

SECTION 01 2300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 1. The cost for each alternate is the net addition to the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 2. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
 3. Execute accepted alternates under the same conditions as other work of the Contract.
 4. Schedule: A Schedule of Alternates is included at the end of this Section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1:
 1. Base Bid: Thermoplastic Membrane Roofing System (TPO)
 2. Alternate 1: Replace Thermoplastic Membrane Roofing System (TPO) with PVC Thermoplastic Single-Ply Roofing System (PVC)

END OF SECTION 01 2300

SECTION 02 1000 - SELECTIVE DEMOLITION AND CUTTING AND PATCHING

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Examination, preparation, and general installation procedures.
 - B. Selective Demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
 - C. Cutting and patching.
 - D. Surveying for laying out the work.
 - E. Cleaning and protection.
- 1.2 SUBMITTALS
 - A. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Hillsborough County Sheriff's Office or separate Contractor.
- 1.3 PROJECT CONDITIONS
 - A. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - B. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
 - C. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.
- 1.4 COORDINATION
 - A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
 - B. Notify affected utility companies and comply with their requirements.
 - C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
 - D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - E. Coordinate completion and clean-up of work of separate sections.
 - F. After Hillsborough County Sheriff's Office occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Hillsborough County Sheriff's Office's activities.

PART 2 PRODUCTS

- 2.1 PATCHING MATERIALS
 - A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
 - B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

PART 3 EXECUTION

- 3.1 EXAMINATION
 - A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
 - B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
 - C. Examine and verify specific conditions described in individual specification sections.
 - D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
 - E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 PREINSTALLATION MEETINGS

- A. Conduct a pre installation meeting at the site before each construction activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Owner of scheduled meeting dates.

3.4 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Owner and Wilder Architecture, Inc. of any discrepancies discovered.
- C. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Grid or axis for structures.
- D. Periodically verify layouts by same means.

3.5 GENERAL INSTALLATION REQUIREMENTS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Owner for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- J. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- K. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- L. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- M. Make neat transitions between different surfaces, maintaining texture and appearance.

3.6 SELECTIVE DEMOLITION

- A. Recycle materials whenever possible, including ceiling tiles, carpet, drywall, and metal studs. In addition to demolished materials, all general construction debris must be included in the recycling program.
- B. Definitions:
 - 1. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
 - 2. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
 - 3. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
 - 4. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.
- C. Material Ownership:

1. Owner has the right to any/all equipment, fixtures or materials that are being removed. Coordinate with Owner at pre-construction conference for list of salvaged items to Owner.
2. Items of salvable value only to Contractor may be removed from area as work progresses. Salvaged items must be transported from site as they are removed.
3. Storage or sale of removed items on site will not be permitted.
- D. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 1. Verify that construction and utility arrangements are as shown.
 2. Report discrepancies to Owner and Wilder Architecture, Inc. before disturbing existing installation.
- E. Submittals:
 1. Permits and notices authorizing demolition.
 2. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
 3. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
 4. Predemolition Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- F. Quality Assurance:
 1. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
 2. Professional Engineer Qualifications: Comply with Division 1 Section "Quality Requirements."
 3. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
 4. Standards: Comply with ANSI A10.6 and NFPA 241.
 5. Predemolition Conference: Conduct conference at Project site to comply with requirements in Section 013000.
 6. Observations: Design Team, Contractor, and Owner shall observe areas slated for demolition prior to commencement of demolition (after utilities are disconnected) and after demolition is complete.
- G. Project Conditions:
 1. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
 2. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
 - a. Do not close or obstruct corridors, elevators or passageways within the existing building without prior written request and permission no less than 72 hours in advance from Owner. Provide alternate routes around closed corridors, elevators or passageways.
 3. Owner assumes no responsibility for condition of areas to be selectively demolished.
 - a. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 4. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 5. Storage or sale of removed items or materials on-site will not be permitted.
 6. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - a. Maintain fire-protection facilities in service during selective demolition operations.
 7. Areas to be demolished will be vacated and discontinued in use before start of work.
- H. Warranty:
 1. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
- I. Examination:
 1. Cap and identify exposed utilities and coordinate with Owner.
 2. Verify that utilities have been disconnected and capped.
 3. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
 4. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
 5. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Owner and Architect.
 6. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- J. Utility Services:

1. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
 2. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
 - a. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
 - b. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - c. Arrange to shut off indicated utilities with utility companies.
 - d. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 - e. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
 3. Capping services after demolition will be the responsibility of the Contractor within areas of demolition. Capping of services will be determined at floor level, above the ceiling to its highest available height or behind wall. Notify the affected utility company in advance and obtain approval before starting work. Coordinate with Owner.
 4. Place marker to indicate location of disconnected services. Identify service lines and capping locations on Project Record Drawings.
- K. Preparation:
1. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
 2. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - a. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - b. Maintain approved means of egress from existing building exits as required by code. When closing off egress routes, install Owner approved temporary signage.
 - c. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Carry out demolition work to cause as little inconvenience to adjacent occupied building areas as possible.
- L. Execution:
1. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - a. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - b. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - c. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - d. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - e. Maintain adequate ventilation when using cutting torches.
 - f. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - g. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - h. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - i. Cease operations and notify Owner immediately, if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored.
 - j. Dispose of demolished items and materials promptly.
 - k. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

- l. Existing Facilities: Comply with Owner's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
 - m. Removed and Salvaged Items. Comply with the following:
 - 1) Carefully remove, store and protect the following materials and equipment for salvage to the Owner:
 - (a) Lighting fixtures
 - (b) Electric door switches
 - (c) Door, frames and hardware
 - 2) Clean salvaged items.
 - 3) Store items in a secure area until delivery to Owner.
 - 4) Protect items from damage during transport and storage.
 - n. Removed and Reinstalled Items: Comply with the following:
 - 1) Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 - 2) Protect items from damage during transport and storage.
 - 3) Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
 - o. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.
 - p. Immediately repair all demolition performed more than required, at no cost to the Owner.
 - q. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
 - r. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
 - s. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.
 - t. Removal all electrical conduits wire fittings and components not presently in use. Wiring and conduit to be removed up to electrical panels to level with floor or deck above.
 - u. Prevent damage, movement or settlement of structure while doing renovation work. Provide and place temporary bracing or shoring and be responsible for safety and support of structure. Assume liability for such movement, settlement, damage and injury.
 - v. Remove demolished materials, debris, tools and equipment from site upon completion of work. Leave site in a condition acceptable to the Owner.
- M. Patching and Repairs:
- 1. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
 - 2. Patching: Comply with provisions in "Cutting and Patching."
- N. Disposal of Demolished Materials:
- 1. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 - a. Burning: Do not burn demolished materials.
 - b. Disposal: Transport demolished materials off Owner's property and legally dispose of them.
- O. Salvaged Items
- 3.7 CUTTING AND PATCHING
- A. Whenever possible, execute the work by methods that avoid cutting or patching.
 - B. See Selective Demolition article above for additional requirements.
 - C. Submittals:
 - 1. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - a. Identification of project
 - b. Extent: Describe cutting and patching, the location and description of affected work, show how they will be performed, and indicate why they cannot be avoided. List any alternates to cutting and patching.
 - c. Effect on work of the Owner or separate contractor.
 - d. Written permission of affected separate contractor.
 - e. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.

- f. Products: List products to be used and firms or entities that will perform the Work.
 - g. Dates: Indicate when cutting and patching will be performed.
 - h. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
 - i. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
 - j. Owner and Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.
- D. Quality Assurance:
- 1. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural concrete.
 - d. Structural steel.
 - e. Lintels.
 - f. Structural decking.
 - g. Miscellaneous structural metals.
 - h. Equipment supports.
 - i. Piping, ductwork, vessels, and equipment.
 - 2. Operational Elements: Do not cut and patch the following operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 - a. Primary operational systems and equipment.
 - b. Air or smoke barriers.
 - c. Fire-protection systems.
 - d. Control systems.
 - e. Communication systems.
 - f. Conveying systems.
 - g. Electrical wiring systems.
 - 3. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Equipment supports.
 - d. Piping, ductwork, vessels, and equipment.
 - e. Noise- and vibration-control elements and systems.
 - 4. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
 - a. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.
 - 1) Roofing.
- E. Materials:
- 1. General: Comply with requirements specified in other Sections of these Specifications and materials required for the original installation.
- F. Examination:
- 1. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
 - 2. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 3. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
 - 4. Beginning of cutting or patching means acceptance of existing conditions.
- G. Preparation:
- 1. Temporary Support: Provide temporary support of Work to be cut.

2. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
 3. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
 4. Maintain excavations free of water.
- H. Performance:
1. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - a. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
 - b. Employ original installer to perform cutting and patching for weather exposed and moisture resistant elements, and sight exposed surfaces.
 2. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - a. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - b. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
 - c. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - d. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - e. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - f. Proceed with patching after construction operations requiring cutting are complete.
 - g. Remove and replace defective or non conforming work.
 - h. Remove samples of installed work for testing when requested.
 3. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 - a. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - b. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - c. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
 - d. Mechanical and Electrical Penetrations:
 - 1) Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
 - 2) At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated fire resistant material, in accordance with Section 07 8400, to full thickness of the penetrated element.
 - e. Remove and replace defective or non conforming work.
 - f. Remove samples of installed work for testing when requested.
- 3.8 PROGRESS CLEANING
- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
 - B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
 - C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
 - D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.
 - E. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
 - F. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

1. Install and maintain temporary barriers between construction project area and existing structure along with issue of policy and procedures to ensure safety, air quality, noise control, and protection of existing facilities.
 - G. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- 3.9 PROTECTION OF INSTALLED WORK
- A. Protect installed work from damage by construction operations.
 - B. Provide special protection where specified in individual specification sections.
 - C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
 - D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
 - E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
 - F. Prohibit traffic from landscaped areas.
 - G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.
- 3.10 FINAL CLEANING
- A. Cleaning Materials.
 1. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
 2. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
 - B. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
 - C. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight exposed interior and exterior surfaces.
 - D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - E. Clean filters of operating equipment.
 - F. Clean site; sweep paved areas, rake clean landscaped surfaces.
 - G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

SECTION 06 1000 - ROUGH CARPENTRY

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Roofing nailers.
 - B. Roofing cant strips.
 - C. Preservative treated wood materials.
- 1.2 REFERENCE STANDARDS
 - A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - C. AWPA U1 - Use Category System: User Specification for Treated Wood.
 - D. PS 1 - Structural Plywood.
 - E. PS 20 - American Softwood Lumber Standard.
 - F. SPIB (GR) - Grading Rules.
- 1.3 SUBMITTALS
 - A. See Section 01330 - Submittal Procedures.
 - B. Product Data: Provide technical data on application instructions and lumber provided.
- 1.4 DELIVERY, STORAGE, AND HANDLING
 - A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

- 2.1 GENERAL REQUIREMENTS
 - A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Douglas Fir-Larch, unless otherwise indicated.
 - 2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 - B. Lumber fabricated from old growth timber is not permitted.
 - C. Provide sustainably harvested wood; see Section 01 6000 - Product Requirements for requirements.
 - D. Provide wood harvested within a 500 mile radius of the project site.
- 2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS
 - A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
 - B. Sizes: Nominal sizes as indicated on drawings, S4S.
 - C. Moisture Content: S-dry or MC19.
 - D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.
- 2.3 CONSTRUCTION PANELS
 - A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
- 2.4 ACCESSORIES
 - A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
- 2.5 FACTORY WOOD TREATMENT
 - A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
 - B. Preservative Treatment:
 - 1. Manufacturers:
 - a. Arch Wood Protection, Inc; _____: www.wolmanizedwood.com.
 - b. Viance, LLC: www.treatedwood.com.

- c. Osmose, Inc: www.osmose.com.
- d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
 - 1. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - a. Treat lumber exposed to weather.
 - 2. Treat lumber in contact with roofing, flashing, or waterproofing.
 - 3. Treat lumber in contact with masonry or concrete.
 - 4. Treat lumber less than 18 inches above grade.

