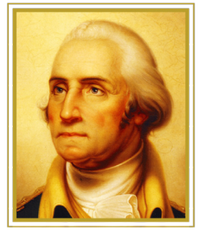

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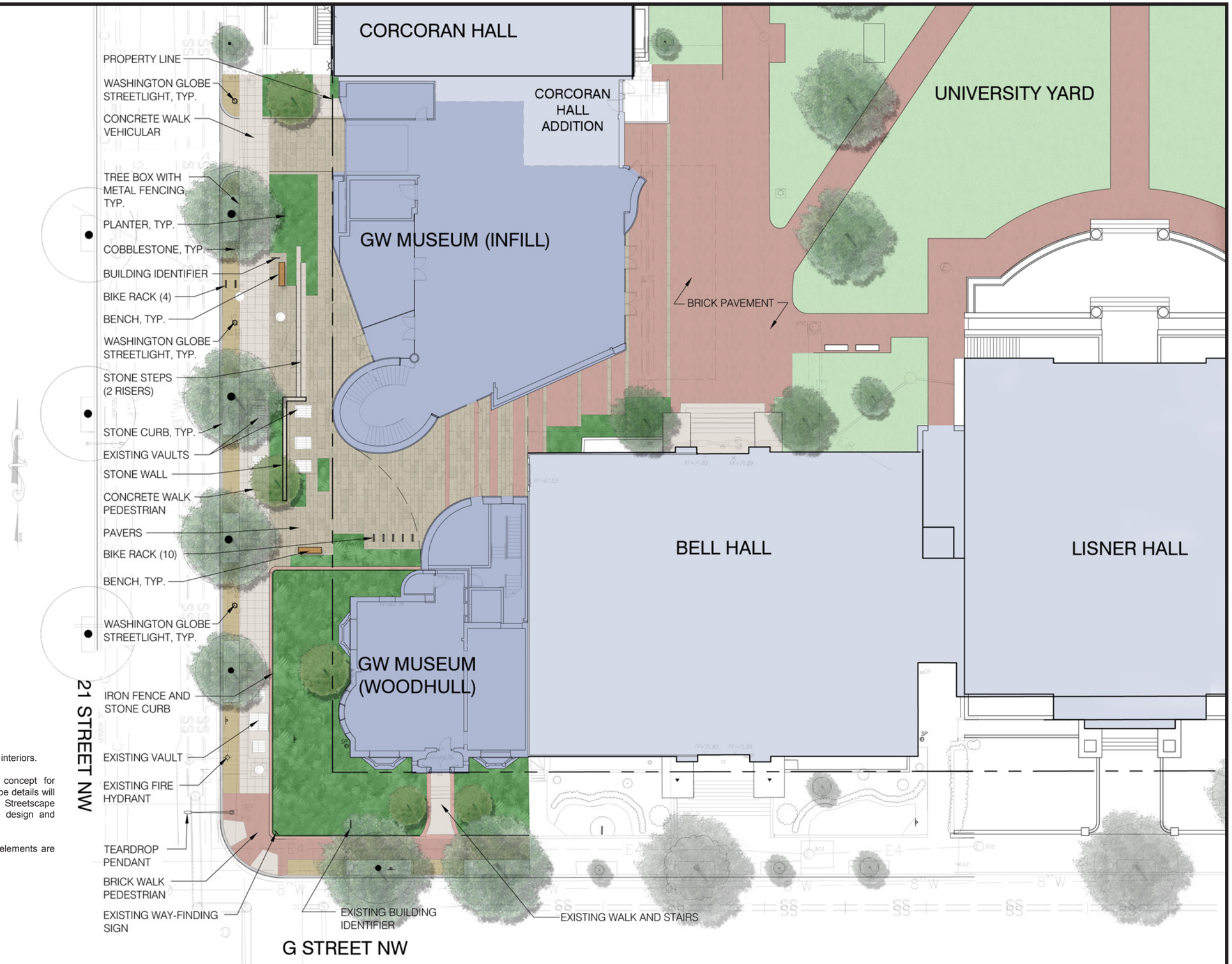
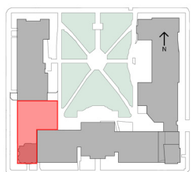
HARTMAN-COX ARCHITECTS



KEY PLAN



DATE
03/14/2012

TITLE
Annotative Site Plan

NUMBER
L-01

NOTES:

1. See architectural drawings for building interiors.

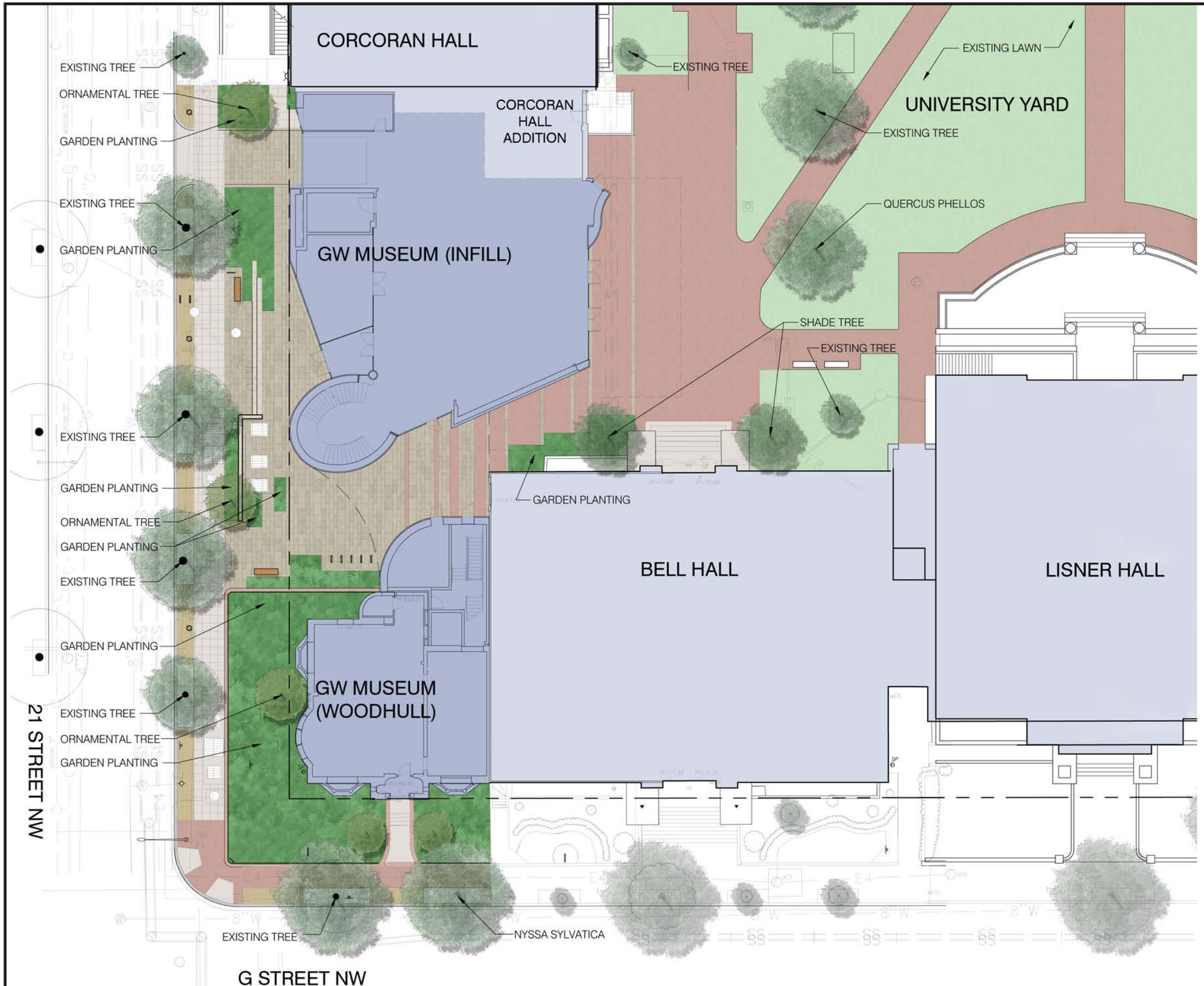
2. Streetscape details are shown in concept for illustrative purposes. The final streetscape details will conform to the Foggy Bottom Campus Streetscape Guidelines as well as other applicable design and permitting standards.

3. Unless noted as existing, all labeled elements are proposed.

N

0 25’

1’ = 25’-0”



NOTES:

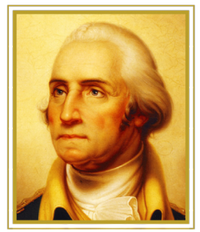
1. Plant species selections identified on this plan are shown to illustrate design intent only. The purpose is to generally define plant size, character, and locations. Refinements to the planting design and final selection of all plant materials consistent with the species shown shall be developed during detailed design phases of work.

2. Unless noted as existing, all labeled elements are proposed.

N

0 25’

1’ = 25’-0”



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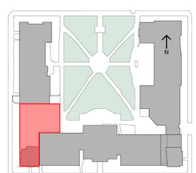
HARTMAN-COX ARCHITECTS

KEY PLAN



DATE
03/14/2012

TITLE
Planting Plan

NUMBER
L-02

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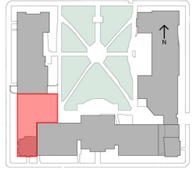
HARTMAN-COX ARCHITECTS

