



architects  
engineers  
www.woldae.com

110 North Brockway St  
Two Hundred Twenty  
Palatine, IL 60067

tel 847 241 6100  
fax 847 241 6105  
mail@woldae.com

To: Prospective Bidders  
From: Wold Architects and Engineers  
Date: March 2, 2016  
Comm. No: 133030

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Subject: **Addendum No. 3** for Bidding Documents for the: **Scott County Sheriff Patrol Headquarters**

**BIDS DUE MARCH 7, 2016 AT 1:00 P.M.**

This addendum forms a part of the Contract Documents dated February 8, 2016. Acknowledge receipt of this Addendum on the space provided on the Bid Form. Failure to do so may result in disqualification of Bid.

This Addendum consists of one (1) typed sheet and the following attachments:

Project Manual: 02 83 10 Chain Link Fencing, 03 41 00 Precast Structural Concrete, 07 21 29 Spray Polyurethane Foam Insulation, 07 53 25 EPDM Adhered Roofing.

**PROJECT MANUAL**

- 1. SECTION 02 83 10 CHAIN LINK FENCING**
  - A. Reissued this Addendum.
  
- 2. SECTION 03 41 00 PRECAST STRUCTURAL CONCRETE**
  - A. Reissued this Addendum.
  
- 3. SECTION 07 21 29 SPRAY POLYURETHANE FOAM INSULATION**
  - A. Reissued this Addendum.
  
- 4. SECTION 07 53 25 EPDM ADHERED ROOFING**
  - A. Reissued this Addendum.

**END OF ADDENDUM #3**

Minnesota  
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Iowa

designers and researchers for public environments

## **SECTION 02 83 10**

### **CHAIN LINK FENCING**

#### **PART 1: GENERAL**

##### **1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specifications apply to this section.

##### **1.02 SUMMARY**

- A. This Section includes:
  - 1. PVC coated chain link fencing and accessories for commercial use.
- B. Related Sections:
  - 1. Section 02 83 15 Chain Link Cantilever Slide Gate.
  - 2. Section 03 30 00 Cast in place concrete.
  - 3. Civil Drawings.

##### **1.03 SUBMITTALS**

- A. Changes in specifications may not be made after the bid date.
- B. Shop Drawings: Layout of fences and gates with dimensions, details, and finishes of components, accessories, and post foundations.
- C. Product Data: Manufacturer's catalog cuts indication material compliance and specified options.
- D. Samples: Color selection for PVC finishes.

##### **1.04 QUALITY ASSURANCE**

- A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
  - 1. Engineering Responsibility: Preparation of data for chain-link fences and gates, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Preinstallation Conference: Conduct conference at Project site to comply with specification requirements.

##### **1.05 WARRANTY**

- A. Provide manufacturer's standard limited warranty that chain link fence is free from defects in material and workmanship including cracking, peeling, blistering, and corroding for a period of 15 years from the date of purchase.

## **PART 2: PRODUCTS**

### **2.01 MANUFACTURER**

- A. Manufacturers for Chain-Link Fences and Gates: Subject to compliance with requirements, provide products by one of the following.
1. Allied Tube and Conduit Corp.
  2. Division/Master Halco Inc.
  3. Cyclone Fence/U Diversified Group, USX Corp.
  4. Merchants Metal, Inc.

### **2.02 CHAIN LINK FENCE FABRIC**

- A. PVC coated: 6mil to 10 mil thickness, thermally fused to aluminum coated steel core wire per ASTM F666 Class 2B. Core wire tensile strength 75,000 psi.
- B. Size: Helically wound and woven to a height of 8 feet with 2” diamond mesh, 9 gauge, with a core wire diameter of .148” and a break load of 1290 lb/f.
- C. Color: ASTM F934 Black.
- D. Selvage of fabric twisted at top and knuckled at bottom.
- E. Interior locations of fence fabric (including at vehicle storage) does not require PVC coating. Interior locations to be hot-dipped galvanized protective coating per ASTM F1043.*

### **2.03 STEEL FENCE FRAMING**

- A. Steel pipe – Type II: Cold formed and welded steel pipe complying with ASTM F 1043, Group IC, with minimum yield strength of 50,000 psi, sizes as indicated. Protective coating per ASTM F1043, 0.9 oz/ft<sup>2</sup> minimum zinc coating. Internal coating Type B, minimum 0.9 oz/ft<sup>2</sup> zinc or Type D, zinc pigmented, 81% nominal coating, minimum 3 mils thick.
- B. PVC Coated finish: In accordance with ASTM F1043, apply supplemental color coating of 10 to 15 mils in black color to match fabric. *Steel fence framing at interior locations (including vehicle storage) does not require PVC coating.*
- C. End and Corner Posts: 3 inches OD / 4.64 lbs/ft
- D. Line (intermediate) Post: 2 ½ inches OD / 3.117 lbs/ft
- E. Rail and Braces: 1 5/8 inches OD / 1.83 lbs/ft.
- F. Size swing gate posts per engineering requirements for each gate location.

### **2.04 INDUSTRIAL SWING GATES**

- A. General: Comply with ASTM F 900 for single and double swing gate types.
1. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1043 and ASTM F 1083 for materials and protective coatings. Provide PVC coating at all gates / gate components to match Fabric and Framing requirements above.

- B. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 900 and the following:
  - 1. Gate Height: As indicated on Drawings.
  - 2. Leaf Width: As indicated on Drawings.
  - 3. Frame Members: Size per engineering requirements for each gate.
- C. Frame Corner Construction: Welded or assembled with corner fittings.
- D. Hardware at garage: Latches permitting operation from both sides of gate, hinges, center gate stops and keepers for each gate leaf more than 5 feet wide. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate.
  - 1. Hinges: Non-lift-off type, offset to permit 180 degree gate opening. Provide 1 ½” pair of hinges for each leaf over 6’0” nominal height.
  - 2. Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch.
  - 3. Padlocks by Owner.
- E. Hardware at Evidence Storage and Amory: Hardware and Card Reader at this location by Door Hardware and Security.

## 2.05 CHAIN LINK SLIDE GATES

- A. Chain link slide gates as specified in Section 02 83 15.

