

ROOF RESTORATION SPECIFICATIONS

FOR

**NORTH UNION LOCAL SCHOOL DISTRICT
PARTIAL ROOF RESTORATION AT
NORTH UNION MIDDLE SCHOOL
12555 MULVANE ROAD
RICHWOOD, OHIO 43044**

**SCOTT W. MARUNIAK, CFO
NORTH UNION LOCAL SCHOOL DISTRICT
12920 SR 739
RICHWOOD, OHIO 43344**

PRE BID MEETING: 3/23/2022 AT 10:00 AM

BIDS DUE: 4/6/2022 AT 12:00 PM

**ROOF SPECIFICATIONS PREPARED BY:
TIM GARGASZ
THE GARLAND COMPANY, INC.(GARLAND/DBS)
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Contractor Cost Worksheet - BUR

Forward Worksheet to: Garland/DBS
3800 East 91st. Street
Cleveland, OH 44105
Phone: 1-800-762-8225
Fax: 216-641-0633
dbsbids@garlandind.com

Submission of this form acknowledges receipt and acceptance of:

1. All standard Garland details and specifications.
2. Prevailing Wage Rates are NOT applicable.
3. Project specific specifications, drawings, and details.

Submit with this Project Cost proposal:

1. Garland Material list with all quantities.

Awarded subcontractor will provide:

1. Site Specific Safety Plan and OSHA 300 log.
2. Equipment list and selected Waste Hauler's License (State or Local).
3. Certificate of Insurance – listing The Garland Company, Inc., Garland/DBS, and the project name (Owner) listed as additional insured's.
4. All licenses and permits.

Contractor Name:	<input type="text"/>	Date:	<input type="text"/>
Address:	<input type="text"/>		
City, State, Zip:	<input type="text"/>		
Telephone:	<input type="text"/>	FAX:	<input type="text"/>
Contact Person:	<input type="text"/>		
Email Address:	<input type="text"/>		
Project Name:	North Union Local School District –2022 Roof Restorations		
ADDRESS (CITY, STATE, ZIP):	Richwood, Ohio 43344		
DBS Project Manager:	Ron Seitz		
DBS Proposal Number:	Not Applicable		
Garland Representative:	Tim Gargasz		



Contractor Cost Worksheet - BUR

PROJECT NAME:

CONTRACTOR'S NAME:

Contractor / Proposal Information

Contact Person:

Phone: Cell: Fax:

The following information is required in considering your proposal for this project.

- Does your proposal comply with Garland's standard published application procedures? Y N
- Does your proposal comply with Garland's standard published details? Y N
- Is your proposal based upon Garland's standard application procedures and details? Y N
- Is your proposal based upon DBS's Continuing Services Agreement? Y N
- Is your proposal based upon DBS's General Conditions? Y N

Check all that apply to your company

- Small disadvantaged business (SDB) Veteran owned (VOB)
- Women owned (WOB) Service Disabled veteran owned (SDV)
- Regular Small Business HUBzone
- Vietnam Veteran business (VVOB) Socially and economically disadvantaged (8a)
- Large Corporation (None of the above)



Contractor Cost Worksheet - BUR

PROJECT NAME: North Union Local School District 2022 Roof Restorations

CONTRACTOR'S NAME:

Schedule of Values (Provide a schedule per each bid item):

- 1. Mobilization: \$
2. Equipment Rental & Dumpster Fee: \$
3. Demolition: \$
4. Insulation: Material: \$
5. Insulation: Labor: \$
6. Roofing Material - Garland: \$ Not applicable
7. Roofing Material - All Other: \$
8. Roofing Labor: \$
9. Sheet Metal - Material: \$ Not Applicable
10. Sheet Metal - Labor \$
11. HVAC Material: if required \$ Not applicable
12. HVAC Labor: if required \$ Not applicable
13. :Material \$
14. :Labor \$
15. Demobilization: \$
16. Sales Tax: \$ Not applicale

Base Bid (LUMP SUM) \$

4' x 4', 4" wet insulation replacement (EACH) \$



Contractor Cost Worksheet - BUR

Quote must be good for minimum of 150 days. If good for longer, How many days?

Proposals will be evaluated both on the base bid proposal and as the most responsive bid to the construction documents and well as mark-up for change orders.

1. Subcontractor's mark-up for change order Overhead = %
2. Subcontractor's mark-up for change order Profit = %



Contractor Cost Worksheet - BUR

PROJECT NAME: North Union Local School District 2022 Roof Restorations

CONTRACTOR'S NAME:

Roof project square footage is #of area #of levels

Total Working Days: Specified Start Date:

This Worksheet Proposal includes Addendums:

Notes:

- DBS will purchase Garland Material for the job based on the material list provided. Any additional Garland Material necessary to complete the project will be the Contractor's responsibility to purchase at Contractor's expense.
Bid bonds are not required from the Contractor for this project.
Performance and Payment bonds will be provided by DBS, and are not the Contractor's responsibility.
Workmanship Warranties will not extend beyond two years.

GUARANTEE

I certify that I have reviewed and understand Cost Proposal and Materials in their entirety including specifications, Continuing Services Agreement, and Insurance requirements and have reflected this in submitted costs.

Contractor Name:

Contractor's Representative Name/Title:

Contractor's Representative Signature:

Date:



PROJECT NAME: North Union Local School District 2022 Roof Restoration

Contractor:

Garland Materials

Table with 5 columns: ITEM, UNIT, QTY., UNIT/PRICE, TOTAL. Rows include items like White Knight Plus Base Coat, White Knight Plus Top Coat, Tuff Stuff MS Caulking, and Polyester Firm (Areas that hold water). Total values are listed as \$0.00.

NOTES:

SECTION 00 70 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 North Union Local School District.
- D. The term Owner's Representative shall be understood to mean the representative of the primary material manufacturer and Design Build Solutions.

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 CONDITION OF SITE

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

1.4 VERIFICATION OF DIMENSIONS AND ELEVATIONS

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

1.5 PROTECTION OF OWNER'S OPERATIONS

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

1.6 PROTECTION OF WORK AND PROPERTY

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

1.7 MATERIAL STORAGE AND CLEAN-UP

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

1.8 INSPECTION OF WORK

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

1.9 INSPECTION OF WORK IN PROGRESS AND UPON COMPLETION

- A. If directed by the Owner's Representative, the Contractor shall cut not more than four (4) cores, of approximately 200 square inches each, from every newly constructed roof area, in order to establish the amount of materials used per square foot, and shall restore all such areas to sound and watertight conditions as prior to the core testing.
- B. In the event that such core cuts disclose any deficiency in materials, or soundness of construction, the Contractor shall, at his/her own expense, apply additional materials or otherwise correct the deficiencies to the satisfaction of the Owner's Representative.
- C. Noncompliance with the terms of this specification and ensuing contract can result in either the cancellation of the contract, or complete replacement of the defective areas at the Contractor's expense. In the event of cancellation, the Owner will not be obligated to compensate the Contractor for any work undertaken in a defective manner.
- D. Damages caused by water infiltration resulting from the failure of the Contractor to secure each day's work in a weather tight manner, will be corrected at the Contractor's expense. Included as damages will be all labor costs incurred by the Owner as a result of such water infiltration.
- E. The Owner will require the Owner's Representative to examine the work in progress, as well as upon completion, in order to ascertain the extent to which the materials and procedures conform to the requirements of these specifications and to the published instructions of the Manufacturer.
- F. The authorized Owner's Representative shall be responsible for:
 - 1. Keeping the Owner informed on a periodic basis as to the progress and quality of the work;
 - 2. Calling to the attention of the Contractor those matters he/she considers to be in violation of the contract requirements;
 - 3. Reporting to the Owner any failure or refusal of the Contractor to correct unacceptable practices;
 - 4. Conducting preliminary and subsequent job-site meetings with the Contractor's official job representative;
 - 5. Supervising the taking of test cuts, and the restoration of such areas;
 - 6. Rendering any other inspection services which the Owner may designate; and
 - 7. Certifying, after completion of the work, the extent to which the Contractor has complied with these specifications as well as to the published instructions of the Manufacturing Company.
- G. The presence and activities of the Owner's Representative shall in no way relieve the Contractor of his/her contractual responsibilities.

1.10 MISCELLANEOUS UTILITIES

- A. Electrical power will be furnished by the Owner for small tools only. All connections to the electrical system will be furnished by the Contractor.
- B. Water for concrete, mortar, washing and drinking purposes will be furnished by the Owner. Any connections to the water system shall be completed by the Contractor.

