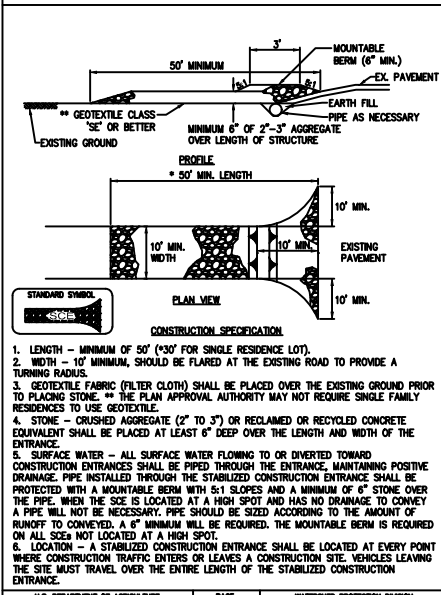
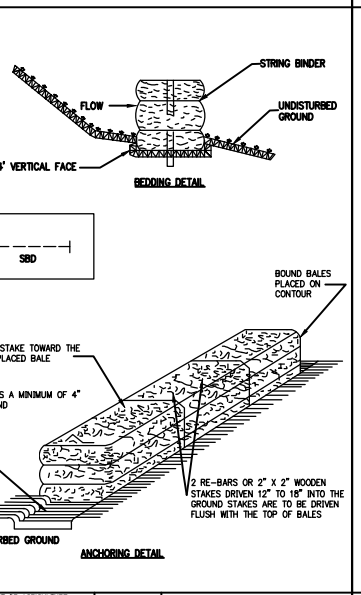


DETAIL 1 - STABILIZED CONSTRUCTION ENTRANCE



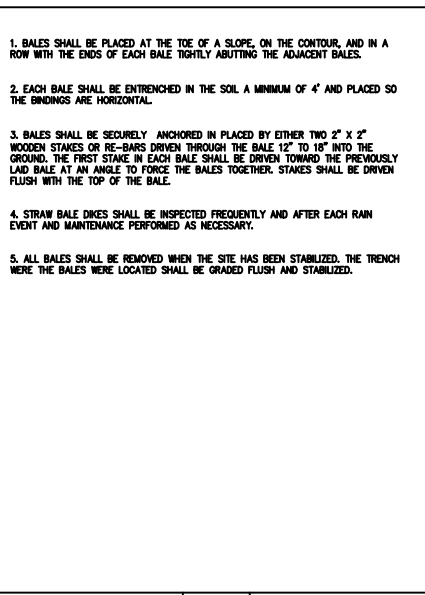
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 4-1-3, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 3 - STRAW BALE DIKE



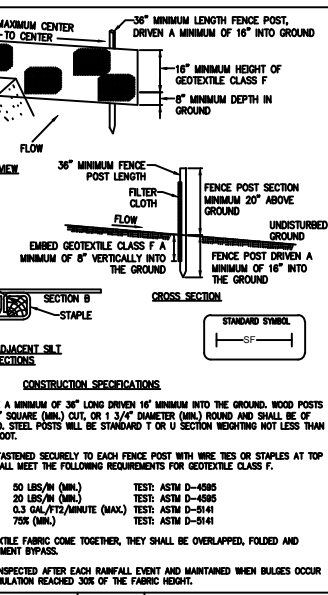
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-4-3, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

STRAW BALE DIKE



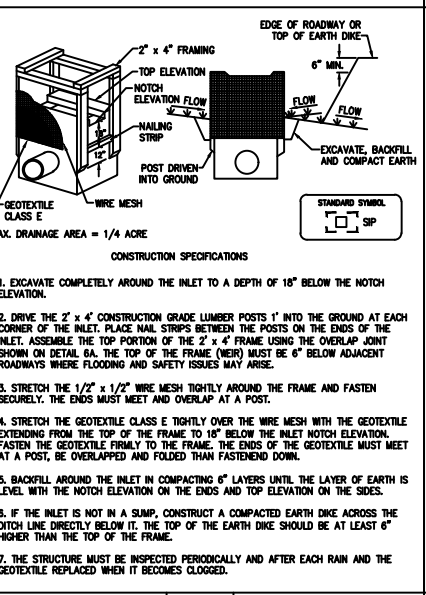
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-1-4, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 4 - SILT FENCE



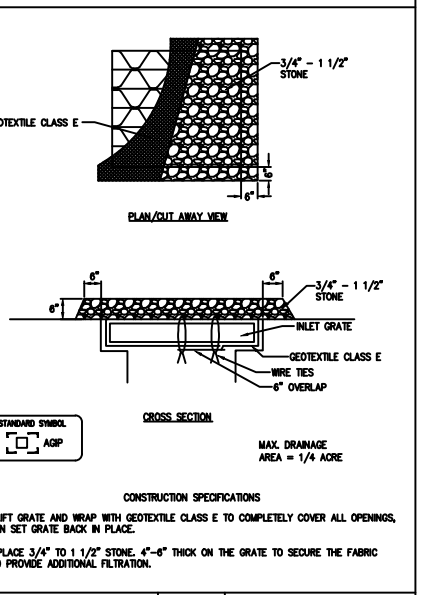
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-5-3, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 6A - STANDARD INLET PROTECTION



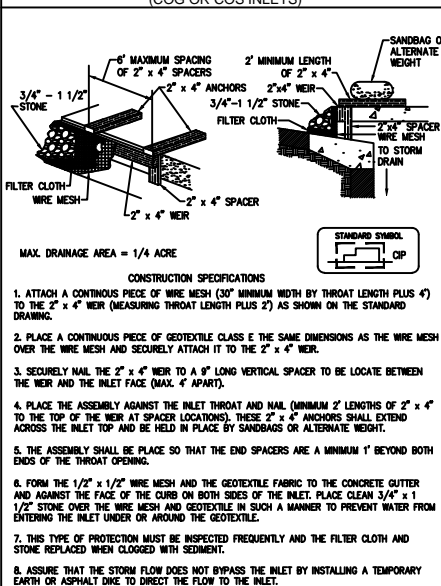
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-7-2, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 6B - AT GRADE INLET PROTECTION



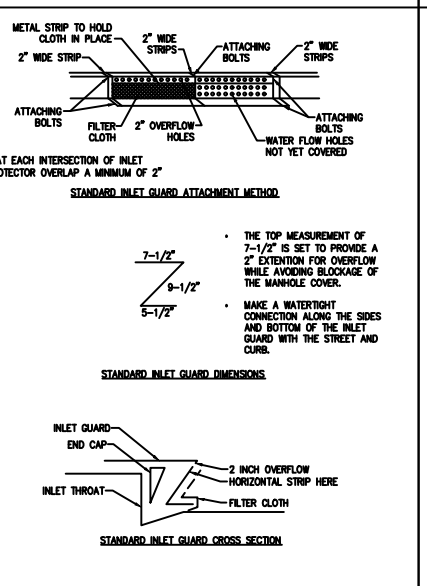
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-7-8, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 6C - CURB INLET PROTECTION (COG OR COS INLETS)



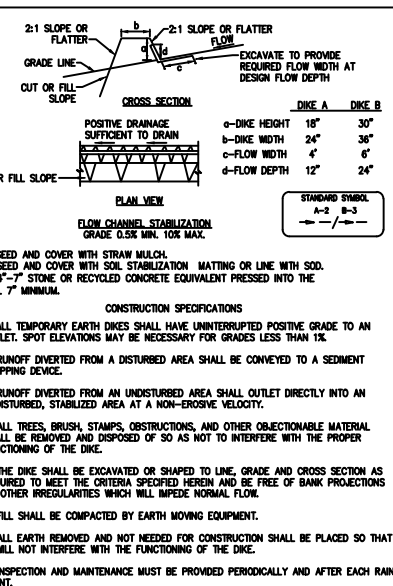
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-7-7, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 6E - AT GRADE INLET GUARD



