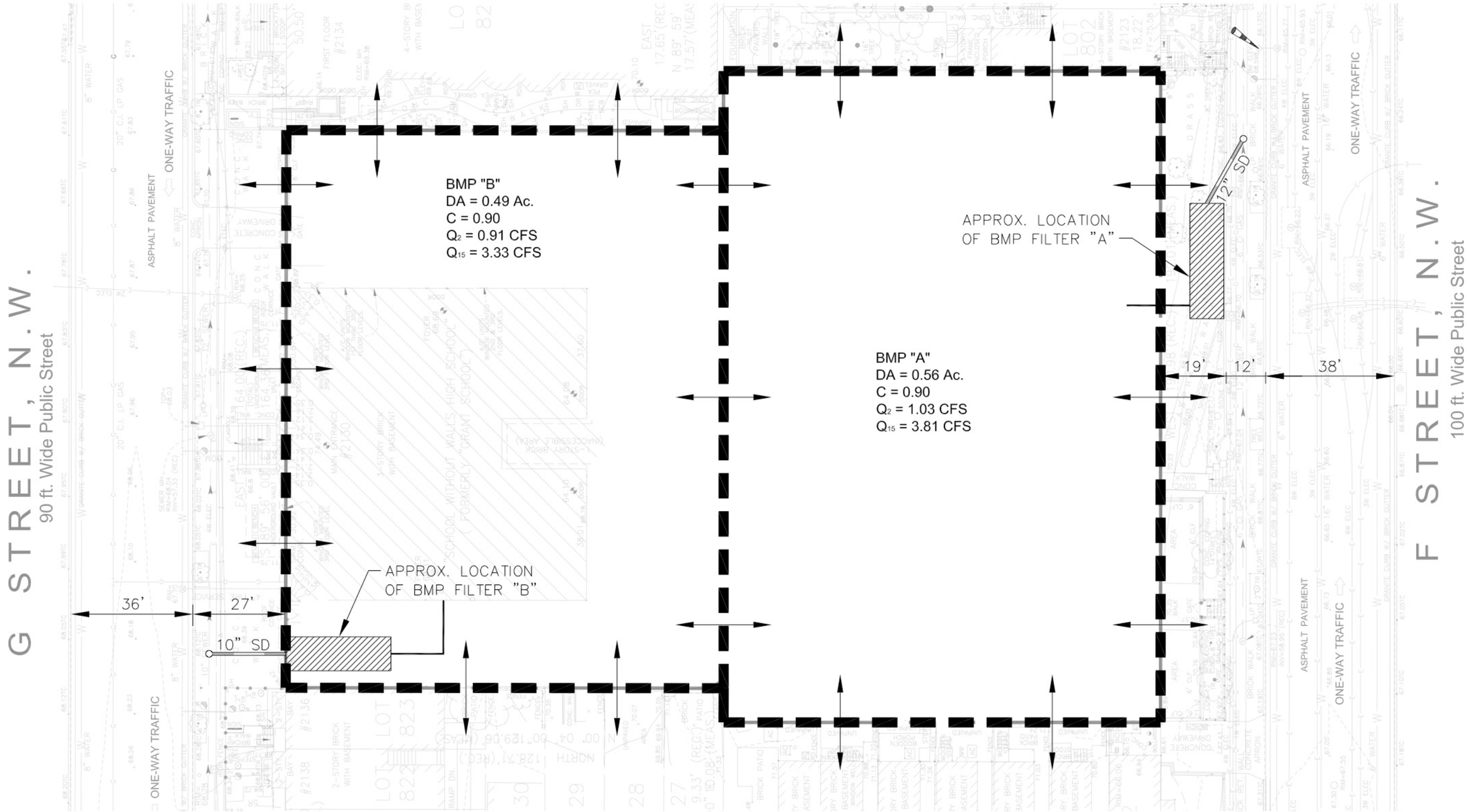


scale: 1" = 30'-0"

0 30' 60'