- C. At the completion of the work, or when the above connections are no longer required, the Contractor shall remove all connections and leave the facilities in a condition at least as satisfactory as prior to the commencement of his/her work.
- D. *Toilet facilities will be provided by the Contractor. The Contractor will be responsible for supplying a portable toilet on the job-site. The Contractor's personnel are not permitted to enter the building without proper authorization from the Owner or Owner's Representative.*

1.11 CHANGES OR EXTRA WORK

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

1.12 CORRECTION OF WORK PRIOR TO FINAL PAYMENT

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

1.13 CORRECTION OF WORK AFTER FINAL PAYMENT

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

1.14 DEDUCTION FOR UNCORRECTED WORK

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

1.15 LIENS

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

1.16 JOB CONDITIONS

- A. All surfaces to be covered shall be smooth, dry, and free from dirt, debris, and foreign material before any of this work is installed. Pumping equipment shall be located on the ground at a safe distance from building; the location being subject to the approval of the Owner. The Contractor shall be responsible for guarding against fires, and shall provide suitable fire extinguishers conveniently located at the site. Competent operators shall be in attendance at all times equipment is in use. Materials shall be stored neatly in areas designated by the Owner and dispersed so as to present a minimum fire hazard. Loads placed on the roof at any point shall not exceed the safe load for which the roof is designed.
- B. **There is NO SMOKING and NO TOBACCO allowed inside or on School Grounds and the Contractor shall be responsible for enforcement of this job rule at all times with his/her personnel.**
- C. The Contractor should be aware of Owner's property when tearing off the existing roof. This is required for removal of dirt, silt, debris, roof membrane and insulation from the roof surface in order to preserve the ecology, eliminate unsightly conditions and protect building surfaces. 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 becomes wet or damaged must be removed from the job-site and replaced at the Contractor's expense.
- E. Asphalt Kettle: Placement of the kettle shall be in a position so as not to interfere with the ongoing operations of the Owner. The asphalt to be used must be placed on a protective covering of some type until it is raised to the roof. A minimum of two (2) fire extinguishers and "Fire Out" must be adjacent to the kettle.
- F. Ladders: Any ladders used on this project must be in good condition. The ladder must also be secured at the roof line at all times while in use. All ladders must be O.S.H.A. approved.
- G. No drugs or alcoholic beverages are permitted on the grounds.
- H. The Contractor shall place necessary barriers and/or protection around or under all work areas where his/her operations involve risk of injury to plant personnel.

- I. The Contractor will also protect the building structure from damage in the process of the job. In the event that damage does occur to any property or equipment, or the Owner's work in process, notification must be made within two (2) working days of the incidents to the Owner and Owner's Representative.
- J. During the progress of the job, if waste material and rubbish are found or damage resulting from the Contractor's operations is found, or the Contractor does not comply with the requirement by keeping the premises free of accumulations and correct the damage, it shall be the Owner's prerogative to hire personnel to do so; and the cost of this work will be deducted from the balance due the Contractor.
- K. Existing roof top equipment walls, windows, etc. shall be completely protected by masking or other effective methods. Any mastics or asphalt must be cleaned off metal surfaces.
- L. The Contractor is responsible for protecting all materials from the elements. If any material, such as insulation, becomes wet, it cannot be installed and must be replaced at the Contractor's expense. NOTE: Insulation and rolled roofing materials must be covered with waterproof tarps at the end of each work day. Plastic wrappers supplied by the insulation manufacturer are not acceptable substitutes for tarps. The Owner's Representative will reject any covering method or material which does not adequately protect roofing materials.
- M. Anyone guilty of willful destruction or unlawful removal of company property will be dismissed from the job and is subject to prosecution by law.
- N. Any lawns damaged by Contractor vehicles will be restored with a stand of grass at the Contractor's expense. Any damaged pavements will likewise be restored and at the Contractor's expense.
- O. The Contractor must verify that all materials can be installed to accommodate the building design, pertinent codes and regulations, and the manufacturer's current recommendations.
- P. The Contractor will ensure that all substrates are clean, dry, sound, smooth, and free of dirt, debris, and other contamination before any materials are supplied.
- Q. Any isolated areas that must be torn off and replaced will be built-up to the height of the existing roof prior to the installation of the new roofing membrane system.

1.17 WORKMANSHIP

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

1.18 INSULATION

- A. Insulation shall have accurate dimensional stability so as to properly conform to the surfaces of the roof, cants, curbs, pipes, etc. Joints between boards shall be tight and insulation shall be held back ½" from vertical surfaces and sumps. Insulation shall be protected from the weather at all times. No more insulation shall be laid than can be completely covered with

roof materials on the same day. A base sheet shall not be considered as a proper weather barrier.

- B. Insulation that becomes wet during or after installation shall be removed and replaced with dry insulation. If roofing is in place, the roofing shall be also replaced. All replacing work shall be done at no added cost to the Owner.

1.19 ROOF DECK

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

1.20 SAFETY

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

1.21 INSURANCE

- A. The following standard indemnity agreement and minimum insurance requirements are incorporated in the Specifications for all work performed by Contractors for the Owner, its affiliated and associated organizations or subsidiaries, hereinafter referred to as Owner.
 - 1. THE CONTRACTOR AGREES TO INDEMNIFY AND SAVE THE OWNER AND OWNER'S REPRESENTATIVE HARMLESS FROM AND AGAINST ANY AND ALL COSTS, LOSS AND EXPENSE, LIABILITY DAMAGES, OR CLAIMS FOR DAMAGES, INCLUDING COST FOR DEFENDING ANY ACTION, ON ACCOUNT OF ANY INJURY TO PERSONS (INCLUDING DEATH) OR DAMAGE TO OR DESTRUCTION OF PROPERTY OF THE OWNER, ARISING OR RESULTING FROM THE WORK PROVIDED FOR OR PERFORMED, OR FROM ANY ACT, OMISSION, OR NEGLIGENCE OF THE CONTRACTOR, SUBCONTRACTOR AND THEIR AGENTS OR EMPLOYEES. THE FOREGOING PROVISIONS SHALL IN NO WAY BE DEEMED RELEASED, WAIVED OR MODIFIED IN ANY RESPECT BY REASON OF ANY INSURANCE OR SURETY PROVIDED BY THE CONTRACTOR.
 - 2. All sub-contractors are required to file Certificates of Insurance properly completed and signed by an authorized insurance company representative before their work commences on the job or job site. No monies will be paid until the acceptable certificates are on file with the Contractor. Such certificates shall provide that there will be no cancellation, reduction or modification of coverage without thirty (30) days prior written notice to the Contractor. In the event such certificates are not provided to the Contractor prior 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.

The Contractor shall provide and maintain standard fire, extended coverage perils, vandalism and malicious mischief insurance to protect the interest of both the Contractor and the Owner for materials brought into the job or stored on the premises. Such insurance shall be for 100% of the insurable value of the work to be performed including all items of labor and materials incorporated therein, materials stored at the job-site to be

used in completing the work, and such other supplies and equipment incidental to the work as are not owned or rented by the Contractor, the cost of which are included in the direct cost of the work. This insurance shall not cover any tools, derricks, machinery, tar buckets, ladders, engines, workmen's quarters, boilers, pumps, wagons, scaffolds, forms, compressors, shanties, or other items owned or rented by the Contractor, the cost of which is not included in the direct cost of the work.

3. In accordance with Section (1.21), the Contractor and subcontractor(s) shall maintain the following insurance:

a. Workmen's Compensation and Employer's Liability Insurance affording:

1. Protection under the Workmen's Compensation Law of the States in which the work is performed; and
2. Employer's Liability protection subject to a minimum limit of \$100,000.

b. Comprehensive General Liability Insurance in amounts not less than:

Personal Injury	\$1,000,000 per person
(including bodily injury)	\$1,000,000 per occurrence
Property Damage	\$1,000,000 per occurrence

c. Comprehensive Automobile Liability Insurance in the following minimum amounts:

Bodily Injury	\$1,000,000 per person
	\$1,000,000 per occurrence
Property Damage	\$1,000,000 per occurrence

d. This insurance shall:

1. Include coverage for the liability assumed by the Contractor under this section (section 1.21.A.1) (Indemnity);
2. Includes coverage for:
 - i. Premises, operations and mobile equipment liability.
 - ii. Completed operations and products liability.
 - iii. Contractual liability insuring the obligation assumed by the subcontractor in this agreement.
 - iv. Liability which subcontractor may incur as a result of the operations, acts or omissions of subcontractors, suppliers of material and their agents or employees; and
 - v. Automobile liability including owned, non-owned and hired automobile.

All coverage will be on an occurrence basis and on a form acceptable to the Contractor.

3. 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;
4. 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;

5. 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
6. The Certificates of Insurance furnished by the Contractor shall show by specific reference that each of the foregoing items have been provided for.

4. The Certificates of Insurance furnished by the Contractor as evidence of the Insurance maintained by him shall include a clause obligating the Insurer to give the Owner thirty (30) days prior written notice or cancellation of any material change in the insurance.