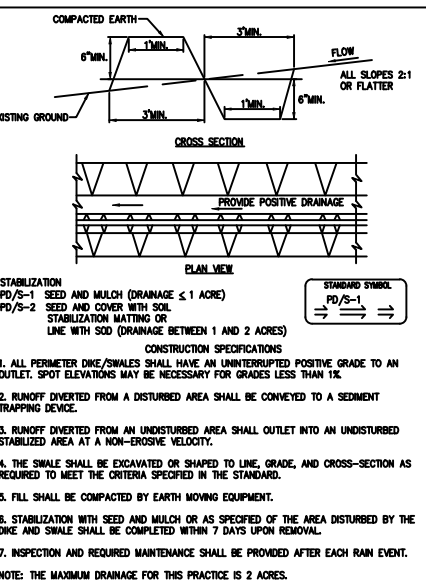
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-7-9, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 9 - EARTH DIKE



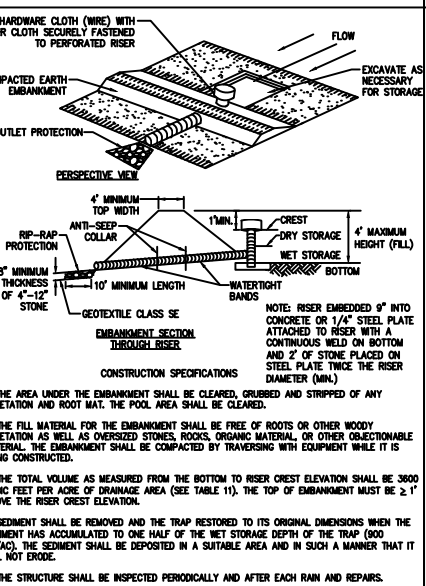
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-1-4, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 11 - PERIMETER DIKE / SWALE



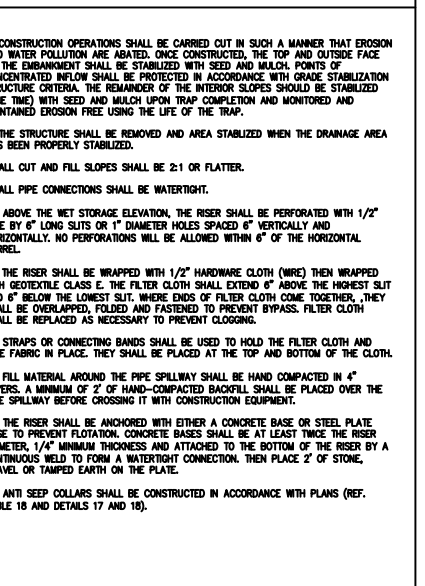
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-1-4, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 12 - PIPE OUTLET SEDIMENT TRAP - ST I



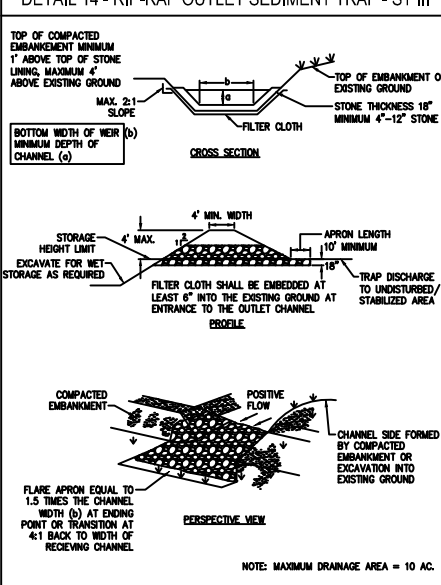
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PIPE OUTLET SEDIMENT TRAP - ST I



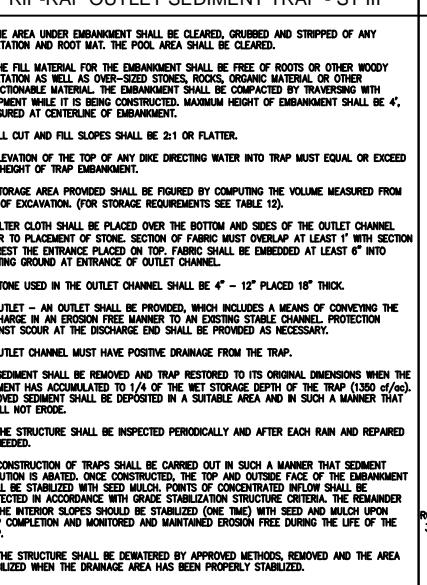
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-11-8, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 14 - RIP-RAP OUTLET SEDIMENT TRAP - ST III



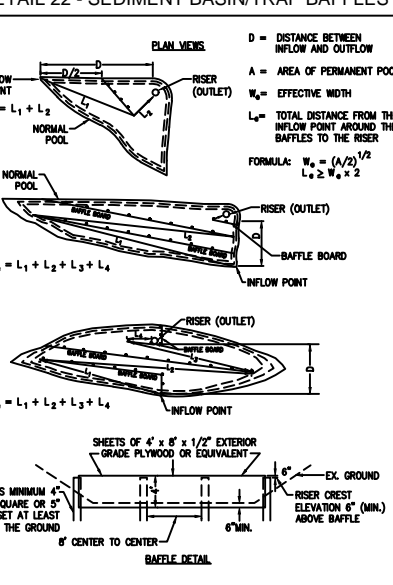
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-14-15, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

RIP-RAP OUTLET SEDIMENT TRAP - ST III



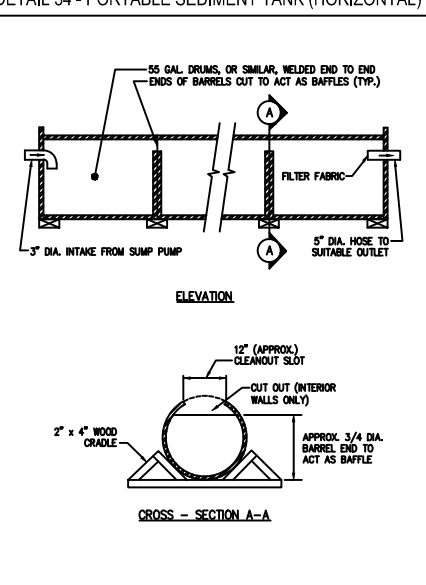
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-14-16, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 22 - SEDIMENT BASIN/TRAP Baffles



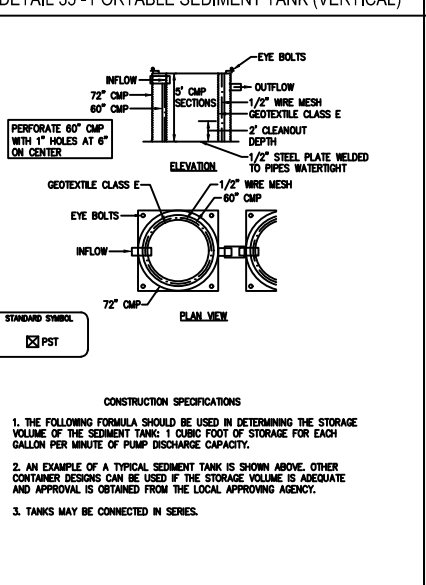
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, PAGE 8-11-32, WATERSHED PROTECTION DIVISION, DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH

DETAIL 34 - PORTABLE SEDIMENT TANK (HORIZONTAL)



