connected with the work under the Contract.
- B. All existing facilities both above and below ground shall be protected and maintained free of damage. Existing facilities shall remain operating during the period of construction unless otherwise permitted. All access roadways must remain open to traffic unless otherwise permitted.
- C. Barricades shall be erected to fence off all construction areas from operations personnel.

D. Safety Requirements:

1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
2. Comply with federal, state, and local and owner fire and safety requirements.
3. Advise owner whenever work is expected to be hazardous to owner employees and/or operations.
4. Maintain a crewman as a floor guard whenever roof decking is being repaired or replaced and whenever any roofing is being removed.
5. Maintain proper fire extinguisher within easy access whenever power tools, roofing kettles, and torches are being used. A MINIMUM OF A 2 HOUR FIRE WATER SHALL BE STRICTLY ADHERED TO WHENEVER PROPANE TORCHES ARE IN USE.
6. ALL SAFETY REQUIREMENTS OF THE BUILDING OWNER MUST BE FOLLOWED. NO EXCEPTIONS WILL BE PERMITTED. SAFETY ORIENTATION MEETING REQUIRED PRIOR TO PERFORMING ANY WORK.

1.6 Bid Result Protests:

- A. Bids can only be protested by bidding contractors. Manufacturers, suppliers and or subcontractors are prohibited from filing a formal bid protest.
- B. Any contractor that desires to protest the bid results can do so by putting up the amount of their bid bond for this project. If the protesting contractor prevails, the bid bond amount will be returned upon the completion of the protest and findings. Should the protesting contractor fail to prove the protest to the satisfaction of the Owner and the Owners Representative, the value of the bid bond will be retained by the owner to pay for the additional research and cost for the delay of the project.

1.7 HOUSEKEEPING

- A. Keep materials neat and orderly.
- B. Remove scrap, waste and debris from the project area.
- C. Maintenance of clean conditions while work is in progress and cleanup when work is completed shall be in strict accordance with the "General Conditions" of this contract.
- D. Fire protection during construction.
- E. Follow all requirements established by the building owner.

END OF SECTION

# CITY OF NOVI

NOVI, MICHIGAN



**Fully Reinforced Liquitec Areas:**

Sump drain 4', new cured EPDM  
 Apply Liquitec at 3 gallon / sq.; embed fabric  
 Apply Liquitec at 2 gallon / sq.

**Seal-A-Pore Area:**

Apply Sealant to masonry wall at elevation  
 change: Caulk control joint

REVISION:  
 △

△

SHEET: 1 OF 1

DATE: FEB. 1

## Fire Station 2

ALL  
 Section 1

JOB NUMBER:

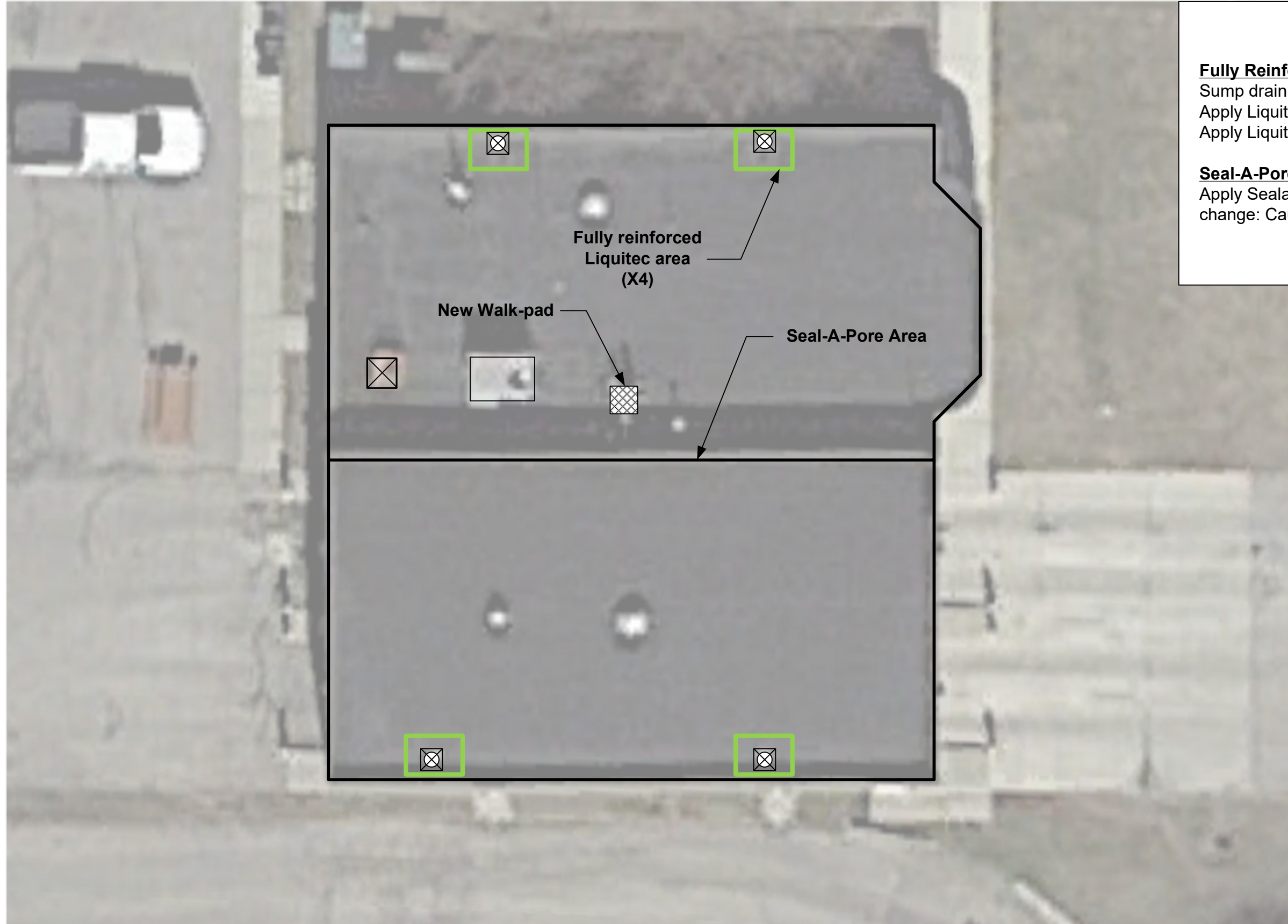
DWG BY:

CHK BY:



THE GARLAND COMPANY INC.  
 3800 EAST 91st STREET - CLEVELAND, OHIO 44105-2197  
 PHONE (800) 321-9336 / FAX (216) 641-0633

CITY OF NOVI  
NOVI, MICHIGAN



**Fully Reinforced Liquitec Areas:**  
 Sump drain 4', new cured EPDM  
 Apply Liquitec at 3 gallon / sq.; embed fabric  
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REVISION:  
△

SHEET: 1 OF 1

DATE: FEB. 1

ALL  
Section 1

JOB NUMBER:  
DWG BY:  
CHK BY:

Fire Station 3



THE GARLAND COMPANY INC.  
 3800 EAST 91st STREET - CLEVELAND, OHIO 44105-2197  
 PHONE (800) 321-9336 / FAX (216) 641-0633

## SECTION 00 72 00

### GENERAL CONDITIONS

#### PART 1 GENERAL

##### 1.1 DEFINITIONS

- A. The contract document consists of the AGREEMENT, the GENERAL CONDITIONS of the contract, the DRAWINGS and the SPECIFICATIONS, including all revisions hereto.
- B. The Owner, the Contractor and the Owner's Representative shall be indicated as such throughout these documents. The term Contractor as used herein shall designate the successful bidder to whom the roof contract is awarded.
- C. The term Owner shall be understood to be the City of Novi.
- D. The term Owner's Representative shall be understood to mean the representative of the primary material manufacturer.

##### 1.2 OWNER'S REPRESENTATIVE STATUS

- A. The Owner's Representative shall have general Rights of Inspection of the work and is the agent of the Owner in all matters pertaining to the work as provided in the Contract Documents. The Owner's Representative has the authority to stop work whenever such stoppage may be necessary to ensure the proper execution of the contract and shall have authority to reject any and all materials, whether worked or unworked, if such materials are not in accordance with the plans and specifications.

##### 1.3 CONDITON OF SITE

- A. The bidders shall visit the site before submitting their bids and determine the field conditions affecting their work. In considering the bids, the Owner will assume that the bidders are aware of all items, pertinent to their work and have made allowance for same in their bids.

##### 1.4 VERIFICATION OF DIMENSIONS AND ELEVATIONS

- A. Dimensions and elevations indicated on the drawings in reference to existing structures or utilities are the best available data but are not guaranteed by the Owner's Representative and the Owner's Representative will not be responsible for their accuracy. Before bidding on any paperwork dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, lines, levels or other conditions of limitations at the site to avoid construction errors. If any work is performed by the Contractor or any of his/her subcontractors prior to adequate verification or applicable data, any resultant extra cost for adjustment of work as required to conform to existing limitations, shall be assumed by the Contractor without reimbursement or compensation by the Owner.



## 1.5 PROTECTION OF OWNER'S OPERATIONS

- A. The Contractor shall erect such barriers, tarpaulins, doors, etc., as may be necessary to protect the Owner's operations while work is in progress. Any such openings that are essential to carrying on the work shall be securely closed by the Contractor when not in use to protect the Owner's operations.

## 1.6 PROTECTION OF WORK AND PROPERTY

- A. The Contractor shall maintain adequate protection of all his/her work from damage and shall protect the Owner's and adjacent property from injury or loss arising from this contract. He/she shall provide and maintain at all times any danger signs, guards and/or obstructions necessary to protect the public and his/her workmen from any dangers inherent with or created by the work in progress. He/she shall hold the Owner harmless from any loss arising due to injury or accident to the public or his/her workmen, or from theft of materials stored at the job site. All materials will be stored in locations other than on roof surfaces except as necessary and shall then be placed on plywood or other type of material to protect the roof surface at all times.
- B. Before starting any work, the Contractor shall protect all grounds, copings, paving and exterior of all buildings where work will be performed.
- C. In those areas where materials and/or hot asphalt will be raised to the roof area, a protective covering shall be placed from the base of the wall extending up and over the top edge of the roof. This coverage shall be wide enough to assure that the exterior walls do not become stained or soiled during roofing operations.
- D. Any areas of the building or grounds which have become stained or damaged in any way shall be repaired or replaced by the Contractor prior to the final inspections. The method of repair used must be acceptable to both the Owner and the Owner's Representative.

## 1.7 MATERIAL STORAGE AND CLEAN-UP

- A. The Contractor shall keep the premises free from rubbish at all times and shall arrange his/her material storage so as not to interfere with the Owner's operations. At the completion of the job, all the unused material and rubbish shall be removed from the site. The ground shall be raked clean and the building shall be broom cleaned. If the Contractor refuses at any time to remove his/her debris from the premises, or to keep the working area clean, such cleaning will be completed by the Owner and deducted from the balance due the Contractor.
- B. The Contractor shall also remove drippage of bitumen or adhesive from all walls, windows, floors, ladders and finished surfaces. Failure to do so will result in the work being done by others and the cost shall be deducted from the balance due the Contractor.
- C. Materials must be delivered with manufacturer's label in tact and legible. Labels must be affixed to the outside of the package stating the type of product, name and address of the manufacturer. All materials shall be stored and protected against weather, vandalism, and theft. Any materials found to be damaged or missing shall be replaced by the Contractor at no cost to the Owner.

## 1.8 INSPECTION OF WORK

- A. Where the drawings or specifications require the inspection and approval of any work in progress by the Owner's Representative, the Contractor shall give that Representative ample notice to allow for scheduling the inspection, which shall be made promptly to avoid delay of work. If work has progressed without the required inspections or approval by the Representative, it shall be uncovered for inspection at the Contractor's expense.
- B. Uncovering of work not originally inspected, or uncovering questioned work may be ordered by the Owner's Representative and it shall be done by the Contractor. If examination proves such work to be incorrectly done or not done in accordance with the plans and specifications, the Contractor shall bear all cost of the reexamination. If the work is proven correctly installed, all such expense shall be born by the Owner.

#### 1.9 INSPECTION OF WORK IN PROGRESS AND UPON COMPLETION

- A. If directed by the Owner's Representative, the Contractor shall cut not more than four (4) cores, of approximately 200 square inches each, from every newly constructed roof area, in order to establish the amount of materials used per square foot, and shall restore all such areas to sound and watertight conditions as prior to the core testing.
- B. In the event that such core cuts disclose any deficiency in materials, or soundness of construction, the Contractor shall, at his/her own expense, apply additional materials or otherwise correct the deficiencies to the satisfaction of the Owner's Representative.
- C. Noncompliance with the terms of this specification and ensuing contract can result in either the cancellation of the contract, or complete replacement of the defective areas at the Contractor's expense. In the event of cancellation, the Owner will not be obligated to compensate the Contractor for any work undertaken in a defective manner
- D. Damages caused by water infiltration resulting from the failure of the Contractor to secure each day's work in a weather tight manner, will be corrected at the Contractor's expense. Included as damages will be all labor costs incurred by the Owner as a result of such water infiltration.
- E. The Owner will require the Owner's Representative to examine the work in progress, as well as upon completion, in order to ascertain the extent to which the materials and procedures conform to the requirements of these specifications and to the published instructions of the Manufacturer.
- F. The authorized Owner's Representative shall be responsible for:
  - 1. Keeping the Owner informed on a periodic basis as to the progress and quality of the work;
  - 2. Calling to the attention of the Contractor those matters he/she considers to be in violation of the contract requirements;
  - 3. Reporting to the Owner any failure or refusal of the Contractor to correct unacceptable practices;
  - 4. Conducting preliminary and subsequent job-site meetings with the Contractor's official job representative;
  - 5. Supervising the taking of test cuts, and the restoration of such areas;
  - 6. Rendering any other inspection services which the Owner may designate; and

7. Certifying, after completion of the work, the extent to which the Contractor has complied with these specifications as well as to the published instructions of the Manufacturing Company.
- G. The presence and activities of the Owner's Representative shall in no way relieve the Contractor of his/her contractual responsibilities.

