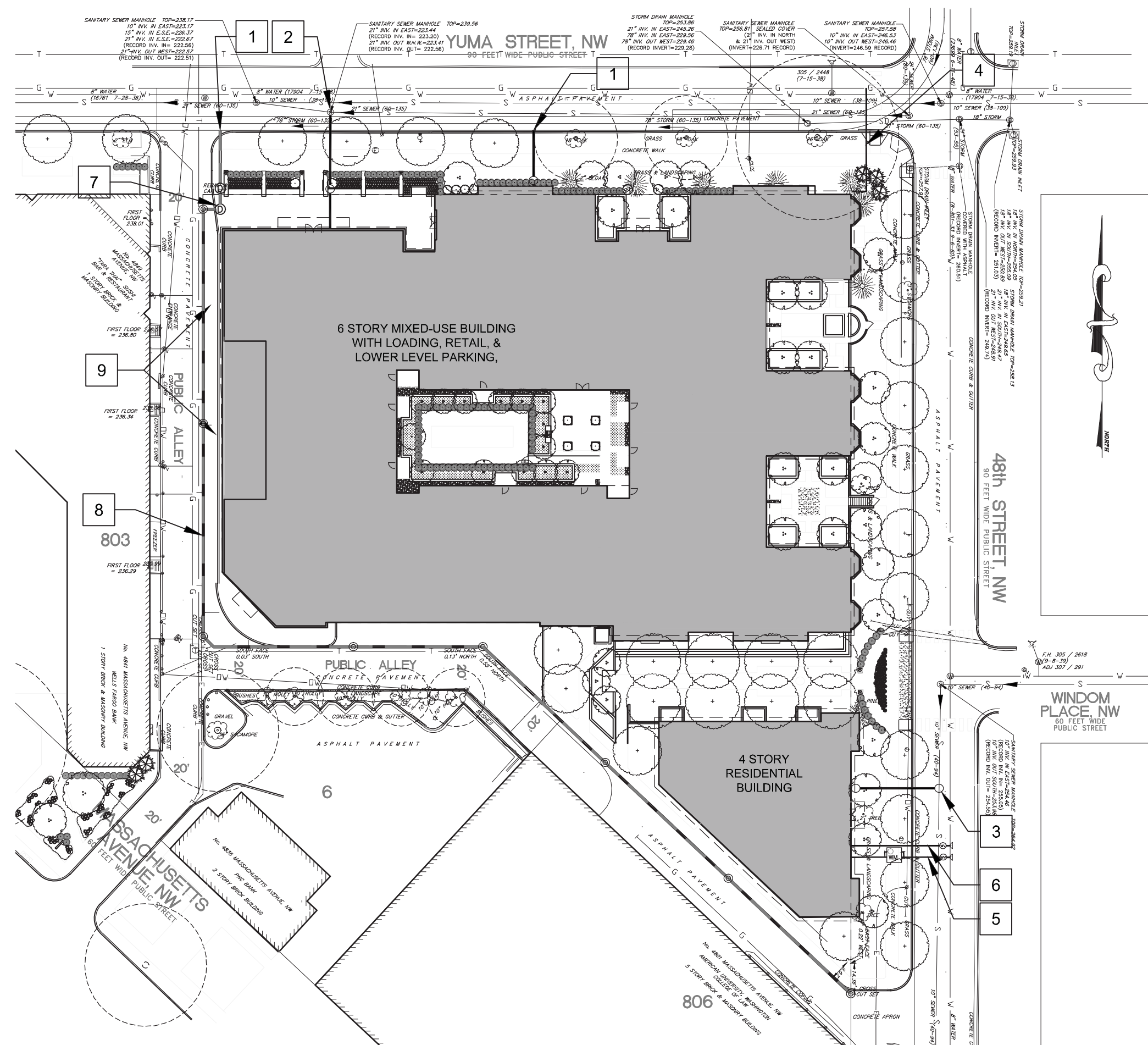


Civil Exhibits

THIS PAGE INTENTIONALLY LEFT BLANK

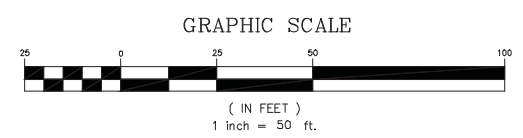


KEYNOTES

- 1 NEW STORM CONNECTION - THIMBLE CONNECTION TO 78" STORM MAIN
- 2 NEW BUILDING SANITARY CONNECTION - CONNECTION TO 21" SANITARY MAIN AT EXISTING MANHOLE
- 3 NEW BUILDING SANITARY CONNECTION - MANHOLE CONNECTION TO 10" SANITARY SEWER
- 4 NEW GAS CONNECTION
- 5 NEW 4" DOMESTIC WATER CONNECTION TO 8" WATER MAIN
- 6 NEW 8" FIRE CONNECTION TO 8" WATER MAIN
- 7 STORMFILTER MANHOLE TREATING PRIVATE SPACE VEHICULAR ACCESS AREAS
- 8 SLOTTED DRAIN AT PROPERTY LINE
- 9 NEW PEPCO VAULTS

