Expression of Interest:
Architectural and Engineering Services – WVSU Roof Replacement Projects

1891

WEST VIRGINIA STATE UNIVERSITY

Prepared By:

The Garland Company, Inc.

March 11th, 2024

Christian Reeves
Territory Manager

GARLAND
since 1895

Garland/DBS, Inc.
3800 E. 91st Street • Cleveland, OH 44105
Phone: (866) 327-0306 • Fax: (216) 883-2055

March 11th, 2024

Mr. Jerry Rush
Director of Purchasing
WVSU
5000 Fairlawn Avenue
Ferrell Hall RM 301
Institute, WV 25112

RE: Expression of Interest for Architectural/Engineering design services and construction/contract administration for multiple roof replacement projects to be completed at West Virginia State University.

Dear Mr. Rush,

We are submitting to you our proposal in response to the requirements set forth by West Virginia State University Purchasing Department's Expression of Interest for Architectural/ Engineering, and Design Services for the roof replacements of The Cole Complex, James C. Wilson Union, and Hill Hall.

This EOI Submittal is being submitted by Garland/DBS, Inc. and the following required corporate info:

Corporate Office: Garland/DBS, Inc.
3800 East 91st Street
Cleveland OH 44105
Phone: 1-800-321-9336
Email: www.garlandco.com
Dun & Bradstreet #06-603-7409

Local Office: The Garland Company
Christian Reeves – Territory Manager
Saint Albans, WV 25177
Phone: 304-951-8940
Email: creeves@garlandco.com

In our more than one hundred years of business, Garland has tackled the most difficult and demanding waterproofing and building envelope projects specific to Higher Education, Municipality, Counties and Federal Government projects. Provided in the attached documents are the requested and required response items to the Expression of Interest:

1. Company Introduction
2. Anticipated Concepts and Proposed Methods of Approach
3. Scope of Services
4. Statement of Qualifications
5. Appendix

Garland/DBS specializes in roofing and waterproofing asset management of services for the exteriors of public, commercial, and government properties. As you will see from the information contained in this response, we have provided these services to numerous public agencies across the country. We have the resources to: thoroughly assess the existing roof; recommend varying solutions options with different performance lives, budgets and schedules; provide design assistance services to finalize the project details; manage/oversee the performance of the project; create a punch list and facilitate final project completion; and issue a long-term performance guarantee.

As a Garland Industries company, Garland/DBS is backed by the resources of a 124-year industry leader in high- performance solutions for the building envelope. Garland Industries, Inc. delivers a full range of innovative materials and services to keep healthcare institutions, government facilities, schools, universities, industrial facilities, and commercial properties watertight. With its core competency of exterior waterproofing, Garland Industries provides not only financial strength, but also a depth of technical knowledge and hands-on support, including highly trained local field service professionals who are actively engaged in facilitating inspections, maintenance, and repairs of building envelopes.

COMPANY INTRODUCTION

On behalf of Garland Industries, we appreciate the opportunity to present you with our options for Architectural/Engineering and Bid Management Services. Our services will provide West Virginia State University with the reassurance that your upcoming roofing investments will be made based upon accurate technical information, detailed financial analysis, and long-term value. We at The Garland Company welcome the opportunity to build a long-term relationship and would like to share the following background information.

Company History

Our company began in 1895, as the Garland Refining Company. We've prevailed by remaining dedicated to our customers, continually developing innovative product and service solutions to meet the ever-changing needs in the market place.

In 1914, we became The Garland Company, Inc. Today, The Garland Company is a full-service Design & Manufacturing Company, headquartered at 3800 East 91st Street in Cleveland, Ohio. As part of Garland Industries, Inc., our products and systems are manufactured throughout our production facilities all located throughout the United States.

In 1994, The Garland Company, Inc. became the first roofing manufacturer in the United States to become ISO 9000 certified. More recently, we achieved ISO 9001-2000 certification to support our ongoing commitment to continual quality improvement. Specifically, ISO 9001 monitors Garland's ability to consistently meet pre-established standards for quality in the research, production, quality control, and services related to our roofing and flooring products. The end result is quality you can count on in everything that Garland provides to ensure long-term roofing and flooring performance.

At the heart of our organization is a locally based network of employee-owner representatives who are committed to servicing our customers around the world with personal accountability and integrity. Our twelve-step approach to total roof management sets the industry standard for optimizing customer return on roof asset investment by ensuring the longest possible working life for every Garland roof. The Garland Company, Inc. is also a contributing member of many national associations designed to help improve quality-roofing standards for all potential customers throughout North America. These associations include: NRCA, AIPE, MBMA, CRRC, RCMA, ASTM, CSI, RCI, and AIA.

Engineering Services

Garland specializes in performance-driven engineering services for all commercial roof applications including but not limited to: low-slope polymer-modified bitumen, standing seam, flat seam, metal restoration, photovoltaic, and green roofing systems. Our technical engineering capabilities include:

- Structural roof evaluations
- Signed-and-sealed roof project specifications, including review for local building code compliance
- Performance Engineering of roofing projects, including: Wind Uplift calculations, Drainage, Core, and R-Value Analysis
- Project inspection and post-project evaluations
- Contractor training
- Computer graphic simulations

Garland's Engineered specifications and drawings ensure an unbiased, third-party engineering firm review and certification of construction documents. These services also help reduce liability exposure for all parties by delegating to an engineer authority the responsibility for determining the acceptability of a project's specifications and details. Stamped specifications certify the intent of the manufacturer to resolve specific customer problems while establishing a higher level of professionalism by certifying the viability of designs and materials. In addition, these engineering services can help customers expedite local, state, and federal approvals for public projects.

Through our various subsidiaries and partnering agreements, we also offer engineering services to support the design-bid-build process as it relates to rooftop systems, including but not limited to:

- Architectural/design technologies such as AutoCAD, engineering design software, 3D modeling, fly-through modeling, robotic total station surveying
- Civil engineering services
- Environmental and landscape engineering
- Electrical and geothermal engineering
- Photovoltaic systems, including the specification, installation, and management of PV solutions that can help you meet specific energy-cost-reduction goals by using the sun's natural energy to reduce energy consumption.
- Structural engineering
- Retrofit slope solutions to:
    - Improve energy efficiency by adding insulation
    - Accommodate unusual architectural designs
    - Enable the installation of high-performance standing seam metal roofing alternatives
- Mechanical services such as rooftop HVAC
- Surveying Services

OUR EXPERIENCE & QUALIFICATIONS

People-First Philosophy

At Garland, our focus is *people*; we are a customer-oriented enterprise. The organizational chart displayed in our corporate boardroom positions our customers at the top, as our chief executive officer. It is this distinct philosophy, combined with our entrepreneurial spirit of innovation, which assures Garland's continued growth as the leader in the roofing market.

Employee-Owner Commitment

The Garland Company, Inc. has over 250 employee-owner representatives servicing customers across North America and Europe, with an unwavering commitment to quality and a single-minded responsiveness to individual customer requirements. Strategically located throughout the United States, Canada, and the United Kingdom, Garland representatives are positioned to provide responsible, integrated facility management for single or multiple site properties.

When you work with Garland as your roof asset management partner, you can count on the highest quality services and products for the most effective and efficient use of your roofing investments.

It all starts with understanding your roofing expectations and working with you and your staff to develop a solution that meets your needs — including your budget. With Garland as your roof asset management partner, every square foot of your roofs will deliver long-term, leak-free performance.

Garland representatives provide pre-job evaluations and written specifications, including detail drawings. The installation process is vigilantly monitored to ensure that contractors are installing our materials as specified, in accordance with recommended application instructions. A post-project evaluation verifies that all goals and objectives set forth in the preconstruction meeting were achieved.

The management and employees of Garland are committed to providing the best possible products and services to our customers. Our goal is to meet or exceed customer requirements by consistently providing benefits and adding values that are commensurate with our cost structure. As our mission statement attests: "Whenever it can be done better, Garland will do it!"

Customer Partnerships

What makes Garland different from our competitors is our direct involvement with customers. Locally based Garland representatives work directly with facility managers to develop a comprehensive roof management plan. Based on your corporate vision of facility management, and the application requirements of your individual facilities, our representatives will recommend the right roofing solution for your performance, budgetary, and scheduling requirements.

Garland representatives are trained to understand the special needs and concerns of the customers we serve. Garland has successfully managed the logistical, safety, health, environmental, and uptime concerns of a wide variety of facilities, from high-profile executive office buildings to electronics manufacturing facilities, schools and universities, and food and beverage processing plants.

Additionally, since Garland is a 100 percent employee-owned company, each representative has a very personal interest in the outcome of every project. By monitoring each project, during and after the job, we are able to ensure that your roofs are installed as specified and properly maintained. For you, that means the confidence that your capital investment will realize exceptional return over the life cycle of your buildings. For Garland, that means the lowest warranty claims in the industry and satisfied customers.

The Garland Difference

Garland ensures single-source accountability for the most complex installed roofing projects from a stable and responsive full-service organization. We have put customer needs first for over 125 years.

Our total solution capabilities have been developed specifically for customers with:

- High aversion to liability exposure
- Complex roofing challenges
- Demanding performance requirements
- The need for guaranteed pricing
- Inflexible scheduling demands
- Zero tolerance for material or labor-related deficiencies
- A long-term perspective on lowering life-cycle costs

Our manufacturing operations use proprietary mixing and process technologies and are independently audited for continuous quality control under ISO 9001-2000. We use the latest testing methods available to ensure that products meet or exceed customer expectations of performance, employing testing protocols in a precise and frequent manner to ensure consistently predictable results. Testing protocols include, but are not limited to:

- Thickness and placement of the scrim – Regular visual examination ensures compliance with rigorous ASTM standards and Garland's own exacting specification requirements.
- Compound stability – Verification of ASTM and Garland-specified softening point temperatures ensures the high-temperature stability of our modified sheets. (Garland's own specification requirements significantly exceed ASTM minimums.)
- Tensile and tear strength – Garland membranes are tested to exacting specifications to ensure superior strength, flexibility, and elongation and to resist the most severe thermal shock, for exceptional performance in any climate.

Authorized Contractor Network

Throughout the United States, Canada, and the United Kingdom, Garland has developed relationships with highly qualified roofing contractors. By subcontracting roofing installation to local contractors, we help support the local economy.

Each contracting firm, prior to being authorized to install our systems, is screened for financial stability, safety performance/compliance with OSHA (Occupational Health and Safety Administration) or HSE (Health and Safety Executive) standards, and appropriate certifications and licensing. Garland also offers both classroom and on-site training so that all crews are well versed in system application.

In addition to being qualified, each contractor is monitored on-the-job several times a week, and evaluated after every project for his ability to meet Garland standards of performance. Job-site inspections and post-installation surveys provide checks and balances to ensure that our installed systems meet customer specifications, and that each contractor merits retention of his Garland authorized status.

The primary reason that Garland has a network of contractors is to provide the best value for our customers. Working with several contractors in a local area assures you of an apples-to-apples comparison during competitive bid situations. By leveling the playing field, you can be sure that every contractor who bids on your projects has the labor, equipment, and familiarity with local building codes, to successfully complete your project.

Additional Analysis & Testing

Each newly constructed or renovated roofing system managed by Garland is eligible to receive many value-added services by Garland at no charge, however there are some third-party analyses with costs that should be anticipated on your project:

Asbestos Testing: Already knowing the construction type of each individual roof section, we anticipate that asbestos may be found on some of the older roof sections of the Junior-High School. Asbestos testing is performed by an EPA Certified and State of Pennsylvania Accredited Asbestos Inspector to conduct third party sampling of roofing material suspected of containing asbestos and submit samples to an accredited laboratory for analysis. Once sampling is complete, a final report will be drafted identifying the materials sampled, sample results and a CAD print delineating the location and types of asbestos-containing materials present. These results may be integrated into full hospital survey documentation for future reference. The third-party testing agency will also supply additional personnel for report preparation and a Project Manager for oversight and review. Total costs for these asbestos testing services are approximately **$1,500.00 to $2,000.00**

Infrared Moisture Analysis: Infrared scans provide a powerful tool in the process of identifying roof areas with moisture content. By evaluating the results, you can establish whether the water infiltration is localized or is widespread across an entire roof area. They also provide confirmation that a roof system is sound. Recently completed installations can be evaluated with post infrared scans to assure an installation is dry at the completion of a project. By having your roofs infrared scanned, you are validating whether or not water infiltration has begun degrading your roofing system. Total costs for these services are approximately **$2000.00 to $3,000.00** depending upon the size of the facility.

- Infrared scans will be completed with the use of the latest thermo graphic imaging equipment.
- Reports containing all of the findings, as well as the methods employed while completing the infrared scans.
- Readings taken from a moisture meter are used to verify infrared scan results.
- Outlines of wet areas will be painted using highly visible marking paint.
- Scale drawings of each roof area will indicate the location of each wet area.

PROJECT TEAM MEMBERS/KEY PERSONNEL

The Region's Roof Management Team

Christian Reeves, Territory Manager – Project Lead

Christian has been with the Garland Company since 2022 serving clients in all of West Virginia. Currently residing in Saint Albans, WV, Christian is responsible for managing the needs of numerous Educational, Municipalities, Healthcare, and industrial client needs including budgeting and project management in Boone, Lincoln, Raleigh, Mason, Jackson, Greenbrier, Putnam, Cabell, and Gilmer County K-12 as well as multiple universities throughout the state. Christian currently manages building assets annually for over a dozen K-12 and Higher Ed Institutions. Christian has a Bachelor of Science in Business Administration from Marshall University.

Grant Kandabrow, Territory Manager

Grant has been with the Garland Company since 2020 serving clients in all of Southwest PA, Western Maryland and Northern WV. Currently residing in PA, Grant is responsible for managing the needs of numerous Educational, Municipalities, Healthcare, and industrial client needs including budgeting and project management in the entire Allegeny Regional counties. Grant currently manages building assets annually for roughly two dozen K-12 and Higher Ed Institutions. Grant has a Bachelor of Science in Mechanical Engineering from Miami University and continues to be associated with many professional and trade associations such as NRCA, AIA, and CSI.

Sam Roberts, Territory Manager & Regional Manager

Sam Roberts has been with the Garland Company since 2015. As a Senior Rep for Garland, Sam takes on additional responsibilities such as training and consulting of newly hired reps for Garland. Sam's experience has taken him across the country serving both National and Regional Accounts solving some of the most challenging building envelope demands. As a member of the Allegheny Roof Management Team, most of Sam's day is spent managing local and regional clients in the K-12 sector and for the City of Pittsburgh. Sam interfaces with Garland's corporate offices and Board of Directors anytime a warranty claim is escalated within the region. Sam has achieved many services honors at Garland including membership into the "Circle of Honor," and the "Top 10 under 10" clubs. Sam has a Bachelor of Science in Engineering and Master's degree in Manufacturing Management from Penn State University and continues to be associated with many professional and trade associations such as NRCA, AIA, CSI, OVEC, PASBO, WPDFA, and KAPPA.

Garland Engineering and Technical Team

Dave Finley C.E.P. - Director of Building Science (Garland Industries)

David Finley, is a Certified EIFS Professional, Level One Infrared Thermographer, and nationally recognized expert in building enclosure issues, investigations, and repairs. His building enclosure experience includes water infiltration testing of windows, curtain walls, facades, and plaza and below-grade waterproofing as well as condensation and air leakage testing of glazed fenestrations and facades. In addition to investigations, Mr. Finley has prepared repair documents, performed peer reviews, and assisted with quality control and quality assurance via construction observation of new and repair construction.

Mr. Finley is well versed in performing hygrothermal analyses using steady and transient state techniques. Additionally, Mr. Finley can analyze window and wall systems for two-dimensional thermal conduction to determine R-Values and to assess thermal bridging. His expertise in building science phenomena is further validated with his voting member status on ASHRAE Technical Committees (TC) 1.12 Moisture Management in Buildings and 4.4 Building Materials and Building Envelope Performance, and contributing member status on ASHRAE Standing Standard Project Committee (SSPC) 160 Criteria for Moisture-Control Design Analysis in Buildings. In addition to being a voting and contributing member, Mr. Finley is the Program Chair of TC 1.12 and Co-chair of the Freeze Thaw Task Force for SSPC 160.

Thomas G. Diamond, P.E., Director of Product & Systems

Tom is the Director of Product & Systems for The Garland Company, Inc., with over 15 years of product management experience. Tom obtained his Bachelors of Science in Mechanical Engineering from the University of Akron in 2003. His primary focus involves the development and management of new and innovative products and services for the building enclosure, as well as designing optimum performance roof and wall systems while assuring compliance with International, State and Local Building Code. He frequently delivers seminars and AIA-approved classes on installation techniques, building enclosure design and roofing and wall system technology.

Melissa Rus – Senior Research Chemist

Melissa is responsible for staying on the cutting edge of research and development. Melissa is a member of the ASTM council and is involved with product testing of existing roof systems as well as future roofing concepts. Melissa has ten years technical experience in the area of SBS modified roof membranes and asphalt and non-asphalt based coatings and mastics. Melissa serves on several industry related standards development committees and task groups including ASTM, RCMA and CGSB. Melissa is a graduate of John Carroll University with a Bachelor of Science in Biology.

THE 12-STEP GARLAND BLUEPRINT:

1. Identify customer needs and concerns.
2. Comprehensive visual inspection and survey of building envelope systems.
3. Subsequent analytical testing, such as an infrared moisture scan, core analysis, on-site field testing or laboratory evaluation.
4. Detailed report outlining building conditions and concerns, including supporting documentation and photographs.
5. Comparative analysis of recommended solutions.
6. Assistance prioritizing recommended work to satisfy performance and budgetary requirements.
7. Assistance preparing construction documents, including comprehensive design of roof and wall assemblies, custom details, and specifications.
8. Recommendation of pre-approved Garland authorized contractors.
9. Project management services to facilitate project budgeting, scheduling and logistics.
10. Assurance of compliance with all building code requirements.
11. Installation monitoring to ensure Garland roof and wall systems are installed as designed and specified to provide long-term performance.
12. Long-term comprehensive guarantee of leak-free performance.

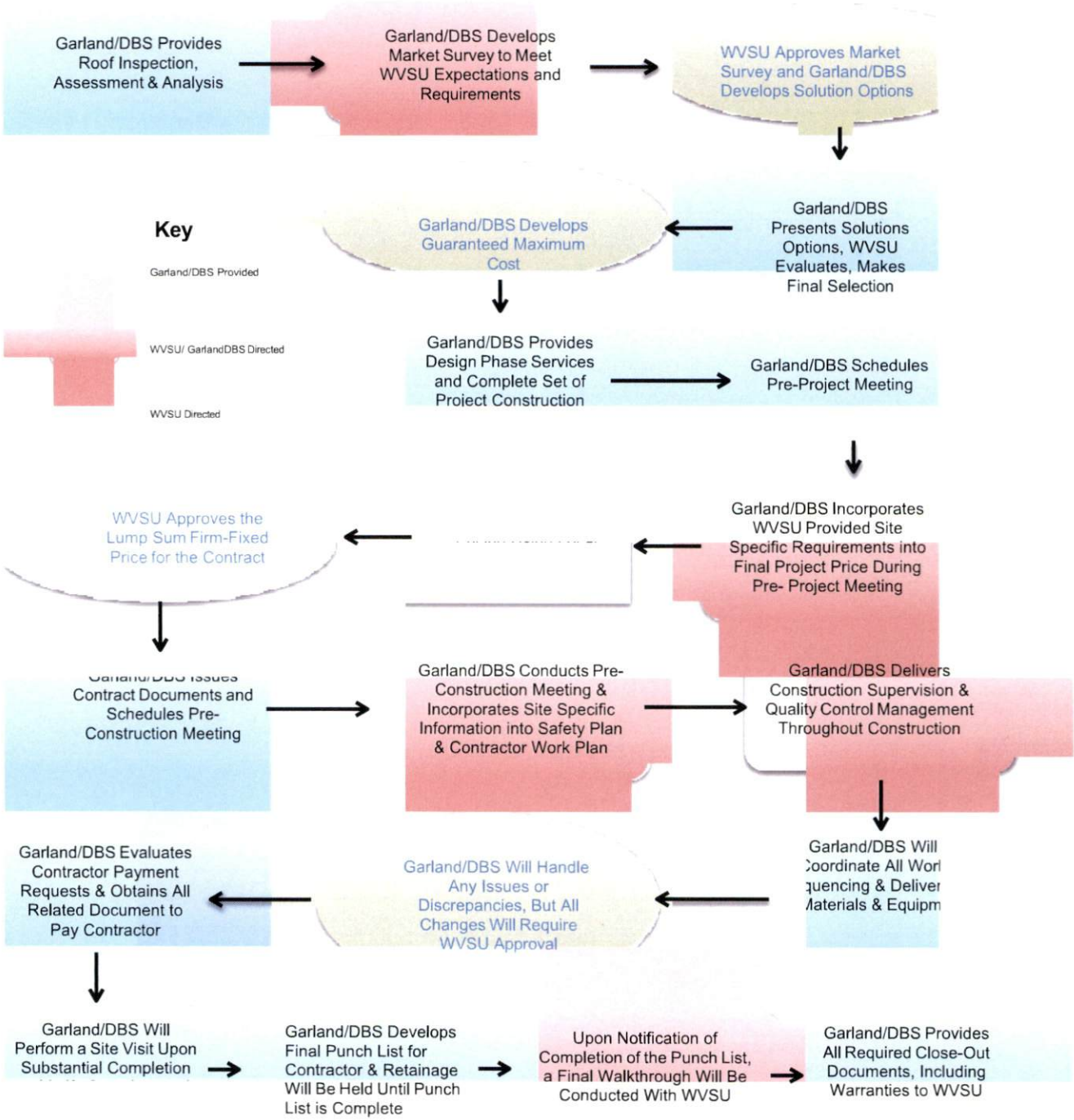
comprehensive inspection report for the following WVSU facilities: Hill Hall, Cole Complex, Davis Fine Arts, Sullivan, Cafeteria, and the Maintenance Buildings.

The following are objectives that have been met through Garland's value-added services thus far:

- Identify and document all active roof leaks campus wide.
- A comprehensive visual inspection and survey of each individual roof section detailed above.
- All reports are uploaded to our RAMP online database which allows users to track all repairs, conditions and life-cycle costs of each roof section.
- Generation of roof drawings and a detailed report documenting the age, construction type and condition of each roof section with supporting photographs.
- Creation of repair scopes, and long-term restoration or replacement scopes of work along with budgets.
- Provided justification and objectives for meeting indoor air quality and continuity of in-school operations through capital roof projects.

Today, the University stands halfway through our 12-step plan, which has in a way prompted the request for the proposal (step 7 of the Blueprint) we are responding to now. Further detail on the scope of services our project team plans to deliver on your projects are outlined in the next section of our proposal.

PROJECT FLOW CHART



Similarly Completed Past Projects

Garland has worked with Higher-Education Facilities throughout the entire United States from West Virginia University, Virginia Tech, Roanoke College, University of Akron to UCLA, Texas A&M, Colorado State and many, many more.

In fact, the following roofs on WVSU's campus are/were Garland Roofs:

- Davis Hall
- The Engineering Lab
- The library
- Capital Theater
- Hamlin Hall
- The Gymnasium
- Dorm Decks (Plaza Decks)
- ROTC Upper Roof
- A Building Main Roof

These roofs were all installed in the early 2000's, and despite a lack of maintenance, have stood up well to the environment. It would be incredibly beneficial to the University to be able to have all warranty information of their roofs solely accountable by one single source. This minimizes the University's liability for warranty claims as well as allows WVSU to work directly with the manufacturer of the roofs in which the warranties are held.

Section A.1 in the Appendix shows previous facility reports for various roofs on WVSU's campus as well as budget reports made.

Section A.2 in the Appendix shows a Project Manual for Roof Replacements at Duquesne University. In this, you'll find an example of a proper roof replacement Specification, General Conditions, Engineered Drawings and Details, Various Analysis' and Project Progress Reports.

Section A.3 in the Appendix shows a Project Manual for Roof Replacements at Robert Morris University. You will find more examples of Specifications, Drawings, Details, Testing and more.

RELEVANT PAST PROJECT EXPERIENCE

1.)
- **Client:** West Liberty University
- **Location:** 208 University Dr, West Liberty, WV 26074
- **Project Delivery Method:** Garland's Design Build Solutions, Material Manufacture, Project Management, Specifications, close out documents, Provided Estimated Costs and Project Scheduling.
- **Date:** 2021-Present
- **Project Description:** Total roof replacements at the Media Arts Center.
- **Contact: Joseph Mills, Director of Physical Plant – 304-479-0413 ; jmills@westliberty.edu**

2.)
- **Client:** Frostburg State University
- **Location:** 101 Braddock Rd, Frostburg, MD 21532
- **Project Delivery Method:** Material Manufacture, Project Management, Specifications, close out documents, Provided Estimated Costs and Project Scheduling.
- **Date:** 2021-Present.
- **Project Description:** Roof Renovation on Compton Science building and total roof replacement on the Performing Arts Center.
- **Contact: John Brewer, Director of Facilities – 301-697-3529 ;** jbrewer@frostburg.edu

3.)
- **Client:** Duquesne University
- **Location:** 600 Forbes Ave, Pittsburgh, PA 15282
- **Project Delivery Method:** Material Manufacture, Project Management, Specifications, close out documents, Provided Estimated Costs and Project Scheduling.
- **Date:** 2023.
- **Project Description:** Total roof replacement on Libermann Hall.
- **Contact: Rod Dobish, Director of Facilities – 412-396-6000 ;** dobishr@duq.edu

RECORD KEEPING, REPORTING AND MONITORING

The Garland Recording Asset Management Program (RAMP) is an Internet database tool for tracking the history of your roofs, cloud storage for all accompanying documentation such as warranties, work orders, installation reports, etc. It is updated in real-time and is 100% accessible by the client.

RAMP-based support services include:

- Maintenance recommendations supported by construction details, photographic documentation, architectural drawings, visual observation notes, core sample documentation, and lab analysis reports.

THE GARLAND COMPANY, INC.

HIGH PERFORMANCE ROOFING AND FLOORING SYSTEMS

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

WEST VIRGINIA, WESTERN PA and OHIO REFERENCE LIST

K-12 SCHOOLS:

1. Mason School District
2. Jackson School District
3. Pocahontas School District
4. Boone School District
5. Lincoln School District
6. Putnam School District
7. Summers School District
8. Raleigh School District
9. Cabell School District
10. Greenbrier School District
11. Gilmer School District
12. Grant School District
13. Willard School District
14. Pittsburgh Public Schools
15. Madison School District
16. New Castle Area School District
17. Shenango Area School District
18. Ellwood City Area School District
19. Fort Cherry School District
20. Crawford Central School District
21. Rochester Area School District
22. South Side Area School District
23. Chartiers Valley School District
24. South Allegheny School District
25. Northgate School District
26. Moon Area School District
27. Pathfinder School
28. Woodland Hills School District
29. Wilkinsburg City School District
30. Northgate School District
31. Moon Area School District
32. Pathfinder School
33. Bentworth School District
34. Woodland Hills School District
35. Wilkinsburg City School District
36. Beaver Area School District
37. Central Valley School District
38. Big Beaver Falls School District
39. Freedom Area School District
40. Aliquippa School District
41. Hempfield Area School District
42. Ligonier Valley School District
43. Greensburg-Salem School District
44. New Kensington-Arnold School District
45. Greater Latrobe Area School District
46. Peters Township School District
47. Charleroi Area School District
48. McGuffey School District
49. Laurel Highlands School District
50. Albert Gallatin Area School District
51. Somerset Area School District
52. Central Greene School District
53. Conemaugh Township Area School District
54. Wattsburg Area School District
55. Fairview School District
56. Ashland School District
57. Northeast School District
58. Corry Area School District
59. Cranberry Area School District
60. Keystone School District
61. Hermitage Area School District
62. Girard School District
63. Oil City Area School District
64. Penncrest School District
65. Commodore Perry School District
66. Iroquois School District
67. Port Allegany School District
68. Harbor Creek School District
69. General McLane School District
70. Oswayo Valley School District
71. North Clarion Area School District

****References in red text are Garland customers in, or close proximity to WVSU or have projects of similar scope.**

VOCATIONAL SCHOOLS:

1. Logan County CTC - WV
2. Mahoning County Career & Technical Center – Youngstown, OH
3. Mountwest CTC - WV
4. Carver CTC - WV
5. Somerset Career & Technical Center – Somerset, PA
6. Northern Westmoreland Career & Technical Center – New Kensington, PA
7. Central Westmoreland Career & Technical Center – New Stanton, PA

CITIES/TOWNSHIPS/MUNICIPALITIES/NON-PROFITS:

1. City of Charleston
2. City of Parkersburg
3. City of Ripley
4. City of Pittsburgh
5. City of Erie
6. Raleigh County Commission
7. City of Hinton
8. Summers County Commission
9. Mason County Commission
10. City of Ravenswood
11. Fayette County Government – Uniontown, PA
12. Somerset County Government – Somerset, PA
13. Greene County Government – Waynesburg, PA
14. City of Beaver Falls – Beaver Falls, PA
15. City of Warren Water Pollution Control – Warren, OH
16. Ashtabula Metro Housing Authority – Ashtabula, OH
17. City of Greensburg – Pittsburgh, PA
18. PENN-DOT Engineering Districts (Multiple)
19. Girard Water Pollution Control – Girard, OH

HIGHER EDUCATION:

1. WVSU
2. WVU
3. UC
4. Penn State University
5. Penn State - Behrend
6. Westminster College
7. Kent State
8. Pennsylvania Highlands Community College – Johnstown, PA
9. Venango College
10. Davis and Elkins
11. Frostburg State University
12. West Liberty University

WE CAN REPLACE YOUR ROOF OR FIND THE RIGHT FIT FOR NEW CONSTRUCTION

We understand the stress and complexities involved in replacing your roof or finding the right fit for a new construction project. Along with the excitement of new designs and a beautiful façade comes the reality of functionality. Garland roof systems are engineered for performance and aesthetics, ensuring your roof will perform for the long term and look good too.

WHAT YOU NEED TO KNOW

- We have systems to suit virtually any type of roof: flat, low slope and steep slope
- We offer a variety of roof system technologies, including the industry's first polyurethane modified 40-year membrane and a market leading KEE membrane to ensure we can meet the needs of your specific project
- Strength is critical to watertight performance, which is why we recommend multi-ply systems
- We confidently offer 30- and 40-year warranties, unmatched in the commercial building industry
- Our products exceed ASTM standards for strength and performance to provide you with the longest possible watertight protection
- Our membrane systems can be hot-applied, cold-applied, torch-applied or self-adhered to suit your specific application requirements
- Our metal roof systems offer unmatched strength with panels designed both for aesthetics and extreme weather performance
- We offer various low odor and zero VOC products for sensitive applications
- We can provide a life-cycle cost analysis to help you determine the total cost of ownership over the life of your roof system
- Wind uplift, drainage and snow retention calculations are available to ensure your system can withstand the constant abuses of Mother Nature
- We have decades of experience and design knowledge to assure watertight details are implemented on each and every project

HOW CAN WE HELP?

TAKE INVENTORY

We can start by providing you with a complete assessment for every exterior asset you manage through our Roof Asset Management Program™ (RAMP®). By documenting the conditions of your facilities, you can be proactive when it comes to maintenance and repairs and be ready with budgets for larger capital investments.

For a deeper look into the condition of your roof, consider CLEAR™ (Comprehensive Laboratory Effective Analysis Reporting™), Garland's roof core sample testing program. The results of a CLEAR analysis help you understand the true condition of your roof so you can make the right decisions about properly repairing, restoring or replacing the roof.

TAKE ACTION

Design-Build Solutions®, Inc. (DBS), a Garland sister company, offers several services to help you maximize the value of your roof investment.

Dry Zone® is a preventive maintenance program that documents and analyzes maintenance and repair data for multiple facilities' roofs and provides helpful recommendations. You'll receive work history reports, real-time updates and job inspection reports, annual budget summaries, and warranty tracking that helps you stay on top of your maintenance obligations.

Leak response helps put your mind at ease. Report your leak via email and receive emergency contact within 24 hours and repair service within 48 hours. All leaks are recorded in the Dry Zone database, which helps to prioritize and manage all of your roof assets.

National purchasing cooperatives can provide purchasing benefits to your organization. Garland holds national purchasing cooperative contracts in the public, private and health care sectors. Talk to your Garland rep about how these could benefit you.

APPENDIX

Section A.1:

Section A.1 shows previous facility reports for various roofs on WVSU's campus as well as budget reports made.

Section A.2:

Section A.2 shows a Project Manual for Roof Replacements at Duquesne University. In this, you'll find an example of a proper roof replacement Specification, General Conditions, Engineered Drawings and Details, Various Analysis' and Project Progress Reports.

Section A.3:

Section A.3 shows a Project Manual for Roof Replacements at Robert Morris University. You will find more examples of Specifications, Drawings, Details, Testing and more.

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WEST VIRGINIA STATE UNIVERSITY

West Virginia State University

Garland Summary

Facility Overview/Budgets

GARLAND
since 1895

The Garland Company, Inc.

- A United States based Full Service, ISO Certified, Roof Asset Management Company, Established in 1895
- 230+ Building Exterior Experts Strategically Located in North America
- Financially Stable - 5A1 Credit Rating
- Manufacturing Facilities in OH, GA, AL, AR, NM, & CA
- Manufactures a Full Line of High Performance Products
  - Modified Bitumen Roof Systems
  - Built-Up Roofing
  - Standing Seam and Flat Seam Metal Wall and Roofing Systems
  - Wall Panels and Vertical Moisture Penetration Solutions
  - Liquid Membranes
  - Full Line of Maintenance Products
  - Green Roofing and Sustainable Building Products

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What we bring to the table

1. **Understanding your building Assets**
   - Full report on all of your buildings at no cost
   - ***COMPLETED**

2. **Evaluate the main issues and develop a plan**
   - Develop a preventative maintenance plan
   - Provide various solutions to extend the life of the roof if possible
   - ***IN PROCESS**

3. **Establish 3–10year budgets**
   - Preventative maintenance budget
   - Restoration Budget
   - Re-roof project budget
   - Breaking down life cycle cost
   - ***COMPLETED**

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What we bring to the table (continued)

4. **Turn-Key Approach:** Design the entire roof project

- Engineering Services (other services offered are snow retention design, roof drainage calculations, engineer stamped specs, engineer stamped shop drawings, structural evaluations, metal panel renderings) ASCE 7-05 wind uplift calculations
- Invite Qualified contractors to bid on the project
- Pre-Bid meeting
- Bid analysis meeting
- Pre-construction meeting
  - 3 days per week on site job monitoring
  - On-line job progress reports (RAMP database)
- Job Close out meeting and 30-40 year warranty issued

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University-Appropriate Services

- **Building & Roof Inspections:**

  RAMP – Roof Asset Management Program

- **Roof Bidding Process/Project Control-**Building a proper roof bid package designed specifically for that roof section/area of the Campus. Project managing a project from start to finish

- ***Budgeting & Life-Cycle Cost Analysis*** to Help Compare and Evaluate the Total Life-Cycle Costs of Various Roofing Solutions

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What does a building inspection Include?

- We will break down each individual building into sections
  - Warranties
  - Budgeting purposes
  - Leak inspections
- Core Cuts
- Photo Reports showing areas of concern
- Breakdown of the life expectancy left on each roof section
- Multiple options
  - 10 year restoration option
  - 20-30 year re-roof option
  - 40 year re-roof option

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Building a Roof Bid Package

- After analyzing the specific roof under replacement consideration we take into consideration the following.
  - Roof location within campus/ specific building
  - Odor/VOC sensitivity
  - Staging & Access concerns
  - Mechanical servicing and foot traffic over life of roof.
  - Warranty duration/Life cycle consideration
  - R Value/Building & Energy code
  - Type of Deck
    - Is slope needed?
    - How to install the insulation. Provide Tapered Insulation layout if needed.
  - Height of the roof-Wind uplift calculations
    - Engineering services are included in design of the roof.

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Bid Details Page

Bid Summary

Project: Roof Areas as indicated – ARH-Highlands Regional Roof Section H

General Description: Reference Scope of Work for each project.

ARH-Highlands Regional
Address: 5000 KY-321
Prestonsburg, KY 41653

Bid Due Date: Monday August 19th 4:00 pm

To: Trena Hall, Kelly Justice & Brian Lucas–Information located on Bid Form

Appalachian Regional Healthcare reserves the right to reject any and/or all bids and to determine which bids are in substantial compliance.

ARH Highlands Regional is requiring the awarded contractor to have a detailed work schedule for this project once the project is officially awarded. No Phasing of the project is allowed.

In compliance with the specifications dated **August 7th 2019 relating** to the above reference project, all bids shall include necessary work to perform the project, the undersigned, hereby proposes and agrees fully to perform the work within the time stated and in strict accordance with the specifications for the following sum of money:

All labor, materials, services, and equipment necessary for the completion of the work described in the specifications. This shall be filled out completely on the attached bid form.

Base Bid Item #1: Roof Section H

Add Alternate # 2: Roof Section I

Important Dates & Times

- Last Questions regarding the project: Wednesday August 14th end of business day
- Addendum Issue date: Thursday August 15th end of business day
- Bid Due Date: Monday August 19th 4:00 pm

Additional Important Details

- On the bid form please include all labor, material pricing and shipping cost on the Bid price.
- Additionally please fill out the Garland material quantity that you will need for this project.
- ARH will be purchasing the Garland Materials off the Premier contract directly but the awarded contractor will be responsible for the freight cost of the material.

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Bid Form

BID PROPOSAL FORM

Project: Roof Areas as indicated – Baptist Health Corbin

General Description: Reference Scope of Work for each project.

Baptist Health Corbin
1 Trillium Way
Corbin, KY 40701

Bid Due Date: Tuesday January 23rd 4:00 pm

To: Justin Combs
justin.combs@bhsi.com

In compliance with the specifications dated January 10th 2018 relating to the above reference project, all bids shall include necessary work to perform the project, the undersigned, hereby proposes and agrees fully to perform the work within the time stated and in strict accordance with the specifications for the following sum of money:

Base Bid Item #1: Sections K, O, I & L(Tower)
All labor, materials, services, and equipment necessary for the completion of the work described in the specifications.

_____Dollars ($_____)

UNIT PRICES:

1. Metal Deck Replacement:
   _____ per SF

INSURANCE REQUIREMENTS. The undersigned has Umbrella Insurance as required.

Undersigned has insurance as specified. Yes_____No_____.

Receipt of Addendum #_____, dated _____.

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Detailed Scope of work

Roof Section E-MOB

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Attached General Conditions forms

1.2 SUMMARY OF WORK

Roof Sections A, B1, B2

A. Remove existing roof and insulation down to the existing concrete deck.
B. Prime existing concrete deck in insulation adhesive primer
C. Install 1 layer of 3 inch rigid poly-iso insulation with insulation adhesive
D. Install ½:12 minimum sloped crickets/saddles using tapered poly-iso rigid insulation between all drains/scuppers. Create minimum 4 ft x 4 ft drain sumps at all scuppers/drains.
E. Install 1 layer of ½" Densdeck Prime in insulation adhesive
F. Install wood fibrous cant strips at all parapet and curb conditions.
G. Installation of Base ply
   a. Cut base ply sheets into 18 foot lengths and allow plies to relax before installing. Install base sheet in Rubberized, polymer modified cold process coal tar roofing bitumen
   b. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
   c. Solidly bond to the substrate and adjacent ply with specified cold adhesive at the rate of 1.5 to 2 gallons per 100 square feet.
   d. Install specified base flashing ply to all perimeter and projection details
H. Modified Cap Ply:
   a. Cut cap ply sheets into 18 foot lengths and allow plies to relax before installing. Shingle sheets uniformly over the prepared substrate to achieve the number of plys specified. Shingle in proper direction to shed water on each large area of roofing.
   b. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
   c. Install specified cap flashing ply to all perimeter and projection details:
   d. Run one ply 36 inches and terminate it prior to running additional plies up and over the edge prior to installing the metal coping
I. Three course the corners of any flashing including inside and outside corners with 2 layers of Silver Flashing and mesh.
J. Flashings to cover any exposed wall or flashing that was previously covered with a membrane. Flashings to go up to the base of any wall panel condition.
K. All flashings to receive a continuous metal termination bar fastened 8 inches on center
M. Install new counterflashing over termination bar with material as listed below for each roof section.
N. All new treated wood blocking/nailers to be installed to replace existing nailers. Prep (scrape and wire brush) and Paint all gas lines with Rust Go Primer and Rustoleum Safety Yellow Paint. Replace all drain supports with new OMG Supports.
O. New wood blocking/nailers will need to be installed in certain areas in order to meet the proper required flashing height
P. Flood coat and gravel with Rubberized, polymer modified cold process coal tar roofing bitumen and pea gravel at a rate of 5 gal/sq.
Q. Gravel guards are to be installed at all the drains in the field of the roof.
R. Paint all drain strainers Red or replace them with new red strainers

Roof Sections C1 & C2

A. Remove existing roof and insulation down to the existing concrete deck.
B. Prime existing concrete deck in insulation adhesive primer
C. Install 1 layer of 3 inch rigid poly-iso insulation with insulation adhesive
D. Install 1/8 inch tapered insulation using polyiso insulation.
E. Install ½:12 minimum sloped crickets/saddles using tapered poly-iso rigid insulation between all drains/scuppers. Create minimum 4 ft x 4 ft drain sumps at all scuppers/drains.
F. Install 1 layer of ½" Densdeck Prime in insulation adhesive
G. Install wood fibrous cant strips at all parapet and curb conditions.
H. Installation of Base ply
   a. Cut base ply sheets into 18 foot lengths and allow plies to relax before installing. Install base sheet in Rubberized, polymer modified cold process coal tar roofing bitumen
   b. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
   c. Solidly bond to the substrate and adjacent ply with specified cold adhesive at the rate of 1.5 to 2 gallons per 100 square feet.
   d. Install specified base flashing ply to all perimeter and projection details
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   c. Install specified cap flashing ply to all perimeter and projection details:
   d. Run one ply 36 inches and terminate it prior to running additional plies up and over the edge prior to installing the metal coping
J. Three course the corners of any flashing including inside and outside corners with 2 layers of Silver Flashing and mesh.
K. Flashings to cover any exposed wall or flashing that was previously covered with a membrane. Flashings to go up to the base of any wall panel condition.
L. All flashings to receive a continuous metal termination bar fastened 8 inches on center minimum.
M. 8 inch minimum flashings heights required.
N. Install new counterflashing over termination bar with material as listed below for each roof

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Roof Specification

SECTION 07550

MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cold Applied 2-Ply Coal Tar Roofing

1.2 REFERENCES

A. ASTM D 451 - Standard Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.

1.3 DESIGN / PERFORMANCE REQUIREMENTS

A. Perform work in accordance with all federal, state and local codes.

B. Design Requirements:
1. Uniform Wind Uplift Load Capacity
   a. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
      1) Design Code: ASCE 7, Method 2 for Components and Cladding.
      2) Importance Category:
         a) II.
      3) Importance Factor of:
         a) 1.0
      4) Wind Speed: 120 mph
      5) Ultimate Pullout Value: 99 pounds per each of the fastener
      6) Exposure Category:
         a) C.
      7) Design Roof Height: 20 feet.
      8) Minimum Building Width: 38 feet.
      9) Roof Pitch: .25:12.
      10) Roof Area Design Uplift Pressure:
         a) Zone 1 - Field of roof 20 psf
         b) Zone 2 - Eaves, ridges, hips and rakes 33.6 psf
         c) Zone 3 - Corners 50.5 psf
2. Live Load: 20 psf, or not to exceed original building design.
3. Dead Load:
   a. Installation of new roofing materials shall not exceed the dead load capacity of the existing roof structure.

1.4 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.
3. Installation instructions.

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.

D. Design Pressure Calculations: Submit design pressure calculations for the roof area in accordance with ASCE 7 and local Building Code requirements. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before Work begins.

E. Verification Samples: For each modified bituminous membrane ply product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

F. Manufacturer's Certificates: Provide to certify products meet or exceed specified requirements.

G. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147. Testing must be performed at 77 deg. F. Tests at 0 deg. F will not be considered.

H. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic inspection and maintenance of all completed roofing work. Provide product warranty executed by the manufacturer. 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. Provide a manufacturer's example of an inspection report that includes photographic evidence of rejection, corrective action, and acceptance of roofing installation. Provide a signed letter of the manufacturer stating that they will inspect the job at least three days a week during installation for the duration of the project.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience and must not have been in Chapter 11 bankruptcy during the last 20 years.

C. 3 days per week inspection reports to owner from full time material manufacturer's employee. The reports will include pictures of the days progress made by the contractor and detailed written report as to the work performed that day.

D. Installer Qualifications: Company specializing in performing Work of this section with minimum 10 years documented experience and a certified Pre-Approved Manufacturer contractor. They shall not of filed for Bankruptcy in the last 10 years.

E. 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.

Roofing manufacturer's inspector must have a minimum of 5 years' experience with said

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Roof Map & Overview

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Facility Overview

BalladHealth

Sycamore Shoals Hospital

1501 W Elk Ave, Elizabethton, TN 37643

THE GARLAND COMPANY INC
3800 E 91st ST | CLEVELAND, OH 44105-2197
PHONE (216)641-7500 | FAX (216)641-0633

Ballad Health

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Roof Measurements

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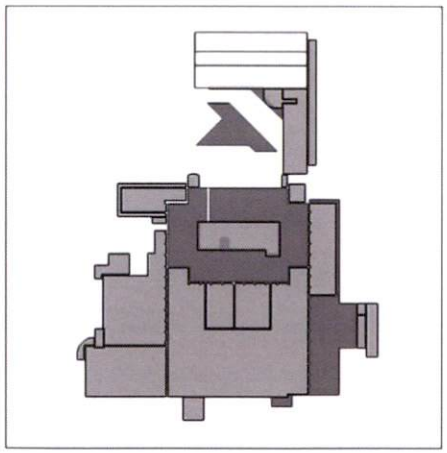
ROOF MEASUREMENT REPORT

5000 KY-321, Prestonburg, KY 41653

Report Contents



In this 3D model, facets appear as semi-transparent to reveal overhangs.

Report Details

Date:	08/07/2019
Report:	29739332

Roof Details

Total Area:	72,021 sq ft
Total Roof Facets:	30
Predominant Pitch:	0/12
Number of Stories:	>1
Total Ridges/Hips:	123 ft
Total Valleys:	0 ft
Total Rakes:	0 ft
Total Eaves:	256 ft
Total Penetrations:	166
Total Penetrations Perimeter:	2,209 ft
Total Penetrations Area:	2,683 sq ft

Contact Us

Contact: Rick Sunderman
Company: The Garland Company Inc.
Address: 3800 East 91st
Cleveland OH 44105
Phone: 513-314-3283

Measurements provided by www.eagleview.com

Certified Accurate
www.eagleview.com/Guarantee.aspx

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ROOF MEASUREMENT REPORT

REPORT IMAGES

North View

East View

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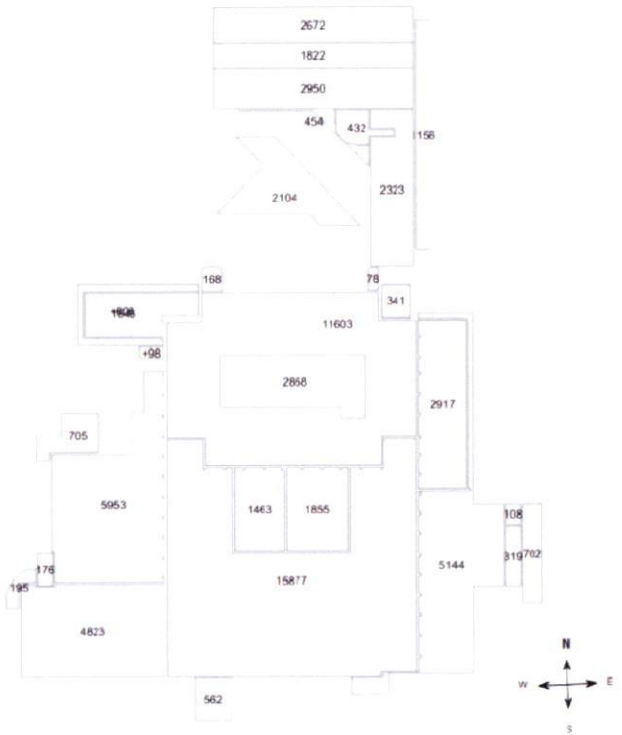
Roof Measurements-

AREA DIAGRAM

Total Area = 72,021 sq ft, with 30 facets.