## 2.06 ACCESSORIES

- A. Chain link accessories: ASTM F 626 provide items required to complete fence system. Galvanize ferrous metal items and finish to match framing. ***Accessories at interior locations do not require PVC coating.***
- B. Post caps: PVC coated formed steel, weather tight closure cap for tubular posts. Provide one cap for each post. Where top rail is used, provide tops to permit the passage of top rail.
- C. Top rail and brace rail ends: PVC coated pressed steel per ASTM F 626, for connection of rail and brace to terminal posts.
- D. Sleeves: Lengths of top rails to be connected using 6” PVC coated sleeves that allow for expansion or contraction of the rail.
- E. Tie Wire: PVC coated 9 gauge galvanized steel for attachment of chain link fabric to posts and rails. Hog rings attach fabric to tension wire to be 12-1/2 GA.
- F. Brace and tension (stretcher bar) bands: PVC coated pressed steel.
- G. Tension (stretcher) bars made of one continuous piece of steel or aluminum, 3/16” x 3/4”. Provide one bar per end or gate post and two bars per corner or pull post. 0.192” diameter core tension wire with tensile strength of 75,000 psi.
- H. Tension Wire: PVC applied to metallic coated steel wire: Per ASTM F 1664 Class 2A, 6 gauge, 0.192” diameter core wire with tensile strength of 75,000 psi.
- I. Truss rods and tighteners: PVC coated steel rods with minimum diameter of 5/16”. Capable of withstanding a tension of minimum 2,000 lbs.

- J. Nuts and Bolts are galvanized but not vinyl coated. Cans of PVC touch of paint to be used to color nuts and bolts.

## **2.07 SETTING MATERIALS**

- A. Concrete: Minimum 28 day compressive strength of 3,000 psi. See also Civil and Structural requirements.

## **PART 3: EXECUTION**

### **3.01 EXAMINATION**

- A. Verify areas to receive fencing are completed to final grades and elevations.
- B. Ensure property lines and legal boundaries of work are clearly established.

### **3.02 CHAIN LINK FENCE FRAMING INSTALLATION**

- A. Install chain link fence in accordance with ASTM F567 and manufacturer's instructions.
- B. Locate terminal post at each fence termination, or every 500 feet, or change in horizontal or vertical direction of 15 inches or more.
- C. Space framing per engineering requirements but no more than 8'-0" O.C. maximum.
- D. Concrete set terminal and gate posts: Drill holes in firm, undisturbed or compacted soil. Holes shall have a diameter of 4 times greater than the outside dimension of post, and depths approximately 6 inches deeper than post bottom. Excavate deeper as required for adequate support in loose and soft soils, and for posts with heavy lateral loads. Set post bottom 42" below surface. Place concrete around posts in a continuous pour. Trowel finish around posts. Slope to direct water away from posts.
- E. Check each post for vertical and top alignment, and maintain in position during placement and finishing operations.
- F. Tension wire: provide tension wire at bottom of fabric. Install tension wire before stretching fabric and attach to each post with ties. Secure tension wire with 12 ½ gauge hog rings at 24" on center.
- G. Top rail: Install lengths 21'-0". Connect joints with sleeves for rigid connections for expansion / contraction.
- H. Install fence locations within building by bolting posts to concrete slab. Size bolts and flanges per manufacturer's recommendations for fencing size and height.

### **3.03 CHAIN LINK FENCE FABRIC INSTALLATION**

- A. Fabric: Install fabric on security side and attach so that fabric remains in tension after pulling force is released. Leave approximately 2 inches between finish grade and bottom selvage. Attach fabric with wire ties to line posts at 15 inches on center and to rails, braces, and tension wire at 24 inches on center.
- B. Tension (stretcher) bars: Pull fabric taught; thread tension bar through fabric and attach to terminal posts with bands spaced maximum of 15 inches on center.

### **3.04 GATE INSTALLATION**

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

### **3.05 ACCESSORIES**

- A. Tie Wires: Bend ends of wire to minimize hazard to persons and clothing.
- B. Fasteners: Install nuts on side of fence opposite fabric side for added security.

### **3.06 CLEANING AND ADJUSTING**

- A. Gate: Adjust gate to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.
- C. Clean up debris and unused material, and remove from site.

**END OF SECTION 02 83 10**

## SECTION 03 4100

### PRECAST STRUCTURAL CONCRETE

#### PART 1 GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings, Details of Construction, and General Provisions of the Contract, including General and Supplementary Conditions and Division - 1 Specification Sections, apply to this Section.

##### 1.02 SECTION INCLUDES

- A. Spandrels.
- B. Wall panels
- C. Grout packing.

##### 1.03 RELATED SECTIONS

- A. Section 01 4533 - Structural Testing And Special Inspection
- B. Section 03 2100 - Concrete Reinforcement
- C. Section 03 3000 - Cast-in-Place Concrete

##### 1.04 REFERENCE STANDARDS

- A. ACI 301-10 - Specifications for Structural Concrete for Buildings; 2010
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2008.
- C. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- D. ASTM A 185/A 185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- E. ASTM A307 - Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength; 2002
- F. ASTM A 416/A 416M - Standard Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete; 2006.
- G. ASTM A496 - Steel Welded Wire Reinforcement, Deformed, for Concrete; 2002
- H. ASTM A 497/A 497M - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete; 2007.
- I. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2007.
- J. ASTM B633 - Electrodeposited Coatings of Zinc on Iron and Steel; 1998el
- K. ASTM B766 - Electrodeposited Coatings of Cadmium; 2003
- L. ASTM C 150 - Standard Specification for Portland Cement; 2007.
- M. ASTM C881 - Epoxy-Resin-Base Bonding Systems for Concrete; 2002
- N. ASTM F1554 - Anchor Bolts, Steel 36, 55, and 105-ksi Yield Strength; 1999
- O. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2008.
- P. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; American Welding Society; 2005.
- Q. PCI MNL-116 - Manual for Quality Control for Plants and Production of Structural Precast Concrete Products; Precast/Prestressed Concrete Institute; 1999, Fourth Edition.
- R. PCI MNL-120 - PCI Design Handbook - Precast and Prestressed Concrete; Precast/Prestressed Concrete Institute;

Sixth Edition, 2004.