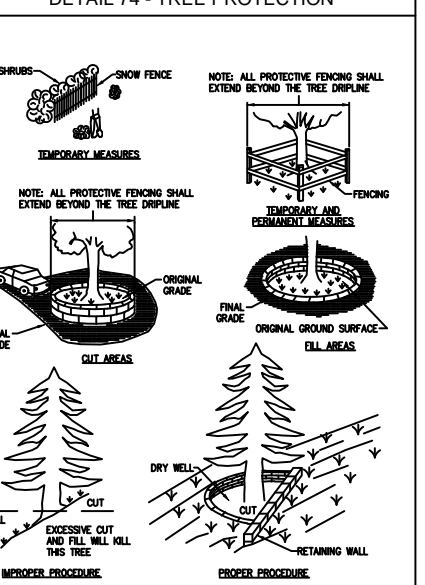
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DETAIL 35 - PORTABLE SEDIMENT TANK (VERTICAL)



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DETAIL 74 - TREE PROTECTION



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EROSION AND SEDIMENT CONTROL DETAILS

2100 PENNSYLVANIA AVENUE NW Washington, DC



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Seal/Signature

Date

04/12/2017

Project Name

2100 PENNSYLVANIA AVENUE NW

Project Number

A1613

Description

EROSION AND SEDIMENT CONTROL DETAILS

Scale

C-501

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2100 PENNSYLVANIA AVENUE NW

Washington, DC



THE GEORGE WASHINGTON UNIVERSITY WASHINGTON DC

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04/12/2017

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2100 PENNSYLVANIA AVENUE NW

Project Number

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Description

SITE DETAILS

Scale

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**COMPOSITE PAVEMENT RESTORATION UTILITY LINES - 1**  
 NOTES:  
 1. ALL EXISTING SAW CUT SHALL BE PARALLEL TO THE ROADWAY CENTERLINE JOINT.  
 2. IF SAW CUT IS WITHIN 2 FT. OF A JOINT IN THE PCC BASE, CUT SHALL BE EXTENDED TO THE JOINT. REPAIR/RESTORATION SHALL EXTEND TO THAT JOINT.  
 3. IF THE UTILITY CUT IS STABILIZED, THE CONTRACTOR MUST REPLACE THE PCC BASE QUANTITY THROUGH WIDTH OF THE CUT RAMP FROM JOINT TO JOINT.  
 4. SEE DEPT. STANDARD SPECIFICATIONS, SECTION 211.01 FOR MATERIAL REQUIREMENTS.  
 5. SEE DEPT. STANDARD SPECIFICATIONS, SECTION 211.02 FOR MATERIAL REQUIREMENTS.  
 6. 1/2" BAR SHOULD BE EMBEDDED 4" INTO EXISTING CONCRETE.  
 7. STEEL PLATES SHALL BE PLACED OVER SAW CUTS TO BE PLACED OVER 1/2" IS CURED. THE PLATE EDGES SHALL BE TEMPORARILY FEATHERED UNTIL THE NEW PAVEMENT SURFACE IS PLACED.  
 8. ALL EXPOSED EDGES OF EXISTING PAVEMENT AND SURFACE OF CONCRETE BASE SHALL BE FINISHED BEFORE PLACING NEW PAVEMENT.  
 9. CLEAR AND MET EDGES OF CUTS BEFORE PLACING CONCRETE. COMPACT AND SAMPON SURFACE BEFORE PLACING BAR.  
 10. THE CONCRETE BASE SHALL BE SAW CUT 4" TO THE EXISTING PCC BASE CONTRACTOR JOINTS FROM 4" TO 24" HOURS AFTER PLACEMENT OF CONCRETE TO PREVENT SHORAGE CRACKING.  
 11. THE CONTRACTOR SHALL RESTORE THE PERMANENT PAVEMENT MARKINGS AFFECTED FROM THE UTILITY CUTS.

**CONCRETE PAVEMENT RESTORATION UTILITY LINES - 2**  
 NOTES:  
 1. RESTORATION SAW CUT SHALL BE PARALLEL TO THE ROADWAY CENTERLINE JOINT.  
 2. IF SAW CUT IS WITHIN 2 FT. OF A JOINT IN THE PCC BASE, CUT SHALL BE EXTENDED TO THE JOINT. REPAIR/RESTORATION SHALL EXTEND TO THAT JOINT.  
 3. IF THE UTILITY CUT IS STABILIZED, THE CONTRACTOR MUST REPLACE THE PCC BASE QUANTITY THROUGH WIDTH OF THE CUT RAMP FROM JOINT TO JOINT.  
 4. SEE DEPT. STANDARD SPECIFICATIONS, SECTION 211.01 FOR MATERIAL REQUIREMENTS.  
 5. SEE DEPT. STANDARD SPECIFICATIONS, SECTION 211.02 FOR MATERIAL REQUIREMENTS.  
 6. THE SAW SHOULD BE EMBEDDED 4" INTO EXISTING CONCRETE.  
 7. CLEAN AND MET EDGES OF CUTS BEFORE PLACING CONCRETE. COMPACT AND SAMPON ADEQUATE BASE BEFORE PLACING BAR.  
 8. THE MINIMUM COMPRESSIVE STRENGTH OF THE PCC PAYMENT SHALL BE 3000 PSI. CONCRETE TESTING SHALL BE CONDUCTED BY A THIRD PARTY LABORATORY. THE TEST RESULTS SHALL BE LOOSER ONLY VALID BY A PROFESSIONAL ENGINEER LICENSED IN D.C. THE TEST RESULTS SHALL BE SUBJECT FOR APPROVAL PRIOR TO REMOVAL PLACING.  
 9. STEEL PLATES SHALL BE PLACED OVER NEWLY PLACED PCC PAYMENT SECTION. (1) 1/2" BAR SHALL BE EMBEDDED 4" INTO EXISTING PCC PAYMENT THROUGH JOINT.  
 10. THE CONTRACTOR SHALL RESTORE THE PERMANENT PAVEMENT MARKINGS AFFECTED FROM THE UTILITY CUTS.

**ALLEY-DRIVEWAY ENTRANCE WITH CURB RETURNS TYPE "A"**  
 NOTES:  
 1. RESTORATION SAW CUT SHALL BE PARALLEL TO THE ROADWAY CENTERLINE JOINT.  
 2. IF SAW CUT IS WITHIN 2 FT. OF A JOINT IN THE PCC BASE, CUT SHALL BE EXTENDED TO THE JOINT. REPAIR/RESTORATION SHALL EXTEND TO THAT JOINT.  
 3. IF THE UTILITY CUT IS STABILIZED, THE CONTRACTOR MUST REPLACE THE PCC BASE QUANTITY THROUGH WIDTH OF THE CUT RAMP FROM JOINT TO JOINT.  
 4. SEE DEPT. STANDARD SPECIFICATIONS, SECTION 211.01 FOR MATERIAL REQUIREMENTS.  
 5. SEE DEPT. STANDARD SPECIFICATIONS, SECTION 211.02 FOR MATERIAL REQUIREMENTS.  
 6. THE SAW SHOULD BE EMBEDDED 4" INTO EXISTING CONCRETE.  
 7. CLEAN AND MET EDGES OF CUTS BEFORE PLACING CONCRETE. COMPACT AND SAMPON ADEQUATE BASE BEFORE PLACING BAR.  
 8. THE MINIMUM COMPRESSIVE STRENGTH OF THE PCC PAYMENT SHALL BE 3000 PSI. CONCRETE TESTING SHALL BE CONDUCTED BY A THIRD PARTY LABORATORY. THE TEST RESULTS SHALL BE LOOSER ONLY VALID BY A PROFESSIONAL ENGINEER LICENSED IN D.C. THE TEST RESULTS SHALL BE SUBJECT FOR APPROVAL PRIOR TO REMOVAL PLACING.  
 9. STEEL PLATES SHALL BE PLACED OVER NEWLY PLACED PCC PAYMENT SECTION. (1) 1/2" BAR SHALL BE EMBEDDED 4" INTO EXISTING PCC PAYMENT THROUGH JOINT.  
 10. THE CONTRACTOR SHALL RESTORE THE PERMANENT PAVEMENT MARKINGS AFFECTED FROM THE UTILITY CUTS.

