

District of Columbia General Retention Compliance Calculator

data input cells

calculation cells

constant values

Site Data

Site Name:

Eritrian Cultural and Civic Center - 2451 24th Place NE

Site Information	
Is Site an "AWDZ Site"?	No
Is Site Located in the MS4?	Yes
AWDZ only - Regulatory Rain Event for WQTV (inches)	NA

Indicate Post-Development Land Cover			
Cover Type	Disturbed Public Right of Way Area (square feet)	Major Land Disturbing Area (square feet)	Major Substantial Improvement Area (square feet)
Natural Cover		0	
Compacted Cover		8,274	
Impervious Cover		12,042.53	
BMP		2,700	
Site Total	0	23,017	0
Retention Standard for SWRv (inches)	0.0	1.2	0.0

Land Cover Summary			
Cover Type	Disturbed Public Right of Way	Major Land Disturbing	Major Substantial Improvement
% Natural Cover	0%	0%	0%
% Compacted Cover	0%	36%	0%
% Impervious Cover	0%	64%	0%
Site Rv	0.00	0.70	0.00

Rv Coefficients	
Land Cover Type	Rv
Natural Cover	0.00
Compacted Cover	0.25
Impervious Cover	0.95

SWRv and WQTV Summary		
	Disturbed Public Right of Way	Site Development
Stormwater Retention Volume, SWRv (cubic feet)	0	1,607
Stormwater Retention Volume, SWRv (gallons)	0	12,023
Water Quality Treatment Volume, WQTV (cubic feet)	NA	NA
Water Quality Treatment Volume, WQTV (gallons)	NA	NA

District of Columbia General Retention Compliance Calculator
Public Right of Way

Indicate Post-Development Land Cover For Public ROW	
Cover Type	Area (square feet)
Natural Cover	0
Compacted Cover	0
Impervious Cover	0
Vehicular Access Areas*	500
BMP	0
Drainage Area Total	0

Land Cover Summary	
% Natural Cover	0%
% Compacted Cover	0%
% Impervious Cover	0%
Site Rv	0.00

Stormwater Retention Volume, SWRv (cubic feet)	0
Stormwater Retention Volume, SWRv (gallons)	0
Vehicular Access Volume (cubic feet)	12

AWDZ Only	
Stormwater Treatment Volume, WQTV (cubic feet)	NA
Stormwater Treatment Volume, WQTV (gallons)	NA

*Vehicular Access areas should be included within the Impervious Cover Category

	Pervious Cover Draining to BMP		Impervious Cover Draining to BMP		Vehicular Access Area Draining to BMP		Maximum Retention Volume Received by BMP (cubic feet)	Description of Retention Value	% Retention Value	Maximum Retention Volume Received from Upstream BMPs (cubic feet)	Maximum Retention Volume To BMP (cubic feet)	Surface Area of BMP (square feet)	Storage Volume Provided by BMP (cubic feet)	Retention Value (cubic feet)	Potential Retention Volume Remaining (cubic feet)	Additional Treatment Volume (cubic Feet)	Downstream BMP	Vehicular Access Volume Addressed?
	Area (square feet)	Type of Cover	Area (square feet)	Type of Cover	Area (square feet)	Volume (cubic feet)												
B1-5 Bioretention - Standard		Natural Cover		Impervious Cover		0	0	Subtract 60% of the Sv - the calculated storage volume for the BMP.	60%	0	0	N/A		0	0	0		N/A
Totals	0		0			0	0											

Volume Retained On Site (cubic feet)	0	Volume Treated (cubic feet)	0
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Retention Volume Remaining (cubic feet)	0		Volume Remaining to Treat 50% of the SWRv (cubic feet)	0
Retention Volume Remaining (gallons)	0	Congratulations! You have exceeded the required SWRv by 0 gallons which may be able to be used to generate SRCs.	Volume Remaining to Treat 50% of the SWRv (gallons)	0

50% of SWRv Retained?	Yes	Volume Remaining to Treat WQTV (cubic feet)	N/A	
Runoff from Vehicular Access Areas Sufficiently Retained or Treated?	No	Volume Remaining to Treat WQTV (gallons)	N/A	
Treatment Required?	No			