- S. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete; Precast/Prestressed Concrete Institute; 1988, Second Edition.
- T. PCI MNL-135 - Tolerance Manual for Precast and Prestressed Concrete Construction; Precast/Prestressed Concrete Institute; 2000.
- U. International Building Code (IBC) - 2009

#### **1.05 DESIGN REQUIREMENTS**

- A. Conform to ACI 318 and MSBC for design load and construction requirements applicable to work of this section.
- B. Design components to withstand dead loads and design loads in the configuration indicated on the drawings and as follows:
  - 1. Maximum Allowable Wind Load Deflection of Wall Assemblies:  $1/240$  span.
  - 2. Calculate structural properties of framing members in accordance with ACI 318.
- C. Design system to accommodate construction tolerances, deflection of other building structural members and clearances of intended openings.

#### **1.06 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene a pre-installation conference one week prior to commencing work of this section.
  - 1. Instruct others when field cutting is required for openings that are 8 inches and smaller.
  - 2. Discuss limitations, if any, on field cutting of openings.
- B. Design loadings shall include initial handling and erection conditions and all dead, wind, and live loads specified on the contract documents including partition weights given on the Drawings. Precast supplier shall review architectural and structural drawings to verify adequacy of precast members supporting partitions and other non-structural elements near openings, at edges, etc.
- C. Design deviations will be permitted only with written approval of the Engineer. Any proposed deviations must include complete design calculations and drawings.

#### **1.07 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings
  - 1. Erection drawings: Include member piece marks with size and shape of each member; plans/elevations showing all products furnished by supplier; sections/details showing connections and cast in items; joints and openings between members and structure; description of all loose cast-in field hardware; locations of field installed anchors, fire ratings of all members; and all dead, live and other applicable design loads.
  - 2. Include anticipated camber and deflection of precast members where camber or deflection exceeds  $L/360$  or  $1/2"$ , and where camber and deflection vary more than  $1/4"$  between adjacent units.
  - 3. Production drawings on request. Include elevation view of each member, sections/details to show quantity and position of reinforcing, anchors, and inserts, handling devices, dimensions and finished, strand prestress, concrete strength, and estimated camber.
- C. Calculations
  - 1. Submit calculations for wall panels, spandrels, and connections.
  - 2. Review of calculations shall be for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Contractor remains responsible for correctness and completeness of submitted calculations.



3. Calculations to be certified by a professional engineer licensed in the State in which the Project is located.
- D. Submit sufficient evidence to the Structural Engineer, on request, that all persons performing shop and field welding are currently certified by AWS for the procedures they are performing.
- E. Precast plant certification on request.

#### **1.09 QUALITY ASSURANCE**

- A. Designer Qualifications: Design precast concrete members under direct supervision of a Professional Structural Engineer experienced in design of precast concrete and licensed in the State in which the Project is located.
- B. The precast concrete manufacturing plant shall be certified by the Precast/Prestressed Concrete Institute, Plant Certification Program, in categories *C1A* ~~*C3A*~~ and ~~*C4A*~~, at the time of bidding.
- C. Perform work of this section in accordance with requirements of PCI MNL-116, PCI MNL-120, PCI MNL-123, and PCI MNL-135.
- D. Fabricator Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of experience.
- E. Erector Qualifications: Company specializing in erecting products of this section with minimum 5 years of experience.
- F. Welder Qualifications: Qualified within previous 12 months in accordance with AWS D1.1 and AWS D1.4.

#### **1.10 DELIVERY, STORAGE, AND HANDLING**

- A. Handle precast members in position consistent with their shape and design. Lift and support only from support points.
- B. Lifting or Handling Devices: Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.
- C. Protect members to prevent staining, chipping, or spalling of concrete.
- D. Mark each member with date of production and final position in structure.
- E. Storage:
  1. Store all units off ground. Place stored units so the identification marks are discernible.
  2. Separate stacked members by battens across full width of each bearing points.
  3. Stack so that lifting devices are accessible and undamaged. Do not use upper member of stacked tier as storage area for shorter member or heavy equipment.

#### **1.11 PROJECT CONDITIONS**

- A. Coordinate the work of framing components not pre-tensioned but associated with the work of this section.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. Cement: Gray portland type, conforming to ASTM C 150, Type I.
- B. Aggregate, Sand, Water, Admixtures: Determined by precast fabricator as appropriate to design requirements and PCI MNL-116.
- C. Fly ash: ASTM C618, type C or F. Use only on precast members not exposed to view with Architect/Engineer's approval.

#### **2.02 REINFORCEMENT**

- A. Tensioning Steel Tendons: ASTM A 416/A 416M, Grade 250 (1725); seven-wire stranded steel cable;

low-relaxation type; full length without splices; uncoated.

- B. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420).
  - 1. Deformed billet-steel bars.
- C. Steel Welded Wire Reinforcement: ASTM A 185/A 185M plain type or ASTM A 497/A 497M deformed type; in flat sheets; unfinished.

### 2.03 ACCESSORIES

- A. Connecting and Supporting Devices: Plates, angles, items cast into concrete, and inserts conforming to PCI MNL-123, and as follows:
  - 1. Structural Steel Material: Carbon steel conforming to ASTM A 36/A 36M, or ASTM A500 Grade B..
  - 2. Anchor Bolts: ASTM F1554
  - 3. Bolts, Nuts and Washers: High strength steel type recommended for structural steel joints.
  - 4. Welded headed studs: AWS D1.1-Type B
  - 5. Deformed bar anchors: ASTM ASTM A496
  - 6. Welding electrodes: E70XX
  - 7. Interior Finish: Prime painted, except where device surfaces will be in contact with concrete or will require field welding.
- B. Grout:
  - 1. Non-shrink, non-metallic, minimum compressive strength of 10,000 psi at 28 days.
  - 2. Epoxy-Resin Grout: Two components mineral-filled epoxy-resin: ASTM C881.
- C. Bearing Pads
  - 1. Random-Oriented, Fiber-Reinforced Elastomeric Pads: Preformed, randomly oriented synthetic fibers set in elastomer. Surface hardness of 70 to 90 Shore A durometer. Capable of supporting a compressive stress of 3000 psi (20.7 MPa) with no cracking, splitting or delaminating in the internal portions of the pad. Masticord: JVI ([www.jvi-inc.com](http://www.jvi-inc.com)) or approved equal.
  - 2. Elastomeric Pads: AASHTO M 251, plain, vulcanized, 100 percent polychloroprene (neoprene) elastomer, 50 to 70 Shore A durometer per ASTM D 2240, minimum tensile strength 2250 psi per ASTM D 412..
- D. Insulation: Manufacturer's standard extruded polystyrene to achieve a wall R-value of 15 or greater – R-Value of 5 per inch minimum *for 3 inches of insulation in wall panel (see Detail of Construction 31019).*
- E. Wydth Connectors: Delta Ties by Dayton Superior *or equal*.
- E. Prime Paint: Zinc rich alkyd type.