**TYPICAL SIDEWALK SECTIONS**  
 NOTES:  
 1. STANDARD TRANSVERSE SLOPE OF SIDEWALK IS 2% TOWARD CURB.  
 2. ALL SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 5 FT. WHEN DIMENSIONED FROM THE ROADWAY BY A WALKWAY SIGN. THE WIDTH OF THE SIDEWALK SHOULD BE A MINIMUM OF 4 FT. MINIMUM 4 FT. FOR SIDE WALK. SIDEWALKS TO BE PLACED ON THE SIDEWALK. THE MINIMUM WIDTH OF SIDEWALK SHALL BE 4 FT. TO ALLOW FOR MEDICINE WALK.  
 3. WHEN MINIMUM SIDEWALK WIDTH REQUIREMENTS ARE MET, A WIDER SIDEWALK SHALL BE PROVIDED IF THE ROADWAY IS NOT ALIGNED.  
 4. ANY EXCEPTIONS TO MINIMUM SIDEWALK OR TRESPASSER REQUIREMENTS REQUIRE THE ENGINEER'S APPROVAL.  
 5. PROVIDE A MINIMUM THE REQUIRED TREE SOIL VOLUME PER BEST PRACTICES STANDARDS.

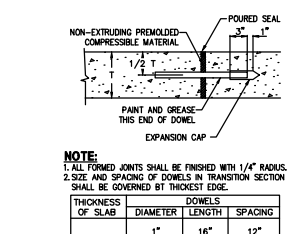
**BRICK SIDEWALK SETTING BED**  
 NOTES:  
 1. BRICK PATTERN SHALL BE AS SHOWN ON DWG NO. 605.03 OR PER APPROVED CONTRACT PLANS.  
 2. SAND SHALL BE CONCRETE SAND WITH COEFF. OF APPROVED EQUAL.  
 3. BRICK ON SAND & GRAVEL TO BE USED ONLY WITH APPROVAL FROM THE CHIEF ENGINEER.

**PATTERNS FOR BRICK SIDEWALK**  
 NOTES:  
 1. REFER TO DWG NO. 605.04 FOR BRICK SETTING BED.  
 2. REFER TO CHAPTER 2.01 DESIGN AND ENGINEERING MANUAL FOR MORE INFORMATION.

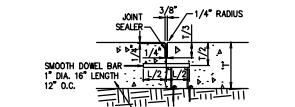
**TYPES OF GRANITE CURBS**  
 NOTES:  
 1. CONDITIONS AT BACK OF CURB VARY AND ARE AS SHOWN ON THE CONTRACT PLANS.  
 2. PCC DRIP WELLS SHALL BE PER DEPT. STANDARD SPECIFICATIONS, SECTION 211.01. (1) SHALL MAINTAIN THE SAME TIME LIMITS AS PCC AND SHALL BE WATERED DOWN AFTER SETTING OF GRANITE CURB.  
 3. THE MINIMUM DEPTH TO CONCRETE SURFACE ON ROADWAY FINISH SHALL BE 10 IN.  
 4. GRANITE CURBS ARE SHOWN WITH A COMPOSITE PAVEMENT SECTION.  
 5. A 1/2" MIN. LAYER OF 1/4" PER FT. THICK GRANITE CURB SHALL BE PLACED BENEATH THE ROADWAY AND CURB AND GUTTER AND IS NOT SHOWN FOR CLARITY.  
 6. A 3/4" MIN. LAYER OF GRADED AGGREGATE BASE SHALL BE PLACED BENEATH THE ROADWAY AND CURB AND GUTTER AND IS NOT SHOWN FOR CLARITY.

**PATTERNS FOR BRICK GUTTER**  
 NOTES:  
 1. CONDITIONS AT BACK OF CURB VARY AND ARE AS SHOWN ON THE CONTRACT PLANS.  
 2. PCC DRIP WELLS SHALL BE PER DEPT. STANDARD SPECIFICATIONS, SECTION 211.01. (1) SHALL MAINTAIN THE SAME TIME LIMITS AS PCC AND SHALL BE WATERED DOWN AFTER SETTING OF GRANITE CURB.  
 3. THE MINIMUM DEPTH TO CONCRETE SURFACE ON ROADWAY FINISH SHALL BE 10 IN.  
 4. GRANITE CURBS ARE SHOWN WITH A COMPOSITE PAVEMENT SECTION.  
 5. A 1/2" MIN. LAYER OF 1/4" PER FT. THICK GRANITE CURB SHALL BE PLACED BENEATH THE ROADWAY AND CURB AND GUTTER AND IS NOT SHOWN FOR CLARITY.  
 6. A 3/4" MIN. LAYER OF GRADED AGGREGATE BASE SHALL BE PLACED BENEATH THE ROADWAY AND CURB AND GUTTER AND IS NOT SHOWN FOR CLARITY.

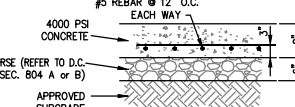
**CURB RAMP DETAILS**  
 NOTES:  
 1. THE SURFACE OF THE PCC RAMP SHALL BE FINISH (FINISHED) (SEE NOTE 1).  
 2. ALL SHAPES SHALL CONFORM TO DEPT. BEST PRACTICES AND THE LATEST AASHTO WITH DIMENSIONS AS SHOWN ON CONTRACT PLANS.  
 3. DETECTABLE WARNING SURFACE/FRANCOISED DOME NOTES:  
 1. INSTALL DETECTABLE WARNING SURFACE/FRANCOISED DOME WITH FRANCOISED DOME FOR A DISTANCE OF 24" FROM THE BACK OF THE CURB AND FOR THE FULL WIDTH OF RAMP.  
 2. DETECTABLE WARNING SURFACE SHALL CONSIST OF A SQUARE GRID OF FRANCOISED DOME AS SHOWN ON A SQUARE GRID IS THE PREDOMINANT DIRECTION OF TRAFFIC TO POINT VEHICLES TO STOP BETWEEN DOME.  
 3. DETECTABLE WARNING SURFACE/FRANCOISED DOME ROBERT SHALL CONTACT TIGHTLY WITH ADJACENT WARNING SURFACES.  
 4. IF MORE THAN ONE SET OF D.  
 5. APPROVE COLOR FOR FRANCOISED DOME IS NOT PROJECT MANAGERS. SHALL ACCEPT OTHER COLORS FOR FRANCOISED DOME UPON REQUEST AND COMPLIANCE EVALUATION.



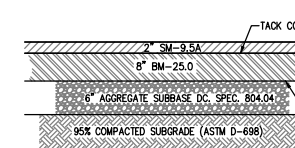
DOWELED TRANSVERSE EXPANSION JOINT FOR CONCRETE DRIVEWAY PAVEMENT (NOT TO SCALE)



CONTRACTION JOINT WITH LOAD TRANSFER FOR CONCRETE DRIVEWAY PAVEMENT (NOT TO SCALE)



TYPICAL CONCRETE PAVEMENT DETAIL FOR DRIVEWAY APRON (NOT TO SCALE)



BITUMINOUS ASPHALT PAVING (NOT TO SCALE)

**\*\*DDOT PAVEMENT NOTE:**  
 THE CONTRACTOR HAS THE OPTION OF USING THE ABOVE BITUMINOUS ASPHALT SECTION FOR ALL PROPOSED STREETS. THIS SECTION MAY BE MODIFIED BASED ON CBR VALUES TAKEN IN THE FIELD BY A CERTIFIED GEOTECHNICAL ENGINEER. CONTRACTOR SHALL COORDINATE WITH THE DDOT INSPECTOR PRIOR TO THE START OF PAVEMENT INSTALLATION.  
**\*\*CONTRACTOR HAS THE OPTION OF INSTALLING A 4" LAYER OF FREE DRAINING AGGREGATE OR SEAL COATING THE AGGREGATE SUBBASE.**