KEY PLAN



DATE
03/14/2012

TITLE
Site Furnishings

NUMBER
L-03

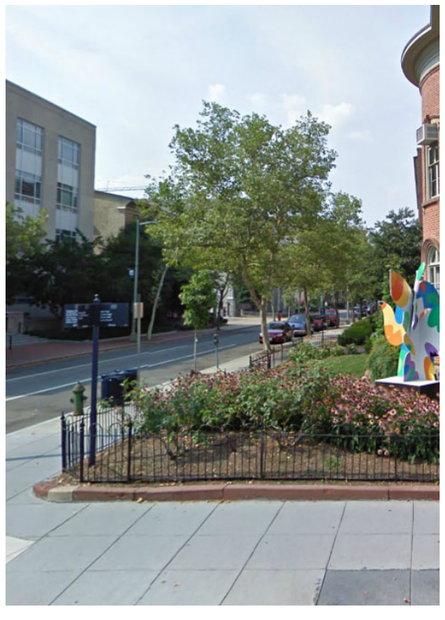
BENCH

BIKE RACK

WASHINGTON GLOBE STREETLIGHT

TEAR DROP PENDANT STREETLIGHT

TREE BOX FENCING

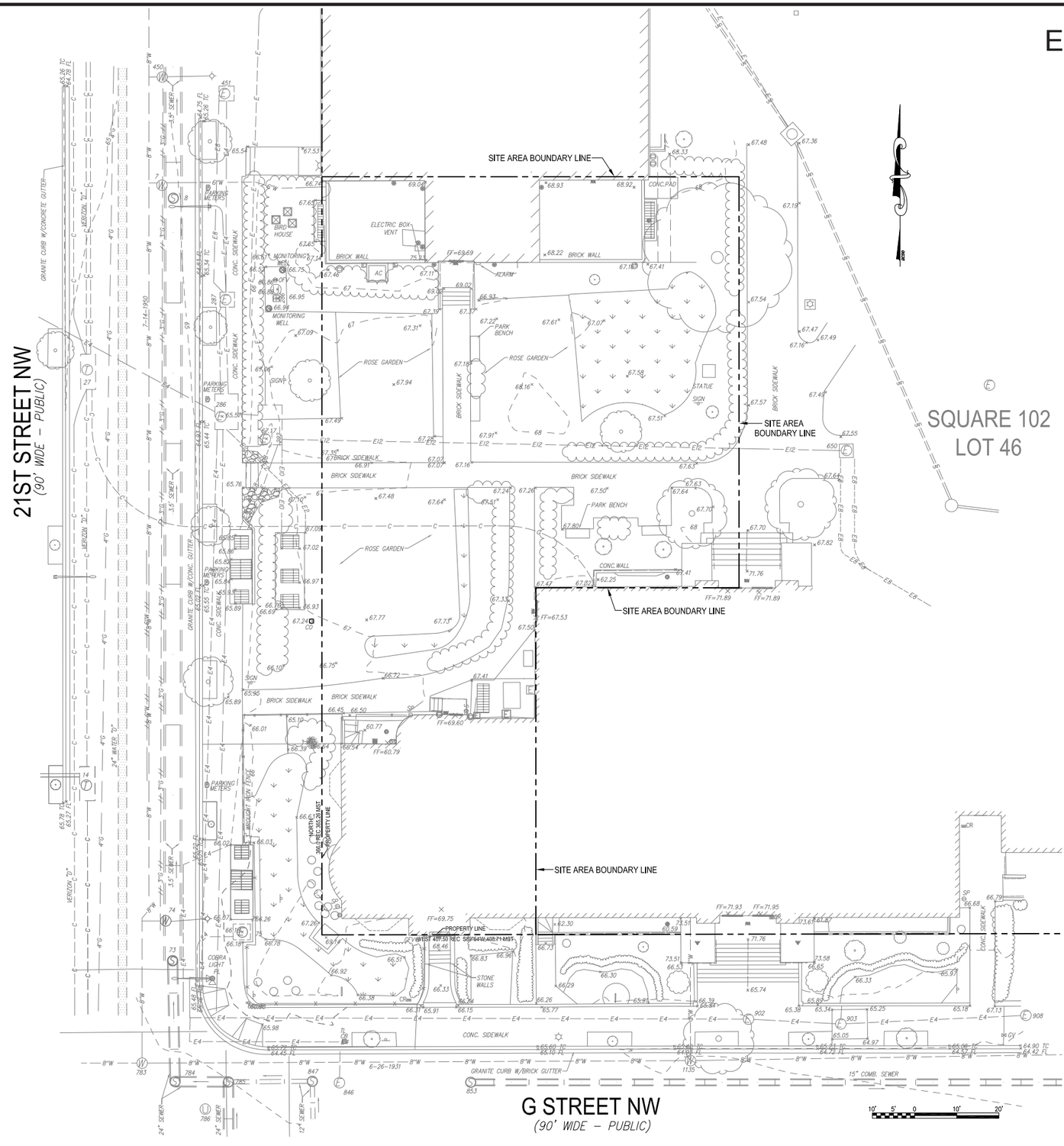


EXISTING IRON FENCE AND BROWNSTONE CURB

NOTE:

Streetscape details are shown in concept for illustrative purposes. The final streetscape details will conform to the Foggy Bottom Campus Streetscape Guidelines as well as other applicable design and permitting standards.

EXISTING CONDITIONS PLAN



MANHOLE TABLE

7 WATER MANHOLE
TOP=65.18
BOTTOM=62.13

8 SEWER MANHOLE
TOP=65.08
?"INV.IN=52.18 (S)
?"INV.OUT=51.58 (N)

14 TELEPHONE MANHOLE
TOP=65.43

27 TELEPHONE MANHOLE
TOP=65.24
BOTTOM=58.46

73 SEWER MANHOLE
TOP=65.71
?"INV.IN=51.96 (S)
?"INV.IN=52.51 (W)
?"INV.OUT=51.66 (N)

74 WATER MANHOLE
TOP=65.70
BOTTOM=63.05

75 ELECTRIC MANHOLE
TOP=66.18
BOTTOM=58.28

286 ELECTRIC MANHOLE
TOP=65.57
BOTTOM=56.87

287 ELECTRIC MANHOLE
TOP=65.50
BOTTOM=62.05

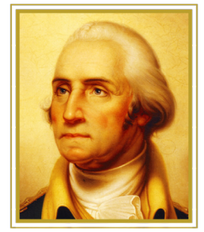
292 ELECTRIC MANHOLE
TOP=67.17
BOTTOM=56.67

450 WATER MANHOLE
TOP=65.06
BOTTOM=62.56 (TOV)

451 ELECTRIC MANHOLE
TOP=65.37
BOTTOM=61.57

522 UTILITY MANHOLE
TOP=66.88

650 ELECTRIC MANHOLE
TOP=67.59



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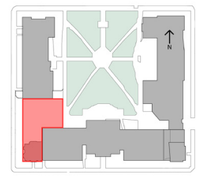
WASHINGTON DC

The George Washington University Museum

HARTMAN-COX ARCHITECTS

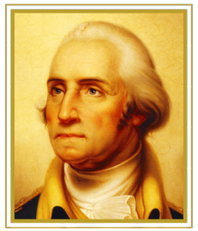
KEY PLAN



DATE
03/14/2012

TITLE
Existing Conditions Plan

NUMBER
C-01



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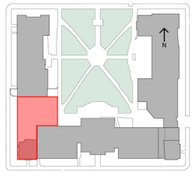
HARTMAN-COX ARCHITECTS

KEY PLAN



DATE

03/14/2012

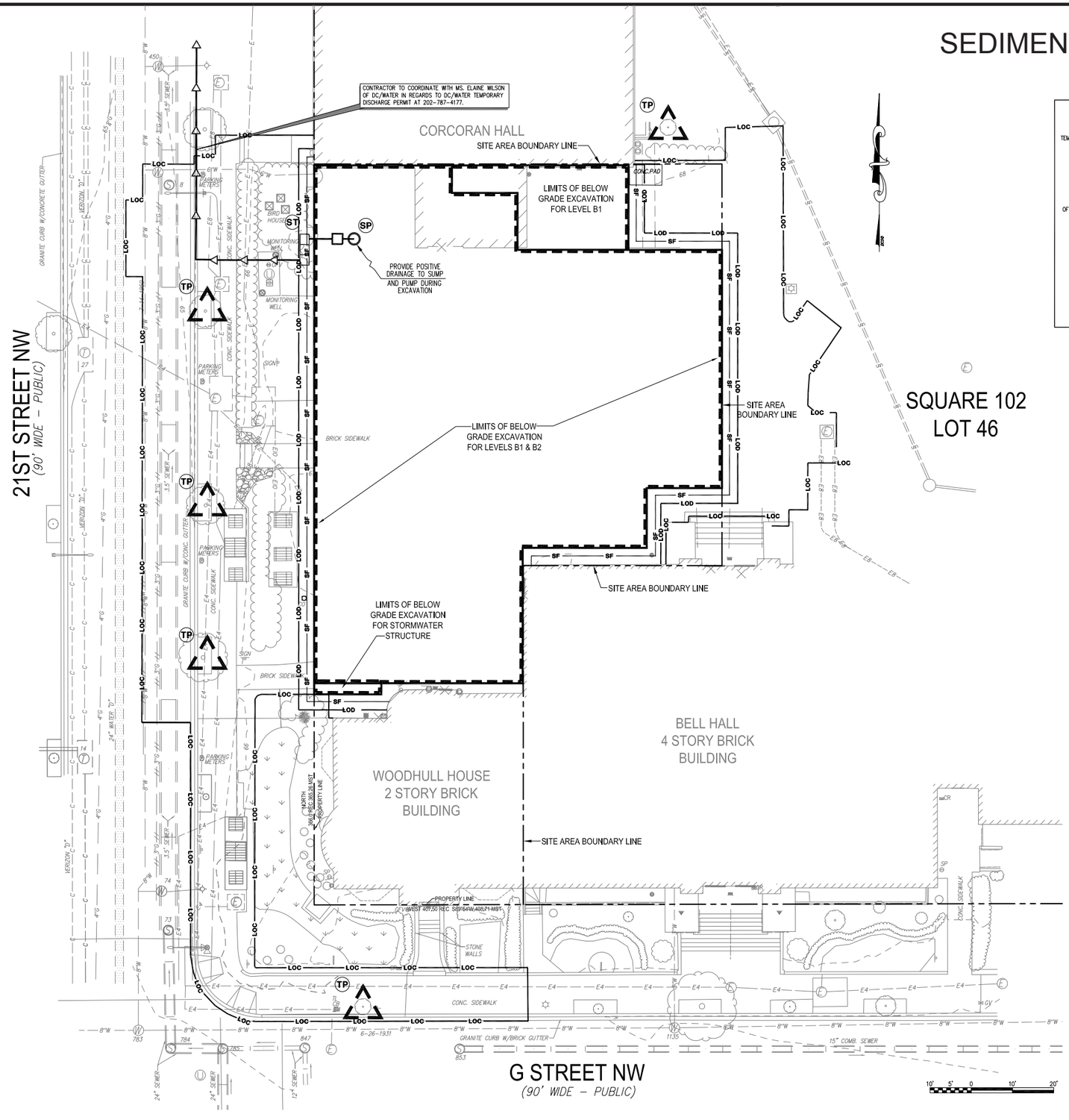
TITLE

Sedimentation & Erosion Control Plan

NUMBER

C-02

SEDIMENTATION & EROSION CONTROL PLAN



LEGEND

PROPOSED

- TEMP CONSTRUCTION ENTRANCE — SCE
- WASH RACK
- SILT FENCE
- INLET PROTECTION — IP
- APPROXIMATE LIMIT OF BELOW GRADE EXCAVATION
- APPROXIMATE LIMIT OF DISTURBANCE — LOD
- APPROXIMATE LIMIT OF CONSTRUCTION — LOC
- TREE PROTECTION — TP
- SUMP PUMP — SP
- SEDIMENT TRAP — ST

DUST CONTROL NOTES:

1. THE CONTRACTOR SHALL CONDUCT OPERATIONS AND MAINTAIN THE PROJECT SITE AS TO MINIMIZE THE CREATION AND DISPERSION OF DUST. DUST CONTROL SHALL BE USED THROUGHOUT THE WORK AT THE SITE.
2. THE CONTRACTOR MUST PROVIDE CLEAN WATER, FREE FROM SALT, OIL AND OTHER DELETERIOUS MATERIAL TO BE USED FOR ON-SITE DUST CONTROL.
3. THE CONTRACTOR SHALL SUPPLY WATER SPRAYING EQUIPMENT CAPABLE OF ACCESSING ALL WORK AREAS.
4. THE CONTRACTOR SHALL IMPLEMENT STRICT DUST CONTROL MEASURES DURING ACTIVE CONSTRUCTION PERIODS ON-SITE. THESE CONTROL MEASURES WILL GENERALLY CONSIST OF WATER APPLICATIONS THAT SHALL BE APPLIED A MINIMUM OF ONCE PER DAY DURING DRY WEATHER OR MORE OFTEN AS REQUIRED TO PREVENT DUST EMISSIONS.
5. FOR WATER APPLICATION TO UNDISTURBED SOIL SURFACES, THE CONTRACTOR SHALL:
   A. APPLY WATER WITH EQUIPMENT CONSISTING OF TANK, SPRAY BAR, PUMP WITH DISCHARGE PRESSURE GAUGE;
   B. ARRANGE SPRAY BAR HEIGHT, NOZZLE SPACING AND SPRAY PATTERN TO PROVIDE COMPLETE COVERAGE OF GROUND WITH WATER;
   C. DISPERSE WATER THROUGH NOZZLES ON SPRAY BAR AT 20 PSI (137.8 K PA) MINIMUM. KEEP AREAS DAMP WITHOUT CREATING NUISANCE CONDITIONS SUCH AS PONDING.
6. FOR WATER APPLICATION TO SOIL SURFACES DURING DEMOLITION AND/OR EXCAVATION, THE CONTRACTOR SHALL:
   A. APPLY WATER WITH EQUIPMENT CONSISTING OF A TANK, PUMP WITH DISCHARGE GAUGE, HOSES AND MIST NOZZLES;
   B. LOCATE TANK AND SPRAYING EQUIPMENT SO THAT THE ENTIRE EXCAVATION AREA CAN BE MISTED WITHOUT INTERFERING WITH DEMOLITION AND/OR EXCAVATION EQUIPMENT OR OPERATIONS. KEEP AREAS DAMP WITHOUT CREATING NUISANCE CONDITIONS SUCH AS PONDING.
   C. APPLY WATER SPRAY IN A MANNER TO PREVENT MOVEMENT OF SPRAY BEYOND SITE BOUNDARIES.

