



BID REQUEST AND PROJECT MANUAL

FOR

Pittsburg USD 250

AT

George E. Nettels Elementary Roof Replacement (defined sections)

PROJECT BID TIME & DATE:

January 5, 2021 at 2:00 p.m.

at

Pittsburg Community Schools District Office

510 Deill Street
Pittsburg, KS 66762

Mandatory Pre-Bid Meeting Time & Date:

December 8, 2020 at 2:00 p.m.

at

510 Deill Street
Pittsburg, KS 66762



George E. Nettels Elementary (defined sections) Roof Replacement, 2020

Date: _____

To: Pittsburg, KS School District

Subject: George E. Nettels Elementary School Roof Replacement (defined sections)

Gentlemen & Ladies:

The undersigned having familiarized himself with the contract documents included in the specification manual, all of which Contract documents are made a part hereof, hereby proposes, in compliance with said Contract documents, to furnish all labors, equipment, materials, bonds, tools, supervision, etc., and to complete all said work as herein specified.

To provide supervision, labor, materials, bonds, permitting and equipment for roof removal/disposal and replacement of the indicated areas at Hawthorne Elementary.

A: Lump Sum Labor and Non Omnia Materials Cost: \$ _____

E: Square Foot Price for Roof Deck Correction: \$ _____

E: Lin. Foot Price for Wood Blocking Correction: \$ _____

Performance and Payment Bond pricing to be included in the lump sum price. All Bids must be received at **The Pittsburg School District Office by:** January 5, 2021 at 2:00 p.m.

initial
_____: All addenda pertaining to this project have been received and acknowledged and have been Considered in the bid provided.

*The undersigned understands and agrees that the **Owner has the right to reject any and all bids**, to waive informalities or other requirements for its benefit and to accept such proposals as it deems in its best interest.*

SIGNATURE: _____

FIRM: _____

INDIVIDUAL: _____

TITLE: _____

Abbreviated Scope of Work

Roof Related Accessories

ROOF FIELD – HORIZONTAL SURFACES

1. Remove existing roof assembly down to gypsum deck
2. Install nail-able base sheet (HPR Glasbase)
3. In Hot Asphalt, mop-in additional base sheet (HPR Glasbase)
4. In Hot Asphalt, mop-in polyisocyanurate base & tapered insulation (where Applicable)
5. In hot asphalt, mop-in ½" Securock board
6. In hot asphalt, install specified base sheet (Stressbase 120)
7. In hot asphalt, install specified cap sheet (Stressply FR Mineral)

ROOF WALL – VERTICAL SURFACES

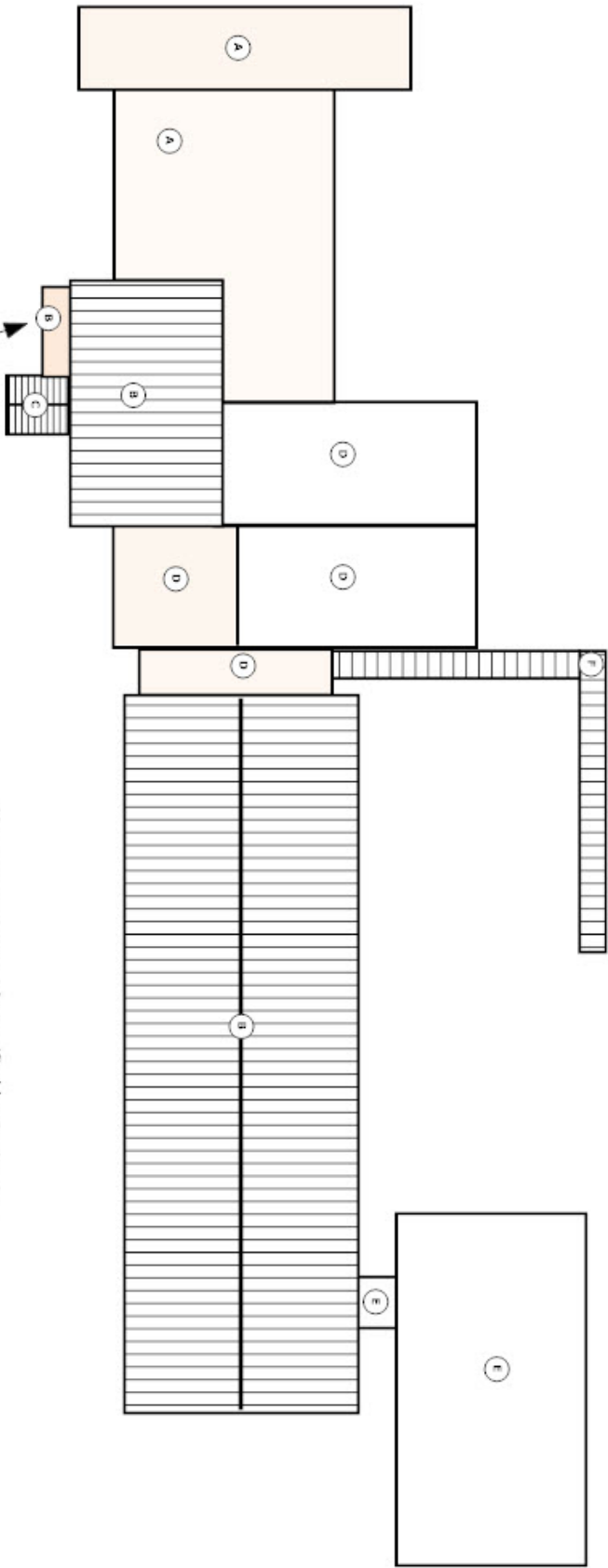
1. Remove all vertical flashings down to substrate
2. Install in hot asphalt, specified modified base sheet (Versiply 40)
3. Install in cold adhesive, specified modified cap sheet (Stressply FR Mineral)
4. Three-course all vertical seams (Green-Lock & Gar-mesh)
5. Paint all vertical flashing with two coats of specified reflective coating (Pyramic)

ACCESSORIES

1. Shop Fabricated metal flashings
2. Shop Fabricated metal edge & caps
3. Shop Fabricated metal gutters, downs, and collectors



| | | | | | | | |
|---------|--------------------------|--|--|-----------|----------|------------|-----------|
| PROJECT | George E. Nettels | | | TITLE | DRAWN BY | DATE | SHEET NO. |
| | 2012 S. Homer | | | Sectional | JT | 11/14/2019 | 1 |



Measurements must be verified by Contractor

| Section | Area | Perimeter |
|---------|-------|-----------|
| A | 11500 | 550 |
| B | 27000 | 1100 |
| C | 550 | 100 |
| D | 11900 | 500 |
| E | 9400 | 450 |
| F | 2000 | 400 |



| | |
|-----------------------------------------------------------------------------------------------------------|-----------|
|  (913) 927-5335 | |
| The Garland Company 3800 E. 91st Street Cleveland, OH 44105 | |
| Revision No. | Date |
| 2 | 7/29/2020 |



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 Pittsburg, KS USD 250 School District.
- 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 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 colloquial for reference and not guaranteed by the Owner's Representative and the Owner's Representative will not be responsible for their accuracy. Before bidding on any paperwork dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, lines, levels or other conditions of limitations at the site to avoid construction errors. If any work is performed by the Contractor or any of his/her subcontractors prior to adequate verification or applicable data, any resultant extra cost for adjustment of work as required to conform to existing limitations, shall be assumed by the Contractor without reimbursement or compensation by the Owner.

1.5 PROTECTION OF OWNER'S OPERATIONS



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

1.6 PROTECTION OF WORK AND PROPERTY

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

1.7 MATERIAL STORAGE AND CLEAN-UP

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

1.8 INSPECTION OF WORK

- A. Where the drawings or specifications require the inspection and approval of any work in progress by the Owner's Representative, the Contractor shall give that Representative ample notice to allow for scheduling the inspection, which shall be made promptly to avoid



delay of work. If work has progressed without the required inspections or approval by the Representative, it shall be uncovered for inspection at the Contractor's expense.

- B. Uncovering of work not originally inspected, or uncovering questioned work may be ordered by the Owner's Representative and it shall be done by the Contractor. If examination proves such work to be incorrectly done or not done in accordance with the plans and specifications, the Contractor shall bear all cost of the reexamination. If the work is proven correctly installed, all such expense shall be born by the Owner.
- C. If in the event an unexpected weather event, water/liquid source exposure or chemical contamination occurs to an uncompleted roof surface it is the responsibility of the contractor to remove and replace the affected area in accordance with this specification.

1.9 INSPECTION OF WORK IN PROGRESS AND UPON COMPLETION

- A. 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
- B. 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.
- C. 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.
- D. 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.
- E. The presence and activities of the Owner's Representative shall in no way relieve the Contractor of his/her contractual responsibilities.

1.10 MISCELLANEOUS UTILITIES

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



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

1.11 CHANGES OR EXTRA WORK

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

1.12 CORRECTION OF WORK PRIOR TO FINAL PAYMENT

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

1.13 CORRECTION OF WORK AFTER FINAL PAYMENT

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

1.14 DEDUCTION FOR UNCORRECTED WORK

- A. If the Owner deems it unacceptable to have the Contractor correct work which has been incorrectly done, a deduction from the contract price shall be agreed upon therefore. Such a



deduction from the contract price shall in no way affect the Contractor's responsibility for defects which may occur nor his/her ability for correcting them, and damage caused by them.

1.15 LIENS

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

1.16 JOB CONDITIONS

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



process, notification must be made within two (2) working days of the incidents to the Owner and Owner's Representative.

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

1.17 WORKMANSHIP

- A. All materials will be securely fastened and placed in a watertight, neat and workmanlike manner. All workmen shall be thoroughly experienced in the particular class of 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 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.



- a. The Contractor is responsible for proper slope and drainage. If, following installation of the roofing system, drainage is not sufficient, Contractor shall remedy to at Contractor's expense.
- B. PHASED ROOFING will be allowed. All work must be watertight in full at the end of each day's work. Adequate watertight tie-ins must be in place prior to ending work for the day.
- C. Insulation that becomes wet during or after installation shall be removed from the job site 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 decking. 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 Certificate of Insurance properly completed and signed by an authorized insurance company representative before their work commences on the job or job site. No monies will be paid until the acceptable certificates are on file with the Contractor. Such certificates shall provide that there will be no cancellation, reduction or modification of coverage without thirty (30) days prior written notice to the Contractor. In the event such certificates are not provided to the Contractor prior commencement of work, Contractor's failure to demand such



certificates shall not be deemed a waiver of Subcontractor's requirement to obtain the subject insurance.

3. The Contractor shall provide and maintain standard fire, extended coverage perils, vandalism and malicious mischief insurance to protect the interest of both the Contractor and the Owner for materials brought into the job or stored on the premises. Such insurance shall be for 100% of the insurable value of the work to be performed including all items of labor and materials incorporated therein, materials stored at the job-site to be used in completing the work, and such other supplies and equipment incidental to the work as are not owned or rented by the Contractor, the cost of which are included in the direct cost of the work. This insurance shall not cover any tools, derricks, machinery, tar buckets, ladders, engines, workmen's quarters, boilers, pumps, wagons, scaffolds, forms, compressors, shanties, or other items owned or rented by the Contractor, the cost of which is not included in the direct cost of the work.
4. In accordance with Section (1.21), the Contractor shall maintain the following insurance:
 - a. Workmen's Compensation and Employer's Liability Insurance affording:
 - 1) Protection under the Workmen's Compensation Law of the States in which the work is performed; and
 - 2) Employer's Liability protection subject to a minimum limit of \$100,000.
 - b. Comprehensive General Liability Insurance in amounts not less than:
 - 1) Personal Injury: \$1,000,000 per person (including bodily injury) \$1,000,000 per occurrence
 - 2) Property Damage: \$1,000,000 per occurrence
 - c. Comprehensive Automobile Liability Insurance in the following minimum amounts:
 - 1) Bodily Injury \$1,000,000 per person; **\$1,000,000 per occurrence**
 - 2) Property Damage \$1,000,000 per occurrence
 - d. This insurance shall:
 - 1) Include coverage for the liability assumed by the Contractor under this section (section 1.21.A.1) (Indemnity);
 - 2) Includes coverage for:
 - a) Premises, operations and mobile equipment liability
 - b) Completed operations and products liability
 - c) Contractual liability insuring the obligation assumed by the subcontractor in this agreement.
 - d) Liability which subcontractor may incur as a result of the operations, acts or omissions of subcontractors, suppliers or material men and their agents or employees; and
 - e) Automobile liability including owned, non-owned and hired automobile.
 - e. All coverage will be on an occurrence basis and on a form acceptable to the Contractor.
 - 1) Include completed operation coverage which is to be kept in force by the Contractor for a period of not less than one year after completion of the work provided for or performed under these specifications;
 - 2) Not be subject to any of the special property damage liability exclusions commonly referred to as the exclusions pertaining to blasting or explosion, collapse or structural damage and underground property;
 - 3) Not be subject to any exclusion of property used by the insured or property in the case, custody or control of the insured or property as to which the insured for any purpose is exercising physical control; and
 - 4) The Certificate of Insurance furnished by the Contractor shall show specific reference that each of the foregoing items have been provided for.



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

1.22 WORK HOURS AND DAYS

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

1.23 COMPLIANCE WITH LAWS

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

1.24 OWNER'S RULES

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

1.25 SAFETY AND ECOLOGY

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

1.26 ANTI-DISCRIMINATION IN EMPLOYMENT

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

PART 2 INSTRUCTIONS TO BIDDERS

2.1 WITHDRAWAL OR MODIFICATION OF BID

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



2.2 BID OPENINGS

- A. Bids will be opened publicly and read aloud at the published date and time. Notice of award will be made by written correspondence. Bid bonds are due at bid opening.
- B. 100% performance and payment bonds are required.
- C. Bids may be mailed along with all bid bond information by the posted bid time to:

Pittsburg USD 250 School District Office
510 Deill Street.
Pittsburg, KS 66762

2.3 QUESTIONS

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

2.4 RESPONSIBILITY FOR MEASUREMENTS AND QUANTITIES

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

2.5 DISCREPANCIES AND ADDENDA

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

2.6 COMPETENCY OF THE BIDDERS

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

2.7 DISQUALIFICATION OF BIDDERS



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

2.8 NOTICE OF AWARD

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

2.9 WARRANTY

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

2.10 START AND COMPLETION DATE

- A. Work shall begin within ten (10) days following the end of Spring term 2021, or as agreed upon.
- B. All work as required in these specifications and drawings shall be completed within sixty (60) days of the start date, or as agreed upon by the parties.
- C. 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.
- D. 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. Subsequent requests for payment can made monthly. Final payment for the project will



be made following completion, after final inspection has been made and an invoice presented to the Owner. A 5% retainer shall be held until substantial completion.