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04/12/2017

Project Name

2100 PENNSYLVANIA AVENUE NW

Project Number

A1613

Description

UTILITY DETAILS

Scale

C-503

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DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

DO-23.01  
1 OF 3

SECTIONAL PLAN (NOT TO SCALE)

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

APPROVED DATE: June 28, 2002  
REVISION NO.: 0  
DATE: 6/28/02  
PREPARED BY: J. BARBER  
CHECKED BY: J. BARBER  
DESIGNED BY: J. BARBER  
DISTRICT DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

DO-23.01  
2 OF 3

SECTION A-A (NOT TO SCALE)

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

APPROVED DATE: June 28, 2002  
REVISION NO.: 0  
DATE: 6/28/02  
PREPARED BY: J. BARBER  
CHECKED BY: J. BARBER  
DESIGNED BY: J. BARBER  
DISTRICT DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

DO-23.01  
3 OF 3

SIZE	A	B	C	D	E	F	G	H
3"	72"	72"	72"	137"	180"	30"	24"	8"
4"	72"	72"	72"	137"	180"	30"	24"	8"
6"	84"	72"	72"	241"	180"	30"	24"	10.5"
8"	84"	72"	72"	241"	180"	30"	24"	10.5"
10"	96"	72"	72"	207"	117"	24"	25"	7.5"

NOTES:  
1. SEALED STRUCTURAL COMPUTATIONS AND REINFORCING DETAILS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATIONS.  
2. MANHOLE STEPS TO BE IN ACCORDANCE WITH M.A. INDUSTRIES MODEL P53-PFC OR APPROVED EQUAL. CAST INSERTS IN WALL 12" ON CENTER.  
3. CONCRETE TO BE CLASS 4000, TYPE 1 CEMENT.  
4. DUCTILE IRON PIPE JOINTS WITHIN VAULT SHALL BE FLANGED.  
5. COMPOUND METERS REQUIRE THE INSTALLATION OF METER STRAINERS. HOWEVER, TURBINE METERS DO NOT REQUIRE THE INSTALLATION OF METER STRAINERS. METER STRAINERS SHALL BE INSTALLED BETWEEN THE METER AND SERVICE VALVE ON THE STREET SIDE OF THE METER AND SERVICE VALVE (SEE DETAIL W-95.01) BETWEEN THE METER STRAINERS AND MANHOLE STEPS.  
6. THIS DRAWING SUPERCEDES DRAWING 0-808 DATED 2-01-1992.

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

APPROVED DATE: June 28, 2002  
REVISION NO.: 0  
DATE: 6/28/02  
PREPARED BY: J. BARBER  
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DISTRICT DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

W-20.01  
1 OF 1

SECTIONAL PLAN  
SECTION A-A

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

APPROVED DATE: June 28, 2002  
REVISION NO.: 0  
DATE: 6/28/02  
PREPARED BY: J. BARBER  
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DISTRICT DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

W-50.01  
1 OF 1

SECTIONAL PLAN  
SECTION A-A

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

APPROVED DATE: June 28, 2002  
REVISION NO.: 0  
DATE: 6/28/02  
PREPARED BY: J. BARBER  
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DISTRICT DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

W-40.01  
1 OF 2

SECTIONAL PLAN - BENDS  
SECTIONAL PLAN - TEES

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

APPROVED DATE: June 28, 2002  
REVISION NO.: 0  
DATE: 6/28/02  
PREPARED BY: J. BARBER  
CHECKED BY: J. BARBER  
DESIGNED BY: J. BARBER  
DISTRICT DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

W-40.01  
2 OF 2

BRANCH OF TEE OR PIPE DIA.	BEND	W	H	W'	G	REINFC. (CL.W)
6"	11.50	11.5"	11.5"	11.5"	0.0"	24 #17
	22.50	11.5"	11.5"	11.5"	11.5"	24 #17
	33.50	11.5"	11.5"	11.5"	23.0"	24 #17
8"	11.50	11.5"	11.5"	11.5"	0.0"	24 #17
	22.50	11.5"	11.5"	11.5"	11.5"	24 #17
	33.50	11.5"	11.5"	11.5"	23.0"	24 #17
12"	11.50	11.5"	11.5"	11.5"	0.0"	24 #17
	22.50	11.5"	11.5"	11.5"	11.5"	24 #17
	33.50	11.5"	11.5"	11.5"	23.0"	24 #17

NOTES:  
1. ALL CONCRETE TO BE CLASS 4000, AIR ENTRAINED, TYPE 1 CEMENT.  
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.  
3. NOMINAL DEPTH OF COVER ON WATER MAIN IS FOUR FEET.  
4. UNIT WEIGHT OF SOIL, 120 PCF.  
5. DESIGN BASED ON  $\sigma = 30$  AND TEST PRESSURE = 185 PSI.  
6. H<sub>2</sub>O - HEIGHT OF BLOCK, W' - WIDTH AT FITTING AND W - WIDTH AGAINST UNDISTURBED GROUND SHOULD BE CENTERED ON PIPE AND FITTING.  
7. FOR PIPE SIZE GREATER THAN 12", BLOCKS BEDED IN SOIL WEAKER THAN  $\sigma = 30$ , OR FOR MAINS WITH A TEST PRESSURE GREATER THAN 185 PSI, THE THURST BLOCK MUST BE SPECIFICALLY DESIGNED FOR EACH APPLICATION.

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

APPROVED DATE: June 28, 2002  
REVISION NO.: 0  
DATE: 6/28/02  
PREPARED BY: J. BARBER  
CHECKED BY: J. BARBER  
DESIGNED BY: J. BARBER  
DISTRICT DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

S-20.11  
1 OF 1

SECTIONAL PLAN  
SECTION A-A

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

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METER INSTALLATION  
COMPOUND METER / TURBINE METER

S-25.01  
1 OF 1

SECTIONAL PLAN  
SECTION A-A

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DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY  
DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

S-80.02  
1 OF 1

ELEVATION

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

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S-80.01  
1 OF 1

SECTIONAL PLAN  
SECTION A-A

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S-80.01  
1 OF 1

PLAN

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

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METER INSTALLATION  
COMPOUND METER / TURBINE METER

DC-23.03  
1 OF 3

SECTIONAL PLAN  
SECTION A-A

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

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METER INSTALLATION  
COMPOUND METER / TURBINE METER

DC-23.03  
2 OF 3

SECTIONAL PLAN  
SECTION A-A

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DESIGN GUIDELINE  
METER INSTALLATION  
COMPOUND METER / TURBINE METER

DC-23.03  
3 OF 3

SIZE	A	B	C	D	E	F	G	H	I	J
3"	72"	72"	72"	16.5"	-	-	10"	12"	-	8"
4"	72"	72"	72"	16.5"	-	-	10.5"	12"	-	8"
6"	72"	72"	72"	22.5"	-	-	11.625"	12"	-	10.5"
8"	72"	72"	72"	28.5"	-	-	12.625"	12"	-	11.5"
10"	96"	72"	72"	36"	-	-	13.75"	12"	-	13"

NOTES:  
1. SEALED STRUCTURAL COMPUTATIONS AND REINFORCING DETAILS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATIONS.  
2. MANHOLE STEPS TO BE IN ACCORDANCE WITH M.A. INDUSTRIES MODEL P53-PFC OR APPROVED EQUAL. CAST INSERTS IN WALL 12" ON CENTER.  
3. CONCRETE TO BE CLASS 4000, TYPE 1 CEMENT.  
4. DUCTILE IRON PIPE JOINTS WITHIN VAULT SHALL BE FLANGED.  
5. DETECTOR CHECK METERS MUST MEET ASSE #1618 AND ANSI/AWWA C510-87 FOR DOUBLE CHECK TYPES AND ASSE 1947 AND ANSI/AWWA C511-87 FOR REDUCED PRESSURE DETECTOR CHECK METERS.  
6. IF A REDUCED PRESSURE BACKFLOW PREVENTER IS REQUIRED ON THE FIRE SERVICE LINE, THEN A REDUCED PRESSURE DETECTOR CHECK METER MUST BE INSTALLED UPSTREAM OF THE BUILDING ACCORDING TO THE DCWMA RIDGE DESIGN CRITERIA.  
7. THIS DRAWING SUPERCEDES DRAWING 0-813 DATED 1-09-1984.

