

**ALTERNATE BID ITEMS:**  
 PLEASE PROVIDE AN ALTERNATE BID PRICE FOR THE FOLLOWING ITEMS AS PART OF YOUR BASE BID SUBMITTAL FOR THIS PROJECT.

**ITEM 1:**  
 INSTALL A FULLY ADHERED 60 MIL PVC ROOFING MEMBRANE FOR ALL ROOF AREAS IN LIEU OF THE 60 MIL TPO ROOFING MEMBRANE INDICATED ON THE DRAWINGS. CONTRACTOR SHALL FOLLOW ROOFING SPECIFICATIONS FOR THIS PROJECT AND PROVIDE A ROOFING SYSTEM WITH A 20 YEAR MANUFACTURER'S WARRANTY AND A 2 YEAR WORKMANSHIP WARRANTY. ACCEPTABLE PVC MEMBRANE MANUFACTURERS ARE AS FOLLOWS:  
 1. MULE-HIDE PRODUCTS CO., INC., BELOIT, WI  
 2. SARNAFIL (SIKA GROUP), CANTON, MA  
 3. CARLISLE SYNTAC INC., CARLISLE, PA  
 4. JOHNS MANVILLE, INC., DENVER, CO

**ITEM 2:**  
 AT BOTH VILLAGE HALL SECOND FLOOR ROOF TERRACES REMOVE EXISTING CONCRETE PAVERS AND ROOFING SYSTEM (EXISTING GYPSUM BOARD & STEEL DECK TO REMAIN) AND INSTALL CONCRETE PAVERS WITH EPDM/RUBBER PEDESTALS ON PROTECTION COURSE, 2" MIN. TAPERED XPS INSULATION (60 PSI MIN.), 60 MIL LOOSE LAID ROOFING MEMBRANE OVER EXISTING GYP. BD. & STEEL DECK. SEE ALTERNATE DETAILS ON SHEET A-4 AND SPECIFICATIONS FOR MORE INFORMATION.

**GENERAL ROOFING NOTES:**  
 1. INSTALL 30" WIDE HEAT WELD TPO WALKWAYS AROUND ROOF HATCH AND ROOF TOP UNITS WITH ADDITIONAL WALKWAY PATH BETWEEN EACH AREA OF WALKWAY.  
 2. SEE DETAILS ON SHEET A-3 & A-4 FOR MORE INFO, AND IF A DETAIL IS NOT ILLUSTRATED FOR A CERTAIN CONDITION CONSULT ROOFING MANUFACTURER'S REPRESENTATIVE FOR RECOMMENDED INSTALLATION DETAIL FOR THAT CONDITION.  
 3. ALL ROOF PENETRATIONS ARE EXISTING TO REMAIN.

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DATE  
 STATE OF ILLINOIS  
 ROBERT L. JURIS  
 001-010983  
 LICENSED ARCHITECT  
 EXPIRES 11-30-2012  
 SIGNATURE

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- GENERAL NOTES:**
- ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES OF ORLAND PARK, COOK COUNTY, AND THE STATE OF ILLINOIS.
  - ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL REQUIREMENTS AS EXPRESSED IN THE AIA GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, AIA DOCUMENT A201, CURRENT EDITION, WHICH FORMS A PART OF THE CONTRACT DOCUMENTS.
  - ALL WORK SHALL CONFORM TO THE SPECIFICATIONS AND QUALITY STANDARDS AS EXPRESSED IN THE DRAWINGS WHICH FORM A PART OF THE CONTRACT DOCUMENTS.
  - THE CONTRACTORS SHALL VERIFY AT THE JOB SITE, ALL DIMENSIONS AND CONDITIONS SHOWN ON THE DRAWINGS, AND SHALL NOTIFY THE ARCHITECT AND OWNER OF ANY DISCREPANCIES, OMISSIONS AND/OR CONFLICTS BEFORE PROCEEDING WITH THE WORK.
  - THE CONTRACTORS SHALL NOT SCALE DRAWINGS; DIMENSIONS GOVERN; LARGE-SCALE DRAWINGS GOVERN OVER SMALL-SCALE DRAWINGS.
  - START OF WORK BY THE CONTRACTORS SHALL SIGNIFY THE ACCEPTANCE OF THE SITE CONDITIONS.
  - UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO FACE OF FINISH MATERIAL.
  - ALL DEBRIS AND WASTE MATERIALS AND EQUIPMENT SHALL BE TRANSPORTED OFF OF THE PREMISES AND LEGALLY DISPOSED OF.

1	ISSUE FOR PERMIT & BIDDING	01/25/2011
No.	Issues & Revisions	Date

**VILLAGE HALL & RECREATION CENTER ROOF REPLACEMENT**  
 VILLAGE OF ORLAND PARK  
 14700 RAVINIA AVENUE  
 ORLAND PARK, IL 60462

Drawing Title 11017\_BASE.DWG

**REMODELED VILLAGE HALL ROOF PLAN**

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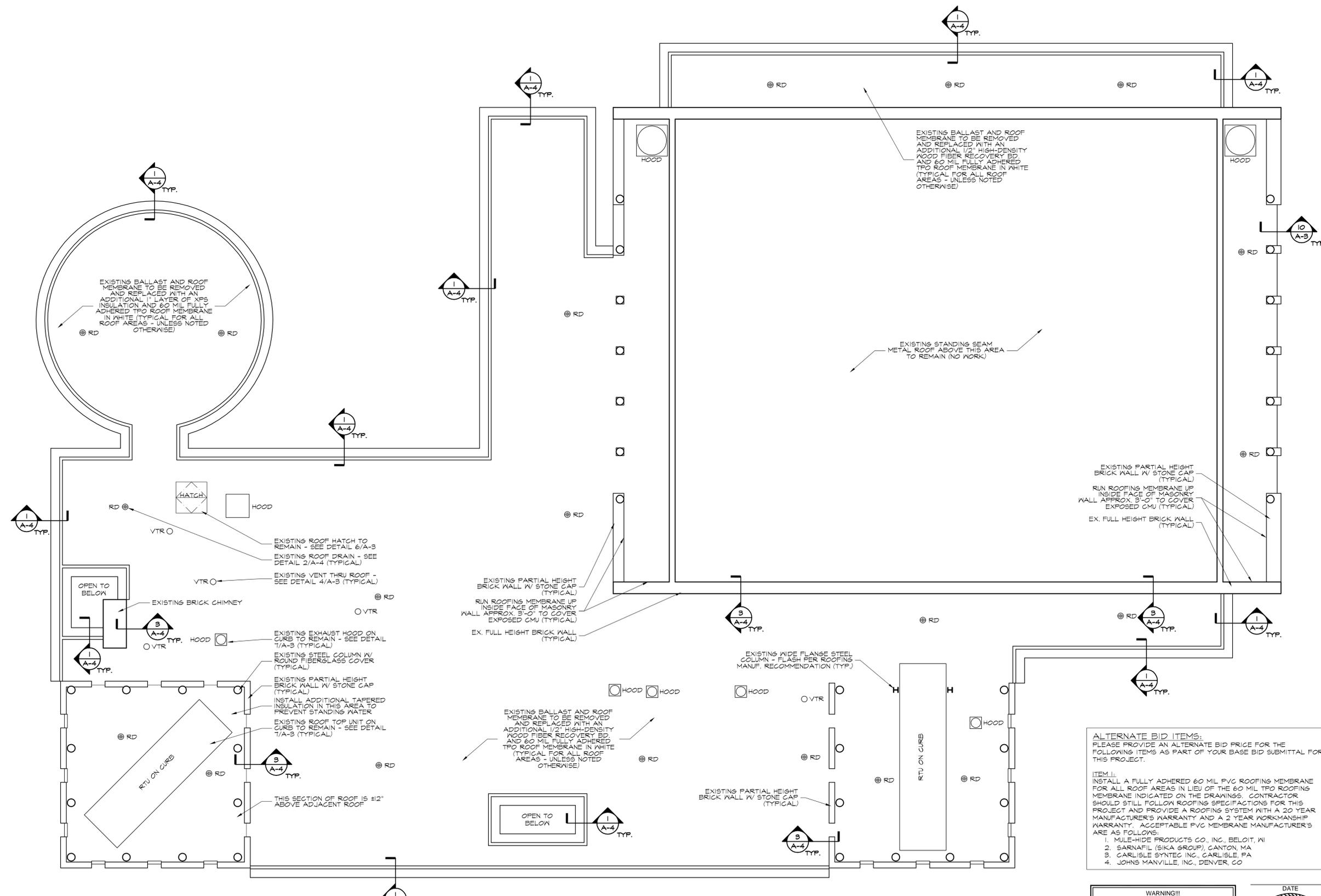
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 Drawn By BAL  
 Checked By RLJ