### 2.04 FABRICATION

- A. Conform to fabrication procedures specified in PCI MNL-116.
- B. Maintain plant records and quality control program during production of precast members. Make records available upon request.
- C. Ensure reinforcing steel, strands, anchors, inserts, plates, angles, and other cast-in items are embedded and located as indicated on Drawings. Keep strands or wires clean of substances harmful to bonding of strand to concrete.
- D. Tension reinforcement tendons as required to achieve design load criteria.
- E. Provide required openings with a dimension larger than 8 inches and embed accessories provided under other sections of the specifications, at indicated locations.
- F. Exposed Ends at Stressing Tendons: Fill recess with non-shrink grout, trowel flush.

- G. Provide AWS certified welders for all shop welding.
- H. Wall Panels:
  - 1. Exterior: Provide reveal recesses and joints as shown on the Drawings. See Drawings for color and texture.
  - 2. When openings in precast panels are shown on drawings, provide color and finish throughout depth of panel at all sides of opening as indicated.
  - 3. Coordinate electrical device location rough-in with Electrical Contractor.
- I. Panel Identification:
  - 1. Mark each precast panel to correspond to identification mark on shop drawings for panel location.
  - 2. Mark each precast panel with date cast.

## **2.05 FINISHES**

- A. Ensure exposed-to-view finish surfaces of precast concrete members are uniform in color and appearance.
- B. Cure members under identical conditions to develop required concrete quality, and minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
- C. Finish members to PCI MNL-116 Standard grade.
- E. Exposed-to-View Finish at interior of Garage: Grade A finish – Surface holes or bubbles over 1/4 inch filled with matching cementitious paste, fins or protrusions removed and surface ground smooth.
- F. Power Trowel Finish: Smooth steel-trowel finish unformed surfaces. Consolidate concrete, bring to proper level with straightedge, float and trowel to a smooth, uniform finish. Surface to be painted or have tile installed – see Room Finish Schedule for finishes.

## **2.06 FABRICATION TOLERANCES**

- A. Conform to fabrication tolerances specified in PCI MNL-135.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that site conditions are ready to receive work and field measurements are as shown on Drawings.
- B. Verify that supporting structure is ready to receive work, including all bearing surfaces, location and alignment of inserts and anchorage items cast in the structure.
- C. Notify the General Contractor in writing of required corrections, if unsatisfactory conditions or deficiencies are observed. Do not begin work until corrections are made

### **3.02 ERECTION**

- A. Erect members without damage to structural capacity, shape, or finish. Replace or repair damaged members.
- B. Align and maintain uniform horizontal and vertical joints, as erection progresses.
- C. Maintain temporary bracing in place until final support is provided. Protect members from staining.
- D. Provide temporary lateral support to prevent bowing, twisting, or warping of members.
- E. Adjust differential camber between precast members to tolerance before final attachment.
- F. Install bearing pads.
- G. Level differential elevation of adjoining horizontal members with grout to maximum slope of 1:12.
- H. Set vertical units dry, without grout, attaining joint dimension with lead or plastic spacers.

- I. Secure units in place. Perform welding in accordance with AWS D1.1.
- J. Cooperate with other trades in permitting insertion of anchors, hangers, electrical outlets, etc.
- K. Remove erection devices or cut off flush with the surface of the member.

### **3.03 TOLERANCES**

- A. Erect members level and plumb within allowable tolerances.
- B. Conform to PCI MNL-135 for erection tolerances.
- C. When members cannot be adjusted to conform to design or tolerance criteria, cease work and advise Architect. Execute modifications as directed.

### **3.04 FIELD OPENINGS AND ANCHORS BY OTHER TRADES**

- A. Field cut openings smaller than 8" in all directions using power saws or core drills. Receive written approval of opening locations by the precast prestressed manufacturer and Architect before cutting. Repair all unsightly spalls or chips caused by cutting.
- B. Receive approval of type and location of field installed fasteners from precast prestressed manufacturer and Architect. Anchors shall not contact prestressing steel.

### **3.05 FIELD QUALITY CONTROL**

- A. Structural Testing and Special Inspection
  - 1. Comply with the requirements of Section 05 1200 - Structural metal Framing.
  - 2. The Owner will employ a Special Inspector for the following:
    - a. Visually inspect welds connecting embeds to structural steel supporting members.
    - b. Visually inspect welds at all connections between precast members.

### **3.06 PROTECTION**

- A. Protect members from damage caused by field welding or erection operations.

### **3.07 CLEANING**

- A. Clean weld marks, dirt, or blemishes from surface of exposed members.
- B. Clean and prime exposed steel and welds immediately after erection.

**END OF SECTION**

## SECTION 07 21 29

### SPRAY POLYURETHANE FOAM INSULATION

#### 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. Section includes:

1. Furnish and install all labor, materials, tools and equipment necessary for the application of spray-polyurethane building-envelope insulation system noted as spray foam insulation.
2. Provide insulation to a thickness as noted on the Drawings, with at least a .70 perm rating unless noted otherwise.

- B. Related work specified in other sections:

1. Structural Steel studs – Section 05 40 00.
2. Metal studs, thermal barrier – Section 09 21 16
3. Gypsum Sheathing – Section 06 16 43.

##### 1.03 REFERENCES

- A. The following specifications and standards are incorporated by reference. Where provisions of these Project Specifications are at variance with those reference specifications, the maximum criteria or requirements shall govern.

