



**Roof
Spec
Inc.**



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PROJECT: **Bix Building,
Partial Roof Replacement and
Repairs
1415 L'Orient Street
St. Paul, MN 55113**

DATE: **February 17, 2021**
RSI PROJECT#: **20-13268-02**
RECS # **02XX0011**

REPORTED TO: **State of Minnesota
Real Estate and Construction
Services
50 Sherburne Avenue, Suite 309
St. Paul, MN 55155**

**Attn: Benjamin Kitograd
Ccs: Wayne Waslaski**

95% CD REVIEW REPORT

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PROJECT SCOPE

General:

This project consists of the replacement of approximately 32,500 square feet over the east half of area B at the Bix Building. Work will also include replacement of deteriorated steel roof deck, minor modifications rooftop mechanical and electrical, and maintenance repairs to the balance of the building's roof.

Existing Roof System:

The existing roof system consists of a ballasted EPDM membrane installed over 5" expanded polystyrene insulation, polyethylene sheet, 2" isocyanurate insulation, and a steel roof deck.

Drainage is accomplished via structural slope to internal roof drains and external scuppers. Overflow drainage is accomplished via perimeter overflow scuppers.

New Roof System:

The new roof system will consist of a 60-mil ballasted EPDM membrane installed over a ½" high density isocyanurate cover board, 5" of isocyanurate insulation, and a polyethylene sheet air/vapor barrier. Additionally, ½" per ft tapered isocyanurate insulation will be installed to form crickets and sumps to promote proper roof drainage.

DESIGN CONSIDERATIONS

1. Staging for the project will take place at the south side on east end of the loading dock area. Additional materials storage will be permitted in a designated area of the adjacent parking lot.
2. A significant portion of the existing steel roof deck is evidenced to be deteriorating and will need to be replaced. An allowance for 12,000 square feet of steel deck replacement will be included in the bid from contractors, with an add/deduct unit price for replacement of additional steel deck or steel deck not replaced under the allowance. The steel roof deck is exposed in these areas and restriction of access to areas directly under removal of the existing steel deck and protection of the stored materials will be necessary. An add alternate will be included on the bid form for a decision to be determined as to who has responsibility for the interior protection.

3. Due to the extensive steel deck replacement anticipated, replacement the entire roof on area B will not be possible. Therefore, a temporary control joint will be installed which will include a temporary overflow scupper to achieve original drainage calculations.
4. Repairs to deficiencies within the balance of roof area B and roof area A will be completed as noted on the attached roof plans.
5. Minor alterations to the rooftop mechanical and electrical may be necessary. All temporary disconnect and reconnect shall be the responsibility of the contractor and will be closely coordinated with on-site personnel.

OPINION OF PROBABLE CONSTRUCTION COSTS

Roofing	\$570,000.00
Mechanical & Electrical Work	\$20,000.00
Sheet Metal/Flashing	\$30,000.00
10 % Contingency	<u>\$100,000.00</u>
TOTAL:	\$720,000.00

ESTIMATED SCHEDULE

Signed Drawings Presented to RECS – March 5, 2021

Pre-Bid Meeting – March 16, 2021

Bids Due – March 26, 2021

Construction – April 19 – June 30, 2021

MN RECS

February 17, 2021

RSI Project #20-13268-02 – 95% CD Review Report – Bix Building, 1415 L'Orient Street, Partial Roof Replacement and Repairs

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COMMENTS

Attached please find the 95% review specifications and drawings. Please review and provide comments at your earliest convenience. Upon being notified to proceed with bidding, any Owner review comments will be incorporated into the final specifications and drawings. In addition, the Division 0 portion of the specifications provided by the Owner will be incorporated into the specifications.

If you should have any questions or require further information, please contact our office.
Thank you.

Respectfully,

ROOF SPEC, INC.

A handwritten signature in blue ink, appearing to read "Dan Trenda".

Dan Trenda, RRO
Project Manager

DT/tp

Enclosures

Section 01 11 00

SUMMARY OF WORK

This Section is for the convenience of the Contractor only and should not be construed as a complete accounting of all work to be performed.

The extent of the scope of work is indicated on the drawings and by the requirements of each Section. A copy of this Project Manual, Specifications and Detail Drawings (including all addenda and change orders) is required to be available on the project site at all times.

PART 1 – GENERAL

1.01 Discovery And Verification:

- A. It is the responsibility of the Contractor to visit the project site to verify dimensions and construction of all existing details, equipment, and job site conditions pertaining to this work prior to bidding.
- B. The details shown and descriptions of existing assemblies were obtained via isolated and random reviews by Roof Spec, Inc. and/or from the original drawings.
- C. Materials and conditions shown by the details should not be construed as representative of each detail item on the entire roof area.

1.02 Demolition And Roof Preparation:

- A. Prior to removal of existing roof system, provide all necessary protection for Owner's equipment and personnel.
- B. Maintain weather-tightness as work occurs and ensure that the building is weather-tight and secure when leaving the work site at the end of each work day.
- C. Remove debris and loose gravel (if present) from roof area and properly dispose of all materials off-site.
- D. Tear off existing roof membrane, base flashings, insulation material and loose vapor retarder (if present) down to the roof deck and properly dispose of off-site.
- E. Ensure that all drains are in proper working order and that drain lines are clear to the first elbow.

PART 2 – NOT USED

PART 3 – EXECUTION

3.01 Deck Repair/Replacement:

- A. Remove obsolete roof penetrations (verified by facility personnel.)
- B. Remove and replace existing deteriorated decking to match existing deck as directed by the Architect/Engineer, if found to be damaged. Provide unit price for replacement.
- C. At areas of minor surface rust, prepare the surface and install low VOC Metal Roof Deck Coating.

3.02 Rough Carpentry:

- A. Install nailers, where required, to match height of new insulation, as detailed.
- B. Install nailers for curb extensions, as required, for minimum curb height of 12” above new membrane.

3.03 Vapor Retarder:

- A. Install a 10 mil polyethylene vapor retarder with all seams taped and sealed to penetrations.

3.04 Insulation:

- A. Install insulation in accordance with specifications and details, joints butted tight.

Note: All joints are to be staggered and offset 50% from the previous layer.

3.05 Membrane/Flashings:

- A. Single Ply Membrane:
 - 1. Install a 60 mil, fire rated, Ballasted EPDM roof system.
 - 2. Install EPDM flashing to all penetrations, perimeters, and wall sections, as detailed.
 - 3. Install EPDM boots at pipe and plumbing locations.

3.06 Plumbing Work:

- A. Replace all missing or damaged drain covers and bolts.
- B. Auger all interior roof drains at completion of re-roofing to ensure working order.

3.07 Sheet Metal/Flashings:

- A. Install new 24-gauge, pre-finished sheet metal counterflashings at curbs and perimeter locations.
- B. Install 24-gauge, pre-finished sheet metal on expansion and control joints where indicated on detail drawings.
- C. Install 24-gauge, galvanized accessories where shown on detail drawings.

3.08 Grounds:

- A. Provide clean-up of building and grounds on a daily basis and dispose of all debris off-site.
- B. After completion of the project, repair or restore any and all grounds, parking areas and roadways to their original condition prior to project commencement.

3.09 Hazardous Materials/Disposal:

- A. In review of the roof areas by the Architect/Engineer, it was discovered that the existing membrane assembly consisted of an EPDM roof system.
- B. This information was obtained by the Architect/Engineer by a physical review of the exterior of the building, and by obtaining test cuts from a limited number of locations representative of the membrane assembly. The interior of the structure was not reviewed by the Architect/Engineer to identify any other components of the facility which could contain asbestos or other potentially hazardous products.
- C. Neither the Owner nor the Architect/Engineer make any representation that the identified potentially hazardous materials are the only potentially hazardous materials incorporated into the roof system, and it is the responsibility of the Contractors bidding the project to identify and verify any hazardous waste material and to include the cost of disposal within their bid price. The Contractor shall be solely responsible for the health and safety of its employees in the handling or removal of potentially hazardous materials.

- END OF SECTION -

Section 01 21 00

ALLOWANCES

PART 1 – GENERAL

1.01 Related Documents:

- A. Drawings, Details of Construction and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work specified in this section.

1.02 Summary:

- A. This section includes administrative and procedural governing allowances.
 - 1. Certain materials and/or labor are specified in the Contract Documents by lump sum allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and/or labor to a later date when additional information is available for evaluation.
- B. Related Sections include the following:
 - 1. Change Orders - Section 01 26 63
 - 2. Unit Prices – Section 01 22 00

1.03 Selection and Purchase:

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. The Architect will issue a Proposal Request for pricing on each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

PART 2 – NOT USED

PART 3 – EXECUTION

3.01 Schedule of Allowances:

- A. Allowance No. 1: Include the sum for replacement of 12,000 sq. ft of Type B metal roof decking.

- END OF SECTION -

Section 01 22 00

UNIT PRICES

PART 1 – GENERAL

1.01 Related Documents:

- A. Drawings, Details of Construction and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work specified in this section.

1.02 Summary:

- A. This Section specifies administrative and procedural requirements for unit prices.
- B. A unit price is an amount proposed by Bidders and stated on the Bid Form as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.
- C. Unit prices include all necessary material, labor, overhead, profit and applicable taxes.
- D. Refer to individual Specification Sections for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections. This Section specifies administrative and procedural requirements for unit prices.
- E. A unit price is an amount proposed by Bidders and stated on the Bid Form as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.
- F. Unit prices include all necessary material, labor, overhead, profit and applicable taxes.
- G. Refer to individual Specification Sections for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
 - 1. Related Sections include the following:
 - a. Bid Form - Section 00 41 00
 - b. Allowances - Section 01 20 00

- H. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.

PART 2 – NOT USED

PART 3 – EXECUTION

3.01 Schedule of Unit Prices:

- A. Unit Price No. 1: Sq. Ft price for replacement of damaged or deteriorated metal roof deck.

- END OF SECTION -

PROGRESS MEETINGS

PART 1 - GENERAL

1.01 Description:

- A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Architect/Engineer will conduct project meetings throughout the construction period as is deemed necessary.

1.02 Representation:

- A. Each Contractor and major Subcontractor shall be represented at every meeting by a responsible member of their organization.

1.03 Submittals:

- A. The minutes of these meetings will be recorded by the Architect/Engineer, and each required representative at meetings will be furnished one copy in addition to the Owner.
- B. The Architect/Engineer conducting meetings, recording, and distributing meeting minutes on behalf of the Owner shall not be construed as coordinating or scheduling Contractor's work.

1.04 Decisions/Interpretations:

- A. All decisions and interpretations given by the Architect/Engineer at project meetings shall be on behalf of the Owner and shall be binding for each Contractor affected.

PART 2 - NOT USED

PART 3 - EXECUTION

3.01 Meeting Schedule:

- A. Meeting schedule as agreed to by Architect/Engineer and Contractors at pre-construction meeting.
- B. Change in meeting date/time: If a change of meeting date/time is required due to causes beyond control of the Owner or Architect/Engineer, the Architect/Engineer will advise each concerned party in advance of such change.

3.02 Meeting Location:

- A. To the maximum extent practical, meetings will be held at the job site.

3.03 Pre-Construction Meeting:

- A. Pre-construction meeting will be scheduled within fourteen days after the Owner has issued notice to proceed. Provide attendance by authorized representatives of the Contractor and all major Subcontractors. The Architect/Engineer will advise other interested parties and request their attendance.
- B. Minimum Agenda:
 - 1. Organization arrangement of Contractor's personnel, those of Subcontractors, and material suppliers.
 - 2. Channels and procedures for communications.
 - 3. Construction schedule including sequence of critical work.
 - 4. Contract documents including distribution of required copies of original documents and revisions.
 - 5. Status of submittal package.
 - 6. Processing of shop drawings and other data submitted for review.
 - 7. Processing of field decisions and change orders.
 - 8. Rules and regulations governing performance of the work.
 - 9. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters.
 - 10. Name of Contractor's designated "Competent Person" per OSHA.
 - 11. Scheduling of project meetings.
 - 12. Project record documents.
 - 13. Shop drawings.

3.04 Project Meetings:

- A. Attendance:
 - 1. To the maximum extent practical, assign the same person or persons to represent the Contractor and major Subcontractors at project meetings throughout the project. Subcontractors, material suppliers, and others may be invited to attend those project meetings in which their aspects of the work are involved.
- B. Minimum Agenda:
 - 1. Review, revise as necessary, and approve minutes of previous meeting.
 - 2. Review progress of the work and construction schedule since last meeting, including status of submittals for approval.
 - 3. Identify problems which impede planned progress.
 - 4. Develop corrective measures and procedures to regain planned schedule.
 - 5. Complete other current business.

- END OF SECTION -

Section 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.01 Description:

- A. Work Included: To assure adequate planning and execution of the work so the work is completed within the number of calendar days allowed in the contract, and to assist the Architect/Engineer in evaluating progress of the work, prepare and maintain the schedules and reports described in this Section.
- B. Definitions:
 - 1. "Day" used throughout the contract, unless otherwise stated, means "calendar day."

1.02 Reliance upon Approved Schedule:

- A. Should any activity not be completed within fifteen days after the stated scheduled date, the Architect/Engineer shall have the right to order the Contractor to expedite completion of the activity by whatever means that he deems appropriate and necessary, without additional compensation to the Contractor.
- B. Should any activity be 30 or more days behind schedule, the Architect/Engineer, consulting with the Owner, shall have the right to perform the activity or have the activity performed by whatever method deemed appropriate.
- C. Costs incurred by the Architect/Engineer in connection with expediting construction activity under this article shall be reimbursed to the Architect/Engineer by the Contractor.
- D. It is expressly understood and agreed that failure by the Architect/Engineer to exercise the option to either order the Contractor to expedite an activity or to expedite the activity by other means shall not be considered precedent-setting for any other activities.

1.03 Submittals:

- A. Comply with the provisions of Section 01 33 00, Submittal Procedures.
- B. Construction Schedule: Within fourteen days after receipt of notice to proceed, submit two prints of the construction schedule prepared in accordance with part 3 of this Section.

- C. Periodic Reports:
 - 1. Contractor shall submit weekly progress reports itemizing daily activities for that period and identifying any problems encountered or anticipated to the Architect/Engineer.
 - 2. Comply with the provisions of Section 01 32 26 Construction Progress Reporting.

PART 2 - PRODUCTS

2.01 Construction Analysis:

- A. Diagram:
 - 1. Graphically show the order and interdependence of all activities necessary to complete the work and the sequence in which each activity is to be accomplished as planned by the Contractor and their project field superintendent in coordination with all Subcontractors whose work is shown on the diagram. Activities shown on the diagram shall include, but are not necessarily limited to:
 - a. Project Mobilization
 - b. Submittals and Approvals of Shop Drawings and Samples
 - c. Procurement of Equipment and Materials
 - d. Demolition/Roof Preparation
 - e. Construction
 - f. Sheet Metal
 - g. Miscellaneous Work
 - h. Final Clean-up
 - i. Final Inspection
- B. The detail of information shall be such that duration times of activities shall normally range from one to thirty days. The selection and number of activities shall be subject to the Architect's/Engineer's approval.

PART 3 - EXECUTION

3.01 Construction Schedule:

- A. As soon as practical after receipt of notice to proceed, complete the construction analysis described in articles 2.1 above, in preliminary form. Meet with the Architect/Engineer, review contents of proposed construction schedule, and make all revisions agreed upon. Submit in accordance with paragraph 1.3 (B) above.

3.02 Periodic Reports:

- A. Construction Schedule Contents:
 - 1. Show activities or portions of activities completed during the reporting period.
 - 2. State the percentage of work actually completed and scheduled as of the report date, and the progress relative to days ahead of, or behind the allowable dates.
 - 3. If work is behind schedule, provide a narrative report which shows, but is not necessarily limited to:
 - a. A description of the problem areas, current and anticipated.
 - b. Delaying factors and their impact.
 - c. An explanation of corrective actions taken or proposed.

3.03 Revisions:

- A. Make only those revisions to construction schedule as are approved in advance by the Architect/Engineer.

- END OF SECTION -

Section 01 32 26

CONSTRUCTION PROGRESS REPORTING

PART 1 - GENERAL

1.01 Description:

- A. To provide a continuous record of the progress of the work, each Contractor shall keep a daily progress report when requested by the Owner/Architect/Engineer.
- B. Format of progress reports shall be approved by Architect/Engineer at the pre-construction meeting.

1.02 Quality Assurance:

- A. Progress reports are to be filled out on a daily basis by the Contractor's job site representative, who shall be in a supervisory position.
- B. Wherever possible, reports shall be completed by the same individual throughout the duration of the project.

1.03 The Architect/Engineer Shall Receive One (1) Copy of All Progress Reports on a Weekly Basis.

PART 2 - NOT USED

PART 3 - EXECUTION

3.01 Completion of Progress Report:

- A. Contractor shall complete one (1) form for each working week. Reports shall include the following:
 - 1. Trade designation and crew size
 - 2. Work Location(s)
 - 3. Atmospheric Conditions
 - 4. Working day and percent completed
 - 5. Brief description of completed work
 - 6. Photographs of both completed work and installation
- B. Forms shall also be completed for the following days:
 - 1. Work days canceled or shortened due to weather, material shortages, or labor conditions.
 - 2. Holidays.

3.02 Forms Shall Be Legibly Filled out in Ink and All Pertinent Items Completed.

- END OF SECTION -

Section 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 Description:

- A. Work included:
 - 1. Make all submittals as required by the contract documents and revise and resubmit as necessary to establish compliance with the specified requirements.
- B. Related work described elsewhere:
 - 1. Additional requirements for submittals not listed in this Section are described in pertinent other Sections of these specifications.

1.02 Quality Assurance:

- A. Coordination of Submittals:
 - 1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted and verify each item of the submittal conforms in all respects with the requirements of the contract documents. By affixing the Contractor's signature to each submittal, you certify this coordination has been performed.

1.03 Submittals:

- A. Submittal Schedule:
 - 1. Within fourteen days after award of contract and before any items are submitted for approval, submit to the Architect/Engineer four copies of the schedule described in Section 01 32 16 of this specification.
- B. Procedures:
 - 1. Make submittals in strict accordance with the provisions of this Section.
- C. Contractor Safety Program:
 - 1. Provide evidence of A Workplace Accident and Incident Reduction (AWAIR) program.
 - 2. Name of person designated as "Competent Person" per Occupational Safety and Health Administration (OSHA).

PART 2 - PRODUCTS

2.01 Shop Drawings and Coordination Drawings:

- A. Scale and Measurements:
 - 1. Make all shop drawings accurate to a scale sufficiently large to show all pertinent aspects of the item.
- B. Type of Prints Required:
 - 1. Submit all shop drawings PDF format to the Architect/Engineer.
- C. Review of Shop Drawings:
 - 1. Distribution of reviewed shop drawings for the Contractors use will be by the Architect/Engineer. All review comments by the Architect/Engineer will be shown on the original submittal when it is returned to the Contractor. The Architect/Engineer shall make and distribute all copies required.

2.02 Manufacturer's Literature:

- A. General:
 - 1. Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly indicate which portion of the contents is being submitted for review.
- B. Number of copies required:
 - 1. Submit in PDF format to the Architect/Engineer.

2.03 Samples:

- A. Accuracy of Samples:
 - 1. Samples shall be of the precise article proposed to be furnished.
- B. Number of Samples Required:
 - 1. Unless otherwise specified, submit two samples.

2.04 Colors:

- A. Unless the precise color is specifically described in the contract documents, and whenever a choice of color is available in a specified product, submit accurate color charts to the Architect/Engineer for review and selection.

2.05 Substitutions:

- A. Approval Required:
 - 1. All products proposed for use, including those specified by required attributes and performance shall require approval by the Architect/Engineer before being incorporated into the work.
 - 2. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved in writing for this work by the Architect/Engineer.
- B. "Or Equal":
 - 1. Where the phrase "or equal" or "or equal as approved by the Architect/Engineer" occurs in the contract documents, do not assume materials, equipment, or methods will be approved as equal unless the item has been specifically approved for this work by the Architect/Engineer.
 - 2. The decision of the Architect/Engineer shall be final.

PART 3 - EXECUTION

3.01 Timing of Submittals:

- A. Make all submittals far enough in advance of scheduled dates for installation to provide all time required for reviews, securing necessary approvals, possible revisions and re-submittals, and placing orders and securing delivery.
- B. Submittal Review Time:
 - 1. In scheduling, allow at least ten (10) calendar days for review by the Architect/Engineer following the Architect/Engineer's receipt of the submittal.
- C. Delays:
 - 1. Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the contract completion date.
- D. Architect's/Engineer's Review:
 - 1. Review by the Architect/Engineer shall not be construed as a complete check, but only that the general method of construction and detailing is satisfactory. Review shall not relieve the Contractor from responsibility for errors which may exist.
- E. Authority to Proceed:
 - 1. The notations "reviewed, no exceptions noted" or "reviewed, exceptions noted" authorize the Contractor to proceed with fabrication, purchase, or both, of the items so noted, subject to the revisions, if any, required by the Architect's/Engineer's review comments.

- F. Revisions:
1. Make all revisions required by the Architect/Engineer. If the Contractor considers any required revision to be a change, he shall so notify the Architect/Engineer as provided for under "changes" in the general conditions. Show each drawing revision by number, date, and subject in a revision block on the drawing. Make only those revisions directed or approved by the Architect/Engineer.
- G. Revisions After Approval:
1. When a submittal has been reviewed by the Architect/Engineer, re-submittal for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary.

3.02 Required Submittals:

- A. Documentation of job site safety:
1. Provide evidence of A Workplace Accident and Incident Reduction (AWAIR) program.
 2. Documentation for person designated as "Competent Person" per Occupational Safety and Health Administration (OSHA).
- B. Submit shop drawings as detailed in 2.1 for the following:
1. Roof-Related Sheet Metal
 2. Other Sheet Metal
- C. Manufacturer's Literature:
1. Submit product literature on roof membrane and all pertinent accessories supplied by manufacturer.
 2. Submit product literature on insulation(s), indicating "R" value.
 3. Submit product literature on all fasteners to be used on project.
 4. Submit product literature on all caulking and sealants to be used on the project.
 5. Submit MSDS sheets for hazardous materials.
 6. Submit a copy of the completed Manufacturer's Pre-Installation Notice.
- D. Samples:
1. Submit two (2) samples of each type of metal to be used on project.

- END OF SECTION -

Section 01 35 23

SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 Description:

- A. The following applies to the work of all Sections of the specifications. Additional requirements are specified in individual Sections.
- B. The roofing Contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related. The most stringent of these laws, ordinances, codes, rules, regulations, and orders (or this Section) shall apply should a conflict arise.
- C. Failure of this Section to reference specific laws, ordinances, codes, rules, regulations, or orders does not excuse Contractor or Contractor employees from following those regulations that may be applicable to the scope of work being performed by the Contractor.
- D. Safety shall be the responsibility of the roofing Contractor. All related personnel shall be instructed daily to be mindful of the full-time requirement to maintain a safe environment for the facility's occupants including staff, visitors, customers, and the occurrence of the general public on or near the site.
- E. These safety requirements may be exceeded by the specific safety rules and procedures of individual facilities.
- F. Contractor shall not permit any unauthorized person to enter the work site, except in accordance with the safety and security requirements of Owner.
- G. Contractor agrees to indemnify and hold harmless Owner *and Architect/Engineer* from prohibiting any Contractor or Subcontractor's employees, agents, or invitees from entering onto the work site or project if, in the sole opinion of Owner, such employee, agent, or invitee fails to comply with the above mentioned safety and health laws, rules, and regulations.

1.02 Referenced Standards:

- A. The standard publications listed below and their supplements form a part of this Section:
 - 1. U.S. Department of Labor - Occupational Safety and Health Administration (OSHA).

MN RECS
L'Orient Street Facility

Safety Requirements
01 35 23-1

2. National Fire Protection Association (NFPA).
 3. National Electrical Code (NEC) - Refer to NFPA 70.
 4. American National Standards Institute, Inc. (ANSI).
 5. The Material Handling Institute, Inc. (MHI) - Refer to Crane Operators Manual.
 6. Environmental Protection Agency (EPA).
 7. Applicable Fire Code.
 8. Applicable Building Code.
 9. Federal, State, or Local Ordinances.
- B. Where a standard is referenced in this Section, the subject referenced (equipment, material, or work) shall be in compliance with the most recent edition of that standard.
- C. The referenced standards are minimum requirements. Where the requirements of this Section are in excess of, but not contrary to, the referenced standards, Contractor shall comply with the more stringent requirements.

1.03 Owner's Facility Safety Indoctrination:

- A. Contractor shall obtain from Owner any safety rules and regulations in effect at Owner's work site. Contractor shall be responsible for requiring all of Contractor's employees to receive and ensure comprehension of this information prior to beginning work.
- B. Contractor shall keep records showing to whom this information had been given. In the event there is a change in personnel or Contractor's work force, Contractor is responsible for providing any new employees with this information and maintaining all necessary records.

1.04 Permits:

- A. At some locations, the Owner may require specific permits consistent with Owners safety rules and regulations.

1.05 Fire Protection and Prevention:

- A. Contractor's personnel shall observe Owner's fire safety rules, regulations, and evacuation procedures.
- B. Contractor shall be responsible for the development of a fire protection program to be followed throughout all phases of the work and shall provide for the firefighting equipment in accordance with OSHA regulations and the requirements appropriate to the type of work being performed.

- C. Spent bitumen mop heads shall be removed from the roof at the end of the day's work, allowed to cool, and disposed of properly after cool. Other flammable materials such as rags and containers shall also be removed from the roof at the end of each day.

1.06 Equipment:

- A. Contractor shall comply with the manufacturer's specifications and limitations applicable to the operation of all equipment.
- B. IFC 1417.3 Fire extinguishers for roofing operations: Fire extinguishers shall comply with IFC, Section 906. There shall be not less than one multipurpose portable fire extinguisher with the minimum 3-A 40-B: C rating on the roof being covered or repaired. Confirm compliance. Enforcement of the fire code is under the authority of the fire code official.