Minimum Requirements for Drainage Area Met?	No
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2200-2210 HUNTER PLACE, SE

DRAINAGE CALCULATIONS AND DETAILS

District of Columbia General Retention Compliance Calculator
Site Drainage Area 1

Indicate Post-Development Land Cover For SDA 1		Major Land Disturbing	Major Substantial Improvement	Major Land Disturbing		Major Substantial Improvement
Cover Type	Area (square feet)	Area (square feet)		Land Cover Summary		
Natural Cover	0			% Natural Cover	0%	0%
Compacted Cover	8,274			% Compacted Cover	36%	0%
Impervious Cover	12,043			% Impervious Cover	64%	0%
Vehicular Access Areas*				Site Rv	0.70	0.00
BMP	2,700					
Drainage Area Total	23,017	0				
Rv Coefficients				Stormwater Retention Volume, SWRv (cubic feet)		1,607
Land Cover Type	Rv			Stormwater Retention Volume, SWRv (gallons)		12,023
Natural Cover	0.00			Vehicular Access Volume (cubic feet)		0
Compacted Cover	0.25					
Impervious Cover	0.95			AWDZ Only		
				Water Quality Treatment Volume, WQTV (cubic feet)		NA
				Water Quality Treatment Volume, WQTV (gallons)		NA

*Vehicular Access areas should be included within the Impervious Cover Category

	Pervious Cover Draining to BMP		Impervious Cover Draining to BMP		Vehicular Access Area Draining to BMP		Maximum Retention Volume Received by BMP (cubic feet)	Description of Retention Value	% Retention Value	Maximum Retention Volume Received from Upstream BMPs (cubic feet)	Maximum Retention Volume To BMP (cubic feet)	Surface Area of BMP (square feet)	Storage Volume Provided by BMP (cubic feet)	Retention Value (cubic feet)	Potential Retention Volume Remaining (cubic feet)	Additional Treatment Volume (cubic feet)	Downstream BMP	Vehicular Access Volume Addressed?
	Area (square feet)	Type of Cover	Area (square feet)	Type of Cover	Area (square feet)	Volume (cubic feet)												
P1-3 Permeable Pavement - Standard		Natural Cover		Impervious Cover	1,978	94	266	Reduce volume conveyed through permeable pavement by 5.0 cu. ft. per 100 sq. ft. of permeable pavement.	N/A	0	266	1,978	187	99	167	88		Yes
		Compacted Cover	1,978	BMP														
B1-5 Bioretention - Standard		Natural Cover	12,043	Impervious Cover		0	1,757	Subtract 60% of the Sv - the calculated storage volume for the BMP.	60%	0	1,757	N/A	2,987	1,757	0	0		N/A
		Compacted Cover	1,015	BMP														
TP2 Tree Planting	9	Number of Trees Planted					N/A	10 of credit per tree	N/A	N/A	N/A	N/A	N/A	90	N/A	N/A	N/A	N/A
Totals	9		15,036		1,978		2,024					Volume Retained On Site (cubic feet)		1,946		Volume Treated (cubic feet)		88

District of Columbia General Retention Compliance Calculator
Site Compliance Calculations