Drawing  
**A-1**  
 of six



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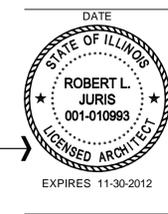


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**VILLAGE OF ORLAND PARK**  
 14700 RAVINIA AVENUE  
 ORLAND PARK, IL 60462

Drawing Title: 11017\_BASE.DWG  
**REMODELED RECREATION CENTER ROOF PLAN**

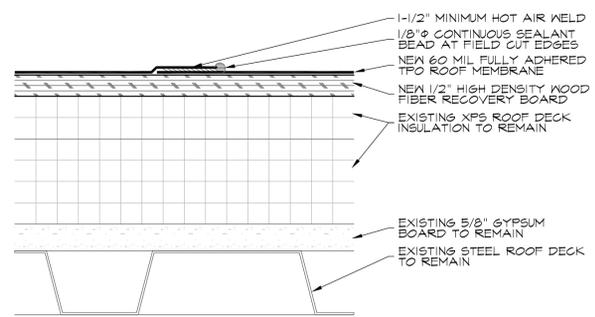
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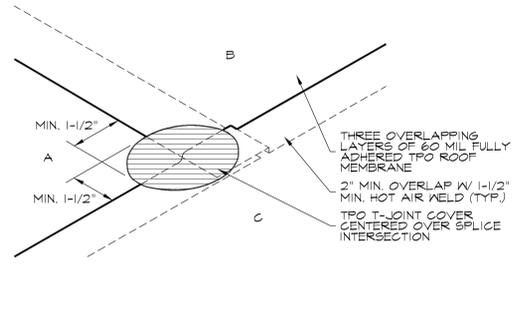
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**A-2**  
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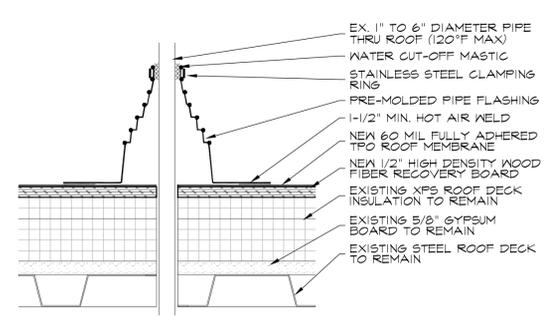
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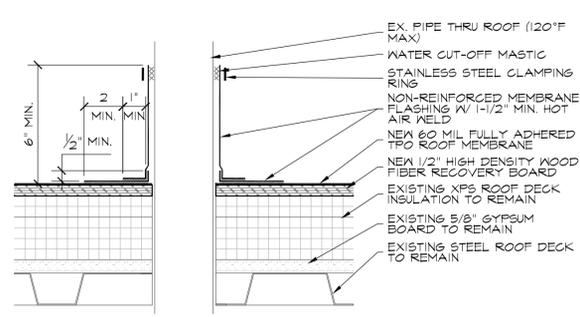
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**TYPICAL LAP SPlice**  
**ROOFING DETAIL**  
 SCALE: 6" = 1'-0"



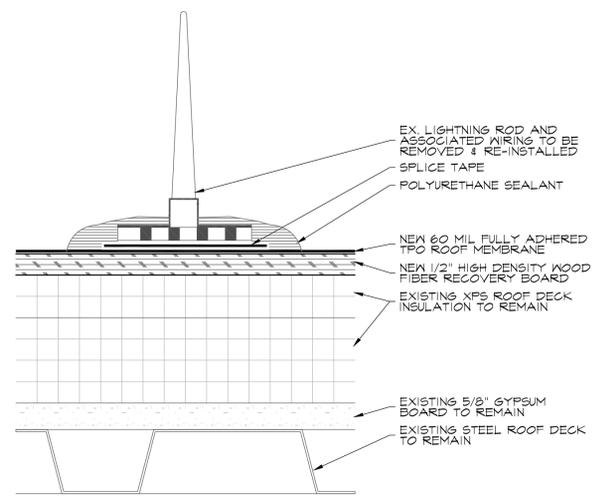
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**TYPICAL 3 LAYER LAP SPlice**  
**ROOFING DETAIL**  
 NOT TO SCALE



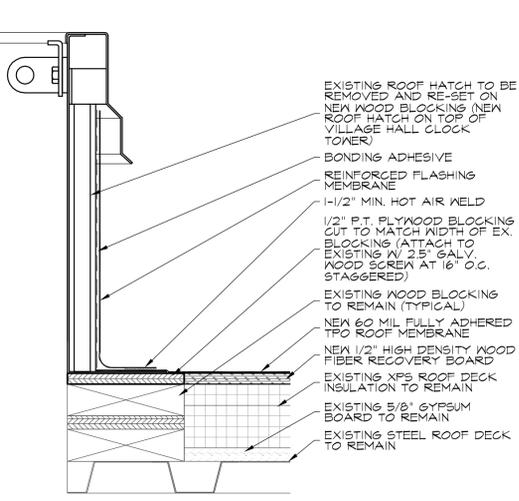
**3**  
**PRE-MOLDED PIPE FLASHING**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"



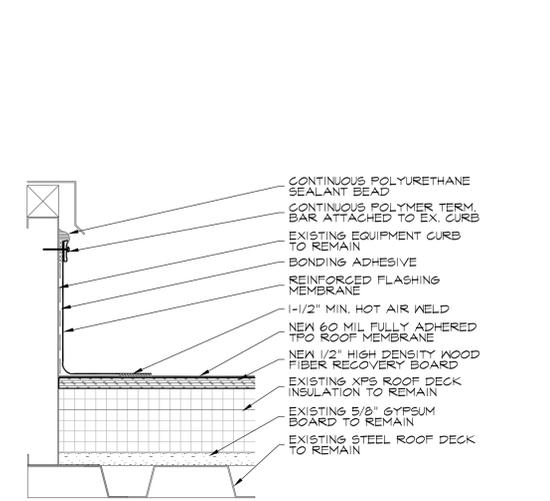
**4**  
**FIELD FAB. PIPE FLASHING**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"



