

Water Meter Sizing per AWWA M22, Third Edition

Project: 444 Maple Ave - RESIDENTIAL

STRAP #(s):

Address: 444 Maple Ave

City: Vienna State: VA Zip Code: 22180

Type of Occupancy: Residential Apartment

Fixture	Fixture Value 60 psi		No. of Fixtures		Fixture Value
Bathtub	8	x	198	=	1584
Bedpan Washers	10	x		=	
Bidet	2	x		=	
Dental Unit	2	x		=	
Drinking Fountain – Public	2	x		=	
Kitchen Sink	2.2	x	150	=	330
Lavatory	1.5	x	198	=	297
Showerhead (Shower Only)	2.5	x		=	
Service Sink	4	x		=	
Toilet – Flush Valve	35	x		=	
– Tank Type	4	x	198	=	792
Urinal – Pedestal Flush Valve	35	x		=	
– Wall Flush Valve	16	x		=	
Wash Sink (Each Set of Faucets)	4	x		=	
Dishwasher	2	x	150	=	300
Washing Machine	6	x	150	=	900
Hose (50 ft. Wash Down) – ½ in.	5	x		=	
– ¾ in.	9	x		=	
– 1 in.	12	x	10	=	120

Combined Fixture Total 4323

Water-flow Demand per Fixture Value from Figure 4-2 or 4-3 x Pressure Adjustment Factor = 90 gpm
*For Residual Pressures at Fixture Outlet from 60-80 psi, Pressure Adjustment Factor is 1.00 per Table 4-3

Add Irrigation – 47 Sections* x 1.16 or 0.40† = 55 gpm
– 10 Hose Bibs x Fixture Value x 1.0 Press. Adj. Factor = 120 gpm

Added Fixed Load = gpm
TOTAL FIXED DEMAND = 265 gpm

*100 ft² area = 1 section
†Spray systems – Use 1.16; Rotary systems – Use 0.40

Meter size chosen per Table 6-1 = 4 in.

Water Meter Sizing per AWWA M22, Third Edition

Project: 444 Maple Ave - RETAIL

STRAP #(s):

Address: 444 Maple Ave

City: Vienna State: VA Zip Code: 22180

Type of Occupancy: Commercial Retail

Fixture	Fixture Value 60 psi		No. of Fixtures		Fixture Value
Bathtub	8	x		=	
Bedpan Washers	10	x		=	
Bidet	2	x		=	
Dental Unit	2	x		=	
Drinking Fountain – Public	2	x	5	=	10
Kitchen Sink	2.2	x	25	=	55
Lavatory	1.5	x	20	=	30
Showerhead (Shower Only)	2.5	x		=	
Service Sink	4	x		=	
Toilet – Flush Valve	35	x	20	=	700
– Tank Type	4	x		=	
Urinal – Pedestal Flush Valve	35	x		=	
– Wall Flush Valve	16	x	5	=	80
Wash Sink (Each Set of Faucets)	4	x	15	=	60
Dishwasher	2	x	5	=	10
Washing Machine	6	x		=	
Hose (50 ft. Wash Down) – ½ in.	5	x		=	
– ¾ in.	9	x		=	
– 1 in.	12	x	10	=	120

Combined Fixture Total 1065

Water-flow Demand per Fixture Value from Figure 4-2 or 4-3 x Pressure Adjustment Factor = 125 gpm
*For Residual Pressures at Fixture Outlet from 60-80 psi, Pressure Adjustment Factor is 1.00 per Table 4-3

Add Irrigation – 0 Sections* x 1.16 or 0.40† = 0 gpm
– 0 Hose Bibs x Fixture Value x 1.0 Press. Adj. Factor = 0 gpm

Added Fixed Load = gpm
TOTAL FIXED DEMAND = 125 gpm

*100 ft² area = 1 section
†Spray systems – Use 1.16; Rotary systems – Use 0.40

Meter size chosen per Table 6-1 = 3 in.

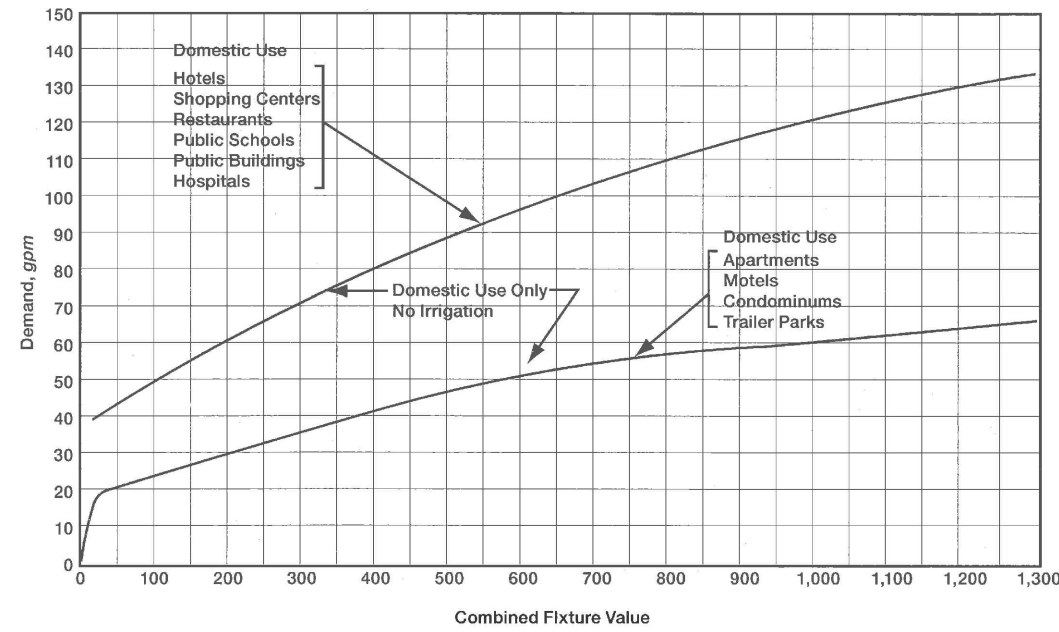


Figure 4-2 Water-flow demand per fixture value—enlarged scale from Figure 4-1

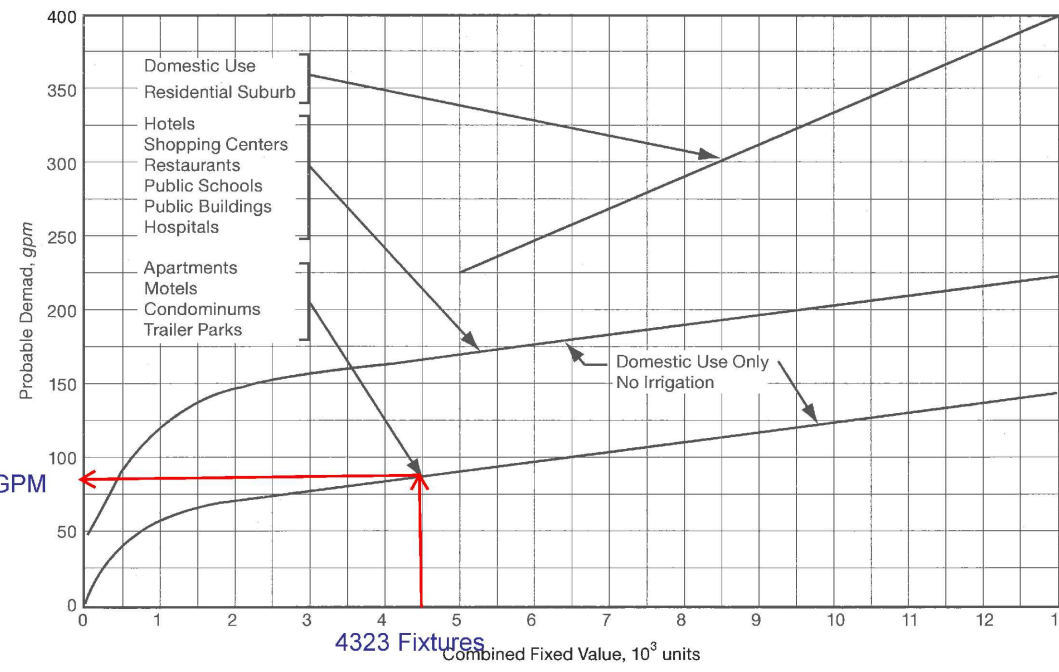


Figure 4-3 Water-flow demand per fixture value

Kitchen Faucet Fixture Value Adjustment			
Residual Pressure at Fixture Outlet, psi	Baseline Flow Rate at 60 psi	Actual Flow Rate at Residual Pressure (Fixture Value)	Pressure Adjustment Factor
15	1.8	1.0	0.56
20	1.8	1.1	0.61
25	1.8	1.2	0.67
30	1.8	1.3	0.72
35	1.8	1.4	0.78
40	1.8	1.5	0.83
50	1.8	1.7	0.94
60	1.8	1.8	1.00
70	1.8	1.8	1.00
80	1.8	1.8	1.00

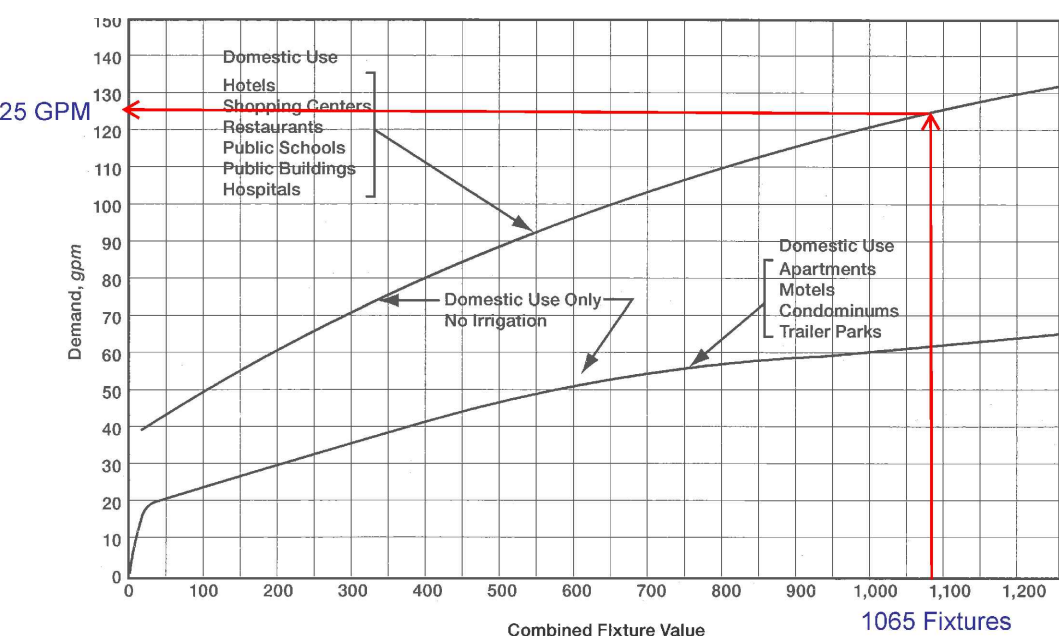


Figure 4-2 Water-flow demand per fixture value—enlarged scale from Figure 4-1

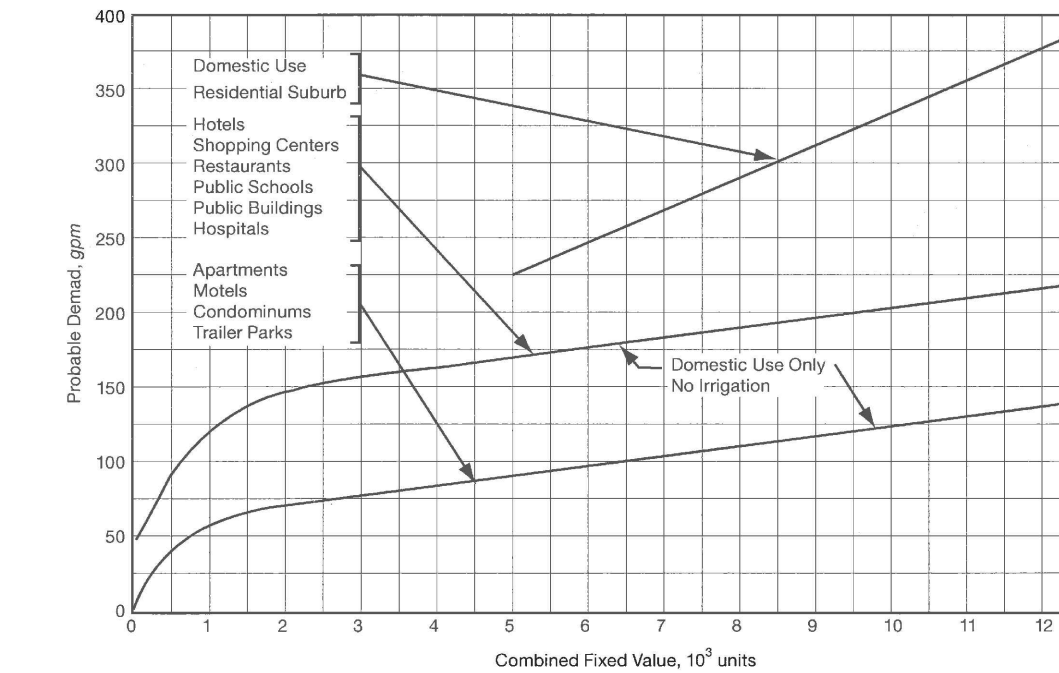


Figure 4-3 Water-flow demand per fixture value

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35	1.8	1.4	0.78
40	1.8	1.5	0.83
50	1.8	1.7	0.94
60	1.8	1.8	1.00
70	1.8	1.8	1.00
80	1.8	1.8	1.00

Table 6-1 AWWA meter standards						
Meter	Minimum Flow Rate, gpm	Low-Normal Flow Rate, gpm	Change-over Range (Compound Meters)	High-Normal Flow Rate, gpm	Maximum Flow Rate, gpm	Head Loss at Maximum Flow, psi
Positive displacement						
½ in.	0.25	1	N/A	7.5	15	15
¾ in.	0.25	1		10	20	15
1 in.	0.50	2		15	30	15
1 ½ in.	0.75	3		25	50	15
2 in.	1.50	5		50	100	15
	2.00	8		80	160	15
Multijet						
¾ in.	0.25	1	N/A	10	20	15
1 in.	0.50	2		15	30	15
1 ½ in.	0.75	3		25	50	15
2 in.	1.50	5		50	100	15
	2.00	8		80	160	15
Turbine class II						
1 ½ in.	N/A	4	N/A	90	120	7
2 in.		4		160	190	7
3 in.		8		350	435	7
4 in.		15		650	750	7
6 in.		30		1,400	1,600	7
8 in.		50		2,400	2,800	7
10 in.		75		3,500	4,200	7
12 in.		120		4,400	5,300	7
16 in.		200		6,500	7,800	7
20 in.		300		10,000	12,000	7
Compound class II						
2 in.	0.25	1	13	80	160	15
3 in.	0.50	2	15	175	350	15
4 in.	0.75	3	18	300	600	15
6 in.	1.50	5	20	675	1,350	15
8 in.	2.00	16	35	900	1,600	15
Fire service, type II—compound						
3 in.		2	30	250	350	12
4 in.		4	40	400	700	12
6 in.		5	90	900	1,600	12
8 in.		8	150	1,600	2,800	12
10 in.		8	200	2,200	4,400	12

Source: Data are drawn from AWWA Standards C700, C701, C702, C703, C704, C708, C710, C712, C713, and C714, latest revision.

N/A = not applicable.

*Minimum flow rate is per the applicable AWWA standard for the bypass meter employed.

(Table continued on next page.)

Table 6-1 AWWA meter standards						
Meter	Minimum Flow Rate, gpm	Low-Normal Flow Rate, gpm	Change-over Range (Compound Meters)	High-Normal Flow Rate, gpm	Maximum Flow Rate, gpm	Head Loss at Maximum Flow, psi
Positive displacement						
½ in.	0.25	1	N/A	7.5	15	15
¾ in.	0.25	1		10	20	15
1 in.	0.50	2		15	30	15
1 ½ in.	0.75	3		25	50	15
2 in.	1.50	5		50	100	15
	2.00	8		80	160	15
Multijet						
¾ in.	0.25	1	N/A	10	20	15
1 in.	0.50	2		15	30	15
1 ½ in.	0.75	3		25	50	15
2 in.	1.50	5		50	100	15
	2.00	8		80	160	15
Turbine class II						
1 ½ in.	N/A	4	N/A	90	120	7
2 in.		4		160	190	7
3 in.		8		350	435	7
4 in.		15		650	750	7
6 in.		30		1,400	1,600	7
8 in.		50		2,400	2,800	7
10 in.		75		3,500	4,200	7
12 in.		120		4,400	5,300	7
16 in.		200		6,500	7,800	7
20 in.		300		10,000	12,000	7
Compound class II						
2 in.	0.25	1	13	80	160	15
3 in.	0.50	2	15	175	350	15
4 in.	0.75	3	18	300	600	15
6 in.	1.50	5	20	675	1,350	15
8 in.	2.00	16	35	900	1,600	15
Fire service, type II—compound						
3 in.		2	30	250	350	12
4 in.		4	40	400	700	12
6 in.		5	90	900	1,600	12
8 in.		8	150	1,600	2,800	12
10 in.		8	200	2,200	4,400	12

Source: Data are drawn from AWWA Standards C700, C701, C702, C703, C704, C708, C710, C712, C713, and C714, latest revision.

N/A = not applicable.

*Minimum flow rate is per the applicable AWWA standard for the bypass meter employed.

(Table continued on next page.)

Table 6-1 AWWA meter standards (continued)						
Meter	Minimum Flow Rate, gpm	Low-Normal Flow Rate, gpm	Change-over Range (Compound Meters)	High-Normal Flow Rate, gpm	Maximum Flow Rate, gpm	Head Loss at Maximum Flow, psi
Fire service, type III—turbine						
3 in.	4	5	N/A	250	350	11
4 in.	10	15		400	700	11
6 in.	20	30		900	1,600	11
8 in.	30	35		1,600	2,800	11
10 in.	35	55		2,500	4,400	11
Propeller (main line)						
2 in.	N/A	45	N/A	100	120	5
3 in.		80		250	300	5
4 in.		85		500	600	2
6 in.		160		1,200	1,350	1
8 in.		190		1,500	1,800	0.5
10 in.		260		2,000	2,400	0.5
12 in.		275		2,800	3,375	0.5
14 in.		350		3,750	4,500	0.5
16 in.		450		4,750	5,700	0.5
18 in.		550		5,625	6,750	0.25
20 in.		650		6,875	8,250	0.25
24 in.		1,000		15,000	18,000	0.25
30 in.		1,600		24,000	24,000	0.25
36 in.		2,400		28,000	40,000	0.1
42 in.		2,800		35,000	50,000	0.1
48 in.		3,500		45,000	55,000	0.1
54 in.		5,000		60,000	80,000	0.1
60 in.		6,000		75,000	95,000	0.1
66 in.		7,500		90,000	115,000	0.1
72 in.		9,000				
Fluidic oscillator						
½ in.	0.25	1	N/A	7.5	15	15
¾ in.	0.25	1		10	20	15
1 in.	0.50	2		15	30	15
1 ½ in.	0.75	3		20	40	15
2 in.	1.50	5		50	100	15
	2.00	8		80	160	15
Singlejet						
¾ in.	0.25	1	N/A	10	20	15
1 in.	0.50	2		15	30	15
1 ½ in.	0.75	3		20	40	15
2 in.	1.50	5		50	100	15
	2.00	8		80	160	15

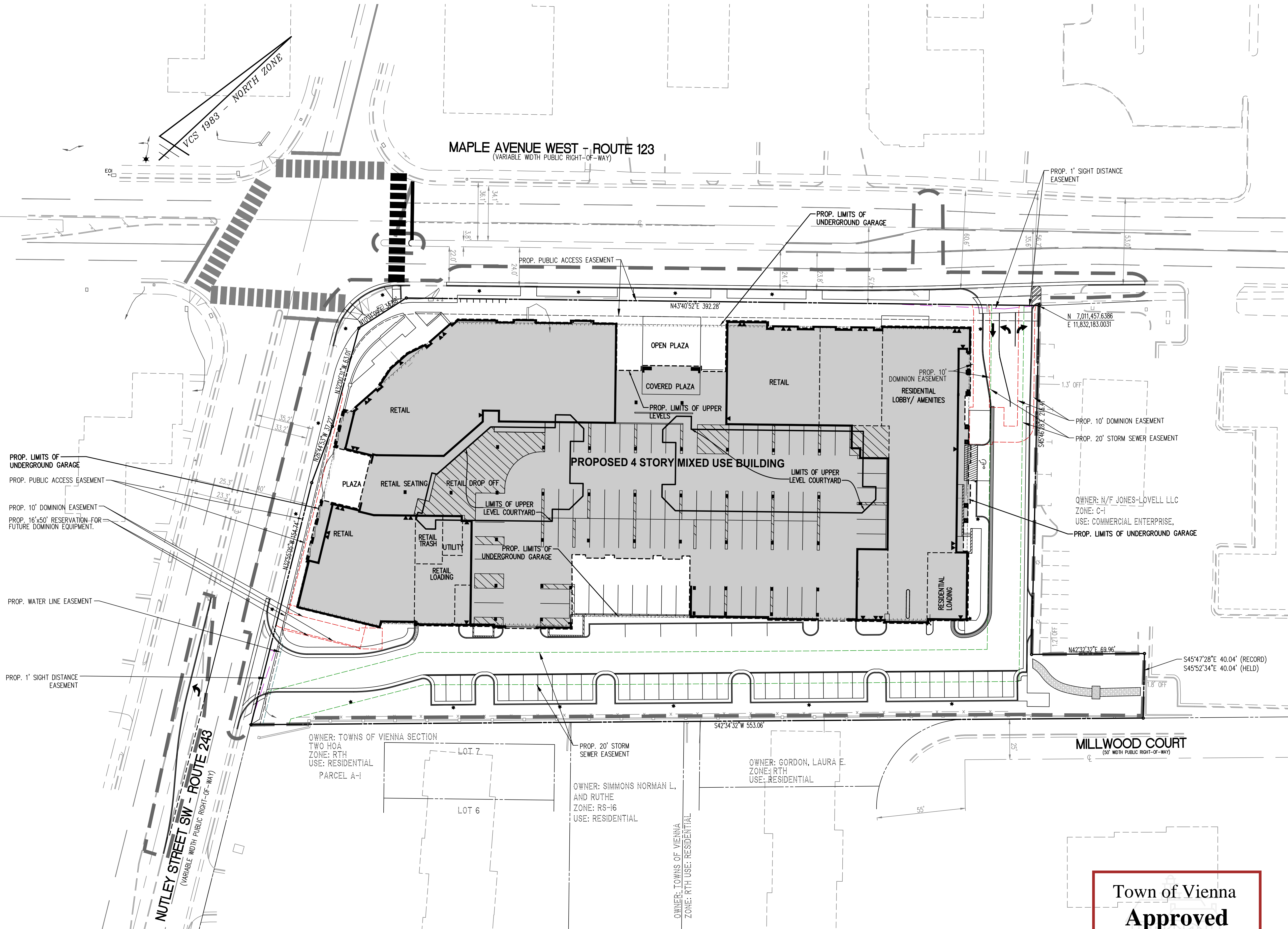
Source: Data are drawn from AWWA Standards C700, C701, C702, C703, C704, C708, C710, C712, C713, and C714, latest revision.