Stormwater Concept Plan

date: 04.03.06

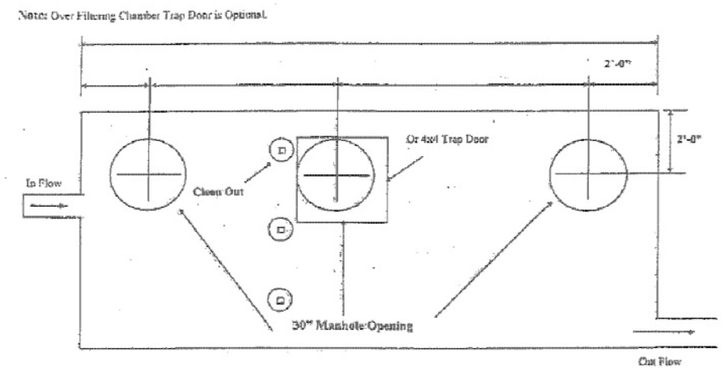
E.6

STORMWATER COMPUTATIONS

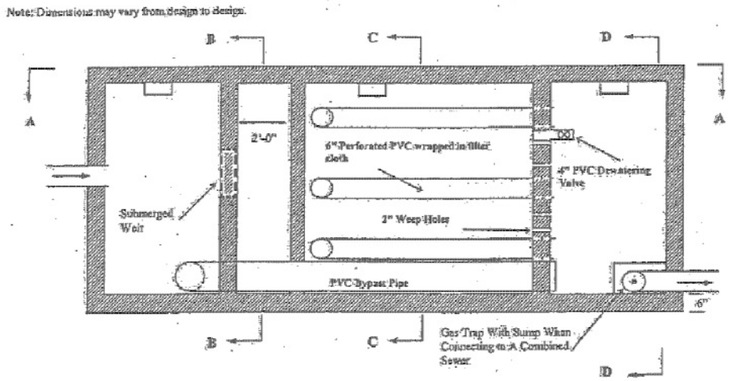
GWU RESIDENCE HALL & SCHOOL WITHOUT WALLS – SWM STUDY

1.	COMPUTE V_w	BMP "A"	BMP "B"	TOTAL	UNITS
	CONTRIBUTING AREA	0.56	0.49	1.05	Ac
	IMPERVIOUS AREA	0.56	0.49	1.05	Ac
	$V_w=(I_A \times 1089)$	609.84	533.61	1143.45	CF
	R x 43,560/12 = 1089 WHERE RUNOFF = 0.3" FOR ROOFS, SIDEWALKS, & PEDESTRIAN PLAZAS				
2.	COMPUTE DETENTION VOLUME (PEAK FLOW ATTENUATION)				
	2.1 2 YR. PRE-DEVELOPMENT				
	C = 0.35				
	I_2 = 5.28 IN/HR				
	Q_2 = CIA	1.03	0.91	1.94	CFS
	2.2 15 YR. POST-DEVELOPMENT				
	C = 0.90				
	I_{15} = 7.56 IN/HR				
	Q_{15} = CIA	3.81	3.33	7.14	CFS
	DETENTION VOLUME REQUIRED = $1.25(300)(Q_{15}-Q_2)$				
	Vq =	1042.5	907.5	1950	CF
	2.3 STORAGE VOLUME REQUIRED				
	$Af=50+(Ia-0.1)\times 167$ SF/Ac	126.8	115.1	241.9	CF
	$Vs=Vw-(F \times T \times Af)$	460.22	397.8	858.0	CF
	2.4 TOTAL VOLUME REQUIRED				
	(GREATER OF Vq AND V_w)	1042.5	907.5	1950	CF
3.	STORAGE PROVIDED				
	$Af=L_2 \times W \Rightarrow L_2=Af/W$	ASSUME W=6'			
	L_2=	21.13	19.18		
	$L_1 \cong L_2/3$	7.04	6.39		
	$L_1+L_2 \geq 3\times 6$	28.17 ≥ 18	25.57 ≥ 18	OK	
	SELECT L_3=4'				
	DIMENSIONS	6x32x8	6x29x8		
	VOLUME	1536	1392		

F-3 | **Figure 3.4a** Example of Three-Chamber Underground Sand Filter for Combined Sewer Areas | F-3