- 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 (95%) of the labor and material values estimated for the preceding month.
- D. Such payments shall be viewed by both parties as progress payments and shall not in any way relieve the Contractor of performance obligations under this contract, nor shall such payments be viewed as approval or acceptance of work performed under this contract.
- E. Final payment shall be withheld until all provisions of the specifications are met, including all necessary clean-up, and the Owner receives written verification of completion.
- F. Upon completion of the job, the Owner, the Owner's Representative, and the Contractor will make final inspection of the work done, and the Owner's Representative if requested by Owner's Representative.
- G. All payments for material used in the execution of this contract can be made by a check issued jointly, payable to the Contractor and Owner's Representative will sign a completion slip authorizing final payment.
- H. If requested by the Owner and/or Owner's Representative, the Contractor shall provide a Letter of Credit from the bank to secure payment to material supplier.
- I. If requested by the Owner and/or Owner's Representative, a certified check shall be paid by the Contractor to material supplied prior to release of order.
- J. If requested by the Owner and/or Owner's Representative, a certified check shall be paid by the Contractor to material supplier via common carrier upon receipt of delivery.
- K. Contractor shall have a pre-approved line of credit from the material supplier.
- L. Final payment shall be made to the Contractor no later than thirty (30) days after job approval, providing the Contractor submits waivers of lien with his/her final invoice indicating that all suppliers have been paid.

2.12 PERFORMANCE AND PAYMENT BOND

- A. The successful Contractor will be responsible for securing a 100% performance and payment bond from an acceptable bonding company. The cost of the bond will be paid directly by the Contractor. Contractor has to identify his/her bonding company and agent, submitting this documentation with his/her proposal. Note: See "Instruction to Bidders."
- B. Financial documentation prescribed by the Owner to ensure that the Contractor is financially sound and capable of supporting the project to its conclusion.
- C. If the successful Bidder is incorporated, an affidavit authorizing persons to sign for the Corporation. This should be in the form of minutes of the meeting of the Board of Directors,



authorizing person or persons to sign for this contract work and indicating a quorum being present.

2.13 TERMINATION BY THE OWNER FOR CAUSE

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

2.14 COMPLIANCE WITH LAWS

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

2.15 LIQUIDATED DAMAGES

- A. Liquidated damages in the amount of \$500 per day for failure to complete in the time set aside and agreed upon by both parties.

PART 3 --- CONTRACTOR'S INSTRUCTIONS

3.1 TAXES

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

3.2 CONTRACTOR'S LICENSE

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

3.3 BUILDING PERMITS

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

3.4 JOB COORDINATION

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



- B. Twenty-four hours prior to starting of the project and/or delivery of materials, the Contractor shall notify the Owner or Owner's Representative and Manufacturer Representative.
- C. Work may begin following the last day of the Spring term.

3.6 CLEAN-UP

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

3.7 SUPERINTENDENT

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

3.8 INSPECTIONS

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

PART 4 – STATEMENT OF POLICY

4.1 ENGINEERING

- A. In addition to high-quality products, the Material Manufacturer provides recommendations and/or specifications for the proper installation of its material. However, the Material Manufacturer does not, nor does its representative, practice engineering or architecture. The Material Manufacturer makes no judgments on, and hereby disclaim any responsibility for the soundness of any roof deck or other structural component of buildings upon which the



Material Manufacturer products are applied, and further recommend a structural engineer to examine the deck conditions. Re-roofing or Ballasted Roofing Systems will require certification from a structural engineer that the structure will support the proposed additional weight.

4.2 GUARANTEES

- A. A roofing guarantee is available for review from the Material manufacturer for the roofing systems published in these specifications. The guarantee will be issued only upon completion of all the guarantee requirements by an approved Contractor. Such guarantees cannot be altered or amended, nor may any other warranties, guarantees or representations be made by an agent or employee of the Material Manufacturer unless such alteration, amendment or additional representation is issued in writing and is signed by a duly authorized officer of the Material Manufacturer, and sealed with the Material Manufacturer seal. This guarantee does not cover cosmetic deficiencies. **THE MATERIAL MANUFACTURER 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.** 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.

4.3 APPROVED CONTRACTORS

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

4.4 ROOFING SEQUENCE

- A. Phase roofing is acceptable and a watertight seal is the responsibility of the Contractor.

4.5 ACCEPTABILITY OF COMPLETED WORK

- A. The acceptability of completed roofing work will be based on its conformance to the contract requirement. The Material Manufacturer is not obligated to accept non-conforming work, and such non-conforming work may be rejected. The rejected work shall be promptly replaced or corrected in a manner and by methods approved by the Material Manufacturer at the Contractor's expense. The Material Manufacturer will instruct the Contractor's foreman and work crew on the proper methods of installation of the roofing system, and will follow-up on a regular basis to inspect the work being done. Any deficiencies from the specified work noted by the Material Manufacturer will be immediately reported to the Owner, along with recommended corrective actions necessary. The Material Manufacturer will not act in a supervisory capacity, and will not be responsible for the Contractor's errors or omissions.
- B. Moisture exposure – In the event that an unexpected moisture event, improperly phased roofing, or any other occurrence of moisture whether it is an act of nature or result of moisture exposure during the installation the area affected will be removed and replaced with dry materials at the contractor's expense. Moisture testing may be conducted by an independent 3rd party to determine if any moisture exists at the contractor's expense. Testing results that show any moisture present will be removed and replaced at the contractor's expense.

4.6 ENGINEERING AND ROOF DECK



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

4.7 ASBESTOS IDENTIFICATION

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

4.8 ASBESTOS LIMITATIONS

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

4.9 MOLD LIMITATIONS

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

PART 5 CONTRACTOR'S QUALIFICATION STATEMENT

The undersigned certified oath that the information provided herein is true and sufficiently complete so as not to be misleading.



Submitted to: _____

Submitted by (Firm Name): _____

Address: _____

Principal Office Location _____

Qualification Statement Submitted for- Project Name

Type of Work:

Site Preparation _____

General Construction _____

Roofing _____

Plumbing _____

HVAC _____

Sprinkler _____

Electrical _____



Other _____

Electrical _____

(File separate form for each classification of work)

Organization:

Please provide the following information concerning your organization:

Type of Entity:

Corporation _____

Partnership _____

Individual _____

Other _____

Name of Principal, Owners or Partners

Years of Service

Name Position with Organization

Number of years this organization has been in business _____



Have members of this organization operated under former names/business?

Yes_____ No_____

If "yes," list name, type of entity and names of principal, owners or partners.

Provide a brief description of the general type of construction the firm performs. Please indicate for this project the work you intend to subcontract or perform.

Perform Subcontract

Earth Work_____

Concrete Work_____

Masonry Work_____

Structural Work_____

Roofing Work_____

Sprinkler_____

Plumbing_____

HVAC_____

Electrical_____



Experience

Please list the type and number of educational projects your firm has constructed which were subject to the Owner Guidelines and other Ohio regulatory agency construction requirements:

Type Number

New Construction – Primary _____

New Construction – Secondary _____

Renovations – Primary _____

Renovations – Secondary _____

Please list on a separate sheet marked "Appendix A" the major construction projects your organization has in progress providing the name of project, owner, architect, contract amount, bonding company, insurance carrier, percentage complete and scheduled completion date.

Please list on a separate sheet marked "Appendix B" the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, bonding company, date of completion and percentage of the cost of the work performed with your own forces.

Insurance and Bonds

Please list names of current insurance carrier and number of projects insured by carrier:



Please list names of bonding company/agent utilized for projects constructed during the last five years:

Claims and Suits

Has your organization ever failed to complete any construction work it has been awarded? Yes___
No___

Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please describe in full.) Yes___ No___

Has there been in the last ten years, or is there now pending or threatened, any litigation, arbitration, investigation, or governmental or regulatory proceeding involving claims in excess of \$100,000 or requesting a declaratory judgment or injunctive relief with respect to the construction or operation of any building which your firm, its principals, predecessors or affiliates constructed? Yes___ No___

Are all city, county, state and Federal taxes of any type, including real estate, FICA and Workmen's Compensation paid to date? Yes___ No___

Is there any potential claim, demand, litigation, arbitration, investigation, governmental proceeding or regulatory proceeding involving your firm, or its principals, predecessors or affiliates? Yes___ No___

If the answer to either of the preceding questions is "Yes," please describe in full in an attachment referred to in the preceding paragraphs, is there any litigation, arbitration, investigation or governmental or regulatory proceeding.

In addition to the litigation, arbitration, investigation, governmental proceeding or regulatory proceeding now pending or threatened to which your firm is or may be a party, or are you aware of any potential claim or demand, which might otherwise affect the capacity of your firm to perform with respect to your involvement with the Owner, whether or not it concerns other work which you have undertaken? If so, please describe in full. Yes___ No___



Bankruptcy

Has your firm, its principals, predecessors, or affiliates been the subject of any proceeding under the federal bankruptcy laws or any other proceedings under state or federal law in which a court or government agency has assumed jurisdiction over any of the assets or business of your firm, its principals, predecessors or affiliates? If so, please identify the proceedings, the court or governmental body and the date such jurisdiction was assumed in an attachment.
Yes___ No___

Change Order History

Describe each instance the last five (5) years where change orders applied for during construction amounted in the aggregate to more than five percent (5%) of the contract price for any building which your firm constructed, or in which actual construction costs exceeded the contract price by more than five percent (5%) in an attachment.

Financial Condition

Please attach your organizations' last two (2) years' financial statements including your latest balance sheet and income statement showing the following:

Current assets (e.g., cash, joint venture accounts, receivable, accrued income, deposits, materials inventory and prepaid expenses):

Net Fixed Assets:

Other Assets:

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes): List all older than 60 days.

Other Liabilities (e.g., capital stock, authorized and outstanding shares per values, earned surplus and retained earnings):

Name and address of firm preparing attached financial statement and date thereof.

References



Please list below Trade References:

Please list below Bank References:

END OF SECTION



SECTION 07550
MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Hot Applied 2-Ply Asphalt Roofing
- B. Accessories.
- C. Edge Treatment and Roof Penetration Flashings.
- D. Gutters and Downspouts

1.2 RELATED SECTIONS

- A. Section - Roof Deck Substrate Preparation.
- B. Section 06114 - Wood Blocking and Curbing: Wood nailers and cant strips.
- C. Section 07220 - Insulation Board: Insulation and fastening.
- D. Section 07620 - Sheet Metal Flashing and Trim: Weather protection for base flashings.
- E. Section 07710 - Manufactured Roof Specialties: Counter flashing gravel stops, and fascia.
- F. Section 07724 - Roof Hatches: Frame and integral curb; Counter flashing.
- G. Section 08620 - Unit Skylights: Skylight frame and integral curb and counter flashing.
- H. Section 08630 - Metal-Framed Skylights: Skylight frame and integral curb and counter flashing.
- I. Section 15120 - Piping Specialties: Roof Drains, Sumps.

1.3 REFERENCES

- A. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D 312 - Standard Specification for Asphalt used in Roofing.
- C. ASTM D 451 - Standard Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.
- D. ASTM D 1970 - Specification for Sheet Materials, Self-Adhering Polymer Modified Bituminous, Used as Steep Roofing Underlayment for Ice Dam Protection.
- E. ASTM D 1079 Standard Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
- F. ASTM D 1227 Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.



- G. ASTM D 1863 Standard Specification for Mineral Aggregate Used as a Protective Coating for Roofing.
- H. ASTM D 2178 Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
- I. ASTM D 2824 Standard Specification for Aluminum-Pigmented Asphalt Roof Coating.
- J. ASTM D 4586 Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- K. ASTM D 4601 Standard Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
- L. ASTM D 5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
- M. ASTM D 6162 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
- N. ASTM D 6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- O. ASTM D 6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- P. ASTM D 6754 - Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.
- Q. ASTM D 6757 - Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing.
- R. ASTM E 108 - Standard Test Methods for Fire Test of Roof Coverings
- S. Factory Mutual Research (FM): Roof Assembly Classifications.
- T. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- U. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
- V. Underwriters Laboratories, Inc. (UL): Fire Hazard Classifications.
- W. Warnock Hersey (WH): Fire Hazard Classifications.
- X. ANSI-SPRI ES-1 Wind Design Standard for Edge Systems used with Low Slope Roofing Systems.
- Y. ASCE 7, Minimum Design Loads for Buildings and Other Structures
- Z. UL - Fire Resistance Directory.
- AA. FM Approvals - Roof Coverings and/or RoofNav assembly database.
- BB. FBC - Florida Building Code.
- CC. Miami-Dade Building Code Compliance - N.O.A. (Notice of Acceptance).
- DD. California Title 24 Energy Efficient Standards.



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 (calculate prior to awarded assembly)
 - 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) I.
 - b) II.
 - c) III.
 - d) IV
 - 3) Importance Factor of:
 - a) 0.77
 - b) 1.0
 - c) 1.15
 - d) 2.0
 - 4) Wind Speed: ___ mph
 - 5) Ultimate Pullout Value: ___ pounds per each of the fastener
 - 6) Exposure Category:
 - a) B.
 - b) C.
 - c) D.
 - 7) Design Roof Height: ___ feet.
 - 8) Minimum Building Width: ___ feet.
 - 9) Roof Pitch: ___ :12.
 - 10) Roof Area Design Uplift Pressure:
 - a) Zone 1 - Field of roof ___ psf
 - b) Zone 2 - Eaves, ridges, hips and rakes ___ psf
 - c) Zone 3 - Corners ___ psf
 - 2. Snow Load: ___ psf.
 - 3. Live Load: 20 psf, or not to exceed original building design.
 - 4. Dead Load:
 - a. Installation of new roofing materials shall not exceed the dead load capacity of the existing roof structure.
 - D. Energy Star: Roof System shall comply with the initial and aged reflectivity required by the U.S. Federal Government's Energy Star program.
 - E. LEED: Roof system shall meet the reflectivity and emissivity criteria to qualify for one point under the LEED credit category, Credit 7.2, Landscape & Exterior Design to Reduce Heat Island - Roof.
 - F. Roof System membranes containing recycled or bio-based materials shall be third party certified through UL Environment.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.



- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation 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. Report shall be signed and sealed by a Professional Engineer registered in the State of the Project who has provided roof system attachment analysis for not less than 5 consecutive years.
- E. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
 - 1. List of proposed materials with recycled content. Indicate post-consumer recycled content and pre-consumer recycled content for each product having recycled content.
 - 2. Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.
 - 3. Product reflectivity and emissivity criteria to qualify for one point under the LEED credit category, Credit 7.2, Landscape & Exterior Design to Reduce Heat Island - Roof.
- F. Recycled or Bio-Based Materials: Provide third party certification through UL Environment of roof System membranes containing recycled or bio-based materials
- G. 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.
- H. Manufacturer's Certificates: Provide to certify products meet or exceed specified requirements.
- I. 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.
- J. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147.
- K. Manufacturer's Fire Compliance Certificate: Certify that the roof system furnished is approved by Factory Mutual (FM), Underwriters Laboratories (UL), Warnock Hersey (WH) or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.
- L. 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. 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 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. The manufacturer's shipping wrap is not sufficient protection. If materials are found to have gotten wet they will be removed and replaced at the contractor's expense.
- 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 No Dollar Limit 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. 20 years from date of acceptance.
 - b. Alternate: Flood and Gravel – 30 years from date of acceptance

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: The 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. No materials included within the Omnia Cooperative Purchase Program listed herein shall be substituted prior to or following the bid opening date.
 - 1. Products to be purchased by the Owner via Omnia Cooperative Purchase:
 - a. Membrane Cap Sheet(s) (field & flashing)
 - b. Membrane Base & Ply Sheet(s) (field & flashing)
 - c. Flashing Adhesives & Sealants
 - d. Paints & Coatings
 - e. Primers
 - f. Cements & Mastics
 - g. Reinforcing Fabric(s)
- B. The Products specified are intended and the Standard of Quality for the products required for this project.
 - 1. Bidder will not be allowed to change materials after the bid opening date.
 - 2. If alternate products are included in the bid, the products must be equal to or exceed the products specified. Supporting technical data shall be submitted to the Architect/ Owner for approval prior to acceptance.
 - 3. No product alternates will be accepted for products on the material quantity form found in this specification.
 - 4. Products allowed for substitution submission:
 - a. Insulation & Cover Boards
 - b. Fasteners
 - c.
 - 5. In making a request for substitution, the Bidder/Roofing Contractor represents that it has:
 - a. Personally investigated the proposed product or method, and determined that it is equal or superior in all respects to that specified.