1.07 Contractor's Safety Training and Education:

- A. Contractor must provide a qualified Safety Supervisor who is responsible for maintaining work site safety during all phases of work. The Safety Supervisor shall conduct safety meetings with all personnel and monitor site safety continuously.
- B. Before work begins, Contractor shall submit to Owner through the Architect/Engineer, a hazardous material inventory for Contractor-supplied hazardous materials and corresponding SDS's.
 - 1. The hazardous material inventory, along with all update information shall be *maintained and* made available with copies of SDS's on site at all times.
- C. Contractors are required to strictly enforce container labeling. Labels are to include the identity of the substance and the appropriate hazard warning on all containers.

1.08 Personal Attire and Protective Equipment:

- A. Contractor is responsible for providing, training and requiring employees to wear appropriate personal protective equipment for all operations where there is an exposure to hazardous conditions, where there is the need for using such equipment to reduce the hazards to employees, where required by the specifications or where required by local laws.

1.09 Personal Conduct:

- A. Horseplay, fighting, gambling, explosives, possession of firearms, drinking alcoholic beverages, use of regulated drugs, being under the influence of drugs or

alcohol, theft, vandalism, sabotage and distribution of unauthorized literature shall be cause to bar those involved from the work site.

1.10 Safety Inspection and Housekeeping:

- A. At a minimum, Contractor shall check the work area daily at the beginning and at the end of each work shift to ensure safe working conditions are maintained and all safety procedures are followed.

1.11 Material Storage and Disposal:

- A. General:
 - 1. Contractor shall be responsible for using safe methods of handling, storage, and disposal of materials.
 - 2. Contractor's personnel shall observe Owner's safety rules and regulations.
- B. Material Disposal:
 - 1. Disposal of debris and waste materials shall comply with all applicable ordinances, regulations, and laws of Local, City, County, State, and National Government Agencies.
 - 2. The disposal method of debris, waste materials, and hazardous waste materials shall be selected by Contractor and comply with applicable laws.
 - 3. Contractor shall prevent the discharge of lubricating oils, cleaning solvents and other materials onto the ground and/or into sewers.

1.12 Vertical and Horizontal Work Safety Access Control:

- A. Ladders:
 - 1. The use and erection of ladders shall comply with OSHA regulations.
- B. Scaffolds, Lifts and Swing Stages:
 - 1. The use and erection shall comply with OSHA regulations.
- C. Safety Harnesses:
 - 1. The use of safety harnesses shall comply with OSHA regulations and safety harnesses shall be used on work sites as required.
- D. Openings in Floors, Walls and Stairwells:
 - 1. The protection of unguarded openings in floors, walls, and stairwells shall be in compliance with OSHA regulations.

- E. Stairways, Platforms, Runways, Walkways and Ramps:
 - 1. The fabrication and use of temporary stairways, walkways, and ramps shall be in compliance with OSHA and ANSI regulations.
- F. Excavations:
 - 1. The fabrication and use of temporary shoring and means of access shall be in compliance with OSHA.

1.13 Miscellaneous Provisions:

- A. General:
 - 1. Contractor is solely responsible for Contractor equipment and goods. Owner is not responsible for any losses by theft (or by any other nature) of Contractor's property.
- B. Illumination:
 - 1. Contractor shall ensure that construction areas, aisles, stairs, ramps runways, corridors, offices, shops, and storage areas where work is in progress shall be adequately lighted with either natural or artificial illumination.
- C. Hand and Power Tools:
 - 1. All hand and power tools and similar equipment, whether furnished by Contractor or Contractor employees, shall be maintained in a safe operating condition. Damaged tools shall be immediately repaired or replaced. Tools shall be used only for the purpose for which they were designed.
 - 2. Any tools that are designed to have guards must have those guards in place at all times.
- D. Temporary Electrical Protection:
 - 1. Contractor shall provide either ground fault circuit interrupters or assured equipment grounding conductor program for all electrical connections which are not a part of the permanent wiring of the building.

1.14 Signs, Signals and Barricades:

- A. The fabrication and use of barricades, fencing, and handrails shall be as shown on drawings and in compliance with Owner's safety rules and with OSHA and ANSI regulations.
- B. Contractor shall be responsible for posting, installing and maintaining signs, signals and barricades to detour the passage of persons or vehicles at all locations where potential hazards exist.

- C. Contractor's employees shall obey all signs, signals, and barricades which are posted to warn of potential or existing hazards.
- D. Contractor is responsible for maintaining all code required means of egress.

PARTS 2 AND 3 - NOT USED

- END OF SECTION -

Section 01 35 53

SECURITY PROCEDURES

PART 1 - GENERAL

1.01 Requirements Included:

- A. Security program
- B. Miscellaneous restrictions

1.02 Related Requirements:

- A. Conditions of contract govern requirements of this Section.

PART 2 - NOT USED

PART 3 - EXECUTION

3.01 Prior to Commencing Work:

- A. A criminal history check will be performed on all workers entering the facility. Each worker must complete a background release form, and be approved by the facility before admittance will be allowed.
 - 1. Smoking or use of any other kind of tobacco is not permitted in any area of the facility or grounds.
 - 2. Lunch breaks shall be taken in the area indicated by Owner.
 - 3. Portable toilets will be placed within the work area for use during the workday.

3.02 Tools:

- A. All tools and materials must be brought in through areas designated by the Owner. All tools will be inventoried upon entry by the Owner's security officers. Each company may keep a gang box for their tools on site to decrease the amount of time spent inventorying tools. Tools taken from the facility at the end of the work day will be checked off the inventory list.

3.03 Miscellaneous Provisions:

- A. A representative of the Contractor or vendor must accept any or all materials delivered to the company at the location designated by Owner. Owner's staff will not accept any Contractor or vendor deliveries.

- B. No cellular phones are allowed into the facility.
- C. All outside Contractors will park in the designated parking lot. Vehicle windows should be rolled up and doors locked.

3.04 Conditions of Work Statement:

- A. No firearms, weapons, explosives, alcoholic beverages or controlled substances are allowed on the grounds or within the facility.
- B. If any tools, equipment, or materials are discovered to be missing, inform the security escort immediately.
- C. Demolition Dumpsters may be placed by the construction area. Moving the Dumpsters must be approved by security staff prior to move.

- END OF SECTION -

CONTRACTOR'S QUALITY CONTROL

PART 1 - GENERAL

1.01 Project Manual:

- A. A copy of the Project Manual, Specifications and Detail Drawings (including all addenda and change orders) is required to be available on the project site at all times.

1.02 Material Quality:

- A. Materials incorporated into project shall be new, except as otherwise indicated in the contract documents, of specified quality, and furnished in sufficient quantity to facilitate proper and speedy execution of the work.
- B. Contractor shall furnish evidence of the quality of materials incorporated into project as required by the contract documents or at the request of Architect/Engineer.
- C. Materials not meeting requirements of the contract documents shall be removed from project and replaced with materials meeting contract document requirements by Contractor with no additional expense to Owner.

1.03 Asbestos:

- A. Refer to Section 01 11 00, Summary of Work, for hazardous materials identified on the site.
- B. The contract documents for this project have been prepared in accordance with generally accepted professional Architectural and Engineering practices. Accordingly, no asbestos or products containing asbestos have been knowingly specified for this project. Notify the Architect/Engineer immediately for instructions if -
 - 1. Materials containing asbestos are brought to the site for inclusion in the work.
 - 2. Asbestos materials are encountered in any existing structures upon which work is being performed.
- C. At Architect's/Engineer's direction and with Owner's approval, an independent testing laboratory will perform testing procedures on suspect materials.

- D. Contractor shall certify that based upon their best knowledge, information, inspection, and belief, no building materials containing asbestos were used in the construction of the project. Submit certification at completion of project on form provided at end of Section 01 77 00 Project Closeout.

PART 2 AND 3 - NOT USED

- END OF SECTION -

Section 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 Description:

- A. Temporary facilities and controls required for the performance of this work include, but are not necessarily limited to:
 - 1. Temporary utilities such as heat, water and electricity
 - 2. Contractor's facilities
 - 3. Sanitary facilities
 - 4. Enclosures such as tarpaulins, barricades, and canopies
- B. Related work described in other Sections of these specifications:
- C. All equipment furnished by Contractors shall comply with all requirements of pertinent safety regulations. The ladders, planks, hoists, and similar items normally furnished by the individual trades in execution of their own portions of the work are part of this Section.

1.02 Quality Assurance:

- A. Conduct daily inspections to verify that temporary utility connections are secure and safe.

1.03 Product Handling:

- A. Use all means necessary to maintain temporary facilities and controls in proper and safe condition throughout the progress of the work.

1.04 Job Conditions:

- A. Make all required connections to existing utility systems with minimum disruption to services in the existing utility systems.
 - 1. When disruption of the existing service is required, do not proceed without the Owner's approval, and when required, provide alternate temporary service.
- B. If required utility is not available from Owner, Contractor shall provide alternate temporary service for the duration of the work.
- C. Contractor to document the condition of the staging area prior to beginning work. Upon completion of work contractor is responsible to restore staging areas to their original condition. This includes any damaged sidewalk or pavement, sod at staging areas and adjacent landscaping.

PART 2 - PRODUCTS

2.01 Utilities:

- A. General: All temporary facilities shall be subject to the Owner's approval.
 - 1. Electricity:
 - a. The Owner may furnish electricity at the site. Special electrical requirements must be reviewed and approved by the Owner.
 - b. Contractor's access to electricity is to be from supply designated by Owner.
 - c. Furnish and install necessary temporary wiring, and upon completion of the work, remove all such temporary facilities.
 - 2. Water:
 - a. Owner will furnish water needed for construction at no cost to Contractor.
 - b. Contractor to provide all hoses, etc.
 - c. Contractor to provide drinking water.

2.02 Contractor's Facilities:

- A. Provide temporary sanitary facilities in the quantity required for use of all personnel. Maintain in a sanitary condition at all times.

2.03 Enclosures:

- A. Furnish, install, and maintain for the duration of construction, all required scaffolds, tarpaulins, barricades, canopies, warning signs, steps, bridges, platforms, and other temporary construction necessary for proper completion of the work in compliance with all safety and other regulations.

2.04 Project Signs:

- A. Allow no signs or advertising of any kind on the job site.

PART 3 - EXECUTION

3.01 Maintenance and Removal:

- A. Maintain all temporary facilities and controls as long as needed for the safe and proper completion of the work.
- B. Remove all such temporary facilities and controls as rapidly as progress of the work will permit, or as directed by the Architect/Engineer.

- END OF SECTION -

Section 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.01 Description:

- A. Work Included: Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.
- B. In addition to standards described in this Section, comply with all requirements for tear-off, hazardous materials disposal and cleaning up as described in various other Sections of these specifications.

1.02 Quality Assurance:

- A. Conduct daily inspections to verify that requirements of cleanliness are being met.

1.03 Related Work:

- A. Section 07 53 24 Ballasted EPDM Roofing.

PART 2 - PRODUCTS

2.01 Cleaning Materials and Equipment:

- A. Provide all required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.02 Compatibility:

- A. Use only the cleaning materials and equipment which are compatible with the surface being cleaned as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.01 Progress Cleaning:

- A. General:
 - 1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
 - 2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this work.

3. At least twice each week and more often if directed by the Architect/Engineer, completely remove all scrap, debris, and waste material from the job site.
 4. Provide storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the surrounding site.
 5. Storage containers shall be as approved by the Architect/Engineer.
- B. Site:
1. Daily and more often if necessitated by job conditions, inspect the site, and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
 2. Weekly, and more often if necessitated by job conditions, inspect all arrangements of materials stored on the site, restack, tidy, or otherwise service all arrangements to meet the requirements of subparagraph 3.1 (A) above.
 3. Maintain the site in a neat and orderly condition at all times.

3.02 Final Cleaning:

- A. Definition:
1. Except as otherwise specifically provided, "clean" (for the purpose of this article) shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.
- B. General:
1. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste.
- C. Site:
1. Unless otherwise specifically directed by the Architect/Engineer, clean all adjacent areas on the site. Completely remove all resultant debris. Restore the building and grounds to the original condition.
- D. Structures:
1. Visually inspect all exterior surfaces and remove all traces of soil, waste material, smudges, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces.
 2. The Architect/Engineer may require light sandblasting or other cleaning at no additional cost to the Owner.
 3. If light sandblasting or other cleaning is required, take every precaution to prevent damage to all adjacent materials, property, and vegetation.

- END OF SECTION -

Section 01 77 00

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 Description:

- A. To provide a specific format for substantial and final inspection.
- B. Related Requirements Specified Elsewhere:
 - 1. Completion: Waiver of Claims, General Conditions
 - 2. Cleaning and Waste Management: Section 01 74 00
 - 3. Project Record Documents: Section 01 78 00
 - 4. Warranties: Section 01 78 36
 - 5. Closeout Submittals Required for Trades: Respective Sections of Specifications
 - 6. Substantial Completion: Conditions of the Contract

1.02 Quality Assurance:

- A. All documents submitted shall be signed by a person authorized to sign contracts on behalf of the Contractor.
- B. All document formats shall be as approved by the Architect/Engineer.

1.03 Submittals:

- A. Refer to paragraph 3.4 below for closeout submittals.

PART 2 - NOT USED

PART 3 - EXECUTION

3.01 Substantial Completion:

- A. Contractor Shall:
 - 1. Submit notification to the Owner via the Architect/Engineer when the project, or designated portion of project, is substantially complete.
 - 2. Submit list of items to be completed or corrected.
- B. Owner and Architect/Engineer will make an inspection within ten (10) days after receipt of certification.

- C. Should Owner and Architect/Engineer consider that work is substantially complete:
 - 1. Contractor shall prepare and submit to Owner, via the Architect/Engineer, a list of all items to be completed or corrected as determined by the audit.
 - 2. Architect/Engineer will prepare and issue a letter to all parties of substantial completion containing:
 - a. Contractor's list of items to be completed, verified, and amended by Owner and Architect/Engineer.
 - b. The time within which Contractor shall complete or correct work of listed items.
 - c. Time and date Owner will assume possession of work or designated portion thereof.
 - d. Signatures of:
 - (1) Owner
 - (2) Architect/Engineer
 - (3) Contractor
- D. Contractor shall then complete work listed for completion or correction within the designated time.
- E. Should Owner and Architect/Engineer consider that work is not substantially complete:
 - 1. The Architect/Engineer shall immediately notify Contractor in writing stating reasons.
 - 2. Contractor shall then complete work and send second written notice to Owner, via the Architect/Engineer, certifying that the project, or designated portion of the project, is substantially complete.
 - 3. Owner and Architect/Engineer will reinspect work within ten (10) calendar days after receipt of notification.

3.02 Final Inspection:

- A. Contractor shall submit written notification to Owner, via the Architect/Engineer that:
 - 1. Contract documents have been reviewed.
 - 2. Project has been inspected for compliance with contract documents.
 - 3. Work has been completed in accordance with contract documents.
 - 4. Project is completed and ready for final inspection.
- B. Contractor shall indicate, with notice of completion to manufacturer that a warranty is required for this project and is to be sent to the Contractor. Contractor is to be responsible to Owner for warranty.
- C. Owner, Architect/Engineer, and Contractor will make final inspection within ten (10) calendar days after receipt of notification.

- D. Should Owner and Architect/Engineer consider that the work is finally complete in accordance with the requirements of the contract documents, Architect/Engineer shall request Contractor to make project closeout submittals.
- E. Should Owner and Architect/Engineer consider that work is not finally complete:
 - 1. Architect/Engineer shall notify Contractor, in writing, stating reasons.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send second written notice to Owner via Architect/Engineer certifying that work is complete.
 - 3. Owner and Architect/Engineer will reinspect work within ten (10) calendar days after receipt of notification.

3.03 Reinspection Costs:

- A. Should Owner and Architect/Engineer be required to perform second inspections because of failure of work to comply with original notification of Contractor, Contractor will compensate Owner and Architect/Engineer for additional services.

3.04 Closeout Submittals:

- A. Construction Material Asbestos Statement: A copy of the certification form is attached.
- B. Project Record Documents: As Required by Section 01 78 00.
- C. Warranties: As Required by Section 01 78 36.
- D. Evidence of payment and release of liens and/or Contractor's affidavit of payment of debts and claims: AIA G706.
- E. All submittals shall be duly executed before delivery to Owner via the Architect/Engineer.
- F. Final adjustment of accounts.
- G. Submit final pay application to Owner via the Architect/Engineer.
- H. Statement shall reflect all adjustments, including:
 - 1. Original Contract Sum
 - 2. Additions and deductions resulting from (if applicable):
 - a. Previous Change Orders
 - b. Cash Allowances
 - c. Unit Prices
 - d. Other Adjustments
 - e. Deductions for Uncorrected Work
 - f. Deductions for Reinspection Payments
 - 3. Total contract sum as adjusted.

4. Previous payments.
 5. Sum remaining due.
- I. Architect/Engineer will prepare final change order, reflecting approved adjustments to contract sum not previously made by previous change orders.

3.05 Final Application for Payment:

- A. Contractor shall submit final application in accordance with conditions of the contract.
- B. Final certificate for payment.
- C. Architect/Engineer will issue final certificate in accordance with provisions of general conditions.
- D. Final payment will not be made until all close-out submittals are received and approved and all work is completed, including all deficiencies noted in inspection reports.

3.06 Construction Materials Asbestos Statement:

- A. Sample form follows.

CONSTRUCTION MATERIAL ASBESTOS STATEMENT

**PROJECT: L'ORIENT STREET FACILITY
PARTIAL ROOF REPLACEMENT**

**OWNER: STATE OF MINNESOTA
DEPARTMENT OF ADMINISTRATION
OFFICE OF STATE PROCUREMENT**

**COMPLETION
DATE:**

As Architect/Engineer; based on my best knowledge, information and belief; I certify that on the above referenced project, no asbestos containing building materials were specified in the construction documents or given approval in shop drawings or submittals.

Roof Spec, Inc.
Company Name

Date

Architect/Engineer: (Print Name)

As Contractor in charge of construction; based on my best knowledge, information, inspection, and belief; I certify that on the above-referenced project, no asbestos containing building materials were used in the construction.

Company Name

Date

Contractor By: (Print Name)

- END OF SECTION -

Section 01 78 00

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 Description:

- A. Throughout the work of this contract, maintain an accurate record of the following:
 - 1. Contract Documents (Project Manual with Detail Drawings)
 - 2. Addenda
 - 3. Change Orders and Other Modifications to the Contract
 - 4. Field Orders and Instructions
 - 5. Construction Schedule
 - 6. Product Samples
 - 7. Shop Drawings
 - 8. Progress Reports

1.02 Quality Assurance:

- A. Delegate the responsibility for maintenance of record documents to one person on the Contractor's staff as approved in advance by the Architect/Engineer.
- B. Make all entries within 24 hours after receipt of information.

1.03 Submittals:

- A. Prior to submitting each request for progress payment, secure the Architect/Engineer's approval of the record documents as currently maintained.
- B. Prior to submitting request for final payment, submit the final record documents to the Architect/Engineer and secure his approval.

1.04 Product Handling:

- A. Use all means necessary to maintain the job set of record documents completely protected from deterioration and from loss and damage until completion of the work and transfer of the recorded data to the final record documents.

PART 2 - PRODUCTS

2.01 Record Documents at Pre-construction Meeting:

- A. Secure from the Architect/Engineer, at no charge to the Contractor, one complete set of all documents comprising the contract.

PART 3 - EXECUTION

3.01 Maintenance of Record Documents:

- A. Upon receipt of record documents described in 2.1 above, identify each of the documents with the title "project record documents."
- B. Maintain the record documents at the job site. Documents to be available to the Architect/Engineer during all working hours.

3.02 Review and Approval:

- A. Submit the completed total set of record documents to the Architect/Engineer as described above. Participate in review meeting or meetings as required by the Architect/Engineer. Make all required changes in the documents and promptly deliver the final project record documents to the Architect/Engineer.

- END OF SECTION -

Section 01 78 36

WARRANTIES

PART 1 - GENERAL

1.01 Description:

- A. To provide the specified Contractor's and Material Manufacturer's Warranty at the completion of the project.

1.02 Submittals:

- A. Upon completion of work and prior to final payment, the following items are to be submitted to the Architect/Engineer as part of this Section.
 - 1. Copies of all manufacturer's punch lists and documentation of completion.
 - 2. Copies of all Architect/Engineer's punch lists and documentation of completion.
 - 3. Manufacturer's report that roof has been inspected and is suitable for warranty.
 - 4. Contractor's three (3) year, labor-and-material warranty on all re-roofing activities to Owner.
 - 5. Manufacturer's labor-and-material warranty to Owner.
 - a. EPDM, fifteen (20) year labor and material warranty.
 - b. Sheet metal, manufacturer's twenty (20) year warranty on finish.
 - 6. Manufacturer's labor-and-material warranty shall have no penal sum and no dollar limit.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 Submit all items in paragraph 1.1 above as part of project manual, Section 01 78 00.

3.2 Submit Contractor's warranty on following form.

- THIS PAGE NOT USED -

**CONTRACTOR'S THREE YEAR
LABOR AND MATERIAL WARRANTY**

Owner:

Address:

Project Name:

Project Address:

Project Number:

Roof Section(s) Identification:

Roof System Description:

Roof Area

System Description

Date of final acceptance:

Contractor:

Address:

Telephone number: (____)

This warranty stipulates that the above Contractor will, for a period of three (3) years from the above date of final acceptance, maintain the roof membrane and flashing systems (includes sheet metal) in a watertight condition. The Contractor further warrants that they will repair all defects (i.e., ridges, blisters, voids, etc., which may or may not be allowing for infiltration) which result from faulty workmanship or defective materials at no additional cost to the Owner.

In addition, all repairs are to be performed inclusive of replacement of any wet or damaged insulation or adjacent materials resulting directly from defective workmanship or materials.

Excluded from this warranty is any and all damage to the subject roof area(s), the building(s) and its contents resulting from acts or omissions of the Owner. In addition, damage resulting from: fire, lightning, windstorms exceeding 72 miles per hour, hail storms, or other unusual phenomenon of the elements; movement or failure of the supporting building structure that causes membrane or flashing failure; or vapor condensation beneath the roof.

Excluded from this warranty are any damages to the building(s) or its contents.

Prior to expiration of the above warranty period, the above named roofing Contractor shall inspect the roof areas in the presence of the Owner's representative. Any items noted within this review not considered to be normal will be corrected by the Contractor at no additional cost to the Owner.

Signed by:

(Signature of company officer)

(Title)

(Date)

- END OF SECTION -

Section 02 41 19

ROOF DEMOLITION

PART 1 - GENERAL

1.01 Description:

- A. Provide all labor, material, equipment, and tools to prepare the existing roofing system for re-roofing as specified in this Section.
- B. Provide for the proper disposal of all materials to be removed as identified in the specifications or on the drawings.

1.02 Scheduling:

- A. Coordinate the roof preparation work with the new roofing work in such a manner as to keep the new insulation and roofing materials, building, and building interior absolutely dry and watertight.
- B. Coordinate all work with the Owner and Architect/Engineer to minimize any disruptions of the Owner's operations.

1.03 Disposal:

- A. All debris shall be stored in containers approved by the Architect/Engineer.
- B. Keep Owner's property clean of any construction debris.

PART 2 - NOT USED

PART 3 - EXECUTION

3.01 Protection of Surfaces:

- A. Contractor shall take all precautions during roof preparation to protect the building and adjacent surfaces from being soiled or damaged. Exercise special care at openings through roof and at roof edges.
- B. Contractor shall protect existing roofing that is not scheduled to be removed with minimum $\frac{3}{4}$ inch thick plywood protection board. Any damage to existing roof shall be repaired by Contractor.
- C. Keep roof surface clean of any debris or materials that might prevent proper drainage.

- D. Keep roof drains and overflow drains in operating condition at the end of each working day.

3.02 Removal of Existing Roofing Materials:

- A. Prior to demolition, inform facility personnel and Architect/Engineer of area and location of work.
- B. Suitably tarp and protect all interior equipment and products from dust and debris which may filter into interior, if necessary.
- C. Remove and dispose of all loose gravel.
- D. Tear off the existing roofing down to the existing roof deck as noted on drawings.
- E. Tear off all existing base flashings.
- F. Tear off all existing projection flashings.
- G. Broom or vacuum surface of existing deck to remove as thoroughly as possible, all dust and debris.

3.03 Disposal:

- A. Properly dispose of all debris on a daily basis.
- B. Do not store debris on roof. Contractor shall take care not to overload roof deck.

3.04 Clean-Up:

- A. Prior to the completion of the work, remove from the job site all tools, equipment, debris and waste.
- B. Contractor shall restore to original condition any damage caused during work performed in this Section.
- C. Conduct final cleaning as per Section 01 74 00 Cleaning and Waste Management.

- END OF SECTION -

Section 05 01 30

METAL DECK REPAIR/REPLACEMENT

PART 1 - GENERAL

1.01 Description:

- A. Work includes, but is not necessarily limited to: Remove all severely deteriorated decking and replace with new deck to match existing or approved equal.

1.02 Quality Assurance:

- A. Qualifications of workers: Provide sufficient workers and supervisors who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.
- B. Rejections: In the acceptance or rejection of the work, the Architect/Engineer will make no allowance for lack of skill on the part of workers.

1.03 Product Handling:

- A. Delivery and storage: Deliver materials to the job site in original, unopened containers no sooner than five (5) calendar days prior to start of job. Materials to be stored up, off of the roof deck or ground, and covered with a weatherproof covering anchored sufficiently so as to resist wind blow-off. Only those materials necessary to accomplish two days' work are to be stored on the roof.
 - 1. Contractor is responsible for all materials delivered to job site until completion of project.
 - 2. When storing materials on the roof, do not over-stress deck.
- B. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the work and materials of all other trades.
- C. Replacements: In the event of damage, immediately make all repairs and replacements to the approval of the Architect/Engineer and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 Metal Deck:

- A. Steel roof deck shall be primed, painted metal decking. Deck shall conform to ASTM A611 Grade C, or equal, having a minimum yield strength of 33,000 psi to match existing.
- B. Steel roof deck shall be as manufactured by U.S. Steel, Vulcraft, Wheeling, or approved equal.

