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ASHEVILLE, N.C.
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CG810	SEDIMENT AND EROSION CONTROL DETAILS
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CG812	SEDIMENT AND EROSION CONTROL DETAILS
CG813	SEDIMENT AND EROSION CONTROL DETAILS
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LP402	ENLARGED LANDSCAPE PLAN
LP403	ENLARGED LANDSCAPE PLAN
LP404	ENLARGED LANDSCAPE PLAN
LP405	ENLARGED LANDSCAPE PLAN
LP406	ENLARGED LANDSCAPE PLAN
LP501	LANDSCAPE DETAILS
LP502	LANDSCAPE EDGING DETAILS
LP601	PLANT SCHEDULE

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ISSUE DATE:
FEBRUARY 25, 2022
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DESIGNED BY:
K. BLANFORD
DRAWN BY:
B. RODRIGUEZ
CHECKED BY:
A. McCOY
SUBMITTED BY:
D. HENSLEY
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FILENAME:
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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

COVER SHEET

SHEET ID
G-001

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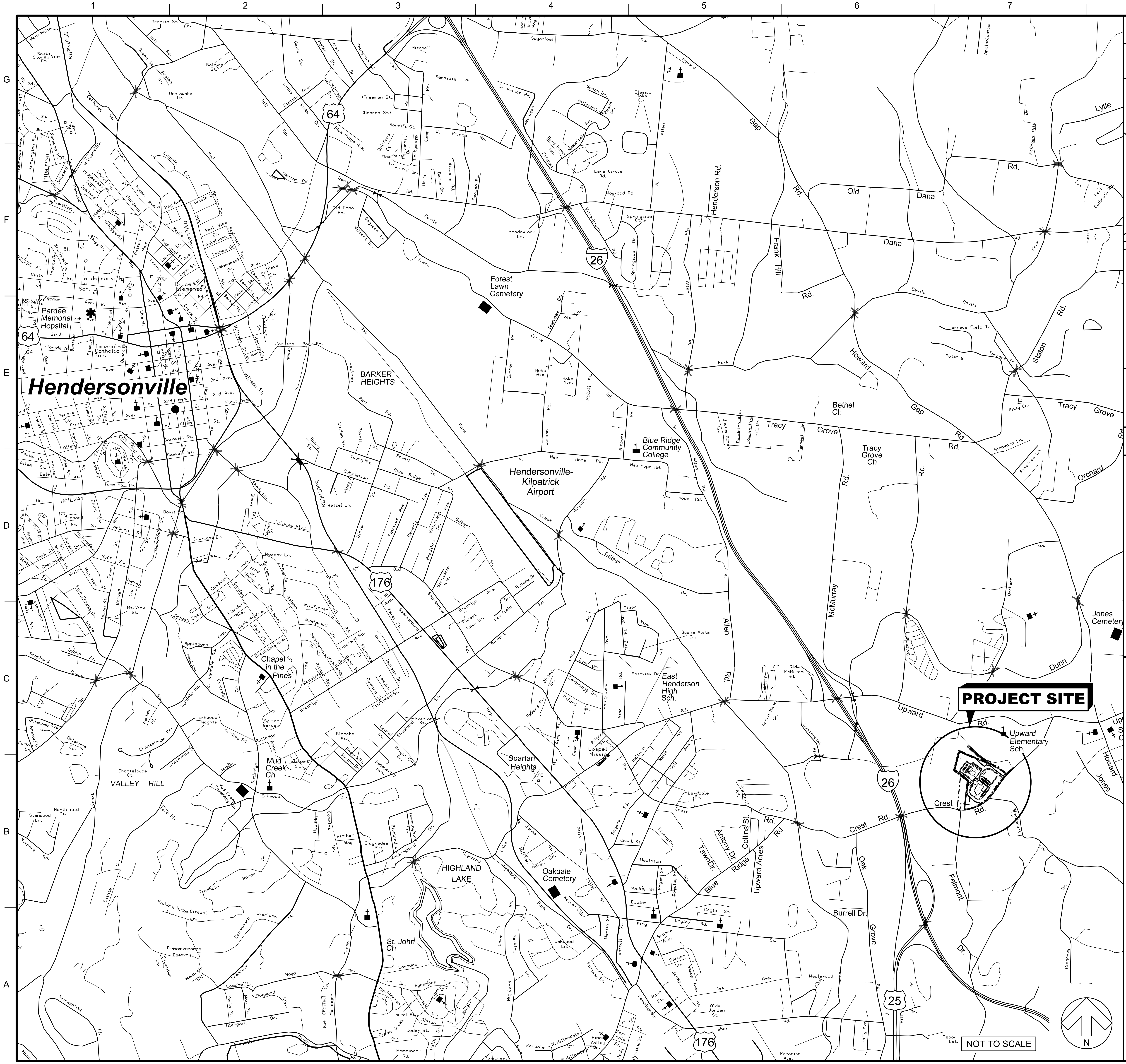
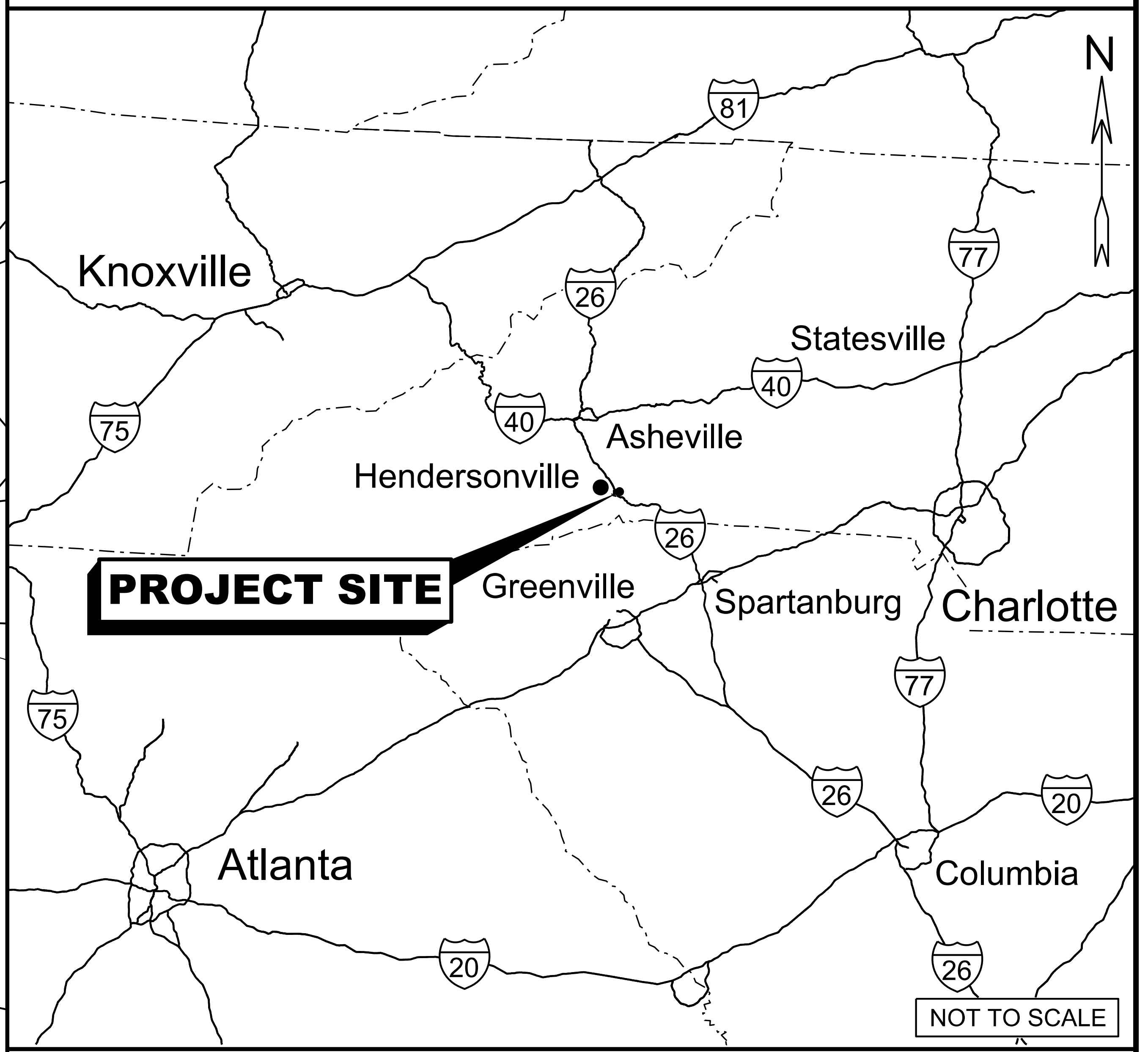
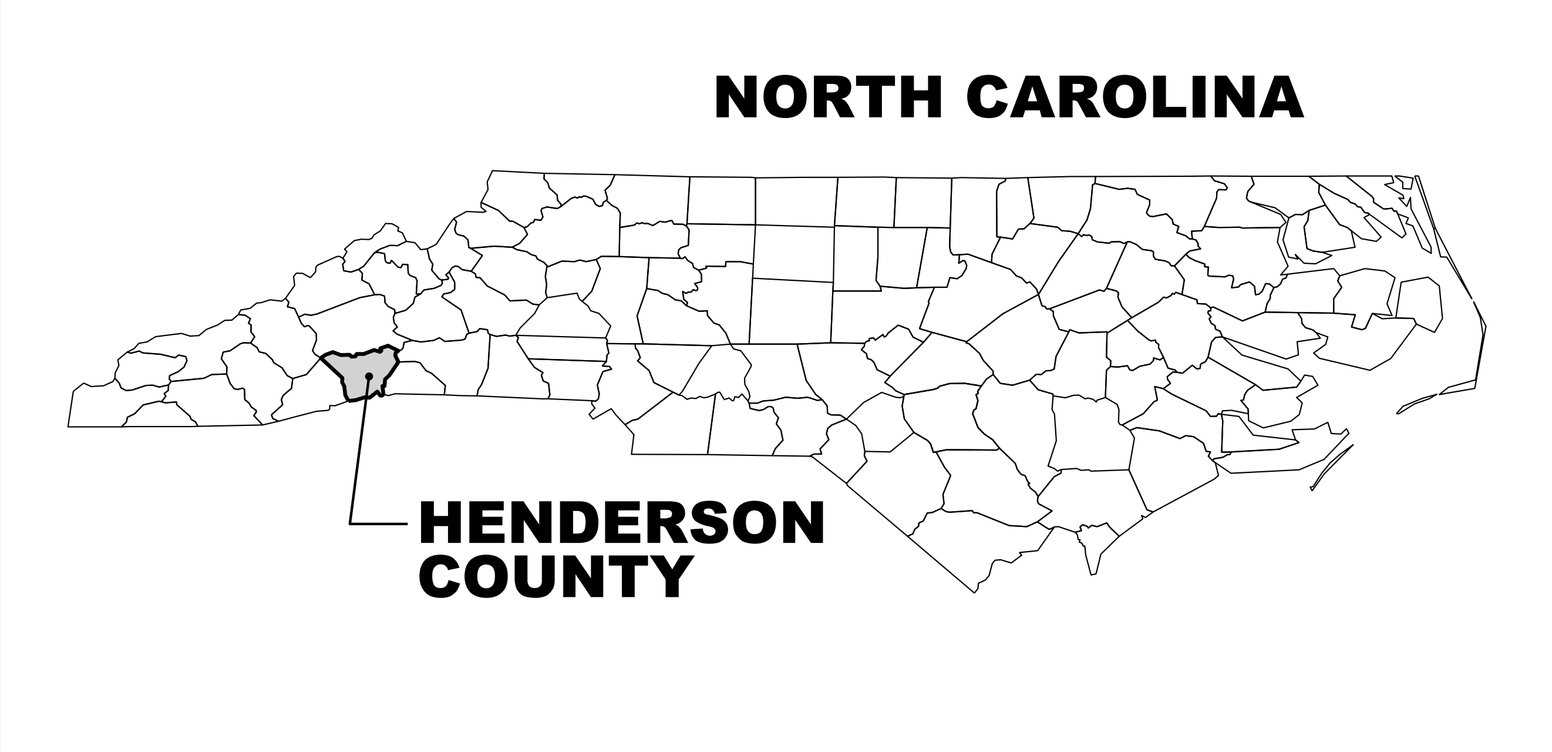


VICINITY MAP



STATE MAP



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MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
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FILENAME:
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ISSUE DATE:
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SOLICITATION NO.:
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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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VICINITY AND LOCATION MAP

SHEET ID
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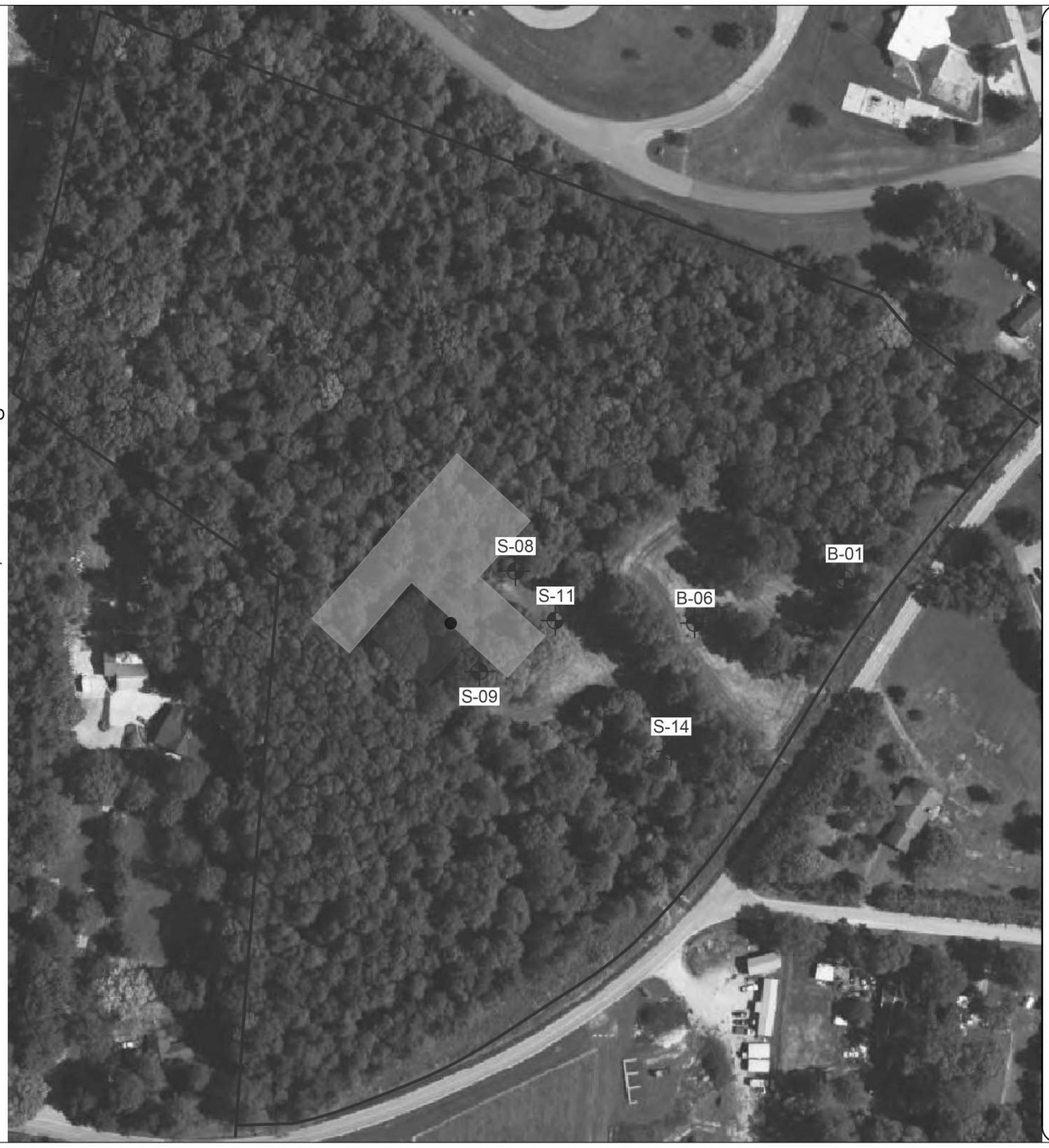
LEGEND:

- ╲ APPROXIMATE AREA OF INVESTIGATION.
- S-08 ⊕ APPROXIMATE BORING LOCATIONS USED FOR GPR CORRELATION (PROVIDED BY BECC).
- ▢ APPROXIMATE EXTENT OF AREA WHERE SURFICIAL TRASH AND DEBRIS WAS READILY OBSERVED. EVIDENCE OF SMALL TRASH PITS WAS ALSO OBSERVED FROM THE SURFACE AT SOME LOCATIONS.
- ▨ APPROXIMATE EXTENT OF DILAPIDATED HOMESTEAD STRUCTURES.
- ▨ APPROXIMATE LOCATION OF 'CLUB HOUSE' AREA, PREVIOUS DISTURBANCE OF SUB-SURFACE MATERIAL DUE TO PRESENCE OF 'CLUB HOUSE' IS NOT EXPECTED.
- ● APPROXIMATE LOCATION OF EXISTING WATER WELL.



CONSULTANT

EGSci
consulting inc
1455 Lincoln Parkway- Suite 500
Atlanta, GA 30346

CLIENT

BECC
360 Industrial Lane
Birmingham, AL 35211

INVESTIGATION

NDT
INVESTIGATION

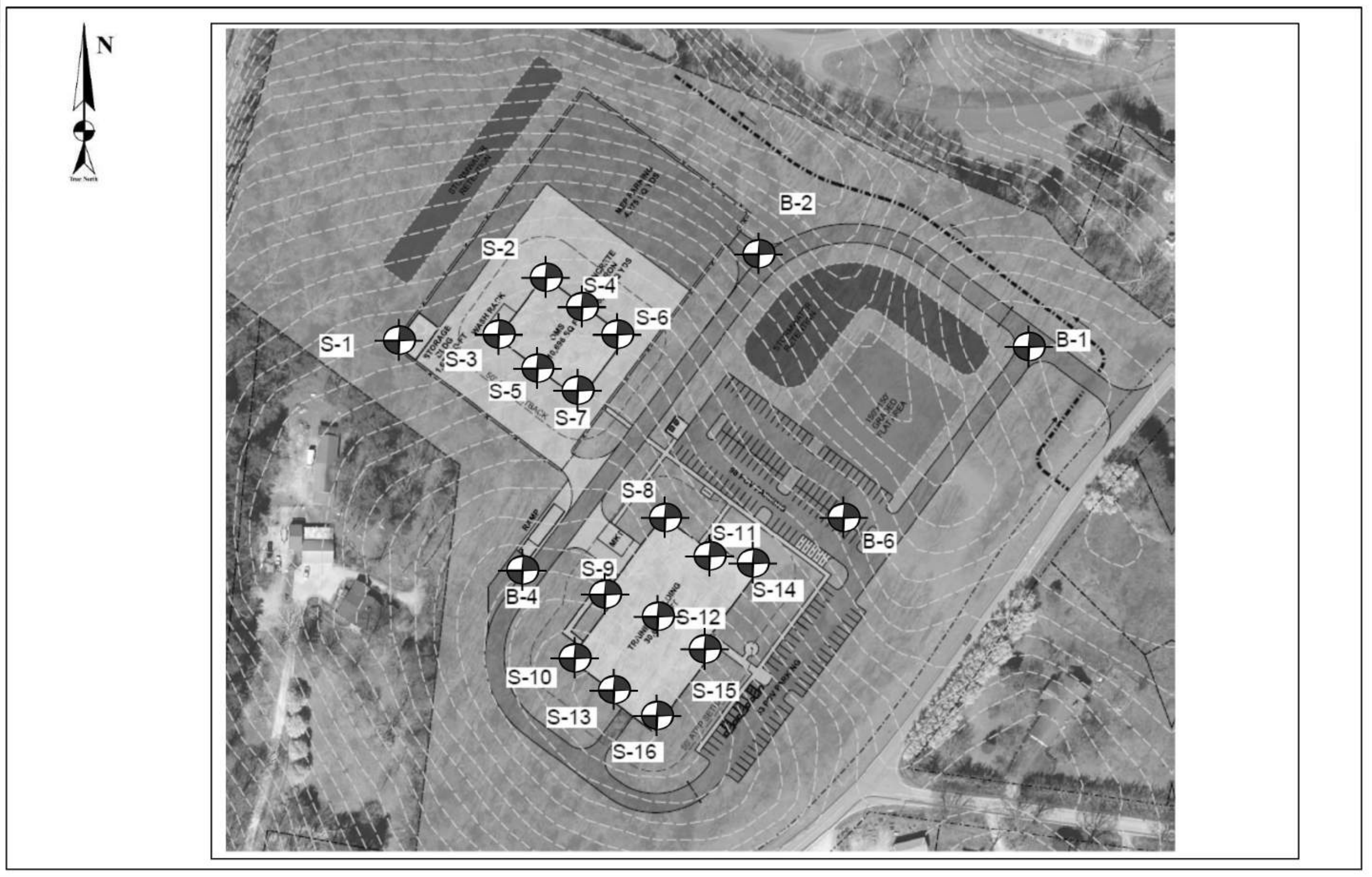
SITE

ASHVILLE USARC

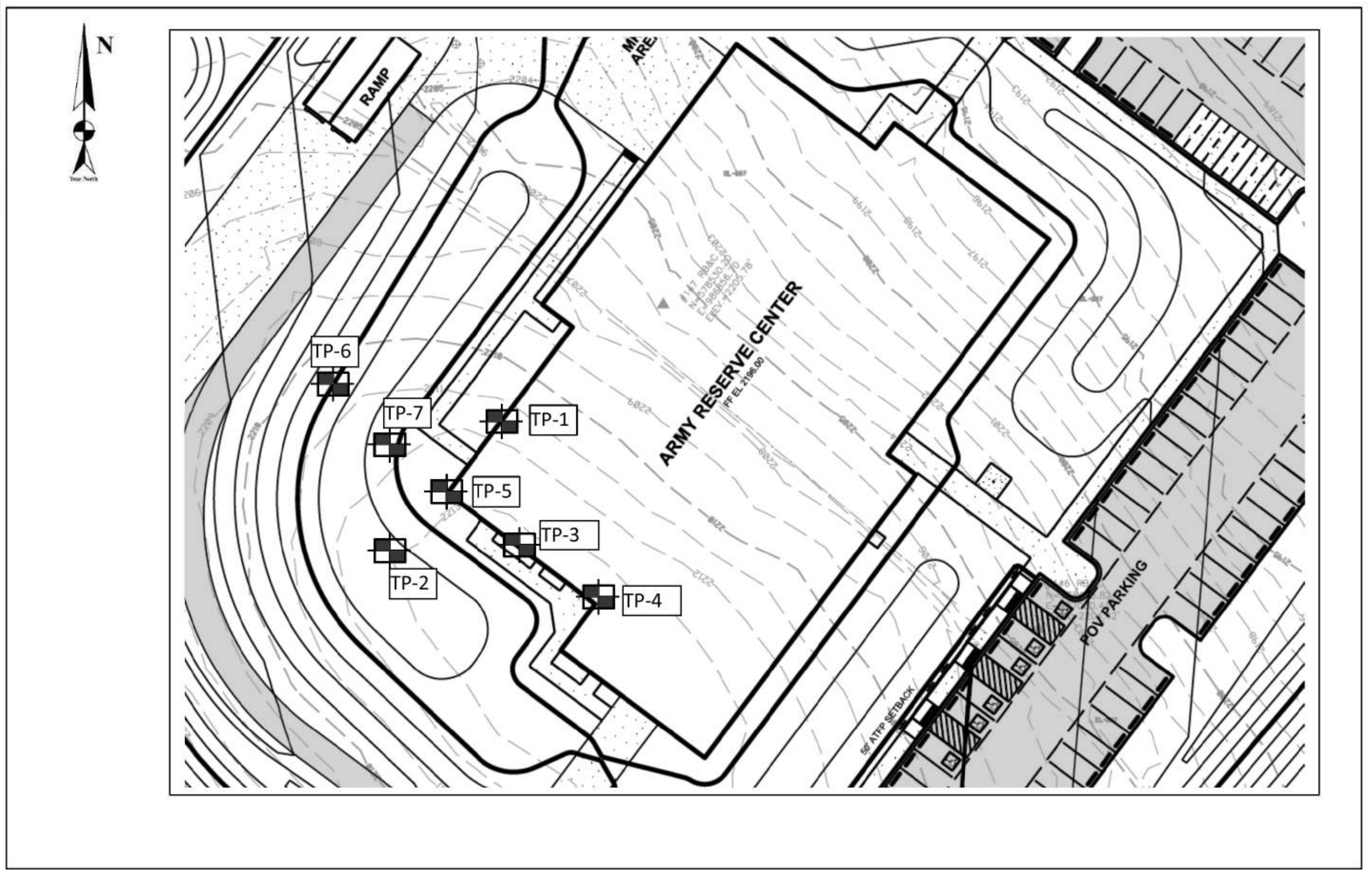
FIGURE DESCRIPTION

APPROXIMATE LOCATION AND EXTENT OF INTERPRETED SITE CONDITIONS.

SCALE	FIGURE
NOT TO SCALE	2



BECC	U. S. Army Reserve Center Training Building & OMS Building Asheville, North Carolina	Boring Location Map	BECC Project No: 220099	Date: 2/4/2021
		Scale: 1"=200 ft.	Map Sheet Sheet 1 of 1	



BECC	U. S. Army Reserve Center Training Building & OMS Building Asheville, North Carolina	Test Pit Location Map	BECC Project No: 220099	Date: 6/18/2021
		Scale: 1"= 75 ft.	Map Sheet Sheet 1 of 1	

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S.CURRY
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FILENAME:
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BORING PLAN

SHEET ID
B-101

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Birmingham AL
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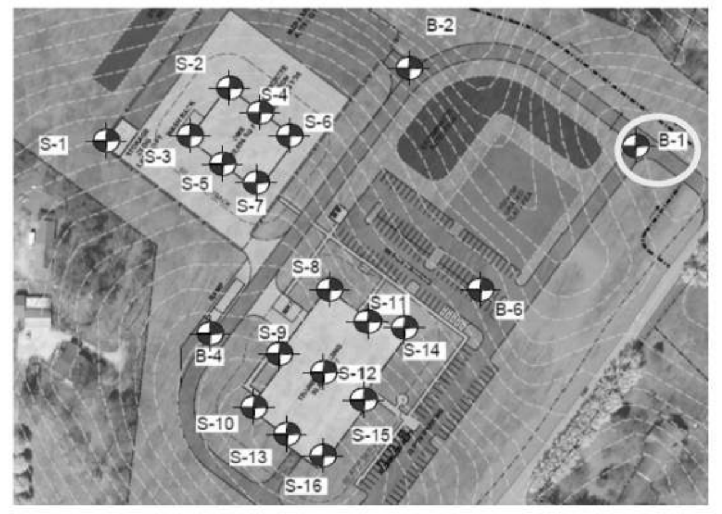
PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** B-1
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2189 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2187.5	0.0			Medium Stiff, Orange Brown Sandy Clayey SILT	SS 1		4-3-2 (5)							Approximately 4" of TOPSOIL
2185.0	2.5			Stiff, Brown Sandy Clayey SILT	SS 2		4-4-6 (10)		29.4					
2182.5	5.0				SS 3		5-7-7 (14)		28.5					
2180.0	7.5		ML	Stiff, Brown Very Sandy Clayey SILT	SS 4		4-5-4 (9)		29.1	NP	NP	58.9		
2177.5	10.0			Dense, Gray Brown Silty SAND	SS 5		11-22-21 (43)							No Groundwater Encountered at Time of Drilling
2175.0	12.5													
	15.0													

Soil Boring Terminated at 15.0 feet

Boring Log

BORING NUMBER - B-1
PAGE 1 OF 1

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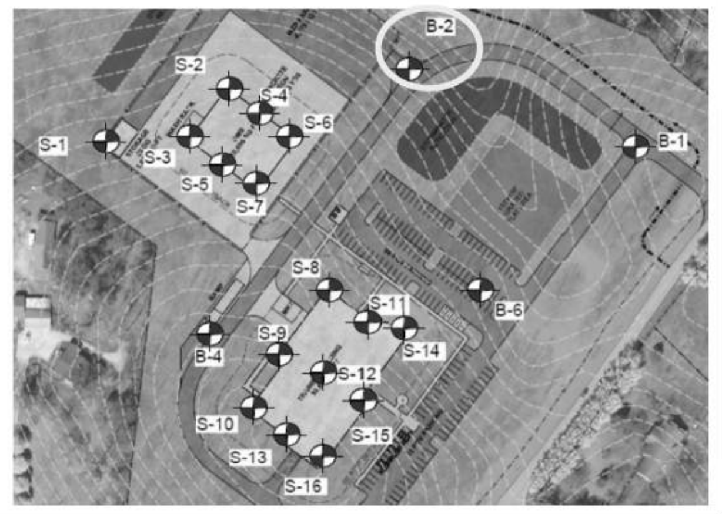
PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** B-2
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2171 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2170.0	0.0			Medium Stiff, Orange Brown Sandy Clayey SILT	SS 1		2-3-3 (6)		16.1					Approximately 4" of TOPSOIL
2167.5	2.5			Stiff, Orange Brown Sandy Clayey SILT	SS 2		3-3-6 (9)							
2165.0	5.0		ML	Medium Stiff, Yellow Brown Very Sandy Clayey SILT	SS 3		2-3-2 (5)		31.1	47	5	51.9		
2162.5	7.5				SS 4		2-3-3 (6)							No Groundwater Encountered at Time of Drilling
2160.0	10.0													

Soil Boring Terminated at 11.2 feet Due to Auger Refusal

Boring Log

BORING NUMBER - B-2
PAGE 1 OF 1

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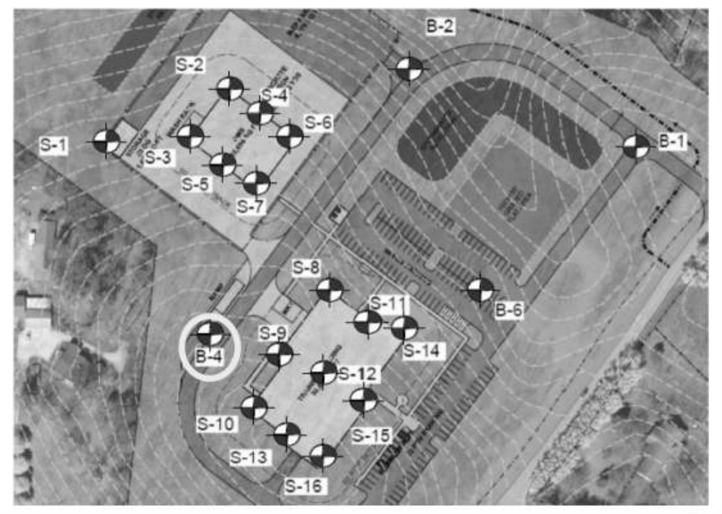
PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** B-4
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2208 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2207.5	0.0			Stiff, Orange Brown Sandy Clayey SILT	SS 1		2-3-3 (6)							Approximately 4" of TOPSOIL
2205.0	2.5			Medium Dense, Gray Silty SAND	SS 2		7-7-7 (14)		29.2					
2202.5	5.0				SS 3		5-7-7 (14)							
2200.0	7.5				SS 4		5-6-7 (13)		20.7					
2197.5	10.0				SS 5		6-8-9 (17)		17.2					No Groundwater Encounterad at Time of Drilling
2195.0	12.5													
	15.0													

Soil Boring Terminated at 15.0 feet

Boring Log

BORING NUMBER - B-4
PAGE 1 OF 1

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CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE B-301.dgn

U.S. ARMY CORPS OF ENGINEERS
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LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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ASHEVILLE, NORTH CAROLINA
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BORING LOGS

SHEET ID
B-301

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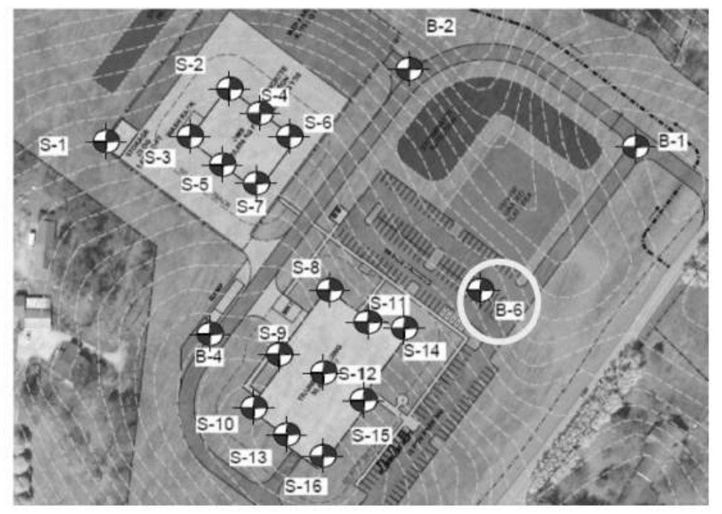
PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** B-6
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2187 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2185.0	0.0			Stiff, Orange Brown Sandy Clayey SILT	SS 1		3-4-3 (7)	▲	27.9					Approximately 4" of TOPSOIL
2182.5	2.5				SS 2		3-4-5 (9)	▲						
2180.0	5.0				SS 3		6-6-7 (13)	▲	29.9					
2177.5	7.5			Stiff, Brown Sandy Clayey SILT	SS 4		4-4-5 (9)	▲						
2175.0 2172.5	10.0 12.5 15.0			Loose, Gray Silty SAND	SS 5		3-4-5 (9)	▲	30.9					No Groundwater Encounterad at Time of Drilling

Soil Boring Terminated at 15.0 feet

Boring Log

BORING NUMBER - B-6
PAGE 1 OF 1

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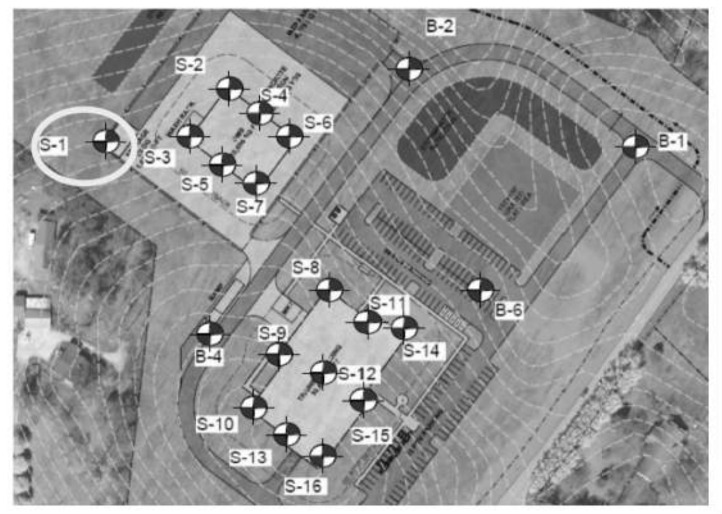
PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-1
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2188 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0			Stiff, Orange Brown Very Sandy Clayey SILT	SS 1		3-4-4 (8)	▲						Approximately 4" of TOPSOIL
2185			ML		SS 2		4-4-7 (11)	▲	21.8	42	8	56.0		
	5			Medium Dense, Gray Silty SAND	SS 3		5-8-8 (16)	▲						
2180					SS 4		12-8-7 (15)	▲	18.1					
2175	10				SS 5		10-8-8 (16)	▲						
2170	15 20			Dense, Gray Silty SAND	SS 6		11-18-18 (36)	▲	11.1					No Groundwater Encounterad at Time of Drilling

Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-1
PAGE 1 OF 1

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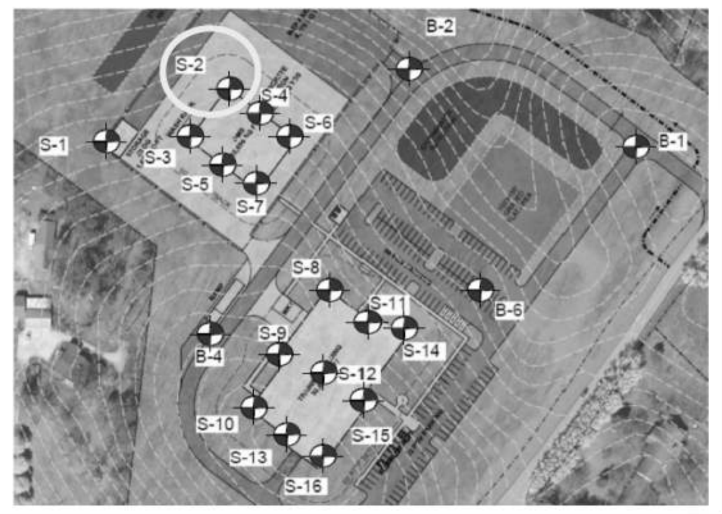
PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-2
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2188 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2187.5	0.0			Soft, Orange Brown Sandy Clayey SILT	SS 1		3-2-2 (4)	▲	22.8					Approximately 6" of TOPSOIL
2185.0	2.5			Medium Stiff, Brown Sandy Clayey SILT	SS 2		4-4-3 (7)	▲						
2182.5	5.0			Loose, Gray Silty SAND	SS 3		3-3-4 (7)	▲	16.5					
2180.0	7.5 10.0				SS 4		3-4-4 (8)	▲	27.8					No Groundwater Encounterad at Time of Drilling

Soil Boring Terminated at 10.0 feet Due
to Auger Refusal

Boring Log

BORING NUMBER - S-2
PAGE 1 OF 1

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
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DESIGNED BY:
S.CURRY
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FILENAME:
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U.S. ARMY CORPS OF ENGINEERS
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LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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BORING LOGS

SHEET ID
B-302

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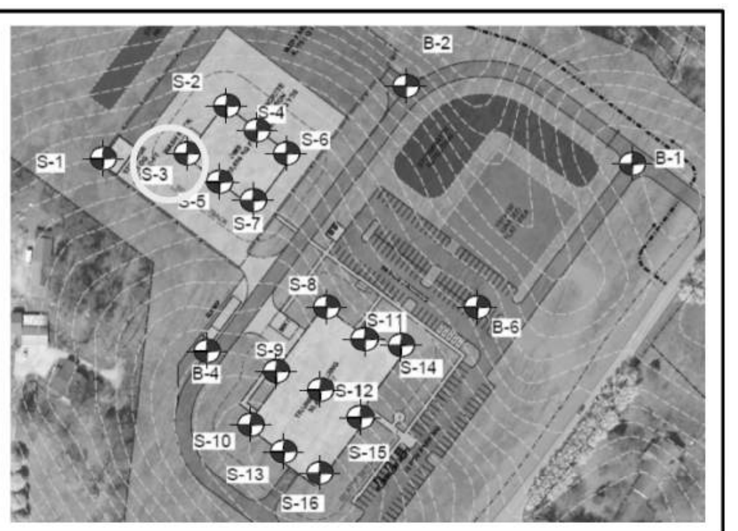
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-3
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2190
METHOD Hollow Stem Auger ft **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2190	0			Medium Stiff, Orange Brown Sandy Clayey SILT	SS 1		4-3-3 (6)		21.1					Approximately 4" of TOPSOIL
			ML	Very Stiff, Brown Sandy Clayey SILT	SS 2		6-7-9 (16)		17.1	33	5	65.6		
2185	5			Loose, Gray Brown Silty SAND	SS 3		2-4-5 (9)		22.1					
					SS 4		2-3-4 (7)							
2180	10			Dense, Gray Silty SAND	SS 5		11-21-28 (49)							
2175	15			Loose, Gray Silty SAND	SS 6		4-5-5 (10)							No Groundwater Encounterad at Time of Drilling
2170	20													

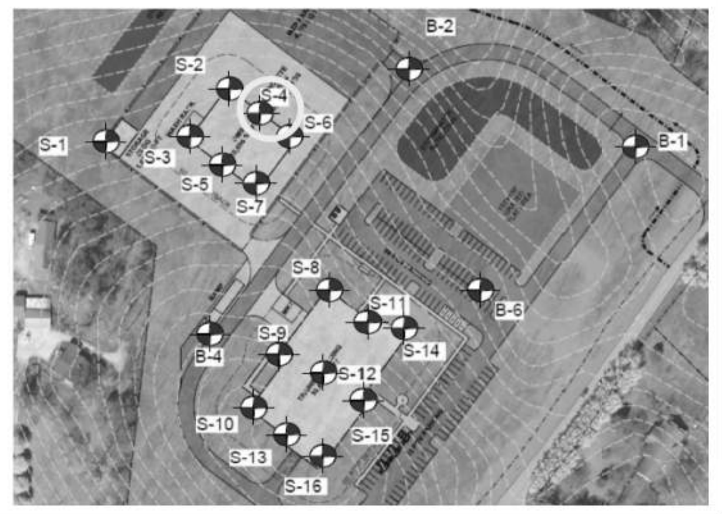
Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-3
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-4
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2191 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0.0			Stiff, Orange Brown Sandy Clayey SILT										Approximately 4" of TOPSOIL
2190.0					SS 1		2-4-5 (9)		24.0					
	2.5													
2187.5					SS 2		4-4-5 (9)		21.9					
	5.0			Loose, Gray Brown Silty SAND										
2185.0					SS 3		3-3-7 (10)							
	7.5			Decomposed Rock: Very Dense, Gray Brown Silty SAND										No Groundwater Encounterad at Time of Drilling
2182.5					SS 4		50/4" (100+)		22.9					

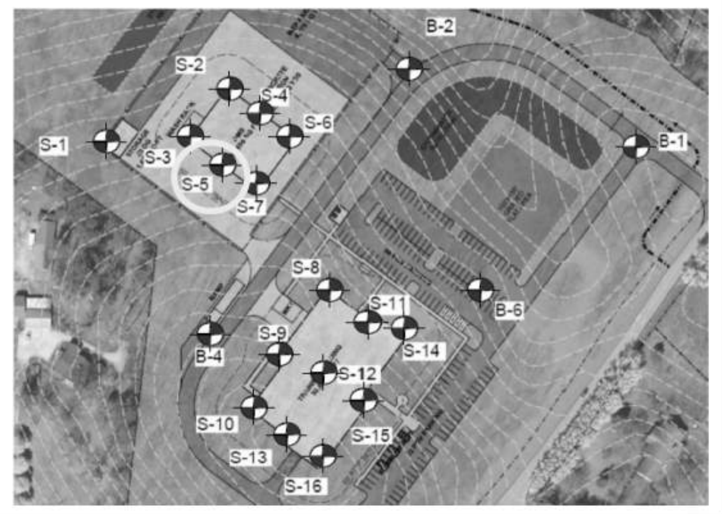
Soil Boring Terminated at 9.5 feet Due to Auger Refusal

Boring Log

BORING NUMBER - S-4
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-5
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2195 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2195	0			Loose, Orange Brown Sandy Silty SAND	SS 1		6-4-4 (8)		24.1					Approximately 6" of TOPSOIL
			SM		ST 2		--		24.6	NP	NP	34.8		
2190	5				SS 3		5-3-4 (7)		29.2					
				Loose, Gray Silty SAND	SS 4		4-3-2 (5)		19.4					
2185	10				SS 5		5-3-3 (6)							
2180	15			Medium Dense, Gray Silty SAND	SS 6		8-7-9 (16)							No Groundwater Encounterad at Time of Drilling
2175	20													

Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-5
PAGE 1 OF 1

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE
DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE B-303.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

BORING LOGS

SHEET ID
B-303

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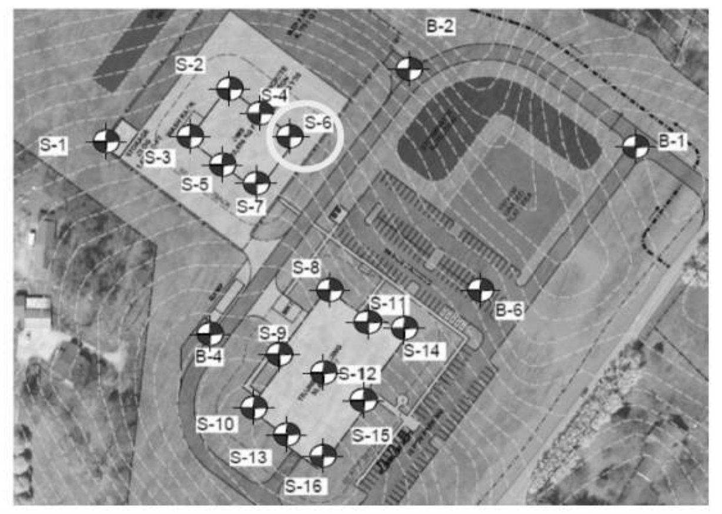
14:45

CERTIFIED FINAL SUBMITTAL

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-6
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2191 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0.0			Stiff, Orange Brown Sandy Clayey SILT										Approximately 6" of TOPSOIL
2190.0					SS 1		3-5-6 (11)		27.5					
	2.5			Very Stiff, Orange Brown Sandy Clayey SILT										
2187.5					SS 2		8-9-9 (15)							
	5.0			Dense, Gray Silty SAND	ST 3		–		20.5	NP	NP	18.1		No Groundwater Encounterad at Time of Drilling
2185.0														
	7.5													
2182.5					SS 4		9-13-31 (44)		17.3					
	10.0													
2180.0														

Soil Boring Terminated at 12.0 feet due
to Auger Refusal

Boring Log

BORING NUMBER - S-6
PAGE 1 OF 1

BECC
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Birmingham AL
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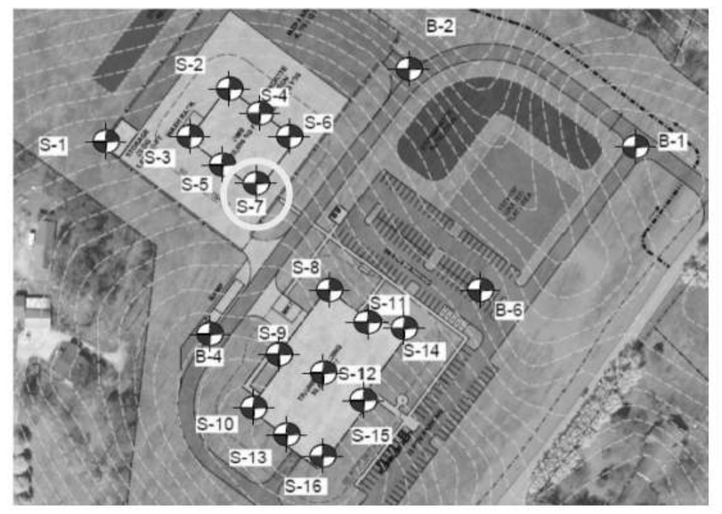
PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-7
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2194
METHOD Hollow Stem Auger ft **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2194	0.0			Stiff, Orange Brown Sandy Clayey SILT	SS 1		3-4-5 (9)		26.3					Approximately 6" of TOPSOIL
2192														
	2.5				SS 2		4-4-5 (9)							
2189.5														
	5.0		SM	Loose, Gray Brown Silty SAND	SS 3		3-4-3 (7)		34.6	NP	NP	35.7		
2187.0														
	7.5			Loose, Gray Silty SAND										No Groundwater Encounterad at Time of Drilling
2184.5					SS 4		3-3-3 (6)		35.9					
	10.0													
2182.0														

Soil Boring Terminated at 12.0 feet Due
to Auger Refusal

Boring Log

BORING NUMBER - S-7
PAGE 1 OF 1

BECC
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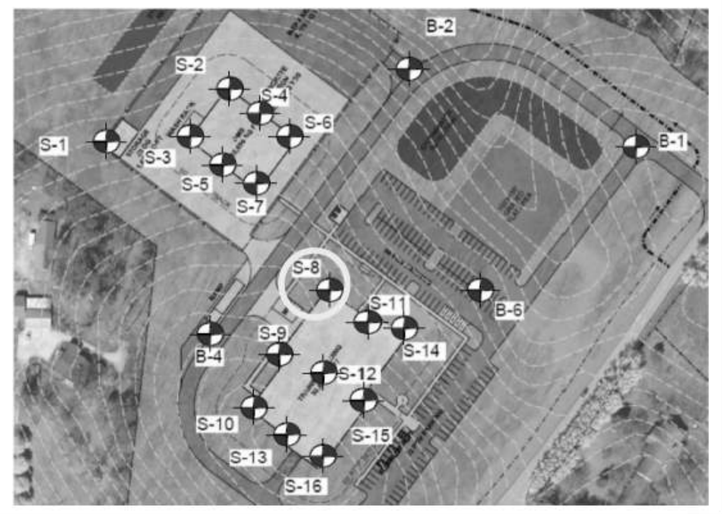
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-8
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2199 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0			Stiff, Orange Brown Sandy Clayey SILT	SS 1		5-5-6 (11)		30.6					Approximately 6" of TOPSOIL
2195					SS 2		5-7-8 (15)							
	5			Medium Stiff, Brown Sandy Clayey SILT	SS 3		4-3-3 (6)		21.1					
2190				Loose, Gray Brown Silty SAND	SS 4		3-4-4 (8)							
	10			Very Loose, Gray Silty SAND	SS 5		3-2-2 (4)		29.0					
2185														
	15			Medium Dense, Gray Silty SAND	SS 6		4-6-7 (13)							No Groundwater Encounterad at Time of Drilling
2180														
	20													

Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-8
PAGE 1 OF 1

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_B-304.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

BORING LOGS

SHEET ID
B-304

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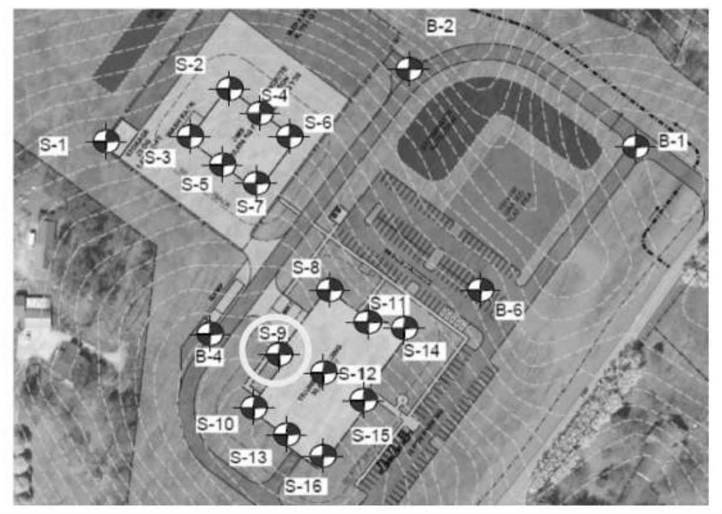
14:44

CERTIFIED FINAL SUBMITTAL

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-9
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2209 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0			Stiff, Orange Brown Sandy Clayey SILT	SS 1		3-3-7 (10)							Approximately 6" of TOPSOIL
2205	5				SS 2		4-7-7 (14)		26.6					
				Loose, Gray Silty SAND	SS 3		4-6-4 (10)							
2200	10				SS 4		3-3-3 (6)		26.6					
				Loose, Gray Brown Silty SAND	SS 5		5-4-4 (8)							
2195	15													No Groundwater Encounterad at Time of Drilling
2190	20				SS 6		2-4-5 (9)		27.7					

Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-9
PAGE 1 OF 1

BECC
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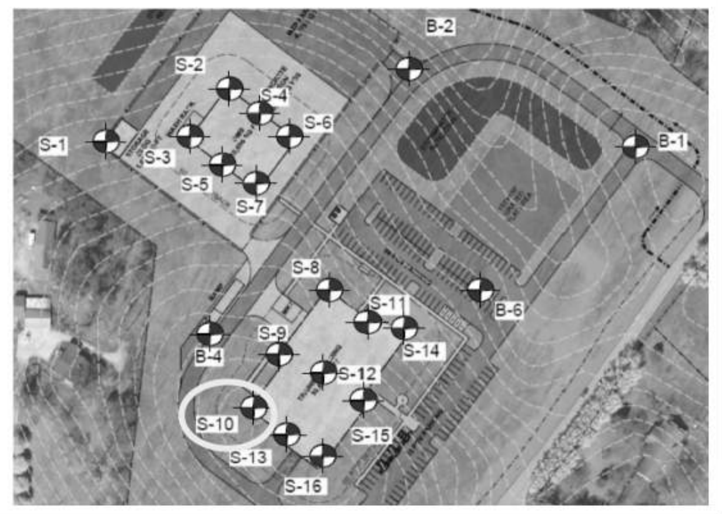
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-10
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2213 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2213.0	0.0			Stiff, Brown Sandy Clayey SILT	SS 1		2-4-7 (11)		26.1					Approximately 6" of TOPSOIL
2210.5	2.5			Loose, Gray Brown Silty SAND	SS 2		4-4-5 (9)							
2208.0	5.0			Loose, Gray Silty SAND	SS 3		3-5-5 (10)		24.3					No Groundwater Encounterad at Time of Drilling
2205.5	7.5													

Soil Boring Terminated at 7.6 feet due
to Auger Refusal

Boring Log

BORING NUMBER - S-10
PAGE 1 OF 1

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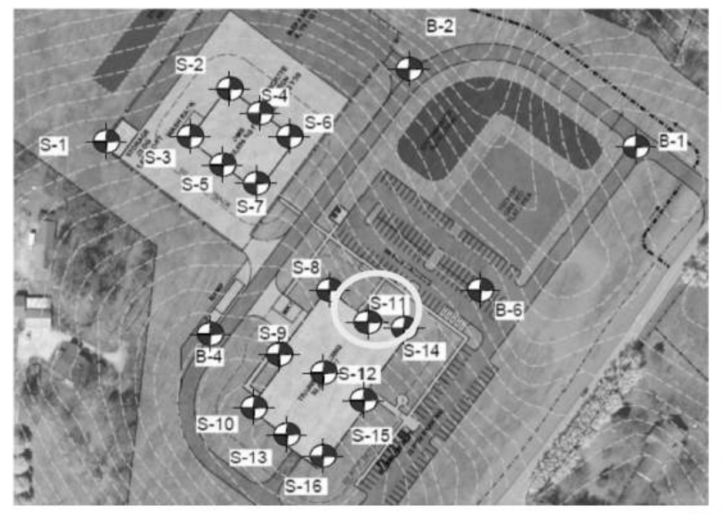
PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-11
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2197 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0			Stiff, Orange Brown Sandy Clayey SILT	SS 1		4-5-8 (13)		20.5					Approximately 5" of TOPSOIL
2195					SS 2		3-4-6 (10)							
	5			Loose, Brown Silty SAND	ST 3		--							
2190					SS 4		2-2-7 (9)		42.8					
	10			Medium Dense, Gray Silty SAND	SS 5		22-14-15 (29)		8.9					
2185														
	15													No Groundwater Encounterad at Time of Drilling
2180					SS 6		7-6-6 (12)							
	20													

Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-11
PAGE 1 OF 1

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_B-305.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

BORING LOGS

SHEET ID
B-305

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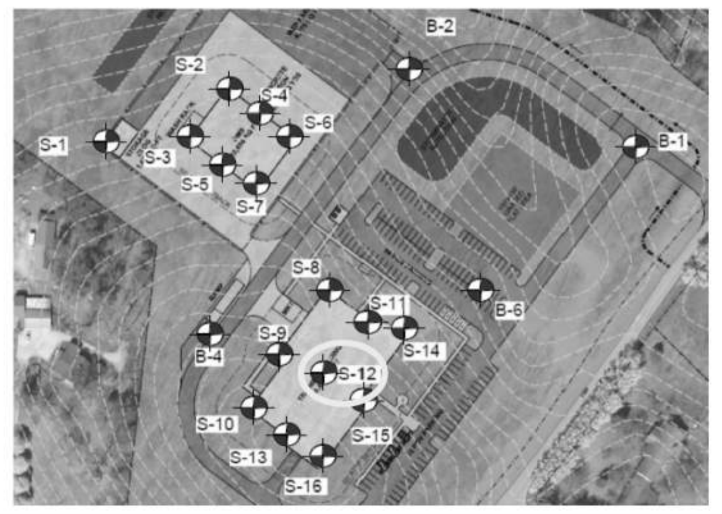
24-FEB-2022
14:44

CERTIFIED FINAL SUBMITTAL

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-12
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2207 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0													Approximately 5" of TOPSOIL
2205				Stiff, Orange Brown Sandy Clayey SILT	SS 1		2-4-6 (10)		22.8					
	5				SS 2		3-4-4 (8)							
2200				Very Loose to Loose, Gray Silty SAND	SS 3		3-2-2 (4)		27.1					
	10				SS 4		2-3-2 (5)							
2195	15				SS 5		4-4-6 (10)		20.3					
2190	20		SM	Medium Dense, Gray Brown Silty SAND	SS 6		15-12-14 (26)		12.7	NP	NP	34.1		
2185	25			Very Dense, Dark Gray Silty SAND	SS 7		16-36-32 (48)		16.3					
2180	30			Decomposed Rock: Very Dense, Dark Gray Silty SAND	SS 8		18-26-50/2 (100+)							
2175	35		SM	Decomposed Rock: Very Dense Gray Brown Silty SAND	SS 9		4-12-50/2 (100+)		23.6	NP	NP	36.1	▽	Groundwater Encountered at 33.5' at Time of Drilling

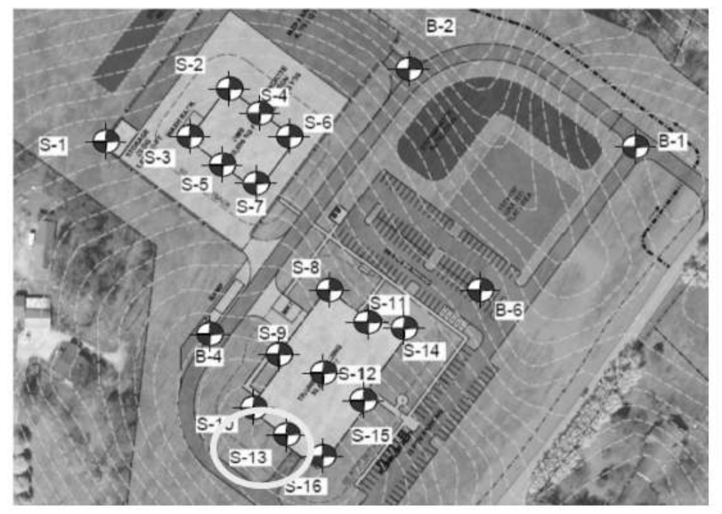
Soil Boring Terminated at 36.0 feet due to Auger Refusal

Boring Log

BORING NUMBER - S-12
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-13
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2213 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2213	0													Approximately 5" of TOPSOIL
				Stiff, Orange Brown Sandy Clayey SILT	SS 1		4-4-7 (11)							
					SS 2		3-5-6 (11)		28.9					
2208	5			Medium Stiff, Brown Sandy SILT	SS 3		4-4-4 (8)							
				Stiff, Gray Brown Very Sandy SILT	SS 4		5-5-6 (11)		20.5	NP	NP	56.2		
2203	10			Loose, Gray Brown Silty SAND	SS 5		4-5-5 (10)							
2198	15			Medium Dense, Gray Brown Silty SAND	SS 6		4-6-7 (13)		28.4					No Groundwater Encounterad at Time of Drilling
2193	20													

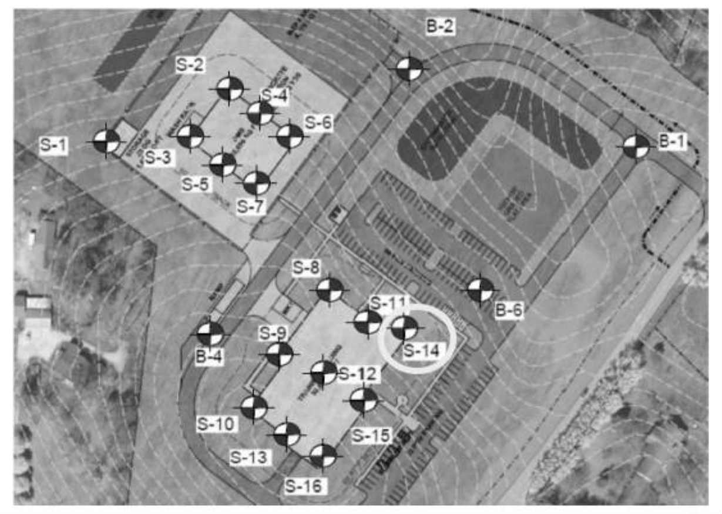
Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-13
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-14
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2197 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0													Approximately 5" of TOPSOIL
2195				Stiff, Orange Brown Sandy Clayey SILT	SS 1		2-4-4 (8)		20.9					
					SS 2		4-5-7 (12)		26.9					
2190	5			Loose Gray Silty SAND	ST 3		--		20.0	NP	NP	18.3		
					SS 4		4-4-5 (9)							
2185	10			Medium Dense, Gray Brown Silty SAND	SS 5		5-7-7 (14)		24.7					
2180	15				SS 6		7-9-10 (19)							No Groundwater Encounterad at Time of Drilling
	20													

Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-14
PAGE 1 OF 1

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_B-306.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

BORING LOGS

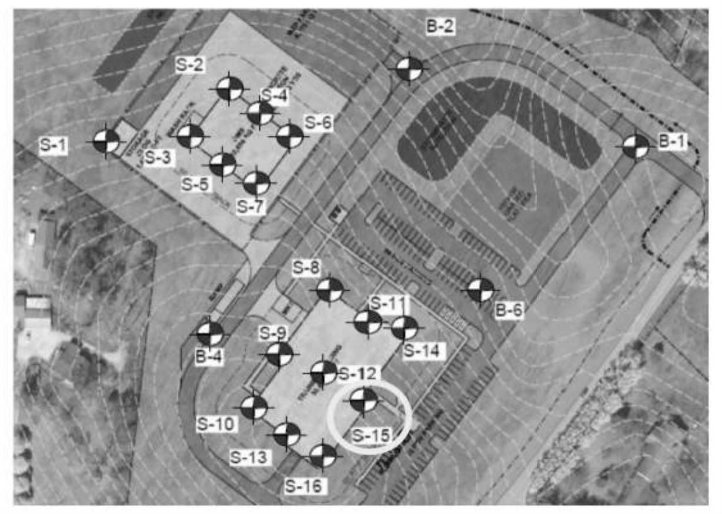
SHEET ID
B-306

CERTIFIED FINAL SUBMITTAL

P:\Projects\01770103 CAD_BIM_Sheets\04_Geotech\ASHE_B-306.dgn
24-FEB-2022
14:45

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-15
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2207 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2205	0			Stiff, Orange Brown Sandy Clayey SILT	SS 1		3-3-4 (7)		20.3					Approximately 6" of TOPSOIL
					SS 2		6-8-6 (14)							
2200	5			Loose, Gray Brown Silty SAND	ST 3		--							
					SS 4		3-3-3 (6)		20.7					
2195	10		SM		ST 5		--		20.4	NP	NP	26.2		
					SS 6		5-5-3 (8)							
2190	15				SS 7		3-4-4 (8)		25.4					No Groundwater Encounterad at Time of Drilling
	20													