#### 1.10 MISCELLANEOUS UTILITIES

- A. Electrical power will be furnished by the Owner for small tools only. All connections to the electrical system will be furnished by the Contractor.
- B. Water for concrete, mortar, washing and drinking purposes will be furnished by the Owner. Any connections to the water system shall be completed by the Contractor.
- C. At the completion of the work, or when the above connections are no longer required, the Contractor shall remove all connections and leave the facilities in a condition at least as satisfactory as prior to the commencement of his/her work.
- D. Toilet facilities will be provided by the Contractor. The Contractor will be responsible for supplying a portable toilet on the job-site. The Contractor's personnel are not permitted to enter the building without proper authorization from the Owner or Owner's Representative.

#### 1.11 CHANGES OR EXTRA WORK

- A. The Owner may, without invalidating the original contract, order such changes or additions as may from time to time be deemed desirable. In so doing, the contract price shall be adjusted, as stated below, with all work being done under the conditions of the original contract except for such adjustments in extension of time as may be acceptable to the Owner. The value of such extra work shall be determined in one of the following ways:
  1. By firm adjustment;
  2. By cost plus with a guaranteed maximum;
  3. By cost with a fixed fee; or
  4. By unit cost.
- B. If agreement is reached that the extra cost shall be handled as per methods 2, 3, or 4, the Contractor shall keep and compile a correct amount of the cost together with such vouchers, etc., as may be necessary to substantiate same for presentation to the Owner. The Owner's Representative shall have authority to make minor job changes or additions as may be necessary to expedite the job providing such changes do not involve additional material cost. No major change or addition shall be made except upon receipt by the Contractor of a signed order from the Owner authorizing such a change. No claims for an extra to the contract price shall be valid unless so authorized.
- C. All work covered by unit prices submitted by the Contractor in his/her proposal must be covered by a written work order. The Owner's Representative will prepare the work order in triplicate covering the quantity of work and the total cost of the work. The work order which will be written at the end of each day, will be signed by the Owner's Representative and the Contractor's foreman and/or superintendent.

#### 1.12 CORRECTION OF WORK PRIOR TO FINAL PAYMENT

- A. The Contractor shall promptly remove any work that does not meet the requirements of the plans and specifications or is incorrectly installed or otherwise disapproved by the Owner or the Owner's Representative as failing to meet the intent of the plans and specifications. The Contractor shall promptly replace any such work without expense to the Owner and shall bear the cost of making good all work of other contractors, or the Owner, destroyed or damaged by such removal or replacement.

#### 1.13 CORRECTION OF WORK AFTER FINAL PAYMENT

- A. The Contractor shall guarantee all materials and workmanship for two (2) years from date of final payment of the contract by the Owner. Any defects which may arise during this period shall be promptly repaired by the Contractor including any damage done to the Owner's property due to such defects.

#### 1.14 DEDUCTION FOR UNCORRECTED WORK

- A. If the Owner deems it unacceptable to have the Contractor correct work which has been incorrectly done, a deduction from the contract price shall be agreed upon therefore. Such a deduction from the contract price shall in no way affect the Contractor's responsibility for defects which may occur nor his/her ability for correcting them, and damage caused by them.

#### 1.15 LIENS

- A. The Contractor shall, if required by the Owner, furnish him/her with a release in full of all liens arising out of this contract or in lieu thereof, and receipts in full for all materials and labor on the job. In either case, the Contractor shall furnish an affidavit that the liens or receipts include all the labor and material for which a lien could be filed. In lieu of the above, the Contractor may at his/her option furnish a bond to indemnify the Owner against all hazard of liens. Neither part nor final payment shall in any way release the Contractor from the above obligation and in the event that part or full payment has been made and any lien remains undischarged, the Contractor shall refund to the Owner the necessary funds to discharge such a lien including all cost and attorney's fees.

#### 1.16 JOB CONDITIONS

- A. All surfaces to be covered shall be smooth, dry, and free from dirt, debris, and foreign material before any of this work is installed. Pumping equipment shall be located on the ground at a safe distance from building; the location being subject to the approval of the Owner. The Contractor shall be responsible for guarding against fires, and shall provide suitable fire extinguishers conveniently located at the site. Competent operators shall be in attendance at all times equipment is in use. Materials shall be stored neatly in areas designated by the Owner and dispersed so as to present a minimum fire hazard. Loads placed on the roof at any point shall not exceed the safe load for which the roof is designed.
- B. There is NO SMOKING allowed inside any buildings and the Contractor shall be responsible for enforcement of this job rule at all times with his/her personnel.
- C. The Contractor should be aware of Owner's property when tearing off the existing roof. This is required for removal of dirt, silt, debris, roof membrane and insulation from the roof surface in order to preserve the ecology, eliminate unsightly conditions and protect building faces. Specific locations will be discussed at the pre bid conference.

- D. Rolled Roofing Materials: All rolled roofing materials must be stored standing on end on a pallet or otherwise raised off of the roof. The materials are to be covered in a proper manner to assure that they will not become wet prior to application. Any materials that become wet or damaged must be removed from the job-site and replaced at the Contractor's expense.
- E. Asphalt Kettle: Placement of the kettle shall be in a position so as not to interfere with the ongoing operations of the Owner. The asphalt to be used must be placed on a protective covering of some type until it is raised to the roof. A minimum of two (2) fire extinguishers and "Fire Out" must be adjacent to the kettle.
- F. Ladders: Any ladders used on this project must be in good condition. The ladder must also be secured at the roof line at all times while in use. All ladders must be O.S.H.A. approved.
- G. No drugs or alcoholic beverages are permitted on the grounds.
- H. The Contractor shall place necessary barriers and/or protection around or under all work areas where his/her operations involve risk of injury to plant.
- I. The Contractor will also protect the building structure from damage in the process of the job. In the event that damage does occur to any property or equipment, or the Owner's work in process, notification must be made within two (2) working days of the incidents to the Owner and Owner's Representative.
- J. During the progress of the job, if waste material and rubbish are found or damage resulting from the Contractor's operations is found, or the Contractor does not comply with the requirement by keeping the premises free of accumulations and correct the damage, it shall be the Owner's prerogative to hire personnel to do so; and the cost of this work will be deducted from the balance due the Contractor.
- K. Existing roof top equipment walls, windows, etc. shall be completely protected by masking or other effective methods. Any mastics or asphalt must be cleaned off metal surfaces.
- L. The Contractor is responsible for protecting all materials from the elements. If any material, such as insulation, becomes wet, it cannot be installed and must be replaced at the Contractor's expense. NOTE: Insulation and rolled roofing materials must be covered with waterproof tarps at the end of each work day. Plastic wrappers supplied by the insulation manufacturer are not acceptable substitutes for tarps. The Owner's Representative will reject any covering method material which does not adequately protect roofing materials.
- M. Anyone guilty of willful destruction or unlawful removal of company property will be dismissed from the job and is subject to prosecution by law.
- N. Any lawns damaged by Contractor vehicles will be restored with a stand of grass at the Contractor's expense. Any damaged pavements will likewise be restored at the Contractor's expense.
- O. The Contractor must verify that all materials can be installed to accommodate the building design, pertinent codes and regulations, and the manufacturer's current recommendations.
- P. The Contractor will ensure that all substances are clean, dry, sound, smooth, and free of dirt, debris, and other contamination before any materials are supplied.

- Q. Any isolated areas that must be torn off and replaced will be built-up to the height of the existing roof prior to the installation of the new roofing membrane system.

#### 1.17 WORKMANSHIP

- A. All materials will be securely fastened and placed in a watertight, neat and workmanlike manner. All workmen shall be thoroughly experienced in the particular class or work upon which they are employed. All work shall be done in accordance with these specifications and shall meet the approval of the Owner or Owner's Representative. The Contractor's representative or job supervisor shall have a complete copy of specifications and drawings on the job-site at all times.
- B. Contractor shall plan and conduct the operations of the work so that each section started on one day is complete and thoroughly protected before the close of work for that day.

#### 1.18 INSULATION

- A. Insulation shall have accurate dimensional stability so as to properly conform to the surfaces of the roof, cants, curbs, pipes, etc. Joints between boards shall be tight and insulation shall be held back ½" from vertical surfaces and sumps. Insulation shall be protected from the weather at all times. No more insulation shall be laid than can be completely covered with roof materials on the same day. A base sheet shall not be considered as a proper weather barrier.
- B. Insulation that becomes wet during or after installation shall be removed and replaced with dry insulation. If roofing is in place, the roofing shall be also replaced. All replacing work shall be done at no added cost to the Owner.

#### 1.19 ROOF DECK

- A. Contractor shall notify the Owner or Owner's Representative of any unforeseen areas of wet insulation. Where the damage is serious and extensive, it will be the Owner's prerogative to authorize removal and replacement of deteriorated roofing, insulation and repair of the vapor barrier, if present. Where damage to the roof deck is found, the Contractor shall furnish the Owner with a unit price for removal and replacement of the damaged deck.

#### 1.20 SAFETY

- A. Contractor shall conform to requirements as designated by the United States Federal Government (O.S.H.A.). Contractor shall abide by all regulations as outlined in the O.S.H.A. handbook and shall have a handbook on location at all times.
- B. Contractors hereby acknowledged that they and their workers have undergone Safety Training and shall at all times act in compliance with all NRCA recommended safety compliance rules and regulations.

#### 1.21 INSURANCE

- A. The following standard indemnity agreement and minimum insurance requirements are incorporated in the Specifications for all work performed by Contractors for the

Owner, its affiliated and associated organizations or subsidiaries, hereinafter referred to as Owner.

1. THE CONTRACTOR AGREES TO INDEMNIFY AND SAVE THE OWNER AND OWNER'S REPRESENTATIVE HARMLESS FROM AND AGAINST ANY AND ALL COSTS, LOSS AND EXPENSE, LIABILITY DAMAGES, OR CLAIMS FOR DAMAGES, INCLUDING COST FOR DEFENDING ANY ACTION, ON ACCOUNT OF ANY INJURY TO PERSONS (INCLUDING DEATH) OR DAMAGE TO OR DESTRUCTION OF PROPERTY OF THE OWNER, ARISING OR RESULTING FROM THE WORK PROVIDED FOR OR PERFORMED, OR FROM ANY ACT, OMISSION, OR NEGLIGENCE OF THE CONTRACTOR, SUBCONTRACTOR AND THEIR AGENTS OR EMPLOYEES. THE FOREGOING PROVISIONS SHALL IN NO WAY BE DEEMED RELEASED, WAIVED OR MODIFIED IN ANY RESPECT BY REASON OF ANY INSURANCE OR SURETY PROVIDED BY THE CONTRACTOR.
2. All sub-contractors are required to file Certificated of Insurance properly completed and signed by an authorized insurance company representative before their work commences on the job or job site. No monies will be paid until the acceptable certificates are on file with the Contractor. Such certificates shall provide that there will be no cancellation, reduction or modification of coverage without thirty (30) days prior written notice to the Contractor. In the event such certificates are not provided to the Contractor prior commencement of work, Contractor's failure to demand such certificates shall not be deemed a waiver of Subcontractor's requirement to obtain the subject insurance.
3. The Contractor shall provide and maintain standard fire, extended coverage perils, vandalism and malicious mischief insurance to protect the interest of both the Contractor and the Owner for materials brought into the job or stored on the premises. Such insurance shall be for 100% of the insurable value of the work to be performed including all items of labor and materials incorporated therein, materials stored at the job-site to be used in completing the work, and such other supplies and equipment incidental to the work as are not owned or rented by the Contractor, the cost of which are included in the direct cost of the work. This insurance shall not cover any tools, derricks, machinery, tar buckets, ladders, engines, workmen's quarters, boilers, pumps, wagons, scaffolds, forms, compressors, shanties, or other items owned or rented by the Contractor, the cost of which is not included in the direct cost of the work.
4. In accordance with Section (1.21), the Contractor and subcontractor(s) shall maintain the following insurance:
  - a. Workmen's Compensation and Employer's Liability Insurance affording:
    - 1) Protection under the Workmen's Compensation Law of the States in which the work is performed; and
    - 2) Employer's Liability protection subject to a minimum limit of \$100,000.
  - b. Comprehensive General Liability Insurance in amounts not less than:
    - 1) Personal Injury: \$1,000,000 per person (including bodily injury) \$1,000,000 per occurrence
    - 2) Property Damage: \$1,000,000 per occurrence
  - c. Comprehensive Automobile Liability Insurance in the following minimum amounts:
    - 1) Bodily Injury \$1,000,000 per person \$1,000,000 per occurrence
    - 2) Property Damage \$1,000,000 per occurrence
  - d. This insurance shall:

- 1) Include coverage for the liability assumed by the Contractor under this section (section 1.21.A.1) (Indemnity);
- 2) Includes coverage for:
  - a) Premises, operations and mobile equipment liability
  - b) Completed operations and products liability
  - c) Contractual liability insuring the obligation assumed by the subcontractor in this agreement.
  - d) Liability which subcontractor may incur as a result of the operations, acts or omissions of subcontractors, suppliers or material men and their agents or employees; and
  - e) Automobile liability including owned, non-owned and hired automobile.
- e. All coverage will be on an occurrence basis and on a form acceptable to the Contractor.
  - 1) Include completed operation coverage which is to be kept in force by the Contractor for a period of not less than one year after completion of the work provided for or performed under these specifications;
  - 2) Not be subject to any of the special property damage liability exclusions commonly referred to as the exclusions pertaining to blasting or explosion, collapse or structural damage and underground property;
  - 3) Not be subject to any exclusion of property used by the insured or property in the case, custody or control of the insured or property as to which the insured for any purpose is exercising physical control; and
  - 4) The Certificate of Insurance furnished by the Contractor shall show specific reference that each of the foregoing items have been provided for.
5. The Certificates of Insurance furnished by the Contractor as evidence of the Insurance maintained by him shall include a clause obligating the Insurer to give the Owner thirty (30) days prior written notice or cancellation of any material change in the insurance.