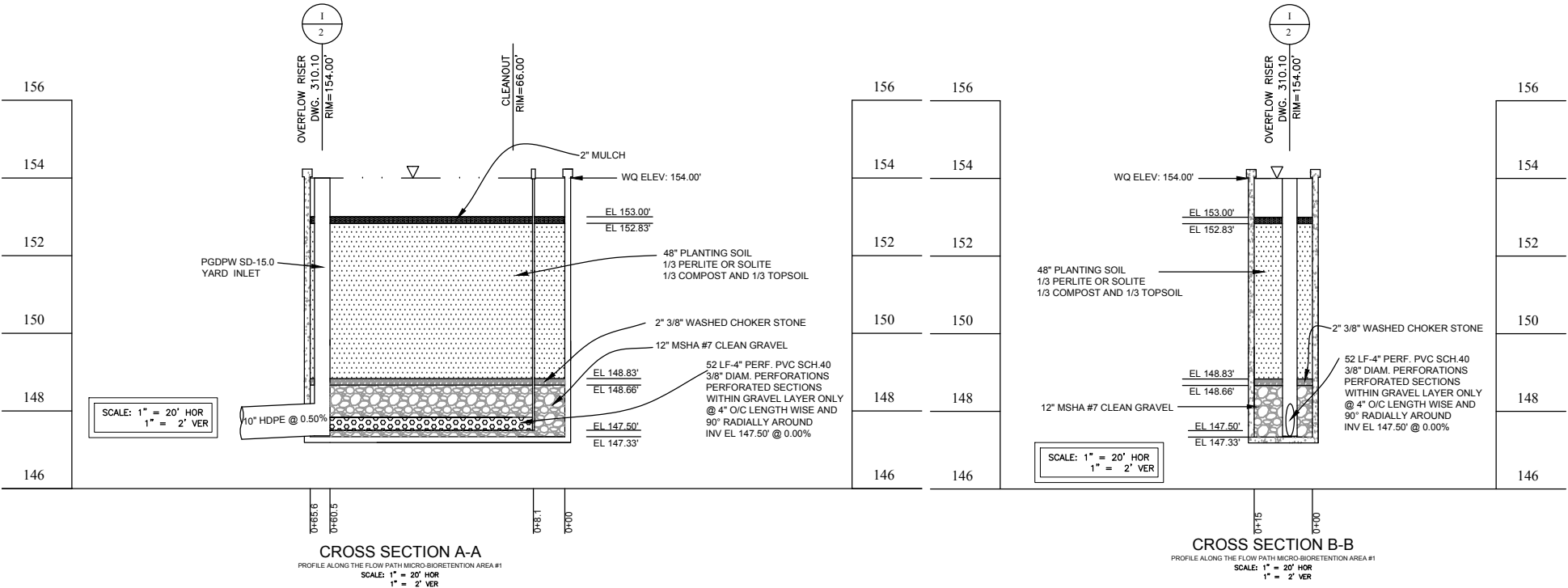
Site Drainage Area 1

Natural Cover (square feet)	0	SWRv (cubic feet)	1,607
Compacted Cover (square feet)	8,274	WQTV (cubic feet)	NA
Impervious Cover (square feet)	12,043		
BMP (square feet)	2,700		
Total Area (square feet)	23,017		
Volume Retained (cubic feet)	1,946		
Retention Volume Remaining (cubic feet)	0		
Retention Volume Remaining (gallons)	0		
At least 50% of SWRv Retained?	Yes		
Vehicular Access Areas Volume Addressed?	Yes		
Treatment Required?	No		
Volume Treated (cubic feet)	88		
Volume Remaining to Treat 50% of the SWRv (cubic feet)	0		
Volume Remaining to Treat 50% of the SWRv (gallons)	0		
Volume Remaining to Treat WQTV (cubic feet)	N/A		
Volume Remaining to Treat WQTV (gallons)	N/A		

District of Columbia General Retention Compliance Calculator
Channel and Flood Protection Calculations

Target Rainfall Event (in)		2-year storm	15-year storm	100-year storm
		3.20	5.20	8.37
SDA 1 (square feet)	23,017			
Storage Volume Provided By BMPs (cf)	3,264			
Storage Volume Provided By BMPs (gallons)	24,415			
SDA 1				
Land Area			Soils	
	Area (sf)	0.0		
Natural Cover	CN	70		
	Area (sf)	8274.0		
Compacted Cover	CN	74		
	Area (sf)	14742.6		
Impervious Cover and BMPs	CN	98	89	S
			1.19	
		2-year storm	15-year storm	100-year storm
Runoff Volume (in) with no BMPs	2.11	4.00	7.09	
Runoff Volume (in) with BMPs	0.41	2.30	5.39	
Adjusted CN	60	71	75	