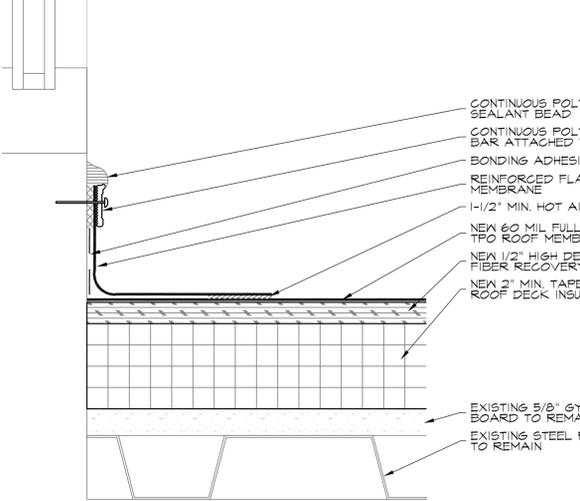
**5**  
**LIGHTNING ROD**  
**ROOFING DETAIL**  
 SCALE: 6" = 1'-0"



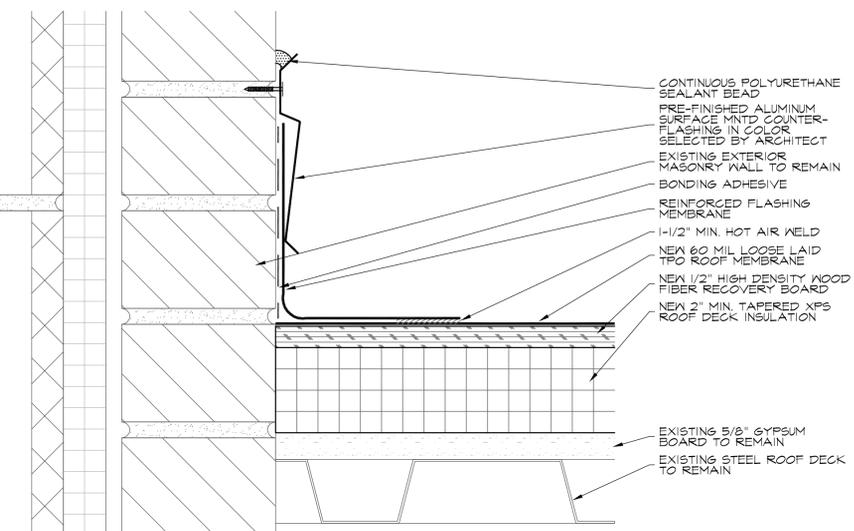
**6**  
**ROOF HATCH**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"



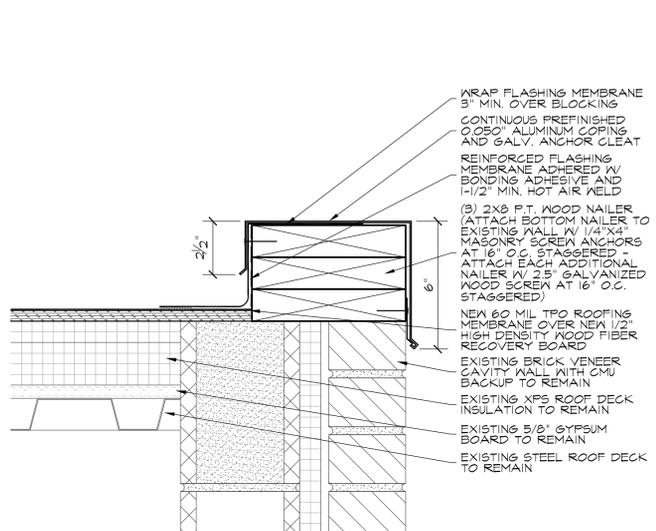
**7**  
**MECHANICAL CURB**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"



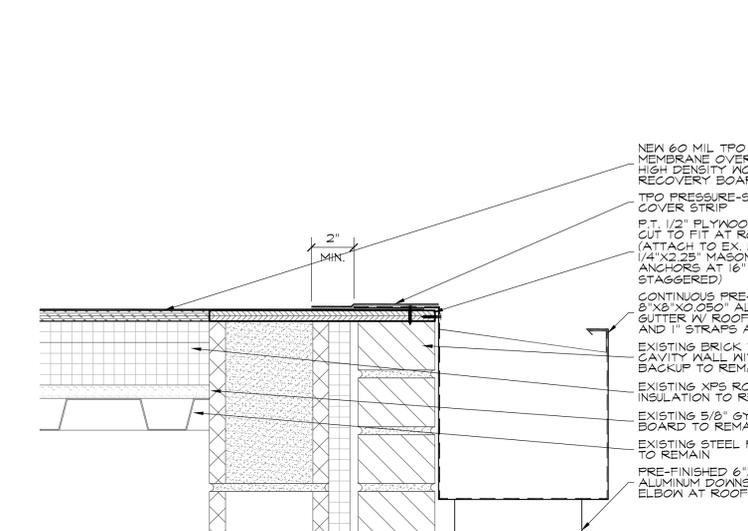
**8**  
**WINDOW WALL FLASHING**  
**ROOFING DETAIL**  
 SCALE: 6" = 1'-0"



**9**  
**WALL FLASHING @ TERRACE**  
**ROOFING DETAIL**  
 SCALE: 6" = 1'-0"



**10**  
**ROOF EDGE**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"



**11**  
**ROOF EDGE W/ GUTTER**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"

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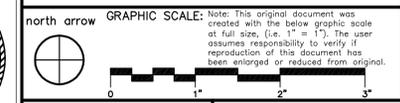
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**ROOFING DETAILS**

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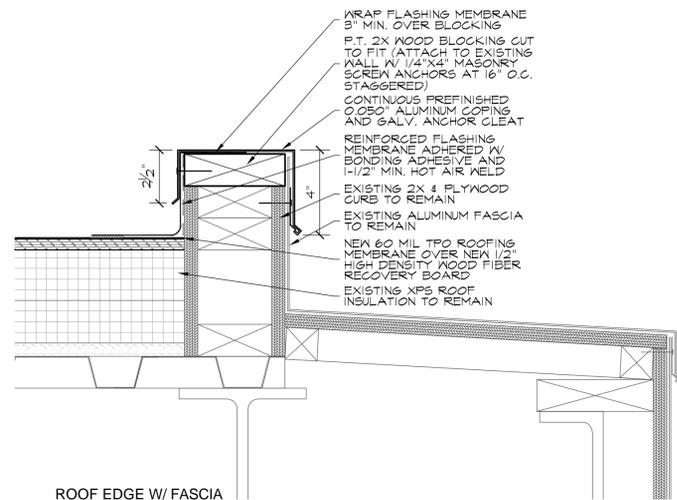
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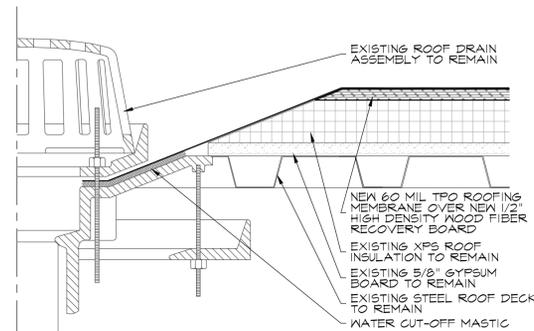
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 STATE OF ILLINOIS  
 ROBERT L. JURIS  
 001-010993  
 LICENSED ARCHITECT  
 EXPIRES 11-30-2012  
 SIGNATURE