PART 3 EXECUTION

3.1 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- F. Provide the following specific non-structural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets.
 - 3. Handrails.
 - 4. Grab bars.
 - 5. Towel and bath accessories.
 - 6. Wall-mounted door stops.

3.4 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.5 INSTALLATION OF CONSTRUCTION PANELS

3.6 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.7 CLEANING

- A. Waste Disposal: Comply with the requirements of Section 01 7419 - Construction Waste Management and Disposal.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.
 - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06 1000

SECTION 07 0150.19 - PREPARATION FOR RE-ROOFING

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Removal of existing roofing system in preparation for a new roof membrane system.
- 1.2 REFERENCE STANDARDS
 - A. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- 1.3 ADMINISTRATIVE REQUIREMENTS
 - A. Coordinate with affected mechanical and electrical work associated with roof penetrations.
 - B. Preinstallation Meeting: Convene one week before starting work of this section.
 - C. Schedule work to coincide with commencement of installation of new roofing system.
- 1.4 QUALITY ASSURANCE
 - A. Materials Removal Firm Qualifications: Company specializing in performing the work of this section with minimum ____ years of documented experience.
- 1.5 FIELD CONDITIONS
 - A. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents or intended continued occupancy.
 - B. Maintain continuous temporary protection prior to and during installation of new roofing system.

PART 2 PRODUCTS

- 2.1 MATERIALS
 - A. Temporary Protection: Sheet polyethylene; provide weights to retain sheeting in position.

PART 3 EXECUTION

- 3.1 EXAMINATION
 - A. Verify that existing roof surface is clear and ready for work of this section.
- 3.2 PREPARATION
 - A. Sweep roof surface clean of loose matter.
 - B. Remove loose refuse and dispose off site.
- 3.3 MATERIAL REMOVAL
 - A. Remove only existing roofing materials that can be replaced with new materials the same day.
 - B. Remove metal counter flashings.
 - C. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions _____.
 - D. Remove damaged insulation and fasteners, cant strips, blocking, and _____.
- 3.4 FIELD QUALITY CONTROL
 - A. The drawings identify the approximate limits to material removal.
 - B. Test Reports: Indicate existing insulation moisture content.
- 3.5 PROTECTION
 - A. Provide temporary protective sheeting over uncovered deck surfaces.
 - B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights.
 - C. Provide for surface drainage from sheeting to existing drainage facilities.

END OF SECTION 07 0150.19

SECTION 07 5400 - THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Mechanically attached system with thermoplastic roofing membrane.
 - B. Insulation, flat and tapered.
 - C. Deck sheathing.
 - D. Flashings.
 - E. Roofing stack boots, roofing expansion joints, and walkway pads.
- 1.2 RELATED REQUIREMENTS
 - A. Section 06 1000 - Rough Carpentry: Wood nailers and curbs.
 - B. Section 07 0150.19 - Preparation for Re-Roofing - .
- 1.3 REFERENCE STANDARDS
 - A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - B. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.
 - C. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
 - D. FM DS 1-28 - Wind Design.
 - E. NRCA (RM) - The NRCA Roofing Manual.
 - F. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; National Roofing Contractors Association.
- 1.4 SUBMITTALS
 - A. See Division 1 for submittal procedures.
 - B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, surfacing, and fasteners.
 - C. Product Approval Conformance: Review the corresponding Product Approval Sheet (PA Series) in the drawing set. Incorporate the requirements described therein with the product submittal.
 1. Include the current Florida Product Approval documentation, including installation instructions, with the submittal.
 - D. Specimen Warranty: For approval.
 - E. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, and mechanical fastener layout.
 - F. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
 - G. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
 - H. Certificates: Provide current Florida Product Approval, including installation instructions.
 - I. Warranty Documentation:
 1. Submit manufacturer warranty and ensure that forms have been completed in Hillsborough County Sheriff's Office's name and registered with manufacturer.
 2. Submit installer's certification that installation complies with warranty conditions for waterproof membrane.
 - J. Warranty: Submit manufacturer warranty and ensure forms have been completed in Hillsborough County Sheriff's Office's name and registered with manufacturer.
- 1.5 QUALITY ASSURANCE
 - A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
 - B. Installer Qualifications: Company specializing in performing the work of this section with at least three years of documented experience.
 1. Approved by membrane manufacturer.
- 1.6 DELIVERY, STORAGE, AND HANDLING
 - A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
 - B. Store products in weather protected environment, clear of ground and moisture.
 - C. Protect foam insulation from direct exposure to sunlight.
- 1.7 WARRANTY
 - A. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
 1. Warranty Term: 20 years.
 2. For repair and replacement include costs of both material and labor in warranty.
 3. Contractor to verify Hillsborough County Sheriff's Office standards and provide required warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Thermoplastic Polyolefin (TPO) Membrane Materials:
 - 1. GAF; EverGuard TPO 60 mil: www.gaf.com/#sle, or equal
- B. Insulation:
 - 1. As approved by membrane roof manufacturer.