#### 1.22 WORK HOURS AND DAYS

- A. When the Contract is awarded, the Contractor will contact the Owner's Representative to arrange the work schedule and the hours of the day that the workmen may be on the building. The job is to be bid under the assumption that all work will be performed on a straight time basis.

#### 1.23 COMPLIANCE WITH LAWS

- A. The Contractor shall give notices, pay all fees, permits and comply with all laws, ordinances, rules and regulations bearing on the conduct of work.

#### 1.24 OWNER'S RULES

- A. The Contractor and all his/her personnel/agent(s) shall abide by all rules created by the Owner. The Contractor must contact the Owner's Representative for specific information regarding the rules governing all operations of the project.
- B. The Contractor shall properly notify all employees of conditions relating to roof areas with very poor condition and which will be worked on. After such notification, the



Contractor must take all necessary precautions to ensure the safety of his/her employees as well as the building personnel.

- C. THE CONTRACTOR SHALL "HOLD HARMLESS" THE MATERIAL MANUFACTURER, AGAINST ANY LITIGATION ARISING FROM ANY ACCIDENTS DURING THE COURSE OF THE CONTRACT.

#### 1.25 SAFETY AND ECOLOGY

- A. The Contractor(s) shall conform to the requirements as designated by the United States Federal Governments (e.g., O.S.H.A).

#### 1.26 ANTI-DISCRIMINATION IN EMPLOYMENT

- A. Contractors and subcontractors shall not discriminate against any employees or applicant for employment, to be employed in performance of his/her contract, with respect to his/her hire, tenure, terms, conditions or privileges of employment because of his/her race, color, gender, sexual preference, religion, national origin, or ancestry.

### PART 2 INSTRUCTIONS TO BIDDERS

#### 2.1 WITHDRAWAL OR MODIFICATION OF BID

- A. Any Bidder may withdraw his/her bid at any time before the scheduled closing date of the bid by appearing in person or by sending an authorized representative of the Bidder. An appointment should first be scheduled by calling the Owner's Representative. The Bidder or his/her representative shall be asked to sign, in writing that the bid was returned to him/her/ after the withdrawal from the contract, the Bidding Contractor may not resubmit them.

#### 2.2 BID OPENINGS

- A. Bids will be opened publicly and read aloud at the published date and time. Notice of award will be made by written correspondence.

#### 2.3 QUESTIONS

- A. Technical questions regarding this bid can be directed to: Brad Konvolinka
- B. If the Contractor feels a conflict exists between what is considered good roofing practice and these specifications, he/she shall state in writing all objections prior to submitting quotations.
- C. It is the Contractor's responsibility, during the course of the work, to bring to the attention of the Owner's Representative any defective membrane, insulation or deck discovered which has not been previously identified.

#### 2.4 RESPONSIBILITY FOR MEASUREMENTS AND QUANTITIES

- A. The Bidding Contractors shall be solely responsible for all accuracy of all measurements and for estimating the material required to satisfy these specifications.

## 2.5 DISCREPANCIES AND ADDENDA

- A. Should a Bidder find any discrepancies in the Drawings and Specifications, or should he be in doubt as to their meaning, he/she shall notify the Owner's Representative at once, who will send a written Addendum to all Bidders concerned. Oral instructions or decisions, unless confirmed by Addenda, will not be considered valid, legal or binding.
- B. No extras will be authorized because of the Contractor's failure to include work called for in the Addenda in his/her bid.
- C. It shall be the responsibility of all Bidders to call to the Owner's Representative's attention at the pre bid meeting, any discrepancies which may exist between or with any of the contract documents, or any questions which may arise as to their true meaning.
- D. Modifications to the specifications (if necessary) will be followed by an addendum; no verbal discussions or agreements shall be recognized.

## 2.6 COMPETENCY OF THE BIDDERS

- A. To enable the Owner to evaluate the competency and financial responsibility of a Contractor, the low Bidder shall, when requested by the Owner, furnish the information indicated in Section 5.0 below, entitled Contractor's Qualification Statement, which shall be sworn to under oath by him/her or by a properly authorized representative of the Bidder.

## 2.7 DISQUALIFICATION OF BIDDERS

- A. Any one or more of the following causes may be considered sufficient for the disqualification of a Bidder and the rejection of his/her bid(s):
  - 1. Failure to attend the pre bid meeting;
  - 2. Evidence of collusion among Bidders;
  - 3. Lack of responsibility as revealed by either financial, experience or equipment statements, as submitted;
  - 4. Lack of expertise as shown by past work, and judged from the standpoint of workmanship and performance history;
  - 5. Uncompleted work under other contracts which, in the judgment of the Owner, might hinder or prevent the prompt completion of additional work if awarded;  
or
  - 6. Being in arrears on existing contracts, in litigation with an Owner, or having defaulted on a previous contract.

## 2.8 NOTICE OF AWARD

- A. The award of this contract for the work is contingent upon receipt of an acceptable bid. Any part of or all bids may be rejected. All bids shall be good for a period of sixty (60) days following the date the bids are due. The contract shall be deemed as having been awarded when the formal notice of acceptance of his/her proposal has been duly served upon the intended awardee by an authorized officer or agent of the Owner.

## 2.9 WARRANTY

- A. A written warranty which will commence from date of acceptance by Manufacturer must be supplied with the roof installation. This warranty will cover all defects in workmanship and materials. Damages caused by storm, vandalism and other trades are not included in the warranty. This warranty shall be from the manufacturer (See further, Statement of Policy).
- B. A two (s) year workmanship warranty is required from the Contractor for all remedial maintenance done under the terms of this contract.

#### 2.10 START AND COMPLETION DATE

- A. Work shall begin within thirty (30) days from the award of this contract, or as agreed upon by all parties.
- B. All work as required in these specifications and drawings shall be completed within sixty (60) days of the start date, or as agreed upon by the parties.
- C. Unless work is hampered by long period of inclement weather, by due proof of material unavailability, or by strike, the Owner will assess a penalty in the amount of \$300.00 a day for each day beyond the agreed completion date.
- D. The Contractor is responsible for supplying trained workmen in proper numbers and for scheduling and laying out his/her work, so that it will be started and completed in a professional manner within the time period indicated on his/her Proposal form.
- E. If the Contractor sets equipment onto the job-site without commencing work immediately, the action will be considered "Spiking the job" which is unacceptable and will be considered a breach of contract by the Contractor; thereby, the contract will be terminated and the Contractor at no cost to the Owner, must remove his/her equipment and possessions from the job-site upon notification by the Owner.

#### 2.11 PAYMENT

- A. Payment for materials shall only be made after the material has been delivered to the job-site. An invoice for the material must be presented to the Owner for payment. Materials are not to be delivered to the job-site until the project is ready to begin. The Contractor must provide a release of lien from the Material Manufacturer. Subsequent requests for payment can made monthly. Final payment for the project will be made following completion, after final inspection has been made and an invoice presented to the Owner. A 10% retainer shall be held until delivery of the warranty.
- B. When the job in progress is interrupted for two (2) weeks or longer by causes beyond the Contractor's control such as a strike, weather, acts of God, etc., the Owner agrees to pay, upon request of the Contractor, a price equivalent to the percentage of work completed at that time. Regular progress payments shall be made for labor and/or materials.
- C. Each invoice shall be accompanied by a detailed estimate of the amounts and values of labor expended and materials purchased up to the last day of the preceding month. The amount of the invoice shall not exceed ninety percent (90%) of the labor and material values estimated for the preceding month.
- D. Such payments shall be viewed by both parties as progress payments and shall not in any way relieve the Contractor of performance obligations under this contract, nor

shall such payments be viewed as approval or acceptance of work performed under this contract.

- E. Final payment shall be withheld until all provisions of the specifications are met, including all necessary clean-up, and the Owner receives written verification of completion.
- F. Upon completion of the job, the Owner, the Owner's Representative, and the Contractor will make final inspection of the work done, and the Owner's Representative if requested by Owner's Representative.
- G. All payments for material used in the execution of this contract can be made by a check issued jointly, payable to the Contractor and Owner's Representative will sign a completion slip authorizing final payment.
- H. If requested by the Owner and/or Owner's Representative, the Contractor shall provide a Letter of Credit from the bank to secure payment to material supplier.
- I. If requested by the Owner and/or Owner's Representative, a certified check shall be paid by the Contractor to material supplied prior to release of order.
- J. If requested by the Owner and/or Owner's Representative, a certified check shall be paid by the Contractor to material supplier via common carrier upon receipt of delivery.
- K. Contractor shall have a pre-approved line of credit from the material supplier.
- L. Final payment shall be made to the Contractor no later than thirty (30) days after job approval, providing the Contractor submits waivers of lien with his/her final invoice indicating that all suppliers have been paid.

## 2.12 PERFORMANCE AND PAYMENT BOND

- A. The successful Contractor will be responsible for securing a performance and payment bond from an acceptable bonding company. The cost of the bond will be paid directly by the Contractor. Contractor has to identify his/her bonding company and agent, submitting this documentation with his/her proposal. Note: See "Instruction to Bidders."
- B. Financial documentation prescribed by the Owner to ensure that the Contractor is financially sound and capable of supporting the project to its conclusion.
- C. If the successful Bidder is incorporated, an affidavit authorizing persons to sign for the Corporation. This should be in the form of minutes of the meeting of the Board of Directors, authorizing person or persons to sign for this contract work and indicating a quorum being present.

## 2.13 TERMINATION BY THE OWNER FOR CAUSE

- A. The Owner may terminate the contract and finish the work by whatever reasonable method he/she deems expedient if the Contractor:
  - 1. Persistently or repeatedly refuses to supply specified materials or to provide enough skilled workers to ensure the project will be completed within the time period indicated on his/her Proposal form;

2. Fails to make payment to sub-contractors and/or suppliers for labor and materials as stipulated in the contract documents; and
  3. Is guilty of substantial breach of a provision of the contract documents.
- B. When the Owner terminates the contract for any of the above reasons, the Contractor shall not be entitled to receive further payment until the work is finished. If the unpaid balance of the contract sum exceeds the cost of finishing the work, it will be paid to the Contractor. If the cost to finish the work exceeds the unpaid balance, the Contractor shall pay the difference to the Owner.

#### 2.14 COMPLIANCE WITH LAWS

- A. The Contractor shall give notices, pay all fees, permits and comply with all laws, ordinances, rules and regulations bearing on the conduct of work.

### PART 3 --- CONTRACTOR'S INSTRUCTIONS

#### 3.1 TAXES

- A. Contractor must comply with all state, federal and local taxes. The Contractor shall accept sole and exclusive responsibility for any and all state federal taxes with respect to Social Security, old age benefits, unemployment benefits, withholding taxes and sales taxes.

#### 3.2 CONTRACTOR'S LICENSE

- A. All pertinent state and local licenses will be required.

#### 3.3 QUALIFICATION OF BIDDERS

- A. Provide State of Michigan pre-certification forms.

#### 3.4 BUILDING PERMITS

- A. The acquisition of the applicable permits and associated costs to obtain said permits will be the responsibility of the successful Contractor.

#### 3.5 JOB COORDINATION

- A. Contractor is responsible for daily communication with the Owner or Owner's Representative relating to areas of roof work in order that the Owner may adequately protect tenant's personal belongings, and the people themselves against possible damage or injury. Contractor is also responsible for policing and protecting areas involving removal and replacement of roof projections, defective decking or other work involving deck penetration.
- B. Twenty-four hours prior to starting of the project and/or delivery of materials, the Contractor shall notify the owner.