N/A = not applicable.

*Minimum flow rate is per the applicable AWWA standard for the bypass meter employed.

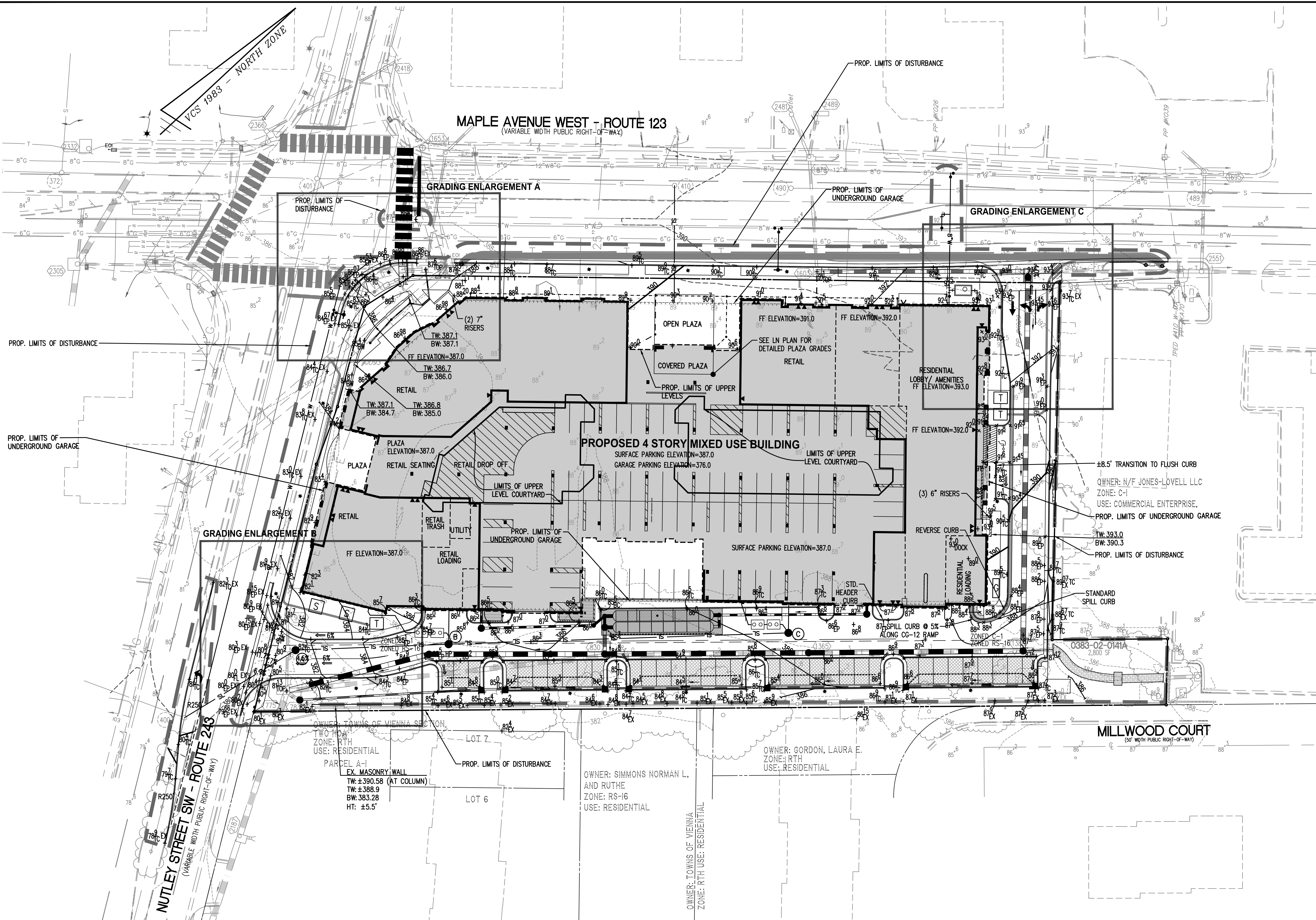
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Table 6-1 AWWA meter standards (continued)						
Meter	Minimum Flow Rate, gpm	Low-Normal Flow Rate, gpm	Change-over Range (Compound Meters)	High-Normal Flow Rate, gpm	Maximum Flow Rate, gpm	Head Loss at Maximum Flow, psi
2 in.	0.50	2.0		80	160	15
3 in.	0.50	2.5		160	320	15
4 in.	0.75	3.0		250	500	15
6 in.	1.50	4.0		500	1,000	15
Residential Fire Sprinkler						
¾ in.	0.5	2	N/A	15	30	10.1
1 in.	0.75	2		25	50	10.7
1½ in.	1.5	3		50	100	7.7
2 in.	2.0	4		80	160	7.7
Residential Fire Sprinkler w/ strainer						
¾ in.	0.5	2	N/A	15	30	14.5
1 in.	0.75	2		25	50	15.3
1½ in.	1.5	3		50	100	11
2 in.	2.0	4		80	160	11



Xref: site plan\07036B-0002

SHEET: C-0405



PROPOSED	DESCRIPTION	EXISTING
	CURB & GUTTER CG-2	
	TRANSITION FROM CG-6 TO CG-6R	
	SANITARY SEWER S	
	SANITARY LATERAL SL	
	CLEAN OUT C.O.	
	STORM SEWER W	
	FIRE HYDRANT F	
	PLUG P	
	OVERHEAD WIRES	
	UTILITY POLE	
	UNDERGROUND ELECTRIC	
	TELEPHONE	
	GAS MAIN	
	ELECTRICAL	
	TRANSFORMER	
	HANDICAP RAMP (CG-12)	
	GUARDRAIL	
	FENCE	
	TRAFFIC FLOW	
	LIGHT	
	DOOR	
	TREES	
	CONTOURS	
	SPOT ELEVATION	
	DRAINAGE FLOW DIRECTION	
	TOP OF CURB	
	BOTTOM OF CURB	
	TOP OF WALL	
	BOTTOM OF WALL	
	HIGH POINT	
	TEST PIT	
	LIMITS OF CLEARING AND GRADING	

NOTES

- SEE SHEET C-0402 FOR LAYOUT PLAN.
- SEE SHEETS C-0202 - C-0205 FOR CONSTRUCTION DETAILS AND NOTES.
- SEE SHEET C-1201 FOR TREE PRESERVATION PLAN.
- SEE BUILDING PLANS FOR ARCHITECTURAL INFORMATION.
- ALL ACCESSIBILITY RAMPS TO MEET "2010 ADA STANDARDS FOR ACCESSIBLE DESIGN" AND VIRGINIA USBC.
- PROPOSED ADA ACCESSIBLE RAMPS SHALL BE INSTALLED WITH 12:1 MAXIMUM RAMP SLOPE. ADA ACCESSIBLE RAMPS SHALL HAVE A MINIMUM 4'x4' LANDING AT THE TOP OF THE RAMP WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
- EXISTING SITE FEATURES DEPICTED ON THIS PLAN ARE FROM A FIELD RUN SURVEY PERFORMED BY THIS FIRM AND DATED 06/08/07.
- CONTRACTOR RESPONSIBLE FOR ENSURING EXISTING UTILITIES TO REMAIN ARE PROTECTED THROUGHOUT CONSTRUCTION.
- A LETTER OF PERMISSION IS REQUIRED FOR OFFSITE DISTURBANCE IF IT IS DETERMINED TO BE NECESSARY AT THE TIME OF CONSTRUCTION.

GRADING NOTES

- CONTRACTOR TO CONFIRM WITH ARCHITECT AND/OR STRUCTURAL ENGINEER, STRUCTURAL INTEGRITY OF EXISTING SITE FEATURES INCLUDING BUILDING WALLS, RETAINING WALLS, GUARD TOWERS, ETC. PRIOR TO ALTERING GRADE ADJACENT TO THE EXISTING FEATURE. ADDITIONAL STRUCTURAL BRACING MAY BE REQUIRED WHEN ALTERING THE GRADE AGAINST AN EXISTING SITE FEATURE.
- PROPOSED ROADS TO HAVE 2% CROSS SLOPE UNLESS OTHERWISE NOTED.
- ALL PROPOSED STRUCTURE TOP ELEVATIONS ARE TO BE VERIFIED BY THE CONTRACTOR WITH THE SITE GRADING PLANS PRIOR TO MANUFACTURE. IN CASE OF CONFLICT, CONTACT ENGINEER FOR ADDITIONAL INFORMATION PRIOR TO CONSTRUCTING IMPROVEMENTS.
- CONTRACTOR TO ENSURE POSITIVE GRADING AWAY FROM BUILDINGS TO PREVENT THE PONDING OF WATER ADJACENT TO FOUNDATIONS.
- TOP AND BOTTOM OF WALL SPOTS PROVIDED AS A GUIDE FOR STRUCTURAL DESIGN PURPOSES ONLY (BY OTHERS). ACTUAL BOTTOM OF WALL SPOTS SHALL BE IN ACCORDANCE WITH APPROVED BUILDING PLANS (BY OTHERS).

Approved

06/09/2021

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Engineers • Surveyors • Planners
Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
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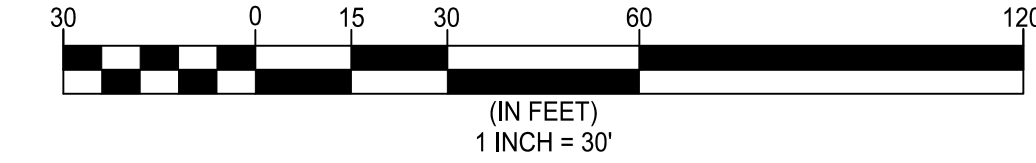
NO.	DESCRIPTION	DATE	REV.	BY	APPROVED

GRADING PLAN

444 MAPLE AVENUE WEST

SITE PLAN

TOWN OF VIENNA, VIRGINIA



PROPOSED

EXISTING

CG-2

CG-6

SL

SL

C.O.

C.O.

W

W

F

F

UE

UE

T

T

G

G

E

E

TRANSFORMER

TRANSFORMER

HANDICAP RAMP (CG-12)

HANDICAP RAMP (CG-12)

GUARDRAIL

GUARDRAIL

FENCE

FENCE

TRAFFIC FLOW

TRAFFIC FLOW

LIGHT

LIGHT

DOOR

DOOR

TREES

TREES

CONTOURS

CONTOURS

SPOT ELEVATION

SPOT ELEVATION

DRAINAGE FLOW DIRECTION

DRAINAGE FLOW DIRECTION

TO

TO

BC

BC

TW

TW

BW

BW

HP

HP

TP

TP

LIMITS OF CLEARING AND GRADING

LIMITS OF CLEARING AND GRADING

LEGEND

CURB & GUTTER

TRANSITION FROM CG-6 TO CG-6R

SANITARY SEWER

SANITARY LATERAL

CLEAN OUT

STORM SEWER

WATER MAIN

FIRE HYDRANT

PLUG

OVERHEAD WIRES

UTILITY POLE

UNDERGROUND ELECTRIC

TELEPHONE

GAS MAIN

ELECTRICAL

TRANSFORMER

HANDICAP RAMP (CG-12)

GUARDRAIL

FENCE

TRAFFIC FLOW

LIGHT

DOOR

TREES

CONTOURS

SPOT ELEVATION

DRAINAGE FLOW DIRECTION

TO

BC

TW

BW

HP

TP

LIMITS OF CLEARING AND GRADING

GRADING ENLARGEMENT C

SCALE: 1" = 10'

GRADING ENLARGEMENT A

SCALE: 1" = 10'

GRADING ENLARGEMENT B

SCALE: 1" = 10'

File No. FM-18 Tax Map No. 038-3 Job No. 07-036 Cadd Dwg. File: Q:\sdsproj\07036\dwg\Engineering\site Plan\07036C-0501.dwg Xref: site plan\07036B-0002