PART 3 - EXECUTION

3.01 Installation:

- A. Metal Deck
 - 1. Steel roof deck shall be anchored to the structural members directly through bottom of the rib by using self-drilling screws.
 - 2. Fasteners shall be a maximum 12" o. c. at ends and intermediate supports of each deck sheet.
 - 3. For spans greater than 5 feet, side laps shall be fastened together not exceeding 3 feet center to center between supports.
 - 4. Ensure that fasteners do not penetrate conduit or miscellaneous piping located at bottom of the decking.
 - 5. Place deck in straight alignment for entire length of run with adjoining deck units.
 - 6. Place deck units flat and square, secured to adjacent framing without warp or excessive deflection.
 - 7. Cut and neatly fit deck around rooftop projections.

3.02 Verification:

- A. Upon completion of the installation in each area, visually inspect and verify that all components are complete and properly installed. Verify that fasteners are properly located and securely anchored.

- END OF SECTION -

Section 06 10 53

ROUGH CARPENTRY

PART I - GENERAL

1.01 Description:

- A. Work included: Install all wood nailers and plywood as indicated on the drawings.

1.02 Quality Assurance:

- A. Qualifications of workers: Provide sufficient workers and supervisors who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.
- B. Rejections: In the acceptance or rejection of rough carpentry, the Architect/Engineer will make no allowance for lack of skill on the part of workers.

1.03 Related Work:

- A. Section 07 22 16 Roof Board Insulation

1.04 Product Handling:

- A. Delivery and Storage:
 - 1. Coordinate storage of materials with Owner and Architect/Engineer.
 - 2. Store all materials in an approved manner, up off the roof deck or ground, and protected from exposure to the elements
- B. Protection:
 - 1. Use all necessary means to protect the materials in this section before, during, and after installation, and to protect the work and materials of all other trades.
- C. Replacement:
 - 1. In the event of damage, immediately make all necessary repairs and replacements to the approval of and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 Nailers and Framing:

- A. Nailers and framing are to be non-preservative treated and have less than 19% moisture content at the time of installation and when roofing is installed.

- B. Approved Materials:
 - 1. Douglas Fir
 - 2. Eastern Pine
 - 3. No. 2 Western Hemlock
 - 4. No. 3 Southern Pine
 - 5. Spruce-Pine-Fir
- C. Size to be as necessary to match height of new materials.

2.02 Plywood:

- A. 3/4" CDX exposure 1 or better, APA rated sheathing, non-preservative treated.

2.03 Fasteners:

- A. Furnish all fasteners and/or anchoring devices for the entire project, which shall include such items as nails, screws, bolts, anchors, and similar items.
 - 1. All bolts shall have standard threads and be complete with washers and nuts.
 - 2. Exterior exposed nails and screws shall be hot-dipped galvanized.
- B. Anchoring devices shall be of the proper type and size for intended use and shall be of adequate design to achieve substantial and positive anchorage unless otherwise indicated.
 - 1. Bottom nailer and blocking anchored to masonry or concrete:
 - a. Fasteners shall be 3/8" in diameter minimum, with corrosion-resistant coating.
 - b. Fasteners shall be counter-sunk heads.
 - c. Fasteners shall be installed as recommended by the manufacturer
 - 2. Wood assemblies, such as wood cants, top nailers and other built-up wood members, shall be anchored with common nails or wood screws having at least 1-1/2" anchoring penetration, spaced in 2 staggered rows at 12" on center for each row. All other nailing shall be at Contractor's discretion for a rigid and secure installation.
 - 3. Plywood shall be anchored to concrete or masonry with threaded masonry screw fasteners or expansion anchors.
 - a. Fasteners shall be 1/4" in diameter minimum, with corrosion-resistant coating.
 - b. Fasteners shall have counter-sunk heads.
 - c. Fasteners shall be installed as recommended by the manufacturer.
 - d. Approved products:
 - (1) Tapcon® by ITW Buildex
 - (2) Zamac Nailin® by Powers Fasteners Inc.
 - (3) Approved alternate
 - 4. Plywood shall be anchored to steel with self-tapping, case-hardened screws.
 - a. Screws shall have a flat, counter-sunk head.

PART 3 - EXECUTION

3.01 Nailers:

- A. Nailers are to be installed to match the height of the new insulation.
- B. All lumber is to be installed with joints true and tight.
- C. Bent or twisted fasteners are to be removed and replaced.
- D. Nailers shall be anchored to meet FM 1-49 requirements.
- E. Fasteners are to be spaced a maximum of 24" on center for nailers with a minimum thickness of 2" nominal, and 12" on center for all nailers less than 2" nominal thickness.
- F. Anchoring devices shall consist of the following:
 - 1. Masonry and/or concrete surfaces shall have wood nailers anchored direct spaced not greater than 36" on center.
 - 2. Structural steel flanges shall have wood nailers anchored direct with minimum 3/8" diameter bolts, spaced not greater than 36" on center. Wood structural support members shall be anchored with 3/8" diameter bolts at point of each bearing. Steel deck (light gauge) surfaces shall have wood nailers anchored direct with 2 rows of 1/4" diameter metal lag-type and/or pan-head No. 12 screws spaced not greater than 12" on center for each row (staggered).

3.02 Plywood:

- A. Vertical surfaces on perimeters, walls, and curbs.
 - 1. Unless otherwise noted, secure plywood with two rows of fasteners 16" on center, staggered.

3.03 Clean-Up:

- A. Premises are to be kept in a neat and orderly condition.
- B. After installation of all rough carpentry, Contractor is to remove all construction debris and equipment from job site.

- END OF SECTION -

Section 07 01 52

BALLASTED EPDM REPAIR AND MAINTENANCE

PART 1 - GENERAL

1.01 Description:

- A. The conditions of the construction contract and general requirements apply to the work specified in this section.
- B. Repair all single-ply (ballasted) membrane re-roofing system as shown on drawings and herein specified.
 - 1. Work shall include the removal of existing metal flashings, metal flashings, cant material, and all other items as necessary for a complete repair type installation.
- C. Metal cap flashings, counterflashings, and miscellaneous sheet metal work incorporated into the work shall be installed and made watertight as a part of the work of this section.

1.02 Quality Assurance:

- A. Contractor/Applicator Qualifications:
 - 1. Single-ply membrane roofing system shall be applied by a Contractor approved by the manufacturer of the single-ply membrane roofing materials.
 - 2. Contractor and contract workers shall have previous experience in applying a ballasted EPDM single-ply membrane system, and have done at least three (3) jobs. Contractor and/or workers not meeting the above criteria will not be considered for this project.

1.03 Submittals:

- A. Samples:
 - 1. Submit for approval samples of proposed materials prior to commencement of work.
 - 2. Submit samples to the attention and address of the Architect/Engineer.
- B. Shop Drawings:
 - 1. Prepare and submit shop drawings for architect's/engineer's review for single-ply membrane system.
 - 2. Shop drawings shall indicate perimeter of building roof area, area of membrane repair, location, and type of penetrations, perimeter and penetration details, and special details.

1.04 Product Delivery, Storage and Handling:

- A. Deliver material in manufacturer's original, unopened containers with manufacturer's labels intact and legible.
- B. Materials shall be stored as to protect them completely from damage by the elements and temperature.
- C. Store materials to be used in conjunction with the membrane, except membrane, in a dry, protected area and between 60 degrees F. and 80 degrees F. If exposed to lower temperature, restore to proper (minimum 60 degrees F.) temperature before using.
- D. Storage of materials on ground and/or roof top (if approved by Owner) shall be protected with waterproof coverings and stored on raised platforms in such a manner to be completely off the ground or roof deck surface (use of pallets or similar type equipment will be acceptable).
 - 1. Waterproof covering shall be applied in a watertight manner and securely tied during and at the end of each working day.
 - 2. Use of manufacturer's product protection wrapping is not acceptable for work site type protection, and if required to prevent moisture accumulation, wrapping shall be side or end punctured or slashed before covering with waterproof covering.
 - 3. No tears in the waterproof coverings will be permitted.
- E. All materials shall carry all appropriate Underwriters Laboratories (UL) classification labels when delivered to the work site.

1.05 Field Documents:

- A. Roofing superintendent or supervisor shall have a copy of this specification and all pertinent drawings at work site.

PART 2 - PRODUCTS

2.01 Materials:

- A. Single-Ply Roofing Membrane:
 - 1. Single-ply roofing membrane shall consist of a 0.060" (60 mil) thick membrane sheet material as manufactured by Carlisle SynTec Corporation or approved equal.
 - 2. Components for the above membrane such as solvents, cleaners, tools and other related items, unless otherwise specified, shall be the products recommended for the purpose or certified by the membrane manufacturer as compatible.

- B. Related Materials:
1. Related materials for the above single-ply membrane roofing system shall consist of the following or as recommended by the membrane manufacturer.
 - a. Membrane flashing shall be 0.060 inch (60 mil) thick uncured EPDM and/or unsupported.
 - b. Bonding adhesive, splice wash, splicing cement, "water cut-off mastic", molded pipe flashing, pourable sealer, rubber fastening strips (if required) and all other related materials shall be compatible with materials with which it is to be used and shall be furnished by membrane manufacturer.

PART 3 - EXECUTION

3.01 Job Conditions:

- A. Protection:
1. All existing work shall be properly protected from damage or soiling during the process of removal of existing roofing and installation of new roofing material. Exercise special care at openings through roof and at roof edges. Spill no roofing materials on existing building surfaces. Any finished work damaged in the execution of work under this section, including lawns/shrubbery, shall be replaced, or restored to the original condition by this Contractor at his own expense.
 2. Contractor shall protect existing roofing that is not scheduled to be removed with minimum 3/4-inch thick plywood protection board for transporting materials and removal of debris or refuse. Any damage to existing roof shall be repaired by Contractor at his expense.
- B. Workmanship:
1. All roofing work shall be accomplished with workers thoroughly skilled in the application of specified materials with all workmanship to be of the very best and shall be done in such manner as to fulfill the requirements of drawings and specifications. Any specific directions furnished by the manufacturer regarding the application of his materials shall be faithfully followed.
 2. After starting work, Contractor is responsible for complete moisture integrity of the roofing and flashing membrane, checking all work installed on the roof and for providing properly applied roof which will insure or maintain the integrity of the specified roofing guarantee/warranty. Therefore, this Contractor shall:
 - a. Not apply insulation or membrane under any conditions not suitable for the re-roofing work.
 - b. Exercise care to insure adequate quantities of materials are used.
 - c. Maintain competent foremen continuously supervising the work, with authority to discard unsuitable materials or remove unsatisfactory workers.

- d. Observe all fire precautions involving the storage and handling of roofing materials. Provide adequate amount of fire extinguishers at work site.
 - e. Always install temporary water cut-offs at the end of each day's work to prevent moisture from getting into and under the completed roofing system and be sure to cleanly remove water cut-off prior to resuming work.
- 3. The following precautions shall be followed when applying the single-ply membrane system:
 - a. Do not use oil-based or asphalt roof cement.
 - b. Do not allow waste products (petroleum grease, oil, solvents, vegetable, or mineral oil, animal fat) or direct steam venting to come in contact with roofing systems.
 - c. Do not expose membrane and accessories to a constant temperature in excess of 180 degrees F.
 - d. Cements and bonding adhesives contain petroleum distillates and are extremely flammable. Do not breathe vapors or use near fire.
 - e. Splice wash used in the splicing procedure is extremely flammable; do not use near fire or flame or in a confined or unventilated area. Dispense only from a UL listed or approved safety can.
 - f. Splicing and bonding surfaces shall be dry and clean.
 - g. Follow specified precautions for storage of materials and expose only enough adhesive to be used within a four (4) hour period.
 - h. Roof surfaces shall be clean and free from dirt and foreign material.

3.02 Preparation of Surfaces and Materials:

- A. Roofing shall not start until roof surfaces are perfectly dry, firm, reasonably smooth, clean, and free from dirt and foreign material. Deck shall be swept and/or vacuumed immediately before application.
- B. Under no conditions shall any roofing materials be applied before sunrise or at any time when there are indications of moisture present (rain, mist, dew, frost, and snow).

3.03 Repair of Single-ply Roofing Membrane:

- A. General:
 - 1. After insulation has been properly removed and stored, Contractor shall install single-ply roofing membrane splices in a straight smooth line.
 - a. At end of each days work a temporary water cut-off shall be applied and be removed cleanly when work is resumed.
 - b. If water cut-offs are left for a long period of time, Contractor shall check them daily for breaks and if any are found, repairs shall be done immediately.

B. Membrane Splicing:

1. Remove dirt and excess dust by brooming or wiping with clean rag or, if necessary, by scrubbing with warm soapy water and rinsing with clean water. Clean the mating surfaces at the splicing area using clean natural fiber rags or natural sponges with approved solvent.
2. Apply an even coat of primer at least 6" on each side of the splice edge. Apply with a paint roller no more than 6" wide avoiding globs or puddles. Allow to dry until slightly tacky to a dry finger touch. Maximum time between application of primer and mating of surfaces shall not exceed 30 minutes.
3. After thoroughly stirring, apply splicing cement to both surfaces using a 3 or 4 inch wide, ½ inch thick paint brush. Apply adhesive smoothly to obtain 100% coverage. Do not allow the cement to glob or puddle. Allow cement to dry until it is tacky but will not string or stick to a dry finger.
4. Roll top sheet toward splice area until the cemented surface is nearly touching the cement on the bottom sheet along the entire length of splice. Allow sheet to fall freely into place. Avoid stretching and wrinkling, while brushing by hand toward the splice edge.
5. Roll splice with a two-inch wide steel roller, using positive pressure, toward the outer edge of the splice.

C. Perimeter Fastening Securement:

1. Fasten the reinforced perimeter strip to either the wall or the deck using discs and approved fasteners spaced 12" on center.
2. There shall be a seam disc no farther than 1" from the end of a length of reinforced perimeter strip.
3. When a reinforced perimeter strip ends the next strip shall be butted against the first leaving a gap between the strips no greater than 1/4".
4. Clean the reinforced perimeter strips and the field membrane that will be bonded to the strip using a clean rag saturated with an approved cleaner. Remove all visible talc, and maintain surfaces free from moisture, oil and other contaminants. Apply primer to both surfaces. Allow the surfaces to dry completely.
5. Stir seam adhesive thoroughly before using. Do not thin! Apply an even coat of adhesive to both the reinforced perimeter strips and the field membrane avoiding globs and puddles. Adhesive may be applied with a roller or a brush. When using a brush do not cut the bristles, and use a back and forth conventional painting stroke.
6. Allow adhesive to dry until slightly tacky to a dry finger touch. Typical time between application of the adhesive and mating surfaces will be about 30 minutes.
7. Roll the field membrane onto the reinforced perimeter stop and then up the wall.
8. Hand roll the entire area of the reinforced perimeter strips thoroughly with a 2" steel hand roller to assure good contact.

3.04 Membrane Flashing:

A. General:

1. Perimeter flashing, including flashing around vents, pipes, conduits, etc., shall be done with 0.060 inch (60 mil.) thick uncured EPDM flashing material using the longest pieces practicable. All flashings and terminations shall be done in accordance with manufacturer's recommendations.
 - a. Complete splicing between flashing and main roof sheet before bonding flashing to vertical surface. Splice shall extend as detailed or at least three inches beyond the fasteners which attach the membrane at the angle change.
 - 1) Apply bonding adhesive to both flashing and surface to which it is being bonded at a rate directed by the manufacturer.
 - 2) After the bonding adhesive has dried to the point where it does not string or stick to a dry finger, roll the flashing into the adhesive.
 - 3) Nail installed flashing at top of flashing every 12 inches on center (maximum) under metal counterflashing or coping cap flashing.

B. Penetrations:

1. Flash all penetrations (pipes, conduits, vents, etc.) passing through the membrane.
 - a. Flash pipe with molded pipe flashings where possible.
 - b. Where molded pipe flashings cannot be installed, use field fabricated pipe seals.

C. Roof Drains:

1. Remove existing dirt and debris in preparation for water cut-off mastic and membrane seal.
2. Seal between membrane and drain base shall be "water stop" as recommended by the manufacturer.

3.05 Clean-Up:

- A. Upon completion of the work, remove all excess material, debris, or trash resulting from this work. Leave completed surfaces clean and free from any defects of material or workmanship.
 1. Leave building and work site in a neat, clean, and undamaged condition.
 2. Clean both interior and exterior surfaces which were soiled due to the construction process.
 3. Repair or replace any damaged lawns or shrubbery to original condition.

- END OF SECTION -

Section 07 21 16

BATT INSULATION

PART 1 - GENERAL

1.01 Descriptions:

- A. Work included:
 - 1. Batt insulation and vapor retarder in exterior wall and roof construction.
 - 2. Batt insulation for stuffing crevices in exterior wall/roof assembly, and as shown on detail drawings.
 - 3. Vapor retarder extensions.

1.02 Quality Assurance:

- A. Standards: Comply with standards specified in this section and as listed in the general requirements.
- B. Qualifications of manufacturer: Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Architect/Engineer.
- C. Qualifications of installers: Use an adequate number of skilled installers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.

1.03 Related Work:

- A. Section 06 10 53 Rough Carpentry
- B. Section 07 22 16 Roof Board Insulation

1.04 Delivery of Material:

- A. Furnish material in manufacturer's packaging complete with installation instructions.
- B. Store materials onsite, off the ground, in a dry area protected from the weather and moisture.
- C. Replace wet or damaged materials.

PART 2 - PRODUCTS

2.01 Materials:

- A. Batt or blanket insulation: ASTM C665 preformed glass or mineral fiber, Type I without membranes.
- B. Vapor Retarder: ASTM D1593, nonrigid, vinyl chloride plastic film, 8 mil thickness.
- C. Vapor retarder extensions: 20 mil vinyl chloride plastic film such as Seal Pruf HD Nevastral or approved equal.
- D. Nails or staples: steel wire, galvanized, type and size to suit application.
- E. Tape: 2-inch wide self-adhering type: bright aluminum or polyethylene faced.

PART 3 - EXECUTION

3.01 Workmanship:

- A. Verify adjacent materials are dry and ready to receive insulation.
- B. Proceed with installation only after unacceptable conditions have been remedied.
 - 1. Start of insulation installation indicates installer's acceptance of substrate installation conditions.

3.02 Installation:

- A. Install batt insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install batt insulation and vapor retarder in roof spaces without gaps or voids.
- C. Trim insulation neatly to fit spaces. Use batts that are free of damage.
- D. Fit insulation tight within spaces and tight to and behind mechanical and electrical services within the plane of insulation. Leave no gaps or voids.
- E. Place vapor retarder on warm side of insulation by stapling or nailing in place at maximum 6 inches on center, or taping in place. Seal all tears or cuts in retarder with tape.
- F. Extend vapor retarder tight to full perimeters of frames. Tape seal in place.

3.03 Verification:

- A. Upon completion of the installation in each area, visually inspect and verify that all components are complete and properly installed. Verify that fasteners are properly located and securely anchored.

- END OF SECTION -

Section 07 22 16

ROOF BOARD INSULATION

PART 1 – GENERAL

1.01 Description:

- A. Work included:
 - 1. Provide and install all roof and deck insulation and insulation fasteners as shown on the roof plan and detail drawings.

1.02 Quality Assurance:

- A. Standards: Comply with standards specified in this section and as listed in the general requirements.
- B. Qualifications of manufacturer: Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Architect/Engineer.
- C. Qualifications of Contractor: The Contractor and contract personnel shall be currently approved by the manufacturer of the approved products as qualified to install the materials of this section.
- D. Qualifications of Installers: Use an adequate number of skilled installers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.
- E. Roof decks and roof coverings shall be designed for wind loads in accordance with Chapter 16 and Sections 1504.2, 1504.3 and 1504.4. [IBC 1504.1]
- F. Roof coverings installed on roofs in accordance with Section 1507 that are mechanically attached or adhered to the roof deck shall be designed to resist the design wind load pressures for components and cladding in accordance with Section 1609. [IBC 1504.3]

1.03 Related Work:

- A. Section 07 26 13 Vapor Retarder
- B. Section 07 53 24 Ballasted EPDM Roofing

1.04 References:

- A. Materials used in this section shall be listed in the latest editions of the following:
 - 1. Factory Mutual Approval Guide.
 - 2. Underwriters Laboratories, Inc. - building materials directory.
 - 3. The NRCA Roofing and Waterproofing Manual, 5th Edition – National Roofing Contractors Association
- B. Roof insulation must meet the requirements of FM 4450 or UL 1256.

1.05 Submittals:

- A. General: Comply with the provisions of Section 01 33 00 Submittal Procedures and 01 32 16 Construction Progress Schedules.
- B. Product Data: Within ten (10) calendar days after award of contract, submit:
 - 1. Complete material list of all items proposed to be furnished and installed under this section.
 - 2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
 - 3. Manufacturers recommended methods of installation.
 - 4. When approved by the Architect/Engineer, the manufacturer's recommended methods of installation (unless superseded by the specifications) will become the basis for accepting or rejecting the actual installation.

1.06 Product Handling:

- A. Delivery and storage: Deliver materials to the job site in original, unopened containers no sooner than five (5) calendar days prior to start of job. Materials to be stored up, off of the roof deck or ground, and covered with a weatherproof covering anchored sufficiently so as to resist wind blow-off. Only those materials necessary to accomplish two days' work are to be stored on the roof.
 - 1. Contractor is responsible for all materials delivered to job site until completion of project.
 - 2. When storing materials on the roof, do not over-stress deck.
- B. Protection: Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades.
- C. Replacements: In the event of damage, immediately make all repairs and replacements to the approval of the Architect/Engineer and at no additional cost to the Owner.

1.07 Product Handling:

- A. Work is to be performed on a daily basis, with each section completed before progressing to the next day's work.
- B. Completion of work shall be defined as the installation of all specified substrate preparation, vapor retarder (if required), insulation, and membrane completely sealed at perimeters, curbs, and penetrations.

1.08 "R" Vales:

- A. Isocyanurate insulation thermal values shall be determined in accordance with ASTM C1303.
- B. The project shall have a minimum R-value of 30.

PART 2 - PRODUCTS

2.01 General:

- A. Minimum product requirements have been listed. All of these components must be used and bid.

2.02 Insulation Materials:

- A. Insulation to be of the type and minimum thickness as listed here or as shown on the detail drawings.
- B. Rigid Insulation
 - 1. Insulation is to be isocyanurate with glass membrane facer and conform to ASTM C1289 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board, Type II, Class I, Grade 2.
 - 2. Thickness as shown on detail drawings.
 - 3. Approved Products:
 - a. ENERGY® 3 by Johns Manville
 - b. InsulBase by Carlisle Syntec
 - c. EnergyGuard by GAF
 - d. ISO 95+ GL by Firestone
 - e. Approved Equal
 - 4. Maximum board size:
 - a. Adhered: 4' x 4'
 - b. Mechanically Fastened: 4' x 8'

- C. Cover Board
 - 1. High density isocyanurate insulation bonded on each side to coated glass fiber facers and conforms to ASTM C1289 Type II, Class 4, Grade 1 (or greater). "R" values must be based on ASTM C518.
 - a. Thickness to be as shown on detail drawings.
 - b. Maximum board size: 4' x 4'
 - 2. Approved Products
 - a. ISOGARD HD by Firestone Building Products
 - b. SecurShield HD by Versico
 - c. Approved Equal

PART 3 - EXECUTION

3.01 General:

- A. The latest manufacturer specifications and installation techniques are to be followed.

3.02 Inspection:

- A. Examine the areas and conditions under which work in this section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until such conditions have been corrected.

3.03 Surface Conditions:

- A. Surfaces scheduled to receive insulation are to be free of any standing water, dew, or loose debris.
- B. Substrate is to be smooth, free of sharp projections, and free of obvious depressions.
- C. All nailers shall be securely installed prior to insulation.

3.04 Job Conditions:

- A. Protection:
 - 1. Existing work shall be properly protected from damage or soiling during the process of removal of existing roofing and installation of new roofing material. Exercise special care at openings through roof and at roof edges. Spill no roofing materials on building surfaces. Any finished work damaged in the execution of work of this section, including lawns/shrubbery, shall be replaced, or restored to the original condition by this Contractor.

2. Contractor shall protect existing roofing that is not scheduled to be removed with minimum 3/4-inch-thick plywood protection board. Any damage to existing roof shall be repaired by Contractor.
- B. Workmanship:
1. Roofing work shall be accomplished to fulfill the requirements of the drawings and specifications. Any specific directions furnished by the manufacturer regarding the application of their materials shall be strictly followed.
 2. After starting work, Contractor is responsible for complete moisture integrity of the roofing and flashing membrane. Therefore, this Contractor shall:
 - a. Not apply insulation or membrane under any conditions not suitable.
 - b. Exercise care to ensure adequate quantities of materials are used.
 - c. Maintain competent supervisor at the work site, with authority to discard unsuitable materials or remove unsatisfactory workers.
 - d. Observe all precautions involving the storage and handling of roofing materials.

3.05 Steel Deck Construction:

- A. Rigid insulation to be loosely laid with all joints staggered and tightly butted. Insulation board to be cut to fit tightly around projections.

3.06 Verification:

- A. Upon completion of the installation in each area, visually inspect and verify that all components are complete and properly installed. Verify that fasteners are properly located and securely anchored.

3.07 Clean Up:

- A. The Contractor shall clear the construction areas and shall provide for the removal from the building site of all his construction debris.
- B. All debris shall be removed from the premises promptly and the construction area left clean daily. Keep all drains clear of debris and in proper order at the end of each working day.
- C. At the completion of the contract, the Contractor is to remove all excess materials and equipment related to his contract.

- END OF SECTION -

Section 07 26 14

VAPOR RETARDER 10 MIL POLYETHYLENE

PART 1 - GENERAL

1.01 Description:

- A. Furnish and install a 10 mil polyethylene vapor retarder complete, in place, as shown on the drawings.

1.02 Quality Assurance:

- A. Standards: Comply with standards specified in this section and as listed in the general requirements.
- B. Qualifications of Manufacturer: Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Architect/Engineer.
- C. Qualifications of Contractor: The Contractor and contract personnel shall be currently approved by the manufacturer of the approved products as qualified to install the materials of this section.
- D. Qualifications of Installers: Use an adequate number of skilled installers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.