CONSTRUCTION AND STABILIZATION SEQUENCE:

1. INSTALL SEDIMENT AND EROSION CONTROL MEASURES INCLUDING STABILIZED TREE PROTECTION, AND SILT FENCE AS INDICATED ON SHEET C1.03. SEE SHEET C1.08 FOR SEDIMENTATION AND EROSION CONTROL DETAILS.
2. SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND APPROVED BY THE INSPECTOR PRIOR TO COMMENCING ANY OTHER LAND DISTURBING ACTIVITIES.
3. REMOVE ITEMS AS INDICATED ON DEMOLITION PLAN.
4. INSTALL SITE IMPROVEMENTS AS INDICATED ON CONSTRUCTION DOCUMENTS FOR THE PROPOSED BUILDING.
5. AT THE COMPLETION OF CONSTRUCTION AND AFTER THE INSPECTOR'S APPROVAL, ALL TEMPORARY SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE REMOVED.

SEDIMENTATION EROSION CONTROL NOTE:

THE APPLICANT MUST NOTIFY THE DEPARTMENT OF HEALTH BY PHONE (202-535-2250) AT LEAST 24 HOURS PRIOR TO THE START OF GRADING ACTIVITY AND WITHIN (2) WEEKS AFTER COMPLETION OF PROJECT TO REQUEST INSPECTION. IF THERE IS NEED TO MAKE CHANGES OR MODIFICATIONS IN THE APPROVED DESIGN, DEPARTMENT OF HEALTH MUST BE NOTIFIED IMMEDIATELY.

SCHEDULE AND HOLD PRE-CONSTRUCTION MEETING WITH THE SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO ANY LAND DISTURBING ACTIVITY. CALL 202-535-2977 FOR APPOINTMENT.

NOTE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF SHEETING AND SHORING AND SUPPORT OF EXISTING UTILITIES AND ADJACENT STRUCTURES. SHORING, BRACING, AND UNDERPINNING DESIGNED BY THE CONTRACTOR'S STRUCTURAL ENGINEER LICENSED IN THE DISTRICT OF COLUMBIA SHALL BE PROVIDED AS NECESSARY TO ENSURE THEIR SUPPORT.
2. PROVIDE SILT FENCE AT PERIMETER OF EXCAVATION AREA TO REMAIN IN PLACE UNTIL BELOW GRADE EXCAVATION HAS BEGUN UNLESS OTHERWISE APPROVED BY THE INSPECTOR.
3. CONTRACTOR TO PROVIDE ON SITE APPROVED STAMPED AND SIGNED SEDIMENTATION AND EROSION CONTROL DRAWINGS BY DEPARTMENT OF HEALTH, WATERSHED PROTECTION DIVISION.

CONSTRUCTION DATES:

- THE PROPOSED DEMOLITION WORK DUE TO COMMENCE IN SUMMER 2012 WITH CONSTRUCTION ANTICIPATED TO TAKE APPROXIMATELY 18 MONTHS.
- EXACT BEGINNING AND END OF CONSTRUCTION IS TO BE ESTABLISHED BY THE OWNER AND APPLICABLE PERMITS.

TOTAL AREA OF DISTURBANCE:

TOTAL AREA OF DISTURBANCE: 20,237 SQUARE FEET OR 0.46 AC

TOTAL VOLUME OF CUT/FILL UTILITIES:

TOTAL AREA OF EXCAVATION: 862 SF

VOLUME OF CUT = $\frac{862 \text{ SQ.FT. (AREA)} \times 7 \text{ (DEPTH)}}{27} = 224$ CY

TOTAL VOLUME CUT/FILL UTILITIES= 0 CY +/-

TOTAL VOLUME OF CUT OF BELOW GRADE EXCAVATION:

TOTAL AREA OF EXCAVATION: 10,099 SF

VOLUME OF CUT = $\frac{9,449 \text{ SQ.FT. (AREA)} \times 36 \text{ (DEPTH)}}{27} = 12,599$ CY

VOLUME OF CUT = $\frac{650 \text{ SQ.FT. (AREA)} \times 20 \text{ (DEPTH)}}{27} = 482$ CY

TOTAL VOLUME CUT OF BELOW GRADE EXCAVATION= 13,081 CY +/-

SEDIMENT CONTROL APPROVAL:

PLAN NUMBER:

THIS APPROVAL IS FOR GRADING AND SEDIMENT CONTROL ONLY. PERMITTEE/ CONTRACTOR IS REQUIRED TO CONSTRUCT DESIGN FEATURE SHOWN HEREON. HE SHALL NOTIFY THIS OFFICE AT NUMBER LISTED BELOW AT LEAST 24 HOURS BEFORE START OF GRADING ACTIVITY, AND WITHIN TWO WEEKS AFTER COMPLETION OF PROJECT FOR FINAL INSPECTION.

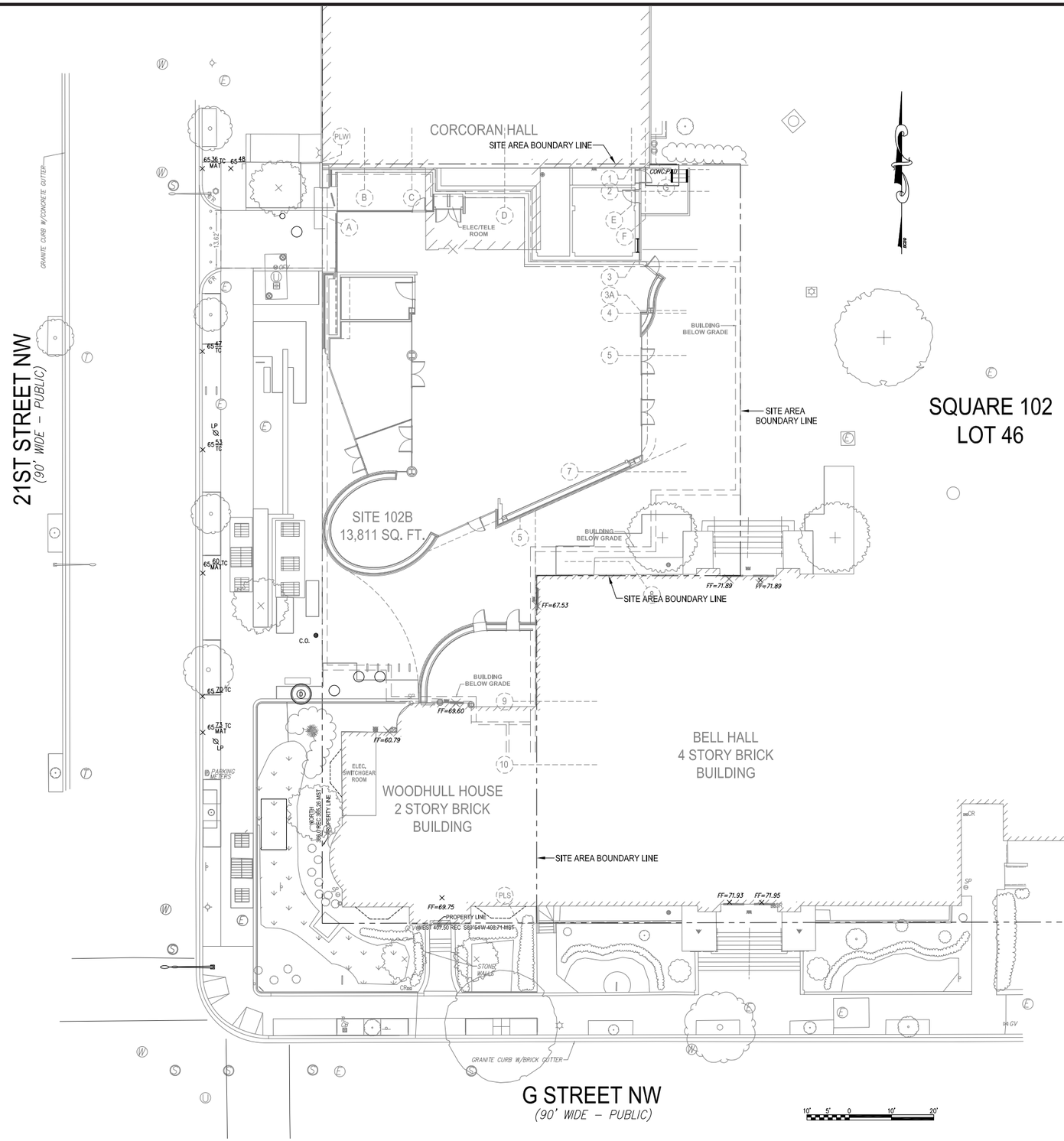
DATE

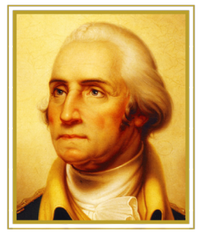
EROSION AND SEDIMENT CONTROL BRANCH

FOR FURTHER INFORMATION, PLEASE CALL:
GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF ENVIRONMENT
WATERSHED PROTECTION DIVISION

1200 1ST-STREET, NE
WASHINGTON, D.C.
TEL NO. (202) 535-2240
FAX NO. (202) 535-1364

GRADING PLAN





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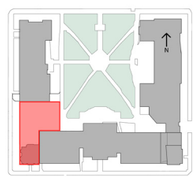
HARTMAN-COX ARCHITECTS

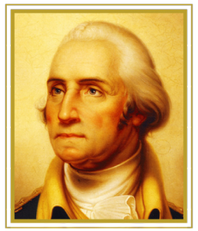
KEY PLAN



DATE
03/14/2012

TITLE
Grading Plan

NUMBER
C-03



THE GEORGE WASHINGTON UNIVERSITY
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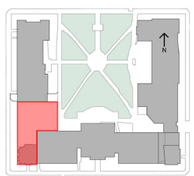
HARTMAN-COX ARCHITECTS