Bioretention		
Sv - storage volume	2578.93	CF
SA bottom - bottom surface area of bioretention	1018	SF
d media - depth of filter media	4	ft
n media - effective porosity of filter media	0.25	
d gravel - depth of underdrain/underground storage gravel layer	1.33	ft
n gravel - effective porosity of gravel layer	0.4	
SA top - top surface area of bioretention	1018	SF
SA avg - average surface area of bioretention	1018	SF
d ponding - maximum ponding depth of bioretention	1	ft
Sv=SAbottom * [(dmedia * nmedia) + (dmedia * ngravel)] + (SA average * dponding)		



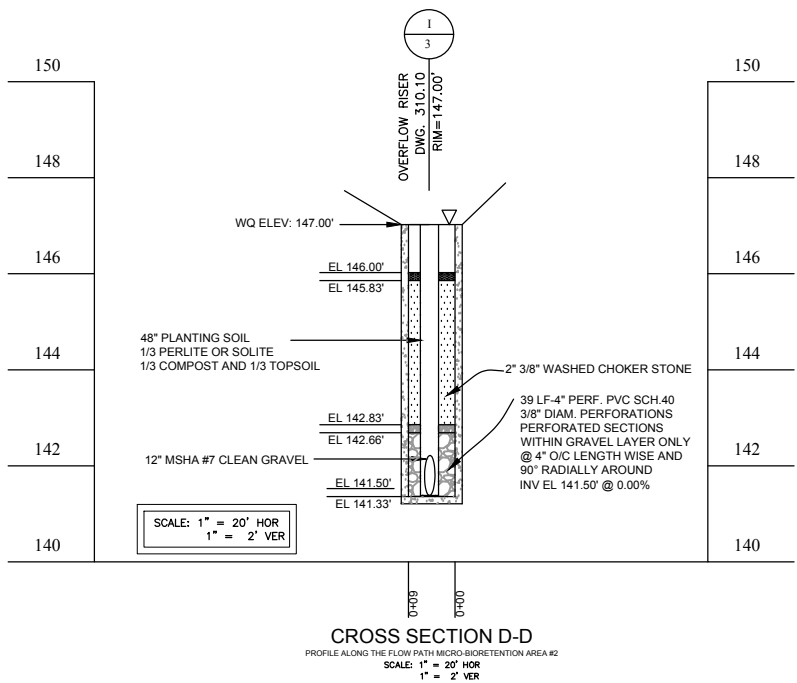
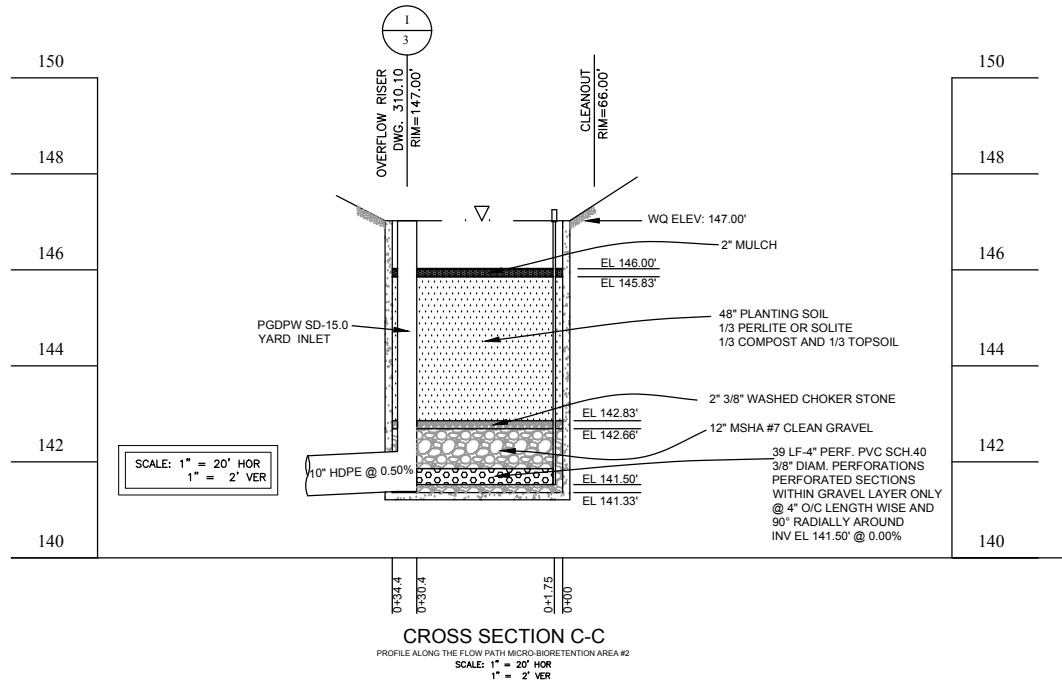
2200-2210 HUNTER PLACE, SE

