# F.12 Blue Roofs

## F.12.1 Blue Roof Plan Standards

1. Verify that the plans include an appropriate sequence of construction that is specific to the construction of the blue roof. Refer to Section 4.6.5 for guidance. [Section 2.3.1]
2. Verify that the plans include an appropriate cross-sectional detail for the blue roof. [Section 2.3.1]
3. Verify that a roof drainage plan is provided and that the roof drainage is consistent with the blue roof design. [Appendix E, Table E-7]

## F.12.2 Blue Roof Design Standards

1. Verify that structural loading is considered for the blue roof design, and that the blue roof design is coordinated with a licensed structural engineer for both new building construction and retrofits to existing structures. [Section 4.6.3, 1]
2. Verify that the maximum surface ponding depth is four to six inches. [Section 4.6.3, 2]
3. Verify that the SMP drains within the acceptable 72-hour period after the 24-hour storm event. [Section 4.6.3, 3]
4. Verify that positive overflow is provided for large storm events, up to and including the 100-year, 24-hour storm event, or, if the project is exempt from Flood Control, the ten-year, 24-hour storm. [Section 4.6.3, 4]
5. Verify that overflow structures and pipes are designed to convey at least the ten-year, 24-hour storm event. [Section 4.6.3, 4]
6. Verify that the blue roof storage area is underlain by a waterproofing membrane. [Section 4.6.3, 5]
7. Verify that the storage system provides adequate storage to control release rates to meet all applicable Stormwater Regulations. [Section 4.6.3, 7]
8. Verify that a porosity of 0.40 is used for ballast stone. [Section 4.6.3, 9]
9. For roofs without ballast, verify that enough weight is provided to secure the waterproofing membrane. [Section 4.6.3, 10]
10. For roofs with ballast, verify that the depth and porosity of the ballast are accounted for when calculating the potential storage volume. [Section 4.6.3, 10]
11. Verify that roof drain restrictors, if proposed, are sized according to the desired release rate and ponding depth. [Section 4.6.3, 11]
12. Verify that safe access to the blue roof is provided for periodic cleaning, inspection, and maintenance by trained building personnel. Easy access must be provided to each of the outlet controls, low-flow discharge points, and overflow connections to permit removal of debris under saturated conditions. [Section 4.6.3, 13]

## F.12.3 Blue Roof Material Standards

1. Verify that stone or gravel used for ballast within the stormwater storage area, if proposed, is specified on the plans as being uniformly graded, clean-washed stone, either crushed or smooth, and that it is noted that PWD defines “clean-washed” as having less than 0.5% wash loss, by mass, when tested per the AASHTO T-11 wash loss test. AASHTO No. 3 and No. 57 stone can meet this specification. [Section 4.6.4, 2a]
2. Verify that the size of the stone, if proposed, does not exceed the mesh size of the outlet control screen or slots. Ballast stone typically falls within the size range of 3/8 inch to two inches. [Section 4.6.4, 2b]
3. Verify that ballast, if proposed, meets all American Society of Testing and Materials (ASTM) D1863 requirements for mineral aggregate used on built-up roofs. [Section 4.6.4, 2c]
4. Verify that all waterproof membranes meet appropriate ASTM specifications. PVC membranes must meet ASTM D4434 requirements, EPDM membranes must meet ASTM D4637 requirements, and TPO membranes must meet ASTM D6878 requirements. [Section 4.6.4, 3b]
5. Verify that all waterproofing membranes are fully waterproof with properly sealed seams, corners, and protrusions to prevent any intrusion of standing water above the membrane. [Section 4.6.4, 3c]
6. Verify that roofing membranes meet all building code requirements and guidelines of the City of Philadelphia. [Section 4.6.4, 3d]