CONCRETE VAULT NOT REQUIRED IF PLACED INSIDE OF BUILDING

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Seal/Signature

Date

04/12/2017

Project Name

2100  
PENNSYLVANIA  
AVENUE NW

Project Number

A1613

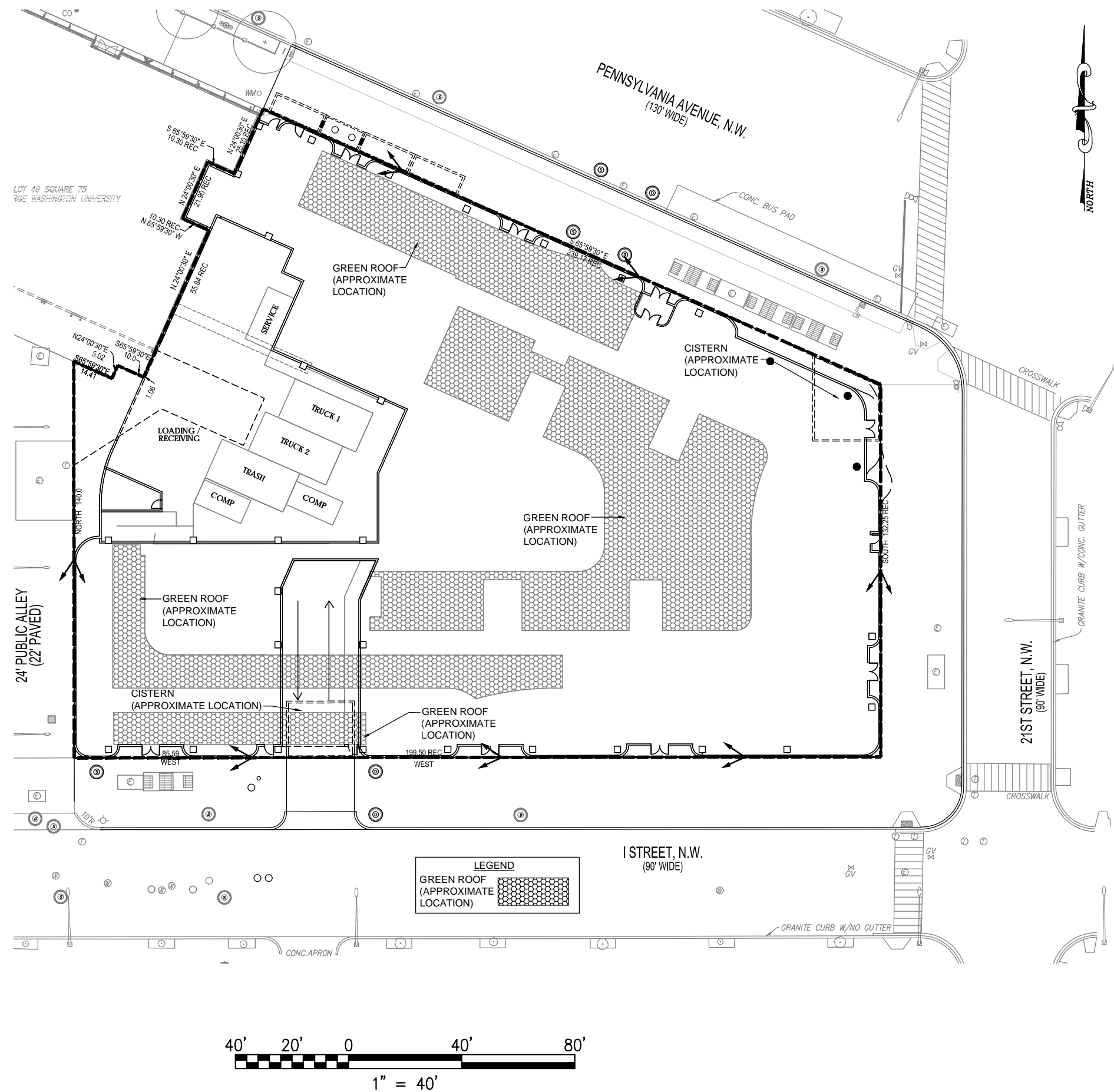
Description

STORMWATER  
MANAGEMENT  
PLAN

Scale

C-701

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**STORMWATER MANAGEMENT NARRATIVE:**

THE PROJECT WILL BE UNDER THE 2013 STORMWATER MANAGEMENT REQUIREMENTS PER THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THIS WILL BE A MAJOR LAND DISTURBING ACTIVITY, THEREFORE, THE SITE WILL RETAIN THE FIRST 1.2" OF RAINFALL. GREEN ROOF AND RAINWATER HARVESTING WILL BE USED TO MEET THE RETENTION AND DETENTION REQUIREMENTS.

**STORMWATER MANAGEMENT NARRATIVE:  
MAXIMUM EXTENT PRACTICABLE IN THE PROW**

THE PUBLIC RIGHT OF WAY PORTION OF THIS PROJECT WILL BE UNDER THE 2013 STORMWATER MANAGEMENT REQUIREMENTS PER THE DEPARTMENT OF ENERGY AND ENVIRONMENT FOR MAXIMUM EXTENT PRACTICABLE IN THE PUBLIC RIGHT OF WAY. THE SITE WILL MEET THE MEP IN THE PROW REQUIREMENTS USING STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES (BMPs).

**NOTE:**

"NO PERMITTED STORM WATER BMP IS COMPLETE UNTIL FINAL INSPECTION HAS BEEN CONDUCTED AND AN AS-BUILT PLAN HAS BEEN SUBMITTED TO THE DOE WITHIN 21 DAYS AFTER FINAL INSPECTION FOR REVIEW AND APPROVAL."



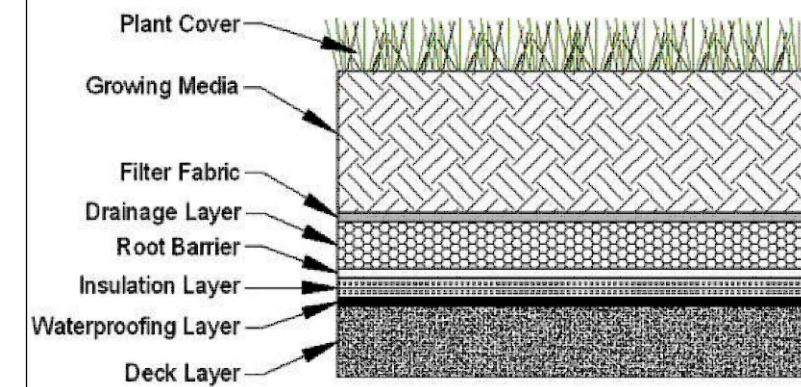
**INITIAL STORMWATER MANAGEMENT ANALYSIS**  
**GWU 2100 Pennsylvania Ave, NW**

<b>TOTAL SITE AREA:</b>		50,497 SF
	<b>Impervious Area</b>	37,557 SF
	<b>BMP Area</b>	12,940 SF (APPROXIMATE GREEN ROOF AREA)
	<b>Compacted Cover</b>	0 SF
<b>TOTAL RETENTION VOLUME REQUIRED:</b>		<b>4,797 CF</b>
<b>TOTAL DETENTION (2 YEAR) VOLUME REQUIRED:</b>		<b>8,919 CF</b>

**GREEN ROOF NOTE:**

FERTILIZER IS NOT RECOMMENDED. IF APPLIED, THE FERTILIZER MUST BE A SLOW RELEASE TYPE, RATHER THAN LIQUID OR GASEOUS FORM.