#### 3.6 CLEAN-UP

- A. Accumulated debris shall be removed periodically to assure maximum safety and sanitation at all times. At completion of work, the Contractor shall remove all excess material and debris from the site and leave all roof surfaces free from accumulations

of dirt, debris and other extraneous materials. The Contractor shall also remove any and all drippage of bituminous materials from the face of the buildings, floor, window, ladders and other finished surfaces.

### 3.7 SUPERINTENDENT

- A. The Contractor shall keep a competent superintendent, satisfactory to the Owner and Owner's Representative, on the job at all times when work is in progress. The superintendent shall not be changed without notifying the Owner and the Owner's Representative unless the superintendent ceases to be in the employ of the Contractor.
- B. The superintendent shall represent the Contractor in his/her absence and all directions and instructions given to the superintendent shall be as binding as if given directly to the Contractor.
- C. The superintendent shall be responsible for the conduct of all the Contractor's employees on the premises and shall promptly take necessary measures to correct any abuses called to his/her attention by the Owner.

### 3.8 INSPECTIONS

- A. Before any material applications are made, the Owner or his/her representative and the material supplier representative shall be available to ensure a complete understanding of the specification.
- B. The accepted Material Manufacturer will have a representative on site a minimum of three (3) times a week to verify compliance with the specifications, answer questions that may arise and provide on-going inspection services.
- C. A final inspection shall be conducted by Owner, Contractor, and the Owner's Representative upon being notified of completion of specified work and clean-up.

## PART 4 – STATEMENT OF POLICY

### 4.1 ENGINEERING

- A. In addition to high-quality products, the Material Manufacturer provides recommendations and/or specifications for the proper installation of its material. However, the Material Manufacturer does not, nor does its representative, practice engineering or architecture. The Material Manufacturer makes no judgments on, and hereby disclaim any responsibility for the soundness of any roof deck or other structural component of buildings upon which the Material Manufacturer products are applied, and further recommend a structural engineer to examine the deck conditions. Re-roofing or Ballasted Roofing Systems will require certification from a structural engineer that the structure will support the proposed additional weight.

### 4.2 GUARANTEES

- A. A roofing guarantee is available for review from the Material manufacturer for the roofing systems published in these specifications. The guarantee will be issued only upon completion of all the guarantee requirements by an approved Contractor. Such guarantees cannot be altered or amended, nor may any other warranties, guarantees or representations be made by an agent or employee of the Material Manufacturer unless such alteration, amendment or additional representation is issued in writing

and is signed by a duly authorized officer of the Material Manufacturer, and sealed with the Material Manufacturer seal. This guarantee does not cover cosmetic deficiencies. THE MATERIAL MANUFACTURER WIL NOT BE RESPONSIBLE FOR ANY DAMAGES TO THE BUILDING OR ITS CONTENTS OR ANY OTHER CONSEQUENTIAL DAMAGES, AND ITS RESPONSIBILITY IS LIMITED TO REPAIRING LEAKS. The Contractor will warranty the roof to the Material Manufacturer for a period of two (2) years. The Contractor will inspect the roof with the Owner's Representative 18 months after completion, and, at the Contractor's expense, correct any workmanship defects before the 24<sup>th</sup> month following completion of the project.

#### 4.3 APPROVED CONTRACTORS

- A. The roof systems must be applied only by those contractors who have received approval from the Material Manufacturer for such installations. No guarantees will be issued when installation has been performed by a non-approved contractor.

#### 4.4 ROOFING SEQUENCE

- A. Phase roofing is not acceptable. Any insulation or base layers laid in any one day must be covered with the properly installed roof system that same day. Failure to do so will void any warranties and no guarantee will be issued for the roofing system.

#### 4.5 ACCEPTABILITY OF COMPLETED WORK

- A. The acceptability of completed roofing work will be based on its conformance to the contract requirement. The Material Manufacturer is not obligated to accept non-conforming work, and such non-conforming work may be rejected. The rejected work shall be promptly replaced or corrected in a manner and by methods approved by the Material Manufacturer at the Contractor's expense. The Material Manufacturer will instruct the Contractor's foreman and work crew on the proper methods of installation of the roofing system, and will follow-up on a regular basis to inspect the work being done. Any deficiencies from the specified work noted by the Material Manufacturer will be immediately reported to the Owner, along with recommended corrective actions necessary. The Material Manufacturer will not act in a supervisory capacity, and will not be responsible for the Contractor's errors or omissions.

#### 4.6 ENGINEERING AND ROOF DECK

- A. The Material Manufacturer nor its representatives, practice engineering nor architecture. It makes no judgments on, and hereby disclaim any responsibility for the soundness of any roof deck or other structural component of buildings upon which its products are applied. Re-roofing and general building structuring require certification from a structural engineer that the structure will support the proposed additional weight. In addition, the Contractor must notify the Owner or his/her representative on the job-site of any unforeseen areas of wet insulation. Where the damage is serious and extensive, it will be the Owner's prerogative to authorize removal and replacement of deteriorated roofing, insulation and repair of the vapor barrier if present. Where damage to the roof deck is found, the Contractor shall furnish the Owner with a unit price for removal and replacement of the damaged deck.

#### 4.7 ASBESTOS IDENTIFICATION

- A. The Material Manufacturer routinely conducts roof surveys and inspections in order to provide recommendations and/or specifications for the use of its products. However, the MATERIALS MANUFACTURER IS NOT, NOR ARE ITS REPRESENTATIVES, CERTIFIED TO IDENTIFY, HANDLE OR MONITOR ASBESTOS IN ROOFING, DECKING OR INSULATION. THEREFORE, IT MAKES NO JUDGMENTS ON AND HEREBY DISCLAIMS ANY RESPONSIBILITY FOR IDENTIFYING, HANDLING OR MONITORING ASBESTOS. If a building owner suspects that an asbestos condition exists on or under the roof area in question, Material Manufacturer can recommend licensed laboratories and technicians that can identify, remove, dispose of, and monitor the project.

#### 4.8 ASBESTOS LIMITATIONS

- A. The Owner has been informed, acknowledges and agrees that Material Manufacturer is not engaged in the business of identifying, abating, encapsulating or removing asbestos or asbestos containing materials from the work site and has not agreed to do so herein.
- B. IN CONSIDERATION OF THE PROVISION HEREOF, THE OWNER HEREBY AGREES TO INDEMNIFY, DEFEND AND HOLD HARMLESS THE MATERIAL MANUFACTURER, ITS OWNERS, OFFICERS, DIRECTORS, EMPLOYEES AND AGENTS, INCLUDING THE ENGINEER FROM AND AGAINST ANY AND ALL LIABILITIES, DAMAGES, LOSSES AND EXPENSES (INCLUDING BUT NOT LIMITED TO ATTORNEY'S FEES) ARISING OUT OF, OR RELATING TO, ANY CLAIMS, DEMANDS, OR CAUSES OF ACTION OF ANY KIND,, ATTRIBUTABLE TO, ARISING OUT OF, OR RELATING TO THE PRESENCE OF ASBESTOS OR ASBESTOS-CONTAINING MATERIALS ON OR AT THE WORK SITE AND/OR THE ABATEMENT, ENCAPSULATION AND/OR THE REMOVAL THEREOF.

#### 4.9 MOLD LIMITATIONS

- A. The Garland Company makes no representation or warranty, express, implied, or otherwise, regarding mold, fungi, rust, corrosion or other bacteria or organism. Neither shall Garland have any duty to identify, nor accept any responsibility or liability for any claims associated with mold, fungi, rust, corrosion or other bacteria or organism related claims.

END OF SECTION



## SECTION 01 43 33.75

### ROOFING MANUFACTURER'S FIELD SERVICES

#### PART 1 – GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including the Conditions of the Contract and Division 07 Specification Sections apply to this Section.

##### 1.2 SUMMARY

- A. Section includes Manufacturer's field services for roofing assemblies.
- B. Related Sections:
  - 1. Section 07 05 00 – Common Work Results for Thermal and Moisture Protection.

##### 1.3 REFERENCES

- A. International building Code (current edition) or local authority building code.
- B. American Society of Civil Engineers (ASCE): ASCE 7, Minimum Design Loads for Buildings and Other Structures.
- C. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- D. American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI): ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal.

##### 1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.
- B. Specimen Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.
- C. Roofing System Manufacturer's Evaluation: Provide a comprehensive written assessment comparing available roofing solutions with validation of why the roofing system selection for the specific project is suitable and appropriate.
- D. Roofing System Manufacturer's Report Form: Provide a copy of the report form utilized by the roofing system manufacturer for progress inspections to monitor installation and quality.

- E. Online Reporting Capabilities: Provide a sample of the roofing system manufacturer's online roof inspection report as well as information about how long inspection reports are available to owner.

#### 1.5 SUBMITTALS FOR INFORMATION

- A. Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.
- B. Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual Global, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes if required.
- C. Manufacturer's Certificate: Certify that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- D. Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.
- E. Written certification from the roofing system manufacturer certifying the applicator is currently authorized for the installation of the specified roof system.
- F. Design Loads: Submit copy of manufacturer's minimum design load calculations according to ASCE 7, Method 2 for Components and Cladding. In no case shall the design loads be taken to be less than those detailed in Design and Performance Criteria article of this specification.
- G. Qualification data for firms and individuals identified in Quality Assurance Article below.
- H. Test Reports: Submit ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal Products.
- I. Substitutions: Products proposed as equal to the products specified for this project shall meet all of the requirements in the appropriate Division 7 specifications and shall be submitted for consideration at least 7 days prior to the date that bids must be submitted.
  - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification Section. That specification Section shall be signed and sealed by a professional engineer licensed in the state in which the installation is to take place. Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.
  - 2. Manufacturer's checklist will be accompanied with any substitution to verify equal performance characteristics to those specified in Division 7 specification.
  - 3. The Owner's decision regarding substitutions will be considered final.

#### 1.6 CONTRACT CLOSEOUT SUBMITTALS

- A. Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.

- B. Roofing Maintenance Instructions: Provide a roof care and maintenance manual of manufacturer's recommendations for maintenance of installed roofing systems.
- C. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.
- D. Inspection Logs: Copy of inspection reports as performed by the manufacturer shall be submitted at project closeout and include photographic documentation of installation progress, weather conditions, and personnel on the project at the time of every inspection.

#### 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with not less than [12] years documented experience [and have ISO 9001 certification].
- B. Installer Qualifications: Company specializing in specified roofing installation with not less than [5] years experience and authorized by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- C. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress. Maintain proper supervision of workmen.
- D. Maintain a copy of the roof plans, details, and specifications in the possession of the Supervisor/Foreman and on the roof at all times.
- E. Source Limitations: Obtain all primary components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
  - 1. The manufacturer providing the roofing system warranty must verify that they manufacture a minimum of 75% of the products utilized in the roofing system of this project. Products that are private labeled shall not be considered as manufactured by the roofing system supplier.
  - 2. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
- F. Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001.

#### 1.8 PRE-INSTALLATION CONFERENCE

- A. Pre-Installation Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of roofing system installation and associated work.
- B. Require attendance of installer of each component of associated work: installers of deck or substrate construction to receive roofing work: installers of rooftop units and other work in and around roofing that must precede or follow roofing work (including mechanical work if any): architect and/or engineer: owner: roofing system manufacturer's full time employee: and other representatives directly concerned with performance of the Work, including (where applicable) owner's insurers, testing agencies and governing authorities. Objectives of conference include:

1. Review foreseeable methods and procedures related to roofing work, including set up and mobilization areas for stored material and work area.
  2. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
  3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
  4. Review roofing system requirements (drawings, specifications and other contract documents).
  5. Review required submittals both completed and yet to be completed.
  6. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
  7. Review required inspection, testing, certifying and material usage accounting procedures.
  8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not a mandatory requirement).
  9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish a copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
- C. The Owner's Representative will designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.
- D. The intent of the conference is to resolve issues affecting the installation and performance of roofing work. Do not proceed with roofing work until such issues are resolved to the satisfaction of the owner and [architect and/or engineer] of record. This shall not be construed as interference with the progress of Work on the part of the owner or [architect or engineer] of Record.

#### 1.9 MANUFACTURER'S INSPECTIONS

- A. When the Project is in progress, a full-time employee of the roofing system manufacturer must provide the following:
1. Report progress and quality of the work as observed. Progress reports must be published to an online system as referenced in Section 1.4.
  2. Provide periodic (3, 4, or 5 days per week) roofing installation inspections: Inspections must include; photographic documentation of work in-progress and written statements of compliance with details/shop drawings.
  3. Report to the owner, architect and/or engineer in writing any failure or refusal of the contractor to correct unacceptable practices called to the contractor's attention.
  4. Confirm after project completion that the manufacturer has observed no application procedures in conflict with the specifications other than those that may have been previously reported and corrected.

#### 1.10 WARRANTY

- A. Upon completion of installation, and acceptance by the owner and architect and/or engineer, the manufacturer will supply to the owner the specified warranty.

- B. Installer will submit a five (5)- year workmanship warranty to the membrane manufacturer with a copy directly to the owner.
- C. The roofing system manufacturer must have been in continuous business operation for a period of time at least as long as the length of the roof system warranty provided for this project.