DRAINAGE CALCULATIONS AND DETAILS

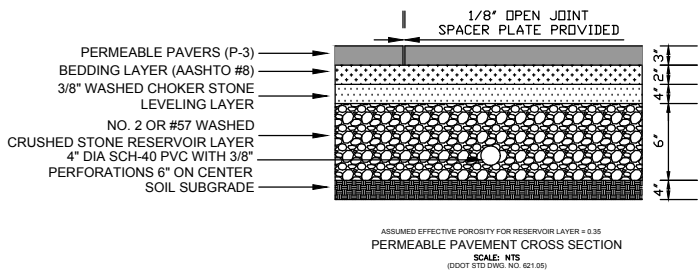


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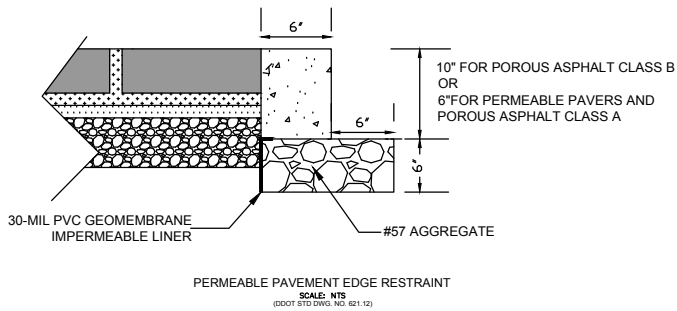
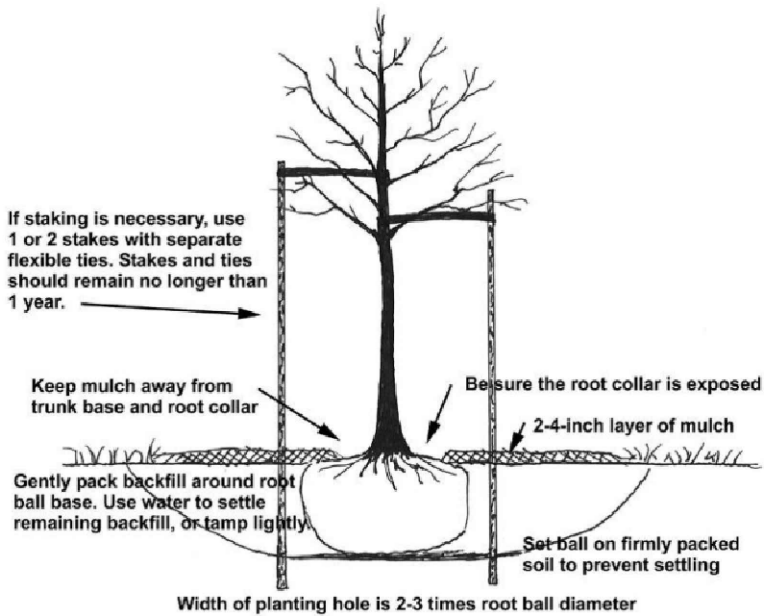


