SECTION 07 01 50 – ROOF PREPARATION AND REPAIR

PART 1 GENERAL

1. SUMMARY
   a. Section Includes:
      1) Roof rehabilitation preparation of entire roof system at roofs noted.
      2) Cutting out of all existing roof traffic pads and membrane and insulation below traffic pads.
      3) EPDM membrane roof repair.
   b. Related Information:
      1) All Documents listed in Table of Contents “TOC”.
      2) Division 07 Section "Roof Rehabilitation" for roof rehabilitation requirements.
   c. Allowances: Refer to Drawing A1: General Notes “Allowances" for description of Work in this Section affected by allowances.
   d. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

2. DESCRIPTION OF WORK
   a. Re-roofing preparation Work consists of the following:
      1) Preparation for roof rehabilitation:
         a) Existing Roof Type: Adhered single ply EPDM over Roof insulation.
         b) Existing Deck Type: Wood deck.
         c) Partial roof tear-off at areas of wet insulation as noted on A1.
         d) Roof patching.

3. MATERIALS OWNERSHIP
   a. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner’s property, demolished materials shall become Contractor’s property and shall be removed from Project site.
4. DEFINITIONS


b. Existing Roofing System: Roofing system identified above, including roof covering/membrane, roof insulation, surfacing, and components and accessories between deck and roof covering/membrane.

c. Partial Roof Tear-Off: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system.

d. Roof Rehabilitation Preparation: Existing roofing membrane that is to remain and be prepared for rehabilitation.

e. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

f. Existing to Remain: Existing items of construction that are not indicated to be removed.

g. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

h. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

i. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

5. PREINSTALLATION MEETINGS


  1) Coordinate with roofing preinstallation meetings specified in Division 07 roofing section(s).

  2) Review methods and procedures related to roofing tear-off, including, but not limited to, the following:
a) Reroofing preparation, including roofing system manufacturer’s written instructions.

b) Temporary protection requirements for existing roofing system components that are to remain.

c) Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.

d) Construction schedule and availability of materials, Installer’s personnel, equipment, and facilities needed to avoid delays.

e) Existing roof deck conditions requiring Architect notification.

f) Existing roof deck removal procedures and Owner notifications.

g) Condition and acceptance of existing roof deck and base flashing substrate for reuse.

h) Structural loading limitations of roof deck during reroofing.

i) Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.

j) HVAC shutdown and sealing of air intakes.

k) Shutdown of fire-suppression, -protection, and -alarm and -detection systems.

l) Asbestos removal and discovery of asbestos-containing materials.

m) Governing regulations and requirements for insurance and certificates if applicable.

n) Existing conditions that may require Architect notification before proceeding.

6. SUBMITTALS

a. Submit Product Data: For each type of product indicated.

b. Submit Schedule of Re-Roofing Preparation Activities: Indicate the following:

1) Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants’ on-site operations are uninterrupted.

2) Use of elevator is not permitted.
3) Interior access to roof scuttle will be limited to Stair to third floor adjacent to loading area. All roof materials that cannot be carried by 1 man are to be lifted by machine from grade to the roof.

4) Coordination of Owner's continuing occupancy of portions of existing building.

7. QUALITY ASSURANCE
      1) Approved by warrantor of existing roof system to work on existing roofing.
   b. Regulatory Requirements:
      1) Comply with hauling and disposal regulations of authorities having jurisdiction.

8. PROJECT / FIELD CONDITIONS
   a. Owner will occupy portions of building immediately below reroofing area.
      1) Conduct reroofing so Owner's operations will not be disrupted.
      2) Provide Owner with not less than 48 hours' written notice of activities that may affect Owner's operations.
      3) Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
      4) Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area.
         a) Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.
   b. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
   c. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
   d. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor’s professional engineer based upon site inspection and analysis.
e. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

1) Remove only as much roofing in one day as can be made watertight in the same day.

f. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

g. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.

1) Hazardous materials will be removed by Owner before start of the Work. Existing roof will be left no less watertight than before removal.

2) If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

   a) Obtain direction from Architect before proceeding with work in the affected area.

PART 2 PRODUCTS

1. TEMPORARY PROTECTION MATERIALS

   a. EPS Insulation: Molded (expanded) polystyrene, ASTM C578.

   b. Plywood: NIST DOC PS 1, Grade CD, Exposure 1.

   c. Oriented Strand Board (OSB): NIST DOC PS 2, Exposure 1.

2. DECK REPAIR/REPLACEMENT MATERIALS

   a. Wood Components:

      1) Solid-sawn wood decking

         a) General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC’s Board of Review.

         b) Moisture Content: Provide wood decking with 19 percent maximum moisture content at time of dressing.

d) Decking Size: Nom. 2x6 shimmed as required to match existing decking.

e.) Grade: Commercial Decking with factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that will not be exposed to view.

2) Wood Blocking, Curbs, Cants and Nailers: Specified in Division 06 Section "Miscellaneous Rough Carpentry."

3) Reuse existing wood components that exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.