- b. Will provide the same guarantee for substitution as for the product and method specified.
 - c. Will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 - d. Will waive all claims for additional cost related to substitution, which consequently become apparent.
 - e. Cost data is complete and includes all related cost under his/her contract or other contracts, which may be affected by the substitution.
 - f. Will reimburse the Owner for all redesign cost by the Architect for accommodation of the substitution.
6. Architect/ Owner reserves the right to be the final authority on the acceptance or rejection of any or all bids, proposed alternate roofing systems or materials that has met ALL specified requirement criteria.
 7. Failure to submit substitution package, or any portion thereof requested, will result in immediate disqualification and consideration for that particular contractors request for manufacturer substitution.

2.2 HOT APPLIED 2-PLY ASPHALT ROOFING - STRESSPLY, OPTIMAX, OR VERSIPLY

- A. Nailable Base Sheet: One ply fastened to the deck per wind uplift calculations.
 1. HPR Glasbase (4112)
- B. Base (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive:
 1. Base Ply Sheet: Garland StressBase 120 (4411-120)
- C. Modified Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive.
 1. Cap Sheet: Garland StressPly FR Mineral (4365)
- D. Interply Adhesive: (1 and 2)
 1. Generic Type III Asphalt:
- E. Flashing Base Ply: One ply bonded to the prepared substrate with Interply Adhesive: except torch sheet.
 1. Flashing Base Ply: VersiPLY 40 (4363-40-G)
- F. Flashing Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive: except torch sheet.
 1. Flashing Cap Sheet: StressPly FR Mineral (4365)
- G. Surfacing: Factory Applied Mineral Surfacing on Cap Sheet

2.3 ACCESSORIES:

- A. Roof Insulation: In accordance with Section 07220.
 1. Polyisocyanurate base and tapered panels where noted (r-19)
- B. Roof Insulation: USG Securock for proper adhesion of the self-adhered base sheet in accordance with Section 07220.
 1. ½" Securock
- C. Nails and Fasteners: Non-ferrous metal or galvanized steel, except that hard copper nails shall be used with copper; aluminum or stainless steel nails shall be used with aluminum; and stainless steel nails shall be used with stainless steel, Fasteners shall be self-clinching type of penetrating type as recommended by the deck manufacturer. Fasten nails and fasteners flush-driven through flat metal discs not less than 1 inch (25 mm) diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than 1 inch (25 mm) diameter are used.



- D. Urethane Sealant Hybrid - : One part, non-sag sealant as approved and furnished by the membrane manufacturer for moving joints: Garland Tuff Stuff MS
 - 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
- E. Sealant -: Single component, 100% solids structural adhesive as furnished and recommended by the membrane manufacturer: Garland Green-Lock Structural Adhesive
 - 1. Elongation, ASTM D 412: 300%
 - 2. Hardness, Shore A, ASTM C 920: 50
 - 3. Shear Strength, ASTM D 1002: 300 psi
- F. Butyl Tape: 100% solids, asbestos free and compressive tape designed to seal as recommended and furnished by the membrane manufacturer:
- G. Pitch Pocket Sealer - Two part, 100% solids, self-leveling, polyurethane sealant for filling pitch pans as recommended and furnished by the membrane manufacturer.
 - 1. Durometer, ASTM D 2240: 40-50 Shore
 - 2. Elongation, ASTM D 412: 250%
 - 3. Tensile Strength, ASTM D 412: 200 @ 100 mil
- H. Glass Fiber Cant - Glass Cant: Continuous triangular cross Section made of inorganic fibrous glass used as a cant strip as recommended and furnished by the membrane manufacturer.

2.4 EDGE TREATMENT AND ROOF PENETRATION FLASHINGS

- A. Pre-Manufactured Edge Metal Finishes:
 - 1. Exposed and unexposed surfaces for mill finish flashing, fascia, and coping cap, as shipped from the mill
 - 2. Exposed surfaces for coated panels:
 - a. Steel Finishes: fluorocarbon finish. Epoxy primer baked both sides, .2-.25 mils thickness as approved by finish coat manufacturer.
Weathering finish as referred by National Coil Coaters Association (NCCA).
Provided with the following properties.
 - 1) Pencil Hardness: ASTM D3363, HB-H / NCCA II-2.
 - 2) Bend: ASTM D-4145, O-T / NCCA II-19
 - 3) Cross-Hatch Adhesion: ASTM D3359, no loss of adhesion
 - 4) Gloss (60 deg. angle): ASTM D523, 25+/-5%
 - 5) Reverse Bend: ASTM D2794, no cracking or loss of adhesion
 - 6) Nominal Thickness: ASTM D1005
 - a) Primer: 0.2 mils
 - b) Topcoat, 0.7 mils min
 - c) Clear Coat (optional, only used with 22 ga. steel) 0.3 mils
 - 7) Color: Provide as specified. (Subject to minimum quantities)
- B. Flashing Boot - *Rubbertite* Flashing Boot: Neoprene pipe boot for sealing single or multiple pipe penetrations adhered in approved adhesives as recommended and furnished by the membrane manufacturer.
- C. Vents and Breathers: Heavy gauge aluminum and fully insulated vent that allows moisture and air to escape but not enter the roof system as recommended and furnished by the membrane manufacturer.
- D. Pitch pans, Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints should be welded/soldered watertight. See details for design.



- E. Drain Flashings should be 4lb (1.8kg) sheet lead formed and rolled.
- F. Plumbing stacks should be 4lb (1.8kg) sheet lead formed and rolled.
- G. Liquid Flashing - : 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
- H. Fabricated Flashings: Fabricated flashings and trim are specified in Section 07620.
 - 1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the CDA Copper Development Association "Copper in Architecture - Handbook" as applicable.
- I. Manufactured Roof Specialties: Shop fabricated copings, fascia, gravel stops, control joints, expansion joints, joint covers and related flashings and trim are specified in Section 07710.
 - 1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the NRCA "Roofing and Waterproofing Manual" as applicable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. 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. Re-Roofing Applications:
 - 1. Remove existing roof flashings from curbs and parapet walls down to the surface of



- the roof. Remove existing flashings at roof drains and roof penetrations.
2. Remove all wet, deteriorated, blistered or delaminated roofing membrane or insulation and fill in any low spots occurring as a result of removal work to create a smooth, even surface for application of new roof membranes.
 3. Install new wood nailers as necessary to accommodate insulation/recovery board or new nailing patterns.
 4. When mechanically attached, the fastening pattern for the insulation/recovery board shall be as recommended by the specific product manufacturer.
 5. Re-roofing over coal tar pitch requires a mechanically attached recovery board or insulation and a base sheet prior to the application of roofing system.
 6. Existing roof surfaces shall be primed as necessary with asphalt primer meeting ASTM D 41 and allowed to dry prior to installing the roofing system.

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
- D. All slopes greater than 2:12 require back-nailing to prevent slippage of the ply sheets. Use ring or spiral-shank 1 inch cap nails, or screws and plates at a rate of 1 fastener per ply (including the membrane) at each insulation stop. Place insulation stops at 16 ft o.c. for slopes less than 3:12 and 4 feet o.c. for slopes greater than 3:12. On non-insulated systems, nail each ply directly into the deck at the rate specified above. When slope exceeds 2:12, install all plies parallel to the slope (strapping) to facilitate backnailing. Install 4 additional fasteners at the upper edge of the membrane when strapping the plies.

3.4 INSTALLATION HOT APPLIED ROOF SYSTEM

- A. Base/Felt Ply(s): Install base sheet or felt plies in twenty five (25) lbs (11.3kg) per square of bitumen shingled uniformly to achieve one or more plies over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof. Do not step on base rolls until asphalt has cooled, fish mouths should be cut and patched.
 1. Lap ply sheet ends 8 inches (203 mm). Stagger end laps 2 inches (304mm) minimum.
 2. Install base flashing ply to all perimeter and projection details after membrane application.
 3. Extend plies 2 inches beyond top edges of cants at wall and projection bases.
 4. Install base flashing ply to all perimeter and projection details.
 5. 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): Solidly bond the modified membrane to the base layers with specified material at the rate of 25 to thirty 30 lbs. (11-13kg) per 100 square feet.
1. Roll must push a puddle of hot material in front of it with material slightly visible at all side laps. Use care to eliminate air entrapment under the membrane. Exercise care during application to eliminate air entrapment under the membrane.
 2. Apply pressure to all seams to ensure that the laps are solidly bonded to substrate.
 3. Install subsequent rolls of modified membrane as above with a minimum of 4 inch (101 mm) side laps and 8 inch (203 mm) end laps. Stagger end laps. Apply membrane in the same direction as the previous layers but stagger the laps so they do not coincide with the laps of the base layers.
 4. Apply hot material no more than 5 feet (1.5 m) ahead of each roll being embedded.
 5. Extend membrane 2 inches (50 mm) beyond top edge of all cants in full moppings of the specified hot material.
- 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: Provide wood blocking, nailers and cant strips as specified in Section 06114.
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 07620 or Section 07710. 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. All termination bars must receive a 3-course application of mesh and mastic.
- 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 surfaces 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 hot material unless otherwise noted in these specifications. 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 sheet of flashing membrane to the substrate.
 5. Seal all vertical laps of flashing membrane with a three-course application of trowel-grade mastic and mesh.
 6. Coordinate counter flashing, cap flashings, expansion joints, and similar work with modified bitumen roofing work as specified.



7. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work.
- H. Flood Coat/Aggregate (if as alternate approved by owner):
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.
- I. Flashing Cap Ply: Install flashing cap sheets by the same application method used for the 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. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified. Cap flashing underlayment:
 - 1) R-Mer Seal (DEV-4133)
 5. Coordinate roof accessories, miscellaneous sheet metal accessory items with the roofing system work.
 6. All stripping shall be installed prior to flashing cap sheet installation.
 7. 3 course all vertical flashing plies with mesh and mastic.
 8. 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.
- J. Surface Coatings: Apply roof coatings in strict conformance with the manufacturer's recommended procedures.
- K. Roof Walkways: Provide walkways in areas indicated on the Drawings.

3.5 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Fabricated Flashings: Fabricated flashings and trim are provided as specified in Section 07620.
1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the Copper Development Association "Copper in Architecture - Handbook" as applicable.
- B. Roof Edge With Gutter:
1. Inspect the nailer to assure proper attachment and configuration. Increase slope at metal edge by additional degree of slope in first board.
 2. Run base ply over the edge. Assure coverage of all wood nailers.
 3. Install gutter and strapping.
 4. Install continuous cleat and fasten at 6 inches (152 mm) o.c.
 5. Install new metal edge hooked to continuous cleat and set in bed of roof cement. Fasten flange to wood nailer every 3 inches (76 mm) o.c. staggered.
 6. Prime metal edge and allow to dry. Do not prime for Green-Lock System lightly sand metal to improve bond.



7. Strip in flange with base flashing ply covering entire flange in bitumen with 6 inches (152 mm) onto the field of the base ply. Assure ply laps do not coincide with metal laps.
8. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
9. Install a second ply of thermoplastic flashing cap ply heat welded over the thermoplastic cap ply, 9 inches (228 mm) on to the field of the roof.

C. Coping Cap:

1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Maximum flashing height is 24 inches (609 mm). Prime vertical wall and allow to dry.
2. Set cant in bitumen. Run all base field plies over cant a minimum of 2 inches (50 mm).
3. Install base flashing ply covering entire wall and wrapped over top of wall and down face with 6 inches (152 mm) on to the base field ply and set in bitumen. Nail base flashing ply at 8 inches (203 mm) o.c. on the back side of the parapet wall.
 - a. In areas where metal cap is too narrow for modified sheet, wrap with R-Mer Seal high -temp metal underlayment.
 - 1) Terminate base & mineral cap 8" above field on wall and counterflash (see 3.5 – D)
4. Install continuous cleat and fasten at 6 inches (152 mm) o.c. to outside wall.
5. Install new metal coping cap hooked to continuous cleat.
6. Fasten inside cap 24 inches (609 mm) o.c. with approved fasteners and neoprene washers through slotted holes, which allow for expansion and contraction.

D. Surface Mounted Counterflashing/Coping Cap:

1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Prime vertical wall and allow to dry.
2. Set cant in bitumen. Run all base 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 the base field ply and set in bitumen.
4. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
6. 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.
7. Secure counterflashing set on butyl tape above flashing. Fasten 8 inches (203 mm) o.c. and caulk top of counterflashing.
8. Attach tapered board to top of wall (minimum slope 1/4 -12). Do not use organic fiberboard or perlite.
9. Cover tapered board and all exposed wood with base flashing ply. Fasten inside and out at 8 inches (203 mm) o.c.
10. Install continuous cleat and fasten at 6 inches (152 mm) o.c. to outside wall.
11. Install new metal coping cap hooked to continuous cleat.
12. Fasten inside of cap 24 inch (609 mm) o.c. with approved fasteners and neoprene washers.

E. 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 and allow to dry.
2. Set cant in bitumen. Run all base 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 the base field ply and set in bitumen.
4. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9



inches (228 mm) on to the field of the roof.

6. 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.
7. Secure counterflashing set on butyl tape above flashing at 8 inches (203 mm) o.c. and caulk top of counterflashing.

F. Expansion Joint:

1. Minimum curb height is 8 inches (203 mm) above finished roof height. Chamfer top of curb. Prime vertical curb and allow to dry.
2. Mechanically attach wood cant to expansion joint nailers. Run all base field plies over cant a minimum of 2 inches (50 mm).
3. Install compressible insulation in neoprene cradle.
4. Install base flashing ply covering curb set in bitumen with 6 inches (152 mm) on to field of the roof.
5. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
6. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
7. Install pre-manufactured expansion joint cover. Fasten sides at 12 inches (609 mm) o.c. with fasteners and neoprene washers. Furnish all joint cover laps with butyl tape between metal covers.

G. Area Divider:

1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical curb at a rate of 100 square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all base 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 the base field ply and set in bitumen.
4. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
6. Install pre-manufactured cover. Fasten sides at 24 inches (609 mm) o.c. with fasteners and neoprene washers through slotted holes. Furnish all joint cover laps with butyl tape between metal covers.

H. Equipment Support:

1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical and allow to dry.
2. Set cant in bitumen. Run all base field plies over cant a minimum of 2 inches (50 mm).
3. Install base flashing ply covering the curb set in bitumen with 6 inches (152 mm) on to the base field ply and set in bitumen.
4. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
6. Install pre-manufactured cover. Fasten sides at 24 inches (609 mm) o.c. with fasteners and neoprene washers. Furnish all joint cover laps with butyl tape between metal covers.
7. Set equipment on neoprene pad and fasten as required by equipment manufacturer.