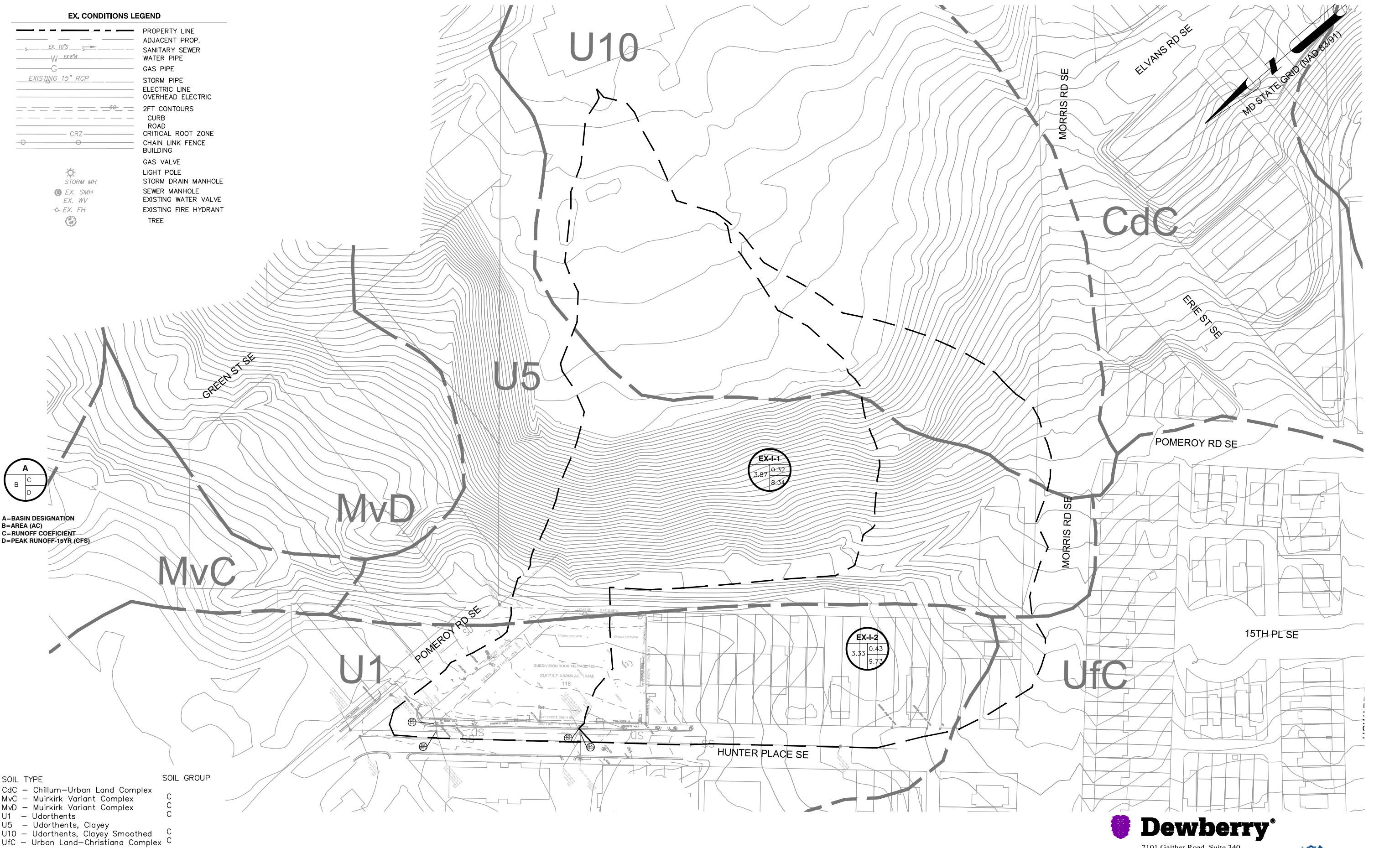
Bioretention	
Sv - storage volume	513.75 CF
SA bottom - bottom surface area of bioretention	225 SF
d media - depth of filter media	3 ft
n media - effective porosity of filter media	0.25
d gravel - depth of underdrain/underground storage gravel layer	1.33 ft
n gravel - effective porosity of gravel layer	0.4
SA top - top surface area of bioretention	225 SF
SA avg - average surface area of bioretention	225 SF
d ponding - maximum ponding depth of bioretention	1 ft
Sv=SAbottom * [(dmedia * nmedia) + (dmedia * ngravel)] + (SA average * dponding)	