1. ASTM C 1029 – Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.
2. ASTM C 518 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
3. ASTM D 1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
4. ASTM D 1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
5. ASTM D 2856 – Standard Test Method for Open-Cell Content of Rigid Cellular Plastics by the Air Pycnometer.
6. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
7. ASTM E 96 – Standard Test Methods for Water Vapor Transmission of Materials.
8. ASTM E 119 – Standard Test Methods for Fire Test of Building Construction Materials.

9. API bulletin AX-119 – MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal; Alliance for the Polyurethanes Industry(API), American Plastics Council.
10. SSPC-SP 6 – Commercial Blast Cleaning (Part of Painting Manual, Volume 2); Steel Structures Painting Council.

#### **1.04 QUALITY ASSURANCE**

- A. Foam and Coating Manufacturer Qualifications: Firms which can show evidence of ability to manufacture the products specified and sufficient financial resources and manufacturing facilities to furnish materials on this project; evidence required includes references, past project descriptions, specimen warranty, product data, test data, and code approvals.
- B. Installer Qualifications: A firm with experience installing insulation systems of the type specified.
  1. Show contractor level *use of foam manufacturers, products, and techniques accredited* by Spray Polyurethane Foam Alliance Accreditation Program.
  2. Approved or certified by the foam manufacturer as qualified to install the specified system.
  3. Provide information concerning projects similar in nature to the one proposed including location and person to be contacted. ***Contractors must provide a list showing a minimum of 5 years of experience.***
- C. Manufacturer Field Representation: Provide qualified representatives of the foam and coating manufacturers to monitor and inspect the installation of their products.
- D. Independent Inspection: Provide inspection of the installation by a qualified SPFA or RCI inspector member.

#### **1.05 SUBMITTALS**

- A. Submit under provisions of Section 01 33 00.
  1. Product Data: Manufacturer's data on products to be installed.
    - a. Application or installation instructions.
    - b. Safety and handling instructions for storage, handling and use of the materials.
  2. Certifications: For manufacturers who are not listed in specification and published data sheets do not indicate compliance with all specification requirements, provide letter of certification that all products comply with the specification requirements; include primers (if required), foam, and coatings.
  3. Qualification Statements:
    - a. Manufacturer qualifications.
    - b. Installer qualifications.
    - c. Independent inspector qualifications.
  4. Manufacturer Authorized Installer.
    - a. Within 30 days of bid award, submit letter from manufacturer that contractor is manufacturer authorized.

5. Applicator's Field Quality Control Procedures: Written description of procedures to be utilized to insure proper preparation and installation of foam, coatings, detail work and follow-up inspection.

**1.06 DELIVERY, STORAGE AND HANDLING**

- A. Provide materials packaged in the manufacturer's original, tightly sealed containers or unopened packages, clearly labeled with the manufacturer's name, product identification, safety information, and batch or lot numbers where appropriate.
- B. Store materials out of the weather and out of direct sunlight in locations where the temperatures are within the limits specified by the manufacturer.
- C. All materials shall be stored in compliance with the local fire and safety requirements.

**1.07 PROJECT CONDITIONS**

- A. Comply with the manufacturer's instructions and recommendations as to handling and safety procedures.
- B. Do not install insulation if substrate or air temperature is below 40° F or temperature is within 5° of the dew point.
  1. Heating can be done to bring up surface temperatures recommended by manufacturer using indirect fire propane heaters, radiant (surface) heaters or #2 fuel oil heaters 24 to 72 continuous hours before applying foam.

**PART 2: PRODUCTS**

**2.01 MANUFACTURERS**

- A. Provide products furnished by BASF Polyurethane Foam Enterprises, LLC, Tel: 1-800-888-3342, www.basf-pfe.com. Products by Bayer Material Science and Icnene Corporation, as well as equivalent products that meet these specifications are acceptable.

**2.02 PRODUCTS**

- A. Foam: Spraytite 178 for walls, floors, and ceilings sprayed-in-place two-component closed-cell polyurethane made by combining an isocyanate (A) component with a polyol (B) component, with the following physical characteristics:

1. CLOSED CELL TYPE POLYURETHANE FOAM (AS CURED)

<u>PROPERTIES</u>	<u>ASTM TEST</u>	<u>VALUE</u>
ISO: Resin Mix Ratio	-----	1:1 (vol:vol)
Density, Core	D-1622	Nominal 2.0 (pcf@2" lift)
Compressive Strength	D-1621	22 psi
Tensile Strength	D1623 Type C	28 psi
Closed Cell Content	D-6226	>90%
R-Value	C-518	6.1 per inch aged
Permeance	E96	1.82 perms
Permeability	E96	1.82 perms per inch @ 1" SPF
	E96	0.91 perms per inch @ 2" SPF
	E96	0.61 perms per inch @ 3" SPF
	E96	0.46 perms per inch @ 4" SPF
Air Permeance	E 2178-01	0.000025 L/s/m <sup>2</sup> @ 75 Pa

Air Leakage	E 283-99	0.000025 L/s/m <sup>2</sup> @ 75 Pa
Dimensional Stability		
Dry Age 28 Days (158°F)	D2126	+8 to +12% Volume Change
Freeze Age 14 Days (-20°F)	D2126	+0.07 to -0.21% Volume Change
Flame Spread Index	E-84	25
Smoke Development Index	E-84	350

- B. Substrate Primers (if required). The primer to be applied must be specifically selected for the given substrate to be primed and must be compatible with the sprayed polyurethane foam.
1. Wood: chlorinated rubber, modified alkyds, others.
  2. Steel: modified alkyds, epoxy, acrylics, others (typically including rust inhibitors).
  3. Galvanized: vinyl copolymer, “wash primer”, modified alkyds, others.
  4. Concrete/masonry: chlorinated rubber, vinyl copolymer acrylic, asphaltic, other.

### **PART 3: EXECUTION**

#### **3.01 GENERAL**

- A. The products intended for use in the building-envelope insulation system must be applied within the manufacturer’s guidelines for temperature, humidity and other atmospheric conditions. In addition, they must be sequenced so as to take into consideration substrate preparation.