I. Curb Detail/Air Handling Station:

1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical and allow to dry.
2. Set cant in bitumen. Run all base field plies over cant a minimum of 2 inches (50 mm).
3. Install base flashing ply covering the curb set in bitumen with 6 inches (152 mm) on to



- the base field ply and set in bitumen.
 4. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
 5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
 6. Install pre-manufactured counterflashing with fasteners and neoprene washers or per manufacturer's recommendations.
 7. Set equipment on neoprene pad and fasten as required by equipment manufacturer.
- J. Pre-manufactured Curb For Equipment Support:
1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical and allow to dry.
 2. Run all base field plies over the pre-manufactured cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering the pre-manufactured curb set in bitumen with 6 inches (152 mm) on to the base field ply and set in bitumen.
 4. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
 5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
 6. Install pre-manufactured cover. Fasten sides at 24 inches (609 mm) o.c. with fasteners and neoprene washers. Furnish all joint cover laps with butyl tape between metal covers.
 7. Set equipment on neoprene pad and fasten as required by equipment manufacturer.
- K. Exhaust Fan:
1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical and allow to dry.
 2. Set cant in bitumen. Run all base 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 the base field ply and set in bitumen.
 4. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
 5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
 6. Install metal exhaust fan over the wood nailers and flashing to act as counterflashing. Fasten per manufacturer's recommendation.
- L. Roof Drain:
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. Run roof system base plies over drain. Cut out plies inside drain bowl.
 4. Set lead/copper flashing (30 inch square minimum) in 1/4 inch bed of mastic. Run lead/copper into drain a minimum of 2 inches (50 mm). Prime lead/copper and allow to dry.
 5. Install base flashing ply (40 inch square minimum) in bitumen.
 6. Install thermoplastic cap ply (48 inch square minimum) in bitumen or foam adhesive.
 7. Install clamping ring and assure that all plies are under the clamping ring.
 8. Remove drain plug and install strainer.
- M. Plumbing Stack:
1. Minimum stack height is 12 inches (609 mm).
 2. Run roof base ply 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 bitumen.
5. Install thermoplastic cap ply in bitumen or foam 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.

N. Heat Stack:

1. Minimum stack height is 12 inches (609 mm).
2. Run roof base ply 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 bitumen.
5. Install thermoplastic cap ply in bitumen or foam adhesive.
6. Caulk the intersection of the membrane with elastomeric sealant.
7. Install new collar over cape. Weld collar or install stainless steel draw brand.

O. Pitch Pocket Umbrella:

1. Run all base plies up to the penetration.
2. Place the pitch pocket over the penetration and prime all flanges.
3. Strip in flange of pitch pocket with one ply of base flashing ply. Extend 6 inches (152 mm) onto field of roof.
4. Then install thermoplastic cap field ply run over the base flashing ply in bitumen or foam adhesive.
5. Install the thermoplastic flashing ply in bitumen or foam over the base flashing ply, 9 inches (228 mm) on to the field of the roof.
6. Fill pitch pocket half full with non-shrink grout. Let this cure and top off with pourable sealant.
7. Caulk joint between roof system and pitch pocket with elastomeric sealant.
8. Place a watershedding type bonnet over the top of the pitch pocket and clamp the top with a drawband collar. Caulk the upper edge of the band with an elastomeric sealant.

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 30 percent, 60 percent and 90 percent completion. Provide a final inspection upon completion of the Work.
1. Additional inspections required before covering wall terminations.
 2. Warranty shall be issued upon manufacturer's acceptance of the installation.
 3. 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.
 4. Provide observation reports from the Sales Representative indicating procedures followed, weather conditions and any discrepancies found during inspection.
 5. 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.

3.9 SCHEDULES

- A. Base (Ply) Sheet:
1. Base Ply: 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. Thermoplastic/Modified Cap (Ply) Sheet:
1. Cap Sheet: 160 mil SBS and SIS (Styrene-Butadiene-Styrene and Styrene-Isoprene-Styrene) mineral surfaced rubber modified roofing membrane with fire retardant characteristics and reinforced with a dual fiberglass scrim and polyester 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 500 lbf/in XD 550 lbf/in
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 87.5 kN/m XD 96.25 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 900 lbf XD 950 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 4003 N XD 4226 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 6.0% XD 6.0%
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 6.0% XD 6.0%
 - d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)
- C. Interply Adhesive:
1. Generic Type III Asphalt: Hot Bitumen, ASTM D 312, Type III steep asphalt having the following characteristics:
 - a. Softening Point 185 deg. F - 205 deg. F
 - b. Flash Point 500 deg. F
 - c. Penetration @ 77 deg. F 15-35 units
 - d. Ductility @ 77 deg. F 2.5 cm
- D. Flashing Base Ply:
1. Flashing base ply: 40 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing

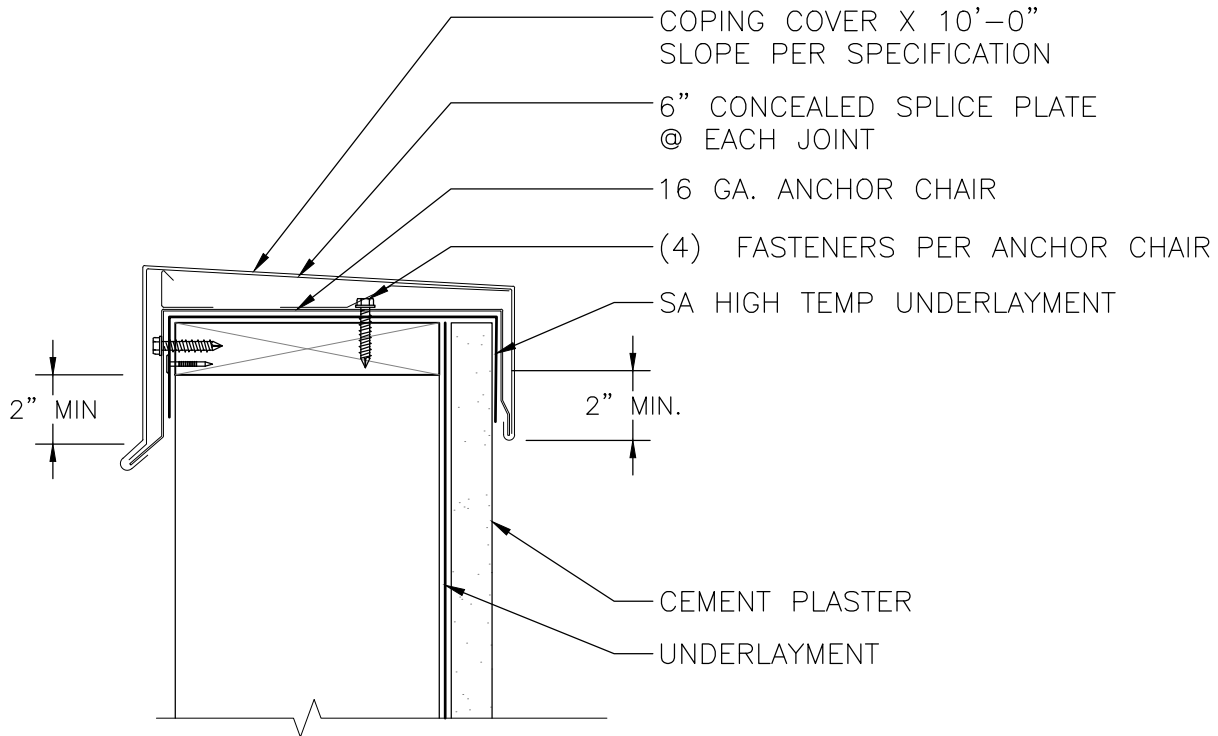


base sheet with dual fiberglass reinforced scrim.

- a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 215 lbf/in XD 215 lbf/in
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 37.5 kN/m XD 37.5 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 275 lbf XD 275 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 1223 N XD 1223 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 4.5% XD 4.5%
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 4.5% XD 4.5%
 - d. Low Temperature Flexibility, ASTM D 5147
 - 1) Passes -30 deg. F (-34 deg. C). Meets or Exceeds ASTM D 4601 Type II Performance Criteria.
- E. Flashing Ply Adhesive:
1. Generic Type III Asphalt: Hot Bitumen, ASTM D 312, Type III steep asphalt having the following characteristics:
 - a. Softening Point 185 deg. F - 205 deg. F
 - b. Flash Point 500 deg. F
 - c. Penetration @ 77 deg. F 15-35 units
 - d. Ductility @ 77 deg. F 2.5 cm
- F. Surfacing:
1. Flood Coat/Aggregate: Alternate
 - a. Flood Coat: Asphalt protective roof coating; 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) Pea gravel.
 2. Flashing Cap (Ply) Sheet:
 - a. Flashing Cap Sheet: 160 mil SBS and SIS (Styrene-Butadiene-Styrene and Styrene-Isoprene-Styrene) mineral surfaced rubber modified roofing membrane with fire retardant characteristics and reinforced with a dual fiberglass scrim and polyester scrim. ASTM D 6162, Type III Grade G
 - 1) Tensile Strength, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf/in XD 550 lbf/in
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 87.5 kN/m XD 96.25 kN/m
 - 2) Tear Strength, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 900 lbf XD 950 lbf
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 4003 N XD 4226 N
 - 3) Elongation at Maximum Tensile, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 6.0% XD 6.0%
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 6.0% XD 6.0%
 - 4) Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)
 3. Surface Coatings:
 - a. Surfacing:
 - 1) Flashing Coating: White elastomeric roof coating, Energy Star approved acrylic roof coating:
 - a) Weight/Gallon 12 lbs./gal. (1.44 g/cm³)
 - b) Non-Volatile % (ASTM D 1644) 66 min
 - c) Reflectance 81%



END OF SECTION



NOTE:
 REFERENCE SPECIFICATION FOR
 SURFACING, MEMBRANE ADHESIVE TYPE,
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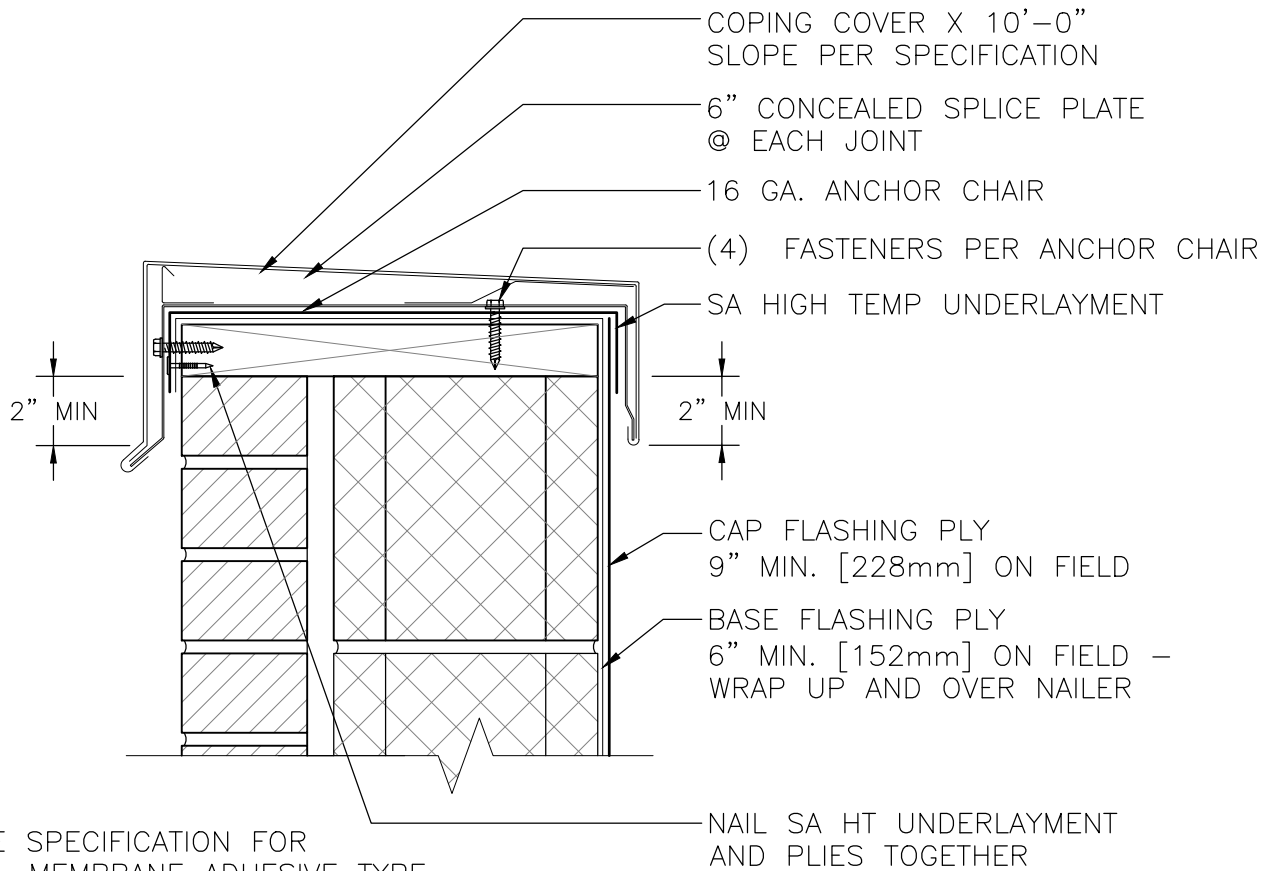
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COPING CAP AT CEMENT PLASTER WALL



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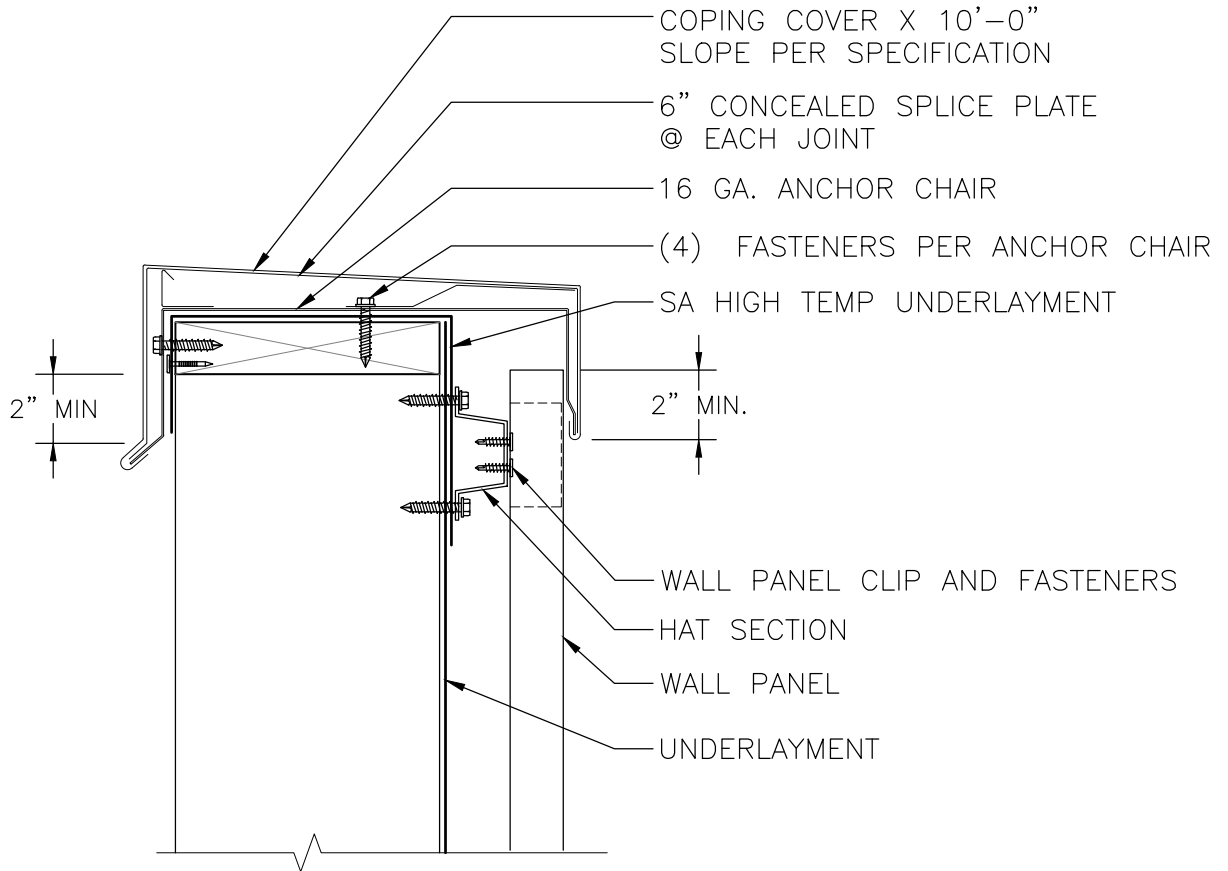
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COPING CAP AT MASONRY WALL



