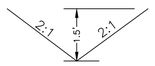
CONVEYANCE CHANNEL CROSS SECTIONS

N.T.S.

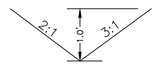
D-1
DRAINAGE AREA=1.31 AC.



MIN. CONSTRUCTED DEPTH = 1.5 FT
LINING=EC-2 (TREATMENT 1)

Q_2	=2.90	cfs
V_2	=3.11	fps
Q_{10}	=3.87	cfs
D_{10}	=0.76	ft

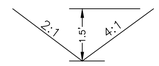
D-2
DRAINAGE AREA=0.56 AC.



MIN. CONSTRUCTED DEPTH = 1.0 FT
LINING=EC-2 (TREATMENT 1)

Q_2	=0.69	cfs
V_2	=3.45	fps
Q_{10}	=0.92	cfs
D_{10}	=0.32	ft

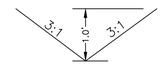
D-3
DRAINAGE AREA=0.09 AC.



MIN. CONSTRUCTED DEPTH = 1.5 FT
LINING=EC-2 (TREATMENT 1)

Q_2	=0.33	cfs
V_2	=3.30	fps
Q_{10}	=0.44	cfs
D_{10}	=0.20	ft

D-4
DRAINAGE AREA=6.18 AC.



MIN. CONSTRUCTED DEPTH = 1.0 FT
LINING=EC-2 (TREATMENT 1)

Q_2	=1.34*	cfs
V_2	=2.94	fps
Q_{10}	=4.35*	cfs
D_{10}	=0.61	ft

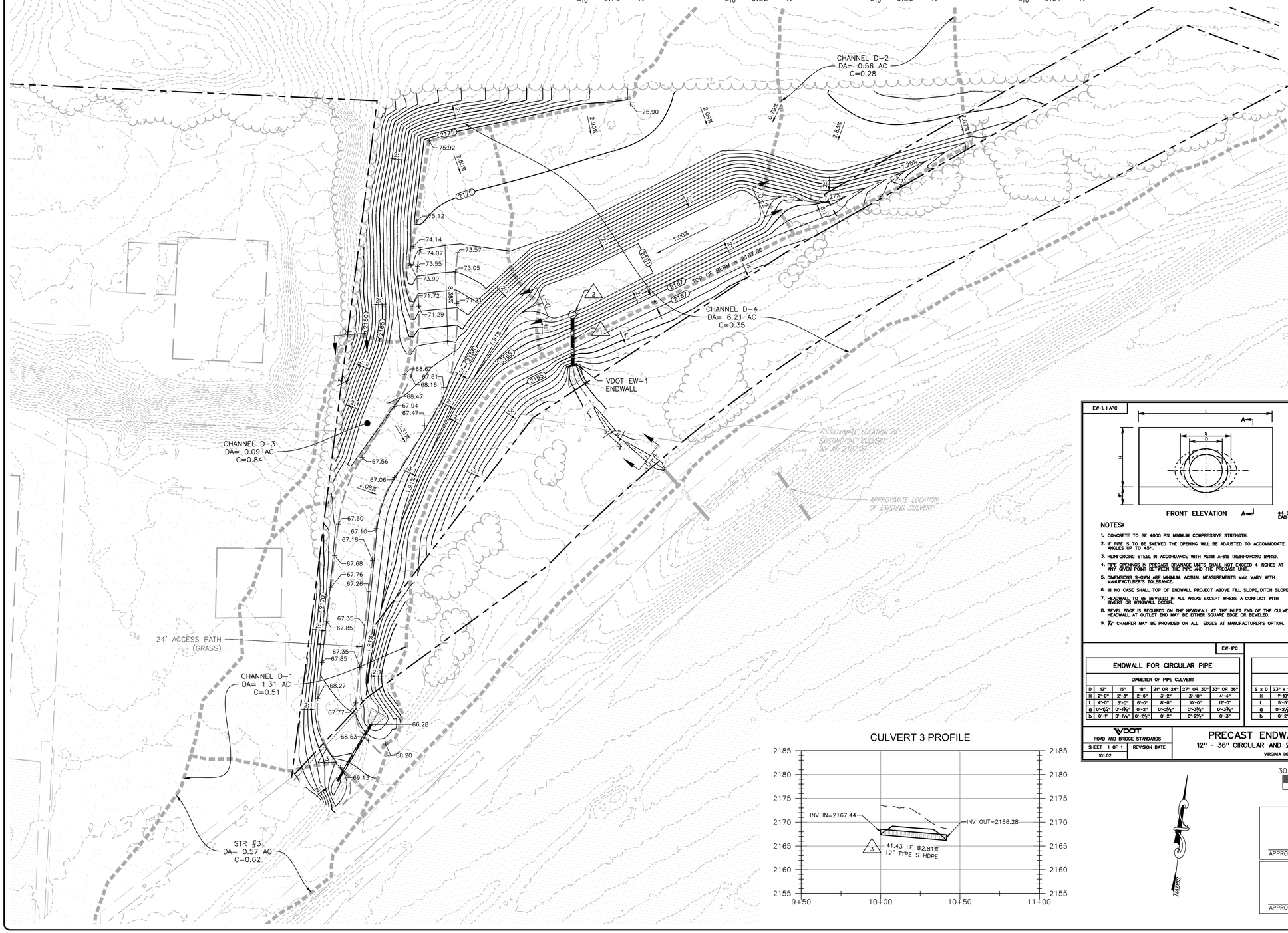
*NOTE:
THE FLOW RATES FOR CONVEYANCE CHANNEL SECTION D-4 HAVE BEEN TAKEN FROM HYDROCAD CALCULATIONS AT POD #1.