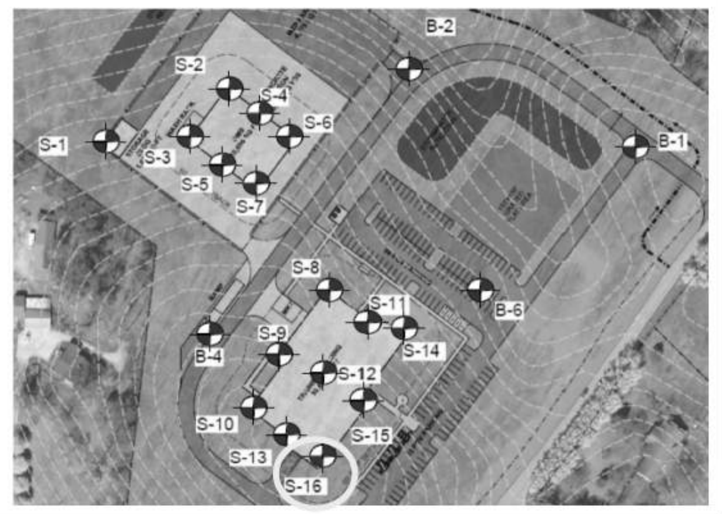
Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-15
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
Telephone: 2059411119

PROJECT US Army Reserve Center- Training Center
BECC PROJECT NO. 220099 **BORING NUMBER** S-16
BORING LOCATION SEE MAP
GEOLOGY Porphyroblastic Gneiss
DATE COMPLETED 1/11/21 **GROUND ELEVATION** 2213 ft
METHOD Hollow Stem Auger **HOLE DIAMETER** 6 inches
CONTRACTOR Tri State Drilling
LOGGED BY R.Wilson **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	UNIFIED CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲ 20 40 60 80	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2213	0			Medium Stiff, Orange Brown Sandy Clayey SILT	SS 1		3-4-4 (8)							Approximately 6" of TOPSOIL
					SS 2		2-4-4 (8)		20.7					
2208	5			Loose, Gray Brown Silty SAND	SS 3		3-4-5 (9)							
					SS 4		4-4-5 (9)		15.2					
2203	10				SS 5		3-4-5 (9)							
2198	15				SS 6		4-4-6 (10)		24.2					No Groundwater Encounterad at Time of Drilling
	20													

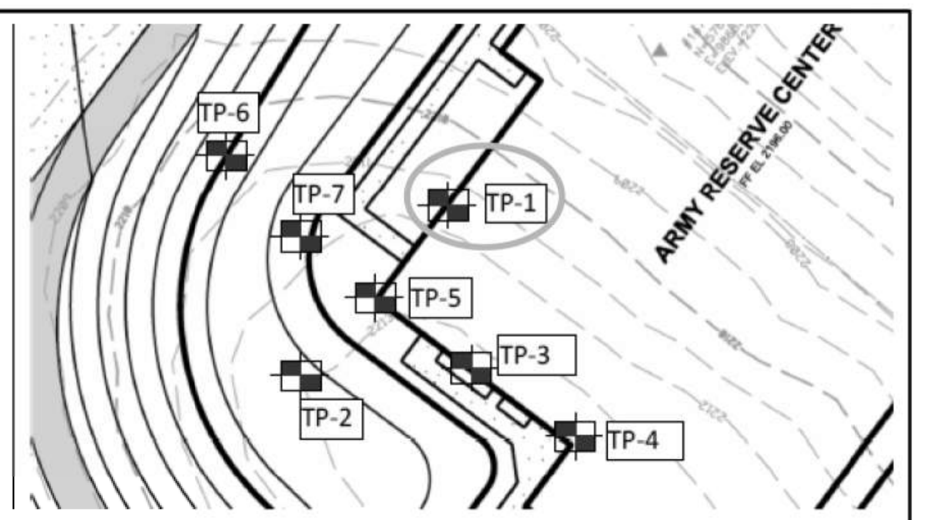
Soil Boring Terminated at 20.0 feet

Boring Log

BORING NUMBER - S-16
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
(205) 941-1119

PROJECT US Army Reserve Training Center
PROJECT NO. 220099 **DATE COMPLETED** 6/14/21
TEST PIT NUMBER TP-1 **TEST PIT LOCATION** See Map
GEOLOGY Porphyroblastic Gneiss
ELEVATION 2211 ft **EQUIPMENT**
LOGGED BY T.Petrowski **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	USCS CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	POCKET PENT. (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0.0				Topsoil with Roots								
2210.0	2.5				Orange Brown Clayey SILT								
2207.5													
2205.0	5.0				Light Gray Silty SAND								No groundwater encountered at time of excavation
2202.5	7.5												
2200.0	10.0												

Test pit terminated at 12.0 feet

TEST PIT LOG

TEST PIT NUMBER TP-1
PAGE 1 OF 1

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE B-307.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

BORING LOGS

SHEET ID
B-307

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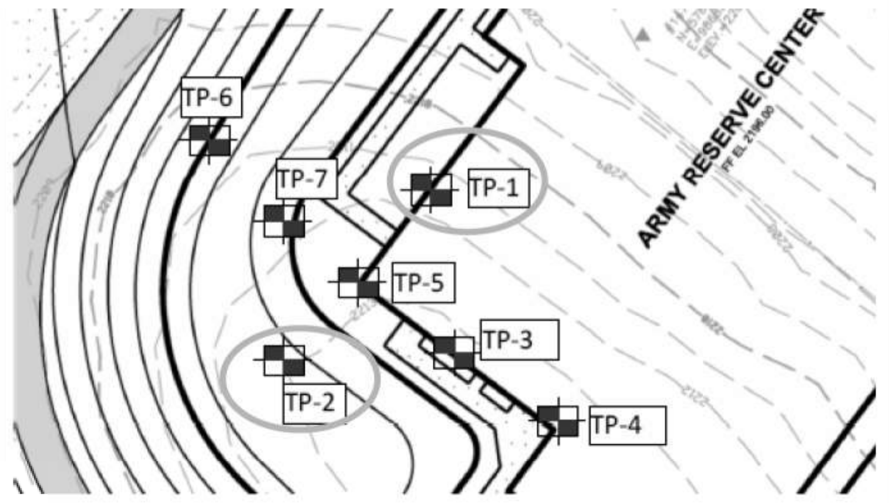
24-FEB-2022
14:45

CERTIFIED FINAL SUBMITTAL

BECC
360 Industrial Lane
Birmingham AL
(205) 941-1119

PROJECT US Army Reserve Training Center
PROJECT NO. 220099 **DATE COMPLETED** 6/14/21
TEST PIT NUMBER TP-2 **TEST PIT LOCATION** See Map
GEOLOGY Porphyroblastic Gneiss
ELEVATION 2213 ft **EQUIPMENT**
LOGGED BY T.Petrowski **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	USCS CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	POCKET PENT. (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0.0												
2212.5					Topsoil with Roots								
					Orange Brown Clayey SILT								
	2.5												
2210.0													
	5.0												No groundwater encountered at time of excavation
2207.5					Light Gray Silty SAND								
	7.5												
2205.0													
	10.0												
2202.5													

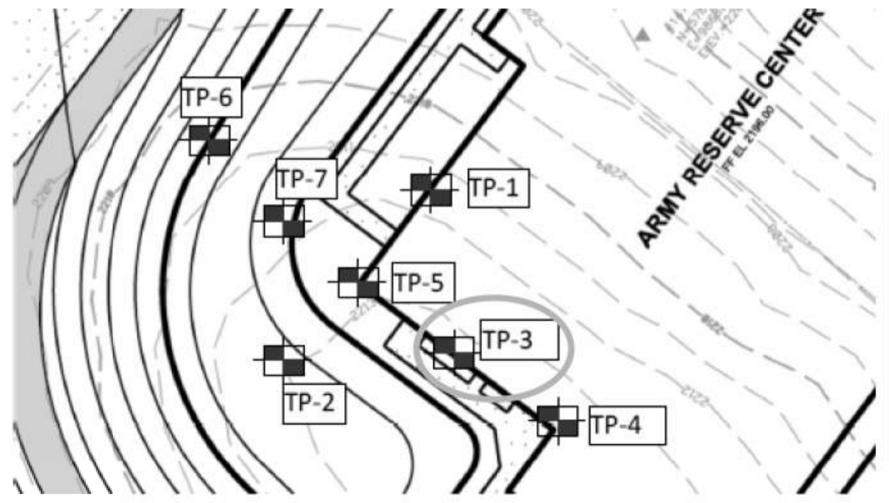
Test pit terminated at 12.0 feet

TEST PIT LOG

TEST PIT NUMBER TP-2
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
(205) 941-1119

PROJECT US Army Reserve Training Center
PROJECT NO. 220099 **DATE COMPLETED** 6/14/21
TEST PIT NUMBER TP-3 **TEST PIT LOCATION** See Map
GEOLOGY Porphyroblastic Gneiss
ELEVATION 2213 ft **EQUIPMENT**
LOGGED BY T.Petrowski **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	USCS CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	POCKET PENT. (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0.0												
2212.5					Topsoil with Roots								
					Light Brown Sandy SILT								
	2.5												
2210.0													
	5.0												No groundwater encountered at time of excavation
2207.5					Light Gray Silty SAND								
	7.5												
2205.0													
	10.0												
2202.5													

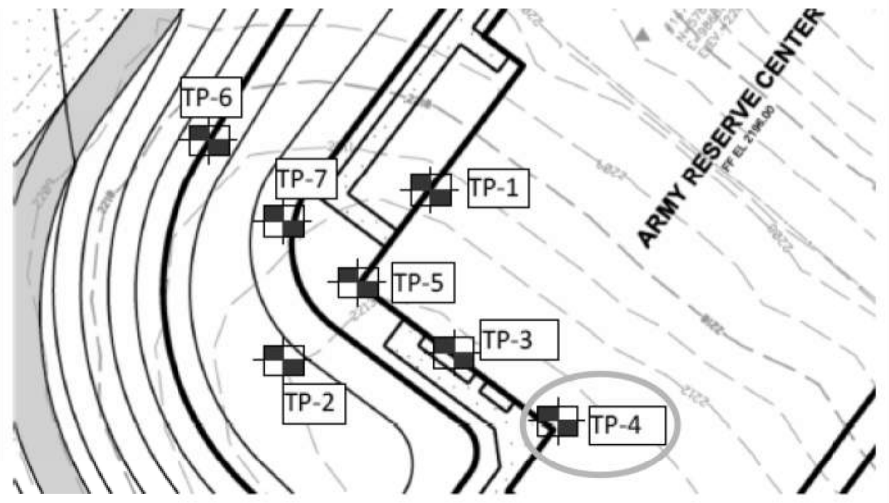
Test pit terminated at 12.0 feet

TEST PIT LOG

TEST PIT NUMBER TP-3
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
(205) 941-1119

PROJECT US Army Reserve Training Center
PROJECT NO. 220099 **DATE COMPLETED** 6/14/21
TEST PIT NUMBER TP-4 **TEST PIT LOCATION** See Map
GEOLOGY Porphyroblastic Gneiss
ELEVATION 2213 ft **EQUIPMENT**
LOGGED BY T.Petrowski **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	USCS CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	POCKET PENT. (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0.0												
2212.5					Topsoil with Roots								
					Orange Brown Sandy SILT								
	2.5												
2210.0													
	5.0												No groundwater encountered at time of excavation
2207.5					Light Gray Silty SAND								
	7.5												
2205.0													
	10.0												
2202.5													

Test pit terminated at 12.0 feet

TEST PIT LOG

TEST PIT NUMBER TP-4
PAGE 1 OF 1

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE B-308.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

BORING LOGS

SHEET ID
B-308

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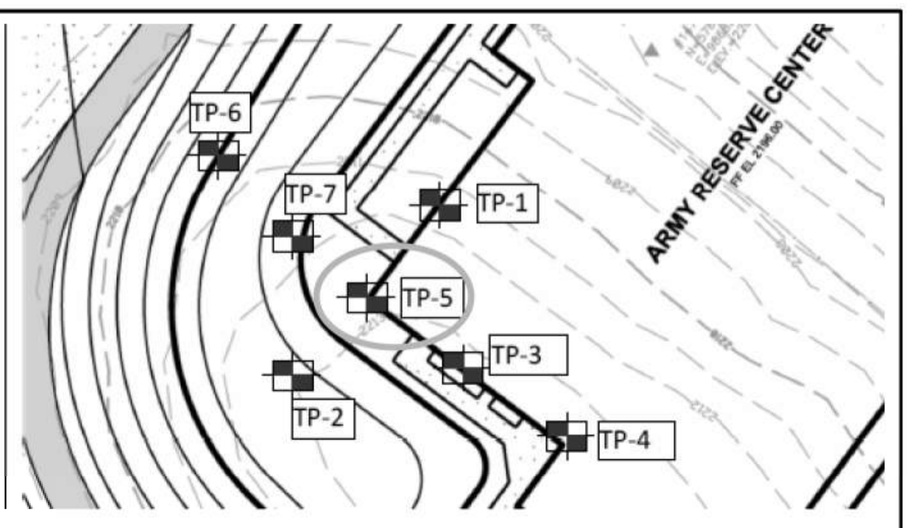
24-FEB-2022
14:46

CERTIFIED FINAL SUBMITTAL

BECC
360 Industrial Lane
Birmingham AL
(205) 941-1119

PROJECT US Army Reserve Training Center
PROJECT NO. 220099 **DATE COMPLETED** 6/14/21
TEST PIT NUMBER TP-5 **TEST PIT LOCATION** See Map
GEOLOGY Porphyroblastic Gneiss
ELEVATION 2213 ft **EQUIPMENT**
LOGGED BY T.Petrowski **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	USCS CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	POCKET PENT. (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0.0												
2212.5					Topsoil with Roots								
2210.0	2.5				Orange Brown Sandy SILT								
2207.5 2205.0	5.0 7.5				Light Gray Silty SAND								No groundwater encountered at time of excavation
					Gray-Brown Rock Layer (Gneiss)								
2202.5	10.0				Light Gray Silty SAND								

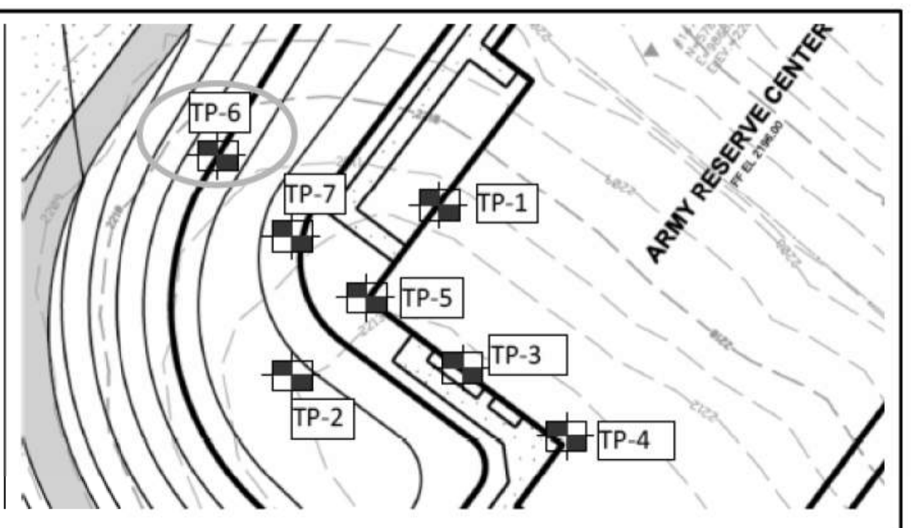
Test pit terminated at 12.0 feet

TEST PIT LOG

TEST PIT NUMBER TP-5
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
(205) 941-1119

PROJECT US Army Reserve Training Center
PROJECT NO. 220099 **DATE COMPLETED** 6/14/21
TEST PIT NUMBER TP-6 **TEST PIT LOCATION** See Map
GEOLOGY Porphyroblastic Gneiss
ELEVATION 2210 ft **EQUIPMENT**
LOGGED BY T.Petrowski **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	USCS CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	POCKET PENT. (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
2210.0	0.0												
					Topsoil with Roots								
					Light Gray Sandy SILT								
2207.5	2.5				Gray-Brown Rock Layer (Gneiss)								
					Light Gray Silty SAND								No groundwater encountered at time of excavation

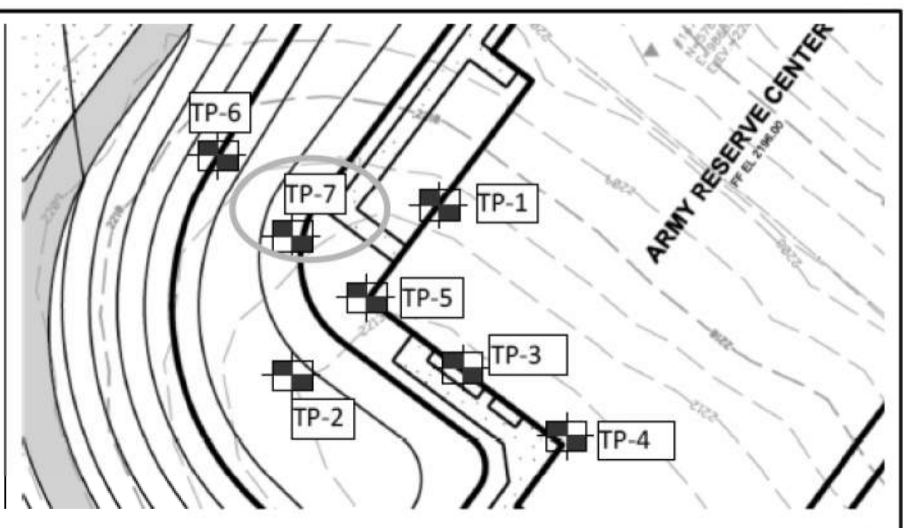
Test pit terminated at 4.0 feet

TEST PIT LOG

TEST PIT NUMBER TP-6
PAGE 1 OF 1

BECC
360 Industrial Lane
Birmingham AL
(205) 941-1119

PROJECT US Army Reserve Training Center
PROJECT NO. 220099 **DATE COMPLETED** 6/14/21
TEST PIT NUMBER TP-7 **TEST PIT LOCATION** See Map
GEOLOGY Porphyroblastic Gneiss
ELEVATION 2211 ft **EQUIPMENT**
LOGGED BY T.Petrowski **REVIEWED BY** R.Rhinehart



ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	AASHTO CLASSIFICATION	USCS CLASSIFICATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	POCKET PENT. (TSF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	FINES CONTENT (%)	WATER LEVEL	NOTES
	0.0												
2210.0					Topsoil with Roots								
	2.5				Organge Brown Sandy SILT								
2207.5 2205.0 2202.5 2200.0	5.0 7.5 10.0				Light Gray Silty SAND								No groundwater encountered at time of excavation

Test pit terminated at 12.0 feet

TEST PIT LOG

TEST PIT NUMBER TP-7
PAGE 1 OF 1

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022	
DRAWN BY: S.HAGGARD	SOLICITATION NO.:	
CHECKED BY: M.MAYER	CONTRACT NO.:	
SUBMITTED BY: D. HENSLEY	CATEGORY CODE	
SIZE: ANSI D	FILENAME: ASHE_B-309.dgn	

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

BORING LOGS

SHEET ID
B-309

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24-FEB-2022
14:46

CERTIFIED FINAL SUBMITTAL

NOTES:

1. PROPERTY INFORMATION
OWNER: PATRICIA ANN JONES
TAX MAP PARCEL ID NUMBER: 958768871
ZONING: INDUSTRIAL
MINIMUM SETBACK REQUIREMENTS:
FRONT: 30'
SIDE: 20'
REAR: 20'
TOTAL = 20.603 ACRES
R/W = 0.773 ACRES
NET = 19.830 ACRES

2. SURVEY PERFORMED BY:
JOYNER KEENY, PLLC
N.C. Firm License # P-0551
1051 NORTH WINSTEAD AVENUE
P.O. BOX 7533
ROCKY MOUNT, NORTH CAROLINA 27804
252-977-3124 (OFFICE)
252-985-6026 (FAX)

3. HORIZONTAL CONTROL:
THE HORIZONTAL POSITIONS FOR THIS PROJECT ARE BASED UPON GPS OBSERVATIONS USING THE NORTH CAROLINA VIRTUAL REFERENCE SYSTEM (VRS) IN THE NORTH CAROLINA GRID COORDINATE SYSTEM (NAD83/2011) DATUM IN U.S. SURVEY FEET. THE PROJECT IS "LOCALIZED" HOLDING GPS POINT #3 WITH NAD83/2011 GRID COORDINATES OF N 578,047.869 FEET, E 986,820.600 FEET. THE AVERAGE COMBINED GRID FACTOR USED IS 0.999773009 (GROUND to GRID). A GRID TIE WAS MADE TO NGS MONUMENT "DEND" (PID# DG4651) WITH PUBLISHED COORDINATES OF N 573,827.40 FEET, E 989,163.05 FEET (EPOCH-2010.00). HORIZONTAL TIE WAS 0.03 FEET. EQUIPMENT USED WAS A TRIMBLE R8s GNSS GPS RECEIVER WITH TRIMBLE "SURVEY ACCESS" SOFTWARE.

4. VERTICAL CONTROL:
THE ELEVATIONS ARE BASED UPON UPON GPS OBSERVATIONS USING THE NORTH CAROLINA VIRTUAL REFERENCE SYSTEM (VRS) IN THE NORTH AMERICAN VERTICAL DATUM (NAVD1988) IN U.S. SURVEY FEET (GEOID MODEL 12B). EQUIPMENT USED WAS A TRIMBLE R8s GNSS GPS RECEIVER WITH TRIMBLE "SURVEY CONTROLLER" SOFTWARE. GPS POINT #3 WAS HELD FIXED AND A CLOSED DIFFERENTIAL LEVEL LINE WAS PERFORMED THROUGH ALL CONTROL POINTS USED IN THIS SURVEY, WHICH MEETS OR EXCEEDS THIRD (3RD) ORDER ACCURACY STANDARDS. VERTICAL TIE WAS 0.02 FEET.

5. THE LOCATION OF UNDERGROUND UTILITIES IS BASED UPON THE FIELD SURVEYS OF ABOVE GROUND FEATURES. THE SURVEYOR DOES NOT GUARANTEE THAT ALL UNDERGROUND STRUCTURES SUCH AS UTILITIES, TANKS, PIPES, ETC. ARE LOCATED HEREON, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, IF MARKED BY OTHERS. NO EXCAVATIONS WERE MADE DURING THIS SURVEY TO LOCATE ANY BURIED UTILITIES OR STRUCTURES. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE LOCATIONS AND ARE BASED ON ABOVE GROUND FEATURES, PHYSICAL EVIDENCE, PAINT MARKINGS, AND BASE UTILITY PLANS.

6. LOCATION OF UNDERGROUND UTILITIES SHOULD BE FIELD VERIFIED BY CONTACTING NC 811

7. NO DETERMINATION HAS BEEN MADE BY THE SURVEYOR AS TO THE FOLLOWING:
A. 100-YEAR FLOOD LIMITS;
B. UNDERGROUND STORAGE FACILITIES;
C. GRAVES, CEMETERIES, OR BURIAL GROUNDS;
D. HAZARDOUS WASTE;
E. WETLAND AREAS

8. FEMA MAP NUMBER:3700958700J PANEL:9587 ZONE "X"

9. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET, EXCEPT WHERE NOTED.

10. DATE OF FIELD SURVEY: 11NOV2020 THRU 13JAN2021

11. FIELD BOOK # 766, 795, & 811

12. ONE FOOT CONTOUR INTERVAL

13. JOYNER KEENY PROJECT # 200322A

14. JOYNER KEENY FILE NAME: 200322A_US Army Reserve Training Center_Asheville_Topo_201215.DGN

15. CREST ROAD (SR 1803 & SR 1804) RIGHT OF WAY CLAIMED BY NCDOT IS TO MAINTENANCE AREA ONLY, PER EMAIL FROM SHELBY ASHE (DIVISION 14 RIGHT OF WAY UNIT) DATED 19NOV2020. JOYNER KEENY DETERMINED THAT 25 FEET NORTH OF THE CENTERLINE OF CREST RD IS THE AVERAGE MAINTAINED RIGHT OF WAY WIDTH.

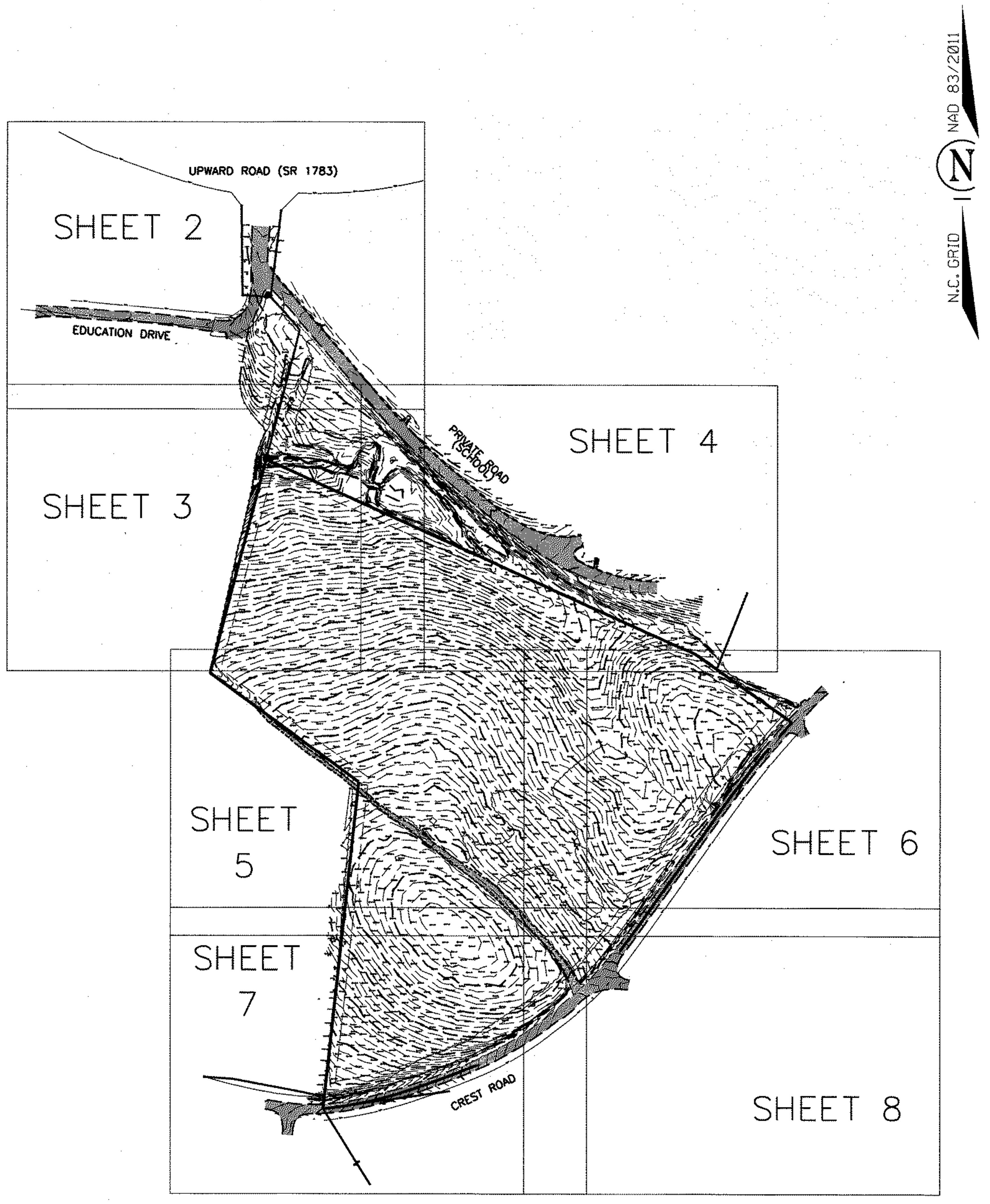
16. CLIENT AUTHORIZING WORK:
MASON & HANGER
300 WEST VINE STREET
SUITE 1300
LEXINGTON KENTUCKY, 40507
R. DARIN HENSLEY, PE, PLS
859-280-3577
P.O. #MN01770102

I, MICHAEL L. FINCH, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL FIELD SURVEY MADE UNDER MY SUPERVISION; THAT THE FIELD SURVEY WAS COMPLETED ON 13JAN2021; THAT THE HORIZONTAL POSITIONS WERE OBTAINED BY CONVENTIONAL TRAVERSING METHODS IN NAD83/2011 DATUM; THAT THE VERTICAL ELEVATIONS WERE OBTAINED BY DIFFERENTIAL LEVELING METHODS IN NAVD1988 DATUM; WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER, AND SEAL.

Michael L. Finch   27 JAN. 2021
MICHAEL L. FINCH, NC PLS #L-3969   DATE

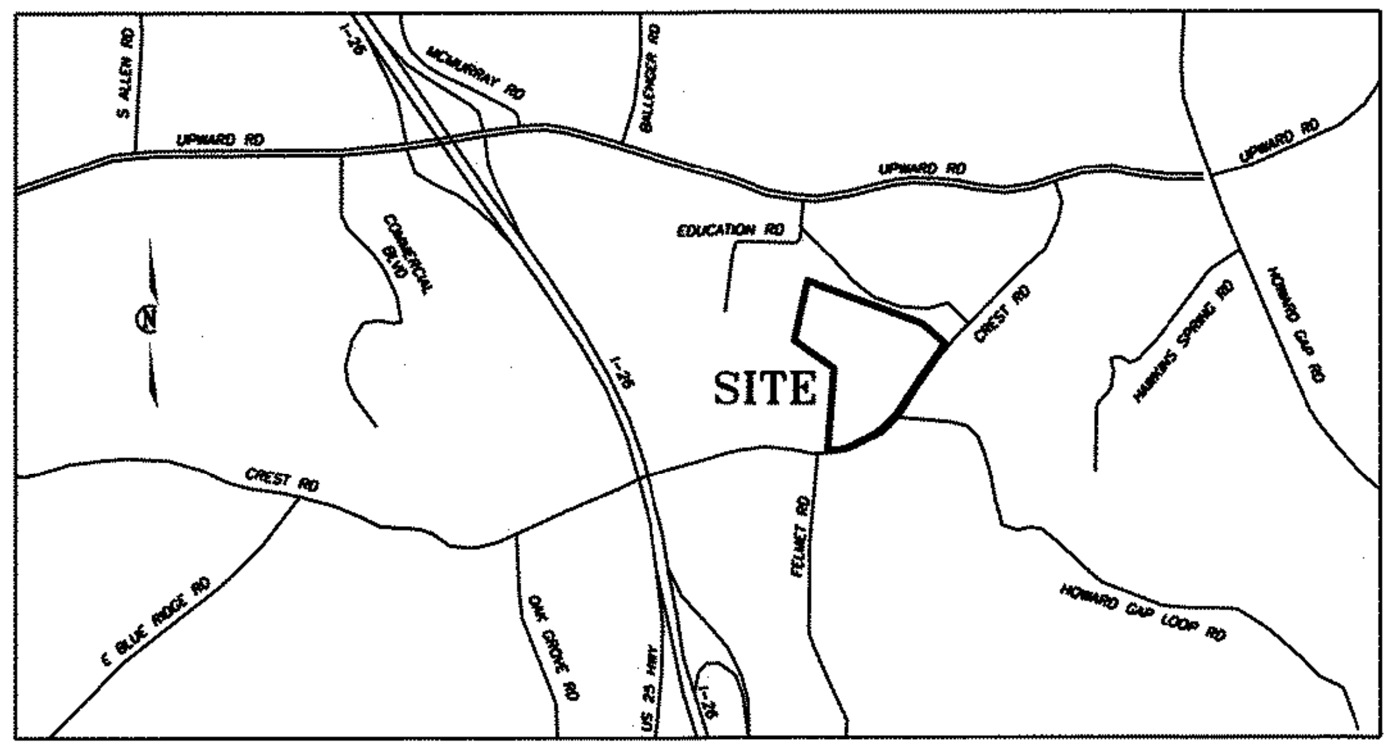
L-3969

— — — — —	MAJOR CONTOUR LINE
— — — — —	MINOR CONTOUR LINE
———————	EDGE OF GRAVEL
———————	EDGE OF PAVEMENT
—X——X—	FENCE LINE
━━━━━━━	BACK OF CURB
〰〰〰	WOODSLINE OR TREELINE
— — — — —	STORM PIPE
——···——	CENTERLINE DITCH
—— E. ——	OVERHEAD ELECTRIC
—— SS. ——	UNDERGROUND SANITARY SEWER
—— W. ——	UNDERGROUND WATER LINE LEVEL B PER CI/ASCE 38-02 STANDARDS
—— G. ——	UNDERGROUND GAS LINE LEVEL B PER CI/ASCE 38-02 STANDARDS
—— TU. ——	UNDERGROUND TELEPHONE LINE LEVEL B PER CI/ASCE 38-02 STANDARDS
—— EU. ——	UNDERGROUND POWER LINE LEVEL B PER CI/ASCE 38-02 STANDARDS
—— W. ——	UNDERGROUND WATER LINE LEVEL C PER CI/ASCE 38-02 STANDARDS
—— G. ——	UNDERGROUND GAS LINE LEVEL C PER CI/ASCE 38-02 STANDARDS
—— TU. ——	UNDERGROUND TELEPHONE LINE LEVEL C PER CI/ASCE 38-02 STANDARDS
—— EU. ——	UNDERGROUND POWER LINE LEVEL C PER CI/ASCE 38-02 STANDARDS
▩	ASPHALT HATCH
▨	GRAVEL/ROCK HATCH
░	CONCRETE HATCH
▦	SOIL ROAD HATCH



PROPERTY CORNER LOCALIZED GROUND COORDINATE TABLE			
CORNER	NORTHING	EASTING	DESCRIPTION
COR-100-1	578010.01	986549.29	MNS
COR 100-1-1	578036.50	986552.16	1/2" IPF
COR 100-1-2	578218.08	986571.82	1/2" RBF
COR 100-1-3	578389.98	986590.44	RBS W/USACE ALUM CAP
COR 100-1-4	578541.96	986606.89	RBS W/USACE ALUM CAP
COR 100-2	578713.46	986625.46	3/4" IPF
COR 100-2-1	578808.10	986496.04	RBS W/USACE ALUM CAP
COR 100-3	578898.94	986371.82	3/4" IAF
COR 100-4	578947.64	986306.12	3/4" IPF
COR 100-4-1	579103.43	986346.69	RBS W/USACE ALUM CAP
COR 100-4-2	579295.72	986396.76	RBS W/USACE ALUM CAP
COR 100-5	579406.13	986425.51	1/2" IPF
COR 100-5-1	579380.47	986482.39	RBS W/USACE ALUM CAP
COR 100-5-2	579304.38	986651.07	RBS W/USACE ALUM CAP
COR 100-5-3	579229.58	986816.87	RBS W/USACE ALUM CAP
COR 100-5-4	579192.66	986898.71	RBS W/USACE ALUM CAP

PROPERTY CORNER LOCALIZED GROUND COORDINATE TABLE			
CORNER	NORTHING	EASTING	DESCRIPTION
COR 100-5-5	579143.26	987008.22	RBS W/USACE ALUM CAP
COR 100-5-6	579088.30	987130.06	RBS W/USACE ALUM CAP
COR 100-5-7	579041.17	987234.52	RBS W/USACE ALUM CAP
COR 100-6	578988.91	987350.36	1/2" IPF
COR 100-6-1	578956.69	987396.14	1/2" IPF
COR 100-6-2	578857.55	987536.99	RBS W/USACE ALUM CAP
COR 100-7	578843.08	987557.56	MNS
COR 100-8	578822.27	987539.20	CP
COR 100-9	578651.89	987404.14	CP
COR 100-10	578411.26	987233.21	CP
COR 100-11	578348.96	987187.44	CP
COR 100-12	578210.45	987050.68	CP
COR 100-13	578182.60	987013.75	CP
COR 100-14	578101.35	986872.29	CP
COR 100-15	578046.57	986724.16	CP



VICINITY MAP
(NOT TO SCALE)

LEGEND

▲	RB&C	REBAR WITH CAP (CONTROL POINTS)
⊠	TBM	TEMPORARY BENCHMARK
Ⓢ	STMH	STORM SEWER MANHOLE
●	PP	POWER POLE
⚲	PPL	POWER POLE WITH LIGHT
⚲	PPTF	POWER POLE WITH TRANSFORMER
Ⓟ	EJB	ELECTRIC JUNCTION BOX
Ⓔ	EM	ELECTRIC METER
▣	EL HH	ELECTRIC HAND HOLE
▣	EL TF	ELECTRIC TRANSFORMER
🅃	TPED	TELEPHONE PEDESTAL
Ⓣ	TMH	TELEPHONE MANHOLE
▣	TEL HH	TELEPHONE HAND HOLE
⊗	WV	WATER VALVE
⯐	FH	FIRE HYDRANT
⊖	WM	WATER METER
Ⓦ	WMH	WATER MANHOLE
⊛	SSMH	SANITARY SEWER MANHOLE
⊕		SPOT ELEVATION
○	IPF	IRON PIPE FOUND
○	RBF	REBAR FOUND
○	IAF	IRON AXLE FOUND
●	MNS	MAG NAIL SET

BLDG	BUILDING
AG	ABOVE GROUND
BG	BELOW GROUND
CHLK	CHAIN LINK
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CP	COMPUTED POINT
CPP	CORRUGATED PLASTIC PIPE
DB	DEED BOOK
DI	DROP INLET
DIR	DIRECTION
ELEC	ELECTRIC
ELEV	ELEVATION
FOC	FIBER OPTIC CABLE
HW	HEADWALL
INV	INVERT
MBL	MINIMUM BUILDING LINE
MH	MANHOLE
N/F	NOW OR FORMERLY
OHE	OVERHEAD ELECTRIC
PG	PAGE
PIN	PARCEL IDENTIFICATION NUMBER
POB	POINT OF BEGINNING
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT OF WAY
S	SIGN
S/W	SIDEWALK
U/G	UNDERGROUND
UKN	UNKNOWN
USACE	UNITED STATES ARMY CORPS OF ENGINEERS
WD	WOOD
WW	WINGWALL
WMV	WATER MAIN VAULT

PREPARED BY:
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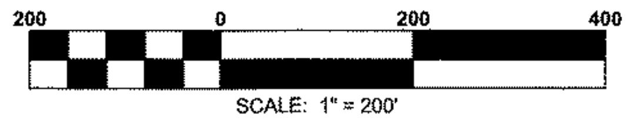

SCALE: 1" = 200'

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE V-101.dgn

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SITE SURVEY

SHEET ID
V-101

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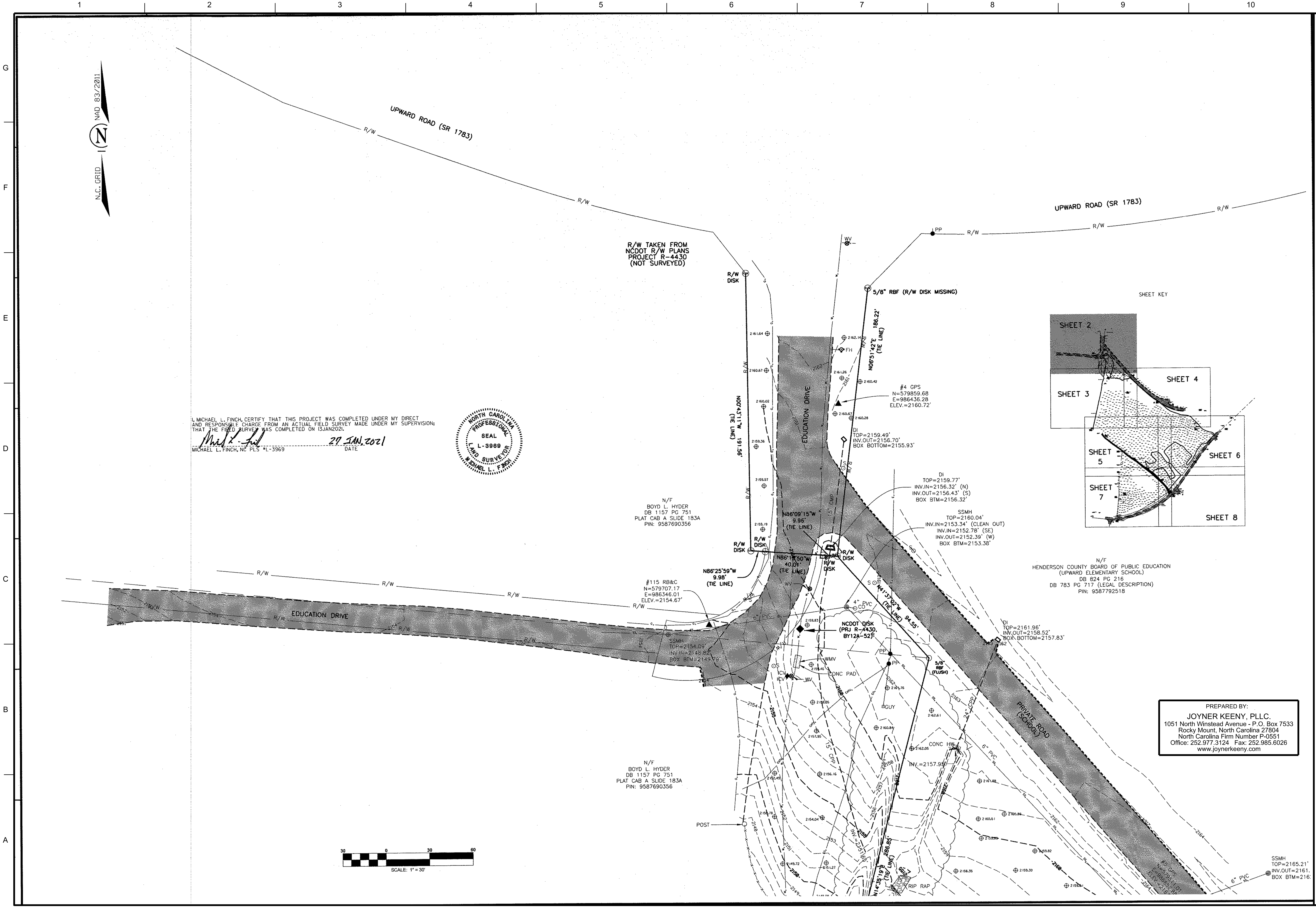

I, MICHAEL L. FINCH, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL FIELD SURVEY MADE UNDER MY SUPERVISION; THAT THE FIELD SURVEY WAS COMPLETED ON 13JAN2021.

Mich L. Finch
MICHAEL L. FINCH, NC PLS #L-3969

27 JAN. 2021
DATE

L-3969
MICHAEL L. FINCH

PREPARED BY:
JOYNER KEENY, PLLC.
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Rocky Mount, North Carolina 27804
North Carolina Firm Number P-0551
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D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE V-102.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
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ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SITE SURVEY

SHEET ID
V-102

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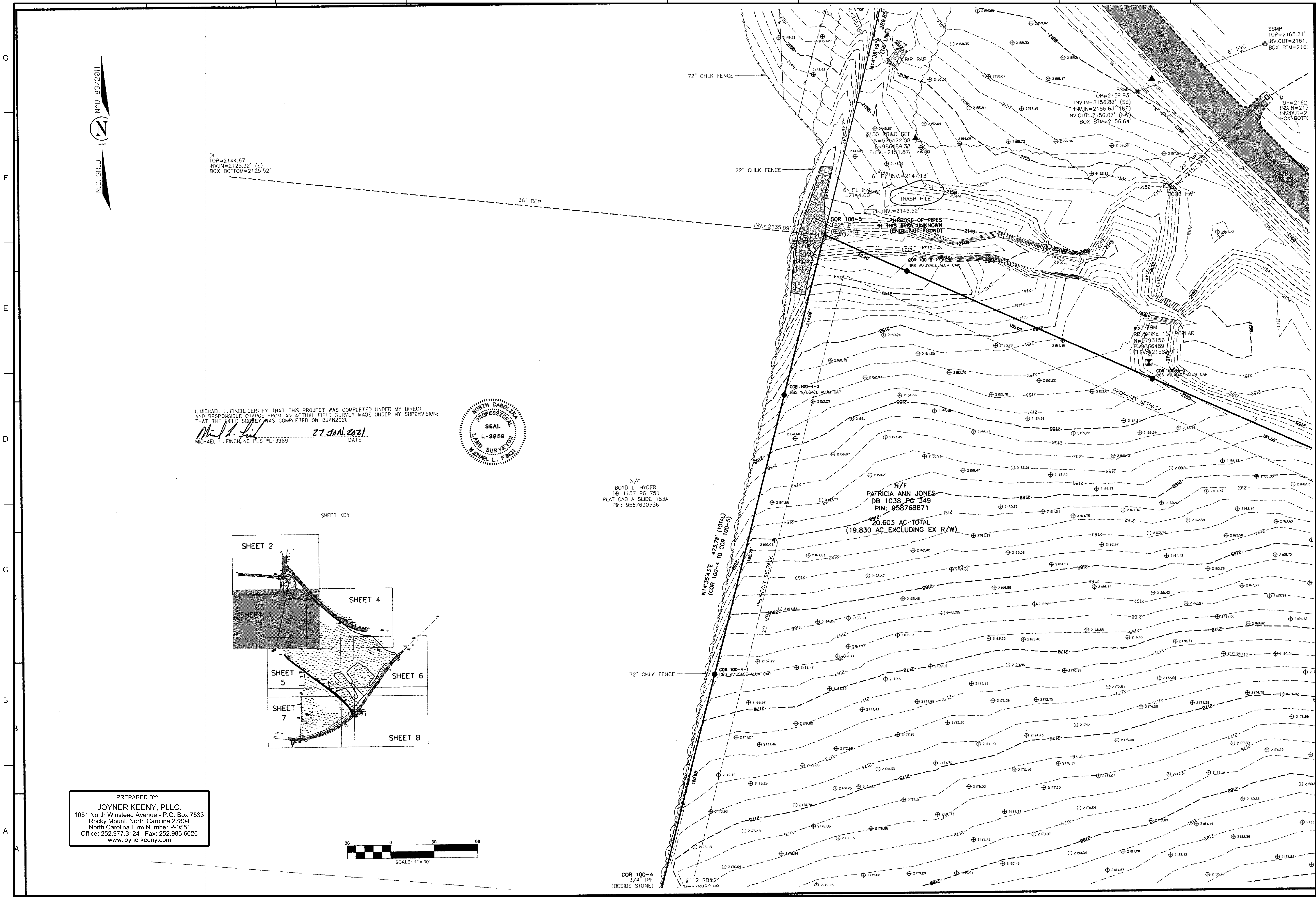

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27 JAN. 2021

MICHAEL L. FINCH, NC PLS #L-3969

DATE

SEAL L-3969

PREPARED BY:
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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
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SITE SURVEY

SHEET ID
V-103

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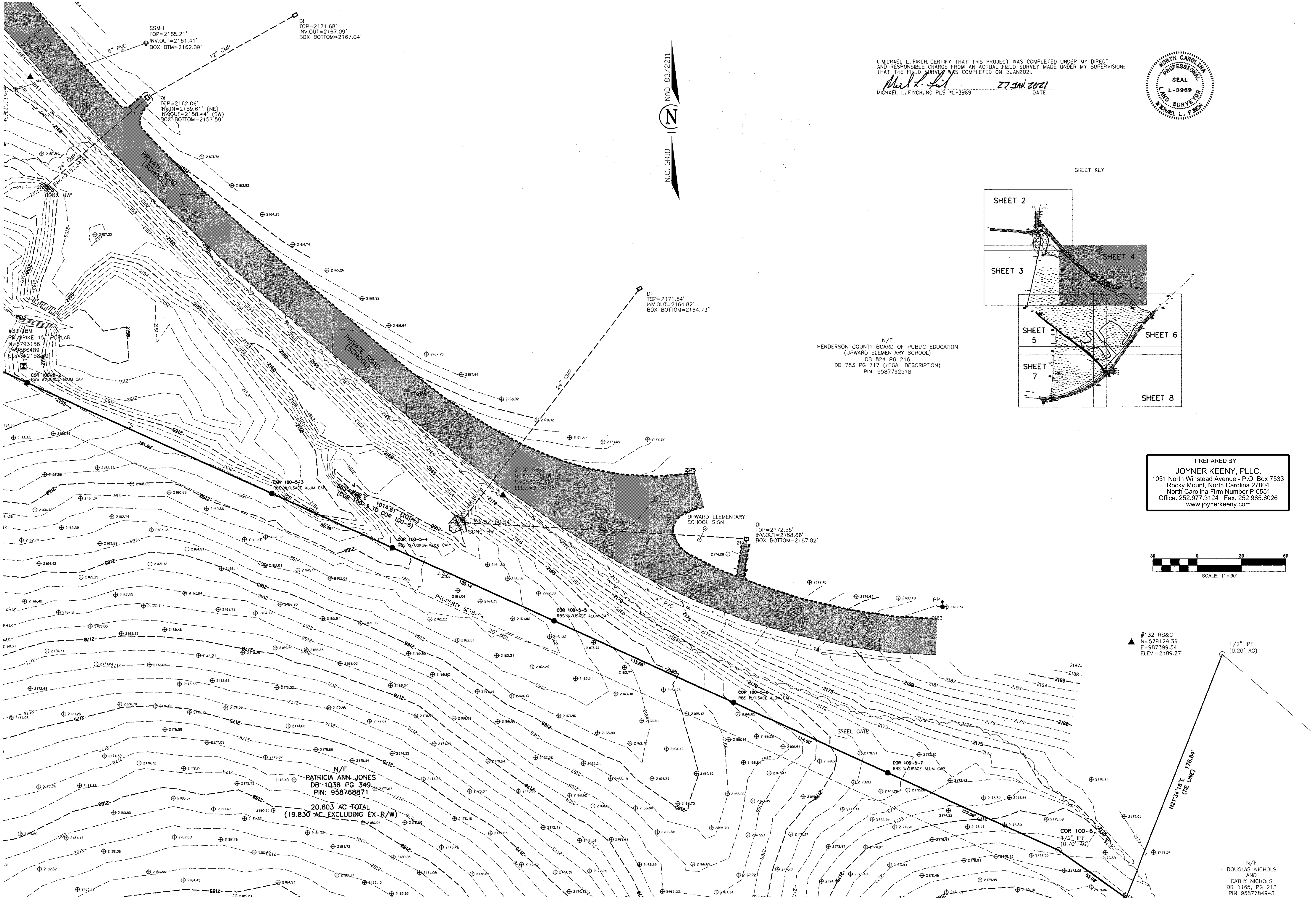

N/F
HENDERSON COUNTY BOARD OF PUBLIC EDUCATION
(UPWARD ELEMENTARY SCHOOL)
DB 824 PG 216
DB 783 PG 717 (LEGAL DESCRIPTION)
PIN: 9587792518

N/F
PATRICIA ANN JONES
DB 1038 PG 349
PIN: 958768871

20.603 AC TOTAL
(19.830 AC EXCLUDING EX R/W)

N/F
DOUGLAS NICHOLS
AND
CATHY NICHOLS
DB 1165, PG 213
PIN 9587784943

I, MICHAEL L. FINCH, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL FIELD SURVEY MADE UNDER MY SUPERVISION; THAT THE FIELD SURVEY WAS COMPLETED ON 13JAN2021.

Mich L. Finch 27 JAN 2021
MICHAEL L. FINCH, NC PLS #L-3969 DATE

SEAL
L-3969
MICHAEL L. FINCH

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U.S. ARMY CORPS OF ENGINEERS
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LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SITE SURVEY

SHEET ID
V-104

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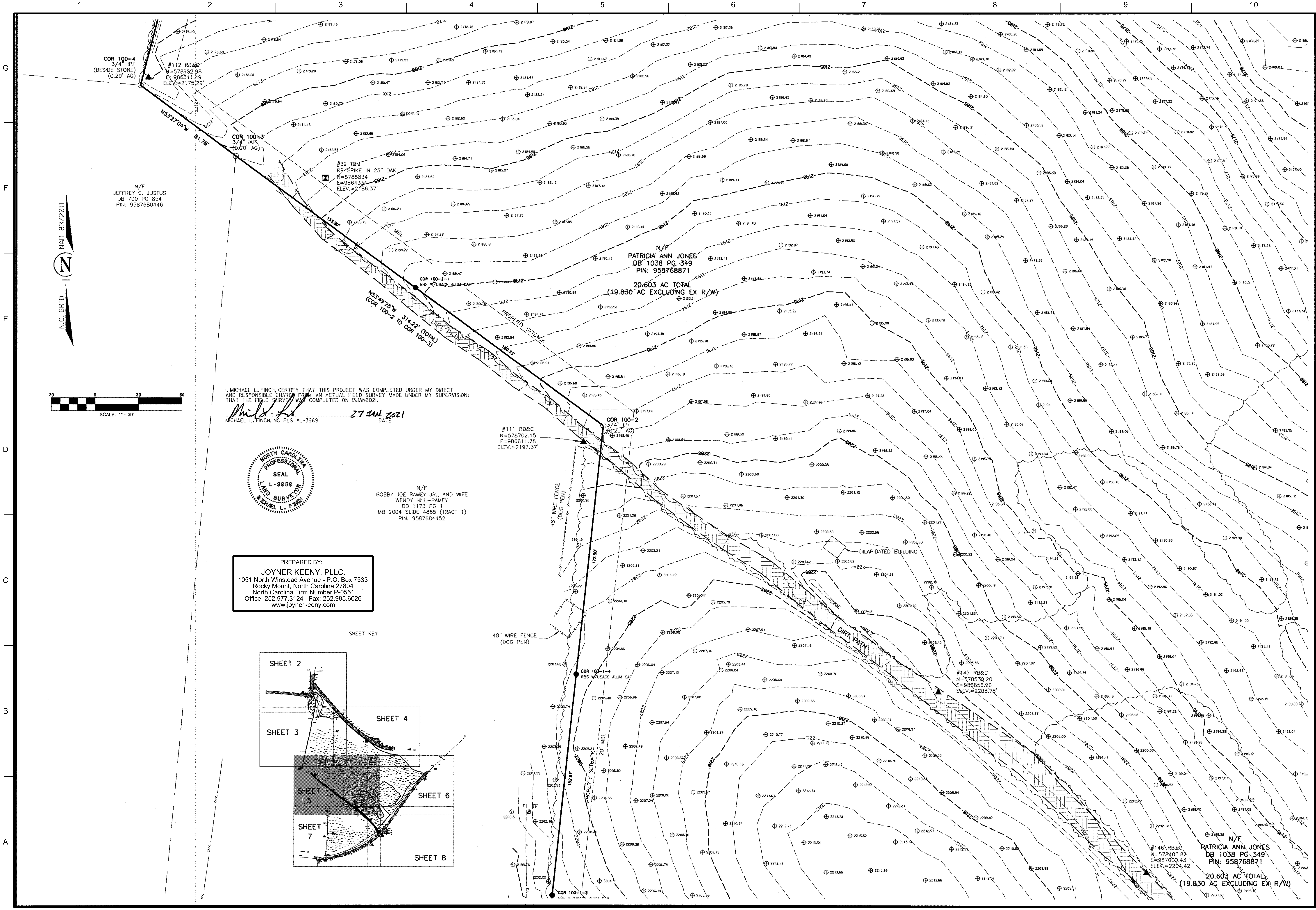

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Michael L. Finch 27 JAN. 2021

MICHAEL L. FINCH, NC PLS #L-3969 DATE

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR
SEAL
L-3969
MICHAEL L. FINCH

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U. S. ARMY RESERVE CENTER
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PN: CAR 21-79351 P2#: 481815

SITE SURVEY

SHEET ID
V-105

CERTIFIED FINAL SUBMITTAL

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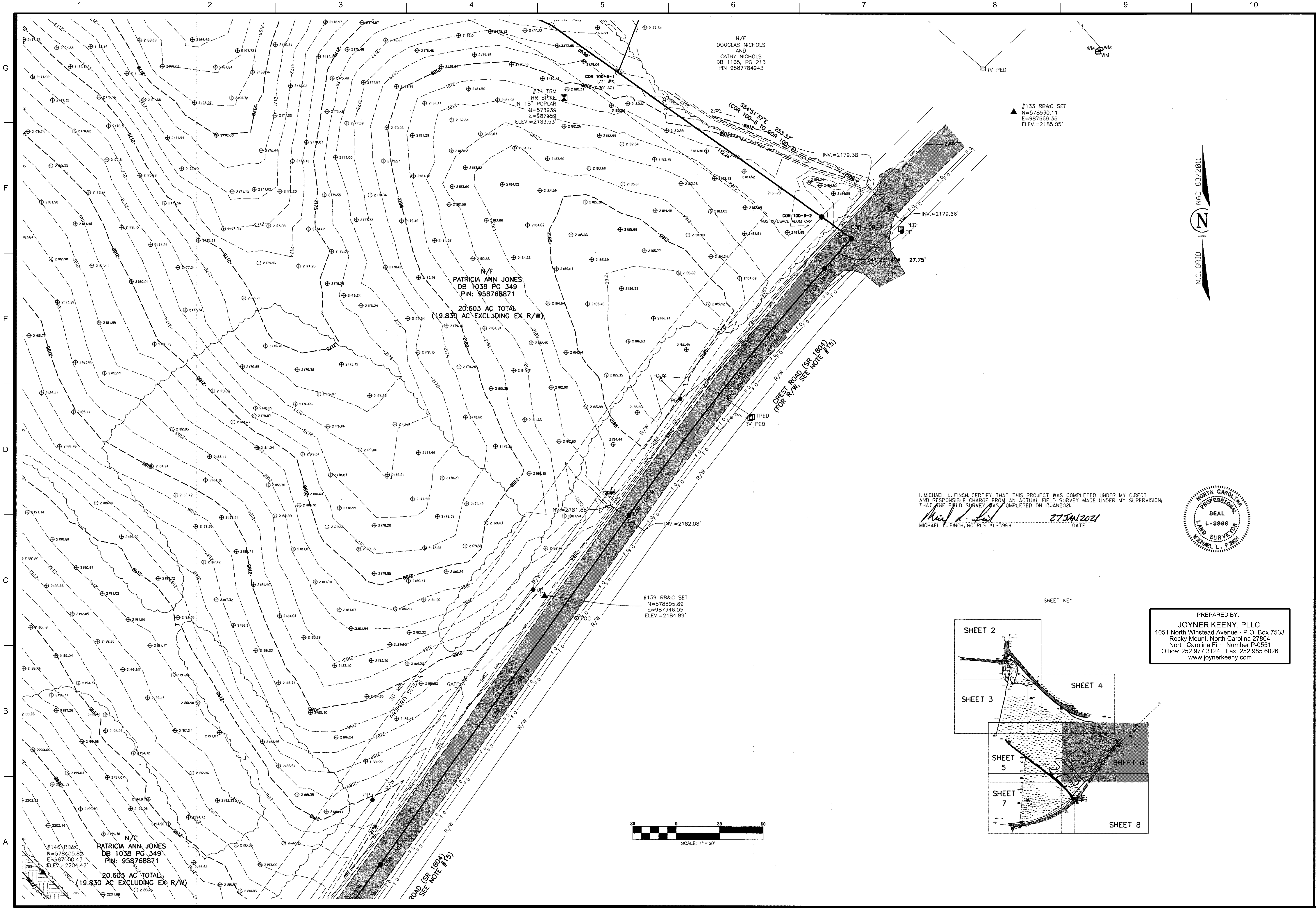

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Miel L. Finch 27JAN2021
MICHAEL L. FINCH, NC PLS #L-3969 DATE

SEAL
L-3969

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SIZE: ANSI D	FILENAME: ASHE V-106.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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U. S. ARMY RESERVE CENTER
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ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SITE SURVEY