1.03 Related Work:

- A. Section 07 22 16 Roof Board Insulation
- B. Section 07 53 24 Ballasted EPDM Roofing

1.04 References:

- A. Materials used in this section shall be listed in the latest editions of the following:
 - 1. Factory Mutual System Approval Guide - equipment, materials, services for conservation of property.
 - 2. Underwriters Laboratories, Inc. - building materials directory.
 - 3. The NRCA Roofing and Waterproofing Manual, 5th Edition – National Roofing Contractors Association.

1.05 Submittals:

- A. General: Comply with the provisions of Section 01 33 00 Submittal Procedures and 01 32 16 Construction Progress Schedules.
- B. Product Data: Within ten (10) calendar days after award of contract, submit:
 - 1. Complete material list of all items proposed to be furnished and installed under this section.
 - 2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
 - 3. Manufacturers recommended methods of installation.
 - 4. When approved by the Architect/Engineer, the manufacturer's recommended methods of installation (unless superseded by the specifications) will become the basis for inspecting and accepting or rejecting of the actual installation procedures used on this work.

1.06 Product Handling:

- A. Delivery and Storage:
 - 1. Coordinate storage of materials with Owner and Architect/Engineer.
 - 2. Deliver all packaged materials to the job site in their original unopened containers with all labels intact and legible.
 - 3. Store all materials in an approved manner, up off of the roof deck or ground, and protected from exposure to the elements.
- B. Protection: Use all necessary means to protect the materials in this section before, during, and after installation, and to protect the work and materials of all other trades.
- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect/Engineer, and at no additional cost to the Owner.

1.07 Scheduling:

- A. Work is to be performed on a daily basis, with each section completed before progressing to the next day's work.
- B. Completion of work shall be defined as the installation of all specified roof preparation, vapor retarder, insulation, roof membrane, flashings, counterflashings, sheet metal, fasteners, and caulking.
- C. Contractor shall complete roofing work on a daily basis unless specifically directed otherwise by the Architect/Engineer.

PART 2 - PRODUCTS

2.01 General:

- A. Minimum product requirements have been listed. All of these components must be used and bid.

2.02 Materials:

- A. 10 mil polyethylene sheet membrane.
- B. Non-skinning butyl sealant.
- C. Vapor retarding seam tape.

PART 3 - EXECUTION

3.01 General:

- A. The latest manufacturer specifications and installation techniques are to be followed.

3.02 Inspection:

- A. Examine the areas and conditions under which work in this section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until such conditions have been corrected.
- B. Contractor shall protect existing roofing that is not scheduled to be removed with minimum $\frac{3}{4}$ inch thick plywood protection board. Any damage to existing roof shall be repaired by Contractor.

3.03 Surface Conditions:

- A. Surfaces scheduled to receive roofing are to be free of any standing water, dew, or loose debris.
- B. Substrate is to be smooth, free of sharp projections, and free of obvious depressions.
- C. All nailers shall be securely installed prior to installation.

3.04 Vapor Retarder Installation:

- A. Apply one ply of 10 mil polyethylene as specified directly onto the deck.

- B. Vapor retarder is to be installed starting at the low point with 6 inch side laps and eight-inch end laps.
- C. Install so that it shall be firmly and uniformly set onto the deck without voids or fishmouths.
- D. Wipe lap area on both sheets with a damp cloth and allow to dry.
- E. Inject a continuous bead of water block 3 inches from the edge within the lap.
- F. Apply seam tape at all laps.
- G. Repair all tears and cuts with vapor retarder seam tape.
- H. Seal all terminations and penetrations with butyl sealant and/or seam tape.

3.05 Clean-Up:

- A. The Contractor shall clear the construction areas and shall provide for the removal from the building site of all his construction debris.
- B. All debris shall be removed from the premises promptly and the construction area left clean daily. Keep all drains clear of debris and in proper order at the end of each working day.
- C. At the completion of the contract, the Contractor is to remove all excess materials and equipment related to his contract.

- END OF SECTION -

Section 07 53 24

BALLASTED EPDM ROOFING

PART 1 - GENERAL

1.01 Description:

- A. Furnish and install a weather and watertight ballasted EPDM roof complete, in place, as shown on the drawings and specified herein, for a complete and proper installation including, but not necessarily limited to:
 - 1. The complete removal of existing membrane including base flashing, metal flashings, counterflashings and all other items necessary for a complete waterproof installation.
 - 2. Contractor shall take all necessary precautions to protect Owner's property from damage caused by weather conditions, excessive loading of the existing structural system or careless workmanship.
 - 3. Metal cap flashings, counterflashings, and miscellaneous sheet metal work incorporated into the work shall be installed and made watertight as a part of the work of this section.
 - 4. Installation of wood nailers, wood edge strips, and plywood backers in accordance with manufacturer's specifications and/or as shown on drawings. Contractor shall coordinate the installation of all carpentry work required for the membrane system herein specified.

1.02 Quality Assurance:

- A. Standards: Comply with standards specified in this section and as listed in the general requirements.
- B. Qualifications of manufacturer: Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Architect/Engineer.
- C. Qualifications of Contractor: The Contractor and his personnel shall be currently approved by the manufacturer of the approved products as qualified to install the materials of this section.
- D. Qualifications of Installers: Use an adequate number of skilled installers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.
- E. Roofing Inspections: Make all required notifications and secure all required inspections by the manufacturer of the approved materials to facilitate issuance of the specified roof warranty.

- F. Ballasted low-slope (roof slope < 2:12) single-ply roof system coverings installed in accordance with Sections 1507.12 and 1507.13 shall be designed in accordance with Section 1504.8 and ANSI/SPRI RP-4. [IBC 1504.4]
- G. Roof coverings installed on low-slope roofs (roof slope < 2:12) in accordance with Section 1507 shall demonstrate physical integrity over the working life of the roof based upon 2,000 hours of exposure to accelerated weathering tests conducted in accordance with ASTM G 152, ASTM G 155 or ASTM G 154. Those roof coverings that are subject to cyclical flexural response due to wind loads shall not demonstrate any significant loss of tensile strength for unreinforced membranes or breaking strength for reinforced membranes when tested as herein required. [IBC 1504.6]
- H. Roof coverings installed on low-slope roofs (roof slope < 2:12) in accordance with Section 1507 shall resist impact damage based on the results of tests conducted in accordance with ASTM D 3746, ASTM D 4272, CGSB 37-GP-52M or the "Resistance to Foot Traffic Test" in Section 5.5 of FM 4470. [IBC 1504.7]

1.03 Related Work:

- A. Section 07 22 16 Roof Board Insulation
- B. Section 07 26 14 Vapor Retarder 10 Mil Polyethylene

1.04 References:

- A. Materials used in this section shall be listed in the latest editions of the following:
 - 1. Factory Mutual Approval Guide.
 - 2. Underwriters Laboratories, Inc. - building materials directory.
 - 3. The NRCA Roofing and Waterproofing Manual, 5th Edition – National Roofing Contractors Association
 - 4. The Wind Design Guide for Fully Adhered Single Ply Roof Systems by Single Ply Roofing Institute (SPRI).

1.05 Submittals:

- A. General: Comply with the provisions of Section 01 33 00 Submittal Procedures and 01 32 16 Construction Progress Schedules.
- B. Product Data: Within ten (10) calendar days after award of contract, submit:
 - 1. Complete material list of all items proposed to be furnished and installed under this section.
 - 2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
 - 3. Manufacturers recommended methods of installation.

4. When approved by the Architect/Engineer, the manufacturer's recommended methods of installation (unless superseded by the specifications) will become the basis for accepting or rejecting the actual installation.

1.06 Product Handling:

- A. Delivery and Storage:
 1. Coordinate storage of materials with Owner and Architect/Engineer.
 2. Deliver all packaged materials to the job site in their original unopened containers with all labels intact and legible.
 3. Store all materials in an approved manner, up off of the roof deck or ground, and protected from exposure to the elements.
 4. Store all rolls of felts, cartons, and drums of cements, primers, and coating on end.
- B. Protection:
 1. Use all necessary means to protect the materials in this section before, during, and after installation, and to protect the work and materials of all other trades.
- C. Replacements:
 1. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect/Engineer, and at no additional cost to the Owner.

1.07 Scheduling:

- A. Work is to be performed on a daily basis, with each section completed before progressing to the next day's work.
- B. Completion of work shall be defined as the installation of all specified substrate preparation, insulation, and EPDM membrane completely sealed at perimeters, curbs, and penetrations.

1.08 Guarantee/Warranty:

- A. The Contractor shall furnish a single-ply membrane manufacturer's warranty to Owner, in duplicate, filled out properly and signed by duly authorized officer, stating that all materials and workmanship for single-ply membrane roofing system will be free from defects of material and workmanship of any kind and shall make repairs and/or replacement at no cost to Owner for a period of not less than twenty (20) years from date of final acceptance by Owner and/or final inspection by system manufacturer. Submittals shall be within two (2) weeks after roofing completion.

- B. In addition to the system manufacturer's workmanship, roofing Contractor shall guarantee the new roof system, carpentry work, roof insulation, and all new sheet metal work for a period of not less than three (3) years from date of final acceptance by Owner, against any failures associated with the entire roofing system and shall make repairs and/or replacement at no cost to Owner during this guarantee period. This supplement guarantee shall be submitted in writing to Owner. Refer to form shown in Section 01 78 36 Warranties.
 - 1. Before final payment by Owner, Contractor shall submit system manufacturer's warranties and his guarantee to the Architect/Engineer.
- C. Repairs shall be made within 24 hours of notification.

PART 2 - PRODUCTS

2.01 General:

- A. Minimum product requirements have been listed. All of these components must be used and bid.

2.02 Materials:

- A. Single-ply Roofing Membrane:
 - 1. Single-ply roofing membrane shall consist of 0.060 inch (60 mil) thick calendared Non-reinforced Ethylene Propylene Diene Monomer (EPDM) unlimited slope fire retardant sheet.
 - a. The membrane thickness tolerance shall be between 0.054" and 0.069" for 60 mil measured in accordance with ASTM D412.
 - b. Membrane shall be factory fabricated in single sheet material measuring not less than twenty (20) feet wide by one hundred (100) feet long or the longest sheet possible as determined by job conditions.
 - c. Rolls of single-ply membrane with factory defects such as creases, stretch marks, out of square, etc., will be rejected.
 - 2. The membrane shall meet or exceed all requirements of ASTM D4637 for EPDM vulcanized sheet used in single-ply roof membrane.
 - 3. Approved Manufacturers:
 - a. Carlisle SynTec Corporation
 - b. Firestone Building Products
 - c. Johns Manville
- B. Related Materials:
 - 1. Related materials for the above single-ply membrane roofing system shall consist of the following or as recommended by the membrane manufacturer.
 - a. Membrane flashing shall be 0.060 inch (60 mil) thick uncured EPDM.

- b. Bonding adhesive, splice cleaner, splice tape, "water cut-off mastic", molded pipe flashing, pourable sealer, reinforced perimeter securement system and all other related materials shall be compatible with materials with which it is to be used and shall be furnished by membrane manufacturer.
- C. Ballast:
 - 1. Natural rounded gravel shall be commercial grade, washed, 1.0" to 2.0" and shall comply with ASTM D448. No more than 10% of any lot shall be outside these requirements. Gravel shall be dry and free of dust, soil, and foreign matter.

PART 3 - EXECUTION

3.01 General:

- A. The latest manufacturer specifications and installation techniques are to be followed.

3.02 Inspection:

- A. Owner will observe the roof installation. Contractor shall give Architect/Engineer one (1) week written notice in advance of starting roofing installation.

3.03 Surface Conditions:

- A. Surfaces to receive roofing are to be free of any standing water, dew, loose debris, dust, and dirt.
- B. Substrate is to be smooth, free of sharp projections, and free of obvious depressions.
- C. All metal fittings specified or shown on drawings are to be in place before roofing.
- D. All nailers shall be securely installed prior to roofing.

3.04 Job Conditions:

- A. Protection:
 - 1. All existing work shall be properly protected from damage or soiling during the process of removing the existing roofing and installation of new roofing material. Exercise special care at openings through roof and at roof edges. Spill no roofing materials on existing building surfaces. Any finished work damaged in the execution of work under this section,

including lawns/shrubbery, shall be replaced, or restored to the original condition by this Contractor at his own expense.

2. Contractor shall protect existing roofing that is not scheduled to be removed with minimum 3/4-inch thick plywood protection board. Any damage to existing roof shall be repaired by Contractor at his expense.

B. Workmanship:

1. All roofing work shall be accomplished with mechanics thoroughly skilled in the application of specified materials with all workmanship to be of the very best and shall be done in such manner as to fulfill the requirements of the contract. Any specific directions furnished by the manufacturer regarding the application of his materials and approved by the Architect/Engineer shall be faithfully followed.
2. After starting work, Contractor is responsible for complete moisture integrity of the roofing and flashing membrane, checking all work installed on the roof and for providing properly applied roof which will insure or maintain the integrity of the specified roofing guarantee/warranty. Therefore, this Contractor shall:
 - a. Not apply insulation or membrane under any conditions not suitable for the re-roofing work.
 - b. Exercise care to insure adequate quantities of materials are used.
 - c. Maintain competent supervisors continuously supervising the work, with authority to discard unsuitable materials or remove unsatisfactory workers.
 - d. Observe all fire precautions involving the storage and handling of roofing materials. Provide adequate amount of fire extinguishers at work site.
3. The following precautions shall be followed when applying the single-ply membrane system:
 - a. Do not use oil base or plastic roof cement.
 - b. Do not allow waste products (petroleum grease, oil, solvents, vegetable, or mineral oil, animal fat) or direct steam venting to come in contact with roofing systems.
 - c. Do not expose membrane and accessories to a constant temperature in excess of 180 degrees F.

3.05 Installation of Single-ply Roofing Membrane:

A. General:

1. Contractor shall install EPDM roofing membrane sheets in a straight smooth line without curving. Position adjoining sheets in such manner that direction of water flow is over and not against laps. Field laps shall form a watertight seal.
 - a. At end of each day's work, a temporary water tie-off shall be applied and be removed cleanly when work is resumed.

- b. If temporary water tie-offs are left for two days time, Contractor shall check them daily for breaks and if any are found, repairs shall be made immediately.
- B. Reinforced Securement Strip:
 - 1. Reinforced securement strip shall be installed at the perimeter of each roof level, roof section, curb flashing, expansion joints, and similar penetrations. Reinforced securement strips shall be mechanically fastened as recommended by membrane manufacturer using approved fasteners.
 - a. Top of mechanical fasteners shall be set flush with the top surface of the plate.
 - b. Space mechanical fasteners a maximum of 12 inches on center.
- C. Roof Drains
 - 1. Remove any existing lead flashing and asphalt materials in preparation for water block sealant and membrane.
 - 2. Seal between membrane and drain base shall be water block sealant as shown on drawings.
 - 3. Roof drains will be sumped. Refer to detail drawings.
- D. Membrane:
 - 1. Over the insulation, install roofing membrane as follows:
 - a. Install EPDM 60 mil membrane loose-laid over surface of insulation and allow to relax for a minimum of 30 minutes.
 - b. Sheet section will be loose-laid and properly positioned using a wrinkle free technique.
- E. Membrane lap splices:
 - 1. Fold top sheet back about twelve (12) inches. Remove dirt and excess dust by brooming or wiping with clean rag. Clean both of the dry mating surfaces at the splicing area as per the manufacturer's recommendations.
 - 2. After the membrane has been overlapped and cleaned, it should then be completed to form a watertight seal.
 - 3. Apply seam tape in accordance with manufacturer's specifications. Seam tape shall be exposed 1/8" to 1/2" along the edge of the splice.
 - 4. Clean the splice edge, extending at least 4" either side of the seam per the manufacturer's recommended cleaning method and adhere 6" uncured EPDM membrane over the seam.
 - 5. Once the membrane splice has been completed, the entire lap must be inspected for voids and inadequate bond with repairs being accomplished immediately if necessary.

3.06 Installation of Flashing:

- A. General:
 - 1. Perimeter flashing, including curbs, shall be fabricated with 0.060 inch (60 mil) thick reinforced membrane and/or manufacturer's uncured flashing

material using the longest pieces practicable. All flashings and terminations shall be done in accordance with manufacturer's recommendations.

- a. Complete splicing between flashing and main roof sheet before bonding flashing to vertical surface. Splice shall extend as detailed or at least three inches beyond the fasteners which attaches the membrane at the angle change.
 - 1) Apply seam tape in accordance with manufacturer's specifications. Seam tape shall be exposed 1/8" to 1/2" along the edge of the splice.
 - 2) Nail installed flashing at top of flashing every 12 inches on center (maximum) under metal counterflashing or coping cap.

B. Penetrations:

1. Flash all penetrations (pipes, conduits, vents, etc.) passing through the membrane.
 - a. Flash pipe with manufacturer's pre-molded pipe flashings where installation is possible.
 - b. Where pre-molded pipe flashings cannot be installed, field fabricate pipe seal with 60 mil uncured EPDM membrane.
2. Seal clusters of pipes and unusual shaped penetrations with metal pans and pipe sleeve flashing flanges. All seams shall be field soldered to avoid open joints and to form a watertight seal. Fill pans with rigid insulation cut to fit and top two inches (minimum) with manufacturer's approved two part pourable sealer and apply umbrella flashing covers as detailed. Apply uncured flashings as detailed and/or per manufacturer's directions.

3.07 Ballast:

- A. Install gravel ballast at a rate of ten (10) pounds per square foot or as recommended by the system manufacturer.

3.08 Clean-Up:

- A. Upon completion of the work, remove all excess material, debris, or trash resulting from this work. Leave completed surfaces clean and free from any defects of material or workmanship.
 1. Leave building and work site in a neat, clean, and undamaged condition.
 2. Clean both interior and exterior surfaces which were soiled due to the construction process.
 3. Repair or replace any damaged lawns or shrubbery to original condition.

- END OF SECTION -

Section 07 62 00

FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 Description:

- A. Furnish and install all coping, flashing, and sheet metal work as shown on drawings and herein specified.
- B. Installation of work shall start not later than 4 working days after a roof section of the re-roofing system, including composition flashings, has been completed. In order to avoid any delays, all work shall be closely coordinated with the roofing work.

1.02 Quality Assurance:

- A. Standards: Comply with standards specified in this section and as listed in the general requirements.
- B. Qualifications of manufacturer: Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Architect/Engineer.
- C. Qualifications of Contractor: The Contractor and contract personnel shall be currently approved by the manufacturer of the approved products as qualified to install the materials of this section.
- D. Qualifications of Installers: Use an adequate number of skilled installers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.
- E. Prior to request for final inspection, contractor shall have inspected all gasketed fasteners and supplied certification letter that all gasketed fasteners were installed and inspected by contractor as per the Contract Documents.
- F. Low-slope built-up, modified bitumen and single-ply roof system metal edge securement, except gutters, shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, except V_{ult} wind speed shall be determined from Figure 1609A, 1609B, or 1609C as applicable. [IBC 1504.5]

1.03 Related Work:

- A. Drawings and general provisions of the contract apply to this section.
- B. Related sections:
 - 1. Section 07 26 13 Vapor Retarder
 - 2. Section 07 53 2a Ballasted EPDM Roofing

1.04 References:

- A. Materials used in this section shall be listed in the latest editions of the following:
 - 1. Factory Mutual Approval Guide.
 - 2. The NRCA Roofing and Waterproofing Manual, 5th Edition – National Roofing Contractors Association
 - 3. The current edition of the *Architectural Sheet Metal Manual* as published by the Sheet Metal and Air Conditioning Contractors National Association, Inc., (SMACNA) shall govern where applicable, unless otherwise specified.
 - 4. Low slope membrane roof metal edge securement except gutters shall be tested for wind resistance in accordance with ANSI/SPRI ES-1.

1.05 Submittals:

- A. General: Comply with the provisions of Section 01 33 00 Submittal Procedures and 01 32 16 Construction Progress Schedules.
- B. Shop Drawings: If requested by the Architect/Engineer, prepare and submit shop drawings of proposed material for architect's/engineer's review, including full-size drawings of all profiles and details of all connections, expansion joints, reinforcement, anchors and other pertinent features.
- C. Product data: If requested by the Architect/Engineer, submit manufacturer's product data on all pre-fabricated metal roof flashing sections, complete with all pertinent information, finishes and installation instructions.
- D. Samples: In lieu of shop drawings above, Contractor may submit full-size samples in duplicate of all required profiles and details.
- E. As part of the contractor's construction submission package, contractor shall submit the following for Architect/Engineer review. The Contractor shall submit the below information to the building department if requested:
 - 1. Product data, including ASTM D2137 & D573 results.
 - 2. Manufacturer recommended installation torque.
 - 3. Contractor's quality control and assurance program.
 - 4. Certification letter from Contractor.

1.06 Product Handling:

- A. Delivery and storage: Deliver materials to the job site in original, unopened containers no sooner than five (5) calendar days prior to start of job. Materials to be stored up, off of the roof deck or ground, and covered with a weatherproof covering anchored sufficiently so as to resist wind blow-off. Only those materials necessary to accomplish two days' work are to be stored on the roof.
 - 1. Contractor is responsible for all materials delivered to job site until completion of project.
 - 2. When storing materials on the roof, do not overload deck.
- B. Protection: Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades.
- C. Replacements: In the event of damage, immediately make all repairs and replacements to the approval of the Architect/Engineer and at no additional cost to the Owner.

1.07 Guarantee/Warranty:

- A. The Contractor shall furnish a sheet metal Manufacturer's warranty to Owner, in duplicate, filled out properly and signed by duly authorized officer, stating that all materials and workmanship for the sheet metal will be free from defects of material and workmanship of any kind and shall make repairs and/or replacement at no cost to Owner for a period of not less than twenty (20) years from date of final acceptance by Owner, and/or final inspection by system manufacturer. Submittals shall be within two (2) weeks after roofing completion.

1.08 Scheduling:

- A. Work is to be performed on a daily basis, with each section completed before progressing to the next day's work.
- B. Completion of work shall be defined as the installation of all specified roof preparation, insulation, underlayment, flashings, counterflashings, sheet metal, fasteners, and caulking.
- C. Contractor shall complete roofing work on a daily basis unless specifically directed otherwise by the Architect/Engineer.

PART 2 - PRODUCTS

2.01 General:

- A. Minimum product requirements have been listed. All of these components must be used and bid.

2.02 Galvanized Sheet:

- A. Sheet metal shall be hot-dipped galvanized steel sheets conforming to ASTM A653 using Architect/Engineer approved manufacturer. Weight of galvanized coating shall be not less than 1.25 ounces per square foot, "commercial," Unless otherwise indicated, galvanized sheet metal shall not be lighter than 24-gauge (0.0250 inch).
- B. Accessories shall be zinc-coated.

2.03 Soldering Materials:

- A. Solder:
 - 1. Solder to comply with ASTM B32, composition 50% tin and 50% lead; 60% tin and 40% lead for lead-coated copper.
- B. Flux:
 - 1. As approved by the manufacturer.

2.04 Pre-Coated Sheet Metal:

- A. Pre-coated metal shall be minimum 24-gauge commercial quality steel with a hot-dipped, galvanized, primed, and fluoropolymer-type finish.
- B. Exposed surfaces shall have a "smooth" -type finish with color as selected by Owner from manufacturer's standard.
 - 1. All exposed surfaces shall be protected with a stripable plastic-type film.
 - 2. Exposed fasteners shall have gasketed, pre-coated heads with matching color. Provide touch-up paint for exposed edges and abraded areas.
- C. Approved Products:
 - 1. UNA-CLAD by Firestone Building Products
 - 2. Carlisle Metal Products by Carlisle Syntec.
 - 3. Pac-Clad by Peterson Aluminum Corp.
 - 4. Approved Equal.

2.05 Counterflashing at Wall Curbs:

- A. Counterflashing shall be designed and fabricated in minimum 96-inch lengths where job dimensions allow (lesser lengths at curbs). Skirt member shall be of size indicated with bottom edge folded under ½ inch, fabricated in such manner as to hold the bottom firmly against the flashings, and formed to fit field conditions. Skirt members, when installed, shall be securely fastened with gasketed screws and/or fasteners as detailed.

- B. Coping cover plates shall be 6 inches wide, and counterflashing shall have S-slip end joints provided, as detailed, and be fabricated of same gauge and material as flashing. Furnish complete with a continuous ribbon of flashing sealant as shown on details.

2.06 Formed Drip Edge Metal:

- A. Steel minimum 24 gauge hot dipped galvanized with face coating polyvinylidene fluoride resin-base finish (Kynar 500 or Hylar 5000).
- B. Form accurately to details.
- C. Profiles, bends, and intersections shall be even and true to line.

2.07 Pipe or Vent Jackets:

- A. Pipe or vent jackets shall be a frost-proof type with a lead cap, and fabricated of galvanized metal designed for use on flat roof construction. Verify at work site for quantity and size.
 - 1. 24 gauge galvanized steel base.
 - 2. Flashing base shall be at least 18 x 18 inches.
- B. Approved Products:
 - 1. No. 1-F flat plumbing vent flange by F. J. Moore Manufacturing Company.
 - 2. Approved Equal.

2.08 Related Materials:

- A. Fasteners shall be of adequate design to achieve substantial and positive anchorage.
 - 1. Nails and fasteners including rivets, screws, and bolts shall be zinc-coated or stainless steel.
 - a. Nails for wood shall be flathead, barbed, not less than #12 gauge, one-inch long.
 - 2. Nails for felt shall be stainless steel or zinc-coated type with one (1) inch caps.
 - 3. Nails for securing metal pan clips shall be zinc-coated ring-shanked with 3/8 inch diameter heads.
- B. Gasketed Fasteners:
 - 1. Provide gasketed screws to secure sheet metal to create a weather-resistant exterior envelope. Gasketed fasteners installed in accordance with manufacturer recommendations/requirements shall comply with IBC 1403.
 - 2. Gasket material shall be EPDM, vulcanized to the metal to establish a bond that assures the EPDM will not separate from the metal.