1.22 WORK HOURS AND DAYS

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

1.23 COMPLIANCE WITH LAWS

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

1.24 OWNER'S RULES

- A. The Contractor and all his/her personnel/agent(s) shall abide by all rules created by the Owner. The Contractor must contact the Owner's Representative for specific information regarding the rules governing all operations of the project.
- B. The Contractor shall properly notify all employees of conditions relating to roof areas with very poor condition and which will be worked on. After such notification, the Contractor must take all necessary precautions to ensure the safety of his/her employees as well as the building personnel.
- C. THE CONTRACTOR SHALL "HOLD HARMLESS" OWNER AND THE MATERIAL MANUFACTURER, AGAINST ANY LITIGATION ARISING FROM ANY ACCIDENTS DURING THE COURSE OF THE CONTRACT.

1.25 SAFETY AND ECOLOGY

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

1.26 ANTI-DISCRIMINATION IN EMPLOYMENT

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

PART 2 - INSTRUCTIONS TO BIDDERS

2.1 WITHDRAWAL OR MODIFICATION OF BID

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

2.2 BID OPENINGS

- A. **Submit bids via online bid submission through Garland/DBS's Center Point platform. Bids can also be submitted via email to:**

Garland/DBS
dbsbids@garlandind.com

- B. Bids should be received by 12:00 PM on April 6, 2022.**

2.3 QUESTIONS

- A. **Technical questions regarding this bid can be directed to: Tim Gargasz, The Garland Company, Inc at 614-323-7088**
- B. If the Contractor feels a conflict exists between what is considered good roofing practice and these specifications, he/she shall state in writing all objections prior to submitting quotations.
- C. It is the Contractor's responsibility, during the course of the work, to bring to the attention of the Owner's Representative any defective membrane, insulation or deck discovered which has not been previously identified.

2.4 RESPONSIBILITY FOR MEASUREMENTS AND QUANTITIES

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

2.5 DISCREPANCIES AND ADDENDA

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

2.6 COMPETENCY OF THE BIDDER

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

2.7 DISQUALIFICATION OF BIDDERS

- A. Any one or more of the following causes may be considered sufficient for the disqualification of a Bidder and the rejection of his/her bid(s):
 - 1. Evidence of collusion among Bidders;
 - 2. Lack of responsibility as revealed by either financial, experience or equipment statements, as submitted;
 - 3. 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
 - 5. Being in arrears on existing contracts, in litigation with an Owner, or having defaulted on a previous contract.

2.8 NOTICE OF AWARD

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

2.9 WARRANTY

- A. A written warranty which will commence from date of acceptance by Manufacturer must be supplied with the roof installation. This warranty will cover all defects in workmanship and materials. Damages caused by storm, vandalism and other trades are not included in the warranty. This warranty shall be from the manufacturer (See further, Statement of Policy).
- B. A two (2) year workmanship warranty is required from the Contractor for all remedial maintenance done under the terms of this contract.

2.10 START AND COMPLETION DATE

- A. Work shall begin on June 4, 2022 for the Middle School Project or as agreed upon by the parties. All work is to be completed by August 12, 2022.
- B. All work as required in these specifications and drawings shall be completed by the agreed upon date by North Union Local Schools, or as agreed upon by the parties. .
- C. *Unless work is hampered by long periods of inclement weather, by due proof of material unavailability, or by strike, the Owner will assess a penalty in the amount of \$300.00 a day for each day beyond the agreed completion date.*
- D. The Contractor is responsible for supplying trained workmen in proper numbers and for scheduling and laying out his/her work, so that it will be started and completed in a professional manner within the time period indicated on his/her Proposal form.
- E. If the Contractor sets equipment onto the job-site without commencing work immediately, the action will be considered "Spiking the job" which is unacceptable and will be considered a breach of contract by the Contractor; thereby, the contract will be terminated and the Contractor at no cost to the Owner, must remove his/her equipment and possessions from the job-site upon notification by the Owner.

2.11 PAYMENT

- A. Payment for materials shall only be made after the material has been delivered to the job-site. An invoice for the material must be presented to the Owner for payment. Materials are not to be delivered to the job-site until the project is ready to begin. The Contractor must provide a release of lien from the Material Manufacturers. Subsequent requests for payment can be made monthly. Final payment for the project will be made following completion, after the final inspection has been made and an invoice presented to the Owner. A 10% retainer shall be held until delivery of the warranty.
- B. When the job in progress is interrupted for two (2) weeks or longer by causes beyond the Contractor's control such as a strike, weather, acts of God, etc., the Owner agrees to pay, upon request of the Contractor, a price equivalent to the percentage of work completed at that time. Regular progress payments shall be made for labor and/or materials.
- C. Each invoice shall be accompanied by a detailed estimate of the amounts and values of labor expended and materials purchased up to the last day of the preceding month. The amount of the invoice shall not exceed ninety percent (90%) of the labor and material values estimated for the preceding month.
- D. Such payments shall be viewed by both parties as progress payments and shall not in any way relieve the Contractor of performance obligations under this contract, nor shall such payments be viewed as approval or acceptance of work performed under this contract.
- E. Final payment shall be withheld until all provisions of the specifications are met, including all necessary cleanup, and the Owner receives written verification of completion.
- F. Upon completion of the job, the Owner, the Owner's Representative, and the Contractor will make final inspection of the work done, and the Owner's Representative will sign a completion slip authorizing final payments.
- G. All payments for material used in the execution of this contract can be made by a check issued jointly, payable to the Contractor and Owner's Representative if requested by Owner's Representative.
- H. If requested by the Owner and/or Owner's Representative, the Contractor shall provide a Letter of Credit from the bank to secure payment to material supplier.
- I. If requested by the Owner and/or Owner's Representative, a certified check shall be paid by the Contractor to material supplier prior to release of order.
- J. If requested by the Owner and/or Owner's Representative, a certified check shall be paid by the Contractor to material supplier via common carrier upon receipt of delivery.
- K. Contractor shall have a pre-approved line of credit from the material supplier.
- L. Final payment shall be made to the Contractor no later than thirty (30) days after job approval, providing the Contractor submits waivers of lien with his/her final invoice indicating that all suppliers have been paid.

2.12 PERFORMANCE AND PAYMENT BOND

- A. Not Applicable. Garland/DBS shall carry the bonding for this project

2.13 TERMINATION BY THE OWNER FOR CAUSE

- A. The Owner may terminate the contract and finish the work by whatever reasonable method he/she deems expedient if the Contractor:
 - 1. Persistently or repeatedly refuses to supply specified materials or to provide enough skilled workers to ensure the project will be completed within the time period indicated on his/her Proposal form;
 - 2. Fails to make payment to sub-contractors and/or suppliers for labor and materials as stipulated in the contract documents; and
 - 3. Is guilty of substantial breach of a provision of the contract documents.
- B. When the Owner terminates the contract for any of the above reasons, the Contractor shall not be entitled to receive further payment until the work is finished. If the unpaid balance of the contract sum exceeds the cost of finishing the work, it will be paid to the Contractor. If the cost to finish the work exceeds the unpaid balance, the Contractor shall pay the difference to the Owner.

2.14 COMPLIANCE WITH LAWS

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

PART 3- CONTRACTOR'S INSTRUCTIONS

3.1 TAXES

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

3.2 CONTRACTOR'S LICENSE

- A. All pertinent state and local licenses will be required by the roofing contractor.

3.3 QUALIFICATION OF BIDDERS

- A. Provide State of Ohio pre-certification forms (low bidder only).

3.4 BUILDING PERMITS

- A. The Roofing contractor shall provide all necessary local building permits.

3.5 JOB COORDINATION

- A. Contractor is responsible for daily communication with the Owner or Owner's Representative relating to areas of roof work in order that the Owner may adequately protect tenant's personal belongings, and the people themselves against possible damage or injury. Contractor is also responsible for policing and protecting areas involving removal and replacement of roof projections, defective decking or other work involving deck penetration.

- B. 48 hours prior to starting of the project and/or delivery of materials, the Contractor shall notify: Scott Maruniak at North Union Local School District at 740-943-2509.**

3.6 CLEAN-UP

- A. Accumulated debris shall be removed periodically to assure maximum safety and sanitation at all times. At completion of work, the Contractor shall remove all excess material and debris from the site and leave all roof surfaces free from accumulations of dirt, debris and other extraneous materials. The Contractor shall also remove any and all drippage of bituminous materials from the face of the buildings, floor, window, ladders and other finished surfaces.

3.7 SUPERINTENDENT

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

3.8 INSPECTIONS

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

PART 4 - STATEMENT OF POLICY

4.1 GUARANTEES

- A. A roofing guarantee is available for review from the Material Manufacturer for the roofing systems published in these specifications. The guarantee will be issued only upon completion of all the guarantee requirements by an approved Contractor. Such guarantees cannot be altered or amended, nor may any other warranties, guarantees or representations be made by an agent or employee of the Material Manufacturer unless such alteration, amendment or additional representation is issued in writing and is signed by a duly authorized officer of the Material Manufacturer, and sealed with the Material Manufacturer seal. This guarantee does not cover cosmetic deficiencies. THE MATERIAL MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY DAMAGES TO THE BUILDING OR ITS CONTENTS OR ANY OTHER CONSEQUENTIAL DAMAGES, AND ITS RESPONSIBILITY IS LIMITED TO REPAIRING LEAKS.