GRADING ENLARGEMENTS

444 MAPLE AVENUE WEST

SITE PLAN
TOWN OF VIENNA, VIRGINIA

WALTER L. PHILLIPS

INCORPORATED

ESTABLISHED 1945

DATE SUBMITTED: 05/25/21

ENGINEERS • SURVEYORS • PLANNERS

LANDSCAPE ARCHITECTS • ARBORISTS

207 PARK AVENUE

FALLS CHURCH, VIRGINIA 22046

(703) 532-6163

Fax (703) 533-1301

www.WLPINC.com

www.WLPINC.com

CHECKED: KW

DRAWN: DL

DATE: 05/25/2021

SUB04: 05/25/2021

SUB02: 05/07/2020

SUB03: 4/19/2021

SUB01: 3/13/2019

SUB00: 05/07/2020

SUB04: 05/25/2021

SUB03: 4/19/2021

SUB02: 05/07/2020

SUB01: 3/13/2019

SUB00: 05/07/2020

SUB04: 05/25/2021

SUB03: 4/19/2021

SUB02: 05/07/2020

SUB01: 3/13/2019

SUB00: 05/07/2020

SUB04: 05/25/2021

SUB03: 4/19/2021

SUB02: 05/07/2020

SUB01: 3/13/2019

SUB00: 05/07/2020

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SUB03: 4/19/2021

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SUB04: 05/25/2021

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SUB01: 3/13/2019

SUB00: 05/07/2020

SUB04: 05/25/2021

SUB03: 4/19/2021

SUB02: 05/07/2020

SUB01: 3/13/2019

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SUB04: 05/25/2021

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SUB02: 05/07/2020

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SUB03: 4/19/2021

SUB02: 05/07/2020

SUB01: 3/13/2019

SUB00: 05/07/2020

SUB04: 05/25/2021

SUB03: 4/19/2021

SUB02: 05/07/2020

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SUB02: 05/07/2020

SUB01: 3/13/2019

SUB00: 05/07/2020

SUB04: 05/25/2021

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SUB04: 05/25/2021

SUB03: 4/19/2021

SUB02: 05/07/2020

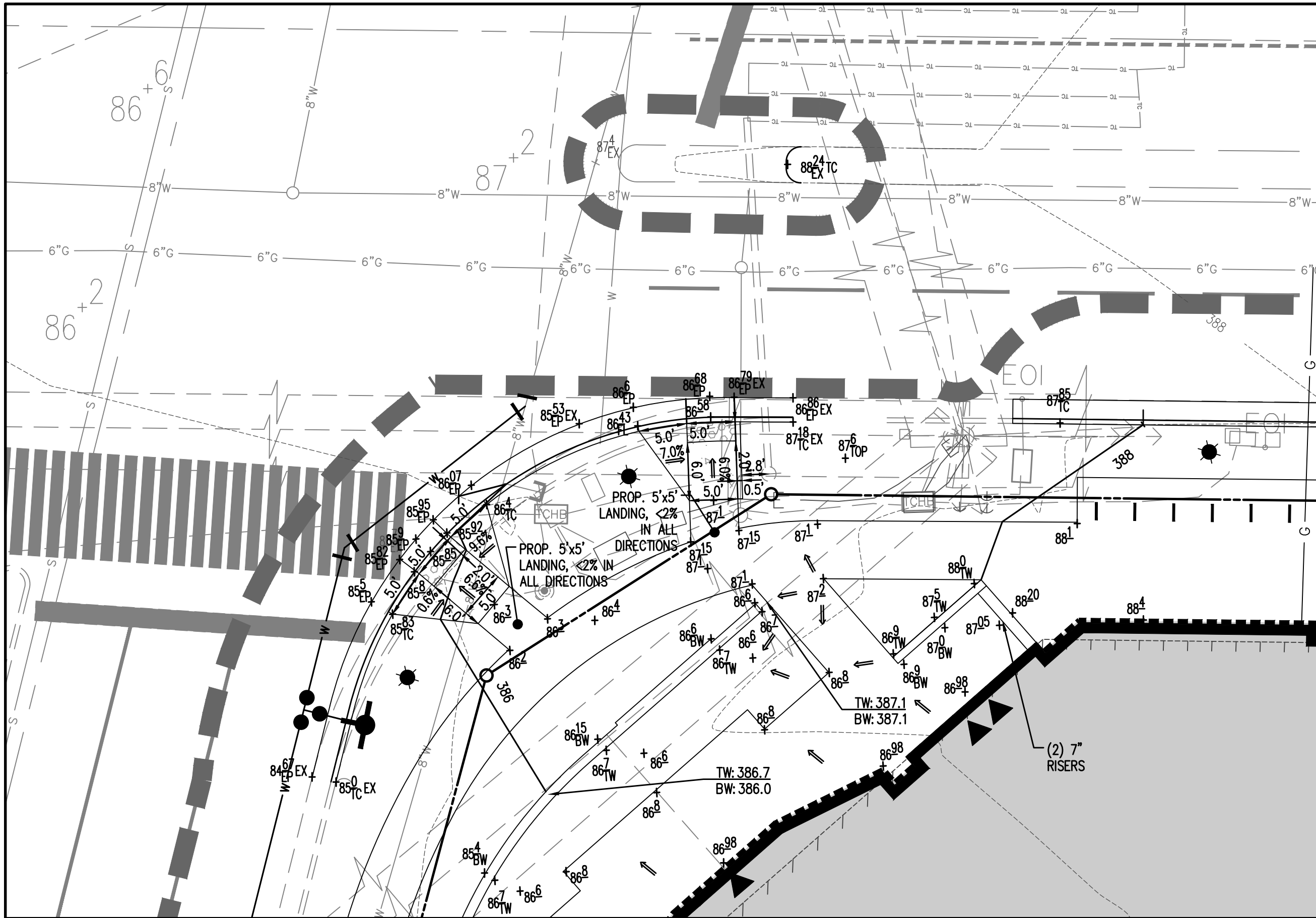
SUB01: 3/13/2019

SUB00: 05/07/2020

SUB04: 05/25/2021

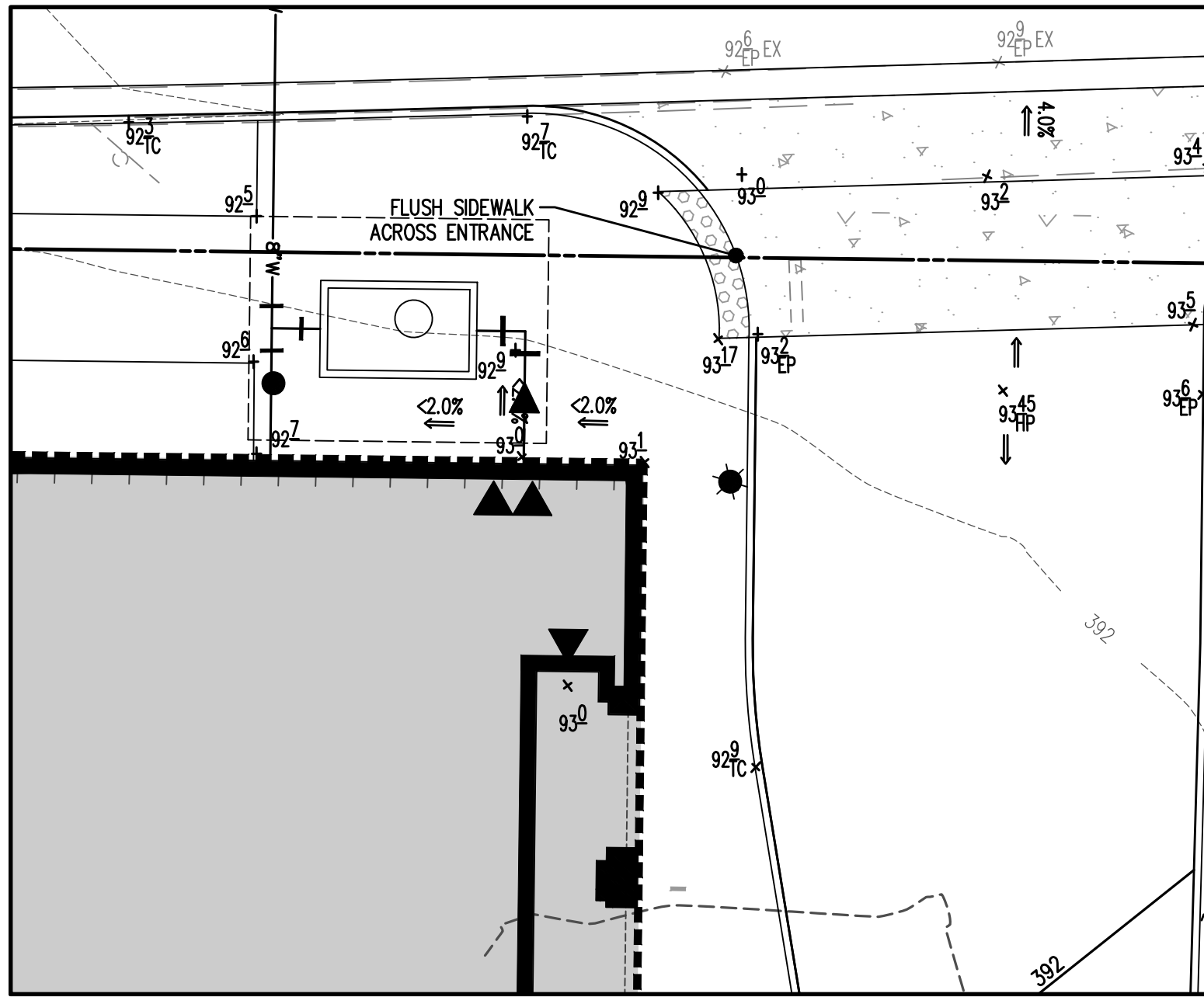
SUB03: 4/19/2021

SUB02: 05/07/2020



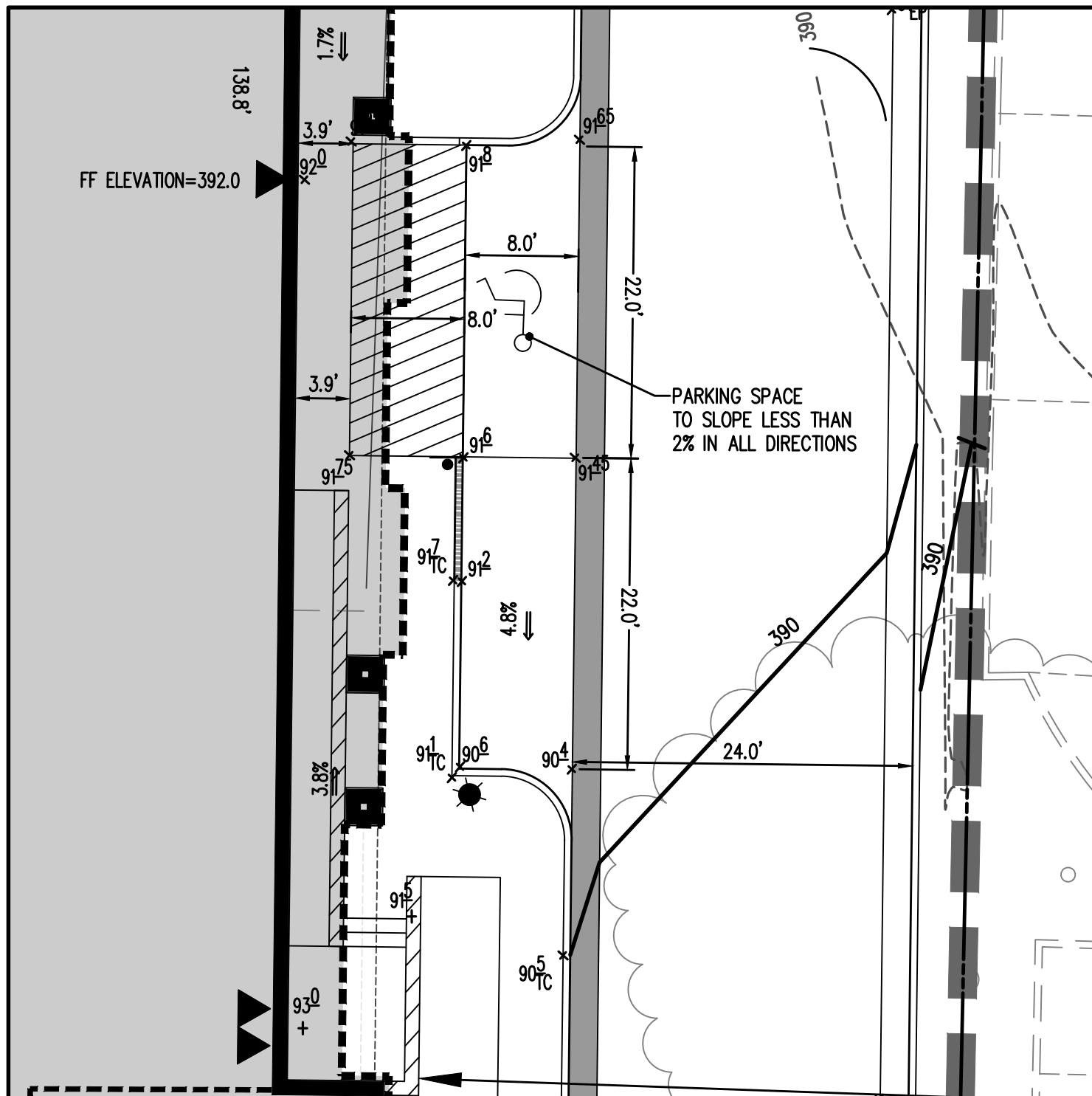
ADA RAMP ENLARGEMENTS

SCALE: 1" = 10'



RESIDENTIAL LOBBY ENTRANCE ENLARGEMENT

SCALE: 1" = 10'



ADA VAN PARKING SPACE ENLARGEMENT

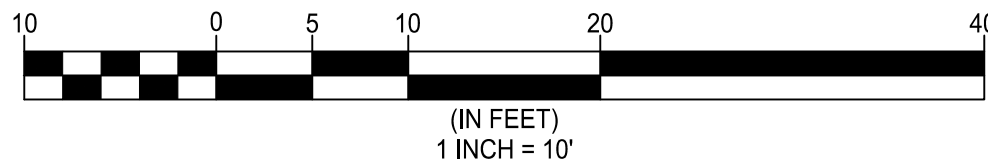
SCALE: 1" = 10'

PROPOSED	DESCRIPTION	EXISTING
	CURB & GUTTER CG-2	
	TRANSITION FROM CG-6 TO CG-6R	
	SANITARY SEWER	
	SANITARY LATERAL	
	CLEAN OUT	
	STORM SEWER	
	WATER MAIN	
	FIRE HYDRANT PLUG	
	OVERHEAD WIRES	
	UTILITY POLE	
	UNDERGROUND ELECTRIC	
	TELEPHONE	
	GAS MAIN	
	ELECTRICAL	
	TRANSFORMER	
	HANDICAP RAMP (CG-12)	
	GUARDRAIL	
	FENCE	
	TRAFFIC FLOW	
	LIGHT	
	DOOR	
	TREES	
	CONTOURS	
	SPOT ELEVATION	
	DRAINAGE FLOW DIRECTION	
	TOP OF CURB	
	BOTTOM OF CURB	
	TOP OF WALL	
	BOTTOM OF WALL	
	HIGH POINT	
	TEST PIT	
	LIMITS OF CLEARING AND GRADING	

NOTES

- SEE SHEETS C-0501 FOR OVERALL GRADING.
- SEE SHEETS C-0201 - C-0205 FOR CONSTRUCTION DETAILS AND NOTES.
- ALL CURB RAMPS TO MEET ADA AND VDOT GUIDELINES. SEE SHEET C-0203 FOR CG-12 DETAILS.
- PROPOSED ADA ACCESSIBLE RAMPS SHALL BE INSTALLED WITH 12:1 MAXIMUM RAMP SLOPE. ADA ACCESSIBLE RAMPS SHALL HAVE A MINIMUM 4'X4' LANDING AT THE TOP OF THE RAMP WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
- ADA PARKING SPACE TO MEET CURRENT ADA GUIDELINES INCLUDING SIZE, SLOPES, STRIPING AND SIGNAGE.

Town of Vienna
Approved
06/09/2021

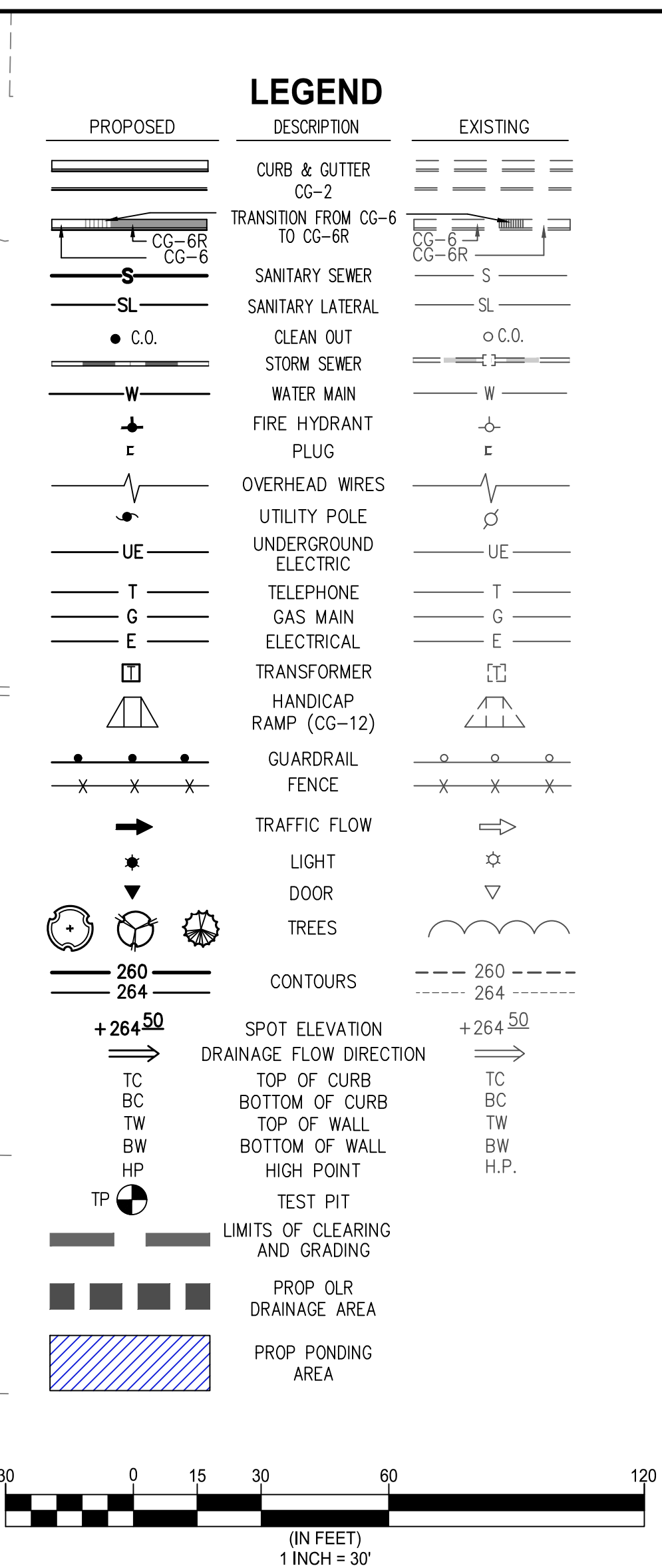


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WALTER L. PHILLIPS
INCORPORATED
ESTABLISHED 1945
DATE SUB01: 01/13/2018 SUB02: 05/07/2020 SUB03: 4/19/2021
SCALE: 1" = 30'
DRAWN: DL
CHECKED: KW

ADA ENLARGEMENTS
444 MAPLE AVENUE WEST
SITE PLAN
TOWN OF VIENNA, VIRGINIA

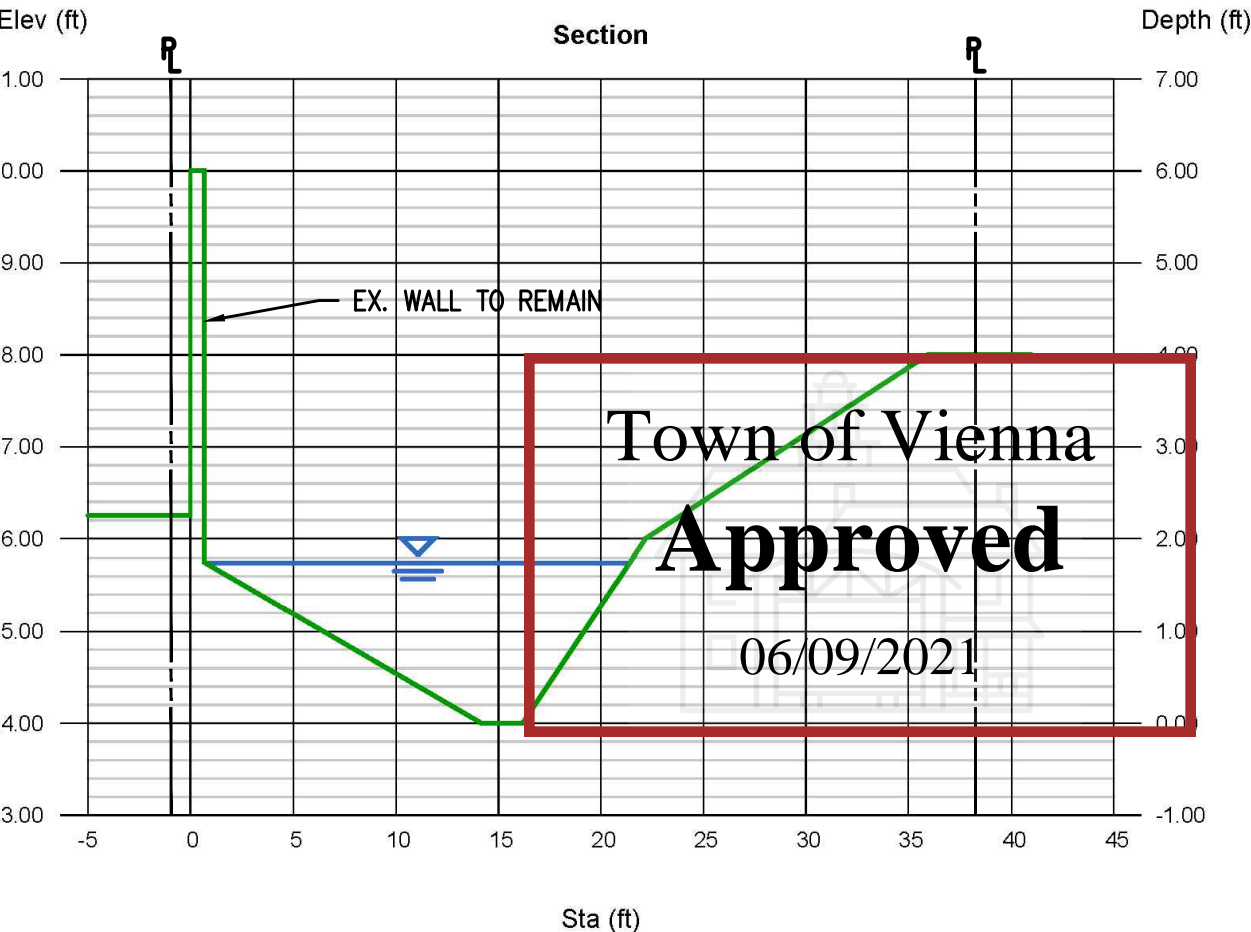
SHEET: C-0503



A SWALE ANALYSIS WAS PERFORMED ON THE ONSITE HEADWALL TO EXAMINE THE ELEVATION OF RUNOFF ASSUMING THE HEADWALL IS 100% CLOGGED. IS ANALYSIS ASSUMES ONLY THE HEADWALL IS EXPERIENCING 100% CLOGGING. SWALE SECTION IS SHOWN ACROSS THE EXISTING CHANNEL TO THE HEADWALL IF THE HEADWALL IS EXPERIENCING 100% CLOGGING DURING THE 1% STORM, THE PONDING IN THE CHANNEL WILL REACH THE ELEVATION 385.74. THEREFORE, AN EVENT RESULTING IN 100% CLOGGING OF THE ONSITE HEADWALL SHOULD REMAIN CONTAINED IN THE EXISTING CHANNEL AND NOT RESULT IN A NEGATIVE IMPACT ON THE ADJACENT PROPERTIES.

user-defined		Highlighted	
Invert Effic (ft)	= 354.00	Depth (ft)	= 1.74
Slope (ft/cfs)	= 0.01	Q (cfs)	= 11.10
N-Value	= 0.025	Area (sqft)	= 19.70
Velocity (ft/s)	= 0.56	Wetted Perim (ft)	= 21.04
Known Q (cfs)	= 0.81	Crit Depth, Yc (ft)	= 0.81
Known Q (cfs)	= 11.10	Top Width (ft)	= 20.64
		EGL (ft)	= 1.74

3. THE GOAL OF THIS ANALYSIS IS TO CONFIRM THAT ADEQUATE OVERLAND RELIEF (OLR) EXISTS ON THE PROPERTY LOCATED AT 444 MAPLE AVE. WEST.
4. ADEQUATE OVERLAND RELIEF IS DEFINED AS NO PONDING WOULD REACH THE PROPOSED BUILDING'S FINISHED FLOOR ELEVATION AT 387.0 OR IMPACT ANY ADJACENT PROPERTIES DURING A 100-YEAR FREQUENCY STORM EVENT THAT HAPPENS TO OCCUR WHEN THE PROPOSED STORM NETWORK ON THIS PROPERTY HAVE COMPLETELY FAILED.
5. THE PEAK STORMWATER FLOW BEING ANALYZED IS THE FLOW FROM THE PROPOSED SITE POST-DEVELOPMENT ASSUMING A FAILED STORM SEWER SYSTEM PLUS ALL OTHER FLOW THAT DRAINS TO THE POINT OF INTEREST. THE ANALYSIS ASSUMES THE WORST CASE SITUATION WHEREBY THE HEADWALL UPSTREAM OF STRUCTURE 1388 IS 100% CLOGGED AND FLOWING ONTO THE SITE. IN THIS CASE THE STORM SEWERS DRAINING TO THIS STRUCTURE WOULD BACK UP ON THE EAST PORTION OF THE PROPERTY BEFORE FLOWING OVERLAND TO THE POINT OF INTEREST.
6. TO ESTIMATE PONDING DEPTH, A BROAD CRESTED WEIR COMPUTATION FOR STORMWATER OVERTOPPING HIGH POINT/CREST AREA IN THE SOUTHEAST CORNER OF THE PROPERTY WAS PERFORMED. THE WEIR SECTION PROFILE SHOWS THE EXISTING/PROPOSED GROUND ALONG THE HIGH POINT FUNCTIONING AS A WEIR CREST SIMILAR TO A POND EMBANKMENT OVERTOPPING. SINCE THE "WEIR" DOES NOT HAVE A UNIFORM AND LEVEL CREST ELEVATION, THE WEIR ANALYSIS IS PERFORMED BY BREAKING THE LENGTH OF THE CREST INTO SECTIONS. AN AVERAGE CREST ELEVATION IS SELECTED FOR EACH WEIR SECTION (SEE WEIR PROFILE FOR ASSUMED AVERAGE ELEVATIONS). THE TOTAL FLOW OVER THE WEIR CREST IS THE SUM OF THE FLOWS OVER EACH OF THE WEIR SECTIONS. USING A TRIAL AND ERROR PROCESS A 100-YR WATER SURFACE PONDING ELEVATION WAS DETERMINED THAT CORRESPONDS WITH THE 100-YEAR STORM PEAK RUNOFF RATE FLOWING OVER THE WEIR.
7. TO BE CONSERVATIVE, THIS ANALYSIS IGNORED THE EFFECT THAT THE VOLUME OF RUNOFF STORED IN LOW POINT PONDING MAY HAVE ON PEAK RUNOFF FLOWS.
8. THE ANALYSIS SHOWS THAT THE WATER WOULD REACH AN ELEVATION OF 385.85 FOR 34.55 CFS OF FLOW WHICH IS APPROX. 2.45 CFS GREATER THAN THE ANTICIPATED 100-YR FLOW. THE ELEVATION 385.85 IS 1.15' LOWER THAN THE PROPOSED FIRST FLOOR ELEVATION. ADDITIONALLY, THE EXISTING MASONRY WALL ALONG THE SOUTHEAST PROPERTY LINE WILL PREVENT ANY OF THE PONDING FROM LEAVING THE PROPERTY AND IMPACTING ADJACENT PROPERTIES BEFORE THE OVERLAND RELIEF ENTERS THE ROW AT NUTLEY STREET. THEREFORE, THERE IS ADEQUATE OVERLAND RELIEF IN A 100-YEAR STORM.