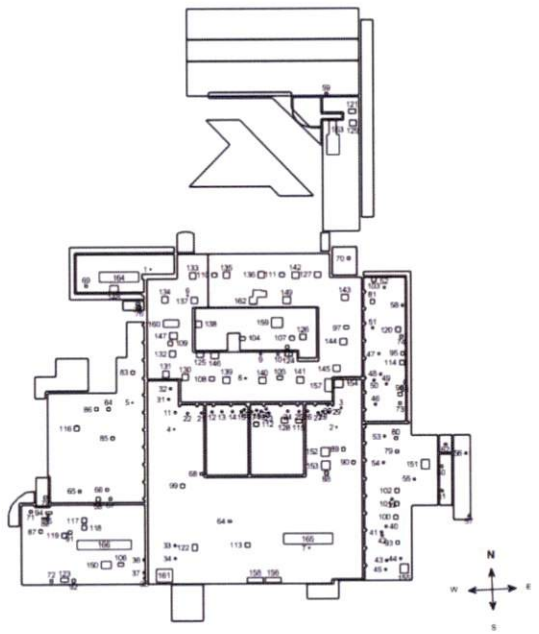


PENETRATIONS

Penetrations Notes Diagram
Penetrations are labeled from smallest to largest for easy reference.

Total Penetrations: 166
Total Penetrations Perimeter = 2,209 ft

Total Penetrations Area: 2,683 sq ft
Total Roof Area Less Penetrations = 69,338 sq ft



Note: Any measured penetration smaller than 3x3 feet may need field verification. Accuracy is not guaranteed. The total penetration area is not subtracted from the total roof area.

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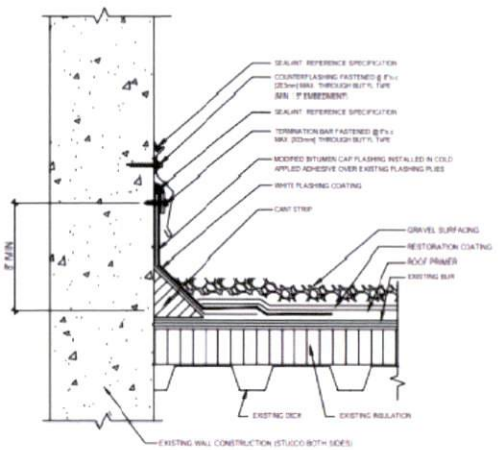
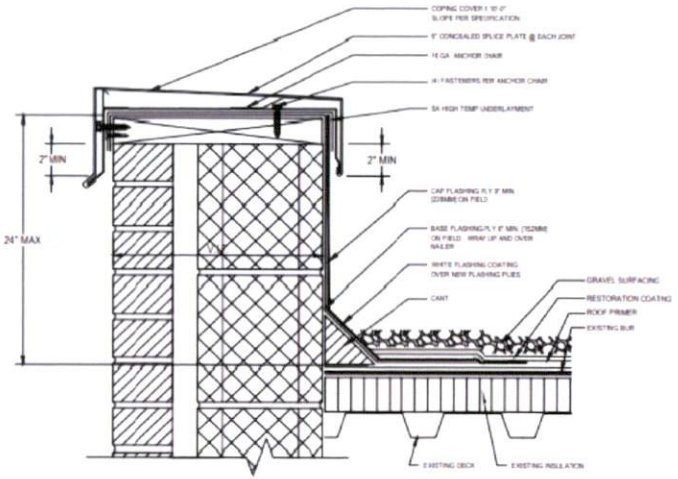
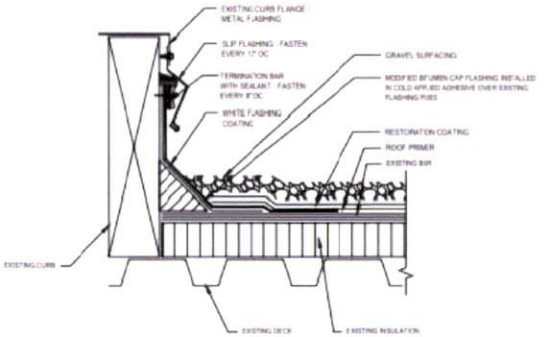
Site Specific Details



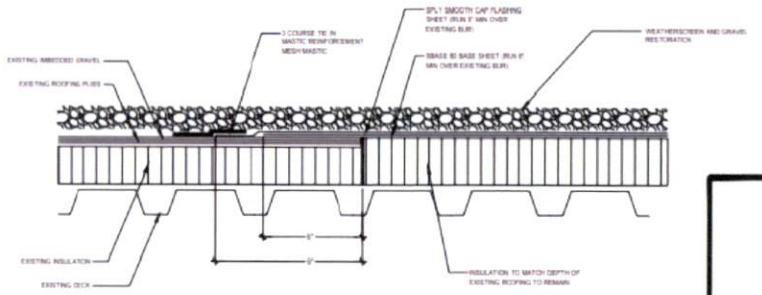
1 SHT 5 BASE FLASHING
SCALE: N.T.S.



2 SHT 5 NEW COPING CAP FLASHING
SCALE: N.T.S.



3 SHT 5 TYPICAL CURB DETAIL
SCALE: N.T.S.



4 SHT 5 TYPICAL WET ROOF REPLACEMENT DETAIL
SCALE: N.T.S.

LEXINGTON FAMILY CARE CENTER ROOF REPLACEMENT
1135 HARRY SYKES WAY, LEXINGTON, KY 40504

GARLAND / DBS, INC.
3800 EAST 91st STREET, CLEVELAND, OHIO 44105-2797
PHONE (800) 321-9336 / FAX (216) 641-0803

DBS

SHEET 5 OF 6

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Wind uplift calculations

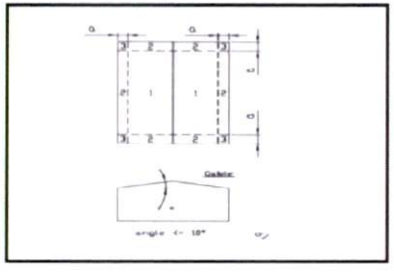
The Garland Company, Inc.
Low Slope Roofing Wind Uplift Calculations
3800 East 91st Street
Cleveland, Ohio 44105-2197
Phone: (800) 321-9336 Fax (216) 883-2046

Project **Enersys**
Roof **Upper Addition**
Sales Rep. **Rick Sunderman** Location **Richmond, KY**

Zone 1 psf (mid roof)	Zone 2 psf (eaves, ridge, hip)	Zone 3 psf (corners)
24.3	**40.7**	**61.3**

Edge Zone Width "a" **8** ft. **10** in.

Fastener Safety Factor	**3.00**
Importance	**III**
Importance Factor	**1**
Wind Speed (mph)	**120**
Ultimate Pullout Value	**585**
Exposure Category	**C**
Design Roof Height	**50.00**
Minimum Building Width	**88.00**
Roof Pitch (X, Y) **0.25** :	**12**



System Type: **Modified Bitumen**
Surfacing: **Mineral Surface**

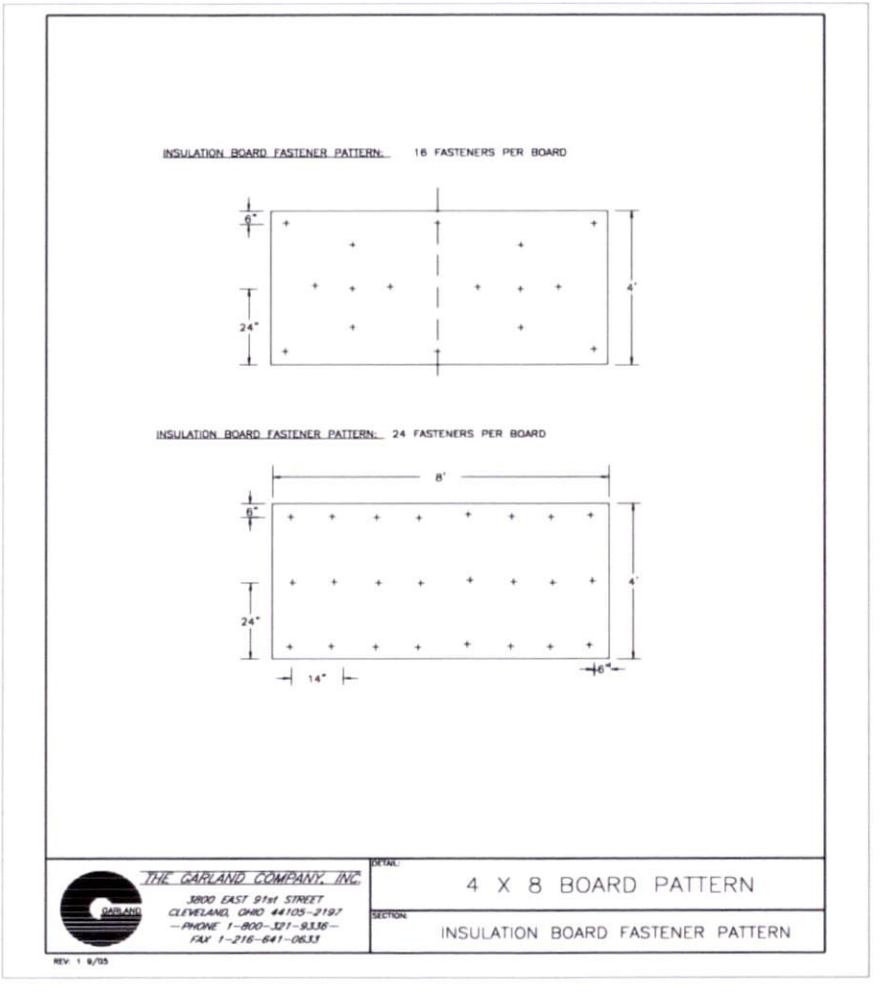
System Type: **2 Ply Modified Bitumen Cold**
Attachment Method: **Mech/ Fasten Insul/Board**

Zone 1 (mid roof)	Zone 2 (eaves, ridge, hip)	Zone 3 (corners)
16 fasteners per 4' x 8' board	16 fasteners per 4' x 8' board	24 fasteners per 4' x 8' board

NOTES: Fasten base layer of insulation according to fastening pattern shown above. Adhere 4' x 4' wood fiber board to the insulation in 3/4" wide beads spaced 12" o.c. Adhere base and cap sheet in Weatherking according to specification. The proposed roof system is in accordance with Approval FL12144-R5, Assembly S-10. Prescriptive Enhancements are used in Zone 3.

EDGE SECUREMENT: Edge metal system must be ANSI/SPRI ES-1 compliant, as required by section 1504.5 of International Building Code. Edge metal system may be an ANSI/SPRI ES-1 compliant premanufactured system, or formed by a contractor certified to fabricate an ANSI/SPRI ES-1 compliant system.

*Unless specifically stated otherwise, these calculations are based on ASCE 7-10 (American Society for Civil Engineers); if a specific building code is required, please specify.
*It is recommended to include the "Negative Uplift Pressures" in the specifications as well as the Safety Factor, Importance Factor, Building Category, Wind Speed, Ultimate Pullout Value, and Exposure.
*The Wind Speed is determined based upon geographical location.



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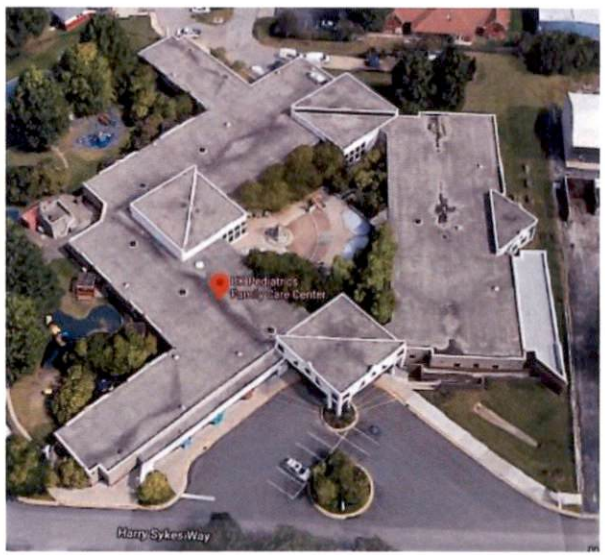
Shop Drawings

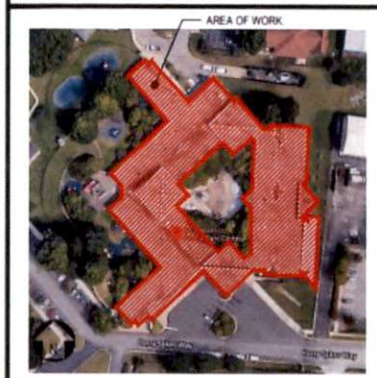
LEXINGTON FAMILY CARE CENTER
ROOF REPLACEMENT

1135 HARRY SYKES WAY, LEXINGTON, KY



LOCATION MAP

KEY PLAN



LEXINGTON FAMILY CARE CENTER ROOF REPLACEMENT
1135 HARRY SYKES WAY, LEXINGTON, KY 40504

GARLAND / DBS INC.

DRAWING INDEX

SHT 1 - COVER SHEET
SHT 2 - GENERAL NOTES
SHT 3 - ROOF PLAN
SHT 4 - DETAILS
SHT 5 - DETAILS
SHT 6 - DETAILS

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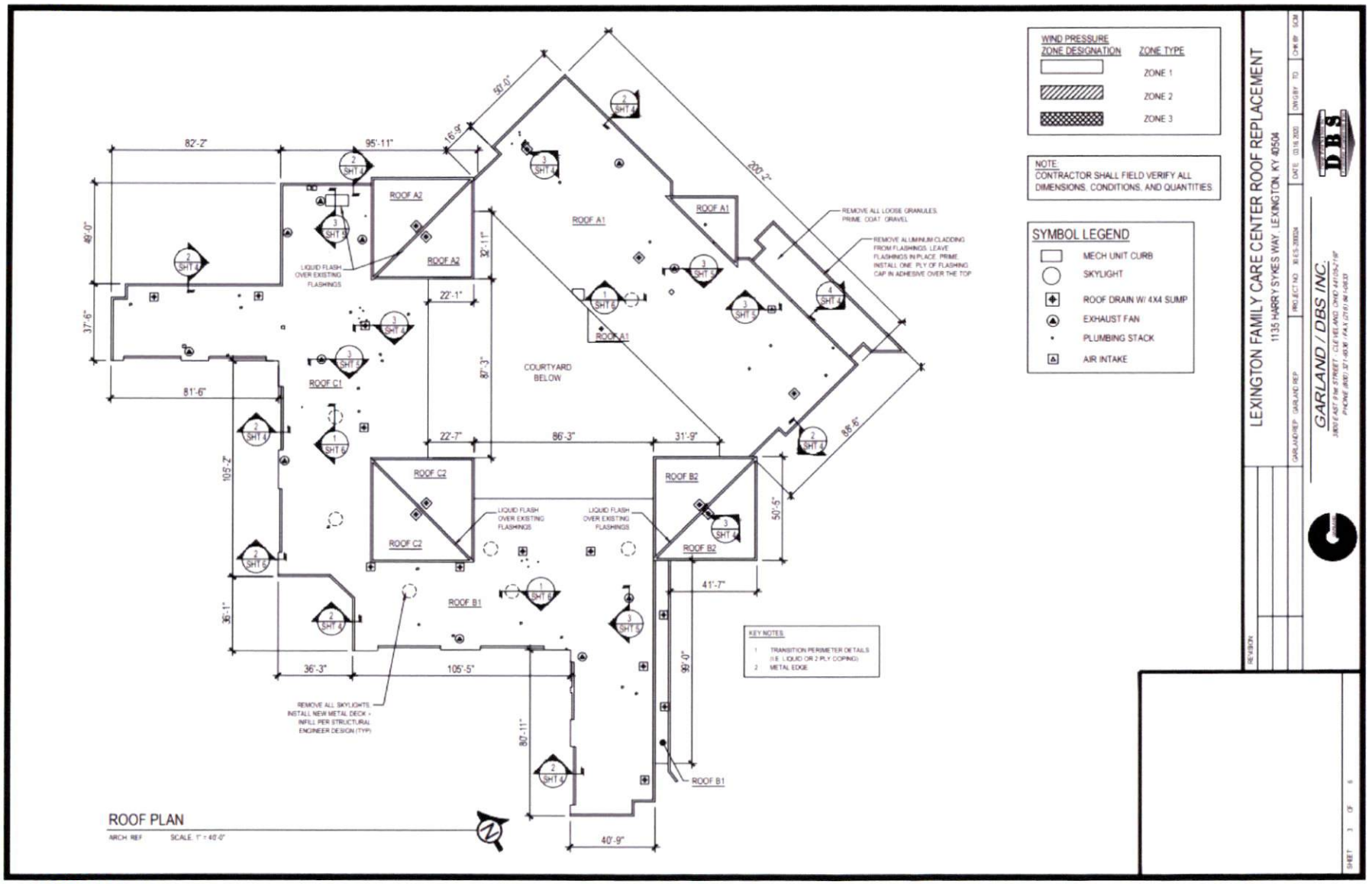
Shop Drawings



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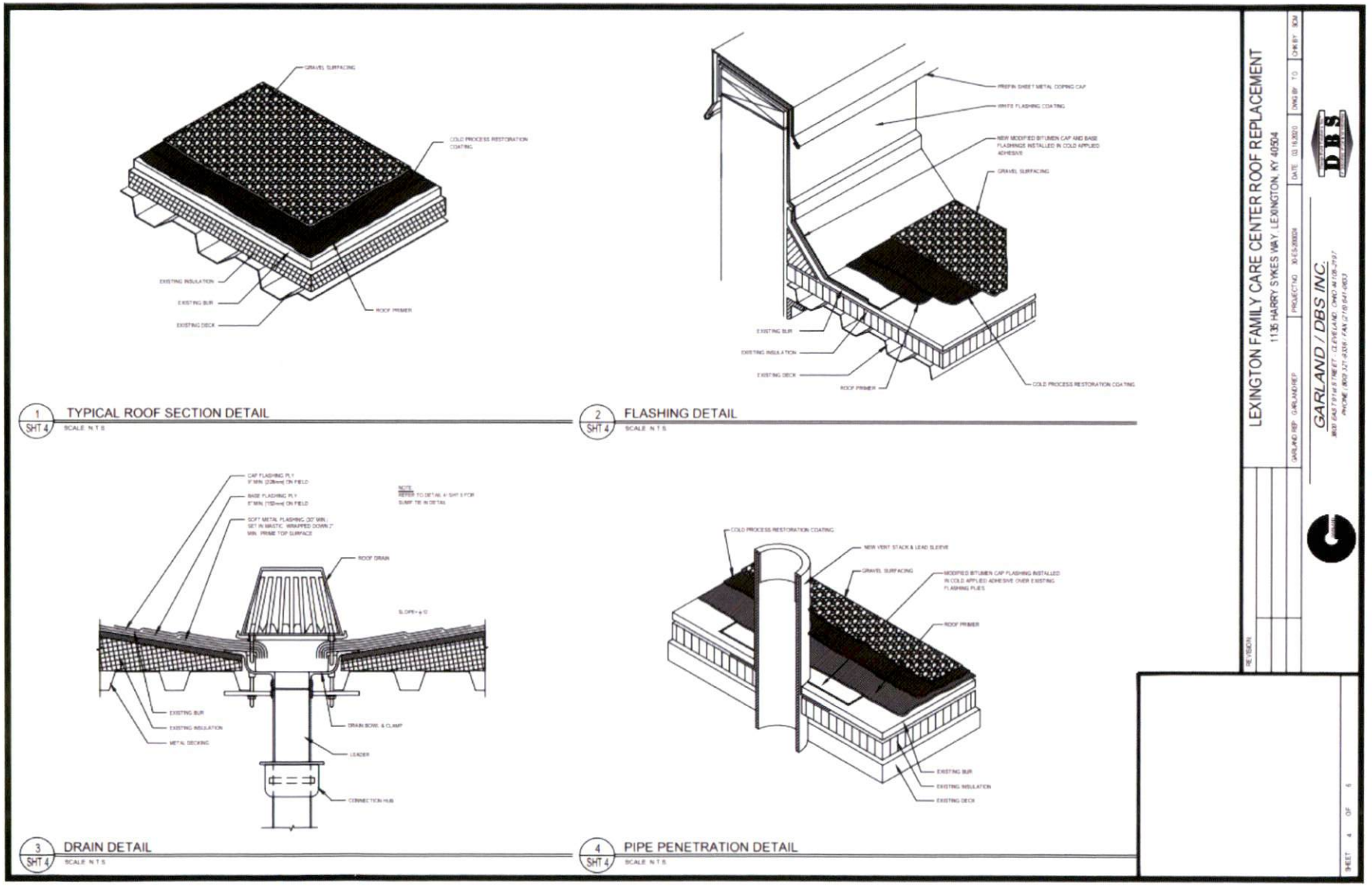
Shop Drawings



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Project Control (After project is awarded)

- Pre-construction Meeting
  - Sit down with all parties to review details, staging, working hours, safety measures, etc.
- On-site job inspections and Progress Report
  - Onsite at least 2-3 times a week pending the construction schedule
  - Progress report sent to the client of weekly
- Online Database(RAMP)
  - Client will have a username and password to access bid documents, inspection reports, progress reports, and other roof information.

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Capital Budgeting

- Asset management spreadsheets
  - Breaks down budgets per roof section with inflation per year
- Life Cycle cost analysis
  - Which roof system makes sense for certain buildings based on life expectancy and overall cost
- **Garland's capability to meet budgets due to multiple array of roofing solutions**

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West Virginia State University Facility Plan

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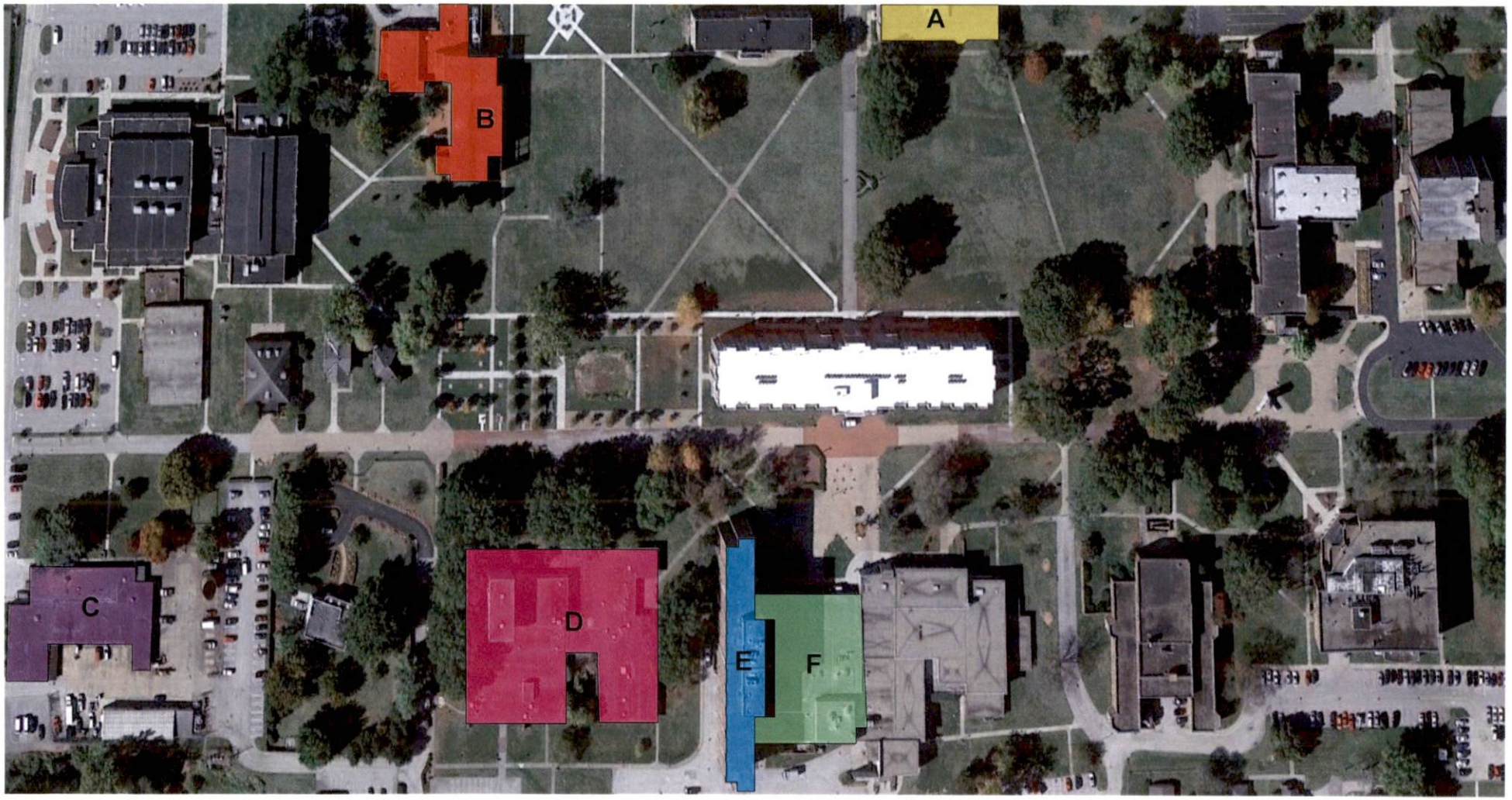
Campus Overview



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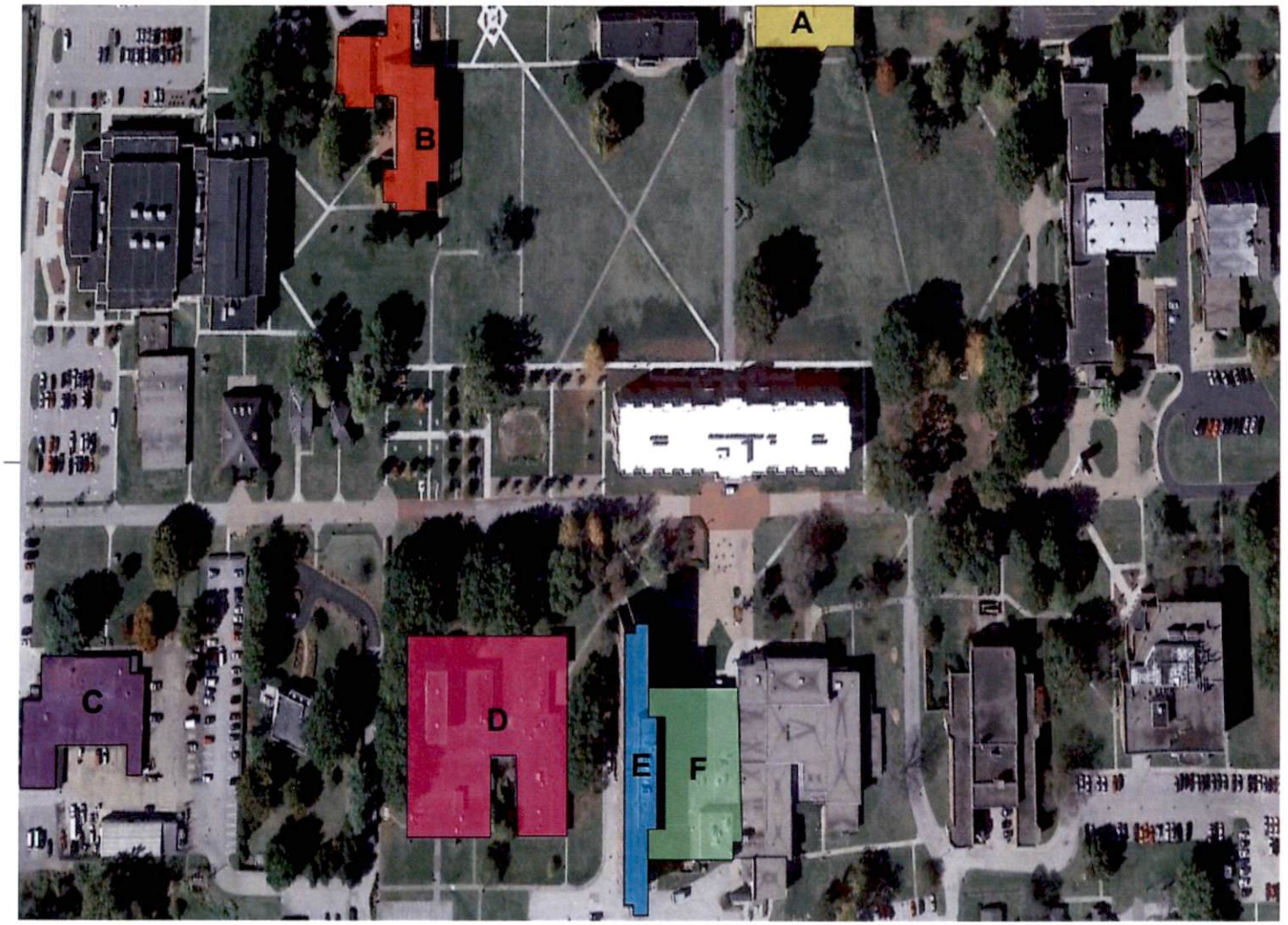
Campus Overview



Facility Overview

A-Hill Hall

B-Cole Complex

C-Maintenance Building

D-Davis Fine Arts Center

E-Sullivan Hall

F-Cafeteria

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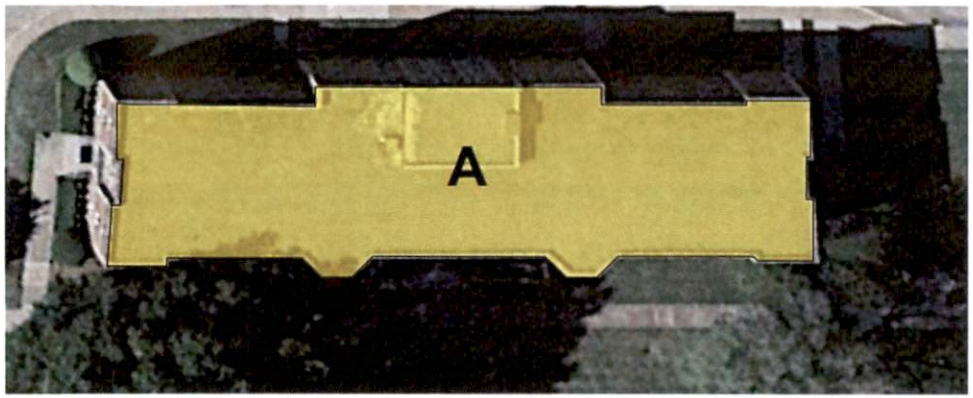
Hill Hall & Cole Complex Overview



Facility Overview

A-Hill Hall

Total SQ Footage: 8,800

Age: 20+ Years

Priority Level: 4

Recommended Year: 2026

Facility Overview

B1-2-Cole Complex

Total SQ Footage: 20,900

Age: 18+

Priority Level: 5

Recommended Year: 2027

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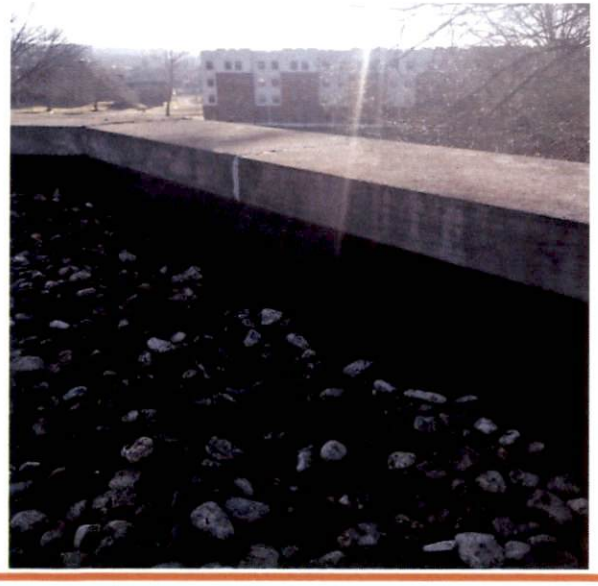
Hill Hall Pictures



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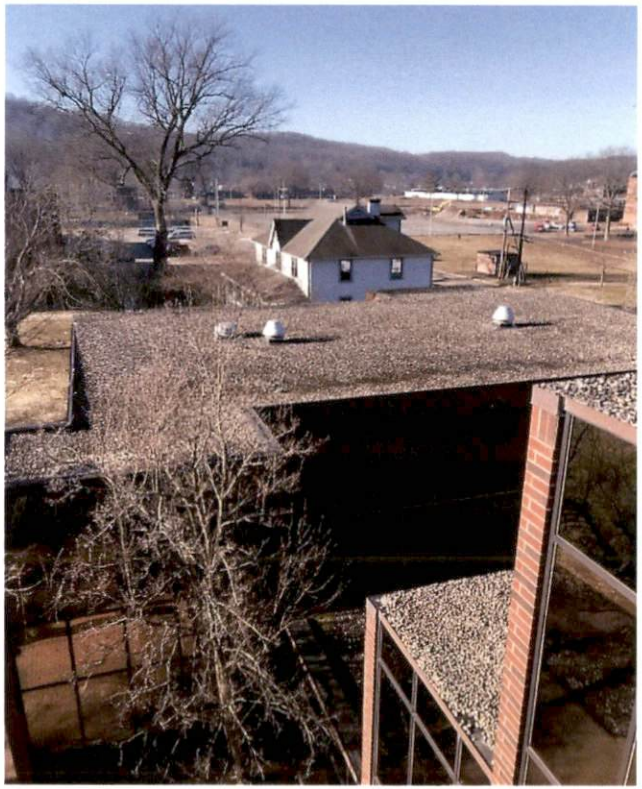
Cole Complex Pictures



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Maintenance Building Overview

Facility Overview

A-Maintenance Building

Total SQ Footage: 19,200

Age: 25+

Priority Level: 4

Recommended Year: 2025

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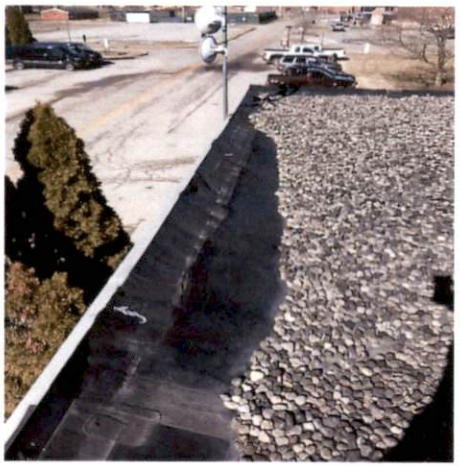
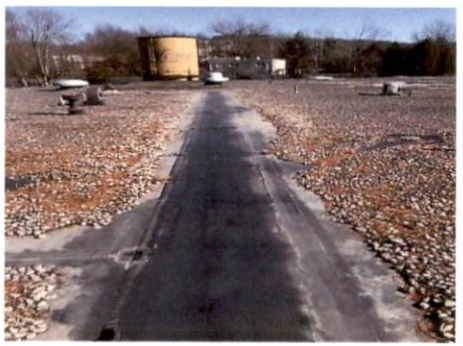
Maintenance Building Pictures





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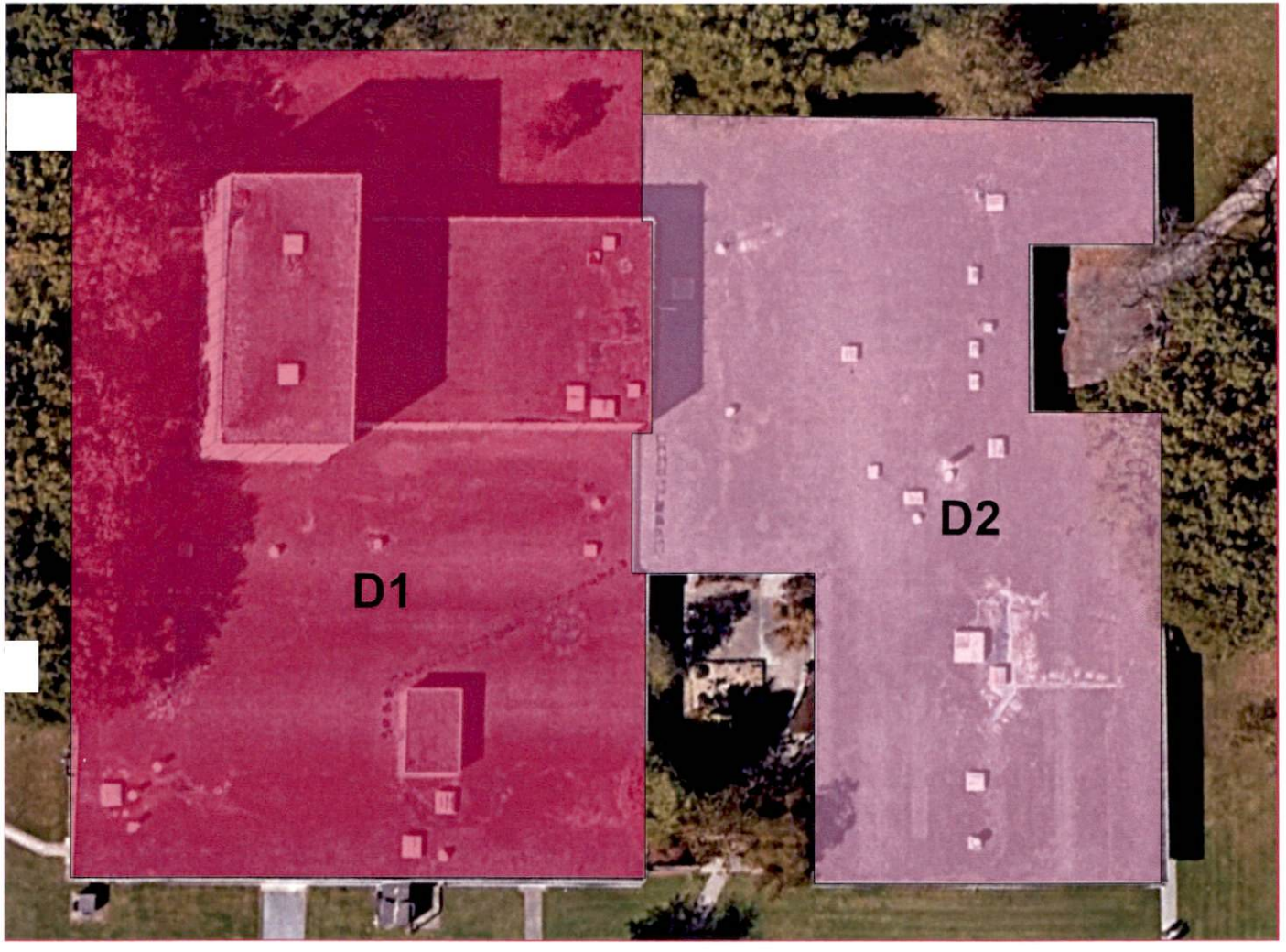
Davis Fine Arts Overview



Facility Overview

D1-Davis Fine Arts

Total SQ Footage: 31,500

Age: 25+

Priority Level: 1

Recommended Year: 2022

D2-Davis Fine Arts

Total SQ Footage: 20,800

Age: 25+

Priority Level: 1

Recommended Year: 2021

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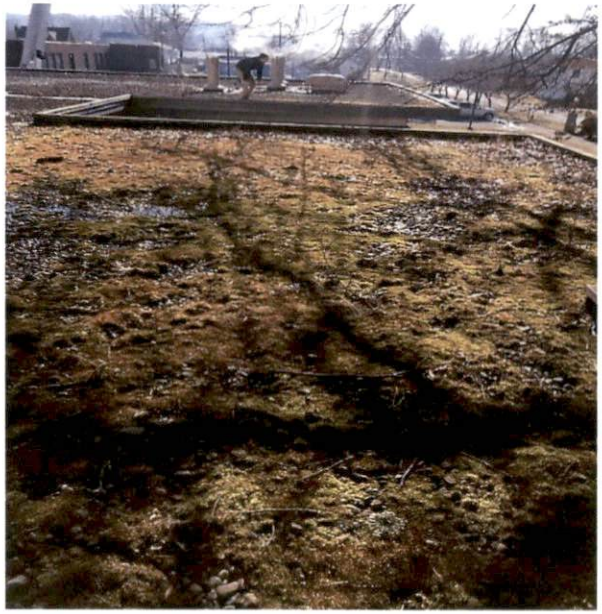
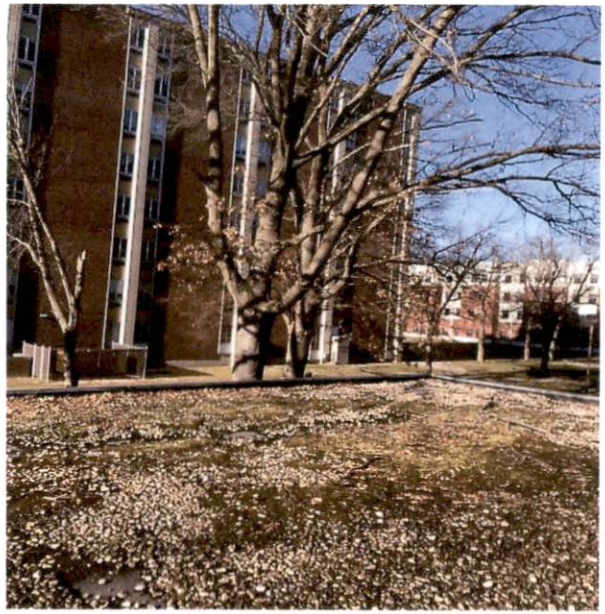
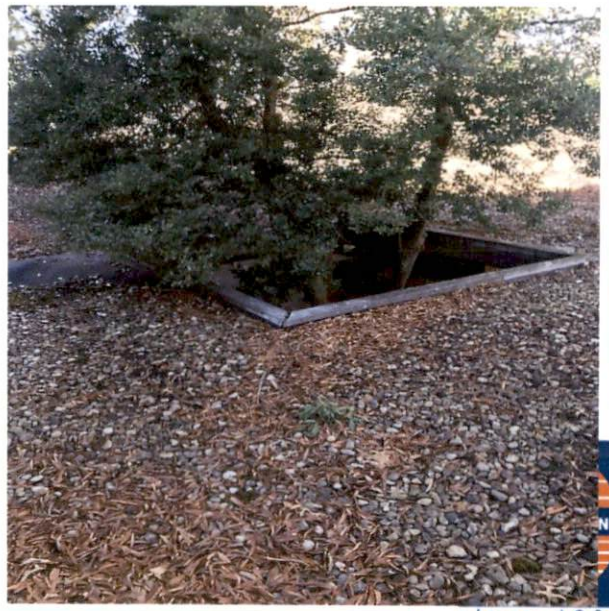
Davis Fine Arts Pictures







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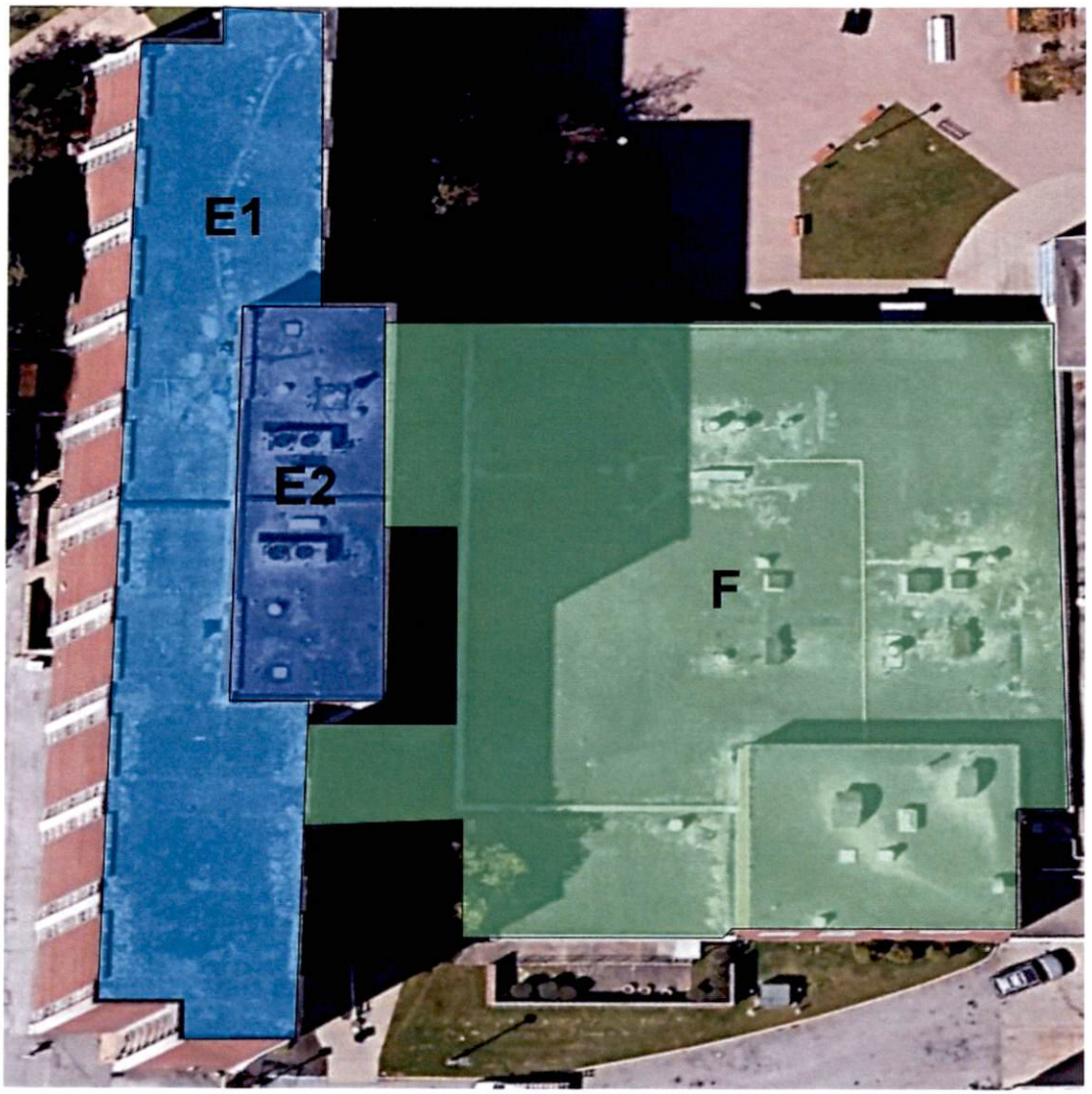
Sullivan Hall & Cafeteria Overview



Facility Overview

E1-2 Sullivan Hall

Total SQ Footage: 12,900

Age: 20+

Priority Level: 3

Recommended Year: 2024

Facility Overview

F-Cafeteria

Total SQ Footage: 21,500

Age: 20+

Priority Level: 2

Recommended Year: 2023

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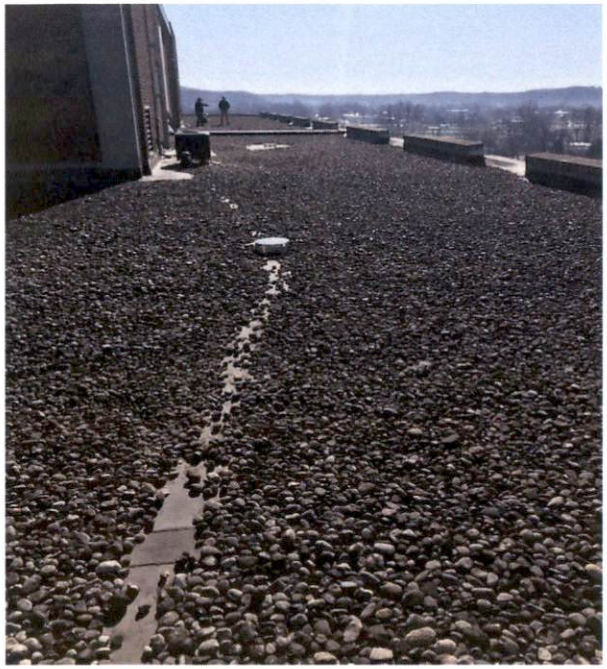
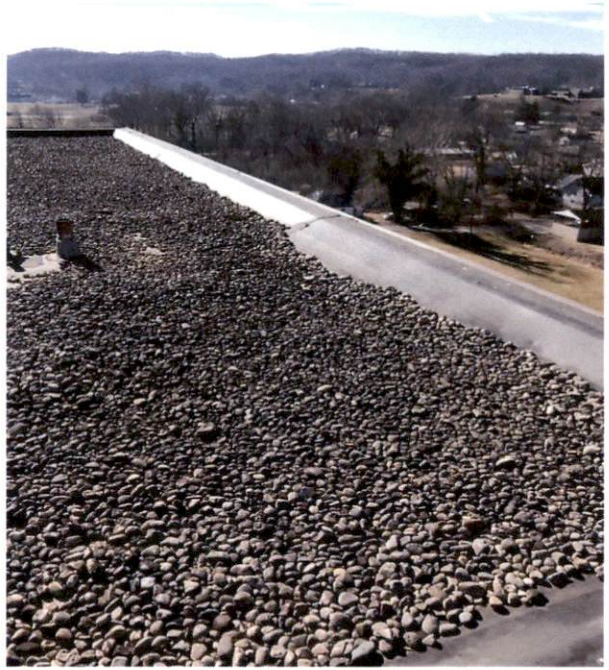
Sullivan Hall Photos