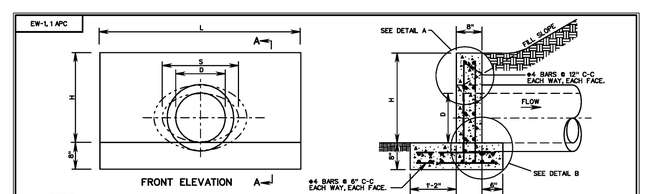
STORM SEWER INSTALLATION NOTES

1. THE MINIMUM DEPTH OF COVER FOR ALL STORM SEWER PIPE 4" TO 48" DIAMETER SHALL BE 12" FROM THE TOP OF THE PIPE TO THE BOTTOM OF FLEXIBLE PAVEMENT (OR TOP OF RIGID PAVEMENT). FOR 54" AND 60" DIAMETER PIPE, THE MINIMUM DEPTH OF COVER SHALL BE 24".
2. ALL STORM INLET/MANHOLE BOTTOMS SHALL HAVE INLET SHAPING (IS-1) PER VDOT STANDARDS. NYLOPLAST BASINS SHALL HAVE THE SUMP FILLED WITH CONCRETE.
3. ALL PIPE CROSSINGS SHALL MEET THE VERTICAL SEPARATION REQUIREMENTS IN ACCORDANCE WITHE THE TOWN'S WATER AND SANITARY SEWER SPECIFICATIONS. THE GENERAL CONTRACTOR SHALL EXERCISE CARE TO VERIFY THE VERTICAL SEPARATION OF UTILITIES IN THE FIELD PRIOR TO INSTALLATION. SHOULD ANY CONFLICTS WITHE THE PROPOSED AND/OR EXISTING UTILITIES ARISE, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY.
4. ALL STORM SEWER PIPE SHALL BE INSTALLED WITH LEAK-RESISTANT JOINTS.