- B. The Contractor will warranty the roof to the Material Manufacturer for a period of two (2) years. The Contractor will inspect the roof with the Owner's Representative 18 months after completion, and, at the Contractor's expense, correct any workmanship defects before the 24th month following completion of the project.

4.2 APPROVED CONTRACTORS

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

4.3 ROOFING SEQUENCE

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

4.4 ACCEPTABILITY OF COMPLETED WORK

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

END OF SECTION

SECTION 01 01 12
SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Attached GENERAL CONDITIONS, BID FORM, forms a component part of this section.

1.2 SUMMARY OF WORK

A. Summary of Work on the Low Sloped Roof Areas of the Middle School:

- a. Perform a thermal scan of the existing roof system to identify any pockets of wet roof insulation. Replace the wet roof insulation on a cost per square foot basis. Any damage or buckled roof insulation will also be identified at the pre construction meeting and replaced on a cost per square foot basis. A line item on the contractor's bid form for 4' x 4' roof insulation replacement should be included with the submission.
- b. Pressure wash the existing PVC roof system with a diluted Simple Green Solution and allow to dry. Do not clean the roof more than 72 hours prior to product application. .
- c. Perform and needed roof field repairs per Section 07 56 30.
- d. Install new stainless steel bolts at each roof drain location along with new drain strainers.
- e. Install a new walk pad at the roof access points.
- f. Install new fluid applied restoration system (White Knight Plus) per Section 07 56 30
- g. Install new joint sealants at all termination bars, storm collars and caulking joints. .
- h. Clean up all debris and damage done to grounds, building and roof top (if any).

1.3 INTENT OF THE SPECIFICATIONS

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

1.4 PROTECTION

- A. The contractor shall use every available precaution to provide for the safety of the property owner, visitors to the site, and all connected with the work under the Contract.
- B. All existing facilities both above and below ground shall be protected and maintained free of damage. Existing facilities shall remain operating during the period of construction unless otherwise permitted. All access roadways must remain open to traffic unless otherwise permitted.
- C. Barricades shall be erected to fence off all construction areas from operations personnel.
- D. Safety Requirements:
 1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
 2. Comply with federal, state, and local and owner fire and safety requirements.
 3. Advise owner whenever work is expected to be hazardous to owner employees and/or operations.

4. Maintain a crewman as a floor guard whenever roof decking is being repaired or replaced and whenever any roofing is being removed.
5. Maintain proper fire extinguisher within easy access whenever power tools, roofing kettles, and torches are being used. A MINIMUM OF A 2 HOUR FIRE WATCH SHALL BE STRICTLY ADHERED TO WHENEVER PROPANE TORCHES ARE IN USE.
6. ALL SAFETY REQUIREMENTS OF THE BUILDING OWNER MUST BE FOLLOWED. NO EXCEPTIONS WILL BE PERMITTED. SAFETY ORIENTATION MEETING REQUIRED.

1.5 HOUSEKEEPING

- A. Keep materials neat and orderly.
- B. Remove scrap, waste and debris from the project area.
- C. Maintenance of clean conditions while work is in progress and cleanup when work is completed shall be in strict accordance with the "General Conditions" of this contract.
- D. Fire protection during construction. **A 2 hour fire watch is mandatory on days where open flames and torches are being used.**
- E. Follow all requirements established by the building owner.

END OF SECTION

SECTION 07 56 30

FLUID APPLIED ROOFING RESTORATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Single Ply Roof Restoration over the low sloped roof areas on the Middle School.
- B. Accessories as specified or required to provide a warrantable, water tight installation.

1.2 RELATED SECTIONS

- A. Section 01 01 12 – Summary of Work
- B. Section 07 90 12 – Joint Sealants

1.3 REFERENCES

- A. ASTM C 78 - Standard Test Method for Flexural Strength of Concrete.
- B. ASTM C 92 - Standard Test Methods for Sieve Analysis and Water Content of Refractory Materials.
- C. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
- D. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
- E. ASTM C 1250 - Standard Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes.
- F. ASTM D 5 - Standard Test Method for Penetration of Bituminous Materials.
- G. ASTM D 36 - Standard Test Method for Softening Point of Bitumen.
- H. ASTM D 43 - Standard Specification for Coal Tar Primer Used in Roofing, Dampproofing, and Waterproofing.
- I. ASTM D 71 - Standard Test Method for Relative Density of Solid Pitch and Asphalt.
- J. ASTM D 75 - Standard Practice for Sampling Aggregates.
- K. ASTM D 92 - Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester.
- L. ASTM D 93 - Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester.
- M. ASTM D 113 - Standard Test Method for Ductility of Bituminous Materials.
- N. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
- O. ASTM D 562 - Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.

- P. ASTM D 624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- Q. ASTM D 816 - Standard Test Methods for Rubber Cements.
- R. ASTM D 1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal).
- S. ASTM D 1370 - Standard Test Method for Contact Compatibility Between Asphaltic Materials (Oliensis Test).
- T. ASTM D 1475 - Standard Test Method For Density of Liquid Coatings, Inks, and Related Products.
- U. ASTM D 1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
- V. ASTM D 1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test).
- W. ASTM D 2042 - Standard Test Method for Solubility of Asphalt Materials in Trichloroethylene.
- X. ASTM D 2196 - Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer.
- Y. ASTM D 2240 - Standard Test Method for Rubber Property-Durometer Hardness.
- Z. ASTM D 2369 - Standard Test Method for Volatile Content of Coatings.
- AA. ASTM D 2939 - Standard Test Methods for Emulsified Bitumens Used as Protective Coatings.
- BB. ASTM D 3111 - Standard Test Method for Flexibility Determination of Hot-Melt Adhesives by Mandrel Bend Test Method.
- CC. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
- DD. ASTM D 4209 - Standard Practice for Determining Volatile and Nonvolatile Content of Cellulosics, Emulsions, Resin Solutions, Shellac, and Varnishes.
- EE. ASTM D 4212 - Standard Test Method for Viscosity by Dip-Type Viscosity Cups.
- FF. ASTM D 4402 - Standard Test Method for Viscosity Determination of Asphalt at Elevated Temperatures Using a Rotational Viscometer.
- GG. ASTM D 4479 - Standard Specification for Asphalt Roof Coatings - Asbestos-Free.
- HH. ASTM D 5040 - Standard Test Methods for Ash Content of Adhesives.
- II. ASTM D 5420 - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).
- JJ. ASTM E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces
- KK. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- LL. SRI - Solar Reflectance Index calculated according to ASTM E 1980.
- MM. South Coast AQMD Standards.

- NN. SMACNA Architectural Sheet Metal Manual.
- OO. ANSI/SPRI ES-1 - Testing and Certification Listing of Shop Fabricated Edge Metal
- PP. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

1.4 SYSTEM DESCRIPTION

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

1.5 SUBMITTALS

- A. Submit under provisions of this Section.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Shop Drawings: Submit shop drawings including installation details of roofing, flashing, fastening, insulation and vapor barrier, including notation of roof slopes and fastening patterns of insulation and base modified bitumen membrane, prior to job start.
- D. Verification Samples: For each product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, and color.
- E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- F. 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: Manufacturer: Company specializing in manufacturing products specified in this section with documented ISO 9001 certification and minimum twelve years and experience.
- C. Installer Qualifications: Company specializing in performing Work of this section with minimum five years documented experience and a certified Pre-Approved Garland Contractor.
- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress.
- E. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.

- F. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

1.7 PRE-INSTALLATION CONFERENCE

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

1.8 DELIVERY, STORAGE, AND HANDLING

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

1.9 PROJECT CONDITIONS

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

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

1.10 WARRANTY

- A. Upon completion of the work, provide the Manufacturer's written and signed limited labor and materials Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due either to defective material or defective workmanship by the installing contractor, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the labor and material necessary to return the defective area to a watertight condition.
 - 1. Warranty Period:
 - a. 10 year leak free warranty.
- B. Installer is to guarantee all work against defects in materials and workmanship for a period indicated following final acceptance of the Work.
 - 1. Warranty Period:
 - a. 2 years from date of acceptance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

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

2.2 ROOF RESTORATION SYSTEM FOR SINGLE PLY ROOFS

- A. White-Knight Plus Base and Top Coat:
 - 1. Primer: None.
 - 2. Coating: White-Knight Plus/ White-Stallion Plus.
 - 3. Flashing: Repair or replace as needed.
 - 4. Reinforcement: Apply White-Knight Plus Base Coat/ White-Stallion Plus Base Coat or Cool

- Sill Flashing Grade on seams and around penetrations only.
5. Surfacing: None.