SHEET ID
V-106

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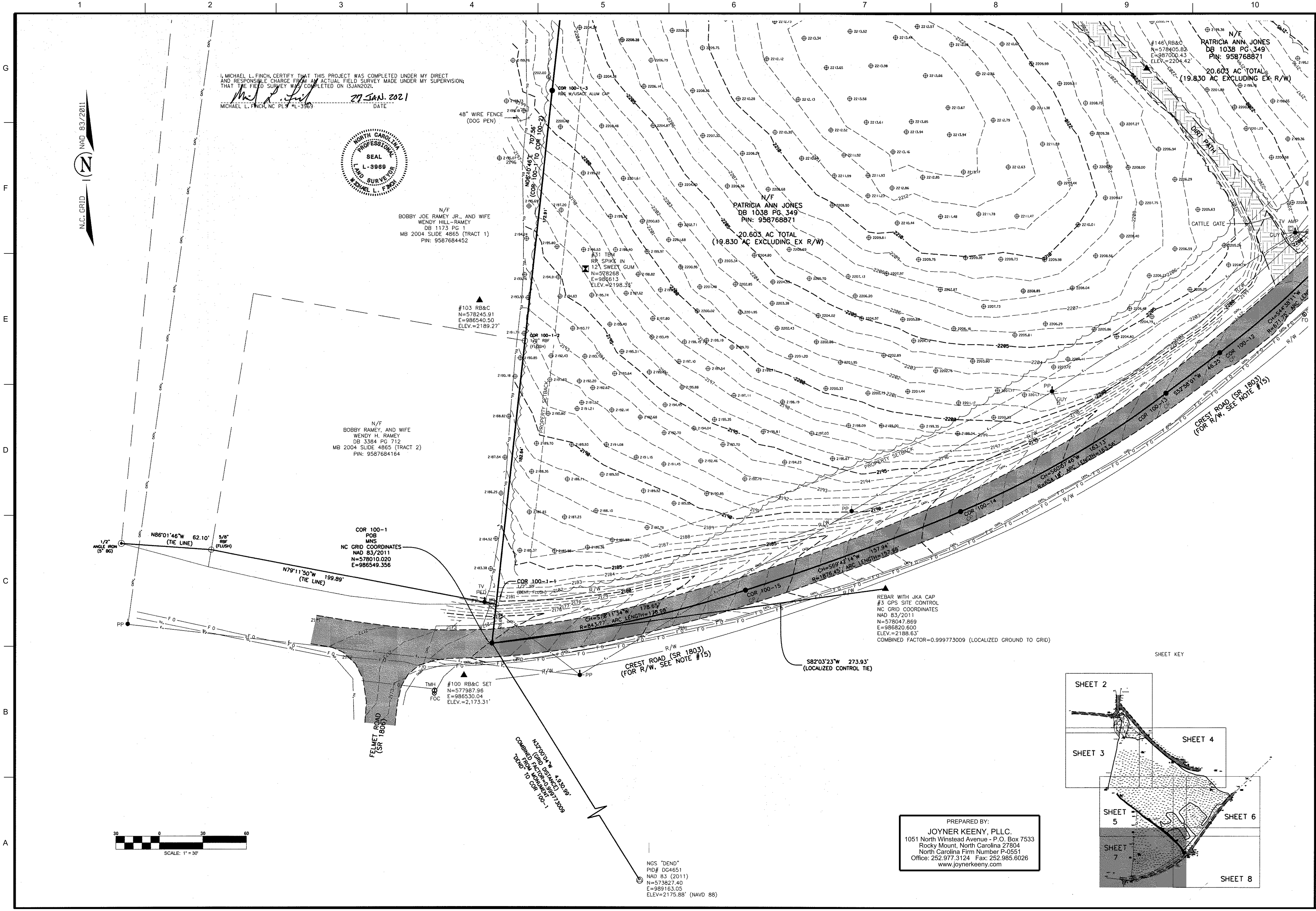
Mil L. Finch 27 JAN. 2021

MICHAEL L. FINCH, NC PLS #L-3969 DATE

L-3969
MICHAEL L. FINCH


1
2
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9
10
G
F
E
D
C
B
A
N.C. GRID NAD 83/2011
N
48" WIRE FENCE (DOG PEN)
N/F BOBBY JOE RAMEY JR., AND WIFE WENDY HILL-RAMEY DB 1173 PG 1 MB 2004 SLIDE 4865 (TRACT 1) PIN: 9587684452
N/F BOBBY RAMEY, AND WIFE WENDY H. RAMEY DB 3384 PG 712 MB 2004 SLIDE 4865 (TRACT 2) PIN: 9587684164
N/F PATRICIA ANN JONES DB 1038 PG 349 PIN: 958768871
20.603 AC TOTAL (19.830 AC EXCLUDING EX R/W)
COR 100-1-3 RBC W/USACE ALUM CAP
COR 100-1-2 1/2" RBF (FLUSH)
COR 100-1-1 1/2" IPF (BENT, FLUSH)
N06°01'46"E 707.58' (COR 100-1 TO COR 100-2)
#31 TBM RR SPIKE IN 12" SWEET GUM N=578268 E=986613 ELEV.=2198.38'
#103 RB&C N=578245.91 E=986540.50 ELEV.=2189.27'
#146 RB&C N=578405.82 E=987000.43 ELEV.=2204.42'
PROPERTY SETBACK
DIRT PATH
CATTLE GATE
TV AMP
GUY
PP
TV PED
1/2" ANGLE IRON (5" BG)
N86°01'46"W 62.10' (TIE LINE)
5/8" RBF (FLUSH)
N79°11'50"W 199.89' (TIE LINE)
COR 100-1 POB MNS NC GRID COORDINATES NAD 83/2011 N=578010.020 E=986549.356
CH=S78°17'34"W 178.65' R=843.77' ARC LENGTH=178.95'
CH=S69°42'14"W 157.94' R=1876.45' ARC LENGTH=157.95'
CH=S60°07'48"W 163.13' R=654.19' ARC LENGTH=163.56'
S52°58'01"W 46.25'
COR 100-15
COR 100-14
COR 100-13
COR 100-12
CREST ROAD (SR 1803) (FOR R/W, SEE NOTE #15)
FELMET ROAD (SR 1806)
R/W
FO
CATV
REBAR WITH JKA CAP #3 GPS SITE CONTROL NC GRID COORDINATES NAD 83/2011 N=578047.869 E=986820.600 ELEV.=2188.63' COMBINED FACTOR=0.999773009 (LOCALIZED GROUND TO GRID)
S82°03'23"W 273.93' (LOCALIZED CONTROL TIE)
#100 RB&C SET N=577987.96 E=986530.04 ELEV.=2,173.31'
TMH
FOC
N32°00'04"W 4,930.99' (GRID DISTANCE) COMBINED FACTOR=0.999773009 "DEND" TO COR 100-1
NGS "DEND" PID# DG4651 NAD 83 (2011) N=573827.40 E=989163.05 ELEV=2175.88' (NAVD 88)
30 0 30 60
SCALE: 1" = 30'
SHEET KEY
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8

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US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

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SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE V-107.dgn

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SITE SURVEY

SHEET ID
V-107

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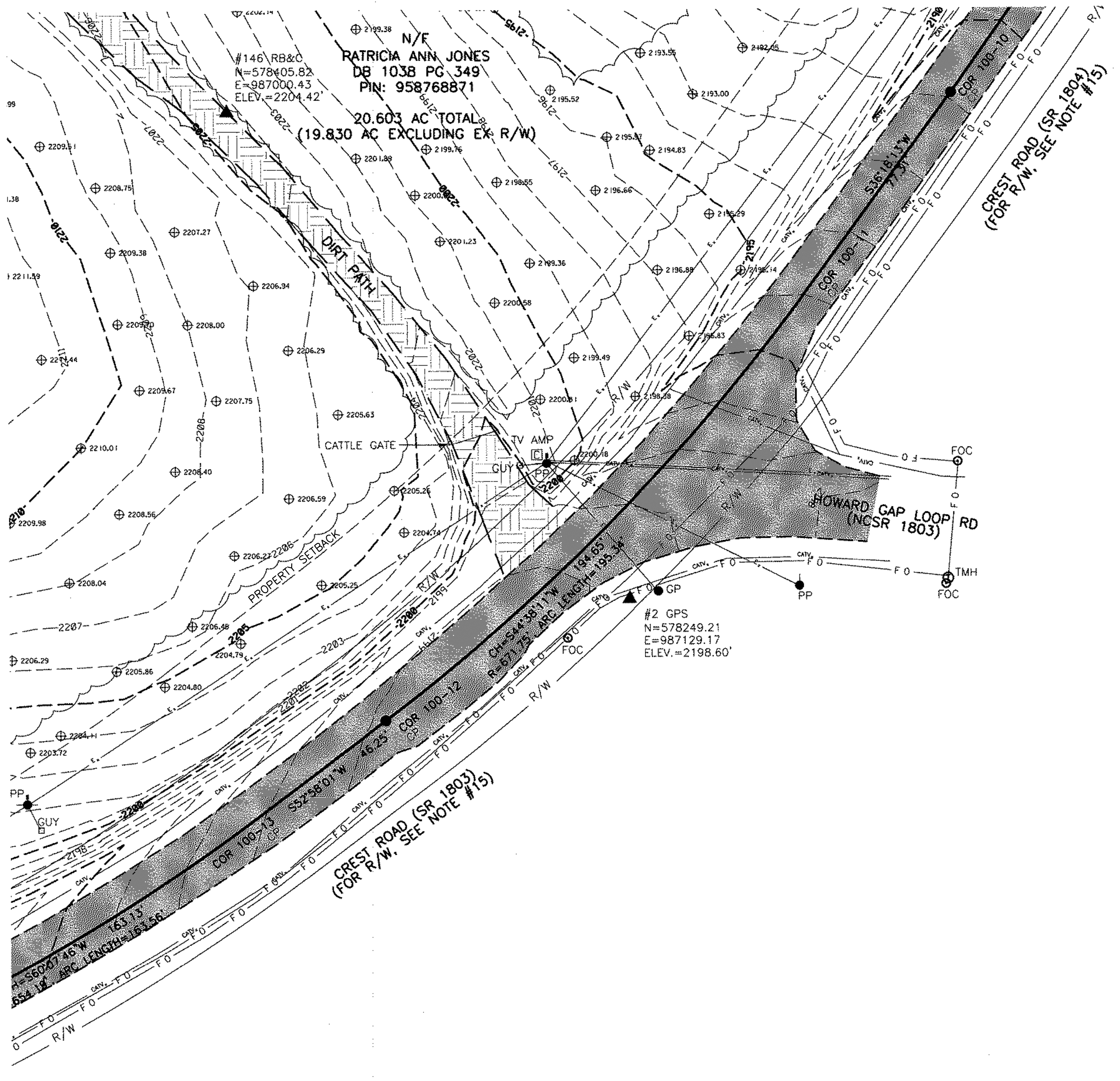
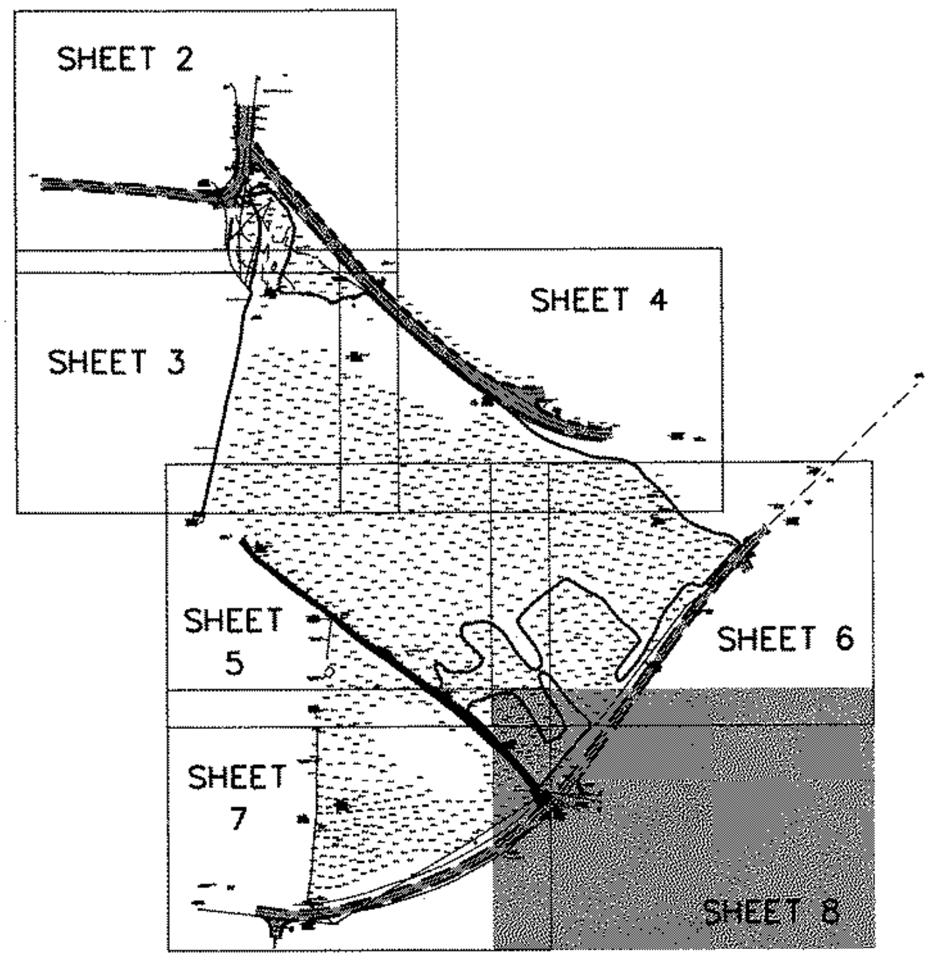


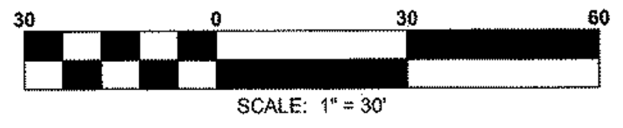
I, MICHAEL L. FINCH, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL FIELD SURVEY MADE UNDER MY SUPERVISION; THAT THE FIELD SURVEY WAS COMPLETED ON 13JAN2021.

Mich L. Finch 27 JAN 2021
MICHAEL L. FINCH, NC PLS #L-3969 DATE

SEAL
L-3969
MICHAEL L. FINCH

SHEET KEY





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SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE V-108.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

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PN: CAR 21-79351 P2#: 481815

SITE SURVEY

SHEET ID
V-108

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24-FEB-2022
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DEMOLITION AND REMOVAL NOTES:

1. TOPSOIL SHALL BE STRIPPED FROM THE SITE AND STOCKPILED. ALL STOCKPILE AREAS SHALL BE PROTECTED WITH PROPER EROSION CONTROL MEASURES. REFER TO CG701 THRU CG815 FOR DETAILS. TOPSOIL SHALL BE SPREAD AND COMPACTED 4 INCHES THICK ON AREAS IDENTIFIED TO BE GRASSED.
2. EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO PERFORMING ANY LAND DISTURBING ACTIVITIES OR DEMOLITION. REFER TO EROSION CONTROL SEQUENCE ON CG803.
3. TREE PROTECTION SHALL BE INSTALLED BEFORE CONSTRUCTION BEGINS AND REMOVED WHEN CONSTRUCTION IS COMPLETED. REFER TO DETAIL 2, SHEET CG810.
4. TREES OUTSIDE THE LIMITS OF CONSTRUCTION SHALL NOT BE DISTURBED BY CONSTRUCTION EQUIPMENT. THE CONTRACTOR SHALL NOT REMOVE ANY TREES LARGER THAN 4 INCHES DBH (DIAMETER AT BREAST HEIGHT), OTHER THAN THOSE SHOWN FOR REMOVAL ON THE PLANS, WITHOUT PRIOR WRITTEN PERMISSION FROM CONTRACTING OFFICER.
5. THE LIMITS OF CONSTRUCTION AS SHOWN ON THE CONTRACT PLANS SHALL NOT BE ADJUSTED WITHOUT PRIOR APPROVAL FROM THE CONTRACTING OFFICER.
6. TEMPORARY STOCKPILE LOCATIONS OF EXCAVATED MATERIALS FROM THE INSTALLATION OF UTILITIES SHALL BE COORDINATED WITH THE CONTRACTING OFFICER. ALL STOCKPILE AREAS SHALL BE PROTECTED WITH PROPER EROSION CONTROL MEASURES. REFER TO CG701 THRU CG815 FOR DETAILS.
7. ALL INACTIVE UTILITIES SHALL BE REMOVED AND NOT ABANDONED IN PLACE. THESE VOIDS SHALL BE BACKFILLED AS PER EARTHWORK SPECIFICATION 31 00 00.00 06. ALL ACTIVE UTILITIES THAT WILL REQUIRE PARTIAL DEMOLITION OR RELOCATION, SHALL BE CAPPED ON THE ACTIVE SIDE AS PER UTILITY PROVIDER'S RECOMMENDATION AND COORDINATION.
8. OFF-SITE VEHICLE TRACKING OF DIRT, SOILS, SEDIMENT AND DUST SHALL BE MINIMIZED OR ELIMINATED TO THE MAXIMUM EXTENT POSSIBLE. REFER TO CG701 THRU CG812 FOR MORE INFORMATION.

WELL ABANDONMENT NOTES

CONTRACTOR SHALL SUBMIT A "RECORD OF ABANDONMENT" (FORM GW-30) TO THE NORTH CAROLINA DIVISION OF WATER QUALITY (NCDENR) WITHIN 30 DAYS AFTER COMPLETED WORK. THE CONTRACTOR SHALL ALSO ADHERE TO ALL GUIDANCE AND CRITERIA AS DIRECTED BY NCDENR.

CONTACT INFORMATION:

ASHEVILLE REGIONAL OFFICE
2090 US HWY 70
SWANNANOA, NC 28778
PHONE: (828) 296-4500

HTTPS://DEQ.NC.GOV/ABOUT/DIVISIONS/WATER-RESOURCES

THE CONTRACTOR SHALL IDENTIFY WHAT TYPE OF WELL TO BE ABANDONED, DRILLED TYPE WELL OR BORED TYPE WELL.

FOR BORED WELL ABANDONMENT

1. THE WELL SHALL BE DISINFECTED ACCORDING TO TITLE 15A NCAC 02C.0111.
2. REMOVE ALL PLUMBING AND PIPING.
3. REMOVE AS MUCH OF THE WELL CASING AS POSSIBLE, BUT NO LESS THAN 3-FT BELOW EXISTING GRADE.
4. REMOVE SOIL DOWN TO THE TOP OF THE REMAINING WELL CASING AND EXTENDING TO A WIDTH OF AT LEAST 12-INCHES OUTSIDE OF THE WELL CASING.
5. FILL THE ENTIRE WELL UP TO EXISTING GRADE WITH GROUT, DRY CLAY, OR EXCAVATED MATERIAL. IF CLAY OR BACKFILL MATERIAL IS USED, IT SHALL BE PLACED IN LIFTS NO MORE THAN 5-FT AND COMPACTED PRIOR TO NEXT LIFT.
6. POUR A 6-INCH CONCRETE PLAN THAT COVERS THE ENTIRE EXCAVATED AREAS ABOVE THE TOP OF THE CASING. THIS ALSO INCLUDES THE AREA EXTENDING ON ALL SIDES OF THE CASING OUT TO A WIDTH OF AT LEAST 12-INCHES ON ALL SIDES.
7. COMPLETE BY FILLING THE REMAINDER OF THE WELL ABOVE THE PLUG WITH ADDITIONAL GROUT OR COMPACTED BACKFILL MATERIAL.

FOR DRILLED WELL ABANDONMENT

1. ANY CASING NOT GROUTED MUST BE REMOVED OR PROPERTY GROUTED.
2. THE ENTIRE DEPTH OF THE WELL SHALL BE SOUNDED TO ENSURE FREEDOM FROM OBSTRUCTIONS THAT MAY INTERFERE WITH SEALING OPERATIONS.
3. THE WELL SHALL BE DISINFECTED USING A SOLUTION MADE FROM CALCIUM HYPOCHLORITE CONTAINING 65% - 75% AVAILABLE CHLORINE SUCH AS HTH. THE USE OF CALCIUM HYPOCHLORITE CONTAINING FUNGICIDES, ALGAECIDES OR OTHER DISINFECTANTS IS PROHIBITED. DOSING AMOUNTS CAN BE FOUND ON THE NCDENR WEBSITE ABOVE.
4. IF THE WELL IS GRAVEL PACKED AND THE CASING AND SCREEN HAVE NOT BEEN REMOVED, NEAT CEMENT OR BENTONITE GROUT MUST BE INJECTED INTO THE WELL, COMPLETELY FILLING IT FROM THE BOTTOM OF THE CASING TO THE TOP OF THE WELL.
5. WELLS CONSTRUCTED IN UNCONSOLIDATED FORMATIONS SHALL BE COMPLETELY FILLED WITH GROUT BY INTRODUCING IT THROUGH A PIPE EXTENDING TO THE BOTTOM OF THE WELL. THE PIPE IS THEN RAISED AS THE WELL IS FILLED (COMMONLY CALLED TREMMIE PIPE).
6. WELLS CONSTRUCTED IN CONSOLIDATED FORMATIONS MAY BE FILLED WITH GROUT, SAND, GRAVEL, OR DRILLING CUTTINGS OPPOSITE THE ZONES OF CONSOLIDATED ROCK. THE TOP OF ANY SAND, GRAVEL, OR CUTTING FILL SHALL BE TERMINATED AT LEAST 10-FT BELOW THE TOP OF CONSOLIDATED ROCK OR 5-FT BELOW THE BOTTOM OF THE CASING. GROUT SHALL BE PLACED BEGINNING 10-FEET BELOW THE TOP OF THE CONSOLIDATED ROCK FOR 5-FT BELOW THE BOTTOM OF THE CASING IN A MANNER TO ENSURE COMPLETE FILLING OF THE CASING, AND EXTENDING UP TO EXISTING GRADE.

CONTRACTOR STAGING AREA:

1. STAGING AREA SHALL BE WITHIN THE LIMITS OF CONSTRUCTION.

LAYOUT NOTES:

1. COORDINATES AND STATIONING ARE IN ENGLISH UNITS.
2. DIMENSIONS ARE FROM BACK OF CURB OR CENTER OF PAVEMENT MARKING UNLESS OTHERWISE NOTED OR SHOWN.

GRADING AND STORM DRAINAGE NOTES:

1. ALL EXCAVATION SHALL BE PERFORMED SO THAT THE SITE AND THE AREA IMMEDIATELY SURROUNDING THE SITE WHICH AFFECTS OPERATIONS SHALL BE CONTINUALLY AND EFFECTIVELY DRAINED DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE DEWATERING AS REQUIRED SO THAT ALL FOOTING EXCAVATIONS ARE ACCOMPLISHED IN THE DRY. ALL FOOTING EXCAVATIONS SHALL REMAIN DRY AND FIRM UNTIL THE FOOTINGS ARE IN PLACE AND BACK FILLED. DEWATERING OF ANY SURFACE WATER, GROUNDWATER, AND/OR ANY PERCHED WATER CONDITION WHICH MAY BE ENCOUNTERED DURING EXCAVATIONS SHALL BE ACCOMPLISHED BY ANY ACCEPTABLE MEANS AS APPROVED BY THE CONTRACTING OFFICER. SEE PARAGRAPHS ON DRAINAGE AND DEWATERING OF SPECIFICATION SECTION 31 00 00.00 06 EARTHWORK FOR ADDITIONAL REQUIREMENTS.
2. ALL STORM DRAINAGE PIPES 15 INCHES OR GREATER SHALL HAVE THEIR JOINTS WRAPPED WITH FILTER FABRIC. FILTER FABRIC SHALL EXTEND 1 FOOT PAST THE JOINT. FILTER FABRIC SHALL HAVE AN OVERLAP OF 18 INCHES.
3. ROOF DRAINS WILL DISCHARGE TO UNDERGROUND PIPING SYSTEM, UNLESS SHOWN OTHERWISE ON THE CG SHEETS.
4. SEE ARCHITECTURAL SHEETS FOR LOCATION OF DOWNSPOUTS AND/OR ROOF DRAINS.
5. ALL EXISTING MANHOLES SHOWN ON CG SHEETS, ES SHEETS, AND V- SHEETS SHALL BE RAISED OR LOWERED TO MATCH THE NEW FINISHED GRADES UNLESS NOTED OTHERWISE ON THESE SHEETS.
6. THE CONTRACTOR MAY ENCOUNTER "PERCHED WATER" CONDITIONS IN SOME EXCAVATIONS REQUIRED FOR THIS PROJECT. SEE BORING LOCATION PLAN AND LOGS.
    - A. A "PERCHED WATER" CONDITION OCCURS WHEN WATER SEEPING DOWNWARD IS BLOCKED BY AN IMPERMEABLE SOIL LAYER, SUCH AS CLAYEY SAND, CLAY OR SILT, AND SATURATES THE MORE PERMEABLE SOIL ABOVE IT. THE TRUE GROUND WATER LEVEL CAN BE SEVERAL TO MANY FEET BELOW THE "PERCHED WATER" LEVEL.
    - B. IT IS ANTICIPATED THAT SATISFACTORY DEWATERING TO PERMIT THE REQUIRED CONSTRUCTION CAN BE ACCOMPLISHED BY THE USE OF FRENCH DRAINS, DITCHES, TRENCHES, AND PUMPING FROM FILTERED SUMPS. THE CONTRACTOR SHALL PERFORM WHICHEVER MEASURES NECESSARY SO THAT ALL REQUIRED WORK IS PERFORMED IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND THE SPECIFICATIONS.
    - C. REFER TO LOGS OF SOIL BORINGS IN THE CONTRACT DRAWINGS FOR WATER LEVELS OBSERVED DURING DRILLING. HOWEVER, BOTH "PERCHED WATER" AND TRUE GROUNDWATER LEVELS CAN FLUCTUATE DEPENDING ON VARIATIONS IN PRECIPITATION, DRAINAGE PATTERNS, SURFACE WATER RUNOFF, AND THE APPLICATION OF IRRIGATION WATER.
7. ALL FILL AND CUT SLOPES SHALL BE NO STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL UNLESS NOTED OTHERWISE ON THE DRAWINGS.
8. SEE LANDSCAPING SHEETS (LP) AND GRASSING SPECIFICATION FOR PERMANENT GRASSING OF SLOPE 3 HORIZONTAL TO 1 VERTICAL OR STEEPER.
9. THE CONTRACTOR SHALL COORDINATE ALL GRADING OPERATIONS WITH OTHER UTILITIES TO BE INSTALLED. WHERE EARTHWORK CUT IS TO BE ACCOMPLISHED, ALL NEW UTILITIES SHALL BE CONSTRUCTED WITH THE REQUIRED COVER AND COORDINATION WITH PRIVATIZED UTILITIES OF OTHER DISCIPLINES.
10. TRENCH BOXES SHALL BE USED TO INSTALL STORM DRAINAGE LINES AROUND EXISTING TREES TO REMAIN. NO FILL FROM THE EXCAVATIONS SHALL BE STOCKPILED WITHIN THE DRIP LINE OF THE TREES TO REMAIN.
11. SEE CG SHEETS FOR STORM DRAINAGE PROFILES AND DETAILS.
12. SURPLUS MATERIAL OR OTHER SOIL MATERIAL NOT REQUIRED OR SUITABLE FOR FILLING OR BACK FILLING SHALL BE REMOVED BY THE CONTRACTOR. THE CONTRACTOR SHALL CHECK WITH THE CONTRACTING OFFICER FOR POTENTIAL SPOIL AREA PRIOR TO THE CONTRACTOR REMOVING FROM GOVERNMENT PROPERTY. THE GOVERNMENT SHALL HAVE FIRST RIGHTS FOR ALL EXCESS SOIL.
13. REFER TO SPECIFICATION SECTION 31 00 00.00 06 EARTHWORK FOR ADDITIONAL INFORMATION.
14. ELEVATIONS SHOWN ON CURBS ARE SHOWN AT BOTTOM OF CURB UNLESS OTHERWISE NOTED.

ROCK REMOVAL

CONTRACTOR SHALL BE AWARE OF POTENTIAL ROCK REMOVAL NEAR BORING S10 (SHEET B-305). THIS BORING HAS AN AUGER REFUSAL AT 7.6' BELOW EXISTING GRADE. EXISTING GRADE IS 2,215' AND AUGER REFUSAL IS AT 2,207.4'. APPROXIMATE EARTHWORK CUT IN THE AREA IS 20-FT BELOW EXISTING GRADE WHICH COULD HAVE A POTENTIAL OF 12-FT OF ROCK REMOVAL. ALSO, NOTE THAT ADJACENT BORINGS DID NOT HAVE AUGER REFUSAL. CONTRACTOR SHALL REFER TO SPECIFICATION 31 00 00.06 EARTHWORK. THE GEOTECHNICAL REPORT IS AVAILABLE FOR INFORMATION ONLY UPON REQUEST TO THE CONTRACTING OFFICER.

SEVEN ADDITIONAL TEST PIT BORES WERE TAKEN TO PROVIDE ADDITIONAL INFORMATION REGARDING ROCK REMOVAL. THOSE ADDITIONAL TEST PIT BORES (TP-1 THRU TP-7) CAN BE FOUND ON SHEET B-101 AND SHEETS B-307 THRU B-309.

UTILITY NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL UTILITIES WITHIN THE LIMITS OF CONSTRUCTION PRIOR TO THE START OF ANY DESIGN AND/OR CONSTRUCTION.
2. REFER TO SPECIFICATION 31 00 00.00 06 EARTHWORK FOR REQUIRED BURIED WARNING AND IDENTIFICATION TAPE.
3. CONTRACTOR SHALL CONTACT AND COORDINATE WITH:

WATER & SANITARY SEWER:
HENDERSONVILLE WATER & SEWER
https://www.hendersonvillenc.gov/water-sewer

305 WILLIAMS ST.
HENDERSONVILLE, NC 2879

TELEPHONE:
(828) 697-3073 (8:00-5:00 M-F)
(828) 891-7779 (AFTER HOURS, WEEKENDS AND HOLIDAYS)

ADAM STEURER, P.E.
UTILITIES ENGINEER
asteurer@hvlnc.gov

NATURAL GAS:
DOMINION ENERGY
DAVIS H SWAIM
LARGE/INDUSTRIAL ACCOUNTS
DOMINION ENERGY
828-670-3556 DESK
828-273-6123 MOBILE
Davis.Swaim@dominionenergy.com
EMERGENCY: 1-877-776-2426

TREE CLEARING AND NORTHERN LONG-EARED BAT NOTE

1. TREE CLEARING OPERATIONS SHALL BE CONDUCTED BETWEEN OCTOBER AND MARCH TO AVOID THE ROOSTING SEASON OF THE NORTHERN LONG-EARED BAT.

EROSION CONTROL NOTES:

1. SEE CG801 THROUGH CG803 FOR STANDARD EROSION AND SEDIMENT CONTROL NOTES.

SURVEY NOTES:

1. REFER TO SHEET V-101 FOR SURVEY.

PERMITS

THE DESIGNER OF RECORD IS RESPONSIBLE FOR THE FOLLOWING:

EROSION & SEDIMENT CONTROL PERMIT (NCDEQ)
STORM WATER PERMIT (NCDEQ)
WATER AND SANITARY SEWER EXTENSION PERMIT (NCDEQ)
DRIVEWAY PERMIT APPLICATION (NCDOT)

THE CONTRACTOR IS RESPONSIBLE FOR THE NCDOT CONSTRUCTION INSPECTION FEE FOR THE DRIVEWAY PERMIT ($50). THE CONTRACTOR SHALL NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINSAND WHEN IT IS COMPLETE.

NCDOT District Engineer
Lonnie Watkins
(828) 891-7911
lrwatkins@ncdot.gov

CONSTRUCTION ACTIVITIES ALONG CREST ROAD (NCDOT)

DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE PROPER SIGNS, SIGNAL LIGHTS, FLAGGERS AND OTHER WARNING DEVICES FOR THE PROTECTION OF TRAFFIC IN CONFORMANCE WITH THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND AMENDMENTS FOR SUPPLEMENTES THERETO. INFORMATION AS TO THE ABOVE RULES AND REGULATINS MAY BE OBTAINED FROM THE DISTRICT ENGINEER.

CONTRACTORS ARE FREE TO USE ANY PRODUCT WHICH MEETS THE GOVERNMENT'S MINIMUM REQUIREMENTS AND NOT IN CONFLICT WITH OTHER CONTRACT PROVISIONS. UNLESS INDICATED OTHERWISE ON THE PLANS OR SPECIFICATIONS (E.G. SOLE-SOURCE), ALL LISTED MANUFACTURERS ARE THE BASIS OF DESIGN. FOR THESE BASIS OF DESIGN PRODUCTS, OTHER MANUFACTURERS MAY BE SUBSTITUTED AS LONG AS THE STANDARD OF QUALITY AND CHARACTERISTICS OF THE SUBSTITUTED MANUFACTURER MEET OR EXCEED THE STANDARD OF QUALITY AND CHARACTERISTICS OF THE BASIS OF DESIGN.

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE C-001.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

CIVIL GENERAL NOTES

SHEET ID
C-001

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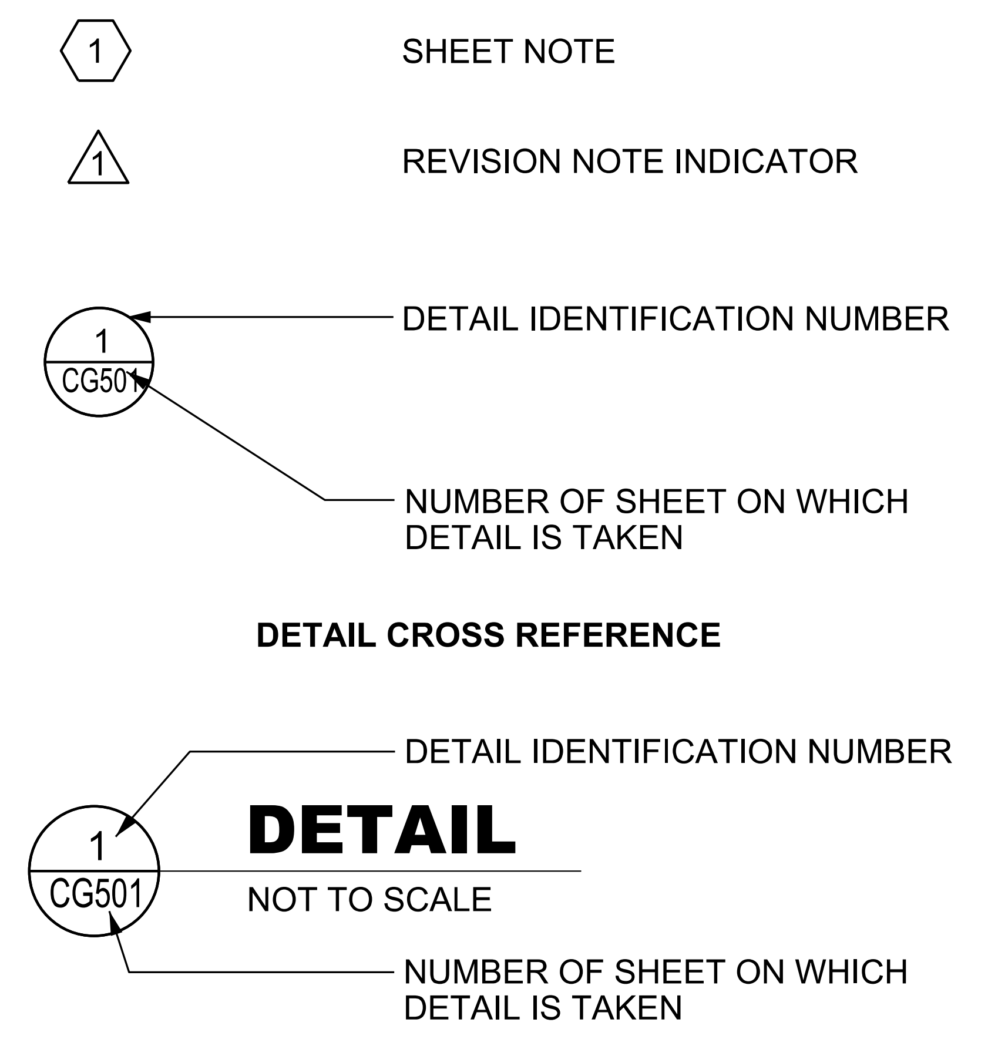
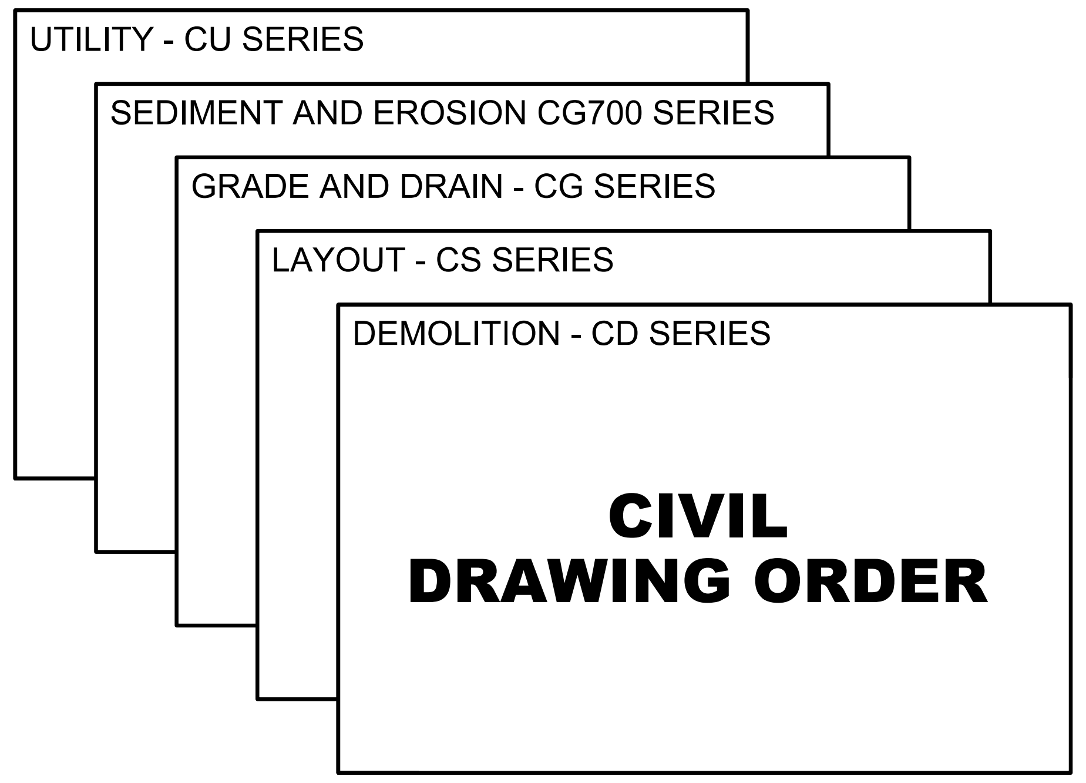
CERTIFIED FINAL SUBMITTAL

CIVIL ABBREVIATIONS

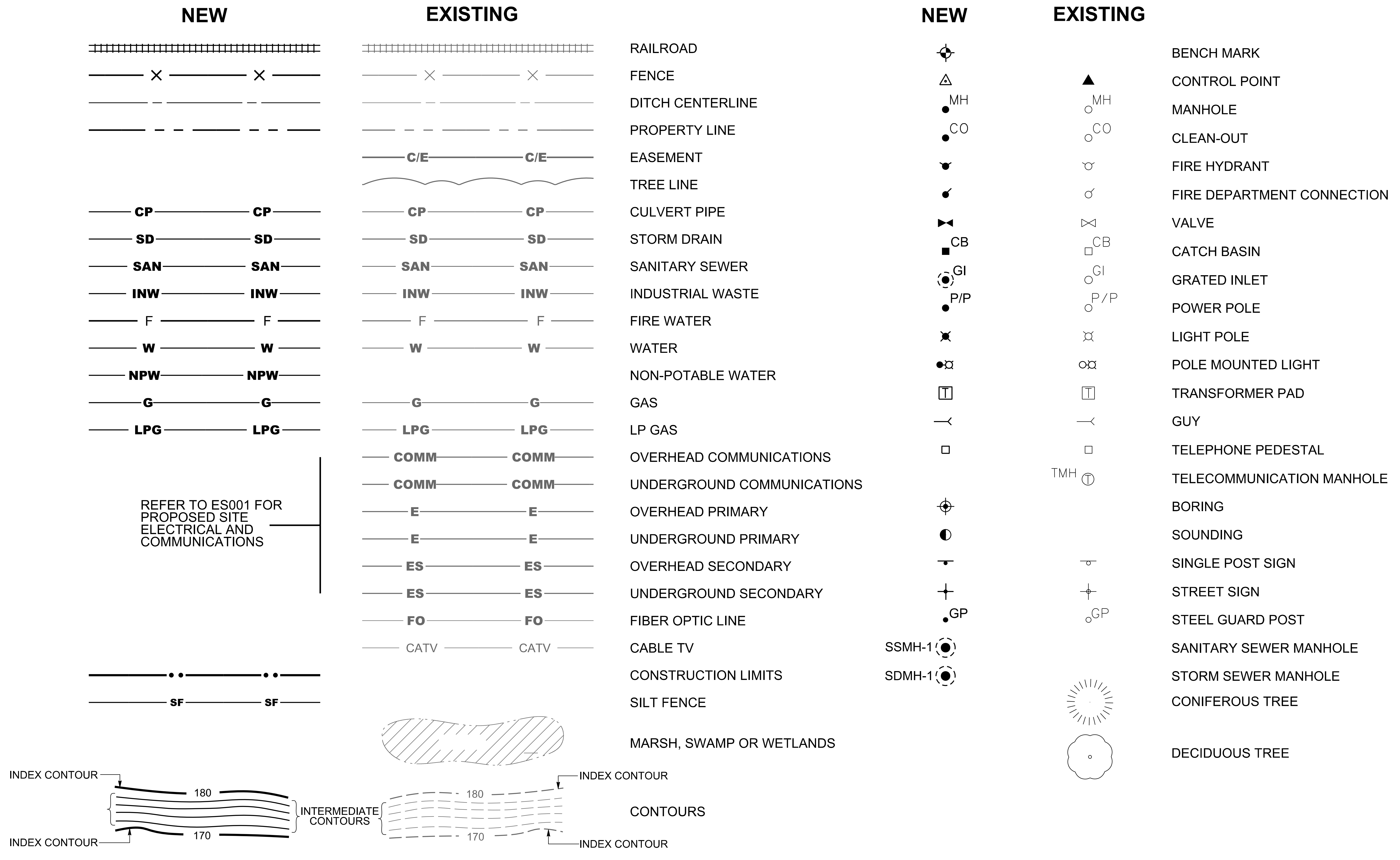
A	
ABN	ABANDON
ABUT	ABUTMENT
AC	ASPHALT CONCRETE
ADJ	ADJUST
AHD	AHEAD
ALT	ALTERNATE
APPRO	APPROXIMATE
ASSY	ASSEMBLY
ATFP	ANTI TERRORISM FORCE PROTECTION
AVE	AVENUE
AVG	AVERAGE
@	AT
B	
BC	BEGIN HORIZONTAL CURVE
BCR	BEGIN CURB RETURN
BEG	BEGIN
BK	BACK
BKF	BACKFILL
BLDG	BUILDING
BLVD	BOULEVARD
BM	BENCH MARK
BOT	BOTTOM
BVC	BEGIN VERTICAL CURVE
BW	BARBED WIRE
C	
CB	CATCH BASIN
CHNL	CHANNEL
CI	CURB INLET
CIP	CAST-IN-PLACE,
CLR	CLEAR, CLEARANCE
CM	CORRUGATED METAL
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCT, CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CTRS	CENTERS
CULV	CULVERT
CL	CENTERLINE
D	
D	DEPTH
DD	DOWNDRAIN
DBL	DOUBLE
DEG	DEGREE
DIA	DIAMETER
DIAPH	DIAPHRAGM
DIST	DISTANCE, DISTRICT
DR	DRIVE
E	
E	EAST
EASE	EASEMENT
EC	END HORIZONTAL CURVE
ECR	END CURB RETURN
ED	EDGE DRAIN
ELECT	ELECTRIC
ELEV	ELEVATION
EMB	EMBANKMENT
ENGR	ENGINEER
EP	EDGE OF PAVEMENT
EQ	EQUATION
ES	EDGE OF SHOULDER
ETW	EDGE OF TRAVELED WAY
EVC	END VERTICAL CURVE
EW	ENDWALL
EXC	EXCAVATION
EXIST	EXISTING
EXP	EXPANSION, EXPRESSWAY
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
F	
FB	FLOOR BEAM
FDN	FOUNDATION
FF	FILTER FABRIC
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIG	FIGURE
FL	FLOW LINE
FOB	FREE ON BOARD
FOC	FACE OF CONCRETE
FR RD	FRONTAGE ROAD
FTG	FOOTING
G	
GA	GAGE
GALV	GALVANIZED
GP	GRADING PLAN
GR	GUARD RAILING
GSP	GALVANIZED STEEL PIPE
GTR	GUTTER
H	
H	HEIGHT
H, HR	HOUR
HD	HORIZONTAL DRAIN
HDWL	HEADWALL
HORIZ	HORIZONTAL
HP	HINGE POINT, HORSEPOWER
HS	HIGH STRENGTH
HW	HEADWALL, HIGH WATER
HWM	HIGH WATER MARK
HWY	HIGHWAY
I	
ID	INSIDE DIAMETER
IF	INSIDE FACE
INT	INTERIOR
INV	INVERT
IRR	IRRIGATION
J	
J	
JCT	JUNCTION
JB	JUNCTION BOX
JT	JOINT
L	
L	LENGTH
LAT	LATITUDE
LOC	LOCATION
LONG	LONGITUDE
LONGIT	LONGITUDINAL
LT	LEFT
M	
MAINT	MAINTENANCE
MAX	MAXIMUM
MEP	MILITARY EQUIPMENT PARKING
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MKR	MARKER
MOD	MODIFIED, MODIFY
MON	MONUMENT
MTL	MATERIAL
N	
N	NORTH
NB	NORTHBOUND
NO.	NUMBER
NTS	NOT TO SCALE
O	
OC	OVERCROSSING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OG	ORIGINAL GROUND
OH	OVERHEAD
OPP	OPPOSITE
P	
P	PAGE
PB	PULL BOX
PC	POINT OF CURVATURE, PRECAST
PCC	POINT OF COMPOUND CURVE,
PCVC	POINT OF COMPOUND VERTICAL CURVE
PED	PEDESTRIAN
PG	PROFILE GRADE
PI	POINT OF INTERSECTION
P/L	PROPERTY LINE
POC	POINT OF HORIZONTAL CURVE
POT	POINT OF TANGENT
POVC	POINT OF VERTICAL CURVE
PP	POWER POLE
PPL	PREFORMED PERMEABLE LINER
PRC	POINT OF REVERSE CURVE
PRF	PAVEMENT REINFORCING FABRIC
PRVC	POINT OF REVERSE VERTICAL CURVE
PERF	PERFORATED
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
Q	
QTY	QUANTITY
R	
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REINF	REINFORCED,
REL	RELOCATE
REPL	REPLACEMENT
RET	RETAINING
REV	REVISED
RDWY	ROADWAY
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION
RT	RIGHT
RTE	ROUTE
R/W	RIGHT OF WAY
RWY	RAILWAY
S	
S	SOUTH,
SALV	SALVAGE
SD	STORM DRAIN
SEC	SECOND, SECTION
SEP	SEPARATION
SHLD	SHOULDER
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIAL, SPECIFICATIONS
ST	STREET
STA	STATION
STD	STANDARD
STR	STRUCTURE
SURF	SURFACING
SW	SIDEWALK,
SWR	SEWER
SYM	SYMMETRICAL
T	
TAN	TANGENT
TBR	TIMBER
TC	TOP OF CURB
TEL	TELEPHONE
TEMP	TEMPORARY
TG	TOP OF GRATE
TOT	TOTAL
TP	TELEPHONE POLE
TRANS	TRANSITION
TS	TRANSVERSE TRAFFIC SIGNAL, TUBULAR STEEL
TYP	TYPICAL
U	
USAR	UNITED STATES ARMY RESERVE
V	
V	VALVE,
VAR	VARIABLE
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VOL	VOLUME
W	
W	WEST, WIDTH
WT	WEIGHT
WV	WATER VALVE
WW	WINGWALL
X	
X SEC	CROSS SECTION
XING	CROSSING
Y	
YR	YEAR
YRS	YEARS

MISCELLANEOUS SYMBOLS


1
SHEET NOTE
1
REVISION NOTE INDICATOR
1
CG501
DETAIL IDENTIFICATION NUMBER
NUMBER OF SHEET ON WHICH DETAIL IS TAKEN
DETAIL CROSS REFERENCE
DETAIL IDENTIFICATION NUMBER
1
CG501
DETAIL
NOT TO SCALE
NUMBER OF SHEET ON WHICH DETAIL IS TAKEN



CIVIL LEGEND



NEW	EXISTING	
┼┼┼┼┼┼	┼┼┼┼┼┼	RAILROAD
—— × —— × ——	—— × —— × ——	FENCE
—— – —— –	—— – —— –	DITCH CENTERLINE
—— – – —— – –	—— – – —— – –	PROPERTY LINE
	—— C/E —— C/E ——	EASEMENT
		TREE LINE
—— CP —— CP ——	—— CP —— CP ——	CULVERT PIPE
—— SD —— SD ——	—— SD —— SD ——	STORM DRAIN
—— SAN —— SAN ——	—— SAN —— SAN ——	SANITARY SEWER
—— INW —— INW ——	—— INW —— INW ——	INDUSTRIAL WASTE
—— F —— F ——	—— F —— F ——	FIRE WATER
—— W —— W ——	—— W —— W ——	WATER
—— NPW —— NPW ——		NON-POTABLE WATER
—— G —— G ——	—— G —— G ——	GAS
—— LPG —— LPG ——	—— LPG —— LPG ——	LP GAS
REFER TO ES001 FOR PROPOSED SITE ELECTRICAL AND COMMUNICATIONS	—— COMM —— COMM ——	OVERHEAD COMMUNICATIONS
	—— COMM —— COMM ——	UNDERGROUND COMMUNICATIONS
	—— E —— E ——	OVERHEAD PRIMARY
	—— E —— E ——	UNDERGROUND PRIMARY
	—— ES —— ES ——	OVERHEAD SECONDARY
	—— ES —— ES ——	UNDERGROUND SECONDARY
	—— FO —— FO ——	FIBER OPTIC LINE
	—— CATV —— CATV ——	CABLE TV
—— • • —— • • ——		CONSTRUCTION LIMITS
—— SF —— SF ——		SILT FENCE
	▨	MARSH, SWAMP OR WETLANDS
INDEX CONTOUR 180 INTERMEDIATE CONTOURS 170 INDEX CONTOUR	INDEX CONTOUR 180 170 INDEX CONTOUR	CONTOURS

NEW	EXISTING	
⌖		BENCH MARK
△	▲	CONTROL POINT
●MH	○MH	MANHOLE
●CO	○CO	CLEAN-OUT
●	○	FIRE HYDRANT
●	○	FIRE DEPARTMENT CONNECTION
⧓	⋈	VALVE
■CB	□CB	CATCH BASIN
◉GI	○GI	GRATED INLET
●P/P	○P/P	POWER POLE
¤	¤	LIGHT POLE
●¤	○¤	POLE MOUNTED LIGHT
T	T	TRANSFORMER PAD
—<	—<	GUY
□	□	TELEPHONE PEDESTAL
	TMH Ⓣ	TELECOMMUNICATION MANHOLE
⌖		BORING
◐		SOUNDING
—•—	—○—	SINGLE POST SIGN
+	+	STREET SIGN
●GP	○GP	STEEL GUARD POST
SSMH-1 ◉		SANITARY SEWER MANHOLE
SDMH-1 ◉		STORM SEWER MANHOLE
	✳	CONIFEROUS TREE
	○	DECIDUOUS TREE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE C-002.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

CIVIL LEGEND AND ABBREVIATIONS

SHEET ID
C-002

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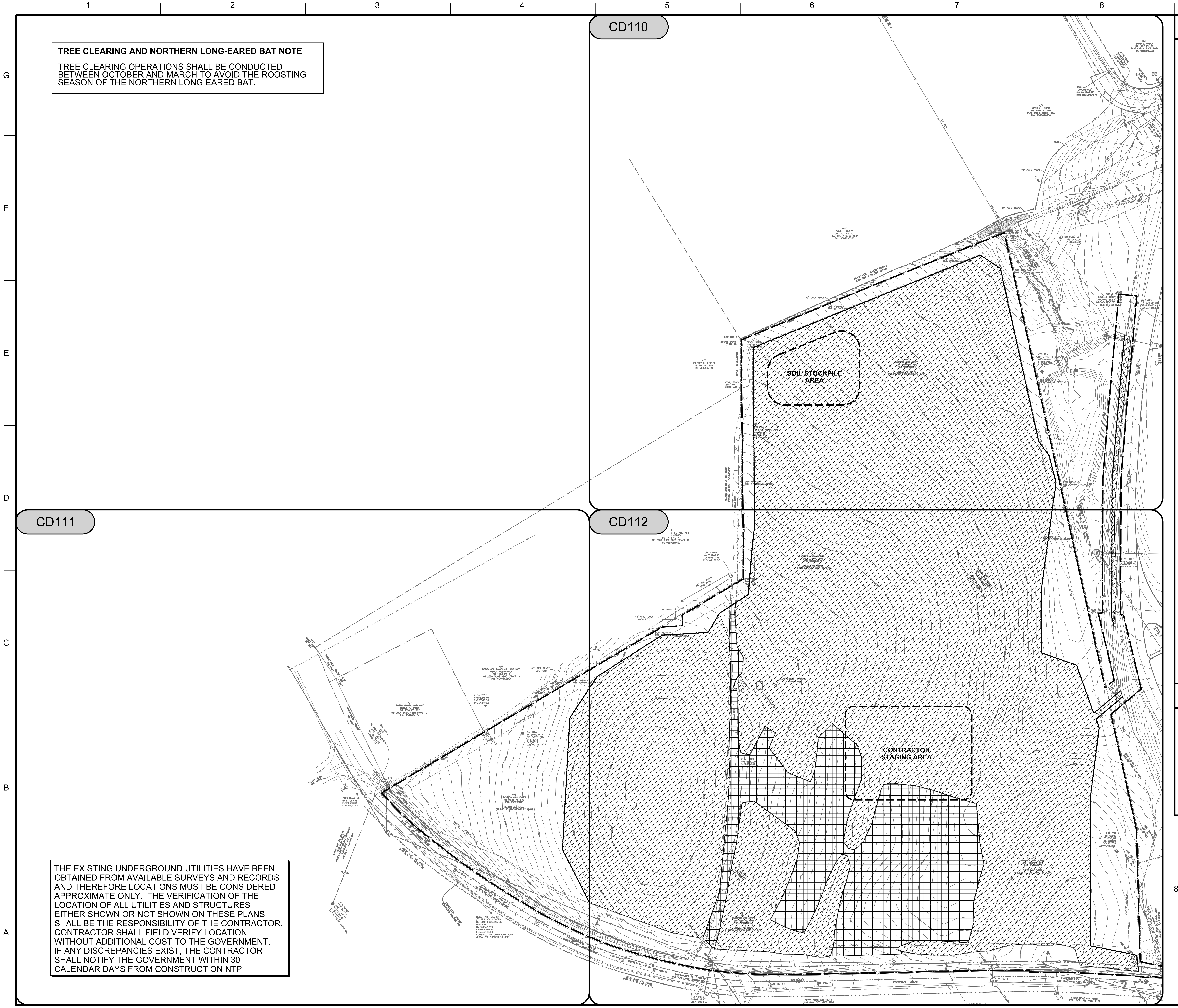
CERTIFIED FINAL SUBMITTAL

TREE CLEARING AND NORTHERN LONG-EARED BAT NOTE

TREE CLEARING OPERATIONS SHALL BE CONDUCTED BETWEEN OCTOBER AND MARCH TO AVOID THE ROOSTING SEASON OF THE NORTHERN LONG-EARED BAT.



THE EXISTING UNDERGROUND UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE SURVEYS AND RECORDS AND THEREFORE LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UTILITIES AND STRUCTURES EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL FIELD VERIFY LOCATION WITHOUT ADDITIONAL COST TO THE GOVERNMENT. IF ANY DISCREPANCIES EXIST, THE CONTRACTOR SHALL NOTIFY THE GOVERNMENT WITHIN 30 CALENDAR DAYS FROM CONSTRUCTION NTP

GENERAL DISCIPLINE NOTES

1. REFER TO SHEET C-002 FOR GENERAL DEMOLITION AND REMOVAL NOTES.
2. REFER TO TS AND ES SHEETS FOR ANY REQUIRED DEMOLITION OR REMOVAL OF COMMUNICATIONS AND ELECTRICAL UTILITIES.
3. REFER TO SHEET CS101 FOR PROJECT HORIZONTAL AND VERTICAL CONTROL.
4. NO UNDERGROUND STORAGE TANKS (UST) ARE ANTICIPATED TO BE FOUND DURING CONSTRUCTION. HOWEVER, IF A UST IS DISCOVERED DURING CONSTRUCTION IMMEDIATELY STOP CONSTRUCTION AND CONTACT THE CONTRACTING OFFICER.
5. THE CONTRACTOR SHALL INSTALL A TEMPORARY CONSTRUCTION FENCE TO ENCLOSE THE ENTIRE BUILDING SITE AREA. THE CONTRACTOR MAY ENCLOSE OTHER AREAS OF THE SITE AT THEIR DISCRETION OR AS DIRECTED BY THE CONTRACTING OFFICER.
6. CONTRACTOR SHALL REMOVE ANY AND ALL REMAINING ASPHALT FROM ABANDONED ROADS WITHIN THE PROJECT BOUNDARY.
7. CONTRACTOR SHALL PROVIDE COMPLETE TIE-INS OF NEW PAVEMENT TO EXISTING PAVEMENT.
8. CONTRACTOR TO MAINTAIN GRASS, LANDSCAPING AND STORMWATER BMPS INCLUDING BIORENTETION AREAS WITHIN PROJECT LIMITS FOR THE DURATION OF CONSTRUCTION.
9. CONTRACTOR SHALL REMOVE TREES, STUMPS AND VEGETATION AS SHOWN ON THE DRAWINGS AND AS PER SPECIFICATIONS. THESE AREAS SHALL ALSO HAVE TOPSOIL STRIPPED AND STOCKPILED AS PER THE EARTHWORK SPECIFICATION 31 00 00.00 06 AND THE GRADE AND DRAIN DRAWINGS (CG SERIES SHEETS).

LEGEND

▨	AREA TO BE CLEARED AND GRUBBED OF TREES AND VEGETATION. REFER TO GENERAL NOTE 9 ABOVE.
▦	AREA TO BE CLEARED OF VEGETATION (FEW TO NO TREES). REFER TO GENERAL NOTE 9 ABOVE.
—·—·—	LIMITS OF CONSTRUCTION
Ⓐ▶	PHOTOGRAPH ID AND DIRECTION. REFER TO SHEETS CD701 FOR PHOTOGRAPHS.

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GRAPHIC SCALE: 1"=80'-0"

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GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022

SOLICITATION NO.:

CONTRACT NO.:

CATEGORY CODE

DESIGNED BY:
S.CURRY

DRAWN BY:
S.HAGGARD

CHECKED BY:
M.MAYER

SUBMITTED BY:
D. HENSLEY

SIZE:
ANSI D

FILENAME:
ASHE_CD101.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

OVERALL DEMOLITION PLAN

SHEET ID
CD101

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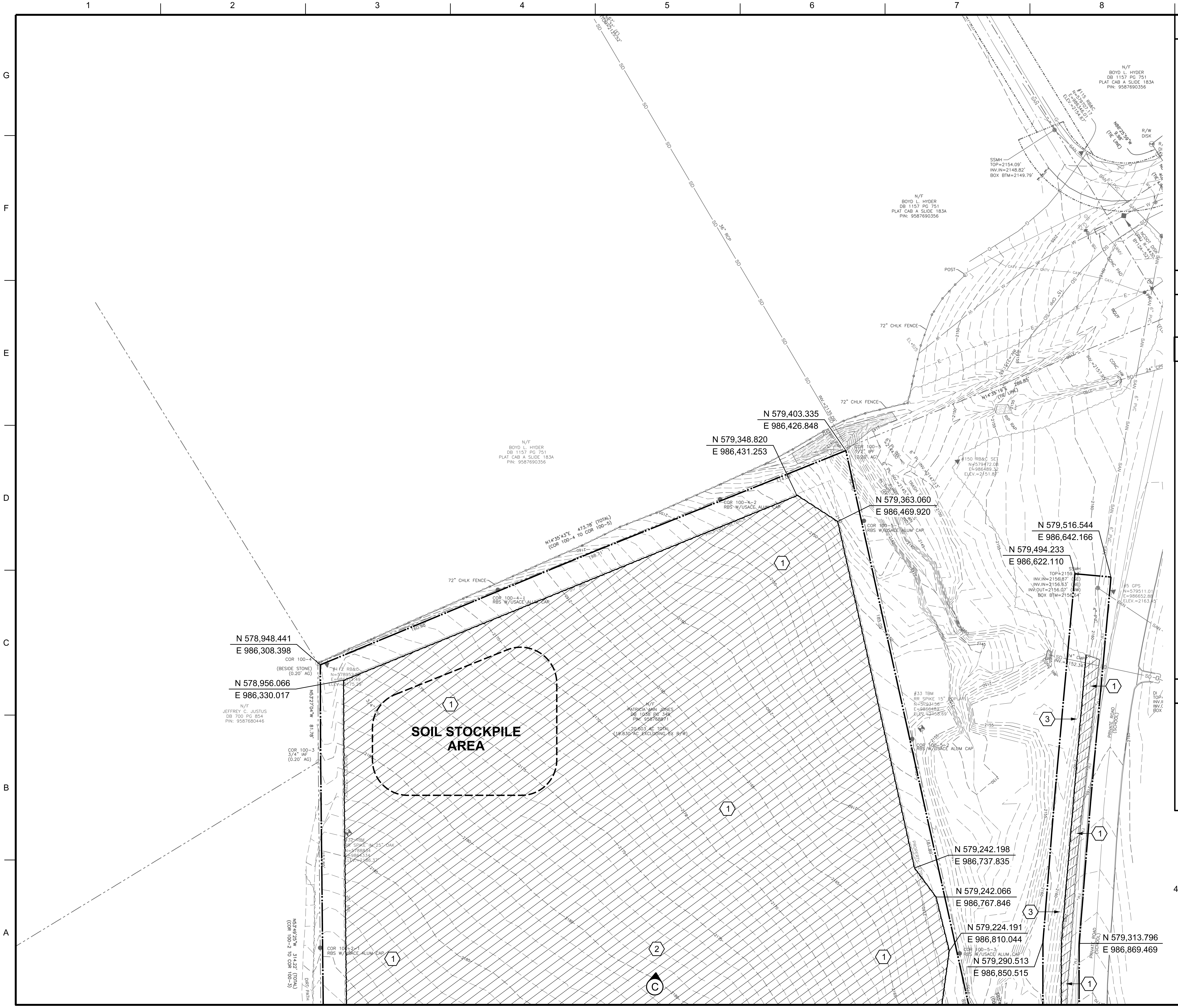
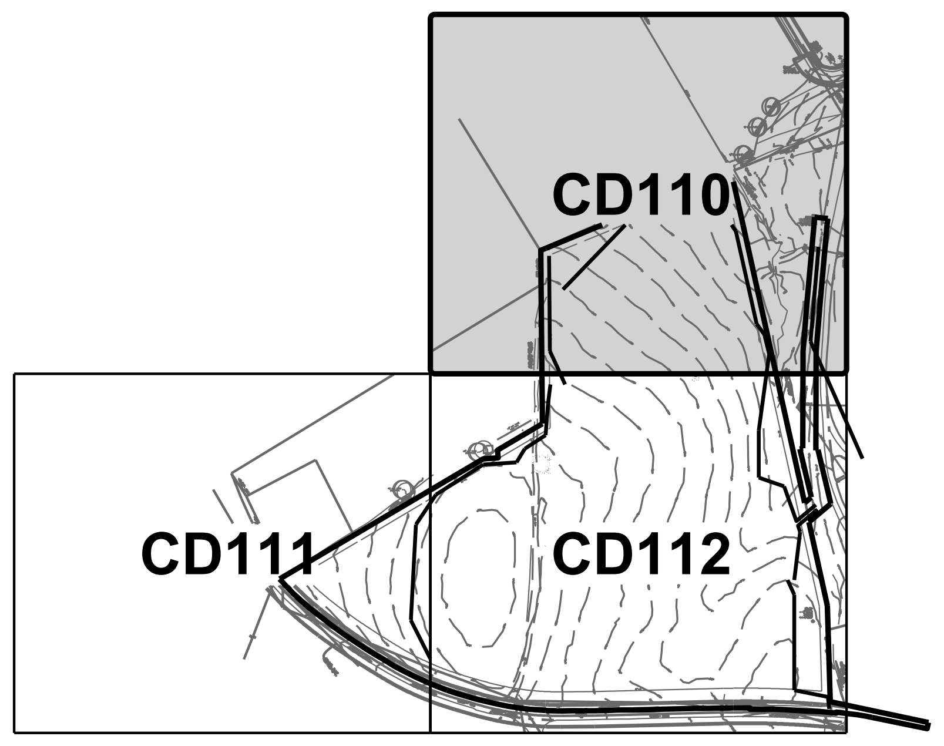


KEY MAP



GENERAL NOTES

1. REFER TO SHEET CD101 FOR GENERAL NOTES.

⬡ SHEET KEYNOTES

1. CONTRACTOR SHALL REMOVE TREES, STUMPS AND VEGETATION AS SHOWN ON THE DRAWINGS AND AS PER SPECIFICATIONS. THESE AREAS SHALL ALSO HAVE TOPSOIL STRIPPED AND STOCKPILED AS PER THE EARTHWORK SPECIFICATION 31 00 00.00 06 AND THE GRADE AND DRAIN DRAWINGS (CG SERIES SHEETS).
2. EXISTING CLUB HOUSE AREA TO BE REMOVED.
3. REMOVE ONLY THE TREES NECESSARY WITHIN THE TEMPORARY CONSTRUCTION EASEMENT FOR THE INSTALLATION OF THE SANITARY SEWER LINE. REFER TO SHEET CU001 FOR EASEMENT INFORMATION.