KEY PLAN

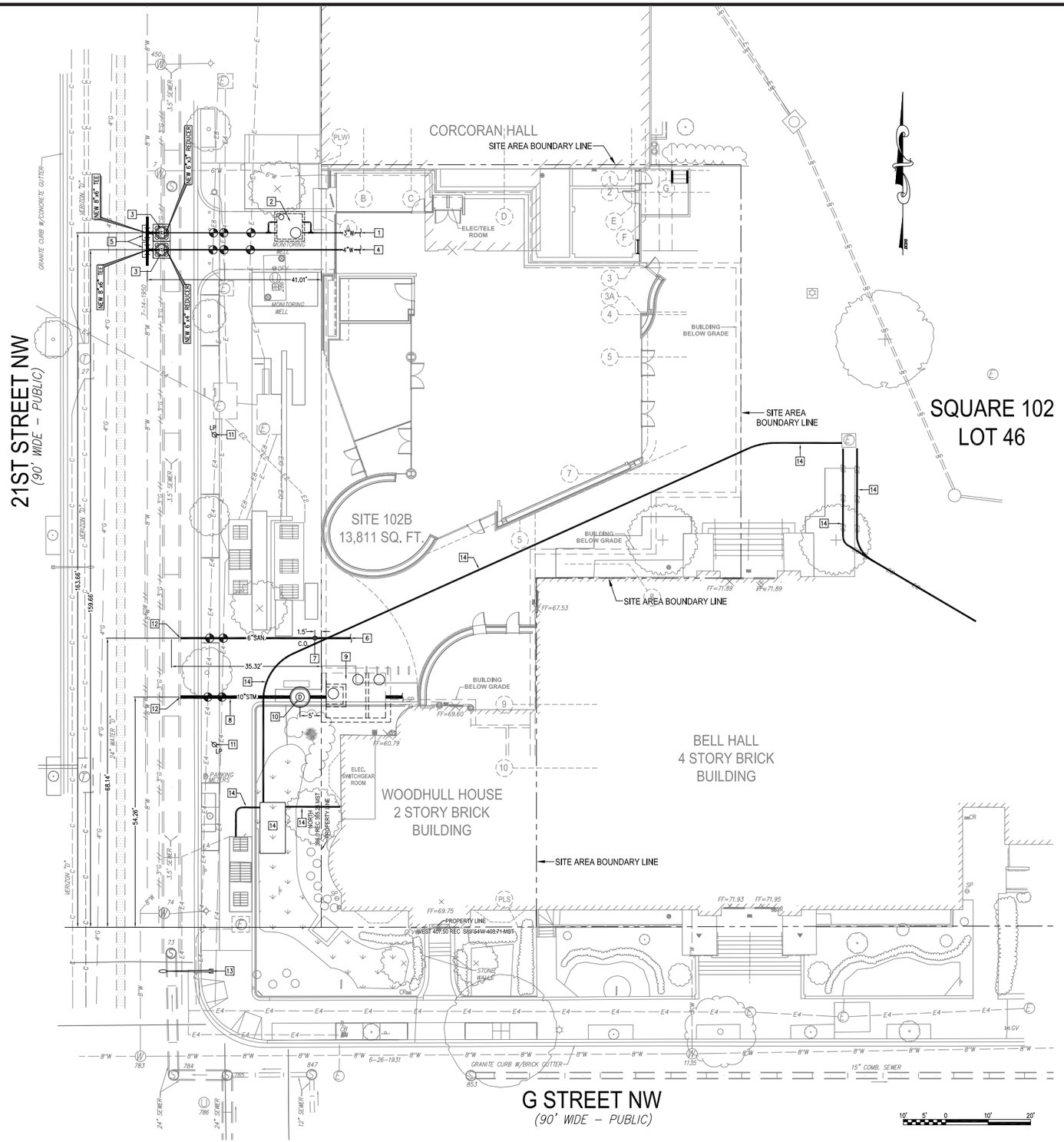


DATE
03/14/2012

TITLE
Utility Plan

NUMBER
C-04

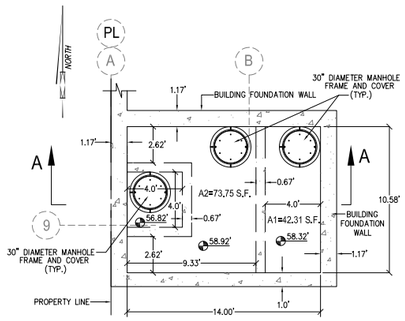
UTILITY PLAN



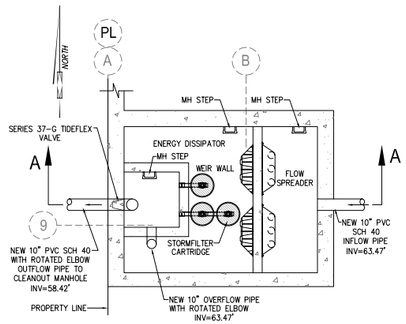
UTILITY KEYNOTES:

1. NEW 3" DIP CLASS 52 DOMESTIC WATER SERVICE LATERAL. BACKFLOW PREVENTER VALVE TO MEET ASSE-1015.
2. NEW 72"x72"x72" I.D. METER VAULT PER DC/WATER STANDARDS AND SPECIFICATIONS. REFER TO DC/WATER STANDARD DRAWING DG-23.01.
3. NEW 6" WATER VALVE WITH 4.0' CASING PER DC/WATER STANDARDS AND SPECIFICATIONS. REFER TO DC/WATER STANDARD DRAWING W-20.01.
4. NEW 4" DIP CLASS 52 FIRE SERVICE LATERAL. BACKFLOW PREVENTER VALVE TO MEET ASSE-1048.
5. NEW IN-LINE THRUST BLOCK PER DC/WATER STANDARDS AND SPECIFICATIONS. REFER TO DC/WATER STANDARD DRAWING W-40.01.
6. NEW 6" PVC SCH-40 SANITARY SEWER LATERAL.
7. NEW CLEANOUT PER DC/WATER STANDARDS AND SPECIFICATIONS. REFER TO DC/WATER STANDARD DRAWING S-80.02.
8. NEW 10" PVC SCH-40 STORM SEWER LATERAL.
9. NEW STORMWATER MANAGEMENT STRUCTURE.
10. NEW 4.0' DIAMETER CLEANOUT MANHOLE PER DC/WASA STANDARDS AND SPECIFICATIONS. REFER TO DC/WATER STANDARD DRAWING S-20.01.
11. NEW NO.16 SINGLE GLOBE STREETLIGHT PER DC/DDOT STREETLIGHT STANDARDS AND SPECIFICATIONS. COORDINATE REQUIREMENTS WITH ALI ZAMANI AT 202-671-0686.
12. NEW ZEE STRAP CONNECTION PER DC/WASA STANDARDS AND SPECIFICATIONS.
13. NEW PENDANT POLE WITH TEAR DROP FIXTURE AND DECORATIVE ARM PER DC STREETLIGHT STANDARDS AND SPECIFICATIONS. RE-INSTALL EXISTING PEDESTRIAN SIGNALS ON THE NEW POLE. COORDINATE REQUIREMENTS WITH MR. ALI ZAMANI AT 202-671-0686 FOR THE STREETLIGHT AND DC/DDOT TRAFFIC SERVICES ADMINISTRATION FOR THE PEDESTRIAN SIGNALS.
14. NEW ELECTRICAL LAYOUT. REFER TO ELECTRICAL DRAWING E0.03 FOR DETAILS.

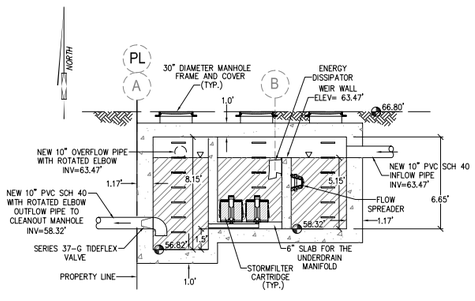
STORMWATER MANAGEMENT PLAN



STORMFILTER QUANTITY/QUALITY
STORM STRUCTURE GEOMETRIC VIEW



STORMFILTER QUANTITY/QUALITY
STORM STRUCTURE PLAN VIEW



STORMFILTER QUANTITY/QUALITY
STORM STRUCTURE - SECTION A

The Stormwater Management StormFilter®

Sizing Based on the District of Columbia Stormwater Guidebook
Volume-Based Design for CSO Area

CONTECH CONSTRUCTION PRODUCTS INC.

Project Name: GWU Museum
Date: 2/21/2012
Input: XXX
Results: XXX

SITE CHARACTERISTIC INPUT

	Acres	Sq. Feet
Total Site Area	0.122	14,600
Total Impervious Area	0.122	14,000
Sidewalk/Rooftop Area	0.122	14,000
Parking/Roadway Area	0.000	0
Land Usage	Mixed/MURP Urban	

ASSUMPTIONS

First Flush Depths (inches)
Sidewalk/Rooftop Area 3.30
Parking/Roadway Area 3.50

First Flush Intensities (in/hr)
Sidewalk/Rooftop Area 0.32
Parking/Roadway Area 0.53

Rational C Values
Impervious 8.90
Pervious 8.35

Rain Intensity (in/hr)
2-Year 1.28
15-Year 7.56

Average Annual Rainfall (in) 40

CARTRIDGE HEIGHT: 18" Low-Drop
Cartridge Flow Rate: 7.5 gpm — 0.017 cfs

WEIGHTED "C" FACTOR

$C_{weighted} = [(C_{impervious})(A_{impervious}) + (C_{pervious})(A_{pervious})] / \text{Total Area}$

$C_{weighted} =$ 0.90

Q_{Design} & $Q_{Cleaner}$ FLOW RATES

$Q_{Design} = (C_{Cartridge})(\text{Intensity}_{2Yr})(\text{Total Area})$
$Q_{Design} =$ 0.60 cfs

$Q_{Cleaner} = (C_{weighted})(\text{Intensity}_{15Yr})(\text{Total Area})$
$Q_{Cleaner} =$ 2.19 cfs

TIME TO DISCHARGE

$T_d = (\text{CONTROL VOLUME})/(Q_d)(3600\ \text{sec/hr})$
$T_d =$ 5.52 hr — OK

QUALITY & QUANTITY CONTROL VOLUMES

$V_{quality} = (\text{Depth}_{1stFlush(Sidewalk/Rooftop)})(\text{Area}_{Sidewalk/Rooftop}) / 12 + (\text{Depth}_{1st})_{Parking/Roadway}(\text{Area}_{Parking/Roadway}) / 12$
$V_{quality} =$ 350 cf

$V_{quantity} = 1.25\,(Q_{Design} - Q_{Cleaner})(T_d)$
$V_{quantity} =$ 596 cf — Design for conrol volume of 596 cubic feet.