2.2 ROOFING - UNBALLASTED APPLICATIONS

- A. Thermoplastic Membrane Roofing: One ply membrane, mechanically fastened, over insulation.
- B. Roofing Assembly Requirements:
 - 1. Solar Reflectance Index (SRI): 78, minimum, calculated in accordance with ASTM E1980.
 - a. Field applied coating may not be used to achieve specified SRI.
- C. Acceptable Insulation Types - Tapered Application: _____.
 - 1. Tapered polyisocyanurate, perlite, or extruded polystyrene board.

2.3 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

- A. Membrane:
 - 1. Material: Thermoplastic polyolefin (TPO) complying with ASTM D6878/D6878M.
 - 2. Reinforcing: Internal fabric.
 - 3. Thickness: 0.060 inch, minimum.
 - 4. Sheet Width: Factory fabricated into largest sheets possible.
 - 5. Solar Refelctance: 79% per ASTM E903.
 - 6. Color: White.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Membrane Fasteners: As recommended and approved by membrane manufacturer.
 - 1. Fastening to meet required design wind load design and Product Approval.
- D. Flexible Flashing Material: Same material as membrane.

2.4 DECK SHEATHING AND COVER BOARDS

- A. Per manufacturer's recommendation for installation over existing rigid insulation

2.5 INSULATION

- A. Polyisocyanurate Board Insulation: Rigid cellular foam, complying with ASTM C1289, layered as required and with the following characteristics:
 - 1. Board Size: 48 by 96 inch.
 - 2. Board Edges: Square.
 - 3. Manufacturers:
 - a. GAF; EnergyGuard Ultra Polyiso Tapered Insulation: www.gaf.com/#sle., or equal
- B. Glass-mat Gypsum Core Board: Dens-Deck.
 - 1. Board Size" 48 x 96 inch.
 - 2. Board Thickness: 1/2".
 - 3. Thermal Resistance: R-value of 0.5.
 - 4. Manufacturer:
 - a. G-P Gypsum.
 - b. Substitutions: See Section 01600 - Product Requirements.

2.6 ACCESSORIES

- A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
- B. Sheathing Joint Tape: Heat resistant type, 6 inch wide, self adhering.
- C. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.
- D. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
 - 1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.
- E. Membrane Adhesive: As recommended by membrane manufacturer.
- F. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
- G. Roofing Nails: Galvanized, hot dipped type, size and configuration as required to suit application.
- H. Strip Reglet Devices: Stainless steel, Type 304 - 0.020", maximum possible lengths per location, with attachment flanges.
 - 1. Basis of Design: Fry Reglet "STX", or equal.
- I. Sealants: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

3.2 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and reglets are in place.

3.3 INSTALLATION - GENERAL

- A. Perform work in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

3.4 VAPOR RETARDER AND INSULATION APPLICATION - UNDER MEMBRANE

- A. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.
- B. Attachment of Insulation:
 - 1. Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions and Factory Mutual requirements.
- C. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
- D. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- E. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- F. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- G. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.
- H. Do not apply more insulation than can be covered with membrane in same day.