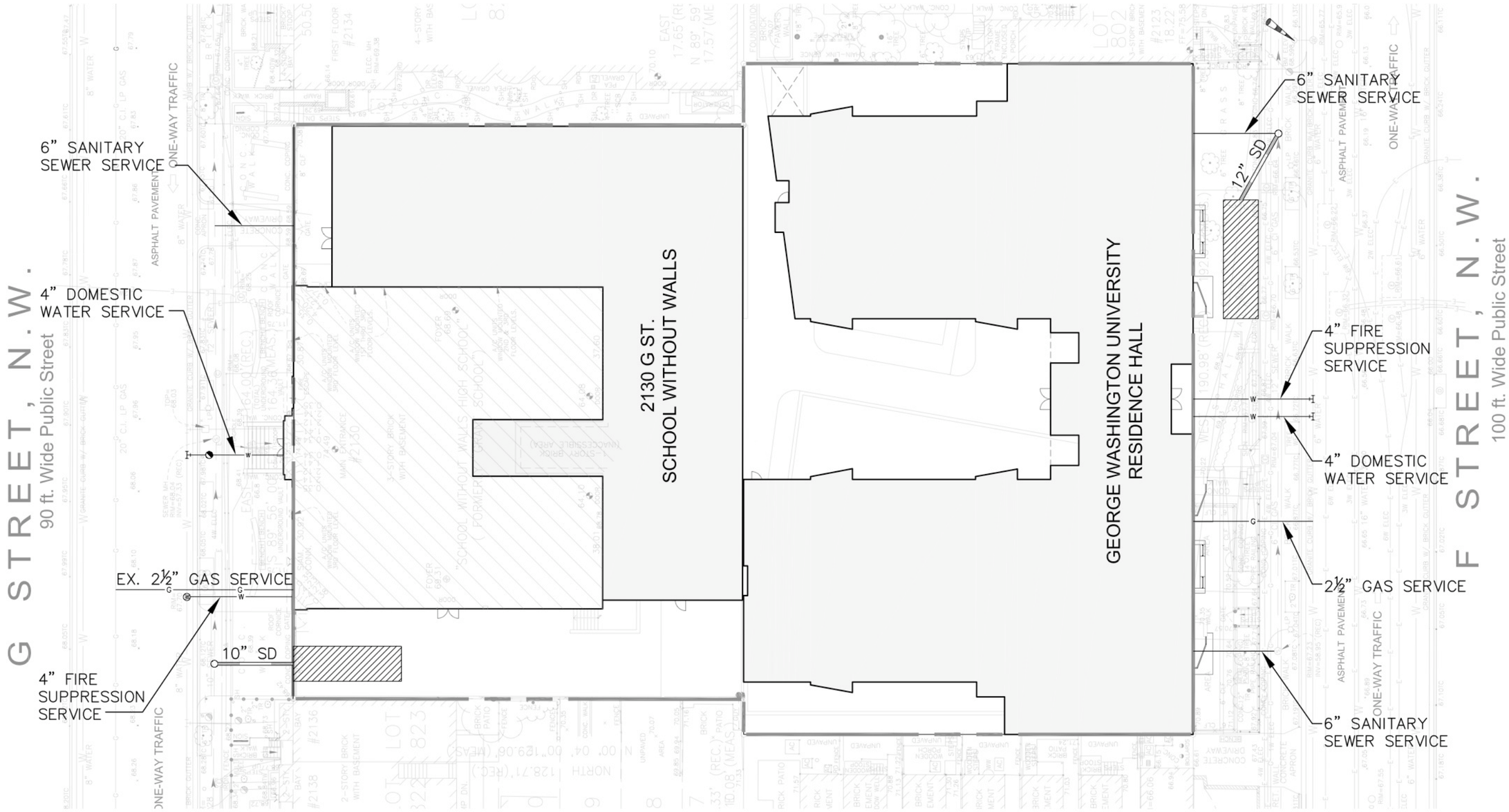
Plan View (Top Slab)
NTS



Source: District of Columbia, 2001

Plan View (Top Slab Removed)
NTS

The three-chamber underground sand filter is an option for providing V_w where space or land prices are at a premium.



NOTE: ALL YARD INLETS AND TRENCH DRAINS TO BE CONNECTED TO BUILDING PLUMBING USING 6" PVC (TYP.) TO BUILDING.