2.3 ACCESSORIES:

- A. Urethane Sealant - 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: 950%
 3. Hardness, Shore A ASTM C 920: 35
 4. Adhesion-in-Peel, ASTM C 92: 30 pli

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 ROOF PREPARATION AND REPAIR

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- B. Repair all defects such as deteriorated roof decks; replace saturated insulation board, replace loose or brittle membrane or membrane flashings. Verify that existing conditions meet the following requirements:
 1. Existing membrane is either fully adhered or that the membranes mechanical fasteners are secured and functional.
 2. Application of roofing materials over a brittle roof membrane is not recommended.
- C. Remove all loose dirt and foreign debris from the roof surface. Do not damage roof membrane in cleaning process.
- D. Clean and seal all parapet walls, gutters and coping caps, and repair any damaged metal where necessary. Seal watertight all fasteners, pipes, drains, vents, joints and penetrations where water could enter the building envelope.
- E. Clean the entire roof surface by removing all dirt, algae, paint, oil, talc, rust or foreign substance. Use a 10 percent solution of TSP (tri-sodium phosphate), Simple Green and warm water. Scrub heavily soiled areas with a brush. Rinse with fresh water to remove all TSP solution. Allow roof to dry thoroughly before continuing.
- F. Repair existing roof membrane as necessary to provide a sound substrate for the liquid membrane. All surface defects (cracks, blisters, tears) must be repaired with similar materials.
- G. Pre-Treatment of Known Growth - General Surfaces: Once areas of moss, mold, algae and other fungal growths or vegetation have been removed and surfaces have also been thoroughly cleaned, apply a biocide wash at a maximum spread rate of 0.2 gallons/square (0.08 liters/m), to guard against subsequent infection. Allow to dry onto absorbent surfaces before continuing with the application. On non-absorbent surfaces, allow to react before thoroughly rinsing to remove all traces of the solution.

3.3 INSTALLATION

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

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

3.4 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Fabricated Flashings: Fabricated flashings and trim are provided as specified in Section 07 6200.
 1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the Copper Development Association "Copper in Architecture - Handbook" as applicable.

- B. Manufactured Roof Specialties: Manufactured copings, fascia, gravel stops, control joints, expansion

joints, joint covers and related flashings and trim are provided as specified in Section 07710.

1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the National Roofing Contractor's Association "Roofing and Waterproofing Manual" as applicable.

3.5 CLEANING

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

3.6 PROTECTION

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

3.7 FIELD QUALITY CONTROL

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

3.8 FINAL INSPECTION

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

roofing system manufacturer.

3.9 PROTECTION

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

3.10 SCHEDULES

A. Coatings:

- 1. Coating: White-Knight Plus/ White-Stallion Plus: Highly reflective multi- purpose, single-component aliphatic urethane, liquid waterproofing membrane.
 - a. Tensile Strength: ASTM D 412, 2100 psi
 - b. Tear Resistance: ASTM D 624, 160 lbs./in
 - c. Elongation: ASTM D 412, 320%
 - d. Density @ 77 degrees F (25 degrees C, ASTM D 2939) 10.4 lb./gal (1.2 g/m3)
 - e. Flash Point: ASTM D 93, 110 degrees F min. (43 degrees C)
 - f. Non-Volatile: ASTM D 75, Typical 83%
 - g. Viscosity @ 77 degrees F (25 degrees C); Brookfield RVT, #4 Spindle 10 rpm9200 cP
 - h. Wet Film Thickness@ 2 gal./100 sq. ft. (0.82 l/m2)
 - i. VOC: 225 g/l
 - j. Reflectance: 0.87
 - k. Emittance: 0.89
 - l. SRI: 110

B. Flashings

- 1. Coating: White-Knight Plus/ White-Stallion Plus: highly reflective multi- purpose, single-component aliphatic urethane, liquid waterproofing membrane.
 - a. Tensile Strength: ASTM D 412, 2100 psi
 - b. Tear Resistance: ASTM D 624, 160 lbs./in
 - c. Elongation: ASTM D 412, 320%
 - d. Density @ 77 degrees F (25 degrees C, ASTM D 2939) 10.4 lb./gal (1.2 g/m3)
 - e. Flash Point: ASTM D 93, 110 degrees F min. (43 degrees C)
 - f. Non-Volatile: ASTM D 75, Typical 83%
 - g. Viscosity @ 77 degrees F (25 degrees C); Brookfield RVT, #4 Spindle 10 rpm9200 cP
 - h. Wet Film Thickness @ 2 gal./100 sq. ft. (0.82 l/m2)
 - i. VOC: 225 g/l
 - j. Reflectance: 0.87
 - k. Emittance: 0.89
 - l. SRI: 110

END OF SECTION

SECTION 07 90 12

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide joint sealants as shown and specified. Work includes:
 - 1. Exterior sealants.
 - 2. Substrate cleaners, primers and sealers.

1.2 SYSTEM PERFORMANCE

- A. Provide joint sealants that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.3 QUALITY ASSURANCE

- A. Application: Performed by skilled, experienced joint sealant applicators with not less than three years of satisfactory experience on projects of comparable size and character.
- B. Joint sealant manufacturers shall make available at no cost and up to 72 hours notice, the services of a qualified field service representative to assure proper joint sealant use, surface preparation, and installation procedures.
- C. Provide each type of joint sealer required produced by one manufacturer.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original, unopened, undamaged and labeled containers.
- B. Store, handle, and protect materials from damage or contamination from foreign materials in accordance with manufacturer's specifications.

1.5 PROJECT CONDITIONS

- A. Apply joint sealants as late as possible in the construction, preceding application of water repellent coatings and painting and following cleaning procedures. Do not apply joint sealants during inclement weather conditions or when temperature is above or below manufacturer's limitations for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. The Garland Company, Inc. Tuff Stuff Sealant at all exposed caulking joints and metal to metal joints.

- B. The Garland Company, Inc. – Garla Flex Sealant at all locations that come in contact with asphalt membrane (base of pitch pockets, around drain seals, base of heat stacks, termination bars, soil stacks, etc.)

2.3 ACCESSORY MATERIALS

- A. Joint primer/sealer: Non-staining type, recommended by sealant manufacturer for joint surfaces to be primed or sealed.
- B. Joint Cleaner: Non-corrosive and non-staining type recommended by sealant manufacturer, compatible with joint forming materials.

PARTY 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and installation conditions. Do not proceed with joint sealer work until unsatisfactory conditions have been corrected.
- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.2 PREPARATION

- A. Clean, seal and prime surfaces in accordance with manufacturer's recommendations. Confine primer/sealer to areas of sealant bond.
- B. Remove dust, dirt, loose coatings, moisture and other substances, which could interfere with sealant bond.
- C. Etch concrete and masonry joint surfaces and toughen vitreous and glazed joint surfaces as recommended by joint sealant manufacturer.

3.3 INSTALLATION

- A. Install joint sealant materials and accessories in strict accordance with manufacturer's installation requirements.
- B. Set joint filler units at depth or position in joint as required coordinating with other work. Do not leave voids or gaps between ends or joint filler units.

END OF SECTION



since 1895

ROOF MEASUREMENT REPORT

12555 Mulvane Rd, Richwood, OH 43344

Report Contents



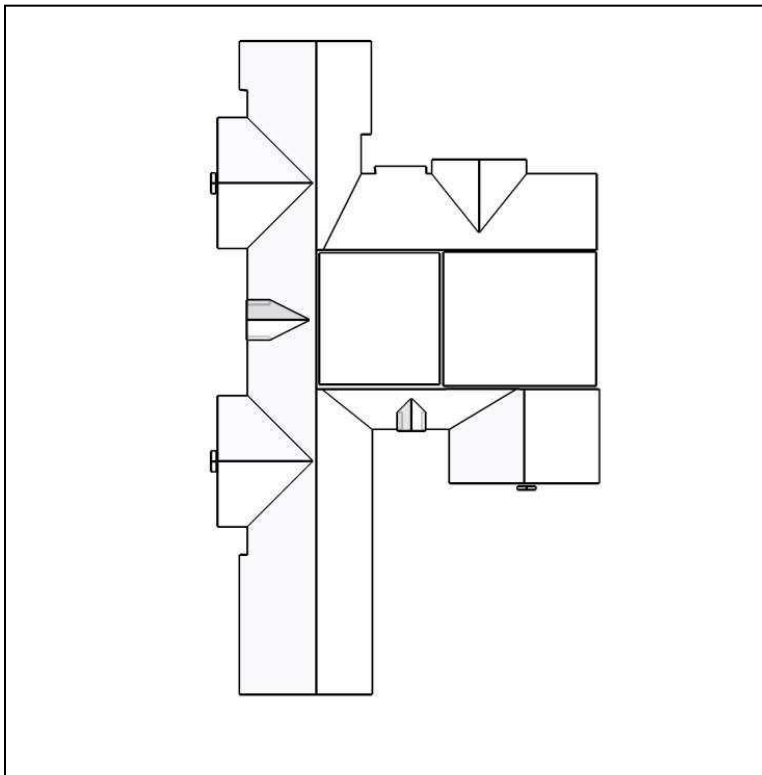
- Images1
- Length Diagram.....4
- Pitch Diagram.....5
- Area Diagram6
- Penetrations Diagram7
- Notes Diagram8
- Property Info.....9
- Report Summary.....10