LEGEND

- PROPOSED BUILDING
- WATER METER VAULT
- WATER VALVE & CASING
- NEW MANHOLE



CIV-02: UTILITY PLAN

PUD SET
4330 48TH STREET, NW

DATE

11/08/2017

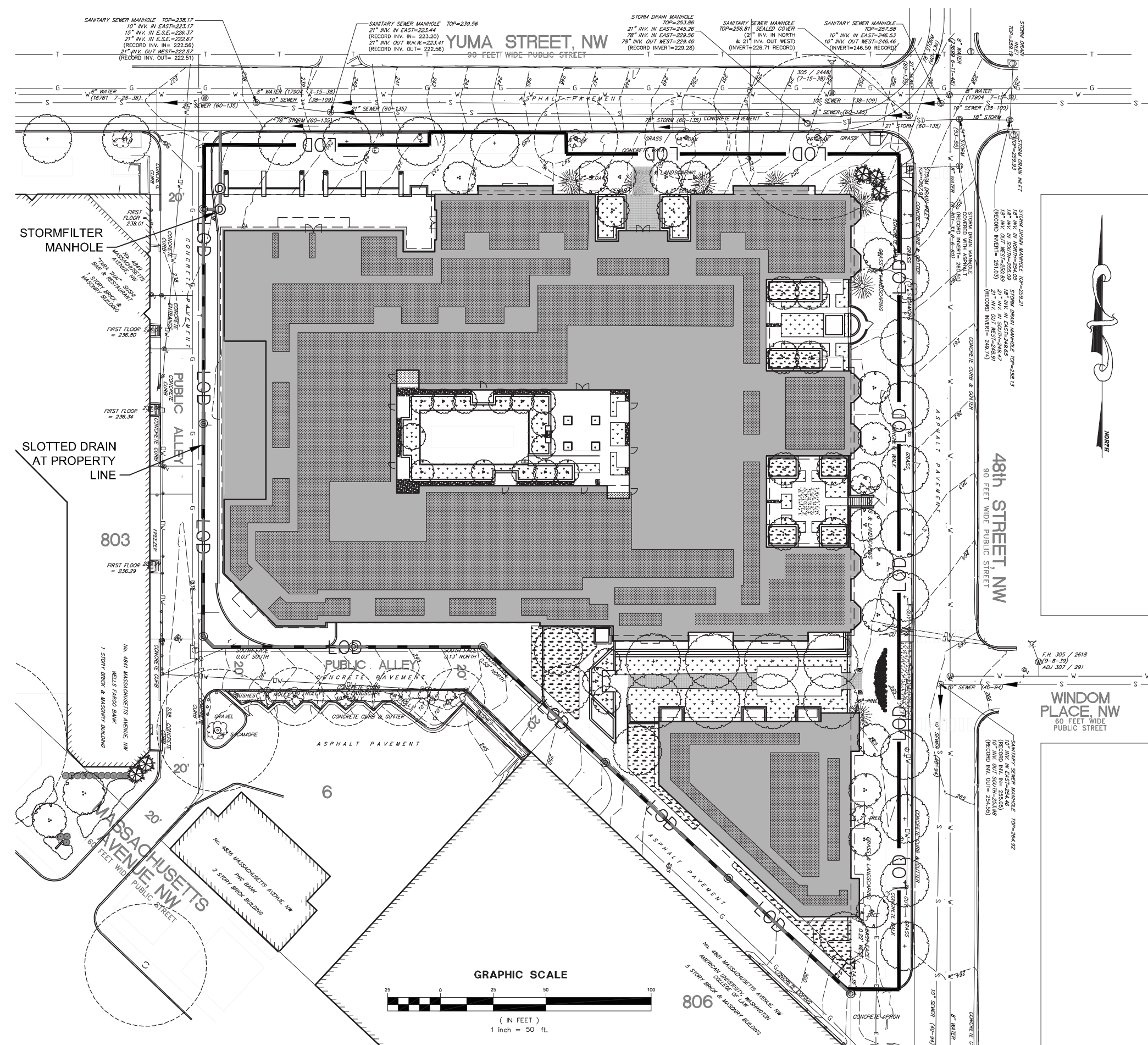


Table 3.1 Extensive Green Roof Material Specifications

Material	Specification
Roof	Structural capacity must conform to ASTM E-2397-05, <i>Practice for Determination of Live Loads and Dead Loads Associated with Vegetative (Green) Roof Systems</i> . In addition, use standard test methods ASTM E2398-05 for <i>Water Capture and Media Retention of Geocomposite Drain Layers for Green (Vegetated) Roof Systems</i> and ASTM E2399-05 for <i>Maximum Media Density for Dead Load Analysis</i> .
Leak Detection System	Optional system to detect and locate leaks in the waterproof membrane.
Waterproof Membrane	See Chapter 6 of Weiler and Scholz-Barth (2009) for waterproofing options that are designed to convey water horizontally across the roof surface to drains or gutter. This layer may sometimes act as a root barrier.
Root Barrier	Impermeable liner that impedes root penetration of the membrane.
Drainage Layer	Depth of the drainage layer is generally 0.25 to 1.5 inches thick for extensive designs. The drainage layer should consist of synthetic or inorganic materials (e.g., gravel, high density polyethylene (HDPE), etc.) that are capable of retaining water and providing efficient drainage. A wide range of prefabricated water cups or plastic modules can be used, as well as a traditional system of protected roof drains, conductors, and roof leaders. Designers should consult the material specifications as outlined in ASTM E2396 and E2398. Roof drains and emergency overflow must be designed in accordance with the District's construction code (DCMR, Title 12).
Filter Fabric	Generally needle-punched, non-woven, polypropylene geotextile, with the following qualities: <ul style="list-style-type: none"> Strong enough and adequate puncture resistance to withstand stresses of installing other layers of the green roof. Density as per ASTM D3776 ≥ 8 oz/y². Puncture resistance as per ASTM D4833 ≥ 130 lb. These values can be reduced with submission of a Product Data Sheet and other documentation that demonstrates applicability for the intended use. Adequate tensile strength and tear resistance for long term performance. Allows a good flow of water to the