LEGEND

▨	AREA TO BE CLEARED AND GRUBBED OF TREES AND VEGETATION.
—··—	LIMITS OF CONSTRUCTION
Ⓐ▶	PHOTOGRAPH ID AND DIRECTION. REFER TO SHEETS CD701 FOR PHOTOGRAPHS.

GRAPHIC SCALE: 1"=40'-0"

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SIZE: ANSI D	FILENAME: ASHE_CD110.dgn

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LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

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ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

DEMOLITION PLAN

SHEET ID
CD110

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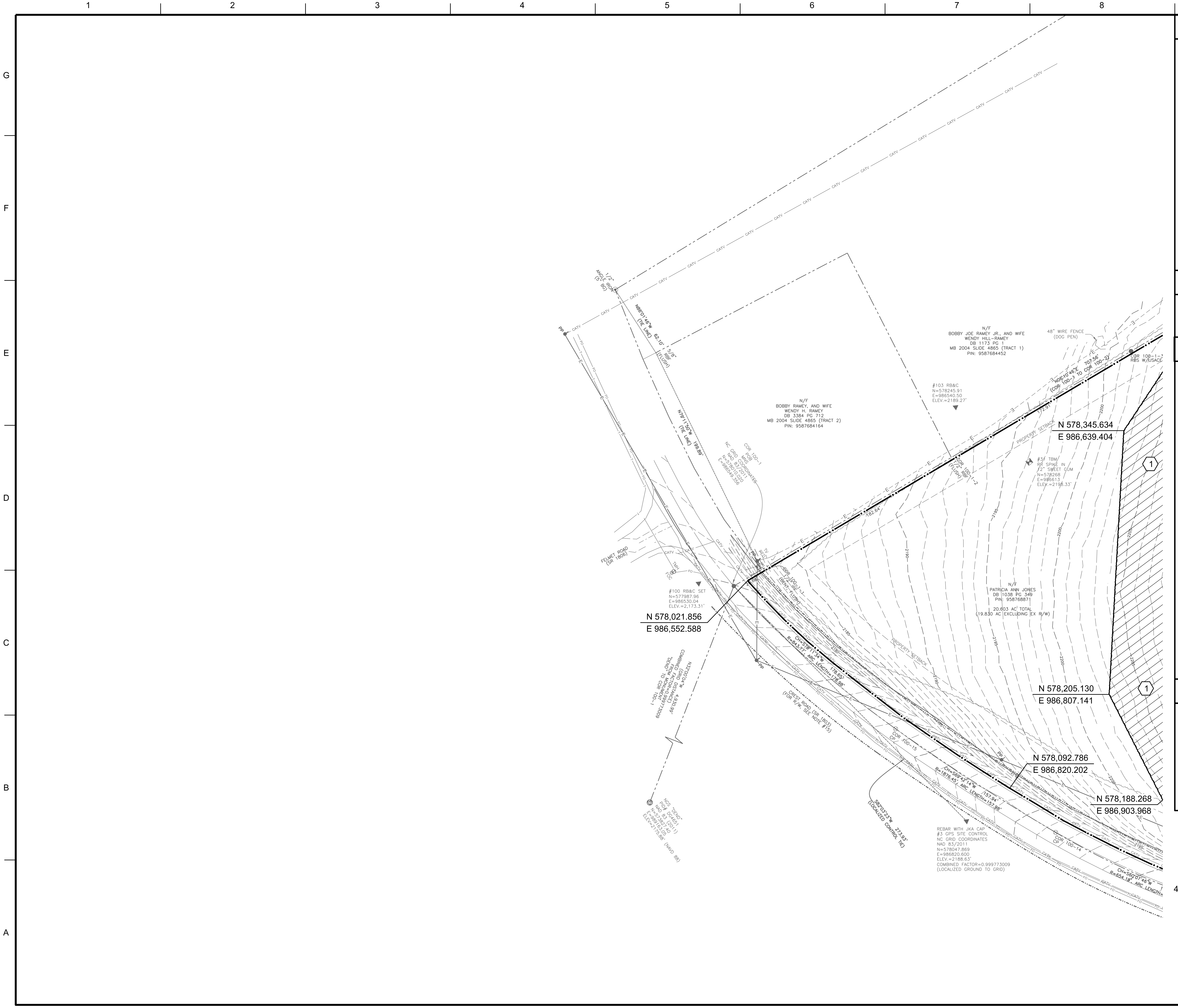

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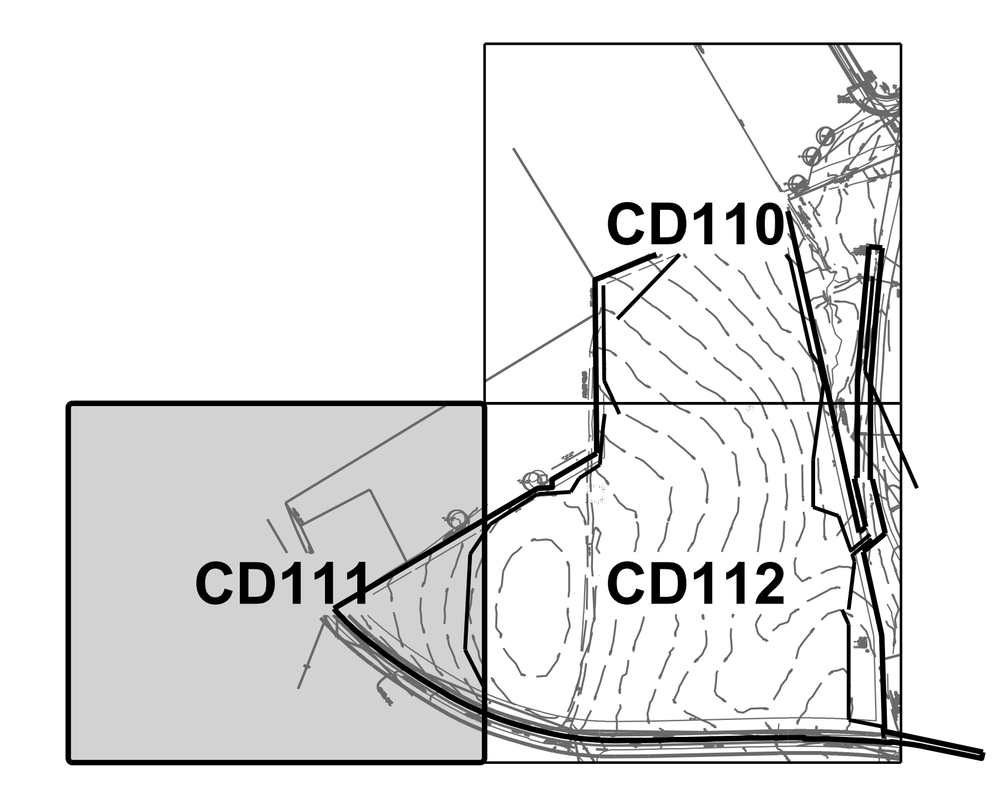

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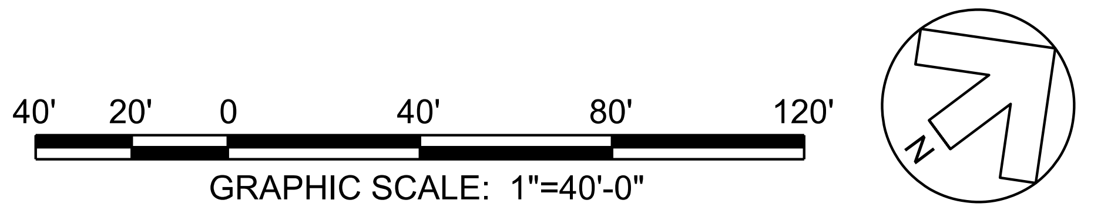

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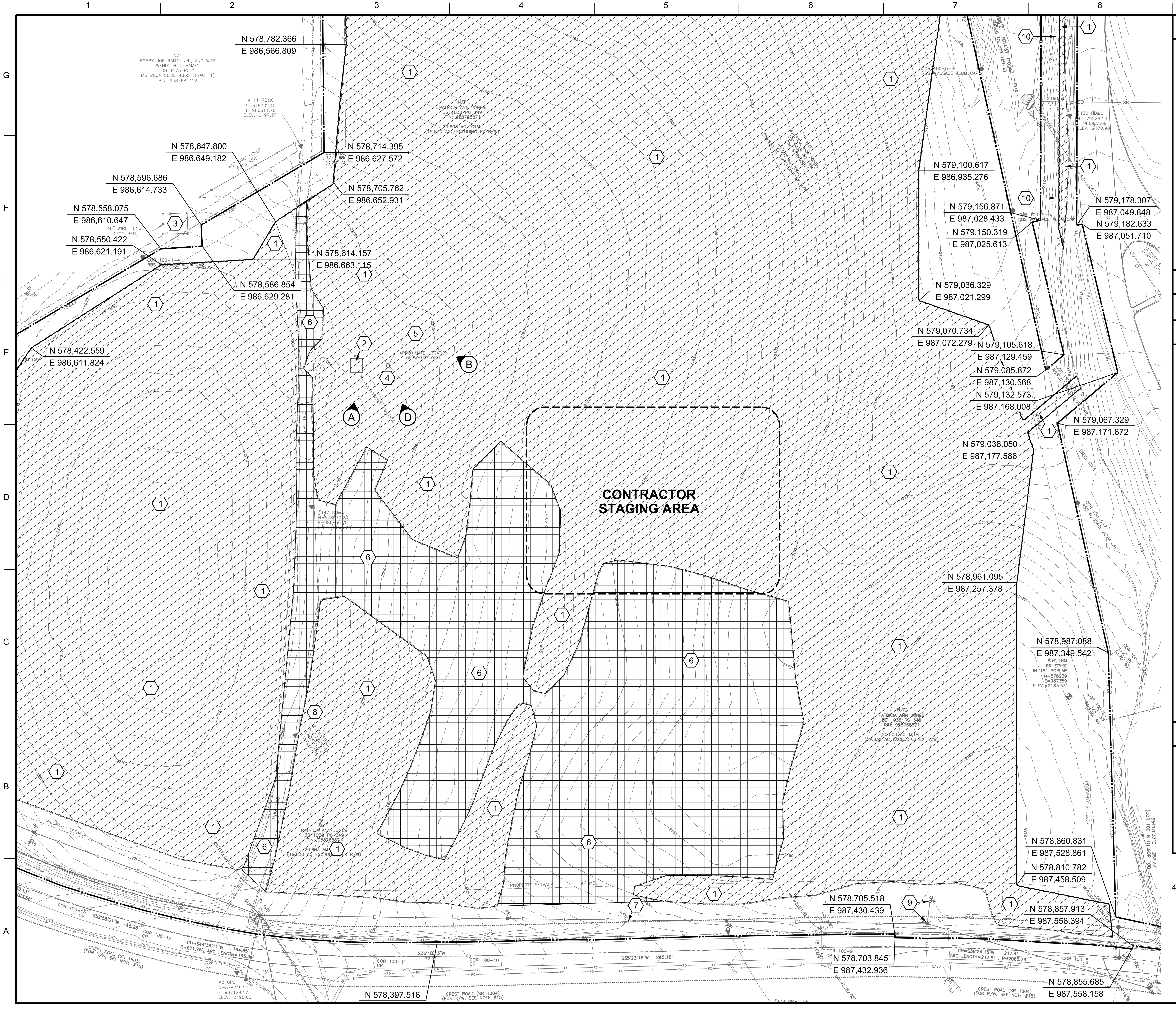

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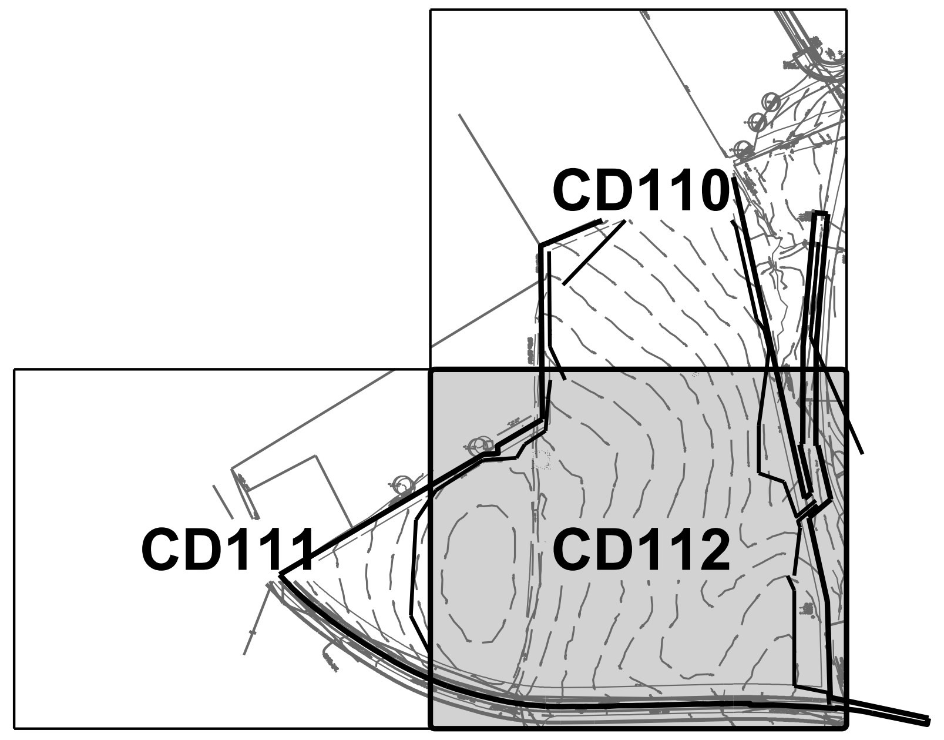
KEY MAP



GENERAL NOTES

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2. EXISTING DILAPIDATED HOMESTEAD BUILDING TO BE REMOVED.
3. EXISTING DOG PEN AREA TO BE FLAGGED OFF AND PROTECTED DURING CONSTRUCTION.
4. EXISTING WATER WELL TO BE ABANDONED. REFER TO WELL ABANDONMENT NOTES ON SHEET C-001.
5. EXISTING TRASH AND DEBRIS TO BE REMOVED.
6. AREA TO BE CLEARED OF VEGETATION.
7. EXISTING GATE TO BE REMOVED.
8. INACTIVE OVERHEAD ELECTRICAL LINE TO BE REMOVED BY DUKE ENERGY. CONTRACTOR SHALL CONTACT DUKE ENERGY (800-777-9898) AND REQUEST THE LINE TO BE REMOVED. DUKE ENERGY WILL CUT THE OVERHEAD LINE AND REMOVE ANY LINES AND POLES THAT ARE TRUCK ACCESSIBLE. ANY REMAINING ABANDONED POLES NOT REMOVED BY DUKE ENERGY MAY BE DEMOLISHED BY THE CONTRACTOR.
9. POWER POLE AND GUY WIRE TO BE RELOCATED BY DUKE ENERGY AT NO COST TO THE CONTRACTOR. CONTRACTOR SHALL COORDINATE RELOCATION. REFER TO SHEET NOTE 7 ON SHEET ES101.
10. REMOVE ONLY THE TREES NECESSARY WITHIN THE TEMPORARY CONSTRUCTION EASEMENT FOR THE INSTALLATION OF THE SANITARY SEWER LINE. REFER TO SHEET CU001 FOR EASEMENT INFORMATION.

LEGEND

▨	AREA TO BE CLEARED AND GRUBBED OF TREES AND VEGETATION.
▦	AREA TO BE CLEARED OF VEGETATION (FEW TO NO TREES).
—·—·—	LIMITS OF CONSTRUCTION
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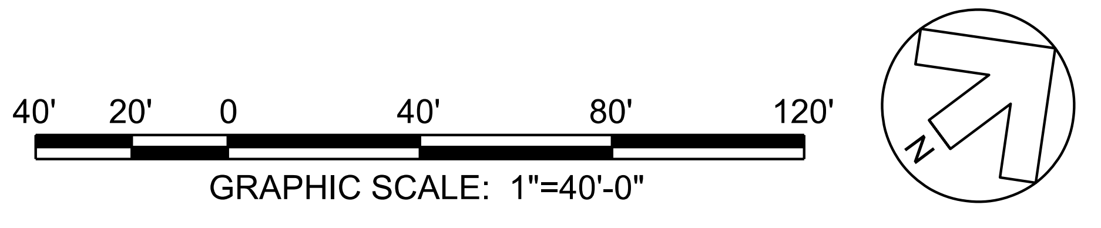

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U.S. ARMY CORPS OF ENGINEERS
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LOUISVILLE, KENTUCKY

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DEMOLITION PLAN

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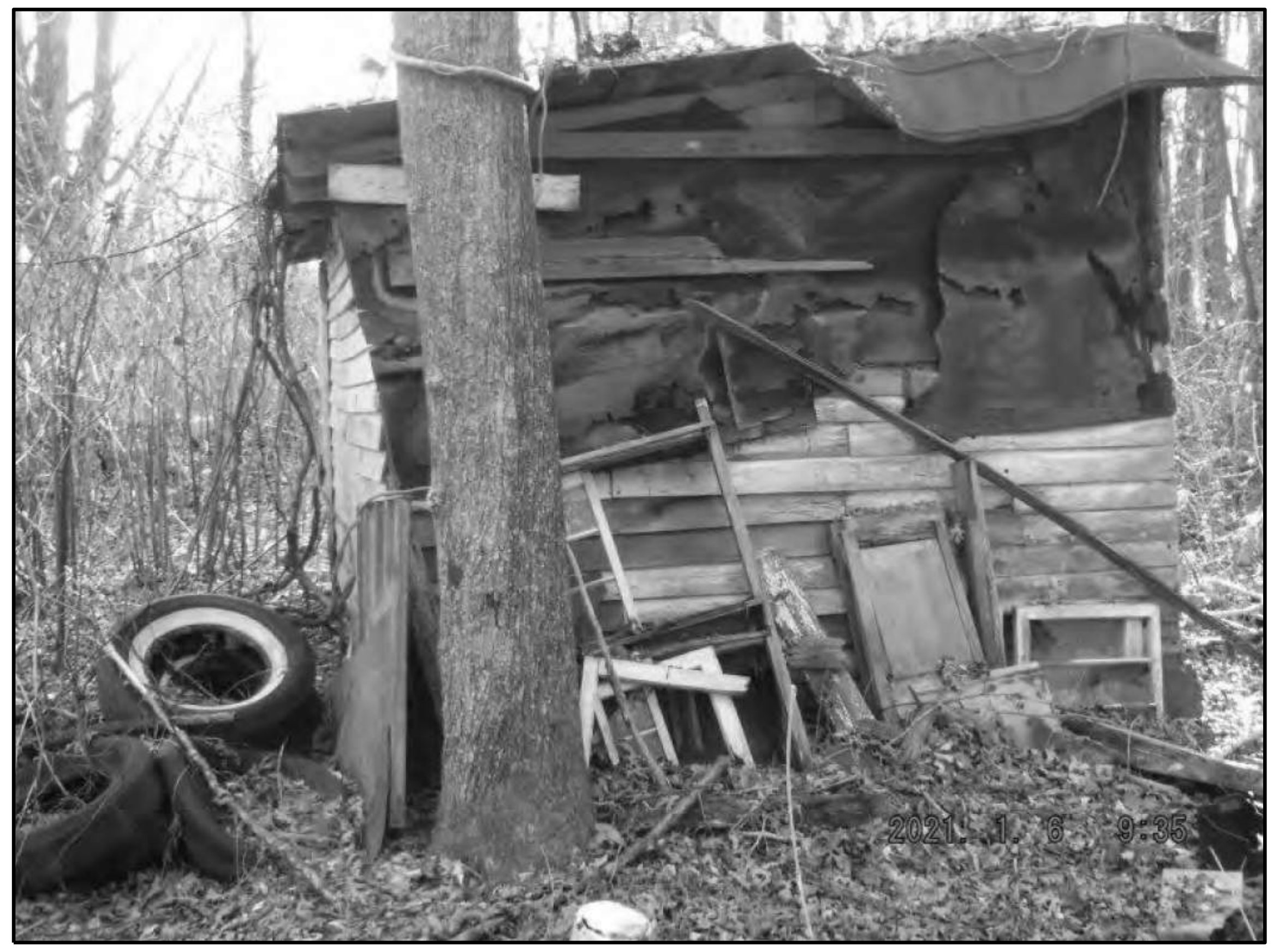
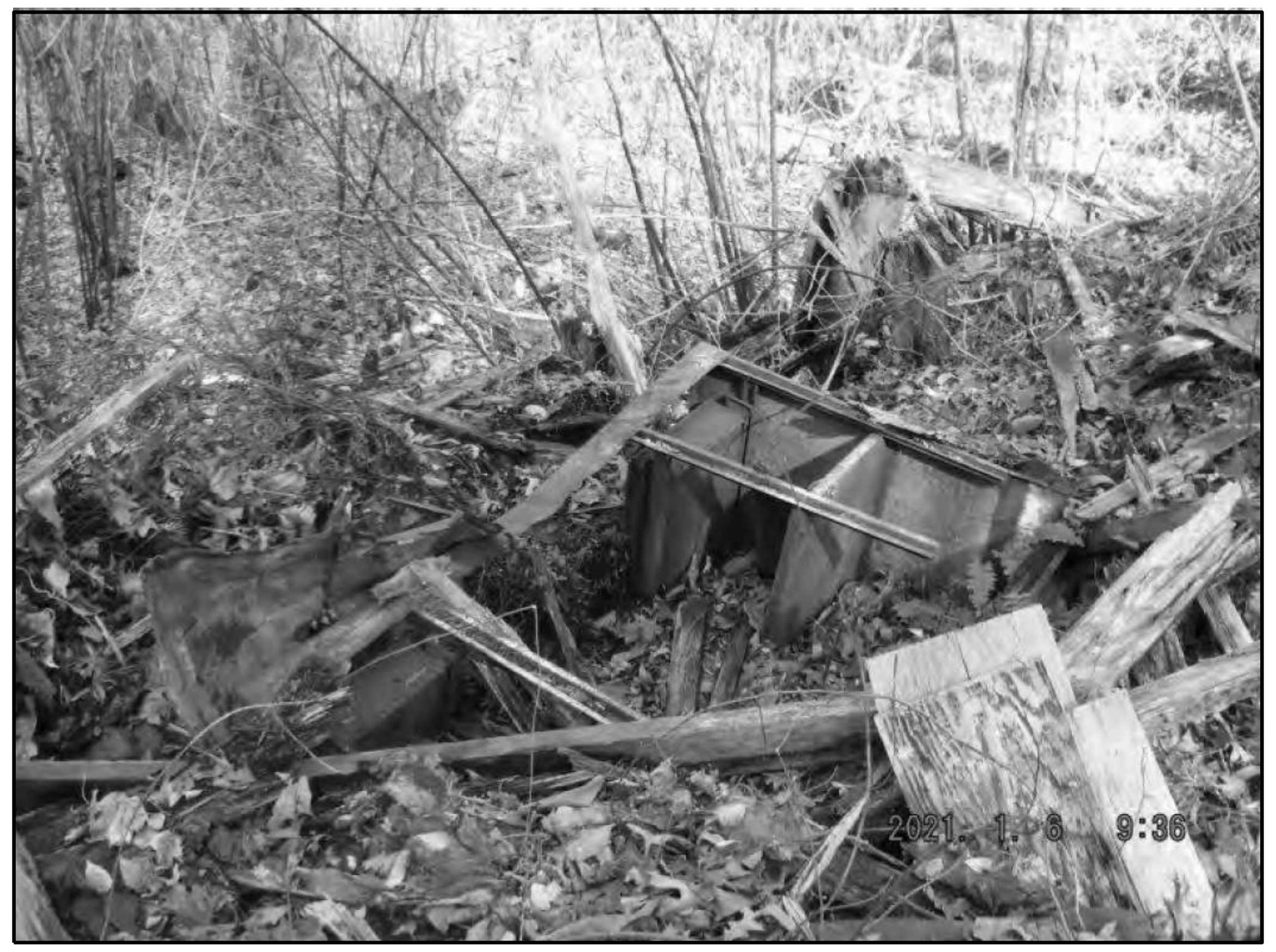


DILAPIDATED HOMESTEAD STRUCTURE

PHOTOGRAPH A



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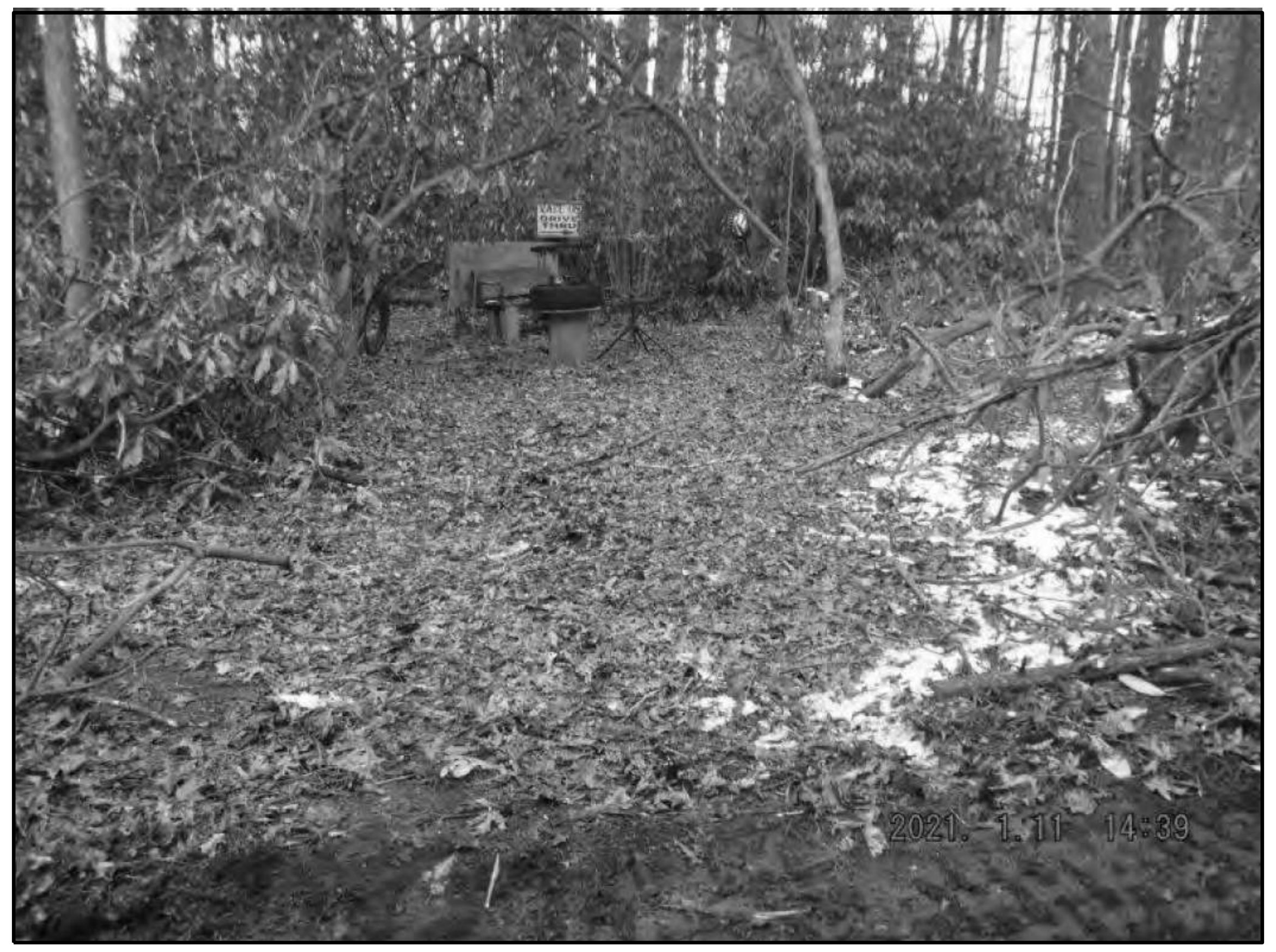
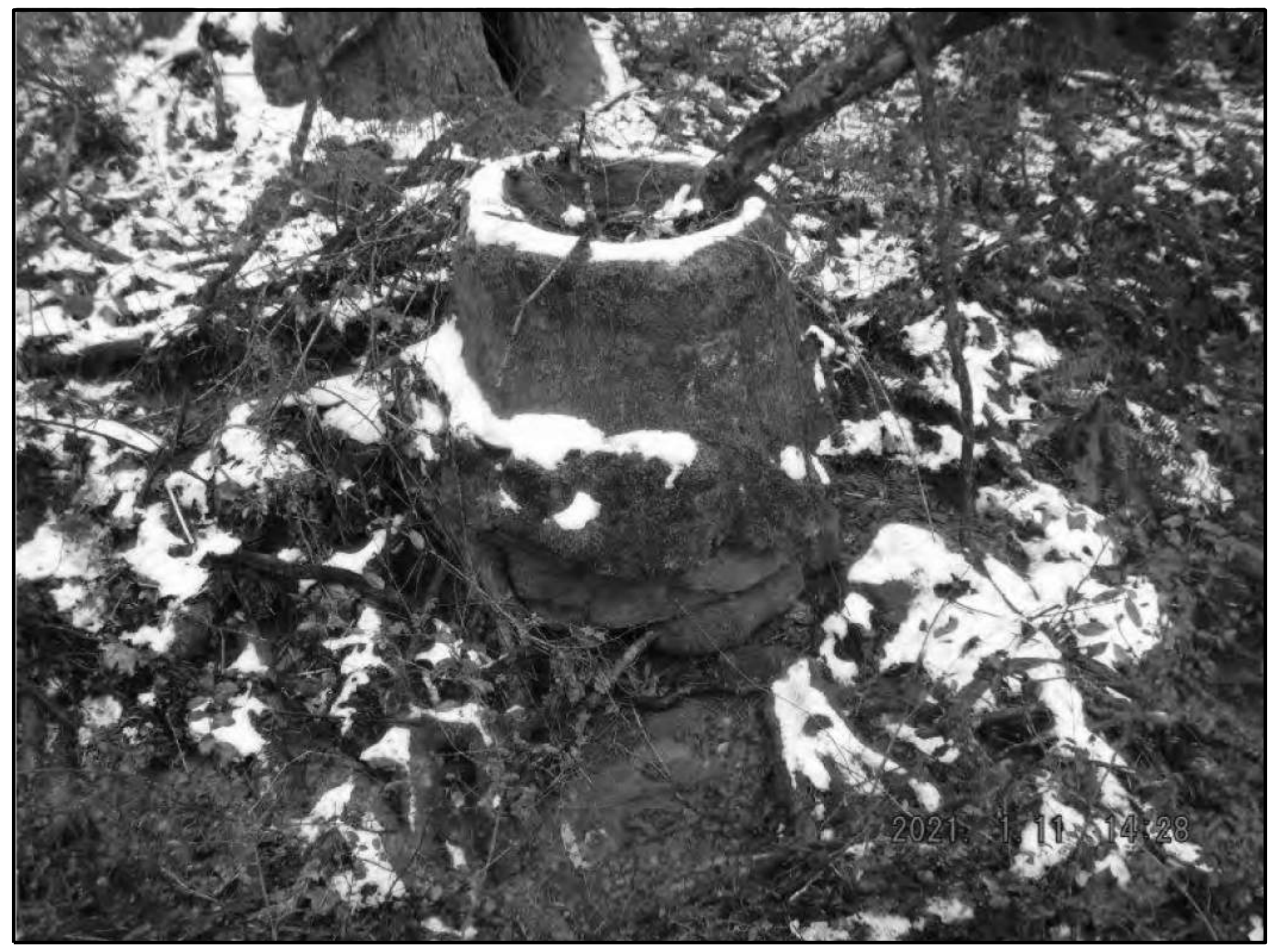
PHOTOGRAPH B



CLUB HOUSE AREA

PHOTOGRAPH C



EXISTING WATER WELL

PHOTOGRAPH D

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DEMOLITION PHOTOGRAPHS

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EARTHWORK NOTES

SITE ACCESS

1. THE CONTRACTOR SHALL NOT ACCESS THE CONSTRUCTION SITE WITHOUT APPROVAL OF THE CONTRACTING OFFICER. THE CONTRACTOR SHALL NOT BEGIN CONSTRUCTION WITHOUT APPROPRIATE EROSION CONTROL MEASURES AND/OR TEMPORARY WATER CROSSINGS BEING CONSTRUCTED AND NECESSARY PERMITS OBTAINED. THE CONTRACTOR WILL BE RESPONSIBLE FOR DESIGNING, INSTALLING AND MAINTAINING ANY TEMPORARY STRUCTURES REQUIRED FOR CONSTRUCTION.

2. THE CONTRACTOR SHALL REMOVE ALL STUMPS WITHIN THE CONSTRUCTION LIMITS. TEMPORARY CONSTRUCTION ROAD STABILIZATION MAY BE USED TO FACILITATE ACCESS, INCLUDING BUT NOT LIMITED TO THE PLACEMENT OF AGGREGATE BASE COURSE (ABC) AND/OR GEOGRID AS NECESSARY.

3. ANY RUTTING OR DISTURBANCE ON OR ALONG ACCESS ROUTES SHALL BE REPAIRED AND THE AREA STABILIZED IMMEDIATELY.

SITE PREPARATION

1. ALL TREES AND UNWANTED VEGETATION SHALL BE REMOVED, STUMPS GRUBBED AND ORGANIC TOPSOIL STRIPPED ONLY AS NECESSARY FOR CONSTRUCTION ACTIVITIES. CLEARING AND GRUBBING SHALL NOT OCCUR DURING WET CONDITIONS.

2. ALL AREAS TO RECEIVE FILL SHALL BE EVALUATED BY A GEOTECHNICAL ENGINEER PRIOR TO FILL PLACEMENT TO DETERMINE WHETHER THE SUBGRADE CAN SUPPORT CONSTRUCTION ACTIVITY AND THE COMPACTIVE EFFORT REQUIRED TO MEET THE SPECIFIED DEGREE OF SOIL COMPACTION. THE EVALUATION SHOULD INCLUDE PROOFROLLING THE SUBGRADE WITH A FULLY LOADED TANDEM AXLE DUMP TRUCK (20 TONS) DURING A PERIOD OF DRY WEATHER AND UNDER THE OBSERVATION OF THE GEOTECHNICAL ENGINEER. ANY AREAS WHICH "PUMP" OR "RUT" EXCESSIVELY UNDER THE WEIGHT OF THE PROOFROLLING VEHICLE WILL REQUIRE UNDERCUTTING, STABILIZATION OR OTHER REMEDIATION. WHERE THE ENGINEER DETERMINES THE SUBGRADE WILL BE DAMAGED BY PROOFROLLING, OTHER METHODS TO EVALUATE THE SUBGRADE AS THE ENGINEER DEEMS APPROPRIATE MAY BE USED.

SOIL REMEDIATION

1. STABILIZATION USING A THICKENED SOIL LIFT COMMONLY TERMED A "BRIDGING LIFT" SHALL NOT BE PERMITTED WITHOUT THE SPECIFIC APPROVAL OF THE GEOTECHNICAL ENGINEER.

2. WHERE GROUNDWATER AT THE TIME OF CONSTRUCTION IS MORE THAN 5 FEET DEEP AND WEAK SOILS ARE NO GREATER THAN 2 FEET DEEP, THE WEAK SOILS MAY BE UNDERCUT AND REPLACED WITH COMPACTED SOIL FILL.

EARTHWORK

1. THE CONTRACTOR TO THE MAXIMUM EXTENT POSSIBLE SHALL NOT PERFORM ANY GRADING OR EARTHWORK IN WET CONDITIONS. CONSTRUCTION PLANNING SHALL CONSIDER THE EFFECTS OF THE WEATHER UPON THE EARTHWORK CONSTRUCTION. SITE PREPARATION AND EARTHWORK SHOULD BE PERFORMED DURING THE DRIER PERIODS OF THE YEAR. IT IS RECOMMENDED THAT EXPOSED SUBGRADES BE SEALED AT THE END OF EACH DAY TO PROMOTE RUN OFF AND REDUCE INFILTRATION FROM RAINFALL. ADEQUATE DRAINAGE SHALL ALWAYS BE PROVIDED TO MINIMIZE ANY INCREASE MOISTURE CONTENT OF THE SUBGRADE/FOUNDATION SOILS.

2. DEPENDING ON THE PREVAILING WEATHER CONDITIONS AT TIME OF CONSTRUCTION, WIDE-TRACKED, LOW GROUND PRESSURE EQUIPMENT MIGHT BE REQUIRED IN SOME AREAS.

3. IF THE SUBGRADE IS TOO SOFT TO SUPPORT CONSTRUCTION EQUIPMENT FOR THE PROPOSED CONSTRUCTION, AS DETERMINED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER, THE CONTRACTOR CAN USE GEOGRID AND AGGREGATE BASE COURSE (ABC) STONE AS DIRECTED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER TO FACILITATE CONSTRUCTION OF THE BUILDING AND PAVEMENT AREAS. REFER TO SPECIFICATIONS FOR GEOGRID. AGGREGATE BASE SHALL BE NCDOT STANDARD ABC. PLACE GEOGRID OVER THE INTENDED CONSTRUCTION AREA IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS; HOWEVER, ADJACENT ROLLS SHALL BE OVERLAPPED ALONG SIDES AND ENDS A MINIMUM OF 24 INCHES. PULL GEOGRID TAUT TO REMOVE WRINKLES AND SLACK WITH HAND TENSIONS. THEN SECURE IN PLACE WITH SMALL PILES OF AGGREGATE.

4. STRUCTURAL EXCAVATION: EXCAVATION BELOW THE BUILDING FOOTPRINT SHALL BE PERFORMED TO A MINIMUM DEPTH OF FOUR (4) FEET BELOW EXISTING GRADE. THIS EXCAVATION SHALL EXTEND A HORIZONTAL DISTANCE OF THREE (3) FEET BEYOND THE PERIMETER OF THE FOUNDATION. CONTRACTOR SHALL REMOVE ALL EXISTING MAN-MADE MATERIAL BELOW THE BUILDING FOOTPRINT. ENSURE THAT FOOTING SUBGRADES HAVE BEEN INSPECTED AND APPROVED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER BEFORE CONCRETE PLACEMENT.

5. ALL STRUCTURAL FILL PLACED TO FACILITATE DESIRED SITE GRADES SHALL BE CONSTRUCTED FROM SATISFACTORY MATERIAL FREE FROM ORGANIC MATERIAL AND ROCKS WITH ANY DIMENSION GREATER THAN 3 INCHES. THE FILL SHALL BE PLACED IN MAXIMUM 8 INCH LOOSE LIFTS AND COMPACTED TO THE CRITERIA LISTED IN SPECIFICATION 31 00 00.00 06 EARTHWORK. SOILS REMOVED WITHIN THE LIMITS CONSTRUCTION ARE BE EXPECTED TO BE WET OF THEIR OPTIMUM MOISTURE CONTENT. THESE SOILS WILL REQUIRE DRYING PRIOR TO USE AS FILL.

6. DENSITY TESTING SHOULD BE PERFORMED BY A SOILS TECHNICIAN TO DETERMINE THE DEGREE OF COMPACTION AND VERIFY COMPLIANCE WITH THE PROJECT SPECIFICATIONS. REFER TO SPECIFICATION 31 00 00.00 06 EARTHWORK.

7. PERMANENT FILL SLOPES SHALL BE CONSTRUCTED NO STEEPER THAN 3H:1V. ALL FINISHED SLOPES SHALL BE SUITABLY PROTECTED FROM EROSION. REFER TO THE EROSION CONTROL PLANS FOR DETAILS.

8. CONSTRUCT RIP-RAP ON FILTER FABRIC IN THE AREAS INDICATED. TRIM AND DRESS INDICATED AREAS TO CONFORM TO CROSS SECTIONS, LINES AND GRADES SHOWN WITHIN A TOLERANCE OF 0.1 FOOT. PLACE FILTER FABRIC ON PREPARED SUBGRADE AS INDICATED. PLACE ROCK FOR RIP-RAP ON PREPARED FILTER FABRIC TO PRODUCE A WELL GRADED MASS WITH THE MINIMUM PRACTICABLE PERCENTAGE OF VOIDS IN CONFORMANCE WITH LINES AND GRADES INDICATED. DISTRIBUTE LARGER ROCK FRAGMENTS, WITH DIMENSIONS EXTENDING THE FULL DEPTH OF THE RIP-RAP THROUGHOUT THE ENTIRE MASS AND ELIMINATE "POCKETS" OF SMALL ROCK FRAGMENTS. REARRANGE INDIVIDUAL PIECES BY MECHANICAL EQUIPMENT OR BY HAND AS NECESSARY TO OBTAIN THE DISTRIBUTION OF FRAGMENT SIZES SPECIFIED ABOVE.

9. IF GEOGRID IS USED PLACE ABC STONE OVER THE GEOGRID TO A THICKNESS SUFFICIENT TO SUPPORT CONSTRUCTION EQUIPMENT, OR TO A MAXIMUM THICKNESS OF 12 INCHES. SPREAD GAB OVER THE GEOGRID EVENLY WITH A DOZER (PREFERABLY LOW-GROUND PRESSURE). IN PLACING GAB HAVE TRUCKS DUMP ONTO THE GAB LIFT AND SPREAD THE MATERIAL WITH THE DOZER. TRACK WALK GAB FIRMLY INTO PLACE. TRY COMPACTING THE GAB WITH A SMOOTH-DRUM ROLLER [PREFERABLY A LIGHT ROLLER] OPERATED IN THE STATIC, RATHER THAT VIBRATORY MODE.

10. WHEN SHORING IS REQUIRED, THE CONTRACTOR SHALL SUBMIT A SHORING AND SHEETING PLAN FOR APPROVAL 15 DAYS PRIOR TO STARTING WORK. SUBMIT DRAWINGS AND CALCULATIONS, CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER, DESCRIBING THE METHODS FOR SHORING AND SHEETING EXCAVATIONS.

GROUNDWATER AND SURFACE WATER CONTROL

1. THE CONTRACTOR IS ADVISED THAT EXCAVATION OPERATIONS, INCLUDING THOSE FOR TEMPORARY EROSION AND SEDIMENT CONTROL STRUCTURES, MAY OCCUR IN AREAS WHERE SATURATED SOILS MAY EXIST. IT IS IMPERATIVE THAT THE CONTRACTOR INSPECT THE SITE TO DETERMINE THE AMOUNT OF SATURATED SOIL THAT MAY BE ENCOUNTERED DURING ANY EXCAVATION OPERATION AND DEVELOP A DEWATERING WORK PLAN.

2. AT LEAST 30 DAYS PRIOR TO BEGINNING ANY EXCAVATION WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND COMMENT A PLAN DESCRIBING AND SHOWING HIS PROPOSED METHODS OF DEWATERING TO PERMIT EXCAVATIONS AND CONSTRUCTION SPECIFIED UNDER THIS SECTION TO BE PERFORMED IN THE DRY. THE DATA TO BE SUBMITTED SHALL INCLUDE, BUT NOT NECESSARILY BE LIMITED TO, THE FOLLOWING:

   A. DRAWINGS INDICATING POTENTIAL LOCATIONS OF "FRENCH" DRAINS, INTERCEPTOR TRENCH DRAINS, WELL POINT DEWATERING SYSTEMS, SUMPS, PUMPS, AND DISCHARGE LINES.
   B. DETAILS OF THE DEWATERING SYSTEMS.
   C. DESCRIPTION OF DRAINAGE PIPE AND GRADATION OF FILTER MEDIA.
   D. TYPES AND CAPACITIES OF PUMPS.
   E. METHOD OF TREATMENT OF DISCHARGE WATER TO PREVENT ILLICIT DISCHARGE OF POLLUTANTS INTO WETLANDS AND WATERWAYS.

   COMMENTS BY THE GOVERNMENT ON THE DEWATERING METHODS PROPOSED WILL ONLY BE WITH RESPECT TO THE BASIC PRINCIPLES OF THE METHODS. REVIEW BY THE GOVERNMENT OF THE DATA SUBMITTED SHALL NOT IN ANY WAY BE CONSIDERED TO RELIEVE THE CONTRACTOR FROM FULL RESPONSIBILITY FOR COMPLETE AND SATISFACTORY DESIGN AND PERFORMANCE OF DEWATERING METHODS EMPLOYED.

   ANY DISCHARGE FROM THE DEWATERING SYSTEM SHALL BE DIRECTED TO AN APPROVED EROSION AND SEDIMENT CONTROL DEVICE.

3. GROUNDWATER SHALL BE LOWERED AND MAINTAINED AT LEAST 3 FEET BELOW ANY EXCAVATION OR SUBGRADE TO PRESERVE THE INTEGRITY OF THE SUBGRADE. THE CONTRACTOR SHALL BE PREPARED TO DEWATER THE SITE AS NECESSARY TO MAINTAIN THE INTEGRITY OF ALL SUBGRADES THROUGHOUT THE CONSTRUCTION PERIOD. ALL PUMPED WATER MUST BE DISCHARGED TO A FILTER BAG OR SEDIMENTATION BASIN.

4. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE TO PREVENT WATER FROM PONDING ON THE FILL OR SUBGRADE SURFACE DURING ALL EARTHWORK OPERATIONS, AND ALSO TO FLAT ROLL OR WHEEL ROLL ANY AND ALL FILLS WHEN PRECIPITATION IS EXPECTED. ONCE THE MOISTURE CONTENT HAS BEEN ADJUSTED WITHIN SPECIFIED LIMITS AND THE SUBGRADE COMPACTED, THE SUBGRADE MOISTURE CONTENT SHALL BE MAINTAINED. SHOULD THE SURFACE SOILS BECOME WET THAT THEY "PUMP" UNDER TRAFFIC OF THE CONSTRUCTION EQUIPMENT, THE SOILS SHALL BE SCARIFIED, AND THE MOISTURE CONTENT ADJUSTED TO WITHIN THE SPECIFIED LIMITS, AND RE-COMPACTED TO THE SPECIFIED DENSITY. IN LIEU OF REWORKING THE SOILS, THE CONTRACTOR MAY, AT HIS OPTION, REMOVE THE WET MATERIALS AND REPLACE THEM WITH SATISFACTORY MATERIALS HAVING PROPER MOISTURE CONTENT.

SPECIFICATIONS

1. REFER TO SPECIFICATION 31 00 00.00 06 EARTHWORK, 01 57 19.00 06 TEMPORARY ENVIRONMENTAL CONTROL AND PERMITS. FOR ADDITIONAL INFORMATION. IF THERE ARE ANY DISCREPANCIES BETWEEN THE SPECIFICATION AND THESE PLANS, THE INFORMATION IN THE SPECIFICATIONS SHALL SUPERCEDE THE PLANS.

ALTERNATIVE DESIGNS

1. ANY DEVIATIONS, REQUESTED BY THE CONTRACTOR, FROM THE DRAWINGS, PLANS AND SPECIFICATIONS WHICH MAY HAVE AN ENVIRONMENTAL IMPACT WILL BE SUBJECT TO APPROVAL BY NCDEQ ENVIRONMENTAL MANAGEMENT DIVISION VIA THE CONTRACTING OFFICER AND MAY REQUIRE AN EXTENDED REVIEW, PROCESSING AND APPROVAL TIME. THE CONTRACTING OFFICER RESERVES THE RIGHT TO DISAPPROVE ALTERNATE METHODS, EVEN IF THEY ARE MORE COST EFFECTIVE, IF THE CONTRACTING OFFICER DETERMINES THAT THE PROPOSED ALTERNATE METHOD WILL HAVE AN ADVERSE ENVIRONMENTAL IMPACT.

ROCK REMOVAL

CONTRACTOR SHALL BE AWARE OF POTENTIAL ROCK REMOVAL NEAR BORING S10 (SHEET B-305). THIS BORING HAS AN AUGER REFUSAL AT 7.6' BELOW EXISTING GRADE. EXISTING GRADE IS 2,215' AND AUGER REFUSAL IS AT 2,207.4'. APPROXIMATE EARTHWORK CUT IN THE AREA IS 20-FT BELOW EXISTING GRADE WHICH COULD HAVE A POTENTIAL OF 12-FT OF ROCK REMOVAL. ALSO, NOTE THAT ADJACENT BORINGS DID NOT HAVE AUGER REFUSAL. CONTRACTOR SHALL REFER TO SPECIFICATION 31 00 00.00 06 EARTHWORK. THE GEOTECHNICAL REPORT IS AVAILABLE FOR INFORMATION ONLY UPON REQUEST TO THE CONTRACTING OFFICER.

SEVEN ADDITIONAL TEST PIT BORES WERE TAKEN TO PROVIDE ADDITIONAL INFORMATION REGARDING ROCK REMOVAL. THOSE ADDITIONAL TEST PIT BORES (TP-1 THRU TP-7) CAN BE FOUND ON SHEET B-101 AND SHEETS B-307 THRU B-309.

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DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
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FILENAME:
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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

EARTHWORK NOTES

SHEET ID
CG001

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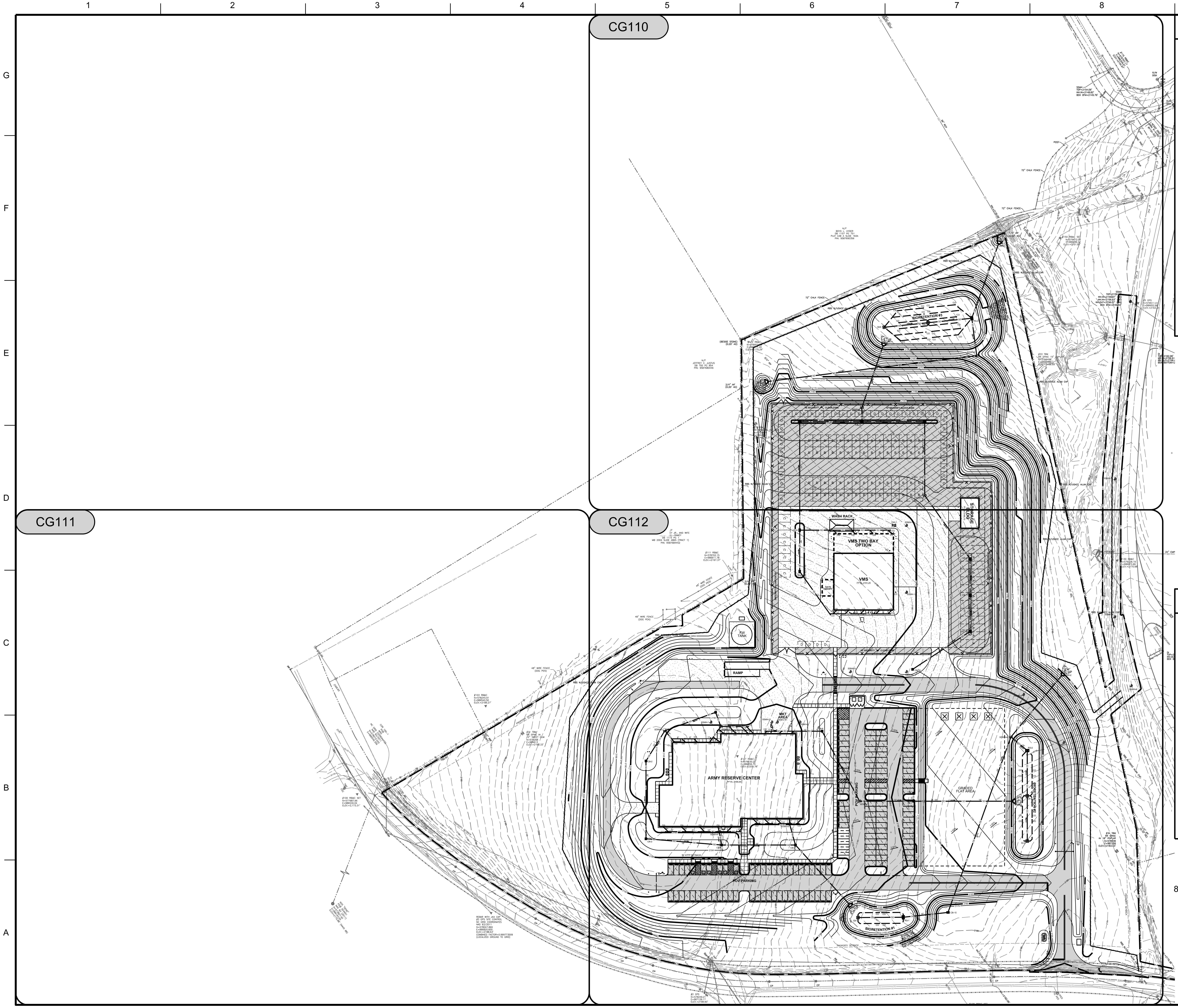

GENERAL NOTES

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2. DISTURBED AREA SHALL BE GRADED TO MATCH EXISTING SLOPES AND GRASSED. REFER TO CG701 AND CG801 SERIES FOR ADDITIONAL GRADING AND PERMANENT EROSION CONTROL REQUIREMENTS.
3. ALL RCP DRAINAGE PIPES TO BE CLASS III UNLESS NOTED. PERFORATED PIPES TO HAVE MINIMUM 1.9 SQUARE INCHES OPEN AREA PER LINEAL FOOT OF PIPE. ALL PIPES LESS THAN 12" IN DIAMETER TO BE PVC.
4. NO UNDERGROUND STORAGE TANKS (UST) ARE ANTICIPATED TO BE FOUND DURING CONSTRUCTION. HOWEVER, IMMEDIATELY CONTACT THE CONTRACTING OFFICER IF A UST IS ENCOUNTERED DURING CONSTRUCTION.
5. REFER TO SHEET CG601 FOR STORM DRAINAGE SCHEDULE.
6. ALL FRAMES, GRATES AND COVERS FOR ANY DRAINAGE STRUCTURES IN PAVEMENT SHALL BE RATED FOR HS-20 LOADING.
7. REFER TO CU, ES AND TS SERIES DRAWINGS FOR ADDITIONAL SITE UTILITY WORK.
8. REFER TO SHEETS CG201 THRU CG203 FOR STORM PIPING PROFILES.

LEGEND

—●●—	CONSTRUCTION LIMITS
— SD —	STORM DRAINAGE PIPING. REFER TO SHEETS CG501 THRU CG503.
HW-1 ▽	TYPICAL HEADWALL. REFER TO DETAIL 1, SHEET CG507.
CB-1 ■	TYPICAL CATCH BASIN. REFER TO SHEETS CG504 THRU CG506.
SDMH-1 ⦿	TYPICAL STORM MANHOLE. REFER TO SHEET CG508.
CO-1 •	TYPICAL CLEAN OUT.

80' 40' 0 80' 160' 240'

GRAPHIC SCALE: 1"=80'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.
VERTICAL DATUM: NAVD88.
UNITS OF MEASURE: U.S. SURVEY FEET.
COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

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SUBMITTED BY:
D. HENSLEY
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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
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U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
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OVERALL
GRADE AND DRAIN PLAN

SHEET ID
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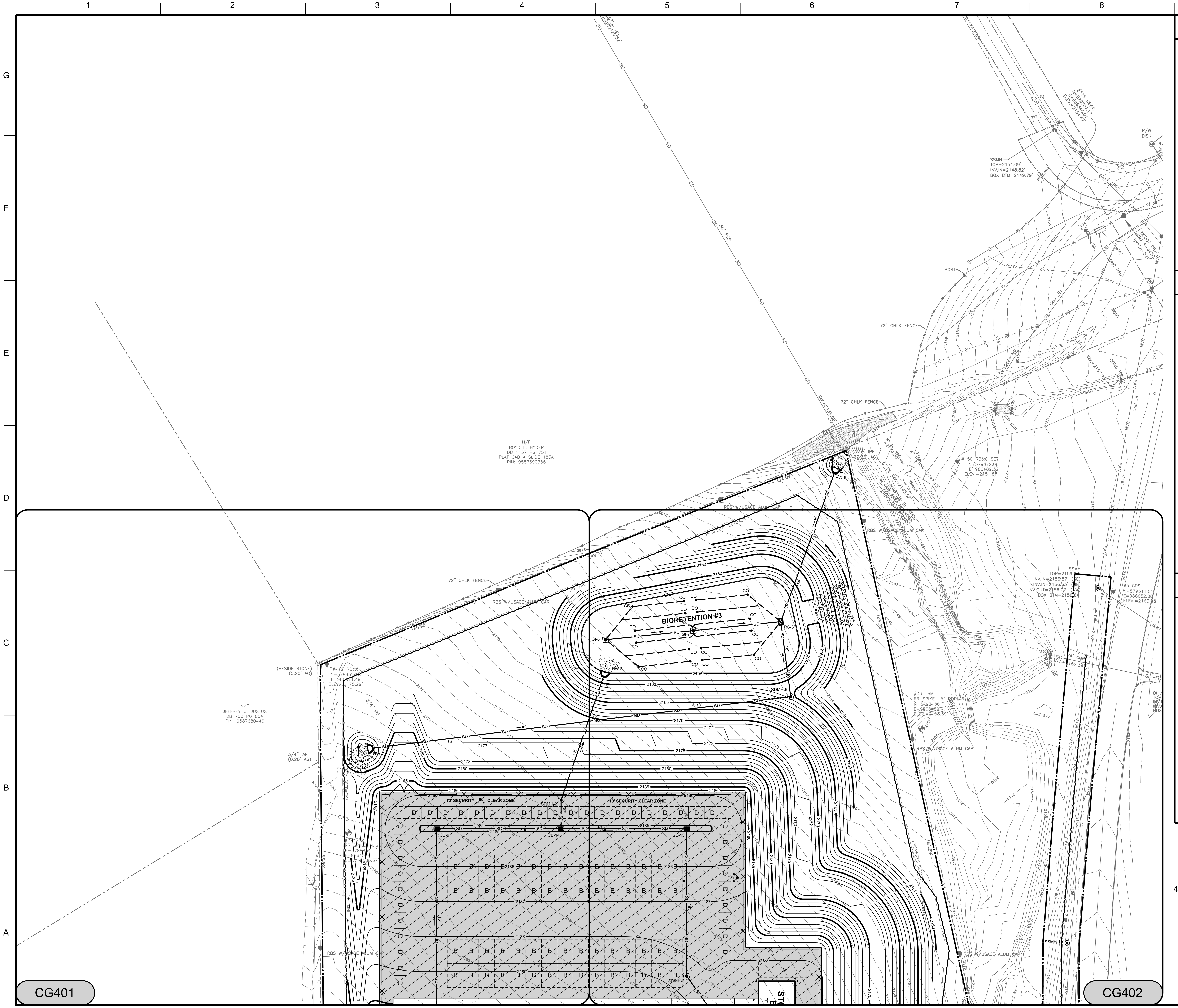
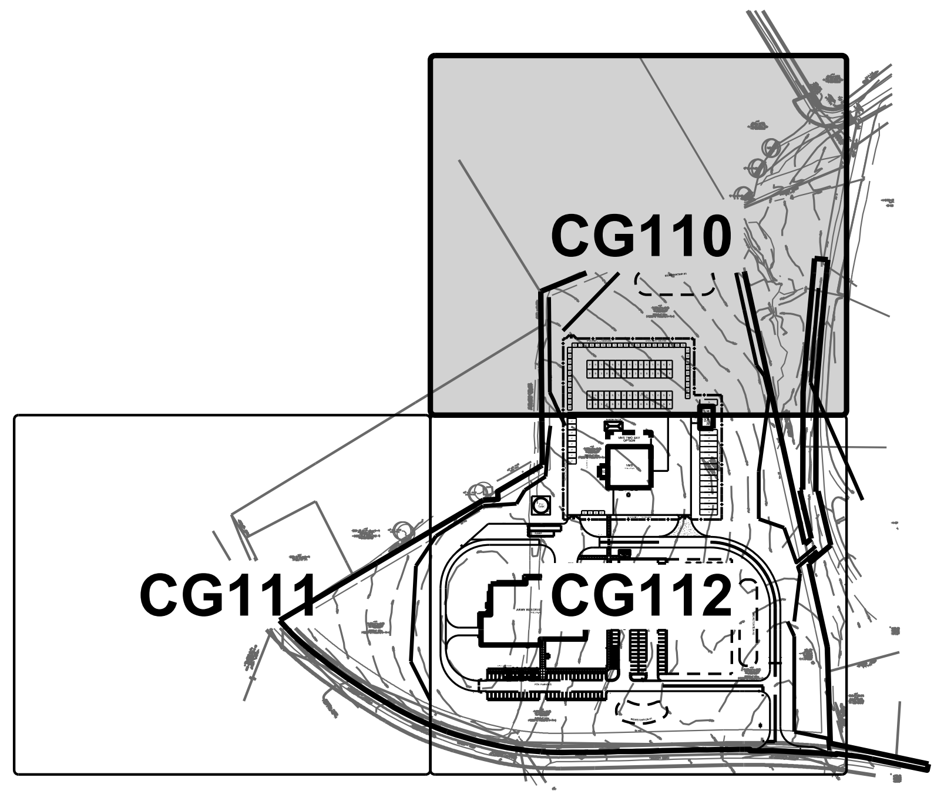


KEY MAP



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CO-1 ●	TYPICAL CLEAN OUT.