## PART 2 – PRODUCTS (NOT USED)

## PART 3 – EXECUTION

### 3.1 EXECUTION, GENERAL

- A. Comply with requirements of related Division 07 Section.

### 3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
- B. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.

### 3.3 FIELD QUALITY CONTROL

- A. Roofing Manufacturer Representative shall perform field inspection as specified in Article titled: MANUFACTURER'S INSPECTIONS above. Inspections must include photographic documentation of installation progress, weather conditions, and personnel on the project at the time of inspection.
- B. Correct defects or irregularities discovered during field inspection. Issues deemed defective must be re-inspected and determined suitable by the roofing manufacturer.
- C. Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system. A copy of the specification shall also be on site at all times.
- D. Frequent progress meetings shall be conducted during the performance of roof system installation and must be attended by the owner, architect or engineer, roofing system manufacturer's full time employee, and other representatives directly concerned with performance of the work.

### 3.4 FINAL INSPECTION

- A. At the completion of the roofing installation and associated work, meet with contractor, architect or engineer, installer, installer of associated work, owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. Notify the owner upon completion of corrections.

- D. The roofing system manufacturer reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the roofing contractor.
- E. If core cuts verify the presence of damp or wet materials, the roofing contractor shall be required to replace the damaged areas at his own expense.
- F. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.
- G. Immediately correct roof leakage during construction. If the contractor does not respond within twenty four (24) hours, the owner may exercise right to correct the Work under the terms of the Conditions of the Contract.

END OF SECTION

SECTION 07563  
FLUID APPLIED ROOFING RESTORATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Single Ply Roof Restoration (1.4.E)(2.6)

1.2 RELATED SECTIONS

- A. Roofing Material: Section 07 52 00- Modified Bituminous Membrane Roofing

1.3 REFERENCES

- A. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
- B. ASTM C 1250 - Standard Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes.
- C. SRI - Solar Reflectance Index calculated according to ASTM E 1980.
- D. SMACNA Architectural Sheet Metal Manual.
- E. ANSI/SPRI ES-1 - Testing and Certification Listing of Shop Fabricated Edge Metal
- F. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

1.4 SYSTEM DESCRIPTION

- A. Single Ply Roof Restoration Renovation: work includes:
  - 1. Surface preparation: Remove membrane chalking, dust, dirt, and debris.
  - 2. Fascia Edges: Inspect and make repairs to membrane
  - 3. Parapets and Vertical Surfaces: Inspect and make repairs to any splits or membrane deterioration.
  - 4. Metal Flashings: Repair/Replace metal flashings, pitch pockets, etc.
  - 5. Roof Repairs: Repair blisters, stressed or cracked membrane. Cut back, patch with new membrane

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. 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.
- C. Shop Drawings: Submit shop drawings including installation details of roofing, flashing, fastening, insulation and vapor barrier, including notation of roof slopes and fastening patterns of insulation and base modified bitumen membrane, prior to job start.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Manufacturer Qualifications: Manufacturer: Company specializing in manufacturing products specified in this section with documented ISO 9001 certification and minimum twelve years and experience.
- C. Installer Qualifications: Company specializing in performing Work of this section with minimum five years documented experience and a certified Pre-Approved Garland Contractor.
- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress.
- E. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- F. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

#### 1.7 PRE-INSTALLATION CONFERENCE

- A. Convene a pre-roofing conference approximately two weeks before scheduled commencement of roofing system installation and associated work.
- B. Require attendance of installers of deck or substrate construction to receive roofing, installers of rooftop units and other work in and around roofing which must precede or follow roofing work including mechanical work, Architect, Owner, roofing system manufacturer's representative.
- C. Objectives include:
  1. Review foreseeable methods and procedures related to roofing work, including set up and mobilization areas for stored material and work area.
  2. Tour representative areas of roofing substrates, inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work.
  3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
  4. Review roofing system requirements, Drawings, Specifications and other Contract Documents.
  5. Review and finalize schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
  6. Review required inspection, testing, certifying procedures.
  7. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
  8. Record conference including decisions and agreements reached. Furnish a copy of records to each party attending.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation.



- B. Store all roofing materials in a dry place, on pallets or raised platforms, out of direct exposure to the elements until time of application. Store materials at least 4 inches above ground level and covered with "breathable" tarpaulins.
- C. Stored in accordance with the instructions of the manufacturer prior to their application or installation. Store roll goods on end on a clean flat surface. No wet or damaged materials will be used in the application.
- D. Store at room temperature wherever possible, until immediately prior to installing the roll. During winter, store materials in a heated location with a 50 degree F (10 degree C) minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.
- E. Avoid stockpiling of materials on roofs without first obtaining acceptance from the Architect/Engineer.
- F. Adhesive storage shall be between the range of above 50-degree F (10-degree C) and below 80-degree F (27-degree C). Area of storage shall be constructed for flammable storage.

#### 1.9 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. Weather Condition Limitations: Do not apply roofing system during inclement weather or when a 40 percent chance of precipitation or greater is expected.
- C. Proceed with roofing work only when existing and forecasted weather conditions will permit unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- E. When applying materials with spray equipment, take precautions to prevent over spray and/or solvents from damaging or defacing surrounding walls, building surfaces, vehicles or other property. Care should be taken to do the following:
  1. Close air intakes into the building.
  2. Have a dry chemical fire extinguisher available at the jobsite.
  3. Post and enforce "No Smoking" signs.
- F. Avoid inhaling spray mist; take precautions to ensure adequate ventilation.
- G. Protect completed roof sections from foot traffic for a period of at least 48 hours at 75 degrees F (24 degrees C) and 50 percent relative humidity or until fully cured.
- H. Take precautions to ensure that materials do not freeze.
- I. Minimum temperature for application is 40 degrees F (4 degrees C) and rising for solvent based materials and 50 degrees F (10 degrees C) and rising for water based.

#### 1.10 WARRANTY

- A. Upon completion of the work, provide the Manufacturer's written and signed limited labor and materials Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due either to defective material or defective workmanship by the installing

contractor, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the labor and material necessary to return the defective area to a watertight condition.

1. Warranty Period:
  - a. 5 plus 5 (10 years): 5 years from date of acceptance plus 5 additional years after required inspection by Garland.

B. Installer is to guarantee all work against defects in materials and workmanship for a period indicated following final acceptance of the Work.

1. Warranty Period:
  - a. 2 years from date of acceptance.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Garland Company, Inc. (The), which is located at: 3800 E. 91st St.; Cleveland, OH 44105; Toll Free Tel: 800-321-9336; Tel: 216-641-7500; Fax: 216-641-0633; Email:[request info \(\)](#); Web:[www.garlandco.com](http://www.garlandco.com)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

### 2.2 ROOF RESTORATION SYSTEM FOR SINGLE PLY ROOFS

- A. White-Knight Plus/ White-Stallion Plus:
  1. Primer: None.
  2. Coating: White-Knight Plus/ White-Stallion Plus.
  3. Flashing: Repair or replace as needed.
  4. Reinforcement: Apply White-Knight Plus Base Coat/ White-Stallion Plus Base Coat on seams and around penetrations only.
  5. Surfacing: None.

### 2.3 EDGE TREATMENT AND ROOF PENETRATION FLASHINGS

- A. Flashing Boot - Rubbertite Flashing Boot: Neoprene pipe boot for sealing single or multiple pipe penetrations adhered in approved adhesives as recommended and furnished by the membrane manufacturer.
- B. Vents and Breathers: Heavy gauge aluminum and fully insulated vent that allows moisture and air to escape but not enter the roof system as recommended and furnished by the membrane manufacturer.
- C. Pitch pans, Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints should be welded/soldered watertight. See details for design.
- D. Drain Flashings should be 4lb (1.8kg) sheet lead formed and rolled.
- E. Plumbing stacks should be 4lb (1.8kg) sheet lead formed and rolled.
- F. Fabricated Flashings: Fabricated flashings and trim are specified in Section 07620.
  1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the CDA Copper Development Association "Copper in Architecture - Handbook" as applicable.
- G. Manufactured Roof Specialties: Manufactured copings, fascia, gravel stops, control joints, expansion joints, joint covers and related flashings and trim are specified in Section 07710.
  1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the NRCA "Roofing and Waterproofing

Manual" as applicable.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 ROOF PREPARATION AND REPAIR

- A. General:
  - 1. Remove existing roof flashings from curbs and parapet walls down to the surface of the roof. Remove existing flashings at roof drains and roof penetrations.
  - 2. Remove all wet, deteriorated, blistered or delaminated roofing membrane or insulation and fill in any low spots occurring as a result of removal work to create a smooth, even surface for application of new roof membranes.
  - 3. Install new wood nailers as necessary to accommodate insulation/recovery board or new nailing patterns.
  - 4. When mechanically attached, the fastening pattern for the insulation/recovery board shall be as recommended by the specific product manufacturer.
  - 5. Re-roofing over coal tar pitch requires a mechanically attached recovery board or insulation and a base sheet prior to the application of roofing system.
  - 6. Existing roof surfaces shall be primed as necessary and allowed to dry prior to installing the roofing system.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Repair all defects such as deteriorated roof decks; replace saturated insulation board, replace loose or brittle membrane or membrane flashings. Verify that exiting conditions meet the following requirements:
  - 1. Existing membrane is either fully adhered or that the membranes mechanical fasteners are secured and functional.
  - 2. Application of roofing materials over a brittle roof membrane is not recommended.
- D. Remove all loose dirt and foreign debris from the roof surface. Do not damage roof membrane in cleaning process.
- E. Clean and seal all parapet walls, gutters and coping caps, and repair any damaged metal where necessary. Seal watertight all fasteners, pipes, drains, vents, joints and penetrations where water could enter the building envelope.
- F. Clean the entire roof surface by removing all dirt, algae, paint, oil, talc, rust or foreign substance. Use a 10 percent solution of TSP (tri-sodium phosphate), Simple Green and warm water. Scrub heavily soiled areas with a brush. Rinse with fresh water to remove all TSP solution. Allow roof to dry thoroughly before continuing.
- G. Repair existing roof membrane as necessary to provide a sound substrate for the liquid membrane. All surface defects (cracks, blisters, tears) must be repaired with similar materials.
- H. Pre-Treatment of Known Growth - General Surfaces: Once areas of moss, mold, algae and

other fungal growths or vegetation have been removed and surfaces have also been thoroughly cleaned, apply a biocide wash at a maximum spread rate of 0.2 gallons/square (0.08 liters/m), to guard against subsequent infection. Allow to dry onto absorbent surfaces before continuing with the application. On non-absorbent surfaces, allow to react before thoroughly rinsing to remove all traces of the solution.

### 3.3 INSTALLATION

#### A. General Installation Requirements:

1. Install in accordance with manufacturer's instructions. Apply to minimum coating thickness required by the manufacturer.
2. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
3. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
4. Protect work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Replace or restore work damaged by installation of the roofing system.
5. All primers must be top coated within 24 hours of application. Re-prime If more time passes after priming.
6. Keep roofing materials dry during application. Phased construction can be allowed as long as no, more than 7 days pass between coats excluding primers.
7. Coordinate counter flashing, cap flashings, expansion joints and similar work with work specified in other Sections under Related Work.
8. Coordinate roof accessories and miscellaneous sheet metal accessory items, including piping vents and other devices with work specified in other Sections under Related Work.

#### B. Single Ply Roof Restoration Renovation: work includes:

1. Surface preparation: Remove membrane chalking, dust, dirt, and debris.
2. Flashing:
  - a. Fascia Edges: Inspect and make repairs to membrane.
  - b. Parapets and Vertical Surfaces: Inspect and make repairs to any splits or membrane deterioration.
  - c. Metal Flashings: Repair/Replace metal flashings, pitch pockets, etc.
3. Reinforcement: Base coat and treatment of field seams and around penetrations:
  - a. Application of White-Knight Plus/ Stallion Plus or White-Knight Plus WC on field seams, flashings and around penetrations.
    - 1) Verify that the surface to be coated is properly prepared.
    - 2) Restore the surface to a suitable condition if roof surface becomes contaminated with dirt, dust or other materials that will interfere with adhesion of the coatings.
    - 3) Apply UniBond to flashings and field seams.
    - 4) Apply materials must be applied at specified dry film thickness.
    - 5) Apply White-Knight/ Stallion Plus or White-Knight Plus WC at minimum 6 inch wide stripe over all seams, flashings and around penetrations at 2.0 gallons per 100 SF.
    - 6) Allow to dry for a minimum of 24 hours before applying finish coats.
    - 7) On vertical surfaces to achieve proper application rate cut your application into two coats to avoid sagging and runs of coating.
4. Coating: Application of White-Knight/ Stallion, White-Knight WC or White-Knight Plus/ Stallion Plus, White-Knight Plus WC finish coats.
  - a. Apply White-Knight/ Stallion or White-Knight Plus/ Stallion Plus in a uniform manner.
  - b. Use special attention to coating flashings and other critical areas to build adequate membrane thickness.

- c. Use multiple coats on verticals to prevent sagging.
- d. Apply at 2.0 gallons per 100 SF over the entire roof surface.