3.5 MEMBRANE APPLICATION

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Spot Adhered Application: Mechanically fasten adhesive discs to substrate. Apply adhesive to discs and bond membrane. Fully adhere one roll before proceeding to adjacent rolls.
- D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. Mechanical Attachment: Apply membrane and mechanical attachment devices in accordance with manufacturer's instructions.
- F. At intersections with vertical surfaces:
 - 1. Fully adhere flexible flashing over membrane and up to nailing strips.
 - 2. Insert flashing into reglets and secure.
- G. Around roof penetrations, seal flanges and flashings with flexible flashing.
- H. Coordinate installation of roof drains and related flashings.

3.6 CLEANING

- A. Remove bituminous markings from finished surfaces.
- B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

3.7 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION 07 5400

SECTION 07 5419 - PVC THERMOPLASTIC SINGLE-PLY ROOFING

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Mechanically attached PVC thermoplastic roofing membrane. al
 - B. Insulation, flat and tapered.
 - C. Deck sheathing.
 - D. Flashings.
 - E. Roofing cant strips, stack boots, roofing expansion joints, and walkway pads.
- 1.2 RELATED REQUIREMENTS
 - A. Section 06 1000 - Rough Carpentry: Wood nailers and curbs.
 - B. Section 07 0150.19 - Preparation for Re-Roofing.
 - C. Section 07 6200 - Sheet Metal Flashing and Trim: Counterflashings, reglets and _____.
- 1.3 REFERENCE STANDARDS
 - A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - B. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing.
 - C. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
 - D. FM DS 1-28 - Wind Design.
 - E. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System.
 - F. NRCA (RM) - The NRCA Roofing Manual.
 - G. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings.
- 1.4 SUBMITTALS
 - A. See Division 1 for submittal procedures.
 - B. Product Data: Provide manufacturer's written information listed below.
 1. Product data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
 - C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and mechanical fastener layout.
 - D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
 - E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
 - F. Specimen Warranty: For approval.
 - G. Warranty:
 1. Submit manufacturer warranty and ensure that forms have been completed in Hillsborough County Sheriff's Office's name and registered with manufacturer.
 2. Submit installer's certification that installation complies with all warranty conditions for the waterproof membrane.
- 1.5 QUALITY ASSURANCE
 - A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty (20) years of documented experience.
 - B. Installer Qualifications: Company specializing in performing the work of this section:
 1. With minimum five (5) years documented experience.
 2. Approved by membrane manufacturer.
- 1.6 DELIVERY, STORAGE, AND HANDLING
 - A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
 - B. Store products in weather protected environment, clear of ground and moisture.
 - C. Protect foam insulation from direct exposure to sunlight.
- 1.7 WARRANTY
 - A. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
 1. Warranty Term: 20 years.
 2. For repair and replacement include costs of both material and labor in warranty.

PART 2 PRODUCTS

- 2.1 MANUFACTURER
 - A. GAF: 1 Campus Drive, Pasippany, NJ 07054 Tel: 973-628-3000, or equal.

2.2 ROOFING APPLICATIONS

- A. PVC Membrane Roofing: One ply membrane, mechanically fastened, over insulation.
- B. Roofing Assembly Performance Requirements and Design Criteria:
 - 1. Solar Reflectance Index (SRI): 78, minimum, calculated in accordance with ASTM E1980.
 - a. Field applied coating may not be used to achieve specified SRI.
 - 2. Roof Covering External Fire Resistance Classification: Class A when tested per UL 790.
 - 3. Insulation Thermal Resistance (R-Value): 3 per inch, minimum; provide insulation of thickness required.
 - 4. Drainage: No standing water within 48 hours after precipitation.

2.3 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

- A. Membrane:
 - 1. Material: Polyvinyl chloride (PVC) complying with ASTM D4434/D4434M.
 - 2. Reinforcing: Internal fabric.
 - 3. Thickness: 60 mil, minimum
 - 4. Sheet Width: Factory fabricated into largest sheets possible.
 - 5. Color: White.
 - 6. Product:
 - a. GAF Everguard PVC Smooth
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Membrane Fasteners: As recommended and approved by membrane manufacturer.
- D. Flexible Flashing Material: Same material as membrane.