**GREEN ROOF DETAIL (TYPICAL):**



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04/12/2017

Project Name

2100 PENNSYLVANIA AVENUE NW

Project Number

A1613

Description

STORMWATER MANAGEMENT PLAN

Scale

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STORMWATER  
MANAGEMENT  
NOTES

Scale

C-703

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**GREEN ROOF INSTALLATION**

GIVEN THE DIVERSITY OF EXTENSIVE VEGETATED ROOF DESIGNS, THERE IS NO TYPICAL STEP-BY-STEP CONSTRUCTION SEQUENCE FOR PROPER INSTALLATION. THE FOLLOWING GENERAL CONSTRUCTION CONSIDERATIONS ARE NOTED:

- CONSTRUCT THE ROOF DECK WITH THE APPROPRIATE SLOPE AND MATERIAL.
- INSTALL THE WATERPROOFING METHOD, ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
- CONDUCT A FLOOD TEST TO ENSURE THE SYSTEM IS WATERTIGHT BY PLACING AT LEAST 2 INCHES OF WATER OVER THE MEMBRANE FOR 48 HOURS TO CONFIRM THE INTEGRITY OF THE WATERPROOFING SYSTEM. ALTERNATELY, ELECTRIC FIELD VECTOR MAPPING (EFVM) CAN BE DONE TO TEST FOR THE PRESENCE OF LEAKS; HOWEVER, NOT ALL IMPERMEABLE MEMBRANES ARE TESTABLE WITH THIS METHOD. PROBLEMS
- HAVE BEEN NOTED WITH THE USE OF EFVM ON BLACK EPDM AND WITH ALUMINIZED PROTECTIVE COATINGS COMMONLY USED IN CONJUNCTION WITH MODIFIED BITUMINOUS MEMBRANES.
- ADD ADDITIONAL SYSTEM COMPONENTS (E.G., INSULATION, ROOT BARRIER, DRAINAGE LAYER AND INTERIOR DRAINAGE SYSTEM, AND FILTER FABRIC) PER THE MANUFACTURER'S SPECIFICATIONS, TAKING CARE NOT TO DAMAGE THE WATERPROOFING. ANY DAMAGE OCCURRING MUST BE REPORTED IMMEDIATELY. DRAIN COLLARS AND PROTECTIVE FLASHING SHOULD BE INSTALLED TO ENSURE FREE FLOW OF EXCESS STORMWATER.
- THE GROWING MEDIA SHOULD BE MIXED PRIOR TO DELIVERY TO THE SITE. MEDIA MUST BE SPREAD EVENLY OVER THE FILTER FABRIC SURFACE AS REQUIRED BY THE MANUFACTURER. IF A DELAY BETWEEN THE INSTALLATION OF THE GROWING MEDIA AND THE PLANTS IS REQUIRED, ADEQUATE EFFORTS MUST BE TAKEN TO SECURE THE GROWING MEDIA FROM EROSION AND THE SEEDING OF WEEDS. THE GROWING MEDIA MUST BE COVERED AND ANCHORED IN PLACE UNTIL PLANTING. SHEETS OF EXTERIOR GRADE PLYWOOD CAN ALSO BE LAID OVER THE GROWING MEDIA TO ACCOMMODATE FOOT OR WHEELBARROW TRAFFIC. FOOT TRAFFIC AND EQUIPMENT TRAFFIC SHOULD BE LIMITED OVER THE GROWING MEDIA TO REDUCE COMPACTION BEYOND MANUFACTURER'S RECOMMENDATIONS.
- THE GROWING MEDIA SHOULD BE MOISTENED PRIOR TO PLANTING, AND THEN PLANTED WITH THE GROUND COVER AND OTHER PLANT MATERIALS, PER THE PLANTING PLAN OR IN ACCORDANCE WITH ASTM E2400. PLANTS SHOULD BE WATERED IMMEDIATELY AFTER INSTALLATION AND ROUTINELY DURING ESTABLISHMENT.
- IT GENERALLY TAKES 2 TO 3 GROWING SEASONS TO FULLY ESTABLISH THE VEGETATED ROOF. THE GROWING MEDIUM SHOULD CONTAIN ENOUGH ORGANIC MATTER TO SUPPORT PLANTS FOR THE FIRST GROWING SEASON, SO INITIAL FERTILIZATION IS NOT REQUIRED. EXTENSIVE GREEN ROOFS MAY REQUIRE SUPPLEMENTAL IRRIGATION DURING THE FIRST FEW MONTHS OF ESTABLISHMENT. HAND WEEDING IS ALSO CRITICAL IN THE FIRST TWO YEARS.

**GREEN ROOF INSTALLATION MAINTENANCE:**

1. THE INSTALLATION MAINTENANCE SHALL BE A MINIMUM OF THREE MONTHS. THE MAINTENANCE PERIOD SHALL CONSIST OF PERIODIC WEEDING AND HAND WATERING DURING THE MONTHS OF JULY AND AUGUST IN THE EVENT OF DROUGHT OR AS DETERMINED.
2. THE GROWTH MEDIA WILL BE THOROUGHLY SOAKED PRIOR TO COMMENCING PLANTING.
3. THE PLUGS SHALL BE SET INTO THE MEDIA TO THEIR FULL DEPTH AND THE MEDIA PRESSED FIRMLY AROUND THE INSTALLED PLUG. AT THE END OF EACH DAY, THE NEWLY PLANTED AREAS WILL BE SOAKED.
4. AT THE END OF THE MAINTENANCE PERIOD, PLANTED AREAS SHALL HAVE NO BARE SPOTS GREATER THAN ONE SQUARE FOOT OVER GREATER THAN 5 PERCENT OF THE OVERALL PLANTED AREA. IF PLANTED AREAS ARE DEFICIENT, THE CONTRACTOR'S RESPONSIBILITY FOR MAINTENANCE OF ALL PLANTED AREAS SHALL BE EXTENDED UNTIL DEFICIENCIES ARE CORRECTED. PLANTED AREAS TO BE CORRECTED SHALL BE PREPARED AND REPLANTED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION.
5. CONTRACTOR SHALL PROVIDE TEMPORARY PROTECTION ON AN AS NEEDED BASIS AGAINST WIND AND WILDLIFE DURING THE MAINTENANCE PERIOD. TEMPORARY BARRIERS WILL BE REMOVED AT THE TIME OF ACCEPTANCE.
6. ABSOLUTELY NO DEBRIS WILL BE LEFT ON THE SITE. CONTRACTOR WILL REPAIR ANY DAMAGE TO THE SITE OR STRUCTURE AND RESTORE THEM TO THEIR ORIGINAL CONDITION AT NO COST TO THE OWNER.

**GREEN ROOF 2-YEAR MAINTENANCE SERVICE:**

THE INSTALLER SHALL GUARANTEE 50 PERCENT COVER RATE AFTER 12 MONTHS AND 80 PERCENT COVER AT THE END OF 24 MONTHS. AS NECESSARY, PLANTS SHALL BE REPLACED TO ACHIEVE THIS REQUIREMENTS.

