FINAL SITE PLAN FOR

SDP 2023-_____

OLD DOMINION VILLAGE

TMP 05600-00-00-067B0 & TMP 05600-00-00-074A0

WHITE HALL DISTRICT, ALBEMARLE COUNTY, VIRGINIA

PARCEL DATA FOR TMP 05600-00-00-067B0

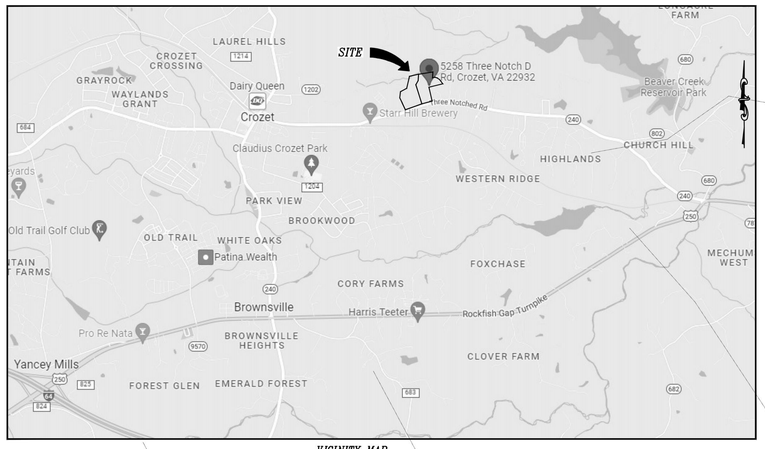
LEGAL REFERENCE:	TMP 05600-00-00-067B0
MAGISTERIAL DISTRICT:	WHITE HALL
OWNER:	MARTIN SCHULMAN 5220 HAVENWOOD LANE SCHUYLER, VA 22969
SITE PLAN NUMBER:	NONE
PRELIMINARY SUBDIVISION:	SUB202300003
SPECAIL USE PERMIT:	SP 1989: VETERINARY HOSPITAL WITH INDOOR KENNELS.
ZONING MAP AMENDMENT:	ZMA 2020-00005
CURRENT ZONING DISTRICT:	NMD – NEIGHBORHOOD MODEL
CURRENT USE:	OLD DOMINION ANIMAL HOSPITAL CROZET
RECORDED DEEDS:	DB 690-599, DB 794-381, DB 1028-358, DB 1086-583, DB 3626-623, DB 4341-677
PARCEL ADDRESS:	1263 PARKVIEW DRIVE
PARCEL AREA:	9.310 ACRES
SOURCE OF BOUNDARY:	BOUNDARY SURVEY PERFORMED BY MERIDIAN PLANNING GROUP, LLC.
SOURCE OF TOPOGRAPHY:	AERIAL SURVEY PERFORMED BY McKENZIE SNYDER, INC. ON MARCH 14, 2021.
FLOODPLAIN:	PORTION OF PARCEL IS IN ZONE A AS SHOWN ON FEMA MAP NO. 51003C0, EFFECTIVE DATE FEBRUARY 4, 2005, AND MAP REVISION DATED FEBRUARY 6, 2017.

PARCEL DATA FOR TMP 05600-00-00-074A0

LEGAL REFERENCE:	TMP 05600-00-00-074A0
MAGISTERIAL DISTRICT:	WHITE HALL
OWNER:	EMERALD LAND, LLC 325 BARRACKS HILLS CHARLOTTESVILLE, VA 22901
SITE PLAN NUMBER:	NONE
PRELIMINARY SUBDIVISION:	SUB202300003
SPECAIL USE PERMIT:	NONE
ZONING MAP AMENDMENT:	ZMA 2020-00005
CURRENT ZONING DISTRICT:	NMD – NEIGHBORHOOD MODEL
CURRENT USE:	RESIDENTIAL
RECORDED DEEDS:	INST #202300001569
PARCEL ADDRESS:	5258 THREE NOTCH'D ROAD
PARCEL AREA:	14.072 ACRES
SOURCE OF BOUNDARY:	BOUNDARY SURVEY PERFORMED BY MERIDIAN PLANNING GROUP, LLC.
SOURCE OF TOPOGRAPHY:	AERIAL SURVEY PERFORMED BY McKENZIE SNYDER, INC. ON MARCH 14, 2021.
FLOODPLAIN:	PORTION OF PARCEL IS IN ZONE A AS SHOWN ON FEMA MAP NO. 51003C0, EFFECTIVE DATE FEBRUARY 4, 2005, AND MAP REVISION DATED FEBRUARY 6, 2017.

SITE DATA

PROPOSED SINGLE FAMILY:	16 LOTS
PROPOSED TOWNHOUSE:	94 LOTS
PROPOSED PARKING:	SINGLE FAMILY LOTS: DRIVEWAY AND GARAGE. TOWNHOUSE LOTS: DRIVEWAY AND GARAGE TOWNHOUSE GUESTS: 1 SPACE PER 4 TOWNHOUSES PARKING SPACES REQUIRED: 94 / 4 = 23.5 SPACES PARKING SPACES PROVIDED: 24 SPACES
WATER & SEWER SERVICE:	PUBLIC WATER AND SEWER
AFFORDABLE UNITS:	REQUIRED: 22 PROVIDED: 22 (LOTS 35-56)



VICINITY MAP
Scale: 1"=2000'

SHEET P-105

SHEETS P-104, P-106, P-108, P-109

SHEET P-115

TMP 56-68
N/F BEAVER CREEK HILL CORPORATION
C/O HANTZMON, WIEBEL & COMPANY
DB 2609 PG 387

TMP 56-68A
N/F PATRICK F OR ROSLYN R NUESCH
DB 2610 PG 054

TMP 56-68F
N/F ROBERT L & YVONNE B VESS TRUSTEES UNDER THE VESS LIVING TRUST
DB 3386 PG 394

TMP 56-67A
N/F CROZET COHOUSING, LLC
DB 4341 PG 677

TMP 56-74
N/F JUDITH S OR WILLIAM J BARBER
DB 1039 PG 310

TMP 56A3-7
N/F ALBEMARLE STORAGE, LLC
DB 3012 PG 96

TMP 56A3-6
N/F ROUTE 240, LLC
DB 2012 PG 352

TMP 56-67
N/F BEAVER CREEK HILL CORPORATION
C/O HANTZMON, WIEBEL & COMPANY
DB 2609 PG 387

TMP 56A3-9
N/F NOTCH'D, LLC
DB 3534 PG 486

ANTARES ROAD
50' PUBLIC R/W

SIRIAH ROAD
50' PUBLIC R/W

ALTAIR ROAD
50' PUBLIC R/W

CAPELLA ROAD
50' PUBLIC R/W

THREE NOTCH'D ROAD
ROUTE 240
50' PUBLIC R/W

30' PRESCRIPTIVE EASEMENT

T-BAR

Virginia State Plane South Zone

80' 0 80' 160' 240'
SCALE: 1"=80'

SETBACKS			
	COMMERCIAL LOT	SINGLE FAMILY ATTACHED	SINGLE FAMILY DETACHED
Front	0' Min. – 105' Max.	15' Min. 20' Max.	15' Min. 50' Max.
Garage	None	17' min	17' min
Side	0' Min.-30' Max.	5' Min.	5' Min.
Rear	0' Min – 25' Max	10' Min. (No Max.)	10' Min. (No Max)
Min Lot Area	None	None	None

PARCEL AREA SUMMARY:

TMP 56-67B	9.72 ACRES
TMP 56-74A	14.34 ACRES
TOTAL	24.06 ACRES

DEVELOPMENT AREA SUMMARY:

COMMERCIAL LOT	0.91 ACRES
SINGLE FAMILY RESIDENTIAL LOTS	1.87 ACRES
TOWNHOUSE LOTS	3.34 ACRES
SUBDIVISION RIGHT-OF-WAY	2.98 ACRES
RIGHT-OF-WAY DEDICATION	0.68 ACRES
PARKING LOT EASEMENTS	0.27 ACRES
AMENITIES (1 THRU 4)	5.78 ACRES
GREEN SPACE (1 THRU 4)	8.23 ACRES
TOTAL	24.06 ACRES

LEGEND

- CRITICAL SLOPES PER GIS
- PRESERVED SLOPES PER GIS
- MANAGED SLOPES PER GIS

SHEET INDEX

P-101 ..... COVERSHEET & CONTEXT MAP
P-102 ..... PLAT OF VACATION
P-103 ..... EXISTING CONDITIONS & DEMOLITION PLAN
P-201 ..... SUBDIVISION PLAN
P-202 ..... SUBDIVISION PLAN
P-203 ..... SITE PLAN
P-204 ..... ZMA PLAN
P-301 ..... GRADING & DRAINAGE PLAN
P-302 ..... UTILITY PLAN
P-401 ..... SITE DETAIL
P-402 ..... DRAINAGE PROFILES
P-403 ..... DRAINAGE NOTES & DETAILS
P-404 ..... DRAINAGE AREAS
P-405 ..... DRAINAGE CALCULATIONS
P-501 ..... SANITARY PROFILES
P-502 ..... WATERLINE PROFILES
P-503 ..... UTILITY DETAILS
P-504 ..... UTILITY DETAILS
P-505 ..... PUMP STATION NOTES & DETAILS

COMMONWEALTH OF VIRGINIA
ANDREW RAY MILLER
LIC. No. 30542
10/11/23
PROFESSIONAL ENGINEER

JOB NO.: 20150
DATE: 10/10/2023
SCALE: AS SHOWN
DRAWN BY: BM
DESIGNED BY: TM
CHECKED BY:

MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434.489.4511
WWW.MERIDIANVBE.COM

NO. | DESCRIPTION | DATE

PROJECT TITLE: FINAL SITE PLAN FOR OLD DOMINION VILLAGE

SHEET TITLE: COVER SHEET

SHEET NO.
P-101

SHEET 1 of 19

TMP 56-68
N/F BEAVER CREEK HILL CORPORATION
C/O HANTZMON, WIEBEL & COMPANY
DB 2609 PG 387

PROPERTY LINE FOLLOWS CENTERLINE OF PARROTT BRANCH FROM POINT "A" (L1) TO POINT "B" (L26) (SEE NOTE 5)

L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18 L19 L20 L21 L22 L23 L24 L25 L26

N64°06'31"E 300.00'

Virginia State Plane South Zone

S05°54'43"W 185.02'

S03°37'56"E 175.26'

TMP 56-68A
N/F PATRICK F OR ROSLYN R NUESCH
DB 2610 PG 054

IF

S38°29'09"W 161.68'

N06°32'54"E 319.44'

TMP 56-74A
N/F EMERALD LAND, LLC
INST #202300001569
ZONED: RA
USE: RESIDENTIAL
14.337 AC.

S61°50'47"E 245.24'

IF bent

TMP 56-67A
N/F CROZET COHOUSINC, LLC
DB 4341 PG 677

S23°53'37"E 91.71'

S65°03'50"E 64.85'

TMP 56-68F
N/F ROBERT L & YVONNE B VESS
TRUSTEES UNDER THE
VESS LIVING TRUST
DB 3386 PG 394

N46°35'08"E 307.72'

EX. 50' GAS EASEMENT
DB 333-194

IF

S71°16'22"W 545.55'

T-BAR

N14°52'21"E 253.78'

TMP 56-74
N/F JUDITH S OR WILLIAM J BARBER
DB 1039 PG 310

ACSA WATER EASEMENT
DB 4673 PG 329

DRAINAGE EASEMENT
DB 3804 PG 432

C3

50' PARKVIEW DRIVE ACCESS EASEMENT
DB 1026-345

TMP 56-67B
N/F MARTIN SCHULMAN
DB 3626 PG 619
DB 4341 PG 677
ZONED: RA
USE: COMMERCIAL
9.727 AC.

PROPERTY LINE TO BE VACATED

775.50'

S15°49'36"E 805.91'

S14°43'47"E 596.81'

TMP 56-67
N/F BEAVER CREEK HILL CORPORATION
C/O HANTZMON, WIEBEL & COMPANY
DB 2609 PG 387

DRAINAGE EASEMENT
(PORTION TO BE VACATED)

N23°40'50"W 257.76'

PRIVATE TRAIL EASEMENT
DB 4673 PG 312

ACSA WATER EASEMENT
DB 4673 PG 312

EX. 50' GAS EASEMENT
DB 333-194

30' PRESCRIPTIVE EASEMENT

30.41'

THREE NOTCH'D ROAD
ROUTE 240
VARIABLE WIDTH R/W

S74°15'22"W 176.05'

S74°15'22"W 248.02'

C2

C1

EX. RWSA WATER EASEMENT
DB 4669-1198

50' 0 50' 100' 150'
SCALE: 1"=50'

COMMONWEALTH OF VIRGINIA
BRADLEY RAY MILLER
LIC. No. 3052
10/13/23
PROFESSIONAL ENGINEER

JOB NO.:	20150
DATE:	10/10/2023
SCALE:	AS SHOWN
DRAWN BY:	BM
DESIGNED BY:	TM
CHECKED BY:	

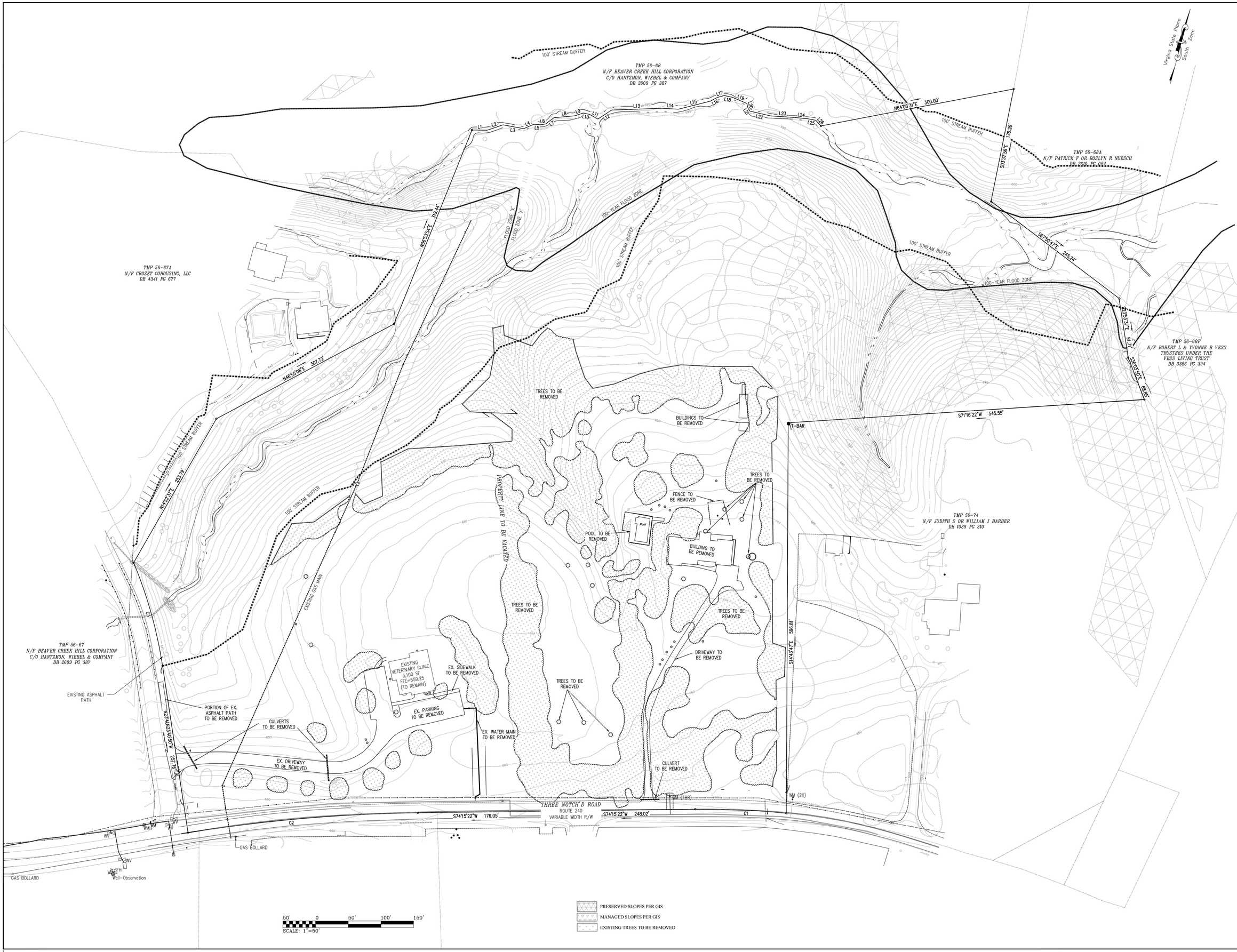
MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434-465-7501
WWW.MERIDIANVBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

SHEET TITLE:
PLAT OF VACATION

SHEET NO.
P-102



COMMONWEALTH OF VIRGINIA
ANTHONY RAY MILLER
Lic. No. 30542
10/10/23
PROFESSIONAL ENGINEER

JOB NO.:	20150
DATE:	10/10/2023
SCALE:	AS SHOWN
DRAWN BY:	BM
DESIGNED BY:	TM
CHECKED BY:	

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PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434.465.7501 FAX: 434.465.7502
WWW.MERIDIANVBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

SHEET TITLE:
EXISTING CONDITIONS & DEOMLITION PLAN

SHEET NO.
P-103

REFER TO SHEET P-105

SCALE: 1"=30'

TMP 56-67A
N/F CROZET COHOUSING, LLC
DB 4341 PG 677

GREEN SPACE #1
HEREBY DEDICATED TO ALBEMARLE COUNTY
7.459 AC.

GREEN SPACE #2
0.562 AC.

OPEN SPACE "B"

OPEN SPACE "C"
0.162 AC.

OPEN SPACE "D"
0.128 AC.

OPEN SPACE "F"
0.876 AC.

COMMERCIAL LOT
0.905 AC.

AREA "A"
(HEREBY DEDICATED TO PUBLIC R/W)
0.682 AC.

OPEN AREA "C"
0.132 AC.

100' STREAM BUFFER

ANTARES ROAD
50' PUBLIC R/W

SIRRAH ROAD
50' PUBLIC R/W

ALTAIR ROAD
50' PUBLIC R/W

CAPELLA ROAD
50' PUBLIC R/W

THREE NOTCH'D ROAD
ROUTE 240
VARIABLE WIDTH R/W

ASHRAM VIEW DRIVE
50' ACCESS EASEMENT
DB 1028-345

T-BAR

LOT 1 0.069 AC.
LOT 2 0.069 AC.
LOT 3 0.069 AC.
LOT 4 0.070 AC.
LOT 5 0.070 AC.
LOT 6 0.070 AC.
LOT 7 0.069 AC.
LOT 8 0.278 AC.
LOT 9 0.240 AC.
LOT 10 0.188 AC.
LOT 11 0.167 AC.
LOT 12 0.113 AC.
LOT 13 0.098 AC.
LOT 14 0.101 AC.
LOT 15 0.101 AC.
LOT 16 0.101 AC.
LOT 17 0.043 AC.
LOT 18 0.033 AC.
LOT 19 0.032 AC.
LOT 20 0.031 AC.
LOT 21 0.030 AC.
LOT 22 0.044 AC.
LOT 23 0.039 AC.
LOT 24 0.030 AC.
LOT 25 0.030 AC.
LOT 26 0.030 AC.
LOT 27 0.039 AC.
LOT 28 0.046 AC.
LOT 29 0.035 AC.
LOT 30 0.034 AC.
LOT 31 0.034 AC.
LOT 32 0.034 AC.
LOT 33 0.034 AC.
LOT 34 0.041 AC.
LOT 35 0.038 AC.
LOT 36 0.029 AC.
LOT 37 0.029 AC.
LOT 38 0.029 AC.
LOT 39 0.029 AC.
LOT 40 0.029 AC.
LOT 41 0.029 AC.
LOT 42 0.038 AC.
LOT 43 0.037 AC.
LOT 44 0.029 AC.
LOT 45 0.029 AC.
LOT 46 0.029 AC.
LOT 47 0.027 AC.
LOT 48 0.027 AC.
LOT 49 0.027 AC.
LOT 50 0.027 AC.
LOT 51 0.029 AC.
LOT 52 0.029 AC.
LOT 53 0.029 AC.
LOT 54 0.029 AC.
LOT 55 0.029 AC.
LOT 56 0.242 AC.
LOT 57 0.051 AC.
LOT 58 0.096 AC.
LOT 59 0.096 AC.
LOT 60 0.033 AC.
LOT 61 0.030 AC.
LOT 62 0.030 AC.
LOT 63 0.038 AC.
LOT 64 0.039 AC.
LOT 65 0.051 AC.
LOT 66 0.032 AC.
LOT 67 0.033 AC.
LOT 68 0.044 AC.
LOT 69 0.044 AC.
LOT 70 0.042 AC.
LOT 71 0.032 AC.
LOT 72 0.032 AC.
LOT 73 0.032 AC.
LOT 74 0.040 AC.
LOT 75 0.040 AC.
LOT 76 0.032 AC.
LOT 77 0.032 AC.
LOT 78 0.032 AC.
LOT 79 0.049 AC.
LOT 80 0.033 AC.
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LOT 92 0.033 AC.
LOT 93 0.052 AC.
LOT 94 0.046 AC.
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LOT 99 0.045 AC.
LOT 100 0.045 AC.
LOT 101 0.035 AC.
LOT 102 0.035 AC.
LOT 103 0.035 AC.
LOT 104 0.035 AC.
LOT 105 0.058 AC.
LOT 106 0.057 AC.
LOT 107 0.037 AC.
LOT 108 0.034 AC.
LOT 109 0.031 AC.
LOT 110 0.037 AC.