Report Details

Date:	02/25/2022
Report:	44657269

Roof Details

Total Area:	63,707 sq ft
Total Roof Facets:	25
Predominant Pitch:	3/12
Number of Stories:	>1
Total Ridges/Hips:	621 ft
Total Valleys:	563 ft
Total Rakes:	114 ft
Total Eaves:	864 ft
Total Penetrations:	37
Total Penetrations Perimeter:	229 ft
Total Penetrations Area:	106 sq ft



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

Contact Us

Contact: Tim Gargasz
 Company: The Garland Company Inc.
 Address: 3800 East 91st St
 Cleveland OH 44105
 Phone: 216-641-7500

Measurements provided by www.eagleview.com



Certified Accurate

www.eagleview.com/Guarantee.aspx

REPORT IMAGES

The following aerial images show different angles of this structure for your reference.



Top View

REPORT IMAGES

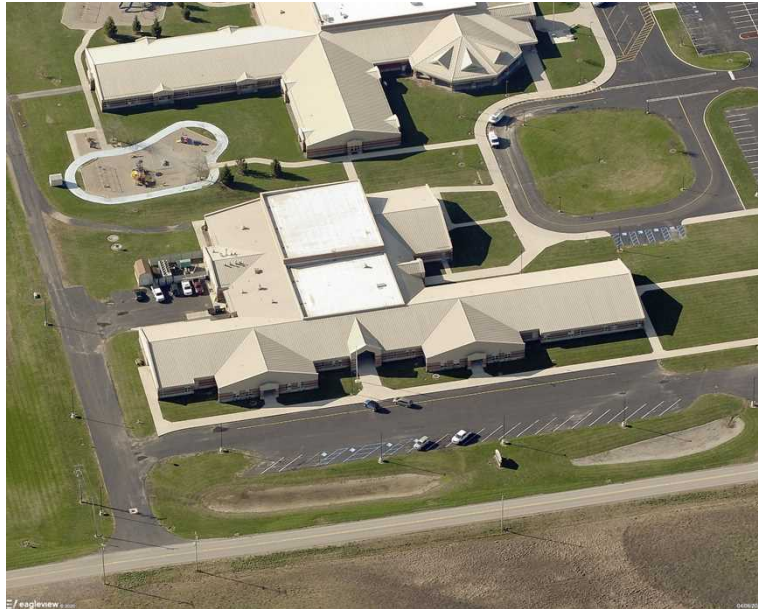


North View



East View

REPORT IMAGES



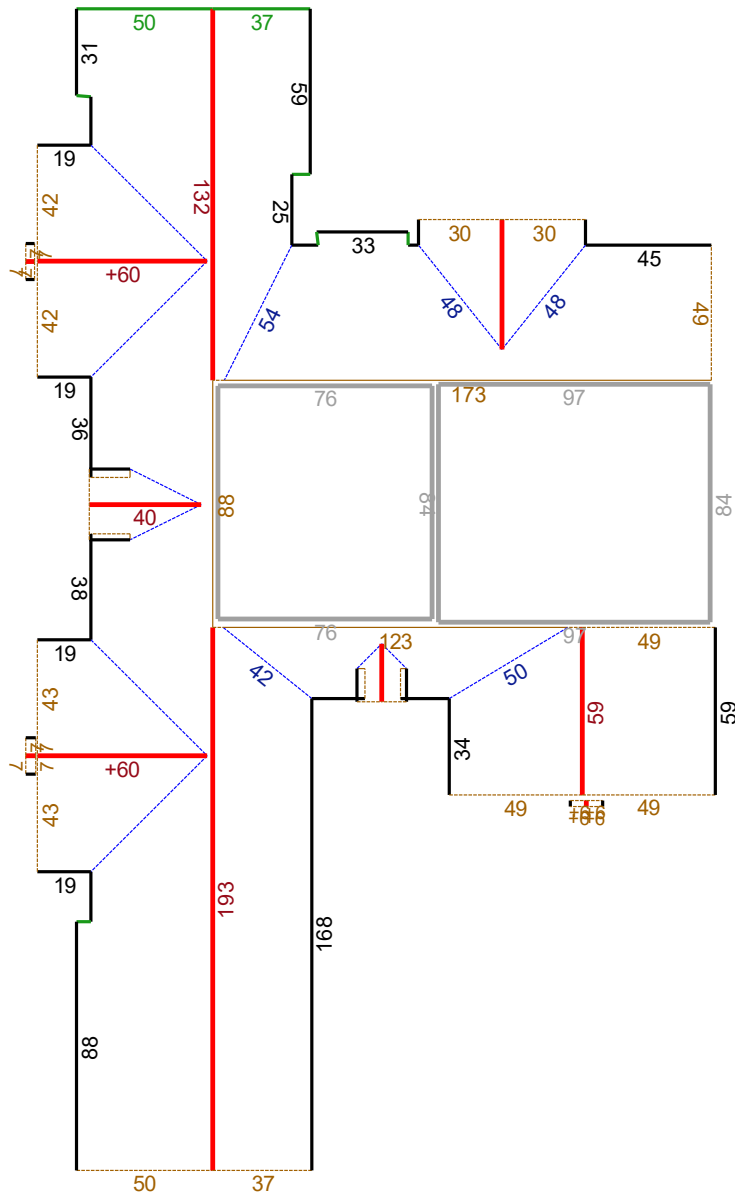
South View



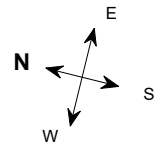
West View

LENGTH DIAGRAM

Total Line Lengths: Ridges = 621 ft Valleys = 563 ft Flashing = 394 ft Eaves = 864 ft
 Hips = 0 ft Rakes = 114 ft Step flashing = 703 ft Parapets = 682 ft



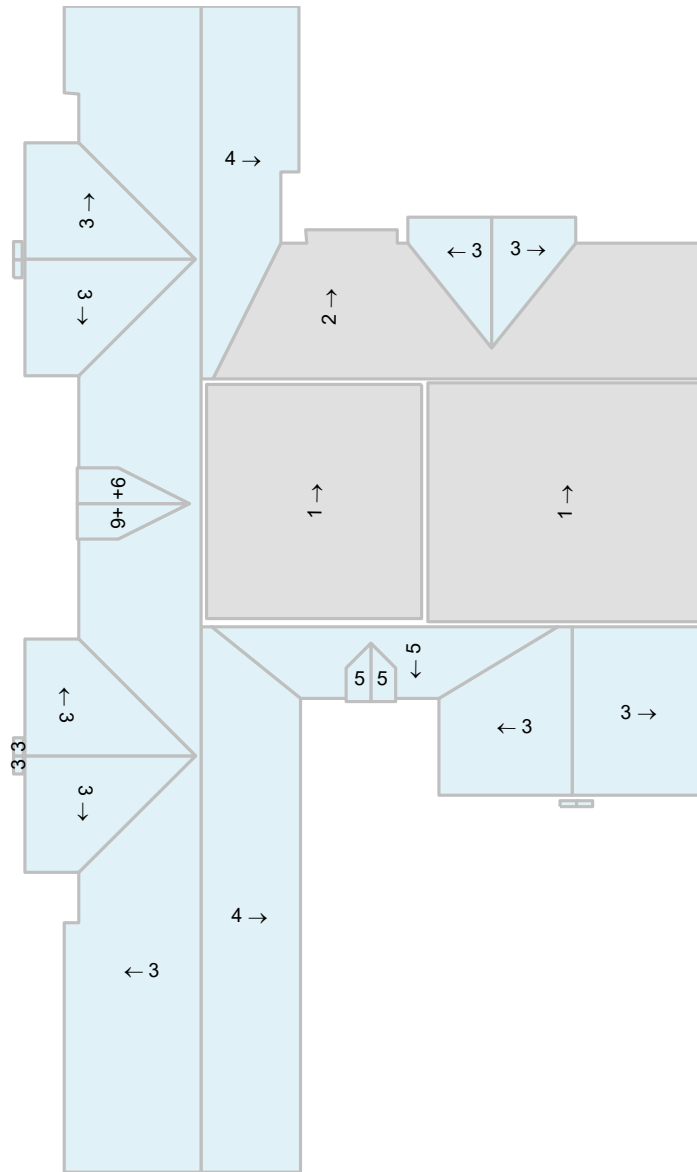
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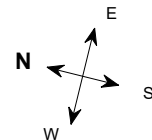
Note: This diagram contains segment lengths (rounded to the nearest whole number) over 5 feet. In some cases, segment labels have been removed for readability. Plus signs preface some numbers to avoid confusion when rotated (e.g. +6 and +9).

