



WDG 1025 Connecticut Ave., NW, Ste. 300 Washington, DC 20036 T 202 857 8300 F 202 463 2198

PCPA Pelli Clarke Pelli Architects 322 Eighth Avenue, 11th Floor New York, New York 10001 T 212 417 9496 F 212 417 9497

WMC 11860 Sunrise Valley Drive, Ste 200 Reston, VA 20191 T 703 391 7600

Boston Properties 2200 Pennsylvania Ave. NW, Ste. 200W Washington, DC 20037 T 202 585 0847

Seal/Signature

Date 09/21/2017

Project Name

2100 PENNSYLVANIA AVENUE NW

Project Number

A1613

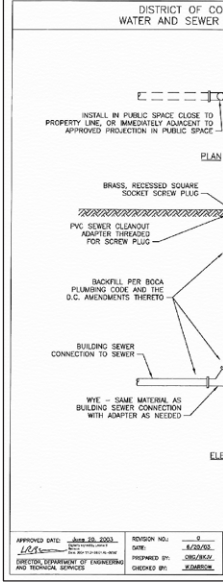
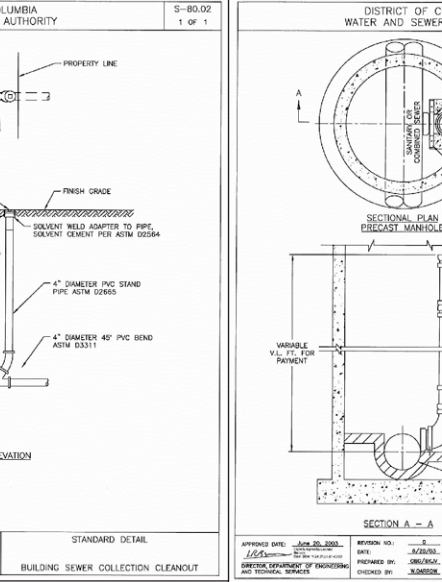
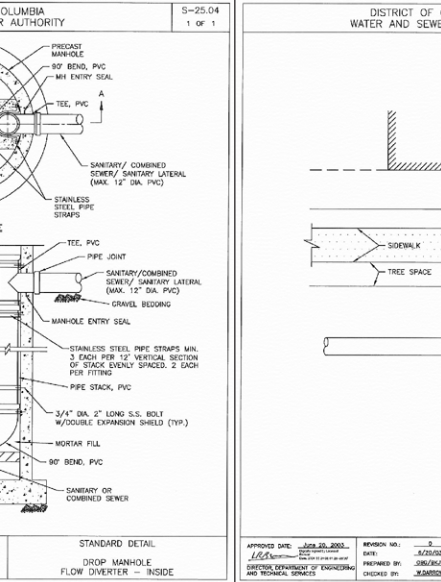
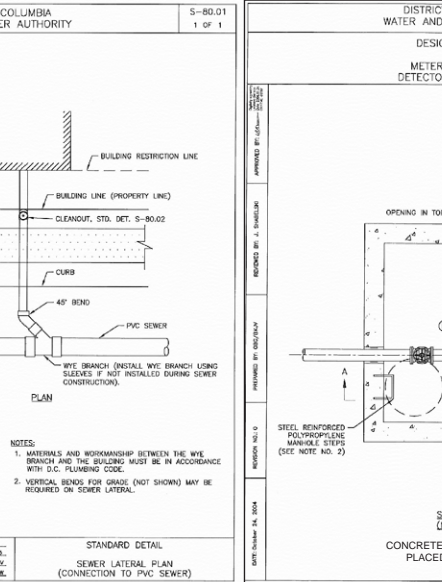
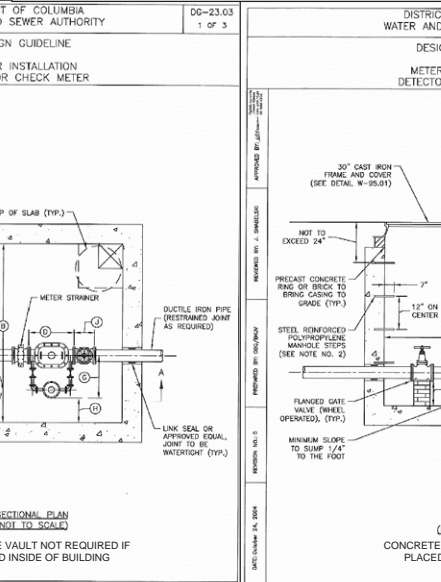
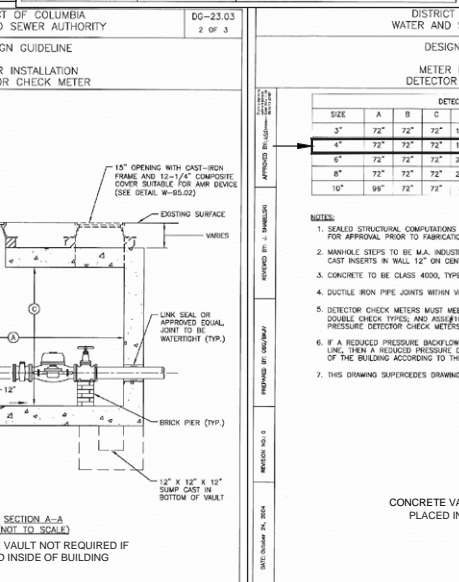
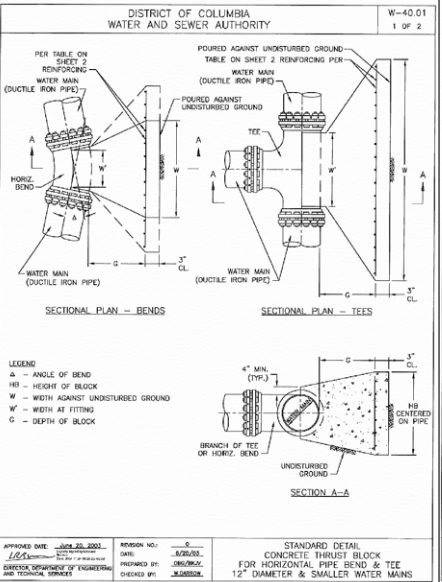