REFER TO SHEET P-105

COMMONWEALTH OF VIRGINIA
ANDREW RAY MILLER
LIC. No. 30542
10/10/23
PROFESSIONAL ENGINEER

JOB NO.:	20150
DATE:	10/10/2023
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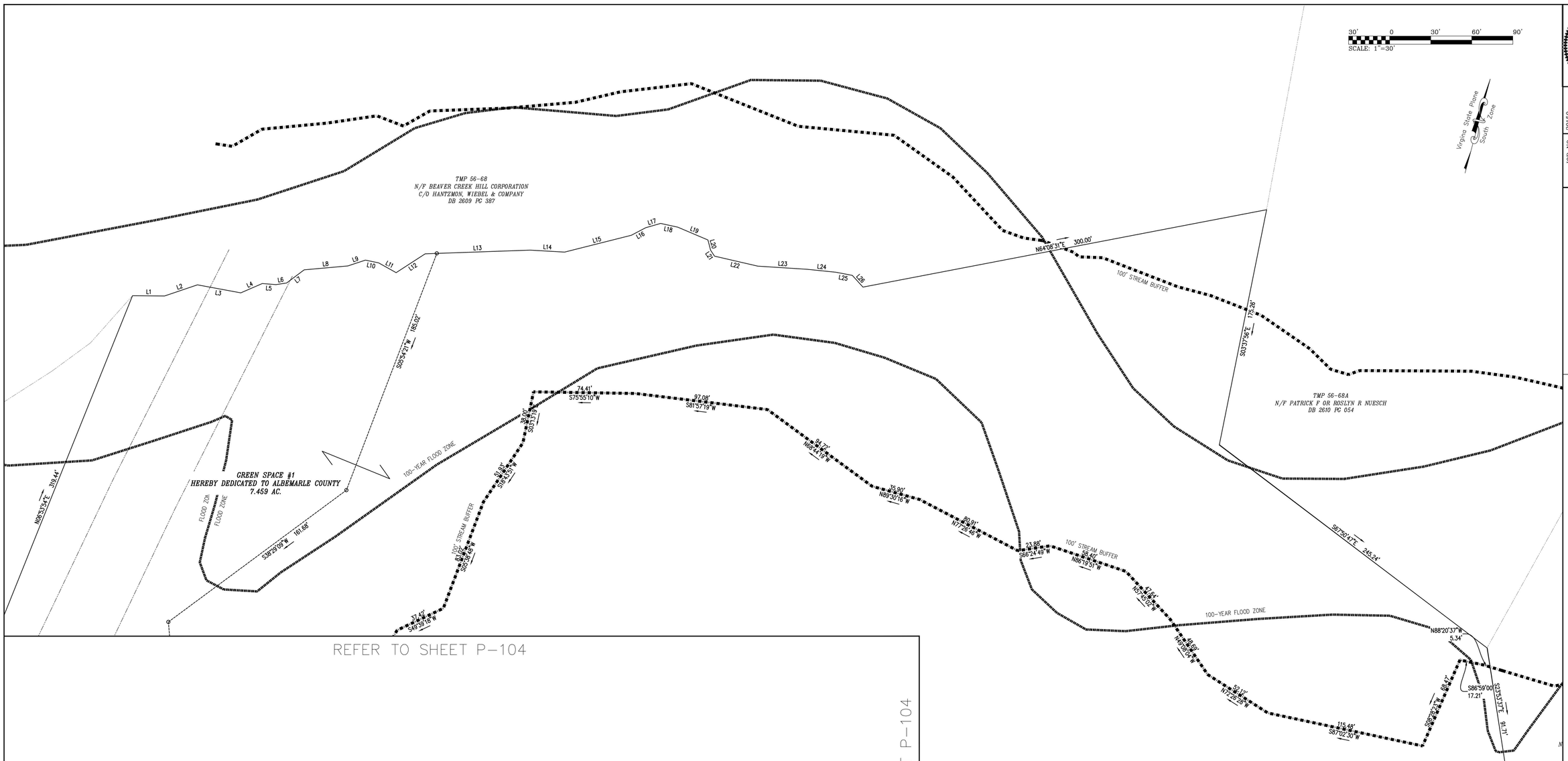
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CHARLOTTESVILLE, VA 22901
PH: 434.465.7501 FAX: 434.465.7507
WWW.MERIDIANVBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

SHEET TITLE:
SUBDIVISION PLAT

SHEET NO.
P-201



REFER TO SHEET P-104

REFER TO SHEET P-104

BOUNDARY CURVE TABLE						
Curve	Length	Radius	Delta	Tangent	Chord	Chord Bearing
C1	139.35'	1211.00'	6°35'34"	69.75'	139.27'	S 77°33'09" W
C2	352.85'	2411.00'	8°23'07"	176.74'	352.54'	S 70°03'48" W
C3	164.28'	675.00'	13°56'40"	82.55'	163.87'	N 30°39'10" W
C4	57.25'	917.07'	3°34'37"	28.64'	57.24'	S 78°10'38" W
C5	29.24'	940.61'	1°46'53"	14.62'	29.24'	S 75°31'20" W
C6	58.68'	37.40'	89°54'07"	37.34'	52.85'	S 58°37'46" E
C7	17.84'	12.00'	85°10'10"	11.03'	16.24'	S 32°35'57" W
C8	17.84'	12.00'	85°10'10"	11.03'	16.24'	S 32°35'57" W
C9	18.85'	12.00'	90°00'00"	12.00'	16.97'	S 59°48'57" E
C10	18.85'	12.00'	90°00'00"	12.00'	16.97'	S 30°11'03" W
C11(T)	64.89'	224.92'	16°31'52"	32.67'	64.67'	N 66°55'07" E
C12	5.15'	224.92'	1°18'43"	2.58'	5.15'	N 74°31'41" E
C13	59.74'	224.92'	15°13'08"	30.05'	59.57'	N 66°15'45" E
C14(T)	50.49'	175.00'	16°31'52"	25.42'	50.32'	S 66°55'07" W
C15	48.54'	175.00'	15°53'31"	24.43'	48.38'	S 67°14'17" W
C16	48.54'	175.00'	15°53'31"	24.43'	48.38'	S 67°14'17" W
C17	18.85'	12.00'	90°00'00"	12.00'	16.97'	N 59°48'57" W
C18	17.60'	12.00'	84°02'44"	10.81'	16.07'	N 27°12'25" E
C19(T)	77.47'	225.00'	19°43'41"	39.12'	77.09'	S 59°21'57" W
C20	14.89'	225.00'	3°47'27"	7.45'	14.88'	S 67°20'03" W
C21	20.48'	225.00'	5°12'56"	10.25'	20.47'	S 62°49'52" W
C22	20.99'	225.00'	5°20'46"	10.50'	20.99'	S 57°33'01" W
C23	21.11'	225.00'	5°22'32"	10.56'	21.10'	S 52°11'22" W
C24(T)	68.06'	175.00'	22°16'59"	34.47'	67.63'	N 60°38'36" E
C25	8.63'	175.00'	2°49'27"	4.31'	8.62'	N 50°54'50" E
C26	59.43'	175.00'	19°27'32"	30.01'	59.15'	N 62°03'19" E
C27	18.52'	12.00'	88°26'19"	11.68'	16.74'	S 63°59'45" E
C28	18.85'	12.00'	90°00'00"	12.00'	16.97'	S 25°13'24" W
C29	40.55'	27.50'	84°29'03"	24.97'	36.97'	S 28°16'19" W
C30	45.86'	42.50'	61°49'25"	25.45'	43.67'	S 16°56'29" W

BOUNDARY CURVE TABLE						
Curve	Length	Radius	Delta	Tangent	Chord	Chord Bearing
C31(T)	251.08'	225.00'	63°56'12"	140.42'	238.25'	S 38°15'18" W
C32	18.20'	225.00'	4°38'07"	9.11'	18.20'	N 67°54'21" E
C33	20.17'	225.00'	5°08'07"	10.09'	20.16'	N 63°01'14" E
C34	26.20'	225.00'	6°40'15"	13.11'	26.18'	N 57°07'03" E
C35	82.05'	225.00'	20°53'34"	41.48'	81.59'	N 43°20'08" E
C36	27.73'	225.00'	7°03'45"	13.88'	27.72'	N 29°21'29" E
C37	20.91'	225.00'	5°19'27"	10.46'	20.90'	N 23°09'53" E
C38	20.43'	225.00'	5°12'04"	10.22'	20.42'	N 17°54'07" E
C39	20.13'	225.00'	5°07'38"	10.07'	20.13'	N 12°44'16" E
C40	15.27'	225.00'	3°53'15"	7.64'	15.26'	N 08°13'50" E
C41	17.69'	12.00'	84°27'24"	10.89'	16.13'	N 48°30'54" E
C42	26.04'	474.00'	3°08'53"	13.03'	26.04'	S 87°40'57" E
C43(T)	114.29'	226.00'	28°58'28"	58.39'	113.07'	S 79°24'16" W
C44	41.74'	226.00'	10°34'55"	20.93'	41.68'	S 88°36'02" W
C45	72.55'	226.00'	18°23'33"	36.59'	72.24'	S 74°06'48" W
C46	82.45'	176.00'	26°50'31"	42.00'	81.70'	S 80°28'14" W
C47(T)	202.18'	524.00'	22°06'24"	102.36'	200.93'	N 82°50'18" E
C48	45.89'	524.00'	5°01'03"	22.96'	45.87'	S 88°37'02" E
C49	24.11'	524.00'	2°38'11"	12.06'	24.11'	N 87°33'20" E
C50	18.31'	524.00'	2°00'09"	9.16'	18.31'	N 85°14'10" E
C51	18.21'	524.00'	1°59'26"	9.10'	18.20'	N 83°14'23" E
C52	18.12'	524.00'	1°58'53"	9.06'	18.12'	N 81°15'13" E
C53	18.06'	524.00'	1°58'29"	9.03'	18.06'	N 79°16'32" E
C54	23.52'	524.00'	2°34'19"	11.76'	23.52'	N 77°00'08" E
C55	23.12'	524.00'	2°31'40"	11.56'	23.12'	N 74°27'08" E
C56	12.84'	524.00'	1°24'13"	6.42'	12.84'	N 72°29'12" E
C57(T)	87.51'	225.00'	22°16'59"	44.31'	86.95'	N 60°38'36" E
C58	18.16'	225.00'	4°37'30"	9.09'	18.16'	N 69°28'20" E
C59	20.17'	225.00'	5°08'06"	10.09'	20.16'	N 64°35'32" E
C60	20.48'	225.00'	5°12'57"	10.25'	20.48'	N 59°25'00" E

BOUNDARY CURVE TABLE						
Curve	Length	Radius	Delta	Tangent	Chord	Chord Bearing
C61	21.00'	225.00'	5°20'47"	10.51'	20.99'	N 54°08'08" E
C62	7.70'	225.00'	1°57'38"	3.85'	7.70'	N 50°28'56" E
C63	47.50'	175.00'	15°33'09"	23.90'	47.36'	S 57°16'41" W
C64	21.98'	12.00'	104°57'37"	15.63'	19.04'	N 62°27'56" W
C65	53.90'	36.50'	84°36'39"	33.22'	49.14'	N 32°19'12" E
C66	19.18'	12.00'	91°33'41"	12.33'	17.20'	N 26°00'15" E
C67(T)	79.61'	474.00'	9°37'23"	39.90'	79.52'	N 76°35'47" E
C68	19.53'	474.00'	2°21'40"	9.77'	19.53'	N 72°57'56" E
C69	60.08'	474.00'	7°15'43"	30.08'	60.04'	N 77°46'37" E
C70	21.97'	12.00'	104°54'34"	15.61'	19.03'	S 46°08'14" E
C71(T)	195.28'	175.00'	63°56'12"	109.22'	185.31'	S 38°15'18" W
C72	16.18'	175.00'	5°17'51"	8.10'	16.17'	N 08°56'08" E
C73	116.03'	175.00'	37°59'14"	60.24'	113.91'	N 30°34'41" E
C74	26.59'	175.00'	8°42'24"	13.32'	26.57'	N 53°55'30" E
C75	20.24'	175.00'	6°37'36"	10.13'	20.23'	N 61°35'30" E
C76	16.24'	175.00'	5°19'06"	8.13'	16.24'	N 67°33'51" E
C77	18.85'	12.00'	90°00'00"	12.00'	16.97'	N 64°46'36" W

BOUNDARY LINE TABLE		
Line	Direction	Length
L1	N 75°52'36" E	23.35'
L2	N 56°18'20" E	25.43'
L3	N 85°27'04" E	32.16'
L4	N 51°32'58" E	17.10'
L5	N 79°29'41" E	10.07'
L6	N 65°07'44" E	7.81'
L7	N 38°16'49" E	15.98'
L8	N 69°49'40" E	32.00'
L9	N 56°41'16" E	13.56'
L10	N 87°01'15" E	9.81'
L11	S 75°52'36" E	14.63'
L12	N 42°05'06" E	25.25'
L13	N 72°57'14" E	76.72'
L14	N 78°19'43" E	25.13'
L15	N 60°51'21" E	50.29'
L16	N 47°11'44" E	11.82'
L17	N 59°02'34" E	11.34'
L18	N 87°14'53" E	12.85'
L19	S 81°58'47" E	23.90'
L20	S 29°21'15" E	7.74'
L21	S 48°33'18" E	5.18'
L22	N 87°56'58" E	32.45'
L23	N 78°41'53" E	36.08'
L24	N 80°46'49" E	21.08'
L25	N 86°00'17" E	12.23'
L26	S 57°12'35" E	11.53'

MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434.465.7501
WWW.MERIDIANWEB.COM

COMMONWEALTH OF VIRGINIA
ANTHONY RAY MILLER
LIC. No. 30542
10/10/23
PROFESSIONAL ENGINEER

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SCALE:	AS SHOWN
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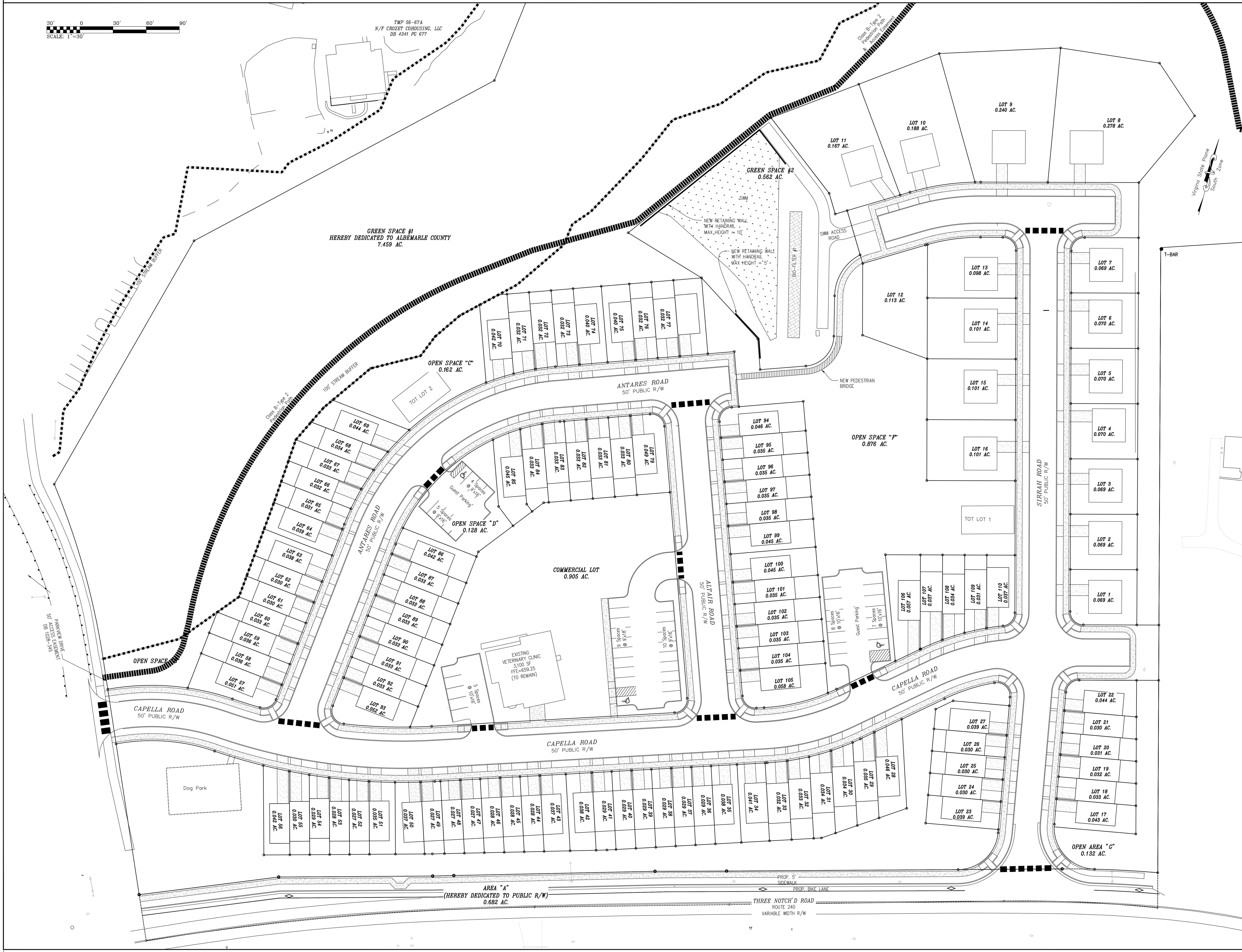
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PROJECT TITLE: FINAL SITE PLAN FOR OLD DOMINION VILLAGE

SHEET TITLE: SUBDIVISION PLAN

SHEET NO.
P-202

REFER TO SHEET P-105



REFER TO SHEET P-105

COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
Lic. No. 30542
10/31/23
PROFESSIONAL ENGINEER

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PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434-882-0121
WWW.MERIDIANWBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

SHEET TITLE:
SITE PLAN

SHEET NO.
P-203

Table B: Density, Housing Type and Non-Residential Use by Block

	BLOCK 1	BLOCK 2	BLOCK 3	BLOCK 4	TOTAL	PROP. UDR DENSITY (units/acre)	ALLOWABLE UDR DENSITY (units/acre)	BLOCK 5	BLOCK 6	BLOCK 7	BLOCK 8	BLOCK 9	BLOCK 10	TOTAL	PROP. NDR DENSITY (units/acre)	ALLOWABLE NDR DENSITY (units/acre)
	Commercial	Residential	Residential	Residential	----	----	----	Residential	Residential	Residential	Residential	Residential	Residential	----	----	----
Block Area (Acres)	0.90	0.29	0.47	1.11	2.77	----	----	0.21	0.20	1.87	0.48	0.26	0.32	3.34	----	----
Proposed Units	NA	7	13	34	54	12 (1)	12 (1)	6	5	16	12	7	10	56	6 (2)	6 (2)
Min Non-Residential Use Gross Floor Area (SF)	3,171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes to Table B:

1. The 4.52 acres of UDR does not include any Greenspace, Flood Hazard Overlay that lies outside of Greenspace, or Preserved Steep Slopes that lie outside of Greenspace. Net area is 4.52 acres.
   a. UDR Net Density Range: (6-12 Units/Acre) * 4.52 Acres = 27 Units (min) to 54 Units (max)
2. The 10.23 Acres of NDR does not include any Greenspace or Flood Hazard Overlay that lies outside of Greenspace. It does include 0.88 Acres of Preserved Steep Slopes that lie outside of Greenspace. Net area is 10.23 Acres – 0.88 Acres = 9.35 Acres.
   a. NDR Net Density Range: (3-6 Units/Acre) * 9.35 Acres = 28 Units (min) to 56 Units (max)

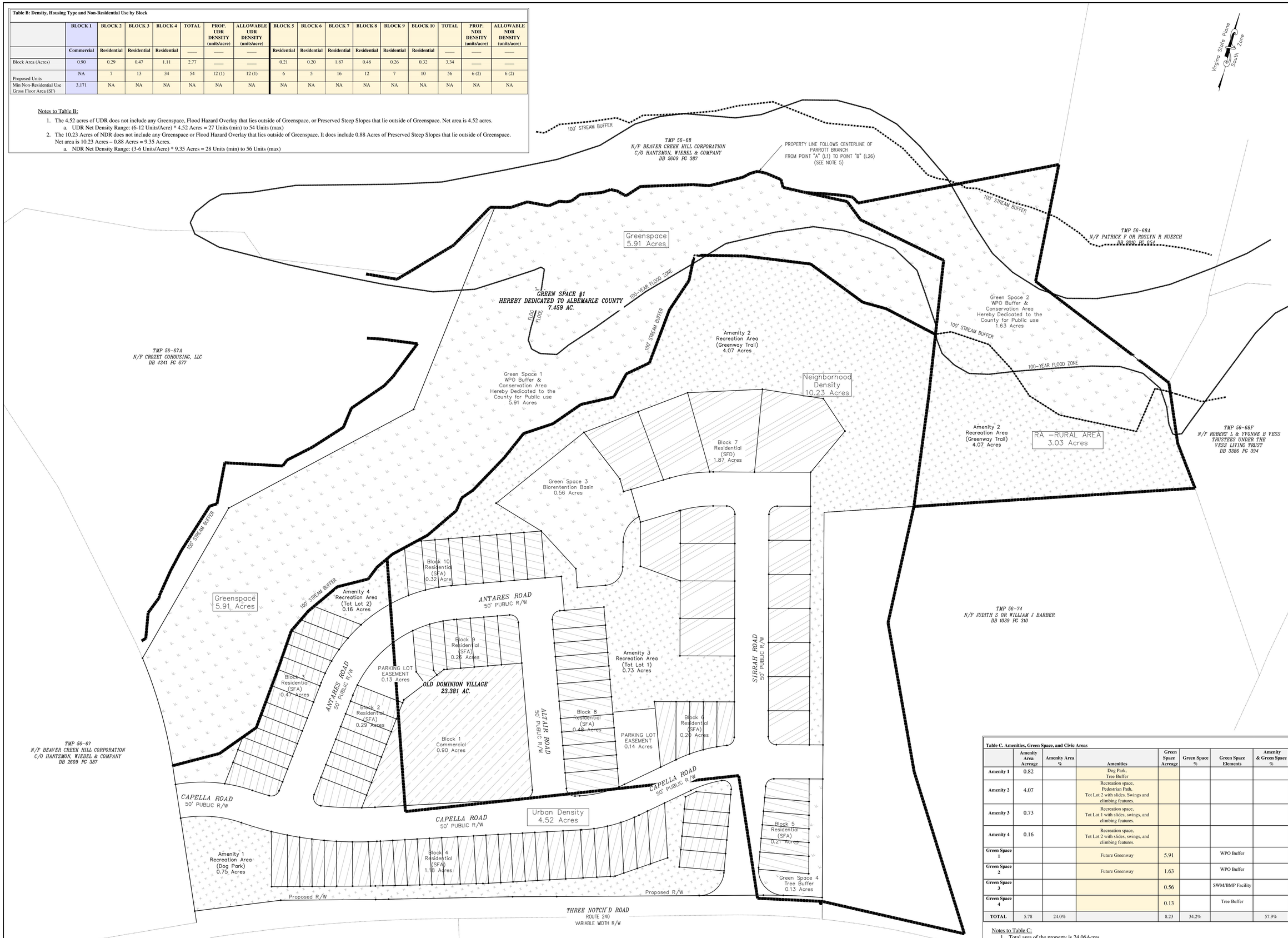


Table C. Amenities, Green Space, and Civic Areas

	Amenity Area Acreage	Amenity Area %	Amenities	Green Space Acreage	Green Space %	Green Space Elements	Amenity & Green Space %
Amenity 1	0.82		Dog Park, Tree Buffer				
Amenity 2	4.07		Recreation space, Pedestrian Path, Tot Lot 2 with slides. Swings and climbing features.				
Amenity 3	0.73		Recreation space, Tot Lot 1 with slides, swings, and climbing features.				
Amenity 4	0.16		Recreation space, Tot Lot 2 with slides, swings, and climbing features.				
Green Space 1			Future Greenway	5.91		WPO Buffer	
Green Space 2			Future Greenway	1.63		WPO Buffer	
Green Space 3				0.56		SWM/BMP Facility	
Green Space 4				0.13		Tree Buffer	
TOTAL	5.78	24.0%		8.23	34.2%		57.9%

Notes to Table C:

1. Total area of the property is 24.06Acres.
2. Total area of amenities is 5.78 Acres (24.0%).
3. Total area of greenspace is 8.23 Acres (34.2%).
4. Total area of development is 10.39 acres (43.2%).
5. All amenities shall be owned by the HOA.

MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434.465.7501
WWW.MERIDIANVBE.COM

COMMONWEALTH OF VIRGINIA
ANTHONY RAY MILLER
LIC. No. 30542
10/10/23
PROFESSIONAL ENGINEER

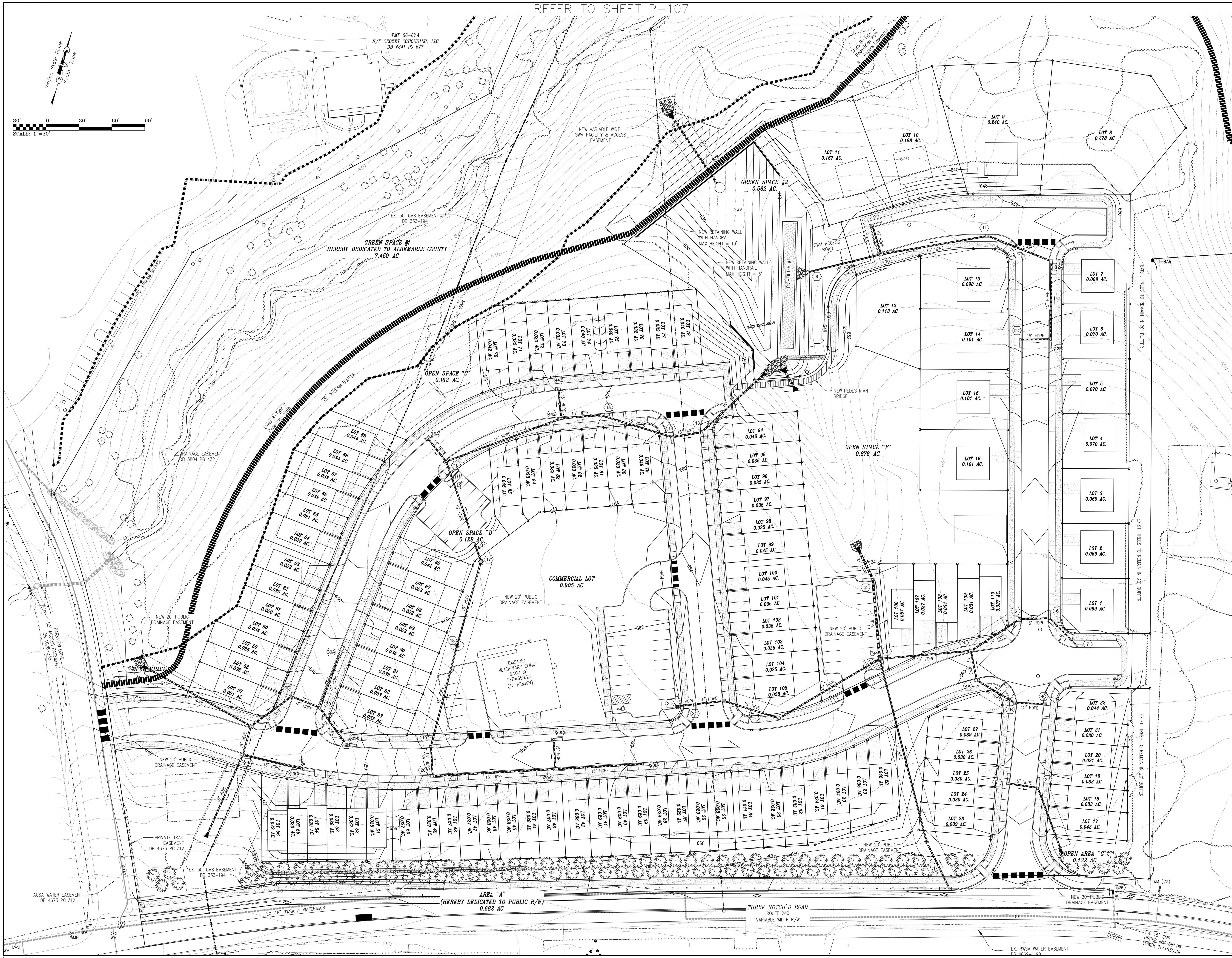
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SCALE: AS SHOWN
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NO.	DESCRIPTION	DATE

PROJECT TITLE: FINAL SITE PLAN FOR OLD DOMINION VILLAGE

SHEET TITLE: ZMA PLAN

SHEET NO. P-204



COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
Lic. No. 30542
10/31/23
PROFESSIONAL ENGINEER

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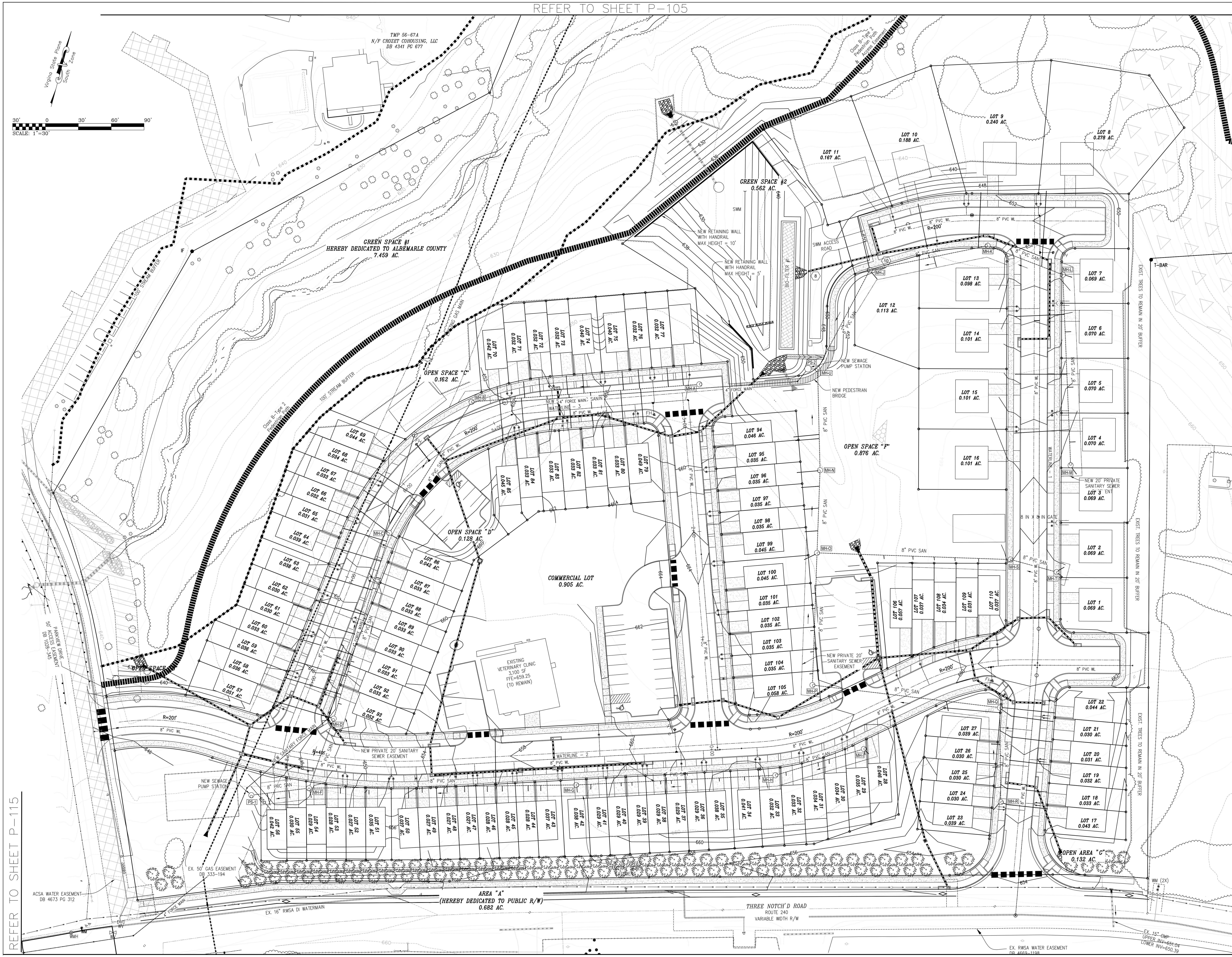
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PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434-882-0121
WWW.MERIDIANWBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

SHEET TITLE:
GRADING & DRAINAGE PLAN

SHEET NO.
P-301



COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
Lic. No. 30542
10/31/23
PROFESSIONAL ENGINEER

JOB NO.:	20150
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SCALE:	AS SHOWN
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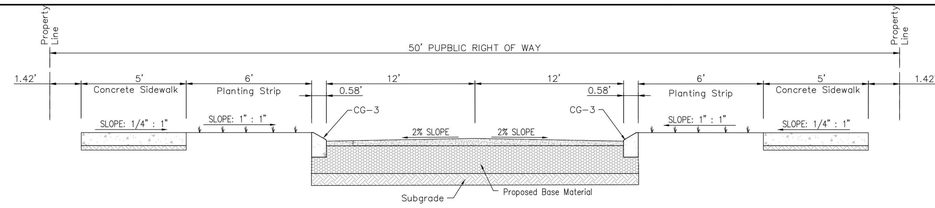
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440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
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NO.	DESCRIPTION	DATE

PROJECT TITLE:
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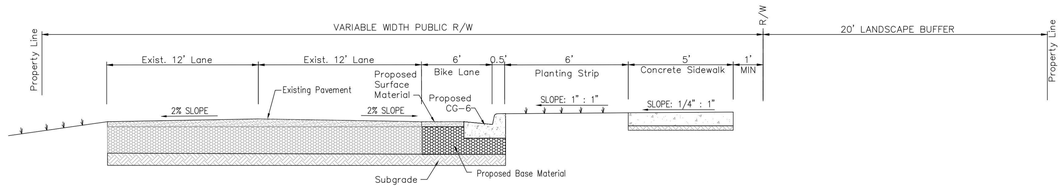
SHEET TITLE:
UTILITY PLAN

SHEET NO.
P-302



1 Z-108 *TYPICAL SECTION FOR ANTARES ROAD, ALTAIR ROAD, CAPELLA ROAD, SIRRAH ROAD & SIRRAH LANE*

NOT TO SCALE



2 Z-108 *TYPICAL SECTION FOR ROUTE 240 IMPROVEMENTS*

NOT TO SCALE

COMMONWEALTH OF VIRGINIA
ANDREW RAY MILLER
Lic. No. 30542
10/13/23
PROFESSIONAL ENGINEER

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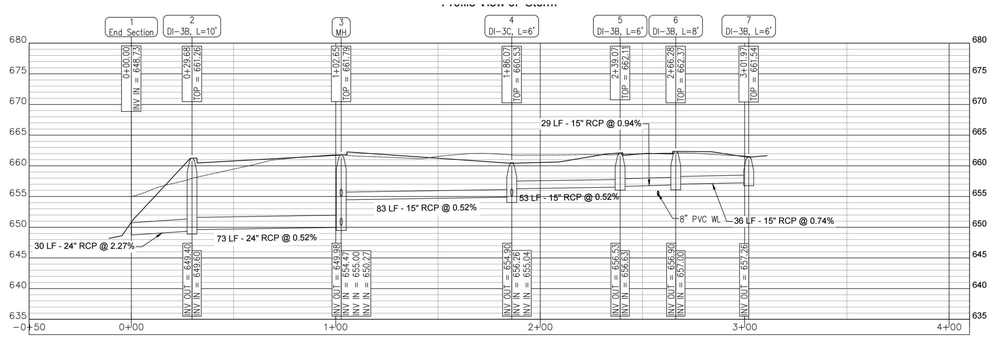
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CHARLOTTESVILLE, VA 22901
PHONE: 434.465.7501
WWW.MERIDIANWEB.COM

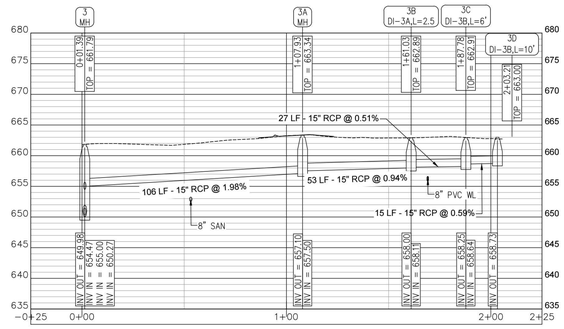
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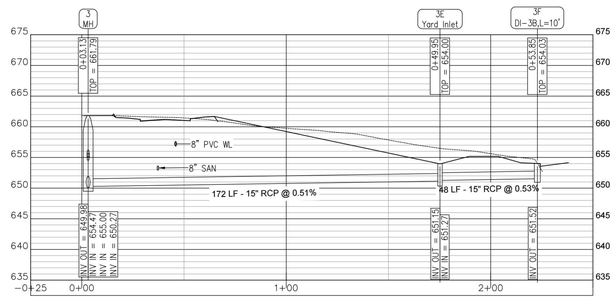
PROJECT TITLE:
FINAL SITE PLAN
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OLD DOMINION VILLAGE

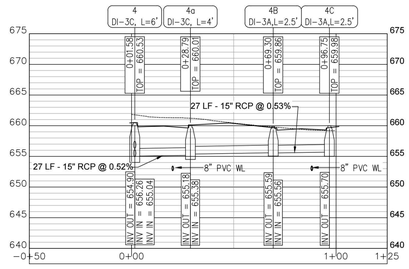
SHEET TITLE:
DETAILS & OFFSITE UTILITY PLAN