MASS LOAD FOR A VOLUME-BASED SYSTEM

Pretreatment Efficiency	80%
EMC of TSS (mg/L)	67
Average Annua Mass Load	167
Mass Removed By Pretreatment	50
Mass Load to SF	117
Mass Load Removed by SF	83
Number of Cartridge Required	3 cartridges

(A1+A2) x D = STORAGE
(42.31+73.75) x 5.15 = 598
VOLUME = 598 CF

VOLUME OF STRUCTURE IS GREATER THAN VOLUME REQUIRED THEREFORE THE STRUCTURE SATISFIED THE DDOE REQUIREMENTS.

*STRUCTURE WILL BE POURED IN PLACE, INFORMATION SHOWN IN THIS FORM IS FOR PRECAST VAULT.

SYSTEM DESIGN

Vault Size	8'x24'
Inside Vault Height (ft)	6
Live Storage Required (cf)	596
Live Storage Provided (cf)	665
Additional Storage Required (cf)	0
Diameter of Storage Pipe (in)	84
Length of Pipe Required (ft)	0

*Assuming bypass elevation is 5" higher than outlet elevation.

Select an 8 x24'x6' CSO-Style StormFilter Vault with (3) 18" Low-Drop Cartridges

CONTECH Construction Products, Inc. • 605 Global Way Suite 113, Linthicum, MD 21090
1-866-740-3338 • www.contech-cpi.com
UrbanGreen™ Stormwater Solutions by CONTECH

GENERAL NOTES:

1. STORMFILTER BY CONTECH STORMWATER SOLUTIONS; PORTLAND, OR (800) 548-4667; SCARBOROUGH, ME (877) 907-8676; ELKRIDGE, MD 9866) 740-3318.
2. FILTER CARTRIDGES TO BE SIPHON-ACTUATED AND SELF-CLEANING.
3. STORMWATER MANAGMENT VAULT WILL BE CAST-IN-PLACE. REFER TO STRUCTURAL DRAWINGS FOR DETAILS.
4. STRUCTURE AND ACCESS COVERS TO MEET AASHTO H-20 LOAD RATING.
5. STORMFILTER REQUIRES 2.3 FEET OF DROP FROM INLET TO OUTLET.
6. INLET AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
7. PROVIDE MINIMUM CLEARANCE FOR MAINTANANCE ACCESS. IF A SHALLOWER SYSTEM IS REQUIRED, CONTACT STORMWATER SOLUTIONS FOR OTHER OPTIONS.
8. DETAIL REFLECTS DESIGN INTENT ONLY. ACTUAL VAULT DIMENSIONS AND CONFIGURATION WILL BE SHOWN ON PRODUCTION SHOP DRAWING. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL.
9. ALL STORMFILTERS REQUIRE REGULAR MAINTENANCE. REFER TO OPERATION AND MAINTENANCE GUIDELINES FOR MORE INFORMATION.

A. TYPES OF MAINTENANCE:

PRESENTLY, PROCEDURES HAVE BEEN DEVELOPED FOR TWO LEVELS OF MAINTENANCE:
- INSPECTION/MINOR MAINTENANCE
- MAJOR MAINTENANCE

INSPECTION/MINOR MAINTENANCE ACTIVITIES ARE COMBINED SINCE MINOR MAINTENANCE DOES NOT REQUIRE SPECIAL EQUIPMENT AND TYPICALLY LITTLE OR NO MATERIALS ARE IN NEED OF DISPOSAL.

INSPECTION/MINOR MAINTENANCE TYPICALLY INVOLVES:
- INSPECTION OF THE VAULT ITSELF
- REMOVAL OF VEGETATION AND TRASH AND DEBRIS.

MAJOR MAINTENANCE TYPICALLY INCLUDES:
- CARTRIDGE REPLACEMENT
- SEDIMENT REMOVAL

IMPORTANT: APPLICABLE SAFETY (OSHA) AND DISPOSAL REGULATION SHOULD BE FOLLOWED DURING ALL MAINTENANCE ACTIVITIES. TWO SCHEDULED INSPECTION/MAINTENANCE ACTIVITIES SHOULD TAKE PLACE DURING THE YEAR.

B. MAINTENANCE ACTIVITY TIMING:

TWO SCHEDULED INSPECTIONS/MAINTENANCE ACTIVITIES SHOULD TAKE PLACE DURING THE YEAR.

FIRST, AN INSPECTION/MINOR MAINTENANCE ACTIVITY SHOULD BE DONE, DURING THE MINOR MAINTENANCE ACTIVITY (ROUTINE INSPECTION, DEBRIS REMOVAL), THE NEED FOR MAJOR MAINTENANCE SHOULD BE DETERMINED AND, IF DISPOSAL DURING MAJOR MAINTENANCE WILL BE REQUIRED, SAMPLES OF THE SEDIMENTS AND MEDIA SHOULD BE OBTAINED.

SECOND, IF REQUIRED, A MAJOR MAINTENANCE ACTIVITY (REPLACEMENT OF THE FILTER CARTRIDGES AND ASSOCIATED SEDIMENT REMOVAL) SHOULD BE PERFORMED.

IN ADDITION TO THESE TWO SCHEDULED ACTIVITIES, IT IS IMPORTANT TO CHECK THE CONDITION OF THE STORMFILTER UNIT AFTER MAJOR STORMS FOR DAMAGE CAUSED BY HIGH FLOWS AND FOR HIGH SEDIMENT ACCUMULATION THAT MAY BE CAUSED BY LOCALIZED EROSION IN THE DRAINAGE AREA. IT MAY BE NECESSARY TO ADJUST THE MAINTENANCE ACTIVITY SCHEDULE DEPENDING ON THE ACTUAL OPERATING CONDITIONS ENCOUNTERED BY THE SYSTEM.

IN GENERAL, MINOR MAINTENANCE ACTIVITIES WILL OCCUR LAST IN THE RAINY SEASON, AND MAJOR MAINTENANCE WILL OCCUR IN LATE SUMMER TO EARLY FALL WHEN FLOWS INTO THE SYSTEM ARE NOT LIKELY TO BE PRESENT.

D. MAINTENANCE METHODS:

1. INSPECTION/MINOR MAINTENANCE

THE PRIMARY GOAL OF A MAINTENANCE INSPECTION IS TO ASSESS THE CONDITION OF THE CARTRIDGES RELATIVE TO THE LEVEL OF SEDIMENT LOADING. IT MAY BE DESIRABLE TO CONDUCT THIS INSPECTION DURING A STORM TO OBSERVE THE RELATIVE FLOW THROUGH THE FILTER CARTRIDGES. IF THE SUBMERGED CARTRIDGES ARE SEVERELY PLUGGED, LARGE AMOUNTS OF SEDIMENTS WILL BE PRESENT AND VERY LITTLE FLOW WILL BE DISCHARGED FROM THE DRAINAGE PIPES. IF THIS IS THE CASE, IT IS LIKELY THAT THE CARTRIDGES NEED TO BE REPLACED.

WARNINGS: IN THE CASE OF A SPILL, THE WORKER SHOULD ABORT MAINTENANCE ACTIVITIES UNTIL THE PROPER GUIDANCE IS OBTAINED. NOTIFY THE LOCAL HAZARD CONTROL AGENCY AND CONTECH STORMWATER SOLUTIONS INC.IMMEDIATELY.

TO CONDUCT AN INSPECTION AND/OR MINOR MAINTENANCE:

IMPORTANT: MAINTENANCE MUST BE PERFORMED BY A UTILITY WORKER FAMILIAR WITH STORMFILTER UNITS.

1. IF APPLICABLE, SET UP SAFETY EQUIPMENT TO PROTECT PEDESTRIANS FROM FALL HAZARDS DUE TO OPEN VAULT DOORS OR WHEN IS BEING DONE NEAR WALKWAYS OR ROADWAYS.
2. VISUALLY INSPECT THE EXTERNAL CONDITION OF THE UNIT AND TAKE NOTES CONCERNING DEFECTS/PROBLEMS.
3. OPEN THE DOORS TO THE VAULT AND ALLOW THE SYSTEM TO AIR OUT FOR 5-10 MINUTES.
4. WITHOUT ENTERING THE VAULT, INSPECT THE INSIDE OF THE UNIT, INCLUDING COMPONENTS.
5. TAKE NOTES ABOUT THE EXTERNAL AND INTERNAL CONDITION OF THE VAULT.

   BE SURE TO RECORD THE LEVEL OF SEDIMENT BUILD-UP ON THE FLOOR OF THE VAULT, IN THE FOREBAY, AND ON TOP OF THE CARTRIDGES. IF FLOW IS OCCURRING, NOTE THE LEVEL OF WATER AND ESTIMATE THE FLOW PER DRAINAGE PIPE. RECORD ALL OBSERVATIONS.
6. REMOVE LARGE LOOSE DEBRIS AND TRASH USING A POLE WITH A GRAPPLE OR NET ON THE END.
7. CLOSE AND FASTEN THE DOOR.
8. REMOVE SAFETY EQUIPMENT.
9. MAKE NOTES ABOUT THE LOCAL DRAINAGE AREA RELATIVE TO ONGOING CONSTRUCTION, EROSION PROBLEMS, OR HIGH LOADING OF OTHER MATERIALS TO THE SYSTEM.
10. FINALLY, REVIEW THE CONDITION REPORTS FROM THE PREVIOUS MINOR AND MAJOR MAINTENANCE VISITS, AND SCHEDULE CARTRIDGE REPLACEMENT IF NEEDED.

2. MAJOR MAINTENANCE:

DEPENDING ON THE CONFIGURATION OF THE PARTICULAR SYSTEM, A WORKER MAY BE REQUIRED TO ENTER THE VAULT TO PERFORM SOME TASKS.

IMPORTANT: IF VAULT ENTRY IS REQUIRED, OSHA RULES FOR CONFINED SPACE ENTRY MUST BE FOLLOWED.

FILTER CARTRIDGE REPLACEMENT SHOULD OCCUR DURING DRY WEATHER. IT MAY BE NECESSARY TO PLUG THE FILTER INLET PIPE IF BASE FLOWS EXIST. STANDING WATER PRESENT IN THE VAULT SHOULD BE CONTAINED DURING THIS OPERATION BY TEMPORARILY CAPPING THE MANIFOLD CONNECTORS.

REPLACEMENT CARTRIDGE WILL BE DELIVERED TO THE SITE. INFORMATION CONCERNING HOW TO OBTAIN THE REPLACEMENT CARTRIDGES IS AVAILABLE FROM CONTECH STORMWATER SOLUTIONS.

WARNING: IN THE CASE OF A SPILL, THE WORKER SHOULD ABORT MAINTENANCE ACTIVITIES UNTIL THE PROPER GUIDANCE IS OBTAINED. NOTIFY THE LOCAL HAZARD CONTROL AGENCY AND CONTECH STORMWATER SOLUTIONS IMMEDIATELY.