3. Screws shall be corrosion resistant and painted the same color to match the counterflashing.
 4. Fasteners shall only be used at vertical surfaces, a minimum of 6-inches above horizontal surfaces.
 5. Gaskets shall be considered “non-brittle” at -40° as per ASTM D2137. Gaskets shall have been tested per ASTM D573 and be heat resistant.
 6. Screws shall be secured with sufficient torque to secure the sheet metal and maintain the seal weather-tight in accordance with the manufacturer’s requirements/recommendations.
 7. Screws shall be secured utilizing a torque adjustable or depth sensitive tool.
- C. Joint Filler:
1. Joint filler and backup shall be an expanded polyethylene rod and backup. Material shall be at least 25% larger in diameter or thickness than opening.
 2. Approved products:
 - a. Ethafoam SB sealant backer rod by Dow Chemical Company.
 - b. Approved Equal
- D. Caulking sealant for exposed joints shall be a one-component polyurethane sealant conforming to Federal Specification TT-S-00230C(2), Type II, Class A or B.
1. Approved Products:
 - a. Tremco Vulkem 116
 - b. Sika Sikaflex 1a
 - c. Sonneborn Sonalastic Np1
 - d. Approved Equal

PART 3 - EXECUTION

3.01 General:

- A. The latest manufacturer specifications and installation techniques are to be followed.

3.02 Inspection:

- A. Examine the areas and conditions under which work in this section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until such conditions have been corrected.

3.03 Job Conditions:

- A. Protection:
 - 1. Existing work shall be properly protected from damage or soiling during the process of removal of existing roofing and installation of new roofing material. Exercise special care at openings through roof and at roof edges. Spill no roofing materials on building surfaces. Any finished work damaged in the execution of work of this section, including lawns/shrubbery, shall be replaced, or restored to the original condition by this Contractor.
 - 2. Contractor shall protect existing roofing with minimum 3/4-inch-thick plywood protection board. Any damage to existing roof shall be repaired by Contractor.
- B. Workmanship:
 - 1. Flashing and sheet metal work shall be accomplished to fulfill the requirements of the drawings and specifications. Any specific directions furnished by the manufacturer regarding the application of their materials shall be strictly followed.

3.04 Installation of Formed Sheet Metal:

- A. All flashing and sheet metal work shall be installed in accordance with approved shop drawings and details, with all work true and in perfect alignment. Intersections of work which cannot be shop-fabricated shall be coped or mitred to the exact profile of the member to which it intersects and be fully and continuously sealed to a watertight condition. All gasketed screws shall be drawn up tight and in full gasket contact with the flashing member, ensuring a rigid and secure installation. All hold-down clips shall be solidly anchored into backup construction.
- B. Cleats or keepers shall be continuous 20-gauge galvanized steel fastened 6 inch on center with 1 ¼ inch minimum galvanized steel roofing nails.
- C. Ribbons of flashing sealant shall be applied to all non-soldered joints or seams, as required or as indicated on drawings. Keep all exposed surfaces of metal work free from sealant, and remove any excess immediately. All flashing sealant shall be applied in accordance with manufacturer's recommendations.
- D. Inserts for counterflashings shall be saw-cut into concrete, stone, or joints of the masonry wall, as shown on detail drawing. Metal insert piece shall be held in place with gasketed fasteners spaced not over 12 inches on center. In crevice, install rod stock, if required, and then apply sealant material.
- E. Coping and cant edge metal shall be engaged on a continuous cleat or keeper on the outside and fastened on the inside with 1½ inch minimum galvanized steel hex head screws with gasketed washers installed 18 inch on center.

- F. Embedded edge metal shall be engaged on a continuous cleat or keeper on the outside and fastened with 1¼ inch galvanized steel roofing nails in two rows ½ inch apart, 3 inch on center, staggered.

3.05 Fabrication and Manufacture of Formed Sheet Metal:

A. Fabrication Procedures:

1. All sheet metal components shall be fabricated in accordance with the best standards of workmanship of the trade and with the recommendations previously cited in the SMACNA manual, unless otherwise indicated. Form all sections as detailed on the approved shop drawings or in accordance with approved samples. Lines, rises, and angles shall be sharp and true. Plain surfaces shall be true and free from waves or buckles. The various sections shall be uniform and the joints at corners shall be rigidly secured. All exposed edges, unless otherwise indicated, shall be returned. Provide for contraction and expansion.

B. Soldering:

1. Soldering must be completed the same day seams are locked and folded together. Phased construction is not acceptable.
2. Remove factory-applied coatings in the area to be soldered, from materials such as alloy-coated copper or alloy-coated stainless steel. Use solvent recommended by manufacturer.
3. Mechanically clean, flux, and smoothly pre-tin with solder edges of sheets and other locations to be soldered. Tinning shall be thin, uniform in thickness, and 1 ½ inches wide on both sides of sheet at folded locked seam locations.
4. Immediately prior to joining pieces to be soldered, mechanically clean pre-tinned surfaces, wipe clean, dry, and fully coat with flux. Use least corrosive flux suitable for given application.
5. Slide pieces together and neatly dress down with a block of wood and mallet and/or dead-blow hammer.
6. Perform soldering with heavy soldering coppers of blunt design, properly prepared and tinned before using. They shall weigh not less than 10 lbs. per pair, except when acetylene gas-heated soldering copper torch is used, copper itself shall weigh not less than 1.25 lbs. Soldering with torch alone is not acceptable.
7. Perform soldering slowly with well heated copper. Thoroughly heat surfaces to be soldered. Use heated surfaces rather than the soldering copper, to melt the solder and draw it into the seam.
8. Use ample solder. Seam shall show at least one full inch of evenly flowed solder.
9. Whenever possible, solder in flat position. At sloped seams, start down-slope and work up-slope. Solder seams a second time on slopes equal to or greater than 45 degrees.

10. Neutralize and remove flux residue as recommended by the flux manufacturer and the American Welding Society. This may include items such as mechanical removal, hot acidified water wash, water, and washing soda (sodium carbonate) wash and clean water rinse after soldering.
- C. Counterflashing at Wall and Curbs:
1. Counterflashing shall be designed and fabricated in minimum 96-inch lengths where job dimensions allow (lesser lengths at curbs). Skirt member shall be of size indicated with bottom edge folded under $\frac{1}{2}$ inch, fabricated in such manner as to hold the bottom firmly against the flashings, and formed to fit field conditions. Skirt members, when installed, shall be securely fastened with gasketed screws and/or fasteners as detailed.
 2. Coping cover plates shall be 6 inches wide, and counterflashing shall have S-slip end joints provided, as detailed, and be fabricated of same gauge and material as flashing. Furnish complete with a continuous ribbon of flashing sealant as shown on details.
- D. Expansion Joint Cover Flashings:
1. Expansion joint cover flashing shall be designed for easy removal, and fabricated in minimum 96-inch lengths. Flashing shall be formed to provide complete watertightness to expansion joint assembly. Covers shall be formed with a sloping top. Skirt flashings shall be of size indicated with bottom edge folded under $\frac{1}{2}$ inch, fabricated in such manner as to hold bottom firmly against flashing, and formed to fit contour or slope of roof. Both cover and skirt members when installed shall be securely fastened with gasketed screws.
 2. Joint cover plates shall be 6 inches wide and be fabricated of same gauge and materials as flashing. Furnish complete with continuous ribbons of flashing sealant as detailed.
- E. Leader Heads and Overflow Scuppers:
1. Leader heads shall be formed of the same gauge material as the perimeter flashing into which they frame.
 2. Sheets forming the leader head shall be riveted together and soldered to form a watertight pan. Leader head lining shall extend through and project outside the fascias. On the roof side, the leader head lining shall be of sufficient length to be built into the roofing at least 6 inches. Provide a 3-inch long outlet tube in bottom of leader head for attaching downspout.
 3. Scuppers shall be fabricated similar to leader heads, except scupper lining shall extend through and project outside the walls, leaving about $\frac{1}{2}$ -inch clearance between masonry and lining.
- F. Gutters:
1. Gutters shall be fabricated in maximum lengths of 40 feet. Location of expansion joints will be as shown on plan view.
 2. Gutter shape and size will be as shown on detail drawings.

3. Gutter brackets and straps or spacers shall be as shown in the SMACNA Manual and/or detail drawings.
- G. Open-Faced Downspouts:
1. Open-faced downspouts shall be formed of the same gauge and material as the gutter and/or leader head to which they connect.
 2. The downspout shall be open-faced with exposed edges hemmed. End joints shall telescope 1-1/2 inches and be riveted or screwed. Attach to wall with 1/8-inch thick strap brackets not over 5 feet apart and designed to support downspout approximately 1 inch from face of wall. Provide all necessary elbows, offsets or other fittings required.
 3. Provide braces five feet on center starting five feet above grade.
 4. Downspouts shall extend within 12 inch of grade.
- H. Fascias:
1. Fascia shall be fabricated in minimum 96-inch lengths. The inner flange shall extend onto the roof not less than 4 inches, and be pre-drilled for nails for anchoring through the roofing membrane. Fascia portion of standing ridge shall be formed to accommodate complete concealment of wood blocking with a continuous formed bottom edge drip which is folded back and under a minimum of 3/4 inch, and extending from face at least 1 inch.
- I. Sleeved Flashings:
1. Furnish and install sleeved flashings for mechanical pipes and electrical conduits. Sleeves shall have a 6-inch wide flange built into roofing, and all joints and seams shall be soldered thoroughly watertight. Provide umbrella flashings. Verify the quantity required and size in the field.
- J. Pitch Pans:
1. Furnish and install pitch pan flashings for mechanical pipes, electrical conduits and other penetrations. Pitch pans shall have a 4-inch wide continuous flange built into roofing, and all joints and seams shall be soldered thoroughly watertight. Provide umbrella flashings. Verify the quantity required and size in the field.
- K. Splash Blocks:
1. All splash blocks shall be as called for on roof plan or details.

3.06 Surface Cleaning:

- A. All sheet metal work upon completion shall be thoroughly clean of all flux, scraps, and dirt. Excess flux shall be neutralized by washing with 5 to 10 percent solution of washing soda. After cleaning, metal shall be washed off with clean water.
- B. Remove protective film, if any, from the exposed surfaces of the sheet metal promptly upon installation. Strip with care to avoid damage to finishes

- C. Clean the exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

3.07 Clean-Up:

- A. The Contractor shall clear the construction areas and shall provide for the removal from the building site of all construction debris.
- B. All debris shall be removed from the premises promptly and the construction area left clean daily.
- C. At the completion of the contract, Contractor is to remove all related equipment.

- END OF SECTION -

Section 07 92 00

SEALANTS & CAULKING

PART 1 - GENERAL

1.01 Summary:

- A. Includes but is not limited to
 - 1. Quality of sealants to be used on project including submittal, material, and installation requirements.
- B. Related sections
 - 1. Removing existing sealants and furnishing and installing of sealants is specified in sections specifying work to be caulked.

1.02 Submittals:

- A. Product Data
 - 1. Manufacturer's literature and installation recommendations for each product.
 - 2. Schedule showing where each product is to be used.
- B. Quality Assurance/Control
 - 1. Furnish certificate from manufacturer indicating date of manufacture.

1.03 Delivery, Storage, & Handling:

- A. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
- B. Deliver and keep in original containers until ready for use.
- C. Do not use damaged or deteriorated materials.
- D. Store in a cool place, but never under 40° F.

PART 2 - PRODUCTS

2.01 Materials:

- A. Sealants
 - 1. Sealants provided shall meet manufacturer's shelf-life requirements.
 - 2. Exterior sheet metal & miscellaneous
 - a. Penetrations and joints in soffits and fascia
 - b. Roof vents & flues
 - c. Flashings

- d. Gutters
 - e. Approved Products:
 - 1) 791 by Dow Corning
 - 2) Narrow Joint Sealer by Schnee-Morehead Inc., Irving, TX
 - 3) Sikaflex-1a, Dymonic FC, Bondaflex PUR 25, Sonneborn NPI
 - 4) Approved equal
 - 3. Color - As selected by the Owner from manufacturer's standard colors.
- B. Backing - Flexible polyurethane or polyolefin rod or bond breaker tape as recommended by the manufacturer for joints being sealed.

PART 3 - EXECUTION

3.01 Preparation:

- A. Remove existing sealants where specified. Surfaces shall be clean, dry, and free of dust, oil, grease, dew, or frost.
- B. Apply specified primer.
- C. Joint Backing
 - 1. Polyurethane rod for open joints shall be at least 1-1/2 times width of open joint, and of thickness to give solid backing. Backing shall fill joint so depth of sealant is no more than 3/8 inch.
 - 2. Apply bond-breaker tape in shallow joints as recommended by the manufacturer.

3.02 Application:

- A. Apply sealant with hand-caulking gun with a nozzle of the proper size to fit joints. Use sufficient pressure to ensure full contact to both sides of joint to full depth of joint.
- B. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface.
- C. Depth of sealant shall be 1/4" minimum and 1/2" maximum, but never more than 1/2 or less than 1/4 of the joint's width.
- D. Do not apply caulking at temperatures below 40° F.
- E. Caulk open perimeters unless indicated otherwise.
- F. For EIFS, carefully check the system manufacturer's details and adhere to caulking details. Use specified material available from system installer.

3.03 Clean-Up:

- A. Immediately clean adjacent materials that have been soiled, before caulk sets.
Use materials and methods recommended by the manufacturer.

- END OF SECTION -

METAL ROOF DECK COATING

PART 1 - GENERAL

1.01 Description:

- A. The conditions of the construction contract and Division 01 - General Requirements apply to the work specified in this section.
- B. Provide all labor, skills, equipment, materials and appliances for the surface preparation, priming and finish painting and/or coating of all metal roof decking.
 - 1. Work shall also include all required ladders, scaffolding, drip cloths, scrapers, power and hand tools, abrasive cloth/paper, chemicals, solvents, vacuum cleaners, dusters, cleaning solvents and water, as required to perform the work properly and achieve the results herein specified.
 - 2. Contractor shall examine all surfaces to be finished and make certain that they can be put in proper condition for finishing by customary cleaning, abrasive blasting, sanding and similar methods. Contractor assumes full responsibility for producing a satisfactory job with the materials specified.
- C. Owner and/or occupants requirements could dictate that the work be performed outside of normal hours.

1.02 Examination:

- A. It is required and expected that this Contractor before submitting a proposal for work required under this specification shall visit the work-site, make a through examination of conditions, take all necessary measurements and thoroughly familiarize themselves with all existing conditions and all the limitations pertaining to the work herein contemplated.
- B. No extras will be allowed because of this Contractor's misunderstanding as to the amount of work involved or his lack of knowledge of any of the conditions pertaining to the work based on his neglect or failure to make an examination of the work-site.

1.03 Quality Assurance:

- A. Applicator Qualifications:
 - 1. For actual application of paint and/or coating materials, use only personnel who are thoroughly trained and experienced in the skills required, who are completely familiar with the manufacturer's recommended methods of application, and who are completely familiar with the painting and requirements of this section.

- B. Referenced Standards:
1. The current editions of the following surface preparation specifications as published by the Steel Structures Painting Council (SSPC) shall govern where applicable, unless otherwise specified:
 - a. Dry Abrasive Blast (SSPC-SP-7)
 - b. Power - Tool Clean (SSPC-SP-3)
 - c. Hand - tool clean (SSPC-SP-2)

1.04 Submittals:

- A. Product Data:
1. Prepare and submit product data to Architect/Engineer for approval. Product data shall include manufacturers recommended installation instructions.
 2. Submit manufacturer's Material Safety Data Sheets for all materials upon Owner's request.
- B. Samples:
1. If requested by Architect/Engineer, submit samples of proposed materials for approval.
- C. Certification:
1. Contractor shall submit to Owner, immediately upon completion of the work, certification from the manufacturer or applicator indicating that the quantity of each coating purchased was sufficient to properly coat all surfaces. Such certification shall make reference to the square footage figures provided to the manufacturer by Contractor. It shall also include the manufacturer's certification that the quality of the paint and/or coating material is in compliance with this specification.
 2. A certified statement from the material manufacturer stating that the coatings used for the deck reconditioning are defined as lead free, and that they contain less than 0.06 percent total lead in the dry paint film.

1.05 Product Delivery, Storage and Handling:

- A. All materials shall be delivered to work-site in the original containers, with labels intact and seals unbroken. No materials other than those specified shall be delivered to the work site.
- B. The area and/or space designated by the Owner for storage and mixing of materials must have good and natural or mechanical ventilation.
1. Contractor shall provide and maintain fire extinguishers in the work area or storage spaces at all times.
 2. Such storage area or space shall be kept clean and neat and storage area and its surroundings shall be returned to their original condition upon completion of the work.

- C. Coatings, spirits, thinners and all other flammable liquids shall be kept in closed metal containers. Brushes and rollers left in solvent or brush cleaner must be kept in closed containers.
 - 1. There shall be no open containers of any flammable liquids including coating material left in the storage or mixing area. Waste, rags, paper and similar combustible materials shall be placed in metal containers provided with self-closing covers. These containers are to be emptied regularly and the contents removed from the premises.

1.06 Job Conditions:

- A. The majority of the work is over Owner occupied space. Every precaution must be taken to protect building occupants and the general public. It is the Contractor's responsibility to prevent fumes from entering into the building. It is the Contractor's responsibility to monitor the interior of the building during the application and curing of the coating system. If coating odors are detected, it is the Contractor's responsibility to provide exhaust equipment and remove odors from the building immediately. This may require sealing all openings, equipment air intakes, etc., during the application and curing of the coating. Contractor shall also implement all necessary precautions to prevent air-borne coatings, solvents, etc., from staining adjacent roof mounted equipment, roofing membrane, building exterior and grounds, including parking lot and vehicles, etc.
- B. The Contractor shall supply required safety equipment (NIOSH-certified respirators, etc.) to all personnel required to be in the vicinity of the application and curing of the steel coating system.
- C. All methods employed in performing the work, and all equipment, tools and machinery used for handling materials and executing any part of the work, shall be subject to the approval of the Architect/Engineer before work is started, and whenever found unsatisfactory, shall be changed and improved as required.

1.07 Guarantees:

- A. The Contractor shall provide a written guarantee stating that the Contractor has prepared and applied the specified coating system per the requirements of this specification and in conformance with the manufacturer's installation instructions.
 - 1. The Contractor shall provide material manufacturer's product warranty.

PART 2 - PRODUCTS

2.01 Materials:

- A. Coating of all steel deck shall be Amerlock 2 VOC as manufactured by PPG Protection * Marine Coatings or approved equal.

2.02 Compatibility:

- A. All paint materials and equipment shall be compatible in use: finish coats shall be compatible with prime coats; prime coats shall be compatible with the surface to be coated; all tools and equipment shall be compatible with the coating to be applied.
- B. Thinners, when used, shall be only those thinners recommended for that purpose by the manufacturer of the material to be thinned.

2.03 Mixing:

- A. All mixing and tinting shall be done on the premises and no materials shall be reduced or changed, except as specified by the manufacturer of the material. Mix and prepare all materials in strict accordance with manufacturer's directions.
- B. The manufacturer's printed pot life shall not be exceeded. If the pot life has been exceeded, the material shall be discarded, even though it may appear satisfactory to use.

PART 3 - EXECUTION

3.01 Inspection:

- A. Access to Work:
 - 1. Architect/Engineer shall at all times have access to the work and Contractor shall provide all necessary inspection equipment such as labor, rigging, lighting and other equipment to facilitate this inspection.
- B. Inspection of Existing Surfaces
 - 1. Contractor and Architect/Engineer shall inspect the existing surfaces before starting of any work and shall determine the sequence and conduct of work and protection methods that may be required. Contractor shall give Architect/Engineer one week's written notice in advance of starting to allow for proper inspection. Contractor shall also examine all surfaces which are to receive his materials for suitability of application of his materials and report defects in same to Owner in writing. Owner will cause all defects to be remedied. The starting of any work by this Contractor will imply his acceptance of these surfaces.
- C. Examination of Applied Work
 - 1. Inspections may include wet and/or dry film thickness gauging, visual surface inspection by the naked eye and/or a suitable magnifying instrument to detect runs, sags, drips, cracks or other defects in the coating system.

2. Inspections may also include any other examination of the prepared surface or coating system, deemed necessary by Architect/Engineer, including random destructive film thickness and coating adhesion checks.

3.02 Pre-Construction Conference:

- A. The Contractor shall have his project superintendent and supervisor attend a pre-construction conference with Architect/Engineer at time and location as set up by Owner. The conference will define both the project requirements and sequence in which the work is to be performed and completed.

3.03 Safety and Ventilation Requirements:

- A. Safety Requirements
 1. All work shall be performed in a safe and orderly manner, all in compliance with the standards as prescribed by OSHA.
 2. Contractor shall take all necessary precautions such as wearing face masks, safety goggles, gloves and other protective measures as may be required to protect all personnel during the preparation of surfaces or application of painting materials.
 3. All safety equipment and protection requirements shall be as recommended by the paint manufacturer, previously cited SSPC specification or prevailing code.
 4. All electrical equipment, tools, and ventilation fans shall be explosion-proof and/or non-sparking and shall be maintained in good working order. Spray equipment shall be as recommended by, or acceptable to the coatings manufacturer, and shall be thoroughly cleaned before and after use with the appropriate cleaning solvents.
 5. Provide adequate explosion-proof lighting during all surface preparation and coating operations. This lighting shall be sufficient to illuminate clearly the working area without shadows.
 6. Prior to use, store all coating material in a secure area which shall provide protection from weather and temperatures below 60 degrees F. The area shall be maintained in a safe, neat and clean manner and free from fire, explosion and other hazards.
- B. Ventilation Requirements
 1. It shall be Contractor's responsibility to insure complete safety to all personnel and property, including the proper use of ventilation and fire protection devices.
 2. Contractor shall maintain adequate and continuous explosion-proof ventilation during all surface preparation and coating operations and during all re-coat and curing periods. This ventilation shall be of the suction type and shall be of sufficient capacity to maintain throughout the interior a clean atmosphere that is well below explosive and toxic limits.

3. Arrange the ventilation system, including all fans and temporary ductwork, so that fresh air is drawn into the area at the bottom and is exhausted at the top with an upward air movement pattern within the area that permits no still air spaces to exist in any area. Give particular attention to floor level or lower spaces and pocket areas where heavier-than-air solvents and particulate matter are likely to accumulate. Said ventilation shall be sufficient for the removal of dust, coating fumes or other volatile gases and moisture to such an extent as to prevent any undesirable accumulation of any thereof.

3.04 Job Conditions:

- A. Protection of Existing Surfaces
 1. All existing surfaces not requiring painting under this specification shall be properly protected from damage or soiling during the process of the work herein specified. Any surface or work damaged in the execution of work under this section shall be replaced or restored to the original condition by this Contractor at his own expense.
- B. Cleaned Surface Protection
 1. All bare metal surfaces as a result of surface preparation shall be protected by coating before any oxidation or discoloration occurs.
- C. Newly Painted Surface Protection
 1. Painting and/or coating operations shall be suspended when there are excessive airborne dust and contaminants which would settle on the freshly painted surface. Surface accumulations of dust and contaminants on previously painted/coated work shall be removed before applying additional coats.
- D. Environmental
 1. Proceed with surface preparation and coating application only when air and surface temperatures are above 40° F and surface temperature is at least 5° above wet bulb air temperature reading. Coating shall not be applied to dusty, wet, or damp surface, and shall not be applied in rain, snow, fog or mist, or when relative humidity exceeds 85%. No coating shall be applied when it is expected that the relative humidity will exceed 85%, or when the air temperature will drop below 40° F within 8 hours after the application of the coating.

3.05 Workmanship:

- A. All preparation of surfaces and painting/coating work shall be accomplished with mechanics thoroughly skilled in the application of specified materials with all workmanship to be of the very best quality and shall be done in such manner as to fulfill the requirements of this specification. Any specific directions furnished by the manufacturer regarding the application of his materials shall be faithfully followed.
- B. Workmanship shall not conflict with, be contrary to, or be below the standards established by the painting/coatings materials manufacturer. After starting work, Contractor is responsible for complete integrity of all materials installed which will insure or maintain the integrity of the guarantee. Therefore, this Contractor shall:
 - 1. Not apply painting/coating materials under any conditions which are not proper, including surfaces or weather.
 - 2. Exercise care to ensure adequate quantities of materials used.
 - 3. Maintain competent foreman continuously supervising the work with authority to discard unsuitable materials or remove unsatisfactory workers.
 - 4. The coating shall be applied at the specified rate and in the manner recommended by the coating manufacturer and it shall be well worked into the surface to which applied. No laps or brush marks shall show. The film thickness of the coatings will be measured and any readings below the specified film thickness shall be corrected by applying an additional coat(s).
 - 5. Care shall be given to insure a uniform coating carefully worked with a brush around nuts and bolts, weld seams, scab marks, plate overlap, joints, and other irregularities in the surface.
 - 6. The coating shall be brushed on in one direction, and then smoothed in a direction at right angles thereto, so as to produce a uniform thickness of coating and as complete a coverage as possible.
 - 7. Application of the coatings to the interior roof structure, including I-beams, compression ring(s), support column(s), attachment brackets, nut/bolt assemblies and roof plate overlap seams shall be by brush or brush/spray application to insure a uniform coat thoroughly worked into and around all seams, welds, bolt assemblies, plate overlap seams, beam flanges and irregularities in the surface.

3.06 Application Procedures:

- A. General
 - 1. All material shall be uniformly flowed on and applied evenly to proper consistency so as to be free from spotting, holidays, laps, pinholes, ropiness, sags, runs, brush marks or other surface imperfections.
 - 2. The minimum paint and/or coating thickness shall be not less than the manufacturer's recommended spreading rate, to provide total dry film thickness as indicated or required.