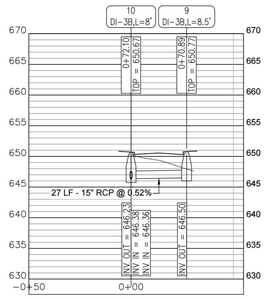
SHEET NO.
P-401

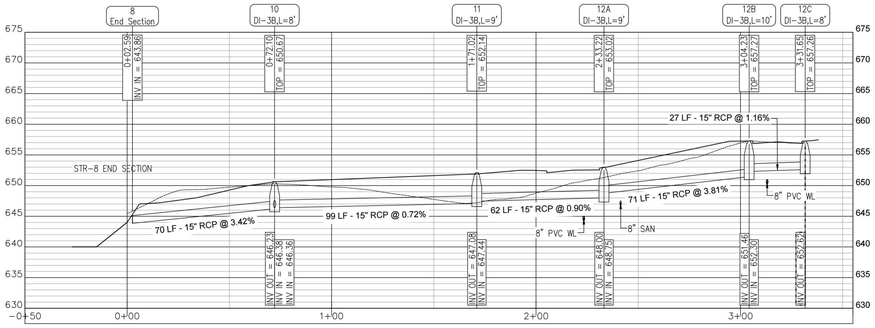


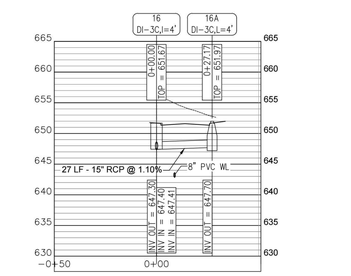


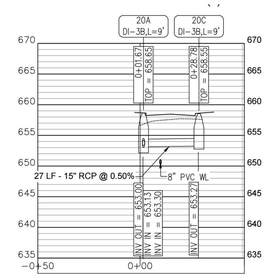


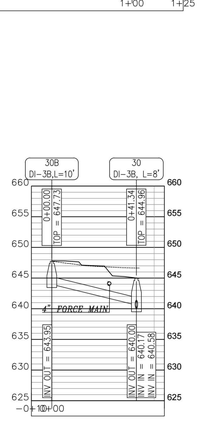


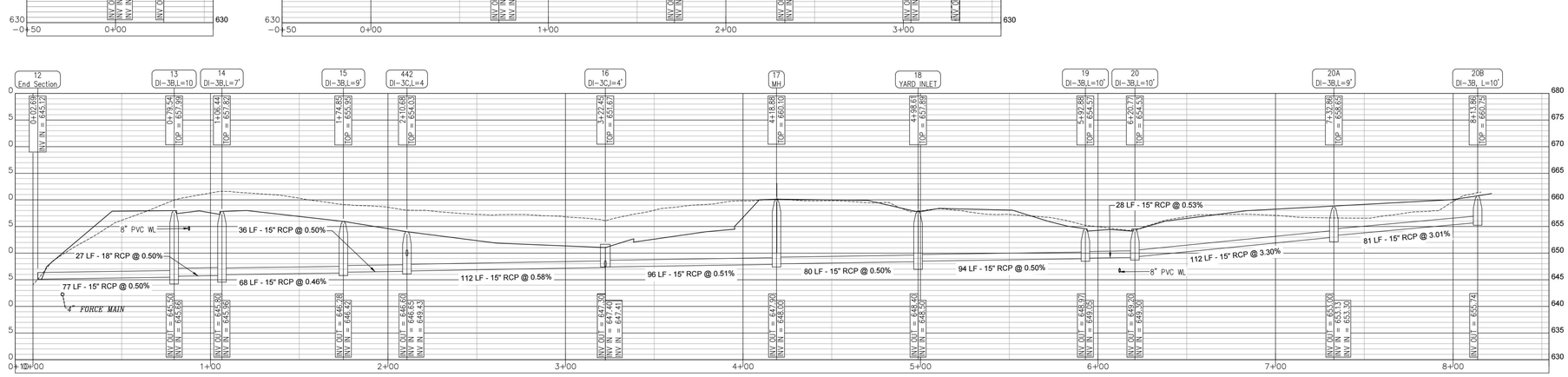


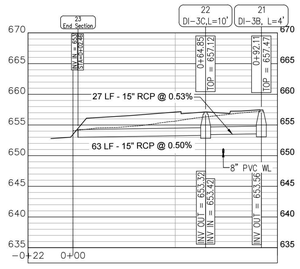


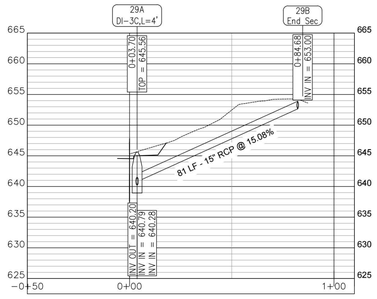


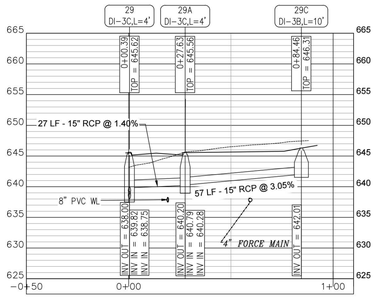


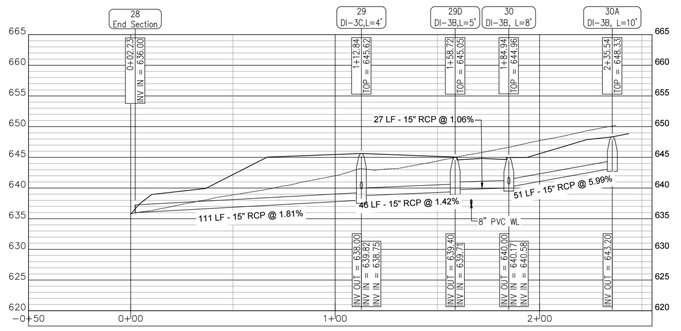


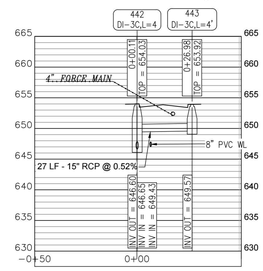












HORZ SCALE: 1" = 30'
VERT SCALE: 1" = 10'

COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
Lic. No. 30542
10/10/23
PROFESSIONAL ENGINEER

MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
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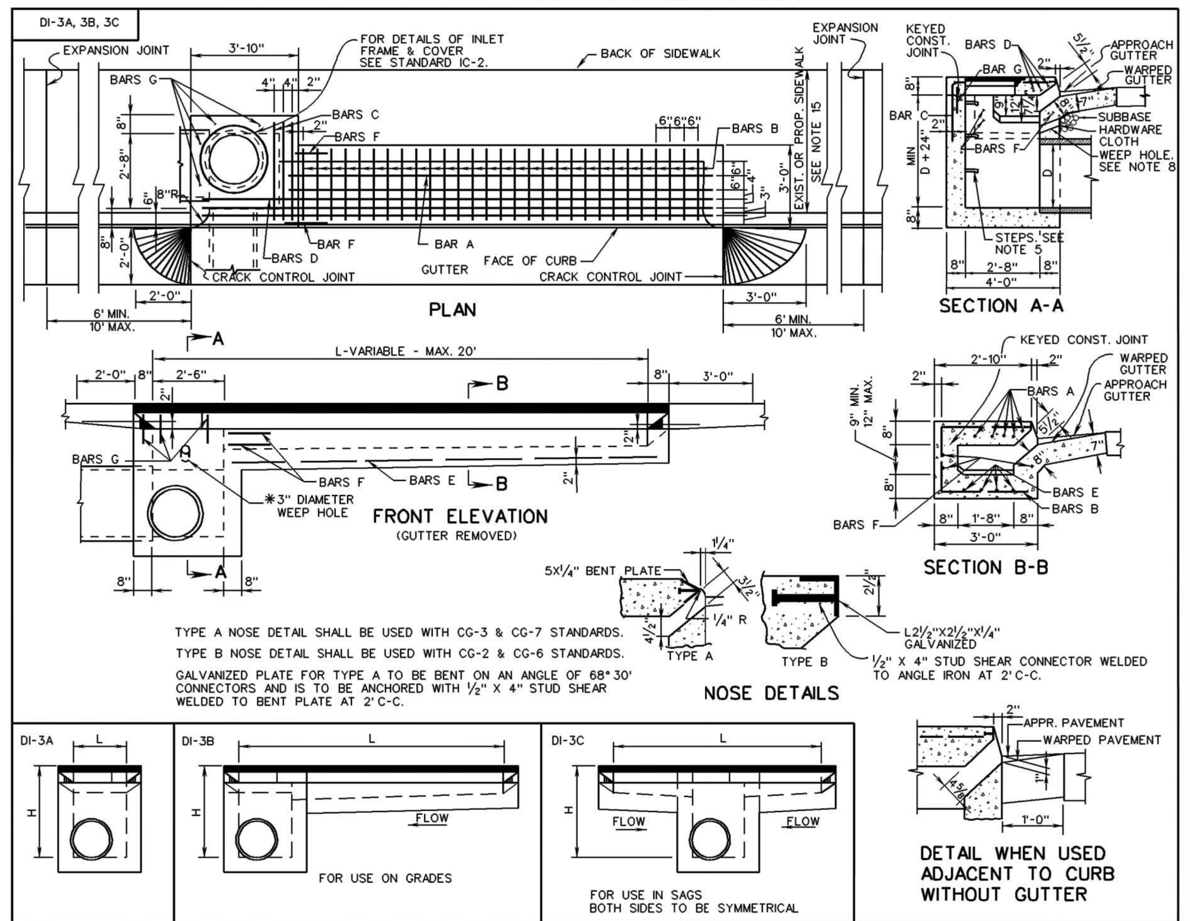
NO.	DESCRIPTION	DATE

PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

SHEET TITLE:
DRAINAGE PROFILES

SHEET NO.
P-402

DI-3A, 3B, 3C



VDOT ROAD AND BRIDGE STANDARDS | SHEET 1 OF 2 | 104.09 | REVISION DATE 08/10

STANDARD CURB DROP INLET
12" - 30" PIPE: MAXIMUM DEPTH (H) = 8'
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE 233 302

2016 ROAD & BRIDGE STANDARDS

TABLE OF QUANTITIES

DI-3A, 3B, 3C

TYPE	L	AREA OF SLOT	Concrete	BARS A		BARS B		BARS C		BARS D		BARS E		BARS F		BARS G		WEIGHT
	Ft.	Sq. Ft.	Cu. Yds.	No.	Lin. Ft. *	No.	Lin. Ft. *	No.	Lin. Ft. *	No.	Lin. Ft*	No.	Lin. Ft.*	No.	Lin. Ft.*	No.	Lin. Ft.*	Lbs.
DI-3A	2'-6"	1.15	2.26	-	-	-	-	1	5'-7"	3	3'-2"	-	-	-	-	6	1'-0"	22
DI-3B	4'	1.83	2.59	5	1'-6"	2	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	1'-6"	3	1'-6"	4	1'-0"	64
	6'	2.75	3.02	5	3'-6"	6	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	3'-6"	3	1'-6"	4	1'-0"	111
	8'	3.67	3.46	5	5'-6"	10	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	5'-6"	3	1'-6"	4	1'-0"	158
	10'	4.58	3.90	5	7'-6"	14	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	7'-6"	3	1'-6"	4	1'-0"	204
	12'	5.50	4.34	5	9'-6"	18	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	9'-6"	3	1'-6"	4	1'-0"	251
	14'	6.42	4.78	5	11'-6"	22	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	11'-6"	3	1'-6"	4	1'-0"	298
	16'	7.33	5.22	5	13'-6"	26	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	13'-6"	3	1'-6"	4	1'-0"	345
	18'	8.25	5.66	5	15'-6"	30	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	15'-6"	3	1'-6"	4	1'-0"	391
	20'	9.17	6.09	5	17'-6"	34	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	17'-6"	3	1'-6"	4	1'-0"	438
DI-3C	6'	2.75	3.01	10	1'-9"	4	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	1'-9"	6	1'-6"	2	1'-0"	111
	8'	3.67	3.45	10	2'-9"	8	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	2'-9"	6	1'-6"	2	1'-0"	158
	10'	4.58	3.89	10	3'-9"	12	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	3'-9"	6	1'-6"	2	1'-0"	205
	12'	5.50	4.33	10	4'-9"	16	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	4'-9"	6	1'-6"	2	1'-0"	252
	14'	6.42	4.77	10	5'-9"	20	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	5'-9"	6	1'-6"	2	1'-0"	298
	16'	7.33	5.21	10	6'-9"	24	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	6'-9"	6	1'-6"	2	1'-0"	345
	18'	8.25	5.65	10	7'-9"	28	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	7'-9"	6	1'-6"	2	1'-0"	392
	20'	9.17	6.09	10	8'-9"	32	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	8'-9"	6	1'-6"	2	1'-0"	439

NOTES

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROXIMATE ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE TO BE PROVIDED WHEN H IS 4'-0" OR GREATER. FOR DETAILS SEE STANDARD ST-1.
6. THIS ITEM MAY BE PRECAST OR CAST-IN-PLACE.
7. #4 X 8" SMOOTH DOWELS AT APPROXIMATELY 12" C-C TO BE PLACED IN ALL AREAS ADJACENT TO ABUTTING CONCRETE TO PREVENT SETTLEMENT.
8. 3" DIAMETER WEEP HOLE TO BE LOCATED TO DRAIN SUBBASE MATERIAL. WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH 1/4" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. ALL REINFORCING STEEL SHALL HAVE A MIN. COVER OF 2".
10. ALL REINFORCING STEEL TO BE CUT CLEAR OF ALL OPENINGS BY 2".
11. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
12. LENGTH OF SLOT (L) WILL, IN EVERY CASE, BE SHOWN ON PLANS.
13. IF INLET IS CONSTRUCTED IN MEDIAN CURB OR WITH INTEGRAL CURB, GUTTER IS TO BE OMITTED (SEE DETAIL).
14. STANDARD INLETS MAY BE CONSTRUCTED WITH CONCRETE BLOCKS IN ACCORDANCE WITH THE DETAILS SHOWN ON STANDARD DRAWING DI-MB.
15. THIS AREA MAY BE EARTHEN, IN WHICH CASE THE EXPANSION JOINTS WILL APPLY ONLY TO CURB AND GUTTER.
16. CONCRETE QUANTITIES SHOWN ARE FOR DEPTH (H) OF 5'-2" WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES. FOR INLETS OF DIFFERENT DEPTHS ADD OR SUBTRACT 0.32 CUBIC YARDS OF CONCRETE FOR EACH FOOT OF DEPTH.
17. LENGTH OF ANGLE IRON AS SHOWN ON SHEET 1 OF 2 IS TO BE L +16" AT 4.10 LBS./FT..
18. * DENOTES LENGTH OF ONE (1) BAR.
19. ALL REINFORCING BARS TO BE #5.
20. WHEN INLET IS USED IN 4'-0" MEDIAN, BACK OF INLET IS TO BE SHAPED TO CONFORM TO PROPOSED CURB.

SPECIFICATION REFERENCE 233 302

STANDARD CURB DROP INLET
12" - 30" PIPE: MAXIMUM DEPTH (H) = 8'
VIRGINIA DEPARTMENT OF TRANSPORTATION

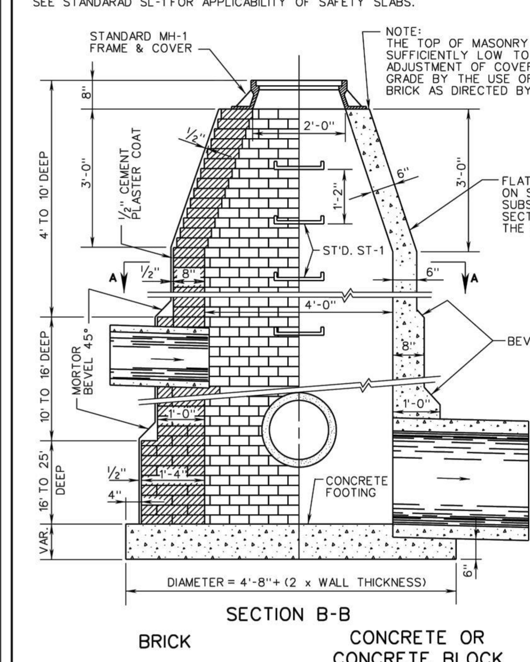
VDOT ROAD AND BRIDGE STANDARDS | REVISION DATE | SHEET 2 OF 2 | 104.10

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

MH-1

SEE STANDARAD SL-1 FOR APPLICABILITY OF SAFETY SLABS.



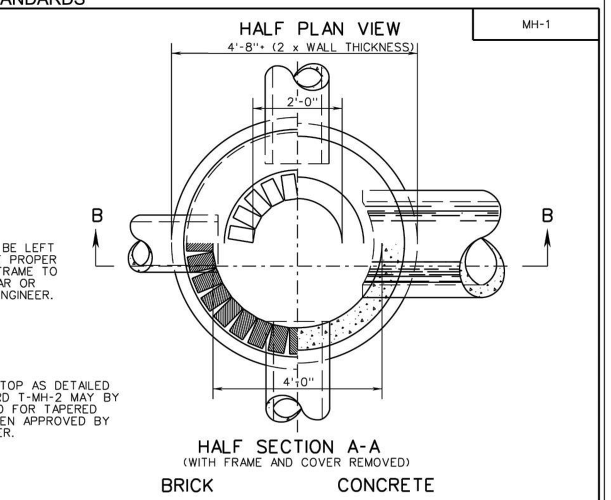


TABLE OF QUANTITIES			
DEPTH	BRICK	MANHOLE	CONCRETE MANHOLE
	BRICK	CONCRETE	CONCRETE
FEET	THOUSANDS	CU. YARDS	CU. YARDS
4	0.5	0.785	1.437
5	0.7	0.785	1.699
6	0.9	0.785	1.961
7	1.0	0.785	2.223
8	1.2	0.785	2.485
9	1.4	0.785	2.747
10	1.6	0.785	3.009
11	1.9	0.970	3.455
12	2.2	0.970	3.817
13	2.5	0.970	4.179
14	2.8	0.970	4.541
15	3.1	0.970	4.903
16	3.4	0.970	5.265
17	4.0	1.173	6.032
INCREMENT	0.45	-	0.582

NOTES:
1. QUANTITIES SHOWN ARE FOR MANHOLE WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES.
2. A BASE THICKNESS OF 9" WAS USED IN COMPUTING CONCRETE QUANTITIES.
3. INCREMENTS TO BE ADDED FOR EACH ADDITIONAL FOOT OF DEPTH.
4. MATERIALS MAY BE BRICK, CONCRETE OR APPROVED CONCRETE MANHOLE BLOCK.
5. IF BLOCKS ARE USED THE MINIMUM THICKNESS OF SAME IS TO BE 5". OTHER THICKNESSES ARE TO CONFORM TO WALL THICKNESS SHOWN FOR CONCRETE.
6. ALL CONCRETE TO BE CLASS A3.
7. WHEN SPECIFIED ON PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.