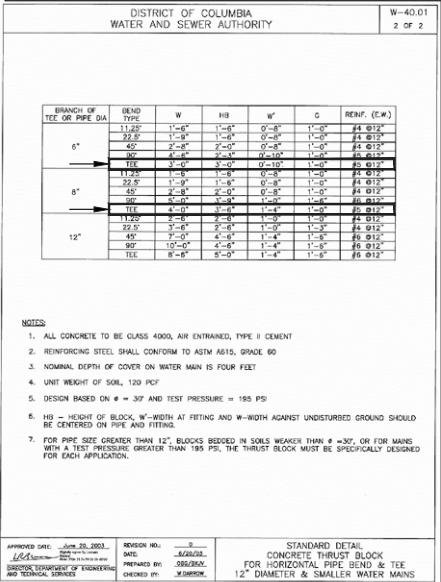
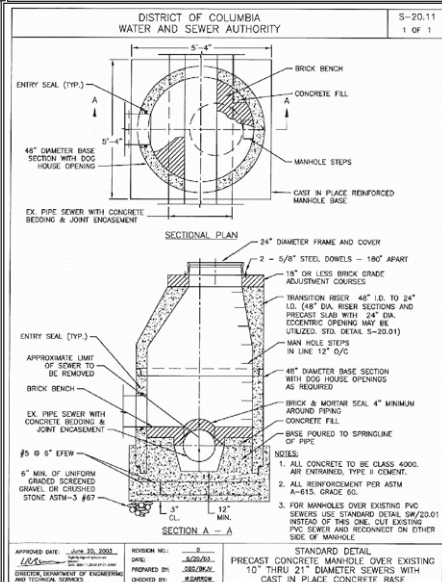
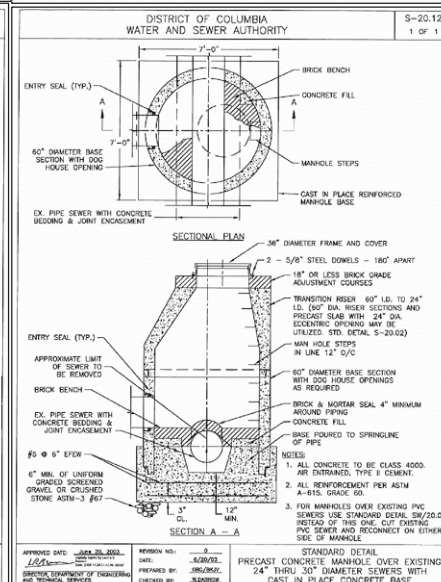
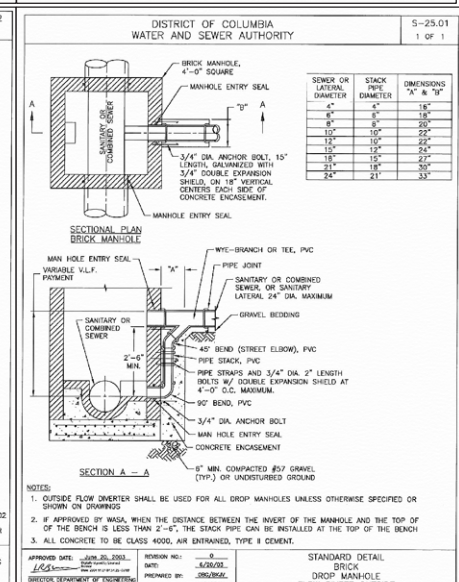
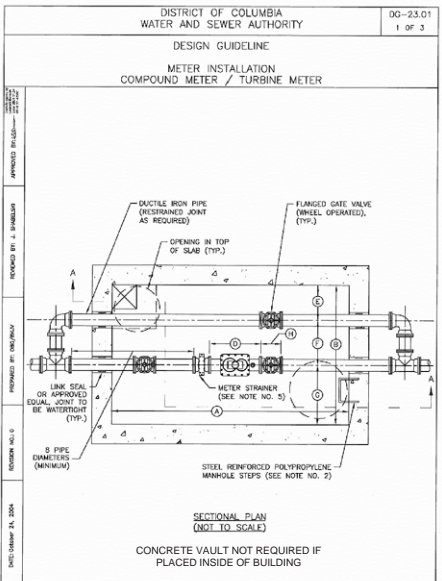
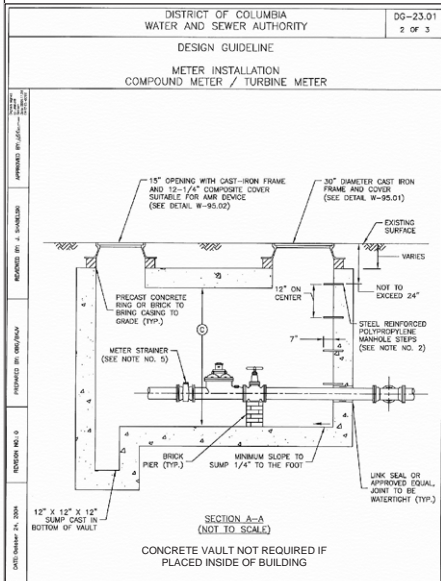
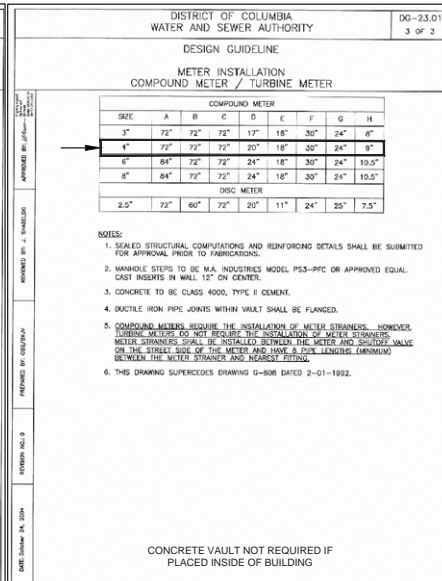
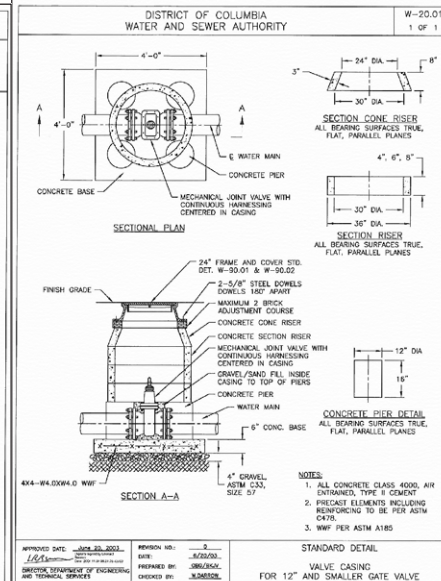
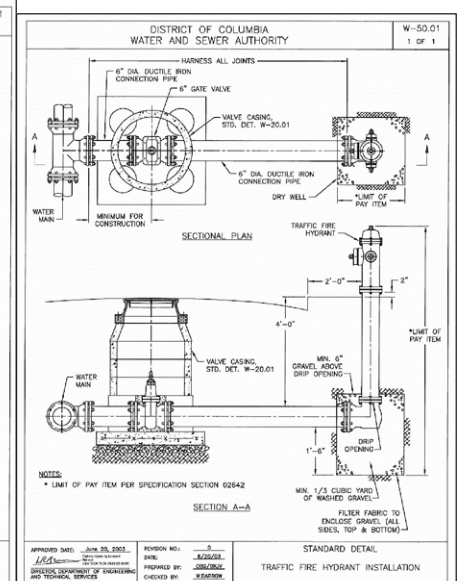
Description