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COPING CAP AT WALL PANEL



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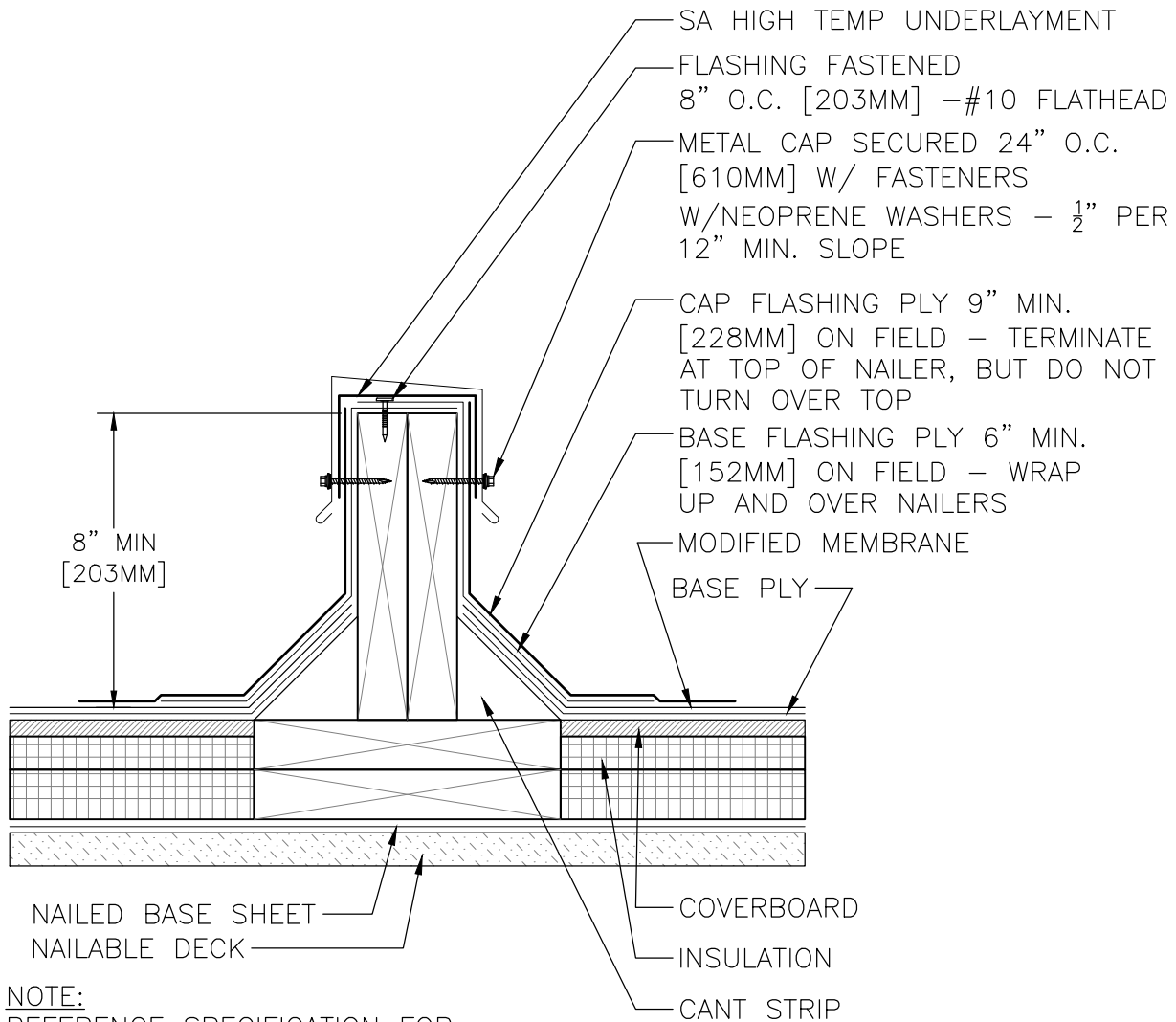
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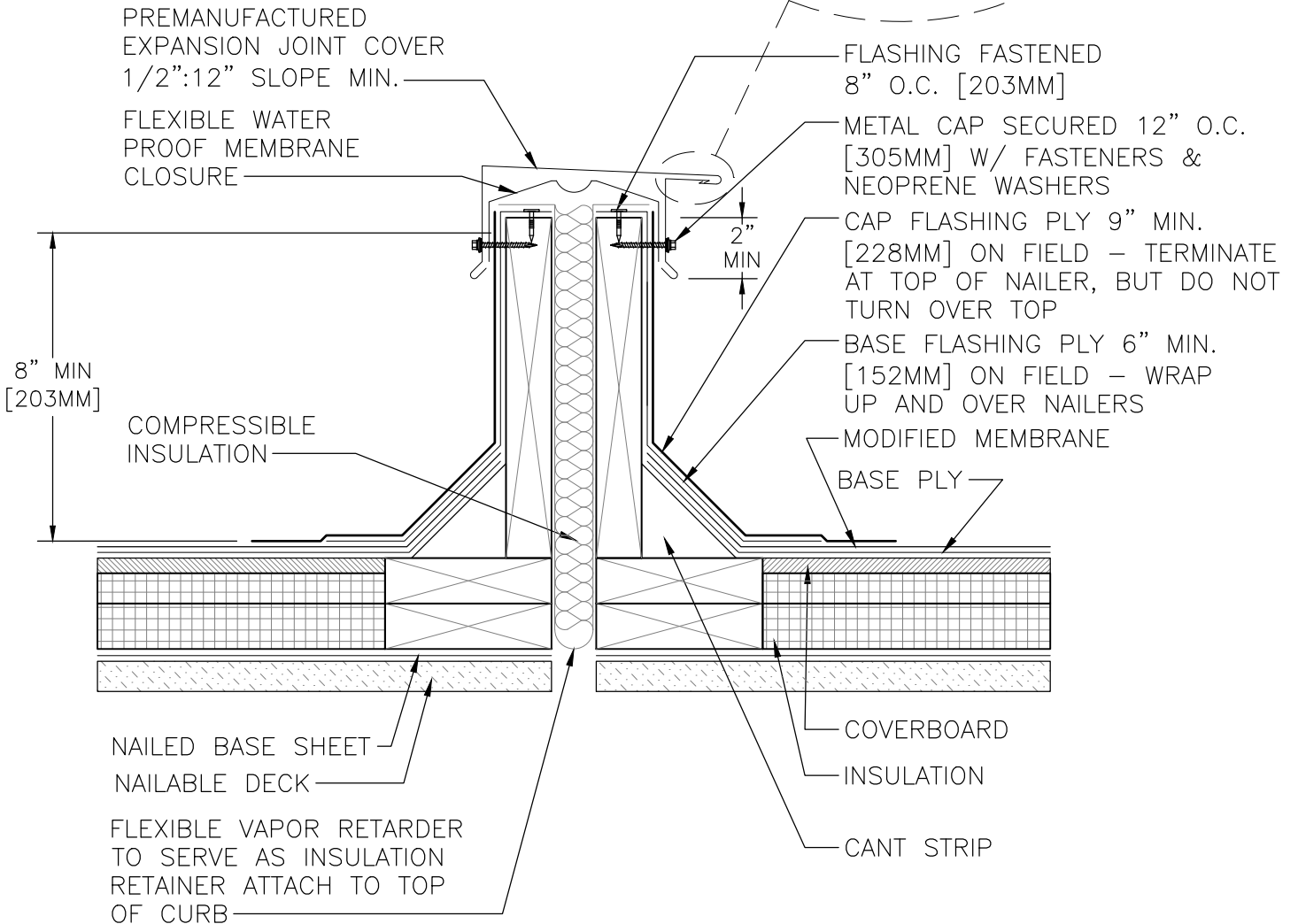
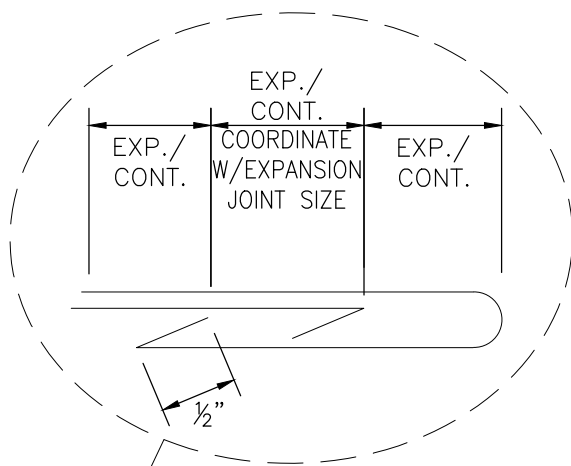
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AREA DIVIDER



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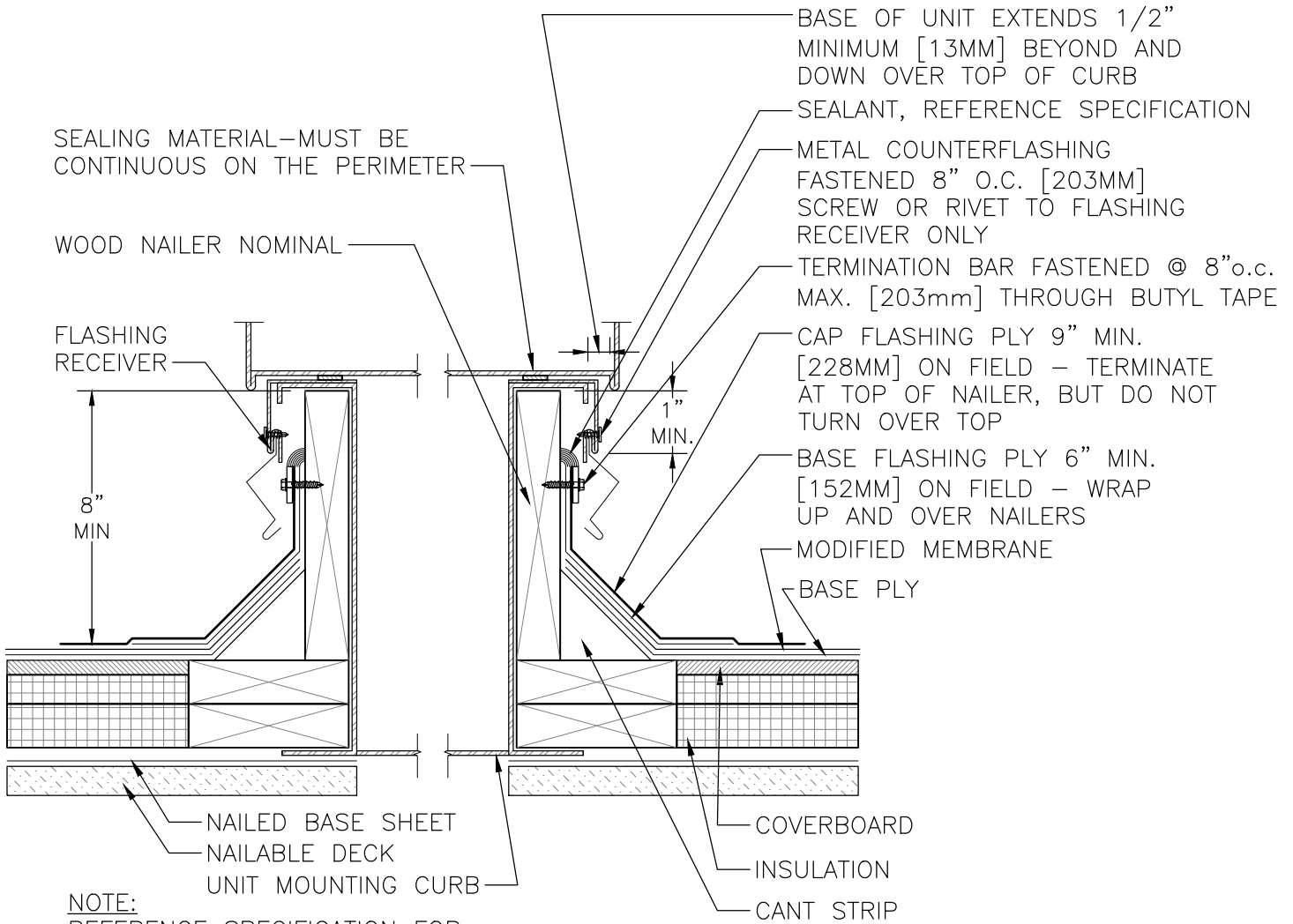
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EXPANSION JOINT