**GREEN ROOF ONGOING MAINTENANCE:**

1. BOTH PLANT MAINTENANCE AND MAINTENANCE OF THE WATERPROOFING ARE REQUIRED.
2. FOR PLANT MAINTENANCE, MONTHLY INSPECTIONS WILL OCCUR TO CHECK FOR WEEDS OR DAMAGE, OR FOR IRRIGATION, PRUNING AND/OR REPLANTING.
3. THE FREQUENCY OF PLANT MAINTENANCE INSPECTIONS MAY INCREASE DURING THE SUMMER MONTHS IN THE CASE OF DROUGHT.
4. INSPECTION OF THE WATERPROOFING MEMBRANE WILL TAKE PLACE TWO TO THREE TIMES A YEAR.

**GREEN ROOF MAINTENANCE CRITERIA**

SCHEDULE (FOLLOWING CONSTRUCTION)	ACTIVITY
AS NEEDED OR REQUIRED BY MANUFACTURER	<ul style="list-style-type: none"> <li>- WATER TO PROMOTE PLANT GROWTH AND SURVIVAL.</li> <li>- INSPECT GREEN ROOF AND REPLACE ANY DEAD OR DYING VEGETATION</li> </ul>
SEMI-ANNUALLY	<ul style="list-style-type: none"> <li>- INSPECT THE WATERPROOF MEMBRANE FOR LEAKS AND CRACKS</li> <li>- WEED TO REMOVE INVASIVE PLANTS (DO NOT DIG OR USE POINTED TOOLS WHERE THERE IS POTENTIAL TO HARM THE ROOT BARRIER OR WATERPROOF MEMBRANE).</li> <li>- INSPECT THE ROOF DRAINS, SCUPPERS, AND GUTTERS TO ENSURE THEY ARE NOT OVERGROWN AND HAVE NOT ACCUMULATED ORGANIC MATTER DEPOSITS. REMOVE ANY ACCUMULATED ORGANIC MATTER OR DEBRIS.</li> <li>- INSPECT THE GREEN ROOF FOR DEAD, DYING, OR INVASIVE VEGETATION, PLANT REPLACEMENT VEGETATION AS NEEDED.</li> </ul>



**CISTERN STORAGE AREA MAINTENANCE**

THE ACCESS COVER TO THE CISTERN STORAGE AREA SHALL BE OPENED. FOLLOWING ALL CONFINED SPACE ENTRY REQUIREMENTS, USING PROPER VENTILATION EQUIPMENT AND TRAINING AS REQUIRED BY OSHA, THE CISTERN STORAGE AREA SHALL BE ENTERED FOR INSPECTIONS. NO ONE SHALL ENTER THE CISTERN UNLESS THEY ARE PROPERLY TRAINED, EQUIPPED, AND QUALIFIED TO ENTER A CONFINED SPACE AS IDENTIFIED BY LOCAL OCCUPATIONAL SAFETY AND HEALTH REGULATIONS.

INSPECTION AND MAINTENANCE OF THE CISTERN MUST BE PERFORMED DURING A THREE (3) DAY DRY WEATHER FORECAST. THE CISTERN SHALL BE DRAINED USING A SUBMERSIBLE PUMP AND WATER DISCHARGED INTO THE CITY’S SEWER. PRIOR TO ENTERING THE CISTERN, ALL LIFT AND TRANSFER PUMPS SHALL BE TURNED OFF FOR SAFETY. ALL AREAS OF THE CISTERN AREA SHALL BE INSPECTED FOR SEDIMENT ACCUMULATION. SEDIMENT ACCUMULATION SHALL BE MEASURED AT ALL SECTORS OF THE CISTERN STORAGE AREA.

THE PROPERTY SHALL MAINTAIN COPIES OF THESE INSPECTION RECORDS. IF THE SEDIMENT DEPTH REACHES EIGHT INCHES (8”) IN ANY OF THESE AREAS, CLEANING OF THE ENTIRE CISTERN SHALL BE REQUIRED AS DESCRIBED BELOW.

THE SYSTEM SHALL BE COMPLETELY CLEANED BACK TO 100 PERCENT (100%) OF THE ORIGINALLY DESIGNED STORAGE VOLUME WHENEVER THE ABOVE SEDIMENT LEVELS HAVE BEEN REACHED. THE CISTERN SHALL BE COMPLETELY DRAINED PRIOR TO PROCEEDING WITH CLEANING.

MAINTENANCE IS TYPICALLY PERFORMED USING A VACUUM TRUCK. SEDIMENT SHALL BE FLUSHED TOWARDS A VACUUM HOSE FOR THOROUGH REMOVAL. AT THE MANHOLE ACCESS TO THE CISTERN STORAGE AREA, A VACUUM HOSE SHALL BE LOWERED INTO THE CISTERN SYSTEM. USING SEWER JETTING EQUIPMENT, SEDIMENT SHALL BE FLUSHED AT THE OPPOSITE END OF THE CISTERN TOWARD THE VACUUM HOSE AT THE MANHOLE ACCESS.

WHEN FINISHED, COVERS THAT WERE REMOVED SHALL BE REPLACED AND THE COLLECTED MATERIAL SHALL BE PROPERLY DISPOSED. THE MATERIAL THAT IS REMOVED MAY BE CONSIDERED LOW-LEVEL HAZARDOUS WASTE AND MUST BE DISPOSED OF IN ACCORDANCE WITH ANY AND ALL LOCAL AND NATIONAL REGULATIONS.

THE PROPERTY OWNER SHALL MAINTAIN COPIES OF ALL INSPECTION AND MAINTENANCE RECORDS.

**CISTERN STRUCTURE COVER INSPECTIONS AND MAINTENANCE**

ALL CISTERN COVERS AND HATCHES SHALL BE INSPECTED AND ANY DEBRIS AROUND COVERS OR HATCHES SHALL BE REMOVED. IF ANY DEBRIS IS BLOCKING GRATED ACCESS COVER TO CISTERN OVERFLOW, IT SHALL BE REMOVED. IF ANY CISTERN COVERS ARE DAMAGED, THEY SHALL BE REPAIRED OR REPLACED AS NECESSARY.

THE PROPERTY OWNER SHALL MAINTAIN COPIES OF ALL INSPECTION AND MAINTENANCE RECORDS.

**CISTERN MAINTENANCE CRITERIA**

RESPONSIBLE PERSON: OWNER

- FOUR TIMES A YEAR: INSPECT AND CLEAN PRESCREENING DEVICES AND FIRST FLUSH DIVERTERS
- TWICE A YEAR: KEEP GUTTERS AND DOWNSPOUTS FREE OF LEAVES AND OTHER DEBRIS
- ONCE A YEAR: INSPECT AND CLEAN STORAGE CISTERN LIDS, PAYING SPECIAL ATTENTION TO VENTS AND SCREENS ON INFLOW AND OUTFLOW SPIGOTS. CHECK MOSQUITO SCREENS AND PATCH HOLES OR GAPS IMMEDIATELY. INSPECT CONDITION OF OVERFLOW PIPES, OVERFLOW FILTER PATH AND/OR SECONDARY STORMWATER TREATMENT PRACTICES.
- EVERY THIRD YEAR: CLEAR OVERHANGING VEGETATION AND TREES OVER ROOF SURFACE

RESPONSIBLE PERSON: QUALIFIED THIRD PARTY INSPECTOR

- ACCORDING TO MANUFACTURER: INSPECT WATER QUALITY DEVICES.
- AS INDICATED IN TRAM: PROVIDE WATER QUALITY ANALYSIS TO DOEE.
- EVERY THIRD YEAR: INSPECT CISTERN FOR SEDIMENT BUILDUP, CHECK INTEGRITY OF BACKFLOW PREVENTER. INSPECT STRUCTURAL INTEGRITY OF CISTERN, PUMP, PIPE AND ELECTRICAL SYSTEM, AND REPLACE DAMAGED OR DEFECTIVE SYSTEM COMPONENTS.

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04/12/2017

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STORMWATER MANAGEMENT NOTES

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