SPECIFICATION REFERENCE 302

MANHOLE FOR 12" - 48" PIPE CULVERTS
VIRGINIA DEPARTMENT OF TRANSPORTATION

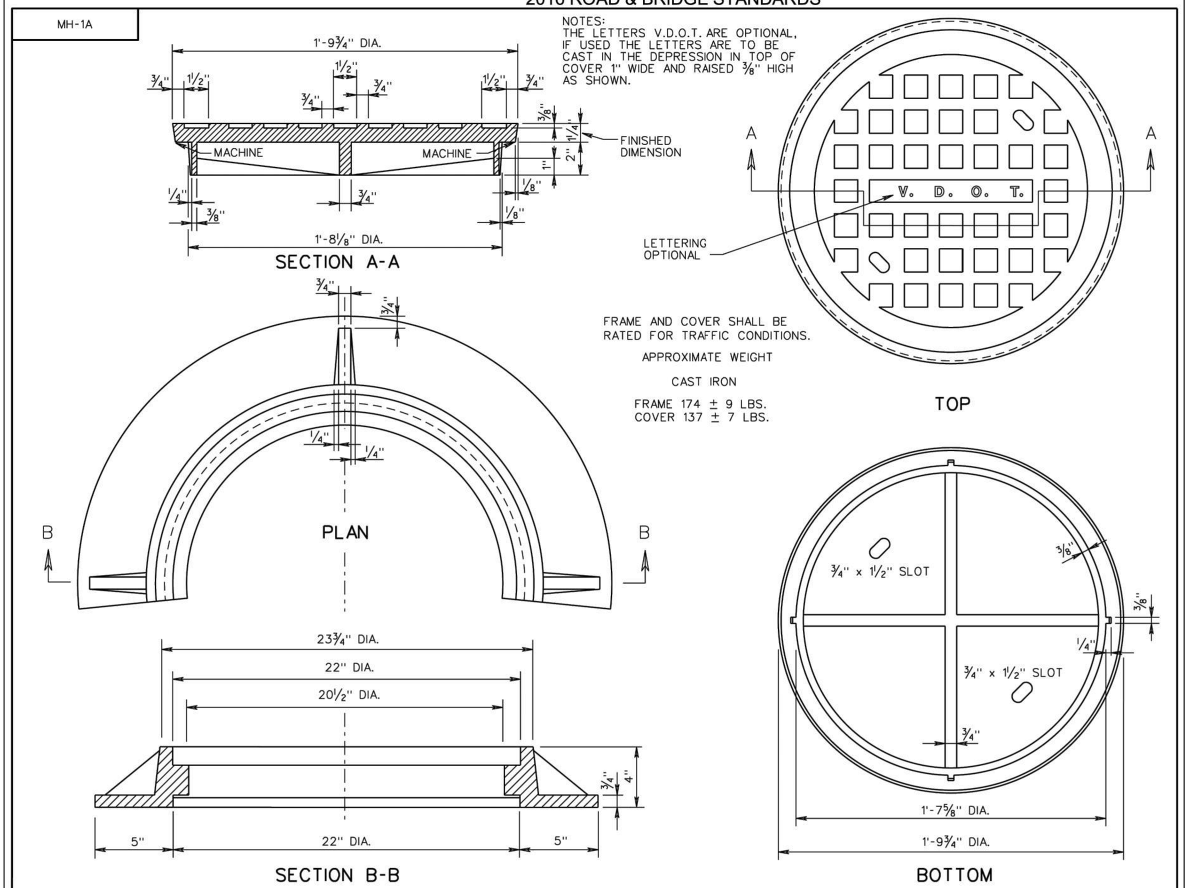
VDOT ROAD AND BRIDGE STANDARDS | REVISION DATE 04/20 | SHEET 1 OF 3 | 106.01

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

MH-1A

NOTES:
THE LETTERS V.D.O.T. ARE OPTIONAL, IF USED THE LETTERS ARE TO BE CAST IN THE DEPRESSION IN TOP OF COVER 1" WIDE AND RAISED 3/8" HIGH AS SHOWN.



FRAME AND COVER SHALL BE RATED FOR TRAFFIC CONDITIONS.

APPROXIMATE WEIGHT

CAST IRON

FRAME 174 ± 9 LBS.
COVER 137 ± 7 LBS.

VDOT ROAD AND BRIDGE STANDARDS | SHEET 1 OF 1 | 106.06 | REVISION DATE 04/20

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

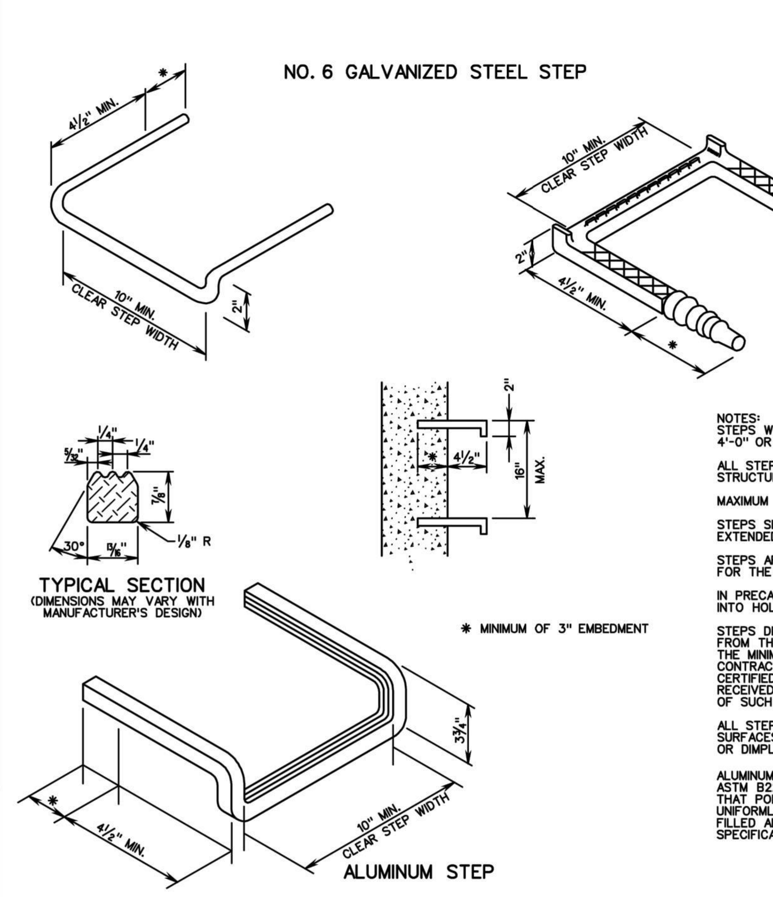
STANDARD MANHOLE FRAME AND COVER
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE 224 302

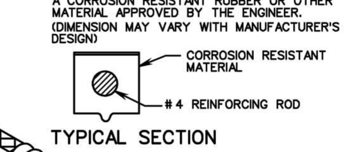
2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

ST-1



#4, GRADE 60, REINFORCING ROD ENCASED IN A CORROSION RESISTANT RUBBER OR OTHER MATERIAL APPROVED BY THE ENGINEER. (DIMENSION MAY VARY WITH MANUFACTURER'S DESIGN)



NOTES:
STEPS WILL BE REQUIRED IN ALL STRUCTURES WITH A DEPTH OF 4'-0" OR GREATER UNLESS OTHERWISE NOTED ON THE PLANS.

ALL STEPS SHALL PROTRUDE 4 1/2" FROM INSIDE FACE OF STRUCTURE WALL.

MAXIMUM STEP SPACING TO BE 16" C-C.

STEPS SHALL WITHSTAND A MINIMUM FORCE OF 300 POUNDS WHEN EXTENDED 4 1/2" FROM THE FACE OF THE SUPPORT.

STEPS ARE TO BE VERTICALLY ALIGNED AND UNIFORMALY SPACED FOR THE ENTIRE DEPTH OF ANY STRUCTURE.

IN PRECAST UNITS STEPS MAY BE CAST IN PLACE, MORTARED INTO HOLES PROVIDED BY THE FABRICATOR, OR DRIVEN.

STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THEY MEET THE MINIMUM REQUIREMENTS SHOWN HEREON AND THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS AND CERTIFIED TEST REPORTS OF THE PROPOSED SUBSTITUTE AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

ALL STEPS INSTALLED SHALL BE PROVIDED WITH SLIP-RESISTANT SURFACES SUCH AS BUT NOT LIMITED TO, CORRUGATED KNURLED, OR DIMPLED SURFACES.

ALUMINUM STEPS SHALL BE FABRICATED IN ACCORDANCE WITH ASTM B221, ALLOY 6005-T5. THAT PORTION OF THE STEP ENCASED IN MASONRY SHALL BE UNIFORMLY COATED WITH A BITUMIMOUS, SOLVENT TYPE, ASBESTOS FILLED ALUMINUM PIGMENTED COATING CONFORMING TO FEDERAL SPECIFICATION TC-C-00498A.

SPECIFICATION REFERENCE

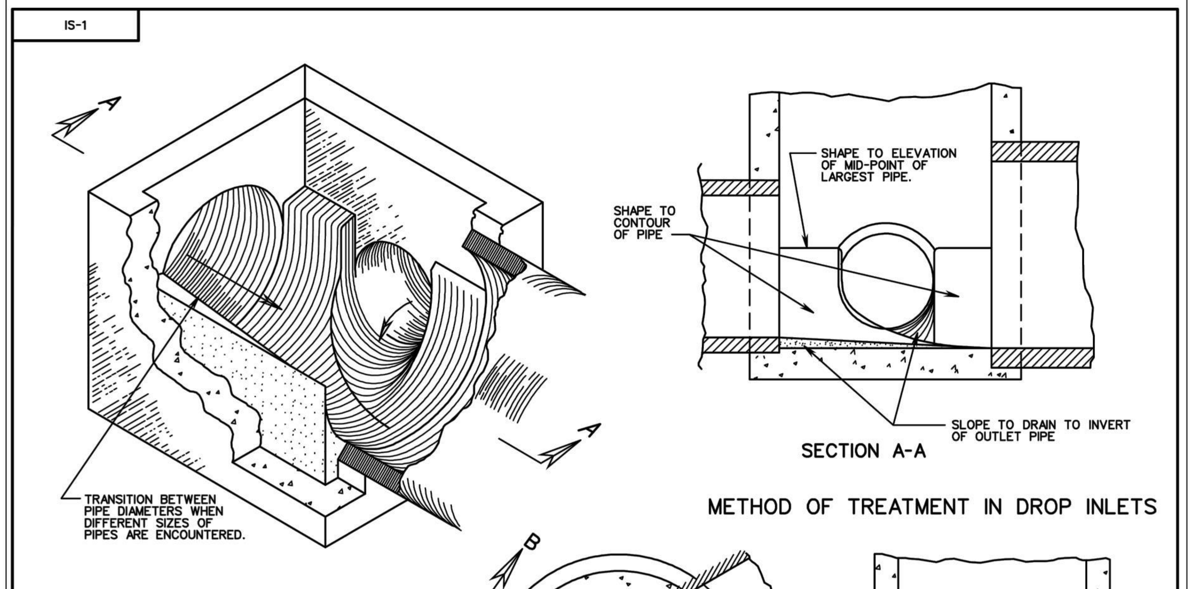
STANDARD STEP
VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS | REVISION DATE | SHEET 1 OF 1 | 106.09

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

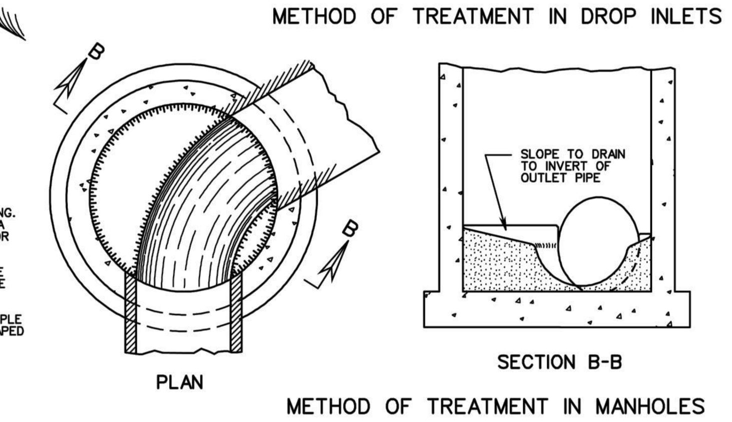
IS-1



NOTES:
SHAPING OF MANHOLE AND INLET INVERTS IN ACCORDANCE WITH THIS DRAWING IS TO APPLY TO THOSE STRUCTURES SPECIFIED ON PLANS OR WHERE INVERT OF PIPE IS ABOVE INVERT OF STRUCTURE.

MANHOLE OR DROP INLET IS TO BE FORMED AND CONSTRUCTED IN ACCORDANCE WITH APPLICABLE STANDARD OR SPECIAL DRAWING. THE INVERT SHAPING AS DETAILED HEREON IS TO CONSIST OF A PORTLAND CEMENT CONCRETE MIX CONFORMING TO CLASS A3 OR CLASS C1, EXCEPT THAT 25% OF COARSE AGGREGATE MAY BE UP TO 4" IN DIAMETER AND CONSIST OF STONE, BROKEN BRICK, BROKEN CONCRETE OR BROKEN CONCRETE BLOCK. THE SURFACE SHALL BE LEFT SMOOTH BY MEANS OF HAND TROWELLING. NONE OF THE COARSE AGGREGATE SHALL REMAIN EXPOSED.

DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE OR DROP INLET IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OUTLET CONFIGURATION AND FLOW LINES.



VDOT ROAD AND BRIDGE STANDARDS | SHEET 1 OF 1 | 106.08 | REVISION DATE

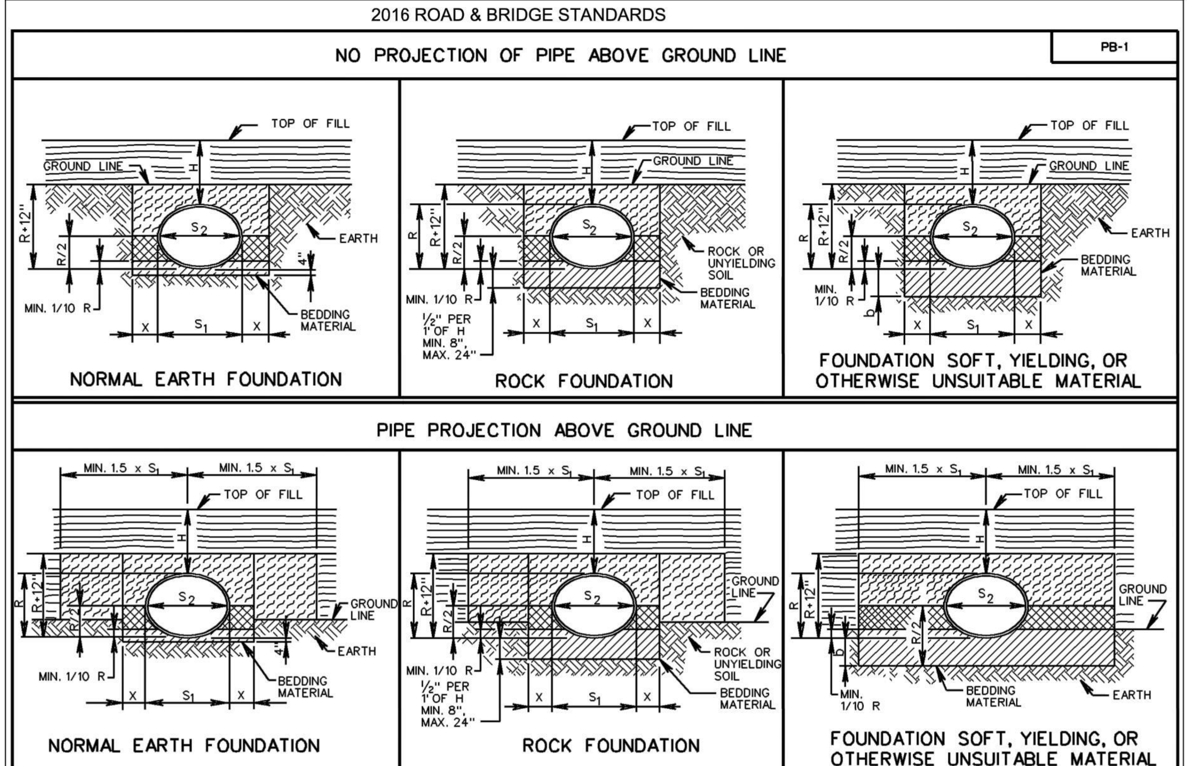
STANDARD METHOD OF SHAPING MANHOLE & INLET INVERTS
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE 302

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

PB-1



BEDDING MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

EMBANKMENT

NOTES:

FOR GENERAL NOTES ON PIPE BEDDING, SEE INSTALLATION OF PIPE CULVERTS AND STORM SEWERS GENERAL NOTES ON SHEET 107.00.

CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE 25 AND 26 MAY BE USED IN PLACE OF CLASS I BACKFILL.

SPECIFICATION REFERENCE 302 303

INSTAL. OF PIPE CULVERTS AND STORM SEWERS ELLIP. PIPE BEDDING AND BACKFILL - METHOD "A"
VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS | REVISION DATE 10/09 | SHEET 2 OF 4 | 107.02

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

PB-1

GENERAL
1. METHOD "A" PIPE BEDDING SHALL BE USED FOR ALL TYPES OF PIPE CULVERTS WITHIN THE APPLICABLE HEIGHT OF COVER RANGE NOTED IN THE STANDARD PC-1 TABLES UNLESS OTHERWISE NOTED ON THE PLANS.
2. H = HEIGHT OF COVER MEASURED FROM TOP OF CULVERT TO FINISHED GRADE.
3. b = EXCAVATION DEPTH AS SHOWN ON PLANS OR TO FIRM BEARING SOIL.

CIRCULAR PIPE
1. D = OUTSIDE DIAMETER OF PIPE.
2. d = INSIDE DIAMETER OF PIPE.
3. X = WIDTH OF CLASS I BACKFILL MATERIAL BEYOND THE EXTREMITY OF THE PIPE.
   X = 12" WHERE d IS LESS THAN 36".
   X = 18" WHERE d IS 36" AND GREATER.
4. WHERE DIRECTED BY THE ENGINEER, BEDDING MATERIAL MAY BE ELIMINATED FOR NORMAL EARTH FOUNDATIONS UNDER ROUTINE ENTRANCE PIPE (EXCEPT PLASTIC PIPE) 30" AND LESS IN DIAMETER WITH HEIGHT OF COVER 15' OR LESS.
5. REGULAR BACKFILL MATERIAL MAY BE USED IN LIEU OF CLASS I BACKFILL MATERIAL FOR ALL FOUNDATION TYPES FOR ROUTINE ENTRANCE PIPE (EXCEPT PLASTIC PIPE) 30" AND LESS IN DIAMETER WITH HEIGHT OF COVER 15' OR LESS.
6. BEDDING MATERIAL AND CLASS I BACKFILL MATERIAL MAY BE ELIMINATED FOR SHOULDER SLOT INLET (DI-13) OUTLET PIPES INSTALLATIONS.

ELLIPTICAL PIPE
1. S_1 = OUTSIDE SPAN DIMENSION OF PIPE.
2. S_2 = INSIDE SPAN DIMENSION OF PIPE.
3. R = OUTSIDE RISE DIMENSION OF PIPE.
4. X = WIDTH OF CLASS I BACKFILL MATERIAL BEYOND THE EXTREMITY OF THE PIPE.
   X = 12" WHERE S_2 IS LESS THAN 36".
   X = 18" WHERE S_2 IS 36" AND GREATER
5. WHERE DIRECTED BY THE ENGINEER, BEDDING MATERIAL MAY BE ELIMINATED FOR NORMAL EARTH FOUNDATIONS UNDER ROUTINE ENTRANCE PIPE WHERE S_2 IS 38" OR LESS AND HEIGHT OF COVER 15' OR LESS.
6. REGULAR BACKFILL MATERIAL MAY BE USED IN LIEU OF CLASS I BACKFILL MATERIAL FOR ALL FOUNDATION TYPES FOR ROUTINE ENTRANCE PIPE WHERE S_2 IS 38" OR LESS AND HEIGHT OF COVER 15' OR LESS.

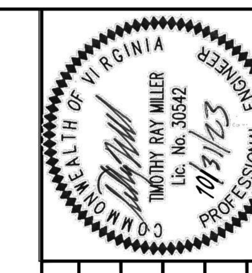
PIPE ARCH
1. S = SPAN DIMENSION OF PIPE.
2. R = RISE DIMENSION OF PIPE.
3. B = SEE PC-1 TABLE FOR APPLICABLE PIPE MATERIAL
4. x = WIDTH OF CLASS I BACKFILL MATERIAL BEYOND THE EXTREMITY OF THE PIPE.
   x = 12" WHERE S_2 IS LESS THAN 36".
   x = 18" WHERE S_2 IS 36" AND GREATER
5. WHERE DIRECTED BY THE ENGINEER, BEDDING MATERIAL MAY BE ELIMINATED FOR NORMAL EARTH FOUNDATIONS UNDER ROUTINE ENTRANCE PIPE WHERE S_2 IS 35" OR LESS AND HEIGHT OF COVER 15' OR LESS.
6. REGULAR BACKFILL MATERIAL MAY BE USED IN LIEU OF CLASS I BACKFILL MATERIAL FOR ALL FOUNDATION TYPES FOR ROUTINE ENTRANCE PIPE WHERE S IS 35" OR LESS AND HEIGHT OF COVER 15' OR LESS.