#### **3.02 SUBSTRATE PREPARATION**

- A. Surface preparation for those substrates that are to be insulated and statements regarding the selection of materials related to the successful performance of the sprayed polyurethane foam insulation are outlined below.
1. Wood.
    - a. Plywood shall contain no more than 18% water, as measured in accordance with ASTM D-4449 and 444084.
    - b. Most untreated and unpainted wood surfaces need not be primed. The spray polyurethane foam can be applied directly to the dry wood. Priming may be required in certain instances. See the sprayed polyurethane foam manufacturer for specific details.
  2. Steel.
    - a. Primed: If the primed metal surface is free of loose scale, rust, weathered or chalking paint; it can be cleaned using vacuum equipment and hand or power tools to remove loose dirt. Grease, oil, or other contaminants shall be removed with proper cleaning solutions.
    - b. Previously Painted: Clean the painted metal surface using hand or power tools to remove loose scale and dirt. Grease, oil, and other surface contaminants can be cleaned using a power wash technique.
    - c. Galvanized: When required, clean galvanized steel as recommended by the primer manufacturer.
    - d. Unpainted Steel: Clean as recommended by primer manufacturer in order to prepare the steel surface for the primer.
  3. Concrete and Masonry.
    - a. Must cure for at least 28 days, and loose dirt and any other contaminants removed.
  4. Sheathing Board.
    - a. Prime sheathing boards if required, prior to the application of sprayed polyurethane foam.



- B. Remove loose dirt, dust and debris by using compressed air, vacuum equipment or brooming. Remove oil, grease, form release agents, laitance, and other contaminants using proper cleaning solutions. Do not wash wood or porous materials with water.

### **3.03 PRIMER APPLICATION**

- A. When required, the primer shall be applied to the properly prepared substrate in accordance with the manufacturer's guidelines so as to achieve a minimum thickness of dry milk. The primer shall be allowed to cure a minimum of hours prior to application of sprayed polyurethane foam or other products.

### **3.04 FOAM APPLICATION**

- A. Do not begin application of foam until all preparation requirements have been completed.
- B. Do not apply foam when the air temperature or surface temperature is below that specified by the manufacturer for ambient air and substrate. Do not apply foam when temperature is within 5 degrees F of the dew point.
  - 1. If temperatures are near manufactures suggested limits for substrate types, apply flash coat to test area. Check test area for proper adhesion and visual properties including rise, cream time and tack-free time.
- C. Apply foam in accordance with the manufacturer's specifications and instructions and as follows.
  - 1. Apply foam with minimum pass thickness of ½ inch and maximum pass thickness of 2 inches, unless greater pass thickness is acceptable to foam manufacturer.
  - 2. Apply foam uniformly over the entire surface with a tolerance of plus ¼ inch per inch of thickness minus 0 inch, except where variations are required to conform to building structure or to insulate around projections, door jambs, and corners.
  - 3. Complete the full thickness of foam in any area prior to the end of each day. If the full thickness is not completed in one day, prepare the surface in accordance with the recommendations of the manufacturer.
  - 4. Allow the foam surface to cure sufficiently.
  - 5. If necessary apply flash coat to substrate as needed for proper product application and reactivity.
- D. Repair damage and defects to the surface prior to the thermal barrier application by others.

### **3.05 CLEAN UP**

- A. Remove overspray from face of studs, finished surfaces and other surfaces that will inhibit the work of other trades.
- B. Properly dispose of waste materials and containers, in compliance with the manufacturer's guidelines and/or appropriate regulating agencies.

**END OF SECTION 07 21 29**

## SECTION 07 53 25

### EPDM ADHERED ROOFING

#### 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. Section includes:

1. Fully adhered surfaced EPDM roofing system.
2. Thermal barrier (when required to achieve UL/FM standards as required by building code), roof insulation, EPDM uncured flashing, adhesive, splicing cement, lap sealant, and all accessories and labor necessary for a complete, weathertight installation.

- B. Related work specified in other sections:

1. Wood nailers, curbs and blocking - Section 06 10 53.
2. Flashings – Division 7.
3. Sheet metal coping and flashing - Section 07 62 00.

##### 1.03 QUALITY ASSURANCE

- A. Installer: Currently approved, in writing, by manufacturer of system prior to awarding of roofing contract.

##### 1.04 PRE-ROOFING CONFERENCE

- A. Hold roofing pre-construction conference at project site not more than one week prior to beginning roofing.

- B. Attendance is mandatory for roofing contractor, roofing foreman, roofing manufacturer's representative, Architect's representative, Owner's representative, sheet metal subcontractor, and anyone else responsible for items penetrating or in contact with the roof.

- C. Agenda:

1. Review in detail Architect's specifications, roof plans and all roof and flashing details.
2. If a manufacturer's specification is used, review and resolve all deviations or differences from Architect's specifications.
3. If Factory Mutual or Underwriters Laboratories requirements are part of specification, review and understand these requirements, and resolve all conflicts between the FM or UL specifications and Architect's/manufacturer's specifications.
4. Review roof plans; for slope, deck type, drainage, membrane attachment, expansion joints flashing and details. Resolve all conflicts between what is considered good roofing practice and specifications.

5. Review proposed roofing system and recommended work practices for its installation.
6. Study all plans to determine whether different roof areas have different requirements.
7. Designate which areas on site will be available for use as storage and working areas.
8. Review procedure to be followed to provide proper protection of roof system during and after construction of roof.
9. On occupied structures, review means and methods to be utilized to maintain structure weathertight during reroofing.

## **1.05 SUBMITTALS**

### **A. Submit in accordance with Section 01 33 00.**

1. Installer certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system.
2. Manufacturer's recommended methods of installation and data to demonstrate compliance with specified requirements.
3. Shop Drawings:
  - a. Document the following information on plans through coordination with other trades and field verification:
    1. Camber of roof structure.
    2. Roof structure slope and elevations of deck.
    3. Location of roof and overflow drains.
    4. Elevations of overflow scuppers relative to roof deck.
    5. Indicate potential drainage problem areas due to insulation layout, camber, slope of deck and roof/overflow drain locations.
    6. Test reports indicating need for thermal barrier: UL 1256 or FM 4450.
  - b. Plans indicating roof size, location and type of penetrations, roof insulation make-up and layout indicating slopes and crickets and coordination/field verification information.
  - c. Base flashings and membrane terminations.
  - d. Penetration details
  - e. If deviations or modifications to indicated details are necessary or desired, clearly indicate for architects review.
4. Samples: If insulation manufacturer is different than roofing manufacturer, submit sample insulation together with manufacturer's written acceptance.
5. Provide Architect with roofing manufacturers representative's inspection report after installation.
6. If roof insulation is being proposed as a substitution for a vapor barrier, submitted documentation confirming insulation has a perm rating of less than one.