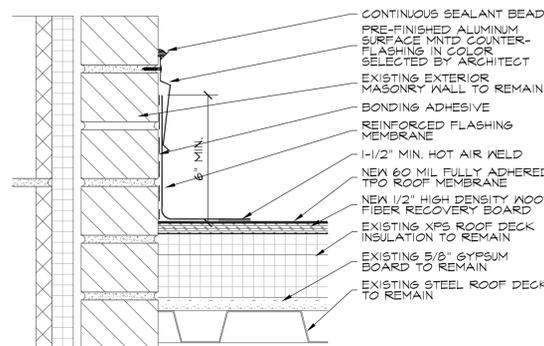
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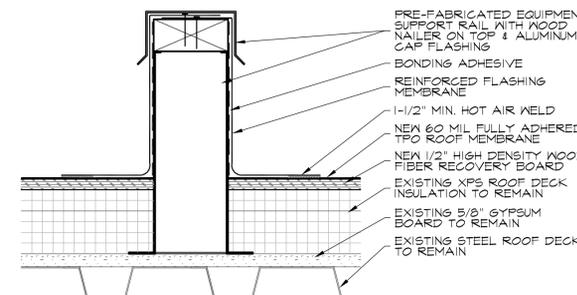
**1**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"



**2**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"

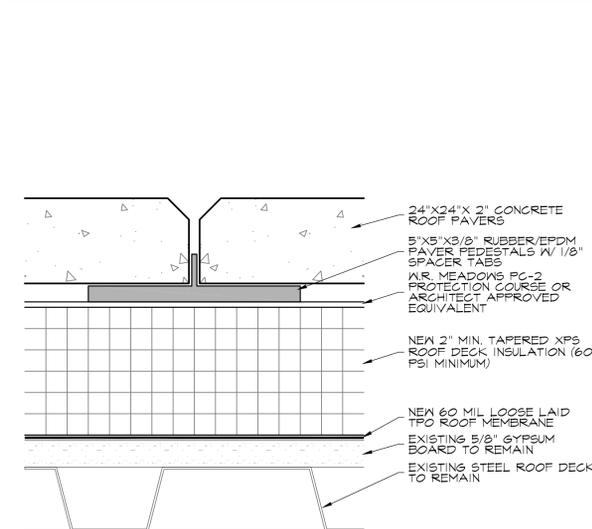


**3**  
**ROOFING DETAIL**  
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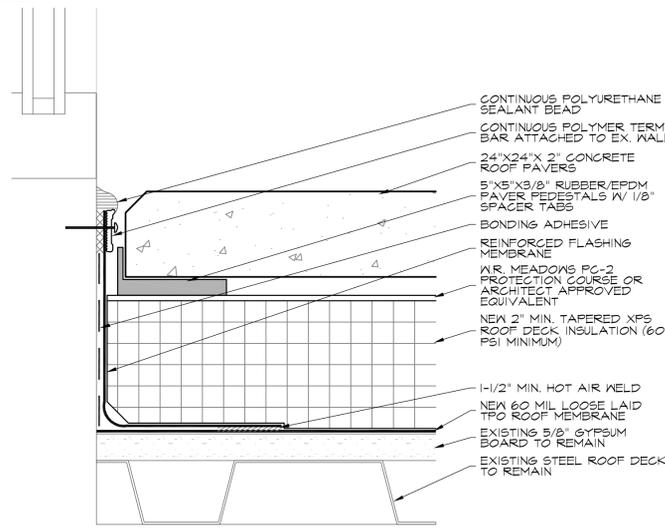


**4**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"

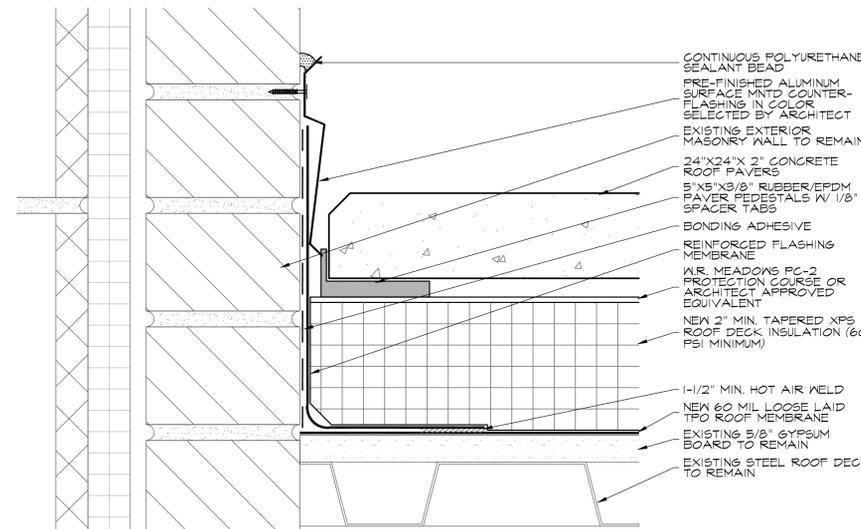
**ALTERNATE DETAILS FOR PAVER TERRACES:**



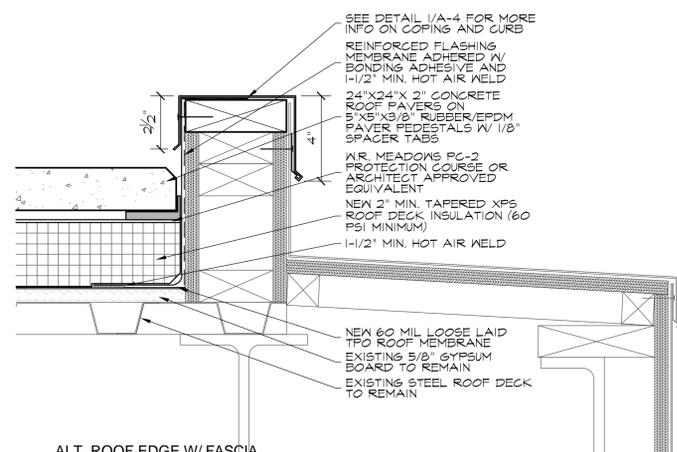
**5**  
**ROOFING DETAIL**  
 SCALE: 6" = 1'-0"



**6**  
**ROOFING DETAIL**  
 SCALE: 6" = 1'-0"



**7**  
**ROOFING DETAIL**  
 SCALE: 6" = 1'-0"



**8**  
**ROOFING DETAIL**  
 SCALE: 3" = 1'-0"

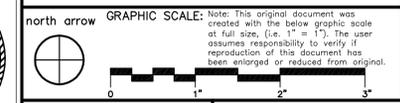
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Project  
**VILLAGE HALL & RECREATION CENTER ROOF REPLACEMENT**  
**VILLAGE OF ORLAND PARK**  
 14700 RAVINIA AVENUE  
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Drawing Title: 11017\_BASE.DWG