drainage layer. Apparent Opening Size, as per ASTM D4751, of $\geq 0.06\text{mm} \leq 0.2\text{mm}$, with other values based on Product Data Sheet and other documentation as noted above. Allows at least fine roots to penetrate. Adequate resistance to soil borne chemicals or microbial growth both during construction and after completion since the fabric will be in contact with moisture and possibly fertilizer compounds.
Growth Media	70% to 80% lightweight inorganic materials and a maximum of 30% organic matter (e.g., well-aged compost). Media typically has a maximum water retention of approximately 30%. Material makeup and proof of maximum water retention of the growing media must be provided. Media must provide sufficient nutrients and water holding capacity to support the proposed plant materials. Determine acceptable saturated water permeability using ASTM E2396-05.
Plant Materials	<i>Scalum</i> , herbaceous plants, and perennial grasses that are shallow-rooted, low maintenance, and tolerant of direct sunlight, drought, wind, and frost. See ASTM E2400-06, <i>Guide for Selection, Installation and Maintenance of Plants for Green (Vegetated) Roof Systems</i> .

STORMWATER MANAGEMENT NARRATIVE


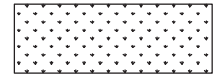
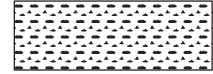
THE SITE WILL MEET ITS STORMWATER RETENTION VOLUME (7,421 CF) WITH A COMBINATION OF EXTENSIVE AND INTENSIVE GREEN ROOF AND A STORMFILTER MANHOLE TO TREAT VEHICULAR ACCESS AREAS. NO WETLANDS, STREAMS, OR WATER COURSES ARE LOCATED ON AND/OR ADJACENT TO THE PROPERTY.

STORMWATER RUNOFF CALCULATIONS

2-YEAR PRE-DEVELOPMENT (MEADOW CONDITION; C=0.35) RUNOFF = 3.4 CFS
 15-YEAR PRE-DEVELOPMENT (MEADOW CONDITION; C=0.35) RUNOFF = 4.9 CFS
 2-YEAR POST-DEVELOPMENT (IMPERVIOUS CONDITION; C=0.90) RUNOFF = 8.8 CFS
 15-YEAR POST-DEVELOPMENT (IMPERVIOUS CONDITION; C=0.90) RUNOFF = 12.5 CFS

NOTE: TO MEET DC STORMWATER REGULATIONS, THE 2-YEAR POST-PROJECT RUNOFF WILL BE KEPT BELOW THE PRE-DEVELOPMENT 2-YEAR FLOW, AND THE 15-YEAR POST-PROJECT RUNOFF WILL BE LESS THAN THE PRE-PROJECT 15-YEAR FLOW.

LEGEND

-  EXTENSIVE GREEN ROOF - 4"
-  INTENSIVE GREEN ROOF - 24"
-  INTENSIVE GREEN ROOF - 48"
- LIMITS OF DISTURBANCE :
 79,674 SF (PRIVATE SPACE)
 +20,326 SF (PUBLIC SPACE) =100,000 SF

CIV-03: STORMWATER MANAGEMENT PLAN

PUD SET
 4330 48TH STREET, NW

DATE

11/08/2017

