Thermoplastic-Polyolefin Roofing (TPO) – (07 54 23)

1. All applicable parts of the General Roofing Specification (section 07 30 00) shall be included in this section.
2. Assessment of TPO roofs
   - 2.1. A TPO roofing system shall be determined as a failed roof when any of the following conditions exist:
     - 2.1.1. When the existing structure is overstressed.
     - 2.1.2. When there is existing moisture within the system.
     - 2.1.3. When there is damage to the existing roof deck – rust, rot, spalling, etc.
     - 2.1.4. If there is significant loss of material over reinforcing scrim.
3. Roof Slope Use as defined in Part 7, General Roofing Specification (07 30 00)
   - 3.1. A TPO roof can be used on the following roof slopes:
     - 3.1.1. Low Slope
     - 3.1.2. Transitional Slope
     - 3.1.3. High Slope, in accordance with the manufacturer's limitations and testing data.
   - 3.2. All roof cricket slopes shall be twice that of the main roof slope, if possible.
   - 3.3. Special conditions for slope of system
     - 3.3.1. The minimum slope for new building construction is ¼ unit vertical in 12 units horizontal.
     - 3.3.2. The recommended minimum slope for new roofing on existing buildings is ¼ unit vertical in 12 units horizontal, when possible.
     - 3.3.3. The absolute minimum slope for new roofing on existing buildings is "positive roof drainage". Ponding is not acceptable.
4. Repair or replacement of roof, not to contradict Part 6, General Roofing Specification (07 30 00)
   - 4.1. If a roof does not meet condition(s) for repair / restore / then roof replacement is the only required and allowed action.
   - 4.2. If the TPO system must be replaced, the existing TPO roofing shall be removed before any new roofing system is installed.
   - 4.3. Additional information regarding what constitutes a failed TPO roofing system can be found in Part 2 of this section.

5. Demolition requirements
    5.1. All items as found in Part 10, General Roofing Specification (07 30 00).
    5.2. No special demolition requirements for TPO roofing systems.
6. Back of parapet treatment
    6.1. The TPO system shall be adhesively applied to the back of parapets as required.
        6.1.1. Height of the TPO membrane system applied to the back of parapets shall not exceed manufacturer’s specified requirements.
    6.2. At locations where the membrane does not extend for the full height of the parapet, the surface shall be waterproofed with materials suitable to the substrate.
7. High wall treatment
    7.1. The TPO system shall be adhesively applied to high walls as required.
    7.2. Height of the TPO membrane system on high walls shall not exceed manufacturer’s specified requirements.
    7.3. The TPO membrane on high walls shall not be roofed to a height where the roof can be seen from the ground.
    7.4. At locations where the membrane does not extend for the full height of the high wall, the surface shall be waterproofed with materials suitable to the substrate.
8. Components of a TPO membrane roofing system
    8.1. Rigid board insulation
        8.1.1. Acceptable types are polyisocyanurate foam board, polystyrene board insulation and composite board insulation, thickness as determined by the Designer.
    8.2. Coverboard
        8.2.1. A coverboard shall be used in all TPO membrane roof assemblies.
        8.2.2. Coverboards are required to provide the following functions:
            8.2.2.1. To separate incompatible material.
            8.2.2.2. To minimize thermal drift.

8.2.2.3. To protect rigid board insulation and provide rigid support for the roof membrane.

8.2.3. Acceptable types of coverboards will be:

8.2.3.1. Glass mat faced gypsum boards.

8.2.3.2. High density wood fiber.

8.2.3.3. High density polyisocyanurate board.

8.2.3.4. Paper faced gypsum board shall not be used as a cover board.

8.2.4. The TPO roofing system is acceptable as an overlay over an existing roofing system, as determined by the Designer.

8.3. Thermoplastic-Polyolefin Roofing (TPO)

8.3.1. The TPO system shall meet ASTM Standard Specification D-6878, 60 mil minimum thickness.

8.3.2. The TPO design, specification and installation shall provide a 20-year minimum life.

8.3.3. A fully adhered membrane is recommended, but attachment is to be determined on a project basis as determined by the Designer.

8.3.3.1. Fastener length for mechanically attached systems shall not exceed 10”.

8.3.4. The TPO roofing system shall have a twenty (20) year, no dollar limit (NDL) material and labor warranty to be provided by the manufacturer.

8.3.5. A two year minimum material and labor warranty shall be provided by the Contractor.

8.3.6. All components of the roofing system shall be supplied by the roofing manufacturer in order to maintain the warranty and fire classification of the system.

8.3.7. All adhesives used shall be low VOC and free of any hazardous materials.

8.3.7.1. Low rise adhesive is recommended.

8.3.8. All penetrations, curb flashings and corner flashings shall be factory-fabricated. No field fabricated components permitted.

8.4. Roof mounted equipment / accessories

8.4.1. All materials to be compatible with the TPO roofing material.

9. Closeout Documents

9.1. All items as found in Part 16, General Roofing Specification (07 30 00).

10. Preventative Maintenance Criteria

10.1. All items as found in Part 17, General Roofing Specification (07 30 00).

11. Budgeting cost ranges

11.1. This part shall apply only to SFB budgeting and economic projections and analysis. Not to be used for anything else

11.2. Budget costing for the TPO roofing system is as follows:

11.2.1. Low-range: $7.50 - $10.50 per square foot.

11.2.2. Mid-range: $10.00 – $13.00 per square foot.

11.2.3. High-range: $13.00 - $25.00 per square foot.

11.3. Life cycle costing estimate for a TPO roof is $2.50 per square foot per year.

12. Expected End of Life (EOL) for the specified TPO roofing system should be no less than 20-years if properly maintained and inspected regularly.