TO CONDUCT CARTRIDGE REPLACEMENT AND SEDIMENT REMOVAL MAINTENANCE:

1. IF APPLICABLE, SET UP SAFETY EQUIPMENT TO PROTECT PEDESTRIANS FROM FALL HAZARDS DUE TO OPEN VAULT DOORS OR WHEN WORK IS BEING DONE NEAR WALKWAYS OR ROADWAYS.
2. VISUALLY INSPECT THE EXTERNAL CONDITION OF THE UNIT AND TAKE NOTES CONCERNING DEFECTS/PROBLEMS.
3. OPEN THE DOORS TO THE VAULT AND ALLOW THE SYSTEM TO THE AIR OUT FOR 5-10 MINUTES.
4. WITHOUT ENTERING THE VAULTS, GIVE THE INSIDE OF THE UNITS, INCLUDING COMPONENTS, A GENERAL CONDITION INSPECTION.
5. MAKE NOTES ABOUT THE EXTERNAL AND INTERNAL CONDITION OF THE VAULT. GIVE PARTICULAR ATTENTION TO RECORDING THE LEVEL OF SEDIMENT BUILD-UP ON THE FLOOR OF THE VAULT, IN THE FOREBAY, AND ON TOP OF THE INTERNAL COMPONENTS.
6. REMOVE LARGE LOOSE DEBRIS AND TRASH USING A POLE WITH A GRAPPLE OR NET ON THE END.
7. USING A BOOM, CRANE, OR OTHER DEVICE (DOLLY AND RAMP), OFFLOAD THE REPLACEMENT CARTRIDGES (UP TO 150 LBS. EACH) AND SET ASIDE.
8. REMOVE USED CARTRIDGES FROM THE VAULT USING ONE OF THE FOLLOWING METHODS:

   IMPORTANT: THIS ACTIVITY WILL REQUIRE THAT WORKERS ENTER THE VAULT TO REMOVE THE CARTRIDGES FROM THE DRAINAGE SYSTEM.

METHOD 1:

A. USING AN APPROPRIATE SLING, ATTACH THE CABLE FROM THE BOOM, CRANE, OR TRIPOD TO THE CARTRIDGE BEING REMOVED. CONTACT CONTECH STORMWATER SOLUTIONS FOR SPECIFICATIONS ON APPROPRIATE ATTACHMENT DEVICES.

THIS ACTIVITY WILL REQUIRE THAT WORKERS ENTER THE VAULT TO REMOVE THE CARTRIDGE FROM THE DRAINAGE SYSTEM AND PLACE THEM UNDER THE VAULT OPENING FOR LIFTING.

IMPORTANT: NOTE THAT CARTRIDGES CONTAINING MEDIA OTHER THAN THE LEAF MEDIA REQUIRE UNSCREWING FROM THEIR THREADED CONNECTORS. TAKE CARE NOT TO DAMAGE THE MANIFOLD CONNECTORS. THIS CONNECTOR THIS CONNECTOR SHOULD REMAIN INSTALLED IN THE MANIFOLD AND CAPPED IF NECESSARY.

B. REMOVE THE USED CARTRIDGES (250 LBS. EACH) FROM THE VAULT.

IMPORTANT: CARE MUST BE USED TO AVOID DAMAGING THE CARTRIDGES DURING REMOVAL AND INSTALLATION. THE COST OF REPAIRING COMPONENTS DAMAGED DURING MAINTENANCE WILL BE THE RESPONSIBILITY OF THE OWNER UNLESS CONTECH STORMWATER SOLUTIONS PERFORMS THE MAINTENANCE ACTIVITIES AND DAMAGE IS NOT RELATED TO DISCHARGES TO THE SYSTEM.

C. SET THE USED CARTRIDGE ASIDE OR LOAD ONTO THE HAULING TRUCK.
D. CONTINUE STEPS "A" THROUGH "C" UNTIL ALL CARTRIDGES HAVE BEEN REMOVED.

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

WITHIN 21 DAYS AFTER COMPLETION OF CONSTRUCTION OF THE STORMWATER DISCHARGE FACILITY, PLEASE SEND THIS PAGE TO THE WATERSHED PROTECTION DIVISION- DEPARTMENT OF HEALTH.

1. STORMWATER DISCHARGE FACILITY INFORMATION:

   SOURCE NAME: _____
   SOURCE LOCATION: STREET: _____
   CITY: _____
   DCRA PERMIT NO.: _____
   DATE ISSUED: _____

2. AS-BUILT CERTIFICATION:

I HEREBY CERTIFY THAT STORMWATER DISCHARGE FACILITY HAS BEEN BUILT SUBSTANTIALLY IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS, AND THAT SUBSTANTIAL DEVIATIONS (NOTED BELOW) WILL NOT PREVENT THE SYSTEM FROM FUNCTIONING IN COMPLIANCE WITH THE REQUIREMENTS OF SECTION 526 THROUGH 535 OF DCMR-21, CHAPTER 5 WHEN PROPERLY MAINTAINED AND OPERATED. THESE DETERMINATIONS HAVE BEEN BASED UPON ON-SITE OBSERVATION OF CONSTRUCTION, SCHEDULED AND CONDUCTED BY ME OR BY A PROJECT REPRESENTATIVE UNDER MY DIRECT SUPERVISION. I HAVE ENCLOSED ONE SET OF AS-BUILT ENGINEERING DRAWINGS.

_____ _____
SIGNATURE OF ENGINEER — NAME (PLEASE TYPE) D.C. REG. NO.

AFFIX SEAL:

COMPANY NAME: _____
COMPANY ADDRESS: _____
DATE: _____ TELEPHONE: _____

SUBSTANTIAL DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS (ATTACH ADDITIONAL SHEETS IF REQUIRED).

_____
_____
_____

C. MAINTENANCE ACTIVITY FREQUENCY:

THE PRIMARY FACTOR CONTROLLING TIMING OF MAINTENANCE FOR THE STORMFILTER IS SEDIMENTATION.

A PROPERLY FUNCTION SYSTEM WILL REMOVE SOLIDS FROM WATER BY TRAPPING PARTICULATES IN THE POROUS STRUCTURE OF THE FILTER MEDIA. THE FLOW THROUGH THE SYSTEM WILL NATURALLY DECREASE AS MORE AND MORE SOLIDS ARE TRAPPED. EVENTUALLY THE FLOW THROUGH THE SYSTEM WILL BE LOW ENOUGH TO REQUIRE REPLACEMENT OF THE CARTRIDGES. IT MAY BE POSSIBLE TO EXTEND THE USABLE SPAN OF THE CARTRIDGES BY REMOVING SEDIMENT FROM UPSTREAM TRAPPING DEVICES ON AN AS-NEEDED BASIS IN ORDER TO PREVENT MATERIAL FROM BEING RE-SUSPENDED AND DISCHARGED TO THE SYSTEM.

SITE CONDITIONS GREATLY INFLUENCE MAINTENANCE REQUIREMENTS. STORMFILTERS UNITS LOCATED IN AREAS WITH EROSION OR ACTIVE CONSTRUCTION SHOULD BE INSPECTED AND MAINTAINED MORE OFTEN THAN THOSE IN FULLY STABILIZED AREAS.

THE MAINTENANCE FREQUENCY MAY BE ADJUSTED AS ADDITIONAL MONITORING INFORMATION BECOMES AVAILABLE DURING THE INSPECTION PROGRAM. AREAS THAT DEVELOP KNOWN PROBLEMS SHOULD BE INSPECTED MORE FREQUENTLY THAN AREAS THAT DEMONSTRATE NO PROBLEMS, PARTICULARLY AFTER LARGE STORMS.

ULTIMATELY, INSPECTION AND MAINTENANCE ACTIVITIES SHOULD BE SCHEDULED BASED ON THE HISTORIC RECORDS AND CHARACTERISTICS OF AN INDIVIDUAL STORMFILTERSYSTEM. IT IS RECOMMENDED THAT THE MAINTENANCE AGENCY DEVELOP A DATABASE TO PROPERLY MANAGE STORM FILTER MAINTENANCE PROGRAMS.

PRIOR TO THE DEVELOPMENT OF THE MAINTENANCE DATABASE, THE FOLLOWING MAINTENANCE FREQUENCIES SHOULD BE FOLLOWED:

INSPECTION/MINOR MAINTENANCE
- ONE TIME PER YEAR
- AFTER MAJOR STORMS

MAJOR MAINTENANCE
- ONE TIME PER YEAR
- IN THE EVENT OF A CHEMICAL SPILL

FREQUENCIES SHOULD BE UPDATED AS REQUIRED.

THE RECOMMEND INITIAL FOR INSPECTION/MINOR MAINTENANCE IS TWO TIMES PER YEAR FOR PRECUTS UNITS. STORM FILTER UNITS SHOULD BE INSPECTED AFTER ALL MAJOR STORMS. SEDIMENT REMOVAL AND CARTRIDGE REPLACEMENT ON AN ANNUAL BASIS IS RECOMMENDED UNTIL FURTHER KNOWLEDGE IS GAINED ABOUT A PARTICULAR SYSTEM.

ONCE AN UNDERSTANDING OF SITE CHARACTERISTICS HAS BEEN ESTABLISHED, MAINTENANCE MAY NOT BE NEEDED FOR ONE TO TWO YEARS, BUT INSPECTION IS WARRANTED.

METHOD 2:

A. UNSCREW THE CARTRIDGES CAP.
B. REMOVE THE CARTRIDGE HOOD.
C. TRIP THE CARTRIDGE ON ITS SIDE.

   IMPORTANT: NOTE THAT CARTRIDGES CONTAINING MEDIA OTHER THAN THE LEAF MEDIA REQUIRE UNSCREWING FROM THEIR THREADED CONNECTORS. TAKE CARE NOT TO DAMAGE THE MANIFOLD CONNECTORS. THIS CONNECTOR THIS CONNECTOR SHOULD REMAIN INSTALLED IN THE MANIFOLD AND CAPPED IF NECESSARY.

D. EMPTY THE CARTRIDGE ONTO THE VAULT FLOOR.
E. SET THE EMPTY, USED CARTRIDGE ASIDE OR LOAD ONTO THE HAULING TRUCK.
F. CONTINUE STEPS A THROUGH "E" UNTIL ALL CARTRIDGES HAVE BEEN REMOVED.

9. REMOVE DEPOSITED SEDIMENT FROM THE FLOOR OF THE VAULT AND, IF LARGE AMOUNTS ARE PRESENT, FROM THE FOREBAY. THIS CAN USUALLY BE ACCOMPLISHED BY SHOVELING THE SEDIMENT INTO CONTAINERS, WHICH, ONCE FULL, ARE LIFTED MECHANICALLY FROM THE VAULT AND PLACED ONTO THE HAULING TRUCK. IF METHOD 2 IN STEP 8 IS USED TO EMPTY THE CARTRIDGES, OR IN CASES OF EXTREME SEDIMENT LOADING, A VACTOR TRUCK MAY BE REQUIRED.
10. ONCE THE SEDIMENTS ARE REMOVED, ASSESS THE CONDITION OF THE VAULT AND THE CONDITION OF THE MANIFOLD AND CONNECTORS. THE CONNECTORS AREE SHORT SECTIONS OF 2-INCH SCHEDULE 40 PVC, OR THREADED SCHEDULE 80 PVC THAT SHOULD PROTRUDE ABOVE THE FLOOR OF THE VAULT.
    A. IF REQUIRED, APPLY A LIGHT COATING OF FDA APPROVED SILICON GREASE TO THE OUTSIDE OF THE EXPOSED PORTION OF THE CONNECTORS. THIS ENSURES A WATERTIGHT CONNECTION BETWEEN THE CARTRIDGE AND THE DRAINAGE PIPE.
    B. REPLACE ANY DAMAGED CONNECTORS.
11. USING THE BOOM, CRANE, OR TRIPOD, LOWER AND INSTALL THE NEW CARTRIDGES. ONCE AGAIN, TAKE CARE NOT TO DAMAGE CONNECTIONS.
12. CLOSE AND FASTEN THE DOOR.
13. REMOVE SAFETY EQUIPMENT.
14. MAKE NOTES ABOUT THE LOCAL DRAINAGE AREA RELATIVE TO ONGOING CONSTRUCTION, EROSION PROBLEMS, OR HIGH LOADINGS OF OTHER MATERIALS TO THE SYSTEM.
15. FINALLY, DISPOSE OF THE RESIDUAL MATERIALS IN ACCORDANCE WITH APPLICABLE REGULATIONS. MAKE ARRANGEMENTS TO RETURN THE USED CARTRIDGES TO CONTECH STORMWATER SOLUTIONS.