**B. At Substantial Completion, submit final warranty and letter from manufacturer stating warranty has been activated.**

**C. Maintenance Data: Submit in accordance with Section 01 78 23.**

## **1.07 PRODUCT HANDLING, STORAGE AND DELIVERY**

- A. Deliver material including insulation, in manufacturer's protective containers, and comply with manufacturer's instructions for storage and handling.
- B. Deliver materials requiring fire resistance classification and/or flame spread rating with labels intact.
- C. All materials must be protected from damage during transit, handling, storage and installation.
- D. Store all materials on clean raised platforms with weather protective covering. Store membrane rolls flat on pallets.
- E. Adhesives and curable materials shall be stored at temperatures above 50°F, but not exceeding 80°F.
- F. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined in the MSDS published by the manufacturer.
- G. Do not store concentrated loads on roof deck.
- H. All materials determined to have been damaged shall be replaced with new material.

## **1.08 JOB CONDITIONS**

- A. Examine substrate and conditions under which elastic sheet roofing work is to be performed. Do not proceed with work until all unsatisfactory conditions have been corrected.
- B. Proceed with installation of elastic sheet roofing only after substrate construction has been completed, and after penetrating components have been installed, so that membrane will not be penetrated or damaged by subsequent work.
- C. Weather conditions: Proceed with elastic sheet roofing work only when weather conditions comply with manufacturer's recommendations, and will permit materials to be applied and cured in accordance with those recommendations. Do not exceed temperature limitations recommended by roofing materials manufacturer.

### **1. Cold Weather Installation:**

- a. The following are guidelines for EPDM installation when temperatures fall below 40 degrees Fahrenheit. Consult roofing manufacturer for more specific requirements.
  - 1) Store all adhesives, tapes and sealants at room temperatures (60 to 80 degrees F) prior to application.
  - 2) Stir adhesives thoroughly before and during application.
  - 3) Be conscious of changes in adhesive, such as thickening and return to heated environment.
  - 4) Use roofing sheet sizes with the least amount of factory folds.
  - 5) Do not apply adhesive when combinations of temperatures and humidity cause water condensation on the adhesive during the drying process.
  - 6) Prevent adhesive, tapes and sealant materials from freezing at all times.
- D. Only as much new roofing as can be made weather tight shall be installed each day. This includes all flashing work.
- E. Any substrate to receive new insulation, membrane or flashing shall be thoroughly dry. Existing wet materials must be removed prior to the application of the new membrane system. Should surface moisture occur on the decking, the contractor shall provide adequate equipment to dry the substrate.
- F. Prior to and during application, the contractor shall ensure that all dirt, debris, and dust be removed from surfaces to be roofed for both new and reroofing substrates.

- G. Precautions shall be taken to prevent wind blow-off or wind damage during the course of the roofing application. This may necessitate additional securement of temporary construction.
- H. The contractor shall verify and ensure that all roof drain lines are unblocked before starting work. If any drain blockages are found, they shall be reported in writing to the Architect.
- I. Temporary waterstops shall be installed at the end of each work day or if inclement weather conditions dictate. These temporary waterstops shall be removed at the start of the next work day and disposed of properly.
- J. Do not install the roofing membrane in direct contact with any product containing asphalt, coal tar pitch, creosote or other harmful materials. Consult the manufacturer for special installation requirements.
- K. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oil, animal oil, animal fat, coal tar pitch, etc. or direct steam venting to come into direct contact with the roofing membrane. Contact the manufacturer for recommendations if such conditions exist.
- L. All work shall be scheduled and executed without exposing interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all reasonable risks. Arrange work sequences to avoid use of newly constructed roofing for storage, walking surfaces and equipment movement. Contractor shall provide all necessary protection and barriers to segregate the work areas and prevent damage to adjacent areas. If excessive foot traffic over newly installed membrane is necessary, the Contractor shall provide plywood to prevent damage.
- M. Any unusual or concealed conditions discovered during the course of the work should be immediately reported in writing to the Architect.
- N. When a system is specified to meet an Underwriter's Laboratory (UL) or an FM Global (FM) rating, all materials used in the system must be properly labeled and/or approved for the particular rating/system.
- O. Adhesives, calking materials, primer wash and sealants contain ingredients which can be toxic and very flammable. Use these products only in fully ventilated areas. Avoid breathing vapor and do not use near heat, sparks, or open flames. Do not smoke while using these materials or when in areas near them.

#### **1.09 WARRANTY**

- A. Manufacturer's warranty includes materials and workmanship to maintain roof in watertight condition.
- B. Provide single source, single responsibility warranty including membrane, insulation, bituminous flashing, walkways, expansion joint covers, and coping/fascia.
- C. Provide 20 year No Dollar Limit total roofing system Warranty, from manufacturer; warranty to run from date of substantial completion.
- D. Submit in accordance to Section 01 78 23.

#### **1.10 SITE CONDITIONS**

- A. Building space directly under roof area covered by this specification will be utilized by on-going operations.
  - 1. Do not interrupt Owner operations.
- B. Access to roof from exterior only.

## **PART 2: PRODUCTS**

### **2.01 MANUFACTURER**

- A. System by Johns Manville, [www.jm.com](http://www.jm.com), is specified. All components are to be supplied or approved by roofing manufacturer to maintain warranty.
- B. Equivalent products by the following manufacturers are acceptable:
  - 1. Carlise SynTec, [www.carlise-syntec.com](http://www.carlise-syntec.com).
  - 2. Firestone Building Products, [www.firestonebpe.com](http://www.firestonebpe.com).
  - 3. Versico Roofing Systems, [www.versico.com](http://www.versico.com)

### **2.02 ROOFING SYSTEM**

- A. # SE6A-(T) Single Ply, Fully Adhered, 60 mil EPDM membrane.
- B. Roofing system to carry a Class B fire rating.
- C. Entire roofing system must pass UL 1256 / FM 4450
- C. Related Materials:
  - 1. Provide products for use with specified roofing system including, but not limited to tape primer/wash, bonding cement, lap cement, seam tape, peel and stick tape, flashing, lap caulk, sealing mastic, pourable sealer, prefabricated flashing, termination bar, fasteners/anchors, and pipe boots.
  - 2. Walkway Pads: 30" x 30" x 3/8" EPDM.