EROSION CONTROL LEGEND

KEY	TITLE	SYMBOL
CE	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE WITH WASH RACK	
SF	SILT FENCE	
SSF	SUPER SILT FENCE	
IP	STORM DRAIN INLET PROTECTION	
CIP	CULVERT INLET PROTECTION	
TP	TREE PROTECTION	
SC	DRAINAGE DIVIDES (STORM SEWER COMPUTATIONS)	
DD	TEMPORARY DIVERSION DIKE	
ST	TEMPORARY SEDIMENT TRAP	
SAF	SAFETY FENCE	
OP	OUTLET PROTECTION	
CD	CHECK DAM	
STB	STRAW BALE BARRIER	

PROP. LIMITS OF UNDERGROUND GARAGE

PROP. LIMITS OF DISTURBANCE

MAPLE AVENUE WEST - ROUTE 123
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)

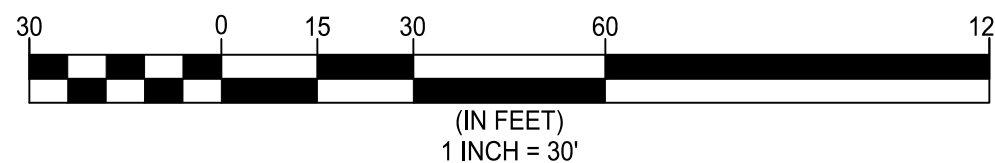
PROPOSED 4 STORY MIXED USE BUILDING

MILLWOOD COURT
(50' WIDTH PUBLIC RIGHT-OF-WAY)

NUTLEY STREET SW - ROUTE 243
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)

OVERLAND RELIEF

STORMWATER FROM THE SITE DISCHARGES AS CONCENTRATED FLOW TO THE MUNICIPAL STORM SYSTEM. IN THE EVENT THAT OVERLAND FLOW OCCURS, THE SITE HAS BEEN DESIGNED TO ENSURE THAT WATER SHEETFLOWS AWAY FROM THE PROPOSED BUILDING. ALL WATER IS DIRECTED AWAY FROM THE PROPOSED BUILDINGS AND FLOWS AWAY FROM THE SITE. THE SHEET FLOW ENTERS ONSITE CURB AND GUTTER AND/OR ADJACENT INLETS LOCATED ON THE PERIPHERAL OF THE SITE (MAPLE AVE AND NUTLEY ST). THE



NOTES:

- REFER TO EXISTING CONDITIONS AND DEMOLITION PLAN (SHEET C-0301 -) FOR DEMOLITION SEQUENCING INFORMATION.
- PERIMETER CONTROLS SHOWN ON THIS SHEET MUST BE IN PLACE PRIOR TO DEMOLITION.

Town of Vienna
Approved

EROSION AND SEDIMENT CONTROL PLAN - PHASE 2

444 MAPLE AVENUE WEST

SITE PLAN
TOWN OF VIENNA, VIRGINIA



WALTER L. PHILLIPS
INCORPORATED
ESTABLISHED 1945
DATE SUB01: 01/12/2019, SUB02: 05/07/2020, SUB03: 4/19/2021
SCALE: 1" = 30'

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NO.	DESCRIPTION	DATE	REV.	APPROVED

EROSION AND SEDIMENT CONTROL NARRATIVE:

PROJECT DESCRIPTION:
THIS PROJECT WILL INVOLVE REDEVELOPMENT OF THE EXISTING 2.76 ACRE PROPERTY. THE EXISTING BUILDINGS, PARKING, AND OTHER INFRASTRUCTURE WILL BE DEMOLISHED IN PHASES AND A PROPOSED MIXED USE BUILDING, PARKING GARAGE, AND SITE INFRASTRUCTURE WILL BE CONSTRUCTED. THE SITE IS LOCATED IN THE TOWN OF VIENNA AT MAPLE AVENUE AND NUTLEY STREET.

EXISTING SITE CONDITIONS:

THE SITE CURRENTLY CONTAINS FIVE EXISTING BUILDINGS (ONE RESTAURANT AND FOUR MOTELS), AN EXISTING PARKING LOT, UTILITIES, DRIVE AISLES, WALLS, FENCES, ETC. GENERALLY, THE DEVELOPED PORTIONS OF SITE ARE FLAT, WHILE THE UNDEVELOPED PORTIONS OF THE SITE CONTAIN SOME STEEP SLOPES AS WELL AS LOW-LYING DRAINAGE AREAS. THE MAJORITY OF THE SITE DRAINS SOUTHEASTERN CORNER BY WAY OF ON-SITE STORM SEWER. THE EAST CORNER OF THE SITE CONTAINS A DEPRESSED AREA WITH TWO HEADWALLS THE SITE IS PREDOMINANTLY COVERED IN IMPERVIOUS AREA AND BUILDINGS.

ADJACENT PROPERTIES:

NORTH: COMMERCIAL PROPERTY
EAST: MILLWOOD COURT AND RESIDENTIAL PROPERTIES
SOUTH: NUTLEY STREET
WEST: MAPLE AVENUE

OFFSITE AREAS:

- STREETSCAPE IMPROVEMENTS AND SITE ENTRANCE CONSTRUCTION.
- UTILITY CONNECTIONS

CRITICAL AREAS:

AN DEPRESSED AREA IS LOCATED ON THE EAST SIDE OF THE SITE WHICH CONTAINS STEEP SLOPES AND A DITCH BETWEEN TWO HEADWALLS. THESE CRITICAL SLOPES HAVE BEEN IDENTIFIED ON THE PHASE 1 EROSION AND SEDIMENT CONTROL PLAN. THESE SLOPES ARE TO REMAIN UNDISTURBED THROUGHOUT CONSTRUCTION.

FAIRFAX COUNTY SOILS MAP SHOWS A MAJORITY OF THE SITE IS MAPPED AS URBAN LAND (95). THE REMAINING PORTIONS OF THE SITE ARE WHEATON-MEADOWVILLE COMPLEX (107B).

EROSION CONTROL PROGRAM:

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATION OF THE VIRGINIA AND EROSIONS AND SEDIMENT CONTROL HANDBOOK.

EROSION CONTROL MEASURES FOR THIS PROJECT SHALL BE GENERALLY ACCOMPLISHED IN TWO PHASES, THOUGH GIVEN THE SIZE OF THE SITE, ADDITIONAL SUB PHASES WILL BE NECESSARY. THE CONTRACTOR SHALL COORDINATE IN DETAIL WITH THE SITE INSPECTOR REGARDING SEQUENCING OF WORK IN SMALLER INCREMENTS THAN THE TWO PRIMARY PHASES DEPICTED ON THESE PLANS. THE FIRST SUB PHASES SHALL INVOLVE ONLY THE WORK NECESSARY TO MOBILIZE ON THE PROPERTY AND TO INSTALL THE PERIMETER CONTROLS PRIOR TO LAND CLEARING ACTIVITIES THAT CREATE DENuded SOIL AREAS. THE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE COORDINATED WITH THE VARIOUS STAGES OF CONSTRUCTION. THE CONTRACTOR SHALL STAGE CONSTRUCTION IN SUCH MANNER TO LIMIT THE AMOUNT OF DENuded AREA EXPOSED. ADDITIONALLY, UNWORKED DENuded AREAS SHALL BE TEMPORARILY STABILIZED TO MINIMIZE THE AMOUNT OF DENuded AREA EXPOSED AT ANY GIVEN TIME. THE FIRST PHASE MEASURES SHALL REMAIN IN PLACE UNTIL THEIR UPSTREAM DRAINAGE AREAS ARE COMPLETELY STABILIZED. THE EROSION AND SEDIMENT FACILITIES MUST REMAIN OPERATIONAL UNTIL THE AREAS DRAINING TO THE FACILITIES HAVE BEEN STABILIZED AND THE SITE INSPECTOR AUTHORIZES THEIR REMOVAL. ONCE SPECIFIC AREAS CONTAINING PHASE 1 MEASURES HAVE BEEN INSPECTED AND APPROVED BY THE SITE INSPECTOR, THE CONTRACTOR MAY BEGIN THE CLEARING AND GRADING ASSOCIATED WITH THAT AREA. THE CONTRACTOR SHALL PROVIDE ADEQUATE DUST CONTROL THROUGHOUT CONSTRUCTION. THE CONSTRUCTION PHASING SHALL DICTATE THE REQUIRED CONTROLS. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE WITH SITE INSPECTORS AS CONSTRUCTION PROGRESSES.

THE SECOND PHASE MEASURES SHALL REMAIN IN PLACE UNTIL THEIR UP STREAM DRAINAGE AREAS ARE COMPLETELY STABILIZED AND FINAL GRADING IS ACHIEVED. STORM INLETS MUST BE PROTECTED BY INLET PROTECTION ONCE THE STRUCTURES HAVE BEEN INSTALLED AND ACTIVATED. TEMPORARY SEEDING AND MULCHING ARE TO BE APPLIED TO ANY DISTURBED AREA NOT WORKED FOR 7 DAYS AND EXPECTED TO BE DORMANT FOR MORE THAN 30 DAYS. A PERMANENT VEGETATIVE COVER CONSISTING OF SOD AND /OR MULCH LANDSCAPED AND PLANTING AREAS SHALL BE ESTABLISHED ON DENuded AREAS AFTER ALL THE DISTURBED ACTIVITY HAS BEEN FINISHED.

PHASE 1

THE CONTRACTOR SHALL GENERALLY FOLLOW THE EROSION AND SEDIMENT CONTROL AND DEMOLITION MEASURES DETAILED BELOW. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL ALSO BE ESTABLISHED AS NEEDED IN THOSE AREAS ACTIVELY UNDER CONSTRUCTION IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (INCLUDING MINIMUM STANDARDS 1 THRU 19) LATEST EDITION. DRAINAGE AREAS WHICH WILL NOT BE IMPACTED BY CONSTRUCTION DO NOT NEED DOWNSTREAM EROSION & SEDIMENT CONTROL DEVICES. IF DISTURBANCE OCCURS WITHIN A DRAINAGE AREA, THE APPROPRIATE DOWN STREAM CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THAT LAND DISTURBANCE. THE FOLLOWING SEQUENCE IS SUBJECT TO CHANGE PER CONTRACTORS CONSTRUCTION SCHEDULE. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING CONSTRUCTION PROGRESS AND REQUIRED EROSION AND SEDIMENT CONTROLS DEVICES AT VARIOUS STAGES OF CONSTRUCTION WITH SITE INSPECTOR.

- CONSTRUCTION ENTRANCES, WITH WASH RACKS, SHALL BE INSTALLED AT TWO LOCATIONS ALONG THE SITE FRONTAGE ON MAPLE AVENUE AND NUTLEY STREET AS DEPICTED ON SHEETS C-0601. A SPRAY NOZZLE IS TO BE PROVIDED ADJACENT TO THE WASH RACK TO CLEAN CONSTRUCTION VEHICLES BEFORE THEY ENTER THE RIGHT-OF-WAY. THE HOSE WILL BE CONNECTED AT THE CLOSEST WATER SOURCE. (IF NO WATER SOURCE IS AVAILABLE, THEN, A WATER TRUCK IS REQUIRED).
- ALL PERIMETER CONTROL MEASURES FOR THE SITE, EXCEPT THE TEMPORARY SEDIMENT TANK, SHALL BE ESTABLISHED BEFORE ANY LAND DISTURBANCE OR BUILDING DEMOLITION CAN OCCUR. THESE INITIAL MEASURES INCLUDE BUT MAY NOT BE LIMITED TO CONSTRUCTION ENTRANCE, INLET PROTECTION, SILT FENCE, AND SUPER SILT FENCE (TO BE USED AS TREE PROTECTION).
- ONCE THESE INITIAL MEASURES HAVE BEEN ESTABLISHED, BUILDING DEMOLITION CAN BEGIN. CONSTRUCTION OF THE TEMPORARY SEDIMENT TANK AND THE TEMPORARY STORM CONNECTION CAN BEGIN. SEE SHEET C-0601 FOR SEDIMENT TANK LOCATION.
- FOLLOWING CONSTRUCTION OF THE TEMPORARY SEDIMENT TANK THE GARAGE EXCAVATION CAN BEGIN.
- CONTRACTOR SHALL ENSURE ALL STOCKPILE AREAS FROM EXCAVATION SHALL BE PLACED ON THE UPHILL SIDE OF BUILDING EXCAVATION AND UTILITY TRENCHES.
- WHEN ALL OF THE NECESSARY PHASE 1 MEASURES ARE IN PLACE FOR SPECIFIC CONSTRUCTION AREA, AN INSPECTION MUST BE MADE. (INSPECTION REQUESTS MUST BE MADE 48 HOURS IN ADVANCE.) FOLLOWING THE INSPECTOR'S APPROVAL OF THE PHASE 1 CONTROL MEASURES, COMMENCEMENT OF PHASE 2 PER CONSTRUCTION PERMIT APPROVAL WILL THEN BE AUTHORIZED. IT IS RECOMMENDED THAT THE CONTRACTOR LIMIT THE AMOUNT OF DISTURBED AREA AT ANY ONE TIME.
- IT IS ASSUMED THAT NOT ALL PHASE 1 EROSION AND SEDIMENT CONTROL DEVICES WILL BE REQUIRED TO BE INSTALLED PRIOR TO LAND DISTURBING ACTIVITIES. ONLY THOSE SPECIFIC DRAINAGE AREAS WHERE CONSTRUCTION SHALL TAKE PLACE SHALL BE REQUIRED TO BE PROTECTED. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE WITH SITE INSPECTORS TO ENSURE NECESSARY CONTROLS ARE IN PLACE BEFORE ANY LAND DISTURBING ACTIVITIES TAKE PLACE.

PHASE 2

- ALL CONTROL MEASURES NOTED IN PHASE 1 WILL REMAIN IN PLACE DURING THE LAND DISTURBING ACTIVITIES. SUPPLEMENTAL CONTROLS ARE TO BE PROVIDED AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN - PHASE 2. (SEE SHEET C-0602). ALL CONTROLS ARE TO BE ADJUSTED AS REQUIRED AS THE SITE CONSTRUCTION PROGRESSES AND AS DIRECTED BY THE INSPECTOR. CONTRACTOR SHALL MAINTAIN ADJACENT ROADS IN A MUD AND DUST FREE CONDITION AT ALL TIMES.
- THIS PHASE WILL CONSIST OF COMPLETION OF THE PROPOSED BUILDINGS, ROADS, UTILITIES AND OTHER INFRASTRUCTURE AS PROPOSED WITH THIS PLAN. ALL SITE RUNOFF SHALL BE CONTROLLED BY EROSION AND SEDIMENT CONTROL MEASURES.
- ALL OF THE STORM SEWER INLETS WILL BE PROTECTED. ALL THE STANDARD AND SUPER SILT FENCE IS TO BE INSPECTED DAILY.
- ANY SOIL STOCKPILE ONSITE SHALL BE LOCATED WITHIN THE LIMITS OF SITE DISTURBANCE, GRADED WITH SLOPES NOT STEEPER THAN 2:1 AND SHALL BE SEEDDED AND MULCHED TO ESTABLISH A GROUND COVER IMMEDIATELY AFTER THE GRADING HAS BEEN COMPLETED. SILT FENCE AROUND THE TEMPORARY STOCKPILE SHALL BE PROVIDED.
- STORMWATER MANAGEMENT FACILITIES SHALL BE CONSTRUCTED NEAR THE END OF CONSTRUCTION IN ORDER TO PREVENT SEDIMENT FROM CLOGGING THE FACILITY. FURTHER, A BARRIER (SUPERSILT FENCE, DIVERSION DIKES, SAFETY FENCE) SHALL BE PROVIDED AROUND PROPOSED INFILTRATION AREAS IN ORDER TO PREVENT CONSTRUCTION VEHICLES FROM INADVERTENTLY COMPACTING IN-SITU SOILS.
- THE CONTRACTOR SHALL PERMANENTLY SEED AND/OR SOD ALL NON-PAVED AREAS DISTURBED BY CONSTRUCTION IN ACCORDANCE WITH SECTION 3.31 AND 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. ALSO SEE SEED SPECIFICATIONS IN SHEET C-0621, EXCEPT THOSE AREAS TO BE LANDSCAPED. ALL LANDSCAPED AREAS WILL RECEIVE SURFACE TREATMENTS (STONE, MULCH, ETC.) AS SHOWN ON THE LANDSCAPE PLANS. FILL SLOPES SHALL PERMANENTLY STABILIZED ONCE THE SLOPE HAS BEEN BROUGHT TO FINAL GRADE BY SEEDING AND EROSION CONTROL BLANKETS TO PREVENT RILL AND GULLY EROSION OF THE CRITICAL SLOPES. DISTURBED FLAT AREAS SHALL BE SEEDDED PRIOR TO BEING MULCHED.
- ALL TEMPORARY EROSION SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION AFTER THE PERMISSION OF THE INSPECTOR.

MAINTENANCE PROGRAM:

THE SITE SUPERINTENDENT, OR REPRESENTATIVE, SHALL MAKE A VISUAL INSPECTION OF ALL STRUCTURAL AND VEGETATIVE CONTROLS AND NEWLY STABILIZED AREAS (I.E. SEEDDED AND MULCHED AREAS) ON A DAILY BASIS, ESPECIALLY AFTER A HEAVY RAINFALL EVENT TO INSURE THAT ALL CONTROLS ARE MAINTAINED AND PROPERLY FUNCTIONING. ANY DAMAGED CONTROLS SHALL BE REPAIRED PRIOR TO THE END OF THE WORK DAY INCLUDING RE-SEEDING AND MULCHING IF NECESSARY.

MAINTENANCE NOTES:

- MAINTENANCE OF THE TEMPORARY CONSTRUCTION ENTRANCE SHALL BE AS REQUIRED TO PREVENT MUD DEPOSITS IN THE RIGHT-OF-WAY.
- SILT FENCE SHALL BE INSPECTED AT THE END OF EACH DAY AND AFTER EACH RAINFALL. ANY REQUIRED REPAIRS OR REPLACEMENTS SHALL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS WILL BE REMOVED AFTER EACH RAINFALL AND AT ANY TIME THE DEPOSITS REACH APPROXIMATELY 1/2 THE HEIGHT OF THE BARRIER.
- INLET PROTECTION SHALL BE INSPECTED AT THE END OF EACH DAY AND AFTER EACH RAINFALL AND REQUIRED REPAIRS MADE IMMEDIATELY.
- EROSION AND SEDIMENT CONTROL DEVICES SHALL BE MAINTAINED IN PLACE UNTIL GROUND DISTURBING CONSTRUCTION AND PERMANENT STABILIZATION IS COMPLETE AND SHALL BE REMOVED BY PERMISSION OF THE FAIRFAX COUNTY INSPECTOR.
- FILTER STONE SHALL BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. STONE CHOKED WITH SEDIMENT SHALL BE REMOVED AND CLEANED OR REPLACED.