**ROOFING DETAILS**  
 (CONTINUED)

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**A-4**  
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DATE  
**ROBERT L. JURIS**  
 001-010993  
 LICENSED ARCHITECT  
 EXPIRES 11-30-2012  
 SIGNATURE

**GENERAL NOTES AND SPECIFICATIONS**

**BIDDING REQUIREMENTS** - See The Village of Orland Park's Bidding Requirements under separate cover.

**CONDITIONS OF THE CONTRACT** - See The Village of Orland Park's Conditions of the Contract under separate cover.

**1.0 SUMMARY OF THE WORK**

A. The general scope of this work is for the Re-roofing for the Village Hall and Recreation Center located at the existing Orland Park Village Center at 14700 Ravinia Drive in Orland Park, Illinois. The work will include, but is not necessarily limited to: selective demolition work of the existing roofing system and replacement with new as shown on the Bid Drawings. B. Coordinate and coordinate all scheduling of work with the Building Manager/Owner in order to minimize conflicts and to facilitate full normal office operations. Schedule the work to accommodate these operations and provide all necessary enclosures, protections, temporary partitions and entrances, security, etc. to meet the Owner's requirements.

**1.1 GENERAL REQUIREMENTS**

- A. General contractor's duties:
1. Provide and pay for all labor, materials, tools, machinery, equipment, utilities, temporary facilities, permits, licenses, fees, bonds, insurance and services as necessary for proper execution and timely completion of the work.
2. Comply with all codes, ordinances, rules, regulations, codes and other legal requirements of public authorities, which bear on performance of work.
3. Project coordination:
a. Coordinate and supervise work of all employees and subcontractors to assure proper performance of work and compliance with schedules.
b. Resolve questions/conflicts which may arise. Consult with Architect to interpret the Contract Documents.
c. Process Shop Drawings. Review for compliance with Contract Documents prior to submit to the Architect.
4. Schedule and administer regular Project meetings with the Owner, Architect and any necessary subcontractors/suppliers on a regular basis, but at intervals not exceeding 14 days. The General Contractor shall be responsible for maintaining minutes of these meetings and distribution afterwards of minutes to all major parties involved.
5. Schedule the Work so that any work that will disrupt existing tenants be performed after building hours. This work shall be scheduled and arranged with the Property Manager.
6. The General Contractor shall update and distribute the Construction Schedule at least prior to each construction coordination meeting, but not to exceed intervals of 14 days.
7. Maintain existing & new construction in a structurally safe & stable condition at all times.
8. Field check & verify all dimensions as work progresses reporting any discrepancies to the Architect immediately.

- 9. Provide protection aids, temporary enclosures and barriers as required to facilitate execution of work and to provide protection of work as well as all construction personnel, passerby and existing facilities and landscaping. Contractor is responsible for the protection of all existing property, including existing wall/floor/etc. finishes, and traffic routes used by trades. Repair or replacement of any property damaged during construction is the sole responsibility of the Contractor.
10. Provide & maintain all access roads and parking areas required by construction. Control & supervise all construction traffic. Maintain roads and parking areas in a clean condition. Maintain access for emergency vehicles at all times. Keep fire hydrants and water control valves free from obstruction.
11. Provide, initiate & maintain effective dust control, water control, pollution control, erosion control, fire prevention, and project security programs throughout the construction period. Provide protection from welding. Protect against the weather, fire, theft, vandalism & injury.
12. All materials shall be new and of the highest quality.

- 13. All work by the General Contractor, sub-contractors and suppliers shall be performed by skilled tradespersons.
14. Incorporate all materials and equipment into the work in accord with all applicable standards, specifications, manufacturer's instructions and the Contract Documents. Separate all dissimilar metals.
15. Maintain all premises free from debris. The owner's dumpsters will not be available for use during construction by the Contractors. Assume responsibility for final cleaning of all interior and exterior finished surfaces and fixtures. This cleaning shall include all final cleaning of all interior finished surfaces at the completion of the Construction Project, just prior to beneficial occupancy.
16. Compile information on the operation and maintenance of all products and equipment.
17. Coordinate all cutting and patching. Install all bracing, reinforcing, etc., necessary to maintain building structural integrity. Repair and restore all areas and finishes to original condition.

- 18. Maintain project record documents including Contract Drawings, reviewed and stamped Shop Drawings, Change Orders, Field Change Authorizations, other modifications to the Contract and field test records. Provide one (1) completed set of blueprint prints to the Architect at the project which have been kept by the General Contractors field superintendent and which have been continuously updated during the course of construction indicating minor changes in the work by the General Contractors field superintendent using a red ink pen. The changes shall include, but not necessarily limited to revised partition locations, dimensions, equipment, electrical and mechanical devices, light fixture locations, etc.
19. General Contractor to submit standard AIA Certificates of Payment and an itemized Sworn Statement not more frequently than once monthly with waivers of lien from all Contractors and major suppliers.

- 20. All changes must be authorized by the Architect on standard Change Order forms prior to commencement of the affected work.
21. Completion of the work.
a. When the General Contractor considers that the work or portions thereof which the Owner agrees to accept substantially complete, the Contractor shall prepare a punchlist with the assistance of the Architect and Owner and distribute to all subcontractors. When these punchlist items are determined by the Architect to be substantially complete, he will issue a Certificate of Substantial Completion. Upon substantial completion of the work or designated portion thereof, and upon application by the Contractor, the Owner shall make payment, reflecting adjustment in retainage, if any, for such work or portions thereof as provided in the Contract Documents.
b. Submit all guarantees, operating instructions, keys and final waivers at final payout.

**1.2 GENERAL NOTES**

- A. These are suggested minimum specifications (subcontractors shall verify with the General Contractor if these specifications are exceeded or changed).
B. All work shall be performed in accordance with all applicable local, state and national codes and ordinances and all authorities having jurisdiction.
C. All dimensions on the floor plans are nominal dimensions and are from the finished faces of masonry and concrete materials.
D. The General Contractor and all subcontractors shall verify all dimensions and conditions before proceeding with work and notify superintendent at once of any discrepancies prior to commencing work.
E. On-site verification of all dimensions and conditions shall be the responsibility of each subcontractor.
F. The Architect shall not have control or charge of, and shall not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work, or for the acts or omissions of the Contractor, Sub-contractors, or any other persons performing any of the work or for the failure of any of them to carry out the work in accordance with the intent of the contractor documents. The Architect shall not be responsible for Structural Work and Scaffolding Acts.
G. Contractor shall provide adequate bracing and/or shoring to insure structural stability of building during construction.

**1.3 GENERAL STRUCTURAL NOTES**

- A. Allowable unit stresses and loading are in accordance with the applicable local building code's/current edition(s).
B. Requirements and design data shall be followed entirely regardless whether they are given by both the specifications and drawings or either one only.
C. Shop drawings prepared by the contractors, suppliers, etc. shall be reviewed by the Architect and/or the Structural Engineer only for conformance with design concept. One reproducible set of four blueprint prints of shop drawings shall be submitted for review. No work shall be started without such review. Before submital to the architect, shop drawings shall be reviewed by the General Contractor and shall be stamped by him.
D. Contractors to assume full responsibility supervision or periodic observation of construction for:
1. Compliance with the contract documents
2. For dimensions to be confirmed and correlated on the job site and between individual drawings/sets of drawings.
3. For fabrication processes and construction techniques. (Including excavation shoring, scaffolding, bracing, erection, formwork, etc.)
4. For coordination of the various trades.
5. For safe conditions on the job site.
E. Unless otherwise noted all details, sections and notes on the drawings are intended to be typical for similar situations elsewhere.