### 3.4 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Fabricated Flashings: Fabricated flashings and trim are provided as specified in Section 07620.
  - 1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the Copper Development Association "Copper in Architecture - Handbook" as applicable.
- B. Manufactured Roof Specialties: Manufactured copings, fascia, gravel stops, control joints, expansion joints, joint covers and related flashings and trim are provided as specified in Section 07710.
  - 1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the National Roofing Contractor's Association "Roofing and Waterproofing Manual" as applicable.

### 3.5 CLEANING

- A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.
- B. Remove asphalt markings from finished surfaces.
- C. Repair or replace defaced or disfigured finishes caused by Work of this section.

### 3.6 PROTECTION

- A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs and structures, vehicles and utilities.
- B. Protect exposed surfaces of finished walls with tarps to prevent damage.
- C. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8 inch (16 mm) thick.
- D. In addition to the plywood listed above, an underlayment of minimum 1/2 inch (13 mm) recover board is required on new roofing.
- E. Special permission shall be obtained from the Manufacturer before any traffic shall be permitted over new roofing.

### 3.7 FIELD QUALITY CONTROL

- A. Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system.
- B. Perform field inspection and [and testing] as required under provisions of Section 01410.
- C. Correct defects or irregularities discovered during field inspection.

### 3.8 FINAL INSPECTION

- A. At completion of roofing installation and associated work, meet with Contractor, Architect, installer, installer of associated work, roofing system manufacturer's representative and others directly concerned with performance of roofing system.

- B. Walk roof surface areas, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. Identify all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. If core cuts verify the presence of damp or wet materials, the installer shall be required to replace the damaged areas at his own expense.
- D. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation that is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- E. Architect upon completion of corrections.
- F. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

### 3.9 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

### 3.10 SCHEDULES

- A. Coatings:
  - 1. Coating: White-Knight Plus/ White-Stallion Plus Base: Highly reflective multi- purpose, single-component aliphatic urethane, liquid waterproofing membrane.
    - a. Tensile Strength: ASTM D 412, 2100 psi
    - b. Tear Resistance: ASTM D 624, 160 lbs./in
    - c. Elongation: ASTM D 412, 320%
    - d. Density @ 77 degrees F (25 degrees C, ASTM D 2939) 10.4 lb./gal (1.2 g/m<sup>3</sup>)
    - e. Flash Point: ASTM D 93, 110 degrees F min. (43 degrees C)
    - f. Non-Volatile: ASTM D 75, Typical 83%
    - g. Viscosity @ 77 degrees F (25 degrees C); Brookfield RVT, #4 Spindle 10 rpm 9200 cP
    - h. Wet Film Thickness @ 2 gal./100 sq. ft. (0.82 l/m<sup>2</sup>)
    - i. VOC: 225 g/l
    - j. Reflectance: 0.87
    - k. Emittance: 0.89
    - l. SRI: 110
- B. Flashings
  - 1. Coating: White-Knight Plus/ White-Stallion Plus: highly reflective multi- purpose, single-component aliphatic urethane, liquid waterproofing membrane.
    - a. Tensile Strength: ASTM D 412, 2100 psi
    - b. Tear Resistance: ASTM D 624, 160 lbs./in
    - c. Elongation: ASTM D 412, 320%
    - d. Density @ 77 degrees F (25 degrees C, ASTM D 2939) 10.4 lb./gal (1.2 g/m<sup>3</sup>)
    - e. Flash Point: ASTM D 93, 110 degrees F min. (43 degrees C)
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    - h. Wet Film Thickness @ 2 gal./100 sq. ft. (0.82 l/m<sup>2</sup>)
    - i. VOC: 225 g/l
    - j. Reflectance: 0.87
    - k. Emittance: 0.89
    - l. SRI: 110

- C. Reinforcement
  - 1. Reinforcement Seam Tape: UniBond

END OF SECTION

# UniBond™ ST

Polyester-Faced Adhesive Tape



## OVERVIEW & FEATURES

UniBond ST is a high-performance, fatigue resistant, self-priming, 100% solids tape designed for use with Garland cold-process restoration systems. This versatile tape will instantly seal and reinforce seams and penetrations on a variety of metal and single-ply roof systems and components. UniBond ST bonds aggressively to a variety of surfaces, including properly prepared EPDM, TPO, Hypalon, aged PVC, CPE, metal roofs, brick, concrete, and masonry. It is formulated with synthetic resins, thermoplastics, and non-curing rubber with a woven polyester facing.

UniBond ST is used on single-ply and metal roofs in conjunction with the CPR™ White, Revitalizer™ Metal, White-Knight®/White-Stallion®, White-Knight®/White-Stallion® Plus, and cold-applied roof maintenance systems to seal roof joints, seams, tears, flashings, copings, skylights, and gutters. Extremely flexible, with no memory, UniBond ST conforms to virtually any shape. UniBond ST seals to itself so it can be cut and folded around an object. A UV stable finish coat must be applied to UniBond ST on the same day - do not expose the UniBond ST fabric surface to the elements.

**Seals & Reinforces** – UniBond ST seals and reinforces seams and penetrations, fusing at a molecular level to a variety of substrates to create an instant, airtight and watertight barrier. This product forms a durable, monolithic restoration system when combined with Garland cold-applied roof coating systems: CPR White, Revitalizer Metal, White-Knight/White-Stallion, or White-Knight/White-Stallion Plus.

**Multi-Purpose & User-Friendly** – Can be used in various applications such as sealing seams, approved flashing details, and numerous maintenance repairs. Installation is as easy as applying a piece of tape. UniBond ST's built-in primer and advanced micro-sealant adhesive technology enables instant adhesion on contact. The versatility and trouble-free application makes UniBond ST an invaluable tool for maintenance and roof restoration.

**Resilient & Flexible** – The 100% solids content prevents shrinkage, aiding the long-term yield of 500% elongation and enabling UniBond ST to accommodate movement.

**Service Temperature** – UniBond ST maintains its physical properties at temperatures as low as -70°F (-56.6°C). This allows the tape to maintain a watertight seal even in extremely cold temperatures.

## APPLICATION

**Surface Preparation** – Substrates must be clean and dry. Remove all moisture, dust, dirt or other foreign contaminants. Remove oil and grease, etc. with mineral spirits or a non-residue cleaner such as

acetone or lacquer thinner. For larger jobs, power wash the surface with TSP or Simple Green. UniBond ST will not adhere to silicone sealants or silicone treated surfaces, water-proof treated surfaces, anti-stain treated surfaces, waxes, oily surfaces, dirt, or other loose elements on a surface.

Due to the variety of surfaces and unpredictable nature of certain substrates, a field test is recommended to determine the adhesion of UniBond ST.

**Application** - UniBond ST should be applied at a minimum application temperature of 40°F (4.44°C) and rising. To install UniBond ST, remove the release liner gradually to prevent contamination of the adhesive prior to application. Apply UniBond ST uniformly to prevent wrinkles and other discrepancies. **DO NOT STRETCH.**

Apply pressure starting at the center of the tape and work toward the outside edge with a steel roller or hands to activate the bonding process. Verify edges are tightly adhered to the surface.

**Finish Coat** - After the tape is properly adhered, the first coat of an approved Garland cold process roof coating must be applied over the polyester facing on the same day. Apply coating a minimum of 2 inches beyond the edge of the tape on each side. For specific coating application rates, see system application guidelines.

## STORAGE

UniBond ST will not degrade in normal warehouse storage. In time, due to the aggressive adhesion of this product, the release liner may become difficult to remove. For this reason, the recommended shelf life is two years. Store indoors, out of direct sunlight between 60-80°F (15.6-26.7°C). Always rotate stock.

## PRECAUTIONS

- Clean skin with mineral spirits, then wash thoroughly with soap and water.
- May be harmful if swallowed - do not induce vomiting; contact physician immediately.
- Keep away from heat and flames.
- Do not expose adhesive tape rolls to moisture.
- Do not use in freezing conditions.
- Do not apply the adhesive tape in the rain or over ice.



# UniBond™ ST

Technical Data	UniBond ST
<b>Tensile Strength</b>	4500 psi
<b>Elongation</b>	500%
<b>Low Temperature Flexibility</b> Pass ½ in. radius	-70°F (-56.6°C)
<b>Service Temperature</b>	-30 - 200°F (-34.4 - 93.3°C)
<b>Permeance</b> (ASTM E 96B)	.001 perms
<b>Adhesion</b>	> 20 lbs./in.
<b>Shrinkage</b>	No measurable shrinkage after 14 days
<b>Nominal Thickness</b>	30 mils (1 mm)
<b>Shelf Life</b>	2 years
<b>Size</b>	
length	50 ft. (15.24 m)
width*	4 in. (10.16 cm)
<b>Packaging</b>	6 rolls per case*, 300 L/ft.

\*Available for special order in 6 in. or 12 in. widths, number of rolls per case will vary with roll size.

For specific application recommendations, please contact your local Garland Representative or Garland Technical Service Department.

For more information, visit us at: [www.garlandco.com](http://www.garlandco.com)

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Tests verified by independent laboratories. Actual roof performance specifications will vary depending on test speed and temperature. Data reflects samples randomly collected. A ± 10% variation may be experienced. The above data supersedes all previously published information. Consult your local Garland Representative or Garland Corporate Office for more information.

UniBond, White-Knight, Revitalizer and CPR are trademarks of The Garland Company, Inc.  
White-Stallion is a trademark of Garland Canada Inc.

# White-Knight® Plus/ White-Stallion® Plus

White-Knight/White Stallion Plus • White-Knight/White Stallion Plus Base Coat • White-Knight Plus WC Base Coat • White-Knight Plus WC



## OVERVIEW & FEATURES

White-Knight/White-Stallion Plus is an ENERGY STAR® qualified liquid waterproofing membrane designed to maintain, restore and upgrade the performance of aged modified bitumen, metal and single ply roof systems. It is a highly reflective, single-component, aliphatic, moisture-triggered polyurethane that provides a finished white roof surface. The White-Knight Plus WC formula is VOC compliant and meets South Coast AQMD standards.

White-Knight Plus system can be used to coat aged single-ply, metal, smooth and granule modified bitumen roof systems. It can also be used as a repair material for maintenance applications. White-Knight Plus can be applied by brush, roller or spray.

**Energy Efficient** - Provides added UV protection to prolong the life of the roof, while helping maintain internal temperatures and reducing cooling costs.

**Waterproofing Protection** - Increased waterproofing protection to the existing roof system, extending the life of the roof system.

**UV & Chemical Resistant** - This high-performance aliphatic polyurethane coating system protects the existing roof from the harmful effects of UV radiation, greatly reducing thermal shock. White-Knight Plus is also uniquely formulated to provide superior chemical resistance to many oils, acids, and other contaminants.

**User Friendly** - Easy application and versatile. It can be used to seal laps, make spot repairs or restore entire roofing systems.

## PREPARATION

Make any necessary repairs, including removal of any wet insulation and roofing materials and replace with like materials. Allow repairs to cure completely. Confirm local water run-off ordinances and restrictions prior to cleaning roof. Carefully power wash all roof surfaces with greater than 2,000 psi pressure to remove debris, rust, scale, dirt, dust, chalking, peeling or flaking coatings, etc. Do not force water into the roof system or damage roof surfaces. Wearing personal protective clothing and equipment, treat areas of algae, mildew or fungus with a solution of three quarts of warm water and TSP or Simple Green Solution. Rinse at least twice to be sure all cleaning agents or contaminants are completely removed to prevent adhesion issues. If the roof surface becomes contaminated with dirt, dust or other particles at any time during the application of the White-Knight Plus system, cleaning measures must be taken to restore the surface to a suitable condition.

Refer to the White-Knight Plus Restoration Application Guides (Single-Ply, Modified Bitumen or Metal) for other substrate specific repair and preparation requirements.

## APPLICATION

White-Knight Plus roof restoration systems require either partial reinforcement of seams, laps and details or full fabric reinforcement of the entire existing roof surface. Single-ply membrane restoration requires only White-Knight Plus Base or White-Knight Plus coating (striping) over existing membrane seams. Refer to the White-Knight Plus Restoration Application Guides (Single- Ply, Modified Bitumen or Metal) for complete installation instructions, coverage rates and primer requirements specific to the existing roof substrate.