PITCH DIAGRAM

Pitch values are shown in inches per foot, and arrows indicate slope direction. The predominant pitch on this roof is 3/12.



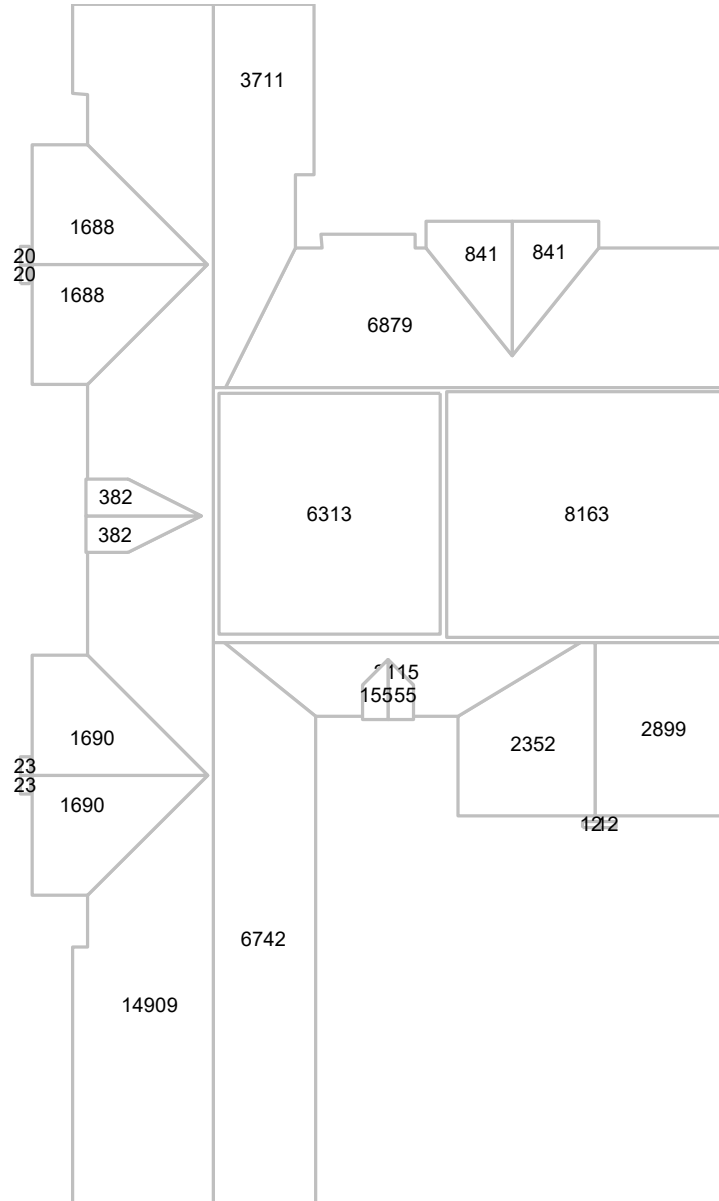
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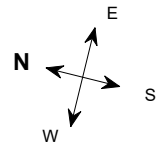
Note: This diagram contains labeled pitches for facet areas larger than 20 square feet. In some cases, pitch labels have been removed for readability. Gray shading indicates flat, 1/12 or 2/12 pitches. If present, a value of "F" indicates a flat facet (no pitch).

AREA DIAGRAM

Total Area = 63,707 sq ft, with 25 facets.



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Note: This diagram shows the square feet of each roof facet (rounded to the nearest foot). The total area in square feet, at the top of this page, is based on the non-rounded values of each roof facet (rounded to the nearest square foot after being totaled).

PENETRATIONS

Penetrations Notes Diagram

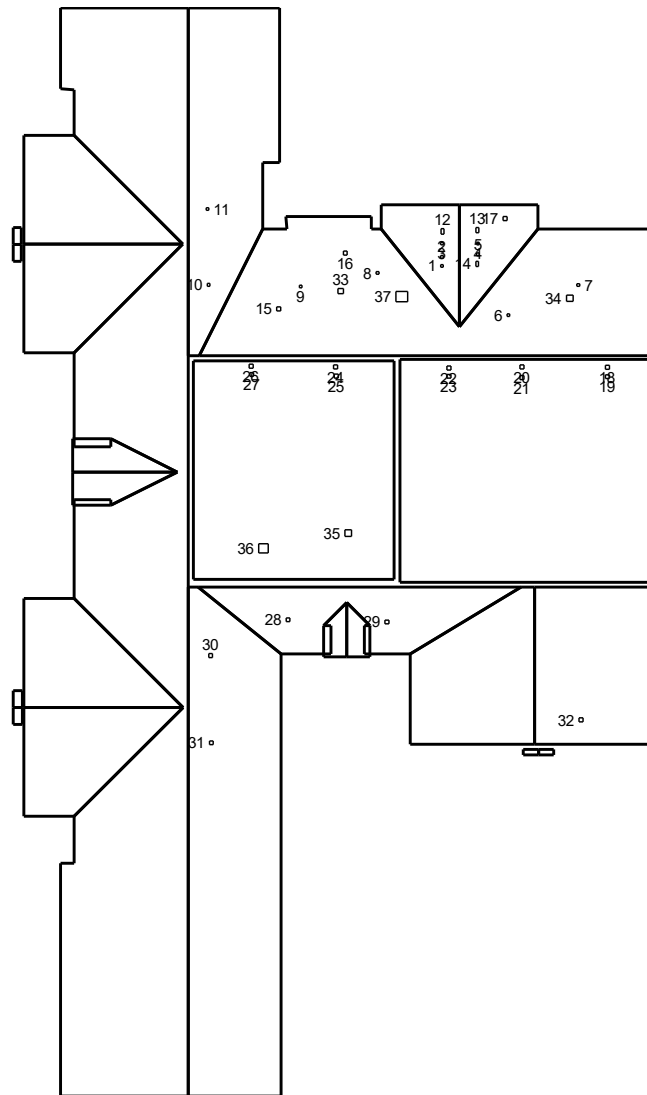
Penetrations are labeled from smallest to largest for easy reference.

Total Penetrations: 37

Total Penetrations Perimeter = 229 ft

Total Penetrations Area: 106 sq ft

Total Roof Area Less Penetrations = 63,601 sq ft

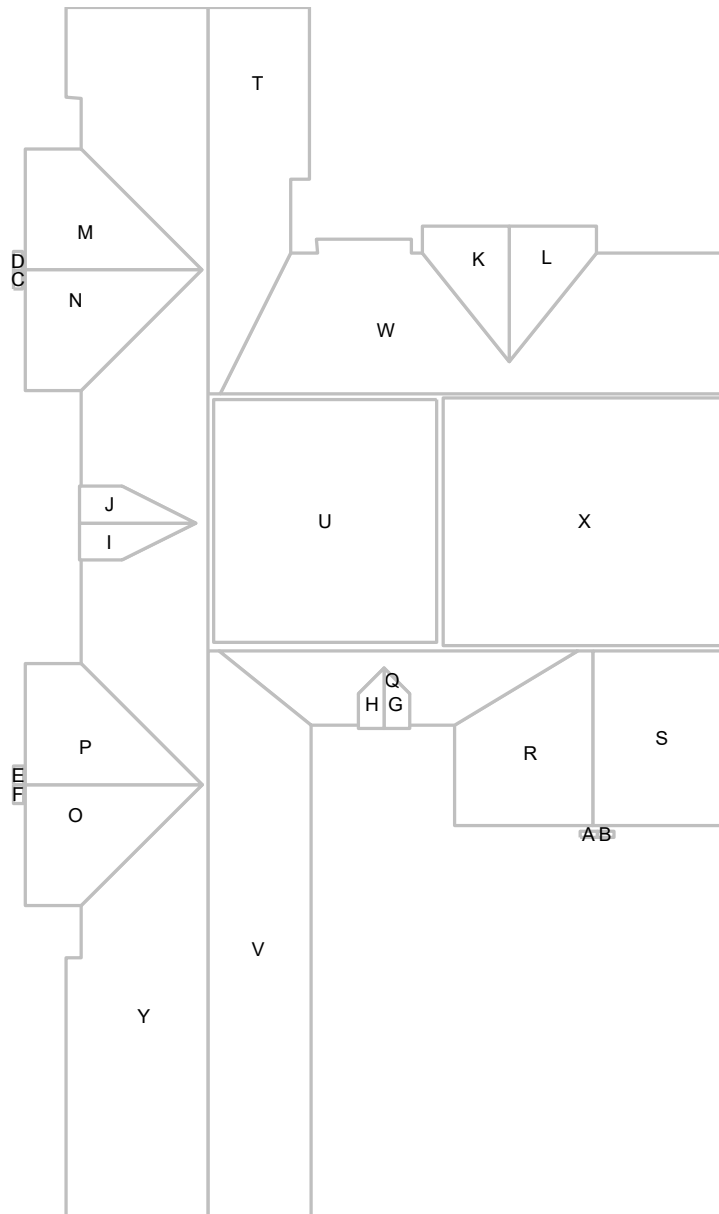


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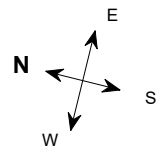
Note: Any measured penetration smaller than 3x3 feet may need field verification. Accuracy is not guaranteed. The total penetration area is not subtracted from the total roof area.