- F. The information contained on the structural drawings is in itself incomplete and void unless used in conjunction with all the contract documents and with all the specifications, trade practices, or applicable standards, codes, etc. incorporated therein by reference which the contractor certifies knowledge of by signing the contract.
G. The General Contractor shall be responsible for coordinating the structural drawings with architectural, mechanical and electrical drawings for location and placement of all inserts, hangers, sleeves, ductwork, openings, etc. that are required by the work and/or equipment, etc.
H. Adequacy of temporary shoring and other temporary shoring and other temporary support devices are the responsibility of the contractor. However, basic procedures, which shall be developed by the Contractor, must be approved before construction may commence.
I. If conditions arise that are at variance with or have not been anticipated by these drawings, such conditions shall be reported to the architect immediately. Work shall not progress until written permission from the owner is obtained.

**1.4 MATERIALS & WORKMANSHIP**

- A. All work shall be performed in a neat workmanlike manner.
B. Each subcontractor shall include labor, materials, tools, equipment, etc., for the complete construction of work indicated and specified by both the drawings and specifications, unless other written arrangements are made between the Contractor and the Owner.
C. Materials as specified on drawings shall be used. Substitutions of materials will not be allowed without the written consent of the Owner and notification of the Architect.
D. Each Sub-contractor shall remove and replace at his own cost, any defects or other faults in his workmanship and/or material.
E. Excess debris shall be cleaned up debris inside and outside the building site which has been caused by his work and place in a dumpster provided by the General Contractor.
F. All material finishes and styles including but not limited to sealants, face brick, concrete copings, etc. not necessarily specified on the drawings shall be submitted to and approved by the Architect.

**DIVISION 2 - EXCAVATION, DRAINAGE & SITE WORK (NOT USED)**

**DIVISION 3 - CONCRETE (NOT USED)**

**DIVISION 4 - MASONRY (NOT USED)**

**DIVISION 5 - METALS (NOT USED)**

**DIVISION 6 - WOOD & PLASTICS (NOT USED)**

**DIVISION 7 - THERMAL & MOISTURE PROTECTION**

**T.1 SINGLE PLY ROOFING SYSTEM - THERMOPLASTIC POLYOLEFIN (TPO)**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provision of the Contract, including General and Supplementary Conditions and Division 7 Specification Sections.
1.02 DESCRIPTION OF WORK

- A. This section includes all material, labor, equipment, temporary protection and tools for the proper installation and completion of the work as required in this specification.
B. The following items are specified in this section:
1. Roof Insulation
2. Flashing
3. Roof membrane
4. Roof membrane flashings
5. Treated Wood
6. Sealants
7. Adhesives

**1.03 REFERENCES**

- A. American Society of Testing and Materials (ASTM)
A653 Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality
D418 Test Methods for Rubber Property-Adhesion of Flexible Substrate
D578 Test Method for Rubber-Deterioration in an Air Oven
D751 Test Methods for Coated Fabrics
D1149 Test Method for Rubber Deterioration-Surface Ozone Cracking in a Chamber
D1203 Test Methods for Volatile Loss From Plastics Using Activated Carbon Methods
D1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheet or Film at Elevated Temperature
D2136 Test Method for Coated Fabrics-Low Temperature Bend Test
D2240 Test Method for Rubber Property-Durometer Hardness
E404 Test Method for Surface Burning Characteristics of Building Materials
E409 Standard Test Methods for Total Normal Emission of Surfaces Using Inspection-Mirror Techniques
E838 Practice for Performing Accelerated Outdoor Weathering Using Concentrated Natural Sunlight
E903 Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres
B. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
C. Underwriters Laboratories, Inc. (UL) Roofing Materials and Systems Directory

**1.04 SUBMITTALS**

- A. Product Data: Submit manufacturer's technical product data, installation instructions and recommendations for each type of roofing product required. Include data substantiating that materials comply with the specified requirements.
B. Submit copy of the membrane manufacturer's warranty covering materials.
C. Submit copy of the Roofing Contractor's warranty covering workmanship.
D. Submit dimensional shop drawings, which shall include:
1. An outline of the roof area.
2. Proposed installation method for insulation and membrane for each different section of roof. Include insulation type (e.g. flat, tapered) and fastener patterns if applicable.
3. Proposed profile details of flashing methods for penetrations and terminations if not indicated in the Contract Documents.
4. Proposed location of manufacturer approved walkpads. Corners are to be rounded and installed in accordance with manufacturer's written instructions. All side and end joints shall be hot-air welded a minimum of 2'-inch (51mm). No adhesive shall be present within the lap areas.
E. Submit report from an independent testing laboratory certifying that manufacturer's membrane has met a minimum of 2,000,000 langley's concentrated natural sunlight, according to ASTM E838.

- F. Submit written documentation from the manufacturer that the proposed roofing system including insulation and fasteners are compatible and meet the applicable requirements and code approvals as referenced in this specification and that the roofing system meets the requirements for the manufacturers standard warranty covering material.
G. Submit certification that membrane installer is a manufacturer-approved applicator.
H. Submit manufacturer's documentation of Energy Star labeled roofing materials.
I. Submit Material Safety Data Sheets (MSDS)

**1.05 QUALITY ASSURANCE**

- A. Roofing system shall be applied only by an approved Contractor authorized prior to bid by the roof membrane manufacturer. Prior to bid, the Roofing Contractor must have completed a minimum of 500 roofing squares of Thermal Propylene Olefin (TPO) membrane in the Chicago region.
B. There shall be no deviation from this specification or the approved shop drawings without prior written approval by the manufacturer and the Architect.
C. Code requirements for the proposed roofing system shall meet the requirements of the following recognized code approval or testing agencies. These requirements are the minimum standards and no roofing work shall commence without written documentation of the system's compliance, as in Article 1.03 "Submittals".
1. Underwriters Laboratories (UL) Class A membrane.
D. Energy Star Roof Compliance: The proposed roofing system shall be Energy Star Roof-compliant and roofing materials shall be Energy Star labeled.
E. For new installations, ponding shall not occur in accordance with NRCA Roofing and Waterproofing manual good roof design practice, which dictates that there be no ponding of water 48 hours after rainfall.
F. There shall be no more than 20 patches per 10,000sf on new construction.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. All products delivered to the job site shall be in the original unopened container or wrappings.
B. Membrane rolls and insulation shall be stored fully protected from moisture and wind damage. Remove plastic from insulation and cover with tarpaulins on a raised surface.
C. Bonding adhesives shall be stored at temperatures recommended by manufacturer.
D. Handle all materials to prevent damage. Any materials which are determined damaged, according to the Architect, are to be removed from the job site and replaced at no cost to the owner.
1.07 PROJECT CONDITIONS
A. Construction may not be fully represented on the drawings, and some modifications to details may be required to accomplish the intent of the documents.
F. Contractor shall ascertain to his satisfaction, coordinate with General Contractor and other sub-contractors prior to bidding, that the specifications and drawings are workable and that they are not in conflict with the manufacturer's requirements for a material warranty.