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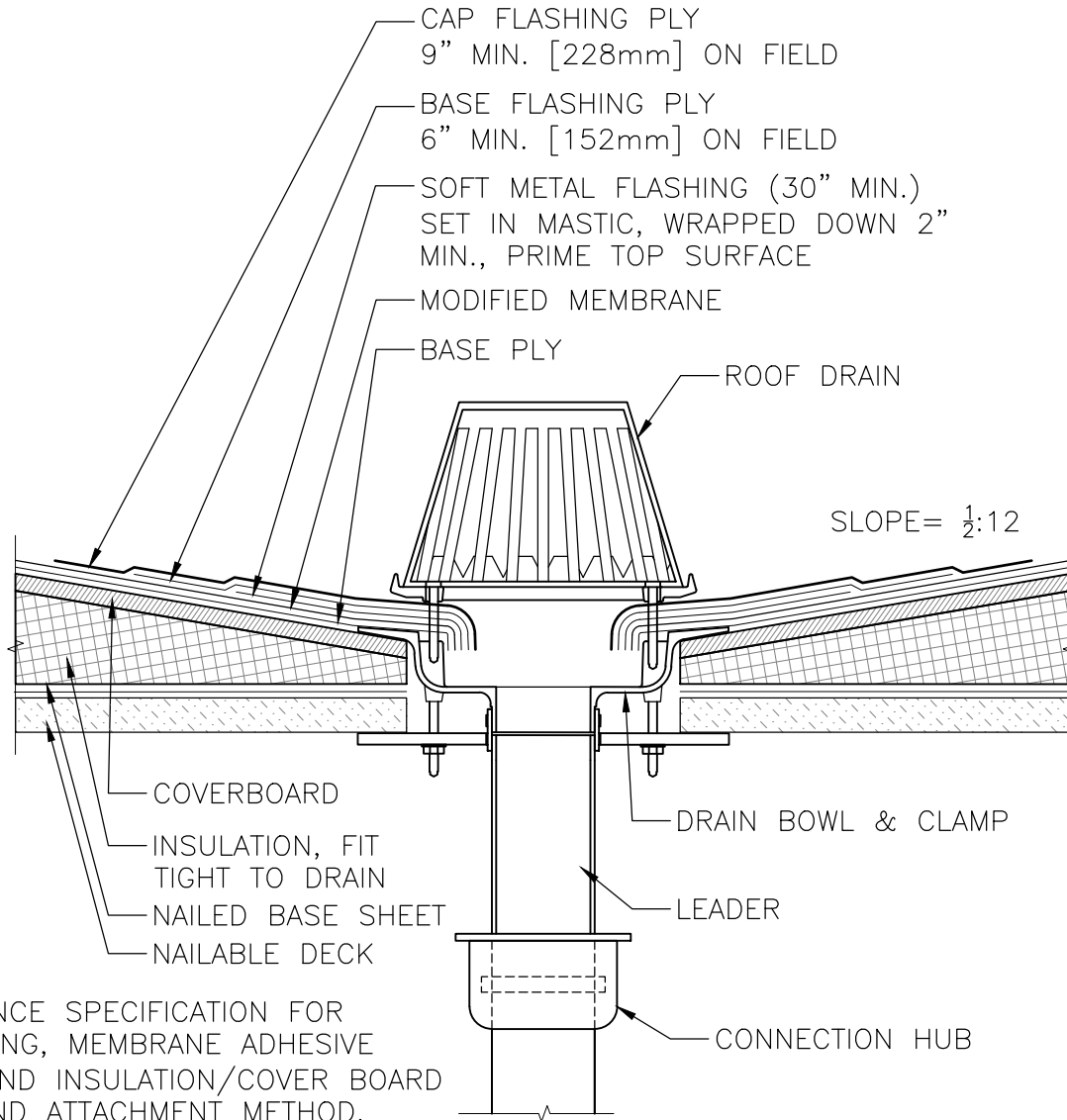
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CURB DETAIL / AIR HANDLING STATION



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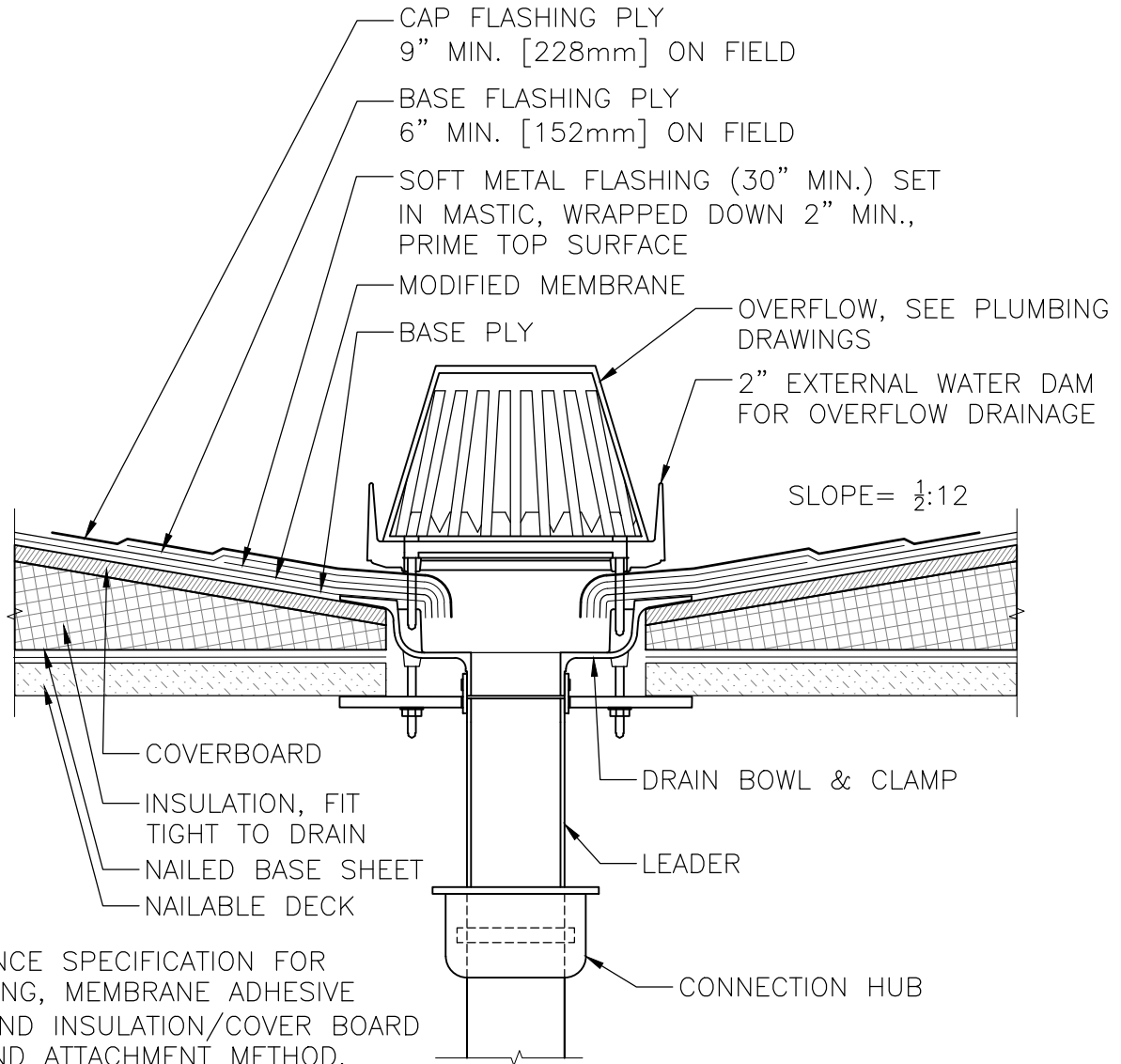
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ROOF DRAIN



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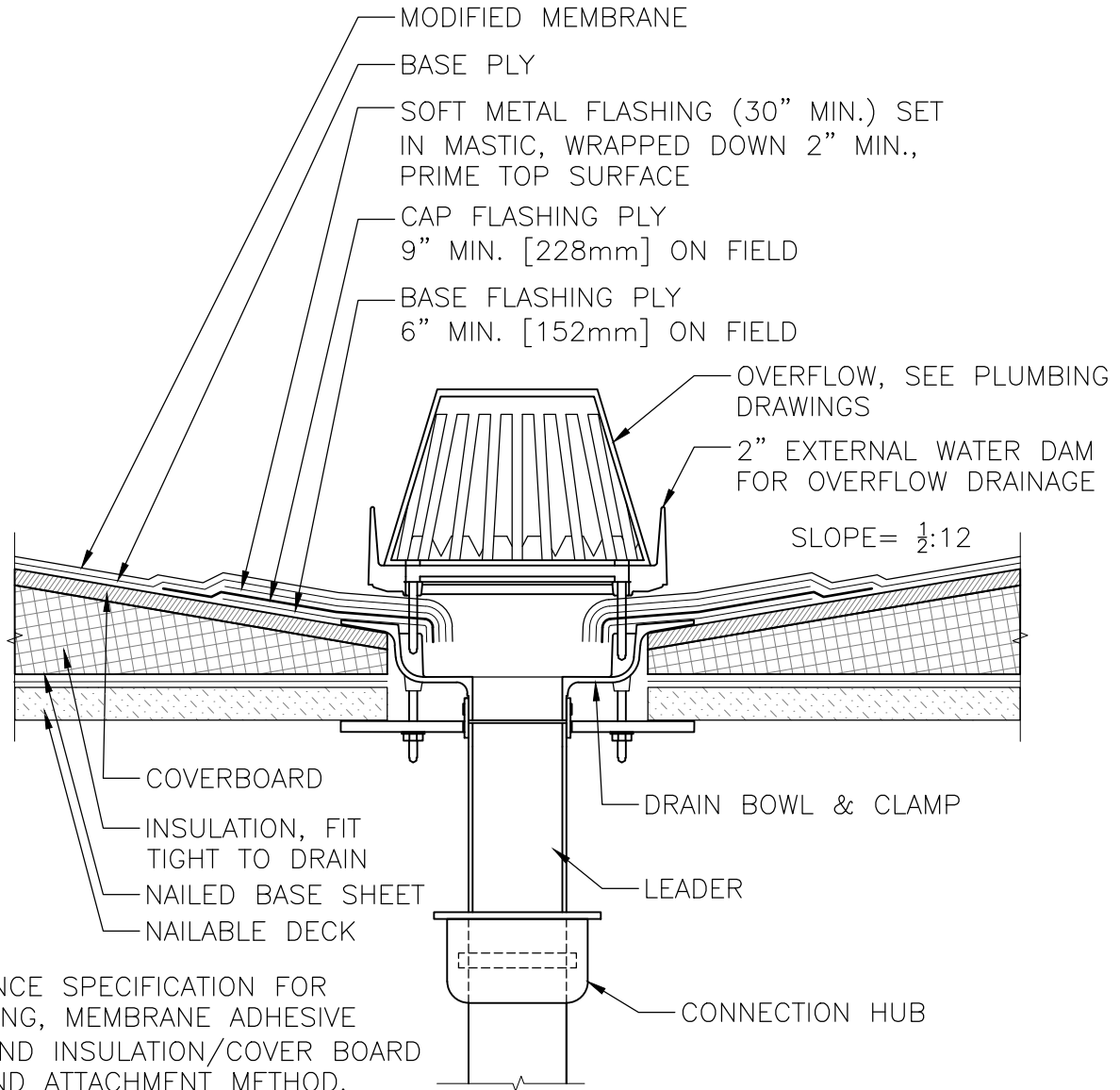
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ROOF DRAIN - OVERFLOW



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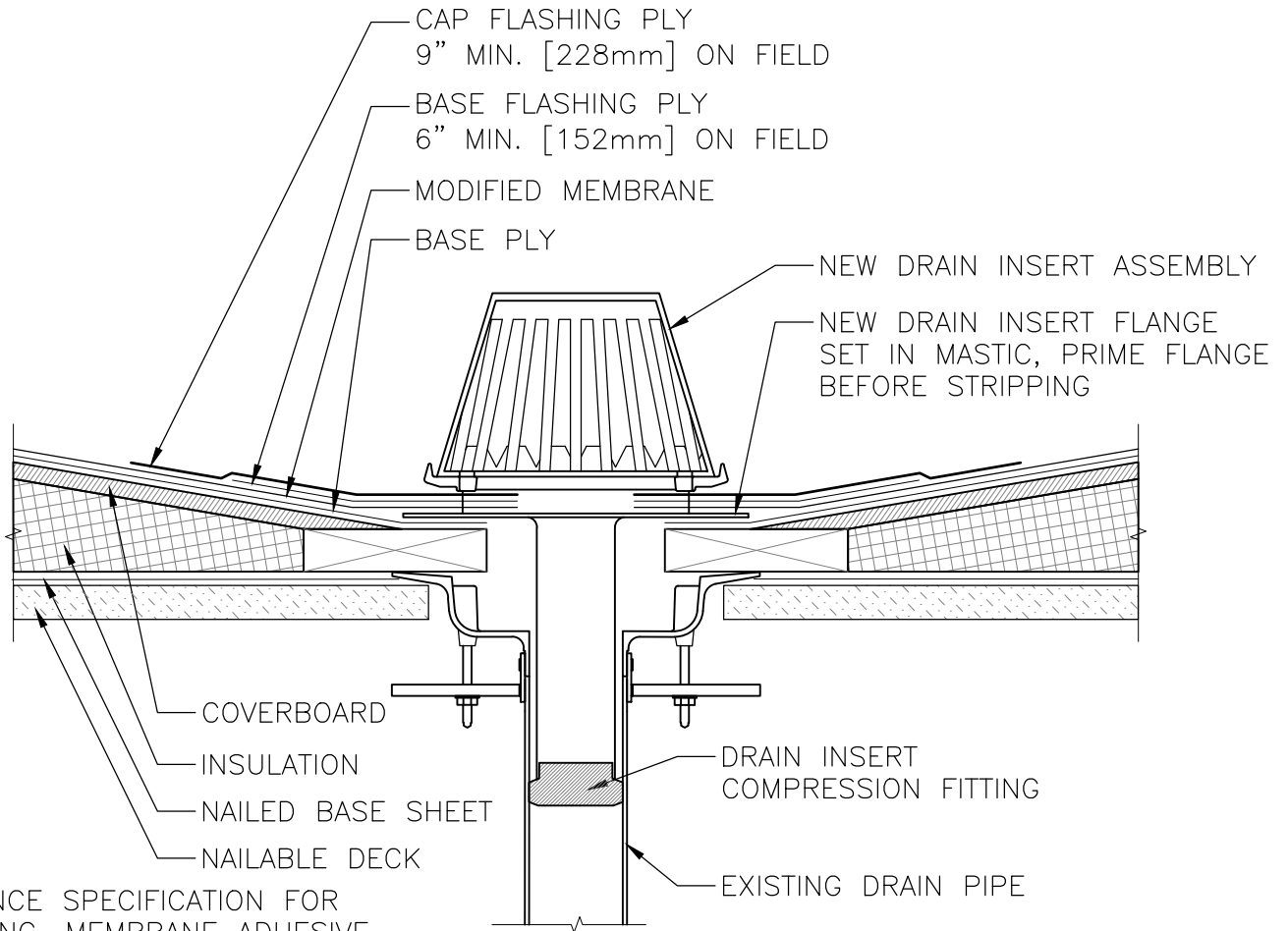
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ROOF DRAIN - OVERFLOW (ALTERNATE)