40' 20' 0 40' 80' 120'

GRAPHIC SCALE: 1"=40'-0"

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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
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ASHEVILLE, NORTH CAROLINA
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GRADE AND DRAIN PLAN

SHEET ID
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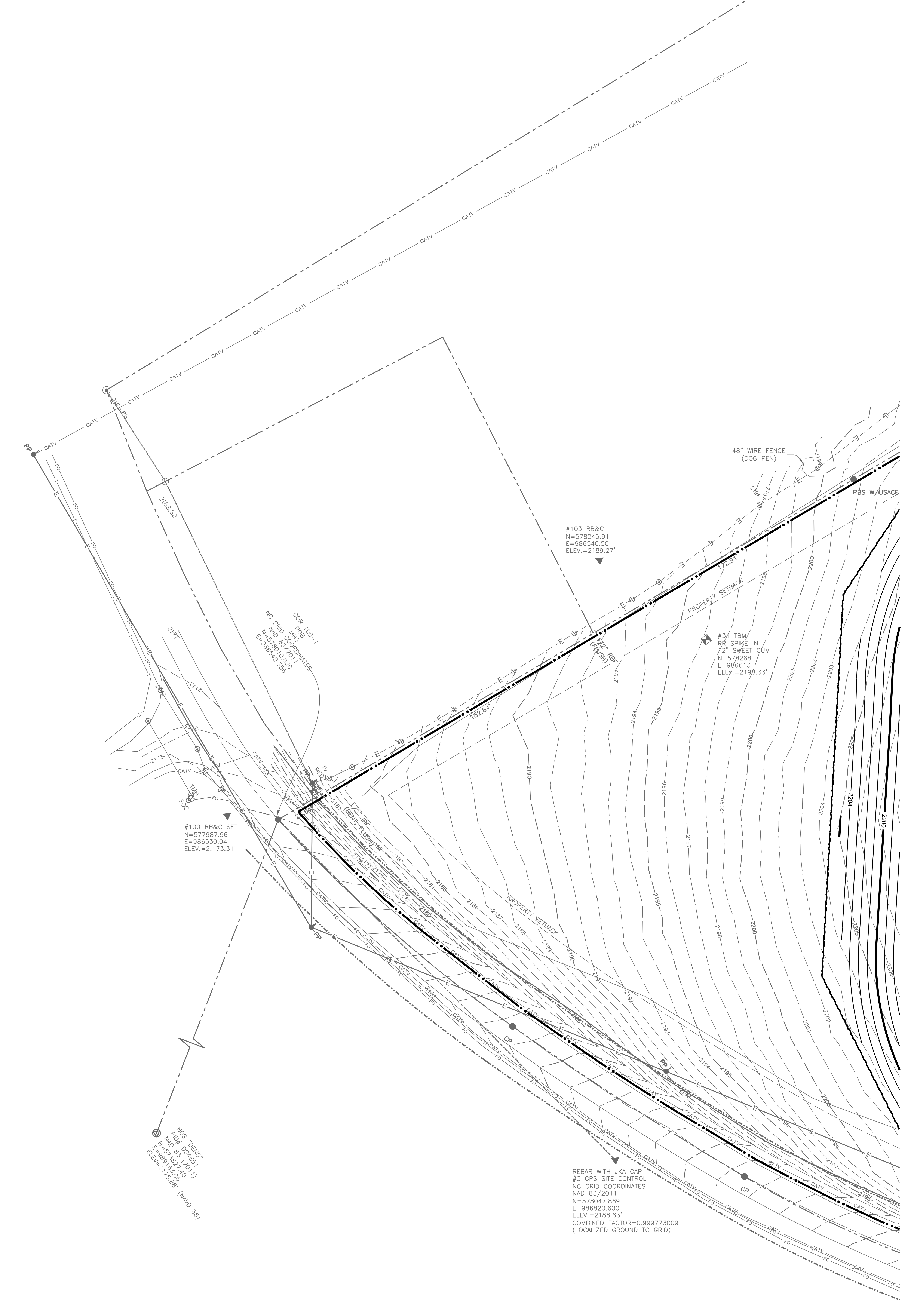

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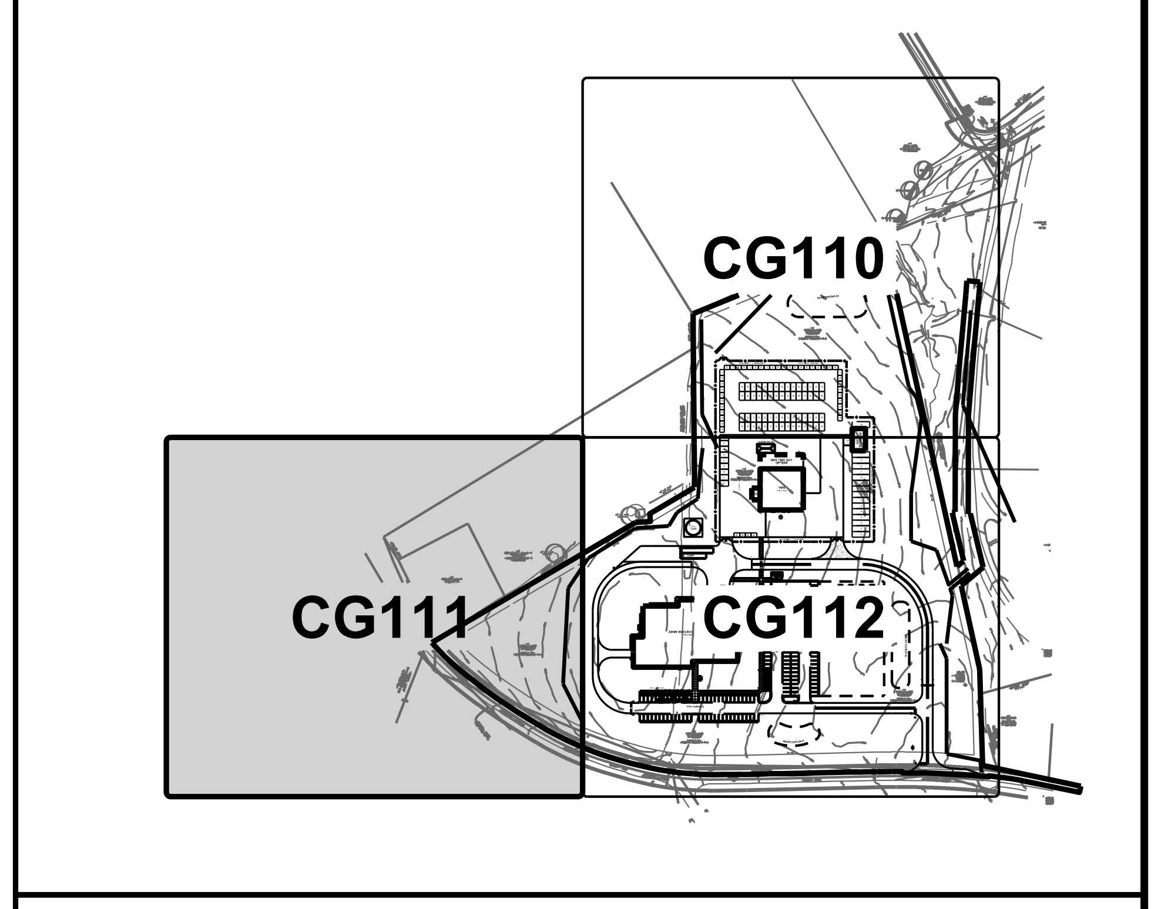

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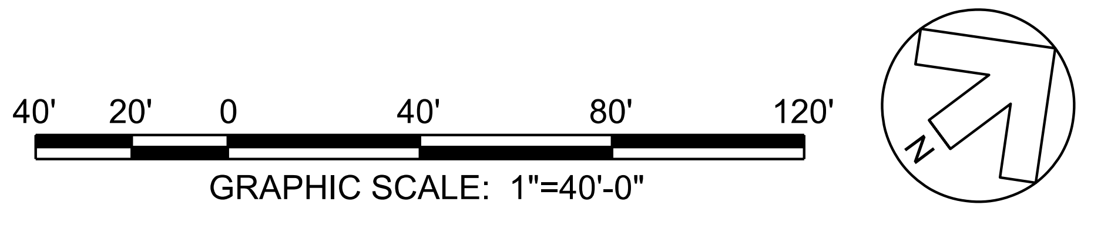
CO-1 ●	TYPICAL CLEAN OUT.



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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger

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ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

GRADE AND DRAIN PLAN

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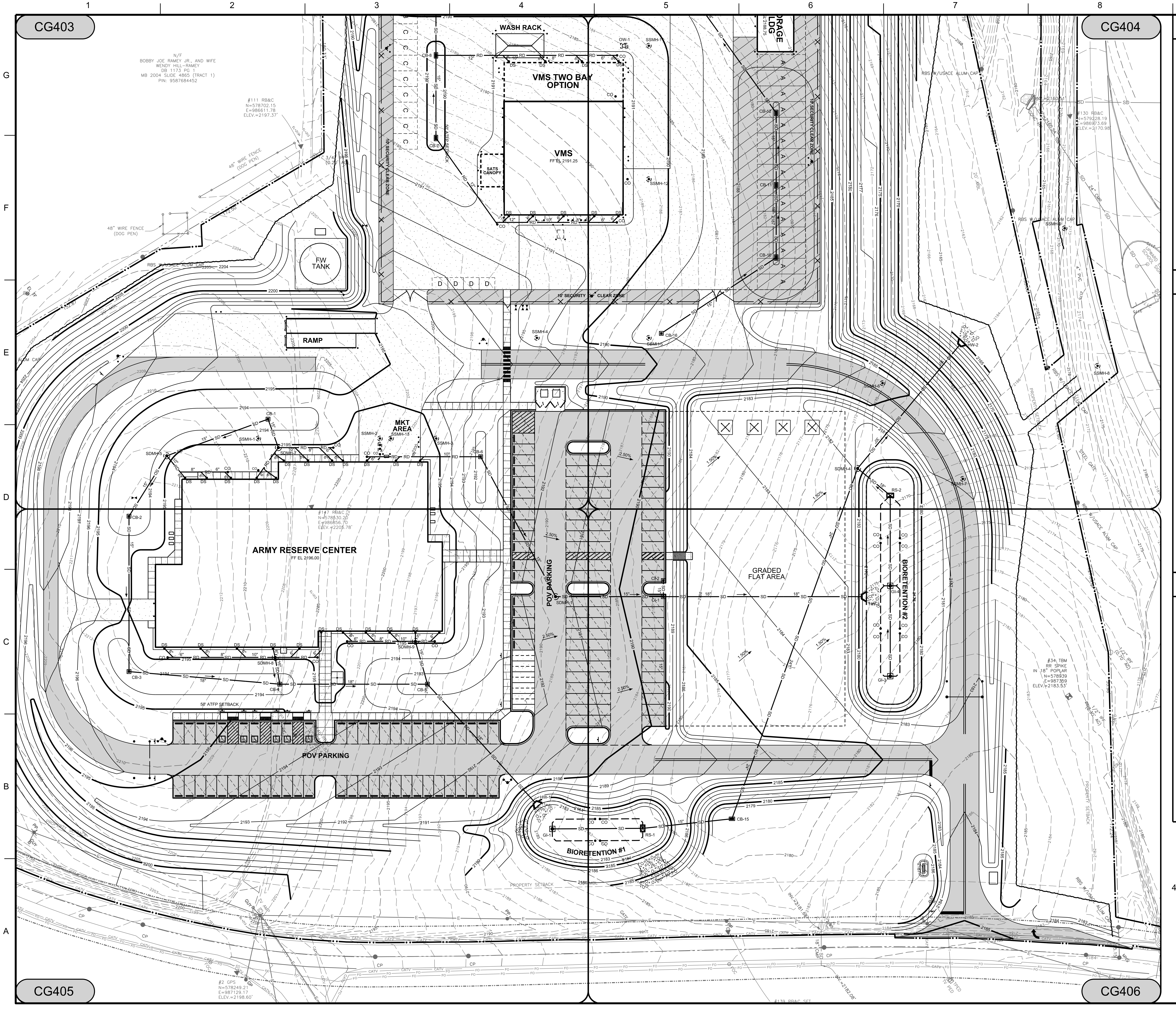

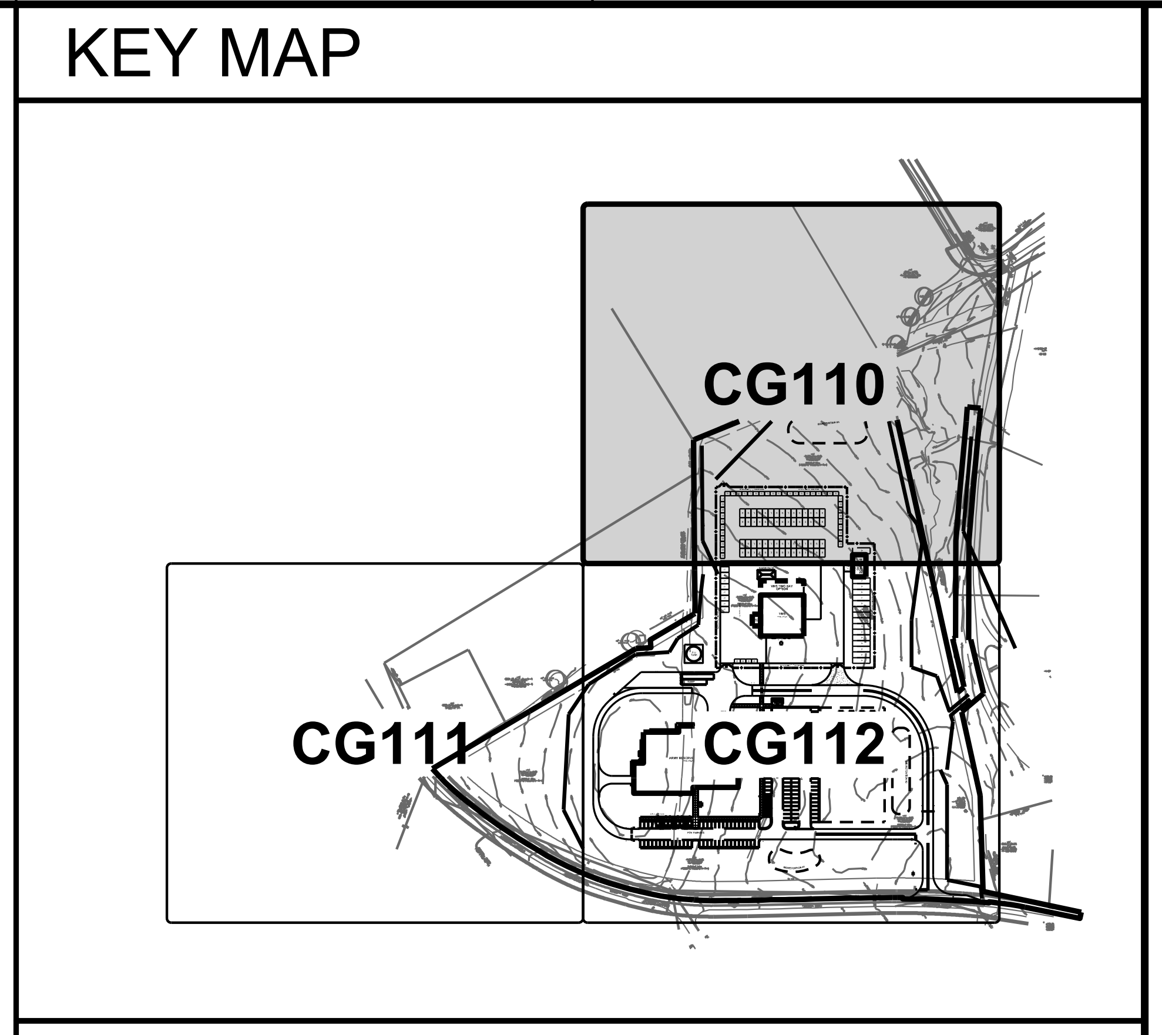

KEY MAP

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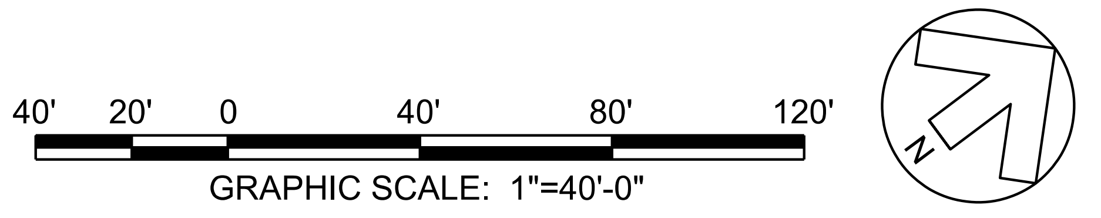

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GEOGRAPHIC COORDINATE DATA

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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
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U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

GRADE AND DRAIN PLAN

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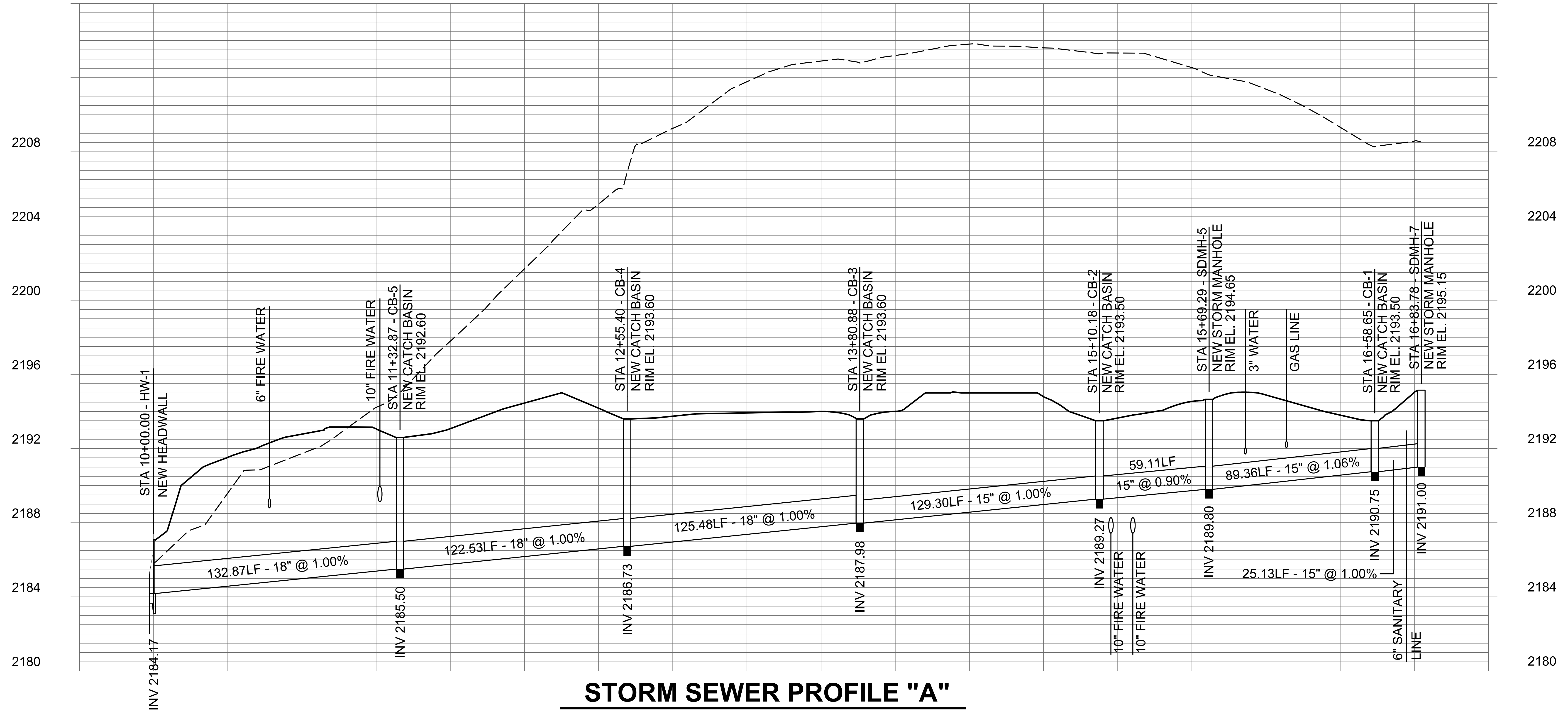

STORM SEWER PROFILE "A"

SCALE: 1"=40' HORIZ.
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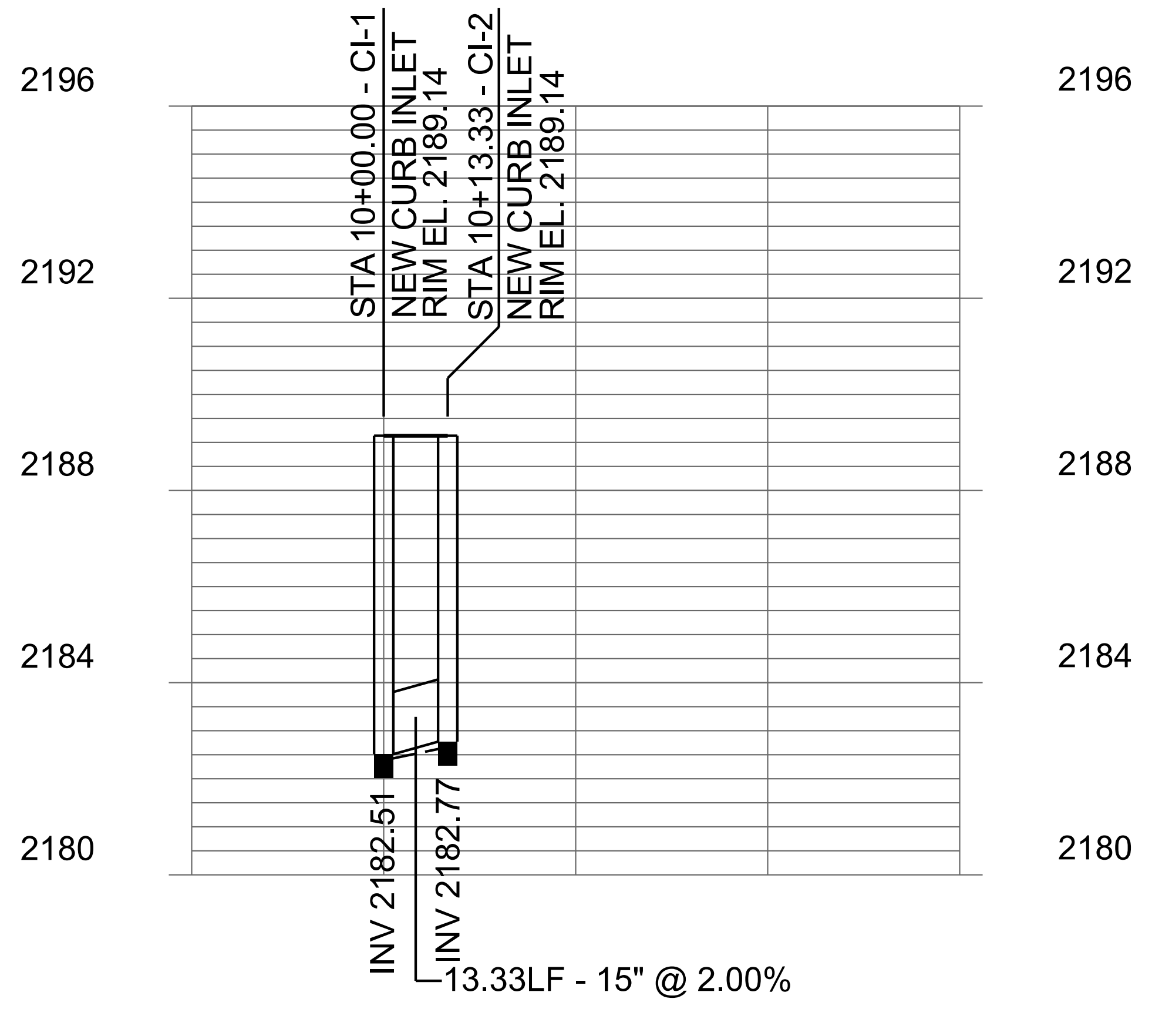

STORM SEWER PROFILE "B"

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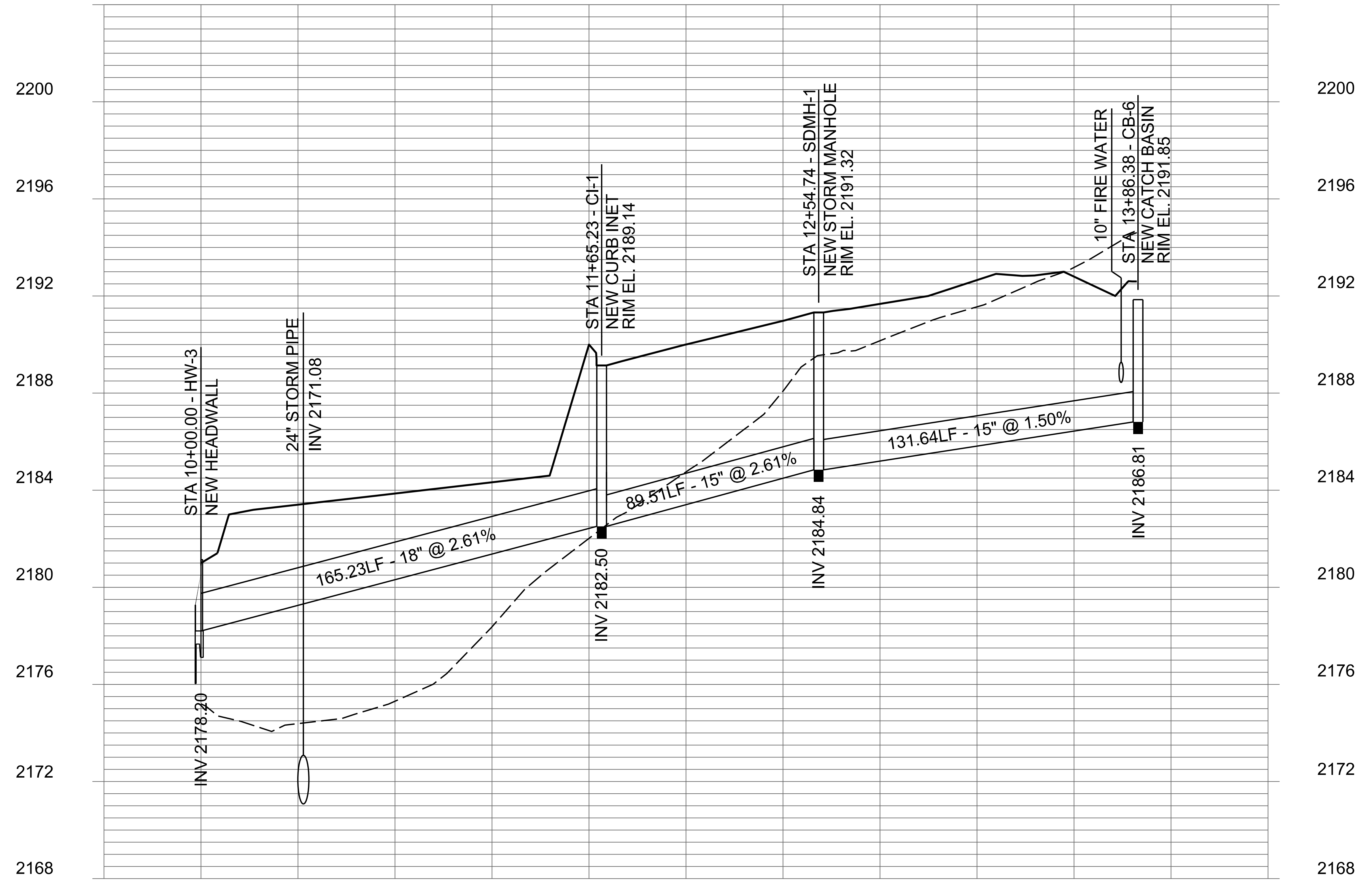

STORM SEWER PROFILE "C"

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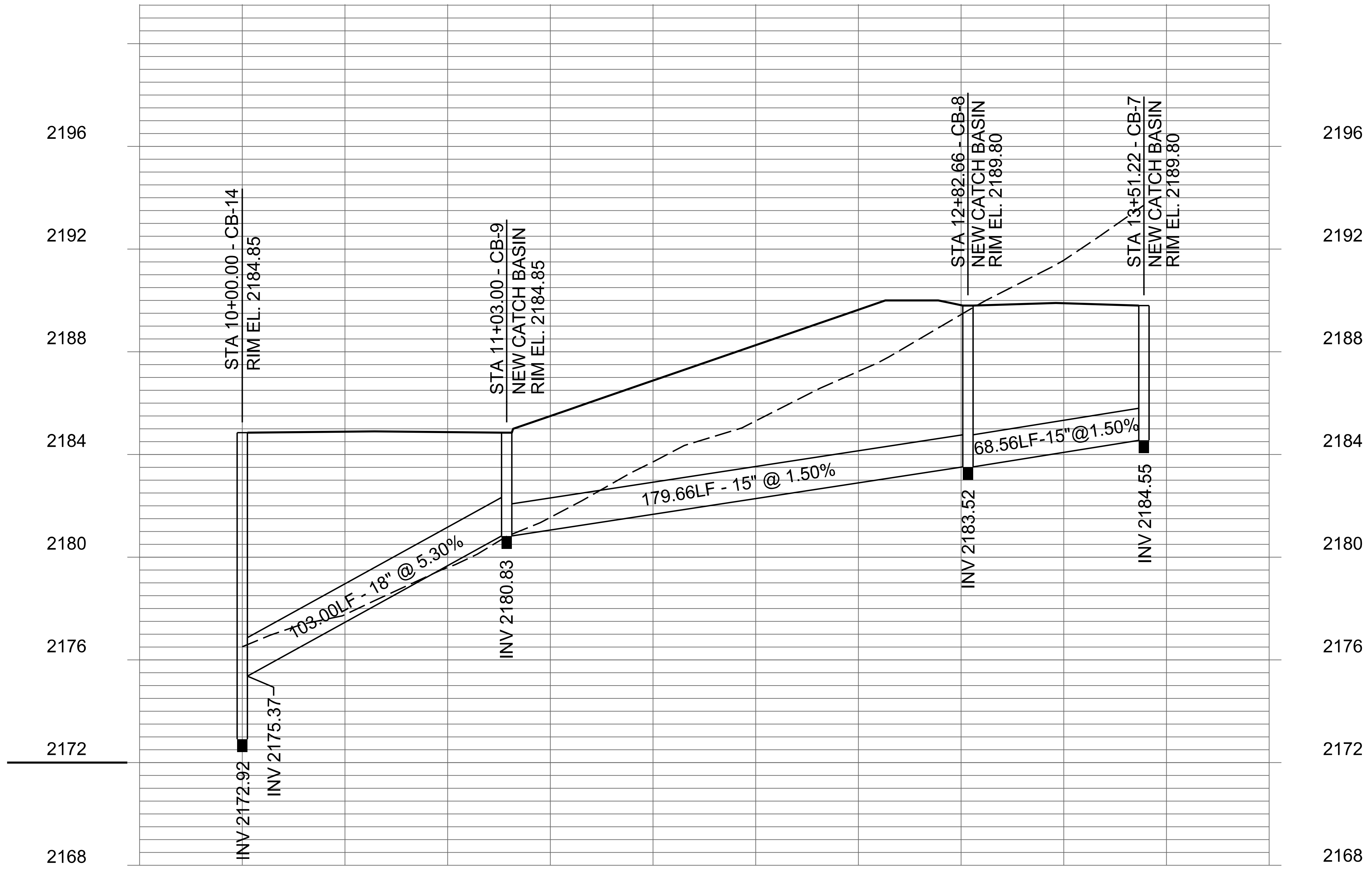

STORM SEWER PROFILE "D"

SCALE: 1"=40' HORIZ.
1"=4' VERT.

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GRAPHIC SCALE: 1"=4'-0" VERT.

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GRAPHIC SCALE: 1"=40'-0" HORIZ.

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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

STORM PROFILES

SHEET ID
CG201

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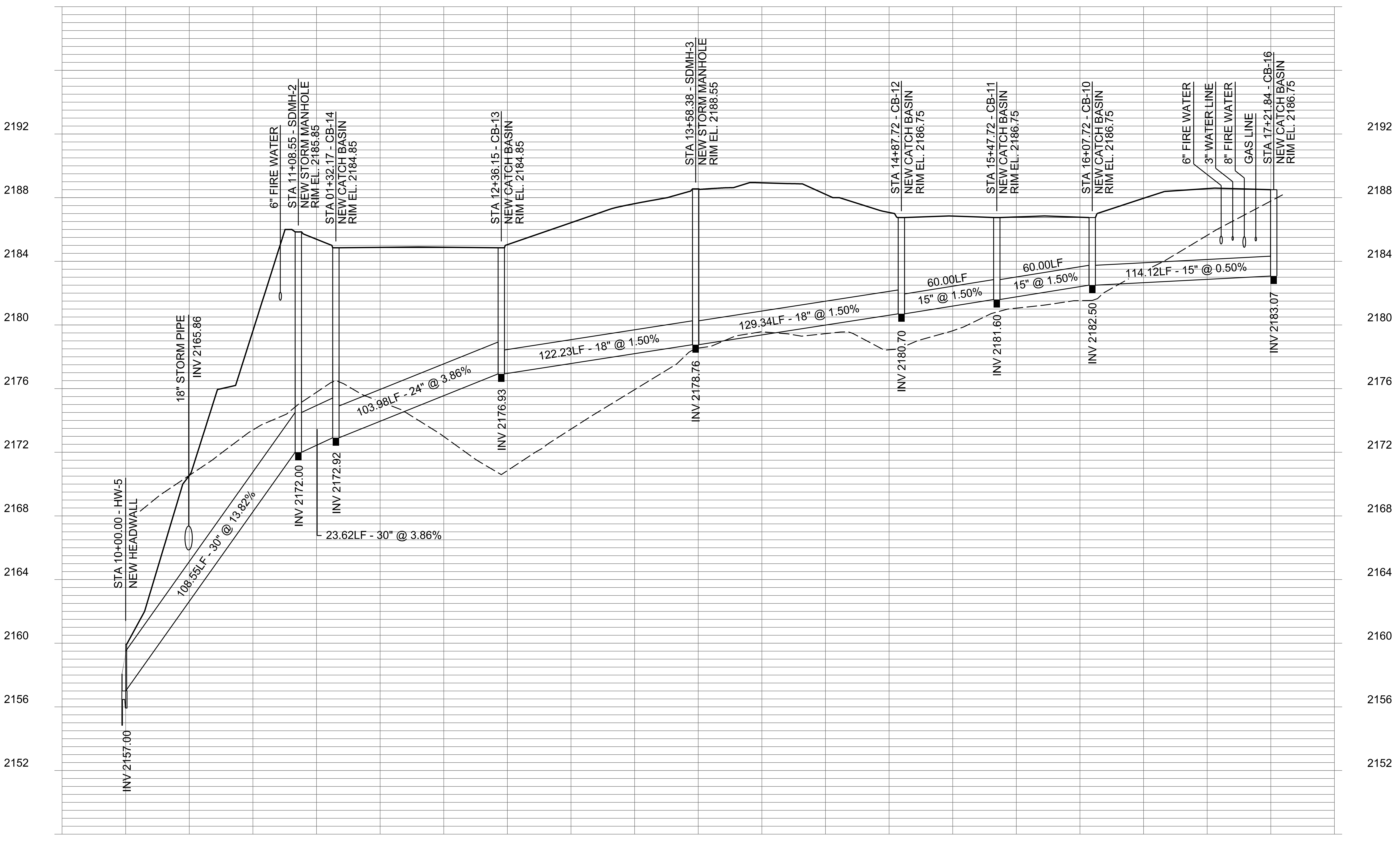

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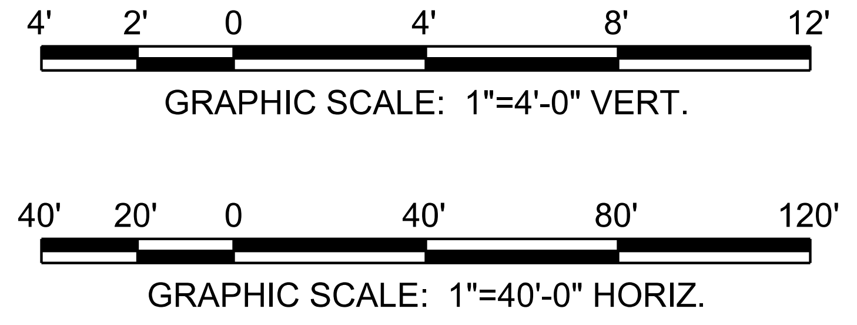
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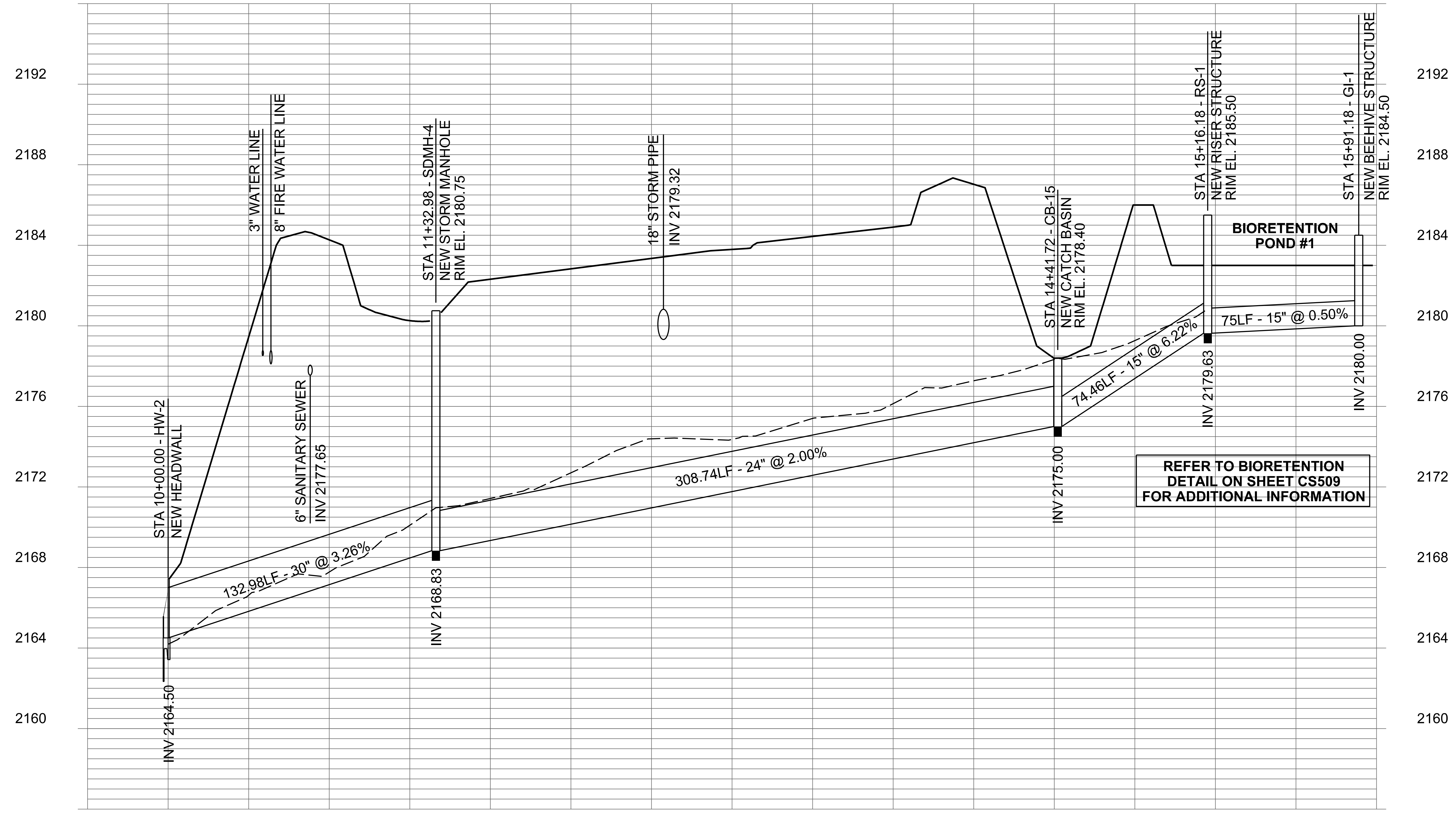

STORM SEWER PROFILE "H"

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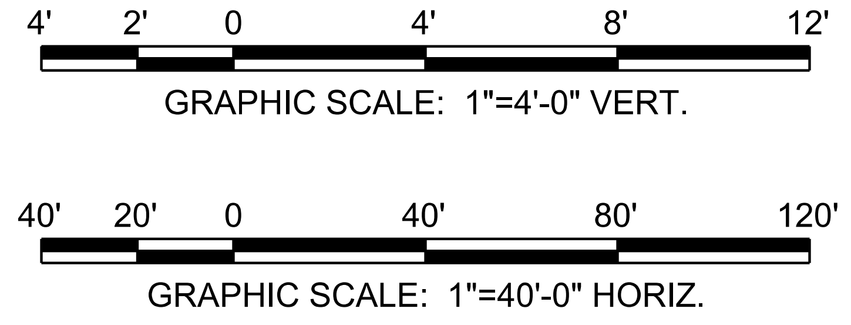
1"=4' VERT.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GRAPHIC SCALE: 1"=4'-0" VERT.
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LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

STORM PROFILES

SHEET ID
CG203

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24-FEB-2022
15:00

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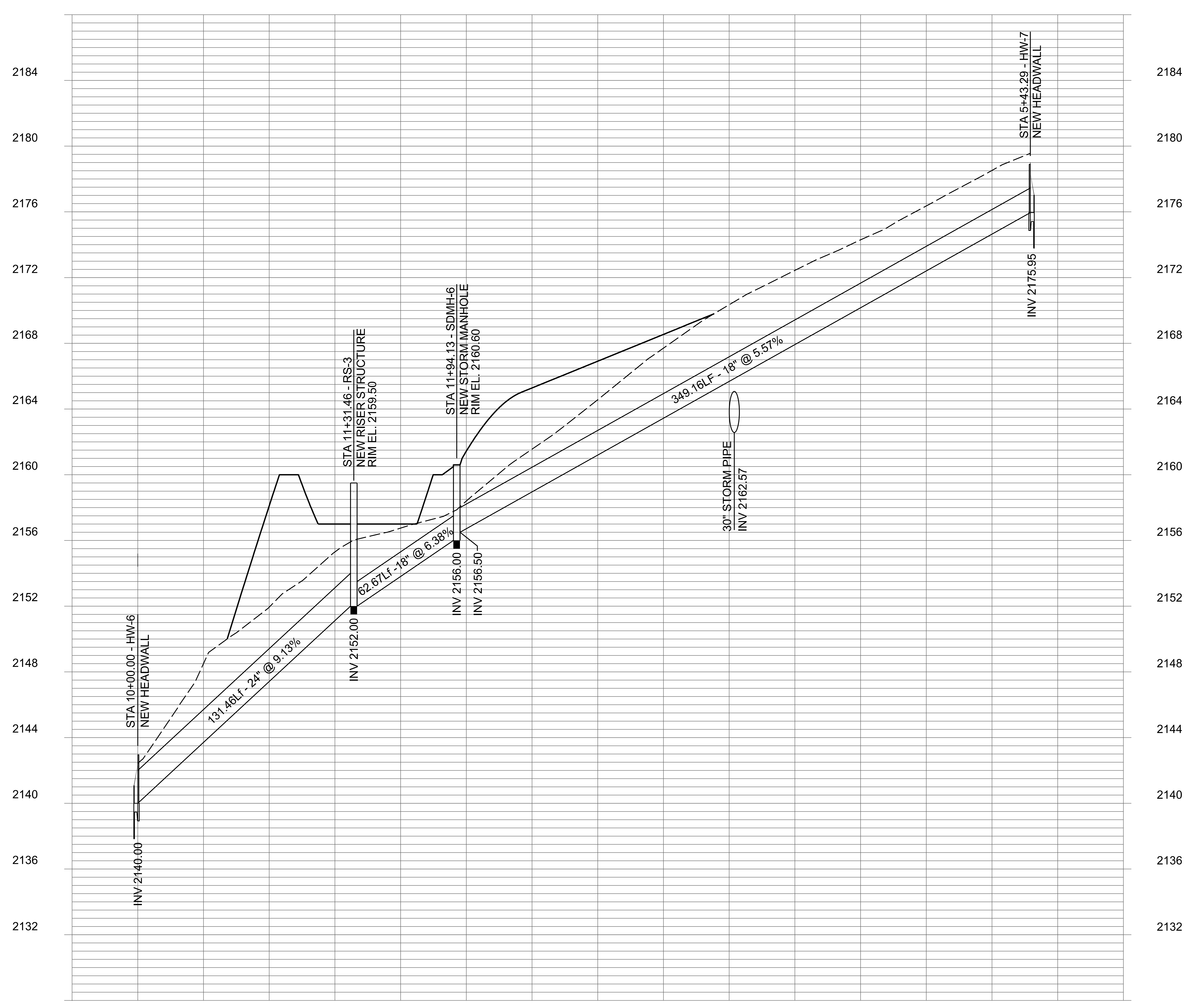
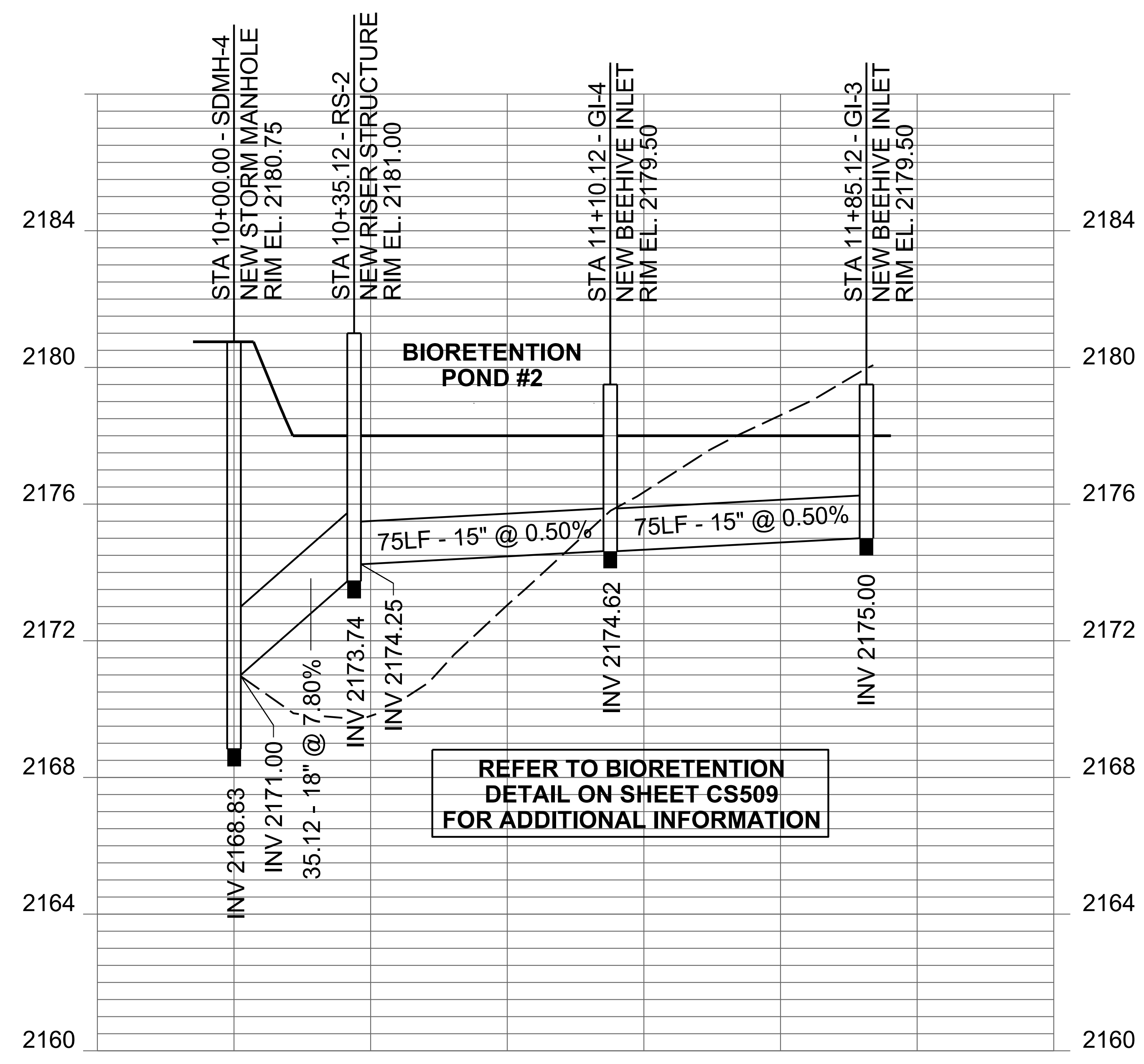


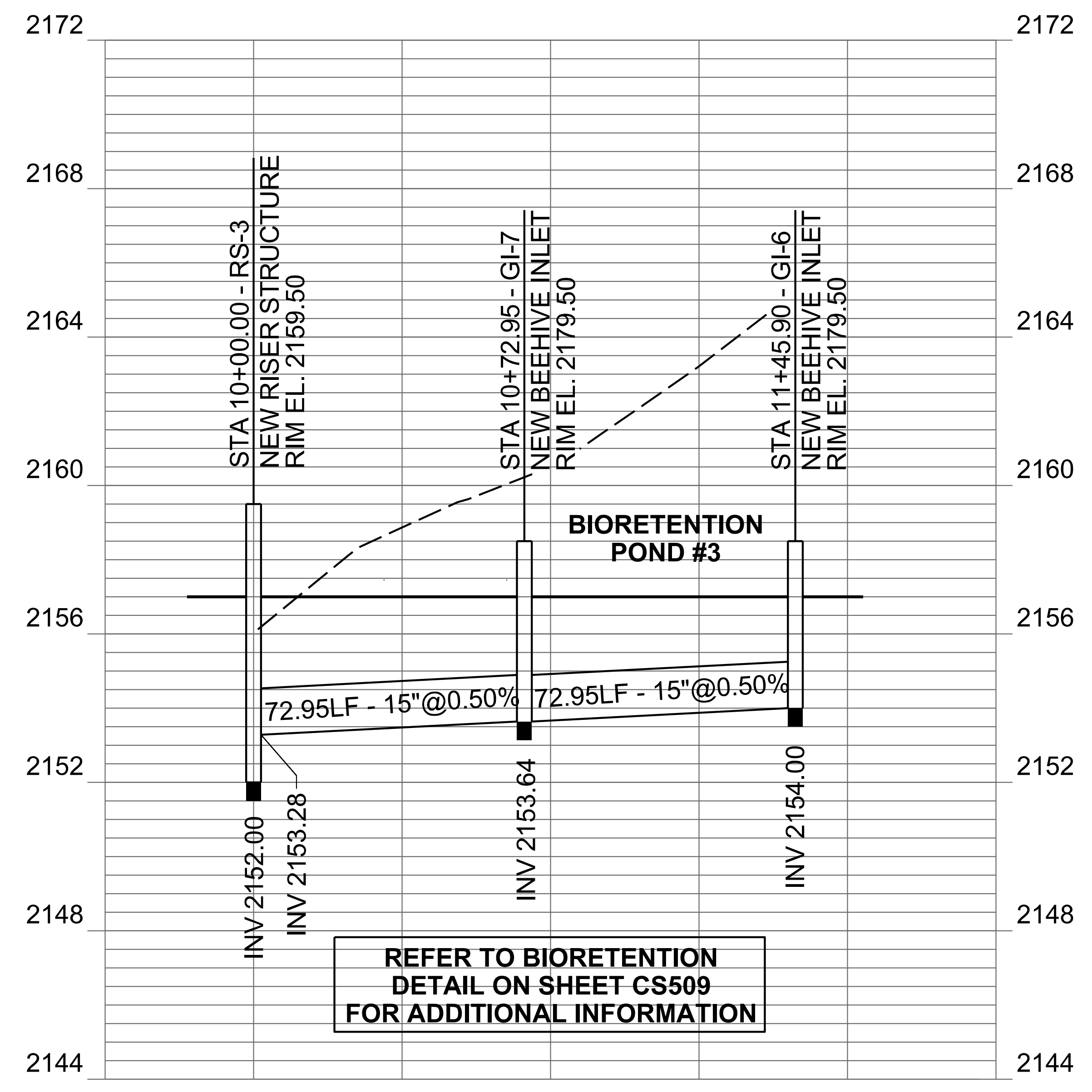
STORM SEWER PROFILE "I"

SCALE: 1"=40' HORIZ.
1"=4' VERT.



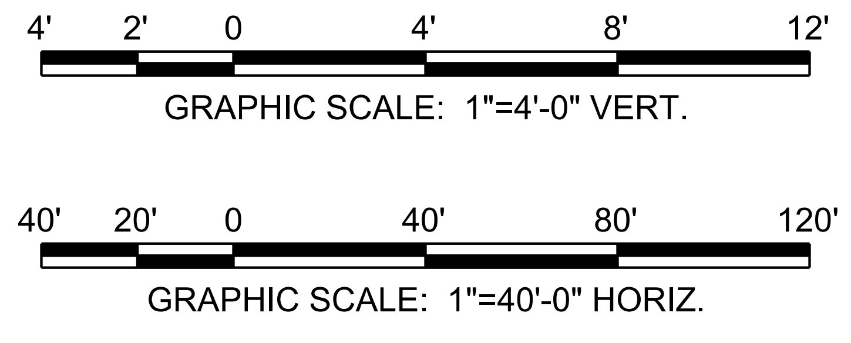
STORM SEWER PROFILE "J"

SCALE: 1"=40' HORIZ.
1"=4' VERT.



STORM SEWER PROFILE "K"

SCALE: 1"=40' HORIZ.
1"=4' VERT.


4'
2'
0
4'
8'
12'
GRAPHIC SCALE: 1"=4'-0" VERT.
40'
20'
0
40'
80'
120'
GRAPHIC SCALE: 1"=40'-0" HORIZ.

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CG204.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

STORM PROFILES

SHEET ID
CG204

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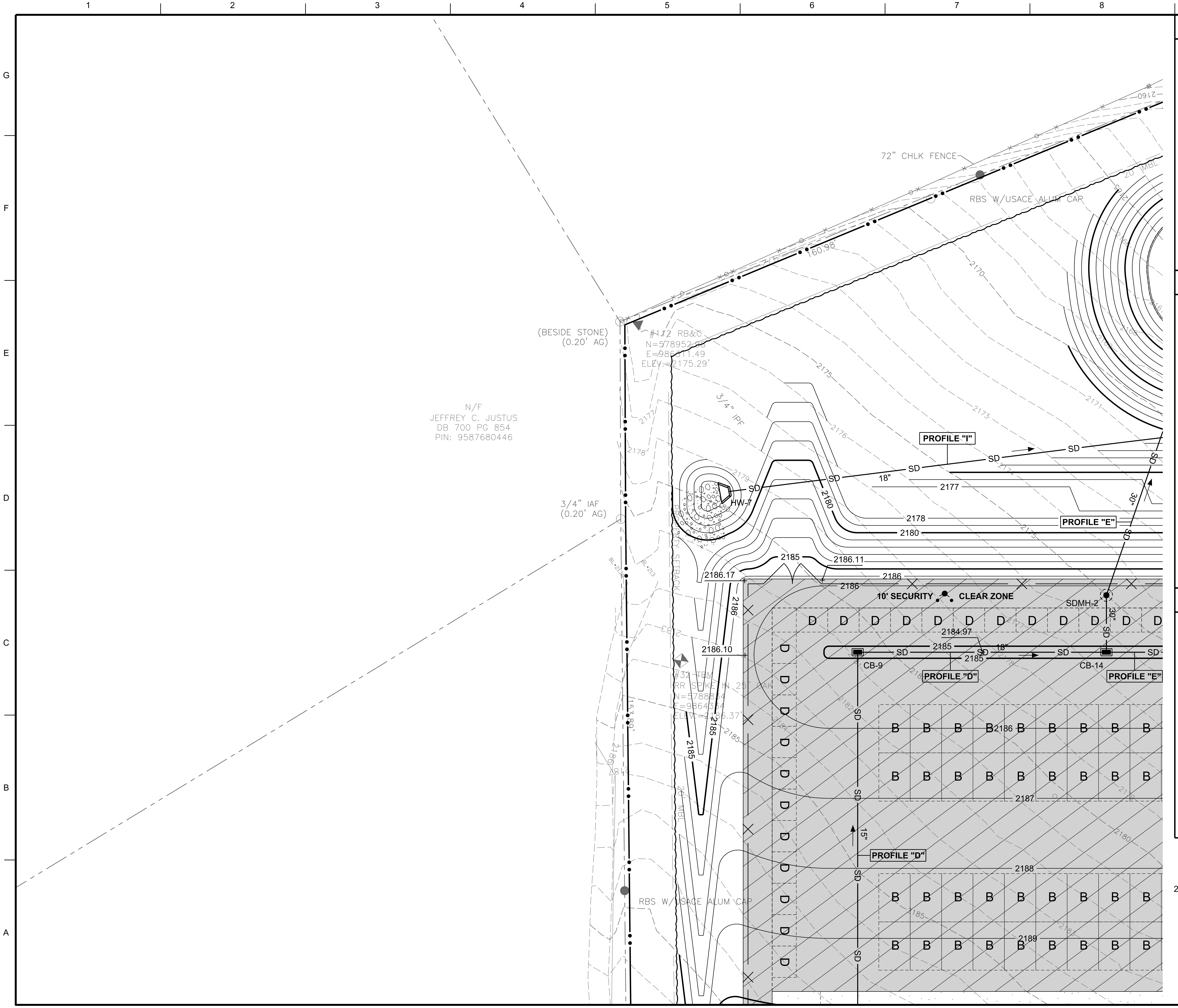

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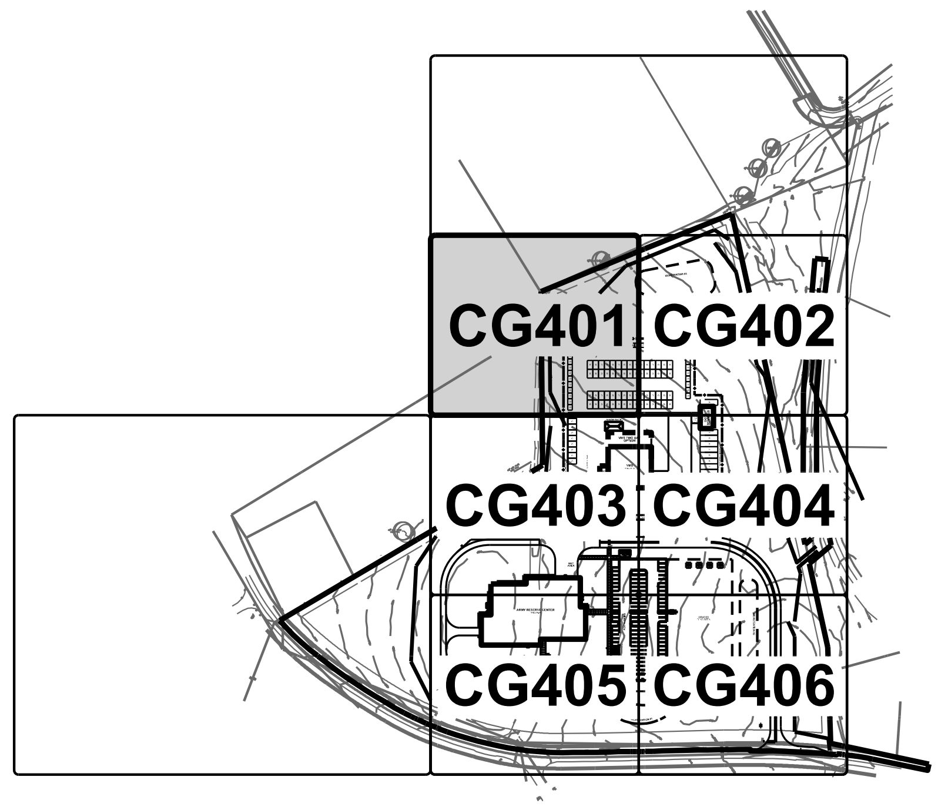

GENERAL NOTES

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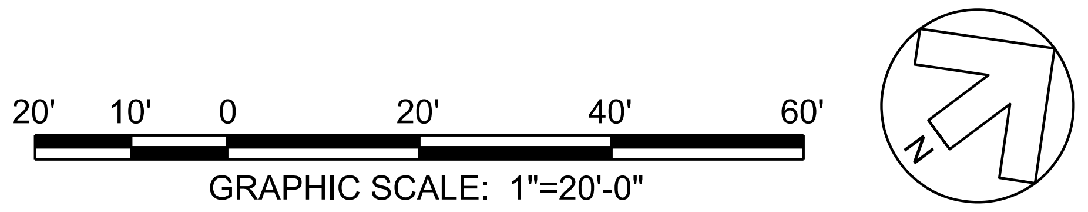
LEGEND

—••—	CONSTRUCTION LIMITS
— SD —	STORM DRAINAGE PIPING. REFER TO SHEETS CG501 THRU CG503.
HW-1 ▽	TYPICAL HEADWALL. REFER TO DETAIL 1, SHEET CG507.
CB-1 ■	TYPICAL CATCH BASIN. REFER TO SHEETS CG504 THRU CG506.
SDMH-1 ⊙	TYPICAL STORM MANHOLE. REFER TO SHEET CG508.
CO-1 •	TYPICAL CLEAN OUT.