UTILITY DETAILS

Scale

C-503

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2100
PENNSYLVANIA
AVENUE NW
Washington, DC



WDG
1025 Connecticut Ave., NW, Ste. 300
Washington, DC 20036
T 202 857 8300
F 202 463 2198

PCPA
Pelli Clarke Pelli Architects
322 Eighth Avenue, 11th Floor
New York, New York 10001
T 212 417 9496
F 212 417 9497

WMC
11860 Sunrise Valley Drive, Ste 200
Reston, VA 20191
T 703 391 7600

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2200 Pennsylvania Ave. NW, Ste. 200W
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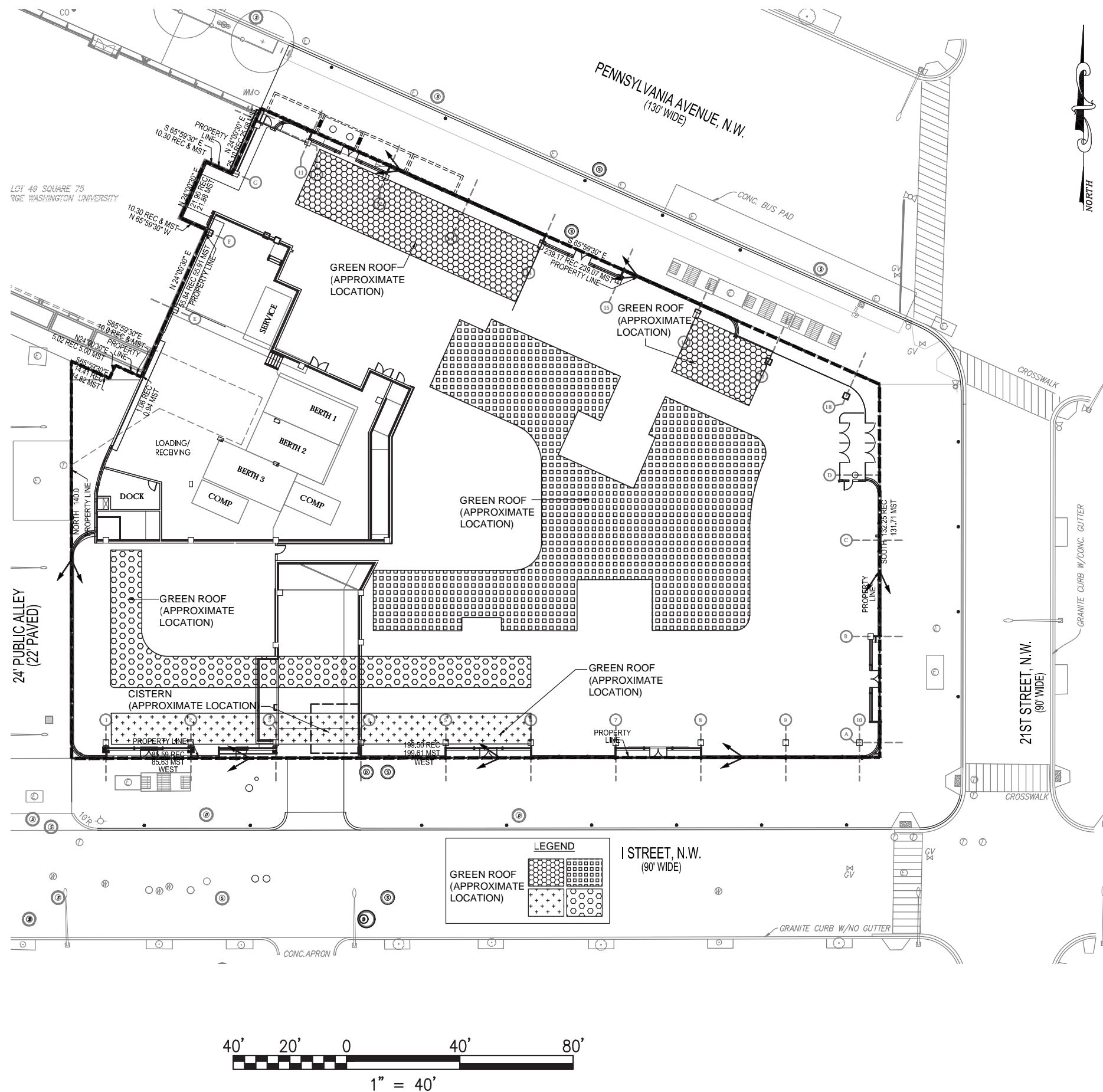
Description

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."