EROSION AND SEDIMENT CONTROL MEASURES:

- SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE INSTALLED AT THE START OF GRADING.
- SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL ALL GROUND DISTURBING ACTIVITY CEASES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS IS COMPLETE.
- ALL STANDARDS AND SPECIFICATIONS REFER TO THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE FAIRFAX COUNTY CHECKLIST.
- TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATIONS SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR TO PROVIDE APPROPRIATE EROSION CONTROL MEASURES FOR ANY STOCKPILED AREA.
- A CONSTRUCTION ENTRANCE SHALL BE INSTALLED AND MAINTAINED FOR THE DURATION OF ALL DISTURBING ACTIVITIES AS SHOWN ON THE PLAN PER STD. AND SPEC. NO. 3.02 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. NO CONSTRUCTION TRAFFIC SHALL BE PERMITTED TO ENTER THE SITE OTHER THAN THROUGH THIS ENTRANCE UNTIL PARKING LOT IS PAVED.
- ALL AREAS DISTURBED BY CONSTRUCTION THAT ARE NOT TO BE CONSTRUCTED UPON SHALL BE TEMPORARILY STABILIZED IMMEDIATELY FOLLOWING FINISH GRADING BY SEEDING AND MULCHING PER STD. AND SPEC. NO. 3.31 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
- BARE SOIL SURFACES NOT AT FINISH GRADE, WHICH WILL BE EXPOSED MORE THAN 7 DAYS, SHALL BE STABILIZED WITH TEMPORARY SEEDING AND MULCHING PER STD. AND SPEC. NO. 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
- ALL AREAS NOT BUILT OR LANDSCAPED SHALL BE SODDED FOR PERMANENT GROUND COVER. ALL SODDING SHALL CONFORM TO VESCH SPECIFICATION 3.33
- THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES ARE ANTICIPATED TO BE REQUIRED AT A MINIMUM:
 - PERIMETER CONTROL WILL REQUIRE SAFETY FENCE (VESCH STD & SPEC 3.01)
 - SEDIMENT BARRIERS WILL REQUIRE SUPER SILT FENCE (FAIRFAX COUNTY PFM SECTION 11-0110. 3J AND PLATE 7-11) AND STORM DRAIN INLET PROTECTION (VESCH STD & SPEC. 3.07)
 - A CONSTRUCTION ENTRANCE IS REQUIRED (VESCH STD & SPEC. 3.02)
 - A DEWATERING STRUCTURE IS REQUIRED (VESCH STD & SPEC. 3.26)
 - DUST CONTROL IS REQUIRED (VESCH STD & SPEC. 3.39)
 - ESTABLISHING VEGETATION IS REQUIRED (VESH STD & SPEC. 3.30, 3.31, 3.32, 3.33, 3.35, 3.35, AND SECTION 11 OF THE FAIRFAX COUNTY PFM)

GENERAL LAND CONSERVATION NOTES

- NO DISTURBED AREA WILL BE LEFT DENuded AND UNWORKED FOR MORE THAN 7 CALENDAR DAYS WITHOUT STABILIZATION UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OR HIS AGENT.
- ALL EROSION AND SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING. FIRST AREAS TO BE CLEARED ARE TO BE THOSE REQUIRED FOR THE PERMETER CONTROLS.
- ALL STORM AND SANITARY LINES NOT IN STREETS ARE TO BE MULCHED AND SEEDDED WITHIN 5 DAYS AFTER BACKFILL. NO MORE THAN 500 FEET ARE TO BE OPEN AT ANY ONE TIME.
- ELECTRIC POWER, TELEPHONE, AND GAS SUPPLY TRENCHES AREA TO BE COMPACTED, SEEDDED, AND MULCHED WITHIN 5 DAYS AFTER BACKFILL.
- DURING CONSTRUCTION, ALL STORM SEWER INLETS WILL BE PROTECTED BY INLET PROTECTION DEVICES, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS.
- ANY DISTURBED AREA NOT COVERED BY NOTE #1 ABOVE AND NOT PAVED, SODDED OR BUILT IS TO BE MULCHED WITH HAY OR STRAW MULCH AT THE RATE OF TWO TONS PER ACRE AND OVERSEEDED.
- AT THE COMPLETION OF THE CONSTRUCTION PROJECT, AND PRIOR TO THE RELEASE OF THE BOND, ALL TEMPORARY SILTATION AND EROSION CONTROLS SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED.
- IF THE MAXIMUM PERIOD FOR DENUDATION IS EXCEEDED AND ANY AREAS REMAIN EXPOSED WITHOUT COVER OR SURFACE, THE COUNTY MAY (IN THE EVENT THE DEVELOPER DOES NOT) INSTALL SUCH GROUND COVER OR OTHER STABILIZING DEVICES AND/OR MATERIAL TO THE MINIMUM EXTENT NECESSARY TO ACHIEVE EROSION AND SEDIMENT CONTROL EQUAL TO THAT WHICH WOULD HAVE BEEN FURNISHED BY THE PERMANENT COVER SHOWN ON THE APPROVED PLANS. THE COST OF ANY SUCH TEMPORARY MEASURES TAKEN BY THE COUNTY SHALL BE BORNE BY THE DEVELOPER AND SHALL BE A CHARGE AGAINST THE CONSERVATION DEPOSIT.
- TEMPORARY DIVERSIONS, SEEDDED AND MULCHED AREAS OR SILT FENCE AND OTHER CONTROL MEASURES AS NECESSARY ARE TO BE PLACED AS INDICATED ON THE DRAWINGS PRIOR TO OR AS THE FIRST STEP IN EXCAVATION.
- WHERE CONSISTENT WITH JOB SAFETY REQUIREMENTS, ALL EXCAVATED MATERIAL IS TO BE PLACED ON THE UPHILL SIDE OF TRENCHES. NO MATERIAL IS TO BE PLACED IN STREAM BEDS. NO STOCKPILE IS PERMITTED. WHERE SOIL IS PLACED ON DOWNHILL SIDE OF TRENCHES, IT IS TO BE BACK SLOPED TO DRAIN TOWARD THE TRENCH. WHEN NECESSARY TO DEWATER THE TRENCHES, THE PUMP DISCHARGE HOSTES MUST OUTLET IN A STABILIZED AREA TO AN EXISTING STORM INLET.
- ANY SOIL REMOVED FROM THE SITE SHALL BE PLACED IN A PERMITTED SITE, ANY SOIL THAT IS BROUGHT ONTO THE SITE WILL BE OBTAINED FROM A PERMITTED SITE.
- THE CONTRACTOR SHALL TAKE STEPS TO MINIMIZE THE RELEASE OF DUST FROM THE CONSTRUCTION SITE. STABILIZING GROUND SURFACES WITH TEMPORARY OR PERMANENT VEGETATION IS THE PREFERRED METHOD BUT THE CONTRACTOR SHALL UTILIZE OTHER MEASURES IN ACCORDANCE WITH VESCH STD & SPEC. 3.39.

SEEDING AND MULCH SPECIFICATION

SEEDING AND MULCH SHALL ACCORDANCE WITH 3.31, 3.32, AND 3.35 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

TABLE 6-1

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- ES-1: Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the *Virginia Erosion and Sediment Control Handbook* and Virginia Regulations 4VAC50-30-1 Erosion and Sediment Control Regulations.
- ES-2: The plan approving authority must be notified one week prior to the pre-construction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.
- ES-3: All erosion and sediment control measures are to be placed prior to or as the first step in clearing.
- ES-4: A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.
- ES-5: Prior to commencing land disturbing activities in areas other than indicated on these plans (including, but not limited to, off-site borrow or waste areas), the contractor shall submit a supplementary erosion control plan to the owner for review and approval by the plan approving authority.
- ES-6: The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the plan approving authority.
- ES-7: All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.
- ES-8: During dewatering operations, water will be pumped into an approved filtering device.
- ES-9: The contractor shall inspect all erosion control measures periodically and after each runoff-producing rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.

Rev. 09-14-04

FAIRFAX COUNTY PRIORITY RATING FORM FOR EROSION & SEDIMENT CONTROL

PROJECT NAME: NAVY FEDERAL CREDIT UNION PROJECT NUMBER:
TAX MAP: 39-3 EVALUATOR: DATE:

A. Percentage of Denuded Area to Total Site Area Rating • > 60% 1 5 • 31 to 60% 2 3 • 10 to 30% 3 1 If the denuded area is greater than 10 acres, the project is initially rated a high priority.	F. Distance Between the Site Outfall and any Downstream, Wet Pond, Wetland, Parkland or other Land Deemed Environmentally Sensitive by the Director. Rating • < 2,500 feet 1 5 • 2,500 to 5,000-feet 2 3 • > 5,000-feet 3 0
B. Watercourse Crossing Yes 1 No 0 If Yes, project is initially rated a high priority.	G. Critical Slopes Within 50-feet of Adjacent Property Rating • Are there any slopes of 0 to 7%; greater than or equal to 500-feet in length, or, • Are there any slopes of 7 to 15%; greater than or equal to 120-feet in length, or, • Are there any slopes greater than 15% and greater than or equal to 75-feet in length If Yes to any of the above 1 5 Not Applicable if critical slope is > 50-feet from adjacent property 0 0
C. Distance of Denuded Area to Downstream Adjacent Property Rating • < 50-feet 1 5 • 50 to 150-feet 2 3 • > 150-feet 3 0	H. Soil Erodibility (Based on Physiographic Setting) Rating • Triassic Basin 1 5 • Piedmont Upland 2 3 • Coastal Plain 3 1
D. Distance of Any Portion of the Denuded Area to a Natural Watercourse Rating • < 50-feet 1 5 • 50 to 150-feet 2 3 • > 150-feet 3 0	
E. *Minimum Vegetative Buffer (Trees, Shrubs, Grasses and other Plants) Rating • < 50-feet 1 0 • 50 to 150-feet 2 3 • > 150-feet 3 5	

* Vegetation in Resource Protection Areas are not to be included as vegetative buffers for this application.

OVERALL RATING If > 22 If > 14 and <= or = to 22 If < or = to 14	PRIORITY (Mark with an "X") High X Medium Low Town of Vienna Approved 08/09/2021 Plan Reviewer
PROJECT PRIORITY LEVEL: HIGH	
** Reserved for Fairfax County use ** APPROVED BY:	

Descriptions on Reverse Side

EROSION AND SEDIMENT CONTROL NOTES

444 MAPLE AVENUE WEST

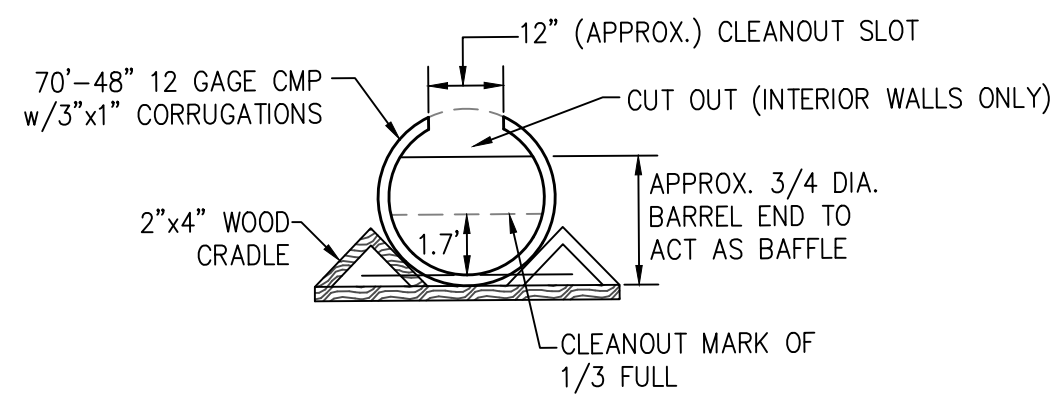
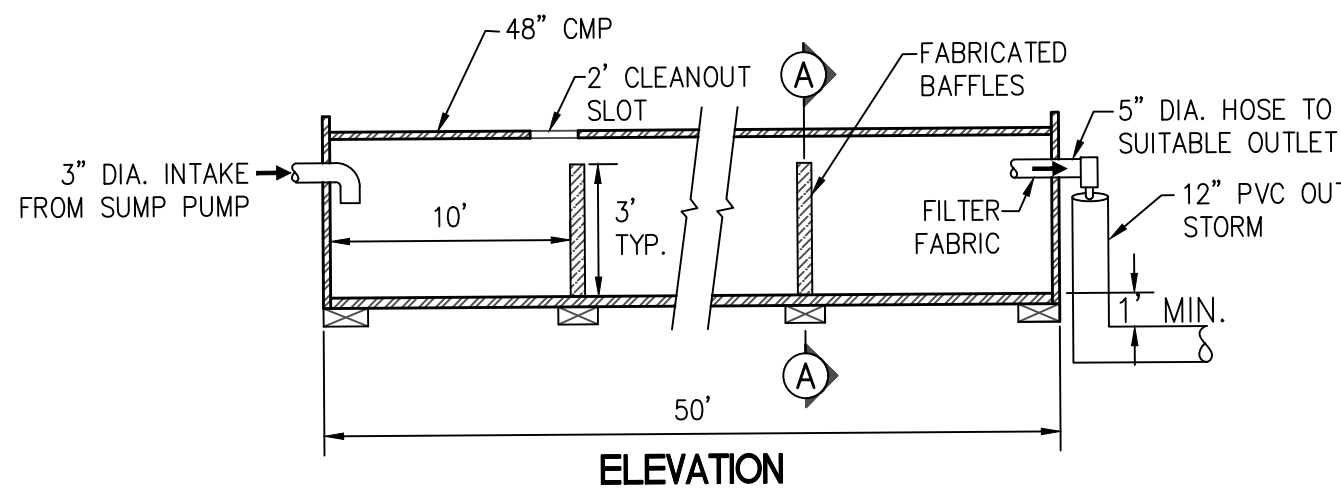
SITE PLAN

TOWN OF VIENNA, VIRGINIA



WALTER L. PHILLIPS
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Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
www.WLPINC.com

DATE SUBMIT: 01/12/2018, SUB02: 05/07/2020, SUB03: 4/19/2021
SUB04: 05/25/2021
SCALE: NONE
DRAWN: DL
CHECKED: KW



NOTE: TANK TO BE CLEANED OF ALL SEDIMENT WHEN 1/3 FULL OR AS DIRECTED BY COUNTY INSPECTOR. SEDIMENT TO BE PLACED AND STABILIZED ON SITE OR HAULED OFFSITE. SEDIMENT NOT TO BE INTRODUCED TO DRAINAGE OUTFALL SYSTEM.

VOLUME COMPUTATIONS:

REQUIRED: $16 \times \text{PUMP RATE IN GPM} = 16 \times 36 = 576 \text{ CF}$
(PUMP DISCHARGE RATE @ 14' HEAD USE 36 GPM)

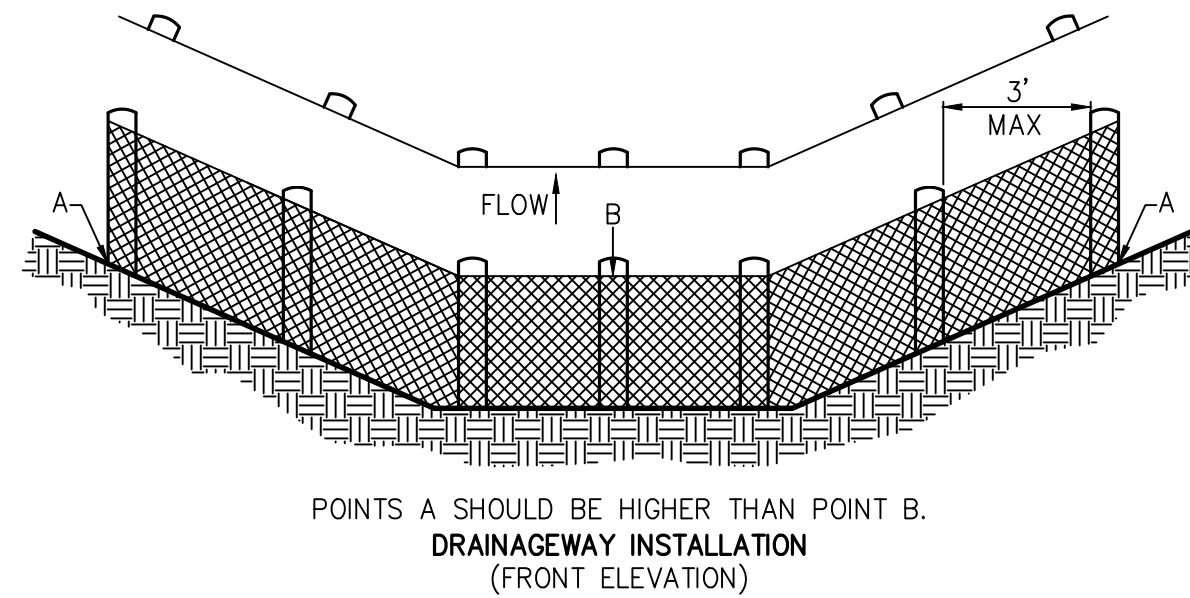
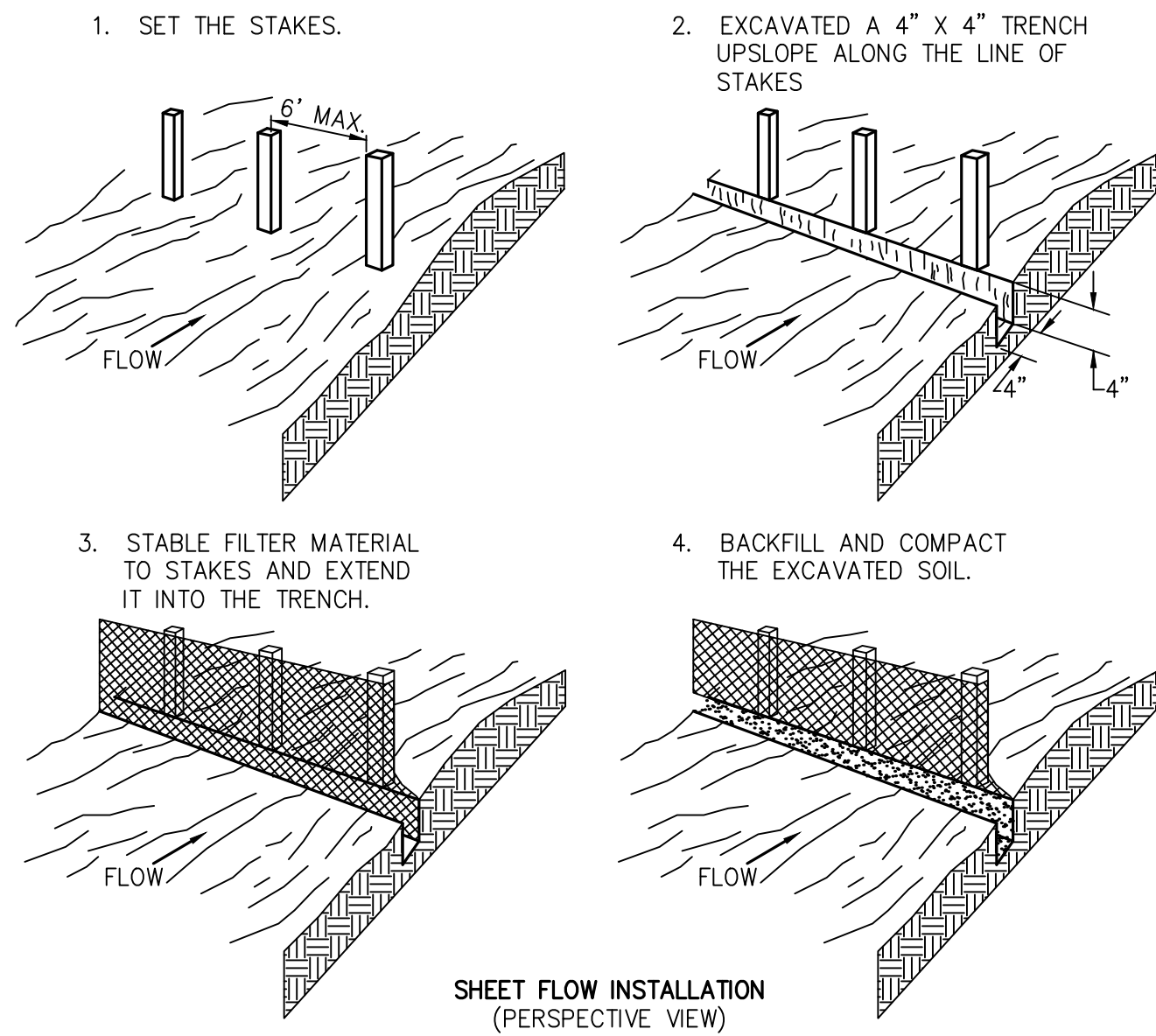
PROVIDED: $\pi R^2 \times L = \pi (2)^2 \times 50' = 628 \text{ CF}$

NOTES:

1. TANK SHALL BE PROVIDED IN ACCORDANCE WITH VESCH STD & SPEC. 3.26.
2. FINAL SIZING OF PUMP FLOW RATE AND PUMP TO BE DETERMINED BY THE CONTRACTOR. THE SEDIMENT TANK SIZE SHALL BE ADJUSTED AS NECESSARY IN ACCORDANCE WITH THE VESCH.