Permeable Pavers	
dp - depth of reservoir layer	0.50 ft
P - rainfall depth	0.1 ft
Rv - runoff coefficient for impervious	0.95
DA - drainage area	1989 SF
Ap - permeable pavement surface area	1989 SF
i - infiltration rate	0 ft/day
tf - time to fill reservoir layer	0.083 day
nr - effective porosity for reservoir layer	0.35

Sv - storage volume	348.08 CF
dp	0.50 ft
nr	0.35
Ap	1989 SF
i	0
tf	0.083 day





2200-2210 HUNTER PLACE, SE

PRE DEVELOPMENT DRAINAGE PLAN

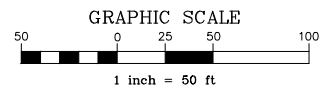


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EX. CONDITIONS LEGEND	
	PROPERTY LINE
	ADJACENT PROP.
	SANITARY SEWER
	WATER PIPE
	GAS PIPE
	STORM PIPE
	ELECTRIC LINE
	OVERHEAD ELECTRIC
	2FT CONTOURS
	CURB
	ROAD
	CRITICAL ROOT ZONE
	CHAIN LINK FENCE
	BUILDING
	GAS VALVE
	LIGHT POLE
	STORM DRAIN MANHOLE
	SEWER MANHOLE
	EXISTING WATER VALVE
	EXISTING FIRE HYDRANT
	TREE

A	B	C	D
A=BASIN DESIGNATION			
B=AREA (AC)			
C=RUNOFF COEFFICIENT			
D=PEAK RUNOFF-15YR (CFS)			



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POST DEVELOPMENT DRAINAGE PLAN