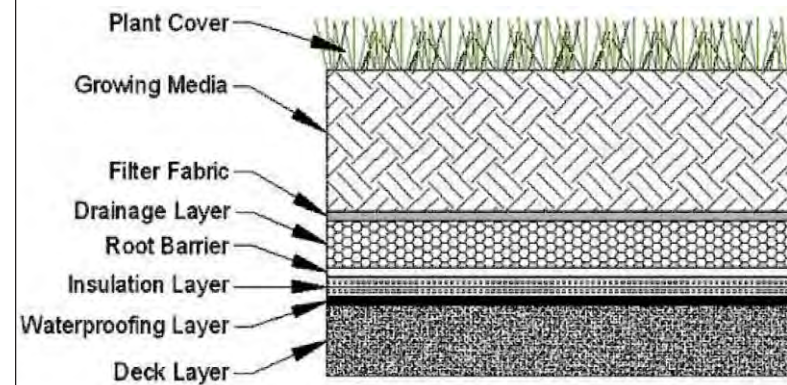
INITIAL STORMWATER MANAGEMENT ANALYSIS GWU 2100 Pennsylvania Ave, NW

TOTAL SITE AREA:		50,780 SF
	Impervious Area	37,248 SF
	BMP Area	13,532 SF (APPROXIMATE GREEN ROOF AREA)
	Compacted Cover	0 SF
TOTAL RETENTION VOLUME REQUIRED:		4,824 CF
TOTAL DETENTION (2 YEAR) VOLUME REQUIRED:		8,969 CF

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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Project Number

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Description

STORMWATER MANAGEMENT PLAN

Scale

C- 702

2100
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AVENUE NW

Washington, DC



THE GEORGE
WASHINGTON
UNIVERSITY
WASHINGTON DC



1025 Connecticut Ave., NW, Ste. 300
Washington, DC 20036
T 202 857 8300
F 202 463 2198



Pelli Clarke Pelli Architects
322 Eighth Avenue, 11th Floor
New York, New York 10001
T 212 417 9496
F 212 417 9497



11860 Sunrise Valley Drive, Ste 200
Reston, VA 20191
T 703 391 7600



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Washington, DC 20037
T 202 585 0847

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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"> - WATER TO PROMOTE PLANT GROWTH AND SURVIVAL. - INSPECT GREEN ROOF AND REPLACE ANY DEAD OR DYING VEGETATION
SEMI-ANNUALLY	<ul style="list-style-type: none"> - INSPECT THE WATERPROOF MEMBRANE FOR LEAKS AND CRACKS - WEED TO REMOVE INVASIVE PLANTS (DO NOT DIG OR USE POINTED TOOLS WHERE THERE IS POTENTIAL TO HARM THE ROOT BARRIER OR WATERPROOF MEMBRANE). - 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. - INSPECT THE GREEN ROOF FOR DEAD, DYING, OR INVASIVE VEGETATION, PLANT REPLACEMENT VEGETATION AS NEEDED.

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.



Seal/Signature

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Description

STORMWATER MANAGEMENT NOTES

Scale

C- 704

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PENNSYLVANIA
AVENUE NW
Washington, DC