## PRECAUTIONS

- Product application must not be done when rain or other conditions such as fog or heavy dew are possible within a 24-hour period.
- Moisture survey must be conducted prior to roof restoration to identify any wet areas of the existing roof system that must be replaced with like-materials
- In accordance with Garland's adhesion testing protocol, ensure that the White-Knight Plus coating bond strength to the existing roof substrate(s) is four (4) pounds per linear inch (pli) or greater
- Storage temperatures should be between 60°F to 80°F (15.6°C to 26.7°C) and not exceed 110°F (43.3°C). Indoor ventilated storage is recommended. Ensure job site storage is in a shaded and ventilated area. Do not store in direct sunlight
- Coverage rate varies depending on warranty and substrate
- Restrict coating application when the ambient temperature is not at a minimum of 50°F (10°C) and rising or when overnight temperature drops below 40°F (4.4°C)
- Roof surface must be at least six Fahrenheit degrees or three Celsius degrees above the dew point and rising
- In areas where the roof is subject to foot traffic, it is recommended to apply a granule non-skid walkway surface
- Excess water on the roof surface can cause the roof to become slippery
- Reinforcement fabric should be used when coating over heavily alligatored surfaces, areas that pond water, and over surface irregularities
- Not intended to restore glaze coats of asphalt

# White-Knight Plus/ White-Stallion Plus

Technical Data	White-Knight Plus (+WC)
<b>Non-Volatile</b> (ASTM D 75)	Typical 83%
<b>Flash Point</b> (ASTM D 93)	110°F min. (43.3°C)
<b>Density</b> @ 77°F (25°C) (ASTM D 2939)	10.4 lb./gal (1.2 g/m <sup>3</sup> )
<b>Viscosity</b> @ 77°F (25°C); 10 RPM, Brookfield RVT, #4 Spindle	9200 cP
<b>Tear Resistance</b> (ASTM D 624)	400 lbs./in
<b>Elongation</b>	320%
<b>Tensile Strength</b> (ASTM D 412)	2100 psi
<b>Color</b>	White
<b>Shelf Life</b>	1 year, unopened
<b>Packaging</b>	5 gal. pail (18.9 l) 55 gal. drum (208.2 l)
<b>Low Temperature Flexibility</b> (ASTM D 5222)	-35°F min. (-37.2°C)
<b>Drying Time* (Typical)</b> @ 77 °F (25 °C) and 50% R.H.	Skin time: 6 hours Over-coat time: 10 hours

Higher temperature and/or humidity will result in reduced skin and overcoat times, lower temperature and/or humidity may extend skin and overcoat times.

Eco-Facts	White-Knight Plus		White-Knight Plus WC	
VOC	225 g/l		50 g/l	
	Initial	Aged	Initial	Aged
<b>Reflectance</b>	0.87	0.75	0.83	0.73
<b>Emittance</b>	0.90	0.87	0.89	0.87
<b>SRI</b>	111	92	104	89

For specific application recommendations, please contact your local Garland Representative or Garland Technical Service Department.

Reflectance, emittance and SRI values are for white color only



0700-0026  
& 0700-0022



Valid in U.S. only



Approval does not apply  
to WC version

For more information, visit us at: [www.garlandco.com](http://www.garlandco.com)

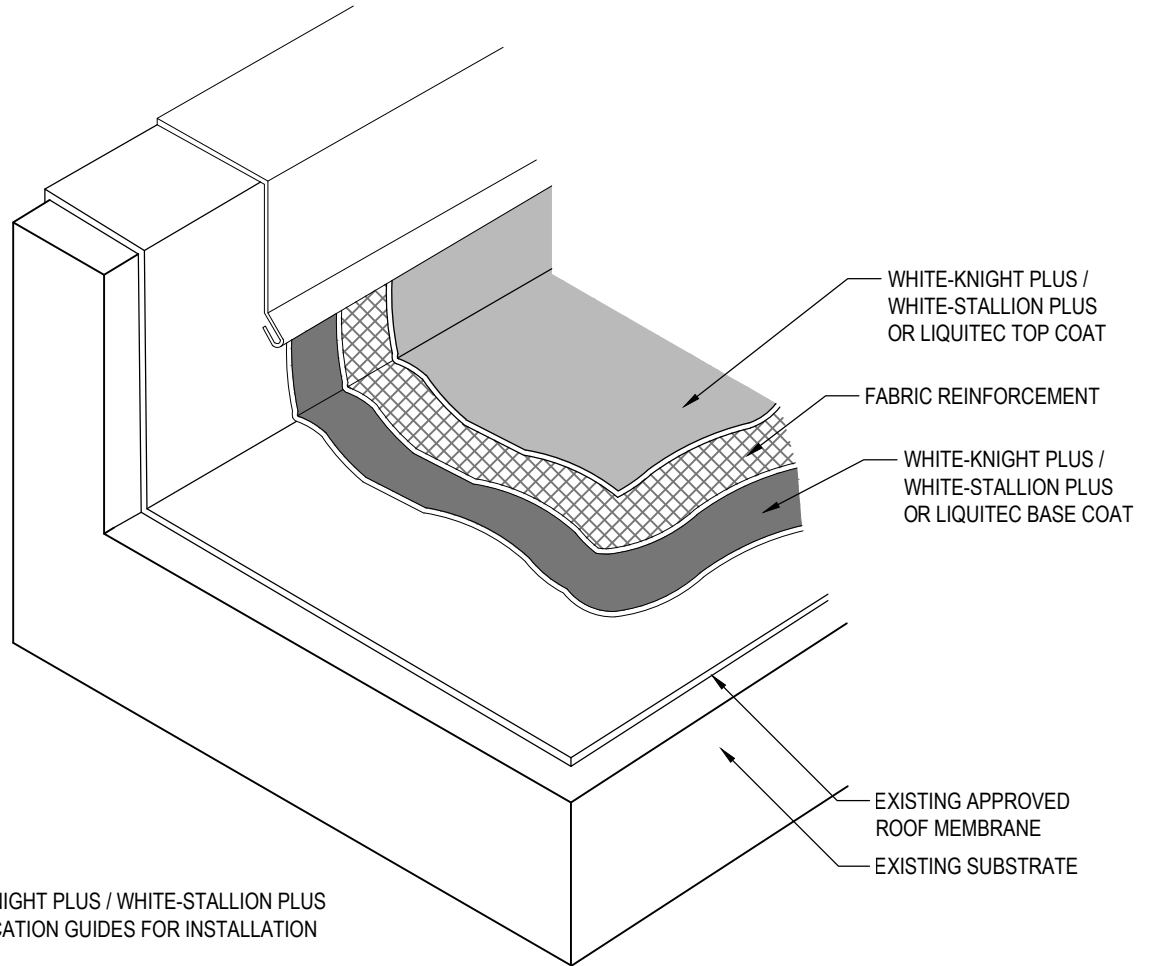
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Tests verified by independent laboratories. Actual roof performance specifications will vary depending on test speed and temperature. Data reflects samples randomly collected. ± 10% variation may be experienced. The above data supersedes all previously published information. Consult your local Garland Representative or the home office for more information.

White-Knight, All-Knight and Garland Greenhouse are trademarks of The Garland Company, Inc. ENERGY STAR is a registered trademark of the U.S. government. The CRRC mark is a registered trademark of the Cool Roof Rating Council.



**NOTE:**

1. REFER TO WHITE-KNIGHT PLUS / WHITE-STALLION PLUS OR LIQUITEC APPLICATION GUIDES FOR INSTALLATION GUIDELINES.

## TYPICAL CURB DETAIL



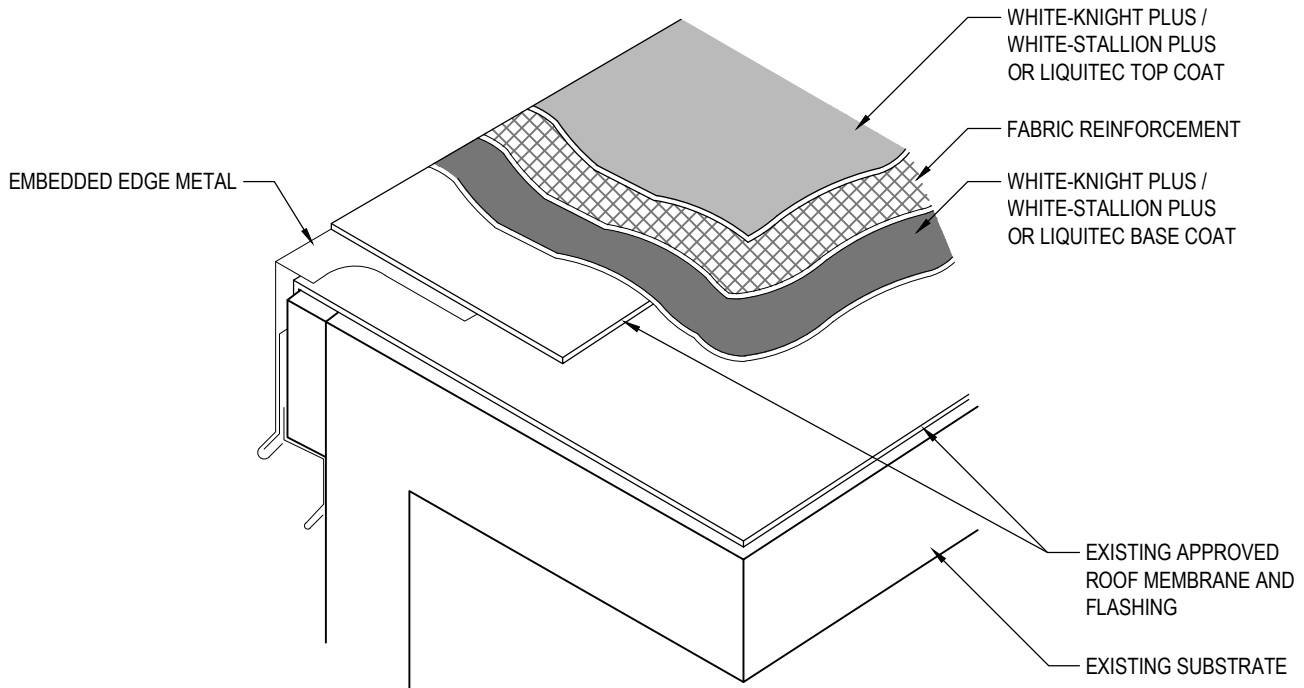
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**NOTE:**

1. REFER TO WHITE-KNIGHT PLUS / WHITE-STALLION PLUS OR LIQUITEC APPLICATION GUIDES FOR INSTALLATION GUIDELINES.



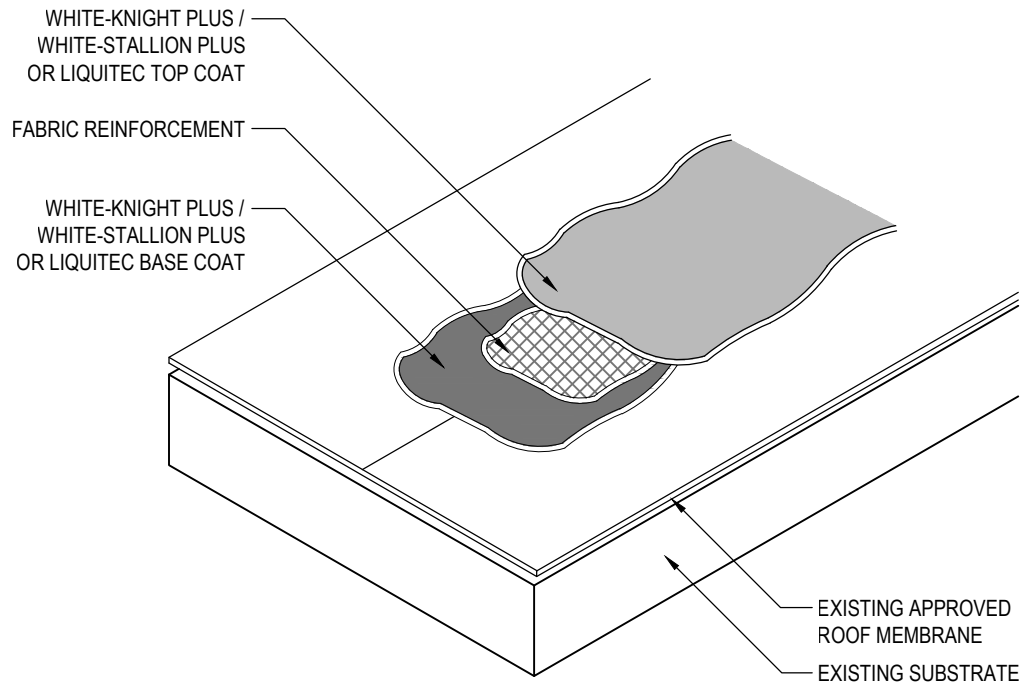
## TYPICAL EMBEDDED EDGE METAL DETAIL



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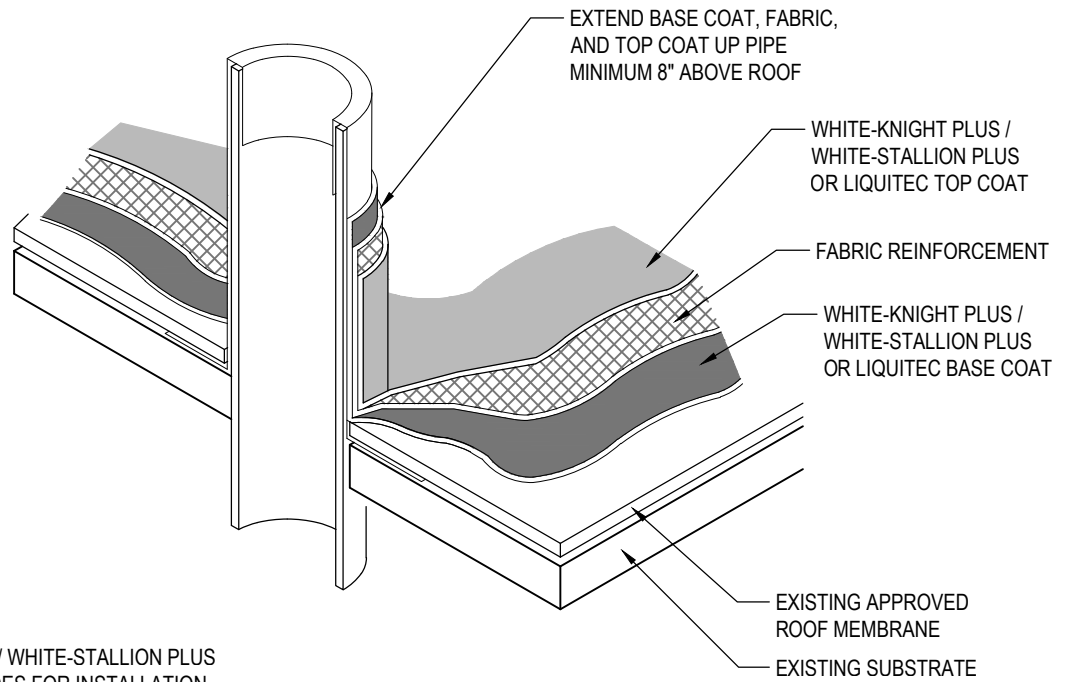
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## TYPICAL MEMBRANE SEAL DETAIL