DOMESTIC AND FIRE WATER METER TO BE PROVIDED PER DC WATER AND SEWER AUTHORITY STANDARDS AND SPECIFICATIONS.

scale: 1" = 30'-0"

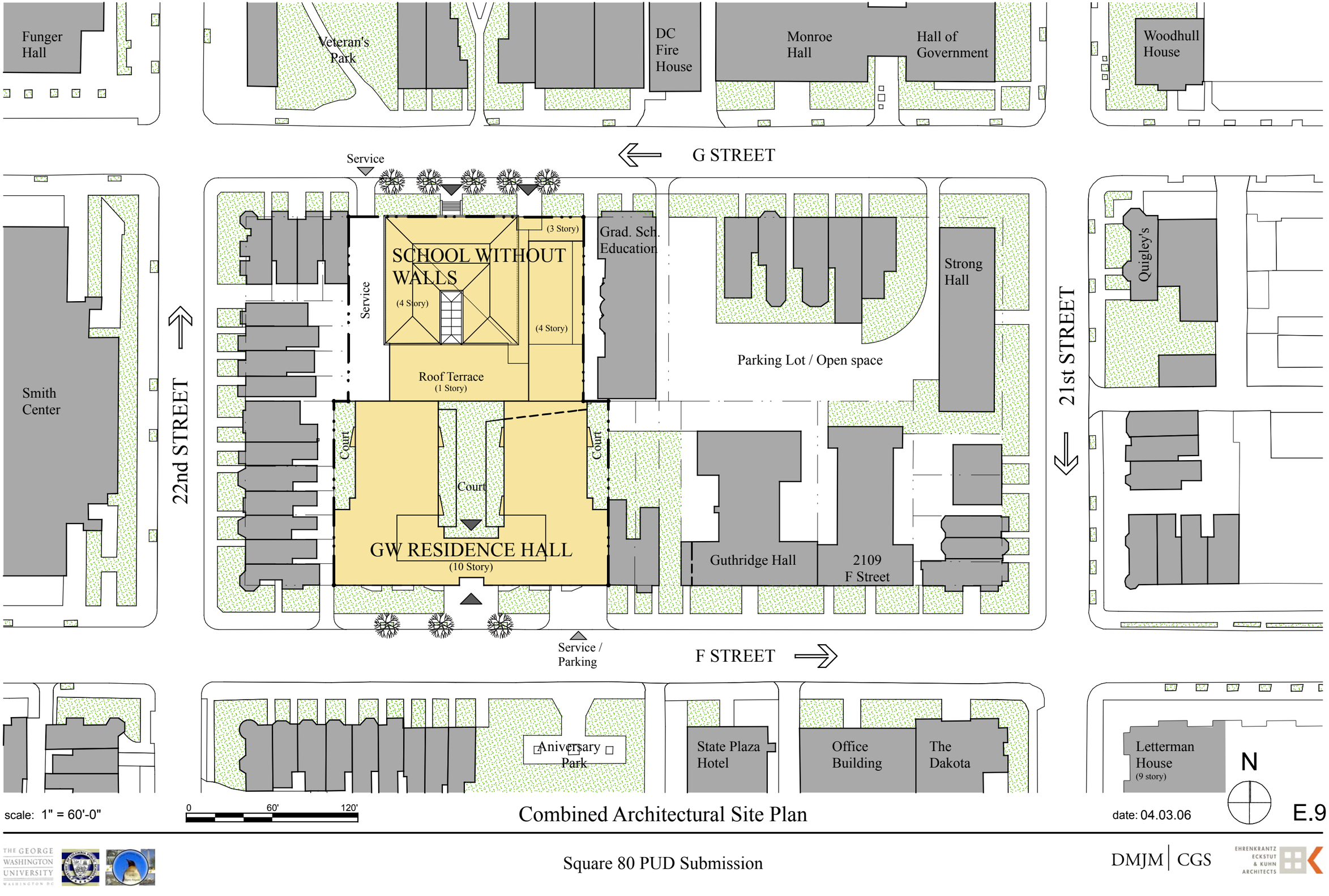
0 30' 60'