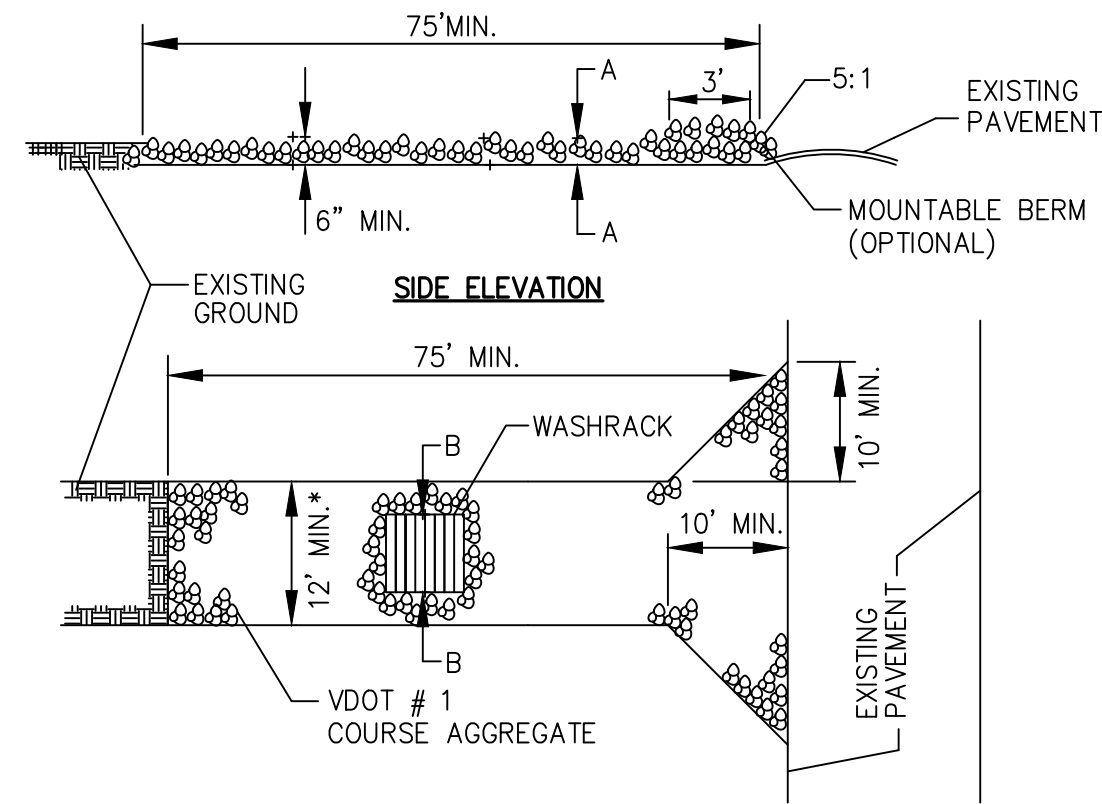
PORTABLE SEDIMENT TANK

NOT TO SCALE
DETAIL FROM VESCH PLATE 3.26-1

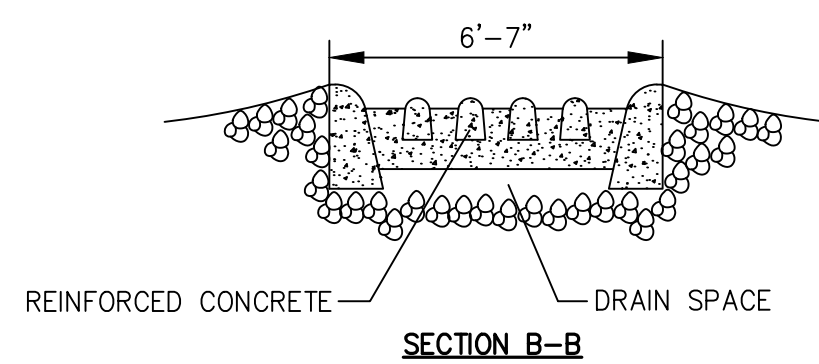
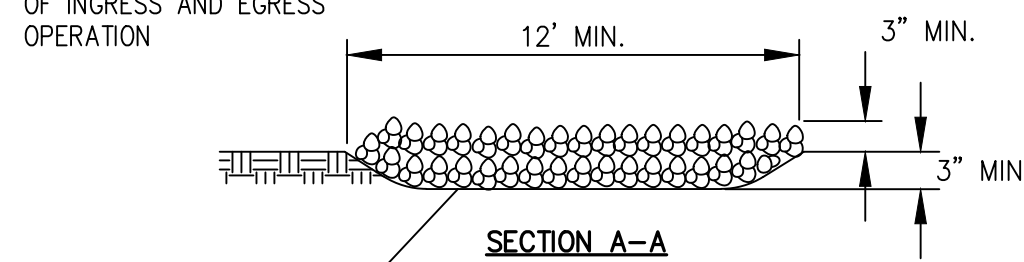


CONSTRUCTION OF SILT FENCE (WITHOUT WIRE SUPPORT)

NOT TO SCALE



*MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION



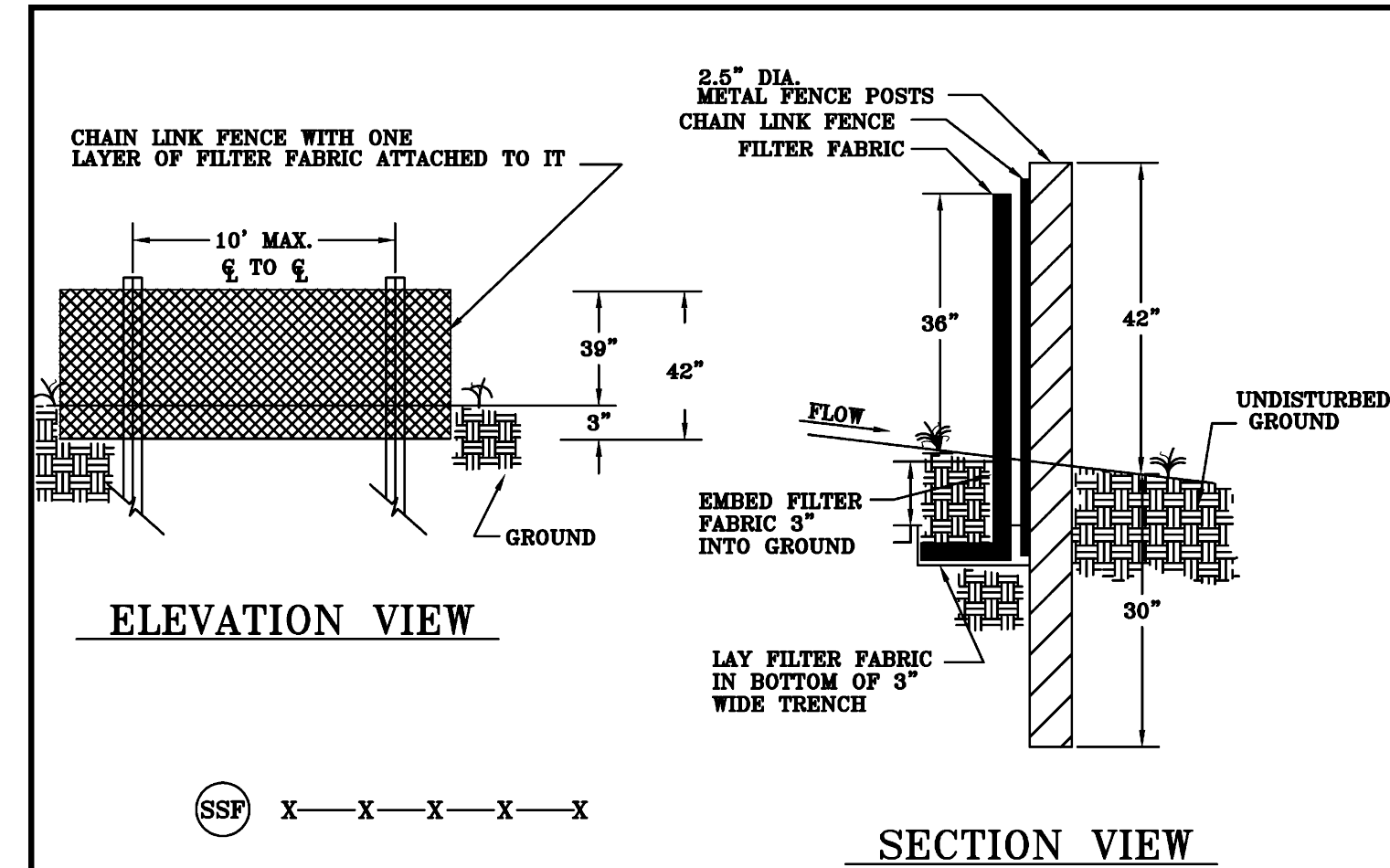
NOTE: WATER TRUCK IS TO BE PROVIDED ONSITE THROUGHOUT CONSTRUCTION FOR WATER SOURCE.

CONSTRUCTION ENTRANCE

NOT TO SCALE

DETAIL FROM VESCH PLATE 3.02-1 MODIFIED
PER FAIRFAX COUNTY PFM SECTION 11-0110.3H.

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



SUPER SILT FENCE NO SCALE

FENCING

Chain link fence shall be 39" above grade with 3" embedded for a total fabric width of 42". The post shall be 42" above grade with 30" placed below grade (without concrete) for a total length of 72".

NOTES

1. Chain link fence shall be fastened securely to fence posts with wire ties.
2. Filter fabric shall be fastened securely to chain link fence with ties spaced horizontally 24" at the top and midsection.
3. Physical properties of the filter fabric shall conform to the latest edition of THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK.
4. When two sections of filter fabric adjoin each other, they shall be overlapped by 6".
5. Maintenance shall be performed as needed and material shall be removed when sediment build-up reaches 50% of the height of the super silt fence.

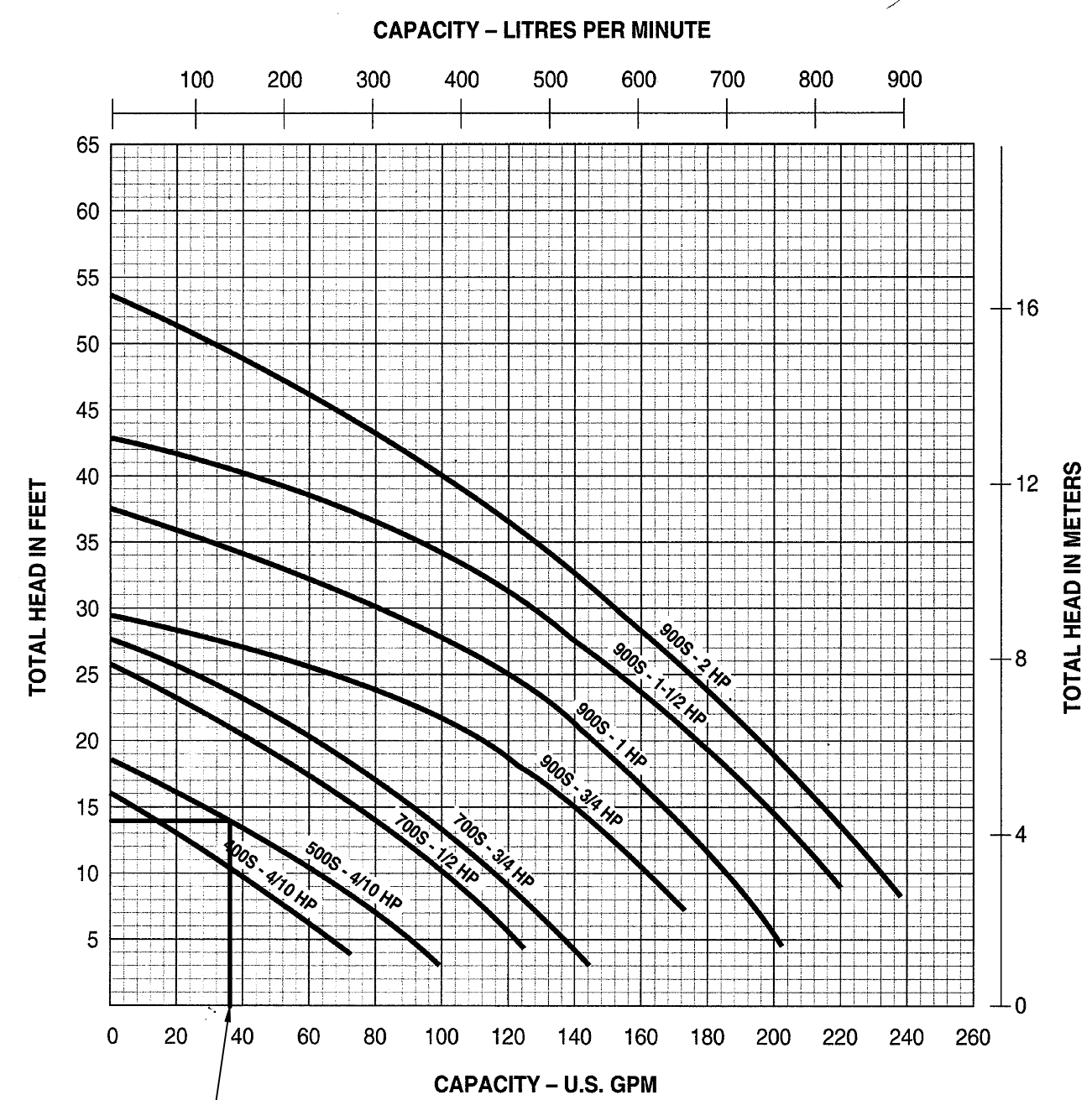
Ref. Sec. 11-0110.3,
11-0110.3J

SUPER SILT FENCE NO SCALE (TREE PROTECTION)

PLATE NO. STD. NO.

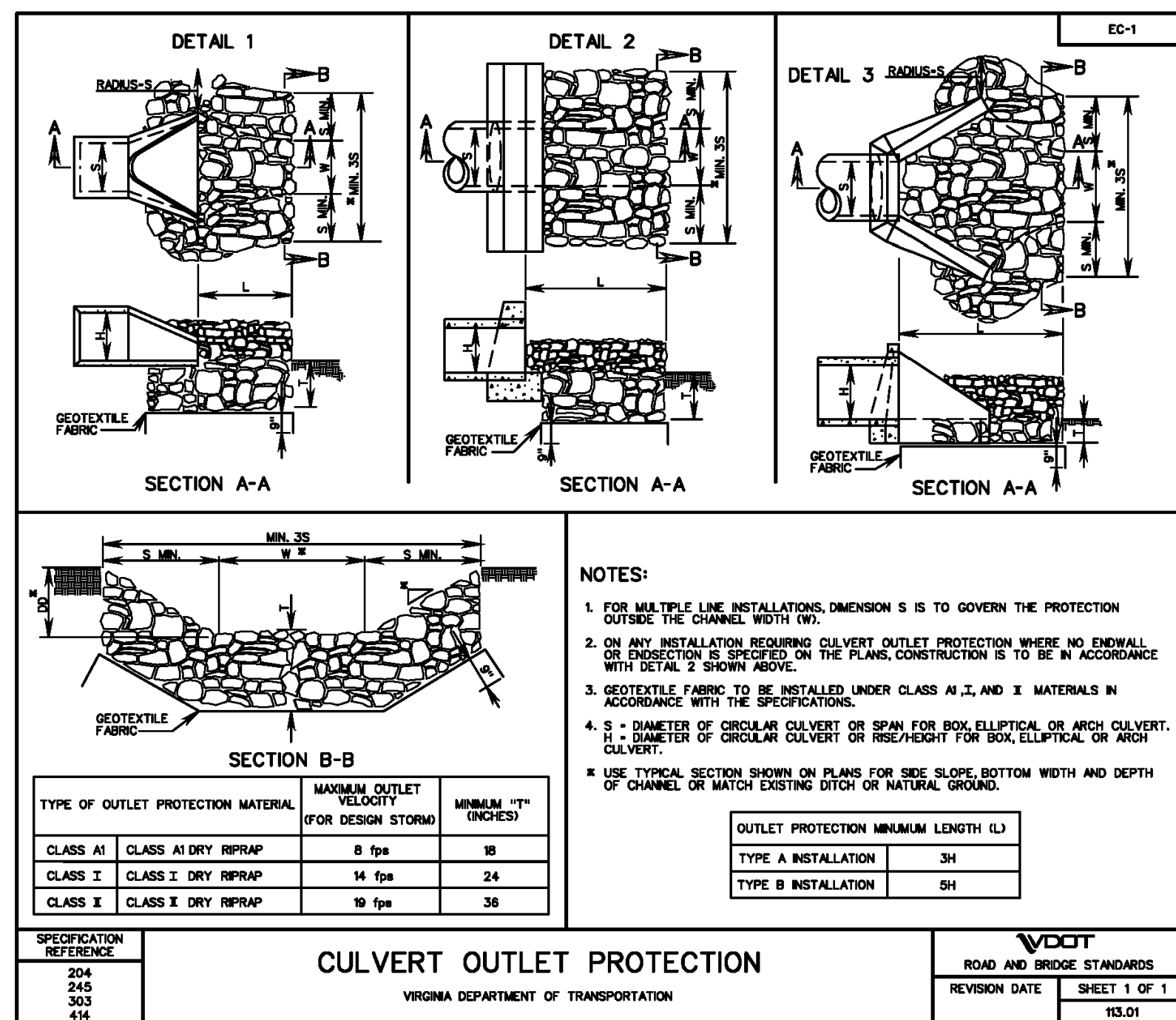
7-11

Rev. 1-00, 2011 Reprint



CAPACITY= 36 GPM
CONTRACTOR TO USE 500S-4/10 HP PUMP MAXIMUM

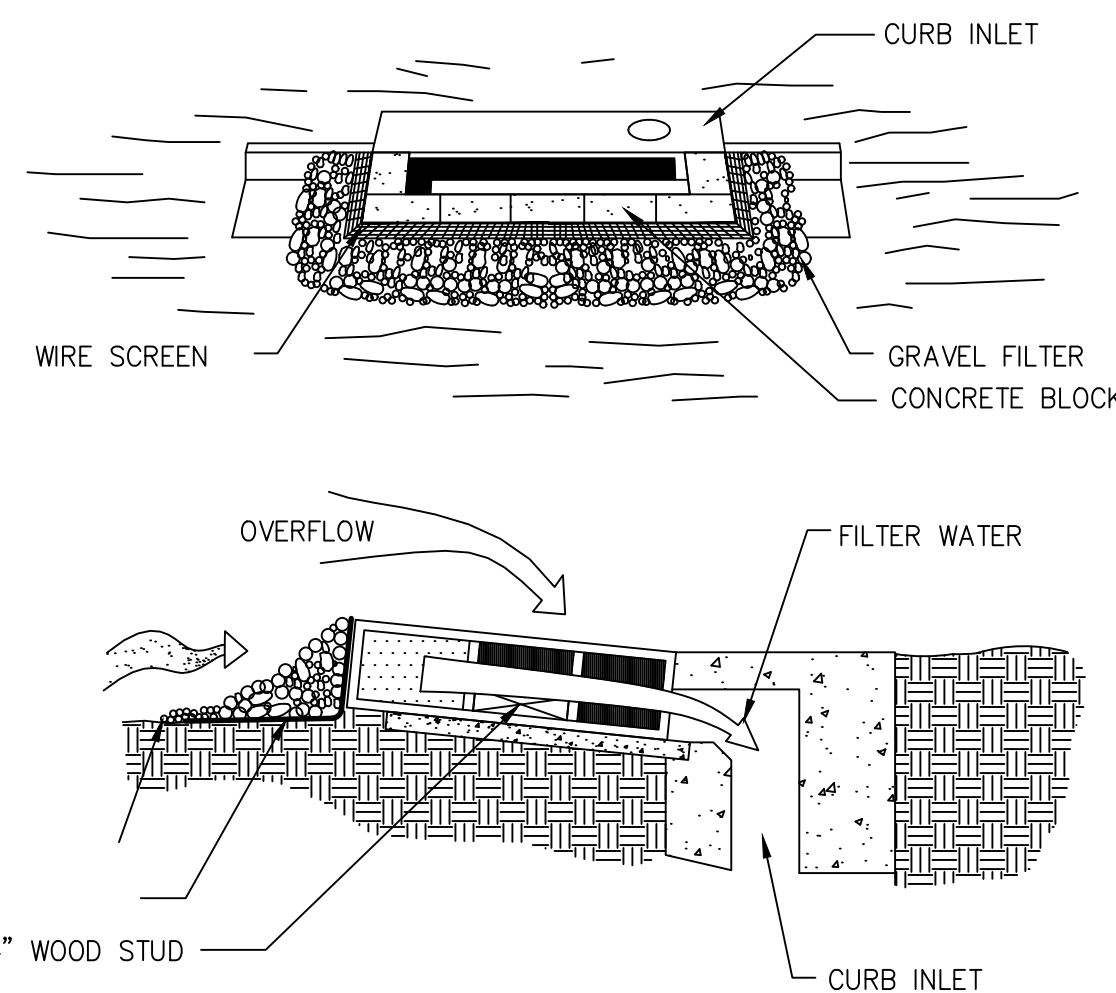
PUMP SELECTION CHART



CULVERT OUTLET PROTECTION

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT
ROAD AND BRIDGE STANDARDS
REVISION DATE SHEET 1 OF 1
115.01



SPECIAL APPLICATION

THIS METHOD INLET PROTECTION IS APPLICABLE AT CURB INLET WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

* GRAVEL SHALL BE V.D.O.T. #3, #357 OR #5 COARSE AGGREGATE

BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER

NOT TO SCALE

DETAIL FROM VESCH PLATE 3.07-8



SOURCE: ADAPTED FROM CONVED PLASTICS AND VDOT ROAD AND BRIDGE STANDARDS

PLATE 3.01-1

DETAIL FROM VESCH PLATE 3.01-1

EROSION AND SEDIMENT CONTROL DETAILS

444 MAPLE AVENUE WEST

SITE PLAN

TOWN OF VIENNA, VIRGINIA

WALTER L. PHILLIPS
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Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
www.WLPINC.com
INCORPORATED ESTABLISHED 1945
DATE SUB01: 01/13/2016 SUB02: 05/07/2020 SUB03: 4/19/2021
SCALE: NONE DRAWN: DL CHECKED: KW
SUB04: 05/25/2021