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**NOTE:**

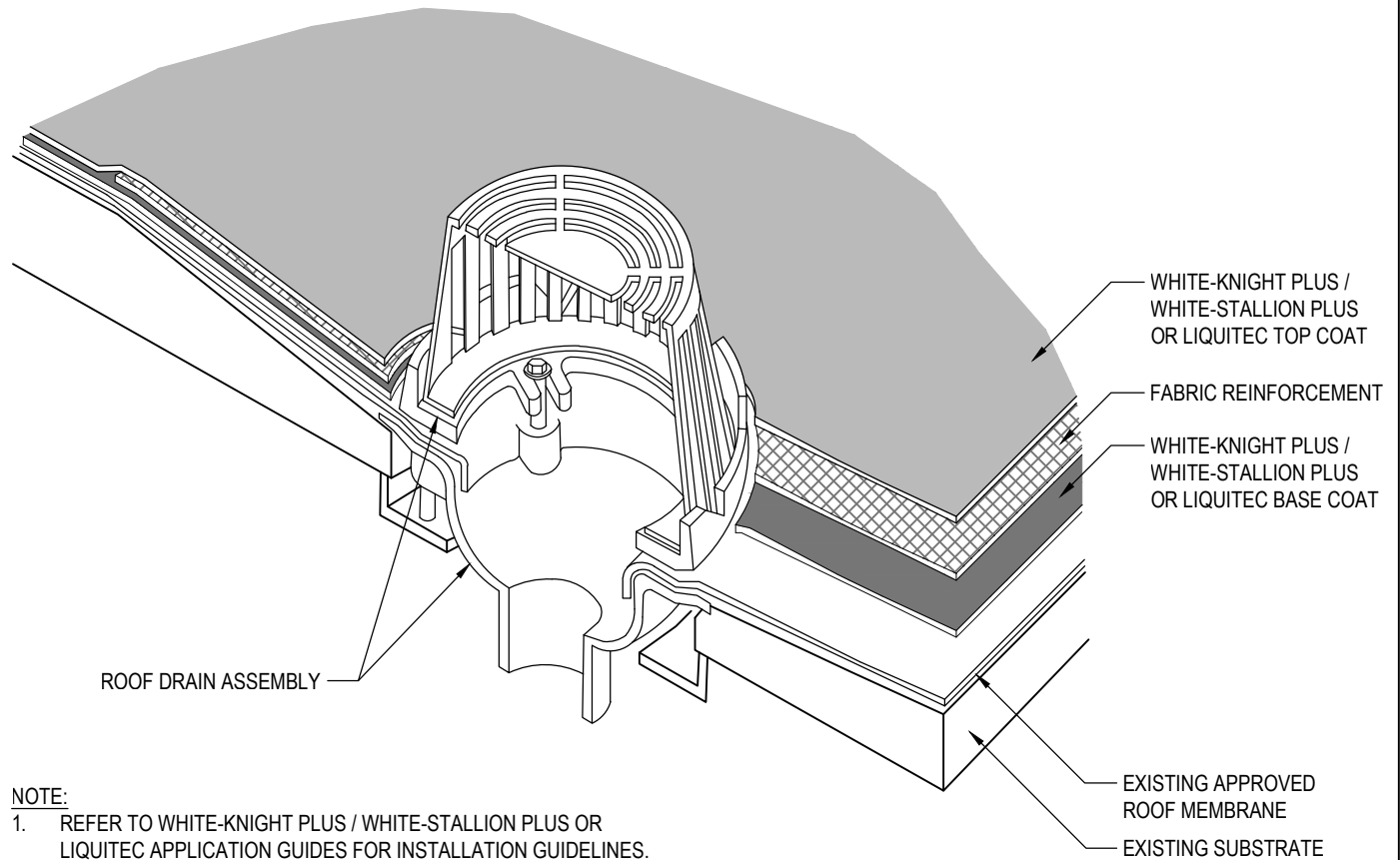
1. REFER TO WHITE-KNIGHT PLUS / WHITE-STALLION PLUS OR LIQUITEC APPLICATION GUIDES FOR INSTALLATION GUIDELINES.

## TYPICAL PIPE PENETRATION DETAIL



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**NOTE:**  
 1. REFER TO WHITE-KNIGHT PLUS / WHITE-STALLION PLUS OR LIQUITEC APPLICATION GUIDES FOR INSTALLATION GUIDELINES.

## TYPICAL CURB DETAIL



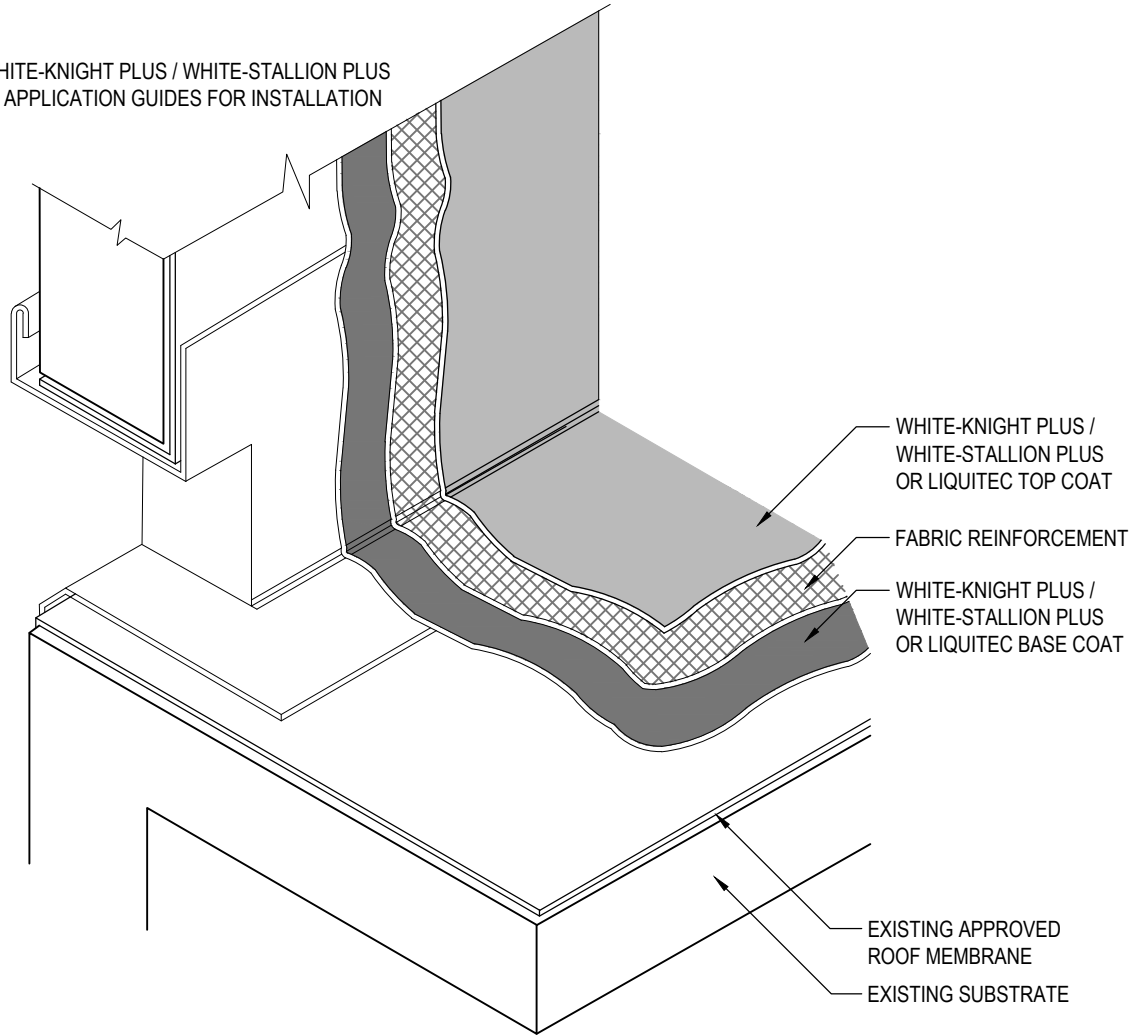
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**NOTE:**

1. REFER TO WHITE-KNIGHT PLUS / WHITE-STALLION PLUS OR LIQUITEC APPLICATION GUIDES FOR INSTALLATION GUIDELINES.



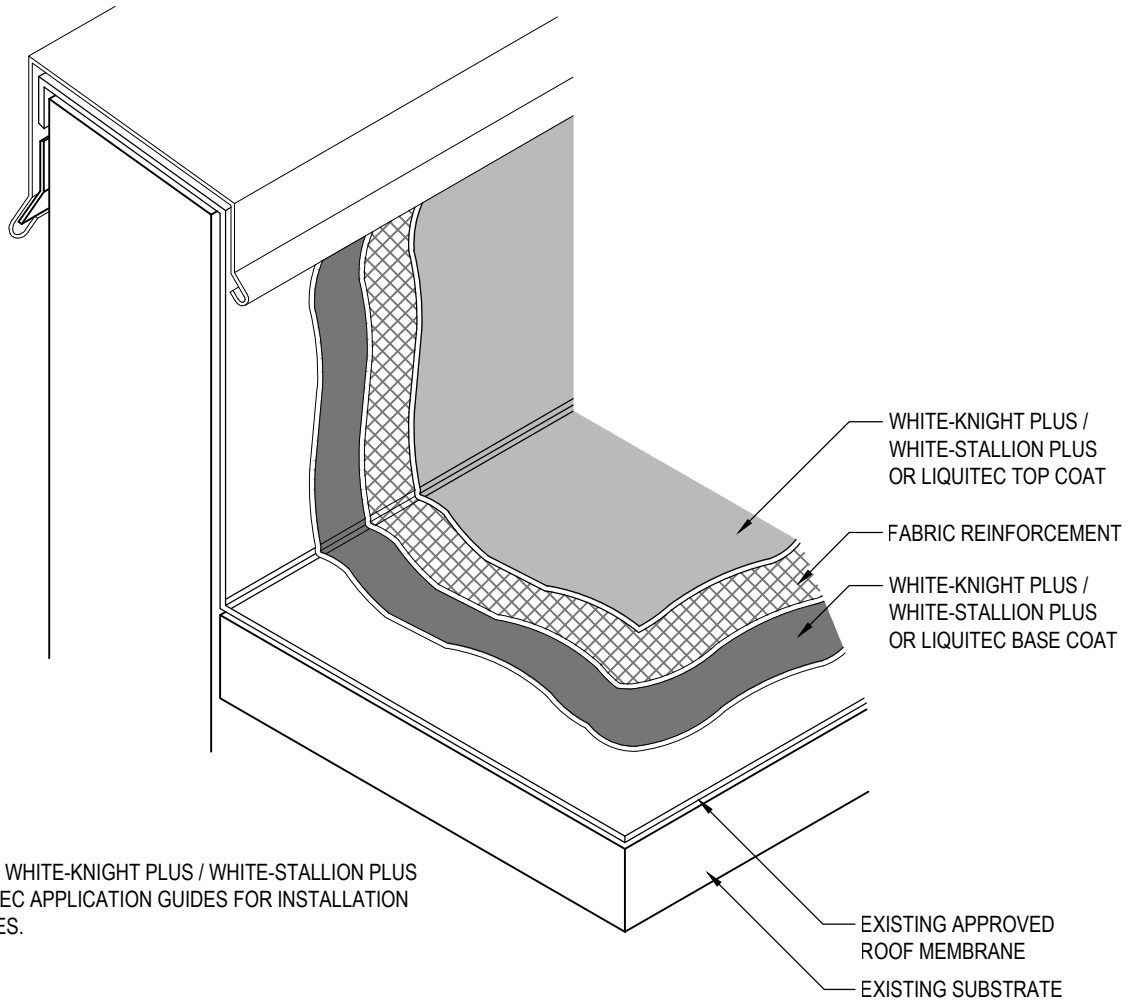
## TYPICAL THROUGH-WALL SCUPPER DETAIL



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## TYPICAL WALL DETAIL



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