2.4 DECK SHEATHING AND COVER BOARDS

- A. Per manufacturer's recommendation for installation over existing rigid insulation.

2.5 INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, fiber reinforced felt both faces; Grade 2 and with the following characteristics:
 - 1. Tapered Board: Slope as indicated; fabricate of fewest layers possible.

2.6 ACCESSORIES

- A. Prefabricated Flashing Accessories:
 - 1. Corners and Seams: Same material as membrane, in manufacturer's standard thicknesses.
 - 2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
 - 3. Miscellaneous Flashing: Non-reinforced PVC membrane; 80 mils (0.080 inch) thick, in manufacturer's standard lengths and widths.
- B. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.
- C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
- D. Membrane Adhesive: As recommended by membrane manufacturer.
- E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
- F. Sealants: As recommended by membrane manufacturer.
- G. Cleaner: Manufacturer's standard, clear, solvent-based cleaner.
- H. Edgings and Terminations: Manufacturer's standard edge and termination accessories.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.2 PREPARATION, GENERAL

- A. Clean substrate thoroughly prior to roof application.
- B. Do not begin work until other work that requires foot or equipment traffic on roof is complete.

3.3 INSTALLATION - GENERAL

- A. Perform work in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.

- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be waterproofed the same day.
- F. Coordinate the work with installation of associated counterflashings installed by other sections as the work of this section proceeds.
- G. When substrate preparation is responsibility of another installer, notify Wilder Architecture, Inc. of unsatisfactory conditions before proceeding.

3.4 INSULATION APPLICATION

- A. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.
- B. Attachment of Insulation:
 - 1. Mechanically fasten subsequent layer of insulation to deck in accordance with roofing manufacturer's instructions and Factory Mutual requirements.
- C. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
- D. Lay boards with edges in moderate contact without forcing, and gap between boards no greater than 1/4 inch. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- E. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- F. Do not apply more insulation than can be completely waterproofed in the same day.

3.5 MEMBRANE APPLICATION

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Seam Welding:
 - 1. Seam Welding: Overlap edges and ends and seal seams by heat welding, minimum 2 inches.
 - 2. Cover all seams with manufacturer's recommended joint covers.
 - 3. Probe all seams once welds have thoroughly cooled. (Approximately 30 minutes.)
 - 4. Repair all deficient seams within the same day.
 - 5. Seal cut edges of reinforced membrane after seam probe is complete.
- D. Mechanical Attachment:
 - 1. Apply membrane and mechanical attachment devices in accordance with manufacturer's instructions.
- E. At intersections with vertical surfaces:
 - 1. Extend membrane over cant strips and up a minimum of 4 inches onto vertical surfaces.
 - 2. Fully adhere flexible flashing over membrane and up to nailing strips.
- F. Coordinate installation of roof drains and sumps and related flashings.
- G. Daily Seal: Install daily seal per manufacturers instructions at the end of each work day. Prevent infiltration of water at incomplete flashings, terminations, and at unfinished membrane edges.

3.6 CLEANING

- A. Remove bituminous markings from finished surfaces.
- B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

3.7 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION 07 5419

SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, and scuppers.
 - B. Sealants for joints within sheet metal fabrications.
- 1.2 RELATED REQUIREMENTS
 - A. Section 06 1000 - Rough Carpentry: Wood nailers for sheet metal work.
 - B. Section 06 1000 - Rough Carpentry: Field fabricated roof curbs.
 - C. Section 07 7123 - Manufactured Gutters and Downspouts.
 - D. Section 07 9200 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.
- 1.3 REFERENCE STANDARDS
 - A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
 - C. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
 - D. SMACNA (ASMM) - Architectural Sheet Metal Manual.
- 1.4 SUBMITTALS
 - A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- 1.5 QUALITY ASSURANCE
 - A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.
- 1.6 DELIVERY, STORAGE, AND HANDLING
 - A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
 - B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