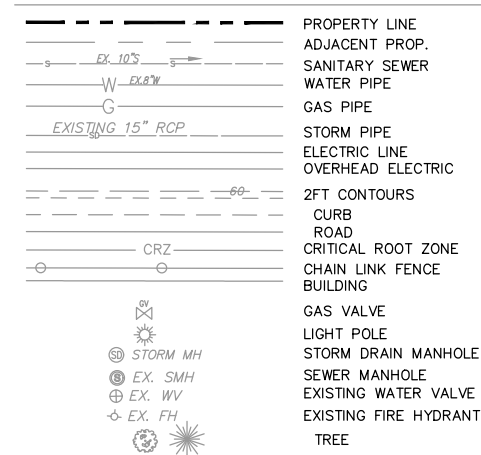
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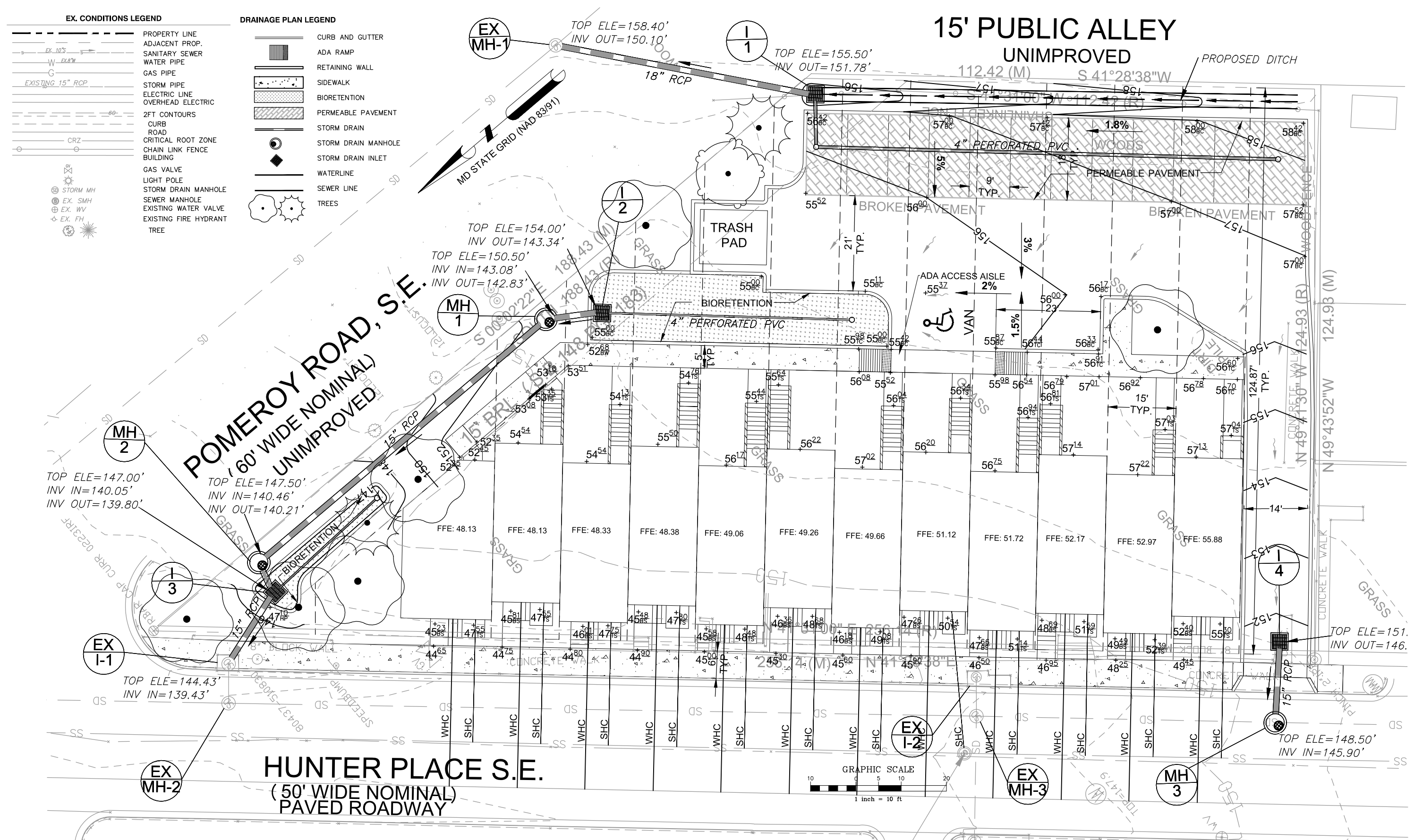
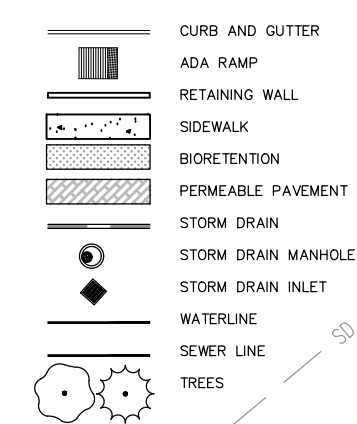
MANNA

Building Neighborhoods and Promoting
Diversity Through Affordable Housing

EX. CONDITIONS LEGEND



DRAINAGE PLAN LEGEND



2200-2210 HUNTER PLACE, SE

GRADING PLAN

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<u>TREES</u>	<u>BOTANICAL NAME / COMMON NAME</u>	<u>CONT</u>	<u>QTY</u>	
	Acer saccharum 'Bonfire' / Bonfire Sugar Maple	B & B	6	
	Crataegus phaenopyrum 'Lustre' / Washington Lustre Hawthorn	B & B	1	
	Ilex opaca / American Holly	B & B	2	
<u>SHRUBS</u>	<u>BOTANICAL NAME / COMMON NAME</u>	<u>SIZE</u>	<u>QTY</u>	
	Cornus sericea / Red Twig Dogwood	5 gal	36	
	Hamamelis x intermedia / Witch Hazel	5 gal	21	
	Ilex glabra / Inkberry Holly	5 gal	38	
<u>BIORETENTION AREAS</u>	<u>BOTANICAL NAME / COMMON NAME</u>	<u>CONT</u>	<u>SPACING</u>	<u>QTY</u>
	Planting Mix see inset	1 gal		1,047 sf



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