- B. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks, and any damages shall be repaired or replaced at no cost to the owner. All exterior lighting, equipment, landscaping and paving shall be protected from damage.
C. Contractor shall test all drains prior to and upon completion of roofing work to insure that no blockage exists or has occurred.
D. Only as much of the new roofing as can be made weather tight each day including all flashing work, shall be installed. Plug all roof drains before starting work each day and unplug all drains at the end of each workday.
E. All surfaces to receive insulation, membrane or flashing shall be thoroughly clean and dry. Should surface moisture occur, the Contractor shall provide the necessary equipment and labor to dry the surface prior to application.
F. All construction, including equipment and accessories, shall be secured against wind blow-off damage.
G. Temporary waterstops shall be installed at the end of each day's work and shall be removed before proceeding with the next day's work. Waterstops shall be compatible with all materials, shall not emit dangerous or incompatible fumes, and shall be installed per manufacturer's recommendations.
H. Contractor shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. Physical protection shall be provided for all new and existing roof areas which receive traffic during construction.
I. Contaminants, such as grease, fats, oils and solvents shall not be allowed to come into direct contact with the roofing membrane. Any exposures shall be presented to the membrane manufacturer for assessment of impact on the roof system performance.
J. Contractor shall take care during application and storage that overloading of deck and structures does not occur.
K. Precautions shall be taken when using adhesives at or near rooftop vents or air intakes. Coordinate closing or shut-offs of vents and air intakes during roofing and flashing operations.

**1.08 WARRANTY**

- A. Upon completion of construction, the manufacturer's twenty (20) year warranty covering materials shall be issued to the owner.
B. Roofing Contractor shall supply the owner with a minimum two (2) year workmanship warranty. In the event any work related to roofing, flashings, or metal work is found to be defective or otherwise not in accordance with the Contract Documents within two (2) years of final acceptance, the roofing Contractor shall remove and replace the defects at no cost to the owner.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Provide an insulated roofing system that is comprised of fully compatible components for use in the proposed application. All proposed materials shall be compatible with substrate.
2.02 ACCEPTABLE MANUFACTURERS
A. Mule-Hide Products Co., Inc., Bolot, WI
B. Corisis Syntec Incorporated, Carlisle, PA
C. Firestone Building Products, Indianapolis, IN
D. Johns Manville, Inc., Denver, CO

**2.03 MEMBRANE**

- A. TPO: Polyester scrim reinforced Thermal Propylene Olefin (TPO) sheet conforming to the following minimum physical properties:
Property ASTM Test Method Specification
Color White
Weight 0.18 lbs/sq ft (0.88 kg/m2)
Nominal Thickness (min.) D751 0.18 lbs/sq ft (152 mm)
Breaking Strength (min.) D751 (Grab Method) 225 lbf (1.0 kN)
Tear Strength (min.) D751 (Tongue Tear) 55 lbf (245 N)
Low Temperature Bend D2136 Pass
Shore A Hardness D2240 80 +/- 5
Heat Aging D573 Maintains original strength
Volatility, Max. Loss D1203, Method A 0.5%
Hydrostatic Resistance (min.) D751, Method A 300 psi (2.1 Mpa)
Ozone Resistance D1149 No Effect
Elongation Concentrated Natural Sunlight, 2 million langley's E838 0.5%
Dimensional Stability (max.) D1204 0.5%
Puncture Resistance (min.) FTM 101B, Method 2031 250 lbf (1.1 kN)
ISO deg. Peel Strength (min.) D413 35 lbf (156 N)
Change in Weight After Immersion in Water (max.) D5710 +/-0.2%
Initial Solar Refl. (min.) E403 0.65
3-yr aged Solar Refl. (min.) E403 0.50
Emissivity (min.) E408 0.90

**2.04 FLASHING MEMBRANE**

- A. Flashing membrane shall be as supplied by the roofing membrane manufacturer. Flashing membranes are generally the same material as the roofing membrane unless otherwise specified in the Contract Documents. Unreinforced 0.055'-inch (1.4 mm) thick ethylene propylene - base membrane shall be supplied for vent stacks, pipes, drains and corners.

**2.05 INSULATION**

- A. General: Provide insulating materials to comply with referenced standards and requirements indicated for materials; provide manufacturer's standard thickness, in size to fit applications. (Mechanically fasten per roofing manufacturer's recommendations)
1. Fully Adhered Systems: Provide no greater than 4'-feet x 4'-feet (1.2m x 1.2m) boards.
B. Extruded polystyrene meeting ASTM C578, Types IV, VI or VII physical properties. An acceptable insulation shall be required over the extruded polystyrene. Minimum thickness shall be as required by insulation manufacturer to span steel deck flutes. Extruded boards shall require an overlay of a minimum 1/2-inch thick high-density roof recovery fiberboard.
1. Surface Burning Characteristics: Comply with ASTM E84 with a maximum flame spread and smoke developed values of 25 and 45, respectively.
C. Insulation fasteners and adhesive shall be approved by the roof membrane manufacturer for compatibility with the system and the required UL requirements.
D. Recovery Board: Minimum 1/2-inch thick high-density roof wood fiberboard, over all insulation and tapered insulation. (Mechanically fasten per roofing manufacturer's recommendations)

**2.06 ACCESSORY PRODUCTS**

- A. Flashing Adhesive: As specified by the membrane manufacturer.
B. Walkway Membrane: Manufacturer's walkway material.
C. Wood Nailers: Wood shall be #2 or better pressure preservative treated lumber using CGA preservatives. Height of nailers shall match that of the insulation thickness or as indicated on the drawings.
D. Sealants: As recommended by the membrane manufacturer to comply with VOC limits of California Bay Area (AQMD) Regulation B, Rule 51.
E. Miscellaneous Fasteners and Anchors: In general, all fasteners, anchors, nails and straps shall be zinc-coated steel, galvanized, or stainless steel and cadmium-free. All fasteners and anchors shall have a minimum embedment of 1-1/2'-inch (38 mm) and shall be approved for such use by the fastener manufacturer and the membrane manufacturer.
F. Sheet Metal Accessory Materials: ASTM A653, with 0.20 percent copper, 690 hot-dipped galvanized, 24-gauge (0.61 mm) or heavier.
G. Expansion Joint Covers: Shall be the manufacturer's prefabricated units of the same material as the roof membrane.
H. Rainmeter Edge Metal: Shall be supplied by the membrane manufacturer and coated with the same material as the roofing membrane and shall be compatible with the roofing membrane for hot-air welding.
I. Slip Sheet: Provide only when needed between incompatible materials. Use membrane manufacturer's standard slip-sheet material.
J. Base Sheet: Provide membrane manufacturer's recommended vented base sheet on all types of concrete decks or when required or recommended by membrane manufacturer for the intended application.
PART 3 - EXECUTION
3.01 INSPECTION
A. Prior to all work of this section, Contractor shall carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
B. Verify that work of other trades that penetrates the roof deck has been completed.
C. Verify that roofing system will be installed in strict accordance with all pertinent codes and regulations, the original design and the manufacturer's recommendations.
D. In the event of discrepancy, immediately notify the Architect.
E. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
F. Upon starting the installation of a new roof, the Architect and the General Contractor and their sub-contractors, if applicable, will designate a portion of the installation to be used as a mock up. The mock up will be the model of how the roof installation shall be installed. The mock up should include the insulation, a curb, flashing parapet and an inside and outside corner along with a termination and lap seam.
G. Throughout the project and at completion, the Architect shall be allowed to inspect the roof, including probing as necessary to ensure proper installation.
3.02 PREPARATION OF SUBSTRATE
A. General: Comply with the insulation and membrane manufacturer's instructions for preparation of the substrate to receive the roofing system.