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Cafeteria Photos

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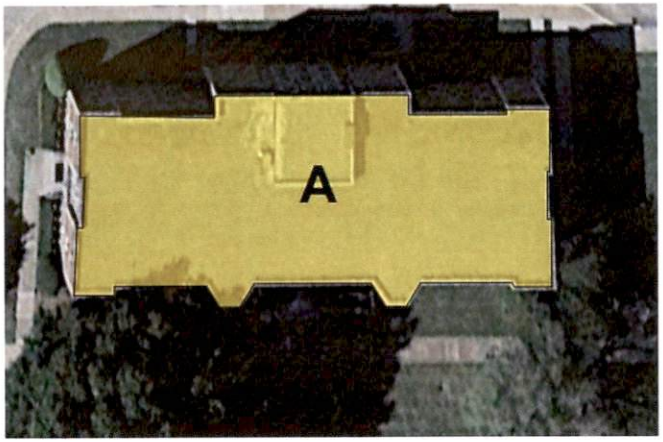
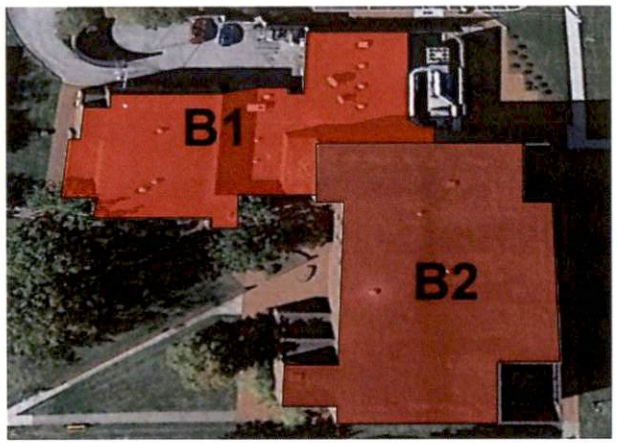
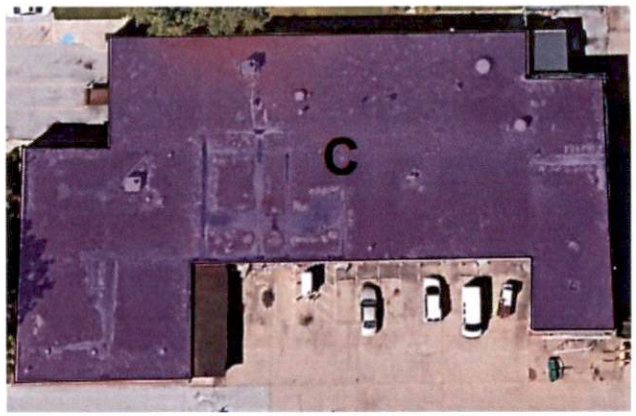
Facility Overview Priority List







Recommended Schedule

2021: Davis Fine Arts	Section D2
2022: Davis Fine Arts	Section D1
2023: Cafeteria	Section F
2024: Sullivan Hall	Section E1-2
2025: Hill Hall	Section A
2026: Maintenance	Section C
2027: Cole Complex	Section B1-2

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Roof Budgets

West Virginia State University

	Roof	Existing Membrane				Low-Budget	High-Budget							
	Area	Roof Quality	Priority	Roof	Action	in Today's	in Today's							
Facility	S.F.	Rating	Level	Age	Type	Dollars	Dollars	2021	2022	2023	2024	2025	2026	2027
Main Campus														
Section A-Hill Hall	8,800	Poor	4A	20+	Replace	$ 180,000	$ 240,000						$275,000.00	
Section B1-2-Cole Complex	20,900	Average	5	18+	Replace	$ 460,000	$ 530,000							$620,000.00
Section C-Maintenance Building	19,200	Failed	4B	25 +	Repair/Replace	$ 240,000	$ 280,000	$ 10,000.00				$310,000.00		
Section D1-Davis Fine Arts	31,500	Failed	1B	25+	Replace	$ 700,000	$ 810,000		$810,000.00					
Section D2-Davis Fine art	20,800	Failed	1A	25+	Replace	$ 470,000	$ 540,000	$540,000.00						
Section E1-2-Sullivan	12,900	Poor	3	20+	Replace	$ 330,000	$ 390,000				$410,000.00			
Section F-Cafeteria	21,500	Poor	2	20+	Replace	$ 480,000	$ 560,000			$580,000.00				
TOTAL						$ 2,860,000	$ 3,350,000	$ 550,000	$ 810,000	$ 580,000	$ 410,000	$ 310,000	$ 275,000	$ 620,000

The above are BUDGETS, the sqft is not exact and the pricing would be determined through competitive bidding process

**Priority Level Scale: 1 = Most pressing/highest priority; 5 Least Pressing/lowest priority

***Budget number listed is on the high end of the Budget range for the project

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Roof Budget Summary

Yearly Budget Summary

Priority Level	*Roof Section*	*Year Recommended*	*Budget Range*
1A	Davis Fine Arts-Section D2	2021/22	$ 470,000-540,000
1B	Davis Fine Arts-Section D1	2021/22	$ 700,000-810,000
2	Cafeteria	2023	$ 480,000-560,000
3	Sullivan Hall	2024	$ 330,000-390,000
4A	Maintenance Building	2025	$ 240,000-280,000
4B	Hill Hall	2026	$ 180,000-240,000
5	Cole Complex	2027	$ 460,000-530,000

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Next Steps for 2021:

- WVSU meets internally to discuss the process
  - Discuss budget of the overall projects
  - What is needed to be completed in 2021, 2022, 2023, etc.
- Give Garland the go ahead based on budgets/timeline to put together the bid package
- Meeting to review the bid package
- Schedule/Advertise the pre-bid meeting with the contractors
- Bids are due back to the University and reviewed
- Project is awarded to low/qualified contractor
- Pre-construction meeting/Start of the project

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West Virginia State University Roof Project Time-line

Project: 2021 Re-roof project

Item #	Description	Start Date	Time to Complete
1	Site Walk (Pictures, Video, Details)	Completed	Completed
3	Architectural Plans - Project Design, Roof specification, Engineering, Temporary Schedule	TBD	2 weeks
4	Bid Set Review: -- Project Review with West Virginia State University. Finalize Schedule	TBD	3-5 Days
5	Job Walk: Mandatory (Pre-Bid)	TBD	1 day
6	Last Day of Questions	TBD	1 week after pre-bid
7	Final Addendum	TBD	1 day after questions are due
8	Bids Due to West Virginia State University	TBD	2 weeks after pre-bid
9	Evaluation of Bids	TBD	1-2 Days after bid due date
10	West Virginia State University Internal meeting	TBD	TBD
11	Prepare / Issue Notice of Award to Contractor	TBD	TBD
12	Contractors Return Insurance Docs & Signed Contracts	TBD	TBD
13	Conduct Pre-Construction Meeting: Finalize Project Schedule - Finalize Material Delivery - Demolition Schedule - Bldg Completion Dates (Timelines) - Staging Areas for Material, etc.	TBD	TBD
14	Roof Installation Begins:	TBD	TBD
15	Punch Walk	TBD	TBD
16	Project Completion	TBD	TBD

***Estimated Total Time from Design-Bids Due: **5 weeks**

***Estimated Duration of Project (D2): **9-14 Weeks** (Pending weather and time of year during installation)

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The Garland Company, Inc.

Roof Asset Management Program

RAMP

Ferrell Hall Repair Scope of Work

Prepared By
Christian Reeves

Prepared For
Daniel Brown

March 14, 2024

Table of Contents

Client Data

WEST VIRGINIA STATE UNIVERSITY
131 FERRELL HALL
INSTITUTE , WEST VIRGINIA 25112

Client Data

Name	West Virginia State University		
Address 1	131 Ferrell Hall		
City	Institute	**State**	West Virginia
ZIP	25112	**Country**	United States

Contact Info

Contact Person	Daniel Brown	**Title**	Director of Facilities
Mobile Phone:	-	**Office Phone:**	304-766-3181
Email:	daniel.brown@wvstateu.edu		

Facility Summary

WEST VIRGINIA STATE UNIVERSITY
131 FERRELL HALL
INSTITUTE , WEST VIRGINIA 25112

FACILITY: Ferrell Hall

Photo

Facility Data

Address 1	5000 Fairlawn Ave
City	Institute
State	West Virginia
ZIP	25112
Type of Facility	Higher Education
Square Footage	22,000
Contact Person	Daniel Brown

Asset Information

Name	Date Installed	Square Footage	Roof Access
Section A	2002	15,000	Attached Ladder

Inspection Report

WEST VIRGINIA STATE UNIVERSITY
131 FERRELL HALL
INSTITUTE , WEST VIRGINIA 25112

FACILITY: Ferrell Hall	ROOF SECTION: Section A	DATE: 08/10/2023

Inspection Information

Inspection Date	08/10/2023	**Core Data**	No
Inspection Type	Visual Inspection	**Leakage**	No

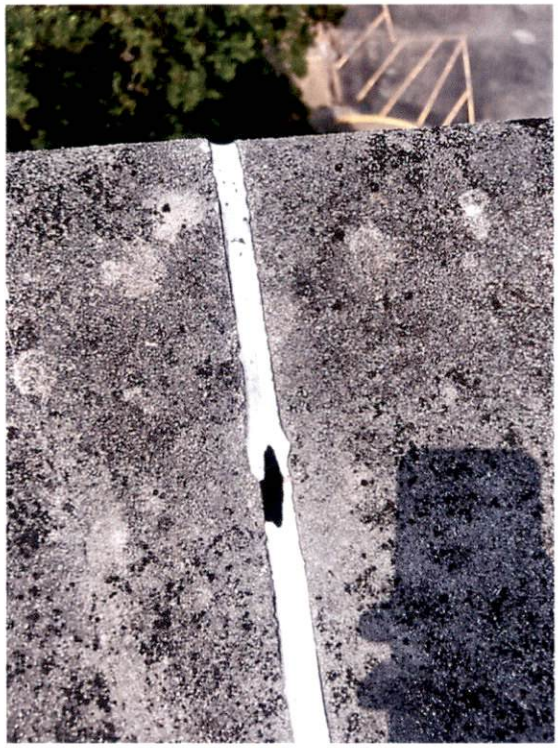
(1)

(2)

(3)

(4)

(5)



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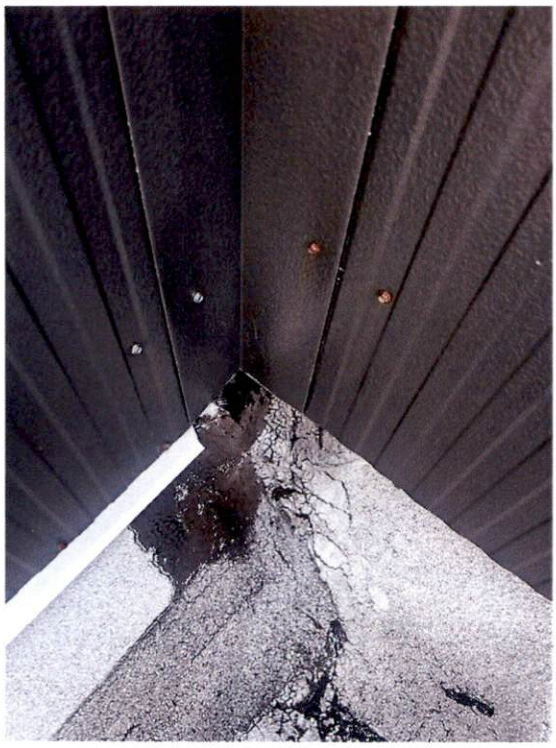

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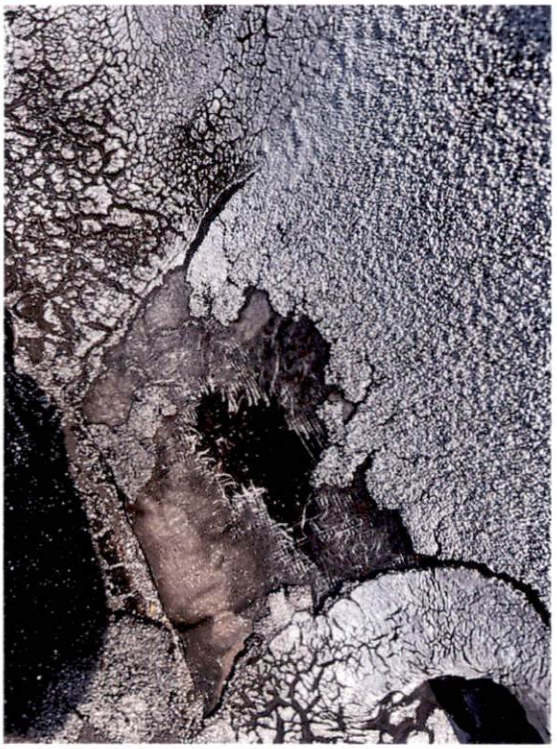

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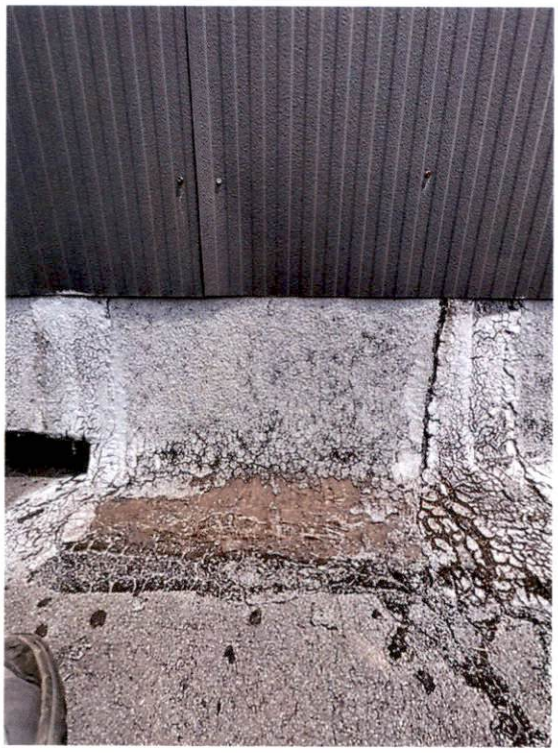

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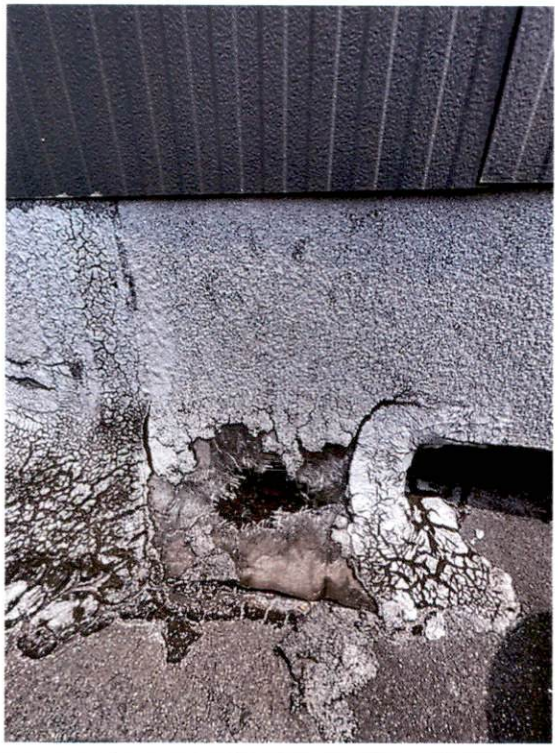

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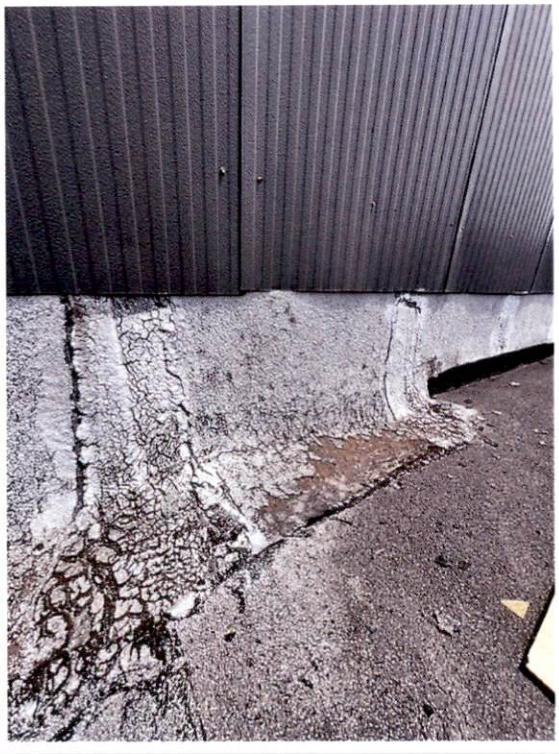

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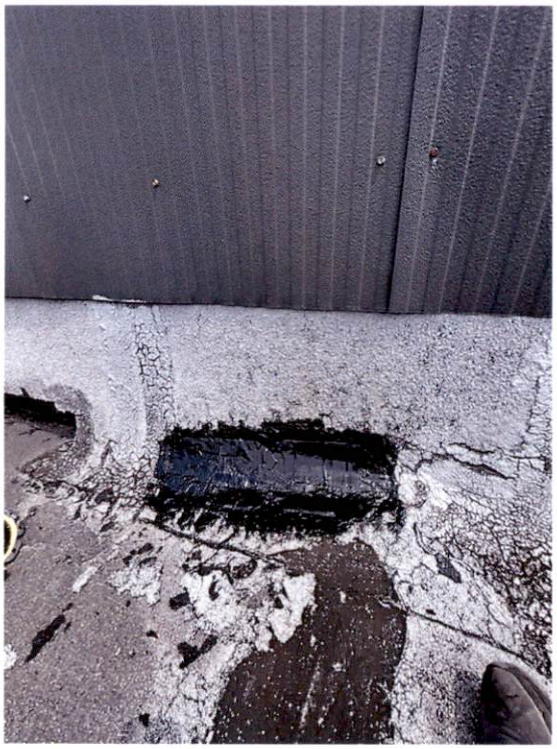

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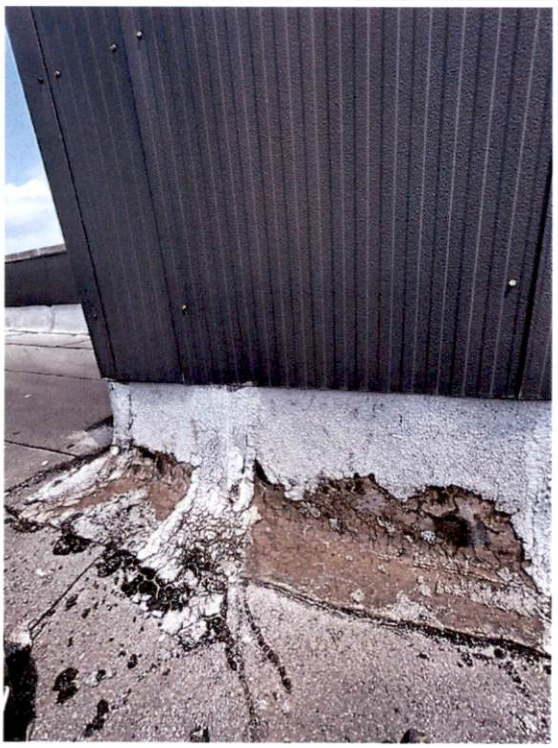

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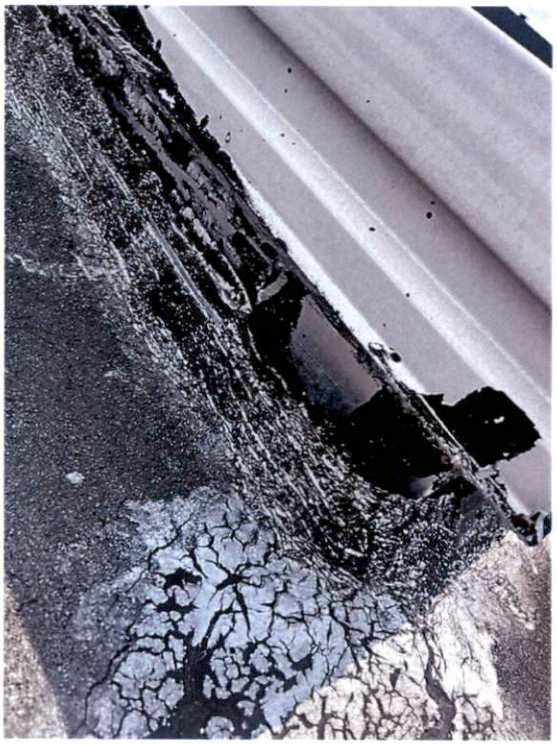

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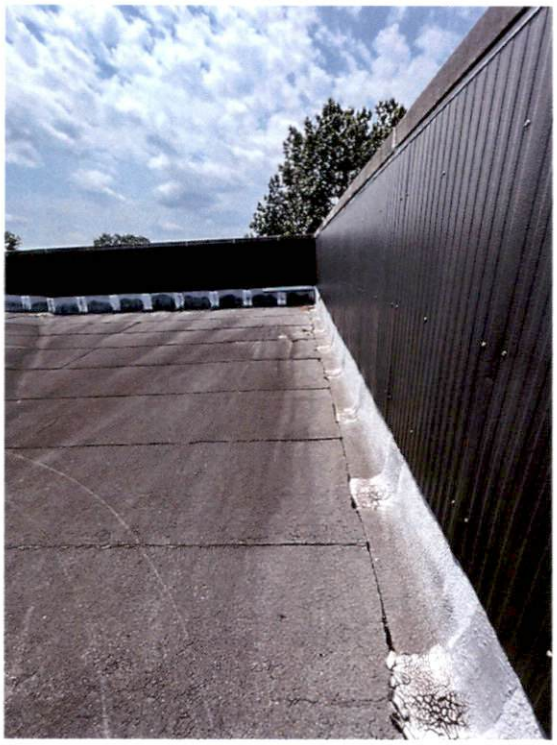

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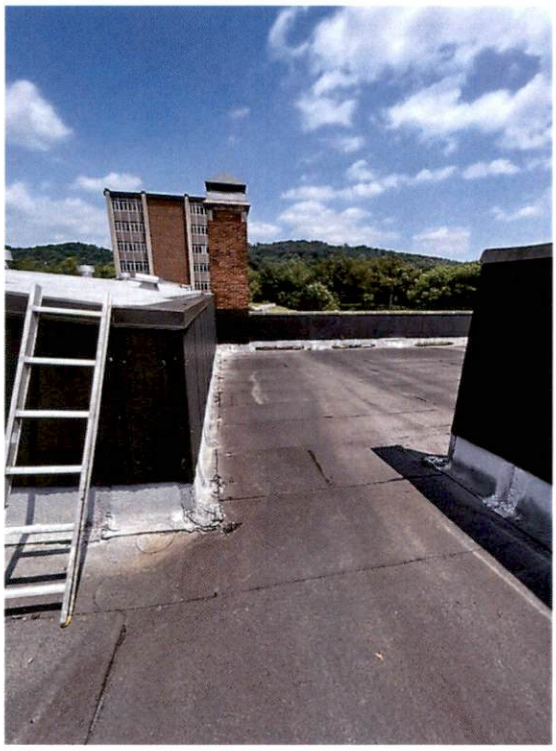

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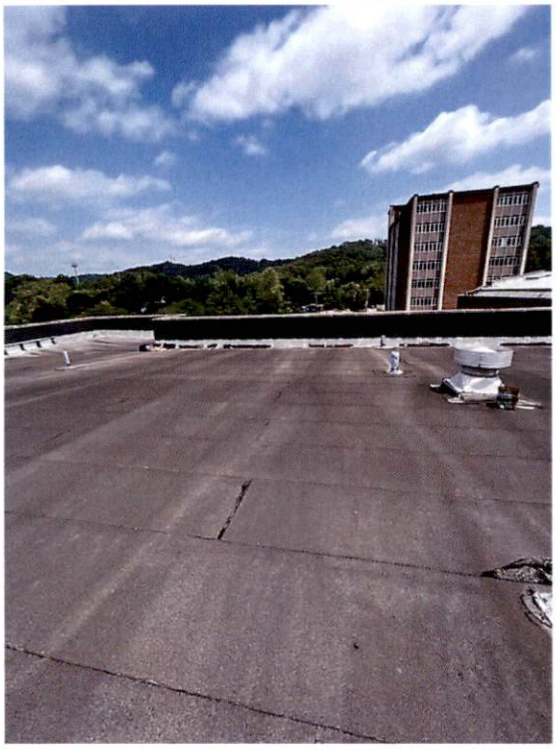

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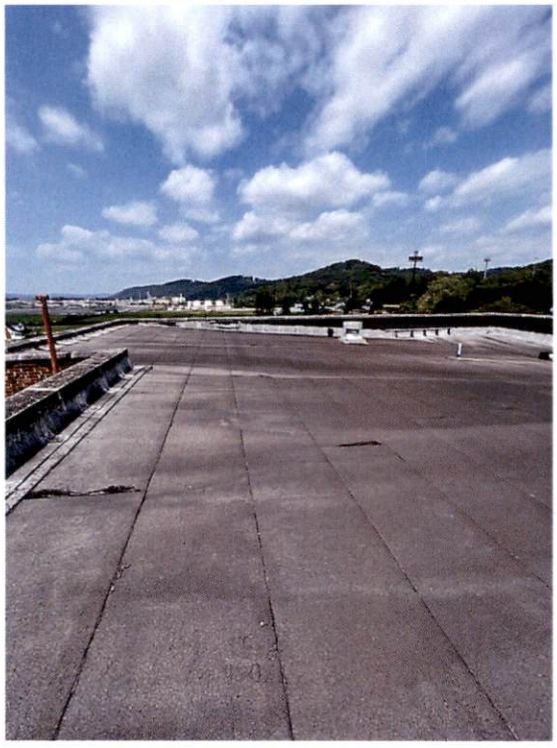

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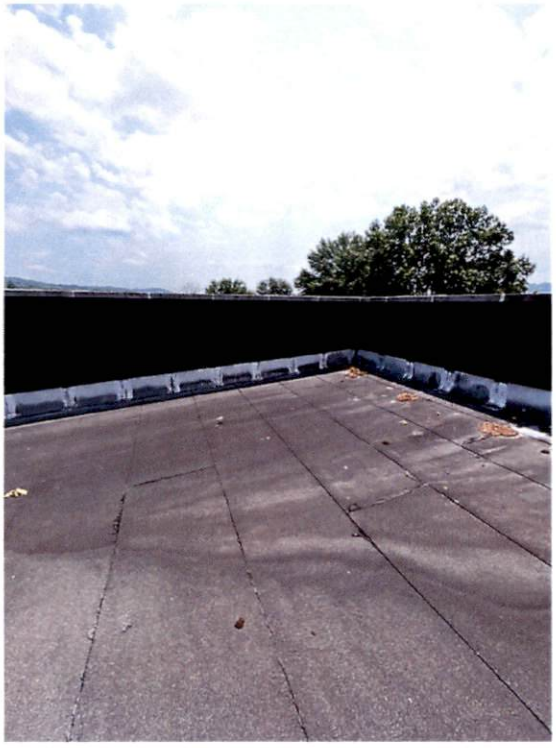

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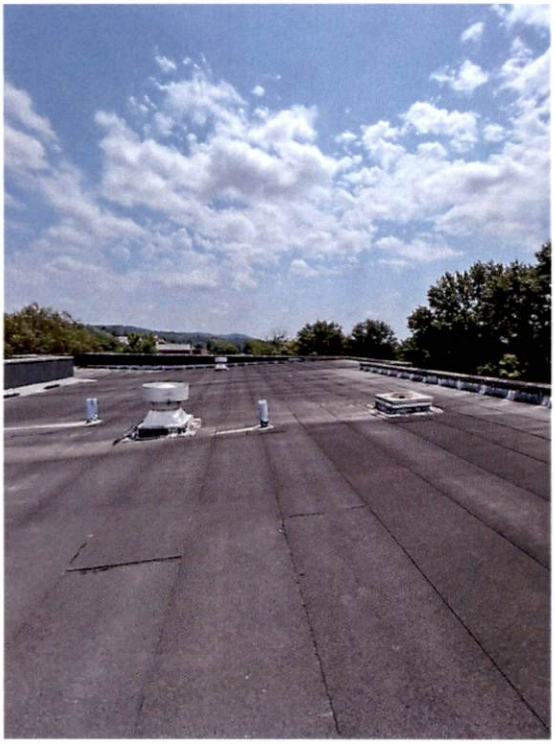

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Solution Options

WEST VIRGINIA STATE UNIVERSITY
131 FERRELL HALL
INSTITUTE , WEST VIRGINIA 25112

FACILITY: Ferrell Hall	ROOF SECTION: Section A	DATE: 09/18/2023

Report Data

Report Date	09/18/2023
Title	-

Repair Options

Solution Option:	Repair	**Action Year:**	2023
Square Footage:	15,000	**Expected Life (Years):**	3
Budget Range:	$22,000.00 - $35,000.00		

Ferrell Hall Repair Scope:
Complete the following repairs to minimize leaks and prevent the spread of wet insulation within the roof system:

- Reseal cracked flashing areas with a 3-course repair utilizing Garland's Garla-Brite UV Resistant material.
- Remove and replace any flashing plys that have detached from the parapet walls using approved base/caps sheets. 3-course these repairs using Garla-Brite and Gar-Mesh Reinforcement.
- Install new Termination bar in affected areas where flashing plys have detached.
- Further investigate/repair existing leaks throughout field of the roof.
- Re-seal any UV degraded sealant with appropriate material on coping stones.
- Clear any vegetative growth off the roof surface.
- Remove all trash and roof related debris.

Duquesne University
Libermann Hall
Roof Replacement

DUQUESNE UNIVERSITY

2023 Roof Replacement
Project Manual
10/20/22

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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 Duquesne University.

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 CONTRACT DOCUMENTS

A. Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with all existing site conditions, site access, physical characteristics of the site and other relevant local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. Contractor acknowledges and agrees that Contract Documents have been thoroughly reviewed and inspected, that it has had the opportunity to seek, and has sought, clarification or explanation of any perceived ambiguity, discrepancy, error or omission in the Contract Documents, and that the Contract Documents are adequate and sufficient to provide for the completion of the Work. Furthermore Contract Documents include all Work, whether or not shown or described, which reasonably may be inferred to be required or useful for the completion of the Work in accordance with all applicable laws, codes and professional standards.

1.4 CONDITION OF SITE

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

1.5 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 or its representatives and the Owner or its representatives 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 its 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.

1.6 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.

1.7 PROTECTION OF WORK AND PROPERTY

A. The Contractor shall maintain adequate protection of all in progress or completed Work from damage and shall protect the Owner's and adjacent property from injury or loss arising from this contract. Contractor shall provide and maintain at all times any danger signs, guards and/or obstructions necessary to protect the public and workmen from any dangers inherent with or created by the work in progress. Contractor shall hold the Owner harmless from any loss arising due to injury or accident to the public or 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. Should the Contractor suffer injury or damage to person or property because of an act or omission of the Owner or of any of the Owner's employees or agents for whose act the Owner is legally liable, the claim shall be made in writing to the Owner within thirty (30) days after the first observance of such injury or damage, otherwise such claim shall be waived. This clause shall not allow claims for injury or damages, which are otherwise precluded by these Contract Documents. Owner shall not be responsible for actions or inactions of other Contractors.

C. Before starting any work, the Contractor shall protect all grounds, copings, paving and exterior of all buildings where work will be performed.

D. In those areas where materials 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.

E. 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.

1.8 MATERIAL STORAGE AND CLEAN-UP

A. The Contractor shall keep the premises free from rubbish at all times and shall arrange 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.

B. If the Contractor refuses at any time to remove Work 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 provided twenty-four (24) hours written notice by the Owner.

C. 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.

D. 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.

1.9 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.

1.10 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 its 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. If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents or fails to carry out Work in accordance with the Contract Documents, the Owner, by written order signed personally or by an agent specifically so empowered by the Owner in writing may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

E. If the Contractor fails within twenty-four hours after receipt of written notice from the Owner to commence and continue correction of any default or neglect to Work as required in the Contract Documents, the Owner may, without prejudice to other remedies the Owner may have, commence and continue to carry out or correct deficiencies in the Work. In such case, the Contract Sum shall be adjusted for all costs incurred by the Owner in the correction of such deficiencies. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. The right of the

Owner to correct the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

F. The Contractor shall promptly correct Work rejected by the Owner or failing to conform to the requirements of the Contract Documents, whether observed before or after completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspection services and expenses made necessary thereby.

G. 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.

H. 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.

I. 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 is considered 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.

J. The presence and activities of the Owner's Representative shall in no way relieve the Contractor of contractual responsibilities.

K. Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority. Contractor shall bear all related costs of such tests, inspections and approvals, including the cost of retesting for verification of compliance with the requirements of the Contract Documents, and all such costs shall be included in the Contract Sum.

1.11 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 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.

1.12 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 the Bid 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.

1.13 CORRECTION OF WORK PRIOR TO FINAL PAYMENT

A. The Contractor shall promptly remove any work that does not meet the requirements of the drawings and specifications or is incorrectly installed or otherwise disapproved by the Owner of 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.

1.14 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.

1.15 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 that may occur nor its ability for correcting them, and damage caused by them.

1.16 LIENS

A. Neither the Contractor nor anyone furnishing labor or materials to the Contractor in connection with the Work shall have the right to file or otherwise assert any mechanic's or materialman's lien or other lien against the Work or the premises upon which the Work is to be located or against any other property of the Owner. The Contractor agrees to indemnify and hold harmless the Owner from all costs, attorneys' fees and other damages arising from any lien filed by anyone claiming by, on behalf of or through the Contractor and, upon notification from Owner of the filing of a lien, Contractor shall promptly take all necessary action to discharge or remove such lien.

1.17 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 all its workmen have undergone Safety Training and shall at all times act in compliance with all NRCA recommended safety compliance rules and regulations.

C. All on-site employees of the Contractor must provide the following clearances to the Duquesne University prior to the start of the project:
   a. PA Criminal Background Check
   b. FBI Fingerprinting

1.18 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 ITS 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 Subcontractors are required to file Certificates of Insurance properly completed and signed by an authorized insurance company representative before 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 to 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 Work to be performed including all items of labor and materials incorporated therein, materials stored at the job-site to be used in completing Work, and such other supplies and equipment incidental to 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 are not included in the direct cost of the work.
4. In accordance with this Section, 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 Work is performed; and
        2) Employer's Liability protection subject to a minimum limit of $1,000,000.
    b. Comprehensive General Liability Insurance in amounts not less than:
        1) General Aggregate: $3,000,000
        2) Products/Completed Operations Aggregate: $1,000,000
        3) Personal Injury: $1,000,000 per occurrence
        4) Property Damage: $1,000,000 per occurrence
    c. Comprehensive Automobile Liability Insurance in the following minimum amounts:
        1) Combined Single Limit: $1,000,000 per occurrence
    d. This insurance shall:
        1) Include coverage for the liability assumed by the Contractor under this section (section 1.18.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 its 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 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.

1.19 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.

1.20 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.

B. It is the responsibility of the Contractor to determine what local ordinances, if any, will affect its work. The Contractor shall check for any county, city, borough or township ordinances, rules or regulations applicable to the area in which the Project is being constructed, and in addition, for any rules or regulations of other organizations having jurisdiction, such as chambers of commerce, planning commissions, industries or utility companies. Any cost of compliance with local control shall have been included in the Contract Sum as bid, notwithstanding that such local controls may not have been identified in the Contract Documents.

C. It shall be the obligation of the Contractor to notify the Owner of any discrepancy between the Contract Documents and applicable building codes and regulations of which the Contractor has knowledge or should be reasonably able to determine. The Contractor shall not violate any requirements of applicable laws, codes and ordinances, or of any recorded covenants of which the Contractor has knowledge. If the Contractor observes that portions of the Contract Documents are at variance with applicable laws, statutes, ordinances, building codes, rules or regulations, the Contractor promptly shall notify the Owner in writing, and necessary changes shall be accomplished by appropriate modification.

D. The Contractor at all times shall observe, comply with, and post as required all Federal, State, and Local laws, ordinances, and regulations in any manner affecting the conduct of the work or applying to employees on the project, as well as all orders or decrees which have been or may be promulgated or enacted by any legal bodies or tribunals having authority or jurisdiction over the work, materials, employees, or Contract. The Contractor shall defend, hold harmless and indemnify the Owner and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or its employees.

E. The Contract shall be governed by the law of the Commonwealth of Pennsylvania. The venue of any legal proceedings arising from this project shall be the Court of Common Pleas of the jurisdiction governing the project site.
   1. Claims and Dispute Resolution:
      a. Claims, disputes and other matters in question between the Contractor and the Owner relating to the execution or progress of the Work or the interpretation of the Contract Documents including those alleging an error or omission shall be subject to dispute resolution.
         1) A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be made by written notice, shall be identified

as a Claim with a title or caption stating "Notice of Claim" and shall state in detail the nature of the Claim. The responsibility to substantiate Claims shall rest with the party making the Claim.

2) Except as otherwise provided in the Contract Documents, the Contractor will be deemed to have waived any Claim against the Owner unless Contractor gives written notice of such Claim within twenty (20) days of the time that Contractor has knowledge or should have had knowledge of the facts giving rise to the Claim.

3) Claims for Additional Cost: If the Contractor believes that additional cost is merited as a result of: (1) any written interpretation issued by the Owner; (2) any written order for a minor change to the Work issued by the Owner; or (3) other reasonable grounds where the Contractor was not at fault, the Contractor shall give written notice of such Claim as provided herein. Such notice of Claim shall be given before proceeding to execute the applicable Work.

4) Claims for Additional Time: If the Contractor wishes to make a claim for an increase in the Contract Time, written notice as provided above shall be given. In the case of a continuing delay, only one claim is necessary. An increase in the Contract Time shall be the sole recourse for delays, disruptions and/or hindrances in the progress of the Work, as against Owner and shall not act an entitlement to Contractor for damages against Owner.

b. Any claim, dispute or other matter that has been referred to the Owner shall be subject to litigation in the Court of Common Pleas, and shall not be subject to arbitration, except for compulsory arbitration as provided by the applicable Rules of Civil Procedure.

c. In any event, claims, disputes or other matters and questions between the parties to the Contract arising out of or relating to the Contract or breach thereof, shall be exclusively litigated in the Court of Common Pleas.

d. All litigation shall be governed by the laws and statutes of the Commonwealth of Pennsylvania.

e. Pending final resolution of any claim or dispute, the Contractor shall proceed diligently with performance of the Contract, except as otherwise agreed in writing by the parties, and any failure to proceed diligently shall constitute a default.

f. To the extent the Contractor commences litigation against the Owner, and the Owner prevails, partially or completely, on any or all of its own claims or defenses to the Contractor's claims, leaving the Contractor with less than one hundred percent (100%) recovery, Owner shall be entitled to payment by Contractor of all reasonable professional fees, including attorneys' fees, architectural fees, engineering fees, and consulting fees, together with all other costs or expenses, including the cost of any of Owner's employees' time, associated with analyzing any claim, pursuing litigation or defending the claim or litigation, which Owner may incur in connection with said litigation. This provision shall create no right to the Contractor or any other person or entity for payment of such costs or expenses.

g. Upon receipt of a claim against the Contractor or at any time thereafter, the Owner may, but is not obligated to, notify the Contractor's surety of the nature and amount of the claim. If the claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

h. The Contractor waives claims against Owner for consequential damages arising out of or relating to this Contract. This waiver includes damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation and for loss of profit except anticipated profit arising directly from

the Work. This waiver is applicable, without limitation, to all consequential damages due to Owner's termination of Contractor.

1.21 OWNER'S RULES

A. The Contractor and all its 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 upon which there will be Work. After such notification, the Contractor must take all necessary precautions to ensure the safety of its employees as well as the building personnel.

1.22 CONCURRENT OPERATIONS

A. Other Activities may be going on during the same time as the Work covered within these specifications. The Contractor shall cooperate with the Owner and its representatives to ensure that all Work does not interfere with other activities, within reason in regards to Work requirements.

1.23 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).

B. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract, including special safety precautions and programs for the protection of staff, visitors and others who use the premises.

C. The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety, and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

PART 2 – INSTRUCTIONS TO BIDDERS

2.1 BID CONDITIONS

A. To qualify for bidding, the Contractor must be an Authorized Garland Applicator at the first date of advertisement. Contractors must attend the pre-bid meeting. Any contractor not attending the pre-bid meeting will not be permitted to submit a bid.

2.2 WITHDRAWAL OR MODIFICATION OF BID

A. Any Bidder may withdraw its 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 its representative shall be asked to sign, in writing that the bid was returned after the withdrawal from the contract, the Bidding Contractor may not resubmit them.

2.3 BID SUBMITTALS

A. Documents Required for Submitting a Formal Bid for this Project:
   1. Standard Form of Bid
   2. Non-Collusion Affidavit
   3. Bid Bond or Certified Check
   4. Certificate of Insurance

B. The completed Standard Form of Bid along with the Required Documents shall be emailed to the contacts listed on the "Standard Form of Bid" as prepared and included in the Project Manual.
   1. No bid will be recorded unless the Standard Form of Bid is completed and signed by the bidder.
   2. All bids will be effective for 60 days from the date of the bid opening and no bid may be withdrawn during that period except as permitted by law.
   3. It is understood that the bidder agrees to furnish according to specifications all items for which a quotation is offered. The Owner will consider all items offered as "or equal" when offered at the same or at a lower price, but reserves the right to determine which is strictly "or equal" taking into consideration that which appears to best serve the purpose of the project. If a substitution is intended for any item, the bidder must clearly indicate its offering including manufacturer and product number in the body of the specifications and submit details.
   4. The Owner is not obligated it to accept the lowest or any bids, and particularly reserves the right to reject any or all bids and to waive any informalities in the bidding process.
   5. It is understood that the stated unit prices on the standard form of bid, shall prevail over the extended price and that the price per unit shall be the unit specifically indicated by the Owner. In the case of a price discrepancy, the indicated unit price, when multiplied by the number of units desired, shall be the acceptable bid price.
   6. In accordance with the Worker and Community Right to Know Act, all items containing hazardous substances and mixtures, as determined by the Department of Labor and Industry, must be labeled as such and accompanied by appropriate Safety Data Sheets (SDS's). Suppliers may mail the SDS's at the time of shipment.

2.4 PRE-BID CONFERENCE

A. A pre-bid conference shall be held on **October 20, 2023 at 1:00 pm**. The meeting will be conducted at Libermann Hall, 600 Fifth Ave. Pittsburgh, PA 15219. The purpose of this meeting is to review site conditions and the contents of this project manual. Contractors failing to attend the pre-bid conference will be disqualified from submitting a bid.

2.5 BID OPENINGS

A. All bids are due to the Duquesne University Facilities Management Office, 1204 Fifth Ave. Pittsburgh, PA 15282; Attention Facilities Management Office, **by 11:00 am (prevailing time), November 3, 2022.**

2.6 BID CONFIRMATION

A. By submission of its proposal, the Contractor acknowledges that the Contract Documents are full and complete, are sufficient to have enabled it to determine the cost of the Work and that the Drawings, Specifications and all addenda are sufficient to enable the Contractor to construct the Work outlined therein in accordance with applicable laws, statutes, ordinances, building codes, and regulations, and otherwise to fulfill all of its obligations under the Contract Documents.
   1. Having carefully studied and compared the Contract Documents with each other and with information furnished by the Owner and inspected the location of the Work and satisfied itself as to the condition thereof, except as to any reported error, inconsistency or omission, by executing the form of agreement, the Contractor represents the following:
      a. Contractor has received all information it needs concerning the condition of the Project Site.
      b. Contractor has satisfied itself as to the condition of the location of the Work, including, without limitation, all structural, surface and subsurface conditions.
      c. Contract sum is just and reasonable compensation for all Work, including all risk, hazards and difficulties in connection therewith.
      d. Contract time is adequate for the performance of the Work.
      e. Contractor shall have no claims for surface or subsurface conditions encountered.
      f. Contract Documents are sufficiently complete and detailed for Contractor to perform the Work required to produce the results intended by the Contract Documents and to comply with all requirements of the Contract Documents.
      g. Work required by the Contract Documents, including, without limitation, all construction details, means, methods, procedures and techniques necessary to perform the Work, use of materials, selection of equipment, and requirements of product manufacturers are consistent with (i) good and sound practices within the construction industry, (ii) generally prevailing and accepted industry standards applicable to the Work, (iii) requirements of any warranties applicable to the Work, and (iv) all laws, ordinances, regulations, rules and orders which bear upon the Contractor's performance of the Work.

2.7 QUESTIONS

A. Technical questions regarding this bid can be directed to: Sam Roberts, The Garland Company, Inc. sroberts@garlandind.com, 412-417-0056

B. 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.

2.8 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.

2.9 DISCREPANCIES AND ADDENDA

A. Should a Bidder find any discrepancies in the Drawings and Specifications, be in doubt as to their meaning, or feels that the Drawings or Specifications conflict with good roofing practice, it 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 the 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.

2.10 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 below, which shall be sworn to under oath by the Bidder or by a properly authorized representative of the Bidder.
   1. The address and description of the Bidder's plant & place of business.
   2. The name and/or Articles of co-partnership or incorporation.
   3. Itemized list of equipment available for use on the project.
   4. A certified or authenticated financial statement, dated within sixty (60) days prior to the opening of the bids. The Owner may require that any items of such statements be further verified.
   5. A list of present contracts, including dollar values, percentages of completion and names of all owners involved.
   6. A list of projects completed during the previous twelve (12) months, including the contract values and names of the owners involved.
   7. A statement regarding any past, present or pending litigation with an Owner.
   8. Such additional information as may be requested that will satisfy the Owner that the Bidder is adequately prepared in technical experience, or otherwise to fulfill the contract.
   9. Sufficient documents to ensure that the Contractor is in compliance with current Fair Employment Practice requirements of the Owner.

2.11 SUBCONTRACTORS

A. The Contractor shall not contract with any Subcontractor or any person or organization (including those who are to furnish materials or equipment fabricated to a special design) proposed for portions of the Work who has been rejected by the Owner. The Contractor will not be required to contract with any Subcontractor or person or organization against which it has a reasonable objection.

B. If the Owner refuses to accept any Subcontractor, or person or organization on a list submitted by the Contractor in response to the requirements of the Contract Documents, the Contractor shall submit an acceptable substitute. No increase in the Contract Sum shall be allowed for any such substitution, provided the Owner shall have made reasonably prompt written objection of such proposed Subcontractor, person, or organization to the Contractor.

C. The Owner shall not be a party to a claim, dispute or other matter in question between a Contractor and Subcontractor.

2.12 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 its 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.

2.13 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 the bid has been duly served upon the intended awardee by an authorized officer or agent of the Owner.

2.14 START AND COMPLETION DATE

A. Work shall begin on **May 8, 2023** or anytime thereafter on approval of the Owner. The Owner reserves the right to request an earlier/later start date should contract approval come prior/later than anticipated.

B. All specified work should be completed by **August 11, 2023**, unless otherwise agreed to by all parties to the Contract in writing.

C. The Contractor is responsible for supplying trained workmen in proper numbers and for scheduling and laying out the Work, so that it will be started and completed in a professional manner within the time period indicated on the bid form.

D. Time limits stated in the Contract Documents are of the essence of the Contract. By bidding and executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

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 its equipment and possessions from the job-site upon notification by the Owner.