Utility Layout Plan

date: 04.03.06

N

E.8

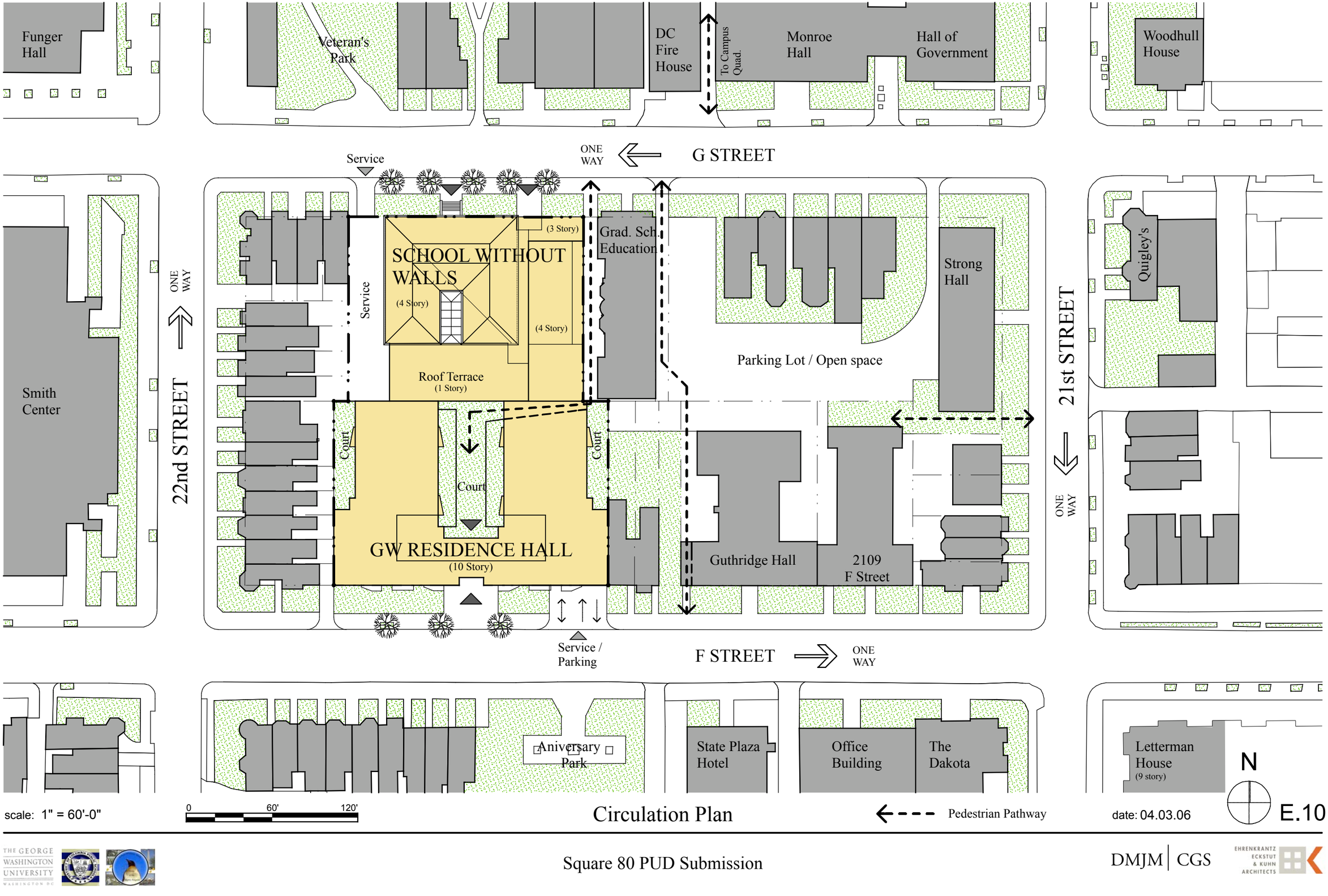


scale: 1" = 60'-0"

Combined Architectural Site Plan

date: 04.03.06

E.9


Funger Hall
Veteran's Park
DC Fire House
To Campus Quad.
Monroe Hall
Hall of Government
Woodhull House
ONE WAY
G STREET
Service
Smith Center
ONE WAY
22nd STREET
Service
SCHOOL WITHOUT WALLS
(4 Story)
(3 Story)
(4 Story)
Roof Terrace
(1 Story)
Court
Court
Court
GW RESIDENCE HALL
(10 Story)
Grad. Sch. Education
Parking Lot / Open space
Strong Hall
Guthridge Hall
2109 F Street
Service / Parking
F STREET
ONE WAY
21st STREET
Quigley's
ONE WAY
Aniversary Park
State Plaza Hotel
Office Building
The Dakota
Letterman House
(9 story)
N
scale: 1" = 60'-0"
0
60'
120'
Circulation Plan
Pedestrian Pathway
date: 04.03.06
E.10