STRUCTURE SCHEDULE

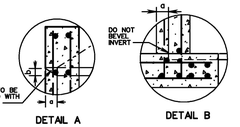
1. 32.39 LF OF 18" C-361 CLASS III RCP @ 1.39%
W/ VDOT EW-1 ENDWALL
INV. UPPER=2160.45 INV. LOWER=2160.00
2. 48" DIA. RISER STRUCTURE
OUTLET CONTROL FLOW STRUCTURE
SEE DETAIL SHEET C9
TOP=2164.00
18" INV. OUT=2160.45
3. 41.43 LF OF 12" HDPE @ 2.81%
W/ VDOT ES-1 FLARED END SECTION
INV. UPPER=2167.44 INV. LOWER=2166.28





NOTES:

1. CONCRETE TO BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH.
2. IF PIPE IS TO BE SKEWED THE OPENING WILL BE ADJUSTED TO ACCOMMODATE ANGLES UP TO 45°.
3. REINFORCING STEEL IN ACCORDANCE WITH ASTM A-615 (REINFORCING BARS).
4. PIPE OPENINGS IN PRECAST DRAINAGE UNITS SHALL NOT EXCEED 4 INCHES AT ANY GIVEN POINT BETWEEN THE PIPE AND THE PRECAST UNIT.
5. DIMENSIONS SHOWN ARE MINIMUM. ACTUAL MEASUREMENTS MAY VARY WITH MANUFACTURER'S TOLERANCE.
6. IN NO CASE SHALL TOP OF ENDWALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
7. HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT OR WINGWALL OCCUR.
8. BEVEL EDGE IS REQUIRED ON THE HEADWALL AT THE INLET END OF THE CULVERT. HEADWALL AT OUTLET END MAY BE EITHER SQUARE EDGE OR BEVELED.
9. ¾" CHAMFER MAY BE PROVIDED ON ALL EDGES AT MANUFACTURER'S OPTION.



EW-1PC

ENDWALL FOR CIRCULAR PIPE

DIAMETER OF PIPE CULVERT

D	12"	15"	18"	21" OR 24"	27" OR 30"	33" OR 36"
H	2'-0"	2'-3"	2'-6"	3'-2"	3'-10"	4'-4"
L	4'-0"	5'-0"	6'-0"	8'-0"	10'-0"	12'-0"
a	0'-7¼"	0'-7½"	0'-2"	0'-2½"	0'-3¼"	0'-3⅝"
b	0'-1"	0'-1¼"	0'-1½"	0'-2"	0'-2½"	0'-3"

EW-1APC

ENDWALL FOR ELLIPTICAL PIPE

SIZE OF ELLIPTICAL PIPE CULVERT (SPAN x RISE)

S x D	23" x 14"	30" x 19"	34" x 22"	38" x 24"	42" x 27"	45" x 29"	49" x 32"	53" x 34"
H	1'-10"	2'-4"	2'-7"	2'-9"	3'-1"	3'-3"	3'-6"	3'-8"
L	5'-5"	7'-2"	8'-6"	9'-2"	10'-2"	10'-11"	12'-1"	12'-11"
a	0'-2½"	0'-3½"	0'-3½"	0'-4"	0'-4½"	0'-4¾"	0'-5"	0'-5½"
b	0'-2"	0'-2½"	0'-2¾"	0'-3"	0'-3½"	0'-3¾"	0'-4"	0'-4½"

VDOT ROAD AND BRIDGE STANDARDS
SHEET 1 OF 1
101.02
REVISION DATE

PRECAST ENDWALL FOR PIPE CULVERTS
12" - 36" CIRCULAR AND 23" x 14" - 53" x 34" ELLIPTICAL PIPES
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
105
302

NADAS

30 0 30 60 90
1" = 30'

APPROVED: Engineering Date

APPROVED: Planning Date

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COMMONWEALTH OF VIRGINIA
JAMES RICHARD TAYLOR
Lic. No. 55142
11/15/2023
PROFESSIONAL ENGINEER

GAD - BRAMMER LN MASS GRADING PLAN

GRADING PLAN & STRUCTURE SCHEDULE

SHAWSVILLE MAGISTERIAL DISTRICT
2600 BRAMMER LN, CHRISTIANSBURG, VIRGINIA

DRAWN BY	WRS
DESIGNED BY	WRS
CHECKED BY	JRT
DATE	07/28/2023
SCALE	AS NOTED
REVISIONS	
11/15/2023	

PROJECT NO. 24230065.00

C4

J:\2023\24230065.00 GAD - BRAMMER LN FILL SITE\CIVIL\dwg\CIVIL BASE.dwg PLOTTED: 11/15/2023 8:48:39 AM