SPECIFICATION REFERENCE 302 303

INSTALLATION OF PIPE CULVERTS & STORM SEWERS GENERAL NOTES
VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS | REVISION DATE | SHEET 1 OF 1 | 107.00

2016 ROAD & BRIDGE STANDARDS



JOB NO.:	20150
DATE:	10/10/2023
SCALE:	AS SHOWN
DRAWN BY:	BM
DESIGNED BY:	TM
CHECKED BY:	

MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434-882-0121
WWW.MERIDIANWBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE: FINAL SITE PLAN FOR OLD DOMINION VILLAGE

SHEET TITLE: DRAINAGE NOTES & DETAILS

SHEET NO. P-403



COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
Lic. No. 30542
10/31/23
PROFESSIONAL ENGINEER

JOB NO.:	20150
DATE:	10/10/2023
SCALE:	AS SHOWN
DRAWN BY:	BM
DESIGNED BY:	TM
CHECKED BY:	

MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434-882-0121
WWW.MERIDIANWBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE:
FINAL SITE PLAN FOR OLD DOMINION VILLAGE

SHEET TITLE:
DRAINAGE AREA PLAN

SHEET NO.
P-404

Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet Ht (in)	Curb Inlet L (ft)	Grate Inlet Area (sqft)	Grate Inlet L (ft)	Grate Inlet W (ft)	Gutter So (ft/ft)	Gutter W (ft)	Gutter Sw (ft/ft)	Gutter Sx (ft/ft)	Gutter n	Gutter Depth (ft)	Gutter Spread (ft)	Inlet Depth (ft)	Inlet Spread (ft)	Inlet Depr (in)	Byp Line No
Structure - (2)	0.78	0.00	0.70	0.08	Curb	3.5	10.00	0.00	0.00	0.00	0.022	2.00	0.020	0.020	0.013	0.10	5.25	0.13	2.26	1.0	Off
Structure - (3)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
Structure - (3A)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
Structure - (3B)	0.42	0.00	0.42	0.00	Curb	3.5	2.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.10	5.10	0.19	5.10	1.0	Off
Structure - (3C)	0.16	0.00	0.15	0.01	Curb	3.5	6.00	0.00	0.00	0.00	0.031	2.00	0.020	0.020	0.013	0.05	2.72	0.10	0.79	1.0	Off
Structure - (4)	0.60	0.00	0.55	0.05	Curb	3.5	10.00	0.00	0.00	0.00	0.032	2.00	0.020	0.020	0.013	0.09	4.43	0.12	1.80	1.0	Off
Structure - (5)	0.17	0.00	0.17	0.00	Curb	3.5	2.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.06	2.77	0.14	2.77	1.0	Off
Structure - (6)	0.38	0.00	0.35	0.03	Curb	3.5	8.00	0.00	0.00	0.00	0.031	2.00	0.020	0.020	0.013	0.08	3.76	0.11	1.49	1.0	Off
Structure - (7)	0.19	0.00	0.18	0.01	Curb	3.5	6.00	0.00	0.00	0.00	0.033	2.00	0.020	0.020	0.013	0.06	2.86	0.11	1.08	1.0	Off
Structure - (4A)	0.69	0.00	0.69	0.00	Curb	3.5	4.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.12	5.79	0.20	5.79	1.0	Off
Structure - (4B)	0.03	0.00	0.03	0.00	Curb	3.5	2.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.02	0.92	0.10	0.92	1.0	Off
Structure - (4C)	0.37	0.00	0.37	0.00	Curb	3.5	2.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.09	4.72	0.18	4.72	1.0	Off
Structure - 3F	1.79	0.00	0.49	1.30	Curb	5.5	10.00	0.00	0.00	0.00	0.200	2.00	0.020	0.020	0.013	0.09	4.74	0.09	4.20	0.1	Off

Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet Ht (in)	Curb Inlet L (ft)	Grate Inlet Area (sqft)	Grate Inlet L (ft)	Grate Inlet W (ft)	Gutter So (ft/ft)	Gutter W (ft)	Gutter Sw (ft/ft)	Gutter Sx (ft/ft)	Gutter n	Gutter Depth (ft)	Gutter Spread (ft)	Inlet Depth (ft)	Inlet Spread (ft)	Inlet Depr (in)	Byp Line No
Structure - (10)	0.34	0.01	0.35	0.00	Curb	3.5	10.00	0.00	0.00	0.00	0.030	2.00	0.020	0.020	0.013	0.07	3.67	0.09	0.29	1.0	Off
Structure - (11)	0.38	0.00	0.38	0.00	Curb	3.5	10.00	0.00	0.00	0.00	0.031	2.00	0.020	0.020	0.013	0.08	3.77	0.10	0.64	1.0	Off
Structure - (12-A)	0.22	0.01	0.23	0.00	Curb	3.5	10.00	0.00	0.00	0.00	0.050	2.00	0.020	0.020	0.013	0.06	2.85	0.08	0.01	1.0	Off
Structure - (12B)	0.36	0.00	0.35	0.01	Curb	3.5	10.00	0.00	0.00	0.00	0.045	2.00	0.020	0.020	0.013	0.07	3.43	0.10	0.89	1.0	3
Structure - (12C)	0.24	0.00	0.24	0.00	Curb	3.5	10.00	0.00	0.00	0.00	0.045	2.00	0.020	0.020	0.013	0.06	2.95	0.08	0.01	1.0	Off
Structure - (9)	0.44	0.00	0.43	0.01	Curb	3.5	10.00	0.00	0.00	0.00	0.030	2.00	0.020	0.020	0.013	0.08	4.00	0.10	0.99	1.0	1

Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet Ht (in)	Curb Inlet L (ft)	Grate Inlet Area (sqft)	Grate Inlet L (ft)	Grate Inlet W (ft)	Gutter So (ft/ft)	Gutter W (ft)	Gutter Sw (ft/ft)	Gutter Sx (ft/ft)	Gutter n	Gutter Depth (ft)	Gutter Spread (ft)	Inlet Depth (ft)	Inlet Spread (ft)	Inlet Depr (in)	Byp Line No
Structure -13	0.42	0.00	0.42	0.00	Curb	3.5	10.00	0.00	0.00	0.00	0.057	2.00	0.020	0.020	0.013	0.07	3.47	0.17	0.01	2.0	Off
Structure - 14	0.18	0.00	0.18	0.00	Curb	3.5	7.00	0.00	0.00	0.00	0.057	2.00	0.020	0.020	0.013	0.05	2.54	0.17	0.01	2.0	1
Structure - 15	0.42	0.00	0.42	0.00	Curb	3.5	9.00	0.00	0.00	0.00	0.030	2.00	0.020	0.020	0.013	0.08	3.91	0.17	0.01	2.0	2
Structure - (442)	0.46	0.00	0.46	0.00	Curb	3.5	4.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.09	4.42	0.26	4.42	2.0	Off
Structure - 16	0.63	0.00	0.63	0.00	Curb	3.5	4.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.11	5.47	0.28	5.47	2.0	Off
Structure - 17	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
Structure - 18	1.99	0.00	0.00	1.99	None	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
Structure - 19)	0.50	0.00	0.49	0.01	Curb	3.5	10.00	0.00	0.00	0.00	0.070	2.00	0.020	0.020	0.013	0.07	3.59	0.18	0.84	2.0	Off
Structure - 20	0.48	0.00	0.47	0.01	Curb	3.5	10.00	0.00	0.00	0.00	0.070	2.00	0.020	0.020	0.013	0.07	3.52	0.18	0.72	2.0	Off
Structure - (20A)	0.38	0.00	0.38	0.00	Curb	3.5	9.00	0.00	0.00	0.00	0.042	2.00	0.020	0.020	0.013	0.07	3.56	0.17	0.01	2.0	Off
Structure - (20B)	0.48	0.00	0.48	0.00	Curb	3.5	10.00	0.00	0.00	0.00	0.044	2.00	0.020	0.020	0.013	0.08	3.84	0.17	0.01	2.0	Off
Structure - (20C)	0.42	0.00	0.42	0.00	Curb	3.5	9.00	0.00	0.00	0.00	0.042	2.00	0.020	0.020	0.013	0.07	3.69	0.17	0.12	2.0	Off
Structure - (443)	0.59	0.00	0.59	0.00	Curb	3.5	4.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.10	5.20	0.27	5.20	2.0	Off
Structure - 16A	0.62	0.00	0.62	0.00	Curb	3.5	4.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.11	5.37	0.27	5.37	2.0	Off

Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet Ht (in)	Curb Inlet L (ft)	Grate Inlet Area (sqft)	Grate Inlet L (ft)	Grate Inlet W (ft)	Gutter So (ft/ft)	Gutter W (ft)	Gutter Sw (ft/ft)	Gutter Sx (ft/ft)	Gutter n	Gutter Depth (ft)	Gutter Spread (ft)	Inlet Depth (ft)	Inlet Spread (ft)	Inlet Depr (in)	Byp Line No
Structure - 22	0.56	0.05	0.46	0.15	Curb	3.5	10.00	0.00	0.00	0.00	0.017	2.00	0.020	0.020	0.013	0.10	5.01	0.07	2.98	0.1	Off
Structure - 21	0.37	0.00	0.32	0.05	Curb	3.5	10.00	0.00	0.00	0.00	0.017	2.00	0.020	0.020	0.013	0.08	4.17	0.05	1.98	0.1	1
Structure - 25.	1.36	0.00	1.27	0.09	Comb	6.0	4.00	0.00	2.20	2.00	0.010	2.00	0.080	0.020	0.013	0.24	5.92	0.10	1.13	0.2	Off

Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet Ht (in)	Curb Inlet L (ft)	Grate Inlet Area (sqft)	Grate Inlet L (ft)	Grate Inlet W (ft)	Gutter So (ft/ft)	Gutter W (ft)	Gutter Sw (ft/ft)	Gutter Sx (ft/ft)	Gutter n	Gutter Depth (ft)	Gutter Spread (ft)	Inlet Depth (ft)	Inlet Spread (ft)	Inlet Depr (in)	Byp Line No
Structure - (29)	0.57	0.00	0.57	0.00	Curb	3.5	4.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.10	5.10	0.27	5.10	2.0	Off
Structure - (29A)	0.42	0.00	0.42	0.00	Curb	3.5	4.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.08	4.16	0.25	4.16	2.0	Off
Structure - (29B	1.69	0.00	0.00	1.69	None	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
Structure - (29D)	0.63	0.00	0.63	0.00	Curb	3.5	5.00	0.00	0.00	0.00	Sag	2.00	0.020	0.020	0.000	0.10	5.02	0.27	5.02	2.0	Off
Structure - (30)	0.22	0.00	0.22	0.00	Curb	3.5	8.00	0.00	0.00	0.00	0.057	2.00	0.020	0.020	0.013	0.06	2.75	0.17	0.01	2.0	Off
Structure - (30B)	0.39	0.00	0.39	0.00	Curb	3.5	10.00	0.00	0.00	0.00	0.074	2.00	0.020	0.020	0.013	0.06	3.22	0.17	0.19	2.0	Off
Structure - (29C)	0.54	0.00	0.53	0.01	Curb	4.0	10.00	0.00	0.00	0.00	0.057	2.00	0.020	0.020	0.013	0.08	3.83	0.18	0.83	2.0	Off
Structure - (30A)	0.39	0.00	0.39	0.00	Curb	3.5	10.00	0.00	0.00	0.00	0.060	2.00	0.020	0.020	0.013	0.07	3.36	0.17	0.01	2.0	Off

3 Z-108 *INLET REPORT*

NOT TO SCALE

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (406)	0.81	15	Cir	49.989	652.32	652.58	0.520	652.67	652.93	0.17	653.10	End	Curb-
2	Pipe - Q	0.33	15	Cir	27.358	652.68	652.84	0.585	653.10	653.06	0.08	653.06	1	Curb-
3	Pipe - R	1.29	15	Cir	6.423	648.12	648.63	7.940	648.57	649.08	n/a	649.08 j	End	Curb-
4	Pipe - (394)	6.39	15	Cir	110.351	636.00	638.00	1.812	637.02	639.02	n/a	639.02 j	End	Curb-
5	Pipe - (393)	3.36	15	Cir	27.238	639.82	640.20	1.395	640.40	640.94	n/a	640.94	4	Curb-
6	Pipe - (392)	2.71	15	Cir	80.974	641.14	647.76	8.175	641.46	648.42	0.26	648.42	5	Curb-
7	Pipe - (402)	2.39	15	Cir	45.903	638.75	639.40	1.416	639.23	640.02	n/a	640.02	4	Curb-
8	Pipe - (395)	1.49	15	Cir	27.503	639.71	640.00	1.054	640.11	640.48	n/a	640.48	7	Curb-
9	Pipe - (397)	0.62	15	Cir	41.344	640.58	643.95	8.151	640.74	644.26	n/a	644.26	8	Curb-
10	Pipe - (398)	0.87	15	Cir	56.786	640.28	642.01	3.046	640.94	642.38	n/a	642.38 j	5	Curb-
11	Pipe - (396)	0.63	15	Cir	50.651	640.17	643.20	5.982	640.48	643.51	n/a	643.51 j	8	Curb-
12	Pipe - A	9.36	24	Cir	88.755	648.94	649.40	0.518	650.03	650.49	n/a	650.49	End	Curb-
13	Pipe - B	8.50	24	Cir	72.970	649.60	649.98	0.521	650.62	651.02	n/a	651.02	12	Curb-
14	Pipe -K	0.80	15	Cir	106.336	655.00	657.10	1.975	655.25	657.45	0.15	657.45	13	Curb-
15	Pipe - L	0.84	15	Cir	53.116	657.50	658.00	0.941	657.81	658.36	0.09	658.36	14	Curb-
16	Pipe - M	0.26	15	Cir	27.191	658.11	658.25	0.515	658.36	658.45	0.07	658.51	15	Curb-
17	Pipe -C	3.29	15	Cir	83.418	654.47	654.90	0.516	655.25	655.68	0.39	656.07	13	Curb-
18	Pipe -D	1.03	15	Cir	53.033	656.26	656.53	0.509	656.66	656.93	n/a	657.05 j	17	Curb-
19	Pipe - E	0.82	15	Cir	28.595	657.16	657.31	0.525	657.51	657.66	n/a	657.66	18	Curb-
20	Pipe - F	0.30	15	Cir	35.693	657.59	657.77	0.504	657.81	657.99	n/a	658.06 j	19	Curb-
21	Pipe - G	1.59	15	Cir	27.214	655.04	655.18	0.515	656.07	656.08	0.05	656.13	17	Curb-
22	Pipe - H	0.62	15	Cir	40.501	655.38	655.59	0.519	656.13	656.13	0.02	656.15	21	Curb-
23	Pipe - I	0.60	15	Cir	27.457	655.56	655.70	0.510	656.15	656.15	0.03	656.19	22	Curb-
24	Pipe - O	5.81	15	Cir	172.160	650.27	651.15	0.511	651.52*	652.92*	0.17	653.09	13	Curb-

Project File: StormE--.stm | Number of lines: 45 | Run Date: 4/5/2023

NOTES: Return period = 10 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewers v2023.00

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	Pipe - P	2.91	15	Cir	47.624	651.27	651.52	0.525	653.09*	653.19*	0.09	653.28	24	Curb-
26	Pipe -S	2.58	15	Cir	69.519	645.95	646.30	0.503	646.59	647.00	0.31	647.31	End	Curb-
27	Pipe - U	1.63	15	Cir	98.913	646.38	647.08	0.708	647.31	647.59	n/a	647.59 j	26	Curb-
28	Pipe - V	1.15	15	Cir	62.199	647.44	648.00	0.900	647.81	648.42	0.22	648.42	27	Curb-
29	Pipe - (385)	0.90	15	Cir	71.016	648.75	651.46	3.816	648.98	651.83	n/a	651.83	28	Curb-
30	Pipe - (384)	0.38	15	Cir	27.416	652.30	652.62	1.167	652.50	652.86	n/a	652.86	29	Curb-
31	Pipe - (T)	0.71	15	Cir	27.176	646.36	646.50	0.515	647.31	647.31	0.01	647.32	26	Curb-
32	Pipe - 9.	9.75	24	Cir	76.848	645.12	645.50	0.494	646.24	646.64	0.39	647.03	End	Curb-
33	Pipe - 8.	9.24	18	Cir	27.056	645.66	645.80	0.518	647.16*	647.37*	0.32	647.69	32	Curb-
34	Pipe - 7	9.05	15	Cir	68.426	645.96	646.30	0.497	647.69*	649.03*	0.54	649.58	33	Curb-
35	Pipe - 6 (1)	8.54	15	Cir	35.830	646.42	646.60	0.502	649.58*	650.20*	1.13	651.33	34	Curb-
36	Pipe - 6	7.25	15	Cir	111.790	646.65	647.30	0.581	651.33*	652.74*	0.81	653.56	35	Curb-
37	Pipe - 4	5.67	15	Cir	96.433	647.41	647.90	0.508	653.56*	654.30*	0.31	654.61	36	Curb-
38	Pipe - 3.	5.73	15	Cir	79.734	648.00	648.40	0.502	654.61*	655.24*	0.17	655.41	37	Curb-
39	Pipe -2	3.12	15	Cir	94.269	648.50	648.97	0.499	655.41*	655.63*	0.05	655.68	38	Curb-
40	Pipe - (1)	2.44	15	Cir	27.516	649.05	649.20	0.545	655.68*	655.72*	0.09	655.81	39	Curb-
41	Pipe - (403)	1.86	15	Cir	112.043	649.30	653.00	3.302	655.81*	655.91*	0.05	655.96	40	Curb-
42	Pipe - (399)	0.77	15	Cir	81.027	653.30	655.74	3.011	655.96	656.09	n/a	656.21 j	41	Curb-
43	Pipe - (387)	0.67	15	Cir	27.114	653.13	653.27	0.516	655.96*	655.96*	0.00	655.97	41	Curb-
44	Pipe - (386)	0.94	15	Cir	26.868	649.43	649.57	0.521	651.33*	651.34*	0.01	651.35	35	Curb-
45	Pipe - (5)	0.98	15	Cir	27.166	647.30	647.44	0.515	653.56*	653.56*	0.01	653.57	36	Curb-

Project File: StormE--.stm | Number of lines: 45 | Run Date: 4/5/2023

NOTES: Return period = 10 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewers v2023.00

COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
Lic. No. 30542
10/31/23
PROFESSIONAL ENGINEER

JOB NO.: 20150
DATE: 10/10/2023
SCALE: AS SHOWN
DRAWN BY: BM
DESIGNED BY: TM
CHECKED BY:

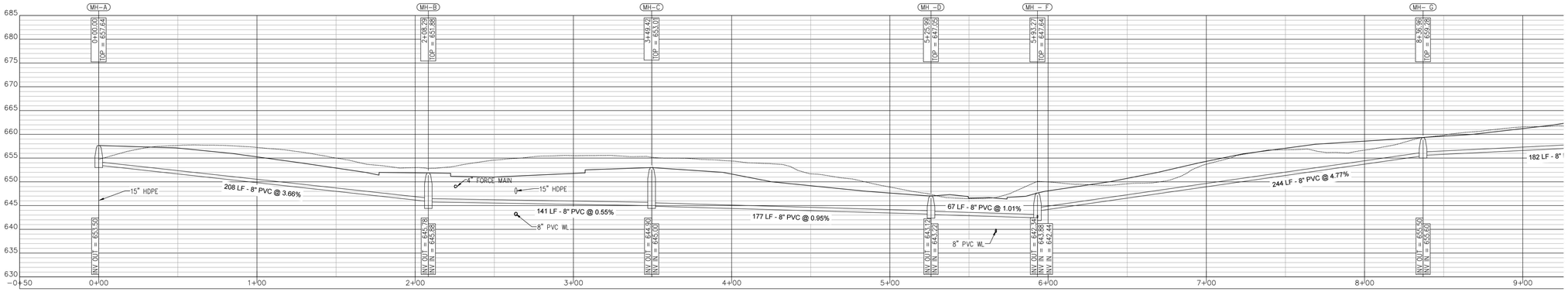
MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434-882-0121
WWW.MERIDIANWBE.COM