E. RELATED MAINTENANCE ACTIVITIES:

(PERFORMED ON AN AS-NEEDED BASIS)

STORMFILTER UNITS ARE OFTEN JUST ONE OF MANY COMPONENTS IN A MORE COMPREHENSIVE STORMWATER DRAINAGE AND TREATMENT SYSTEM. THE ENTIRE SYSTEM MAY INCLUDE CATCH BASINS, DETENTION VAULTS, SEDIMENTATION VAULTS AND MANHOLES, DETENTION/RETENTION PONDS, SWALES, ARTIFICIAL WETLANDS, AND OTHER MISCELLANEOUS COMPONENTS.

IN ORDER FOR MAINTENANCE OF THE STORMFILTER TO BE SUCCESSFUL, IT IS IMPERATIVE THAT ALL OTHER COMPONENTS BE PROPERLY MAINTAINED. THE MAINTENACE/REPAIR OF UPSTREAM FACILITIES SHOULD BE CARRIED OUT PRIOR TO STORMFILTER MAINTENANCE ACTIVITIES.

IN ADDITION TO CONSIDERING UPSTREAM FACILITIES, IT IS ALSO IMPORTANT TO CORRECT ANY PROBLEMS IDENTIFIED IN THE DRAINAGE AREA. DRAINAGE AREA CONCERNS MAY INCLUDE: EROSION PROBLEMS, HEAVY OIL AND GREASE LOADING, AND DISCHARGES OF INAPPROPRIATE MATERIALS.

F. RELATED MAINTENANCE ACTIVITIES:

THE ACCUMULATED SEDIMENT FOUND IN STORMWATER TREATMENT AND CONVEYANCE SYSTEMS MUST BE HANDLED AND DISPOSED OF IN A MANNER THAT WILL NOT ALLOW THE MATERIAL TO AFFECT SURFACE OR GROUND WATER. IT IS POSSIBLE FOR SEDIMENTS TO CONTAIN MEASURABLE CONCENTRATIONS OF HEAVY METALS AND ORGANIC CHEMICALS (SUCH AS PESTICIDES AND PETROLEUM PRODUCTS). AREAS WITH THE GREATEST POTENTIAL FOR HIGH POLLUTANT LOADING INCLUDE INDUSTRIAL AREAS AND HEAVILY TRAVELED ROAD.

SEDIMENTS AND WATER MUST BE DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE WASTE DISPOSAL REGULATIONS. IT IS NOT APPROPRIATE TO DISCHARGE UNTREATED MATERIALS BACK TO THE STORMWATER DRAINAGE SYSTEM.

PART OF ARRANGING FOR MAINTENANCE TO OCCUR SHOULD INCLUDE COORDINATION OF DISPOSAL OF SOLIDS (LANDFILL COORDINATION) AND LIQUIDS (MUNICIPAL VACUUM TRUCK DECANT FACILITY, LOCAL WASTEWATER TREATMENT PLANT, ON-SITE TREATMENT AND DISCHARGE.)

OWNERS SHOULD CONTACT THE LOCAL PUBLIC WORKS DEPARTMENT AND INQUIRE ABOUT HOW THE DEPARTMENT DISPOSES OF THEIR STREET WASTE RESIDUALS. CONTECH STORMWATER SOLUTIONS WILL DETERMINE DISPOSAL METHODS OR REUSE OF THE MEDIA CONTAINED IN THE CARTRIDGES. IF THE MATERIAL HAS BEEN CONTAMINATED WITH ANY UNUSUAL SUBSTANCE, THE COST OF SPECIAL HANDLING AND DISPOSAL WILL BE THE RESPONSIBILITY OF THE OWNER.

STATEMENT BY PERSON RESPONSIBLE FOR MAINTENANCE

THE UNDERSIGNED AGREES TO MAINTAIN AND OPERATE THE DISCHARGE FACILITIES IN SUCH A MANNER AS TO COMPLY WITH THE PROVISIONS OF SECTION 526 THROUGH 535 OF DCMR-21, CHAPTER 5. RESPONSIBILITY FOR MAINTENANCE AND OPERATION MAY BE TRANSFERRED TO ANOTHER ENTITY UPON WRITTEN NOTICE TO THE WATERSHED PROTECTION DIVISION OF THE DEPARTMENT OF HEALTH FROM THE UNDERSIGNED AND THE ENTITY ASSUMING RESPONSIBILITY, CERTIFYING THAT THE TRANSFER OF RESPONSIBILITY FOR MAINTENANCE AND OPERATION IN COMPLIANCE WITH SECTION 526 THROUGH 535 OF DCMR-21, CHAPTER 5 HAS BEEN ACCEPTED. FOR MAINTENANCE AND OPERATION IN COMPLIANCE WITH SECTION 509 THROUGH 518 HAS BEEN ACCEPTED.

_____
SIGNATURE OF PERSON RESPONSIBLE FOR MAINTENANCE (IT MAY BE THE APPLICANT)

NAME AND TITLE (PLEASE TYPE): _____

ADDRESS: _____

DATE: _____ PHONE NO. _____

STATEMENT BY PROFESSIONAL ENGINEER REGISTERED IN THE DISTRICT OF COLUMBIA

THIS IS TO CERTIFY THAT THE ENGINEERING FEATURES OF THIS STORMWATER DISCHARGE FACILITY HAVE BEEN DESIGNED/EXAMINED BY ME AND FOUND TO BE IN CONFORMITY WITH MODERN ENGINEERING PRINCIPLES APPLICABLE TO THE TREATMENT AND DISPOSAL OF STORMWATER POLLUTANTS. I FURTHER CERTIFY THAT THE FACILITY HAS BEEN DESIGNED IN ACCORDANCE WITH THE SPECIFICATION REQUIRED UNDER SECTION 526 THROUGH 535 OF DCMR-21, CHAPTER 5. IT IS ALSO STATED THAT THE UNDERSIGNED HAS FURNISHED THE APPLICANT WITH A SET OF INSTRUCTIONS FOR MAINTENANCE AND OPERATION OF THE STORMWATER DISCHARGE FACILITY.

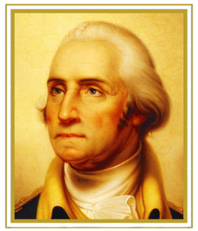
_____
SIGNATURE OF THE ENGINEER

AFFIX SEAL:

NAME AND TITLE (PLEASE TYPE): _____

11860 Sunrise Valley Drive, Suite 200
ADDRESS:
Reston, VA 20191

DATE: _____ PHONE NO. (703) 391-7600

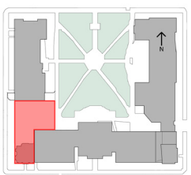


THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON DC

The George Washington University Museum

HARTMAN-COX ARCHITECTS

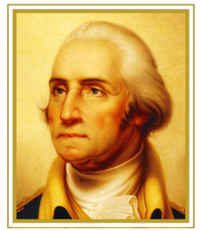
KEY PLAN



DATE
03/14/2012

TITLE
Stormwater Management Plan

NUMBER
C-05



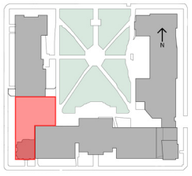
THE GEORGE WASHINGTON UNIVERSITY

WASHINGTON DC

The George Washington University Museum

HARTMAN-COX ARCHITECTS

KEY PLAN



DATE

03/14/2012

TITLE

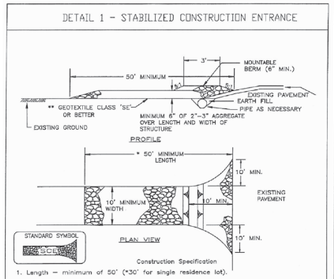
Sedimentation & Erosion Control Details

NUMBER

C-06

SEDIMENTATION & EROSION CONTROL DETAILS

DETAIL 1 - STABILIZED CONSTRUCTION ENTRANCE

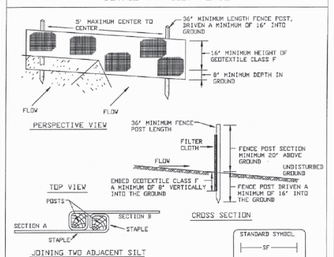


Construction Specification

1. Length – minimum of 50' (*30' for single residence lot).
2. Width – 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone – crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water – all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required. The mountable berm is required on all SCEs not located at a high spot.
6. Location – A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

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

DETAIL 4 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1½"x 1½" square (minimum) cut, or 1¾" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or J section weighing not less than 1.00 pond per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall nest the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: ASTM D-4595
Tensile Modulus	20 lbs/in (min.)	Test: ASTM D-4595
Flow Rate	0.3 gal/ft²/minute (max.)	Test: ASTM D-5141
Filtering Efficiency	75% (min.)	Test: ASTM D-5141

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 30% of the fabric height.

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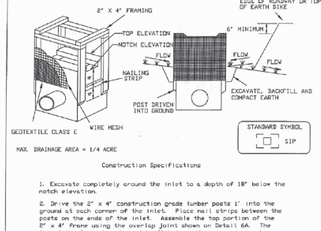
DETAIL 6A - STANDARD INLET PROTECTION



Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation.
2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 6A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.
3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must nest and overlap at a post.
4. Stretch the Geotextile Class E tightly over the wire mesh with the geotextile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must nest at a post, be overlapped and folded, then fastened down.
5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.
6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.
7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

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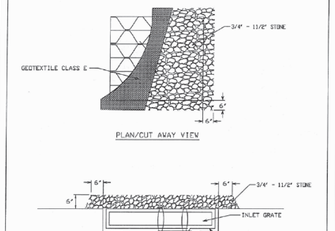
DETAIL 6B - AT GRADE INLET PROTECTION



Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
2. Place 3/4" to 1 1/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

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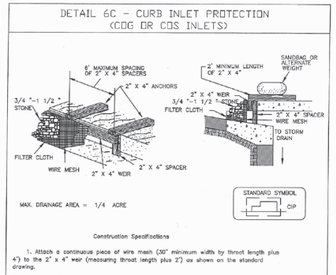
DETAIL 6C - CURB INLET PROTECTION (COG OR COS INLETS)



Construction Specifications

1. Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4") to the 2" x 4" weir (measuring throat length plus 2") as shown on the standard drawing.
2. Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.
3. Securely nail the 2" X 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).
4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.
5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.
6. Form the 1/2" x 1/2" wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4" x 1 1/2" stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.
7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.
8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

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PIPE OUTLET SEDIMENT TRAP - ST I