3. Preparation of galvanized decking:
 - a. Wire brush any light oxidation (white and smaller areas of rust oxidation that have not structurally affected the decking)
 - b. Vacuum debris and particulates from decking flutes.
 - c. Wipe decking with mild solvent as recommended by coating manufacturer.
- B. Method of Application
 1. Brush Application
 - a. Brush out and work all brush coats onto surface in an even film with minimum of brush marks and in accordance with all workmanship to be of the very best.
 2. Roller Application
 - a. Roller application shall be limited to only those surfaces impracticable for brush application.
 - b. Limit roller applications (generally) to flat surfaces. Apply each coat in a double roller pass type application to provide uniform coverage and to hide as brush-applied coats.
- C. Coverage
 1. Coverage and hide shall be complete. When color, dirt, or undercoats show through coating, the surface shall be covered by additional coats until the film is of a uniform finish, color, appearance and coverage, at no additional cost to Owner. Give special attention to insure that all surfaces, including edges, corners, crevices, welds and exposed fasteners receive a film thickness equivalent to that of flat surfaces.

3.07 Clean-Up:

- A. Contractor shall maintain a neat and clean work site by daily removal of debris caused by operations specified under this section.
 1. Disposal of abrasive materials shall be in accordance with prevailing code or local regulations.
 2. Any oil rags, waste and similar items must be removed from work-site area every night and every precaution taken to avoid the danger of fire.
- B. On completion of all painting and/or coating work, remove all staging, scaffolding and containers from work-site. Paint spots, oil or stains, and abrasive materials on adjacent surfaces shall be removed, damaged areas touched up and the entire area left clean.

- END OF SECTION -

Section 23 01 00

MECHANICAL WORK

PART 1 - GENERAL

1.01 Description:

- A. It shall be the responsibility of the Contractor to disconnect and reconnect roof related mechanical equipment, gas and refrigerant piping, fittings, duct work, insulation, accessories and etc., on the roofs where it becomes necessary to raise items to perform Work and to properly flash curbs, parapets, pipes and other roof penetrations. Contractor shall include all materials and labor necessary to perform the Work.
- B. To perform the Re-Roofing Work, various mechanical units will require temporary shut downs. Temporary shut down shall include all labor and material necessary and may include evacuating/drawing-down any gas or refrigerant lines to their nearest shut-off valve or source.
- C. In the event that roof top cooling units or miscellaneous equipment have to be lifted from the roof structure to accomplish the re-roofing work, Contractor shall make whatever arrangements necessary to safely remove these items from the roof and replace them upon completion of work.
- D. Reconnection shall include all labor and material to reconnect the items to return them back in the same working condition prior to execution of Work.
 - 1. Reconnections shall include but not be limited to replacement of all minor sub-comments that become damaged or disrupted due to disconnect such as gaskets, fasteners, couplings, etc.
 - 2. Replacement materials shall comply with building code requirements and match existing.
 - 3. Reconnection shall also include reloading /drawing-in any gas or refrigerant lines.
 - 4. Any exterior insulation on refrigerant lines that are disturbed shall be replaced with new exterior grade insulation to match existing and comply with build code.
 - 5. Any filters that become exposed during Work shall be cleaned. If the filters become damaged or soiled during Work they shall be replaced at no additional cost.
- E. Various roof top equipment, piping, duct work and etc. will require minor extensions to accommodate raised curbs and parapet heights typical on re-roofing projects. These minor extensions are considered repairs and all material to create the extensions shall match the existing adjacent material and comply with building code.

1.02 Related Work:

- A. Section 07 53 24 Ballasted EPDM Roofing
- B. Section 26 01 00 Electrical Work

1.03 Site Inspection & Testing:

- A. The Project Drawings indicate the approximate location of the majority of roof-top equipment and lines. The size, configuration and type of equipment, lines and ducts vary. It shall be the responsibility of the Contractor, prior to bidding, to field verify all roof-related existing condition which will need disconnect and reconnections.
- B. Owner shall familiarize Contractor with location of controls, equipment, etc. which affect his work.
- C. All existing roof top units are in good working order. Prior to execution of any work, the Contractor shall inspect and test all units and provide an existing condition report to the Engineer and Owner. The report shall include the roof plan to identify the units and photographic documentation.
- D. Upon re-installation of equipment after re-roofing work is complete, Contractor shall reconnect all disrupted services to same and test and balance equipment units prior to turning it over to Owner. The contractor is responsible for returning all mechanical units and equipment back to the same condition prior to Work. The re-testing and balancing shall be coordinated with the Owner and Engineer. At the completion of testing, contractor shall supply a report of their findings.
- E. Any items damaged by this Contractor's work shall be repaired or replaced by him at no cost to the Owner.

1.04 Quality Assurance:

- A. Standards: Comply with the standards specified in this section and as listed in the general requirements.
 - 1. All disconnect and reconnection shall conform to all city, local, state and federal requirements.
 - 2. As a minimum, all disconnect and reconnection shall conform to:
 - a. 2020 Minnesota Building
 - b. 2020 Mechanical and Fuel Gas Codes
 - c. 2020 Minnesota Plumbing Code
- B. Qualifications of Contractor: While there is no state license requirements for mechanical contractors, they are required to have on file a mechanical bond with

DLI in order to contract to perform gas, heating ventilation, cooling, air condition, fuel burning or refrigeration work in the state of Minnesota. Copy of the approved DLI filing shall be submitted to the Engineer.

- C. Qualifications of Installers: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.
- D. Inspections:
 - 1. The Contractor shall obtain and pay any necessary permitting fees from the local building official to perform Work. Copy of such permit shall be supplied as a submittal to the Engineer prior to performing Work.
 - 2. Contractor shall coordinate with the local building officials to provide any necessary inspection services required.

1.05 Scheduling/Coordination:

- A. Contractor shall coordinate this work with the Owner so as to keep the interruption of equipment operation to a minimum. Adequate lead time shall be provided.
- B. Temporary shut downs shall be coordinated with the facility and indicated on the contractor's construction schedule. All units that are temporarily shut down will require to be back in operation the same day unless otherwise noted.
- C. Coordinate Work with flashing work specified in Section 07 53 24 Ballasted EPDM Roofing

PART 2 - NOT USED

PART 3 - NOT USED

- END OF SECTION -

Section 26 01 00

ELECTRICAL WORK

PART 1 - GENERAL

1.01 Description:

- A. It shall be the responsibility of the Contractor to disconnect and reconnect electrical lines, conduit, junction boxes, sensors, accessories and etc., on the roofs where it becomes necessary to raise items to perform Work and to properly flash curbs, parapets, pipes and other roof penetrations. Contractor shall include all materials and labor necessary to perform the Work.
- B. To perform the Re-Roofing Work, various mechanical units will require temporary shut downs. Temporary shut down shall include all labor and material necessary to temporally shut down the power source.
- C. In the event that roof top cooling units or miscellaneous equipment have to be lifted from the roof structure to accomplish the re-roofing work, Contractor shall make whatever arrangements necessary to safely remove these items from the roof and replace them upon completion of work.
- D. Reconnection shall include all labor and material to reconnect the items to return them back in the same working condition prior to execution of Work.
 - 1. Reconnections shall include but not be limited to replacement of all minor sub-comments that become damaged or disrupted due to disconnect such as gaskets, fasteners, fittings, expansion fittings, wall seals, bushings, locknuts, couplings, etc.
 - 2. Replacement materials shall comply with building code requirements, be exterior grade and match existing.
 - 3. Reconnection of the exterior conduit on the roof will be anchored to the inside face of the copings and support above the roof on blocking specified in Section 07 53 24.
- E. Various wall and roof lighting, equipment, wiring, conduit and etc. will require minor extensions to accommodate the replacement of stucco (where indicated on the drawings) and raised curbs, parapet heights typical on re-roofing projects. These minor extensions are considered repairs and all material to create the extensions shall match the existing adjacent material and comply with building code.

1.02 Related Work:

- A. Section 07 53 24 Ballasted EPDM Roofing
- B. Section 23 01 00 Mechanical Work

1.03 Site Inspection & Testing:

- A. The Project Drawings indicate the approximate location of the majority of wall and roof-top equipment and lines. The size, configuration and type of equipment, lines vary. It shall be the responsibility of the Contractor, prior to bidding, to field verify all wall and roof-related existing condition which will need disconnection and reconnections.
- B. Owner shall familiarize Contractor with location of controls, equipment, etc. which affect his work.
- C. All existing electrical lines, lights and equipment are in good working order. Prior to execution of any work, the Contractor shall inspect and test all equipment and lighting and provide an existing condition report to the Engineer and Owner. The report shall include the roof plan to identify the units and photographic documentation.
- D. Upon re-installation of equipment, conduit and lighting, after re-roofing and stucco work is complete, Contractor shall reconnect all disrupted services to same and re-test prior to turning it over to Owner. The contractor is responsible for returning all lighting, electrical equipment, and mechanical units back to the same condition prior to Work. The re-testing shall be coordinated with the Owner and Engineer. At the completion of testing, contractor shall supply a report of their findings.
- E. Any items damaged by this Contractor's work shall be repaired or replaced by him at no cost to the Owner.

1.04 Quality Assurance:

- A. Standards: Comply with the standards specified in this section and as listed in the general requirements.
 - 1. All disconnect and reconnection shall conform to all city, local, state and federal requirements.
 - 2. As a minimum, all disconnect and reconnection shall conform to:
 - a. 2014 National Electrical Code
- B. Qualifications of Contractor: All Work shall be accomplished by a Contractor licensed in the State of Minnesota in good standing. Contractor shall submit a copy of current license to the Owner and Engineer.
- C. Qualifications of Installers: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.

- D. Inspections:
1. The Contractor shall obtain and pay any necessary permitting fees from the local building official to perform Work. Copy of such permit shall be supplied as a submittal to the Engineer prior to performing Work.
 2. Contractor shall coordinate with the local building officials to provide any necessary inspection services required.

1.05 Scheduling/Coordination:

- A. Contractor shall coordinate this work with the Owner so as to keep the interruption of equipment operation to a minimum. Adequate lead time shall be provided.
- B. Temporary shut downs shall be coordinated with the facility and indicated on the contractor's construction schedule. All units that are temporarily shut down will require to be back in operation the same day unless otherwise noted.
- C. Coordinate Work with flashing, sheet metal and conduit support work specified in Section 07 53 24 Ballasted EPDM Roofing

PART 2 - NOT USED

PART 3 - NOT USED

- END OF SECTION -































PROJECT TITLE:	L'Orient Street Facility Partial Re-Roof
ADDRESS:	1415 L'Orient Street, St. Paul, MN 55117
PROJECT TYPE:	Public (state-owned) Building: Minnesota State
OWNER:	State of Minnesota RECS
CONTACT:	Ben Kitograd
ADDRESS:	50 Sherburne Ave, St. Paul, MN 55155

GENERAL NOTES	
ID	DESCRIPTION
1	CONTRACTOR SHALL VERIFY MEASUREMENTS AND JOB CONDITIONS PRIOR TO BIDDING. EXISTING CONDITIONS AS OBSERVED IN ISOLATED LOCATIONS, MAY NOT BE REPRESENTATIVE OF THE ENTIRE PROJECT.
2	CONTRACTOR SHALL REVIEW PROJECT FOR ANY ITEMS NOT SHOWN ON THE PLANS. REVIEW PROJECT SPECIFICATIONS FOR ADDITIONAL DETAILS NOT IDENTIFIED BY THE PROJECT DRAWINGS.
3	COORDINATE WORK OF ALL TRADES TO ENSURE THE BUILDING IS WATERTIGHT AT END OF EACH DAY'S WORK. SEQUENCE WORK IN SUCH A MANNER THAT DAMAGE AND/OR WEAR OF NEW OR EXISTING BUILDING COMPONENTS WILL NOT OCCUR.
4	PROTECT NEW AND EXISTING CONSTRUCTION. RESTORE EXTERIOR AND INTERIOR FINISHES (INCLUDING LANDSCAPING) DAMAGED DURING THE WORK.
5	BUILDING WILL BE OCCUPIED DURING CONSTRUCTION. COORDINATE CLOSELY WITH OWNER TO MINIMIZE DISRUPTIONS TO NORMAL BUSINESS ACTIVITIES.
6	SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.
7	CONTRACTOR SHALL SUBMIT A SITE SAFETY PLAN FOR THE OWNER'S REVIEW. THE PLAN(S) SHALL BE COMPLETE, REFLECTING THE ENTIRE SITE AND SHALL SHOW ANY PHASED PROTECTION. THE SITE SAFETY PLAN(S) SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, NOTES, SIDEWALK BRIDGE, FENCES, EGRESS, SCAFFOLDING, FIRE PROTECTION, ETC.
8	CONTRACTOR IS RESPONSIBLE FOR ALL MECHANICAL AND ELECTRICAL DISCONNECTS, MODIFICATIONS AND RECONNECTS. APPROXIMATE LOCATIONS OF MECHANICAL AND ELECTRICAL LINES ABOVE THE ROOF ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL QUANTITY AND TYPE OF ALL MECHANICAL AND ELECTRICAL LINES THAT REQUIRE DISCONNECTION, MODIFICATION AND RECONNECTIONS PRIOR TO BIDDING.
9	PROVIDE SOIL PIPE EXTENSION TO ACHIEVE 12" VERTICAL HEIGHT ABOVE ROOF MEMBRANE.

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9	PROVIDE SOIL PIPE EXTENSION TO ACHIEVE 12" VERTICAL HEIGHT ABOVE ROOF MEMBRANE.

The map, titled "PROJECT LOCATION", illustrates the project site's context within a street network. The primary thoroughfare is Arlington Avenue East, which runs horizontally across the middle of the map. Jackson Street runs vertically along the left side, intersecting Arlington Avenue East. To the north of Arlington Avenue East, Timberlake Road and Biglow Lane are shown, with Timberlake Road curving to the left and Biglow Lane curving to the right. To the south of Arlington Avenue East, L'Orient Street runs vertically, intersecting it. Further south, East Sherwood Avenue and East Cottage Avenue are visible, running horizontally. The map also shows several other streets: Trent Brook Circle, Jackson Street, and North Mississippi Street. A "STAGING AREA" is indicated by a dashed rectangular boundary in the center of the map, near the intersection of Arlington Avenue East and L'Orient Street. The area within the staging area is shaded with diagonal lines. Other areas with diagonal shading are scattered throughout the map, particularly in the lower-left and lower-right quadrants. The map is oriented with North at the top, as indicated by a north arrow in the top-left corner.

LEGEND			
ID	DESCRIPTION		
RD	ROOF DRAIN		NON-PENETRATING SAFETY RAILING
ORD	OVERFLOW ROOF DRAIN		WALL-MOUNTED SAFETY RAILING
SC	SCUPPER W/ DOWNSPOUT		EXISTING CONSTRUCTION TO REMAIN
OSC	OVERFLOW SCUPPER		WORK BY OTHERS
V	VENT STACK		EARTH (UNDISTURBED)
P	PIPE PENETRATION		GRAVEL
G	GUY WIRE		MORTAR/GYPSUM
A	ROOF ANCHOR		CONCRETE
■	PITCH POCKET		BRICK
⊙	HOT STACK		CMU
□	CURB/PRV (VERIFY TYPE IN FIELD)		CMU (GROUTED)
◻	SQUARE TO ROUND CURB		STONE
RH	ROOF HATCH		STEEL
SL	SKYLIGHT		3/4" PLYWOOD
	SLEEPERS		WOOD BLOCKING (CONTINUOUS)
	SLEEPERS W/ UNIT		WOOD BLOCKING (INTERMITTENT)
	CURB TO BE REMOVED		WOOD BLOCKING (FINISH)
	PENETRATION/DRAIN TO BE REMOVED		FIBERGLASS BATT INSULATION
	DOOR		PERLITE
	STANDARD LADDER		HIGH DENSITY WOOD FIBER INSULATION
	LADDER WITH LANDING		ISOCYANURATE INSULATION
	SATELLITE ANTENNA		EXTRUDED POLYSTYRENE INSULATION

ID	DESCRIPTION		
RD	ROOF DRAIN		NON-PENETRATING SAFETY RAILING
ORD	OVERFLOW ROOF DRAIN		WALL-MOUNTED SAFETY RAILING
SC	SCUPPER W/ DOWNSPOUT		EXISTING CONSTRUCTION TO REMAIN
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■	PITCH POCKET		BRICK
⊙	HOT STACK		CMU
□	CURB/PRV (VERIFY TYPE IN FIELD)		CMU (GROUTED)
◻	SQUARE TO ROUND CURB		STONE
RH	ROOF HATCH		STEEL
SL	SKYLIGHT		3/4" PLYWOOD
	SLEEPERS		WOOD BLOCKING (CONTINUOUS)
	SLEEPERS W/ UNIT		WOOD BLOCKING (INTERMITTENT)
	CURB TO BE REMOVED		WOOD BLOCKING (FINISH)
	PENETRATION/DRAIN TO BE REMOVED		FIBERGLASS BATT INSULATION
	DOOR		PERLITE
	STANDARD LADDER		HIGH DENSITY WOOD FIBER INSULATION
	LADDER WITH LANDING		ISOCYANURATE INSULATION
	SATELLITE ANTENNA		EXTRUDED POLYSTYRENE INSULATION

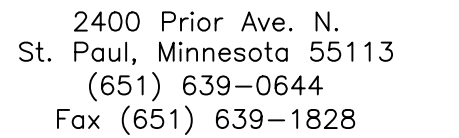
ABBREVIATIONS	
ID	DESCRIPTION
ALUM	ALUMINUM
C.L.	CENTER LINE
CMU	CONCRETE MASONRY UNIT
CONT	CONTINUOUS
C.J.	CONTROL JOINT
DIA	DIAMETER
E.J.	EXPANSION JOINT
GALV	GALVANIZED
GA	GAUGE
LW	LOWER ROOF
MIN	MINIMUM
N.C.J.	NEW CONTROL JOINT
N.E.J.	NEW EXPANSION JOINT
N.I.C.	NOT IN CONTRACT
O.C.	ON CENTER
PREFIN	PREFINISHED
SIM	SIMILAR
SS	STAINLESS STEEL
TYP	TYPICAL
UP	UPPER ROOF
V.I.F.	VERIFY IN FIELD
W/	WITH

ID	DESCRIPTION
ALUM	ALUMINUM
C.L.	CENTER LINE
CMU	CONCRETE MASONRY UNIT
CONT	CONTINUOUS
C.J.	CONTROL JOINT
DIA	DIAMETER
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SIM	SIMILAR
SS	STAINLESS STEEL
TYP	TYPICAL
UP	UPPER ROOF
V.I.F.	VERIFY IN FIELD
W/	WITH

[illegible][illegible]

SITE PLAN

The diagram is a site plan showing a large rectangular area. Inside this area, there is a smaller rectangular area labeled "STAGING AREA". The staging area is shaded with diagonal lines. The overall layout is simple, with the staging area positioned towards the bottom right of the main area.

A floor plan diagram of a room. The room has a large central area and a smaller rectangular area on the left. A rectangular area in the lower right of the main space is shaded with diagonal lines and labeled "STAGING AREA". The room is bounded by a thick black line on the left and bottom, and a thinner black line on the top and right.

Project Identification

L'ORIENT STREET FACILITY
1415 L'ORIENT STREET
ST. PAUL, MN 55117

PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN,
SPECIFICATION, OR REPORT WAS PREPARED BY
ME OR UNDER MY DIRECT SUPERVISION AND
THAT I AM A DULY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE OF
MINNESOTA.

SIGNATURE: _____
William F. Waugh, P. E.

DATE: _____ LICENSE # 40940
MN Reg. No.

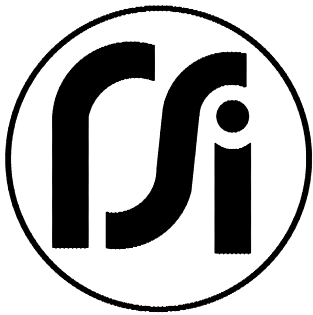
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Drawn By: RSI

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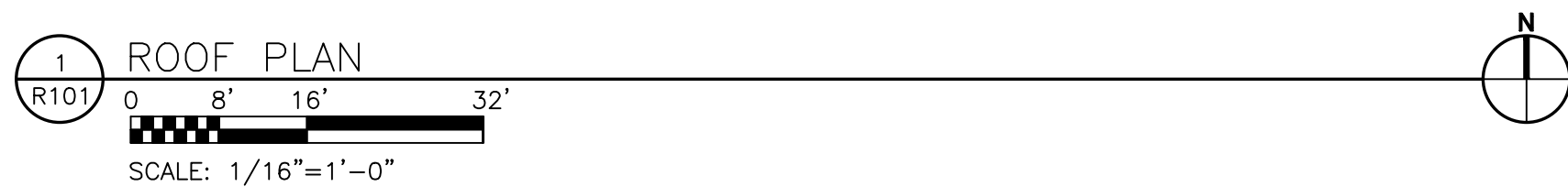
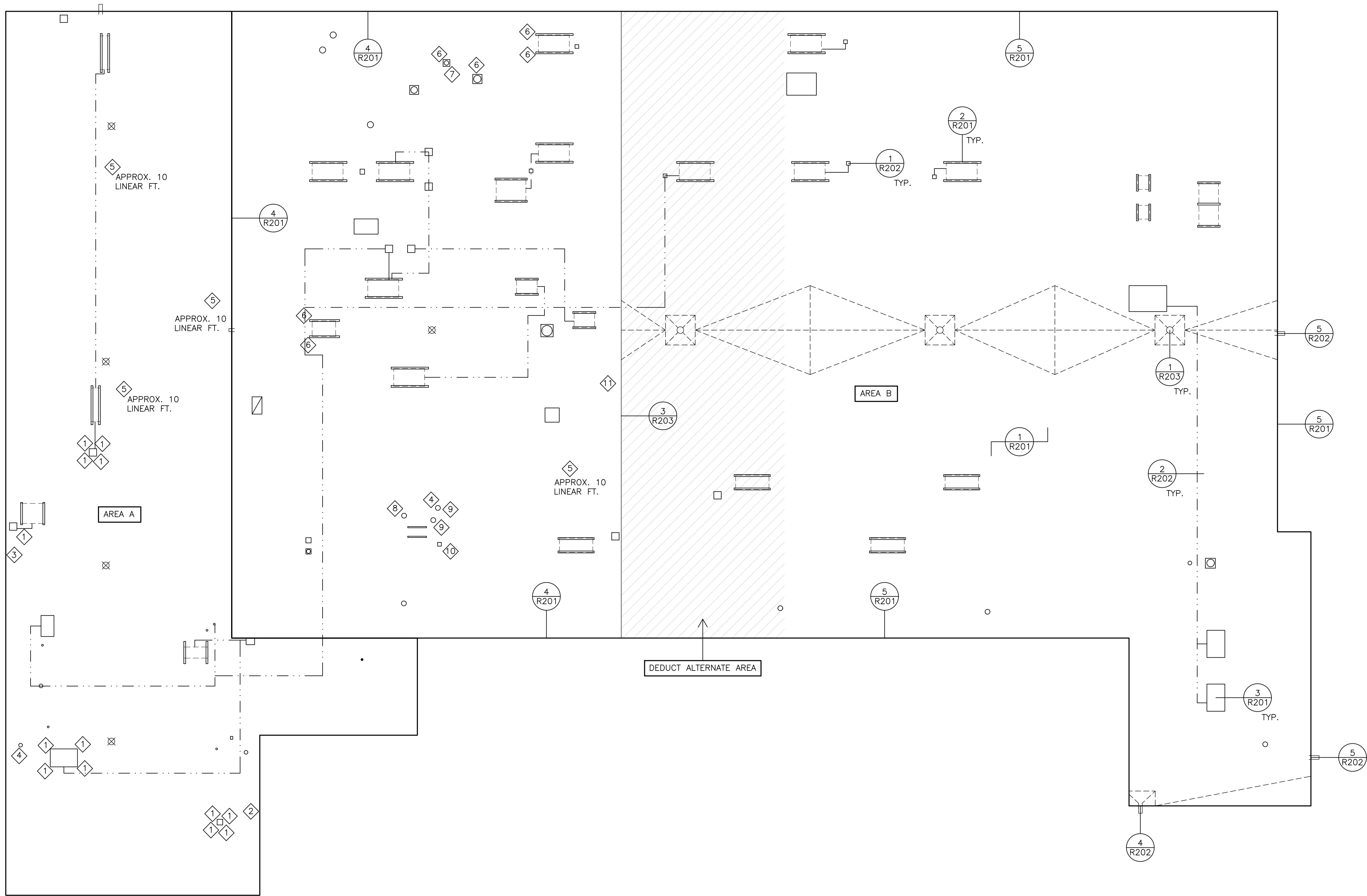
Title Page

R001



ROOF SPEC INC

2400 Prior Ave. N.
St. Paul, Minnesota 55113
(651) 639-0644
Fax (651) 639-1828



ROOFING KEY NOTES	
ID	
1	OVERLAY CORNERS OF BASE FLASHING WITH NEW UNCURED EPDM MEMBRANE.
2	RESCURE LOOSE COVER PLATE.
3	REMOVE AND DISPOSE OF OBSOLETE RAILING.
4	INSTALL NEW UNCURED EPDM MEMBRANE AND STACK FLASHING.
5	CLEAN EXISTING MEMBRANE AND OVERLAY SEAM WITH 6" UNCURED EPDM MEMBRANE.
6	CUT BRIDGED MEMBRANE AT THE BASE OF THE SLEEPER/CURB. REPAIR ALL FOUR SIDES SIMILAR TO DETAIL 2/R201.
7	INSTALL NEW 24 GAUGE GALVANIZED REDUCER AT CURB. FIELD VERIFY AND SIZE TO MATCH EXISTING.
8	INSTALL NEW EPDM PIPE BOOT AT ROOF PENETRATION.
9	INSTALL NEW SEALANT AND STORM COLLAR.
10	INSTALL NEW PITCH PAN AND TWO PART POURABLE SEALER.
11	CUT 12" OPENING IN TEMPORARY CONTROL JOINT AND FLASH OPENING WITH EPDM MEMBRANE.