2.15 PROHIBITION ON CASH ALLOWANCES

A. No cash allowances for any purposes are included in the specifications of this project.

2.16 TAXES

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

B. The Contractor shall pay all wage and occupation taxes as required by the local municipality at the Project Site.

C. The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. The Contractor hereby assigns and transfers to the Owner any and all rights to refunds of sales and use tax that may be paid for materials purchased in connection with this contract. The Contractor further agrees that it will not file a claim for refund for any sales or use tax that is the subject of this assignment. The Owner or its representative shall be afforded access to all the Contractor's records relating to this contract that may be reasonably necessary to the Owner's pursuit of sales and use tax refunds and, for such purpose, the Contractor shall preserve all such records for a period of three years after the date of final payment.

2.17 PAYMENT

A. The Contractor's applications for payment shall be presented to the Owner between the first (1st) and the fifth (5th) day of each calendar month. Applications received prior to the first day of the month or subsequent to the fifth day of the month shall be deemed to have been received by the Owner as of the fifth (5th) day of the following calendar month. Payments are due and payable sixty (60) days from the date of receipt of the application. Amounts unpaid sixty (60) days after the invoice date shall bear interest at the rate prevailing from time to time at the Pennsylvania Local Government Investment Trust (PLGIT).

B. The contractor shall submit one invoice for materials and mobilization, after the Owner or its representatives have verified in writing, that all materials and equipment are on site and conform to the requirements set forth in this project manual. This invoice shall not exceed 50% of the total value of the contract.

C. Additional invoices will be submitted on a monthly basis and will be considered a request for "progress payments". Progress payments will not be released until the Owner or its representatives have approved and verified the amount of work completed is commensurate with the payment request.

D. A 10% retainage will be held until the contractor attains fifty-percent (50%) completion of installation, whereupon the retainage shall be reduced to five percent (5%) and held until all punch list items are completed; provided, however, that the Owner shall be entitled to withhold up to one and one-half times such amount as is required to complete or correct any remaining, uncompleted or non-conforming work.

2.18 BONDS

A. A bid bond, or certified check, for an amount not less than ten percent (10%) of the amount of the bid, shall accompany each bid. The check or bond from each unsuccessful bidder will be returned within thirty (30) days after the project has been awarded. Failure of any accepted bidder to enter into a contract to complete the specified work may cause the forfeiture of its bid security.

B. The successful contractor will be required to furnish a Performance Bond and a Labor & Materials Bond within thirty (30) days after the official notification of award of each contract. The premium for these bonds shall be included in each Contractor's bid.

1. **Performance and Labor and Material Payment Bonds**: the contractor shall provide a performance bond and a labor and material payment bond, each in the amount of 100% of the contract price, before the award of the contract.

C. The form of the bonds and sureties shall be acceptable to the owner and for the following amounts:
   1. Performance Bond for the full amount (100%) of the contract insuring the faithful performance of all provisions of the contract and satisfactory completion of the specified work, within the time agreed upon and covering all guarantees against defective material and workmanship in any work under the contract for a period of two (2) years after the work has been accepted (Final Completion) by the Owner.
   2. A Labor and Material Bond for the full amount (100%) of the contract will also be required for the protection of all Subcontractors and material suppliers. Bonds shall bear the same date as that of the contract.

2.19 WARRANTY

A. A written warranty, commencing from date of acceptance by the 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.

B. A two (2) year workmanship warranty is required from the Contractor for all remedial maintenance done under the terms of this contract.

2.20 TERMINATION BY THE OWNER FOR CAUSE

A. The Owner may terminate the contract and finish the work by whatever reasonable method it 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 the bid form;
   2. Fails to make payment to Subcontractors and/or suppliers for labor and materials as stipulated in the contract documents; or
   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.

PART 3 – FIELD WORK

3.1 CONTRACTOR'S LICENSE

A. All pertinent State and Local licenses will be required.

3.2 BUILDING PERMITS

A. The acquisition of the applicable permits and associated costs to obtain said permits is the responsibility of the Contractor.

3.3 JOB COORDINATION

A. Contractor is responsible for daily communication with the Owner or Owner's Representative relating to areas of roof work in 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. Seventy-Two (72) hours prior to starting of the project and/or delivery of materials, the Contractor shall notify Rich Florian, Duquesne University Facilities Management

3.4 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 on Owner property and the Contractor shall be responsible for enforcement of this job rule at all times with its 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. 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.

F. No drugs or alcoholic beverages are permitted on the grounds.

G. The Contractor shall place necessary barriers and/or protection around or under all work in areas where its operations involve risk of injury to plant.

H. 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.

I. 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 qualified personnel to do so; and the cost of this work will be deducted from the balance due the Contractor.

J. 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.

K. 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.

L. Anyone guilty of willful destruction or unlawful removal of company property will be dismissed from the job and is subject to prosecution by law.

M. 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.

N. 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.

O. 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.

P. 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.

3.5 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 and 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.

3.6 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 0.5" 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.

3.7 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.

3.8 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.

3.9 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 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 attention by the Owner.

3.10 MATERIALS MANUFACTURER REPRESENTATIVE

A. The materials Manufacturer issuing the final guarantee on this roofing project must furnish a full-time employee to serve as the Manufacturer Representative during the course of the project.

B. The Manufacturer Representative cannot be associated with or work for any Distributor or Contractor, nor have any financial association with either.

C. The Manufacturer will provide in writing, upon request of the Owner, and signed by an officer of the Company, complete acceptance of the terms listed under section 3.10. The Manufacturer must also supply the name and the phone number of the officer that will be endorsing the document.

D. The Manufacturer Representative will be required to examine the roofing work a minimum of three (3) days a week or every other working day. This requirement will not be waived until the completion of the project.

E. The authorized Manufacturer Representative shall be responsible for the following:
   1. Rendering any inspection services the Owner may request.
   2. Keeping the Owner informed after each inspection as to the progress and quality of the work as observed.
   3. Calling to the attention of the contractor those matters observed considered to be in violation of the contract requirements.
   4. Reporting to the Owner in writing any failure or refusal of the Contractor to correct unacceptable practices called to attention.
   5. Supervise the taking of test cuts and the restoration of such areas.
   6. Confirming after completion of the specified work and based on observations and tests, that no application procedures in conflict with the specifications have been observed, other than those that may have been previously reported. Final payment will not be released until the Owner has received this confirmation.

F. The presence and activities of the Manufacturer Representative shall in no way relieve the Contractor of contractual obligations.

G. Non-compliance 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 obliged to compensate the Contractor for any work undertaken. Furthermore, damages caused by water infiltration resulting from the failure of the Contractor to secure each days work in a watertight 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.

END OF SECTION

SECTION 01 11 00
SUMMARY OF WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 PROJECT INFORMATION

A. Section Includes:
   1. Scope of Work
   2. Submittal of Bids
   3. Additional Requirements

1.3 SCOPE OF WORK

A. Duquesne University – Libermann Hall: 600 Fifth Ave. Pittsburgh, PA 15219

1) Lobby Roof: Modified Bitumen Roof Replacement
   a. Remove and discard existing roof membrane, insulation, and flashings to the deck.
   b. Replace all internal roof drains with new cast iron drain bowl assemblies.
      1) Camera scope to grade before and after replacement.
      2) Complete all necessary plaster repair and painting
   c. Attach polyisocyanurate insulation as shown on Drawings
      1) 1/8" Tapered
      2) R-30 Minimum (Outside of Sump)
      3) Install 8' X 8' minimum tapered sumps at all roof drains.
      4) Crickets shall be installed to divert runoff around all curbs.
   d. Adhere cover board.
   e. Install modified bitumen base sheet.
   f. Install modified bitumen cap sheet in cold adhesive.
   g. Install 2-ply modified bitumen flashings.
      1) Three-course all vertical cap flashing seams.
   h. Apply reinforced fluid-applied 8'X8' target around internal drains and walkways.
   i. Install new counter flashings and coping.
      1) High-temp underlayment to be installed under coping cap.
   j. Manufacturer's warranty will be provided upon completion.

2) Lobby Roof Alternate: Clad Parapet Walls
   a. Install new watertight wall panels system and trim.

3) 6th Floor Roof: Modified Bitumen Roof Replacement
   a. Remove and discard existing roof membrane, insulation, and flashings to the deck.
   b. Replace all internal roof drains with new cast iron drain bowl assemblies.
      1) Camera scope to grade before and after replacement.
      2) Complete all necessary plaster repair and painting
   c. Attach polyisocyanurate insulation
      1) 1/8" Tapered
      2) Install 8' X 8' minimum tapered sumps (.5" - 1.5") over .25" DensDeck Substrate Board at all roof drains.
      3) Crickets shall be installed to divert runoff around all curbs.

d. Adhere cover board.
e. Install modified bitumen base sheet.
f. Install modified bitumen cap sheet in cold adhesive.
g. Install 2-ply modified bitumen flashings.
    1) Three-course all vertical cap flashing seams.
h. Apply reinforced fluid-applied 8'X8' target around internal drains and walkways.
i. Install new counter flashings and coping.
    1) High-temp underlayment to be installed under coping cap.
j. Manufacturer's warranty will be provided upon completion.

4) 6th Floor Roof Alternate Add:

    a. Adhere roof membrane in no odor, zero VOC membrane adhesive

5) Loading Dock Roof: Modified Bitumen Roof Replacement
    a. Remove and discard existing roof membrane, insulation, and flashings to the deck.
    b. Replace all internal roof drains with new cast iron drain bowl assemblies.
        1) Camera scope to grade before and after replacement.
        2) Complete all necessary plaster repair and painting
    c. Attach polyisocyanurate insulation as shown on Drawings
        1) 1/8" Tapered
        2) R-30 Minimum (Outside of Sump)
        3) Install 8' X 8' minimum tapered sumps at all roof drains.
        4) Crickets shall be installed to divert runoff around all curbs.
    d. Adhere cover board.
    e. Install modified bitumen base sheet.
    f. Install modified bitumen cap sheet in cold adhesive.
    g. Install 2-ply modified bitumen flashings.
        1) Three-course all vertical cap flashing seams.
    h. Apply reinforced fluid-applied 8'X8' target around internal drains.
    i. Install new counter flashings and coping.
        1) High-temp underlayment to be installed under coping cap.
    j. Manufacturer's warranty will be provided upon completion.

6) Loading Dock Roof Alternate: Clad Parapet Walls
    a. Install new watertight wall panels system and trim

1.4 SUBMITTAL OF BIDS

A. Contractor bids for all material and for all labor, tools, equipment and supervision necessary to complete the installation will be submitted directly to Duquesne University via email by **11:00 am on November 3rd, 2022**. Email completed bid form, certificate of insurance, and non-collusion affidavit to:

1. Mark Minosky - minoskim@duq.edu

2. Richard Florian - florianr@duq.edu

1.5 ADDITIONAL REQUIREMENTS

A. Contractor is responsible for acquiring all applicable permits and coordinating necessary street closures.

B. Contractor is responsible for adhering to all OSHA, state, federal, and local regulations.

C. Contractor is responsible for installing pressure treated perimeter wood blocking, raising utility/plumbing lines, and raising mechanical units to meet flashing requirements and account for increased insulation thicknesses.

D. Subcontractor is responsible for ensuring positive slope to the roof drains and the elimination of ponding water.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 07 22 00
ROOF DECK AND INSULATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes roof insulation over the properly prepared deck substrate.

B. Related Sections:
1. Section 07 52 00 – Modified Bituminous Membrane Roofing.
2. Section 07 62 00 – Sheet Metal Flashing and Trim.

1.3 REFERENCES

A. American Society for Testing and materials (ASTM):
1. ASTM C1289 Standard Specification for Faced Rigid Polyisocyanurate Thermal Insulation.
2. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.

B. Factory Mutual Research (FM):
1. Roof Assembly Classifications.

C. Underwriters Laboratories, Inc. (UL):
1. Fire Hazard Classifications.

D. Warnock Hersey (WH):
1. Fire Hazard Classifications.

E. Insulation Board, Polyisocyanurate (FS HH-I-1972)

1.4 SUBMITTALS

A. Product Data: Provide manufacturer's specification data sheets for each product.

B. Shop Drawings (Fully Tapered Roof Systems only)
1. Submit manufacturer's shop drawings indicating complete installation details of tapered insulation system, including identification of each insulation block, sequence of installation, layout, drain locations, roof slopes, thicknesses, crickets and saddles.
2. Shop drawing shall include: Outline of roof, location of drains, complete board layout of tapered insulation components, thickness and the average "R" value for the completed insulation system.

1.5 QUALITY ASSURANCE

A. Fire Classification, ASTM E-108.

B. Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual, 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.

C. Pre-installation meeting: Refer to Division 07 roofing specifications for pre-installation meeting requirements.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.

B. Store all insulation materials in a manner to protect them from the wind, sun and moisture damage prior to and during installation. Any insulation that has been exposed to any moisture shall be removed from the project site.

C. Keep materials enclosed in a watertight, ventilated enclosure (i.e. tarpaulins).

D. Store materials off the ground. Any warped, broken or wet insulation boards shall be removed from the site.

PART 2 – PRODUCTS

2.1 PRODUCTS, GENERAL

A. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.

2.2 INSULATION MATERIALS

A. Thermal Insulation Properties and Approved Insulation Boards.
   1. Gypsum Roof Substrate Board (6th Floor Roof Only)
      a. Qualities: Nonstructural, noncombustible, water-resistant treated gypsum core panel.
      b. Board Size: Four feet by four feet (4'x4').
      c. Thickness: One quarter (1/4) inch.
      d. Compliances: UL, WH or FM listed under Roofing Systems.
      e. Acceptable Products:
         1) Dens Deck Prime; Georgia Pacific
         2) Securock; USG

   2. Tapered Polyisocyanurate Roof Insulation; ASTM C1289:
      a. Qualities: Factory Tapered, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
      b. Thickness: Minimum 0.5"
      c. R-Value: Minimum 30 (2" min outside sump on 6th Floor Roof)
      d. Tapered Slope: 1/8:12 (Field), 1/4:12 (Crickets)
      e. Compliances: UL, WH or FM listed under Roofing Systems Federal Specification HH-I-1972, Class 1

   3. Gypsum Roof Cover Board
      f. Qualities: Nonstructural, noncombustible, water-resistant treated gypsum core panel.
      g. Board Size: Four feet by four feet (4'x4').
      h. Thickness: One half (1/2) inch.(.25" for 6th Floor sump substrate boards)

i. Compliances: UL, WH or FM listed under Roofing Systems.
j. Acceptable Products:
   1) Dens Deck Prime; Georgia Pacific
   2) Securock; USG

2.3 RELATED MATERIALS

A. Fiber Cant and Tapered Edge Strips: Performed rigid insulation units of sizes/shapes indicated, matching insulation board or of perlite or organic fiberboard, as per the approved manufacturer.
   1. Acceptable Manufacturers:
      a. The Garland Company, Inc.
      b. Celotex
      c. Johns Manville
      d. GAF
      e. Approved Equivalent

B. Roof Deck Insulation Adhesive: Insul-Lock HR - Dual-component, high rise foam adhesive as recommended by insulation manufacturer and approved by FM indicated ratings.
   1. Tensile Strength (ASTM D412).....250 psi
   2. Density (ASTM D1875).....8.5 lbs./gal.
   3. Viscosity (ASTM D2556).....22,000 to 60,000 cP.
   4. 2 `Peel Strength (ASTM D903).....17 lb/in.
   5. 3 `Flexibility (ASTM D816).....Pass @ -70°F

C. Fasteners: Corrosion resistant screw fastener as recommended by roof membrane manufacturer.
   1. Factory Mutual Tested and Approved with three (3) inches coated disc for I-90 rating, length required to penetrate metal deck one inch.

PART 3 – EXECUTION

3.1 INSPECTOR OF SURFACES

A. Roofing contractor shall be responsible for preparing an adequate substrate to receive insulation.
   1. Verify that work which penetrates roof deck has been completed.
   2. Verify that wood nailers are properly and securely installed.
   3. Examine surfaces for defects, rough spots, ridges, depressions, foreign material, moisture, and unevenness.
   4. Do not proceed until defects are corrected.
   5. Do not apply insulation until substrate is sufficiently dry.
   6. Broom clean substrate immediately prior to application.
   7. Use additional insulation to fill depressions and low spots that would otherwise cause ponding water.
   8. Verify that temporary roof has been completed.

3.2 INSTALLATION

A. Attachment with Mechanical Fasteners
   1. Approved insulation board shall be fully attached to the deck with an approved mechanical fastening system. As a minimum, the amount of fasteners shall be in accordance with manufacturer's recommendation for FM I-90 system. Otherwise, a minimum of one fastener per two square feet shall be installed.

2. Filler pieces of insulation require at least two fasteners per piece if size of insulation is less than four square feet.
3. Spacing pattern of fasteners shall be as per manufacturer's recommendations to meet the FM requirements. Placement of any fastener from edge of insulation board shall be a minimum of three inches, and a maximum of six (6) inches.
4. Minimum penetration into deck shall be as recommended by the fastener manufacturer. There is a one (1) inch minimum for metal, wood and structural concrete decks where not specified by the manufacturer. For gypsum and cement-wood fiber decks, penetration shall be determined from pull-out test results with a minimum penetration of one and one-half (1 ½) inches.
5. Gypsum and cementitious wood fiber decks: Where the roof deck is visible from the building interior, the contractor shall ensure no penetration of fasteners through underside of the deck. Any holes or spalling caused by fastener installation shall be repaired by the roofing contractor. Where the new roof system thickness exceeds an amount so that a minimum of 1 ½ of penetration cannot be achieved with an Olympic TB Fastener, or approved equivalent, then (and only then) toggle bolts may be used to secure installation to the deck.
6. Tape joints of insulation as per manufacturer's requirements.

B. Attachment with Insulation Adhesive Approved by Factory Mutual (FM).
1. Ensure all surfaces are clean, dry, free of dirt, debris, oils, loose ore embedded gravel, unadhered coatings, deteriorated membrane and other contaminants that may inhibit adhesion.
2. Apply insulation adhesive directly to the substrate using a ribbon pattern with one quarter to one half (1/4-1/2) inch wide beads 12 inches o.c., using either the manual applicator or an automatic applicator, at a rate of one (1) gallon per one hundred (150) square feet per cartridge.
3. Immediately place insulation boards into wet adhesive. Do not slide boards into place. Do not allow the adhesive to skin over before installing insulation boards.
4. Briefly step each board into place to ensure contact with the adhesive. Substrates with irregular surfaces may prevent the insulation board from making positive contact with the adhesive. Relief cuts or temporary weights may be required to ensure proper contact.
5. All boards shall be cut and fitted where the roof deck intersects a vertical surface. The boards shall be cut to fit a minimum of one quarter (1/4) inch away from the vertical surface.
6. Tape joints of insulation as per manufacturer's requirements.

3.3 CLEANING

A. Remove debris and cartons from roof deck. Leave insulation clean and dry, ready to receive roofing membrane.

3.4 CONSTRUCTION WASTE MANAGEMENT

A. Remove and properly dispose of waste products generated during installation. Comply with requirements of authorities having jurisdiction.

END OF SECTION

SECTION 07 42 14
METAL WALL PANELS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section includes pre-formed flat seam wall panel system complete with anchor clips, fasteners, flashing, and trim.

B. Related Work Specified Elsewhere:
   1. Section 07 62 00 – Sheet Metal Flashing and Trim

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM B209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate

B. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
   1. Architectural Sheet Metal Manual

1.4 SUBMITTALS FOR REVIEW

A. Product Data: Include manufacturer's detailed material and system description, concealed anchor clips, sealant and closure installation instructions, and finish specifications. Indicate fastener types and spacing; and required fastener pullout values.

1.5 CONTRACT CLOSEOUT SUBMITTALS

A. Wall Panel Maintenance Instructions: Provide a manual of manufacturer's recommendations for maintenance of installed systems.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an Installer who has completed the Manufacturer's Approved Contractor course and is currently certified for the installation of the specified system.

B. If required, fabricator/installer shall submit work experience and evidence of adequate financial Responsibility. The Owner's representative reserves the right to inspect fabrication facilities in determining qualifications.

C. Source Limitations: Obtain all components of the wall panel system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the Manufacturer.
   1. 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.
   2. Manufacturer shall have direct authority and control over all fabrication of steel components as well as the raw materials used in their fabrication.

D. Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001 approval.

E. Engage the Manufacturer's Field Representative to conduct required periodic inspections of work in progress as described herein and shall furnish written documentation of all such inspections.

1.7 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference approximately two (2) weeks before scheduled commencement of system installation and associated work.

B. Require attendance of installer of each component of associated work which must precede or follow wall panel work (including mechanical or electrical work if any), Architect, Owner, system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, testing agencies and governing authorities.

C. Objectives of conference to include:
1. Review foreseeable methods and procedures related to work, including set up and mobilization areas for stored material and work area.
2. Tour representative areas of building, inspect and discuss condition of substrates, penetrations and other preparatory work performed by others.
3. Review structural loading limitations of wall framing and inspect for unacceptable variations in planarity.
4. Review 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 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 unfavorable conditions, including possibility of temporary wall protection (if not mandatory requirement).
9. Record discussion of conference including decisions and agreements (or disagreements) reached. Furnish 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.
10. Review notification procedures for weather or non-working days.

D. The Owner's Representative will be designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.

E. The intent of the conference is to resolve issues affecting the installation and performance of wall panel work. Do not proceed with work until such issues are resolved the satisfaction of the Owner and Engineer of Record. This shall not be construed as interference with the progress of Work on the part of the Owner or Engineer of Record.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Manufacturer's Responsibilities:
1. All panels shall be shipped from the manufacturer with a strippable film or similar packaging material separating the individual panels to minimize flexing, stressing, scratching or otherwise damaging the material during transit to the job.
2. Fully cover steel with tarpaulins or similar protective cover during transit to prevent dirt and debris from coming in contact with the finished goods.

B. Installer's Responsibilities:

1. Stack pre-finished materials to prevent twisting, bending, abrasion and denting and elevate one end to facilitate moisture run-off.
2. Unload wall panels using a boom or crane, supporting the panels in at least two locations during lifting, and never lift more than three panels at a time.
3. Protect moisture-sensitive materials and water-based from the weather.
4. Inspect materials upon delivery. Reject and remove physically damaged or marred material from project site.

1.9 DESIGN AND PERFORMANCE CRITERIA

A. Thermal Expansion and Contraction:
1. Completed metal wall panel and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.
2. The design temperature differential shall be not less than <insert design temperature differential [200] °F.
3. Interface between panel and clip shall provide for unlimited thermal movement in each direction along the longitudinal direction.

1.10 WARRANTIES

A. Manufacturer shall execute a single warranty covering of the following criteria. Multiple-source warranties are not acceptable.
1. Manufacturer's standard twenty (20) year finish warranty covering checking, crazing, peeling, chalking, fading, or adhesion.
2. Installer's two (2) year warranty covering wall panel system installation.
3. Warranties shall commence on date of Substantial Completion.

PART 2 – PRODUCTS

2.1 PRODUCTS, GENERAL

A. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified here in shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.

2.2 ACCEPTABLE MANUFACTURERS

A. The design is based upon R-MER Wall Pan wall panel systems engineered and manufactured by:

The Garland Company
3800 East 91st Street
Cleveland, Ohio 44105
Telephone: (800) 762-8225
Website: www.garlandco.com

2.3 METAL WALL PANEL SYSTEM

A. General
1. The products, quality, and performance criteria specified shall be regarded as the minimum standard of quality required for the project.
2. Basis of Design: R-MER Wall Pan System manufactured by The Garland Company, Cleveland, OH.

B. Materials
   1. Panel material: .040" thickness aluminum, 3105-H14 alloy, smooth as per ASTM B209-96.
   2. Flashing and flat stock material: Fabricate in profiles indicated on drawings of same material, thickness, and finish as wall panel system, unless indicated otherwise.

C. Finish on surfaces:
   1. Exposed surfaces for coated panels:
      a. Two coat coil applied, baked-on full-strength (70% resin) fluorocarbon coating system (polyvinylidene fluoride, PVF2), applied by manufacturer's approved applicator.
      b. Coating system shall provide nominal 1.0 mil dry film thickness, consisting of primer and color coat.
      c. Color shall be GARLAND standard color as selected by Owner.
   2. Unexposed surfaces for coated panels shall be baked-on polyester coating with .20 - .30 dry film thickness (TDF).
   3. Exposed and unexposed surfaces for uncoated panels shall be as shipped from the mill.

D. Characteristics:
   1. Fabrication: Panels shall be factory roll-formed from the specified metal. Field rolled panels will not be allowed.
   2. Configuration: Interlocking flush/flat seams incorporating concealed anchor clips. Through fastened or exposed fastener systems are not acceptable.
   3. Anchor clips: Clips shall be 22 gauge galvalume steel designed to allow thermal movement of the panel in each direction along the longitudinal dimension.
   4. Panel Width (Seam Spacing): 12" nominal.
   5. Panel lengths: Full length without joints to the extent as is practical.
   6. Profile of panel face shall have a double Vee-groove reveal located in the center of each panel face. These will absorb thermal stresses, reduce oil canning, and provide aesthetic appeal.

E. Accessories:
   1. Fasteners:
      a. Concealed fasteners: Corrosion resistant steel screws, #10 x 1" long, pancake head, Phillips drive. Use self-drilling, self-tapping for metal substrate or A-point for plywood substrate.
      b. Exposed fasteners: Series 410 stainless steel screws or one eighth (1/8) inch diameter stainless steel waterproof rivets. All exposed fasteners shall be factory painted to match the color of the wall panels.
   2. Provide all miscellaneous accessories for complete installation.

2.4 ACCESSORY PRODUCTS

A. Sealant:
   1. Acceptable product:
      a. Concealed Application: Non-curing butyl sealant or equal.
      b. Exposed Application: Garland SS sealant or equal.
   2. Colors: As selected by architect from sealant manufacturer's standard selection.

B. Wall Substrate:
   1. Install ¾" high x 24 gauge (minimum) galvanized steel during hat sections to wall structural substrate. Hat sections shall be installed perpendicular to panel seams, and shall be spaced thirty (30) inches on center (maximum) to accommodate the panel fastener spacing given in article 3.2 C.

2.5 FABRICATION

A. Shop fabricate flashing components to the maximum extent possible, forming metal work with clear, sharp, straight, and uniform bends and rises. Hem exposed edges of flashings.

B. Form flashing components from full single width sheet in minimum ten (10'-0") feet sections. Provide shop fabricated, mitered corners, joined using closed end pop rivets and joint sealant.

C. Fabricate panels and related sheet metal work in accordance with approved shop drawings and applicable standards.

PART 3 – EXECUTION

3.1 PREPARATION

A. Inspection: Examine the alignment and placement of the building structure and substrate. Correct any objectionable warp, waves or buckles in the substrate before proceeding with installation of the pre-formed metal panels.

3.2 INSTALLATION, GENERAL

A. Install wall system when the atmospheric dry bulb temperature is minimum forty (40) degrees Fahrenheit and rising.

B. Install all components of the wall system in exact accordance with the manufacturer's standard published procedures as applicable to these project conditions and substrates.

3.3 WALL PANEL INSTALLATION

A. Comply with all details and install wall panel materials and flashings in accordance with approved Manufacturer's shop drawings and manufacturer's product data within specified erection tolerances.

B. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.

C. Limit exposed fasteners to extent indicated on shop drawings.

D. Seal laps and joints in accordance with system manufacturer's product data.

E. Installed system shall be true to line and plane and free of dents, and physical defects. In light gauge panels with wide flat surfaces, some oil canning may be present. Oil canning does not affect the finish or structural integrity of the panel and is therefore not cause for rejection.

F. Form joints in linear sheet metal to allow for one fourth (1/4) inch minimum expansion at twenty (20'-0") feet on center maximum and eight (8'-0") feet from corners.

G. At joints in linear sheet metal items, set sheet metal items in two (2) one fourth (1/4) inch beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.

3.4 CLEANING

A. Clean installed work in accordance with the manufacturer's instructions.

B. Replace damaged work than cannot be restored by normal cleaning methods.

3.5 CONSTRUCTION WASTE MANAGEMENT

A. Remove and properly dispose of waste products generated during construction. Comply with requirements of authorities having jurisdiction.

3.6 FINAL INSPECTION

A. At completion of installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, system manufacturer's representative, and other representatives directly concerned with performance of system.

B. Inspect work and flashing of penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.

C. Repair or replace deteriorated or defective work found at time above inspection as required to a produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

D. Notify the Owner upon completion of corrections.

E. Following the final inspection, provide written notice of acceptance of the installation from the system manufacturer.

F. Immediately correct leakage during construction. If the Contractor does not respond within twenty four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

3.7 DEMONSTRATION AND TRAINING

A. At a time and date agreed to by the Owner, instruct the Owner's facility manager, or other representative designated by the Owner, on the following procedures:
   1. Troubleshooting procedures
   2. Notification procedures for reporting leaks or other problems
   3. Maintenance
   4. The Owner's obligations for maintaining the warranty in effect and force
   5. The Manufacturer's obligations for maintaining the warranty in effect and force

END OF SECTION

SECTION 07 52 00
MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. 2-Ply Asphalt Roofing.

B. Accessories.

C. Edge Treatment and Roof Penetration Flashings.

1.2 RELATED SECTIONS

A. Section 07 22 00 – Roof Deck and Insulation.

B. Section 07 62 00 – Sheet Metal Flashing and Trim.

1.3 REFERENCES

A. ASTM D 4586 Standard Specification for Asphalt Roof Cement, Asbestos-Free.

B. ASTM D 5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.

C. ASTM D 6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.

D. ASTM D 6754 - Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.

E. Factory Mutual Research (FM): Roof Assembly Classifications.

F. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.

G. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.

H. Underwriters Laboratories, Inc. (UL): Fire Hazard Classifications.

I. Warnock Hersey (WH): Fire Hazard Classifications.

J. ASCE 7, Minimum Design Loads for Buildings and Other Structures

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Perform work in accordance with all federal, state and local codes.

B. Exterior Fire Test Exposure: Roof system shall achieve a UL, FM or WH Class rating for roof slopes indicated on the Drawings as follows:
   1. Factory Mutual Class A Rating.
   2. Underwriters Laboratory Class A Rating.
   3. Warnock Hersey Class A Rating.

C. Design Requirements:
   1. Uniform Wind Uplift Load Capacity
      a. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
         1) Design Code: ASCE 7, Method 2 for Components and Cladding.

1.5 SUBMITTALS

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

B. Design Pressure Calculations: Submit design pressure calculations for the roof area in accordance with ASCE 7 and local Building Code requirements. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before Work begins.

C. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic inspection and maintenance of all completed roofing work. Provide product warranty executed by the manufacturer. 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.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience and must not have been in Chapter 11 bankruptcy during the last five years.

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. 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 MEETINGS

A. Convene minimum two weeks prior to commencing Work of this section.

B. Review installation procedures and coordination required with related Work.

C. Inspect and make notes of job conditions prior to installation:
   1. Record minutes of the conference and provide copies to all parties present.
   2. Identify all outstanding issues in writing designating the responsible party for follow-up action and the timetable for completion.
   3. Installation of roofing system shall not begin until all outstanding issues are resolved to the satisfaction of the Architect.

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 except store KEE-Stone FB 60 rolls flat 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 COORDINATION

A. Coordinate Work with installing associated metal flashings as work of this section proceeds.

1.10 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.

1.11 WARRANTY

A. Upon completion of the work, provide the Manufacturer's written and signed NDL 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. 30 years from date of acceptance. Requires mid period inspection.

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); 3800 E. 91st St., Cleveland, OH 44105. ASD. Toll Free: 800-321-9336. Phone: 216-641-7500. Fax: 216-641-0633. Web Site: www.garlandco.com.

2.2 2-PLY ROOF SYSTEM

A. Base (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive:
   1. FlexBase 80: 80 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a dual fiberglass reinforced scrim, performance requirements according to ASTM D 5147.

a. Tensile Strength, ASTM D 5147
   1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 225 lbf/in XD 225 lbf/in
   2) 50 mm/min. @ 23 +/- 2 deg. C MD 39.0 kN/m XD 39 kN/m
b. Tear Strength, ASTM D 5147
   1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 300 lbf XD 300 lbf
   2) 50 mm/min. @ 23 +/- 2 deg. C MD 1335 N XD 1335 N
c. Elongation at Maximum Tensile, ASTM D5147
   1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 7% XD 7%
   2) 50 mm/min. @ 23 +/- 2 deg. C MD 7% XD 7%
d. Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34.4 deg).

B. Modified Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive:
1. StressPly Plus FR Mineral: 155 mil SBS (Styrene-Butadiene-Styrene) mineral surfaced, rubber modified roofing membrane reinforced with a fiberglass and polyester composite scrim. ASTM D 6162, Type III Grade G
   a. Tensile Strength, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 310 lbf/in XD 310 lbf/in
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 54.25 kN/m XD 54.25 kN/m
   b. Tear Strength, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf XD 500 lbf
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 2224 N XD 2224 N
   c. Elongation at Maximum Tensile, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 8% XD 8%
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 8% XD 8%
   d. Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34 deg. C)

C. Interply Adhesive:
1. Weatherking: Rubberized, polymer modified cold process asphalt roofing bitumen V.O.C. compliant ASTM D 3019. Performance Requirements:
   a. Non-Volatile Content ASTM D 4479 70%
   b. Density ASTM D1475 8.9 lbs./gal.
   c. Viscosity Stormer ASTM D562 400-500 grams
   d. Flash Point ASTM D 93 100 deg. F min. (37 deg. C)
   e. Slope: up to 3:12
2. Green-Lock Plus Membrane Adhesive: (6^{th} Floor Alt Add)Cold applied solvent free membrane adhesive: zero V.O.C. compliant performance requirements:
   a. Non-Volatile Content ASTM D 4586 100%
   b. Density ASTM D 1475 12.3 lbs./gal. (1.47 g/cm3)
   c. Viscosity Brookfield Spindle T-E at 5 rpm 124,000 cPs.
   d. Flash Point ASTM D 93 400 deg. F min. (232 deg. C)
   e. Slope: up to 3:12

D. Flashing Base Ply: One ply bonded to the prepared substrate with Interply Adhesive:
1. FlexBase 80: 80 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a dual fiberglass reinforced scrim, performance requirements according to ASTM D 5147.
   a. Tensile Strength, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 225 lbf/in XD 225 lbf/in
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 39.0 kN/m XD 39 kN/m
   b. Tear Strength, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 300 lbf XD 300 lbf
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 1335 N XD 1335 N
   c. Elongation at Maximum Tensile, ASTM D5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 7% XD 7%
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 7% XD 7%
   d. Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34.4 deg.)

E. Flashing Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive:
   1. StressPly Plus FR Mineral: 155 mil SBS (Styrene-Butadiene-Styrene) mineral surfaced, rubber modified roofing membrane reinforced with a fiberglass and polyester composite scrim. ASTM D 6162, Type III Grade G
      a. Tensile Strength, ASTM D 5147
         1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 310 lbf/in XD 310 lbf/in
         2) 50 mm/min. @ 23 +/- 2 deg. C MD 54.25 kN/m XD 54.25 kN/m
      b. Tear Strength, ASTM D 5147
         1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf XD 500 lbf
         2) 50 mm/min. @ 23 +/- 2 deg. C MD 2224 N XD 2224 N
      c. Elongation at Maximum Tensile, ASTM D 5147
         1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 8% XD 8%
         2) 50 mm/min. @ 23 +/- 2 deg. C MD 8% XD 8%
      d. Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34 deg. C)

F. Flashing Ply Adhesive:
   1. Flashing Bond: Asphalt roofing mastic V.O.C. compliant, ASTM D 4586, Type II trowel grade flashing adhesive.
      a. Non-Volatile Content ASTM D 4479 70 min.
      b. Density ASTM D 1475 8.3 lbs./gal. (1kg/l)
      c. Flash Point ASTM D 93 103 deg. F (39 deg. C)
   2. Green-Lock Plus Flashing Adhesive: (6th Floor Alt Add)Cold applied solvent free flashing adhesive: zero V.O.C.
      a. Non-Volatile Content ASTM D 4586 100%
      b. Density ASTM D 1475 11.8 lbs./gal. (1.17 g/cm3)
      c. Viscosity Brookfield 400,000 cPs.
      d. Flash Point ASTM D 93 400 deg. F min. (232 deg. C)

G. Fluid-Applied Primer:
   1. Garla-Block Primer: copolymer sealant that prevent staining and degradation of surface coatings when installed over smooth or granulated asphalt, coal tar modified bitumen, or smooth asphalt BUR membranes.
      a. Non-Volatile Solids % by Weight, ASTM 3960: 28-32 %
      b. Non-Volatile Solids % by Volume, ASTM 3960: 25-28 %
      c. pH: 8-10
      d. Wet Film Thickness @ 1 gal./100 sq. ft.: 16 mils (microns 406.4)
      e. Flash Point PMCC: None
      f. Drying Time, Touch @ 70 degrees F (21.1 degrees C) /50% R.H.: 1-2 hrs.
      g. Viscosity @ 77 degrees F (25 degrees C) Brookfield RVT, #4 Spindle; 20 rpm, ASTM 2196: 3000-5000 cPs
      h. VOC: 30 g/l max

H. Fluid-Applied Coating:
   1. Base Coating: LiquiTec Base: Multi-purpose, 100% solids, two-part, fast-cure, polyurea liquid waterproofing membrane having the following characteristics:
      a. Elongation, ASTM D 412: 433%
      b. Tensile Strength, ASTM D 412: 2300 psi
      c. Tear Resistance, ASTM D 624: 449 lbs./in
      d. Low Temperature Flexibility, ASTM D522: -60°F (-51.1°C)
      e. Hardness, ASTM D2240 (Shore A): 80
      f. Dynamic Impact Resistance (Fully Reinforced System): ASTM D5635, 37 joules
      g. Static Puncture Resistance (Fully Reinforced System): ASTM D5602, 20 kg
      h. Tensile-Tear Resistance (Fully Reinforced System): ASTM D4073, 274 lbf
      i. Tensile Load Strain (Fully Reinforced System): ASTM D5147, 193 lbf/in.
      j. Toughness (Fully Reinforced System): ASTM D5147,140 lb-in.

k. Dry Film Thickness (Fully Reinforced System), 80-88 mils
l. Lap Shear Strength (MB Seam with coating): ASTM D7379, 231 lbf/in.
m. Density @ 77° F (25° C, ASTM D 2939) 9.6 lb./gal (1.2 g/m3)
n. Flash Point: ASTM D 93, 110°F min. (43°C)
o. VOC: 0 g/l
p. Microbial Resistance: ASTM G21, No Microbial Growth

2. Reinforcement/Base Coat
   a. Grip Polyester Soft: Strong, elastic polyester reinforcing fabric.
3. Top Coating: LiquiTec: Multi-purpose, 100% solids, two-part, fast-cure, polyurea liquid waterproofing membrane having the following characteristics:
   a. Elongation, ASTM D 412: 433%
   b. Tensile Strength, ASTM D 412: 2300 psi
   c. Tear Resistance, ASTM D 624: 449 lbs./in
   d. Low Temperature Flexibility, ASTM D522: -60°F (-51.1°C)
   e. Hardness, ASTM D2240 (Shore A): 80
   f. Dynamic Impact Resistance (Fully Reinforced System): ASTM D5635, 37 joules
   g. Static Puncture Resistance (Fully Reinforced System): ASTM D5602, 20 kg
   h. Tensile-Tear Resistance (Fully Reinforced System): ASTM D4073, 274 lbf
   i. Tensile Load Strain (Fully Reinforced System): ASTM D5147, 193 lbf/in.
   j. Toughness (Fully Reinforced System): ASTM D5147, 46 in.-lbf/in²
   k. Dry Film Thickness (Fully Reinforced System), 80-88 mils
   l. Lap Shear Strength (MB Seam with coating): ASTM D7379, 231 lbf/in.
   m. Density @ 77° F (25° C, ASTM D 2939) 9.6 lb./gal (1.2 g/m3)
   n. Flash Point: ASTM D 93, 110°F min. (43°C)
   o. VOC: 0 g/l
   p. Microbial Resistance: ASTM G21, No Microbial Growth
   q. Water Leakage Resistance: ASTM D7281, Pass
   r. Initial Reflectance: 0.84
   s. Initial Emittance: 0.88
   t. Initial SRI: 105

2.3 ACCESSORIES:

A. Urethane Sealant Hybrid - Tuff-Stuff MS: One part, non-sag sealant as approved and furnished by the membrane manufacturer for moving joints.
   1. Tensile Strength, ASTM D 412: 250 psi
   2. Elongation, ASTM D 412: 450%
   3. Hardness, Shore A ASTM C 920: 35
   4. Adhesion-in-Peel, ASTM C 92: 30 pli

2.4 EDGE TREATMENT AND ROOF PENETRATION FLASHINGS

A. Pitch pans, Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints should be welded/soldered watertight. See details for design.

B. Drain Flashings should be 4lb (1.8kg) sheet lead formed and rolled.

C. Plumbing stacks should be 4lb (1.8kg) sheet lead formed and rolled.

D. Liquid Flashing - Tuff-Flash LO: An asphaltic-polyurethane, low odor, liquid flashing material designed for specialized details unable to be waterproofed with typical modified membrane flashings.
   1. Tensile Strength, ASTM D 412: 400 psi
   2. Elongation, ASTM D 412: 300%
   3. Density @77 deg. F 8.5 lb/gal typical

E. Fabricated Flashings: Fabricated flashings and trim are specified in Section 07 62 00 – Sheet Metal Flashing and Trim.
   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.

PART 3 – EXECUTION

3.1 EXAMINATION

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

B. Inspect and approve the deck condition, slopes and fastener backing if applicable, parapet walls, expansion joints, roof drains, stack vents, vent outlets, nailers and surfaces and elements.

C. Verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.

D. If substrate preparation and other conditions are the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. General: Clean surfaces thoroughly prior to installation.
   1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   2. Fill substrate surface voids that are greater than 1/4 inch wide with an acceptable fill material.
   3. Roof surface to receive roofing system shall be smooth, clean, free from loose gravel, dirt and debris, dry and structurally sound.
   4. Wherever necessary, all surfaces to receive roofing materials shall be power broom and vacuumed to remove debris and loose matter prior to starting work.
   5. Do not apply roofing during inclement weather. Do not apply roofing membrane to damp, frozen, dirty, or dusty surfaces.
   6. Fasteners and plates for fastening components mechanically to the substrate shall provide a minimum pull-out capacity of 300 lbs. (136 k) per fastener. Base or ply sheets attached with cap nails require a minimum pullout capacity of 40 lb. per nail.
   7. Prime decks where required, in accordance with requirements and recommendations of the primer and deck manufacturer.

B. Metal Deck: Metal deck shall be installed as specified in Section
   1. Fastening of the deck should comply with the anticipated live and dead loads pertaining to the building as well as applicable Code.
   2. Steel decks shall be minimum 22-gauge factory galvanized or zinc alloy coated for protection against corrosion.
   3. Suitable insulation shall be mechanically attached as recommended by the insulation manufacturer.
   4. Decks shall comply with the gauge and span requirements in the current Factory Mutual FM Approval Guide and be installed in accordance with Loss Prevention Data Sheet 1-28 or specific FM approval.
   5. When re-roofing over steel decks, surface corrosion shall be removed, and repairs to severely corroded areas made. Loose or inadequately secured decking shall be fastened, and irreparable or otherwise defective decking shall be replaced.

3.3 INSTALLATION - GENERAL

A. Install modified bitumen membranes and flashings in accordance with manufacturer's instructions and with the recommendations provided by the National Roofing Contractors Association's Roofing & Waterproofing Manual, the Asphalt Roofing Manufacturers Association, and applicable codes.

B. General: Avoid installation of modified bitumen membranes at temperatures lower than 40-45 degrees F. When work at such temperatures unavoidable use the following precautions:
   1. Take extra care during cold weather installation and when ambient temperatures are affected by wind or humidity, to ensure adequate bonding is achieved between the surfaces to be joined. Use extra care at material seam welds and where adhesion of the applied product to the appropriately prepared substrate as the substrate can be affected by such temperature constraints as well.
   2. Unrolling of cold materials, under low ambient conditions must be avoided to prevent the likelihood of unnecessary stress cracking. Rolls must be at least 40 degrees F at the time of application. If the membrane roll becomes stiff or difficult to install, it must be replaced with roll from a heated storage area.

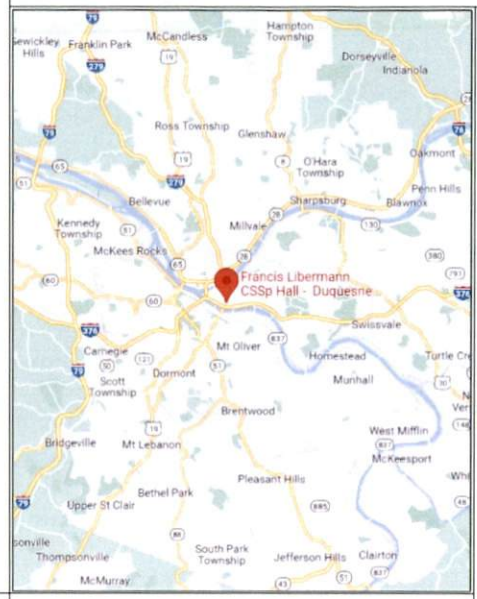
C. Commence installation of the roofing system at the lowest point of the roof (or roof area), working up the slope toward the highest point. Lap sheets shingle fashion so as to constantly shed water

3.4 INSTALLATION COLD APPLIED ROOF SYSTEM

A. Base Ply: Install base sheet in Interply Adhesive: applied at the rate required by the manufacturer. Shingle base sheets uniformly to achieve one ply throughout over the prepared substrate. Shingle in proper direction to shed water on each large area of roofing.
   1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
   2. Solidly bond to the substrate and adjacent ply with specified cold adhesive at the rate of 2 to 2-1/2 gallons per 100 square feet.
   3. Roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Use care to eliminate air entrapment under the membrane.
   4. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
   5. Extend plies 2 inches beyond top edges of cants at wall and projection bases.
   6. Install base flashing ply to all perimeter and projection details.
   7. Allow the one ply of base sheet to cure at least 30 minutes before installing the modified membrane. However, the modified membrane must be installed the same day as the base plies.

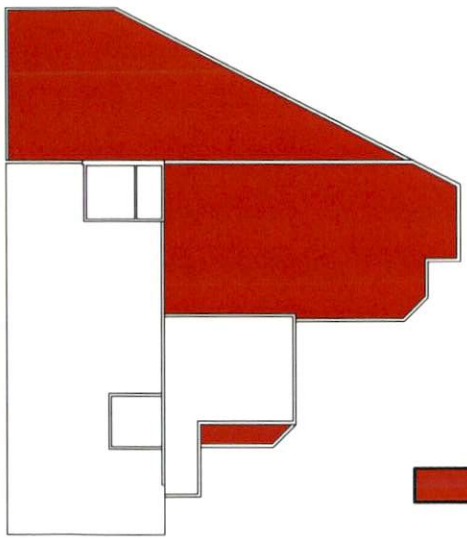
B. Modified Cap Ply(s): Allow plies to relax before installing. Install in interplay adhesive applied at the rate required by the manufacturer. Shingle sheets uniformly over the prepared substrate to achieve the number of plys specified. Shingle in proper direction to shed water on each large area of roofing.
   1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
   2. Solidly bond to the base layers with specified cold adhesive at the rate of 2 to 2-1/2 gallons per 100 square feet.
   3. Roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Care should be taken to eliminate air entrapment under the membrane.
   4. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Hold adhesive from all side and end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
   5. Allow cold adhesive to set for 5 to 10 minutes before installing the top layer of modified membrane.
   6. Heat-weld all side and end laps.