6. Construction operations shall be carried out in such a manner that erosion and water pollution are abated. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. Points of concentrated inflow shall be protected in accordance with Grade Stabilization Structure criteria. The remainder of the interior slopes should be stabilized (one time) with seed and mulch upon trap completion and maintained and maintained erosion free during the life of the trap.
7. The structure shall be removed and area stabilized when the drainage area has been properly stabilized.
8. All cut and fill slopes shall be 2:1 or flatter.
9. All pipe connections shall be watertight.
10. Above the wet storage elevation, the riser shall be perforated with 1/2" vide by 6" long slits or 1" diameter holes spaced 6" vertically and horizontally. No perforations will be allowed within 6" of the horizontal barrel.
11. The riser shall be wrapped with 1/2" hardware cloth (wire) then wrapped with Geotextile Class E. The filter cloth shall extend 6" above the highest slit and 6" below the lowest slit. Where ends of filter cloth come together, they shall be overlapped, folded and fastened to prevent bypass. Filter cloth shall be replaced as necessary to prevent clogging.
12. Straps or connecting bands shall be used to hold the filter cloth and wire fabric in place. They shall be placed at the top and bottom of the cloth.
13. Fill material around the pipe spillway shall be hand compacted in 4" layers. A minimum of 2' of hand-compacted backfill shall be placed over the pipe spillway before crossing it with construction equipment.
14. The riser shall be anchored with either a concrete base or steel plate base to prevent flotation. Concrete bases shall be at least twice the riser diameter and 12" deep with the riser embedded 9". Steel plate bases shall be at least twice the riser diameter, 1/4" minimum thickness and attached to the bottom of the riser by a continuous weld to form a watertight connection. Then place 8" of stone, gravel or tamped earth on the plate.
15. Anti seep collars shall be constructed in accordance with plans (ref. table 18 and Details 17 and 18).
16. Concentric trash rack and anti-vortex device design details are on Detail 16.
17. Refer to Section G for dewatering requirements of sediment traps.
18. Outlet – An outlet shall be provided, which includes a means of conveying the discharge in an erosion free manner to an existing stable channel.
19. Where discharge occurs at the property line, local ordinances and drainage easement requirements shall be met.

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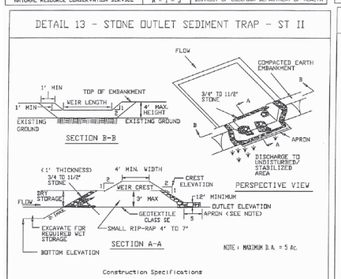
DETAIL 13 - STONE OUTLET SEDIMENT TRAP - ST II



Construction Specifications

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. All cut and fill slopes shall be 2:1 or flatter.
4. The stone used in the outlet shall be small rip-rap 4" to 7" in size with a 1' thick layer of 3/4" to 1 1/2" washed aggregate placed on the upstream face of the outlet. Stone facing shall be as necessary to prevent clogging. Geotextile Class SE may be substituted for the stone facing by placing it on the inside face of the stone outlet.
5. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to one half of the wet storage depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

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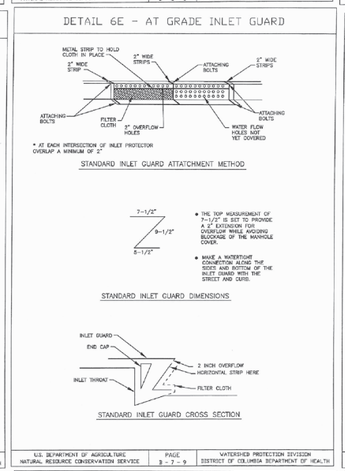
DETAIL 6E - AT GRADE INLET GUARD



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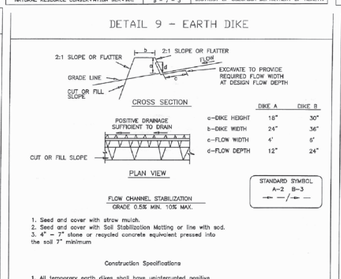
DETAIL 9 - EARTH DIKE



Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

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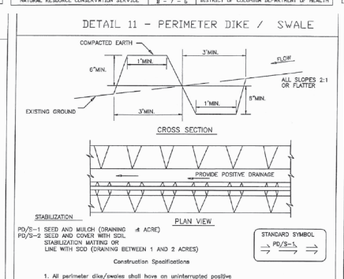
DETAIL 11 - PERIMETER DIKE / SWALE



Construction Specifications

1. All perimeter dike/swales shall have an uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet into an undisturbed stabilized area at a non-erosive velocity.
4. The swale shall be excavated or shaped to line, grade, and cross-section as required to meet the criteria specified in the standard.
5. Fill shall be compacted by earth moving equipment.
6. Stabilization with seed and mulch or as specified of the area disturbed by the dike and swale shall be completed within 7 days upon removal.
7. Inspection and required maintenance shall be provided after each rain event.

Note: The maximum drainage area for this practice is 2 acres.

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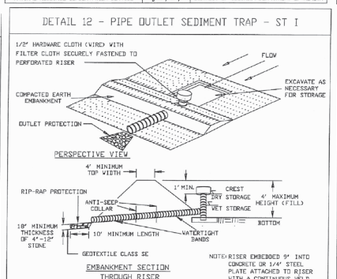
DETAIL 12 - PIPE OUTLET SEDIMENT TRAP - ST I



NOTE: RISER EMBEDDED 9" INTO CONCRETE OR 1/4" STEEL PLATE ATTACHED TO RISER WITH A CONTINUOUS WELD ON BOTTOM AND 2" OF STONE PLACED ON STEEL PLATE TWICE THE RISER DIAMETER (MIN.)

Construction Specifications

1. The area under the embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. The total trap volume as measured from the bottom to riser crest elevation shall be 3600 cubic feet per acre of drainage area (see Table 11). The top of embankment must be 3' above the riser crest elevation.
4. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half of the wet storage depth of the trap (1800cf/ac). The sediment shall be deposited in a suitable area and in such a manner that it will not erode.
5. The structure shall be inspected periodically and after each rain and repairs

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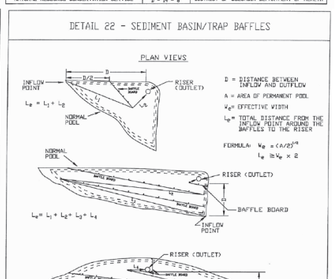
DETAIL 22 - SEDIMENT BASIN/TRAP BAFFLES



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STONE OUTLET SEDIMENT TRAP - ST II

6. The structure shall be inspected periodically and after each rain and repairs made as needed.
7. Construction of traps shall be carried out in such a manner that sediment pollution is abated. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. Points of concentration inflow shall be protected in accordance with Grade Stabilization Structure criteria. The remainder of the interior slopes should be stabilized (one time) with seed and mulch upon trap completion and maintained and maintained erosion free during the life of the trap.
8. The structure shall be dewatered by approved methods, removed and the area stabilized when the drainage area has been properly stabilized.
9. Refer to Section G for specifications concerning trap dewatering.
10. Minimum trap depth shall be measured from the weir elevation.
11. The elevation of the top of any dike directing water into the trap must equal or exceed the elevation of the trap embankment.
12. Geotextile Class SE shall be placed over the bottom and sides of the outlet channel prior to the placement of stone. Sections of filter cloth must overlap at least 1' with the section nearest the entrance placed on top. The filter cloth shall be embedded at least 6" into existing ground at the entrance of the outlet channel.
13. Outlet – An outlet shall be provided, including a means of conveying the discharge in an erosion free manner to an existing stable channel.

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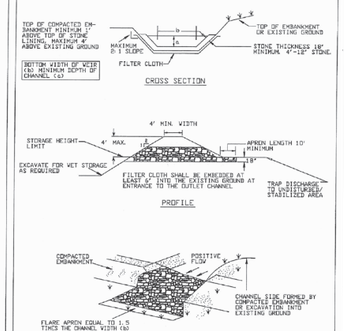
DETAIL 14 - RIP-RAP OUTLET SEDIMENT TRAP - ST III



NOTE: MAXIMUM DRAINAGE AREA= 10 ac.

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RIP-RAP OUTLET SEDIMENT TRAP - ST III

Construction Specifications

1. The area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed. Maximum height of embankment shall be 4', measured at centerline of embankment.
3. All cut and fill slopes shall be 2:1 or flatter.
4. Elevation of the top of any dike directing water into trap must equal or exceed the height of trap embankment.
5. Storage area provided shall be figured by computing the volume measured from top of excavation. (For storage requirements see Table 12).
6. Filter cloth shall be placed over the bottom and sides of the outlet channel prior to placement of stone. Section of fabric must overlap at least 1' with section nearest the entrance placed on top. Fabric shall be embedded at least 6" into existing ground at entrance of outlet channel.
7. Stone used in the outlet channel shall be 4" - 12" placed 18" thick.
8. Outlet – An outlet shall be provided, which includes a means of conveying the discharge in an erosion free manner to an existing stable channel. Protection against scour at the discharge end shall be provided as necessary.
9. Outlet channel must have positive drainage from the trap.
10. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/4 of the wet storage depth of the trap (1350 cf/ac). Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
11. The structure shall be inspected periodically and after each rain and repaired as needed.
12. Construction of traps shall be carried out in such a manner that sediment pollution is abated. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. Points of concentrated inflow shall be protected in accordance with Grade Stabilization Structure criteria. The remainder of the interior slopes should be stabilized (one time) with seed and mulch upon trap completion and monitored and maintained erosion free during the life of the trap.
13. The structure shall be dewatered by approved methods, removed and the area stabilized when the drainage area has been properly stabilized.

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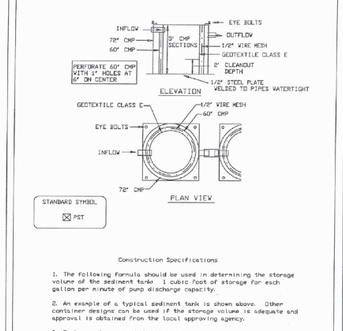
DETAIL 35 - PORTABLE SEDIMENT TANK (VERTICAL)



Construction Specifications

1. The following formula should be used in determining the storage volume of the sediment tanks: 1 cubic foot of storage for each gallon per minute of pump discharge capacity.
2. An example of a typical sediment tank is shown above. Other container designs can be used if the storage volume is adequate and approval is obtained from the local approving agency.
3. Tanks may be connected in series.

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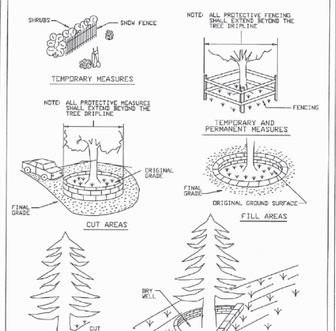
DETAIL 74 - TREE PROTECTION



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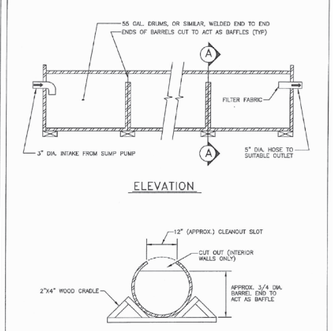
DETAIL 34 - PORTABLE SEDIMENT TANK (HORIZONTAL)



SOURCE: USDA – SCS

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