Project Identification

L'ORIENT STREET FACILITY
1415 L'ORIENT STREET
ST. PAUL, MN 55117

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RSI Project #: 20-13268-02

Drawn By: _____ RSI

Sheet Title

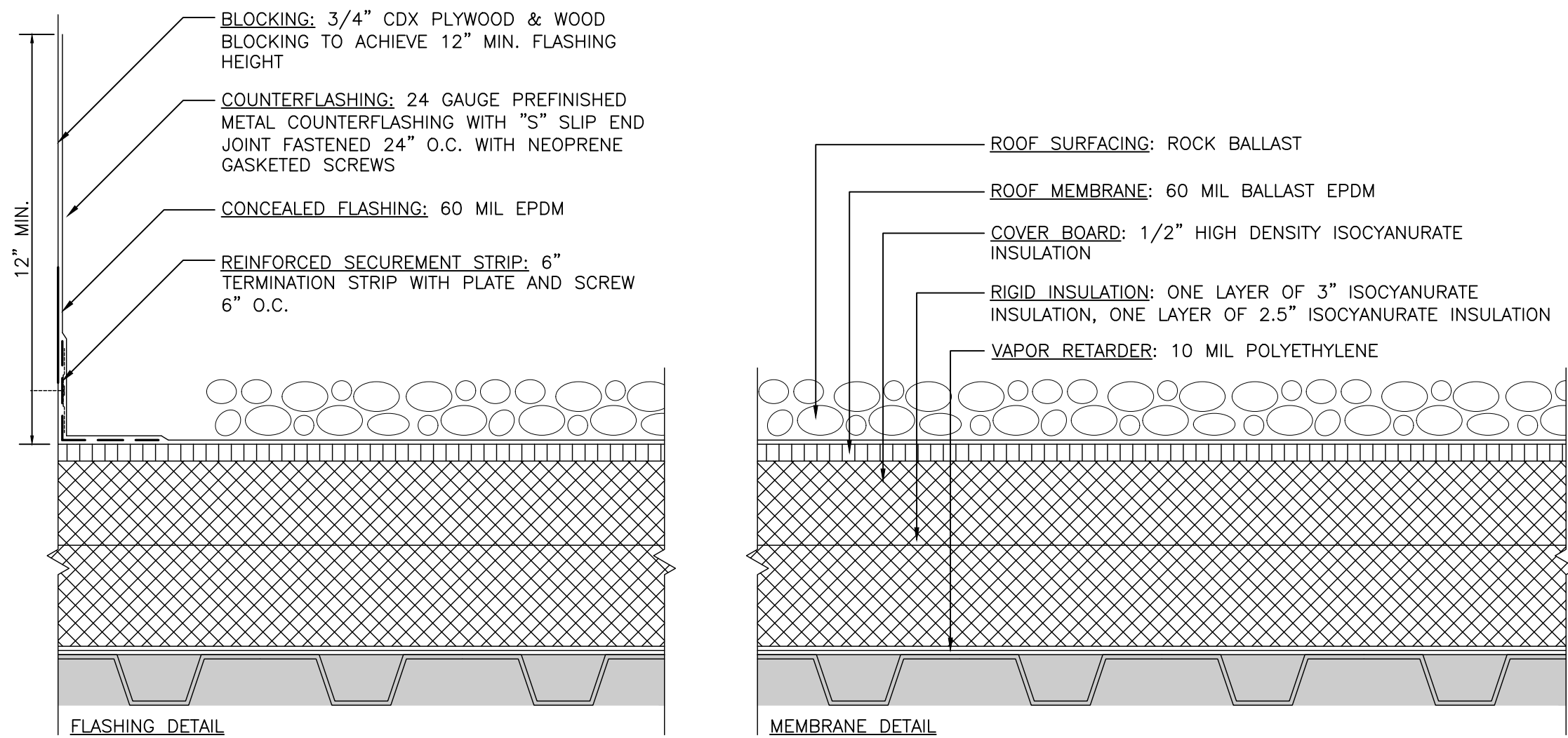
Roof Plan

R101

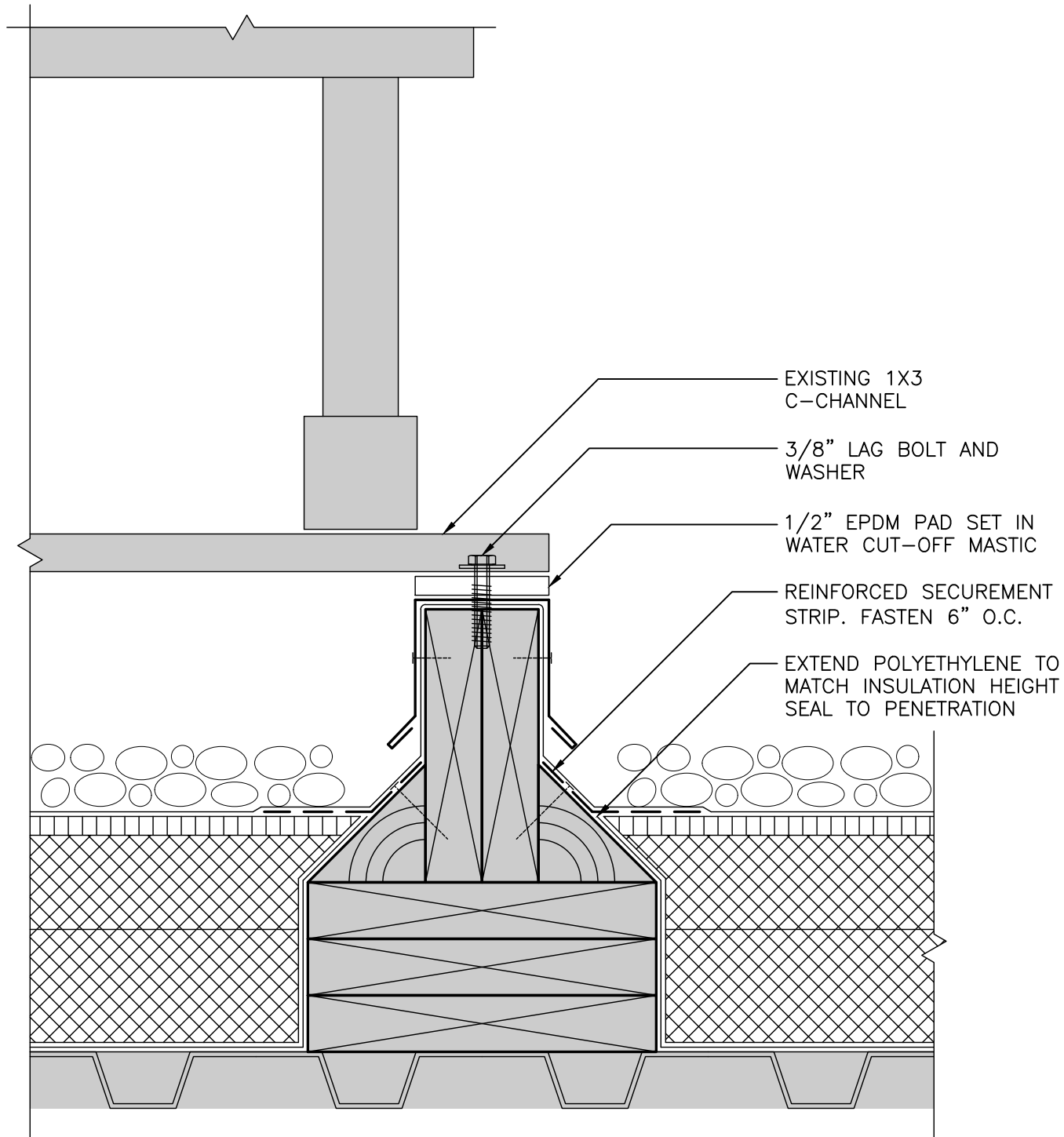


ROOF SPEC INC

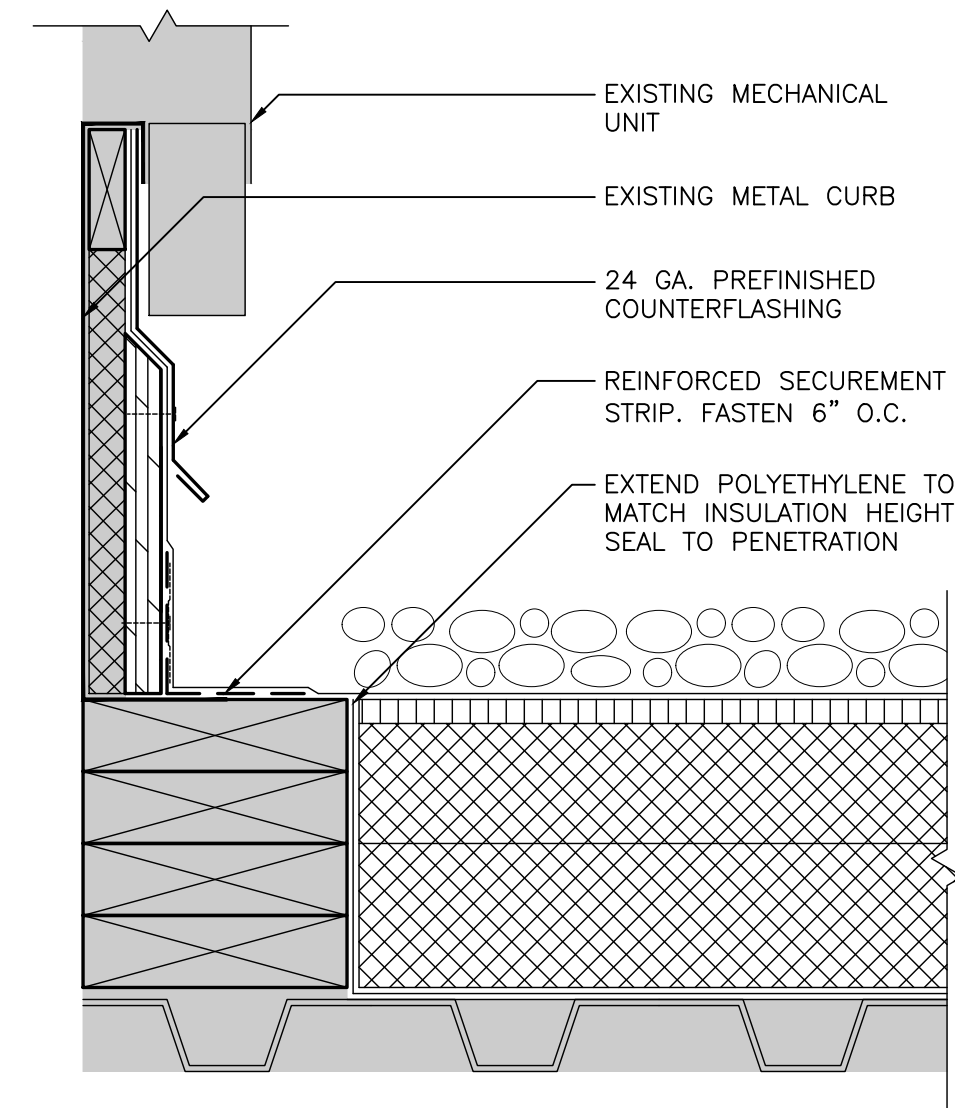
2400 Prior Ave. N.
St. Paul, Minnesota 55113
(651) 639-0644
Fax (651) 639-1828



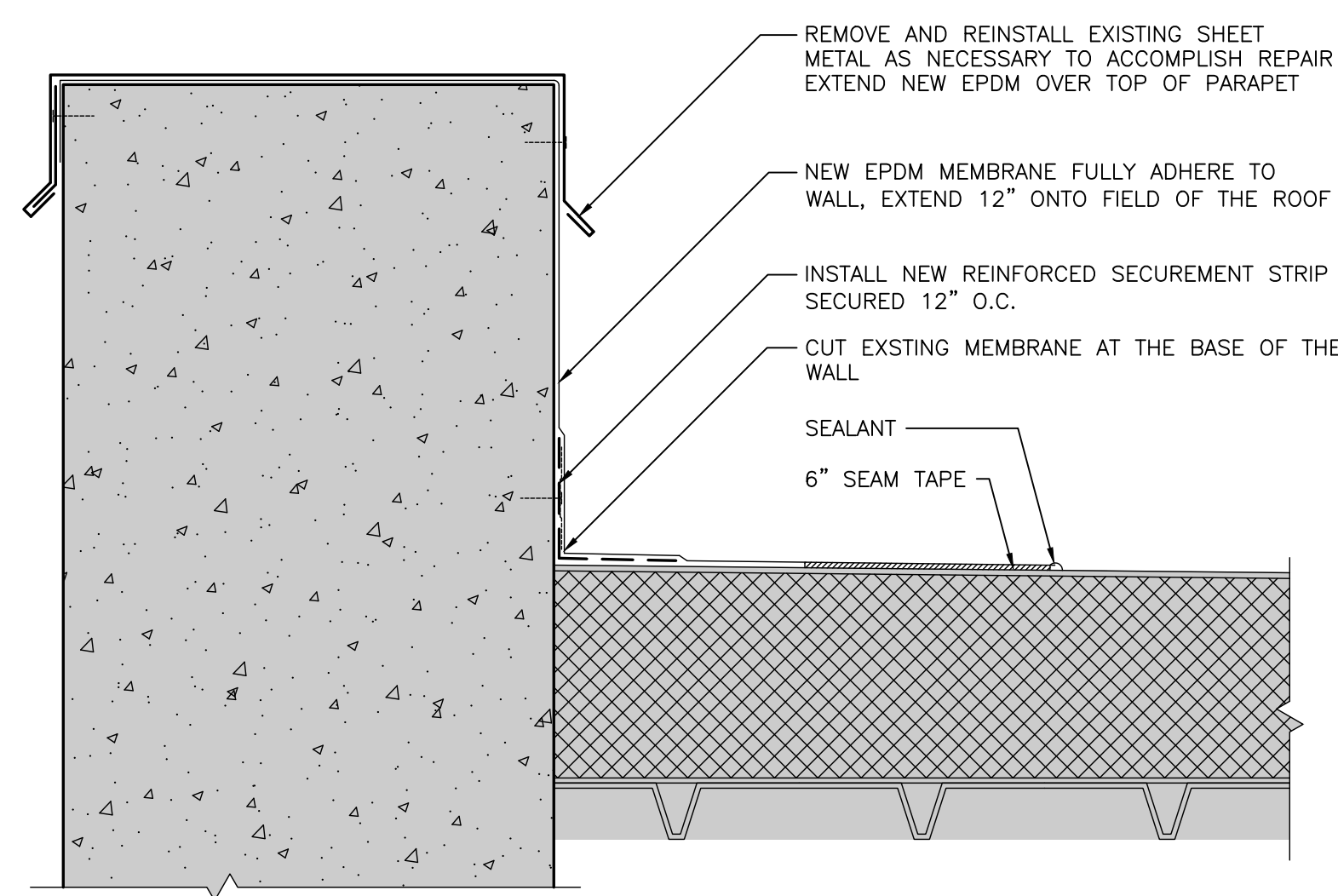
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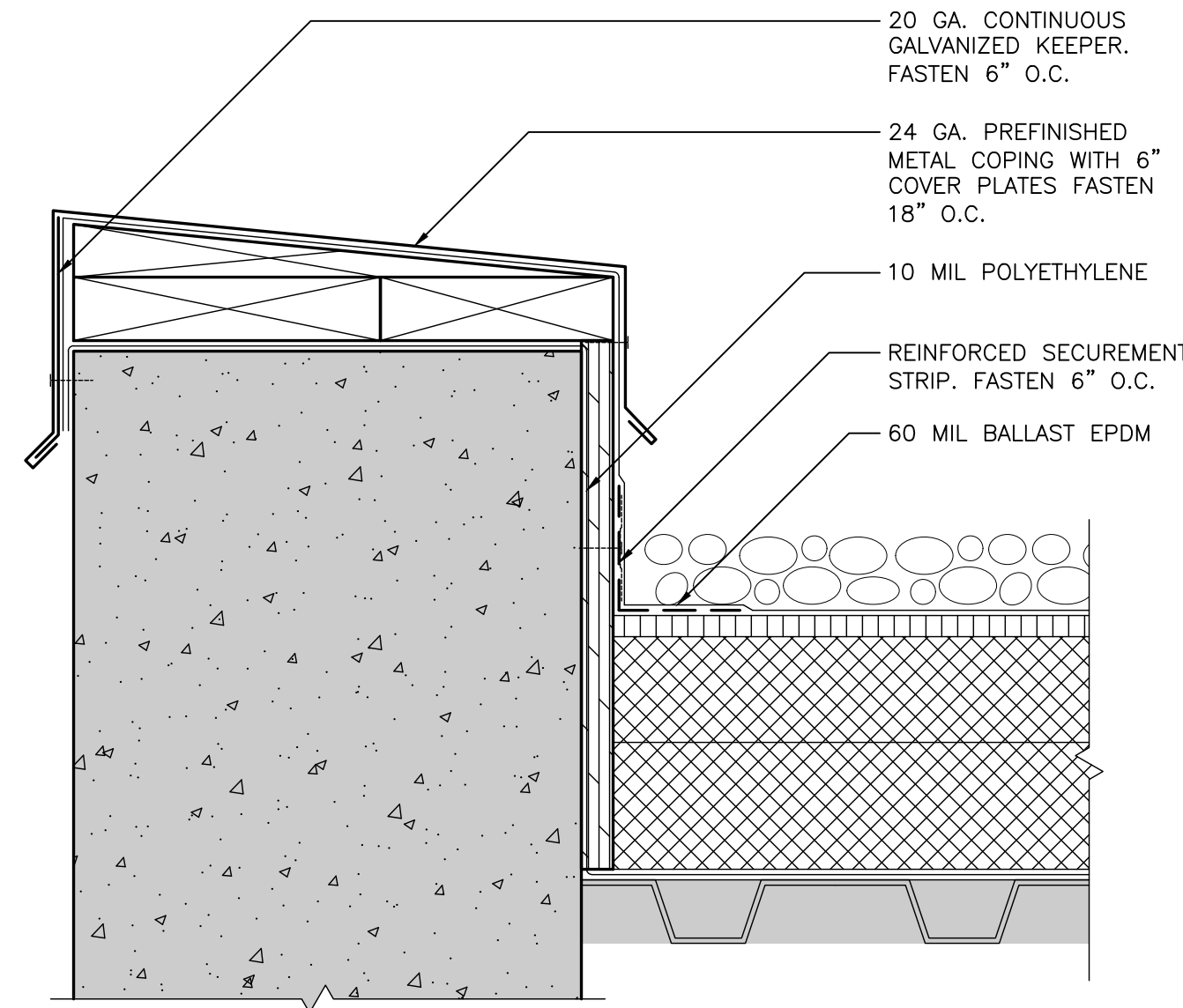
2 SLEEPER CURB DETAIL
A201 SCALE: 3"=1'-0"



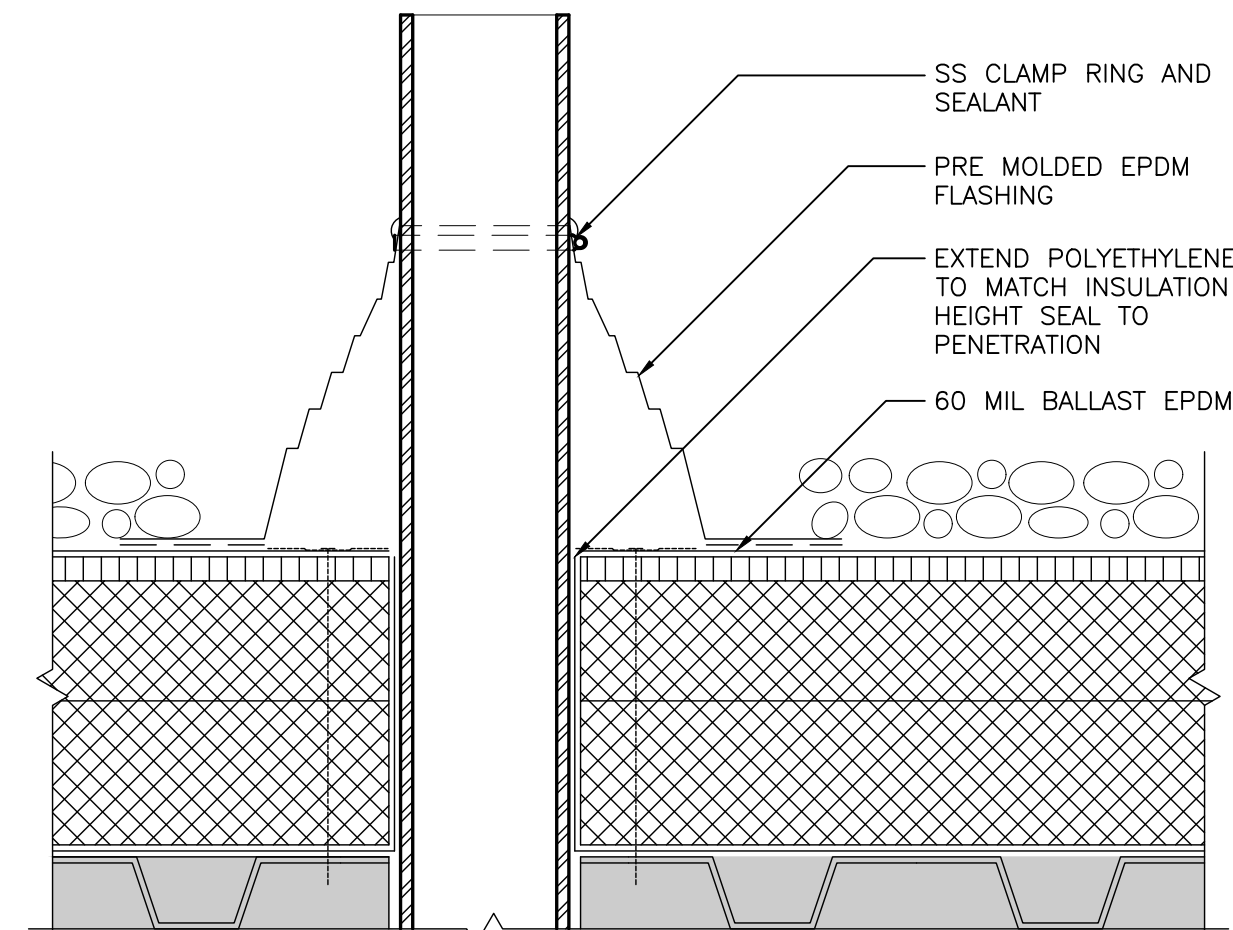
3 METAL CURB DETAIL
R201 SCALE: 3"=1'-0"



4 PERIMETER EDGE DETAIL
R201 SCALE: 3"=1'-0"



5 PERIMETER EDGE DETAIL
R201 SCALE: 3"=1'-0"



6 PIPE PENETRATION DETAIL
R201 SCALE: 3"=1'-0"

Project Identification

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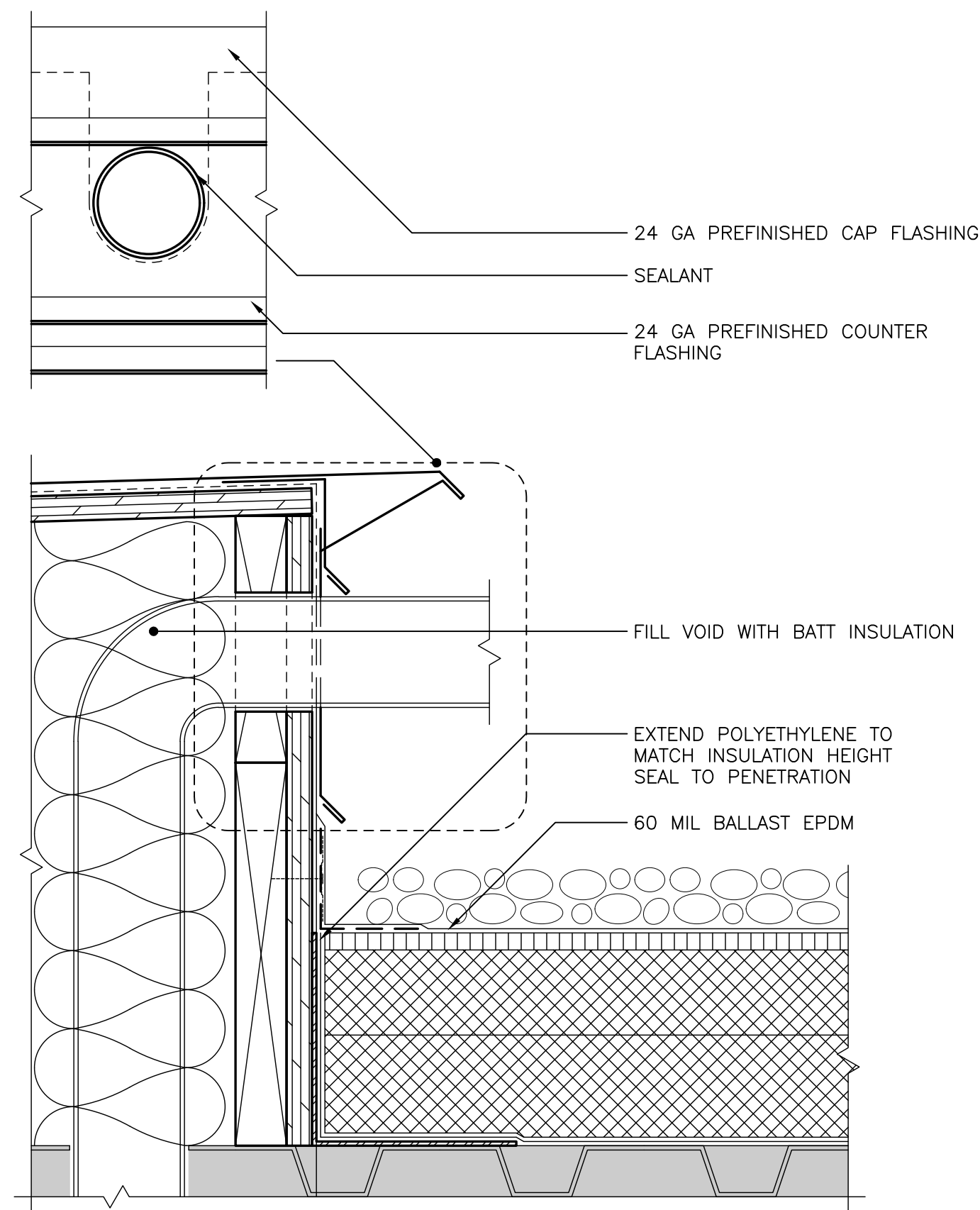
DATE: _____ LICENSE # 40940
MN Reg. No.