GRAPHIC SCALE: 1"=20'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

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of Engineers®

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M.MAYER
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D. HENSLEY
SIZE:
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ASHE_CG401.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
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LOUISVILLE, KENTUCKY

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ENLARGED
GRADE AND DRAIN PLAN

SHEET ID
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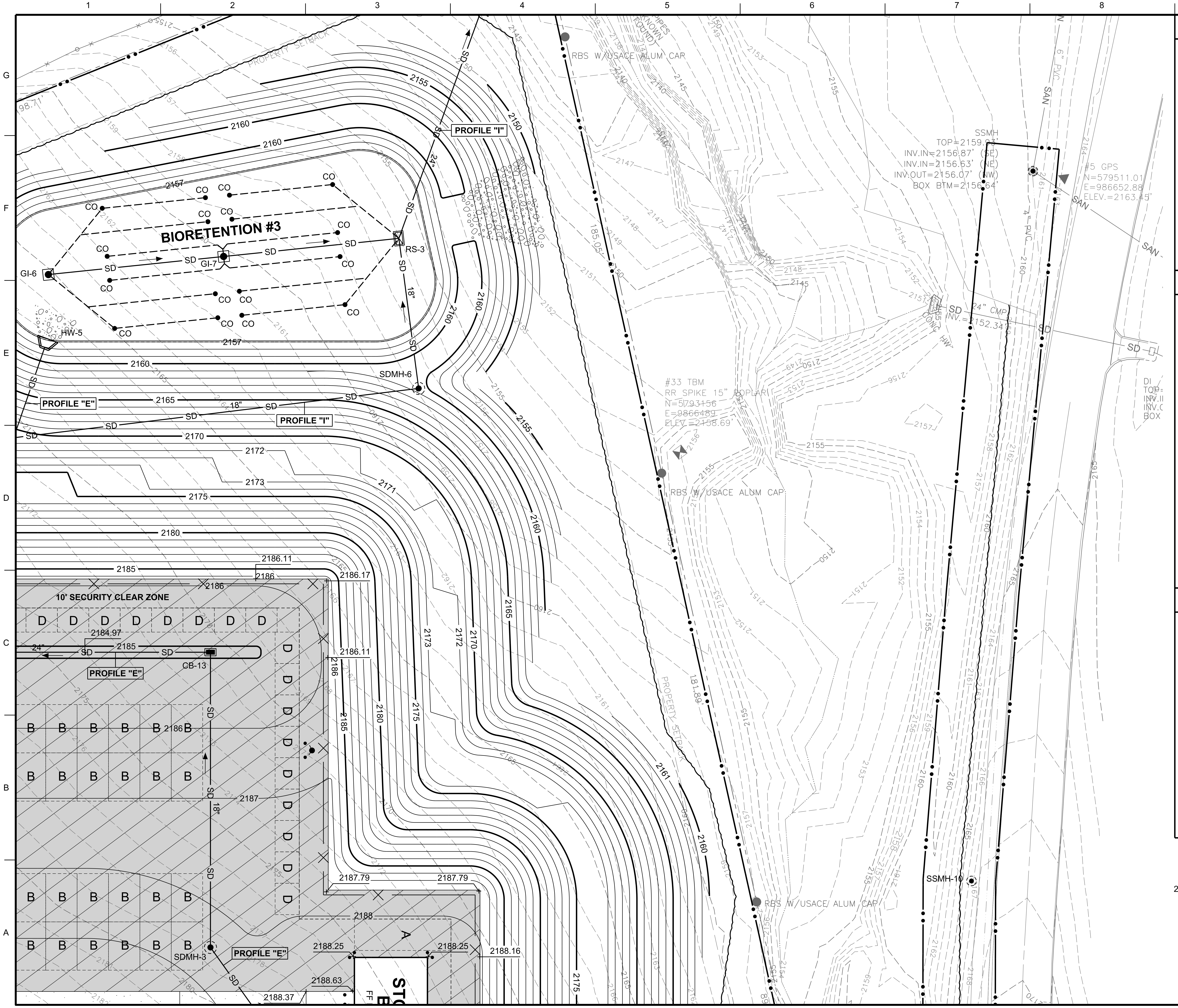

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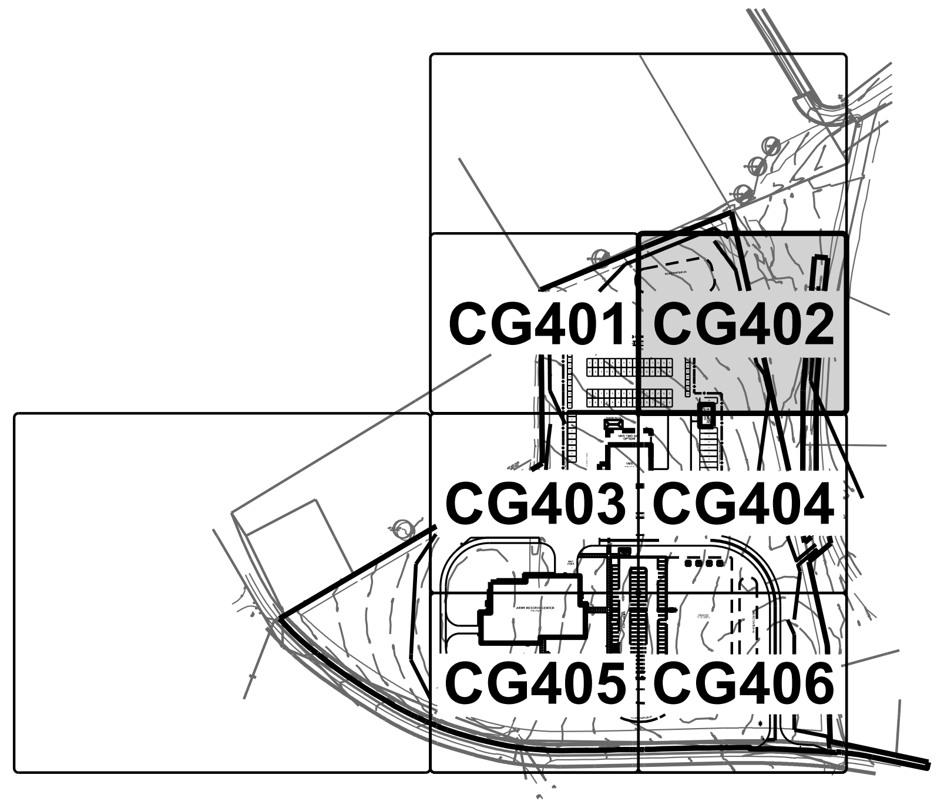

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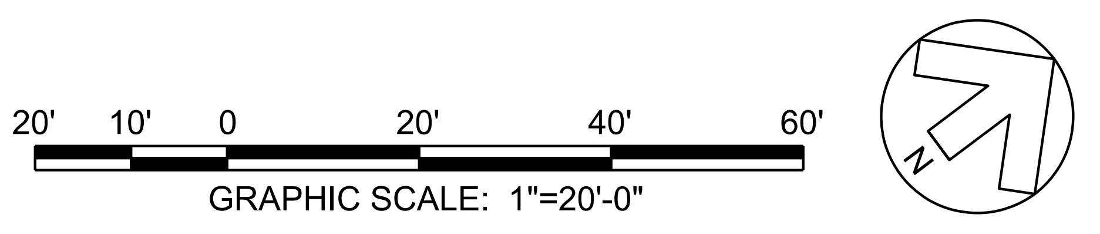

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CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CG402.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
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ENLARGED
GRADE AND DRAIN PLAN

SHEET ID
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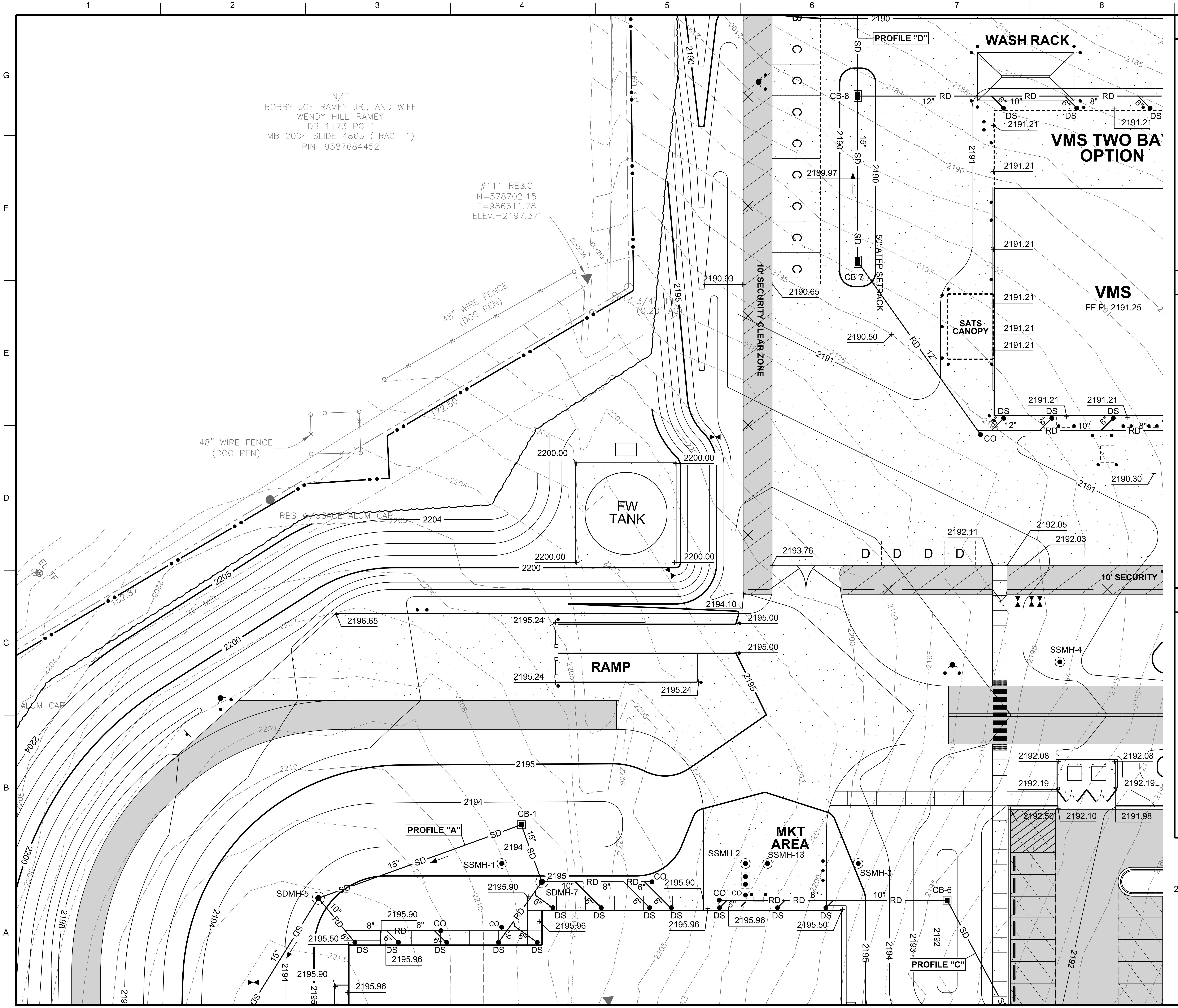

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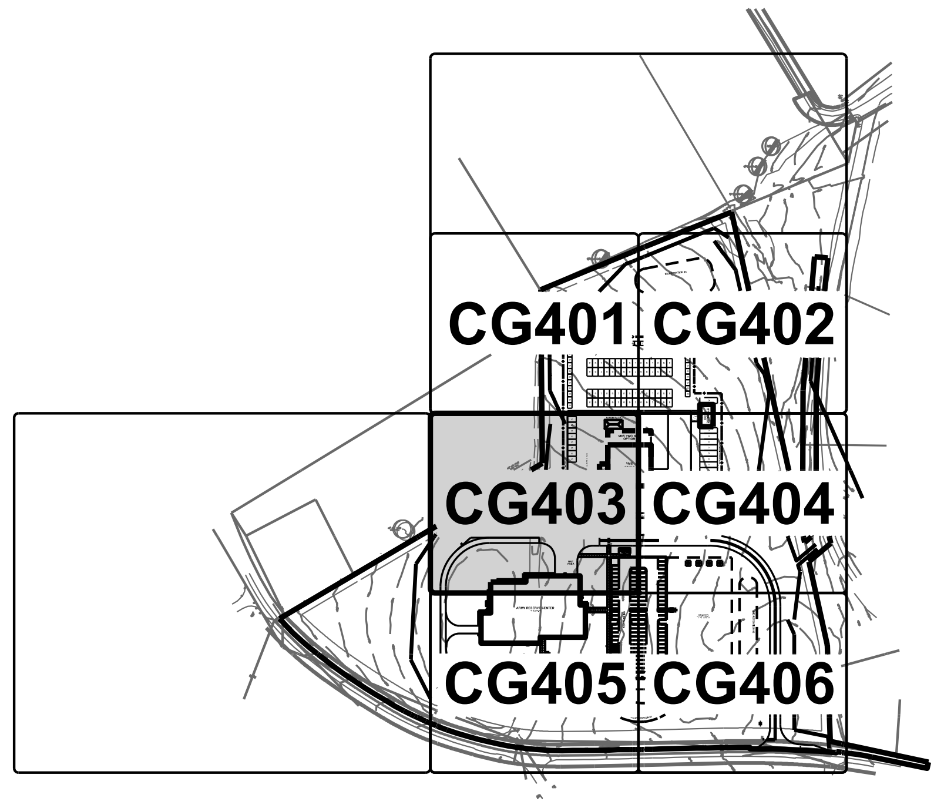

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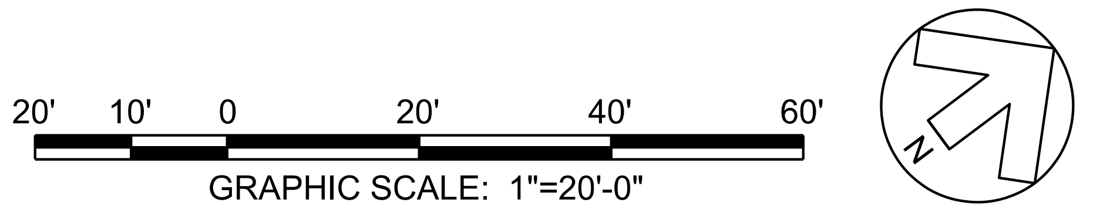

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US Army Corps of Engineers®

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DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE CG403.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED
GRADE AND DRAIN PLAN

SHEET ID
CG403

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24-FEB-2022
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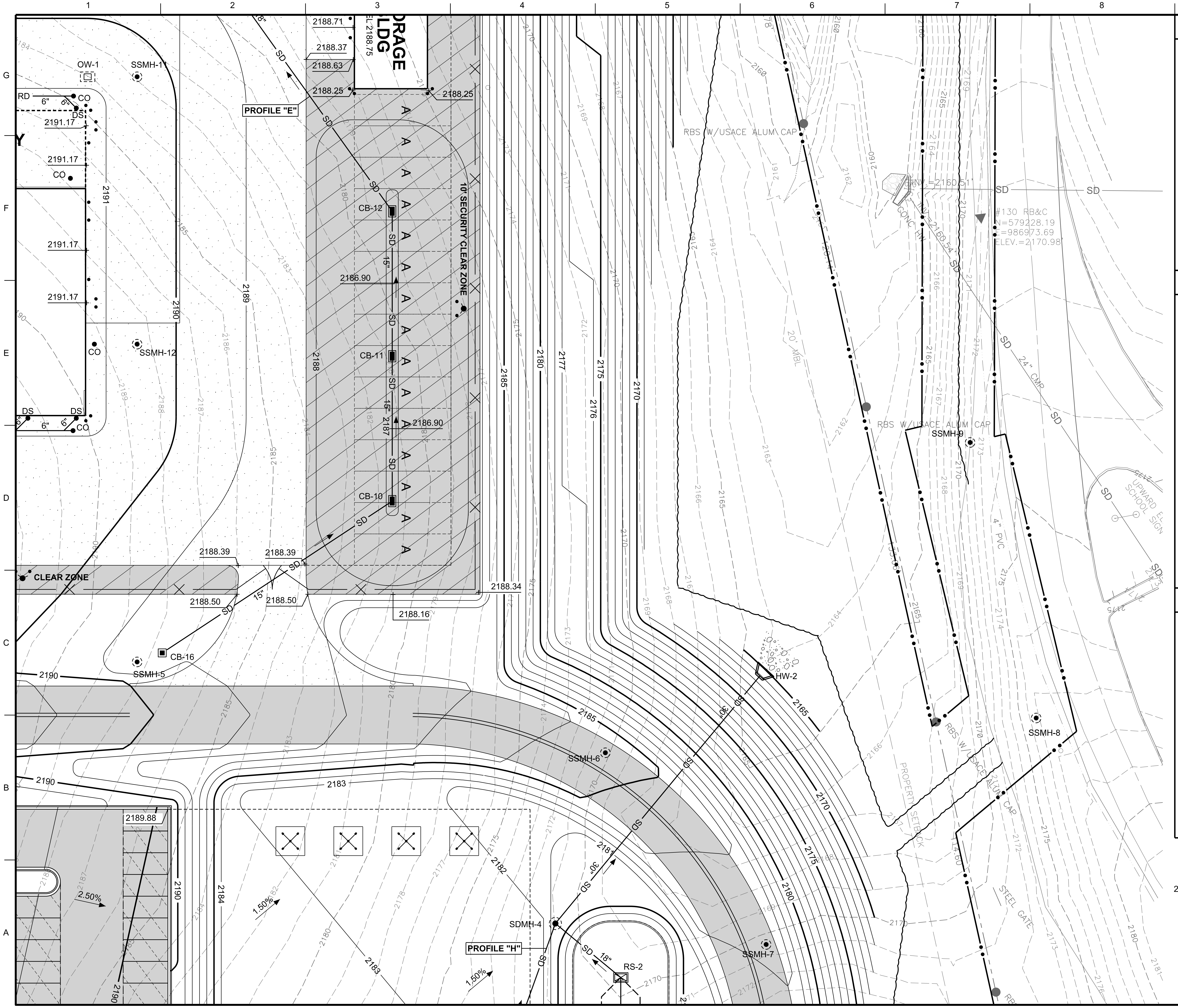

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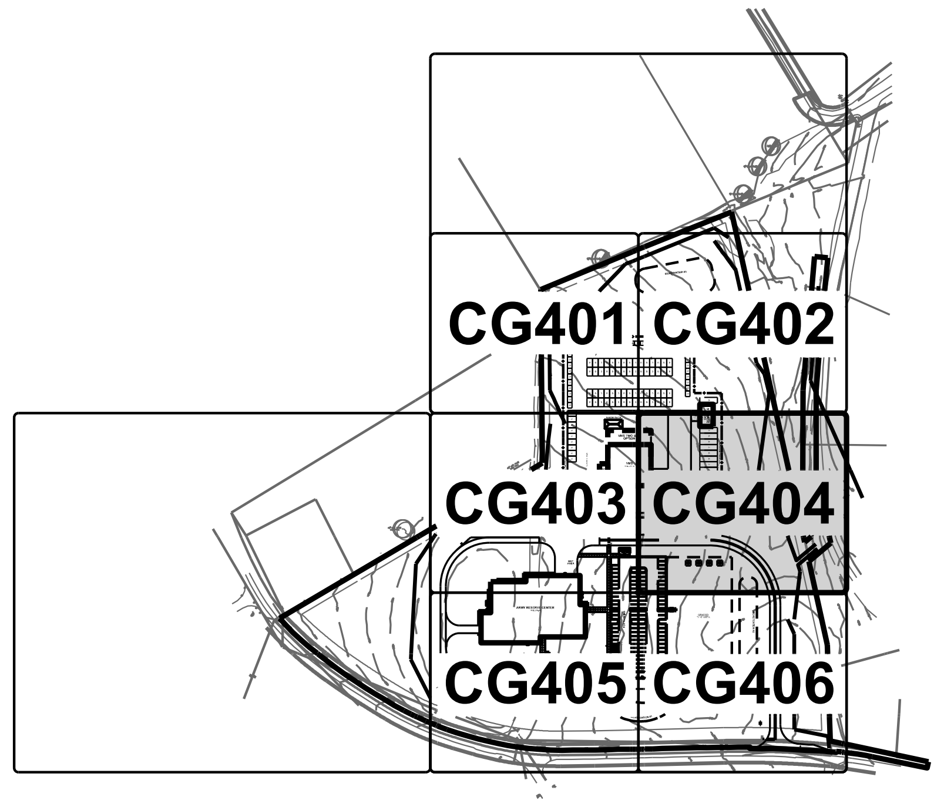

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CO-1 •	TYPICAL CLEAN OUT.

20' 10' 0 20' 40' 60'

GRAPHIC SCALE: 1"=20'-0"

N

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

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US Army Corps of Engineers®

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DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022	
DRAWN BY: S.HAGGARD	SOLICITATION NO.:	
CHECKED BY: M.MAYER	CONTRACT NO.:	
SUBMITTED BY: D.HENSLEY	CATEGORY CODE	
SIZE: ANSI D	FILENAME: ASHE_CG404.dgn	

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED
GRADE AND DRAIN PLAN

SHEET ID
CG404

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15:01

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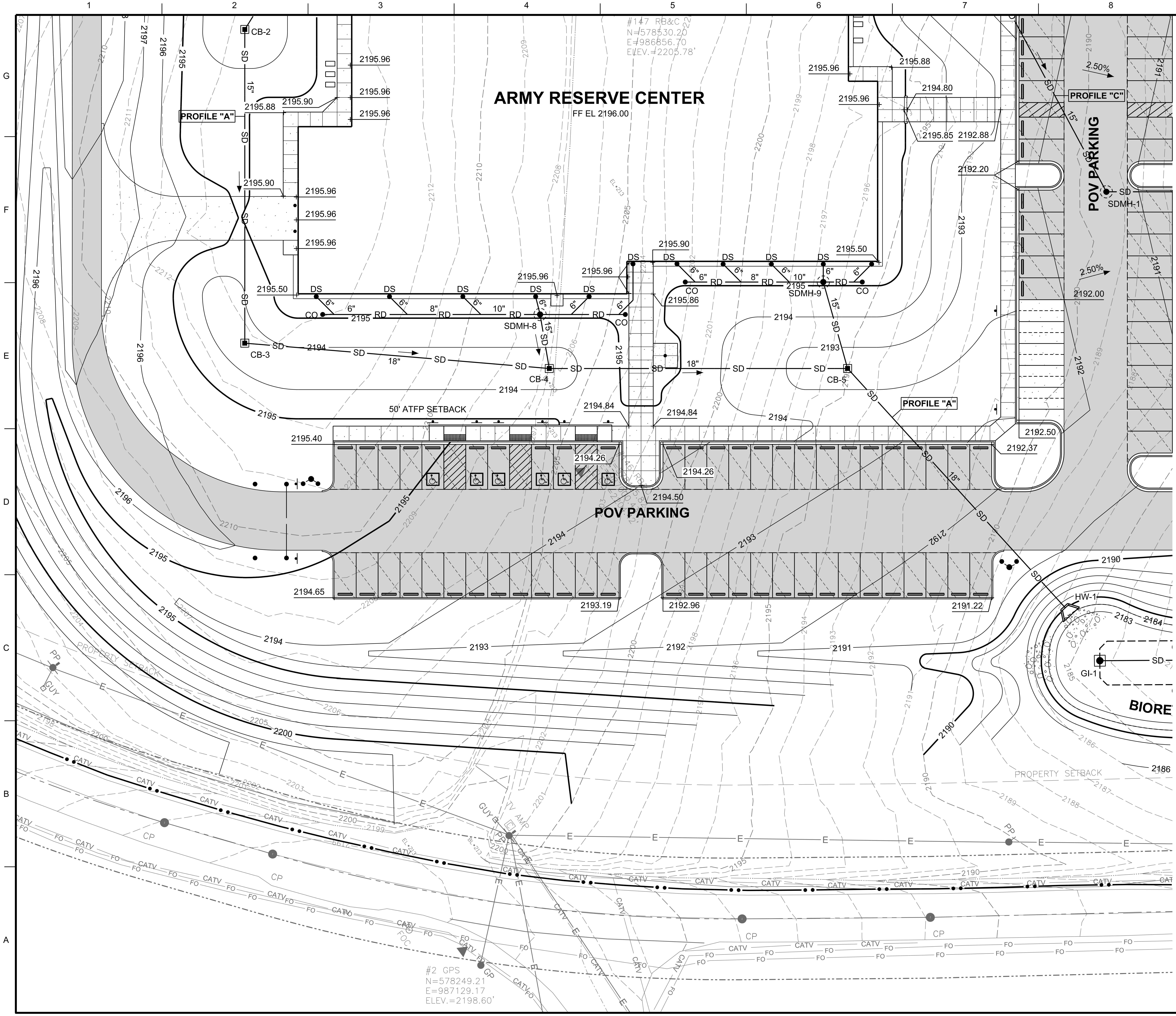
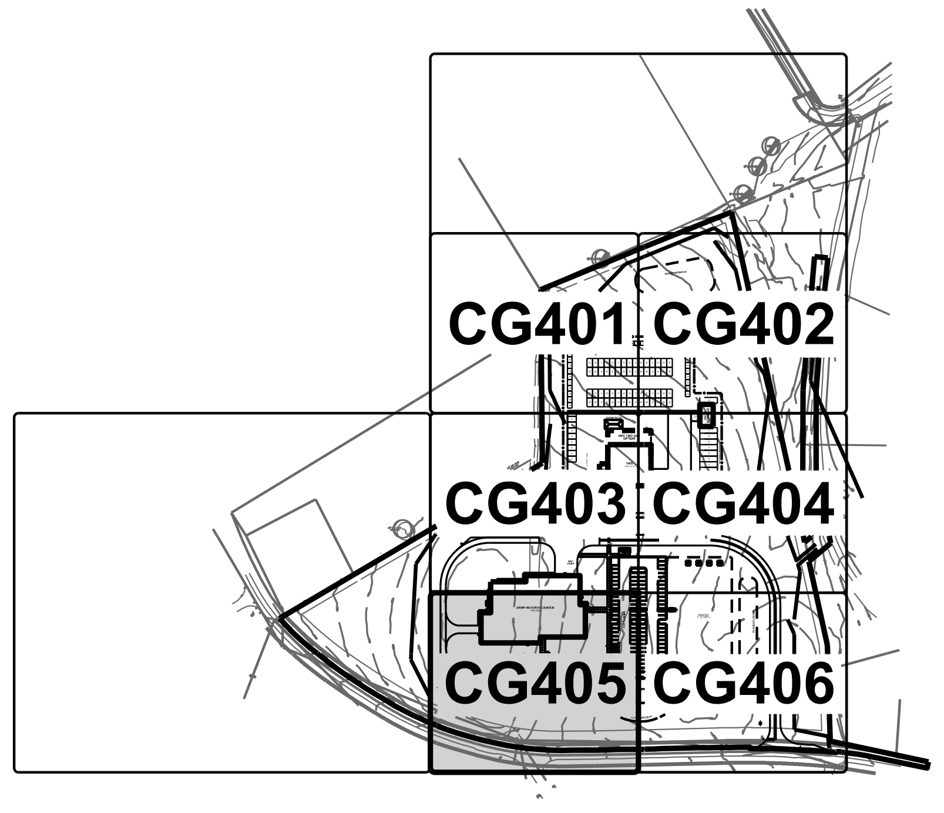


KEY MAP



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LEGEND

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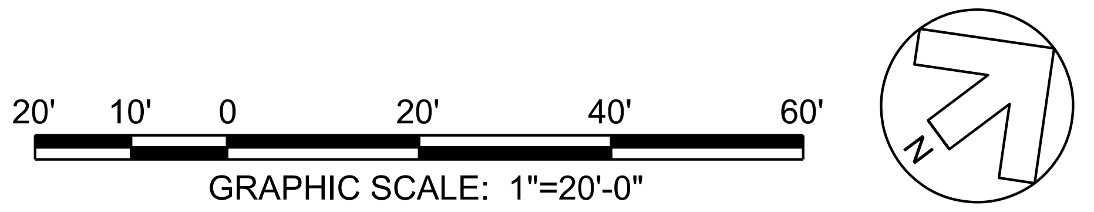

GRAPHIC SCALE: 1"=20'-0"

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U.S. ARMY CORPS OF ENGINEERS
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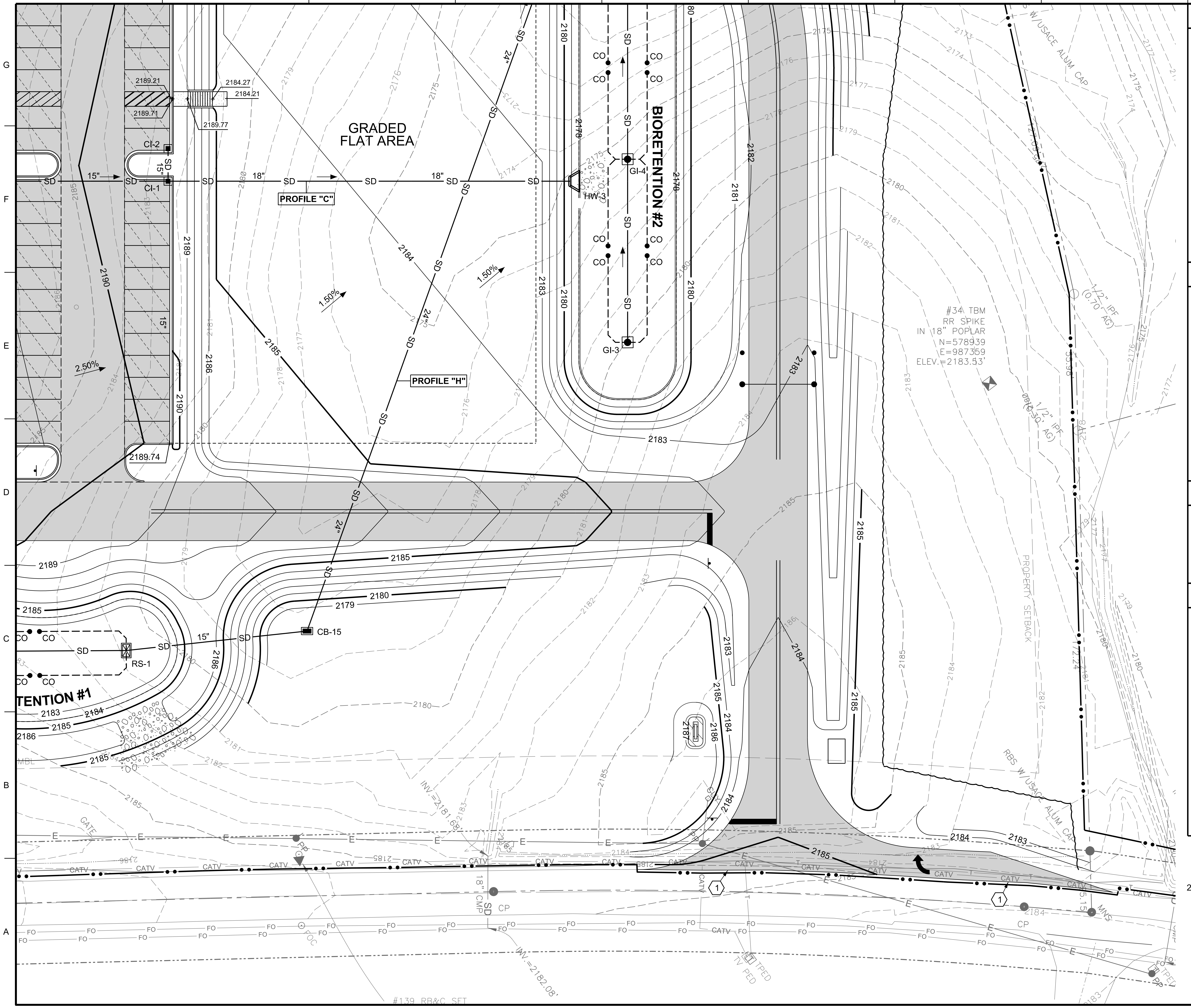
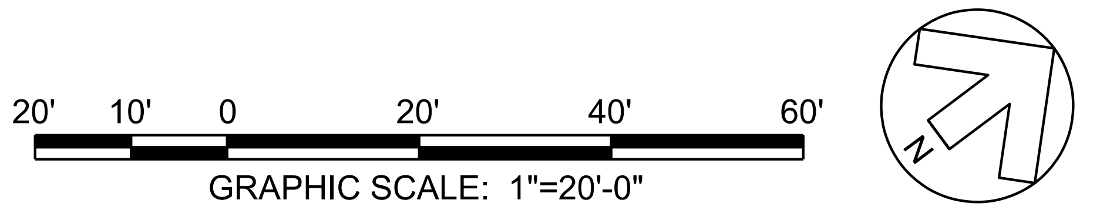
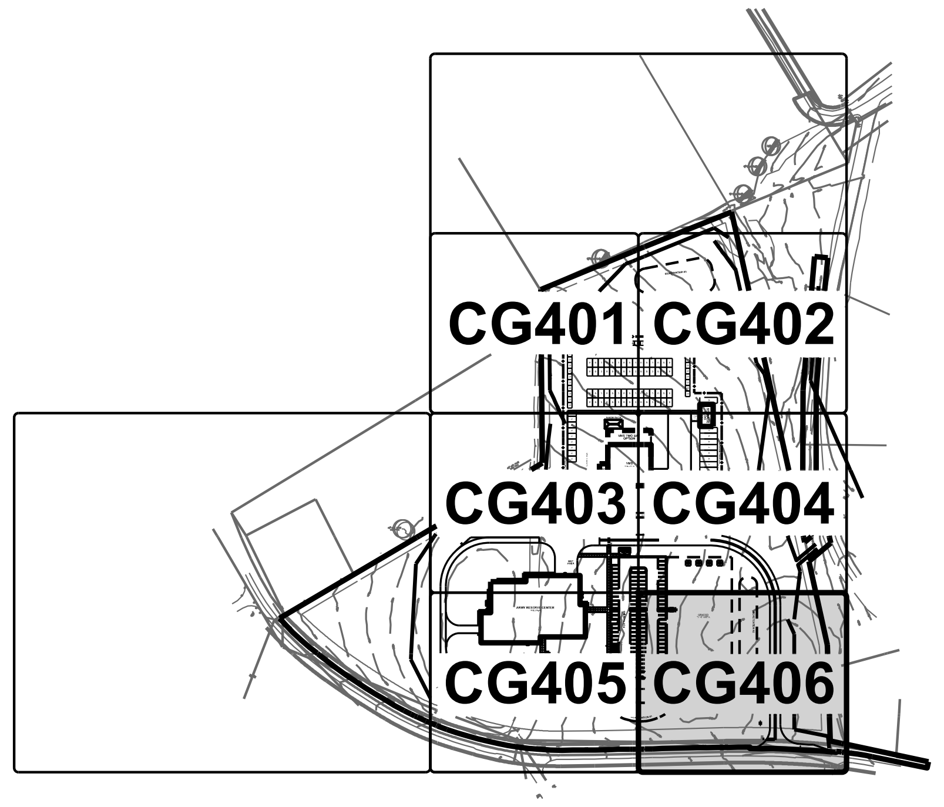




KEY MAP



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⬡ SHEET KEYNOTES

1. MATCH EXISTING GRADES

LEGEND

─•• CONSTRUCTION LIMITS	CONSTRUCTION LIMITS
— SD —	STORM DRAINAGE PIPING. REFER TO SHEETS CG501 THRU CG503.
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STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

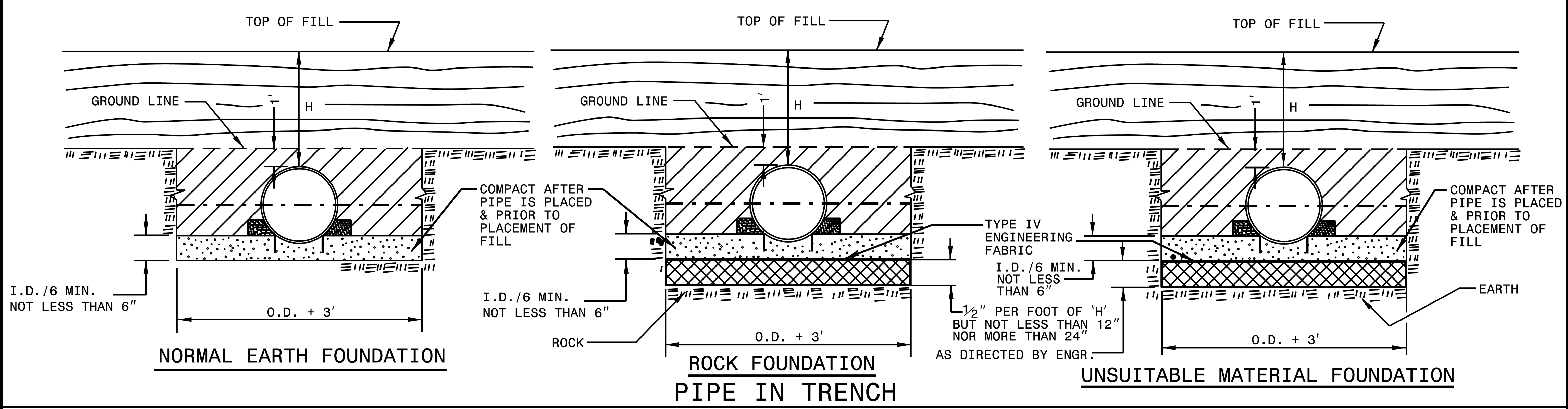
1-12

ENGLISH STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 3

300.01



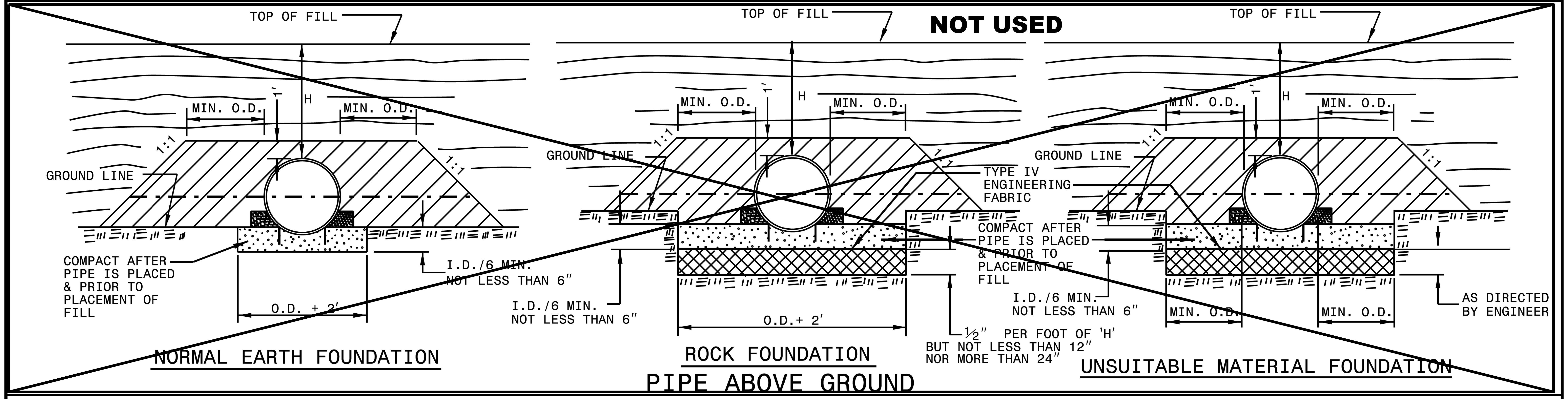
TOP OF FILL
GROUND LINE
H
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D./6 MIN. NOT LESS THAN 6″
O.D. + 3′
TYPE IV ENGINEERING FABRIC
I.D./6 MIN. NOT LESS THAN 6″
ROCK
½″ PER FOOT OF 'H' BUT NOT LESS THAN 12″ NOR MORE THAN 24″
AS DIRECTED BY ENGR.
EARTH

NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE IN TRENCH



NOT USED
TOP OF FILL
H
MIN. O.D.
GROUND LINE
1:1
TYPE IV ENGINEERING FABRIC
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D./6 MIN. NOT LESS THAN 6″
O.D. + 2′
O.D.+ 2′
½″ PER FOOT OF 'H' BUT NOT LESS THAN 12″ NOR MORE THAN 24″
AS DIRECTED BY ENGINEER

NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

■	TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
░	LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

— · — · —	SPRINGLINE OF PIPE
▨	SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
≋	APPROVED SUITABLE LOCAL MATERIAL.
≡	UNDISTURBED EARTH MATERIAL
▩	SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

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ENGLISH STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 3

300.01

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CG501.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

PIPE INSTALLATION DETAILS

SHEET ID
CG501

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24-FEB-2022
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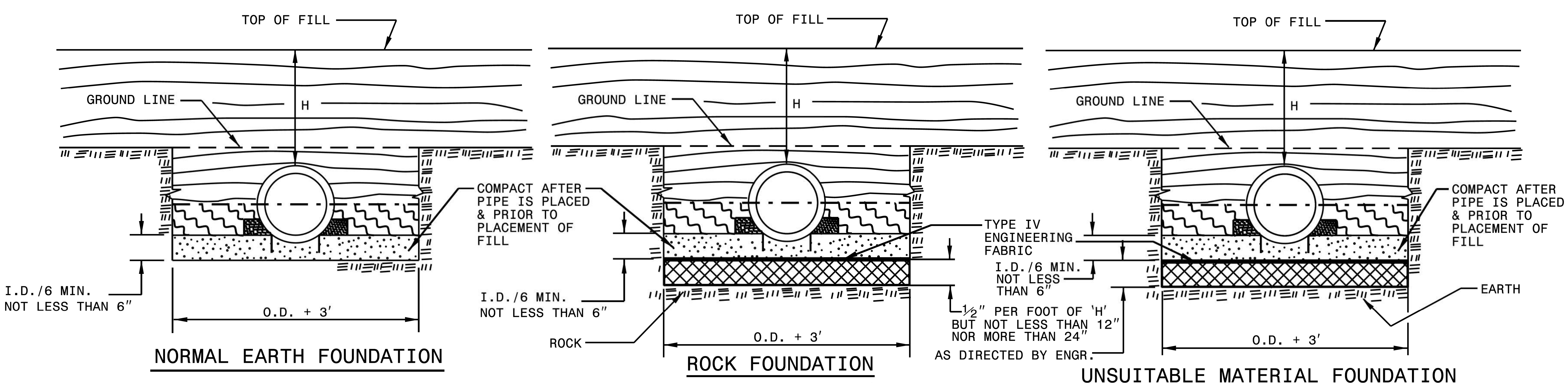
ENGLISH STANDARD DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 3

300.01



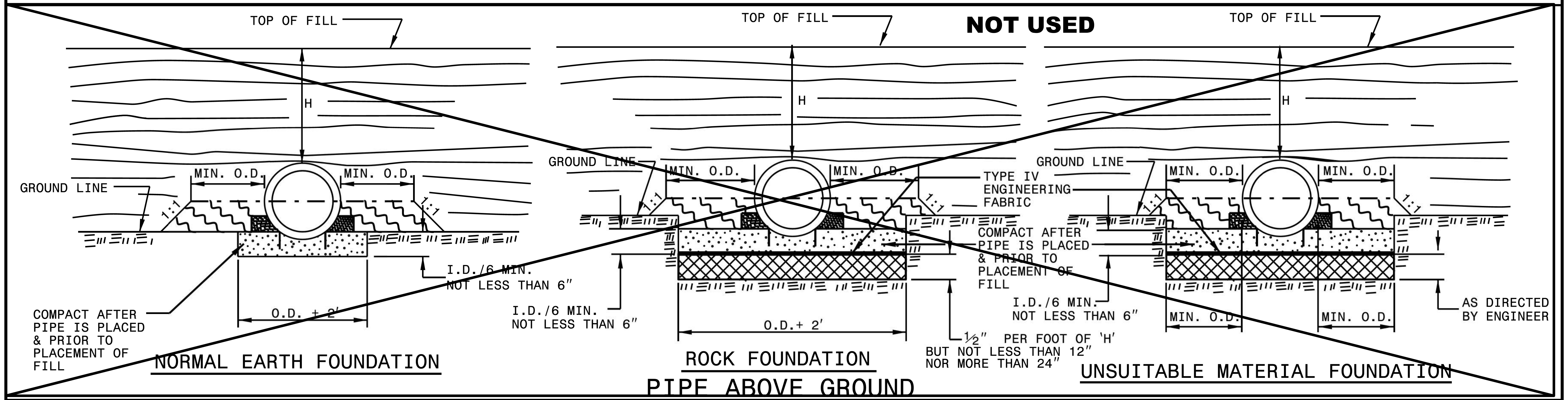
NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE IN TRENCH

NOT USED



NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

■ TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

░ LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

— · — · — SPRINGLINE OF PIPE

▨ SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

☰ APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

≡ UNDISTURBED EARTH MATERIAL

▩ SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

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ENGLISH STANDARD DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 3

300.01

US Army Corps
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MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS 600 DR. MARTIN LUTHER KING PL LOUISVILLE DISTRICT LOUISVILLE, KENTUCKY	DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
	DRAWN BY: S.HAGGARD	SOLICITATION NO.:
Mason&Hanger A Day & Zimmermann Company	CHECKED BY: M.MAYER	CONTRACT NO.:
	SUBMITTED BY: D. HENSLEY	CATEGORY CODE
	SIZE: ANSI D	FILENAME: ASHE_CG502.dgn

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

PIPE INSTALLATION DETAILS

SHEET ID
CG502

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FLEXIBLE PIPE

NOT USED

Round Corrugated Steel Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	204	256			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12		54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

NOT USED

Round Corrugated Aluminum Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	123	155	218	281	344
15	12	98	123	174	224	275
18	12	81	102	144	187	228
21	12	69	87	123	160	195
24	12	60	76	108	139	171
27	12		67	95	123	151
30	12		60	85	111	136
36	12		50	71	92	113
42	12			60	78	96
48	12			52	68	84
54	12			46	50	74
60	12				50	62
66	12					51
72	12					41

NOT USED

~~HDPE - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 60″~~
~~* (Maximum fill) 20′ for pipe diameters ≤ 24″~~
~~17′ for pipe diameters ≥ 30″ and ≤ 60″~~

PVC - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 36″
* (Maximum fill) 30′ for pipe diameters ≥ 12″ and ≤ 36″

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE
TO THE BOTTOM OF THE PAVEMENT STRUCTURE

NOT USED

~~** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.~~

~~REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS~~

~~CSP - AASHTO M36~~
~~CAAP - AASHTO M196~~
~~HDPE - AASHTO M294~~
PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

RIGID PIPE

RCP - * (Minimum fill) 1′ for Class IV & CLASS V
2′ for Class III & Class II

* (Maximum fill) 10′ - Class II pipe
20′ - Class III pipe
30′ - Class IV pipe
40′ - Class V pipe

(For fills > 40′ & < 80′ use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE
TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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ENGLISH STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300.01

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ENGLISH STANDARD DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300.01

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DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D.HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CG503.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

PIPE INSTALLATION DETAILS

SHEET ID
CG503

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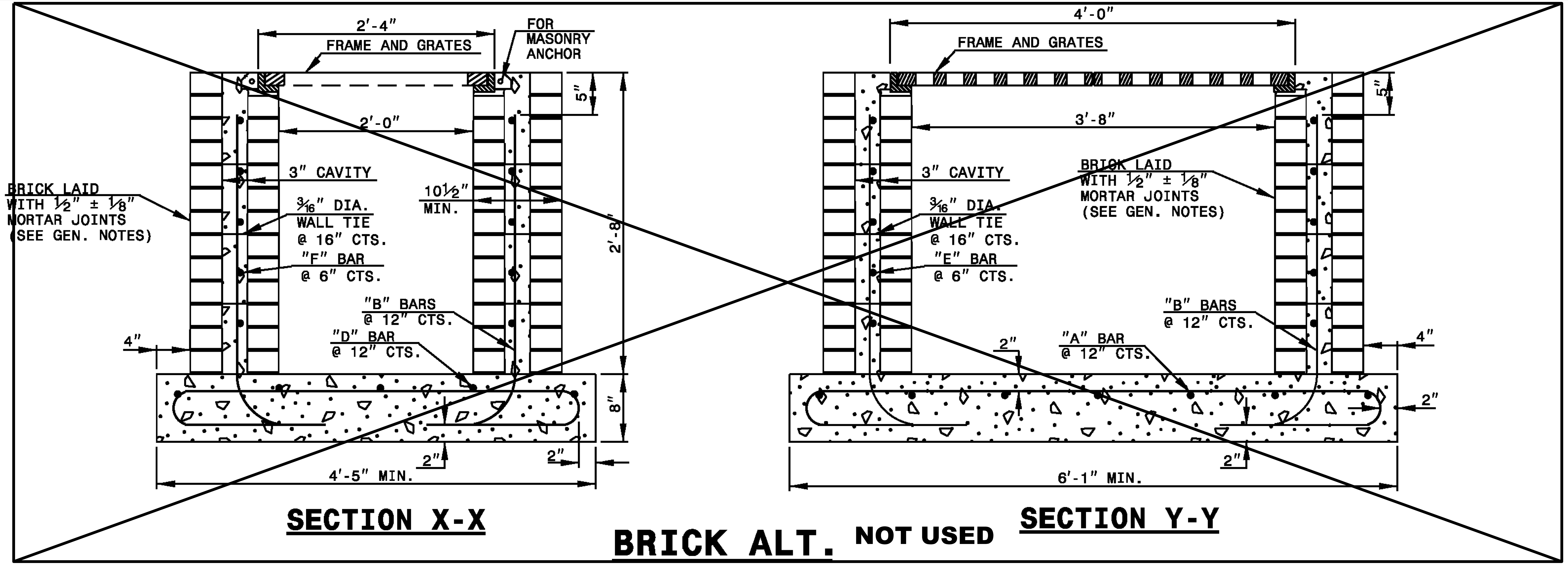
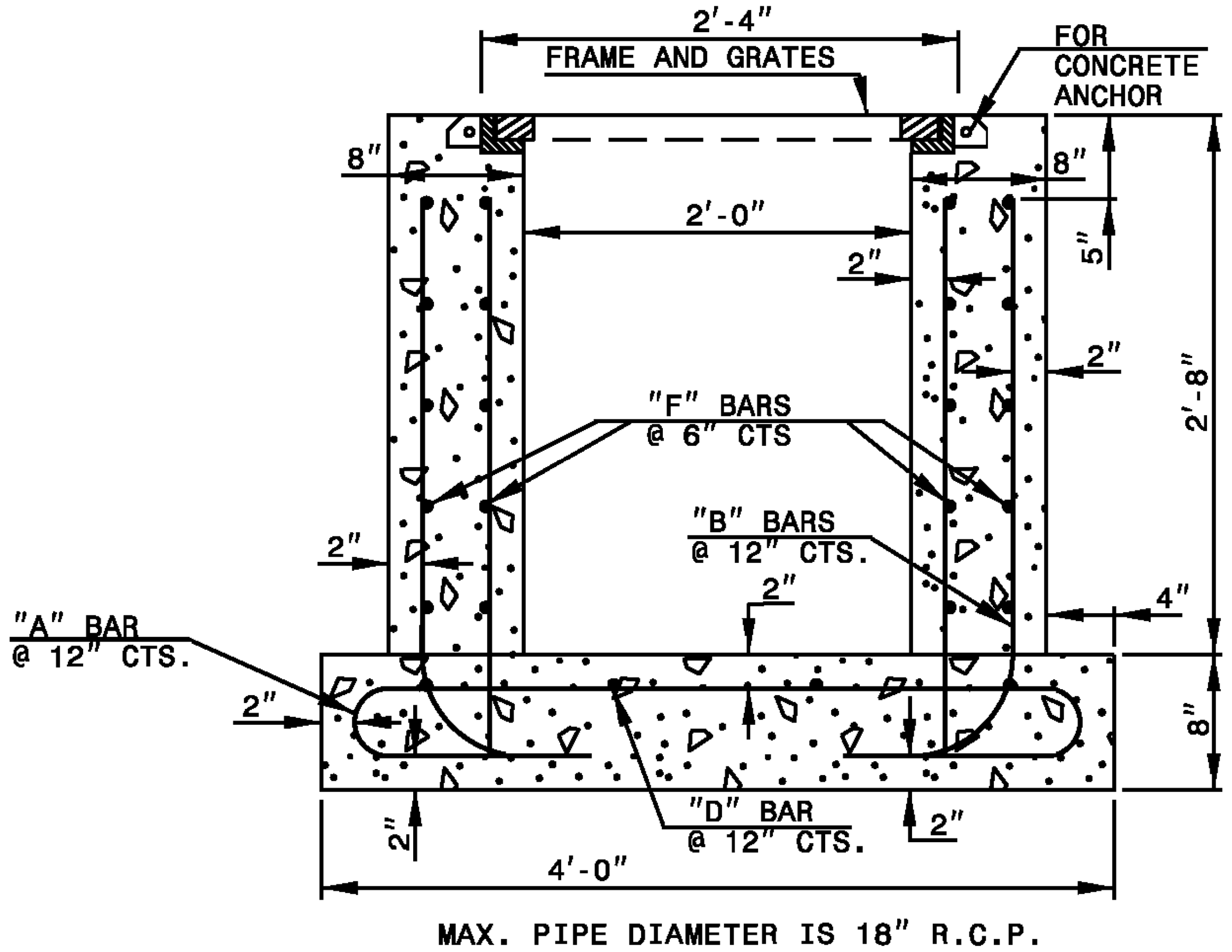
ENGLISH STANDARD DRAWING FOR
TRAFFIC BEARING GRATED DROP INLET
FOR CAST IRON DOUBLE FRAME AND GRATES

SHEET 1 OF 2
840.35



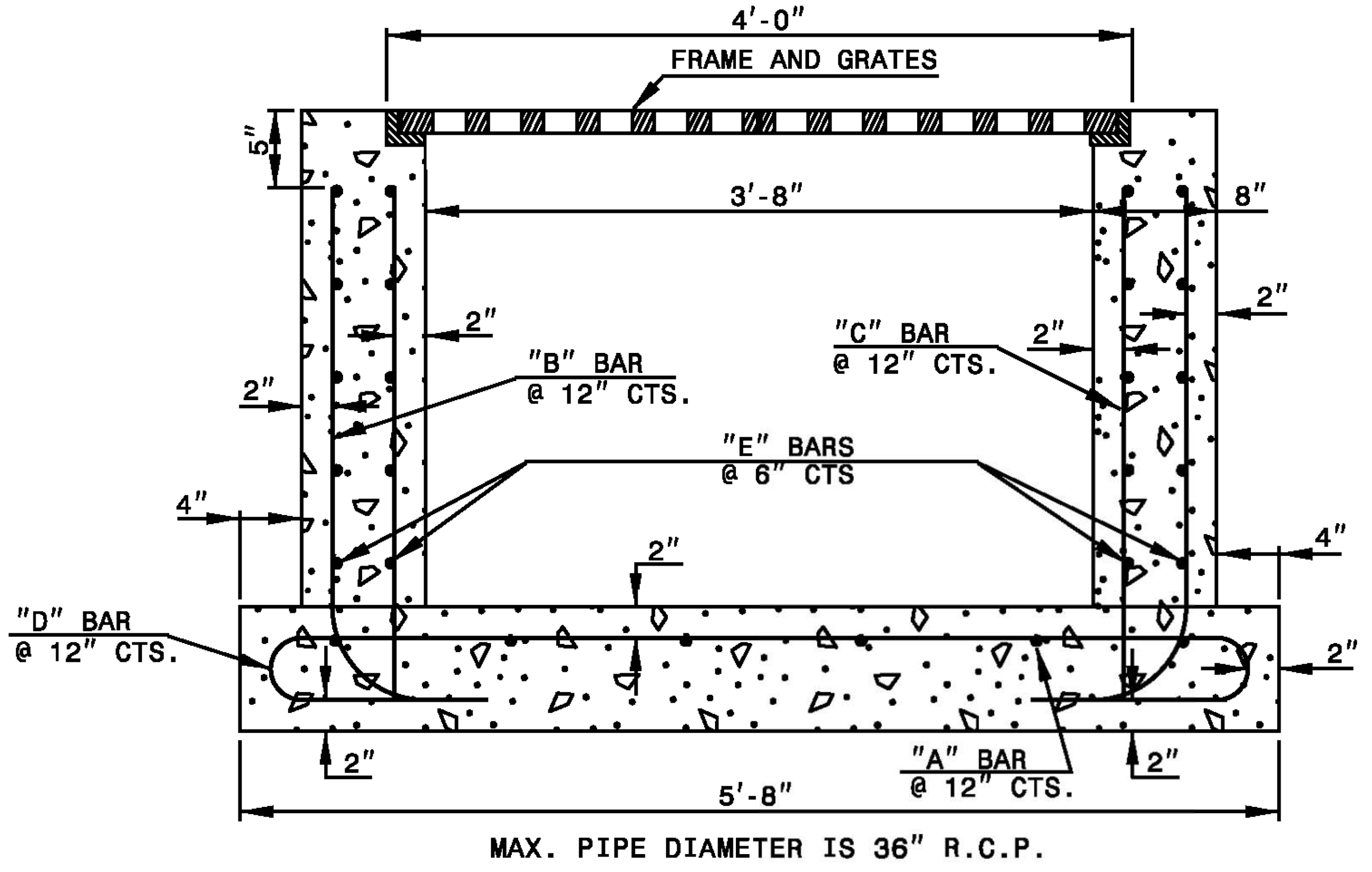
SECTION X-X **SECTION Y-Y**

BRICK ALT. **NOT USED**



MAX. PIPE DIAMETER IS 18" R.C.P.

SECTION X-X



MAX. PIPE DIAMETER IS 36" R.C.P.

SECTION Y-Y

CONCRETE ALT.

NOTES:
-HORIZONTAL AND VERTICAL DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.
-MAXIMUM HEIGHT FOR THIS STRUCTURE IS 14'-0".
-MAKE ALL ADJUSTMENTS AS DIRECTED BY THE ENGINEER.
-DEPTH OF STEEL GRATE WILL REQIURE DEEPER SEAT ALONG SHORT WALLS.