- 2.1 SHEET MATERIALS
 - A. Stainless Steel: ASTM A666, Type 304 alloy, soft temper, 26 gage, ___ inch; smooth No. 4 finish.
- 2.2 ACCESSORIES
 - A. Fasteners: Stainless steel, with soft neoprene washers.
 - B. Primer: Zinc chromate type.
 - C. Protective Backing Paint: Zinc molybdate alkyd.
 - D. Sealant: Type ___ specified in Section 07 9005.
 - E. Plastic Cement: ASTM D4586, Type I.
- 2.3 FABRICATION
 - A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
 - B. Form pieces in longest possible lengths.
 - C. Hem exposed edges on underside 1/2 inch; miter and seam corners.
 - D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
 - E. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- 2.4 ROOF DRAINAGE SYSTEM INSTALLATION
 - A. General: Install sheet metal roof drainage items to complete roof drainage system according to SMACNA recommendations as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.
 - B. Parapet scuppers: Install scuppers where indicated through parapet. Continuously support . set to correct elevation, and seal, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
 1. Anchor scupper closure trim flanges to exterior wall and seal or solder to scupper.
 2. Loosely lock front edge of scupper with conductor head.
 3. Seal or solder exterior wall scupper flanges into back of conductor head.

2.5 ACCESSORIES

- A. Fasteners: Stainless steel, with soft neoprene washers.
- B. Concealed Sealants: Non-curing butyl sealant.
- C. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- D. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.3 INSTALLATION

- A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- B. Apply plastic cement compound between metal flashings and felt flashings.
- C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION 07 6200

SECTION 07 9200 - JOINT SEALANTS

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Nonsag gunnable joint sealants.
 - B. Joint backings and accessories.
- 1.2 REFERENCE STANDARDS
 - A. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
 - B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
 - C. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
 - D. ASTM C1193 - Standard Guide for Use of Joint Sealants.
 - E. ASTM C1311 - Standard Specification for Solvent Release Sealants.
 - F. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
- 1.3 SUBMITTALS
 - A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
 - B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 2. List of backing materials approved for use with the specific product.
 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 4. Substrates the product should not be used on.
 - C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
 - D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
 - E. Samples for Verification: Where custom sealant color is specified, obtain directions from Wilder Architecture, Inc. and submit at least two physical samples for verification of color of each required sealant.
 - F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
 - G. Field Quality Control Plan: Submit at least two weeks prior to start of installation.
 - H. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.
- 1.4 QUALITY ASSURANCE
 - A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
 - B. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 1. Adhesion Testing: In accordance with ASTM C794.
 2. Compatibility Testing: In accordance with ASTM C1087.
 3. Allow sufficient time for testing to avoid delaying the work.
 4. Deliver to manufacturer sufficient samples for testing.
 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.
 - C. Field Quality Control Plan:
 1. Visual inspection of entire length of sealant joints.
 2. Non-destructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
 3. Field testing agency's qualifications.
 4. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.
 - D. Field Adhesion Test Procedures:
 1. Allow sealants to fully cure as recommended by manufacturer before testing.
 2. Have a copy of the test method document available during tests.
 3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.

4. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Wilder Architecture, Inc..
- E. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Spot Method.

PART 2 PRODUCTS

2.1 JOINT SEALANT APPLICATIONS

- A. Scope:
 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on the drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between different exposed materials.
 - b. Other joints indicated below.
 2. Do not seal the following types of joints.
 - a. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - b. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - c. Joints where installation of sealant is specified in another section.
 - d. Joints between suspended panel ceilings/grid and walls.
- B. Type ___ - Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
 1. Type ___ - Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing.

2.2 JOINT SEALANTS - GENERAL

2.3 NONSAG JOINT SEALANTS

- A. Type ___ - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 1. Movement Capability: Plus and minus 50 percent, minimum.
 2. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
- B. Type ___ - Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.

2.4 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Install bond breaker backing tape where backer rod cannot be used.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- E. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- F. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.2 FIELD QUALITY CONTROL

- A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Wilder Architecture, Inc. immediately.
- C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION 07 9200