THE GEORGE
WASHINGTON
UNIVERSITY
WASHINGTON DC

WDG

1025 Connecticut Ave., NW, Ste. 300
Washington, DC 20036
T 202 857 8300
F 202 463 2198

PCPA

Pelli Clarke Pelli Architects
322 Eighth Avenue, 11th Floor
New York, New York 10001
T 212 417 9496
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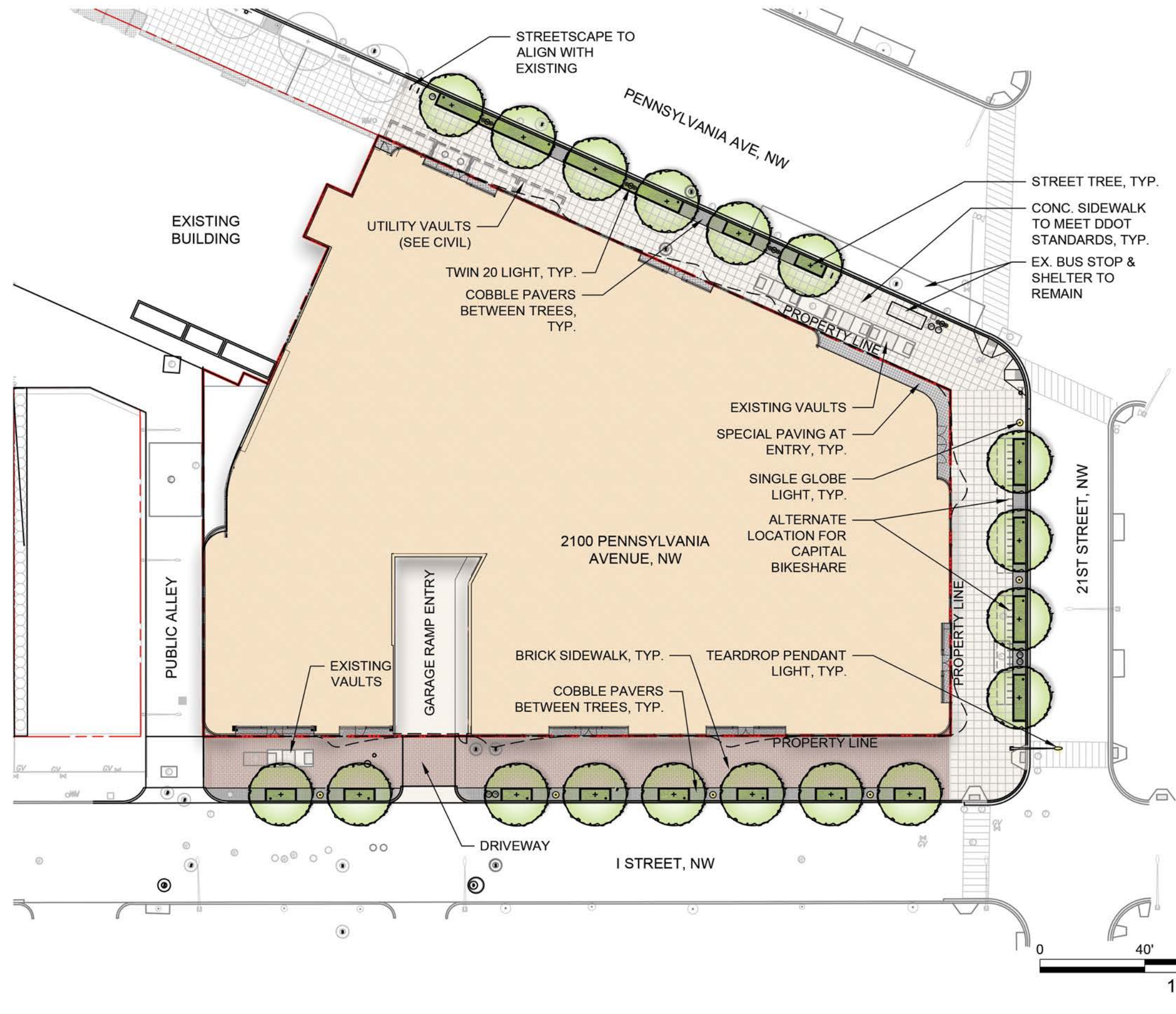
Description

Scale

C-705






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SITE LANDSCAPE PLAN



NOTES:

1. STREETScape INFORMATION IS SHOWN IN CONCEPT FOR ILLUSTRATIVE PURPOSES. APPLICANT REQUESTS FLEXIBILITY TO VARY THE FINAL STREETScape DESIGN TO CONFORM WITH APPLICABLE DESIGN AND PERMITTING STANDARDS, INCLUDING THE FOGGY BOTTOM STREETScape PLAN STANDARDS.
2. FINAL LOCATION OF CAPITAL BIKESHARE UNDER REVIEW IN COORDINATION WITH NPS AND DCDOT.

- LEGEND:**
-  STREET TREE
 -  TWIN 20 LIGHT
 -  SINGLE GLOBE LIGHT
 -  TEARDROP PENDANT LIGHT
 -  BIKE RACKS
 -  TRASH OR RECYCLING RECEPTACLE

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SITE LANDSCAPE PLAN

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