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ENGLISH STANDARD DRAWING FOR
TRAFFIC BEARING GRATED DROP INLET
FOR CAST IRON DOUBLE FRAME AND GRATES

SHEET 1 OF 2
840.35

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CG504.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

DRAINAGE INLET DETAILS

SHEET ID
CG504

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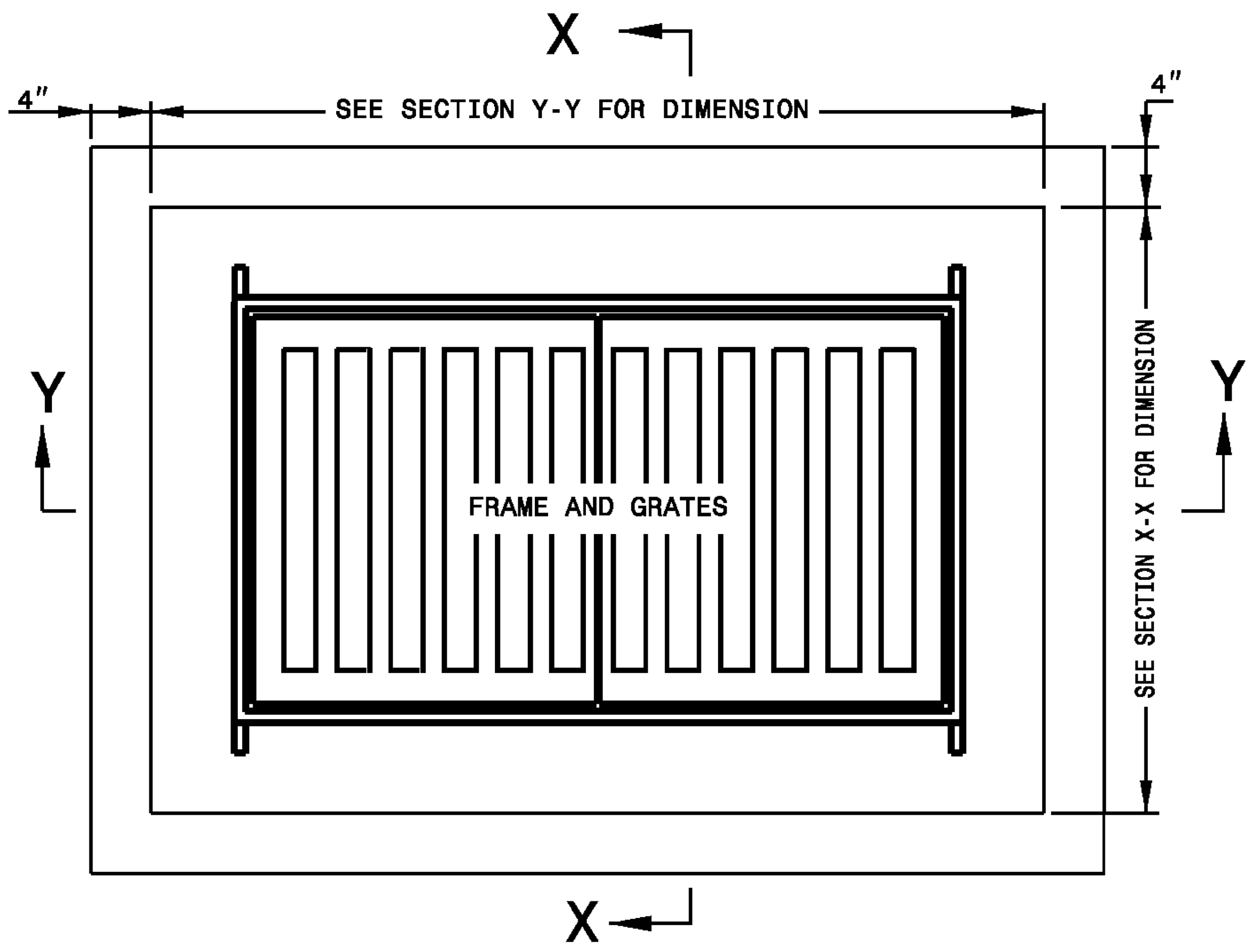
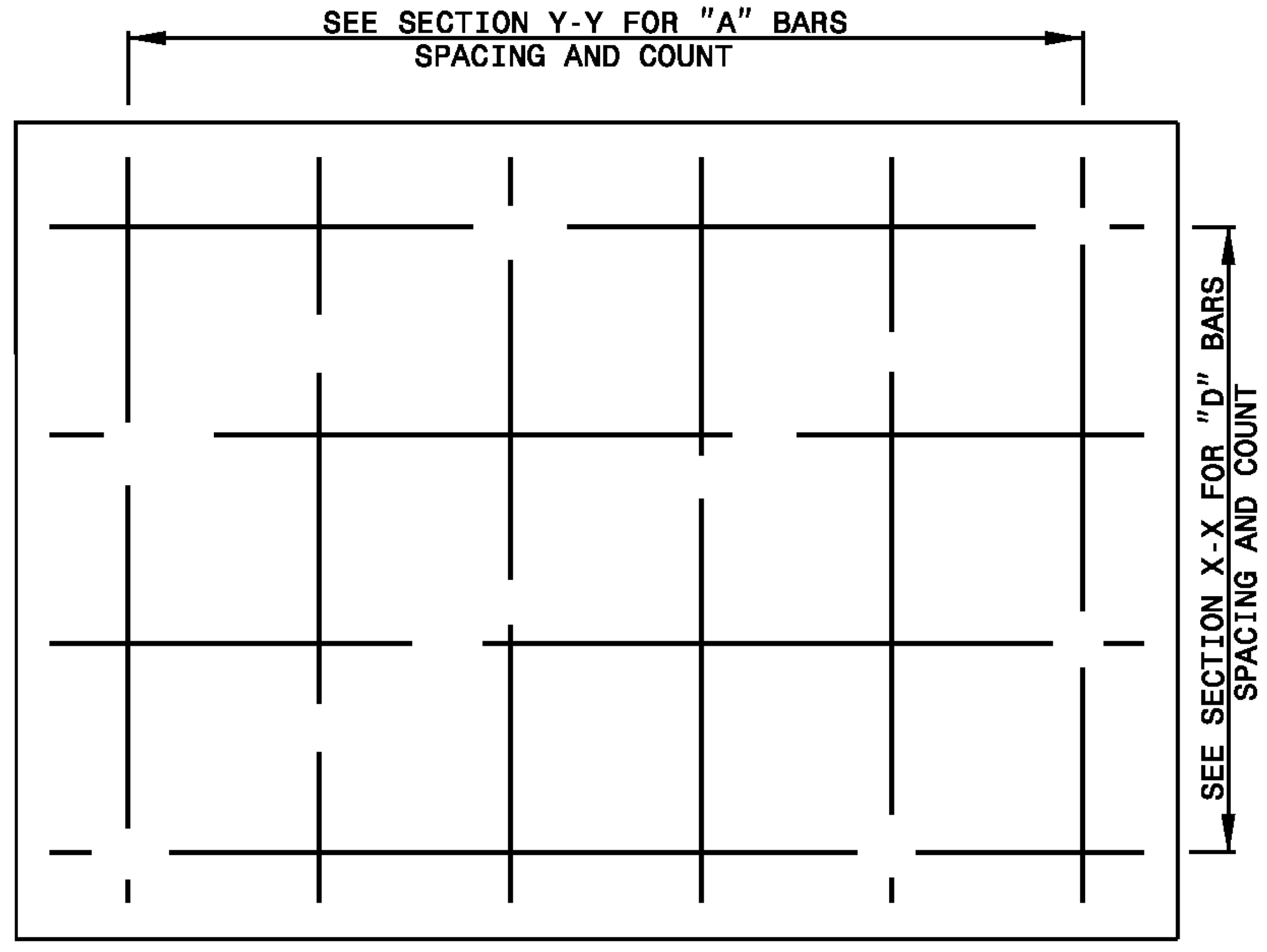
ENGLISH STANDARD DRAWING FOR
TRAFFIC BEARING GRATED DROP INLET
FOR CAST IRON DOUBLE FRAME AND GRATES

SHEET 2 OF 2
840.35

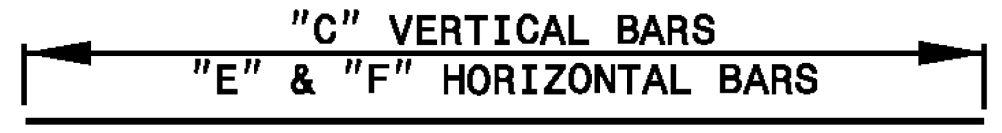


PLAN

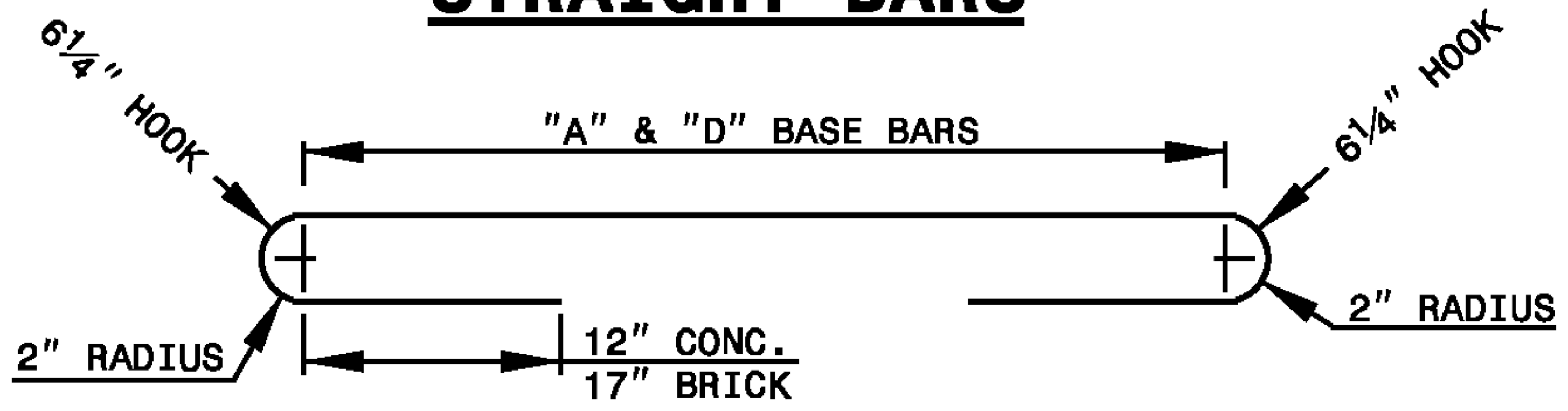


PLAN OF BASE

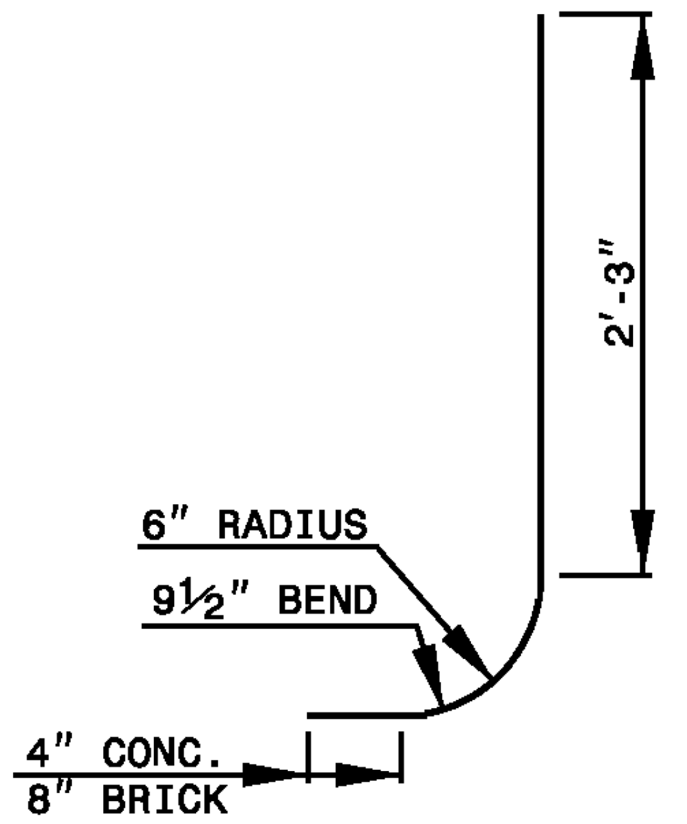
BILL OF MATERIALS							
COMMON		CONCRETE ALT.			BRICK ALT.		
BAR	SIZE	LENGTH	QUANTITY	WEIGHT	LENGTH	QUANTITY	WEIGHT
A	#5	6'-4½"	6	39.9	7'-7½"	6	47.7
B	#5	3'-4½"	16	56.3	3'-4½"	16	56.3
C	#5	2'-8"	14	38.9	-0-	-0-	-0-
D	#5	8'-0½"	4	33.6	9'-3½"	4	38.8
E	#5	3'-0"	20	62.6	3'-0"	10	31.3
F	#5	4'-8"	20	97.3	4'-8"	10	48.7
REINF. STEEL (TOTAL WEIGHT LBS.)				328.6			222.8
CONCRETE IN BASE CLASS 'AA' (CUBIC YARDS)				0.56			0.66
CONCRETE IN WALLS CLASS 'AA' (CUBIC YARDS)				0.92			-0-
CONCRETE IN WALLS CLASS 'B' (CUBIC YARDS)				-0-			0.36
BRICK IN WALLS (CUBIC YARDS)				-0-			0.91
CONCRETE TOTAL (CUBIC YARDS)				1.48			1.02
BRICK & CONCRETE TOTAL (CUBIC YARDS)				1.48			1.93
CONC. CUBIC YARDS IN WALL/FOOT OF HEIGHT				0.35			0.14
BRICK CUBIC YARDS IN WALL/FOOT OF HEIGHT				-0-			0.34
LBS. OF REINF. STEEL IN WALL/FOOT OF HEIGHT				94.9			47.6



STRAIGHT BARS



BASE BARS



CORNER BARS

GENERAL NOTES:
- -USE CLASS 'AA' CONCRETE FOR CAST IN PLACE CONCRETE BOX.
- -USE CLASS 'B' CONCRETE IN THE WALL CAVITY FOR REINFORCED BRICK CONSTRUCTION AND CLASS 'AA' FOR THE FOOTING BASE.
- -CHAMFER ALL EXPOSED CONCRETE CORNERS 1".
- -USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
- -IF PIPES ARE SET IN THE BASE FOLLOW CONSTRUCTION PROCEDURES SHOWN BY STD. DWG. 840.00.
- -PRECAST UNITS MADE OF CLASS 'AA' CONCRETE MAY BE USED IN LIEU OF BRICK MASONRY CONSTRUCTION.
- -INCLUDE REINFORCING STEEL COST IN THE UNIT OR LINEAR FOOT BID PRICE FOR "MASONRY DRAINAGE STRUCTURE".
- -REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
- -CONCRETE BRICK, JUMBO BRICK AND 4" SOLID CONCRETE BLOCK WILL BE PERMITTED.
- -CONCRETE FOR BRICK BOX REFER TO SECTION 832 OF THE STANDARD SPECIFICATIONS.
- -PROVIDE GRATED DROP INLETS OVER 3'-6" DEEP WITH STEPS SPACED 12" ON CENTER AS DIRECTED BY STD. DWG. 840.66.
- -FRAME AND GRATES ARE SEPARATE CONTRACT ITEMS.

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ENGLISH STANDARD DRAWING FOR
TRAFFIC BEARING GRATED DROP INLET
FOR CAST IRON DOUBLE FRAME AND GRATES

SHEET 2 OF 2
840.35

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MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

DESIGNED BY:
S.CURRY
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CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CG505.dgn

ISSUE DATE:
FEBRUARY 25, 2022
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U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

DRAINAGE INLET DETAILS

SHEET ID
CG505

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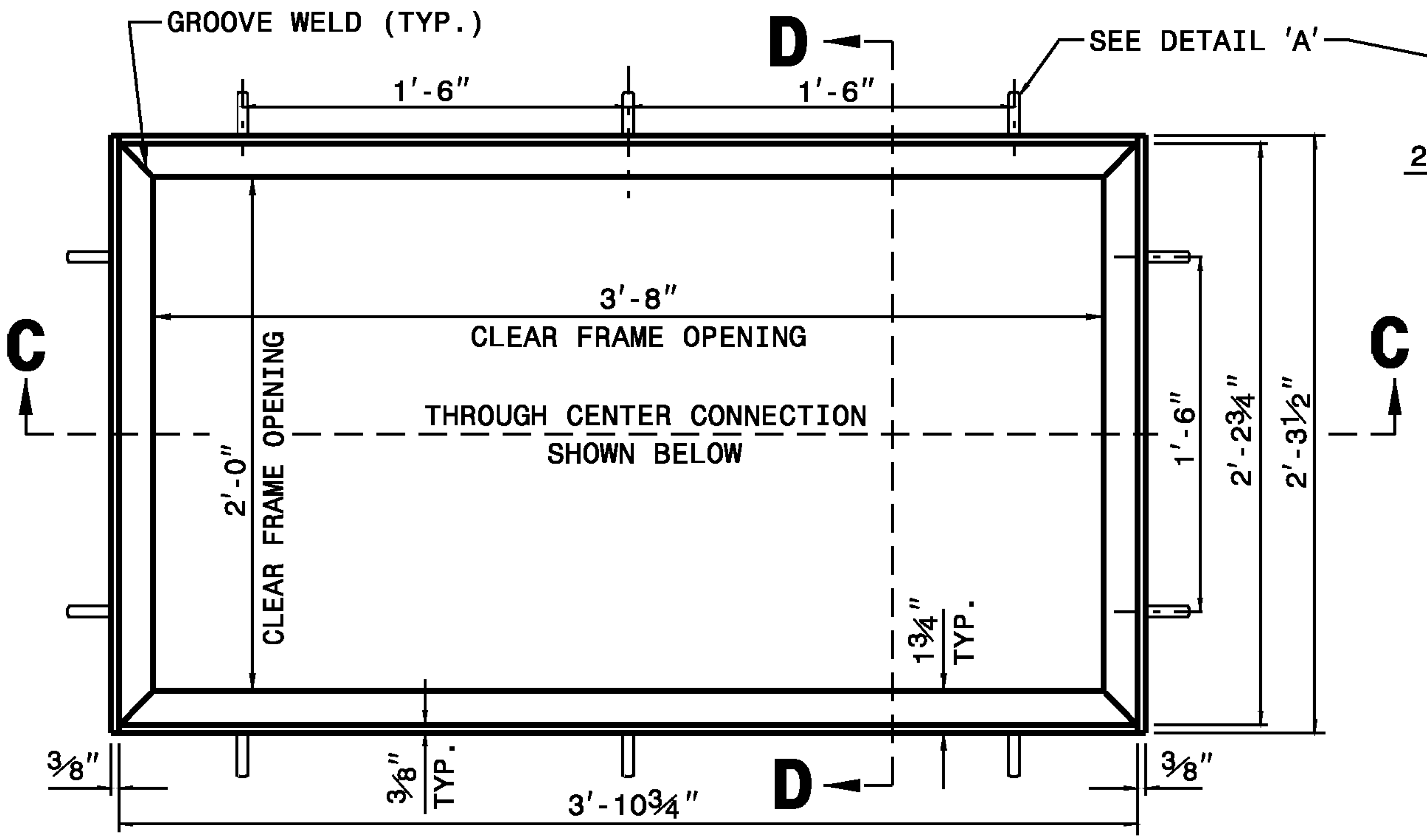
RALEIGH, N.C.

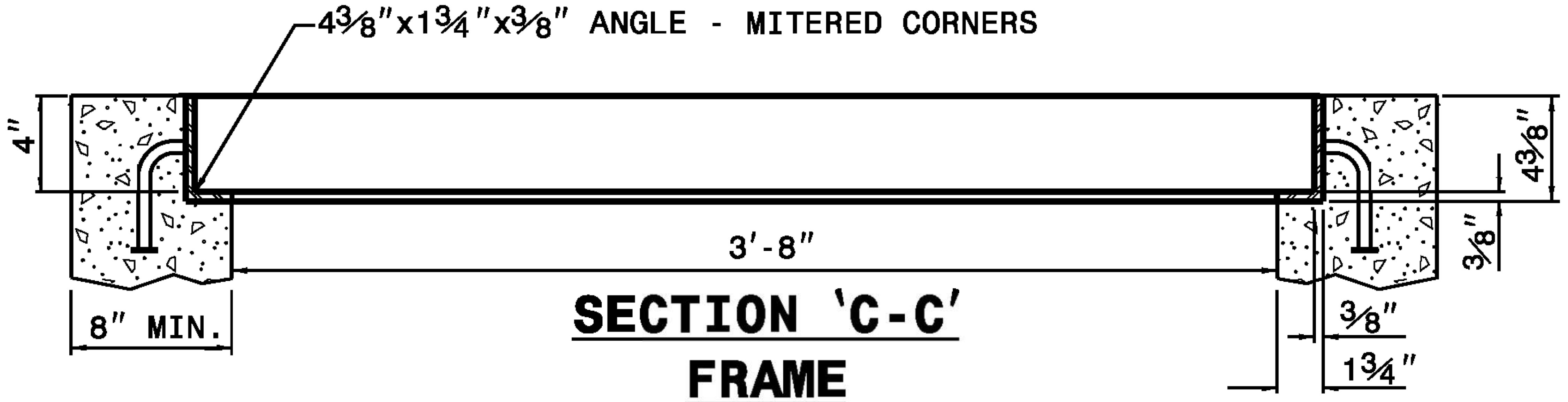
1-12

ENGLISH STANDARD DRAWING FOR
STEEL GRATE AND FRAME

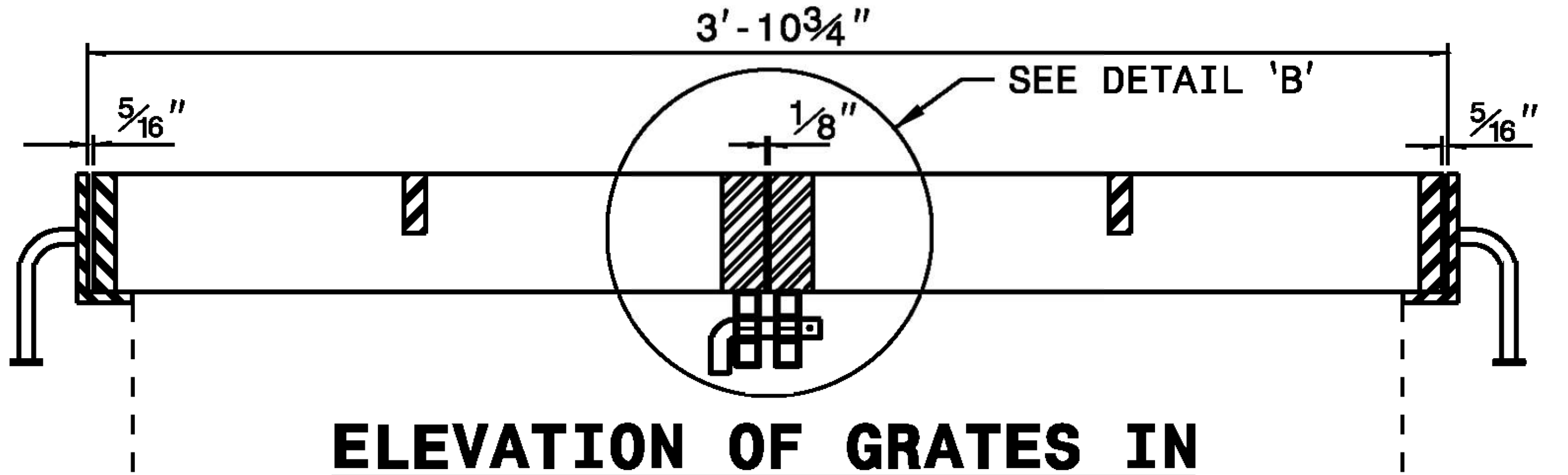
SHEET 1 OF 2
840.37



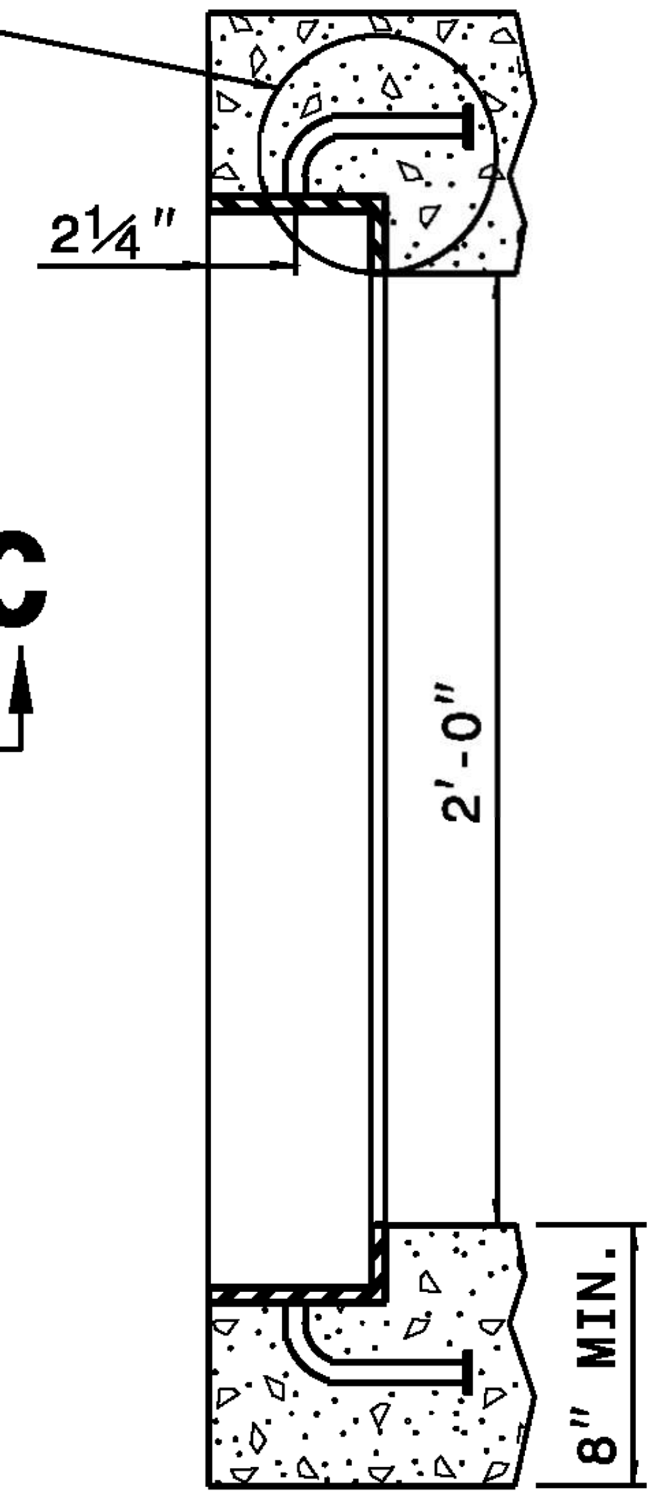
PLAN VIEW



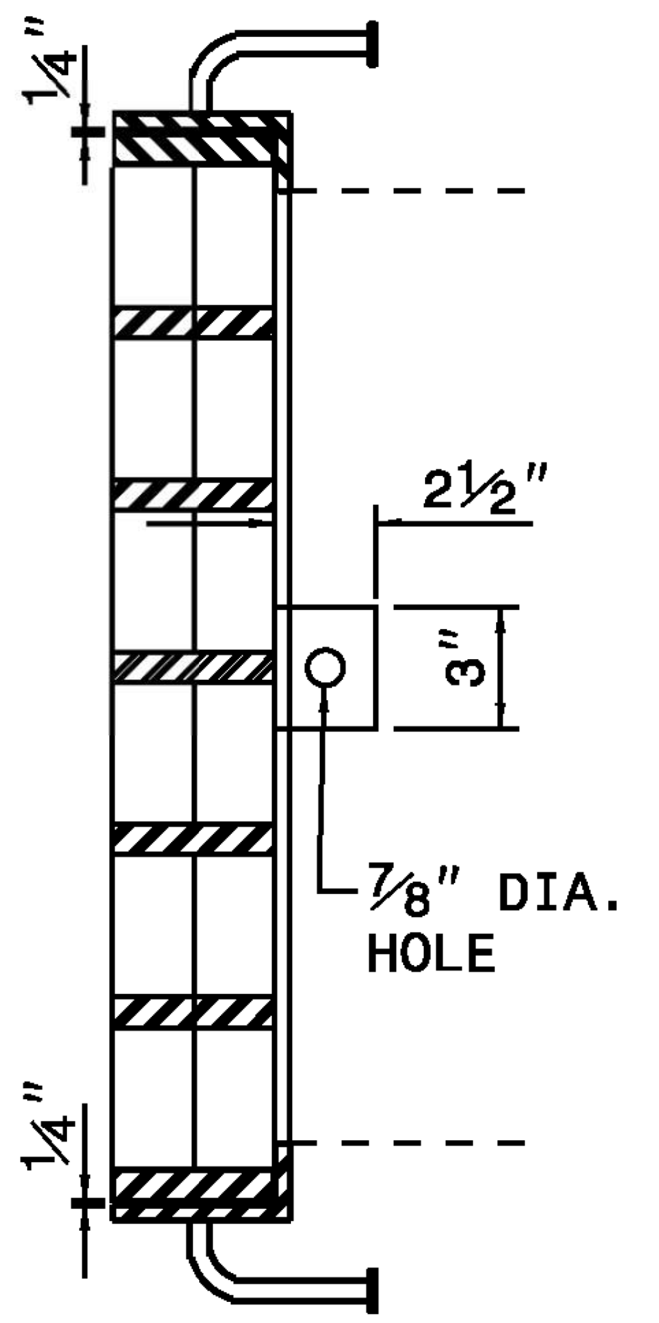
SECTION 'C-C'
FRAME



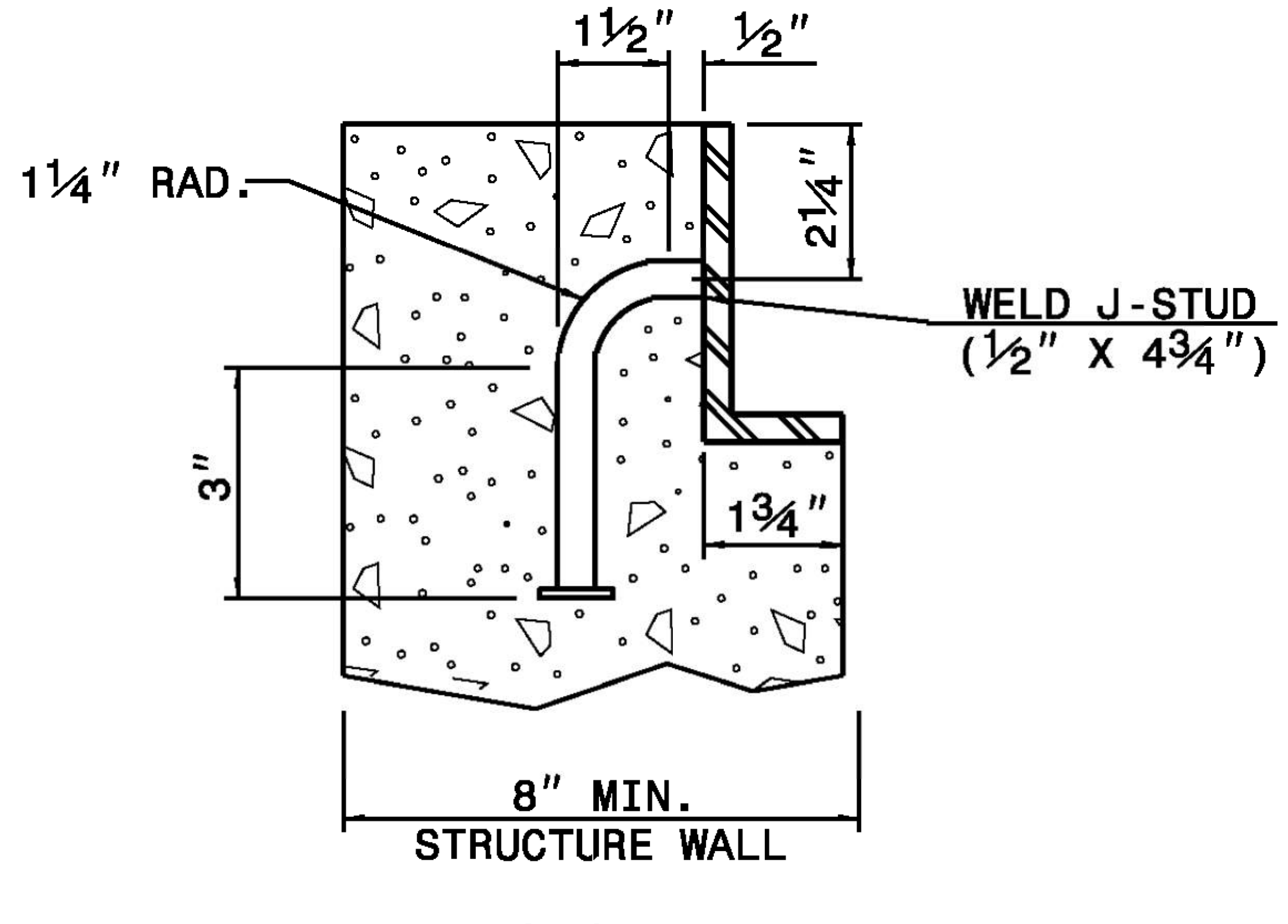
ELEVATION OF GRATES IN FRAME SYSTEM SECTION 'C-C'



SECTION 'D-D'



ELEVATION OF GRATE IN FRAME SYSTEM SHOWN THROUGH SECTION 'D-D'



DETAIL 'A' STUD ANCHOR

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1-12

ENGLISH STANDARD DRAWING FOR
STEEL GRATE AND FRAME

SHEET 1 OF 2
840.37

US Army Corps
of Engineers®

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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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DESIGNED BY:
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U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

DRAINAGE INLET DETAILS

SHEET ID
CG506

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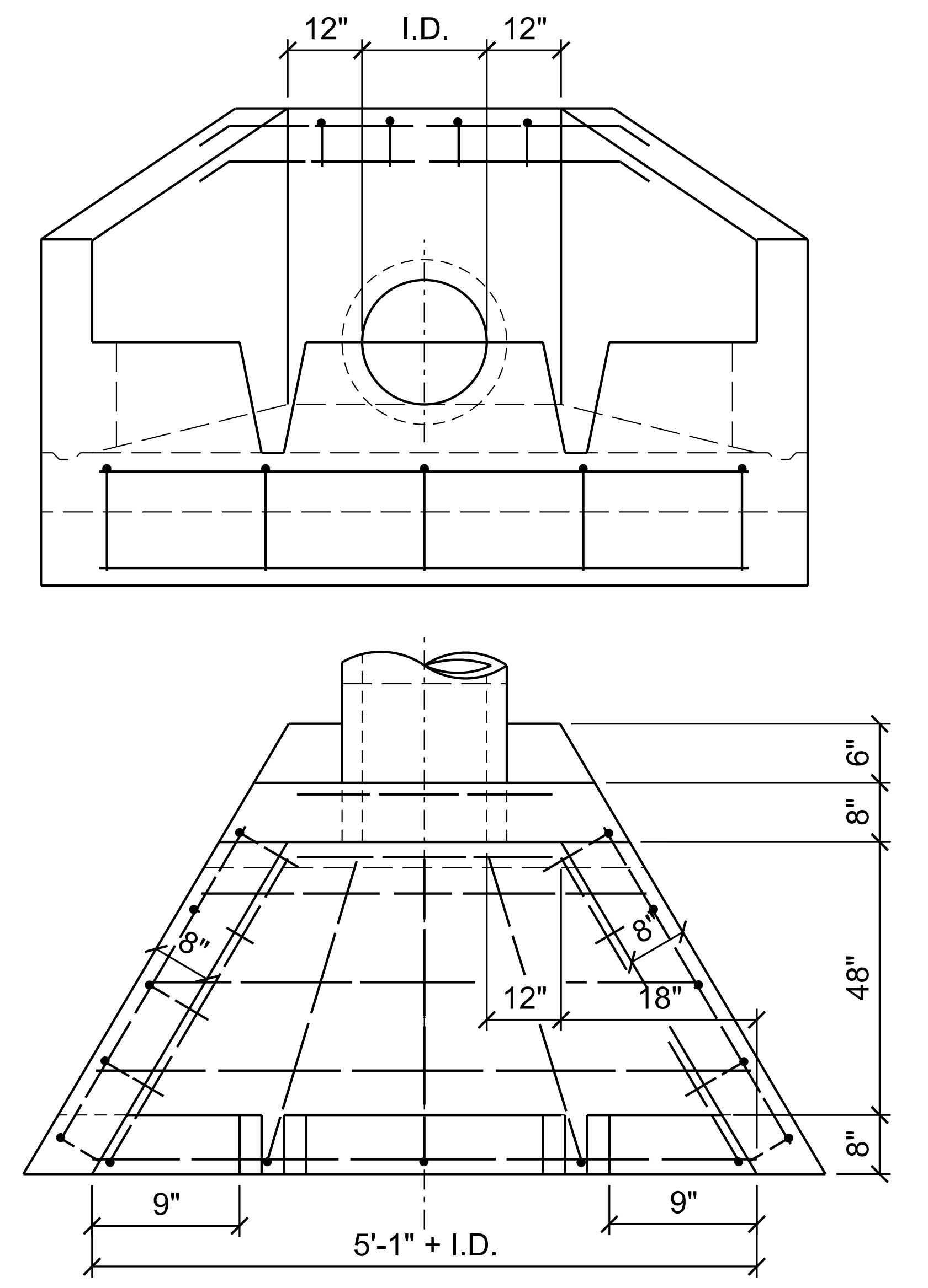
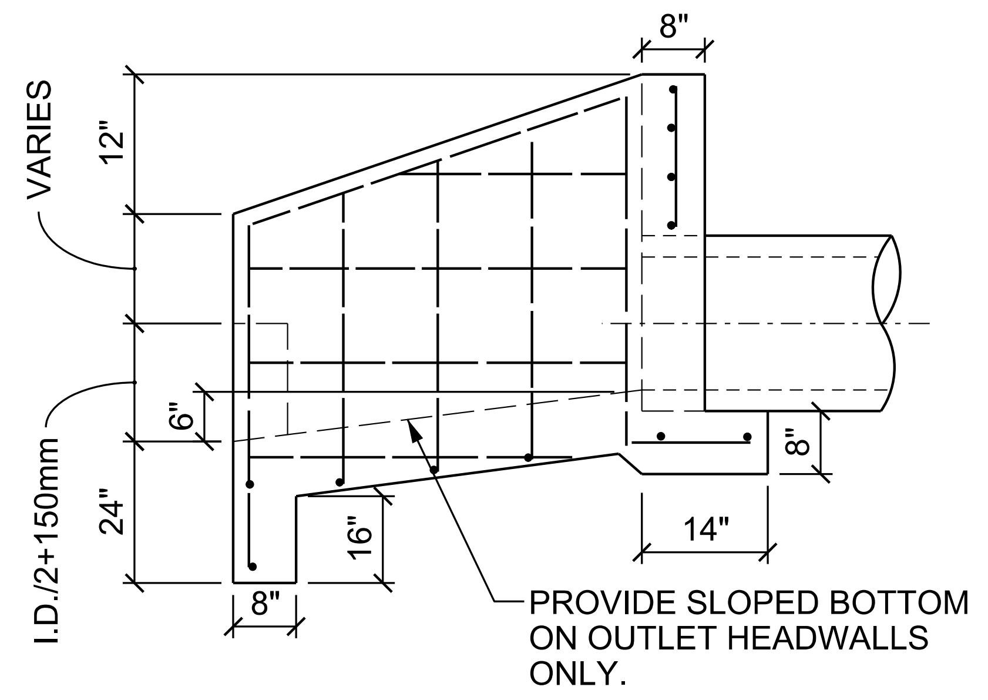




NOTES:

DOWNSTREAM HEADWALL SHOWN WITH ENERGY DISSIPATOR. ENERGY DISSIPATOR NOT USED WITH UPSTREAM HEADWALL.

STEEL REINFORCEMENT TO BE #5@12" O.C. THROUGHOUT.

ALL STEEL SHALL HAVE A 2" MINIMUM CLEARANCE TO THE CONCRETE FACE ON THE BACK FILL SIDE OF THE WALLS.

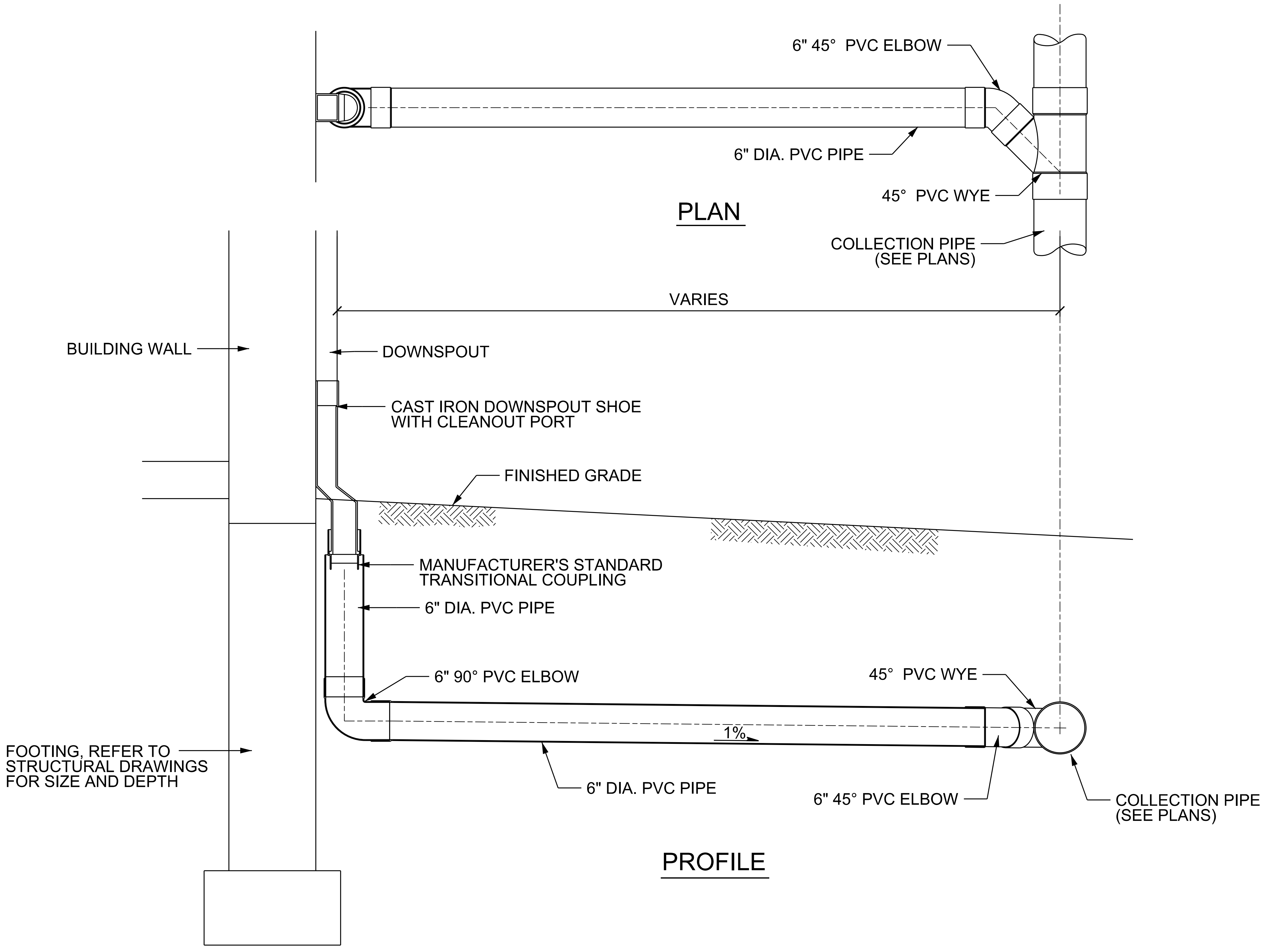
TOP OF WALL SHALL BE MINIMUM 18" ABOVE CROWN OF PIPE.

TOP OF END SILL SHALL BE LEVEL WITH CENTERLINE OF PIPE.

NOTE:

REINFORCING NOT SHOWN FOR CLARITY.
PRECAST SHALL MEET ASTM C-478.
CAST-IN-PLACE SHALL BE #5@12" E.W. MINIMUM.

1
TYP
TYPICAL CONCRETE HEADWALL DETAIL
NOT TO SCALE


6" 45° PVC ELBOW
6" DIA. PVC PIPE
45° PVC WYE
COLLECTION PIPE (SEE PLANS)
PLAN
VARIES
BUILDING WALL
DOWNSPOUT
CAST IRON DOWNSPOUT SHOE WITH CLEANOUT PORT
FINISHED GRADE
MANUFACTURER'S STANDARD TRANSITIONAL COUPLING
6" DIA. PVC PIPE
6" 90° PVC ELBOW
45° PVC WYE
1%
FOOTING, REFER TO STRUCTURAL DRAWINGS FOR SIZE AND DEPTH
6" DIA. PVC PIPE
6" 45° PVC ELBOW
COLLECTION PIPE (SEE PLANS)
PROFILE

2
TYP
ROOF DRAIN DETAIL
NOT TO SCALE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE
FILENAME: ASHE_CG507.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

DRAINAGE DETAILS

SHEET ID
CG507

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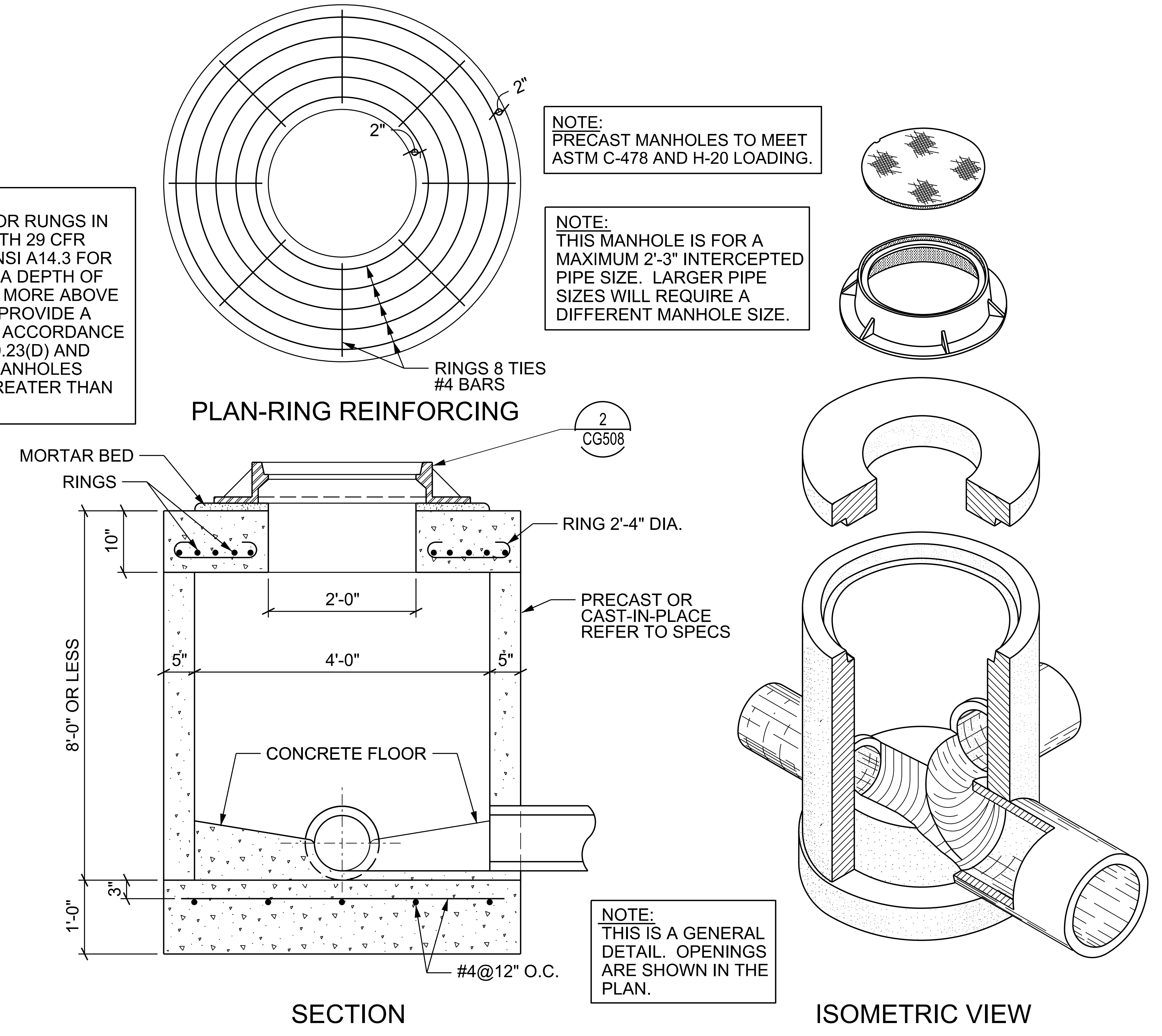
24-FEB-2022
15:04

CERTIFIED FINAL SUBMITTAL

NOTE:
PROVIDE STEPS OR RUNGS IN ACCORDANCE WITH 29 CFR 1910.24(B) AND ANSI A14.3 FOR MANHOLES WITH A DEPTH OF 4 FEET (1.2 M) OR MORE ABOVE A LOWER LEVEL. PROVIDE A FIXED LADDER IN ACCORDANCE WITH 29 CFR 1029.23(D) AND ANSI A14.3 FOR MANHOLES WITH A DEPTH GREATER THAN 20 FT (6.1 M)."

NOTE:
PRECAST MANHOLES TO MEET ASTM C-478 AND H-20 LOADING.

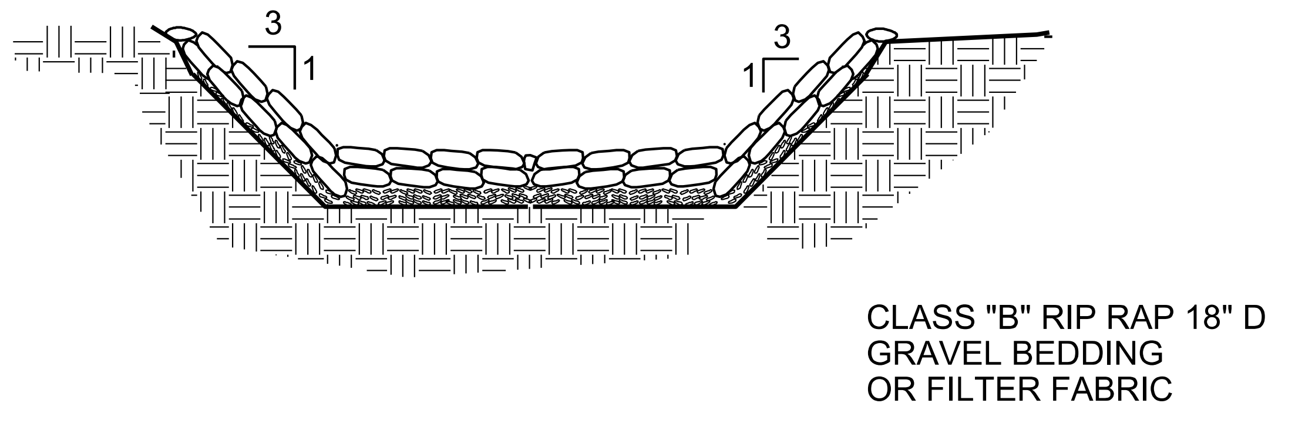
NOTE:
THIS MANHOLE IS FOR A MAXIMUM 2'-3" INTERCEPTED PIPE SIZE. LARGER PIPE SIZES WILL REQUIRE A DIFFERENT MANHOLE SIZE.



NOTE:
THIS IS A GENERAL DETAIL. OPENINGS ARE SHOWN IN THE PLAN.

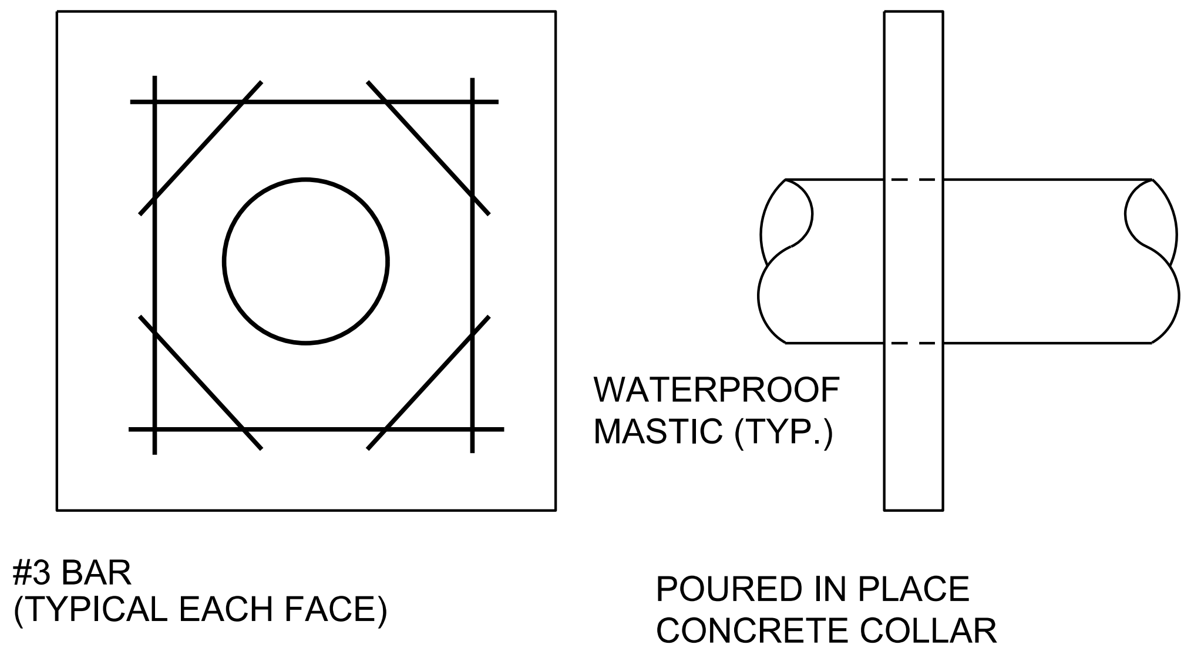
1 CG401 CG402 STORM SEWER MANHOLE DETAIL

NOT TO SCALE



3 CG508 EMERGENCY SPILLWAY DETAIL

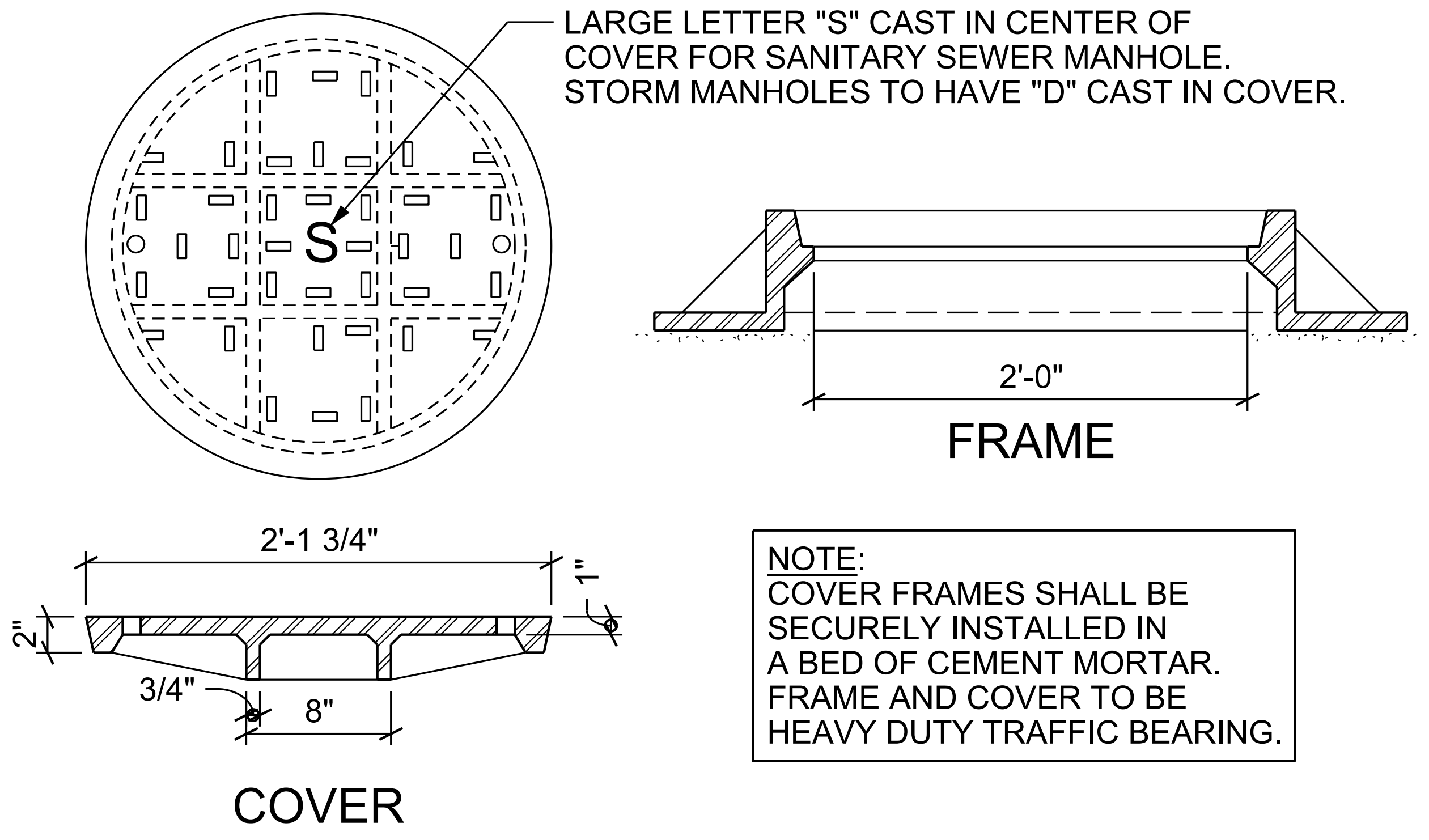
NOT TO SCALE



NOTE:
CONCRETE SHALL BE 3000 PSI @ 28 DAYS
REINFORCING STEEL, ASTM A615, GRADE 60: FY - 60,000 PSI
COLLAR SHOULD BE PLACED AT LEAST TWO FEET FROM PIPE JOINT

4 CG508 ANTI-SEEP COLLAR DETAIL

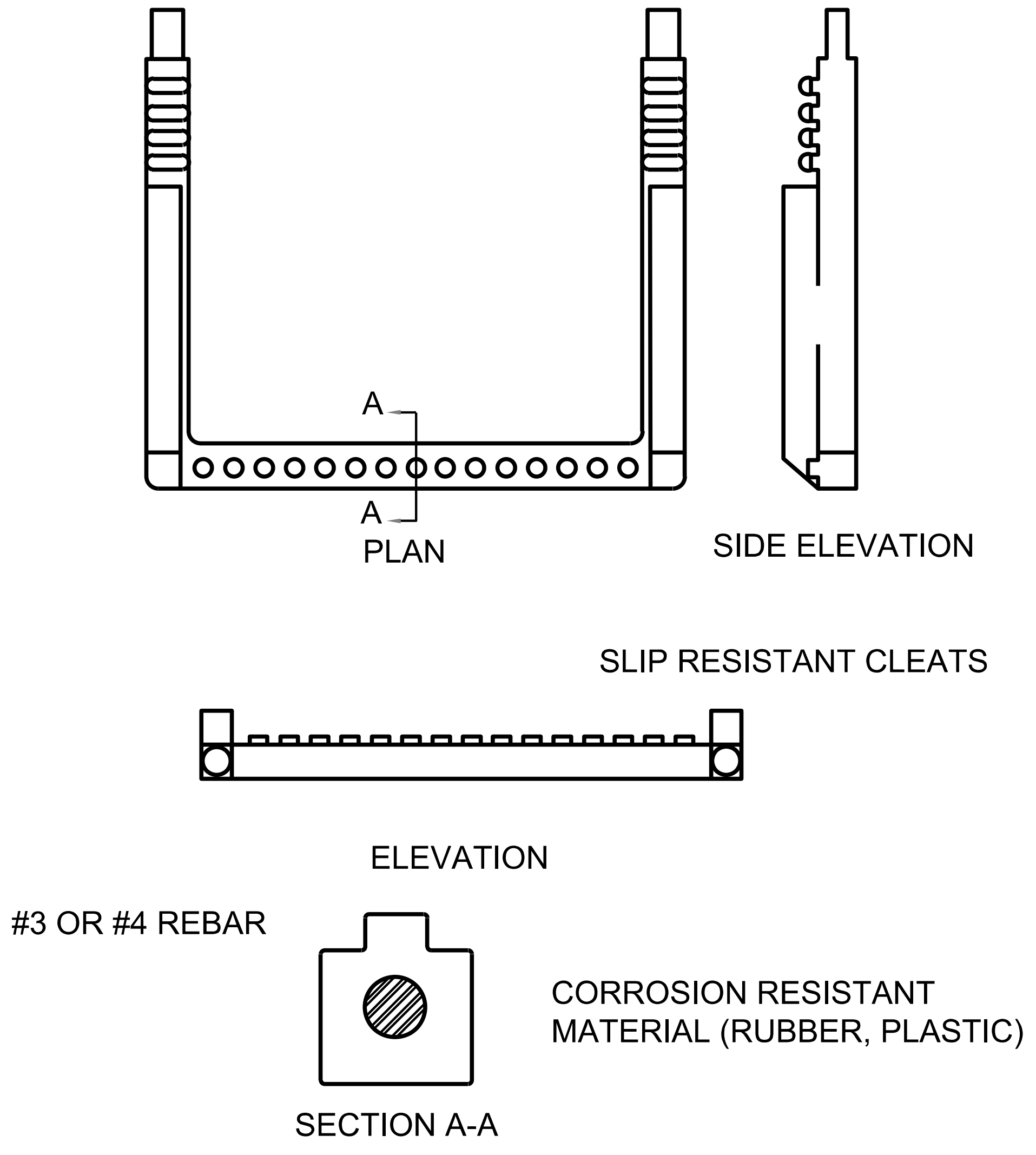
NOT TO SCALE


LARGE LETTER "S" CAST IN CENTER OF
COVER FOR SANITARY SEWER MANHOLE.
STORM MANHOLES TO HAVE "D" CAST IN COVER.
S
2'-0"
FRAME
2'-1 3/4"
1"
2"
3/4"
8"
COVER

NOTE:
COVER FRAMES SHALL BE SECURELY INSTALLED IN A BED OF CEMENT MORTAR. FRAME AND COVER TO BE HEAVY DUTY TRAFFIC BEARING.