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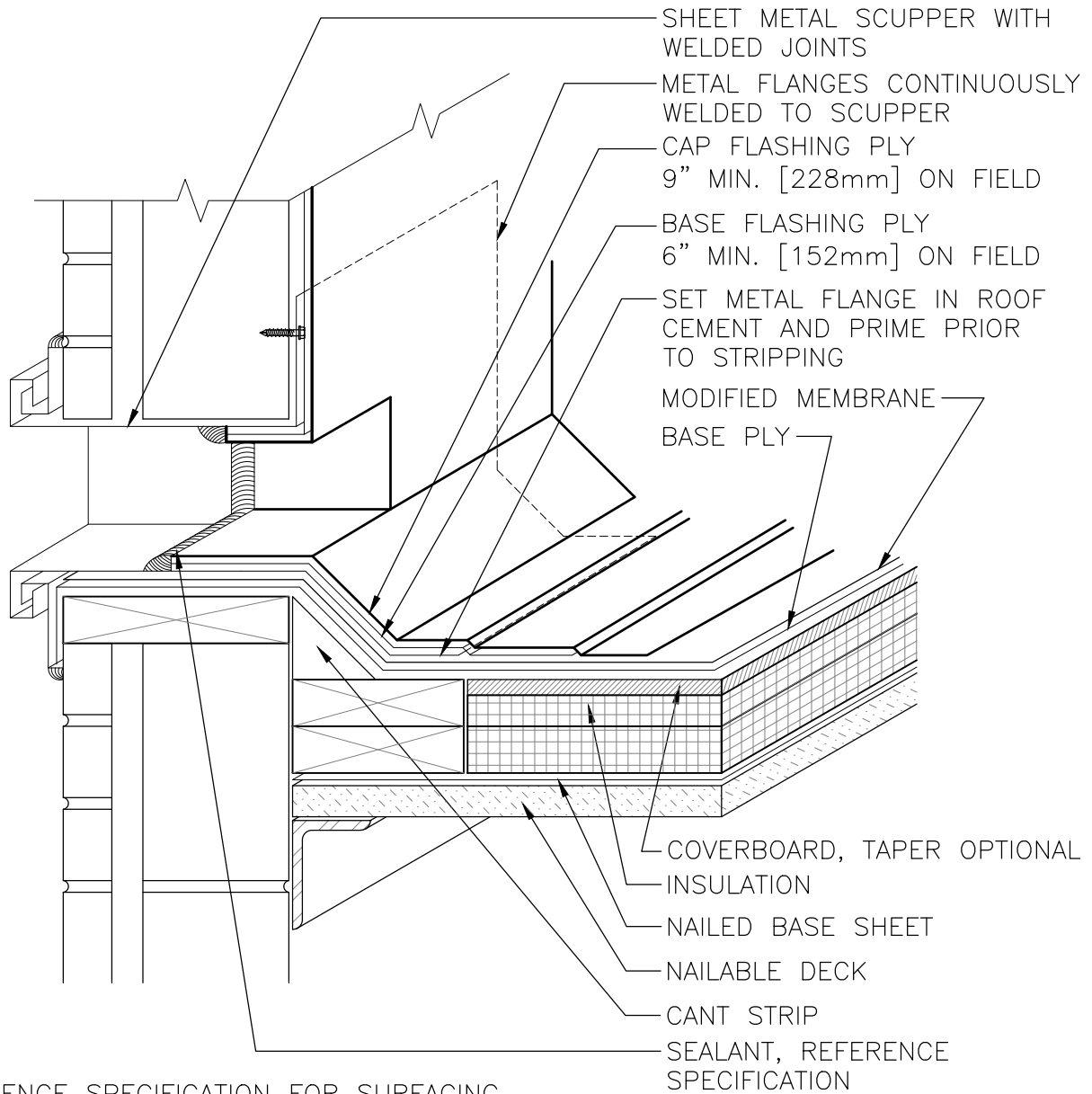
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ROOF DRAIN RETROFIT



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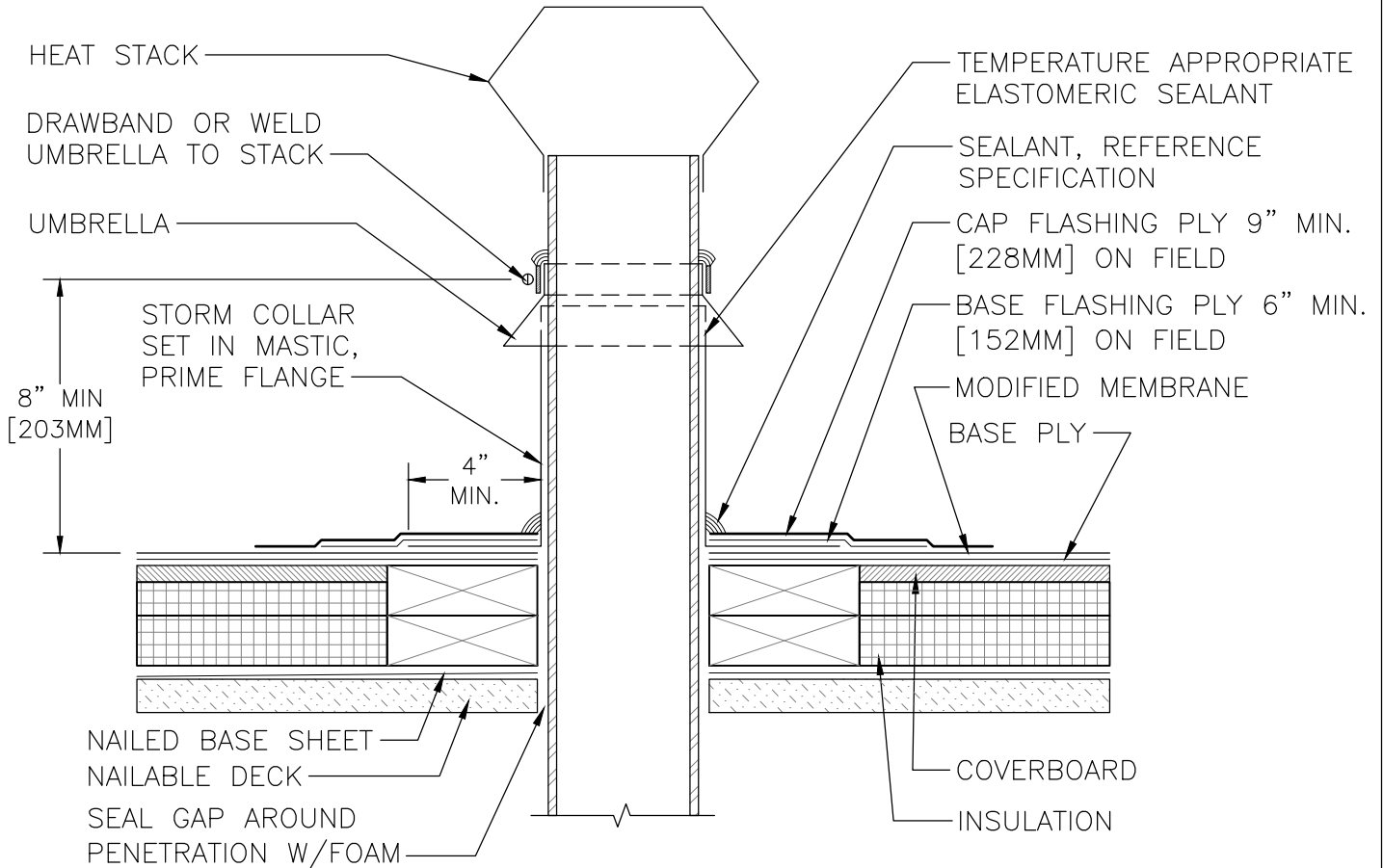
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SCUPPER THROUGHWALL - OVERFLOW



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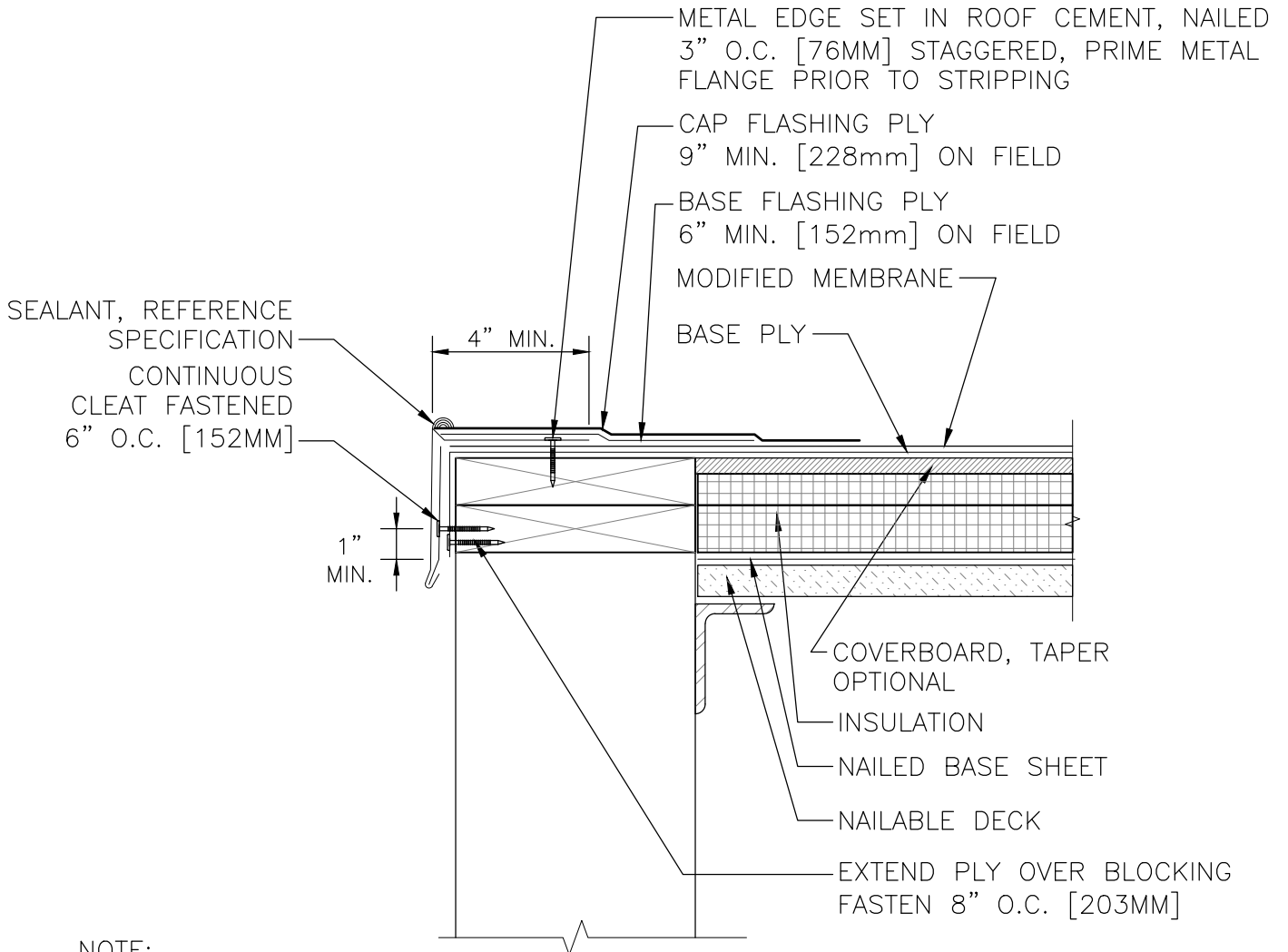
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HEAT STACK



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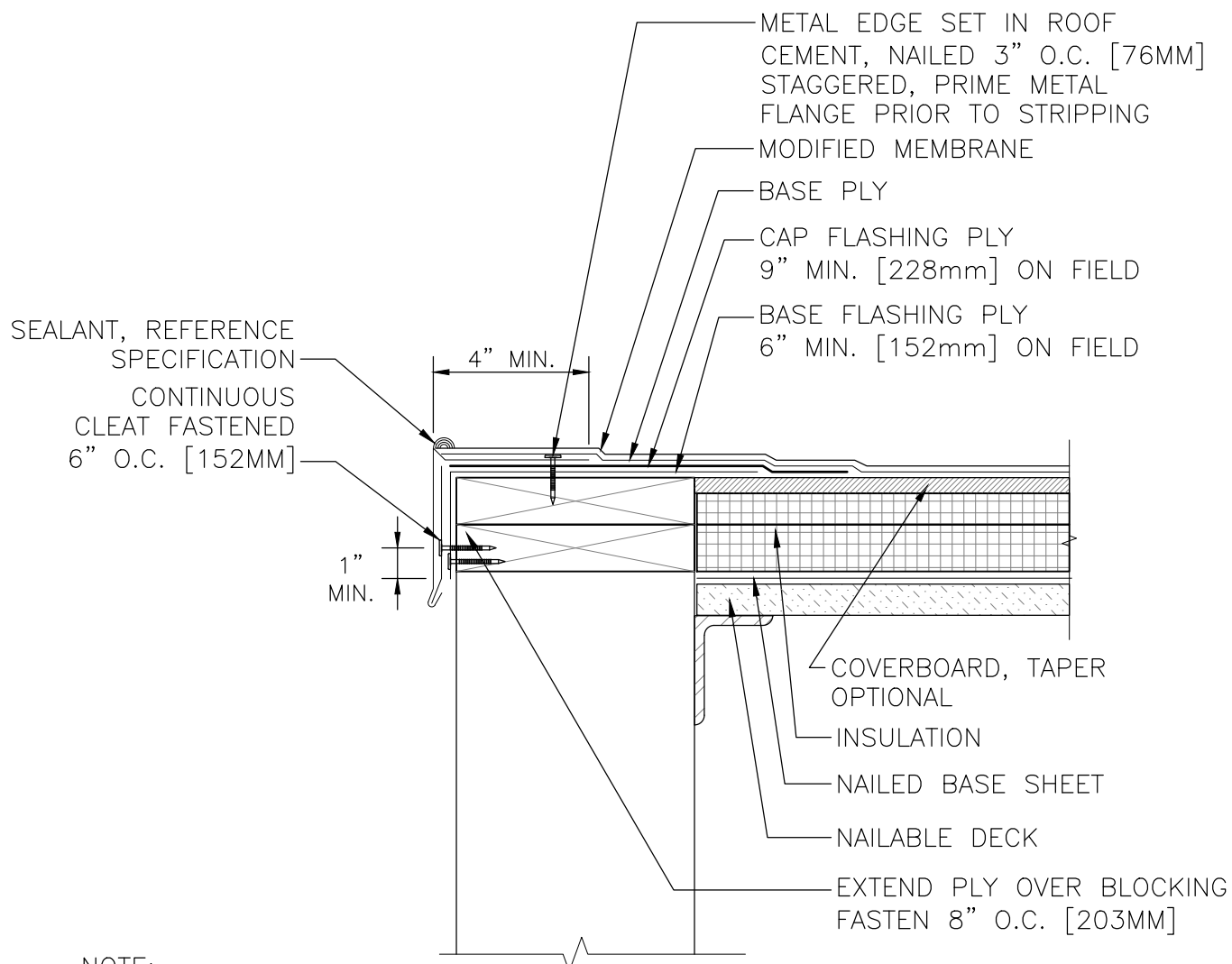
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METAL EDGE - DRIP EDGE