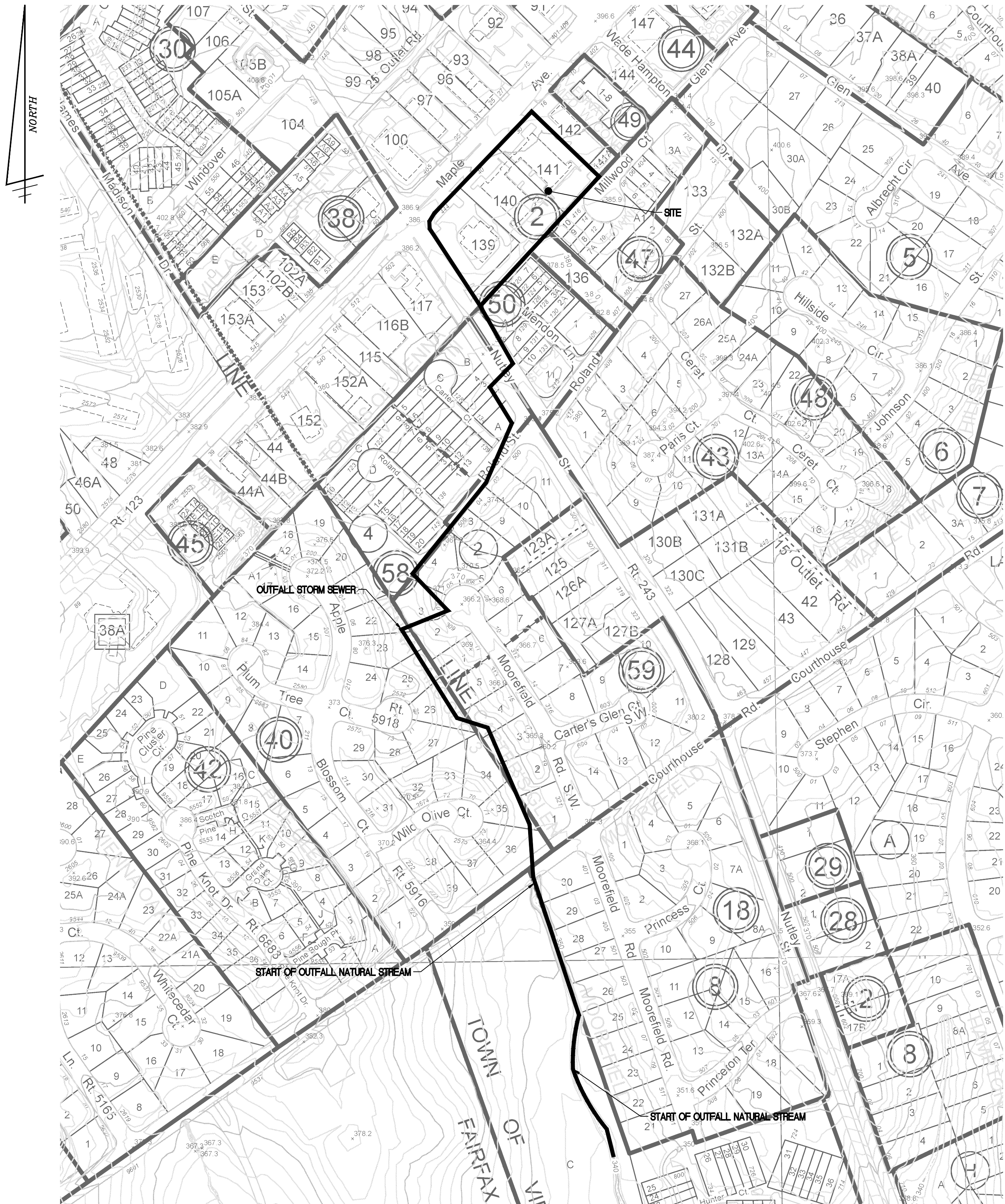
KAREN L. S. WHITE
Lic. No. 041850
05/25/21
PROF. 1231

NO.	DESCRIPTION	DATE	APPROVED BY	REVISION

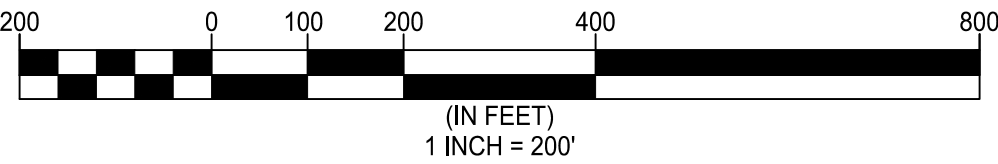
OUTFALL NARRATIVE

STORMWATER RUNOFF FROM THE SITE WILL BE COLLECTED IN PROPOSED DRAINAGE INLETS ONSITE. THE PROPOSED SITE DRAINAGE SYSTEM WILL CONNECT TO AN EXISTING STORM SEWER SYSTEM THAT CURRENTLY CROSSES THE PROPERTY. THIS EXISTING SYSTEM LEAVES THE PROPERTY AT THE PROPERTY'S SOUTHERN CORNER AND THEN HEADS SOUTH ALONG NUTLEY STREET. AFTER CROSSING NUTLEY STREET, THE STORM SEWER TURNS SOUTHWEST DOWN ROLAND STREET. IT THEN CONNECTS TO A LARGER STORM SEWER SYSTEM LOCATED BEHIND HOMES BETWEEN MOOREFIELD ROAD AND BLOSSOM COURT. THE STORM SEWER THEN CROSSES COURTHOUSE ROAD BEFORE OUTLETING INTO A STREAM CHANNEL THAT BEGINS ON THE SOUTH SIDE OF COURTHOUSE ROAD. THIS CHANNEL WAS RESTORED USING NATURAL DESIGN CONCEPTS UNDER THE HUNTERS BRANCH STREAM RESTORATION PLANS PREPARED BY WETLANDS STUDIES AND SOLUTIONS. SHEET 27 OF 32 OF THE FINAL PLANS INDICATES THAT THE RESTORED STREAM HAS A DRAINAGE AREA OF 389.4 ACRES WHICH IS MORE THAN 100 TIMES THE SITE AREA. THEREFORE, THE SITE OUTFALL CONSISTS OF STORM SEWER AND RESTORED CHANNEL AND NOT NATURAL STREAM.

THE RESTORATION PLAN ALSO SHOWS OUR SITE IN AREA THAT IS LARGELY IMPERVIOUS. HOWEVER, THE PROJECT WILL RESULT IN AN INCREASE IN IMPERVIOUS AREA. THE ENERGY BALANCE EQUATION WAS APPLIED TO THE SITE FOR THE 1-YEAR AND 10-YEAR STORM EVENTS. THE ADJUSTED FLOW RATES FOR EACH STORM EVENT WILL BE MET THROUGH THE USE OF PROPOSED PERVIOUS PAVEMENT PARKING SPACES OUTSIDE THE GARAGE AND AN UNDERGROUND DETENTION FACILITY. THEREFORE, STORMWATER RUNOFF FROM THE RESTORED CHANNEL'S 389 ACRE DRAINAGE AREA WILL STILL BE CONSISTENT WITH THE DESIGN FOR THE RESTORED CHANNEL WHICH SATISFIES THE VIRGINIA STORMWATER REGULATIONS. SEE NARRATIVE AND CHARTS ON SHEET C-0703 FOR ADDITIONAL INFORMATION.



Town of Vienna
Approved
06/09/2021



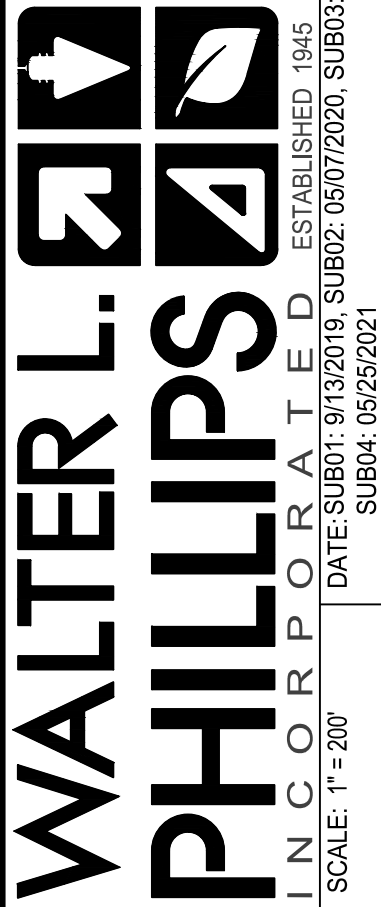
STORMWATER OUTFALL ANALYSIS

444 MAPLE AVENUE WEST

SITE PLAN
TOWN OF VIENNA, VIRGINIA

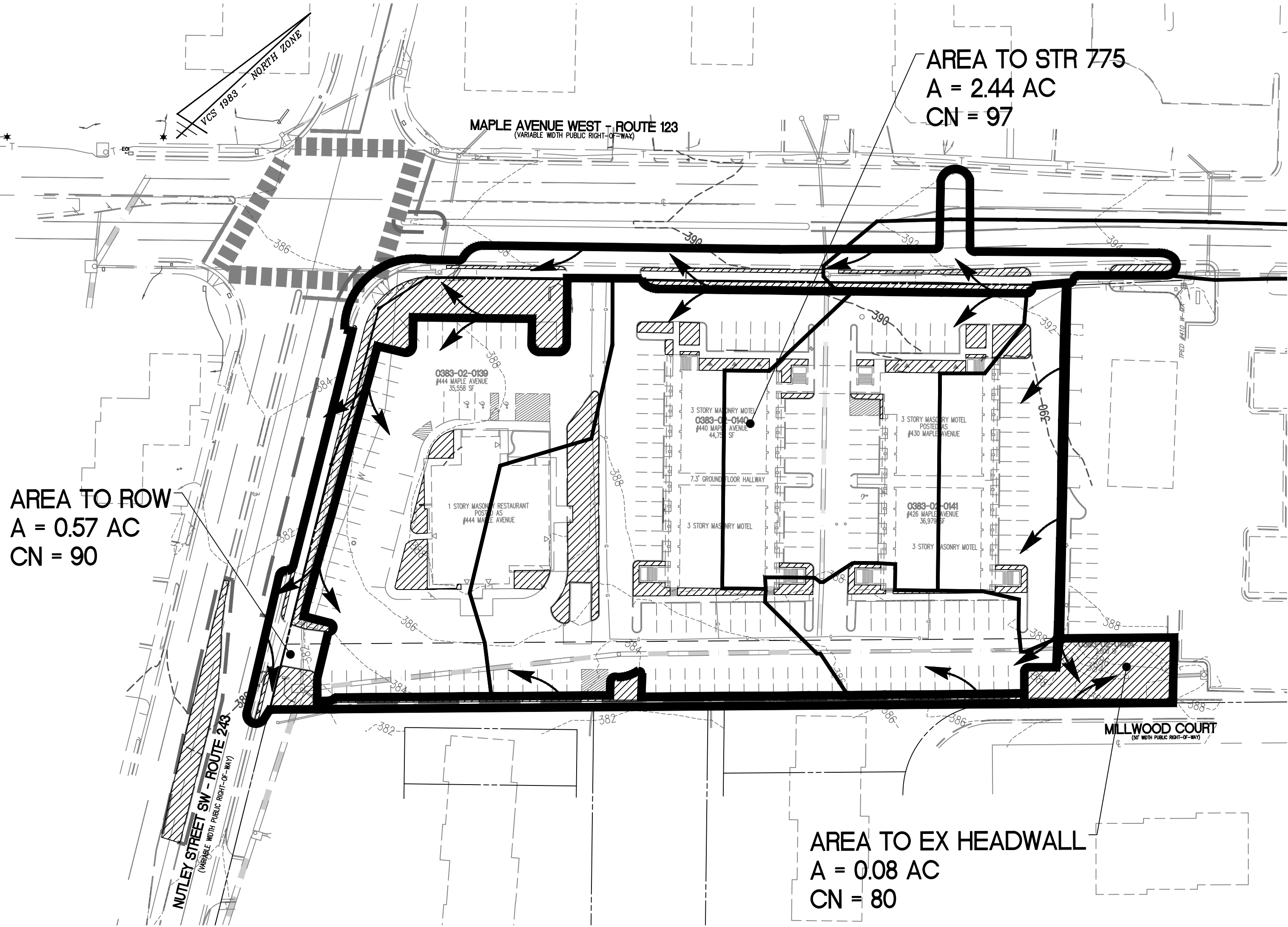


NO.	REVISION APPROVED BY			DATE	APPROVED	DATE
	DESCRIPTION	REV.	BY			



Engineers • Surveyors • Planners
Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
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CHECKED: KW
DRAWN: DL
DATE SUB01: 9/13/2019, SUB02: 05/07/2020, SUB03: 4/19/2021
SCALE: 1" = 200'
SUB04: 05/25/2021



PRE-DEVELOPMENT DRAINAGE DIVIDES

LEGEND



EXISTING IMPERVIOUS AREA

DISTURBED AREA = 3.15 AC
IMPERVIOUS AREA = 2.65 AC

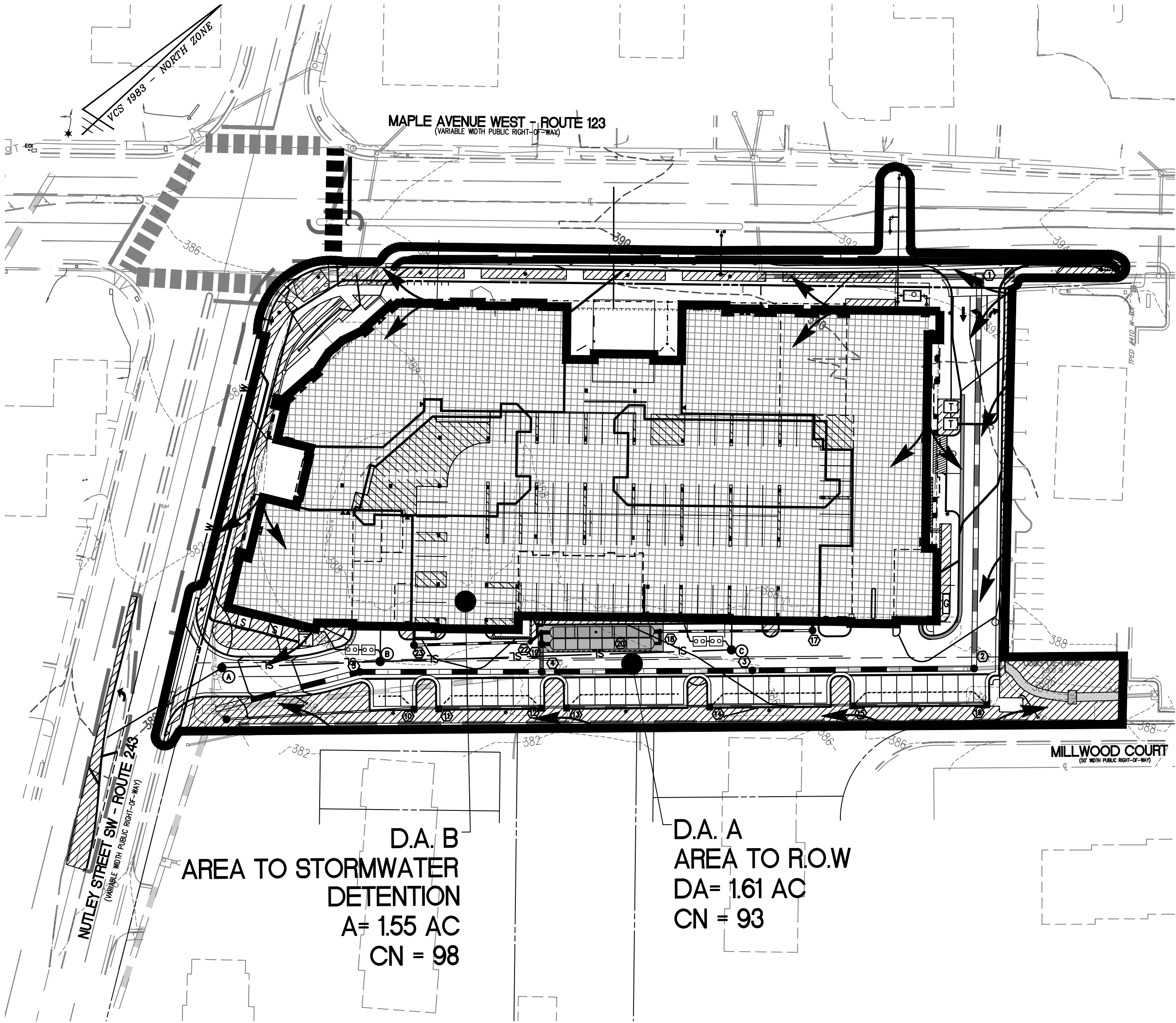
SWM Water Quantity Energy Balance Worksheet

SITE AREA (acre)	1-year		10-year	
	PRE	POST (adjusted)	PRE	POST (adjusted)
P	2.62	2.62	4.87	4.87
CN	95	95	95	96
S=1000/CN-10	0.53	0.53	0.53	0.42
0.2S	0.11	0.11	0.11	0.08
RV=(P-0.2S) ² /((P-0.2S)+S)	2.08	2.08	4.29	4.40

$Q_{Post Development} \leq I.F. * (Q_{pre-development} * RV_{pre-development}) / RV_{Developed}$

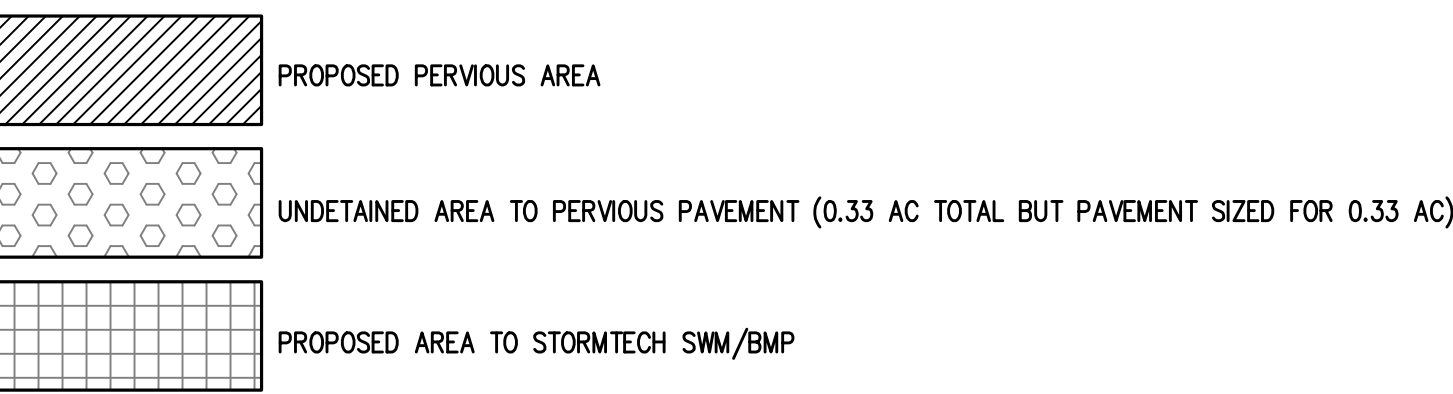
I.F.		0.8
CHANNEL PROTECTION		
Qpre-development	8.312	From TR55
QPost Development	8.312	From TR55
RVPost Development (with runoff reduction)	2.13	From RRM
Allowable	6.49	

FLOOD CONTROL	
Qpre-development	16.37
QPost Development	16.55
RVPost Development (with runoff reduction)	4.36
Allowable	16.11



POST-DEVELOPMENT DRAINAGE DIVIDES

LEGEND

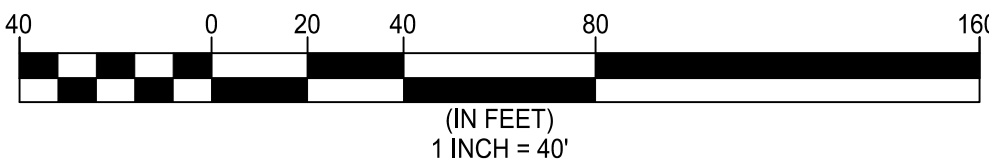


PROPOSED IMPERVIOUS AREA

DISTURBED AREA = 3.15 AC
IMPERVIOUS AREA = 2.77 AC

STORMWATER MANAGEMENT AND WATER QUALITY NARRATIVES

- 1) THE 2014 STORMWATER REGULATIONS ARE APPLICABLE TO THIS PROJECT.
- 2) THE SITE IS CURRENTLY DEVELOPED WITH A RESTAURANT AND MOTEL. THEREFORE, THIS IS A REDEVELOPMENT PROJECT. THE WATER QUALITY REQUIREMENT IS TO REDUCE THE PRE-DEVELOPMENT PHOSPHOROUS LOAD RELEASED FROM THE SITE BY THE AMOUNT DETERMINED USING THE VRMM SPREADSHEET ISSUED BY THE VIRGINIA DEQ. SOME OF THE BMP REQUIREMENT WILL BE MET BY CONSTRUCTING PERMEABLE PAVEMENT. THESE FACILITIES ARE BEING DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE 2013 VERSION OF THE VIRGINIA DEQ STORMWATER DESIGN SPECIFICATIONS. THE OTHER PROPOSED BMP IS AN ADS STORMTECH CHAMBERS WITH ISOLATOR ROW SWM/BMP FACILITY. BETWEEN THESE TWO FACILITIES, THE PHOSPHOROUS LOAD REDUCTION WILL EXCEED THE REQUIREMENTS. PLEASE REFER TO COPIES OF THE VRMM SPREADSHEETS FOUND ON THIS SHEET.
- 3) THE CONCENTRATED RUNOFF FROM THE SITE WILL BE CONVEYED TO AN EXISTING STORM SEWER SYSTEM THAT HEADS SOUTH ALONG NUTLEY STREET. THERE IS NO NATURAL STREAM WITHIN THE OUTFALL (REFER TO THE OUTFALL NARRATIVE AND MAP SHEET C-0701). HOWEVER, THE INCREASE IN PROPOSED IMPERVIOUS AREA DOES NOT FOLLOW THE DESIGN INTENT OF THE HUNTERS BRANCH STREAM RESTORATION. THEREFORE THE ENERGY BALANCE EQUATION WILL BE SATISFIED FOR THE 1-YEAR PEAK RUNOFF RELEASE RATE FROM THE SITE TO SATISFY A CHANNEL PROTECTION REQUIREMENT.
- 4) THE FLOOD PROTECTION REQUIREMENT FOR THE SITE WILL BE MET THROUGH THE ENERGY BALANCE EQUATION. THEREFORE AN UNDERGROUND DETENTION SYSTEM IS PROPOSED TO REDUCE THE FLOW RATES FOR THE TEN-YEAR 24-HOUR STORMS TO COMPLIES WITH THE FLOOD PROTECTION REQUIREMENTS. RUNOFF FLOW RATES HAVE BEEN MODELED USING HYDROFLOW HYDROGRAPHS SOFTWARE. PRINT-OUTS OF THE HYDROGRAPHS AND DETENTION FACILITY DESIGN DATA CAN BE FOUND ON FOLLOWING SHEETS.