LOCATION MAP



DRAWING INDEX

SITE MAP



AREA IN PROJECT SCOPE

DUQUESNE UNIVERSITY

PRE-BID DATE:
THURSDAY
OCTOBER 20TH 2022
1:00 PM

BID DUE DATE:
THURSDAY
NOVEMBER 3RD 2022
11:00 AM

DUQUESNE UNIVERSITY
LIBERMANN HALL
2023 ROOF RENOVATION PROJECT

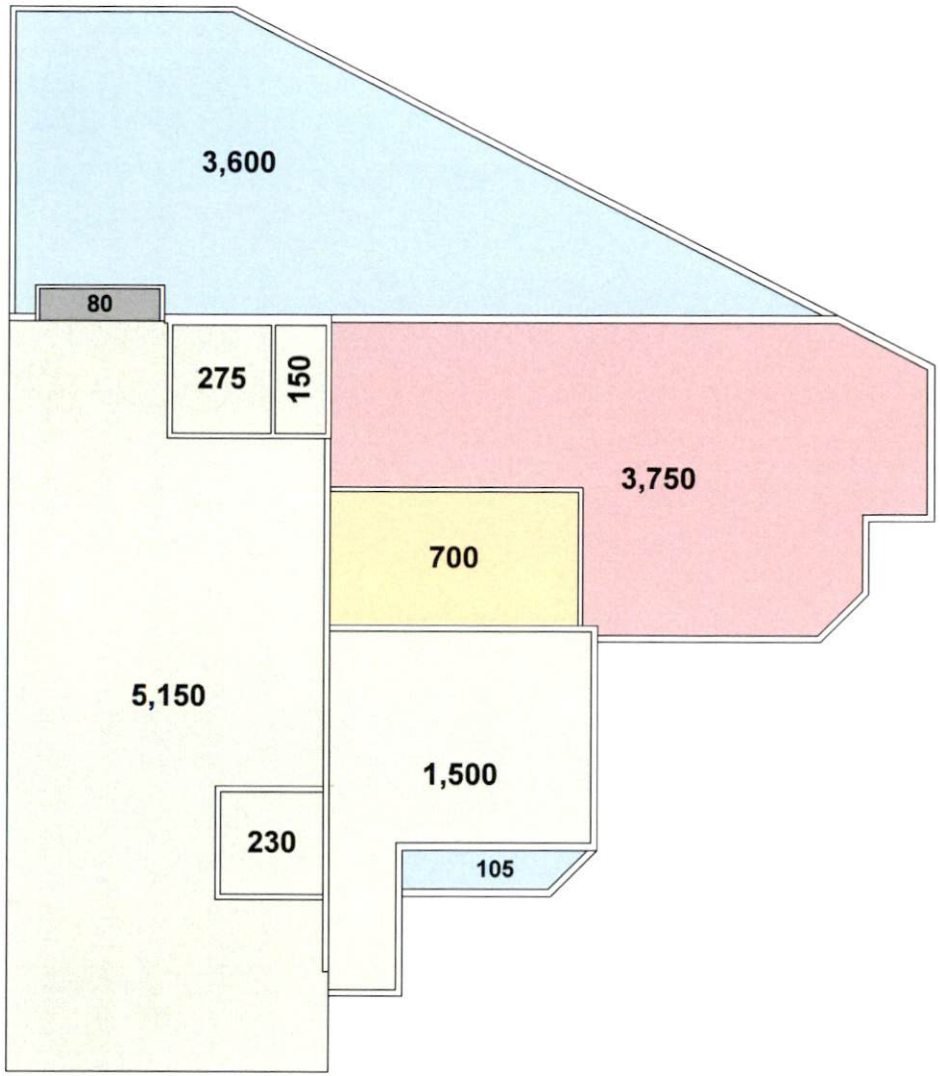
GARLAND
The Garland Company
3800 E. 91st Street
Cleveland, OH 44105

NO.	DATE	REVISION DESCRIP.
0	9/27/22	INITIAL ISSUE
1	10/3/22	REV 1

DUQUESNE UNIVERSITY
LIBERMANN HALL
600 FORBES AVENUE
PITTSBURGH, PA 15219

SHEET TITLE:
COVER PAGE

SHEET NO.
A-1



Areas displayed in units of sqft

ROOF SYSTEM TYPE

- EPDM
- GRAY MINERAL MODIFIED BITUMEN
- PVC
- BLACK MINERAL MODIFIED BITUMEN
- BALLASTED EPDM

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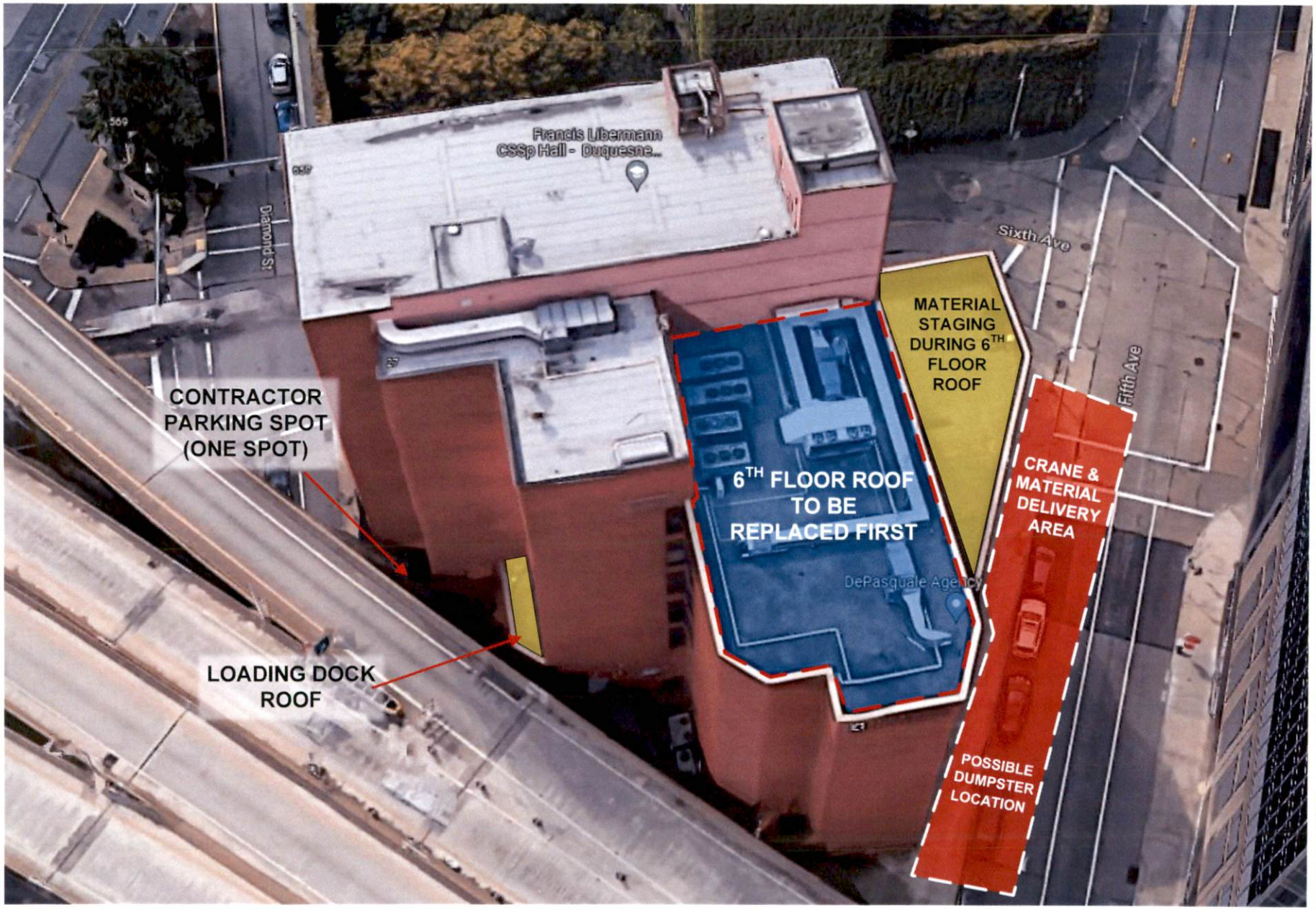
SHEET TITLE:
ROOF SYSTEM TYPES AND AREAS

SHEET NO.
A-2



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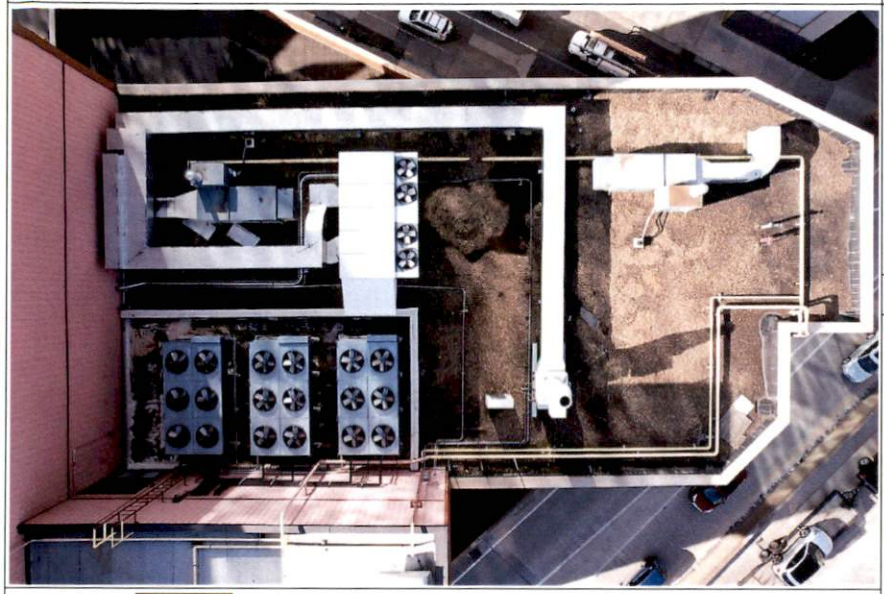
SHEET TITLE:

PHASING AND STAGING PLAN

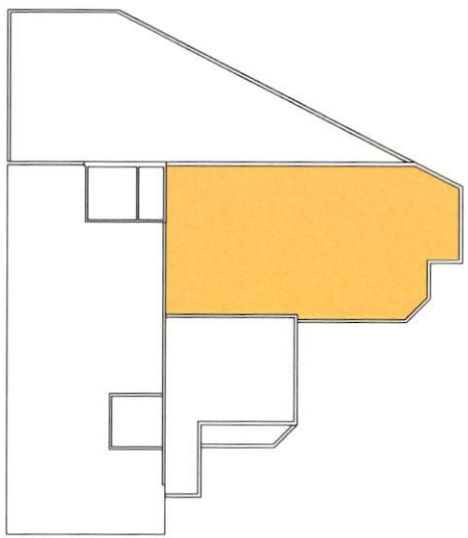
SHEET NO.

A-3

ROOF SECTION PHOTO(S)



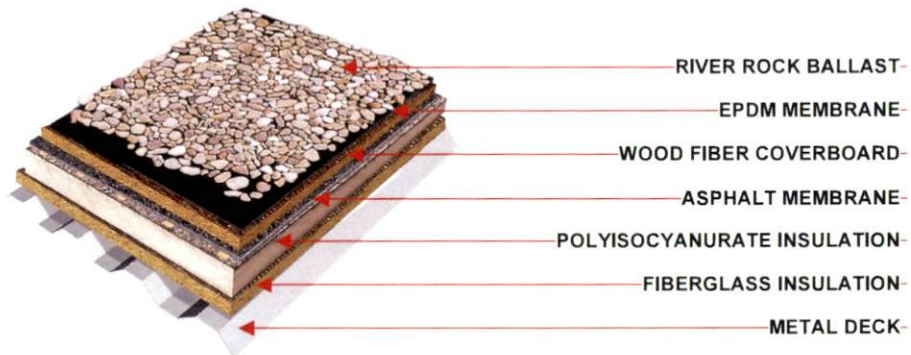
SITE MAP



ROOF SECTION INFORMATION

Roof Section Name: 6TH Floor Roof
Square Footage: 4,450
Year Installed/Age: 1987 (PVC Newer)
System Type: Ballasted EPDM
Slope: Dead Level
Height: Six Stories
Drainage System: Internal Roof Drains
Accessibility: Elevator / Walkout
Inspection Rating: Poor
Notes: **PVC Membrane partially covers a section of the roof

EXISTING ROOF SYSTEM ILLUSTRATION



CORE ANALYSIS

- METAL DECK (FLAT)
- 1-½" FIBERGLASS INSULATION
- 1-½" POLYISOCYANURATE INSULATION
- UNREINFORCED ASPHALT MEMBRANE
- ½" WOOD FIBER COVERBOARD (WET)
- 0.045" UNREINFORCED EPDM MEMBRANE
- RIVER ROCK BALLAST
- **PVC MEMBRANE

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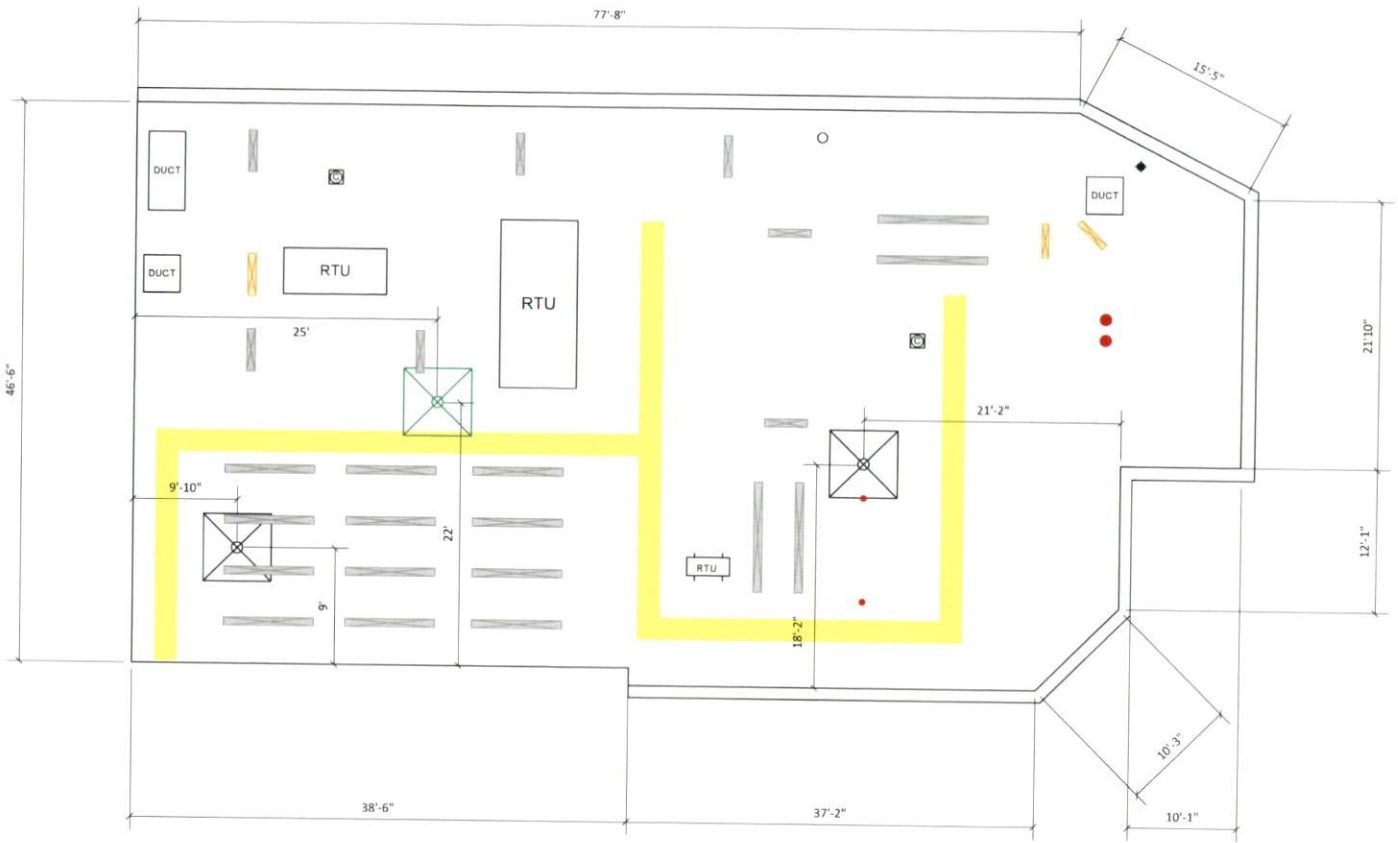
SHEET TITLE:
6TH FLOOR ROOF CONDITION SUMMARY

SHEET NO.
B-1



GENERAL NOTES

1.) IT IS THE ROOFING CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH ALL DETAILS INVOLVED IN THE ROOFING CONTRACT.
2.) ALL DRAWINGS ARE GRAPHIC REPRESENTATION OF APPROXIMATE LOCATIONS OF EXISTING AND NEW MATERIALS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF WORK.
3.) THE ROOFING CONTRACTOR TO PROTECT ALL ADJACENT SURFACES NOT SCHEDULED FOR WORK AND TO REPAIR ANY DAMAGED AREAS AS A RESULT OF CONTRACTOR WORK AT NO ADDITIONAL COST TO THE OWNER.
4.) THE ROOFING CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN WATER TIGHTNESS AND PROVIDE PROTECTION AT ANY/ALL OPENINGS IN THE ROOF LEFT AT THE END OF EACH CONSTRUCTION DAY.
5.) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS,CONDITIONS AND QUANTITIES.

DRAWING LEGEND

	WALKWAY		NEW INTERNAL ROOF DRAIN
	CONDUIT PORTAL		EXISTING INTERNAL ROOF DRAIN
	VENT STACK	RTU	ROOF TOP UNIT
	SOIL STACK		PIPE PENETRATION
	WOOD BLOCK SUPPORT		EQUIPMENT SUPPORT

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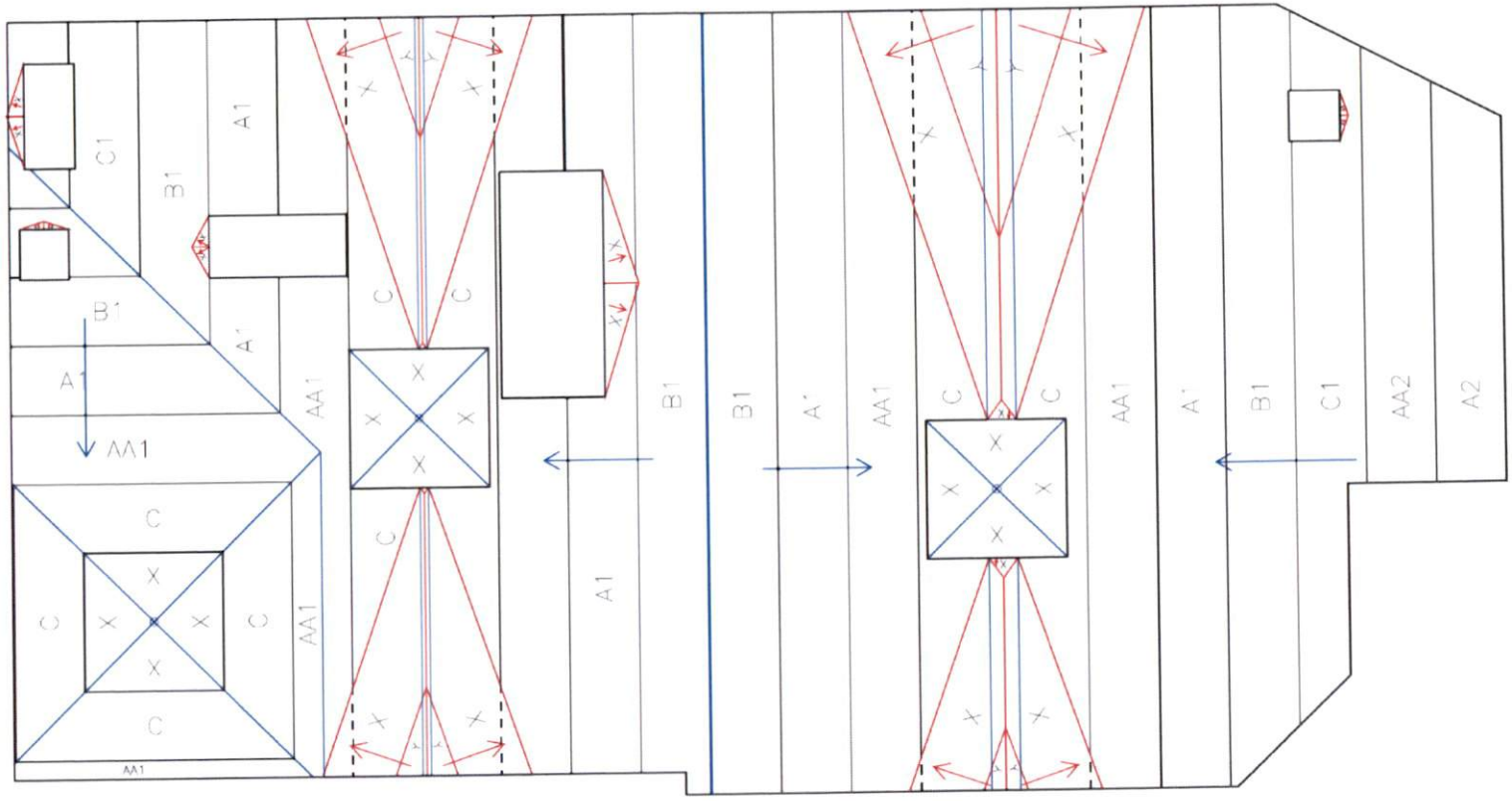
SHEET TITLE:
6TH FLOOR ROOF PLAN

SHEET NO.
B-2



TAPERED SYSTEM PROPERTIES

TAPERED PANELS: TAPERED VPG 20 PSI
FILL PANELS: VPG-FLAT 20 PSI
CRICKET PANELS: TAPERED VPG 20 PSI
FILL PANELS: VPG-FLAT 20 PSI

TAPERED SPECS	CRICKET SPECS
MIN. THICKNESS: 0.5"	MIN. THICKNESS: 0.5"
MAX. THICKNESS: 5.5"	MAX. THICKNESS: 2.5"
SLOPE (in/ft): 1/8"	SLOPE (in/ft): 1/4"

R-VALUE PER INCH: 5.7
MINIMUM R-VALUE: 11.4
AVERAGE R-VALUE: 17.30

TOTAL SQUARES OF APPLICATION: 67

TAPER ROOF SQ/FT:	3,467	FLAT ROOF SQ/FT:	N/A
TAPER SQUARES:	35	FLAT SQUARES:	N/A
CRICKET SQUARES:	6	TOTAL BUNDLES:	17.21
FILL SQUARES:	26	TOTAL STACKS:	0
BASE LAYER:	0	TOTAL TRUCKS:	0.36

1. DESIGN IS FOR 2.0" MIN.
2. DESIGN IS FOR 1/8" SLOPE & 1/4" CRICKETS.
3. DESIGN INCLUDES 3 8'X8' HINGED TARGET SUMPS (0.5" - 1.5")
4. TOTAL BOARD FEET OF POLYISO INCLUDED IN DESIGN: 12,892

VIKING Products Group

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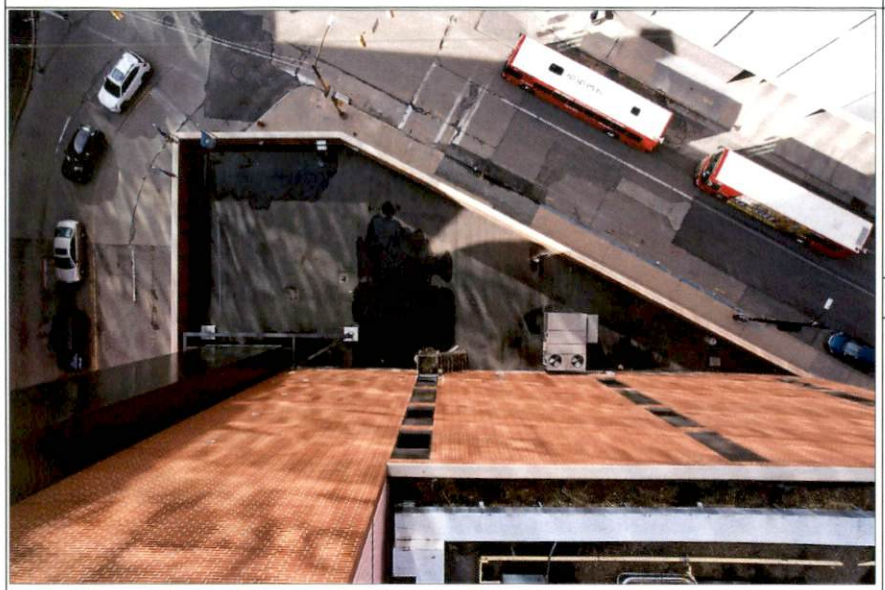
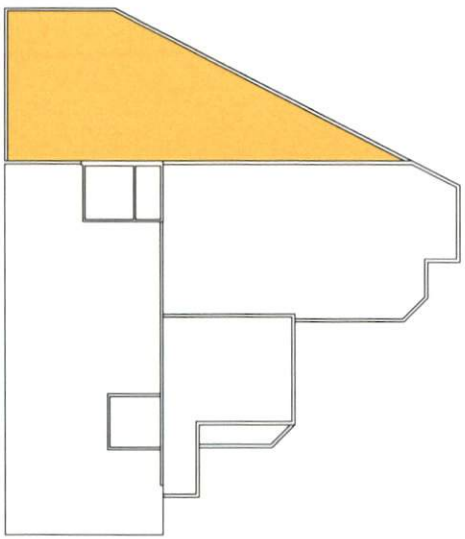
SHEET TITLE:
6TH FLOOR ROOF TAPER PLAN

SHEET NO.
B-3

ROOF SECTION PHOTO(S)



SITE MAP



ROOF SECTION INFORMATION

Roof Section Name:	Lobby Roof
Square Footage:	3,600
Year Installed/Age:	20+ Years Old
System Type:	Mineral Modified Membrane
Slope:	Dead Level
Height:	Two Stories
Drainage System:	Internal Roof Drains
Accessibility:	Walkout from stairs / Ladder Needed
Inspection Rating:	Fair
Notes:	

EXISTING ROOF SYSTEM ILLUSTRATION

CORE ANALYSIS

- METAL DECK (FLAT)
- MECHANICALLY ATTACHED 2" POLYISOCYANURATE INSULATION
- ½" WOOD FIBER COVERBOARD
- MINERAL SURFACED MODIFIED BITUMEN MEMBRANE SYSTEM

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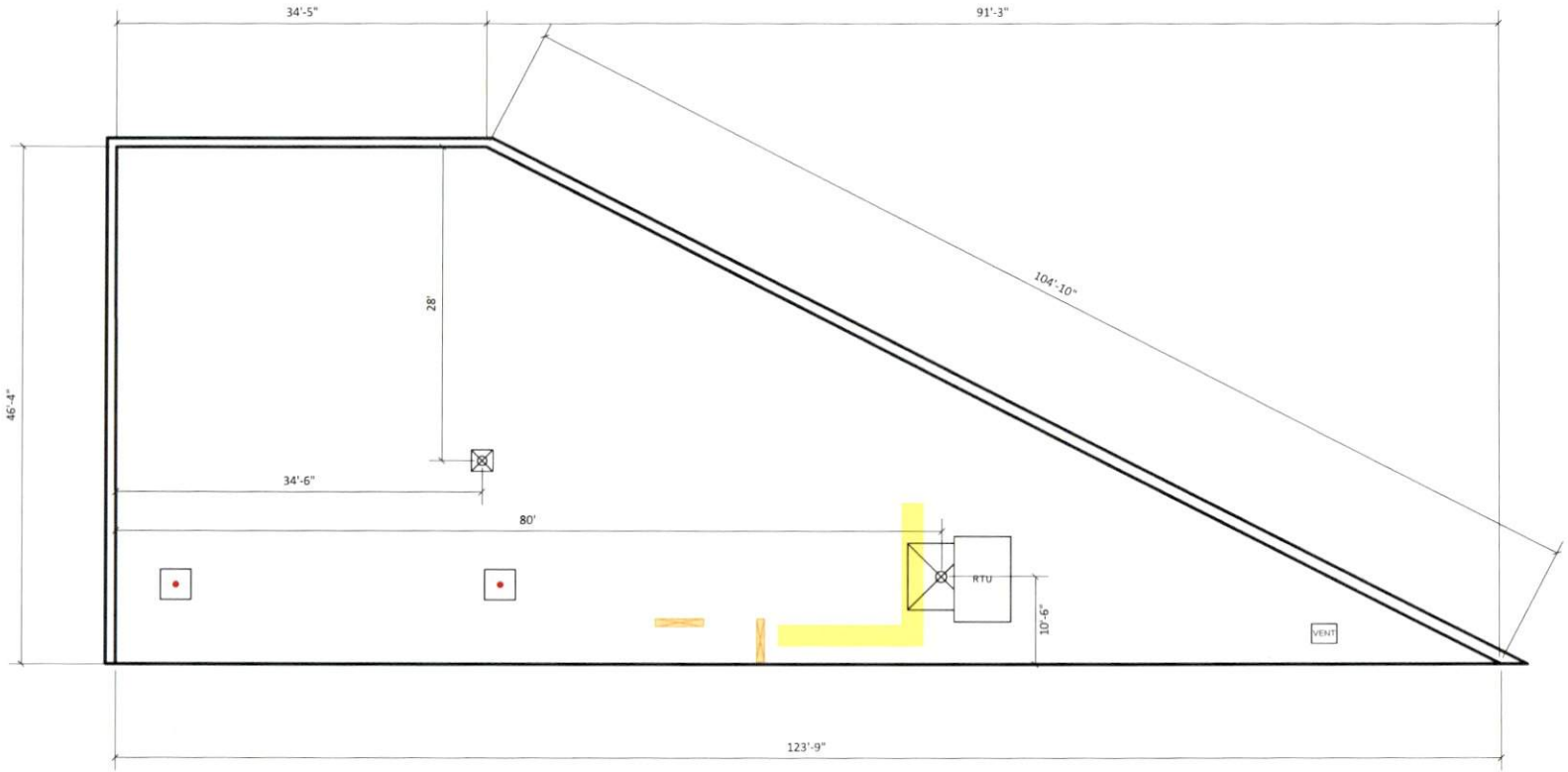
SHEET TITLE:

LOBBY ROOF CONDITION SUMMARY

SHEET NO.

C-1



DRAWING LEGEND

- INTERNAL ROOF DRAIN
- RTU — ROOF TOP UNIT
- PIPE PENETRATION
- WOOD BLOCK SUPPORT
- WALKWAY

GENERAL NOTES

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5.) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS,CONDITIONS AND QUANTITIES.

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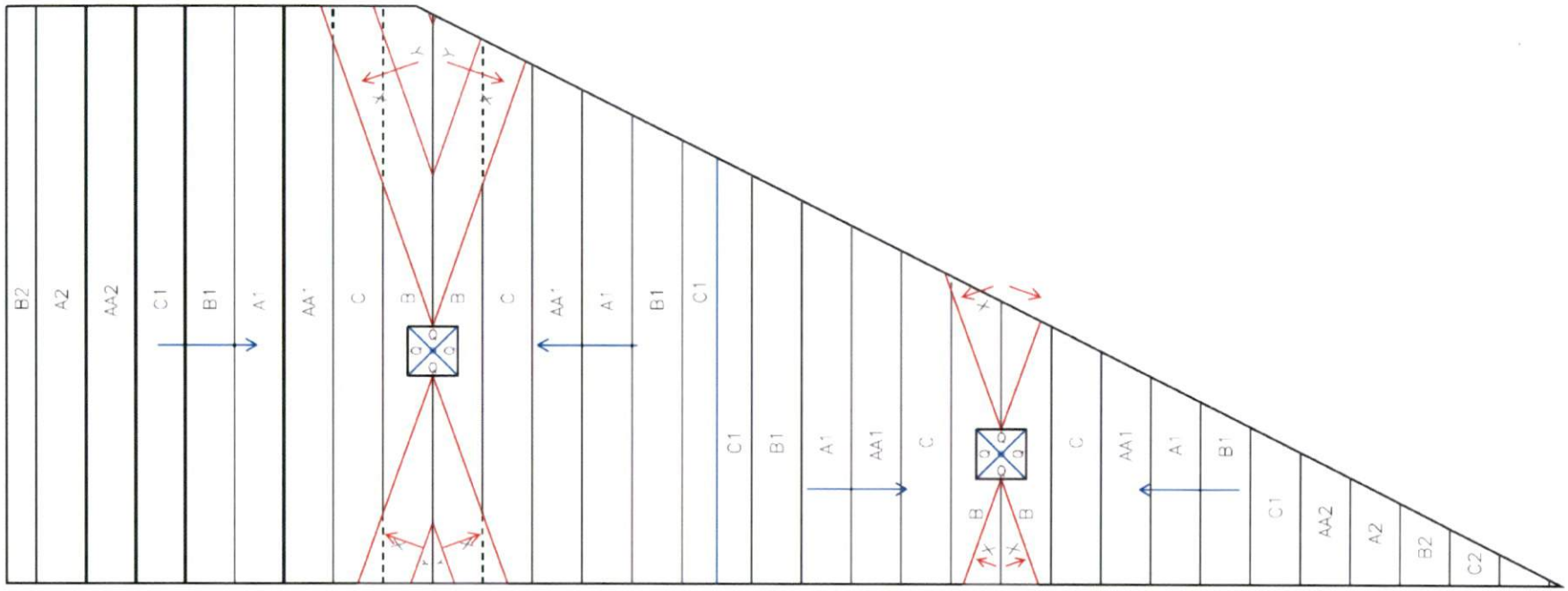
SHEET TITLE:
LOBBY ROOF PLAN

SHEET NO.
C-2



TAPERED SYSTEM PROPERTIES

TAPERED PANELS: TAPERED VPG 20 PSI
FILL PANELS: VPG-FLAT 20 PSI
CRICKET PANELS: TAPERED VPG 20 PSI
FILL PANELS: VPG-FLAT 20 PSI

TAPERED SPECS	CRICKET SPECS
MIN. THICKNESS: 4.2"	MIN. THICKNESS: 0.5"
MAX. THICKNESS: 10.8"	MAX. THICKNESS: 2.5"
SLOPE (in/ft): 1/8"	SLOPE (in/ft): 1/4"

R-VALUE PER INCH: 5.7
MINIMUM R-VALUE: 30
AVERAGE R-VALUE: 40.70

TOTAL SQUARES OF APPLICATION: 110

TAPER ROOF SQ/FT:	3,696	FLAT ROOF SQ/FT:	N/A
TAPER SQUARES:	37	FLAT SQUARES:	N/A
CRICKET SQUARES:	4	TOTAL BUNDLES:	38.74
FILL SQUARES:	32	TOTAL STACKS:	0
BASE LAYER:	37	TOTAL TRUCKS:	0.81

1. DESIGN IS FOR 1/8" SLOPE & 1/4" CRICKETS.
2. DESIGN INCLUDES A 3.7" BASE LAYER & A 1.5" TAPER START TO ACHIEVE MIN R 30
3. DESIGN INCLUDES 2 4'X4' FACTORY PRE-CUT SUMPS (0.5" - 1.5") WITH A 3.7" BASE LAYER
4. TOTAL BOARD FEET OF POLYISO INCLUDED IN DESIGN: 28,260

VIKING Products Group

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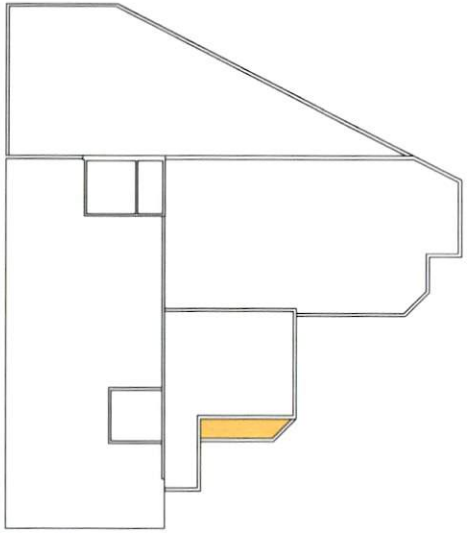
PITTSBURGH, PA 15219

SHEET TITLE:
LOBBY ROOF TAPER PLAN

SHEET NO.
C-3

ROOF SECTION PHOTO(S)

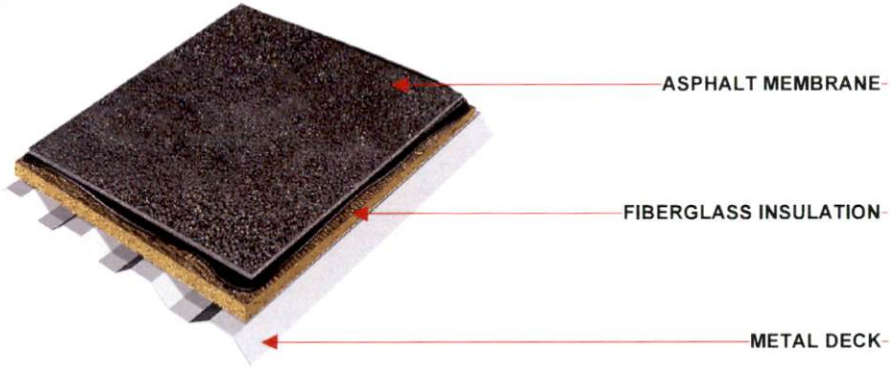
SITE MAP



ROOF SECTION INFORMATION

Roof Section Name:	Loading Dock Roof
Square Footage:	105
Year Installed/Age:	Unknown
System Type:	Asphalt Membrane
Slope:	Dead Level
Height:	Two Stories
Drainage System:	Internal Roof Drain
Accessibility:	Two Story Ladder Needed
Inspection Rating:	Fair
Notes:	

EXISTING ROOF SYSTEM ILLUSTRATION



CORE ANALYSIS

- METAL DECK (FLAT)
- 1-½" FIBERGLASS INSUALTION
- NON-REINFORCED ASPHALT MEMBRANE

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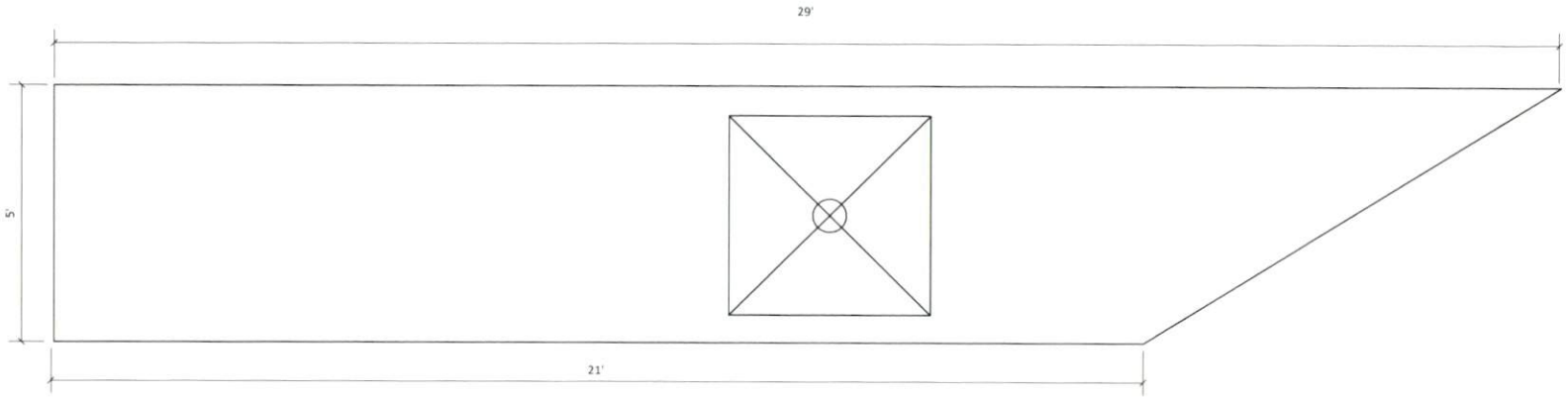
SHEET TITLE:
LOADING DOCK ROOF CONDITION SUMMARY

SHEET NO.
D-1



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LIBERMANN HALL
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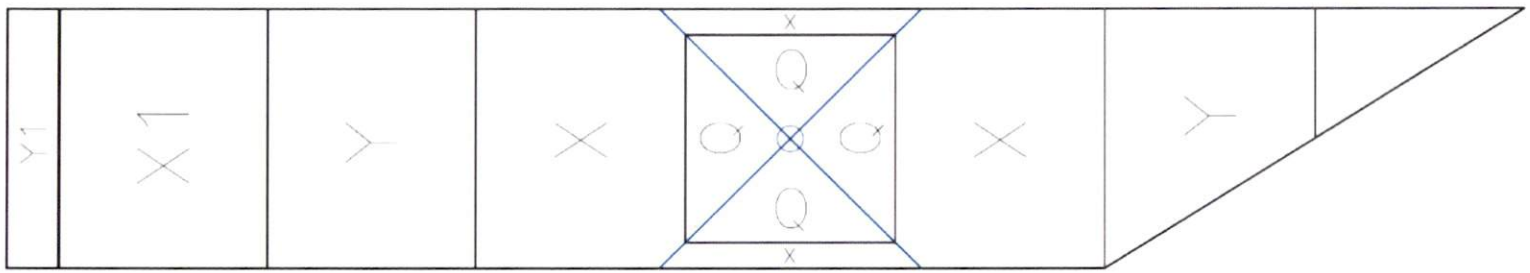
SHEET TITLE:

LOADING DOCK ROOF PLAN

SHEET NO.

D-2



TAPERED SYSTEM PROPERTIES

TAPERED PANELS: TAPERED VPG 20 PSI
FILL PANELS: VPG-FLAT 20 PSI
CRICKET PANELS: TAPERED VPG 20 PSI
FILL PANELS: VPG-FLAT 20 PSI

TAPERED SPECS	CRICKET SPECS
MIN. THICKNESS: 0.5"	MIN. THICKNESS: N/A
MAX. THICKNESS: 9.0"	MAX. THICKNESS: N/A
SLOPE (in/ft): 1/4"	SLOPE (in/ft): N/A

R-VALUE PER INCH: 5.7
MINIMUM R-VALUE: 2.9
AVERAGE R-VALUE: 44.80

TOTAL SQUARES OF APPLICATION: 3

TAPER ROOF SQ/FT:	125	FLAT ROOF SQ/FT:	N/A
TAPER SQUARES:	1	FLAT SQUARES:	N/A
CRICKET SQUARES:	0	TOTAL BUNDLES:	1.19
FILL SQUARES:	0	TOTAL STACKS:	0
BASE LAYER:	2	TOTAL TRUCKS:	0.02

1. DESIGN IS FOR 0.5" MIN.
2. DESIGN IS FOR 1/4" TAPER SLOPE.
3. DESIGN INCLUDES A 5.2" BASE LAYER TO ACHIEVE MIN R-30.
4. DESIGN INCLUDES (1) 4'X4' FACTORY PRE-CUT SUMP
5. TOTAL BOARD FEET OF POLYISO INCLUDED IN DESIGN: 902

VIKING Products Group

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SHEET TITLE:
LOADING DOCK ROOF TAPER PLAN

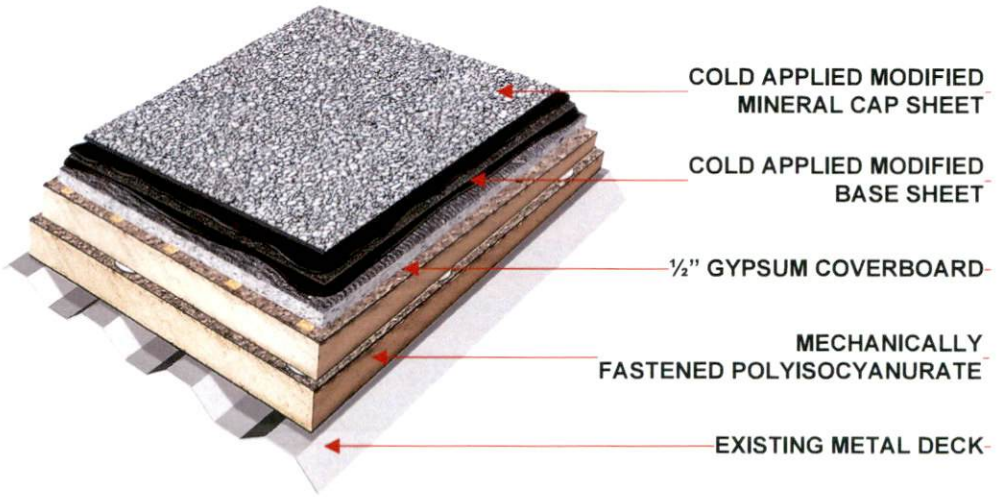
SHEET NO.
D-3

LOBBY & LOADING DOCK ROOF: MODIFIED BITUMEN ROOF REPLACEMENT

Scope of Work:

A) Remove and discard existing roof membrane, insulation, and flashings to the deck.
B) Replace all internal roof drains with new cast iron drain bowl assemblies.
    1) Camera scope to grade before and after replacement.
    2) Complete all necessary plaster repair and painting.
C) Attach polyisocyanurate insulation as shown on Drawings
    1) 1/8" Tapered
    2) R-30 Minimum (Outside of Sump)
    3) Install 8' X 8' minimum tapered sumps at all roof drains.
    4) Crickets shall be installed to divert runoff around all curbs.
D) Adhere cover board.
E) Install modified bitumen base sheet.
F) Install modified bitumen cap sheet in cold adhesive.
G) Install 2-ply modified bitumen flashings.
    1) Three-course all vertical cap flashing seams.
H) Apply reinforced fluid-applied 8'X8' target around internal drains and walkways.
I) Install new counter flashings and coping.
    1) High-temp underlayment to be installed under coping cap.
J) Manufacturer's warranty will be provided upon completion.

ROOF SYSTEM ILLUSTRATION

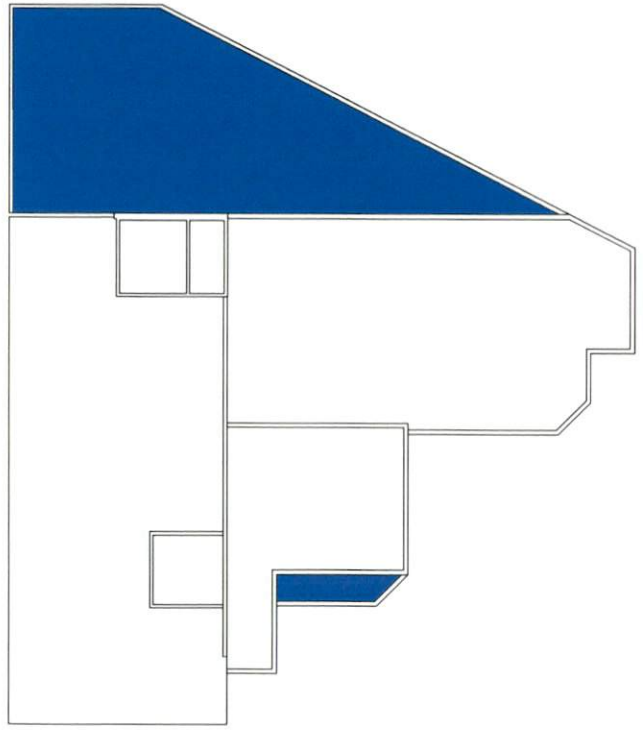


ADD ALTERNATE BIDS

Clad Parapet Walls:

A) Install new watertight wall panel system and trim.