RSI Project #: 20-13268-02

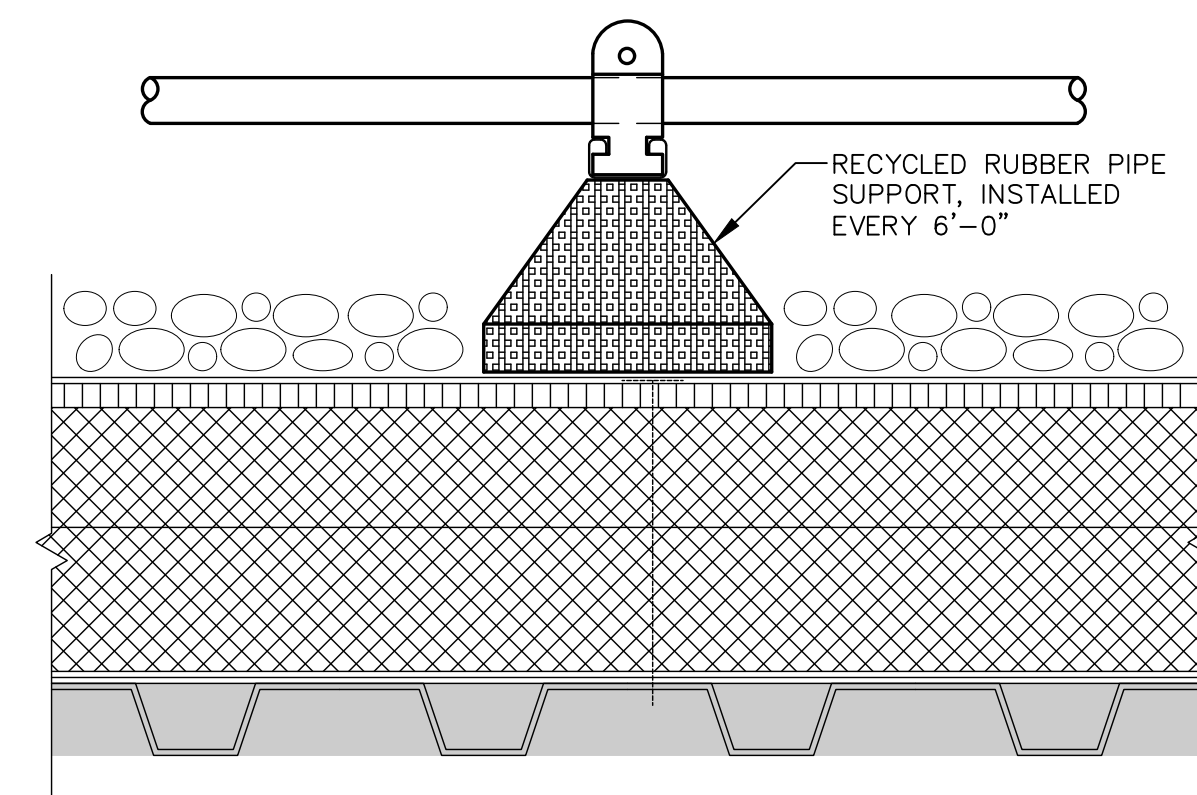
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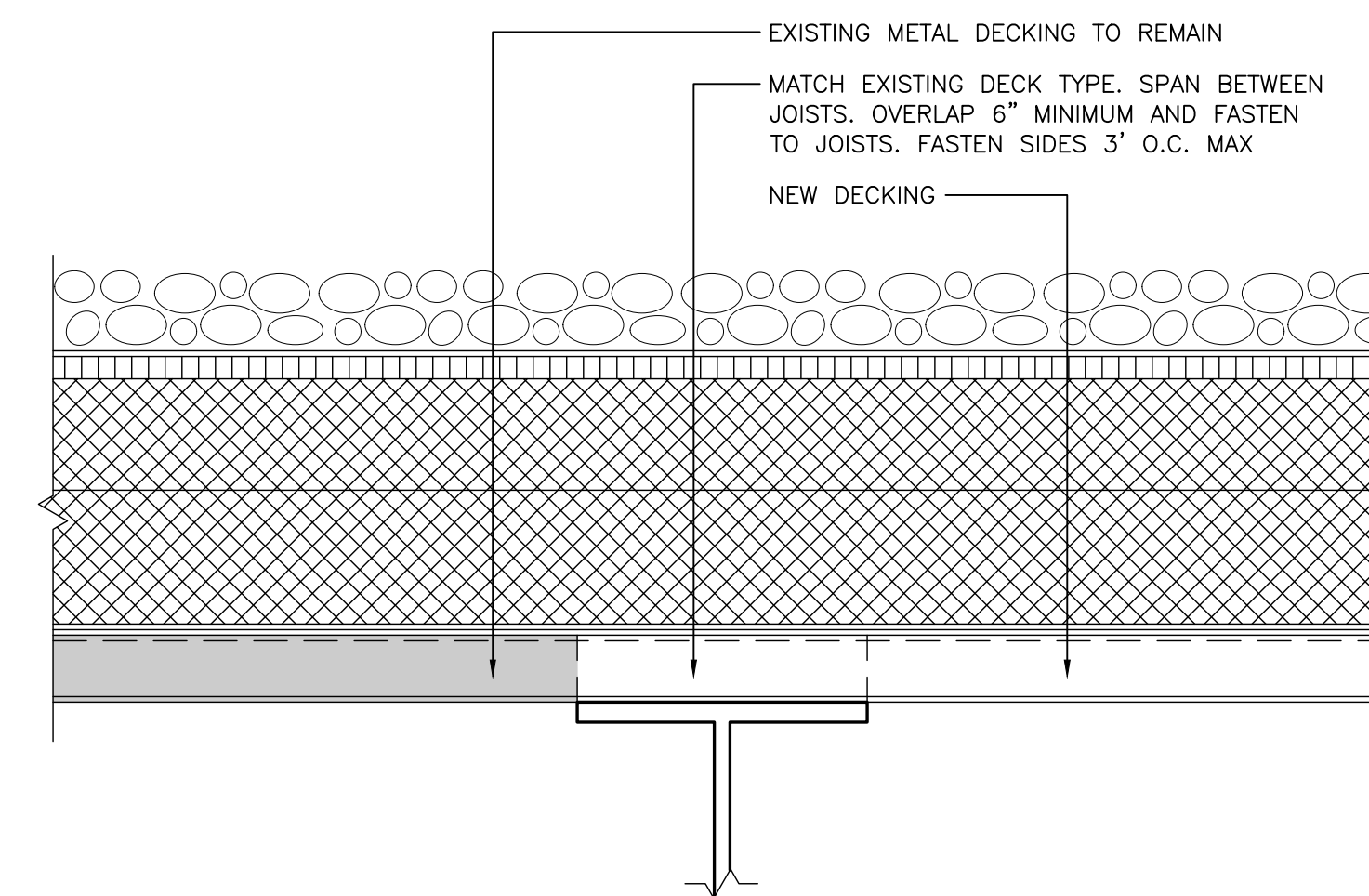
Roof Details
R201



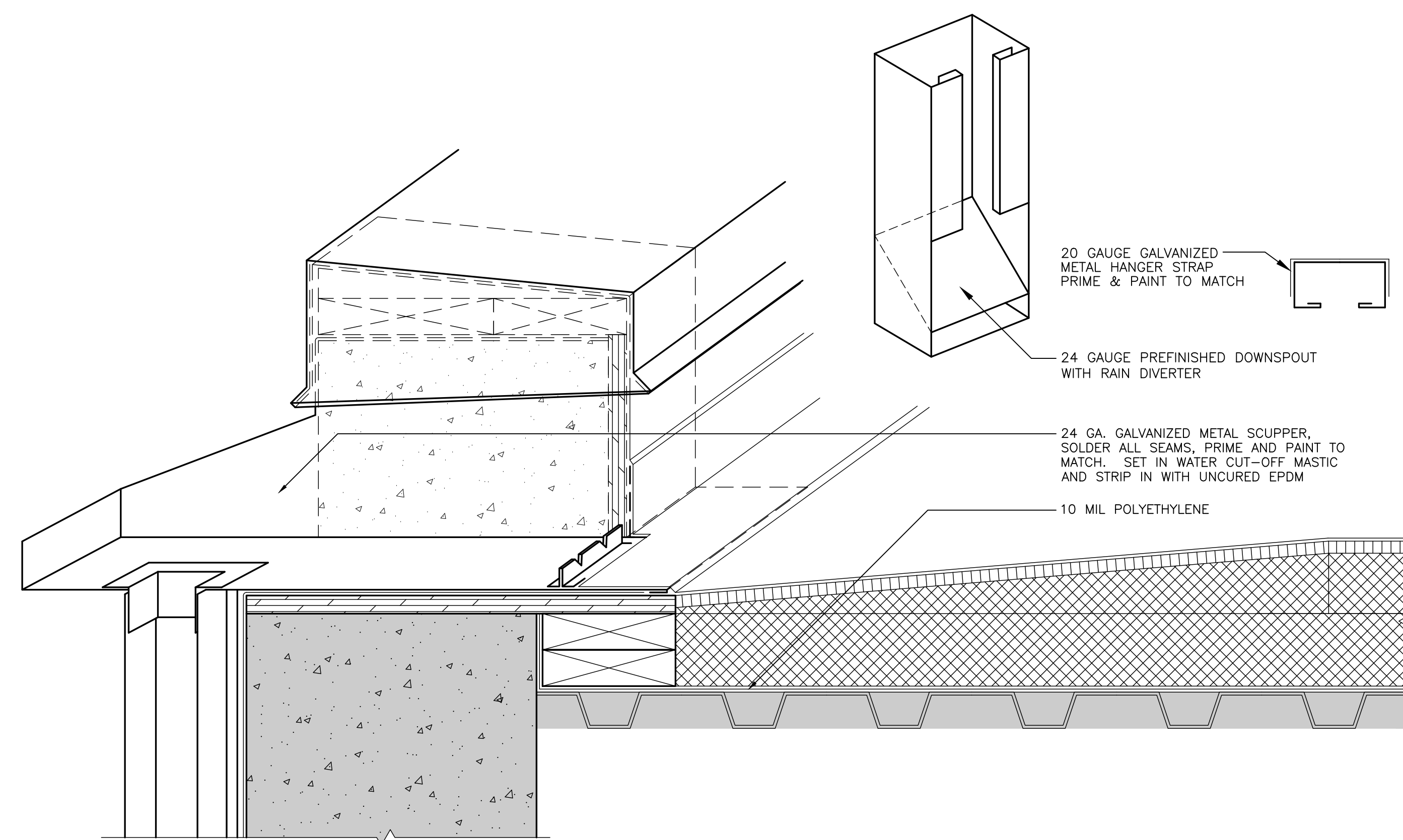
1 PIPE BOX CURB DETAIL
R202 SCALE: 3"=1'-0"



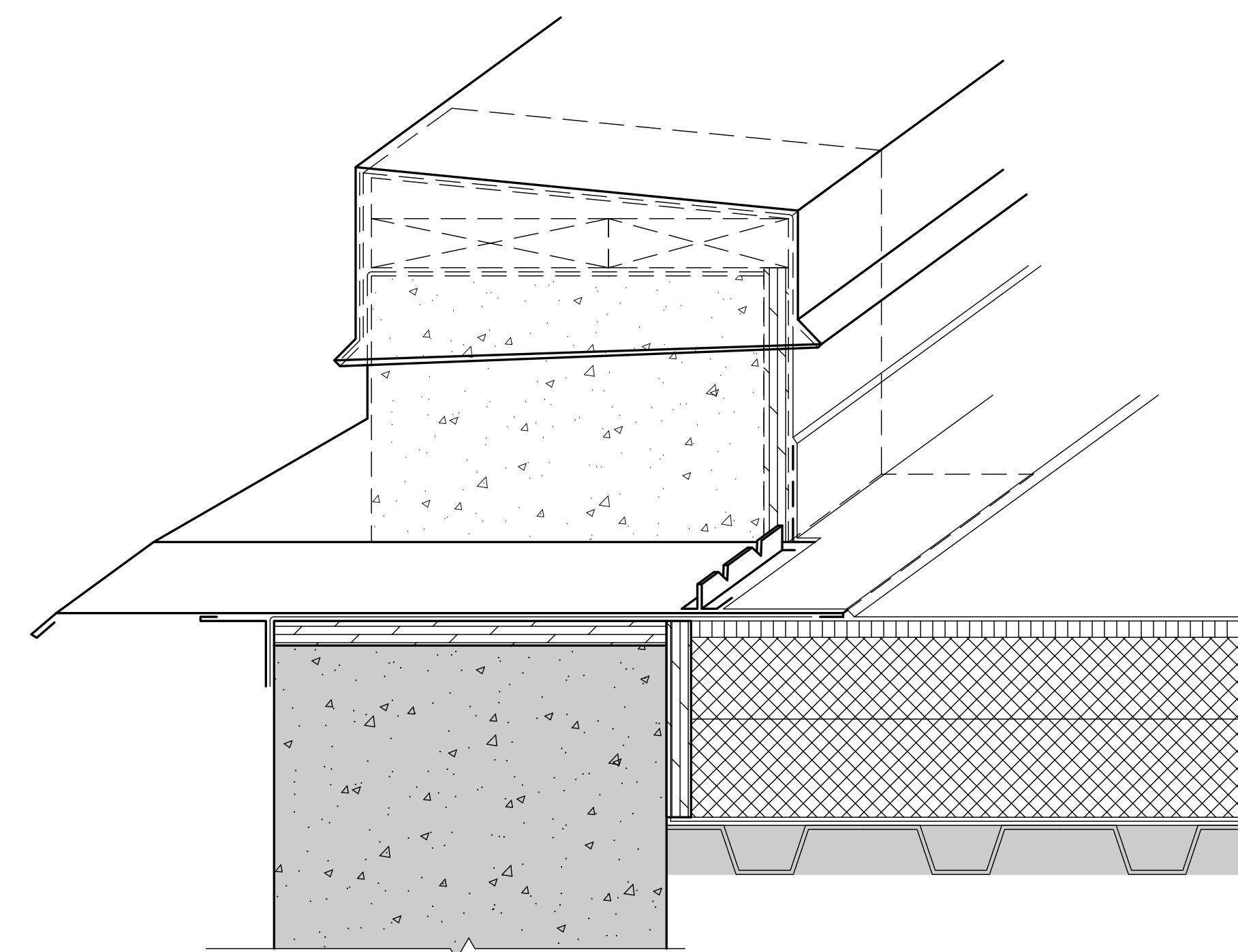
2 PIPE SUPPORT DETAIL
R202 SCALE: 3"=1'-0"



3 METAL DECK REPAIR/REPLACEMENT DETAIL
R202 SCALE: 3"=1'-0"



4 SCUPPER DETAIL
R202 SCALE: 3"=1'-0"



5 OVERFLOW SCUPPER DETAIL
R202 SCALE: 3"=1'-0"



ROOF SPEC INC

2400 Prior Ave. N.
St. Paul, Minnesota 55113
(651) 639-0644
Fax (651) 639-1828

Project Identification
L'ORIENT STREET FACILITY
1415 L'ORIENT STREET
ST. PAUL, MN 55117

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MN Reg. No.

RSI Project #: 20-13268-02

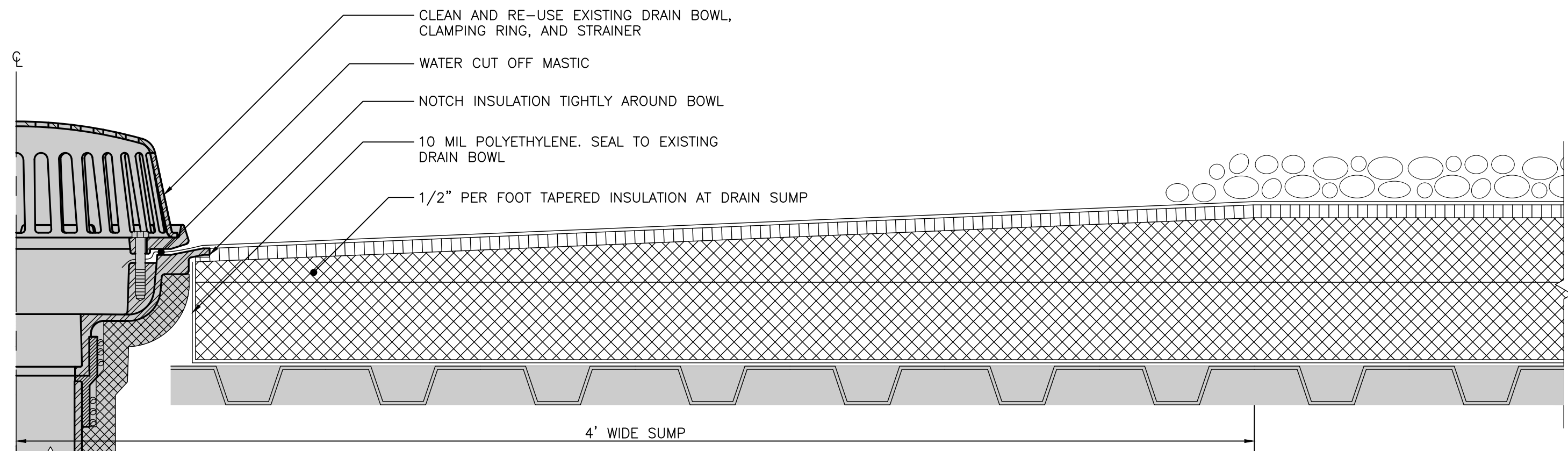
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Sheet Title
Roof Details
R202

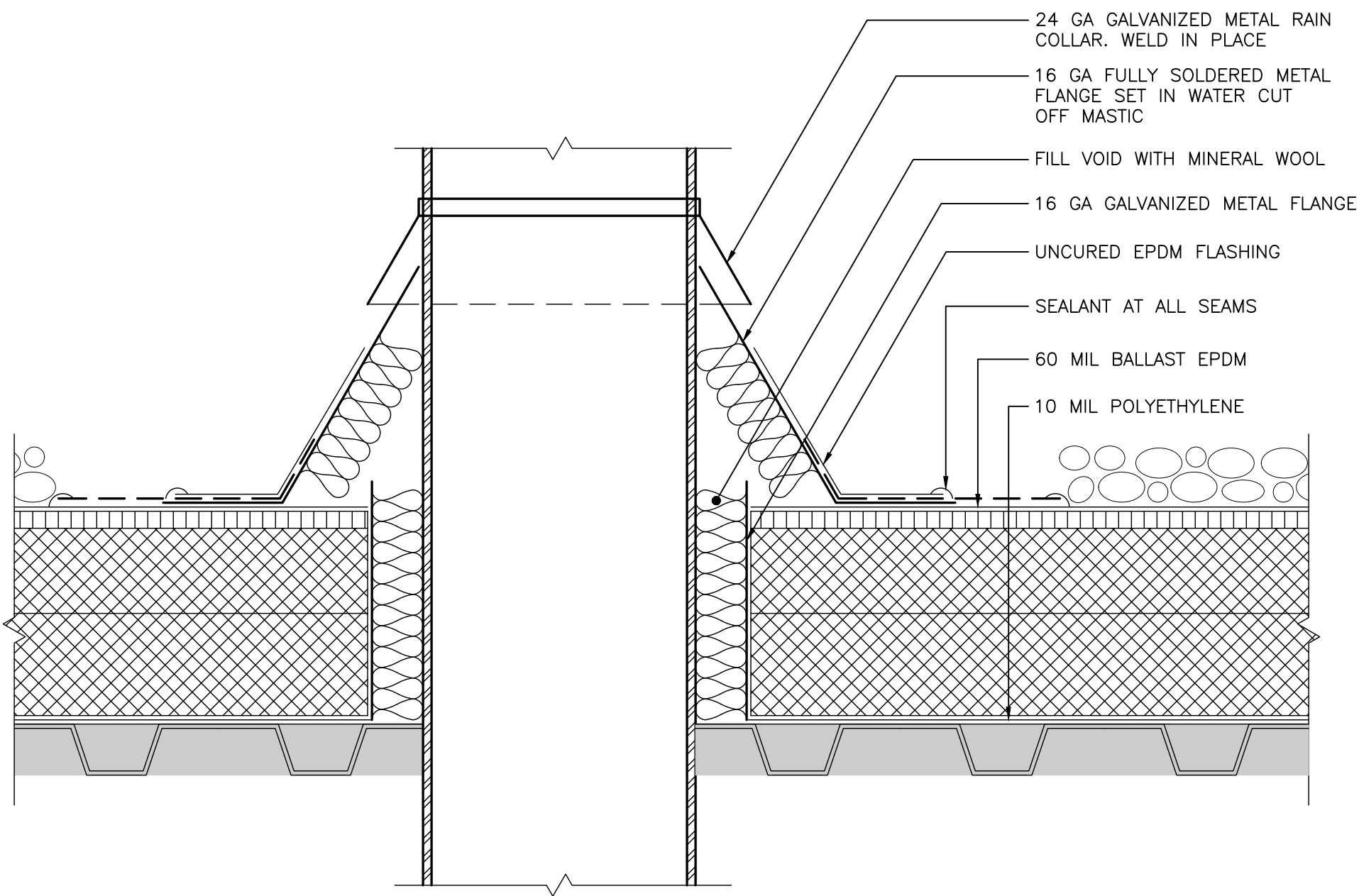


ROOF SPEC INC

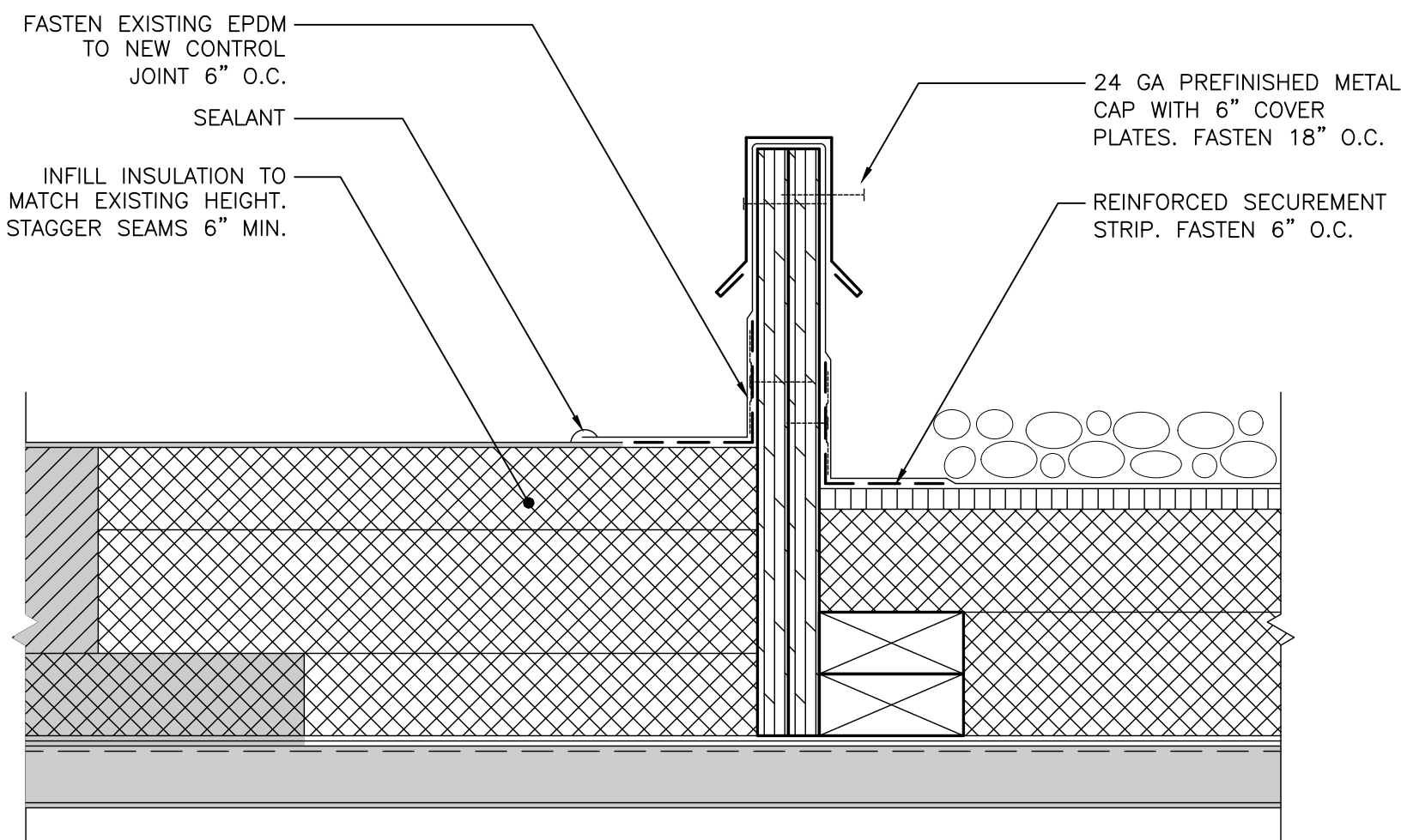
2400 Prior Ave. N.
St. Paul, Minnesota 55113
(651) 639-0644
Fax (651) 639-1828



1 ROOF DRAIN DETAIL
R203 SCALE: 3"=1'-0"



2 HOT STACK DETAIL
R203 SCALE: 3"=1'-0"



3 TEMPORARY JOINT DETAIL
R203 SCALE: 3"=1'-0"

Project Identification

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1415 L'ORIENT STREET
ST. PAUL, MN 55117

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MN Reg. No.

RSI Project #: 20-13268-02

Drawn By: _____ RSI

Sheet Title

Roof Details
R203