NO.	DESCRIPTION	DATE

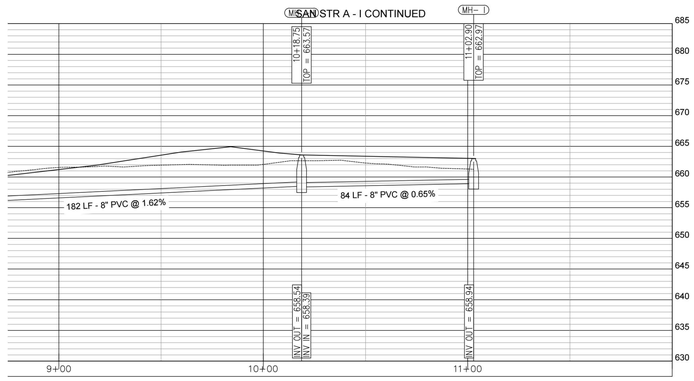
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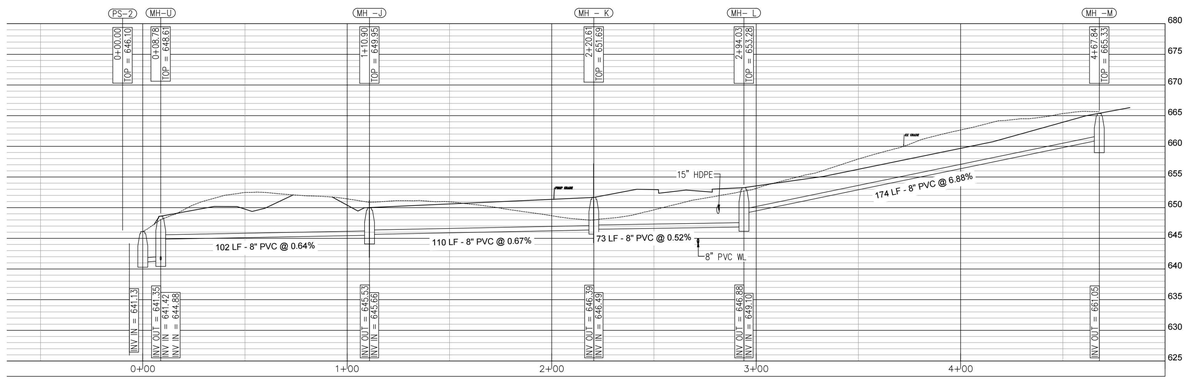
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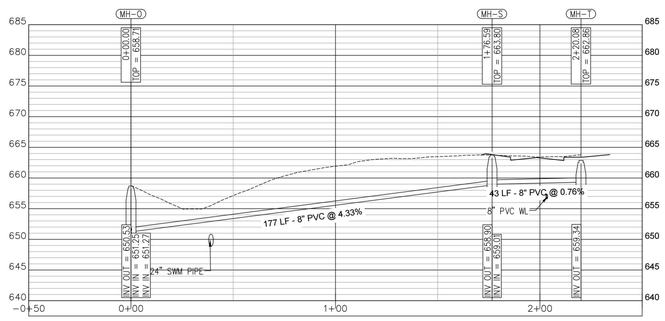
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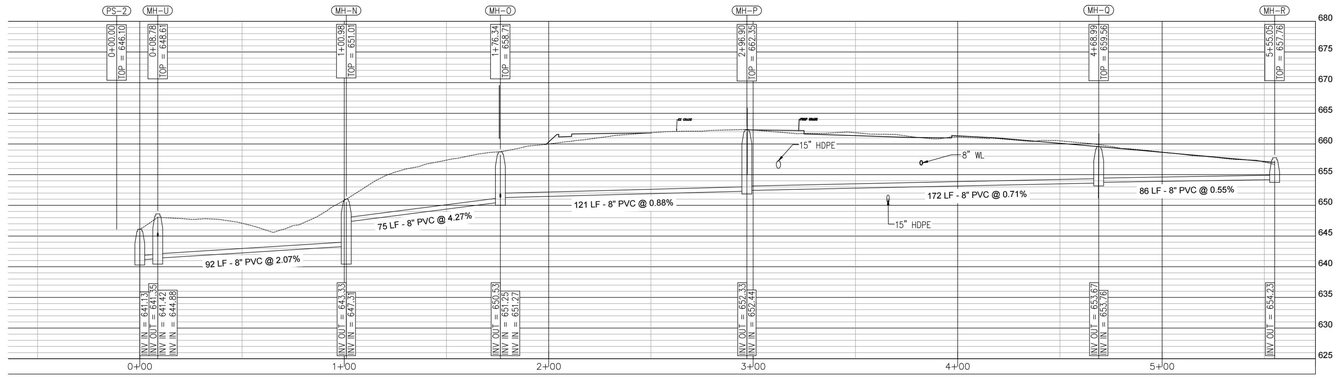


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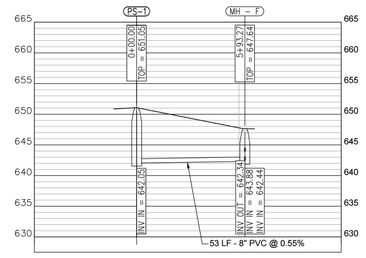








Profile View of SAN PS-1 - MH-F



HORZ SCALE: 1" = 30'
VERT SCALE: 1" = 10'

COMMONWEALTH OF VIRGINIA
ENGINEER
MATTHEW RAY MILLER
LIC. No. 30542
10/10/23
PROFESSIONAL

JOB NO.:	20150
DATE:	10/10/2023
SCALE:	AS SHOWN
DRAWN BY:	BM
DESIGNED BY:	TM
CHECKED BY:	

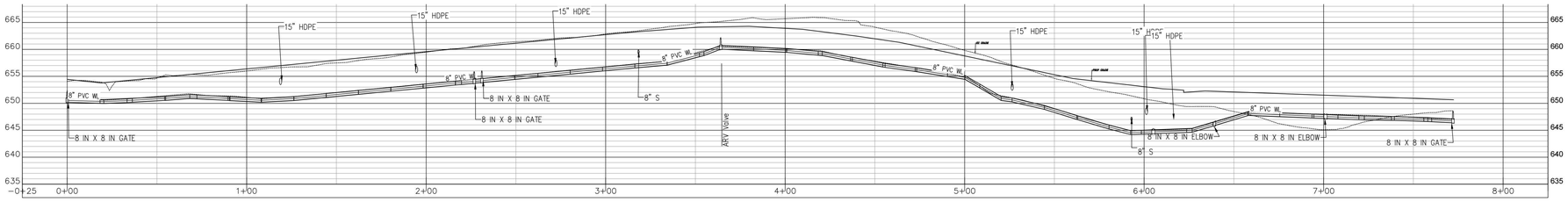
MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434.465.7501
FAX: 434.465.7502
WWW.MERIDIANWDE.COM

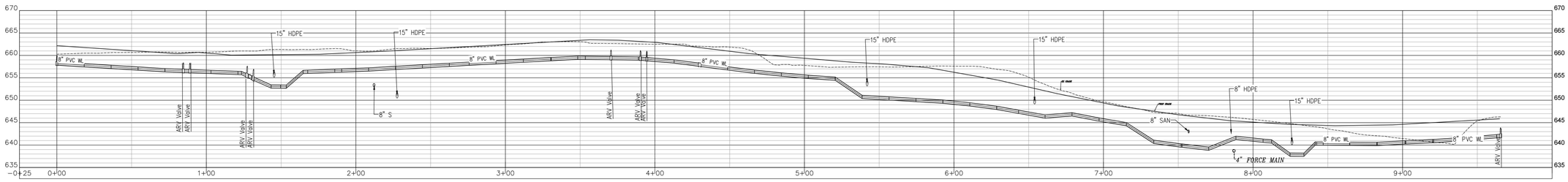
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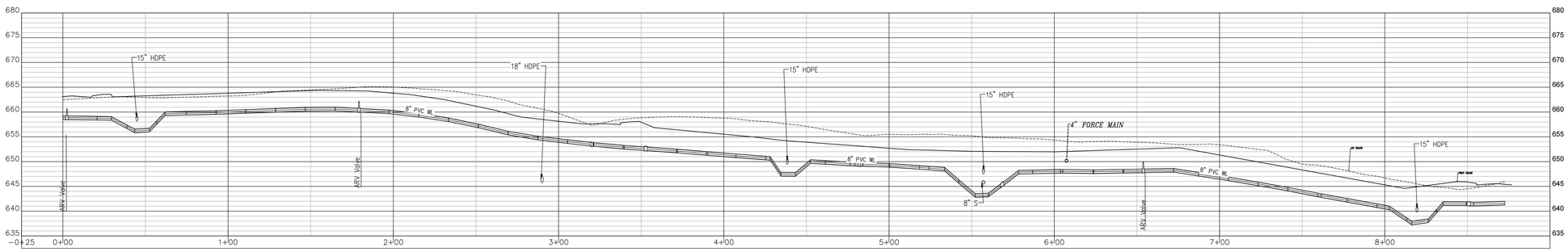
PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

SHEET TITLE:
SANITARY PROFILES

SHEET NO.
P-501







HORZ SCALE: 1" = 30'
VERT SCALE: 1" = 10'

COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
Lic. No. 30542
10/10/23
PROFESSIONAL ENGINEER

JOB NO.:	20150
DATE:	10/10/2023
SCALE:	AS SHOWN
DRAWN BY:	BM
DESIGNED BY:	TM
CHECKED BY:	

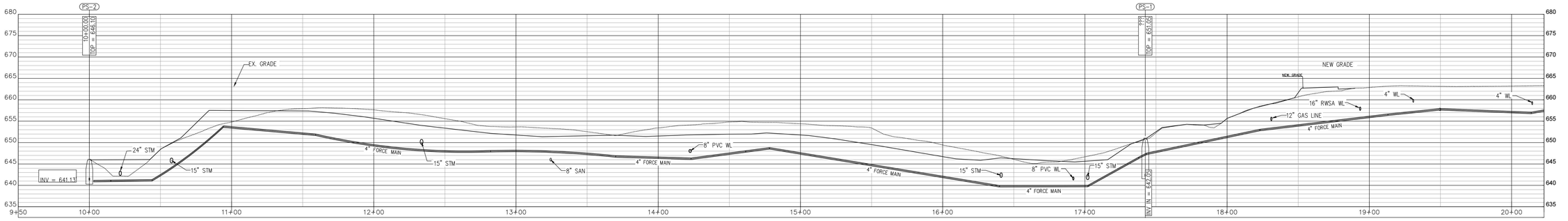
MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434-882-0121
WWW.MERIDIANWBE.COM

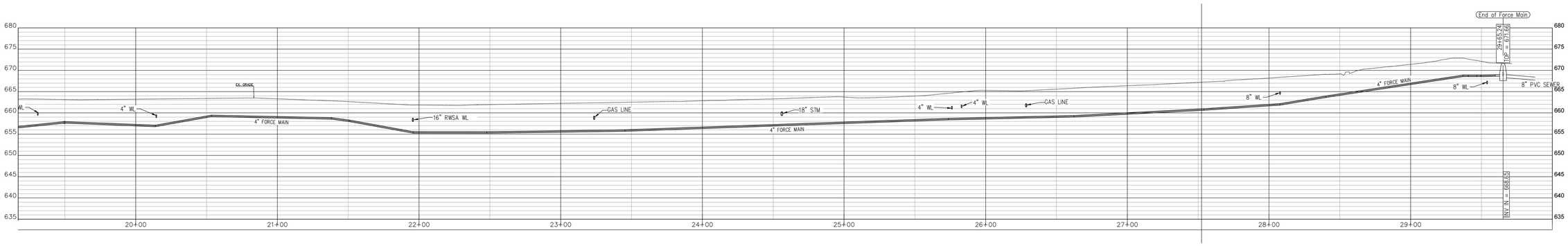
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PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

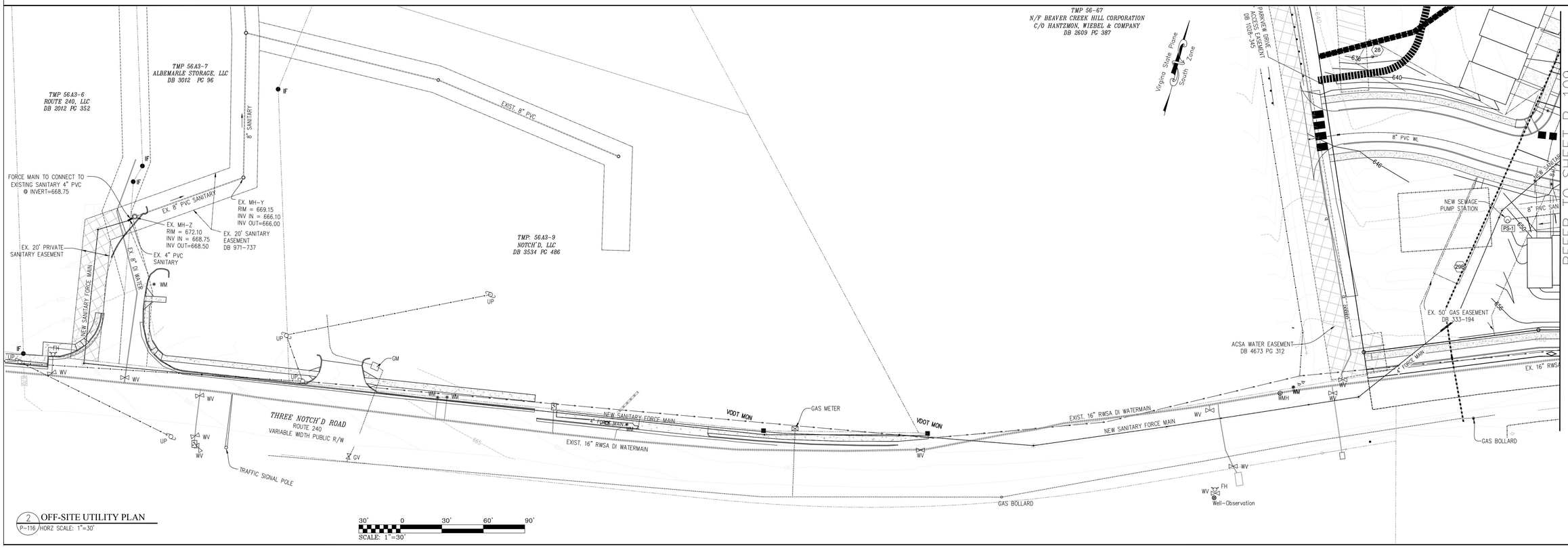
SHEET TITLE:
WATERLINE PROFILES

SHEET NO.
P-502





1 SANITARY FORCEMAIN PROFILE
P-116 HORZ SCALE: 1"=30'
VERT SCALE: 1"=10'



2 OFF-SITE UTILITY PLAN
P-116 HORZ SCALE: 1"=30'

30' 0 30' 60' 90'
SCALE: 1"=30'

COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
Lic. No. 30542
10/13/23
PROFESSIONAL ENGINEER

JOB NO.:	20150
DATE:	10/10/2023
SCALE:	AS SHOWN
DRAWN BY:	BM
DESIGNED BY:	TM
CHECKED BY:	

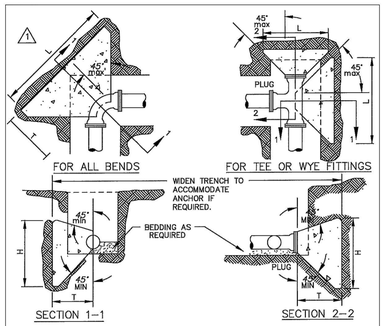
MERIDIAN
PLANNING GROUP, LLC
ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434-882-0121
WWW.MERIDIANVBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE:
FINAL SITE PLAN
FOR
OLD DOMINION VILLAGE

SHEET TITLE:
UTILITY DETAILS

SHEET NO.
P-503
SHEET 17 of 19

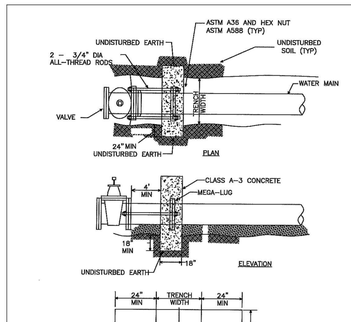


PIPE SIZE	DEGREE OF BEND	BEND DIMENSIONS (FEET) L	H	T	VOL. CU.YD.	TEE AND PLUGS (FEET) L	H	T	VOL. CU.YD.
4" & 6"	90	2.50	2.50	3.01	0.24	2.00	2.25	2.50	0.15
	45	2.00	2.25	2.60	0.15				
	22 1/2	1.50	2.00	2.52	0.10				
	11 1/4	1.50	2.00	2.50	0.10				
8"	90	3.66	3.16	3.21	0.48	3.16	2.91	2.66	0.32
	45	2.66	2.66	2.77	0.26				
	22 1/2	1.66	2.16	2.69	0.13				
	11 1/4	1.66	2.16	2.67	0.13				
10" & 12"	90	4.83	3.83	3.42	0.83	3.83	4.00	2.83	0.52
	45	3.33	3.58	2.95	0.43				
	22 1/2	2.33	2.58	2.86	0.24				
	11 1/4	1.83	2.33	2.84	0.16				

1. THRUST BLOCKS ARE REQUIRED WHENEVER THE PIPELINE : CHANGES DIRECTION, CHANGES SIZE, DEAD ENDS AND AT VALVES.
2. USE 2500 P.S.I. CONCRETE.
3. NO CONCRETE SHALL BE POURED ON ANY PART OF THE JOINT.
4. THE CONSULTING ENGINEER SHALL BE RESPONSIBLE TO THE VERIFY THE TYPE & SIZE OF ALL THRUST BLOCKS.

CONCRETE THRUST BLOCKS

NTS
FIG. W–3



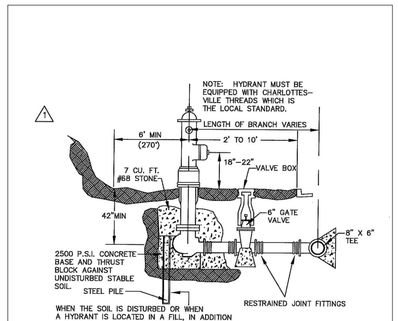
NOTE:

1. ALL RODS AND FASTENERS SHALL BE GIVEN TWO COATS OF ASPHALTIC PAINT AFTER ASSEMBLY.
2. CONTRACTOR SHALL ENSURE THAT THE COLLAR BEARS AGAINST UNDISTURBED SOIL FOR THE MINIMUM DIMENSION SHOWN.
3. DIMENSIONS SHOWN BEYOND THE TRENCH WIDTH ARE ABSOLUTE MINIMUM. IF THE TRENCH WIDTH IS LARGER DURING CONSTRUCTION, THE COLLAR DIMENSIONS SHALL INCREASE ACCORDINGLY.

CROSS ANCHOR RESTRAINTS FOR VALVES

NTS

Fig. W–3C

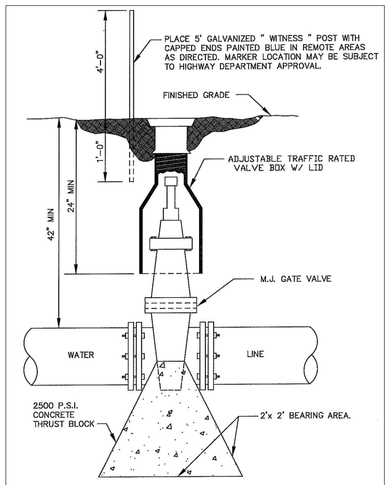


NOTE :

1. SURROUND WEEP HOLES WITH GRAVEL AND KEEP FREE OF CONCRETE.
2. MAINTAIN A 3 1/2" MIN. COVER FROM THE MAIN TO THE FIRE HYDRANT (INCLUDING DITCHES)
3. FINISHED GRADE SHALL SLOPE AWAY FROM THE FIRE HYDRANT AND VALVE BOX.
4. THE GATE VALVE IS ALLOWED IN SHOULDER OR BEHIND THE DITCH. IT IS NOT ALLOWED IN THE DITCH.
5. FIRE HYDRANTS SHALL BE INSTALLED AT LOCATIONS WHERE WEEP HOLES ARE ABOVE THE PREVAILING GROUNDWATER ELEVATION. IF REQUIRED TO BE IN WET AREAS, THE WEEP HOLES SHALL BE PLUGGED AND THE HYDRANT SHALL BE PUMPED DRY.