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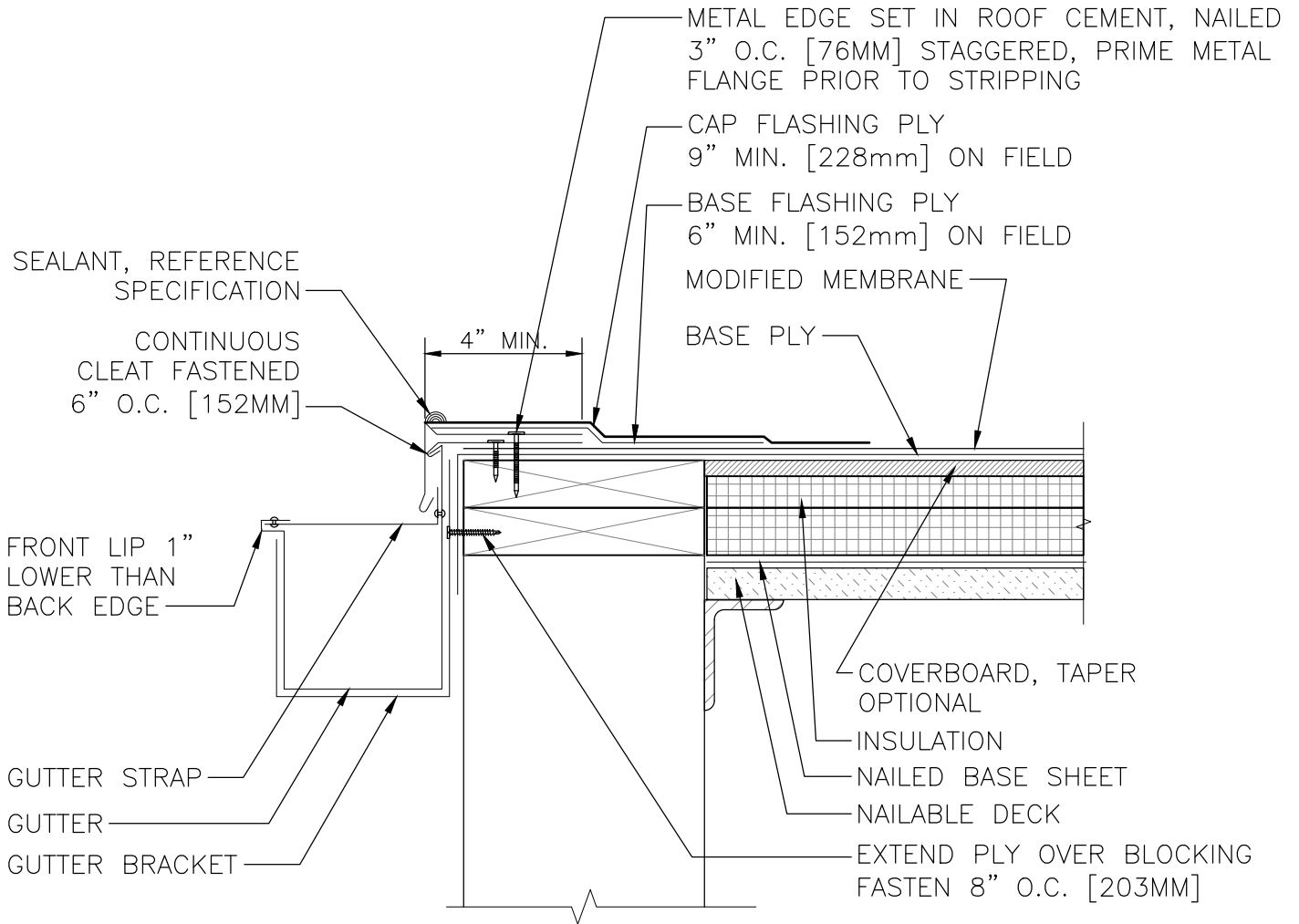
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METAL EDGE - DRIP EDGE (ALTERNATE)



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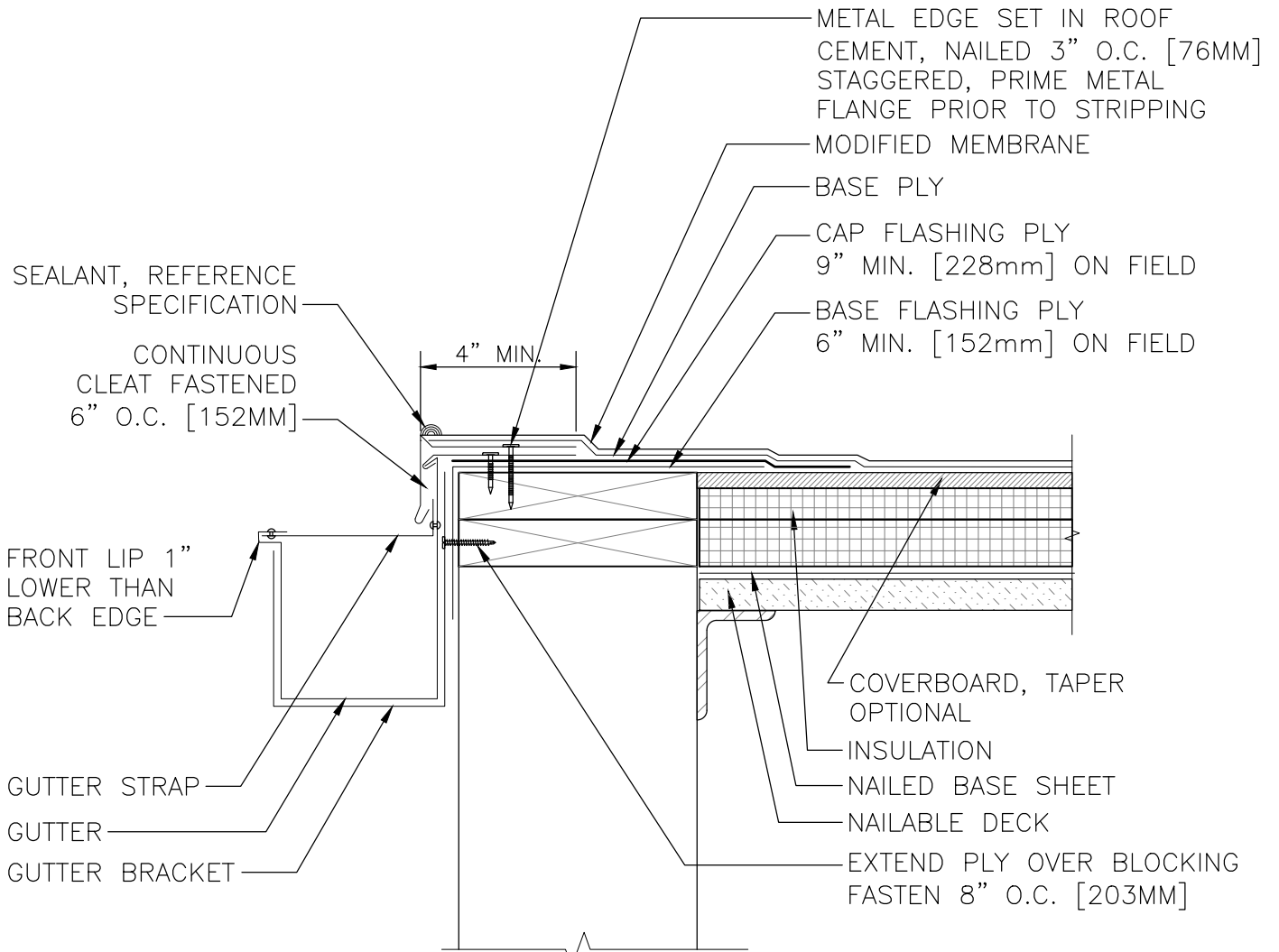
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METAL EDGE - DRIP EDGE WITH GUTTER



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METAL EDGE - DRIP EDGE WITH GUTTER (ALTERNATE)



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PREPARE AND PRIME PROJECTION

SEALANT, REFERENCE SPECIFICATION

DRAWBAND

WATERTIGHT SHEET METAL RAIN COLLAR OVERLAPPING PENETRATION POCKET

POURABLE SEALANT, 2 PART, 2" MIN.

NON-SHRINK GROUT, 2" MIN.

4" MIN.

SHEET METAL PITCH PAN SOLDERED/WELDED WATERTIGHT 4" MIN [102MM] HEIGHT

SEALANT, REFERENCE SPECIFICATION

CAP FLASHING PLY 9" MIN. [228MM] ON FIELD

BASE FLASHING PLY 6" MIN. [152MM] ON FIELD

MODIFIED MEMBRANE BASE PLY

NAILED BASE SHEET

NAILED DECK

SEAL GAP AROUND PENETRATION W/FOAM

COVERBOARD

INSULATION

OPT: WOOD NAILERS; VARIES DEPENDING UPON SIZE OF PENETRATION

NOTE:
REFERENCE SPECIFICATION FOR SURFACING, MEMBRANE ADHESIVE TYPE, AND INSULATION/COVER BOARD TYPE AND ATTACHMENT METHOD.

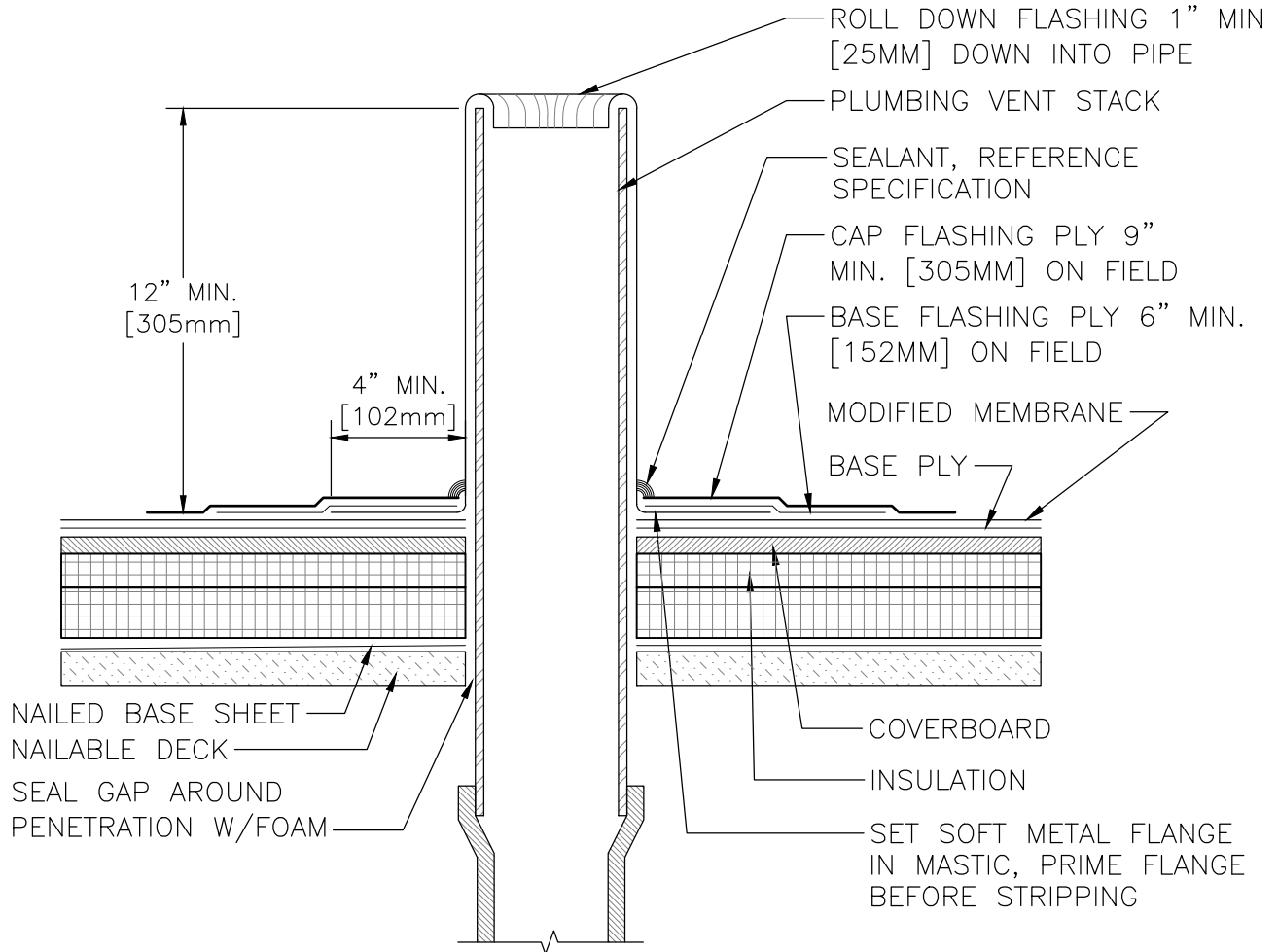
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PITCH POCKET (PIPE)



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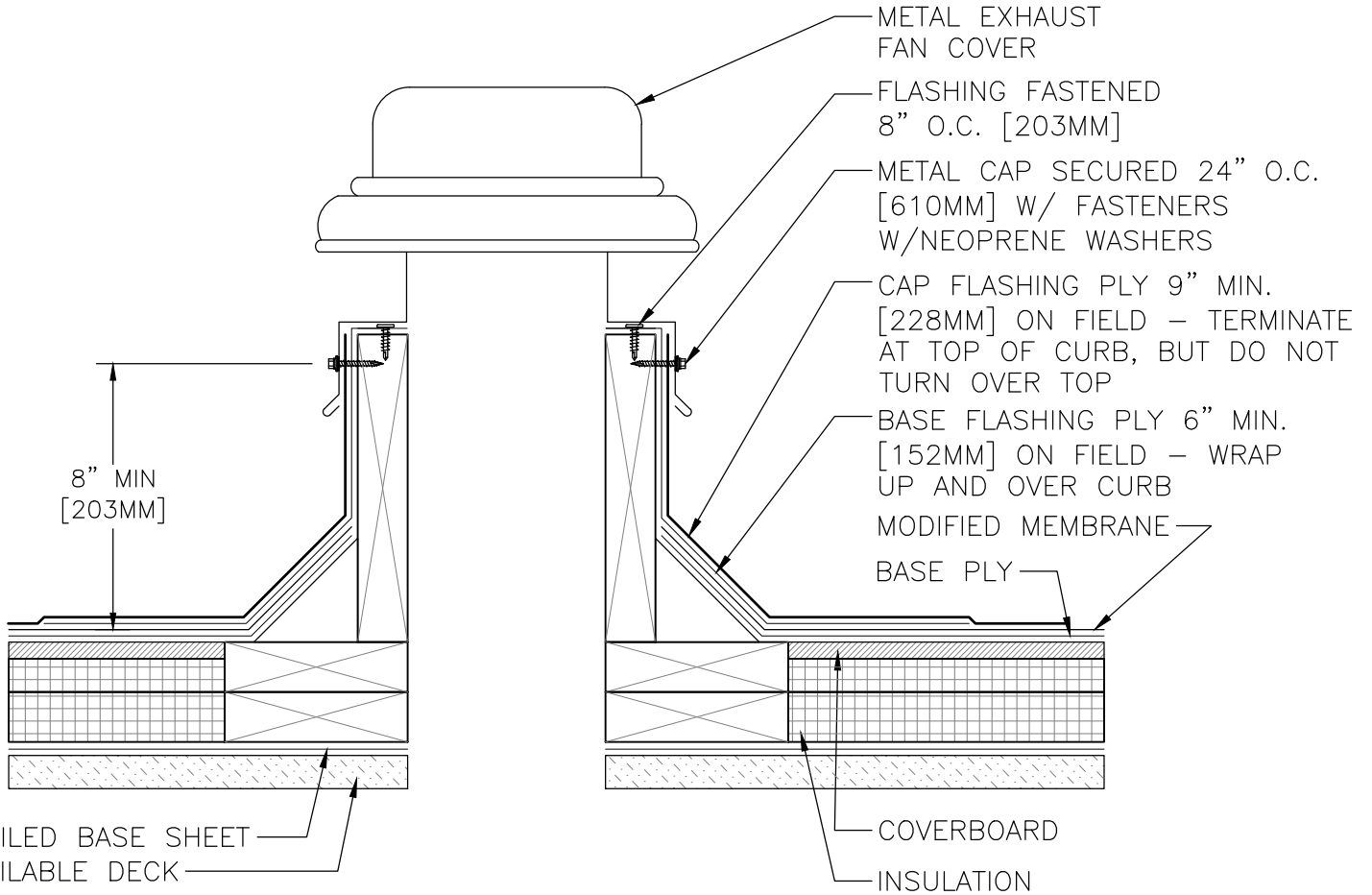
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PLUMBING STACK



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NOTE:
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EXHAUST FAN



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