PRE AND POST DEVELOPMENT DRAINAGE AREAS

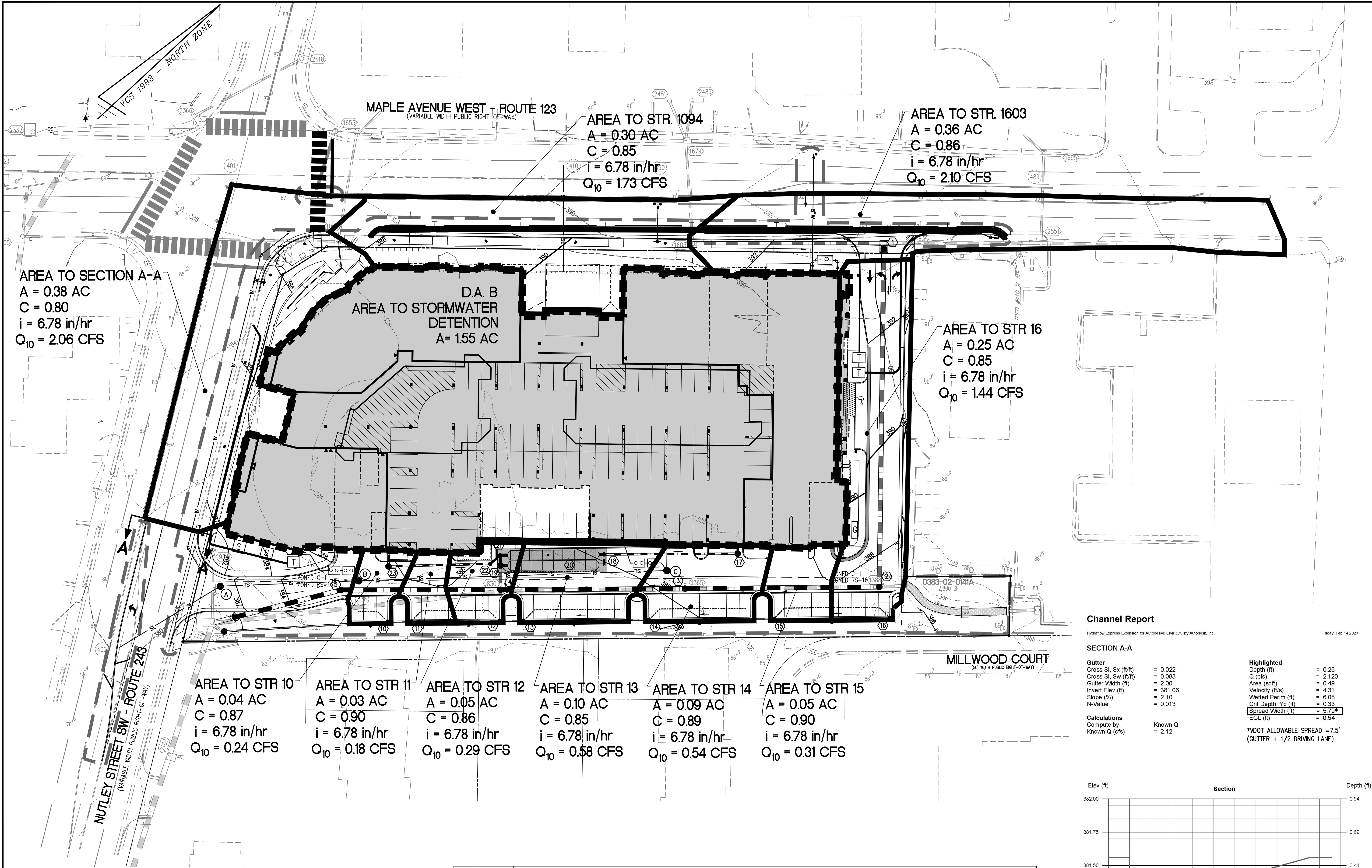
444 MAPLE AVENUE WEST

SITE PLAN
TOWN OF VIENNA, VIRGINIA



Engineers • Surveyors • Planners
Landscape Architects • Arborists
WALTER L. PHILLIPS
INCORPORATED
DATE SUB01: 9/19/2019, SUB02: 05/07/2020, SUB03: 4/19/2021
SCALE: 1" = 40'
DRAWN: DL
CHECKED: KW

Town of Vienna
Approved
06/09/2021



AREA TO SECTION A-A
A = 0.38 AC
C = 0.80
i = 6.78 in/hr
Q₁₀ = 2.06 CFS

AREA TO STR. 1094
A = 0.30 AC
C = 0.85
i = 6.78 in/hr
Q₁₀ = 1.73 CFS

AREA TO STR. 1603
A = 0.36 AC
C = 0.86
i = 6.78 in/hr
Q₁₀ = 2.10 CFS

AREA TO STR 16
A = 0.25 AC
C = 0.85
i = 6.78 in/hr
Q₁₀ = 1.44 CFS

AREA TO STR 10
A = 0.04 AC
C = 0.87
i = 6.78 in/hr
Q₁₀ = 0.24 CFS

AREA TO STR 11
A = 0.03 AC
C = 0.90
i = 6.78 in/hr
Q₁₀ = 0.18 CFS

AREA TO STR 12
A = 0.05 AC
C = 0.86
i = 6.78 in/hr
Q₁₀ = 0.29 CFS

AREA TO STR 13
A = 0.10 AC
C = 0.85
i = 6.78 in/hr
Q₁₀ = 0.58 CFS

AREA TO STR 14
A = 0.09 AC
C = 0.89
i = 6.78 in/hr
Q₁₀ = 0.54 CFS

AREA TO STR 15
A = 0.05 AC
C = 0.90
i = 6.78 in/hr
Q₁₀ = 0.31 CFS

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Feb 14 2020

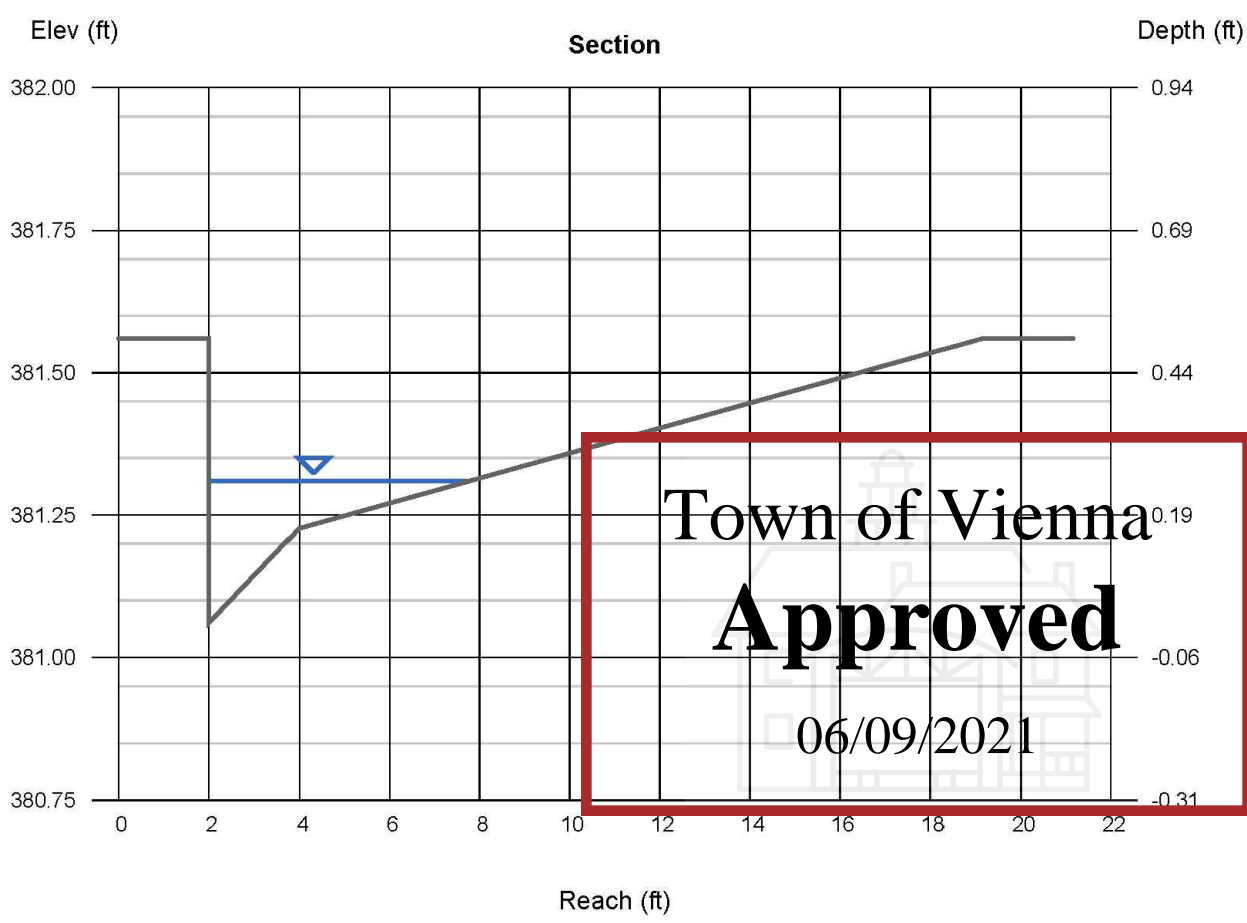
SECTION A-A

Gutter
Cross SI, Sx (ft/ft) = 0.022
Cross SI, Sw (ft/ft) = 0.083
Gutter Width (ft) = 2.00
Invert Elev (ft) = 381.06
Slope (%) = 2.10
N-Value = 0.013

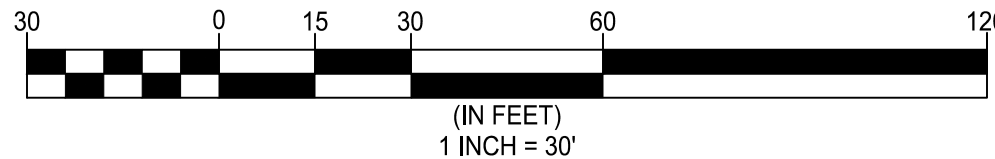
Calculations
Compute by: Known Q
Known Q (cfs) = 2.12

Highlighted
Depth (ft) = 0.25
Q (cfs) = 2.120
Area (sqft) = 0.49
Velocity (ft/s) = 4.31
Wetted Perim (ft) = 6.05
Crit Depth, Yc (ft) = 0.33
Spread Width (ft) = 5.78
EGL (ft) = 0.54

*VDOT ALLOWABLE SPREAD = 7.5'
(GUTTER + 1/2 DRIVING LANE)



INLET																												
NUMBER	TYPE	LENGTH (FT.)	STATION	DRAINAGE AREA (AC.)	C	CA	Σ CA	Intensity	Q INCR. (CFS)	Q ₁₀ CARRYOVER (CFS)	Q ₁₀ GUTTERFLOW	S ₁ GUTTER SLOPE (FT/FT)	S ₂ CROSS SLOPE (FT/FT)	T ₁ (SPREAD)	W (FT)	WT	Sw (FT/FT)	Sw/Sx	Eo (App. 9C-8)	a = 12(SW/SX) + LOCAL DEPRESSION	S' w = a/(12W)	S ₂ = Sx + S' wEo (FT/FT)	COMPUTED LENGTH L ₁ (FT) (App. 9C-17)	L ₁ SPECIFIED LENGTH (FT)	L/L ₁	E (App. 9C-18)	Q ₁₀ INTERCEPTED (CFS)	Q ₁₀ CARRYOVER (CFS)
1603	DI-3B	8	0+00	0.36	0.86	0.31	0.31	6.78	2.10	0.00	2.10	0.02	0.04	4.92	2.00	0.41	0.08	2.38	0.81	3.16	0.13	0.14	10.17	8	0.79	0.9381203	1.97	0.13
1094	DI-3B	8	0+00	0.3	0.85	0.26	0.26	6.78	1.73	0.13	1.86	0.02	0.05	4.03	2.00	0.50	0.08	1.85	0.89	2.92	0.12	0.15	9.39	8	0.85	0.9677483	1.80	0.06



INLET DRAINAGE DIVIDES

444 MAPLE AVENUE WEST

SITE PLAN

TOWN OF VIENNA, VIRGINIA

Engineers • Surveyors • Planners
Landscape Architects • Arborists
WALTER L. PHILLIPS
INCORPORATED
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(703) 532-6163 Fax (703) 533-1301
www.WLPINC.com
ESTABLISHED 1945
DATE SUB01: 01/12/2019 SUB02: 05/07/2020 SUB03: 4/19/2021
SCALE: 1" = 30'
DRAWN: DL
CHECKED: KW



REVISION APPROVED BY		DATE		APPROVED		DATE	
NO.	DESCRIPTION	REV.	BY	DATE	DATE	DATE	DATE

Project Name:444 Maple Avenue West

Date:4/20/2020

Linear Development Project?No

CLEAR ALL

data input cells

constant values

calculation cells

final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) →3.15

Maximum reduction required:20%

The site's net increase in impervious cover (acres) is:0.122291093

Post-Development TP Load Reduction for Site (lb/yr):1.41

Check:
BMP Design Specifications List: 2013 Draft Stds & Specs
Linear project? No
Land cover areas entered correctly? ☒
Total disturbed area entered? ☒

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.51	0.51
Impervious Cover (acres)				2.65	2.65
					3.15

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.38	0.38
Impervious Cover (acres)				2.77	2.77
Area Check	OK.	OK.	OK.	OK.	3.15

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-ReDevelopment	Listed	Adjusted ¹
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	0.51	0.38
Weighted Rv(turf)	0.25	0.25
% Managed Turf	16%	13%
Impervious Cover (acres)	2.65	2.65
Rv(impervious)	0.95	0.95
% Impervious	84%	87%
Total Site Area (acres)	3.15	3.03
Site Rv	0.84	0.86

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.2203	0.2177
Pre-ReDevelopment Treatment Volume (cubic feet)	9,594	9,483
Pre-ReDevelopment TP Load (lb/yr)	6.03	5.96
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.91	1.96
Baseline TP Load (lb/yr) (0.41 lb/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		1.24

Adjusted Land Cover Summary:
Pre-ReDevelopment land cover minus previous land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column 1 shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lb/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	1.41
------------------------------------	------

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	43.12	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	44.52
-----------------------------------	-------	--	-------

395

Site Results (Water Quality Compliance)

Area Checks

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	1.22	1.55	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.33	1.55	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.38	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft³)9,905

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft ³)	509	0	0	0	0	509
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	2.87	3.36	0.00	0.00	0.00	6.22
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.42	1.34	0.00	0.00	0.00	1.76
TP LOAD REMAINING (lb/yr)	2.45	2.02	0.00	0.00	0.00	4.46
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	2.98	0.00	0.00	0.00	0.00	2.98

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	6.22
TP LOAD REDUCTION REQUIRED (lb/yr)	1.41
TP LOAD REDUCTION ACHIEVED (lb/yr)	1.76
TP LOAD REMAINING (lb/yr)	4.46
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr)	0.00

** TARGET TP REDUCTION EXCEEDED BY 0.35 LB/YEAR **

Total Nitrogen (For Informational Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	44.52
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	2.98
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	41.54

395

Runoff Volume and Curve Number Calculations

Enter design storm rainfall depths (in):

1-year storm	2-year storm	10-year storm
2.62	3.17	4.87

Use NOAA Atlas 14 (<http://hdsc.mws.nasa.gov/hdsc/pdfs/>)

*Notes (see below):

[1] The curve numbers and runoff volumes computed in this spreadsheet for each drainage area are limited in their applicability for determining and demonstrating compliance with water quantity requirements. See VRRM User's Guide and Documentation for additional information.

[2] Runoff Volume (RV) for pre- and post-development drainage areas must be in volumetric units (e.g., acre-feet or cubic feet) when using the Energy Balance Equation. Runoff measured in watershed-inches and shown in the spreadsheet as RV(watershed-inch) can only be used in the Energy Balance Equation when the pre- and post-development drainage areas are equal. Otherwise RV(watershed-inch) must be multiplied by the drainage area.

[3] Adjusted CNs are based on runoff reduction volumes as calculated in D.A. tabs. An alternative CN adjustment calculation for Vegetated Roofs is included in BMP specification No. 5.

Drainage Area Curve Numbers and Runoff Depths*

Curve numbers (CN, CNadj) and runoff depths (RV_{Developed}) are computed with and without reduction practices.

Drainage Area A

	A Soils	B Soils	C Soils	D Soils	Total Area (acres):
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	1.60
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.38	Runoff Reduction Volume (ft ³): 509
Impervious Cover	0.00	0.00	0.00	1.22	
CN (p.a. A)	94				

RV_{Developed} (watershed-inch) with no Runoff Reduction*1.982.514.18

RV_{Developed} (watershed-inch) with Runoff Reduction*Adjusted CN*939393

*See Notes above

Drainage Area B

	A Soils	B Soils	C Soils	D Soils	Total Area (acres):
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	0.00	0.00	0.00	0.00	1.55
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.00	Runoff Reduction Volume (ft ³): 0
Impervious Cover	0.00	0.00	0.00	1.55	
CN (p.a. B)	98				

RV_{Developed} (watershed-inch) with no Runoff Reduction*2.392.944.63

RV_{Developed} (watershed-inch) with Runoff Reduction*Adjusted CN*989898

*See Notes above

Drainage Area A

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.38	0.38	0.25
Impervious Cover (acres)				1.22	1.22	0.95
Total					1.60	

Total Phosphorus Available for Removal in D.A. A (lb/yr)2.87

Post Development Treatment Volume in D.A. A (ft³)4,560

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft ³)	Runoff Reduction (ft ³)	Remaining Runoff Volume (ft ³)	Total BMP Treatment Volume (ft ³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
3. Permeable Pavement (RR)																		
3.a. Permeable Pavement #1 (Spec #7)	45		0.33	0	509	622	1,131	25	0.00	0.71	0.42	0.29		25	0.00	5.08	2.98	2.10

TOTAL IMPERVIOUS COVER TREATED (ac)0.33AREA CHECK: OK.

TOTAL MANAGED TURF AREA TREATED (ac)0.00AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)1.41

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)2.87

TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)0.00

TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)0.42

TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. A (lb/yr)0.42

TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr)2.45

Drainage Area B

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)					0.00	0.00
Impervious Cover (acres)				1.55	1.55	0.95
Total					1.55	

Total Phosphorus Available for Removal in D.A. B (lb/yr)3.36

Post Development Treatment Volume in D.A. B (ft³)5,345

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft ³)	Runoff Reduction (ft ³)	Remaining Runoff Volume (ft ³)	Total BMP Treatment Volume (ft ³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
14. Manufactured Treatment Devices (no RR)																		
14.b. Manufactured Treatment Device-Filtering	0		1.55	0	0	5,345	5,345	40	0.00	3.35	1.34	2.01		0	0.00	24.00	0.00	24.00

TOTAL IMPERVIOUS COVER TREATED (ac)1.55AREA CHECK: OK.

TOTAL MANAGED TURF AREA TREATED (ac)0.00AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)1.41

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. B (lb/yr)3.36

TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)1.34

TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)0.00

TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. B (lb/yr)1.34

TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. B (lb/yr)2.02

Town of Vienna

Approved

06/09/2021

File No. FM-18 Tax Map No. 038-3 Job No. 07-036 Cadd Dwg. File: Q:\sdskproj\07036\dwg\Engineering\site Plan\07036C--0703.dwg Xref: site plan\07036B-0002

STORMWATER MANAGEMENT AND BMP COMPUTATIONS AND NARRATIVES

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DATE SUB01: 9/13/2016 SUB02: 05/07/2020 SUB03: 4/19/2021
SCALE: NONE
DRAWN: DL
CHECKED: KW

444 MAPLE AVENUE WEST
SITE PLAN
TOWN OF VIENNA, VIRGINIA

SHEET: C-0703