TYPICAL FIRE HYDRANT ASSEMBLY DETAIL

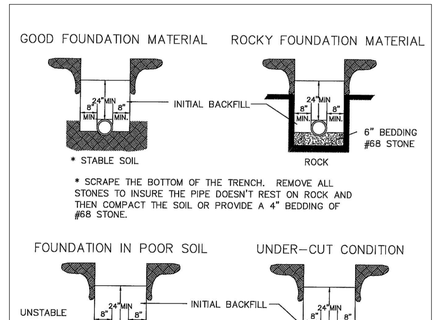
N.T.S.
FIG. W–4



NOTE : IN REMOTE AREAS, VALVE BOXES SHALL EXTEND SIX (6) INCHES ABOVE GRADE.

TYPICAL GATE VALVE

NTS
FIG. W–5



NOTE :

1. NO ROCKS SHALL BE ALLOWED WITHIN 24" OF THE WATER LINES.
2. NO ROCKS LARGER THAN 6" IN ANY DIMENSION SHALL BE ALLOWED ABOVE THE INITIAL BACKFILL.
3. THE INITIAL BACKFILL SHALL BE PLACED AND COMPACTED IN 6" LIFTS.
4. NO ORGANIC OR FROZEN MATERIAL OR DEBRIS SHALL BE ALLOWED IN THE TRENCH.
5. BELL HOLES SHALL BE DUG OUT IN ALL CASES.

DUCTILE IRON WATER PIPE INSTALLATION & BEDDING

NTS
FIG. W–2

NOTE:
1) SADDLES SHALL BE USED ON PVC PIPE.
2) NO SWEATED FITTINGS.
3) LATERALS INSTALLED WITHIN EXISTING, OR PROPOSED, VDOT RIGHT–OF–WAY SHALL BE INSTALLED IN A 2–INCH PVC SDR–21 OR HDPE DR11 CASING PIPE.

TYPICAL SERVICE LATERAL INSTALLATION (3/4" & 1" METERS)

NTS
FIG. W–6A

NOTES:

- GATE VALVE WILL BE 4" UNLESS OTHERWISE SPECIFIED BY THE ACSA.
- SERVICE LINE TO CONNECT AT MAIN WITH X"x4" TEE.
- REFER TO FIG. W–3 FOR THRUST BLOCK DETAILS ON TEE.
- REFER TO FIG. W–5 FOR THRUST BLOCK DETAILS AND DEPTH OF COVER ON GATE VALVE.
- NO CONCRETE SHOULD BE POURED ON ANY PART OF THE RESTRAINED JOINT. USE PLASTIC SHEETING AS PROTECTION FOR BOLTS.
- USE 2500 P.S.I. CONCRETE.

LARGE METER SERVICE LINE

NTS
FIG. W–6C

NOTES:

1. PROVIDE A 6" THICK GRAVEL BED BENEATH THE METER VAULT.
2. MINIMUM WALL THICKNESS FOR PRECAST OR POUR–IN–PLACE VAULTS SHALL BE 4".
3. THE OUTSIDE OF THE VAULT BELOW GRADE SHALL BE COATED WITH AN APPROVED WATER PROOFING COMPOUND.

TYPICAL METER VAULT (1 1/2" METER)

NTS
FIG. W–7B

ELEVATION

NOTE: WHEN BEDROCK IS ENCOUNTERED AND COVER EQUALS OR EXCEEDS 3', THE TRENCH SHALL BE BACKFILLED WITH COMPACTED 21A STONE AND TOPPED WITH 18" OF VDOT CLASS 1 RIPRAP.

WATER TYPICAL STREAM CROSSING

NTS
FIG. W–12

NOTES:

1. 2" LINES PIPED WITH 2" BRASS PIPE & FITTINGS EXCEPT PRVs.
2. 2" PRV's SHALL BE CLA–VAL 90 SERIES (RANGE AND MODEL TO BE SPECIFIED BY THE ACSA) OR APPROVED EQUAL.
3. MAIN PRV SHALL BE CLA–VAL 90 SERIES (RANGE AND MODEL TO BE SPECIFIED BY THE ACSA) OR APPROVED EQUAL.
4. SIX (6) 4" ASHCROFT #1009 LIQUID FILLED PRESSURE GAUGES (RANGE TO BE SPECIFIED BY THE ACSA) W/GAUGE COCKS, OR APPROVED EQUAL.
5. EXTEND 6" DIAMETER, SCHEDULE 40 DRAIN TO DAYLIGHT AND TERMINATE WITH FLAP VALVE.

PRESSURE REDUCING VALVE VAULT

N.T.S
W–13

NOTE :

1. BEDDING THICKNESS REQUIREMENT SHOWN IS MINIMUM AND SHALL BE SPECIFICALLY DETERMINED BY THE CONSULTANT FOR THE SOIL CONDITIONS.
2. THE CONSULTANT WILL DETERMINE WHETHER MANHOLES SHALL HAVE EXTENDED OR NON–EXTENDED BASES.
3. ALL JOINTS, LIFT HOLES, INLETS, OUTLETS TO BE SEALED & GROUTED INSIDE AND OUT.

TYPICAL MANHOLE SECTION SHOWING BRANCH TIE–IN

N.T.S
FIG. S–I–A

TYPICAL MANHOLE PLAN SHOWING BRANCH TIE – IN

NTS
FIG. S–I–B

TYPICAL MANHOLE FRAME & COVER

N.T.S
FIG S–I–D

SEWER SERVICE LATERAL CONNECTION NOTES:

1. WHERE A SEWER SERVICE LATERAL CONNECTS TO A MANHOLE AND NO INVERT ELEVATION FOR THE SERVICE LATERAL IS INDICATED , THE TOP (CROWN) ELEVATION OF THE SERVICE LATERAL PIPE SHALL BE AT LEAST 0.2' HIGHER THAN THE TOP (CROWN) ELEVATION OF THE THE LOWEST PIPE CONNECTED TO THE MANHOLE.
2. SEWER LATERALS TAPPED INTO AN EXISTING SEWER MAIN SHALL BE CONNECTED USING A PIPE SADDLE.
3. MINIMUM GRADE FOR SEWER SERVICE CONNECTION SHALL BE 2% (1/4" PER FOOT)
4. ALL SEWER LATERALS SHALL HAVE A MINIMUM DIAMETER OF 4".
5. ALL SEWER LATERALS SHALL HAVE A MINIMUM COVER OF 3 FEET.

SEWER SERVICE LATERAL CONNECTION

N.T.S.
FIG. S–2

NOTE :

1. OPEN CUTS IN PAVED AREAS WITHIN EXISTING VDOT RIGHT–OF–WAY SHALL BE BACKFILLED ENTIRELY WITH NO. 21A STONE.
2. FOR DUCTILE IRON PIPE THE BOTTOM OF THE TRENCH SHALL BE SCRAPED AND COMPACTED, AND ALL STONES REMOVED OR A 4" BEDDING OF NO. 68 STONE SHALL BE PROVIDED .
3. WHERE ROCK IS ENCOUNTERED PIPE SHALL BE INSTALLED ON A MINIMUM 6" BEDDING OF NO. 68 STONE .

TYPICAL SEWER PIPE INSTALLATION IN TRENCH

NTS
FIG. S–3

COMMONWEALTH OF VIRGINIA
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ENGINEERING*SURVEYING*PLANNING
440 PREMIER CIRCLE, SUITE 200
CHARLOTTESVILLE, VA 22901
PHONE: 434–882–0121
WWW.MERIDIANVBE.COM

NO.	DESCRIPTION	DATE

PROJECT TITLE: FINAL SITE PLAN FOR OLD DOMINION VILLAGE

SHEET TITLE: DRAINAGE NOTES & DETAILS

SHEET NO.
P-504

OLD DOMINION PUMP STATION NO. 1 DESIGN

COMPUTATION OF FLOW GENERATION

RESIDENTIAL AREA

Townhomes = 66 Lots x 3.2 Persons/Dwelling x 100 gpd/Person = 21,120 gpd

COMMERCIAL AREA

Existing Veterinary Clinic = 1,180 gpd

Total flow would be 22,300 gpd for Pump Station No. 1

FORCE MAIN SIZING From Pump Station No. 1

Average flow: 22,300 gpd/1440 minutes/day = 16 gpm

Peak Flow: 16 gpm x 3 peak factor = 48 gpm

A 4 inch force main would require a flow of minimum 80 gallons per minute to achieve the scour velocity of 2.0 feet per second. In this case the pump would have a capacity of almost 2 times the peak flow into the station.

STORAGE IN WET WELL AND PIPING IF BOTH PUMPS FAIL

Volume in Wet Well pi $(r)^2$x h x 7.48 gallons/cu. Ft Where pi = 3.14, r = 3 ft., h = 2 ft.

Volume in Wet Well $3.14(3)^2$ x 2 x 7.48 = 422 gallons

Volume in Gravity Sewer Line pi$(r)^2$ x length x 7.48 gallons/cu. ft. Where pi = 3.14, r = 4/12 = 0.33 ft.

Manholes PS 1 to MHF, MHF to MHD, MHD to MHC to MHB length = 424 ft.

Volume in Gravity Sewer $3.14(.33)^2$x 424 x 7.48 gallons/cu. ft. = 1084 gallons

Volume in Manholes pi $(r)^2$x h x 7.48 gallons/cu. Ft Where pi = 3.14, r = 2 ft., h = 9 ft.

Volume in Manholes $3.14(2)^2$ x 9 x 7.48 gallons/cu/ ft = 846 gallons

Total Storage = Wet Well + Gravity Sewer Line + Manholes

422 gallons + 1084 gallons + 846 gallons = 2,352 gallons

Time to React at Peak Flow = 2,352 gallons/48 gallons/minute = 49 minutes

Time to React at Average Flow = 2,352 gallons/16 gallons/minute = 147 minutes
(2 Hours and 27 minutes)

GENERAL HORSEPOWER DETERMINATIONS

4 inch PVC C900 Force Main

Whp = (q)(TDH)/3920 Where q is pump capacity 80 gpm, TDH is 36.93 ft., Pump efficiency is 40%, Motor Efficiency is 55%

Bhp = Whp/Pump Efficiency

Hp = Bhp/Motor Efficiency

Hp = 80 (36.93)/3920 x 0.40 x 0.55 = 3.42

Actual Conditions will be dictated by the pump curves and pump selection.

BUOYANCY FORCE

Upward Force

Force = Pi x r^2 x height x 7.49 gallons/ft^3 x 8.34 #/ gallon where pi = 3.14, R = 3 ft., Height = 16.1 ft

Force Upward = 3.14 x 3^2 x 17.1 x 7.49 x 8.34 = 30,186 pounds

Downward Force

Manhole Weight

Outside Diameter - Inside Diameter = Area of Concrete in ft^3

(3.14 x 3.5^2 x 17.1 ft) - (3.14 x 3^2 x 17.1 ft) = (657 ft^3) - (483 ft^3) = 174 ft^3

174 ft^3 x yd^3/27 = 6.4 yd^3 for manhole only

Bottom Slab Weight

Pi x r^2 x height where r = 4.5 ft., Height = 0.5 ft.

3.14 x 4.5^2 x 0.5 ft x yd^3/27 ft^3 = 1.17 yd^3

Top Slab Weight

Pi x R x R x Height x yd^3/27 ft^3 where R = 3 ft., Pi = 3.14 ft., Height = 0.5 ft.

3.14 ft. x 9 ft. x 0.5 ft x yd^3/27 ft^3 = = 0.52 yd^3

Weight of Dirt

Outside Diameter of Base - Outside Diameter of Wet Well

(3.14 x 4.5^2 x 17.1 ft) - (3.14 x 3.5^2 x 17.1 ft) = (1087 ft^3) - (657 ft^3) = 430 ft^3

Weight of dirt is 62.4 #/ft^3 Concrete Weight is 4,000 #/ yd^3

Downward Force = Manhole Weight + Bottom Slab + Top Slab + Dirt Weight

= (6.4 yd^3 + 1.17 yd^3 + 0.52 yd^3) x 4,000 #/yd^3 + (430 ft^3 x 62.4 #/ft^3)

= 32,360 # + 26,832 # = 59,192 pounds

Downward Force is greater than the buoyancy force without adding in the footings.

52,192 pounds is greater than 30,186 pounds.

CYCLE TIME FOR PUMPING STATION

At Average Flow of 16 gpm; 422 gallons of volume between Pump On and Pump Off

422 gallons/(80 gpm - 16 gpm) = 6.6 minutes of pumping time.

Fill Time 422 gallons/16 gpm = 26.3 minutes to fill

Cycle time is 6.6 minutes + 26.3 minutes = 32.9 minutes

Pump Runs 6.6 minutes per 30 minutes at average flow.

At peak flow of 48 gpm;

422 gallons/(80 gpm - 48 gpm) = 13.2 minutes pumping time

Fill time 422 gallons/48 gpm = 8.8 minutes to fill

Cycle time is 13.2 minutes + 8.8 minutes = 22 minutes

Pump Runs 13.2 minutes per 30 minutes at peak flow

OLD DOMINION PUMP STATION NO. 2 DESIGN

COMPUTATION OF FLOW GENERATION

RESIDENTIAL AREA

Single-Family = 16 Lots x 6 Persons/Dwelling x 75 gpd/Person = 7,200 gpd

Townhomes = 28 Lots x 4 Persons/Dwelling x 75 gpd/Person = 8,400 gpd

Total residential flow would be 15,600 gpd for Pump Station No. 2

FORCE MAIN SIZING From Pump Station No. 2

Average flow: 15,600 gpd/1440 minutes/day = 11 gpm

Peak Flow: 11 gpm x 3 peak factor = 33 gpm

A 4 inch force main would require a flow of minimum 80 gallons per minute to achieve the scour velocity of 2.0 feet per second. In this case the pump would have a capacity of almost 3 times the peak flow into the station.

STORAGE IN WET WELL AND PIPING IF BOTH PUMPS FAIL

Volume in Wet Well pi $(r)^2$x h x 7.48 gallons/cu. Ft Where pi = 3.14, r = 3 ft., h = 2 ft.

Volume in Wet Well $3.14(3)^2$ x 2 x 7.48 = 422 gallons

Volume in Gravity Sewer Line pi$(r)^2$ x length x 7.48 gallons/cu. ft. Where pi = 3.14, r = 4/12 = 0.33 ft.

Manholes MHU to MHN & MHN to MHO length = 159 ft.

Volume in Gravity Sewer $3.14(.33)^2$x 159 x 7.48 gallons/cu. ft. = 407 gallons

Volume in Manholes pi $(r)^2$x h x 7.48 gallons/cu. Ft Where pi = 3.14, r = 2 ft., h = 7.0 ft.

Manholes MHU, MHN

Volume in Manholes $3.14(2)^2$ x 7.0 x 7.48 gallons/cu/ ft = 658 gallons

Total Storage = Wet Well + Gravity Sewer Line + Manholes

422 gallons + 407 gallons + 658 gallons = 1,487 gallons

Time to React at Peak Flow = 1,487 gallons/33 gallons/minute = 45 minutes

Time to React at Average Flow = 1,487 gallons/11 gallons/minute = 135 minutes
(2 Hr. 15 Min)

GENERAL HORSEPOWER DETERMINATIONS

4 inch PVC C900 Force Main

Where q is pump capacity 80 gpm, TDH is 40.76 ft., Pump efficiency is 40%, Motor Efficiency is 55%

Hp = 80 (40.76)/3920 x 0.40 x 0.55 = 3.78

Actual Conditions will be dictated by the pump curves and pump selection.

BUOYANCY FORCE

Upward Force

Force = Pi x r^2 x height x 7.49 gallons/ft^3 x 8.34 #/ gallon where pi = 3.14, R = 3 ft., Height = 12.1 ft

Force Upward = 3.14 x 3^2 x 12.1 x 7.49 x 8.34 = 21,360 pounds

Downward Force

Manhole Weight

Outside Diameter - Inside Diameter = Area of Concrete in ft^3

(3.14 x 3.5^2 x 12.1 ft) - (3.14 x 3^2 x 12.1 ft) = (465 ft^3) - (342 ft^3) = 123 ft^3

123 ft^3 x yd^3/27 = 4.55 yd^3 for manhole only

Bottom Slab Weight

Pi x r^2 x height where r = 4.5 ft., Height = 0.5 ft.

3.14 x 4.5^2 x 0.5 ft x yd^3/27 ft^3 = 1.17 yd^3

Top Slab Weight

Pi x R x R x Height x yd^3/27 ft^3 where R = 3 ft., Pi = 3.14 ft., Height = 0.5 ft.

3.14 ft. x 9 ft. x 0.5 ft x yd^3/27 ft^3 = = 0.52 yd^3

Weight of Dirt

Outside Diameter of Base - Outside Diameter of Wet Well

(3.14 x 4.5^2 x 12.1 ft) - (3.14 x 3.5^2 x 12.1 ft) = (769 ft^3) - (465 ft^3) = 304 ft^3

Weight of dirt is 62.4 #/ft^3 Concrete Weight is 4,000 #/ yd^3

Downward Force = Manhole Weight + Bottom Slab + Top Slab + Dirt Weight

= (4.55 yd^3 + 1.17 yd^3 + 0.52 yd^3) x 4,000 #/yd^3 + (304 ft^3 x 62.4 #/ft^3)

= 24,960 # + 18,969 # = 43,929 pounds

Downward Force is greater than twice the buoyancy force without adding in the footings.

43,929 pounds is greater than 21,360 pounds.

CYCLE TIME FOR PUMPING STATION

At Average Flow of 11 gpm; 211 gallons of volume between Pump On and Pump Off

211 gallons/(80 gpm - 11 gpm) = 3.0 minutes of pumping time.

Fill Time 211 gallons/11 gpm = 19 minutes to fill

Cycle time is 3.0 minutes + 19 minutes = 22 minutes

Pump Runs 9.0 minutes per 60 minutes at average flow.

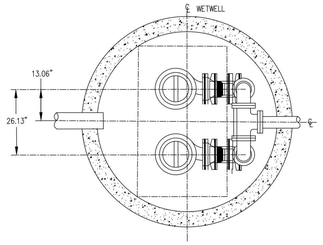
At peak flow of 33 gpm;

211 gallons/(80 gpm - 33 gpm) = 4.5 minutes pumping time

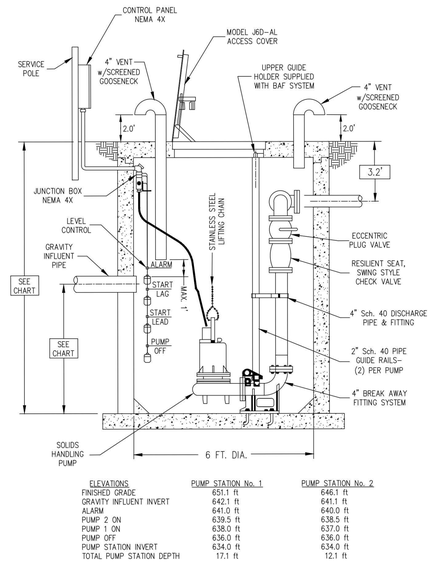
Fill time 211 gallons/33 gpm = 6.4 minutes to fill

Cycle time is 4.5 minutes + 6.4 minutes = 10.9 minutes

Pump Runs 13.5 minutes per 30 minutes at peak flow



TOP VIEW



ELEVATIONS	PUMP STATION No. 1	PUMP STATION No. 2
FINISHED GRADE	651.1 ft	646.1 ft
GRAVITY INFLUENT INVERT	642.1 ft	641.1 ft
ALARM	641.0 ft	640.0 ft
PUMP 2 ON	639.5 ft	638.5 ft
PUMP 1 ON	638.0 ft	637.0 ft
PUMP OFF	636.0 ft	636.0 ft
PUMP STATION INVERT	634.0 ft	634.0 ft
TOTAL PUMP STATION DEPTH	17.1 ft	12.1 ft

SIDE VIEW

DUPLEX CONTROL PUMP STATION
SCALE: NTS

COMMONWEALTH OF VIRGINIA
TIMOTHY RAY MILLER
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10/10/23
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SHEET TITLE: PUMP STATION NOTES & DETAILS

SHEET NO. P-505