SITE MAP



The Garland Company
3800 E. 91st Street
Cleveland, OH 44105

NO.	DATE	REVISION DESCRIP.
0	9/27/22	INITIAL ISSUE
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DUQUESNE UNIVERSITY
LIBERMANN HALL
600 FORBES AVENUE
PITTSBURGH, PA 15219

SHEET TITLE:
LOBBY & LOADING DOCK ROOF REPLACEMENT SCOPE OF WORK

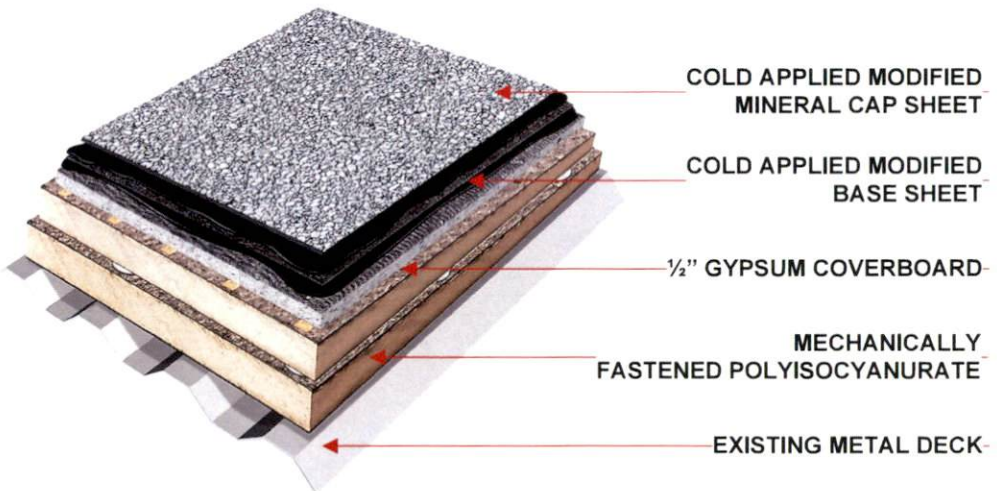
SHEET NO.
E-1

6TH FLOOR ROOF: MODIFIED BITUMEN ROOF REPLACEMENT

Scope of Work:

A) Remove and discard existing roof membrane, insulation, and flashings to the deck.
B) Replace all internal roof drains with new cast iron drain bowl assemblies.
    1) Camera scope to grade before and after replacement.
    2) Complete all necessary plaster repair and painting.
C) Attach polyisocyanurate insulation
    1) 1/8" Tapered
    2) Install 8' X 8' minimum tapered sumps (.5" - 1.5") over .25" DensDeck at all roof drains.
    3) Crickets shall be installed to divert runoff around all curbs.
D) Adhere cover board.
E) Install modified bitumen base sheet.
F) Install modified bitumen cap sheet in cold adhesive.
G) Install 2-ply modified bitumen flashings.
    1) Three-course all vertical cap flashing seams.
H) Apply reinforced fluid-applied 8'X8' target around internal drains and walkways.
I) Install new counter flashings and coping.
    1) High-temp underlayment to be installed under coping cap.
J) Manufacturer's warranty will be provided upon completion.

ROOF SYSTEM ILLUSTRATION

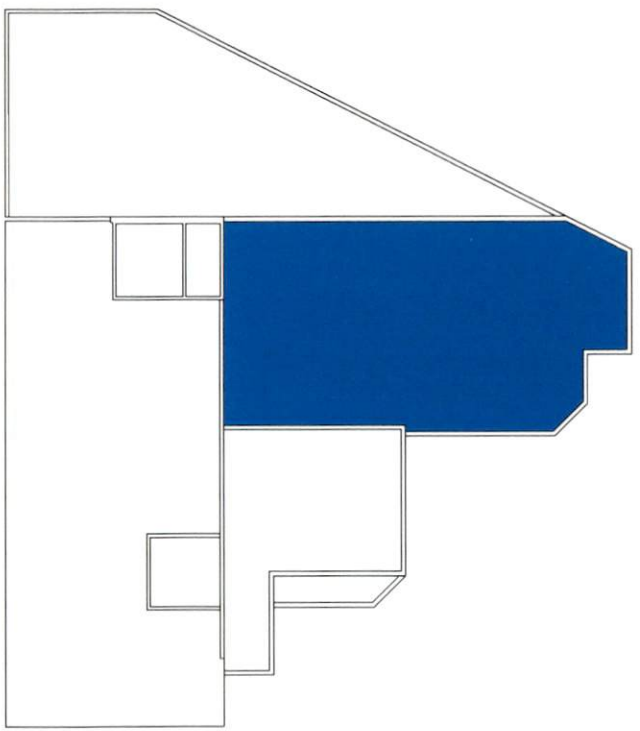


ADD ALTERNATE BIDS

6th Floor Roof Alternate Add:

A) Adhere roof membrane in no odor, zero VOC membrane adhesive.

SITE MAP



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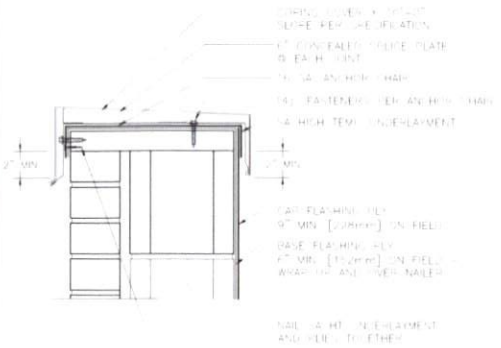
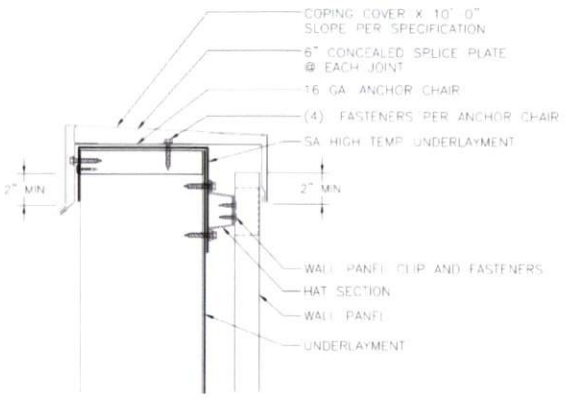
600 FORBES AVENUE
PITTSBURGH, PA 15219

SHEET TITLE:
6th FLOOR ROOF REPLACEMENT SCOPE OF WORK

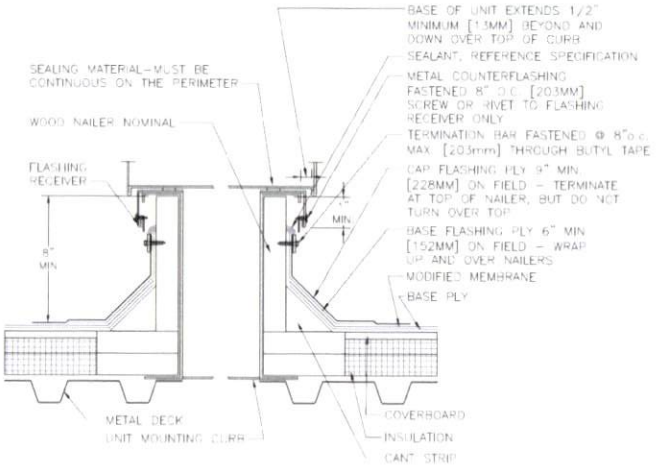
SHEET NO.
E-2



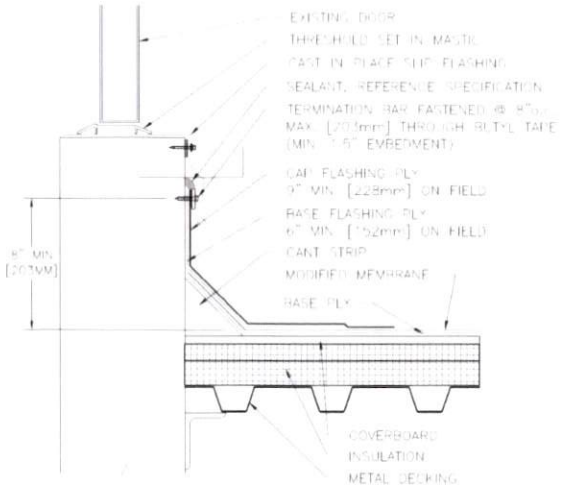
1 **COPING CAP AT MASONRY WALL DETAIL**



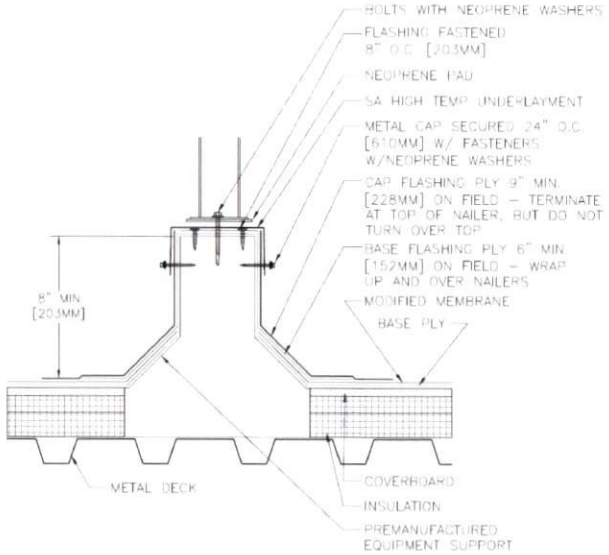
2 **COPING CAP AT WALL PANEL DETAIL**



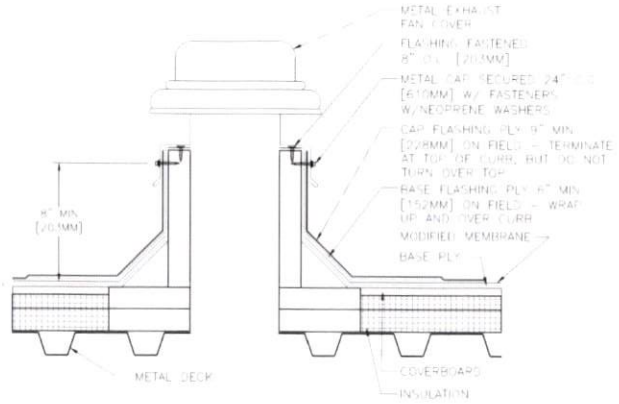
3 **CURB / AIR HANDLING STATION DETAIL**



4 **DOOR THRESHOLD DETAIL**



5 **EQUIPMENT SUPPORT DETAIL**



6 **EXHAUST FAN DETAIL**

The Garland Company
3800 E. 91st Street
Cleveland, OH 44105

NO.	DATE	REVISION DESCRIP.
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1	10/3/22	REV 1

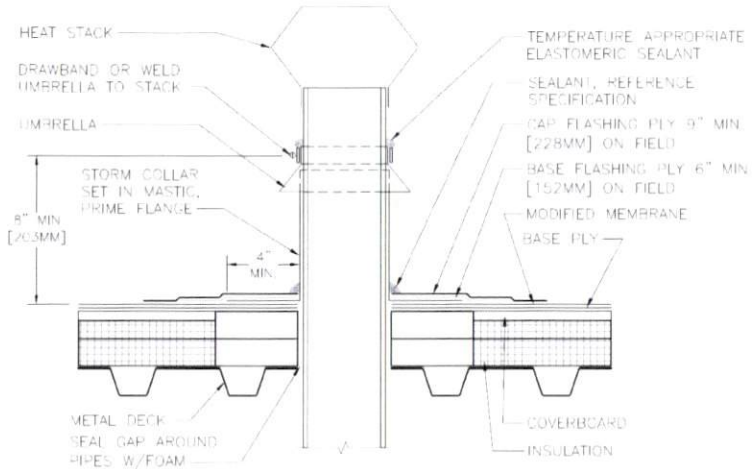
DUQUESNE UNIVERSITY
LIBERMANN HALL
600 FORBES AVENUE
PITTSBURGH, PA 15219

SHEET TITLE:

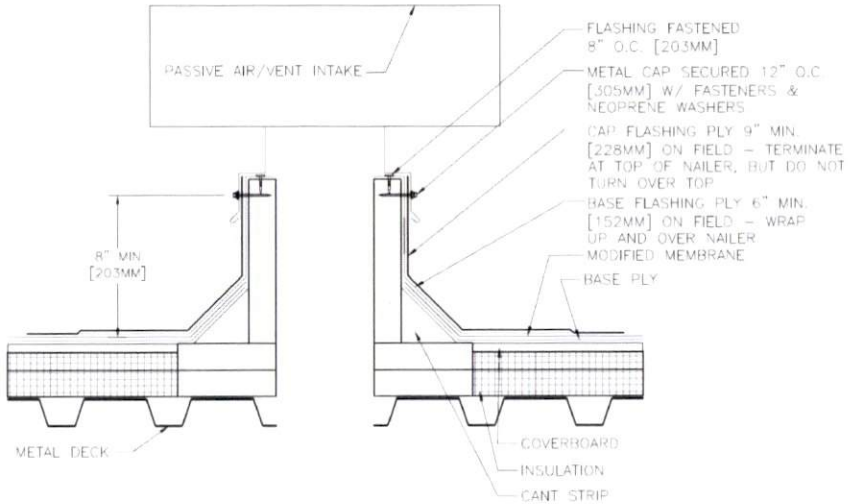
DETAIL DRAWINGS

SHEET NO.

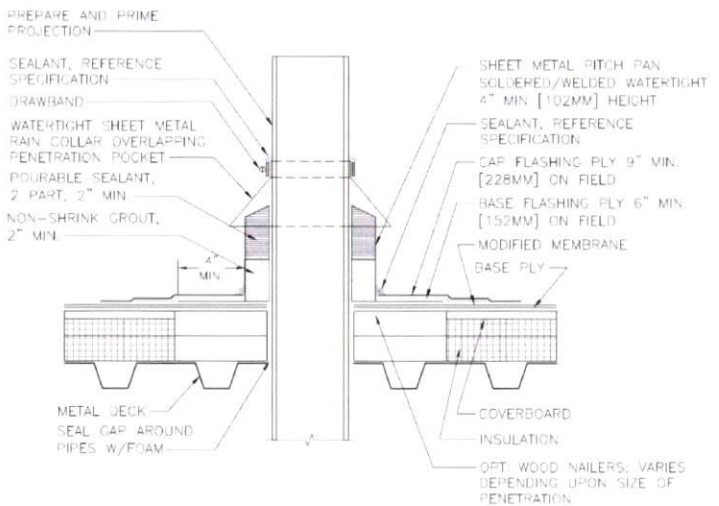
F-1



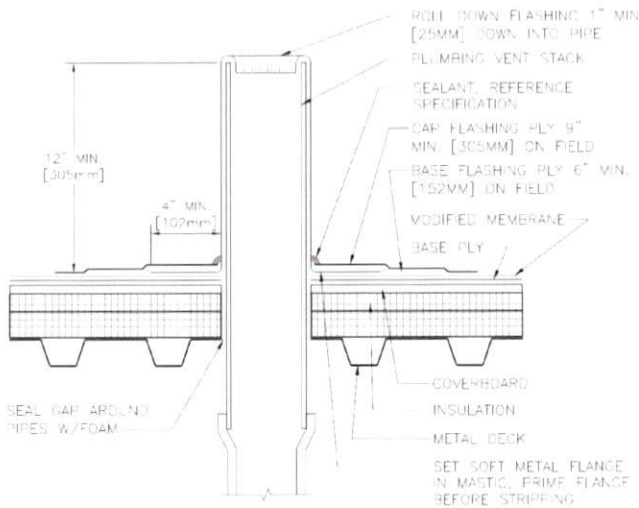
7 **HEAT STACK DETAIL**



8 **PASSIVE AIR VENT / INTAKE DETAIL**



9 **PITCH POCKET (PIPE) DETAIL**



10 **PLUMBING STACK DETAIL**

The Garland Company
3800 E. 91st Street
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NO.	DATE	REVISION DESCRIP.
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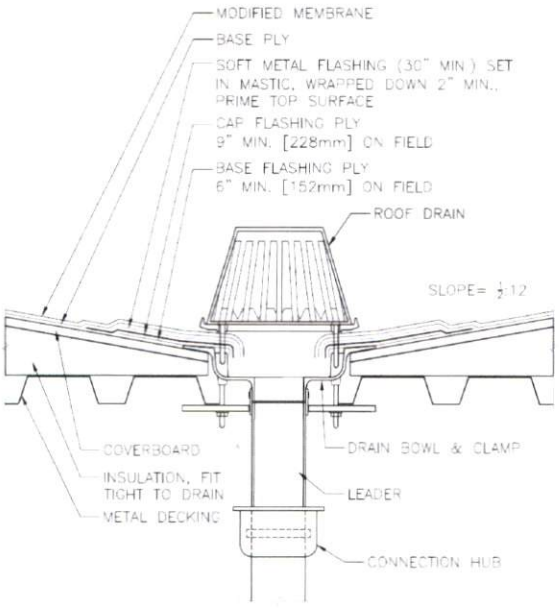
PITTSBURGH, PA 15219

SHEET TITLE:

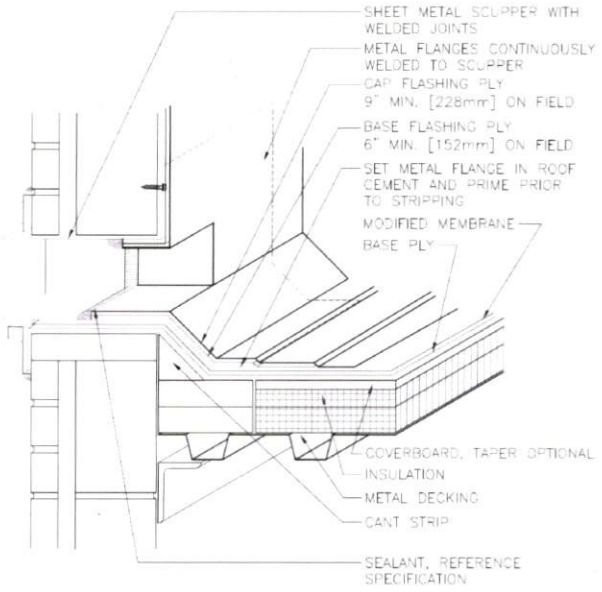
DETAIL DRAWINGS CONT.

SHEET NO.

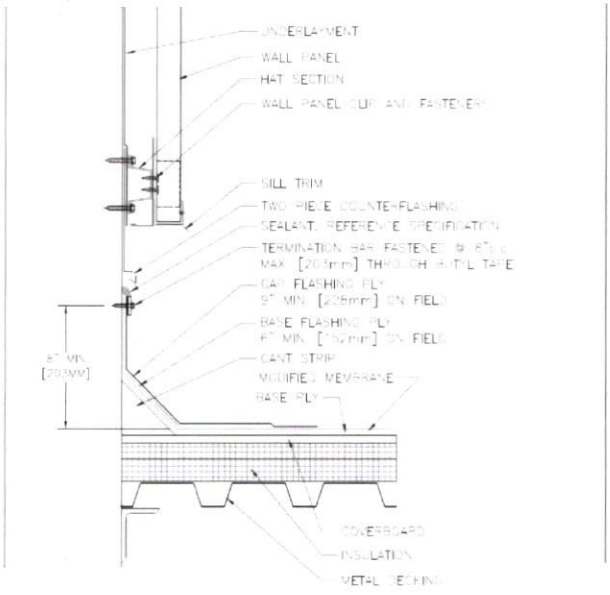
F-2



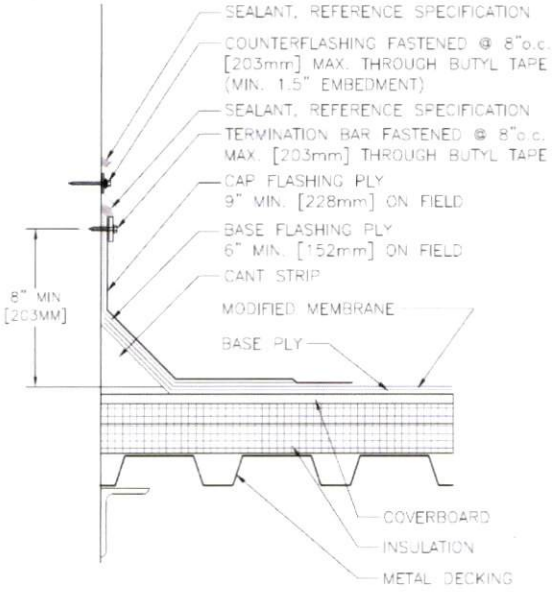
11 **HEAT STACK DETAIL**



12 **PASSIVE AIR VENT / INTAKE DETAIL**



13 **PITCH POCKET (PIPE) DETAIL**



14 **PLUMBING STACK DETAIL**

SHEET NO.
DETAIL DRAWINGS CONT.

SHEET TITLE:
F-3

DUQUESNE UNIVERSITY
LIBERMANN HALL
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NO.	DATE	REVISION DESCRIP.
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The Garland Company
3800 E. 91st Street
Cleveland, OH 44105

Existing Core Information

All bidding contractor are responsible for confirming core samples of individual roof sections

Lobby Roof Section:

- Metal Deck (Flat)
- 2" Polyiso
- ½'' Wood Fiber
- Mineral-surfaced modified membrane

6th Floor Roof Section:

- Metal Deck (Flat)
- 1 ½" Fiberglass
- 1 ½" Polyiso
- Unreinforced Asphalt Membrane
- ½" Wood Fiber
- Ballasted EPDM

Loading Dock Roof Section:

- Metal Deck (Flat)
- 1 ½" Fiberglass
- Unreinforced Asphalt Membrane

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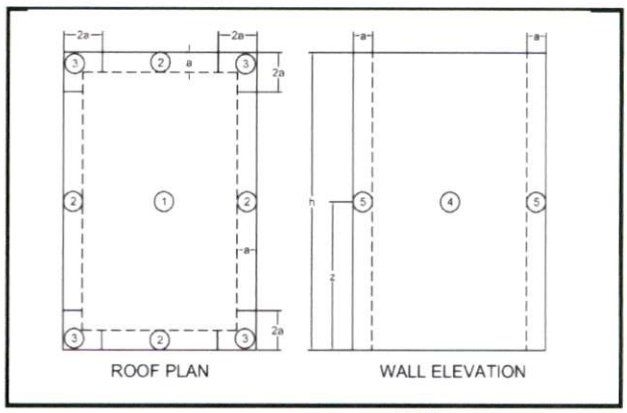
Preliminary Pressure Calculations

Date	9/22/2022
Sales Rep	Sam Roberts
City	Pittsburgh
State	PA

Project Name	Duquesne Libermann
Roof Sections	6th Floor Roof

Design Code	ASCE 7-16 ASD	Base Velocity Pressure	20.7 psf	Gcpi = 0.55	
Exposure Category	C	Roof Type	Tall building h>60		
Risk Cat. , Importance Factor	III , 1	Edge Zones			
Wind Speed	116 mph	Zone 2 width =	4'-8"		
Design Roof Height:	72	Zone 3 width =	4'-8"		
Minimum Building Width	46 ft	Zone 3 length =	9'-3"		
Roof Pitch (X, Y)	0.13 : 12	=			
Roof Angle	0.62 deg	=			
Parapet ≥ 36" Entire Roof	No	=			
		Zone Image a =	4'-8"		
Deck Type	Steel				

Notes:



Zone Pressures (psf)

ZONE 1	ZONE 2	ZONE 3				Wall Perimeter Zone 4	Wall Corner Zone 5
40.5	59.1	77.8				30.1	48.8
FM 1-90	FM 1-120	FM 1-165					

Notes:

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Coping

		Date	9/22/2022
		Sales Rep	Sam Roberts
Project Name	Duquesne Libermann	City	Pittsburgh
Roof Sections	6th Floor Roof	State	PA

ANSI/SPRI ES-1 COPING PRELIMINARY DESIGN

Project Data

Design Wind Speed:	116	mph
Metal Edge Height:	74.00	feet
Exposure Category:	C	
Importance Classification:	III	

Design Wind Pressure — ASCE 7-16 ASD

Basic Velocity Pressure:	20.87	psf
Horizontal Design Pressure:	49.04	psf
Vert. Design Pressure:	78.26	psf

ES-1 Tested Coping System

Product Designation:	ES-C050-16-60-16	
System Description:	R-Mer Edge Snap on Coping 16" x 0.050" Alum w/ 16 GA Anchor Chairs at 60" o.c.	
Maximum Tested Front Load:	86	psf
Max. Vertical Front Dim.:	6	inches
Maximum Tested Top Load:	220	psf
Max. Vertical Width:	16.00	inches
Maximum Tested Rear Load:	129.1	psf
Max. Vertical Rear Dim.:	4.00	inches

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Fascia

		Date	9/22/2022
		Sales Rep	Sam Roberts
Project Name	Duquesne Libermann	City	Pittsburgh
Roof Sections	6th Floor Roof	State	PA

ANSI/SPRI ES-1 FASCIA PRELIMINARY DESIGN

Project Data

Design Wind Speed:	116	mph
Metal Edge Height:	74.00	feet
Exposure Category:	C	
Importance Classification:	III	

Design Wind Pressure — ASCE 7-16 ASD

Basic Velocity Pressure:	20.87	psf
Horizontal Design Pressure:	49.04	psf

ES-1 Fascia Load

Vertical Face Dimension:	7.25	inches
Fascia Design Load:	81.90	psf

ES-1 Tested Fascia System

Product Designation: MEA-RMF-Fascia725-A40

System Description: R-Mer Force Fascia 7.25" x 0.040" Aluminum w/ RMEBF-700 Base Frame

Maximum Tested Load:	470	psf
Max. Vertical Face Dim.:	7.25	inches

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Preliminary Pressure Calculations

Date	9/22/2022
Sales Rep	Sam Roberts
City	Pittsburgh
State	PA

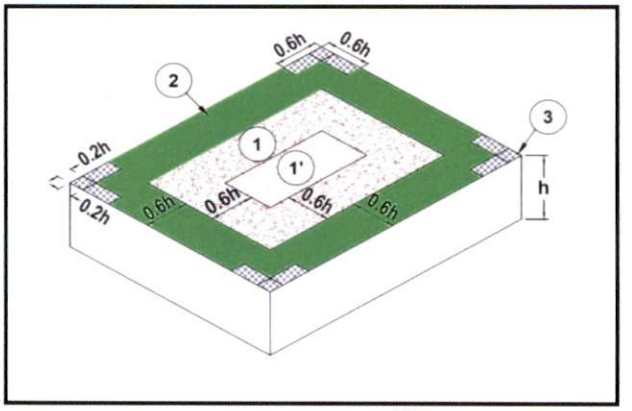
Project Name	Duquesne Libermann
Roof Sections	Lobby Roof

Design Code	ASCE 7-16 ASD	Base Velocity Pressure	14.9	psf	Gcpi = 0.55
Exposure Category	C	Roof Type	Gable		
Risk Cat. , Importance Factor	III , 1	Edge Zones			
Wind Speed	116 mph	Zone 2 width =	9'-0"		
Design Roof Height:	15	Zone 3 width =	3'-0"		
Minimum Building Width	135 ft	Zone 3 length =	9'-0"		
Roof Pitch (X, Y)	0.13 : 12	=			
Roof Angle	0.62 deg	=			
Parapet ≥ 36" Entire Roof	Yes	=			

Deck Type: Steel

Notes:

Zone Image



Zone Pressures (psf)

ZONE 1'	ZONE 1	ZONE 2	ZONE 3			Wall Perimeter Zone 4	Wall Corner Zone 5
21.6	33.6	42.5	42.5			22.1	26.2
FM 1-45	FM 1-75	FM 1-90	FM 1-90				

Notes:

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Coping

Project Name	Duquesne Libermann	Date	9/22/2022
Roof Sections	Lobby Roof	Sales Rep	Sam Roberts
		City	Pittsburgh
		State	PA

ANSI/SPRI ES-1 COPING PRELIMINARY DESIGN

Project Data

Design Wind Speed:	116	mph
Metal Edge Height:	20.00	feet
Exposure Category:	C	
Importance Classification:	III	

Design Wind Pressure — ASCE 7-16 ASD

Basic Velocity Pressure:	15.84	psf
Horizontal Design Pressure:	27.81	psf
Vert. Design Pressure:	59.42	psf

ES-1 Tested Coping System

Product Designation:	ES-C040-16-60-16	
System Description:	R-Mer Edge Snap on Coping 16" x 0.040" Alum w/ 16 GA Anchor Chairs at 60" o.c.	
Maximum Tested Front Load:	50.9	psf
Max. Vertical Front Dim.:	6	inches
Maximum Tested Top Load:	130	psf
Max. Vertical Width:	16.00	inches
Maximum Tested Rear Load:	111.5	psf
Max. Vertical Rear Dim.:	4.00	inches

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Fascia

		Date	9/22/2022
		Sales Rep	Sam Roberts
Project Name	Duquesne Libermann	City	Pittsburgh
Roof Sections	Lobby Roof	State	PA

ANSI/SPRI ES-1 FASCIA PRELIMINARY DESIGN

Project Data

Design Wind Speed:	116	mph
Metal Edge Height:	20.00	feet
Exposure Category:	C	
Importance Classification:	III	

Design Wind Pressure — ASCE 7-16 ASD

Basic Velocity Pressure:	15.84	psf
Horizontal Design Pressure:	27.81	psf

ES-1 Fascia Load

Vertical Face Dimension:	7.25	inches
Fascia Design Load:	46.44	psf

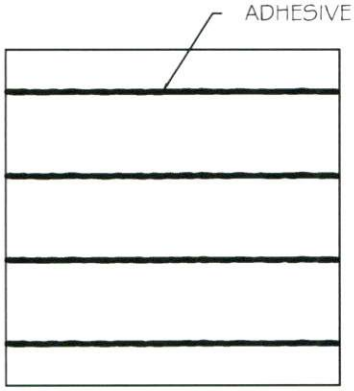
ES-1 Tested Fascia System

Product Designation: MEA-RMF-Fascia725-A40

System Description: R-Mer Force Fascia 7.25" x 0.040" Aluminum w/ RMEBF-700 Base Frame

Maximum Tested Load:	470	psf
Max. Vertical Face Dim.:	7.25	inches

TYPICAL ZONE 1, 2 AND 3 INSULATION BOARD ADHESIVE PATTERN: 12" OC BEADS PER BOARD



4 ADHESIVE RIBBONS
EQUALLY SPACED AT
12" (30.5cm) O.C. (TYP.)

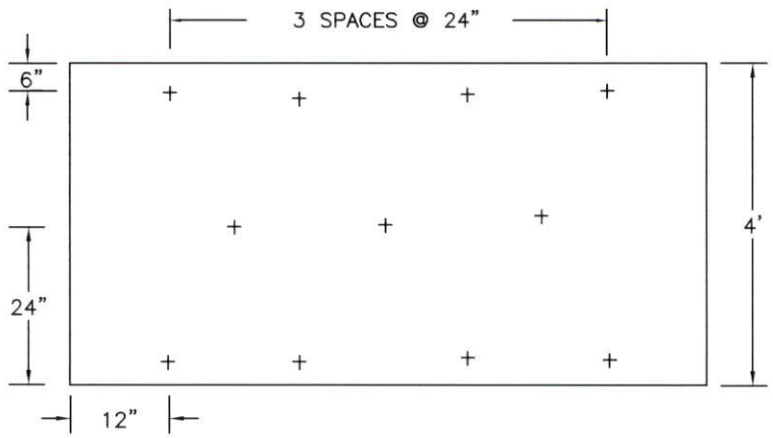
THE GARLAND COMPANY, INC.
GARLAND CANADA, INC.
THE GARLAND COMPANY UK, LTD
since 1895

DETAIL:
4 X 4 BOARD PATTERN

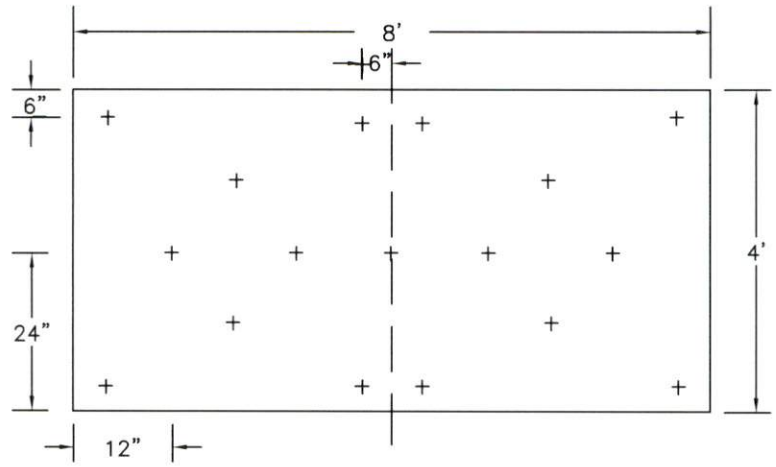
SECTION:
INSULATION BOARD ADHESIVE PATTERN

REV: 3 28/07

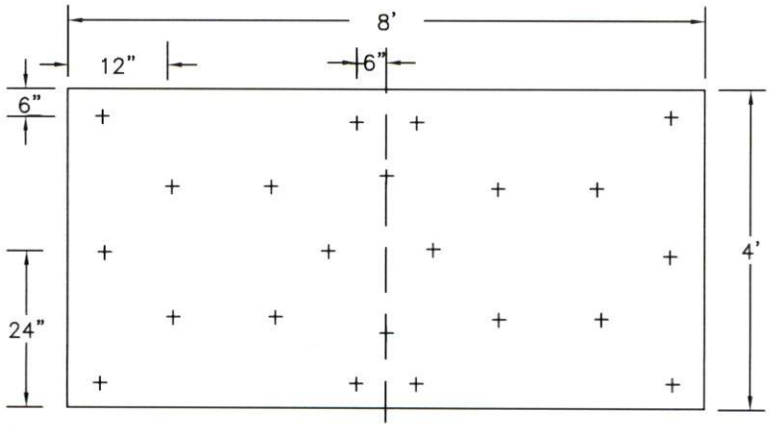
ZONE 1 INSULATION BOARD FASTENER PATTERN: 11 FASTENERS PER BOARD



ZONE 2 INSULATION BOARD FASTENER PATTERN: 17 FASTENERS PER BOARD



ZONE 3 INSULATION BOARD FASTENER PATTERN: 22 FASTENERS PER BOARD



THE GARLAND COMPANY, INC.
3800 EAST 91st STREET
CLEVELAND, OHIO 44105-2197
—PHONE 1-800-321-9336—
FAX 1-216-641-0633

DETAIL:

4 X 8 BOARD PATTERN

SECTION:

INSULATION BOARD FASTENER PATTERN

REV: 1 9/05

Standard Form of Bid / Contract

Owners Information:	**Bidder Information:**
Duquesne University 600 Forbes Ave Pittsburgh, PA 15219 Attn: Mark Minoski Director of Design and Construction minoskim@duq.edu Richard Florian CAD Designer / Project Manager florianr@duq.edu	Contractor: _____ Address: _____ City: _____ State/Zip: _____ Name: _____ Position: _____ Phone: _____

Description of Work: Replacement of the Liberman Hall Lobby, 6th Floor, and Loading Dock roof sections.

Bid Due Date : 11/3/2022 @ 11:00 am (e-mailed to Mark Minoski and Rich Florian)

Bids Items:

Base Bid Amount: Replacement of the Lobby, 6th Floor, and Loading Dock Roofs

$_____

Alternate Bid Amount #1: Clad Lobby Roof Parapet Walls

$_____

Alternate Bid Amount #2: Clad Loading Dock Roof Parapet Walls

$_____

Alternate Bid Amount #3: No odor, zero VOC adhesive (6th Floor Roof)

$_____

Unit Price for Additions to Contract:

Replacement of deteriorated deck

$_____/sq ft

Standard Form of Bid / Contract

1. The undersigned agrees that the proposal is based on material and standards of construction of the makes or types called for in the project manual. Any use of alternate materials without prior written approval will not be permitted.

2. It is hereby certified that the undersigned is the only person(s) interested in this proposal as a principal, and that the proposal is made without collusion with any person, firm, or corporation.

3. Bidder guarantees that, if awarded Contract, he will furnish and deliver all materials, tools, equipment, light, heat, tests, transportation, secure all permits, bonds and licenses, perform all labor, superintendence and all means of construction, pay all fees and do all incidental work, and to execute, construct, and finish in accordance with the procedures outlined in the "Project Manual" to the complete satisfaction and acceptance of the Owner for the price(s) stated on page 1 "Bid Items" & page 2 "Unit Price for Additions to Contract".

4. It is understood that the Owner reserves the right to reject any or all proposals, or part thereof or items therein, and waive technicalities required for the best interests of the Owner. It is further understood that competency and responsibility of bidders will receive consideration before the award of the Contract.

5. By executing this "Standard Form of Bid", the bidder is certifying that he has reviewed and understands the contents of this project manual and has received and understands any or all "addenda" that were issued during the course of the bid process and agrees to abide by same. It is the sole responsibility of the bidder to verify he has received all addenda. The contractor must acknowledge receipt of all addenda in the space provided on page 4 of 4 on this "Standard Form of Bid / Contract".

Bidder acknowledges receipt of the following addenda:

Addenda No. _____ Issue Date _____

Addenda No. _____ Issue Date _____

Addenda No. _____ Issue Date _____

Execution of Bid Form

As an officer of the company submitting this bid to the Owner, I certify that I (we) have thoroughly read and understand the contents of the project manual and addenda and are faithfully executing this "Standard Form of Bid / Contract" for the Owner's consideration:

Company Name	**Name of Authorized Bid Preparer**
Address	**Authorized Signature**
City	**Position Held**
State & Zip	**Witness Name**
Phone	**Witness Signature**

INSTRUCTIONS FOR NON-COLLUSION AFFIDAVIT

1. This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid.

2. This Non-Collusion Affidavit must be executed by the member, officer or employee of the bidder who makes the final decision on prices and the amount quoted in the bid.

3. Bid rigging and other efforts to restrain competition, and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval or submission of the bid.

4. In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.

5. The term "complimentary bid" as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than the bid of another firm, any intentionally high or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.

6. Failure to file an Affidavit in compliance with these instructions will result in disqualification of the bid.

NON-COLLUSION AFFIDAVIT

Contract/Bid No._____

_____

State of _____:

County of _____:

I state that I am _____ of _____
(Title) (Name of my firm)

and that I am authorized to make this affidavit on behalf of my firm, and its owners, directors, and officers. I am the person responsible in my firm for the price(s) and the amount of this bid.

I state that:

(1) The price(s) and amount of this bid have been arrived at independently and without consultation, communication or agreement with any other contractor, bidder or potential bidder.

(2) Neither the price(s) nor the amount of this bid, and neither the approximate price(s) or approximate amount of this bid, have been disclosed to any other firm or person who is a bidder nor potential bidder, and they will not be disclosed before bid opening.

(3) No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complimentary bid.

(4) The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complimentary or other noncompetitive bid.

(5) _____, it affiliates, subsidiaries, officers,
(Name of firm)

directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or

Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

I state that _____ understands and acknowledges that the
(Name of my firm)
above representations are material and important, and will be relied on by _____ in awarding the contract(s) for which this bid is and my firm understands (Name of entity) that any misstatement in this affidavit is and shall be treated as fraudulent concealment from _____ of the true facts relating to the submission of bids for this contract.
(Name of entity)

_____
(Name and Company Position)

SWORN TO AND SUBSCRIBED
BEFORE ME THIS ___ DAY
OF _____, 2022.

_____ My Commission Expires
Notary Public

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Liberman Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100818
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100818 - 01 Cust. #: 0804-DULB-012A Material: Roofing Material/Insulation Location: 6th Floor Roof Appearance: brown,fibrous,nonhomogenous Layer: 1 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 90% Other - 10%
Lab ID #: 100818 - 01a Cust. #: 0804-DULB-012A Material: Tar Location: 6th Floor Roof Appearance: black,fibrous,nonhomogenous Layer: 2 of 4	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 5% Other - 95%
Lab ID #: 100818 - 01b Cust. #: 0804-DULB-012A Material: Foam Location: 6th Floor Roof Appearance: yellow,nonfibrous,homogenous Layer: 3 of 4	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Liberman Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100818
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100818 - 01c Cust. #: 0804-DULB-012A Material: Insulation 2 Location: 6th Floor Roof Appearance: yellow,fibrous,homogenous Layer: 4 of 4	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 95% Other - 5%
Lab ID #: 100818 - 02 Cust. #: 0804-DULB-012B Material: Roofing Material/Insulation Location: 6th Floor Roof Appearance: brown,fibrous,nonhomogenous Layer: 1 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 90% Other - 10%
Lab ID #: 100818 - 02a Cust. #: 0804-DULB-012B Material: Tar Location: 6th Floor Roof Appearance: black,fibrous,nonhomogenous Layer: 2 of 4	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 5% Other - 95%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Liberman Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100818
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100818 - 02b Cust. #: 0804-DULB-012B Material: Foam Location: 6th Floor Roof Appearance: yellow,nonfibrous,homogenous Layer: 3 of 4	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 100818 - 02c Cust. #: 0804-DULB-012B Material: Insulation 2 Location: 6th Floor Roof Appearance: yellow,fibrous,homogenous Layer: 4 of 4	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 95% Other - 5%
Lab ID #: 100818 - 03 Cust. #: 0804-DULB-012C Material: Roofing Material/Insulation Location: 6th Floor Roof Appearance: brown,fibrous,nonhomogenous Layer: 1 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 90% Other - 10%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Liberman Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100818
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100818 - 03a Cust. #: 0804-DULB-012C Material: Tar Location: 6th Floor Roof Appearance: black,nonfibrous,homogenous Layer: 2 of 4	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 100818 - 03b Cust. #: 0804-DULB-012C Material: Foam Location: 6th Floor Roof Appearance: yellow,nonfibrous,homogenous Layer: 3 of 4	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 100818 - 03c Cust. #: 0804-DULB-012C Material: Insulation 2 Location: 6th Floor Roof Appearance: yellow,fibrous,homogenous Layer: 4 of 4	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 95% Other - 5%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Liberman Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100818
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100818 - 04 Cust. #: 0804-DULB-013A Material: Roof Flashing/Tar Location: 6th Floor Roof Appearance: black,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 100818 - 05 Cust. #: 0804-DULB-013B Material: Roof Flashing/Membrane Location: 6th Floor Roof Appearance: black,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 100818 - 05a Cust. #: 0804-DULB-013B Material: Tar Location: 6th Floor Roof Appearance: black,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Liberman Hall-Roofing

Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100818
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100818 - 06 Cust. #: 0804-DULB-013C Material: Roof Flashing/Membrane Location: 6th Floor Roof Appearance: black,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 100818 - 06a Cust. #: 0804-DULB-013C Material: Tar Location: 6th Floor Roof Appearance: black,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: Cust. #: Material: Location: Appearance: Layer: of	Asbestos Present:	

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP TESTING

NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Libermann Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100819
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100819 - 01 Cust. #: 0804-DULB-014A Material: Field Roof/Membrane Location: Lobby Roof Appearance: black,fibrous,nonhomogenous Layer: 1 of 4	Asbestos Present: **NO** No Asbestos Observed	Synthetic - 30% Other - 70%
Lab ID #: 100819 - 01a Cust. #: 0804-DULB-014A Material: Felt Location: Lobby Roof Appearance: black,fibrous,homogenous Layer: 2 of 4	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 60% Other - 40%
Lab ID #: 100819 - 01b Cust. #: 0804-DULB-014A Material: Fiberboard Location: Lobby Roof Appearance: brown,fibrous,homogenous Layer: 3 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 90% Other - 10%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Libermann Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
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Wixom, MI 48393

ARI Report # 22-100819
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100819 - 01c Cust. #: 0804-DULB-014A Material: Foam/Felt Location: Lobby Roof Appearance: yellow,fibrous,nonhomogenous Layer: 4 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 2% Fiberglass - 2% Other - 96%
Lab ID #: 100819 - 02 Cust. #: 0804-DULB-014B Material: Field Roof/Membrane Location: Lobby Roof Appearance: black,fibrous,nonhomogenous Layer: 1 of 4	Asbestos Present: **NO** No Asbestos Observed	Synthetic - 25% Other - 75%
Lab ID #: 100819 - 02a Cust. #: 0804-DULB-014B Material: Felt Location: Lobby Roof Appearance: black,fibrous,homogenous Layer: 2 of 4	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 40% Other - 60%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP TESTING

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Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Libermann Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100819
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100819 - 02b Cust. #: 0804-DULB-014B Material: Fiberboard Location: Lobby Roof Appearance: brown,fibrous,homogenous Layer: 3 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 80% Other - 20%
Lab ID #: 100819 - 02c Cust. #: 0804-DULB-014B Material: Foam/Felt Location: Lobby Roof Appearance: yellow,fibrous,nonhomogenous Layer: 4 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 2% Fiberglass - 2% Other - 96%
Lab ID #: 100819 - 03 Cust. #: 0804-DULB-014C Material: Field Roof/Membrane Location: Lobby Roof Appearance: black,fibrous,nonhomogenous Layer: 1 of 4	Asbestos Present: **NO** No Asbestos Observed	Synthetic - 30% Other - 70%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Libermann Hall-Roofing
Project # : 2220288

Report To:

Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100819
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100819 - 03a Cust. #: 0804-DULB-014C Material: Felt Location: Lobby Roof Appearance: black,fibrous,homogenous Layer: 2 of 4	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 50% Other - 50%
Lab ID #: 100819 - 03b Cust. #: 0804-DULB-014C Material: Fiberboard Location: Lobby Roof Appearance: brown,fibrous,homogenous Layer: 3 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 80% Other - 20%
Lab ID #: 100819 - 03c Cust. #: 0804-DULB-014C Material: Foam/Felt Location: Lobby Roof Appearance: yellow,fibrous,nonhomogenous Layer: 4 of 4	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 2% Fiberglass - 2% Other - 96%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

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Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Libermann Hall-Roofing
Project # : 2220288

Report To:

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Wixom, MI 48393

ARI Report # 22-100819
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100819 - 04 Cust. #: 0804-DULB-015A Material: Roof Flashing/Membrane Location: Lobby Roof Appearance: black,fibrous,nonhomogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Synthetic - 25% Other - 75%
Lab ID #: 100819 - 04a Cust. #: 0804-DULB-015A Material: Felt Location: Lobby Roof Appearance: black,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 50% Other - 50%
Lab ID #: 100819 - 05 Cust. #: 0804-DULB-015B Material: Roof Flashing/Membrane Location: Lobby Roof Appearance: black,fibrous,nonhomogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Synthetic - 25% Other - 75%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP TESTING
NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne-Libermann Hall-Roofing

Project # : 2220288

Report To:

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Wixom, MI 48393

ARI Report # 22-100819
Date Collected: NDG
Date Received: 08/08/22
Date Analyzed: 08/08/22
Date Reported: 08/09/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100819 - 05a Cust. #: 0804-DULB-015B Material: Felt Location: Lobby Roof Appearance: black,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 50% Other - 50%
Lab ID #: 100819 - 06 Cust. #: 0804-DULB-015C Material: Roof Flashing/Membrane Location: Lobby Roof Appearance: black,fibrous,nonhomogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Synthetic - 30% Other - 70%
Lab ID #: 100819 - 06a Cust. #: 0804-DULB-015C Material: Felt Location: Lobby Roof Appearance: black,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 50% Other - 50%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING

NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne University-Libermann Hall-Loading Dock
Project # : 2220298

Report To:
Ms. Amanda Neary
Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100965
Date Collected: 08/17/22
Date Received: 08/18/22
Date Analyzed: 08/23/22
Date Reported: 08/25/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100965 - 01 Cust. #: 1-01 Material: Built-Up Roofing Tar/Felt Location: Client Submitted Sample Appearance: black,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 20% Other - 80%
Lab ID #: 100965 - 02 Cust. #: 1-02 Material: Built-Up Roofing Tar/Felt Location: Client Submitted Sample Appearance: black,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 20% Other - 80%
Lab ID #: 100965 - 03 Cust. #: 1-03 Material: Built-Up Roofing Tar/Felt Location: Client Submitted Sample Appearance: black,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 20% Other - 80%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

APEX Research Inc., 11054 Hi Tech Drive, Whitmore Lake, MI 48189
(734) 449-9990, Fax (734) 449-9991

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Duquesne University-Libermann Hall-Loading Dock
Project # : 2220298

Report To:
Ms. Amanda Neary
Performance Environmental Services, Inc.
28054 Center Oak Ct. Ste B
Wixom, MI 48393

ARI Report # 22-100965
Date Collected: 08/17/22
Date Received: 08/18/22
Date Analyzed: 08/23/22
Date Reported: 08/25/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 100965 - 04 Cust. #: 2-01 Material: Flashing Location: Client Submitted Sample Appearance: black,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%
Lab ID #: 100965 - 05 Cust. #: 2-02 Material: Flashing Location: Client Submitted Sample Appearance: black,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%
Lab ID #: 100965 - 06 Cust. #: 2-03 Material: Flashing Location: Client Submitted Sample Appearance: black,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

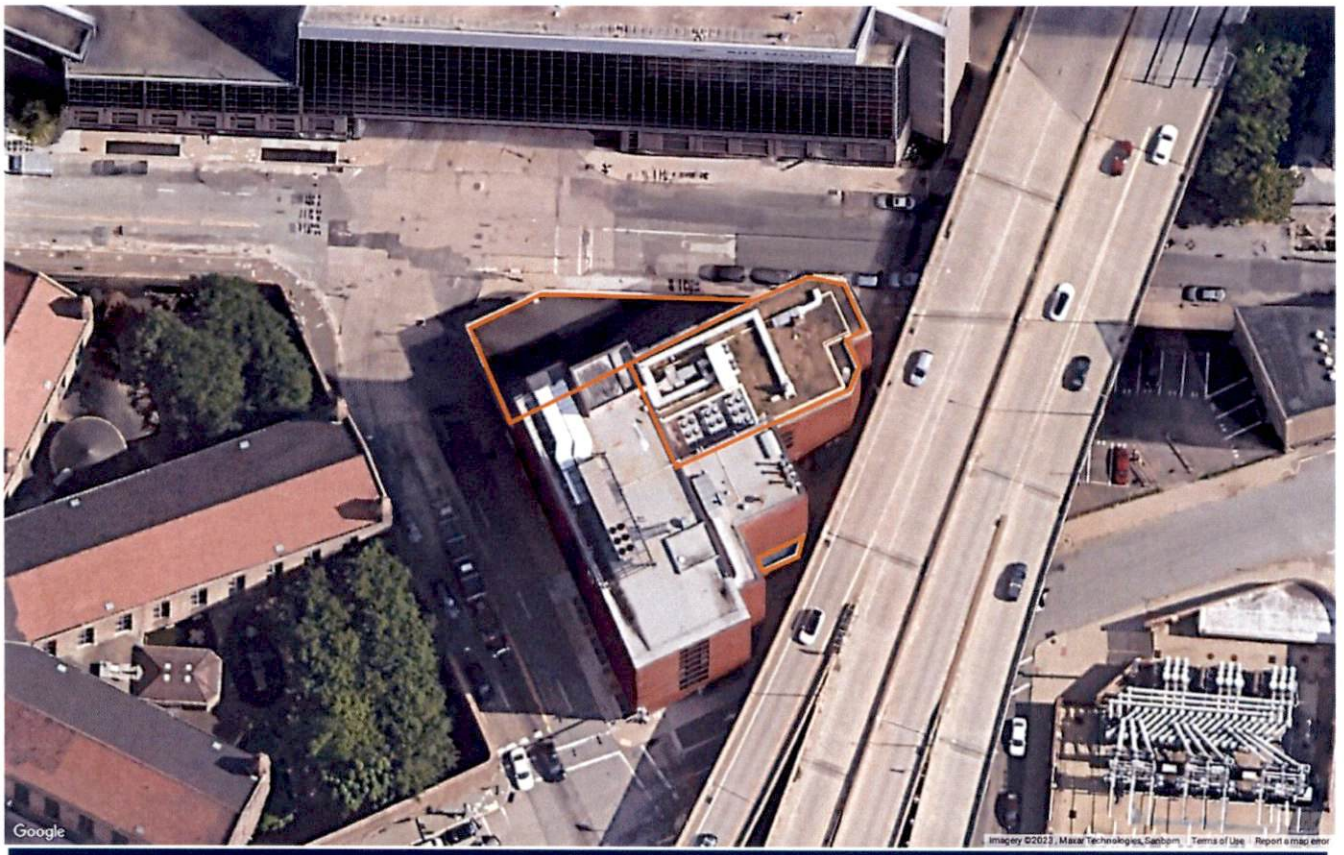
Progress Report

Client: Duquesne University

Facility: Libermann Hall

Report Date: 07/29/2023

Roof Section: 6th Floor Roof



Report Data

Title Roof Replacement Progress / Punch List

During the week of 7/24, MTG completed the following;

- Installed 90% of the coping and metal flashings.
- Flashed walls and curbs
- Began completion of punchlist items
- Started cleaning of interior areas

The crew will continue working on the punchlist items next week and expect to be fully complete with the project during the week of 8/7.