3. ROOFING INFILL AND REPLACEMENT MATERIALS

a. Use roofing infill materials matching existing membrane roofing system materials unless otherwise indicated.

1) Roof Insulation: Board Insulation, Polyisocyanurate, CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces, ASTM C1289 Type II Class 1.

a) Compressive Strength, ASTM D1621: Grade 2: 20 psi (138 kPa).

b) Conditioned Thermal Resistance at 75 deg. F (24 deg. C): 14.4 at 2.5 inches (50.8 mm) thick.

2) Membrane: ASTM D4637; Type I EPDM; unreinforced, 0.060 inch (1.5 mm) thick, ; black color.

3) Membrane adhesive and tape: Membrane manufacturer's recommended membrane adhesive, complying with VOC limits of authorities having jurisdiction; and in-seam tape for sealing perimeter of membrane patch

b. Fasteners: Factory-coated steel fasteners with metal or plastic plates listed in FM Approvals' RoofNav, and acceptable to new roofing system manufacturer.

4. AUXILIARY RE-ROOFING MATERIALS

a. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of existing and new membrane roofing system.
PART 3 EXECUTION

1. PREPARATION, GENERAL

   a. Protection of In-Place Conditions: Protect existing roofing system that is indicated not to be reroofed.
      
      1) Loosely lay 1-inch- (25-mm-) minimum thick, molded expanded polystyrene (EPS) insulation over the roofing membrane in areas indicated.
         a) Loosely lay 15/32-inch (12-mm) plywood or OSB panels over EPS. Extend EPS past edges of plywood or OSB panels a minimum of 1 inch (25 mm).
      
      2) Limit traffic and material storage to areas of existing roofing membrane that have been protected.
      
      3) Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.

   b. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.

   c. Shut off rooftop utilities and service piping before beginning the Work.

   d. Test existing roof drains to verify that they are not blocked or restricted.
      
      1) Immediately notify Architect of any blockages or restrictions.

   e. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work.
      
      1) Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

   f. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.
      
      1) Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
      
      2) Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.

   g. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
h. Roof Drain Protection: Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.

1) If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

2) Prevent debris from entering or blocking roof drains and conductors.
   a) Use roof-drain plugs specifically designed for this purpose.
   b) Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

3) If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding.
   a) Do not permit water to enter into or under existing membrane roofing system components that are to remain.

2. ROOF TEAR-OFF

a. Notify Owner each day of extent of roof tear-off proposed for that day and obtain authorization to proceed.

b. Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.

c. Remove walkways and accessories from roofing membrane.
   1) Cut out existing walkway pads; mechanically attach replacement insulation to deck and adhere EPDM membrane patch, seal patch edges with in-seam tape.

d. Roof Drainage: Remove roof drainage items indicated for removal.

e. Partial Roof Tear-Off: Where indicated on Drawings, remove existing roofing membrane and other membrane roofing system components down to the deck.
   1) Remove cover boards, roof insulation and base sheets or vapor retarders.
   2) Remove fasteners from deck.
f. Roof Edge Specialties: Reuse existing perimeter metal systems, except where indicated otherwise; refasten and repair existing fascia and coping covers to remain.

g. Inspect wood blocking, curbs, and nailers for deterioration and damage.

1) Replace existing wood components that exhibit signs of deterioration or other conditions detrimental to securement of roofing system components, including roof edge flashings.

2) Reuse of Existing Wood Nailers: Permitted where type, size and securement are in accordance with Factory Mutual Loss Prevention Data Bulletin 1-49; and existing wood nailers exhibit no signs of deterioration or other conditions detrimental to securement of new roofing system in conformance with specified requirements.

3. DECK PREPARATION

a. Inspect deck after partial tear-off of membrane roofing system.

b. Verify that deck is sound and dry.

c. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.

d. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

4. DECK REPAIR/REPLACEMENT

a. Repair existing deck to provide smooth working surface for installation of roof system.

1) Replace deck that cannot be repaired to sound condition.

5. INFILL AND REPLACEMENT MATERIALS INSTALLATION

a. Immediately after removal of selected portions of existing membrane roofing system, and inspection and repair, if needed, of deck, fill in the tear-off areas to match existing membrane roofing system construction.

b. Mechanically fasten insulation to deck to resist uplift pressures in accordance with ASCE 7 and applicable code. Build-up insulation thickness to match height of existing roofing membrane.

c. Adhere EPDM membrane using manufacturer’s recommended adhesive; apply at recommended rate. Seal edges with in-seam tape.
6. ROOF REHABILITATION CLEANING AND PREPARATION
   a. Clean 200 SF sample area for review and approval by architect. Do not proceed with rehabilitation cleaning at any other areas prior to receiving written approval of sample area.
   b. Power wash existing coated EPDM roof membrane with a min. pressure of 2500 Opsi.

7. DISPOSAL
   a. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
      1) Storage or sale of demolished items or materials on-site is not permitted.
   b. Transport and legally dispose of demolished materials off Owner’s property.

8. CLEANING
   a. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

END OF SECTION 07 01 50