- B. Clean substrate of dust, debris, and other substances detrimental to the system work. Remove sharp projections.
3.03 INSTALLATION OF INSULATION
A. Insulation shall be installed according to the insulation manufacturer's instructions and shall be approved by the Architect and membrane manufacturer. Stagger joints between layers.
B. Insulation shall be neatly cut to fit around all penetrations and projections.
C. Install tapered insulation where applicable in accordance with insulation manufacturer's approved shop drawings in order to achieve the specified slope.
D. Install tapered insulation around drains creating a drain sump.
E. Do not install more insulation board than can be covered with membrane by the end of the day, or onset of inclement weather.
F. Attachment.
1. Insulation shall be mechanically fastened to the deck with approved fasteners and plates at a rate and pattern acceptable to Factory Mutual's and membrane manufacturer's requirements for fastening rates and patterns.
2. Fasteners are to be installed in accordance with the fastener manufacturer's recommendations. Fasteners are to have a minimum penetration into the structural deck as recommended by the fastener manufacturer and membrane manufacturer. Fasten only in top of ribs of metal deck, not flutes.
3. Perform pull out tests for the Architect to verify deck conditions and actual pull out values prior to installation of the membrane.
4. Use fastener tools with a depth locator as recommended or supplied by the fastener manufacturer to ensure proper installation.
3.04 INSTALLATION OF MEMBRANE
A. Install materials in accordance with manufacturers instructions for the intended application.
B. Surface of the insulation shall be inspected prior to installation of the roof membrane. The insulation surface shall be clean and smooth with no excessive surface roughness, contaminated surfaces, or unsound surfaces such as broken or delaminated insulation boards.
C. Membrane shall be installed per the membrane manufacturer's written installation procedures for an approved mechanically fastened system.
D. No bonding adhesive shall be applied to lap areas that are to be welded to flashing or adjacent sheets. All sheets shall be applied in the same manner, lapping all sheets as required by welding techniques. No peel and stick products allowed.
E. Any repairs or patches shall be hot-air welded. No peel and stick products allowed.
F. Adjacent sheets shall be welded in accordance with the manufacturer's written instructions.

- G. Hand and machine welding shall be carried out per the manufacturer's written instructions. All mechanics intending to use the welding equipment shall have successfully completed a course of instruction provided by a manufacturer's representative prior to welding. All welding equipment must be approved by the manufacturer prior to use.
H. All completed seams shall be checked by the Contractor after cooling for continuity using a screwdriver or suitable blunt instrument. In addition, on-site evaluation of welded seams shall be made by Contractor at locations as directed by the Architect or membrane manufacturer's representative. Contractor shall provide 2'-inch (51 mm) wide cross-sectional samples taken through completed seams. Approximately two samples will be taken per 100 roofing squares. Correctly welded seams display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Contractor at no additional charge to the owner.
I. Exposed or cured membrane shall be hot-air welded per manufacturer's instructions.
1. During the course of the work, the entire roof area shall be kept clear of loose or spilled fasteners and metal scraps to guard against accidental puncture of the membrane.
3.05 MEMBRANE FLASHINGS

- A. All flashing shall be installed concurrently with the roof membrane as the job progresses. No temporary membrane flashings shall be allowed without the prior written approval of the Architect. Approval shall only be for specific locations on specific dates.
B. All flashing membranes shall be fully adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded in place, or prefabricated corners and miters may be used.
1. Bituminous elements shall not be in contact with non-compatible membrane. Manufacturers recommended isolator shall be used to isolate non-compatible membrane flashing from bituminous coated elements such as vent stacks and pipes penetrating the roof.
C. All flashings shall be hot-air welded at their joints and at their connections with the roof membrane. No peel and stick products allowed.
D. Pipe penetrations shall be flashed a minimum of 8'-inches (203 mm) above the roofing membrane, and terminate with a stainless steel hose clamp with sealant applied along the top edge. Pipe should be isolated by membrane. Factory fabricated pipe seals and roof membrane shall be welded as outlined. A buffer layer of membrane shall be installed between hose clamp and flashing sheet to avoid damage.
E. All curb flashing membranes shall be mechanically fastened along the top using nails with 1'-inch (25 mm) diameter heads spaced a maximum of 6'-inches (152 mm) on center, or predrilled metal strips. All roof edge flashings shall be hot-air welded to the membrane manufacturer's coated metal. Predrilled metal strips shall be caulked along the top edge with a sealant. Expansion pins with nylon sheaths set in predrilled holes shall be used to secure flashings to masonry and concrete surfaces. Reglets shall be used on walls as shown on the Contract Documents.

- F. Edge metal shall be supplied by the membrane manufacturer and shall be coated with the same material as the roofing membrane. The edge metal and membrane strips joining each piece of edge metal shall closely match the color of the building perimeter, unless specified elsewhere on the Contract Documents or by the Architect.
3.06 TEMPORARY CUT-OFF
A. Flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. When a break in the day's work occurs in the central area of the roof, a temporary waterstop shall be constructed to provide a watertight seal.
1. Waterstop shall be installed per the manufacturer's recommendations and per details shown on the Contract Documents.
2. When work on the new system is suspended, the stagger of the insulation joints shall be maintained by installing partial fillers. New membrane shall be carried into the waterstop.
3. When work resumes, the contaminated membrane, insulation fillers, etc., shall be removed from the work area and disposed off-site. Do not reuse these materials in new work.
B. If inclement weather occurs while a temporary waterstop is in place, the Contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.
3.07 WALKWAY INSTALLATION
A. Walkways: Install walkway pads at location shown on Construction Documents. Hot-air weld along edges a minimum of 2'-inches (51mm) to substrate, and fully adhere walkway pads between nelds to substrate with compatible adhesive according to roofing system manufacturer's written instruction. Corners of walkway are to be rounded and hot-air welded in accordance with manufacturer's written instruction.

- 3.08 COMPLETION
A. At the completion of construction and prior to Contractor's request for final inspection by Architect, membrane manufacturer's technical consultant shall provide on-site inspection of installed roofing system.
1. Membrane manufacturer shall provide Contractor and Architect with itemized list of defects or non-compliance with manufacturer's recommendations.
2. Contractor shall immediately correct identified items. Complete corrections before request for final inspection from Architect.
B. Prior to demobilization from site, work shall be reviewed by Architect and Contractor.
1. Use punchlist to identify defects or non-compliance with these specifications or membrane manufacturer's recommendations in punch list.
2. Contractor shall immediately correct identified items prior to demobilization, to satisfaction of Architect and membrane manufacturer.

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No.	Issues & Revisions	Date
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**VILLAGE HALL & RECREATION CENTER ROOF REPLACEMENT**  
**VILLAGE OF ORLAND PARK**

**14700 RAVINIA AVENUE**  
**ORLAND PARK, IL 60462**

**Drawing Title** 11017\_BASE.DWG

**GENERAL REQUIREMENTS AND SPECIFICATIONS**

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