Please call with any questions.

Sam Roberts
The Garland Company, Inc

sroberts@garlandind.com
412-417-0056

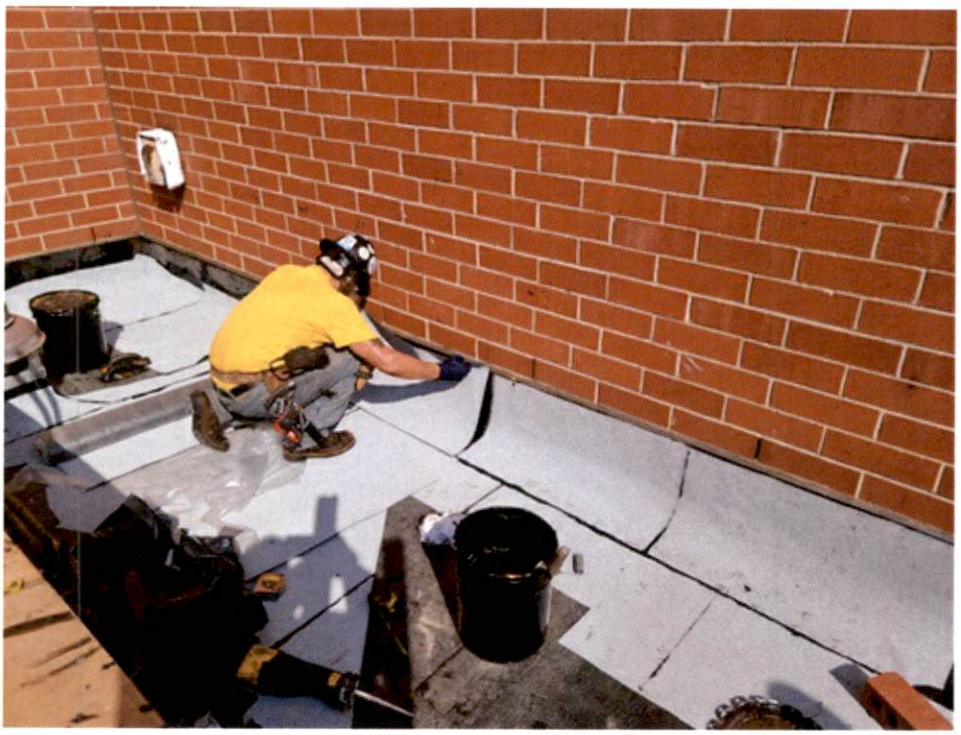


Photo 1

Adhering cap flashings

Photo 2

Overview of lobby roof

Photo 3

Curb flashed and pitch pocket installed

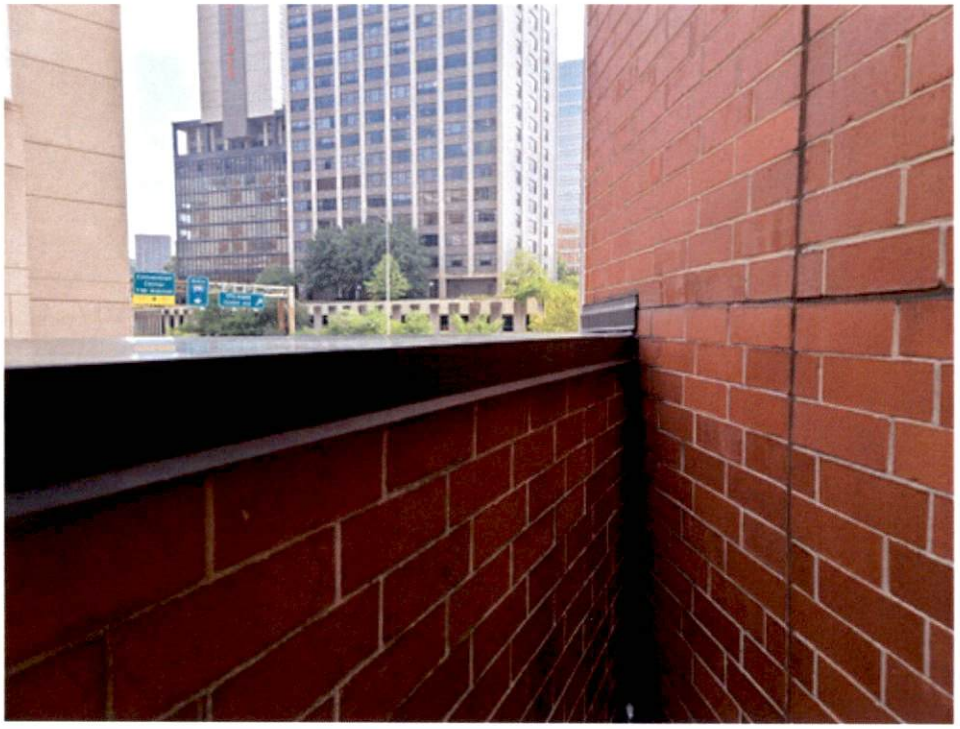


Photo 4

Metal coping and end cap installed

Photo 5

Low area to receive additional cap ply.

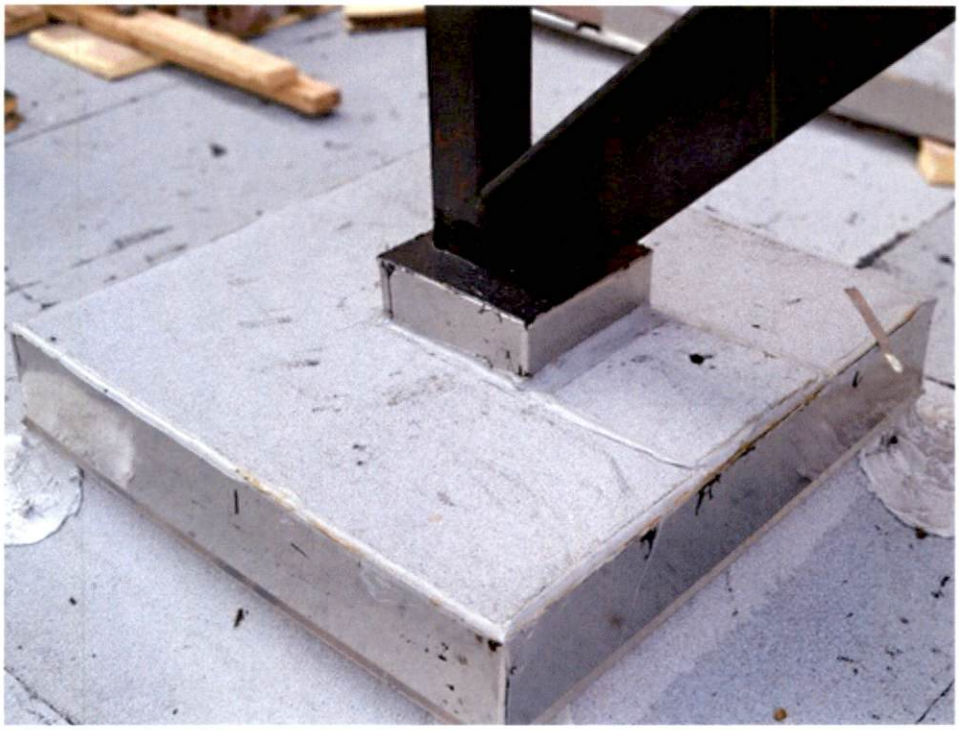


Photo 6

Curb to receive additional ply and coating to distribute ponding water.

Photo 7

Fluid-applied membrane to be installed around internal drains.

Photo 8

Caulk perimeter of all pitch pockets.

Photo 9

Caulk all pitch pockets.

Photo 10

Repair membrane wrinkles.

Photo 11

Install additional ply and fluid-applied membrane on 6th floor drain.

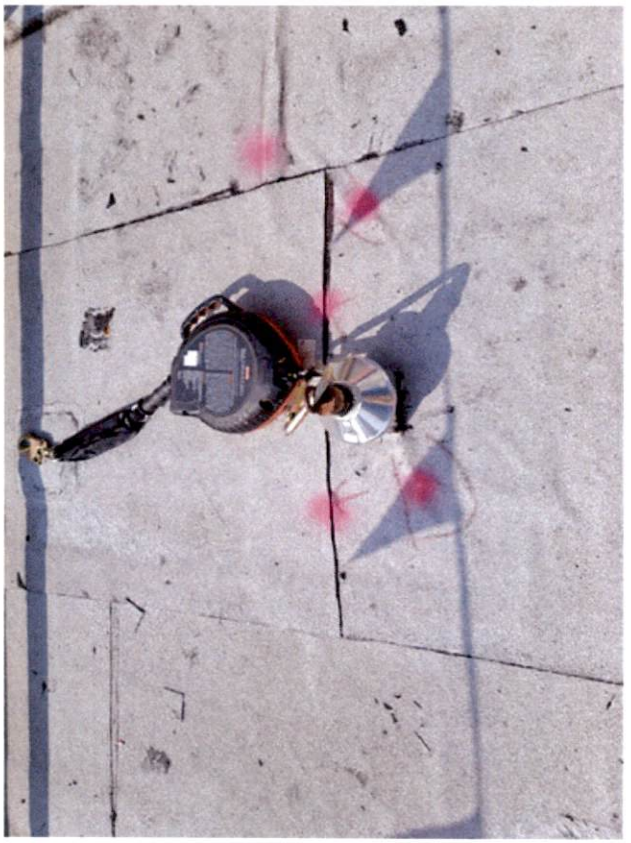


Photo 12

Repair membrane wrinkles.

Photo 13

Complete 3-course patching.

Photo 14

Complete trim metal installation on Lobby roof.

Photo 15

Repair wrinkles, install additional cap sheet, and apply fluid applied membrane on Lobby roof drain.

Photo 16

Install walk pads under all stairwell legs.

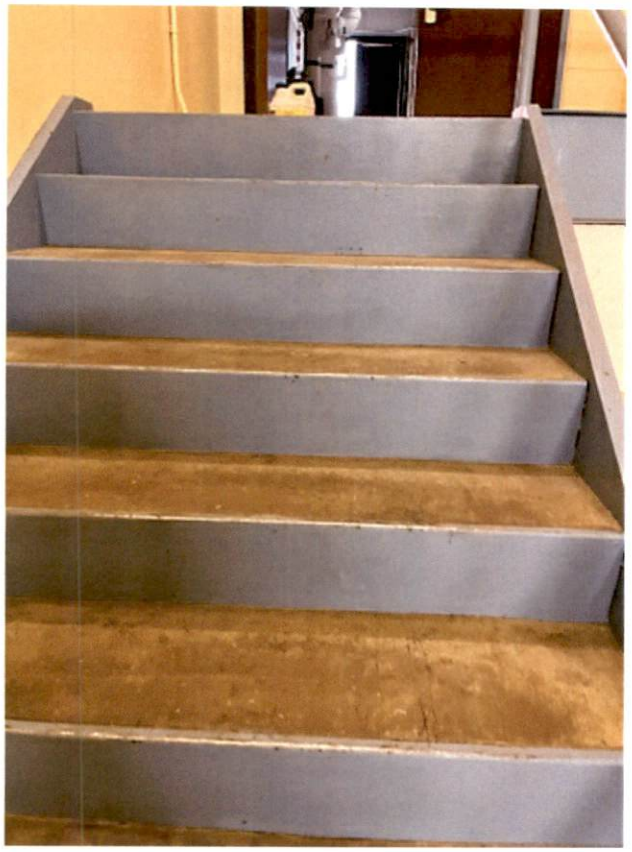


Photo 17

Clean stairwell.

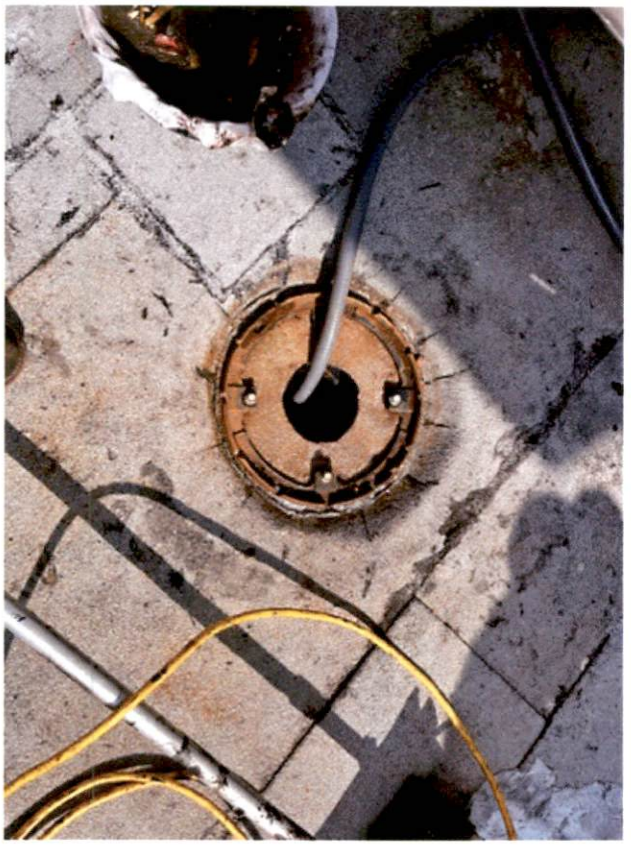


Photo 18

Repair new 6th floor drain and install fluid-applied membrane.

Photo 19

Scupper cut into 6th floor parapet wall.

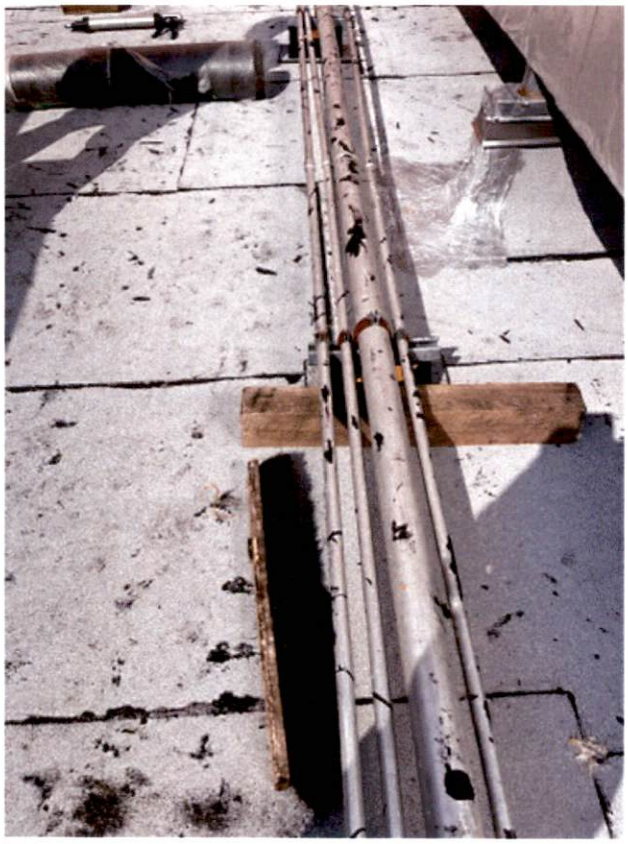


Photo 20

Clean conduit on 6th floor roof.

Photo 21

Clean floor in 6th floor mechanical area.

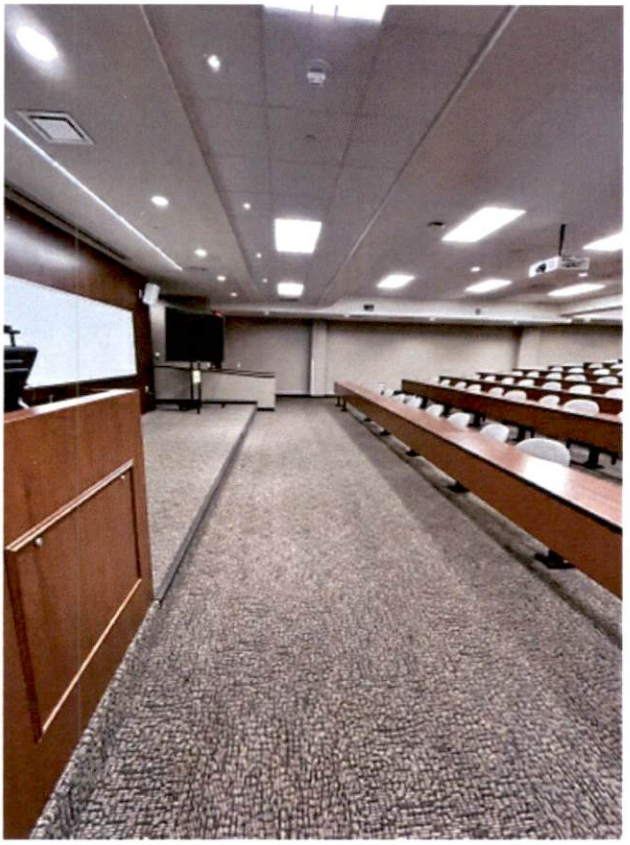


Photo 22

Room 609 with new paint and plaster repair completed.

Photo 23

Metal trim being installed on the Loading Dock roof.

Photo 24

Underlayment installed under the coping cap on the Loading Dock roof.

Robert Morris University

Massey Hall / John Jay Center

Roof Replacement
Project Manual

10/19/22

TABLE OF CONTENTS

SECTION 01 11 00
SUMMARY OF WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 PROJECT INFORMATION

A. Section Includes:
   1. Scope of Work
   2. Submittal of Bids

1.3 SCOPE OF WORK

A. Robert Morris University – Massey Hall Low Slope Roof Replacements

   1) Base Bid #1: Modified Membrane Roof Replacement
      a. Remove and discard existing roof system to the deck, including membrane, insulation, flashings, and edge metal.
      b. Replace all internal roof drains with new cast iron assemblies.
         1) Camera scope to grade before and after replacement.
      c. Attach tapered polyisocyanurate insulation.
         1) Install 8' tapered sumps at all roof drains.
         2) 4-way tapered design
         3) 2.5" base layer on Roof #1
      d. Install cover board in insulation adhesive.
      e. Install 2-ply modified bitumen membrane in cold adhesive.
      f. Install 2-ply modified bitumen flashings.
         1) Three-course all vertical cap flashing seams.
         2) Roof #2 – Transition modified membrane to single ply KEE above 12" flashing height.
      g. Apply cold applied flood coat and slag
      h. Install new aluminum coping and trim.
      i. Install new, certified lightning protection

B. Robert Morris University – John Jay Center – Upper Roof

   1) Base Bid #1: Modified Membrane Roof Replacement
      a. Remove and discard existing roof system to the deck, including membrane, insulation, flashings, and edge metal.
      b. Replace all internal roof drains with new cast iron assemblies.
         1) Camera scope to grade before and after replacement.
      c. Attach tapered polyisocyanurate insulation.
         1) Install 8' tapered sumps at all roof drains.
      d. Install cover board in insulation adhesive.
      e. Install 2-ply modified bitumen membrane in cold adhesive.
      f. Install 2-ply modified bitumen flashings.
         1) Three-course all vertical cap flashing seams.
      g. Apply cold applied flood coat and slag
      h. Install new aluminum coping and trim.

1.4 SUBMITTAL OF BIDS

A. All bids shall be emailed to Matt Hyatt (hyatt@rmu.edu) by November 2nd, 2022 at 4:00 pm

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 07 22 00
ROOF DECK AND INSULATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes roof insulation over the properly prepared deck substrate.

B. Related Sections:
1. Section 07 52 00 – Modified Bituminous Membrane Roofing.
2. Section 07 62 00 – Sheet Metal Flashing and Trim.

1.3 REFERENCES

A. American Society for Testing and materials (ASTM):
1. ASTM C1289 Standard Specification for Faced Rigid Polyisocyanurate Thermal Insulation.
2. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.

B. Factory Mutual Research (FM):
1. Roof Assembly Classifications.

C. Underwriters Laboratories, Inc. (UL):
1. Fire Hazard Classifications.

D. Warnock Hersey (WH):
1. Fire Hazard Classifications.

E. Insulation Board, Polyisocyanurate (FS HH-I-1972)

1.4 SUBMITTALS

A. Product Data: Provide manufacturer's specification data sheets for each product.

B. Shop Drawings (Fully Tapered Roof Systems only)
1. Submit manufacturer's shop drawings indicating complete installation details of tapered insulation system, including identification of each insulation block, sequence of installation, layout, drain locations, roof slopes, thicknesses, crickets and saddles.
2. Shop drawing shall include: Outline of roof, location of drains, complete board layout of tapered insulation components, thickness and the average "R" value for the completed insulation system.

1.5 QUALITY ASSURANCE

A. Fire Classification, ASTM E-108.

B. Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual, 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.

C. Pre-installation meeting: Refer to Division 07 roofing specifications for pre-installation meeting requirements.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.

B. Store all insulation materials in a manner to protect them from the wind, sun and moisture damage prior to and during installation. Any insulation that has been exposed to any moisture shall be removed from the project site.

C. Keep materials enclosed in a watertight, ventilated enclosure (i.e. tarpaulins).

D. Store materials off the ground. Any warped, broken or wet insulation boards shall be removed from the site.

PART 2 – PRODUCTS

2.1 PRODUCTS, GENERAL

A. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.

2.2 INSULATION MATERIALS

A. Thermal Insulation Properties and Approved Insulation Boards.
   1. Tapered Polyisocyanurate Roof Insulation; ASTM C1289:
      a. Qualities: Factory Tapered, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
      b. Thickness: Minimum 0.5" on Wood and Concrete Decks, 1.5" on Metal Decks
      c. R-Value: Minimum 30 (Except Massy Roof #1)
      d. Tapered Slope (Field of roof): 1/8:12
      e. Tapered Slope (Crickets, Sumps): ¼:12
      f. Compliances: UL, WH or FM listed under Roofing Systems Federal Specification HH-I-1972, Class 1
      g. Acceptable Products:
         1) Viking Products Group
         2) ENRGY 3; Johns Manville
         3) EnergyGuard; GAF
         4) Approved Equivalent
   2. Gypsum Roof Cover Board
      a. Qualities: Nonstructural, noncombustible, water-resistant treated gypsum core panel.
      b. Board Size: Four feet by four feet (4'x4').
      c. Thickness: One half (1/2) inch.
      d. Compliances: UL, WH or FM listed under Roofing Systems.
      e. Acceptable Products:
         1) Dens Deck Prime; Georgia Pacific

2.3 RELATED MATERIALS

A. Fiber Cant and Tapered Edge Strips: Performed rigid insulation units of sizes/shapes indicated, matching insulation board or of perlite or organic fiberboard, as per the approved manufacturer.
   1. Acceptable Manufacturers:
      a. The Garland Company, Inc.
      b. Celotex
      c. Johns Manville
      d. GAF
      e. Approved Equivalent

B. Roof Deck Insulation Adhesive: Insul-Lock HR - Dual-component, high rise foam adhesive as recommended by insulation manufacturer and approved by FM indicated ratings.
   1. Tensile Strength (ASTM D412).....250 psi
   2. Density (ASTM D1875).....8.5 lbs./gal.
   3. Viscosity (ASTM D2556).....22,000 to 60,000 cP.
   4. 2 `Peel Strength (ASTM D903).....17 lb/in.
   5. 3 `Flexibility (ASTM D816).....Pass @ -70°F

C. Asphalt: ASTM D312, Type III Steep Asphalt.

D. Fasteners: Corrosion resistant screw fastener as recommended by roof membrane manufacturer.
   1. Factory Mutual Tested and Approved with three (3) inches coated disc for I-90 rating, length required to penetrate metal deck one inch.

PART 3 – EXECUTION

3.1 INSPECTOR OF SURFACES

A. Roofing contractor shall be responsible for preparing an adequate substrate to receive insulation.
   1. Verify that work which penetrates roof deck has been completed.
   2. Verify that wood nailers are properly and securely installed.
   3. Examine surfaces for defects, rough spots, ridges, depressions, foreign material, moisture, and unevenness.
   4. Do not proceed until defects are corrected.
   5. Do not apply insulation until substrate is sufficiently dry.
   6. Broom clean substrate immediately prior to application.
   7. Use additional insulation to fill depressions and low spots that would otherwise cause ponding water.
   8. Verify that temporary roof has been completed.

3.2 INSTALLATION

A. Attachment with Mechanical Fasteners
   1. Approved insulation board shall be fully attached to the deck with an approved mechanical fastening system. As a minimum, the amount of fasteners shall be in accordance with manufacturer's recommendation for FM I-90 system. Otherwise, a minimum of one fastener per two square feet shall be installed.
   2. Filler pieces of insulation require at least two fasteners per piece if size of insulation is less than four square feet.
   3. Spacing pattern of fasteners shall be as per manufacturer's recommendations to meet the FM requirements. Placement of any fastener from edge of insulation board shall be a minimum of three inches, and a maximum of six (6) inches.

4. Minimum penetration into deck shall be as recommended by the fastener manufacturer. There is a one (1) inch minimum for metal, wood and structural concrete decks where not specified by the manufacturer. For gypsum and cement-wood fiber decks, penetration shall be determined from pull-out test results with a minimum penetration of one and one-half (1 ½) inches.
5. Gypsum and cementitious wood fiber decks: Where the roof deck is visible from the building interior, the contractor shall ensure no penetration of fasteners through underside of the deck. Any holes or spalling caused by fastener installation shall be repaired by the roofing contractor. Where the new roof system thickness exceeds an amount so that a minimum of 1 ½ of penetration cannot be achieved with an Olympic TB Fastener, or approved equivalent, then (and only then) toggle bolts may be used to secure installation to the deck.

B. Attachment with Insulation Adhesive Approved by Factory Mutual (FM).
1. Ensure all surfaces are clean, dry, free of dirt, debris, oils, loose ore embedded gravel, unadhered coatings, deteriorated membrane and other contaminants that may inhibit adhesion.
2. Apply insulation adhesive directly to the substrate using a ribbon pattern with one quarter to one half (1/4-1/2) inch wide beads 12 inches o.c., using either the manual applicator or an automatic applicator, at a rate of one (1) gallon per one hundred (150) square feet per cartridge.
3. Immediately place insulation boards into wet adhesive. Do not slide boards into place. Do not allow the adhesive to skin over before installing insulation boards.
4. Briefly step each board into place to ensure contact with the adhesive. Substrates with irregular surfaces may prevent the insulation board from making positive contact with the adhesive. Relief cuts or temporary weights may be required to ensure proper contact.
5. All boards shall be cut and fitted where the roof deck intersects a vertical surface. The boards shall be cut to fit a minimum of one quarter (1/4) inch away from the vertical surface.
6. Tape joints of insulation as per manufacturer's requirements.

3.3 CLEANING

A. Remove debris and cartons from roof deck. Leave insulation clean and dry, ready to receive roofing membrane.

3.4 CONSTRUCTION WASTE MANAGEMENT

A. Remove and properly dispose of waste products generated during installation. Comply with requirements of authorities having jurisdiction.

END OF SECTION

SECTION 07 52 00
MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Cold Applied 2-Ply Asphalt Roofing.

B. Accessories.

C. Edge Treatment and Roof Penetration Flashings.

1.2 RELATED SECTIONS

A. Section 07 22 00 – Roof Deck and Insulation.

B. Section 07 62 00 – Sheet Metal Flashing and Trim.

1.3 REFERENCES

A. ASTM D 4586 Standard Specification for Asphalt Roof Cement, Asbestos-Free.

B. ASTM D 5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.

C. ASTM D 6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.

D. ASTM D 6754 - Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.

E. Factory Mutual Research (FM): Roof Assembly Classifications.

F. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.

G. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.

H. Underwriters Laboratories, Inc. (UL): Fire Hazard Classifications.

I. Warnock Hersey (WH): Fire Hazard Classifications.

J. ASCE 7, Minimum Design Loads for Buildings and Other Structures

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Perform work in accordance with all federal, state and local codes.

B. Exterior Fire Test Exposure: Roof system shall achieve a UL, FM or WH Class rating for roof slopes indicated on the Drawings as follows:
   1. Factory Mutual Class A Rating.
   2. Underwriters Laboratory Class A Rating.
   3. Warnock Hersey Class A Rating.

C. Design Requirements:
   1. Uniform Wind Uplift Load Capacity
      a. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
         1) Design Code: ASCE 7, Method 2 for Components and Cladding.

1.5 SUBMITTALS

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

B. Design Pressure Calculations: Submit design pressure calculations for the roof area in accordance with ASCE 7 and local Building Code requirements. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before Work begins.

C. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic inspection and maintenance of all completed roofing work. Provide product warranty executed by the manufacturer. 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.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience and must not have been in Chapter 11 bankruptcy during the last five years.

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. 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 MEETINGS

A. Convene minimum two weeks prior to commencing Work of this section.

B. Review installation procedures and coordination required with related Work.

C. Inspect and make notes of job conditions prior to installation:
   1. Record minutes of the conference and provide copies to all parties present.
   2. Identify all outstanding issues in writing designating the responsible party for follow-up action and the timetable for completion.
   3. Installation of roofing system shall not begin until all outstanding issues are resolved to the satisfaction of the Architect.

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 except store KEE-Stone FB 60 rolls flat 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 COORDINATION

A. Coordinate Work with installing associated metal flashings as work of this section proceeds.

1.10 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.

1.11 WARRANTY

A. Upon completion of the work, provide the Manufacturer's written and signed NDL 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. 30 years from date of acceptance.

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); 3800 E. 91st St., Cleveland, OH 44105. ASD. Toll Free: 800-321-9336. Phone: 216-641-7500. Fax: 216-641-0633. Web Site: www.garlandco.com.

2.2 COLD APPLIED 2-PLY ROOF SYSTEM

A. Base (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive:
   1. StressBase 120: 120 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet with dual fiberglass reinforced scrim, performance requirements according to ASTM D 5147.

a. Tensile Strength, ASTM D 5147
   1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in
   2) 50mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
b. Tear Strength, ASTM D 5147
   1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 100 lbf XD 85 lbf
   2) 50mm/min. @ 23 +/- 2 deg. C MD 444 N XD 378 N
c. Elongation at Maximum Tensile, ASTM D 5147
   1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
   2) 50mm/min@ -17.78 +/- 2 deg. C MD 4 % XD 4 %
d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)

B. Modified Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive:
1. StressPly Plus: 105 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing membrane incorporating recycled rubber and reinforced with a fiberglass and polyester composite scrim. ASTM D 6162, Type III Grade S
   a. Tensile Strength, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 310 lbf/in XD 310 lbf/in
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 54.25 kN/m XD 54.25 kN/m
   b. Tear Strength, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf XD 500 lbf
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 2224 N XD 2224 N
   c. Elongation at Maximum Tensile, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6F MD 8% XD 8%
      2) 50 mm/min. @ 23 +/- 2 deg. C MD 8% XD 8%
   d. Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34 deg. C)

C. Interply Adhesive:
1. Weatherking: Rubberized, polymer modified cold process asphalt roofing bitumen V.O.C. compliant ASTM D 3019. Performance Requirements:
   a. Non-Volatile Content ASTM D 4479 70%
   b. Density ASTM D1475 8.9 lbs./gal.
   c. Viscosity Stormer ASTM D562 400-500 grams
   d. Flash Point ASTM D 93 100 deg. F min. (37 deg. C)
   e. Slope: up to 3:12

D. Flashing Base Ply: One ply bonded to the prepared substrate with Interply Adhesive:
1. StressBase 120: 120 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet with dual fiberglass reinforced scrim, performance requirements according to ASTM D 5147.
   a. Tensile Strength, ASTM D 5147
      1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in
      2) 50mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
   b. Tear Strength, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 100 lbf XD 85 lbf
      2) 50mm/min. @ 23 +/- 2 deg. C MD 444 N XD 378 N
   c. Elongation at Maximum Tensile, ASTM D 5147
      1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
      2) 50mm/min@ -17.78 +/- 2 deg. C MD 4 % XD 4 %
   d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)

E. Flashing Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive:
1. StressPly Plus: 105 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing membrane incorporating recycled rubber and reinforced with a fiberglass and polyester composite scrim. ASTM D 6162, Type III Grade S
   a. Tensile Strength, ASTM D 5147
      1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 310 lbf/in XD 310 lbf/in

2) 50 mm/min. @ 23 +/- 2 deg. C MD 54.25 kN/m XD 54.25 kN/m

b. Tear Strength, ASTM D 5147
   1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf XD 500 lbf
   2) 50 mm/min. @ 23 +/- 2 deg. C MD 2224 N XD 2224 N

c. Elongation at Maximum Tensile, ASTM D 5147
   1) 2 in/min. @ 73.4 +/- 3.6F MD 8% XD 8%
   2) 50 mm/min. @ 23 +/- 2 deg. C MD 8% XD 8%

d. Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34 deg. C)

F. Flashing Ply Adhesive:
1. Flashing Bond Asphalt roofing mastic V.O.C. compliant, ASTM D 4586, Type II trowel grade flashing adhesive.
   a. Non-Volatile Content ASTM D 4479 70 min.
   b. Density ASTM D 1475 8.3 lbs./gal. (1kg/l)
   c. Flash Point ASTM D 93 103 deg. F (39 deg. C)
2. KEE-Lock WB Flashing Ply Adhesive(Wall Covering Adhesive) – Acrylic pressure-sensitive bonding adhesive
   a. VOC – 0g/L

G. Wall Covering Thermoplastic KEE Sheet:
1. KEE-Stone 60 NF Flashing: 60 mil non-fleeceback thermoplastic, ketone ethylene ester (KEE) roofing membrane with polyester scrim. ASTM D 6754.
   a. Breaking Strength, ASTM D 751, Proc. B, strip
      1) 375 lbf
   b. Tear Strength ASTM D 751
      1) 145 lbf. minumum.
   c. Elongation at Break (%), ASTM D 751, Proc. B, Strip
      1) 30.0%

H. Surfacing:
1. Flood Coat/Aggregate:
   a. Weatherscreen: Asphalt protective roof coating, Weatherscreen; heavy-bodied, fiber reinforced, cold process roof coating having the following characteristics:
      1) Weight/Gallon 9.1 lbs./gal. (1.1 g/cm3)
      2) Non-Volatile % (ASTM D 4479) Typical 75
      3) Viscosity Brookfield RVT;
      4) Spindle #5; 10RPM @ 71 deg. F 20,000-25,000 cPs
      5) Roofing Aggregate: ASTM D 1863
         a) Slag.
2. Silver-Shield: ASTM D 2824 aluminum coating fibered aluminum roof coating fibered aluminum roof coating having the following characteristics:
   a. Flash Point 100 deg. F (38 deg. C) min.
   b. Weight/Gallon 8.2 lbs./gal. (1.0 g/cm3)
   c. Viscosity (75 deg. F) 100 - 125 K.U

2.3 ACCESSORIES:

A. Urethane Sealant Hybrid - Tuff-Stuff MS: One part, non-sag sealant as approved and furnished by the membrane manufacturer for moving joints.
1. Tensile Strength, ASTM D 412: 250 psi
2. Elongation, ASTM D 412: 450%
3. Hardness, Shore A ASTM C 920: 35
4. Adhesion-in-Peel, ASTM C 92: 30 pli

2.4 EDGE TREATMENT AND ROOF PENETRATION FLASHINGS

A. Pitch pans, Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints should be

welded/soldered watertight. See details for design.

B. Drain Flashings should be 4lb (1.8kg) sheet lead formed and rolled.

C. Plumbing stacks should be 4lb (1.8kg) sheet lead formed and rolled.

D. Liquid Flashing - Tuff-Flash: An asphaltic-polyurethane, low odor, liquid flashing material designed for specialized details unable to be waterproofed with typical modified membrane flashings.
   1. Tensile Strength, ASTM D 412: 400 psi
   2. Elongation, ASTM D 412: 300%
   3. Density @77 deg. F 8.5 lb/gal typical

E. Fabricated Flashings: Fabricated flashings and trim are specified in Section 07 62 00 – Sheet Metal Flashing and Trim.
   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.

PART 3 – EXECUTION

3.1 EXAMINATION

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

B. Inspect and approve the deck condition, slopes and fastener backing if applicable, parapet walls, expansion joints, roof drains, stack vents, vent outlets, nailers and surfaces and elements.

C. Verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.

D. If substrate preparation and other conditions are the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. General: Clean surfaces thoroughly prior to installation.
   1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   2. Fill substrate surface voids that are greater than 1/4 inch wide with an acceptable fill material.
   3. Roof surface to receive roofing system shall be smooth, clean, free from loose gravel, dirt and debris, dry and structurally sound.
   4. Wherever necessary, all surfaces to receive roofing materials shall be power broom and vacuumed to remove debris and loose matter prior to starting work.
   5. Do not apply roofing during inclement weather. Do not apply roofing membrane to damp, frozen, dirty, or dusty surfaces.
   6. Fasteners and plates for fastening components mechanically to the substrate shall provide a minimum pull-out capacity of 300 lbs. (136 k) per fastener.
   7. Prime decks where required, in accordance with requirements and recommendations of the primer and deck manufacturer.

B. Metal Deck: Metal deck shall be installed as specified in Section
   1. Fastening of the deck should comply with the anticipated live and dead loads pertaining to the building as well as applicable Code.
   2. Steel decks shall be minimum 22-gauge factory galvanized or zinc alloy coated for protection against corrosion.

3. Suitable insulation shall be mechanically attached as recommended by the insulation manufacturer.
4. Decks shall comply with the gauge and span requirements in the current Factory Mutual FM Approval Guide and be installed in accordance with Loss Prevention Data Sheet 1-28 or specific FM approval.
5. When re-roofing over steel decks, surface corrosion shall be removed, and repairs to severely corroded areas made. Loose or inadequately secured decking shall be fastened, and irreparable or otherwise defective decking shall be replaced.

3.3 INSTALLATION - GENERAL

A. Install modified bitumen membranes and flashings in accordance with manufacturer's instructions and with the recommendations provided by the National Roofing Contractors Association's Roofing & Waterproofing Manual, the Asphalt Roofing Manufacturers Association, and applicable codes.

B. General: Avoid installation of modified bitumen membranes at temperatures lower than 40-45 degrees F. When work at such temperatures unavoidable use the following precautions:
1. Take extra care during cold weather installation and when ambient temperatures are affected by wind or humidity, to ensure adequate bonding is achieved between the surfaces to be joined. Use extra care at material seam welds and where adhesion of the applied product to the appropriately prepared substrate as the substrate can be affected by such temperature constraints as well.
2. Unrolling of cold materials, under low ambient conditions must be avoided to prevent the likelihood of unnecessary stress cracking. Rolls must be at least 40 degrees F at the time of application. If the membrane roll becomes stiff or difficult to install, it must be replaced with roll from a heated storage area.

C. Commence installation of the roofing system at the lowest point of the roof (or roof area), working up the slope toward the highest point. Lap sheets shingle fashion so as to constantly shed water

3.4 INSTALLATION COLD APPLIED ROOF SYSTEM

A. Base Ply: Install base sheet in Interply Adhesive: applied at the rate required by the manufacturer. Shingle base sheets uniformly to achieve one ply throughout over the prepared substrate. Shingle in proper direction to shed water on each large area of roofing.
1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
2. Solidly bond to the substrate and adjacent ply with specified cold adhesive at the rate of 2 to 2-1/2 gallons per 100 square feet.
3. Roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Use care to eliminate air entrapment under the membrane.
4. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
5. Extend plies 2 inches beyond top edges of cants at wall and projection bases.
6. Install base flashing ply to all perimeter and projection details.
7. Allow the one ply of base sheet to cure at least 30 minutes before installing the modified membrane. However, the modified membrane must be installed the same day as the base plies.

B. Modified Cap Ply(s): Allow plies to relax before installing. Install in interplay adhesive applied at the rate required by the manufacturer. Shingle sheets uniformly over the prepared substrate to achieve the number of plys specified. Shingle in proper direction to shed water on each large area of roofing.
1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.

2. Solidly bond to the base layers with specified cold adhesive at the rate of 2 to 2-1/2 gallons per 100 square feet.
3. Roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Care should be taken to eliminate air entrapment under the membrane.
4. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Hold adhesive from all side and end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
5. Use a 50lb roller to ensure full adhesion and to remove any air pockets after installation of the cap sheet.
6. Extend membrane 2 inches beyond top edge of all cants in full moppings of the cold adhesive as shown on the Drawings.

C. Fibrous Cant Strips: Provide non-combustible perlite or glass fiber cant strips at all wall/curb detail treatments where angle changes are greater than 45 degrees. Cant may be set in approved cold adhesives, hot asphalt or mechanically attached with approved plates and fasteners.

D. Wood Blocking, Nailers and Cant Strips:
1. Provide nailers at all roof perimeters and penetrations for fastening membrane flashings and sheet metal components.
2. Wood nailers should match the height of any insulation, providing a smooth and even transition between flashing and insulation areas.
3. Nailer lengths should be spaced with a minimum 1/8 inch gap for expansion and contraction between each length or change of direction.
4. Nailers and flashings should be fastened in accordance with Factory Mutual "Loss Prevention Data Sheet 1- 49, Perimeter Flashing" and be designed to be capable of resisting a minimum force of 200 lbs/lineal foot in any direction.

E. Metal Work: Provide metal flashings, counter flashings, parapet coping caps and thru-wall flashings as specified in Section 07 62 00 – Sheet Metal Flashing and Trim. Install in accordance with the SMACNA "Architectural Sheet Metal Manual" or the NRCA Roofing Waterproofing manual.

F. Termination Bar: Provide a metal termination bar or approved top edge securement at the terminus of all flashing sheets at walls and curbs. Fasten the bar a minimum of 8 inches (203 mm) o/c to achieve constant compression. Provide suitable, sealant at the top edge if required.

G. Flashing Base Ply: Install flashing sheets by the same application method used for the base ply.
1. Seal curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
3. Adhere to the underlying base ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
4. Solidly adhere the entire flashing ply to the substrate. Secure the tops of all flashings that are not run up and over curb through termination bar fastened at 6 inches (152 mm) O.C. and sealed at top.

H. Flashing Cap Ply:
1. Seal curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind,

around or under the roof or flashing membrane.

2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
3. Adhere to the underlying base flashing ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
4. Seal all vertical laps of flashing ply with a three-course application of trowel-grade mastic and fiberglass mesh.
5. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified.
6. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work.
7. All stripping shall be installed prior to flashing cap sheet installation.
8. Heat and scrape granules when welding or adhering at cut areas and seams to granular surfaces at all flashings.
9. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed, or nailed 4 inches on center and covered with an acceptable counter flashing.

I. Surface Coatings:
   1. Apply Silver Shield over roof flashings at a rate of 2 Gal/SQ

J. Flood Coat/Aggregate:
   1. Install after cap sheets and modified flashing, tests, repairs and corrective actions have been completed and approved.
   2. Apply flood coat materials in the quantities recommended by the manufacturer.
   3. Uniformly embed aggregate in the flood coat of cold adhesive at a rate recommended by the manufacturer.
   4. Aggregate must be dry and placed in a manner required to form a compact, embedded overlay. To aid in embedment, lightly roll aggregate.

3.5 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

A. Scupper Through Wall:
   1. Inspect the nailer to assure proper attachment and configuration.
   2. Run one ply over nailer, into scupper hole and up flashing as in typical wall flashing detail. Assure coverage of all wood nailers.
   3. Install a scupper box in a 1/4 inch (6 mm) bed of mastic. Assure all box seams are soldered and have a minimum 4 inch (101 mm) flange. Make sure all corners are closed and soldered. Prime scupper at a rate of 100 square feet per gallon and allow to dry.
   4. Fasten flange of scupper box every 3 inches (76 mm) o.c. staggered.
   5. Strip in flange of scupper box with base flashing ply covering entire area with 6 inch (152 mm) overlap on to the field of the roof and wall flashing.
   6. Install a second ply of modified flashing ply in adhesive over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all seams.

B. Surface Mounted Counterflashing:
   1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Maximum flashing height is 24 inches (609 mm). Prime vertical wall at a rate of 100 square feet per gallon and allow to dry.
   2. Set cant in bitumen. Run all field plies over cant a minimum of 2 inches (50 mm).
   3. Install base flashing ply covering wall set in bitumen with 6 inches (152 mm) on to field of the roof.
   4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9

inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.

5. Apply butyl tape to wall behind flashing. Secure termination bar through flashing, butyl tape and into wall. Alternatively use caulk to replace the butyl tape.
6. Secure KEE clad counterflashing set on butyl tape above flashing at 8 inches (203 mm) o.c. and caulk top of counterflashing. Counterflashing to have minimum 4" upper flange
7. Position KEE-Stone NF 60 Flashing membrane where the membrane is ready to be installed
8. Use preferred method to align sheet with install path
9. Apply KEE-Lock WB Flashing Adhesive to the exposed side of the base flashing and the backside of the KEE-Stone NF 60 membrane at a total combined rate or 1.0 – 1.5 gal/SQ. KEE-Lock WB Flashing Adhesive can be sprayed, rolled, or brushed.
10. Allow minimum of 30 min for adhesive to become tacky.
11. Install KEE-Stone NF 60 Flashing ply extending min. 4" onto the surface mounted counterflashing flange.
12. Broom in the KEE-Stone FB 60 Flashing membrane immediately after install to ensure even continuous contact between the fleece backing and the adhesive
13. On all vertical seams, fully heat weld 6" KEE-Stone Utility Roll
14. Complete all inside and outside corner flashing details by fully heat welding properly formed KEE-Stone Utility Roll
    a. Note: Once KEE-Stone Utility Roll has had a chance to bond, utilize a seam probe to check all laps and joints for full adhesion. Check for small voids at laps; if the membrane can be lifted at any area, it is not properly adhered. Any areas not properly bonded require welding or if necessary, the application of a patch to seal any un-bonded areas that exist.
15. All vertical flashings shall be terminated a min. 8" (203mm) above the top layer of insulation with approved termination bar and counter-flashing system.
16. Heat weld KEE-Stone NB flashings to KEE clad counterflashing.