NOTES DIAGRAM

Roof facets are labeled from smallest to largest (A to Z) for easy reference.



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Property Info



Property Location

Longitude = -83.3021992

Latitude = 40.4376813

Online map of property:

http://maps.google.com/maps?f=g&source=s_q&hl=en&geocode=&q=12555+Mulvane+Rd,Richwood,OH,43344

Property Info

Year Built:

Effective Year Built: *

*



Notes

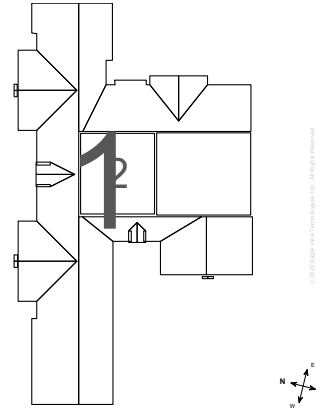
This was ordered as a commercial property. There were no changes to the structure in the past four years.

REPORT SUMMARY

Below is a measurement summary using the values presented in this report.

Lengths, Areas and Pitches

Ridge	621 ft (11 Ridges)
Hips	0 ft (0 Hips)
Valleys	563 ft (13 Valleys)
Rakes*	114 ft (7 Rakes)
Eaves/Starter**	864 ft (33 Eaves)
Drip Edge (Eaves + Rakes)	978 ft (40 Lengths)
Parapet Walls	682 ft (8 Lengths)
Flashing	394 ft (7 Lengths)
Step Flashing	703 ft (35 Lengths)
Total Area	63,707 sq ft
Total Penetrations Area	106 sq ft
Total Roof Area Less Penetrations	63,601 sq ft
Total Penetrations Perimeter	229 ft
Predominant Pitch	3/12



Total Roof Facets = 25

*Rakes are defined as roof edges that are sloped (not level).

** Eaves are defined as roof edges that are not sloped and level.

Measurements by Structure

Structure	Area (sq ft)	Ridges (ft)	Hips (ft)	Valleys (ft)	Rakes (ft)	Eaves (ft)	Flashing (ft)	Step Flashing (ft)	Parapets (ft)
1	57392	620	0	563	114	864	394	702	363
2	6313	0	0	0	0	0	0	0	319

All values in this table are rounded up to the nearest foot for each separate structure. Measurement totals displayed elsewhere in this report are added together before rounding which may cause totals to differ.

Areas per Pitch

Roof Pitches	1/12	2/12	3/12	4/12	5/12	6/12
Area (sq ft)	14476.0	6879.1	28710.0	10453.0	2424.6	763.4
% of Squares	22.7%	10.8%	45.1%	16.4%	3.8%	1.2%

The table above lists each pitch on this roof and the total area and percent (both rounded) of the roof with that pitch.



ROOF MEASUREMENT REPORT

Waste Calculation Table

Waste %	0%	10%	12%	15%	17%	20%	22%
Area (sq ft)	63,707	70077.7	71351.8	73263.1	74537.2	76448.4	77722.5
Squares	637.1	700.8	713.5	732.6	745.4	764.5	777.2

This table shows the total roof area and squares (rounded up to the nearest decimal) based upon different waste percentages. The waste factor is subject to the complexity of the roof, individual roofing techniques and your experience. Please consider this when calculating appropriate waste percentages. Note that only roof area is included in these waste calculations. Additional materials needed for ridge, hip, valley, and starter lengths are not included.

Parapet Calculation Table

Wall Height (ft)	1	2	3	4	5	6	7
Vertical Wall Area (sq ft)	682	1364	2046	2728	3410	4092	4774

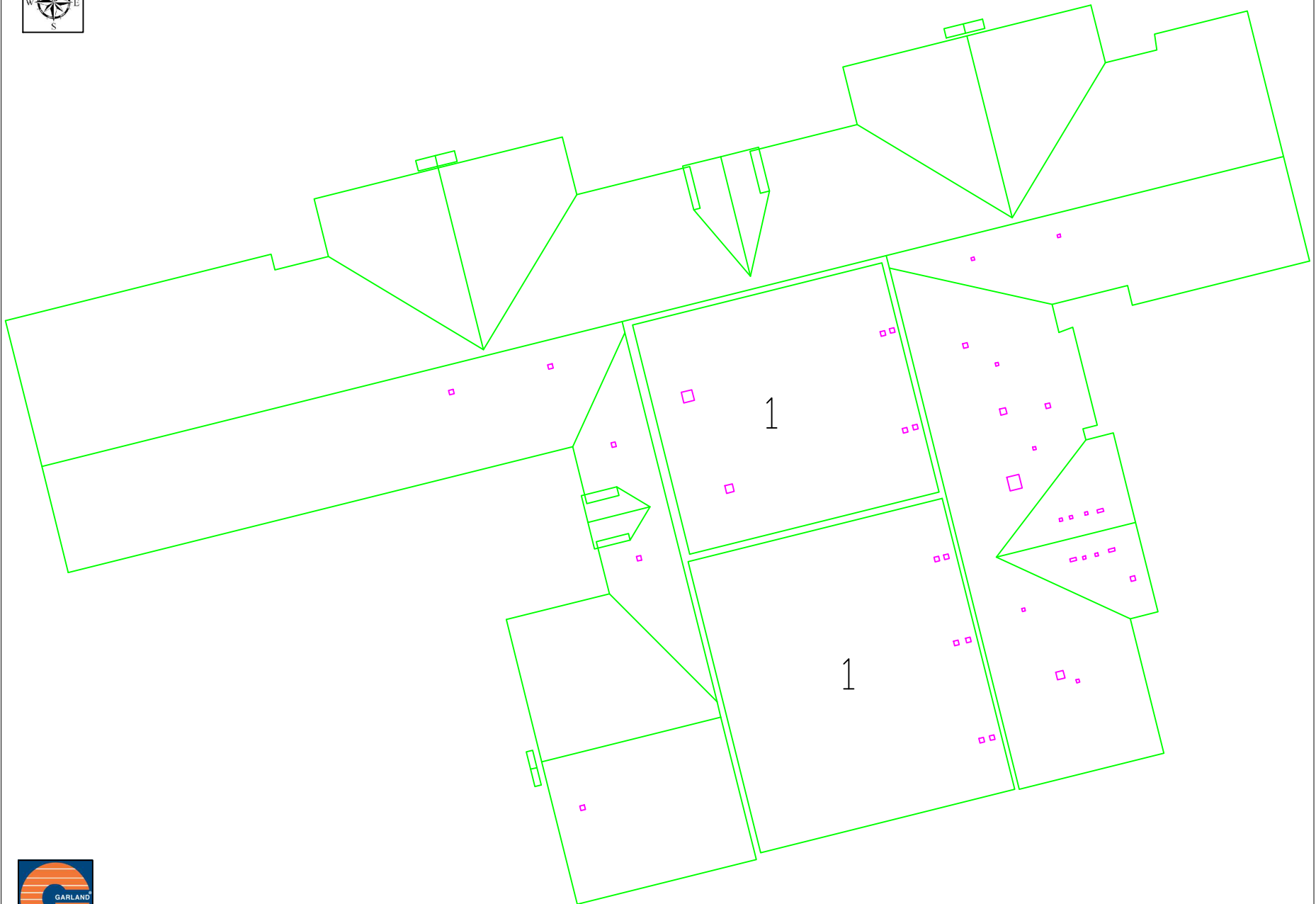
This table provides common parapet wall heights to aid you in calculating the total vertical area of these walls. Note that these values assume a 90 degree angle at the base of the wall. Allow for extra materials to cover cant strips and tapered edges.

Penetration Table

	1-11	12-14	15-32	33	34-35	36	37
Area (sq ft)	1	2	2.3	4	6.3	12.2	18
Perimeter (ft)	4	6	6	8	10	14	17

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.

North Union Local Schools
2022 Middle School Partial Roof Renovation
12555 Mulvane Road Richwood, OH 43444



Notes: The roofing contractor is to verify all dimensions, projections and roof compositions for bidding purposes. Areas labeled with a 1 are to be included in this project.