### **2.04 THERMAL BARRIER**

- A. Provide ½" USG Securock Glass-Mat Roof Board or G.P. DensDeck thermal barrier.
- B. Note: Thermal barrier may be omitted if UL 1256 or FM 4450 assembly test reports indicate such. Refer to IBC 2603.4.1.5.

### **2.05 INSULATION**

- A. Insulation (Base and tapered): Polyisocyanurate with Long-Term Thermal Resistance Value of ~~5.7~~ 5.0 per inch (~~R-Value of 26.6 at 4 1/2" thickness~~) and faced with a universal fiber glass reinforced facer as approved by roofing manufacturer to maintain warranty. (ASTM C1289).
  - 1. Thickness for base layer as shown on drawings.
- B. Provide ½" USG Securock Glass – Mat Board or G.P. DensDeck thermal barrier if required by manufacturer to meet UL or FM requirements.
- C. Receive roofing manufacturer's written approval of proposed insulation materials.

### **2.07 MISCELLANEOUS**

- A. Pipe and Conduit Supports: Base of UV resistant rubber or EPDM with 14 gauge galvanized steel strut channel attached to top. Size as required to support pipes/conduits. Provide galvanized strut clamps to anchor pipes/conduits.

## **PART 3: EXECUTION**

### **3.01 SUBSTRATE PREPARATION**

- A. Comply with sheet membrane manufacturer's instructions for preparation of substrate to receive elastomeric sheet roofing. Clean substrate of dust, debris and other substances detrimental to EPDM roofing work.
- B. Do not begin the Work of this Section until all existing conditions have been accepted. Report unsatisfactory conditions to Contractor, Architect in writing.
- C. Conform to cold weather requirements as specified in Part 1 when conditions warrant.
- D. Verify proper placement of roof drainage systems, back-up overflow systems in relationship to finished roof elevations; this includes:
  - 1. Proper placement of roof drains, roof drain clamps. Finished roof surface elevation shall not be lower than lowest inlet point on drain.
  - 2. Proper placement of overflow roof drains and/or overflow scuppers.
- E. Be responsible for verification of proper elevations of roof drains, drain clamps, and back-up overflow systems.

### **3.03 THERMAL BARRIER**

- A. Install thermal barrier as required by manufacturer to meet UL or FM tests.

### **3.04 ROOF INSULATION**

- A. Install roof insulation in two layers in accordance with roofing manufacturer's standard specifications, using manufacturer's recommended fasteners. Offset insulation joints between layers.
- B. Loosely lay each layer of roof insulation with end joints staggered. Insulation joints shall be 1/4" or less in width. Open joints shall be repaired with like insulate material. Neatly cut and fit insulation around roof penetrations and projections. Install coverboard over roof insulation. Install only dry insulation and only as much insulation as can be covered same day with membrane.
- C. Provide saddles between drains and crickets, as needed, to insure no ponded water.
- D. All insulation must be secured to the structural deck with fasteners acceptable to manufacturer at rates published by the insulation manufacturer and recommendations published by FM Global for adhered applications as a minimum standard. Additional fastening may be required to provide an acceptable substrate depending upon actual project conditions.

### **3.05 MEMBRANE INSTALLATION**

- A. General:
  - 1. The Adhered EPDM Roofing Membrane shall only be applied over compatible, clean, dry and smooth surfaces in accordance with the approved shop drawings and manufacturers details. The application shall begin at the highest elevation and continue to the lowest elevation of each individual roof. The seams shall be overlapped in the direction of the slope of the roof. Except where no other alternative exists, good roofing practice dictates that the sheets should be laid shingle fashion, against the slope, in order to avoid back-water laps.
  - 2. For adhering membrane, membrane lap splicing, membrane securement in accordance with manufacturers requirements.

B. Membrane Flashings

1. Install flashings at curbs, vent pipes, scuppers, inside/outside corners and membrane terminations with materials and adhesive as recommended by manufacturer.

**3.06 MISCELLANEOUS**

- A. Install walkway pads in continuous rows with seam tape or lap sealant as recommended by manufacturer.
- B. Cut off mechanical fastener tips from underside of deck in garage and areas with exposed deck in occupied rooms. Leave appropriate amount of screw below steel deck as required by manufacturer.
- C. Install metal flashings, including copings and fascias per manufacturer's recommendation to meet wind design standards.

**3.07 WATERSTOPS**

- A. Install temporary cutoffs around incomplete edges of roofing assembly at the end of each work day and when work must be postponed due to inclement weather. Straighten the insulation line using loosely laid pieces of insulation. Seal the EPDM membrane to the deck or existing membrane by performing the following procedure: Fold the edge of the roofing membrane back a minimum of 12". Clean the surface of the folded-back membrane with Tape Primer/Wash or other approved cleaning method. Apply a ¼" bead of Lap Caulk or Pourable Sealer on the cleaned area of the sheet. If the roofing membrane installation is to be delayed for 14 days or more, or if the substrate surface is rough, apply two ¼" beads of sealant. Remove the temporary seals completely when work resumes, cutting out the contaminated membrane. Remove all sealant, contaminated membrane, insulation fillers, etc. from the work area and properly dispose off-site.

**3.08 CLEANUP**

- A. Remove handprints, footprints and general soil from membrane using detergent and water. Rinse thoroughly.
- B. Remove bonding adhesive or splicing cement residue as recommended by the manufacturer.
- C. Leave roof areas and site clean of debris and trash.

**3.09 INSPECTION**

- A. Have an authorized representative of manufacturer supplying roofing system perform two in-progress inspections, as well as one final and one inspection one year after completion of job. Make corrections as noted in inspection reports.

**END OF SECTION 07 53 25**