C. Reglet Mounted Counterflashing:

1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Maximum flashing height is 24 inches. Prime vertical wall at a rate of 100 square feet per gallon and allow to dry.
2. Set cant in adhesive. Run all field plies over cant a minimum of 2 inches (50 mm).
3. Install base flashing ply covering wall set in adhesive with 6 inches (152 mm) on to field of the roof.
4. Install a second ply of modified flashing ply in adhesive over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Apply butyl tape to wall behind flashing. Secure termination bar through flashing, butyl tape and into wall. Alternatively use caulk to replace the butyl tape.
6. Cut reglet in masonry one joint above flashing.
7. Secure reglet counterflashing with expansion fasteners and caulk reglet opening.

D. Exhaust Fan:

1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical at a rate of 100 square feet per gallon and allow to dry.
2. Set cant in adhesive. Run all plies over cant a minimum of 2 inches (50 mm).
3. Install base flashing ply covering curb with 6 inches (152 mm) on to field of the roof.
4. Install a second ply of modified flashing ply installed over the base flashing ply, 9 inches (228 mm) on to field of the roof. Attach top of membrane to top of wood curb and nail at 8 inches (203 mm) o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install metal exhaust fan over the wood nailers and flashing to act as counterflashing. Fasten per manufacturer's recommendation.

E. Roof Drain Alternate:
   1. Plug drain to prevent debris from entering plumbing.
   2. Taper insulation to drain minimum of 24 inches (609 mm) from center of drain.
   3. Install two base flashing plies (40 inch square minimum) in bitumen.
   4. Set lead/copper flashing (30 inch square minimum) in 1/4 inch (6 mm) bed of mastic. Run lead/copper into drain a minimum of 2 inches (50 mm). Prime lead/copper at a rate of 100 square feet per gallon and allow to dry.
   5. Run roof system plies over drain. Cut out plies inside drain bowl.
   6. Install modified membrane (48 inch square minimum) in bitumen.
   7. Install clamping ring and assure that all plies are under the clamping ring.
   8. Remove drain plug and install strainer.

F. Plumbing Stack:
   1. Minimum stack height is 12 inches (609 mm).
   2. Run roof system over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
   3. Prime flange of new sleeve. Install properly sized sleeves set in 1/4 inch (6 mm) bed of roof cement.
   4. Install base flashing ply in adhesive.
   5. Install membrane in adhesive.
   6. Caulk the intersection of the membrane with elastomeric sealant.
   7. Turn sleeve a minimum of 1 inch (25 mm) down inside of stack.

G. Liquid Flashing:
   1. Mask target area on roof membrane with tape.
   2. Clean all non-porous areas with isopropyl alcohol.
   3. Apply 32 wet mil base coat of liquid flashing over masked area.
   4. Embed polyester reinforcement fabric into the base coat of the liquid flashing.
   5. Apply 48-64 wet mil top coat of the liquid flashing material over the fabric extending 2 inches (51 mm) past the scrim in all directions.
   6. Apply minerals immediately or allow the liquid flashing material to cure 15-30 days and then install reflective coating.

3.6 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.

3.7 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.

3.8 FIELD QUALITY CONTROL

A. Inspection: Provide manufacturer's field observations at start-up and at intervals of approximately every other working day until completion. Provide a final inspection upon completion of the Work.
   1. Warranty shall be issued upon manufacturer's acceptance of the installation.
   2. Field observations shall be performed by a Sales Representative employed full-time by the manufacturer and whose primary job description is to assist, inspect and approve membrane installations for the manufacturer.
   3. Provide observation reports from the Sales Representative indicating procedures followed, weather conditions and any discrepancies found during inspection.
   4. Provide a final report from the Sales Representative, certifying that the roofing system has been satisfactorily installed according to the project specifications, approved details and good general roofing practice.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide all labor, equipment, and materials to fabricate and install the following.
   1. Flashing and trim
   2. Gutters, and downspouts.

B. Related Work Specified Elsewhere:
   1. Section 07 52 00 – Modified Bituminous Membrane Roofing

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (galvanized) or Zinc-Iron Alloy-Coated (galvannealed) by the Hot-Dip Process.
   2. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI)
   1. ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal

C. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
   1. 1993 Edition Architectural Sheet Metal Manual

D. National Roofing Contractors Association (NRCA)
   1. Roofing and Waterproofing Manual

1.4 SUBMITTALS FOR REVIEW

A. Product Data:
   1. Provide manufacturer's specification data sheets for each product.
   2. Metal material characteristics and installation recommendations.
   3. Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specified can be approved.

1.5 QUALITY ASSURANCE

A. Engage an experienced roofing contractor specializing in sheet metal flashing work with a minimum of five (5) years experience.

B. Maintain a full-time supervisor/foreman who is on the job-site at all times during installation. Foreman must have a minimum of five (5) years experience with the installation of similar system to that specified.

C. Source Limitation: Obtain components from a single manufacturer. Secondary products which cannot be supplied by the specified manufacturer shall be approved in writing by the primary manufacturer prior to bidding.

D. Upon request fabricator/installer shall submit work experience and evidence of financial responsibility. The Owner's representative reserves the right to inspect fabrication facilities in determining qualifications.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.

B. Stack pre-formed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials which may cause discoloration or staining.

1.7 PROJECT CONDITIONS

A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for pre-formed metal edge system.

1.8 DESIGN AND PERFORMANCE CRITERIA

A. Thermal expansion and contraction:
1. Completed metal edge flashing system, shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.

PART 2 – PRODUCTS

2.1 PRODUCTS, GENERAL

A. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.

2.2 ACCEPTABLE MANUFACTURERS

A. The design is based upon roofing systems engineered and manufactured by:

The Garland Company
3800 East 91st Street
Cleveland, Ohio 44105
Telephone: (800) 762-8225
Website: www.garlandco.com

2.3 MATERIALS

A. General: Product designations for the materials used in this section shall be based on performance characteristics of the R-Mer metal edge system manufactured by The Garland Company, Cleveland, OH, and shall form the basis of the contract documents.

B. Materials: Minimum gauge of steel or thickness of Aluminum to be specified in accordance with Architectural Sheet Metal Manual, Sheet Metal and Air Conditioning Contractor's National Association, Inc. recommendations.

C. Flat Stock: KEE Clad Metal (Wall Covering Transition Flashing)

D. Flat Stock: High gloss, factory painted aluminum
   1. Material and Thickness:
      a. 0.040 aluminum (Coping, counterflashing, trim)

2.4 RELATED MATERIALS AND ACCESSORIES

A. Metal Primer: Zinc chromate type.

B. Plastic Cement: ASTM D 4586

C. Fasteners:
   1. Corrosion resistant screw fastener as recommended by metal manufacturer. Finish exposed fasteners same as flashing metal.
   2. Fastening shall conform to Factory Mutual requirements or as stated on section details, whichever is more stringent.

D. Gutter and Downspout Anchorage Devices: Material as specified for system

PART 3 – EXECUTION

3.1 EXECUTION, GENERAL

A. Refer to Division 07 Section Common Work Results for Thermal and Moisture Protection.

3.2 PROTECTION

A. Isolate metal products from dissimilar metals, masonry or concrete with bituminous paint, tape, or slip sheet. Use gasketed fasteners where required to prevent corrosive reactions.

3.3 GENERAL

A. Secure fascia to wood nailers at the bottom edge with a continuous cleat.

B. Fastening of metal to walls and wood blocking shall comply with building code standards.

C. All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.

D. Allow sufficient clearances for expansion and contraction of linear metal components. Secure metal using fasteners as required by the system. Exposed face fastening will be rejected.

3.4 INSPECTION

A. Verify that curbs are solidly set and nailing strips located.

B. Perform field measurements prior to fabrication.

C. Coordinate work with work of other trades.

D. Verify that substrate is dry, clean and free of foreign matter.

E. Commencement of installation shall be considered acceptance of existing conditions.

3.5 MANUFACTURED SHEET METAL SYSTEMS

A. Furnish and install manufactured fascia and coping cap systems in strict accordance with manufacturer's printed instructions.

3.6 SHOP-FABRICATED SHEET METAL

A. Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.

B. Hem exposed edges.

C. Angle bottom edges of exposed vertical surfaces to form drip.

D. Lap corners with adjoining pieces fastened and set in sealant.

E. Form joints for gravel stop fascia system, coping cap with a 3/8" opening between sections. Back the opening with an internal drainage plate formed to the profile of fascia piece.

F. Install sheet metal to comply with referenced ANSI/SPRI, SMACNA and NRCA standards.

3.7 FLASHING MEMBRANE INSTALLATION

A. Snap-On Coping Cap Detail
   1. Install Miters first.
   2. Position base flashing of the Modified Roofing membrane over the wall edge covering nailers completely, fastening eight (8) inches on center. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.
   3. Install minimum sixteen (16) gauge, sixteen (16) inch long by specified width anchor chair at minimum of five (5) feet on center.
   4. Install six (6) inch wide splice plate by centering over sixteen (16) inch long by specified width anchor chair. Apply two beads of sealant to either side of the splice plate's center. Approximately two (2) inches from the coping cap joint. Install Coping Cap by hooking outside hem of coping on outside face of anchor chair. Press downward on inside edge of coping until "snap" occurs and hem is engaged on the entire chair.

3.8 CLEANING

A. Clean installed work in accordance with the manufacturer's instructions.

B. Replace damaged work than cannot be restored by normal cleaning methods.

3.9 CONSTRUCTION WASTE MANAGEMENT

A. Remove and properly dispose of waste products generated. Comply with requirements of authorities having jurisdiction.

3.10 FINAL INSPECTION

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

B. Inspect work and 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. Repair or replace deteriorated or defective work found at time above inspection as required to a produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

D. Notify the Owner upon completion of corrections.

E. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

F. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

3.11 DEMONSTRATION AND TRAINING

A. At a time and date agreed to by the Owner, instruct the Owner's facility manager, or other representative designated by the Owner, on the following procedures:
   1. Troubleshooting procedures
   2. Notification procedures for reporting leaks or other apparent roofing problems
   3. Maintenance
   4. The Owner's obligations for maintaining the warranty in effect and force
   5. The Manufacturer's obligations for maintaining the warranty in effect and force.

END OF SECTION

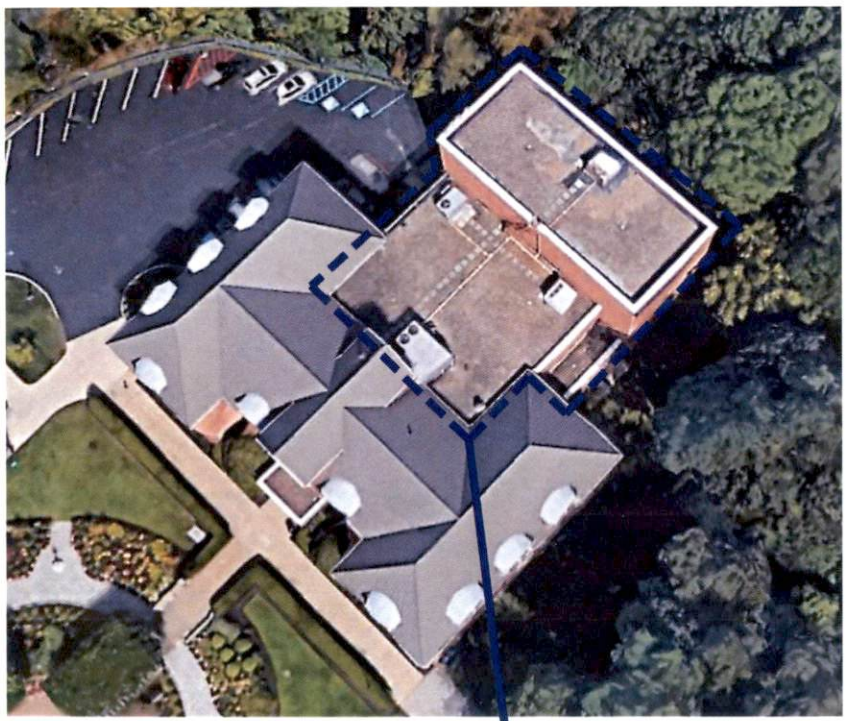
APPENDIX

ROBERT MORRIS UNIVERSITY

MASSEY HALL
372 Massey Way, Moon Township, PA 15108

JOHN JAY CENTER
153 Campus Drive, Moon Township, PA 15108

PROJECT AERIAL VIEW



LIMIT OF WORK

LIMIT OF WORK

GARLAND since 1895

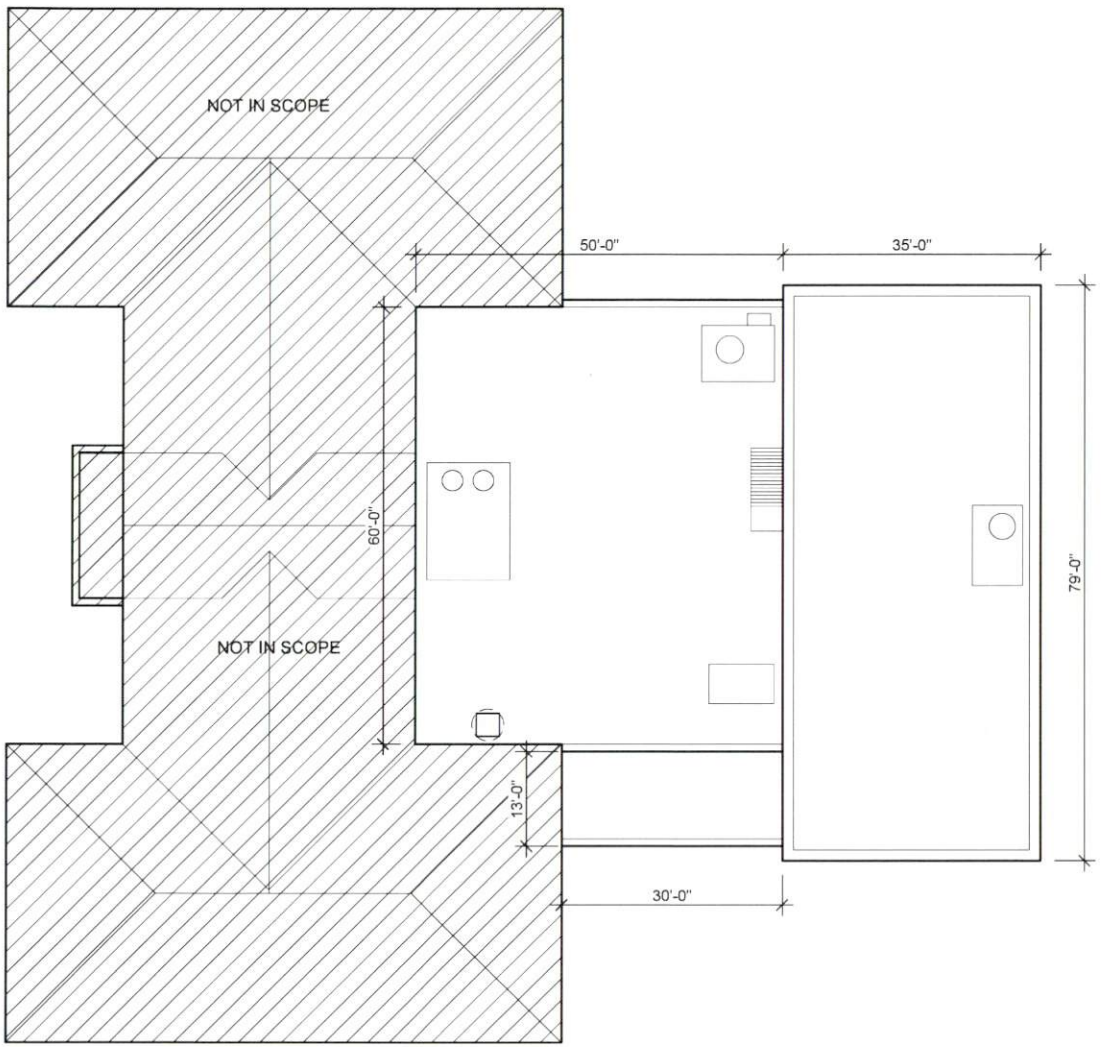
DRAWING INDEX

MASSEY HALL
&
JOHN JAY CENTER

SCALE: AS NOTED
DATE: 09/23/2022
PROJ. #
DRAWN BY:

COVERSHEET

A-001



1 A-101 ROOF PLAN
SCALE: N.T.S.

GENERAL NOTES:

1.) IT IS THE ROOFING CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH ALL DETAILS INVOLVED IN THE ROOFING CONTRACT.

2.) ALL DRAWINGS ARE GRAPHIC REPRESENTATION OF APPROXIMATE LOCATIONS OF EXISTING AND NEW MATERIALS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF WORK.

3.) THE ROOFING CONTRACTOR TO PROTECT ALL ADJACENT SURFACES NOT SCHEDULED FOR WORK AND TO REPAIR ANY DAMAGED AREAS AS A RESULT OF CONTRACTOR WORK AT NO ADDITIONAL COST TO THE OWNER.

4.) THE ROOFING CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN WATER TIGHTNESS AND PROVIDE PROTECTION AT ANY/ALL OPENINGS IN THE ROOF LEFT AT THE END OF EACH CONSTRUCTION DAY.

5.) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, CONDITIONS AND QUANTITIES.

GARLAND since 1895

RMU ROBERT MORRIS

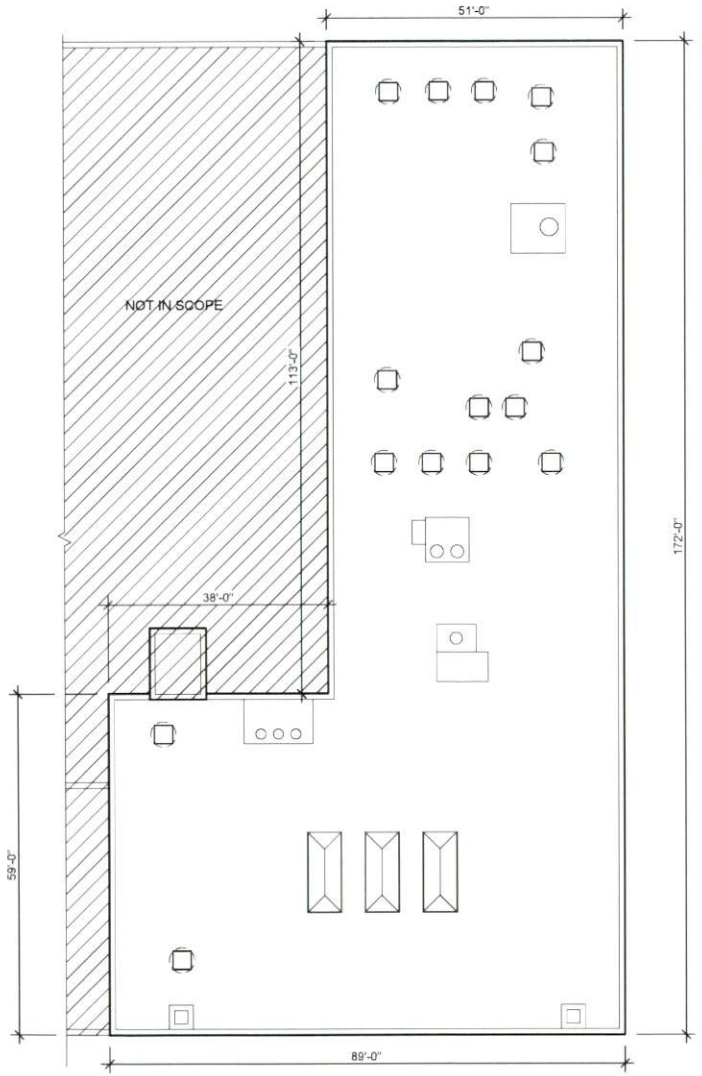
MASSEY HALL

372 Massey Way,
Moon Township, PA 15108

SCALE: AS NOTED
DATE: 09/23/2022
PROJ. #
DRAWN BY:

ROOF PLAN

A-101



1 A-102 ROOF PLAN
SCALE: N.T.S.

GENERAL NOTES:

1.) IT IS THE ROOFING CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH ALL DETAILS INVOLVED IN THE ROOFING CONTRACT.

2.) ALL DRAWINGS ARE GRAPHIC REPRESENTATION OF APPROXIMATE LOCATIONS OF EXISTING AND NEW MATERIALS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF WORK.

3.) THE ROOFING CONTRACTOR TO PROTECT ALL ADJACENT SURFACES NOT SCHEDULED FOR WORK AND TO REPAIR ANY DAMAGED AREAS AS A RESULT OF CONTRACTOR WORK AT NO ADDITIONAL COST TO THE OWNER.

4.) THE ROOFING CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN WATER TIGHTNESS AND PROVIDE PROTECTION AT ANY/ALL OPENINGS IN THE ROOF LEFT AT THE END OF EACH CONSTRUCTION DAY.

5.) CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, CONDITIONS AND QUANTITIES.

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RMU ROBERT MORRIS

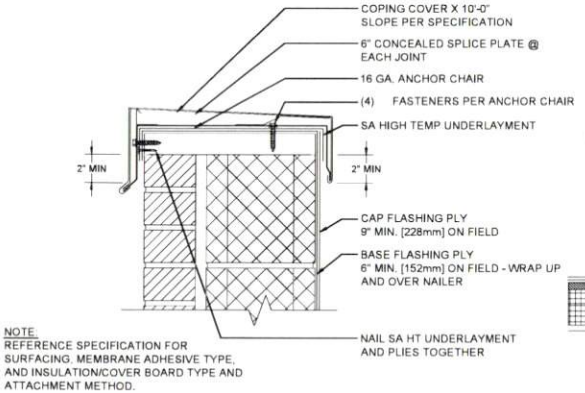
JOHN JAY CENTER

153 Campus Drive
Moon Township, PA 15108

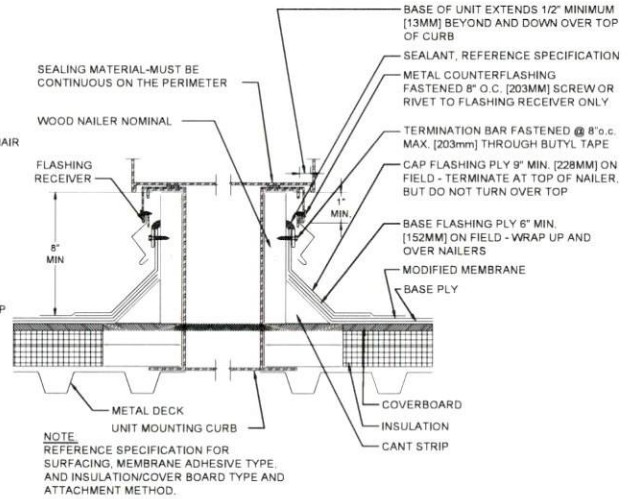
SCALE: AS NOTED
DATE: 09/23/2022
PROJ. #:
DRAWN BY:

ROOF PLAN

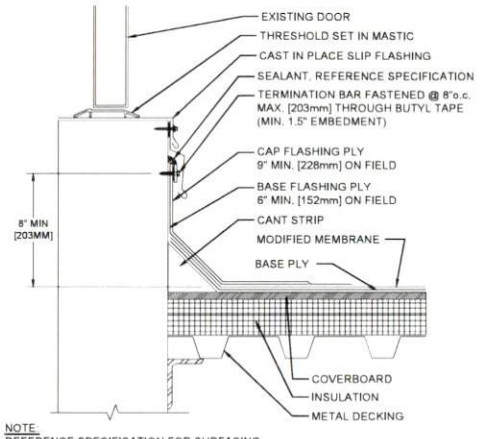
A-102



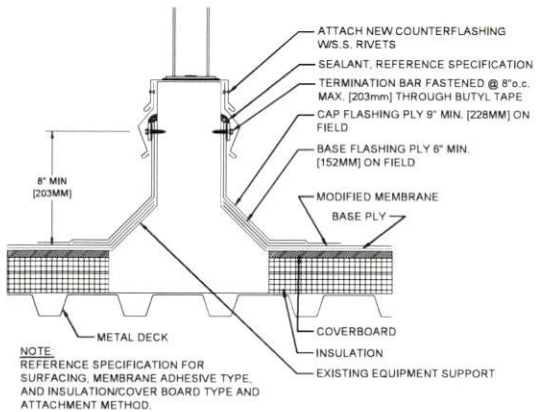
1 A-501 COPING CAP DETAIL
SCALE: N.T.S.



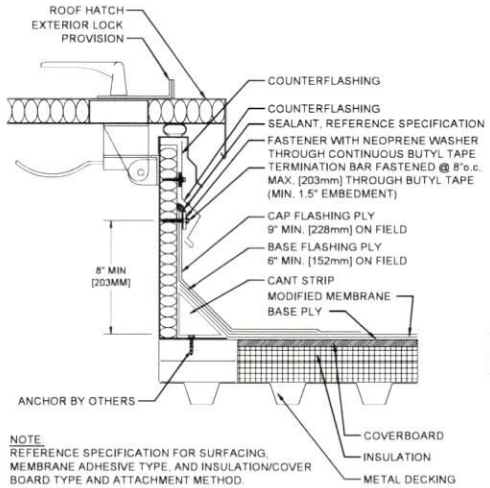
2 A-501 CURB AT AIR HANDLING UNIT DETAIL
SCALE: N.T.S.



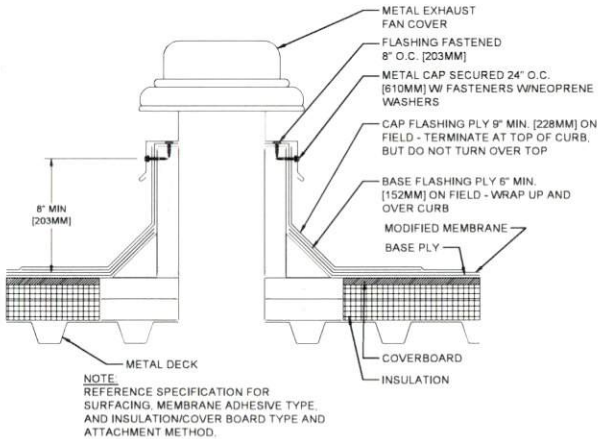
3 A-501 DOOR THRESHOLD DETAIL
SCALE: N.T.S.



4 A-501 EQUIPMENT SUPPORT - PREMANUFACTURED
SCALE: N.T.S.



5 A-501 ROOF HATCH DETAIL
SCALE: N.T.S.



6 A-501 EXHAUST FAN DETAIL
SCALE: N.T.S.

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RMU ROBERT MORRIS

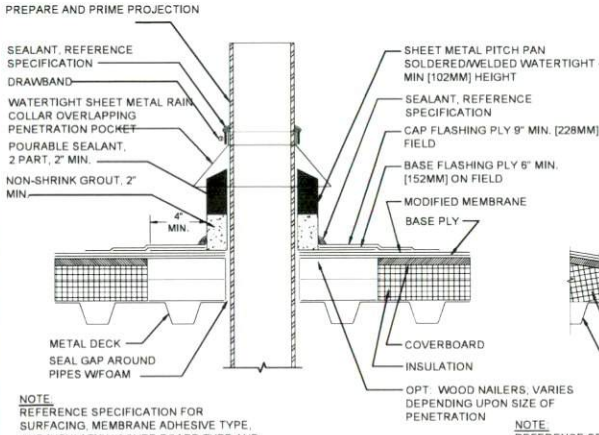
HALE CENTER

4003 Jefferson Way, Moon Township, PA 15108

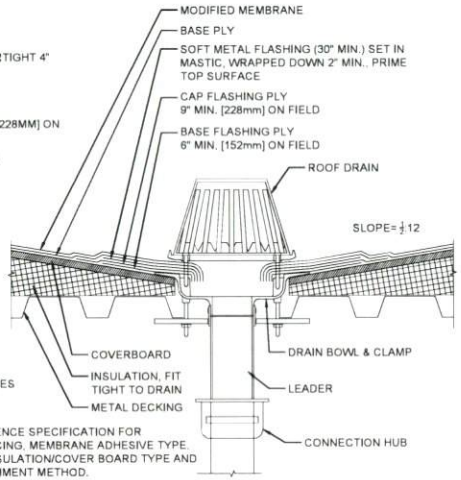
SCALE: AS NOTED
DATE: 09/23/2022
PROJ. #:
DRAWN BY:

ROOF DETAILS

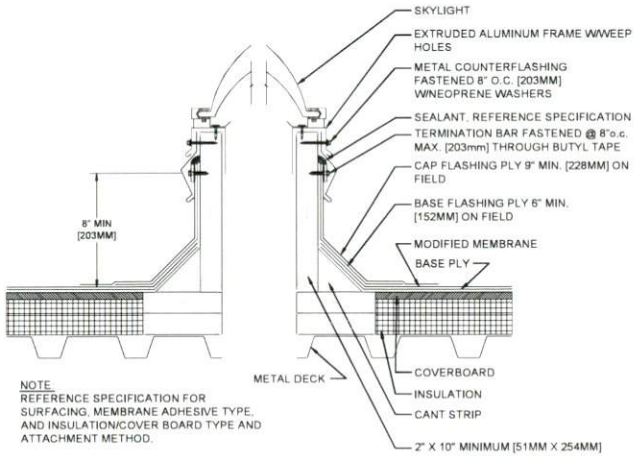
A-501



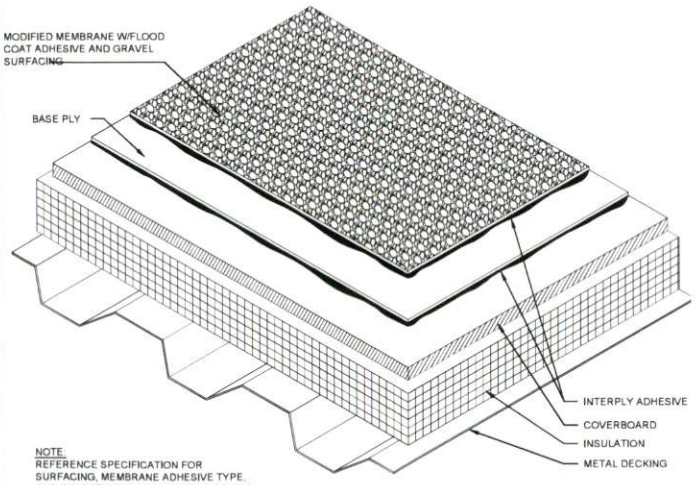
1 A-502 PITCH POCKET DETAIL
SCALE: N.T.S.



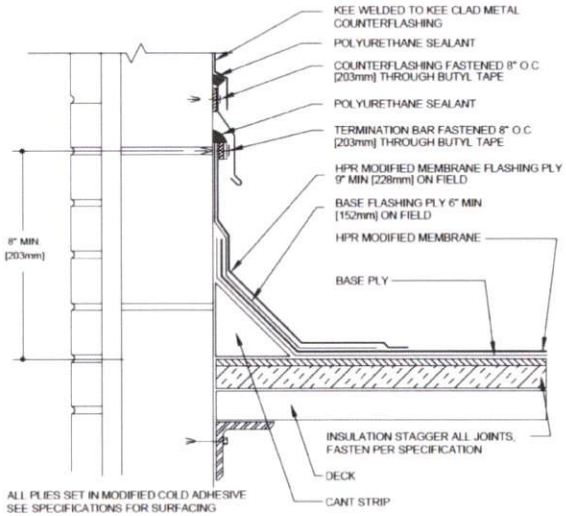
2 A-502 ROOF DRAIN (ALTERNATE) DETAIL
SCALE: N.T.S.



3 A-502 SKYLIGHT DETAIL
SCALE: N.T.S.



4 A-502 TYPICAL ROOF SECTION
SCALE: N.T.S.



5 A-502 KEE WALL CLADDING DETAIL
SCALE: N.T.S.

GARLAND
since 1895

RMU ROBERT MORRIS

HALE CENTER

4003 Jefferson Way, Moon Township, PA 15108

SCALE: AS NOTED
DATE: 09/23/2022
PROJ. #
DRAWN BY:

ROOF DETAILS

A-502

THE GARLAND COMPANY, INC.

HIGH-PERFORMANCE BUILDING ENVELOPE SOLUTIONS

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Preliminary Pressure Calculations

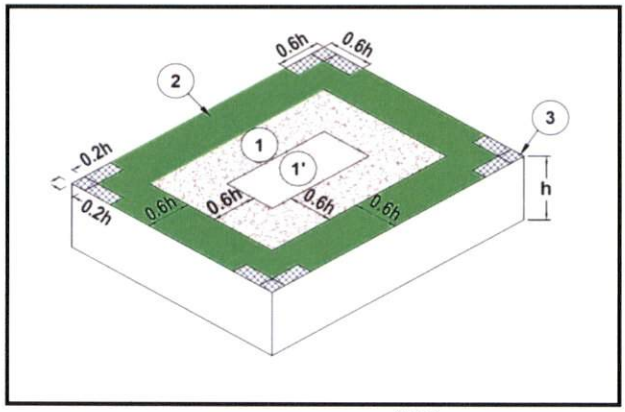
Date	9/22/2022
Sales Rep	Sam Roberts
City	Moon Twp
State	PA

Project Name	RMU John Jay
Roof Sections	John Jay

Design Code	ASCE 7-16 ASD	Base Velocity Pressure	18.8	psf	Gcpi = 0.55
Exposure Category	C	Roof Type	Gable		
Risk Cat. , Importance Factor	IV , 1	Edge Zones			
Wind Speed	121 mph	Zone 2 width =	18'-0"		
Design Roof Height:	30	Zone 3 width =	6'-0"		
Minimum Building Width	200 ft	Zone 3 length =	18'-0"		
Roof Pitch (X, Y)	0.25 : 12	=			
Roof Angle	1.19 deg	=			
Parapet ≥ 36" Entire Roof	No	=			
Deck Type	Steel				

Notes:

Zone Image



Zone Pressures (psf)

ZONE 1'	ZONE 1	ZONE 2	ZONE 3			Wall Perimeter Zone 4	Wall Corner Zone 5
27.2	42.2	53.5	70.4			27.9	33.0
FM 1-60	FM 1-90	FM 1-120	FM 1-150				

Notes:

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Coping

		Date	9/22/2022
		Sales Rep	Sam Roberts
Project Name	RMU John Jay	City	Moon Twp
Roof Sections	John Jay	State	PA

ANSI/SPRI ES-1 COPING PRELIMINARY DESIGN

Project Data

Design Wind Speed:	121	mph
Metal Edge Height:	31.00	feet
Exposure Category:	C	
Importance Classification:	IV	

Design Wind Pressure — ASCE 7-16 ASD

Basic Velocity Pressure:	18.91	psf
Horizontal Design Pressure:	33.18	psf
Vert. Design Pressure:	70.90	psf

ES-1 Tested Coping System

Product Designation: ES-C24-16-60-16

System Description: R-Mer Edge Snap on Coping 16" x 24 Ga w/ 16 GA Anchor Chairs at 60" o.c.

Maximum Tested Front Load:	74.4	psf
Max. Vertical Front Dim.:	6	inches
Maximum Tested Top Load:	160	psf
Max. Vertical Width:	16.00	inches
Maximum Tested Rear Load:	93.9	psf
Max. Vertical Rear Dim.:	4.00	inches

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Fascia

Project Name	RMU John Jay	Date	9/22/2022
Roof Sections	John Jay	Sales Rep	Sam Roberts
		City	Moon Twp
		State	PA

ANSI/SPRI ES-1 FASCIA PRELIMINARY DESIGN

Project Data

Design Wind Speed:	121	mph
Metal Edge Height:	31.00	feet
Exposure Category:	C	
Importance Classification:	IV	

Design Wind Pressure — ASCE 7-16 ASD

Basic Velocity Pressure:	18.91	psf
Horizontal Design Pressure:	33.18	psf

ES-1 Fascia Load

Vertical Face Dimension:	7.25	inches
Fascia Design Load:	55.41	psf

ES-1 Tested Fascia System

Product Designation: MEA-RMF-Fascia725-Z24

System Description: R-Mer Force Fascia 7.25" x 24 GA w/ RMEBF-700 Base Frame

Maximum Tested Load:	320	psf
Max. Vertical Face Dim.:	7.25	inches

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Preliminary Pressure Calculations

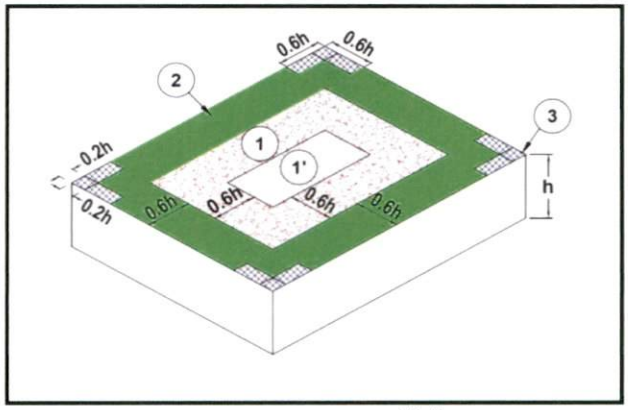
Date: 9/22/2022
Sales Rep: Sam Roberts
City: Moon Twp
State: PA

Project Name: RMU Massey
Roof Sections: Massey Hall

Design Code	ASCE 7-16 ASD	Base Velocity Pressure	17.3 psf	Gcpi = 0.55	
Exposure Category	C	Roof Type	Gable		
Risk Cat. , Importance Factor	III , 1	Edge Zones			
Wind Speed	116 mph	Zone 2 width =	18'-0"		
Design Roof Height:	30	Zone 3 width =	6'-0"		
Minimum Building Width	130 ft	Zone 3 length =	18'-0"		
Roof Pitch (X, Y)	0.25 : 12	=			
Roof Angle	1.19 deg	=			
Parapet ≥ 36" Entire Roof	No	=			
Deck Type	Steel				

Notes:

Zone Image



Zone Pressures (psf)

ZONE 1'	ZONE 1	ZONE 2	ZONE 3			Wall Perimeter Zone 4	Wall Corner Zone 5
25.0	38.8	49.2	64.7			25.6	30.3
FM 1-60	FM 1-90	FM 1-105	FM 1-135				

Notes:

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Coping

		Date	9/22/2022
		Sales Rep	Sam Roberts
Project Name	RMU Massey	City	Moon Twp
Roof Sections	Massey Hall	State	PA

ANSI/SPRI ES-1 COPING PRELIMINARY DESIGN

Project Data

Design Wind Speed:	116	mph
Metal Edge Height:	31.00	feet
Exposure Category:	C	
Importance Classification:	III	

Design Wind Pressure — ASCE 7-16 ASD

Basic Velocity Pressure:	17.38	psf
Horizontal Design Pressure:	30.49	psf
Vert. Design Pressure:	65.16	psf

ES-1 Tested Coping System

Product Designation: ES-C24-16-60-16

System Description: R-Mer Edge Snap on Coping 16" x 24 Ga w/ 16 GA Anchor Chairs at 60" o.c.

Maximum Tested Front Load:	74.4	psf
Max. Vertical Front Dim.:	6	inches
Maximum Tested Top Load:	160	psf
Max. Vertical Width:	16.00	inches
Maximum Tested Rear Load:	93.9	psf
Max. Vertical Rear Dim.:	4.00	inches

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Fascia

		Date	9/22/2022
		Sales Rep	Sam Roberts
Project Name	RMU Massey	City	Moon Twp
Roof Sections	Massey Hall	State	PA

ANSI/SPRI ES-1 FASCIA PRELIMINARY DESIGN

Project Data

Design Wind Speed:	116	mph
Metal Edge Height:	31.00	feet
Exposure Category:	C	
Importance Classification:	III	

Design Wind Pressure — ASCE 7-16 ASD

Basic Velocity Pressure:	17.38	psf
Horizontal Design Pressure:	30.49	psf

ES-1 Fascia Load

Vertical Face Dimension:	7.25	inches
Fascia Design Load:	50.93	psf

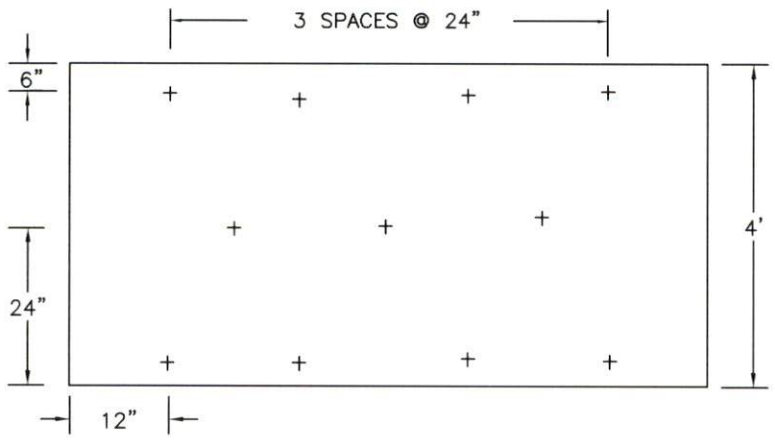
ES-1 Tested Fascia System

Product Designation: MEA-RMF-Fascia725-Z24

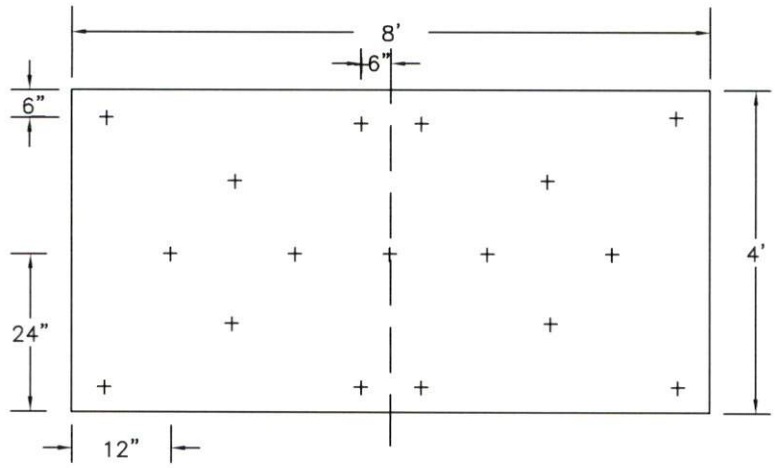
System Description: R-Mer Force Fascia 7.25" x 24 GA w/ RMEBF-700 Base Frame

Maximum Tested Load:	320	psf
Max. Vertical Face Dim.:	7.25	inches

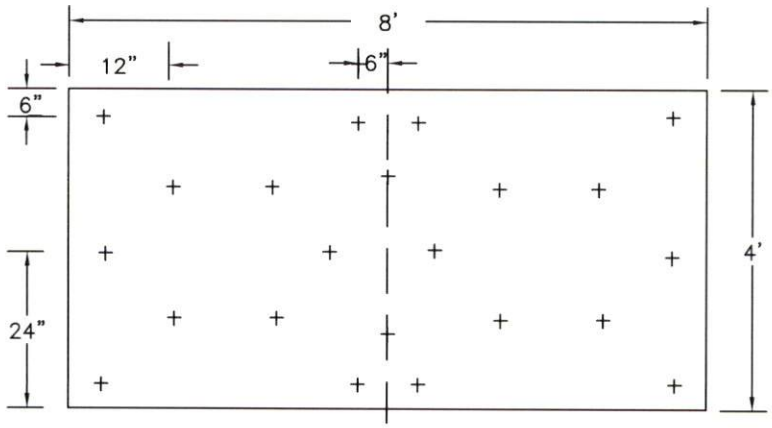
ZONE 1 INSULATION BOARD FASTENER PATTERN: 11 FASTENERS PER BOARD



ZONE 2 INSULATION BOARD FASTENER PATTERN: 17 FASTENERS PER BOARD



ZONE 3 INSULATION BOARD FASTENER PATTERN: 22 FASTENERS PER BOARD



THE GARLAND COMPANY, INC.
3800 EAST 91st STREET
CLEVELAND, OHIO 44105-2197
—PHONE 1-800-321-9336—
FAX 1-216-641-0633

DETAIL:

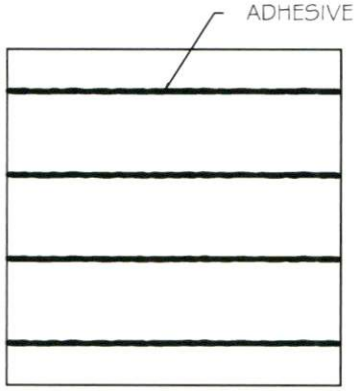
4 X 8 BOARD PATTERN

SECTION:

INSULATION BOARD FASTENER PATTERN

REV: 1 9/05

TYPICAL ZONE 1, 2 AND 3 INSULATION BOARD ADHESIVE PATTERN: 12" OC BEADS PER BOARD



4 ADHESIVE RIBBONS
EQUALLY SPACED AT
12" (30.5cm) O.C. (TYP.)

since 1895

THE GARLAND COMPANY, INC.

GARLAND CANADA, INC.

THE GARLAND COMPANY UK, LTD

DETAIL:

4 X 4 BOARD PATTERN

SECTION:

INSULATION BOARD ADHESIVE PATTERN

REV: 3 28/07

APPENDIX
EXISTING CORE INFORMATION

A. Massey Hall –

1. Metal Deck
2. 1" Perlite
3. 3.5" Styrene (Tapered)
4. Ballasted EPDM

B. John Jay Center – Upper Roof.

1. Metal Deck
2. 3.5" Polyiso
3. ½" Wood Fiber
4. Gravel BUR

Standard Form of Bid / Contract

Owners Information:	**Bidder Information:**
Robert Morris University 6001 University Blvd, Moon Twp, PA 15108 Attn: Matt Hyatt Director of Maintenance and Plant Engineering	Contractor: _____ Address: _____ City: _____ State/Zip: _____ Name: _____ Position: _____ Phone: _____

Description of Work: Massey Hall / John Jay Center Roof Replacement

Bid Due Date : Emailed (hyatt@rmu.edu) by 4:00 pm on November 2nd 2022

Bids Items:

Massey Hall Roof Replacement

Bid Amount: $_____

John Jay Center Roof Replacement

Bid Amount: $_____

Unit Price for Additions to Contract:

Replacement of deteriorated deck

$_____/sq ft

Standard Form of Bid / Contract

1. The undersigned agrees that the proposal is based on material and standards of construction of the makes or types called for in the project manual. Any use of alternate materials without prior written approval will not be permitted.

2. It is hereby certified that the undersigned is the only person(s) interested in this proposal as a principal, and that the proposal is made without collusion with any person, firm, or corporation.

3. Bidder guarantees that, if awarded Contract, he will furnish and deliver all materials, tools, equipment, light, heat, tests, transportation, secure all permits, bonds and licenses, perform all labor, superintendence and all means of construction, pay all fees and do all incidental work, and to execute, construct, and finish in accordance with the procedures outlined in the "Project Manual" to the complete satisfaction and acceptance of the Owner for the price(s) stated on page 1 "Bid Items" & page 2 "Unit Price for Additions to Contract".

4. It is understood that the Owner reserves the right to reject any or all proposals, or part thereof or items therein, and waive technicalities required for the best interests of the Owner. It is further understood that competency and responsibility of bidders will receive consideration before the award of the Contract.

5. By executing this "Standard Form of Bid", the bidder is certifying that he has reviewed and understands the contents of this project manual and has received and understands any or all "addenda" that were issued during the course of the bid process and agrees to abide by same. It is the sole responsibility of the bidder to verify he has received all addenda. The contractor must acknowledge receipt of all addenda in the space provided on page 4 of 4 on this "Standard Form of Bid / Contract".

Standard F

Bidder ac

Addenda No

Addenda No

Addenda No

Executio

As an office … oughly read and understand … Standard Form of Bid / Contract" f…

Company … **eparer**

Address

City

State & Z

Phone

Sealed Bid: A+E Services - WVSU-WVSU Roof Replacements

Buyer: Jerry Rush

Solicitation Number: AEOI WSC2400000003

Bid Closing Dat: 03/15/2024

Bid Closing Time: 2:30 P.M.

3/15/24 11:57 pm

Contractor: _____