2 CG508 MANHOLE COVER AND FRAME DETAIL

NOT TO SCALE



5 CG508 STANDARD SLIP RESISTANT MANHOLE STEP DETAIL

NOT TO SCALE

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
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DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CG508.dgn

U.S. ARMY CORPS OF ENGINEERS
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A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

STORM MANHOLE DETAILS

SHEET ID
CG508

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24-FEB-2022
15:04

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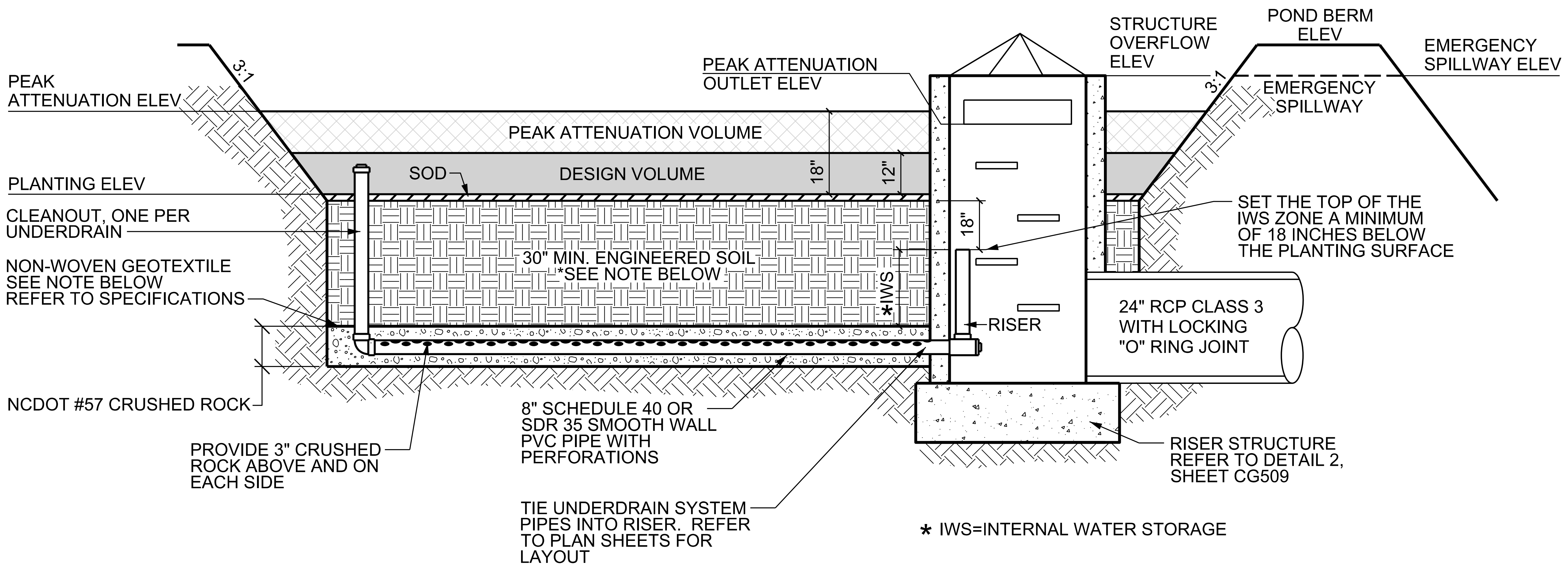
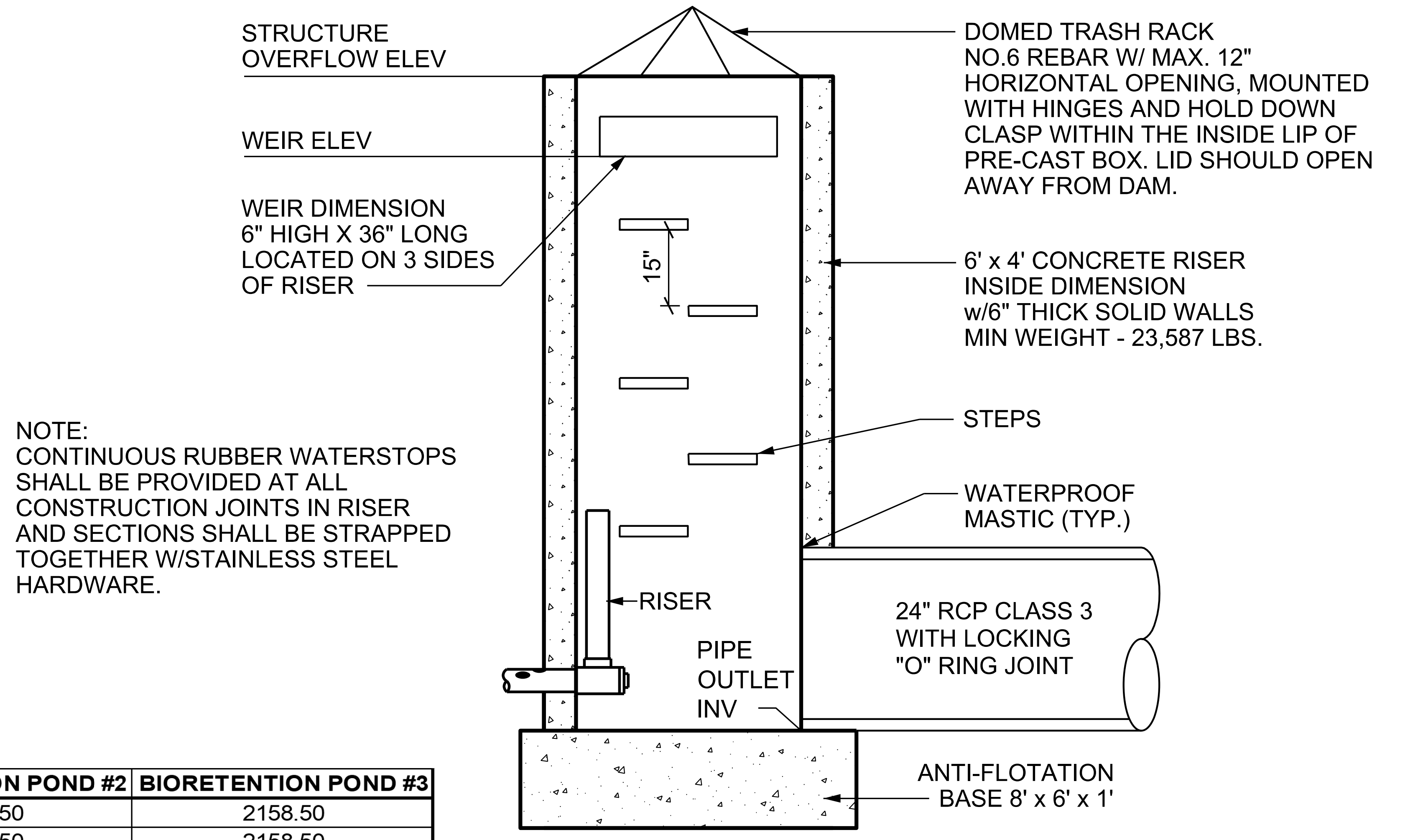
Bioretention Area	Surface Area (sf)	Ponding Depth Provided (in)	Ponding Volume (cf)	Depth of Soil above IWS (in)	Excess Storage Volume in Soil (cf)	EISA 438 Volume Required (cf)	NCDEQ Volume Required (cf)	Emergency Overflow Wier Length (ft)	Head (ft)	Emergency Overflow Flow (cfs)	Exit Channel Length (FT)	100yr Storm (cfs)	Infiltration Rate Ksat	Underdrains and IWS Required	Number of Clean Out Pipes	Height of Riser (IN)	Depth of Planting Media (IN)	Peak Attenuation Depth (IN)	Planting Elevation	Bottom of Planting Media Soil	Bottom Elevation of Cell	SHWT Elevation	Depth to SHWT (FT)
Bioretention Cell 1	4,687	12	6,723	18	1,406	3,704	4,651	20	0.50	8.69	10.00	12.76	0.01 in/hr	YES	4	12	30	18	2183.00	2180.5	2179.33	2173.50	5.83
Bioretention Cell 2	7,649	12	8,333	18	2,295	8,358	6,431	20	0.50	1.13	10.00	1.13	0.02 in/hr	YES	8	12	30	18	2178.00	2175.5	2174.33	2164.00	10.33
Bioretention Cell 3	11,570	12	18,910	18	3,884	13,499	9,876	20	0.50	9.71	10.00	9.71	0.01 in/hr	YES	12	12	30	18	2157.00	2154.5	2153.33	2150.50	3.83


PEAK ATTENUATION ELEV
3:1
PLANTING ELEV
CLEANOUT, ONE PER UNDERDRAIN
NON-WOVEN GEOTEXTILE SEE NOTE BELOW REFER TO SPECIFICATIONS
NCDOT #57 CRUSHED ROCK
PROVIDE 3" CRUSHED ROCK ABOVE AND ON EACH SIDE
PEAK ATTENUATION VOLUME
SOD
DESIGN VOLUME
30" MIN. ENGINEERED SOIL *SEE NOTE BELOW
18"
12"
18"
*IWS
RISER
8" SCHEDULE 40 OR SDR 35 SMOOTH WALL PVC PIPE WITH PERFORATIONS
TIE UNDERDRAIN SYSTEM PIPES INTO RISER. REFER TO PLAN SHEETS FOR LAYOUT
PEAK ATTENUATION OUTLET ELEV
STRUCTURE OVERFLOW ELEV
POND BERM ELEV
3:1
EMERGENCY SPILLWAY ELEV
EMERGENCY SPILLWAY
SET THE TOP OF THE IWS ZONE A MINIMUM OF 18 INCHES BELOW THE PLANTING SURFACE
24" RCP CLASS 3 WITH LOCKING "O" RING JOINT
RISER STRUCTURE REFER TO DETAIL 2, SHEET CG509

* IWS=INTERNAL WATER STORAGE


STRUCTURE OVERFLOW ELEV
WEIR ELEV
WEIR DIMENSION 6" HIGH X 36" LONG LOCATED ON 3 SIDES OF RISER
15"
NOTE: CONTINUOUS RUBBER WATERSTOPS SHALL BE PROVIDED AT ALL CONSTRUCTION JOINTS IN RISER AND SECTIONS SHALL BE STRAPPED TOGETHER W/STAINLESS STEEL HARDWARE.
RISER
PIPE OUTLET INV
DOMED TRASH RACK NO.6 REBAR W/ MAX. 12" HORIZONTAL OPENING, MOUNTED WITH HINGES AND HOLD DOWN CLASP WITHIN THE INSIDE LIP OF PRE-CAST BOX. LID SHOULD OPEN AWAY FROM DAM.
6' x 4' CONCRETE RISER INSIDE DIMENSION w/6" THICK SOLID WALLS MIN WEIGHT - 23,587 LBS.
STEPS
WATERPROOF MASTIC (TYP.)
24" RCP CLASS 3 WITH LOCKING "O" RING JOINT
ANTI-FLOTATION BASE 8' x 6' x 1'

*BIORETENTION “ENGINEERED SOIL” LAYER SHALL BE MINIMUM 30” DEEP. THE SOIL MIX SHOULD BE UNIFORM AND FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR MATERIAL GREATER THAN 2 INCHES. IT SHOULD BE A HOMOGENOUS SOIL MIX OF 75 TO 85 PERCENT BY VOLUME MEDIUM TO COARSE WASHED SAND (USDA SOIL TEXTURAL CLASSIFICATION), 8 TO 10 PERCENT FINES (SILT AND CLAY), AND 5 TO 10 PERCENT ORGANIC MATTER (SUCH AS PINE BARK FINES). HIGHER (10 PERCENT) FINES CONTENT SHOULD BE RESERVED FOR AREAS WHERE TN IS THE TARGET POLLUTANT. IN AREAS WHERE PHOSPHORUS IS THE TARGET POLLUTANT, LOWER (8 PERCENT) FINES SHOULD BE USED. ADDITIONALLY, THE PHOSPHORUS CONTENT OF THE SOIL MIX SHOULD BE LOW. SOIL MEDIA SHALL BE SENT TO NC DEPARTMENT OF AGRICULTURE [NCDA] LABS TO BE ANALYZED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THE SOIL ANALYZED. THE P INDEX FOR BIORETENTION SOIL MEDIA SHOULD ALWAYS RANGE BETWEEN 10 AND 30, REGARDLESS OF THE TARGET POLLUTANT (HARDY ET. AL., 2003 AND HUNT ET. AL., 2006). THE P INDEX IS AN EXTREMELY IMPORTANT DESIGN ELEMENT. CELLS THAT ARE CONSTRUCTED OF HIGH P-INDEX SOILS CAN EXPORT PHOSPHORUS.

NOTE: CUT SOIL FROM THE PROJECT SITE OR SOIL FROM THE BORROW PIT MAY NOT BE USED FOR THE ENGINEERED SOIL FOR THE BIORENTENTION BASINS

THE MEDIA SHOULD BE TESTED TO DETERMINE AN ACTUAL DRAINAGE RATE AFTER PLACEMENT. THE PERMEABILITY SHOULD FALL BETWEEN 1 AND 6 INCHES PER HOUR, WITH 1-2 INCHES PER HOUR BEING PREFERRED. AS A RULE OF THUMB, USING THE ABOVE-SPECIFIED MEDIA, THE INFILTRATION RATES SHOULD BE APPROXIMATELY 2 IN/HR AND 1 IN/HR FOR 8% AND 10% FINES, RESPECTIVELY, DEPENDING ON THE TARGET POLLUTANT. AN ESTIMATED DRAINAGE RATE FOR PERCENT FINES BETWEEN 8 AND 10 CAN BE APPROXIMATED DURING DESIGN BY LINEAR INTERPOLATION. IF TSS OR PATHOGENS IS THE TARGET POLLUTANT, THE HIGHER PERMEABILITY CAN BE USED BECAUSE THESE TWO POLLUTANTS ARE REMOVED ON THE SURFACE OF THE BIORETENTION CELL RATHER THAN WITHIN THE CELL.

REFER TO PLANS FOR FINISH GRADES.

NOTE: ENGINEERED SOIL SHALL NOT BE COMPACTED DURING INSTALLATION.

	BIORETENTION POND #1	BIORETENTION POND #2	BIORETENTION POND #3
PEAK ATTENUATION ELEV.	2184.50	2179.50	2158.50
PEAK ATTENUATION OUTLET ELEV.	2184.50	2179.50	2158.50
STRUCTURE OVERFLOW ELEV	2185.50	2181.00	2159.50
POND BERM	2186.00	2182.00	2160.00
EMERGENCY SPILLWAY	2185.50	2182.00	2159.50
WEIR ELEVATION	2184.50	2179.35	2158.50
PLANTING ELEVATION	2183.00	2178.00	2157.00
PIPE OUTLET INV.	2179.63	2173.74	2152.00
Q-100 STORM ELEV.	SPILLWAY/OVERFLOW	2179.73	SPILLWAY/OVERFLOW
Q-25 STORM ELEV.	2185.32	2179.51	2159.11
Q-10 STORM ELEV.	2184.95	2179.06	2158.81
Q-5 STORM ELEV.	2184.70	2178.78	2158.64
Q-2 STORM ELEV.	2184.47	2178.47	2158.30
Q-1 STORM ELEV.	2183.80	2178.28	2157.93

RISER STRUCTURE

2 TYP **DETAIL** NOT TO SCALE

LOW IMPACT BMP
BIORETENTION BASIN

1 TYP **DETAIL** NOT TO SCALE

NON-WOVEN GEOTEXTILE NOTES:

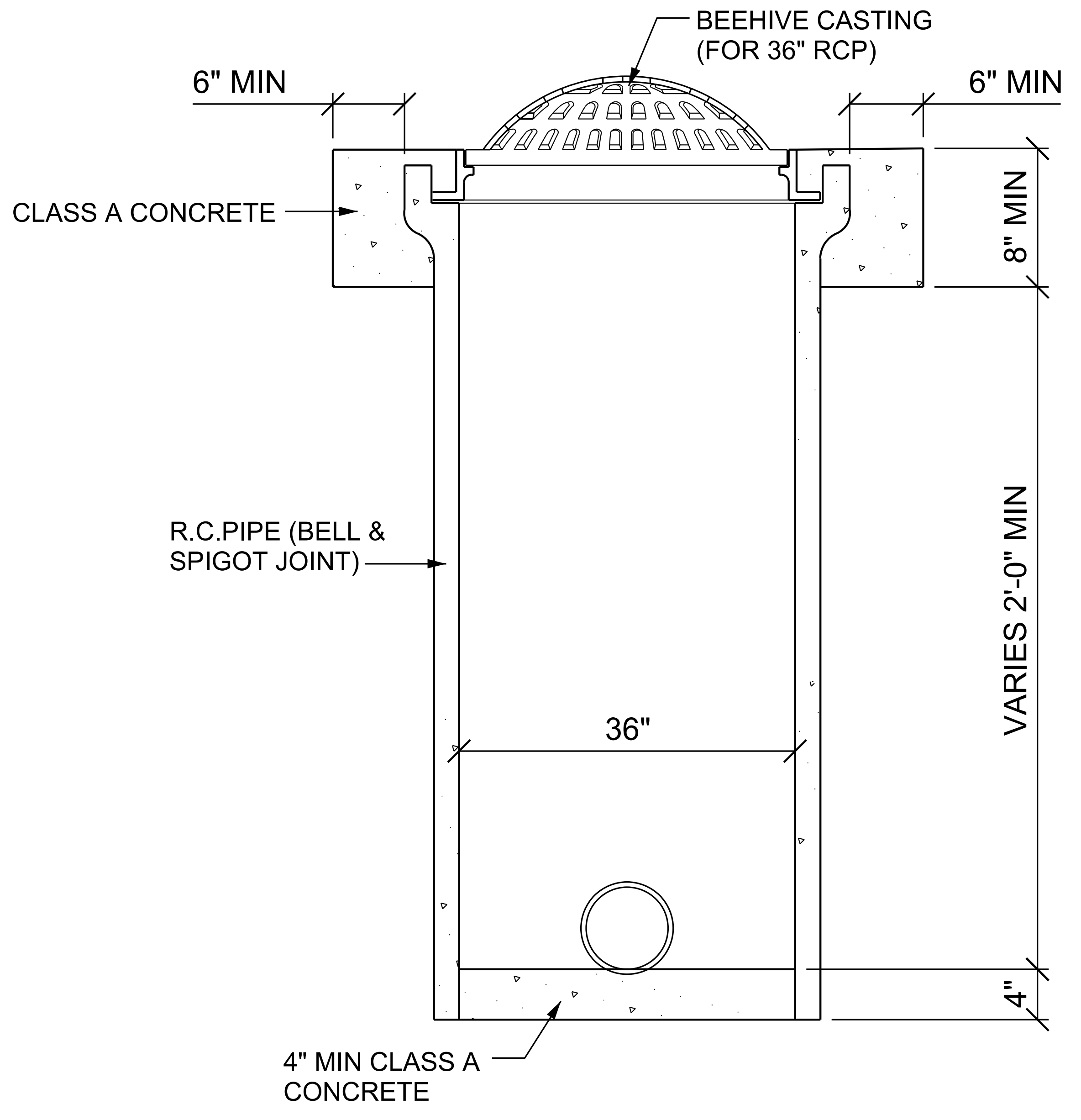
THE GEOTEXTILE FABRIC SHALL BE INSTALLED AS A SEPARATION BARRIER BETWEEN THE FOLLOWING:

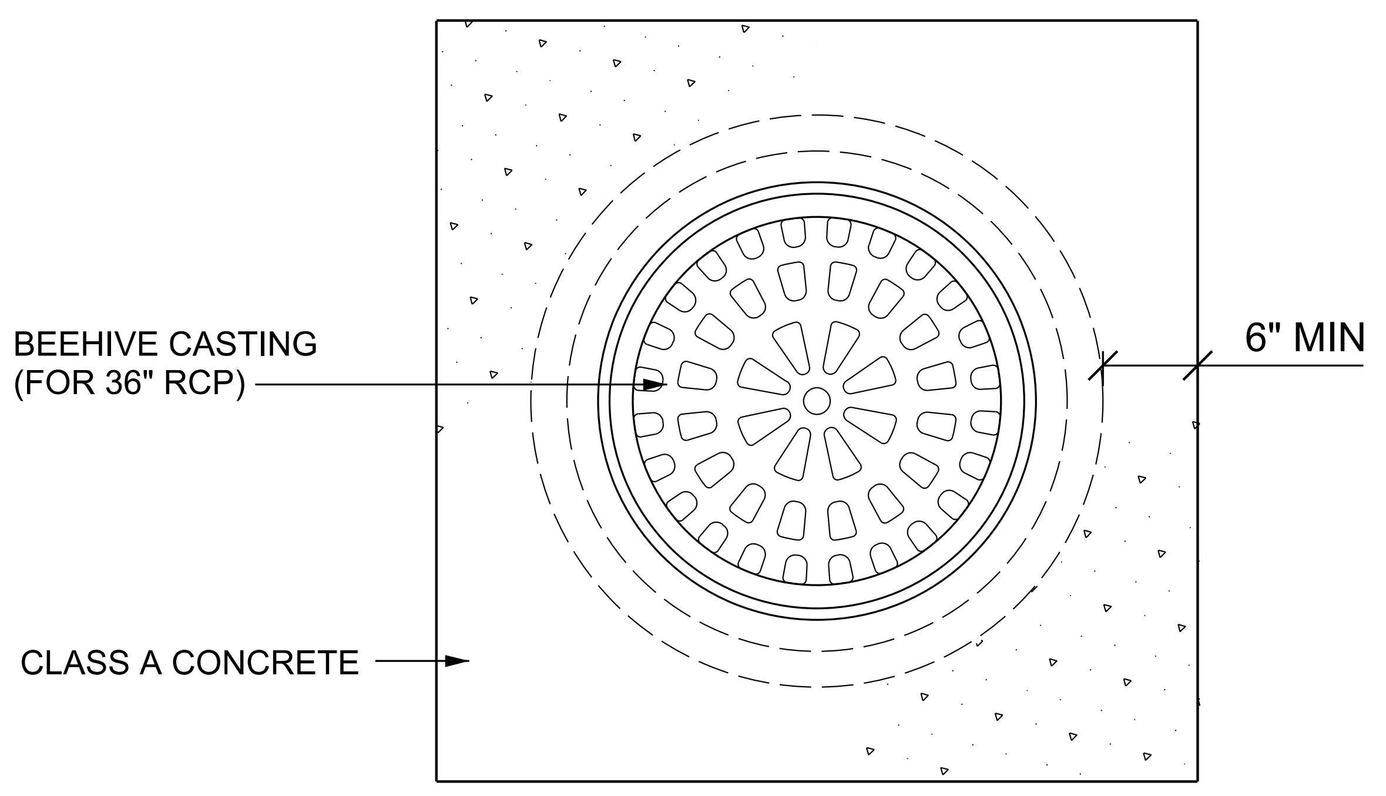
THE ENGINEERED SOIL AND THE EXISTING (IN-SITU) SOIL ALONG THE SIDE WALLS.

BETWEEN THE ENGINEERED SOIL AND #57 CRUSHED ROCK AT THE BOTTOM OF THE BASIN

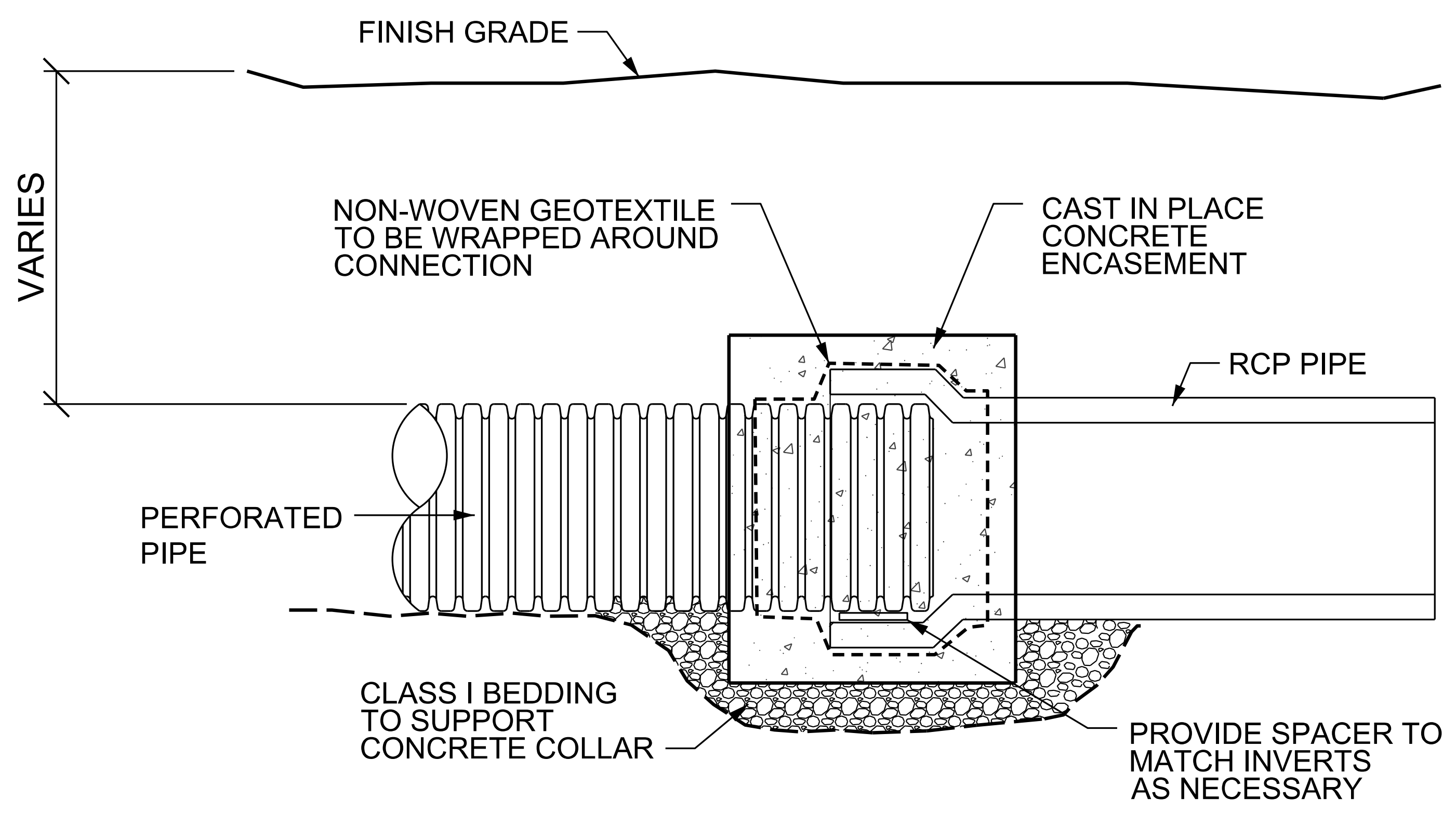
BETWEEN THE #57 CRUSHED ROCK AND THE EXISTING (IN-SITU) SOIL.

REFER TO SPECIFICATION FOR NON-WOVEN GEOTEXTILE FABRIC PROPERTIES AND INSTALLATION.





PLAN


FINISH GRADE
VARIES
NON-WOVEN GEOTEXTILE TO BE WRAPPED AROUND CONNECTION
CAST IN PLACE CONCRETE ENCASEMENT
RCP PIPE
PERFORATED PIPE
CLASS I BEDDING TO SUPPORT CONCRETE COLLAR
PROVIDE SPACER TO MATCH INVERTS AS NECESSARY

LOW IMPACT BMP
PIPE CATCH BASIN WITH BEEHIVE GRATE

PERFORATED PIPE TO CONCRETE PIPE CONNECTION

3 TYP **DETAIL** NOT TO SCALE

4 TYP **DETAIL** NOT TO SCALE

US Army Corps of Engineers®

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DESIGNED BY: S.CURRY
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SIZE: ANSI D
FILENAME: ASHE_CG509.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
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BIO RETENTION DETAILS

SHEET ID
CG509

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STORMWATER DRAINAGE SCHEDULE

FROM STRUCTURE	NORTHING	EASTING	GRATE	INVERT	TO STRUCTURE	NORTHING	EASTING	GRATE	INVERT	LENGTH	SIZE (INCHES)	PIPE MATERIAL	PLAN SHEET	NOTES
CB-1	578544.704	986776.972	2193.50	2190.75	SDMH-5	578459.195	986751.018	2194.65	2189.80	89.36	15	RCP	CG403	REFER TO PROFILE "A", SHEET CG201
CB-2	578404.107	986772.451	2193.50	2189.27	CB-3	578326.953	986875.690	2193.60	2187.98	128.88	15	RCP	CG405	REFER TO PROFILE "A", SHEET CG201
CB-3	578326.953	986875.690	2193.60	2187.98	CB-4	578420.889	986958.896	2193.60	2186.73	125.48	18	RCP	CG405	REFER TO PROFILE "A", SHEET CG201
CB-4	578420.889	986958.896	2193.60	2186.73	CB-5	578519.040	987032.248	2192.60	2185.50	122.53	18	RCP	CG405	REFER TO PROFILE "A", SHEET CG201
CB-5	578519.040	987032.248	2192.60	2185.50	HW-1	578531.795	987164.505	-	2184.17	132.87	18	RCP	CG405	REFER TO PROFILE "A", SHEET CG201
CB-6	578667.282	986907.546	2191.85	2186.81	SDMH-1	578647.635	987037.712	2191.32	2184.84	131.64	15	RCP	CG403/CG405	REFER TO PROFILE "C", SHEET CG201
CB-7	578795.900	986673.560	2189.80	2184.55	CB-8	578836.945	986618.639	2189.80	2183.52	68.56	15	RCP	CG403	REFER TO PROFILE "D", SHEET CG201
CB-8	578836.945	986618.639	2189.80	2183.52	CB-9	578944.499	986474.723	2184.85	2180.83	179.66	15	RCP	CG403/CG401	REFER TO PROFILE "D", SHEET CG201
CB-9	578944.499	986474.723	2184.85	2180.83	CB-14	579027.004	986536.382	2184.85	2175.37	103.00	18	RCP	CG401	REFER TO PROFILE "D", SHEET CG201
CB-10	578962.625	986921.980	2186.75	2182.50	CB-11	578998.543	986873.919	2186.75	2181.60	60.00	15	RCP	CG404	REFER TO PROFILE "E", SHEET CG202
CB-11	578998.543	986873.919	2186.75	2181.60	CB-12	579034.462	986825.858	2186.75	2180.70	60.00	15	RCP	CG404	REFER TO PROFILE "E", SHEET CG202
CB-12	579034.462	986825.858	2186.75	2180.70	SDMH-3	579037.125	986696.543	2188.55	2178.76	129.34	18	RCP	CG404/CG402	REFER TO PROFILE "E", SHEET CG202
CB-13	579110.299	986598.631	2184.85	2176.93	CB-14	579027.004	986536.382	2184.85	2172.92	103.98	24	RCP	CG401/CG402	REFER TO PROFILE "E", SHEET CG202
CB-14	579027.004	986536.382	2184.85	2172.92	SDMH-2	579041.145	986517.461	2185.85	2172.00	23.62	30	RCP	CG401	REFER TO PROFILE "E", SHEET CG202
CB-15	578654.562	987272.919	2178.40	2175.00	SDMH-4	578912.029	987102.526	2180.75	2168.83	308.74	24	RCP	CG406/CG404	REFER TO PROFILE "H", SHEET CG203
CB-16	578848.698	986915.312	2188.50	2183.07	CB-10	578962.625	986921.980	2186.75	2182.50	114.12	15	RCP	CG404	REFER TO PROFILE "E", SHEET CG202
CI-1	578719.283	987091.258	2189.14	2182.51	HW-3	578851.276	987189.901	-	2178.20	164.78	18	RCP	CG406	REFER TO PROFILE "C", SHEET CG201
CI-2	578727.264	987080.577	2189.14	2182.77	CI-1	578719.283	987091.258	2189.14	2182.51	13.33	15	RCP	CG406	REFER TO PROFILE "B", SHEET CG201
GI-1	578530.155	987190.428	2184.50	2180.00	RS-1	578590.493	987234.973	2185.50	2179.63	75.00	15	RCP	CG405/CG406	REFER TO PROFILE "H", SHEET CG203
GI-3	578830.532	987256.803	2179.50	2175.00	GI-4	578875.429	987196.726	2179.50	2174.62	75.00	15	RCP	CG406	REFER TO PROFILE "J", SHEET CG204
GI-4	578875.429	987196.726	2179.50	2174.62	RS-2	578920.327	987136.650	2181.00	2174.25	75.00	15	RCP	CG406/CG404	REFER TO PROFILE "J", SHEET CG204
GI-6	579150.173	986433.158	2158.50	2154.00	GI-7	579212.785	986470.603	2158.50	2153.64	72.95	15	RCP	CG402	REFER TO PROFILE "K", SHEET CG204
GI-7	579212.785	986470.603	2158.50	2153.64	RS-3	579275.396	986508.048	2159.50	2153.28	72.95	15	RCP	CG402	REFER TO PROFILE "K", SHEET CG204
HW-7	578941.622	986389.468	-	2175.95	SDMH-6	579244.765	986562.719	2160.60	2156.50	349.16	18	RCP	CG401	REFER TO PROFILE "I", SHEET CG204
RS-1	578590.493	987234.973	2185.50	2179.63	CB-15	578654.562	987272.919	2178.40	2175.00	74.46	15	RCP	CG406	REFER TO PROFILE "H", SHEET CG203 REFER TO DETAIL 2, SHEET CD509
RS-2	578920.327	987136.650	2181.00	2173.74	SDMH-4	578912.029	987102.526	2180.75	2171.00	35.12	18	RCP	CG404	REFER TO PROFILE "J", SHEET CG204 REFER TO DETAIL 2, SHEET CD509
RS-3	579275.396	986508.048	2159.50	2152.00	HW-6	579385.174	986435.728	-	2140.00	131.46	24	RCP	CG402	REFER TO PROFILE "I", SHEET CG204 REFER TO DETAIL 2, SHEET CD509
SDMH-1	578647.635	987037.712	2191.32	2184.84	CI-1	578719.283	987091.258	2189.14	2183.50	89.45	15	RCP	CG405/CG406	REFER TO PROFILE "C", SHEET CG201
SDMH-2	579041.145	986517.461	2185.85	2172.00	HW-5	579130.899	986456.409	-	2157.00	108.55	30	RCP	CG401/CG402	REFER TO PROFILE "E", SHEET CG202
SDMH-3	579037.125	986696.543	2188.55	2178.76	CB-13	579110.299	986598.631	2184.85	2176.93	122.23	18	RCP	CG402	REFER TO PROFILE "E", SHEET CG202
SDMH-4	578912.029	987102.526	2180.75	2168.83	HW-2	579041.241	987071.104	-	2164.5	132.98	30	RCP	CG404	REFER TO PROFILE "H", SHEET CG203
SDMH-5	578459.195	986751.018	2194.65	2189.80	CB-2	578404.107	986772.451	2193.50	2189.27	59.11	15	RCP	CG403/CG405	REFER TO PROFILE "A", SHEET CG201
SDMH-6	579244.765	986562.719	2160.60	2156.00	RS-3	579275.396	986508.048	2159.50	2152.00	62.67	18	RCP	CG401/CG402	REFER TO PROFILE "I", SHEET CG204
SDMH-7	578537.405	986801.017	2195.15	2191.00	CB-1	578544.704	986776.972	2193.50	2190.75	25.13	15	RCP	CG403	REFER TO PROFILE "A", SHEET CG201
SDMH-8	578431.153	986938.856	2195.10	2190.00	CB-4	578420.889	986958.896	2193.60	2189.32	22.52	15	RCP	CG405	
SDMH-9	578532.305	986997.812	2195.10	2190.00	CB-5	578519.040	987032.248	2192.60	2189.89	36.90	15	RCP	CG405	

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CG601.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

DRAINAGE SCHEDULE

SHEET ID
CG601

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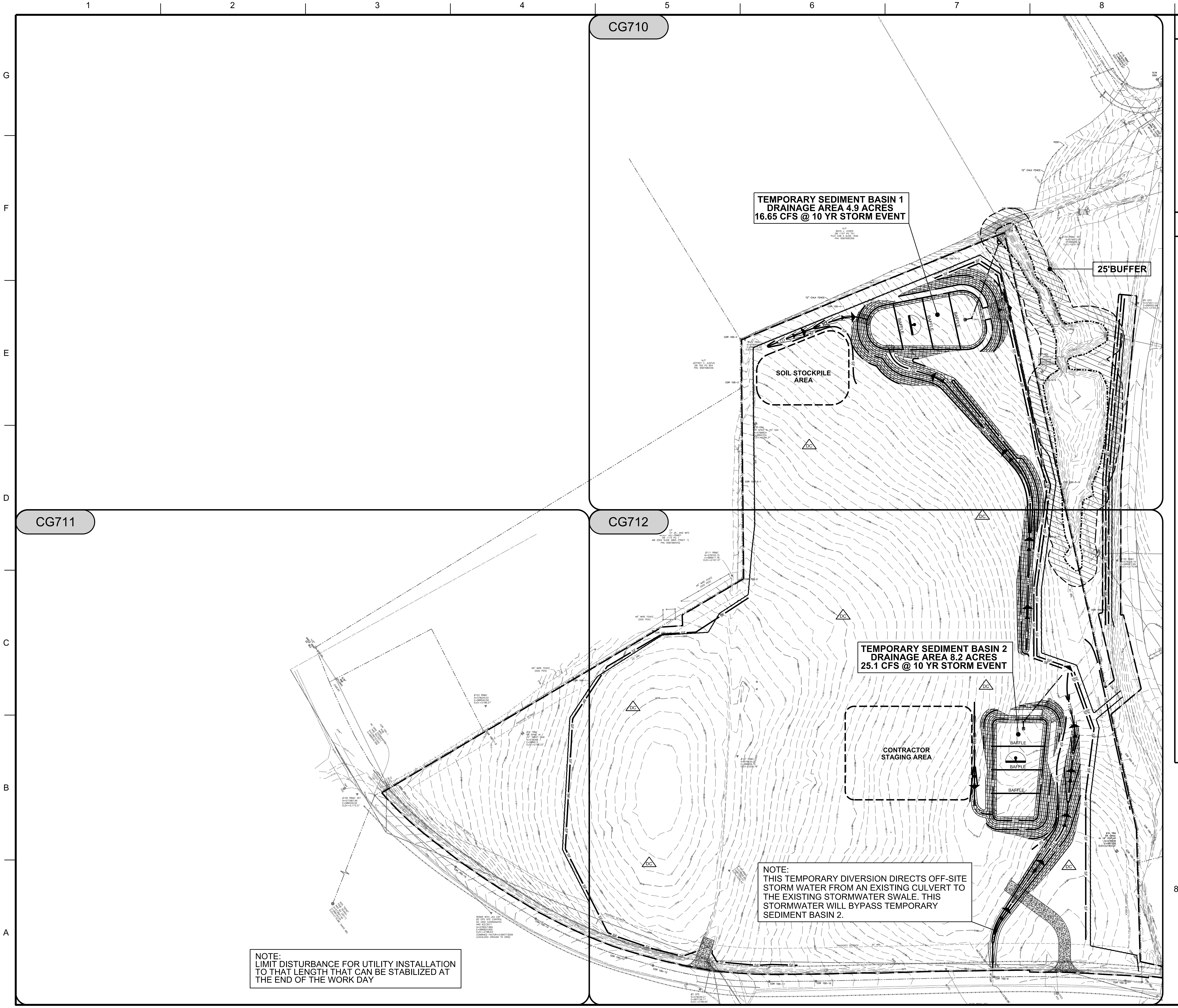

NOTE:
THIS TEMPORARY DIVERSION DIRECTS OFF-SITE STORM WATER FROM AN EXISTING CULVERT TO THE EXISTING STORMWATER SWALE. THIS STORMWATER WILL BYPASS TEMPORARY SEDIMENT BASIN 2.

NOTE:
LIMIT DISTURBANCE FOR UTILITY INSTALLATION TO THAT LENGTH THAT CAN BE STABILIZED AT THE END OF THE WORK DAY

GENERAL NOTES

1. REFER TO SHEET C-001 FOR GENERAL NOTES.
2. DISTURBED AREA SHALL BE GRADED TO MATCH EXISTING SLOPES AND GRASSED. SEE THE EROSION CONTROL PLANS FOR ADDITIONAL GRADING REQUIREMENTS.
3. **PROVIDE GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE.**
4. ALL TEMPORARY DIVERSION CHANNELS AND PERMANENT CHANNELS SHALL BE LINED AS PER THE CHART ON SHEET CG809 IMMEDIATELY UPON CONSTRUCTION.
5. ALL BORROW OR WASTE MATERIAL SHALL COME FROM OR GO TO A PERMITTED SITE AND OR FACILITY,

EROSION CONTROL LEGEND

—••—	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀—	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
DC	DUST CONTROL
▨	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
◌	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
TS	TEMPORARY SEEDING
◓	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
RR ▨	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
☐	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
RECP	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
GL1	PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.
▩	GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE
◠	ROCK PIPE INLET PROTECTION. REFER TO DETAIL 2, SHEET CG811.

80' 40' 0 80' 160' 240'

GRAPHIC SCALE: 1"=80'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CG701.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

OVERALL INITIAL PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG701

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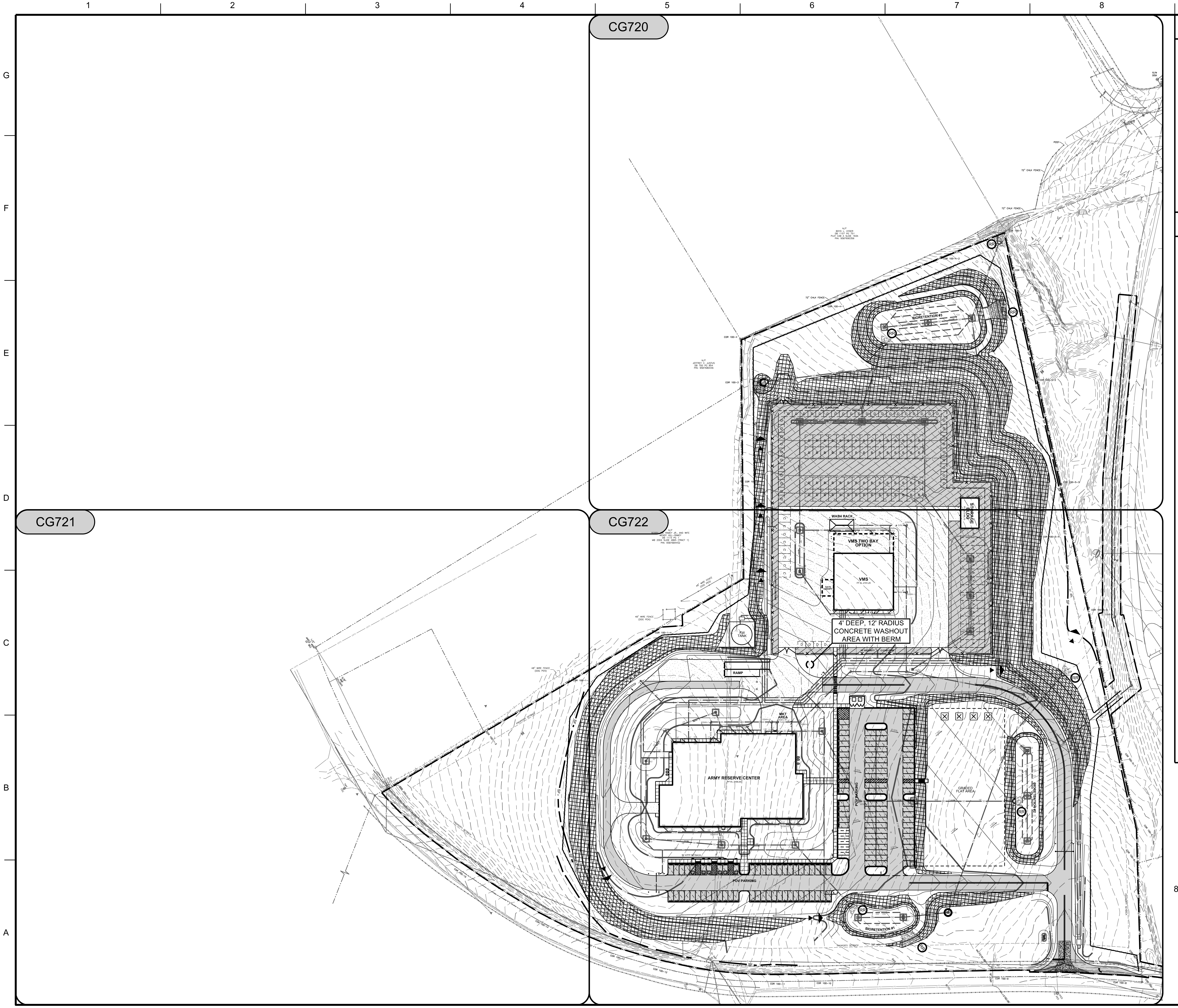

GENERAL NOTES

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2. DISTURBED AREA SHALL BE GRADED TO MATCH EXISTING SLOPES AND GRASSED. SEE THE EROSION CONTROL PLANS FOR ADDITIONAL GRADING REQUIREMENTS.
3. BIO-RETENTION AREA IS NOT TO BE EXCAVATED OR INSTALLED UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN PERMANENTLY STABILIZED.
4. ALL BORROW OR WASTE MATERIAL SHALL COME FROM OR GO TO A PERMITTED SITE AND OR FACILITY,

EROSION CONTROL LEGEND

—••—	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀—	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
DC	DUST CONTROL
▨	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
◌	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
TS	TEMPORARY SEEDING
◓	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
RR ▨	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
☐	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
RECP	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
GL1	PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.
▩	GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE
◠	ROCK PIPE INLET PROTECTION. REFER TO DETAIL 2, SHEET CG811.

80' 40' 0 80' 160' 240'
GRAPHIC SCALE: 1"=80'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
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CATEGORY CODE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CG702.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

OVERALL INTERMEDIATE PHASE SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG702

CERTIFIED FINAL SUBMITTAL

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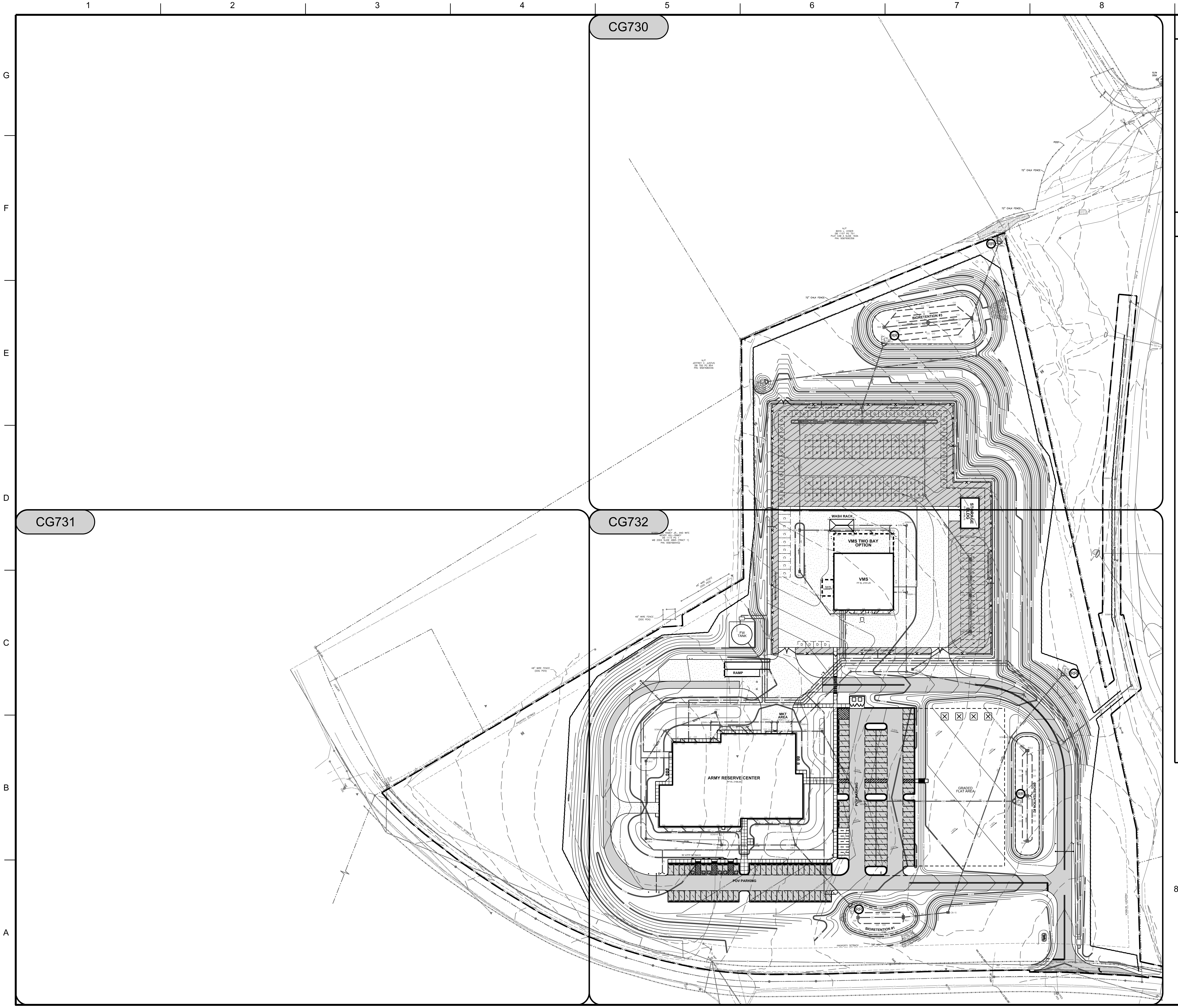

GENERAL NOTES

1. REFER TO SHEET C-001 FOR GENERAL NOTES.
2. DISTURBED AREA SHALL BE GRADED TO MATCH EXISTING SLOPES AND GRASSED. SEE THE EROSION CONTROL PLANS FOR ADDITIONAL GRADING REQUIREMENTS.
3. BIO-RETENTION AREA IS NOT TO BE EXCAVATED OR INSTALLED UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN PERMANENTLY STABILIZED.
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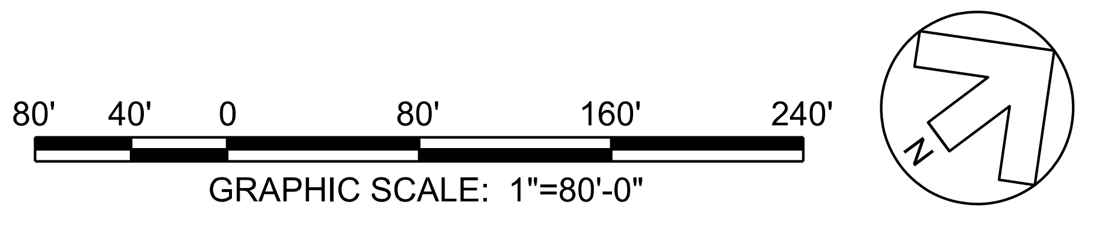
EROSION CONTROL LEGEND

—●●—	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀—	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
DC	DUST CONTROL
▨	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
◌	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
TS	TEMPORARY SEEDING
◒	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
RR ▨	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
☐	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
RECP	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
GL1	PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.
▩	GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE
⌒	ROCK PIPE INLET PROTECTION. REFER TO DETAIL 2, SHEET CG811.



GRAPHIC SCALE: 1"=80'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.
VERTICAL DATUM: NAVD88.
UNITS OF MEASURE: U.S. SURVEY FEET.
COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

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DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CG703.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

OVERALL FINAL PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG703

CERTIFIED FINAL SUBMITTAL

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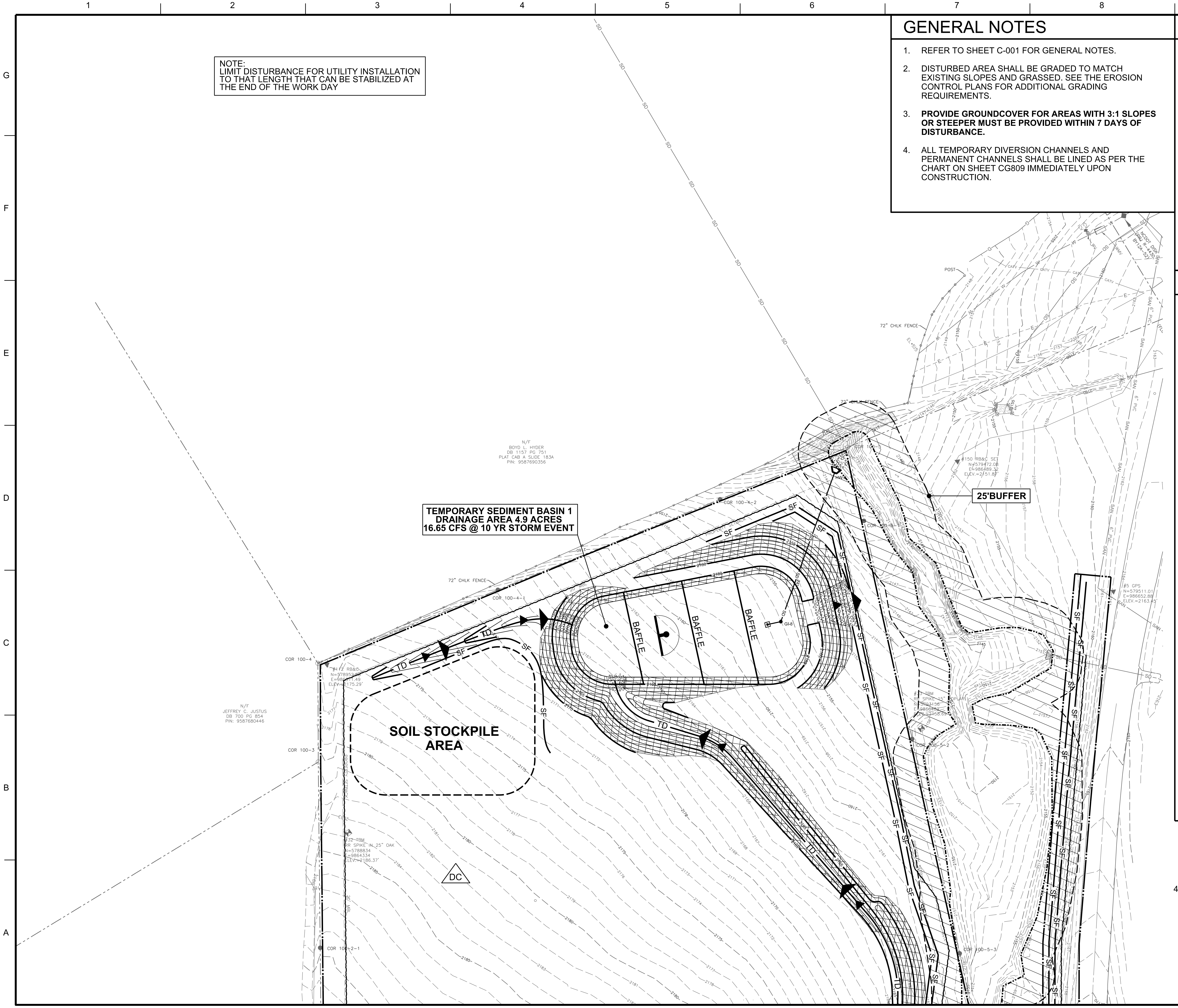
NOTE:
LIMIT DISTURBANCE FOR UTILITY INSTALLATION TO THAT LENGTH THAT CAN BE STABILIZED AT THE END OF THE WORK DAY



GENERAL NOTES

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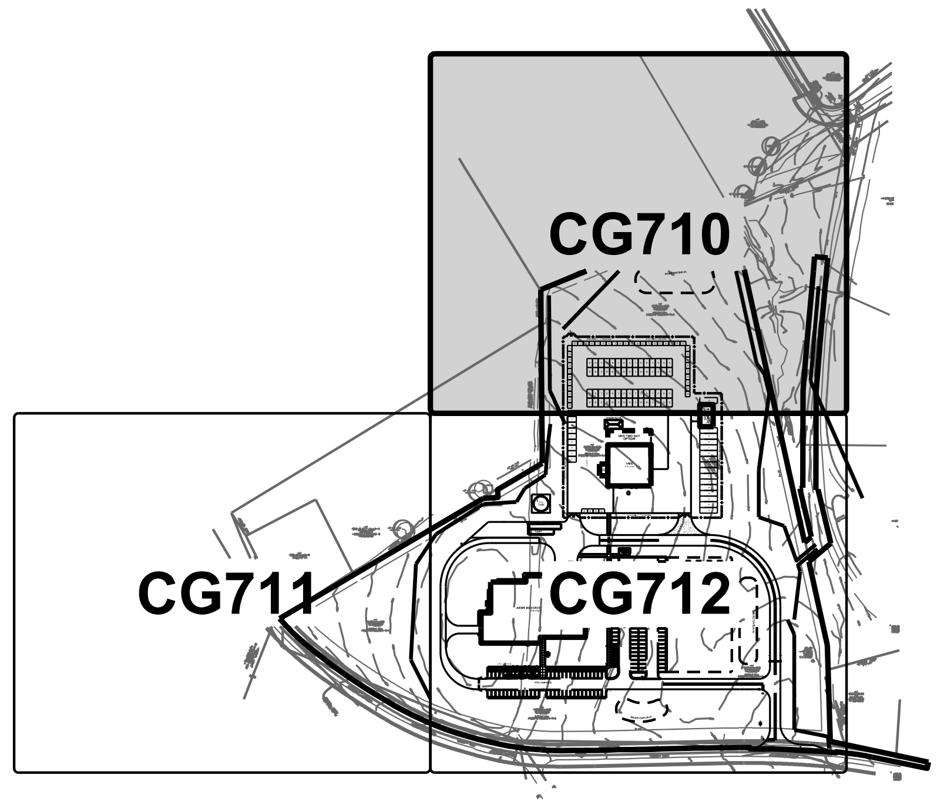
2. DISTURBED AREA SHALL BE GRADED TO MATCH EXISTING SLOPES AND GRASSED. SEE THE EROSION CONTROL PLANS FOR ADDITIONAL GRADING REQUIREMENTS.
3. **PROVIDE GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE.**
4. ALL TEMPORARY DIVERSION CHANNELS AND PERMANENT CHANNELS SHALL BE LINED AS PER THE CHART ON SHEET CG809 IMMEDIATELY UPON CONSTRUCTION.

KEY MAP



EROSION CONTROL LEGEND

—●●—	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀ ←	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
△DC	DUST CONTROL
▨	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
⬭	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
(TS)	TEMPORARY SEEDING
◓	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
(RR)	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
☐	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
⊕ RECP ⊕	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
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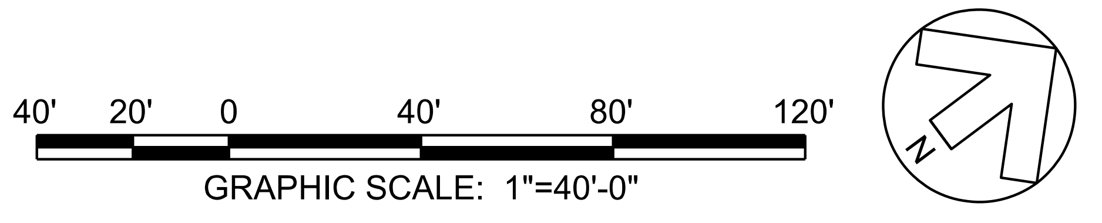

GRAPHIC SCALE: 1"=40'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
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DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

INITIAL PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG710

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15:05

CERTIFIED FINAL SUBMITTAL

GENERAL NOTES

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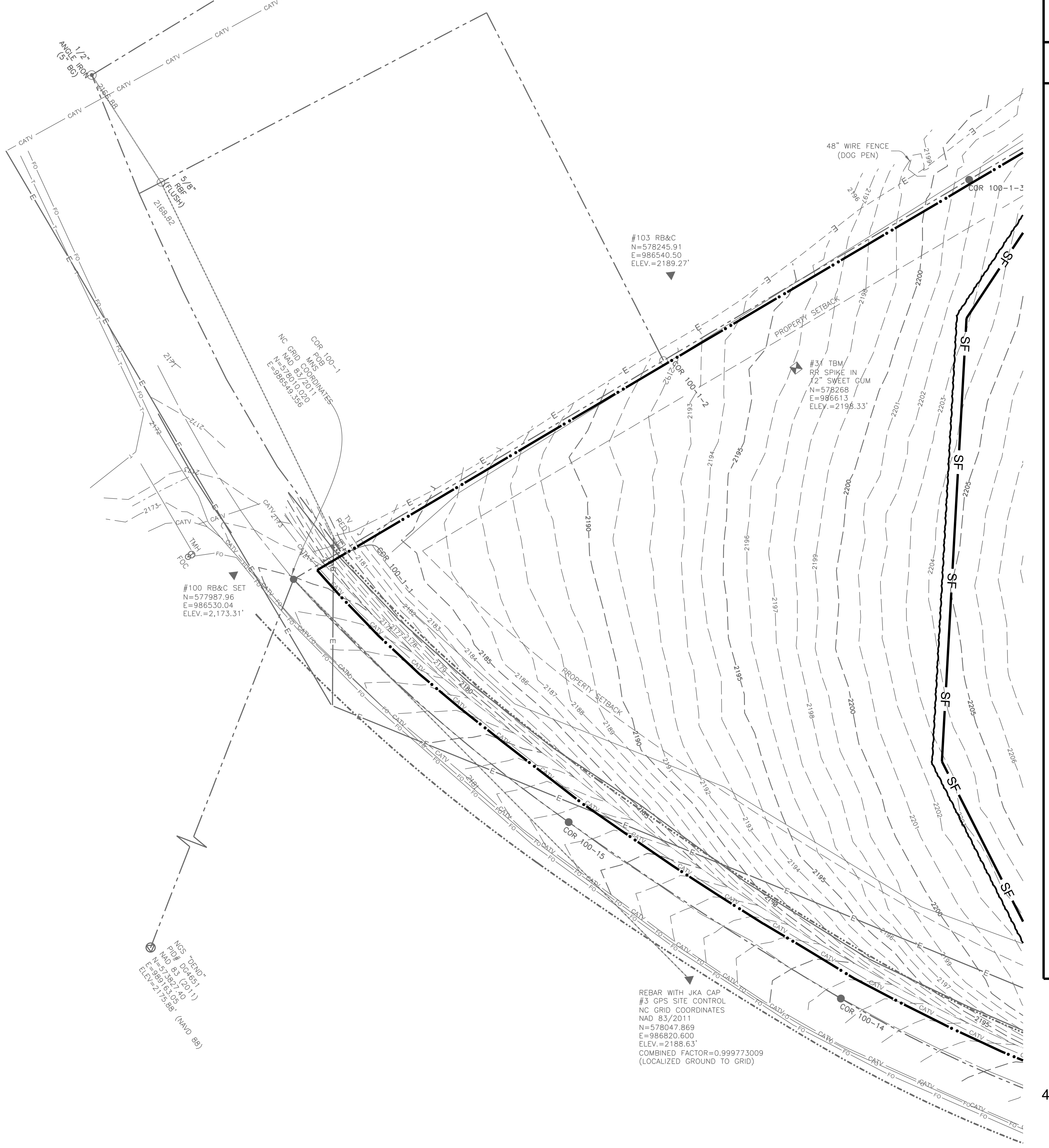
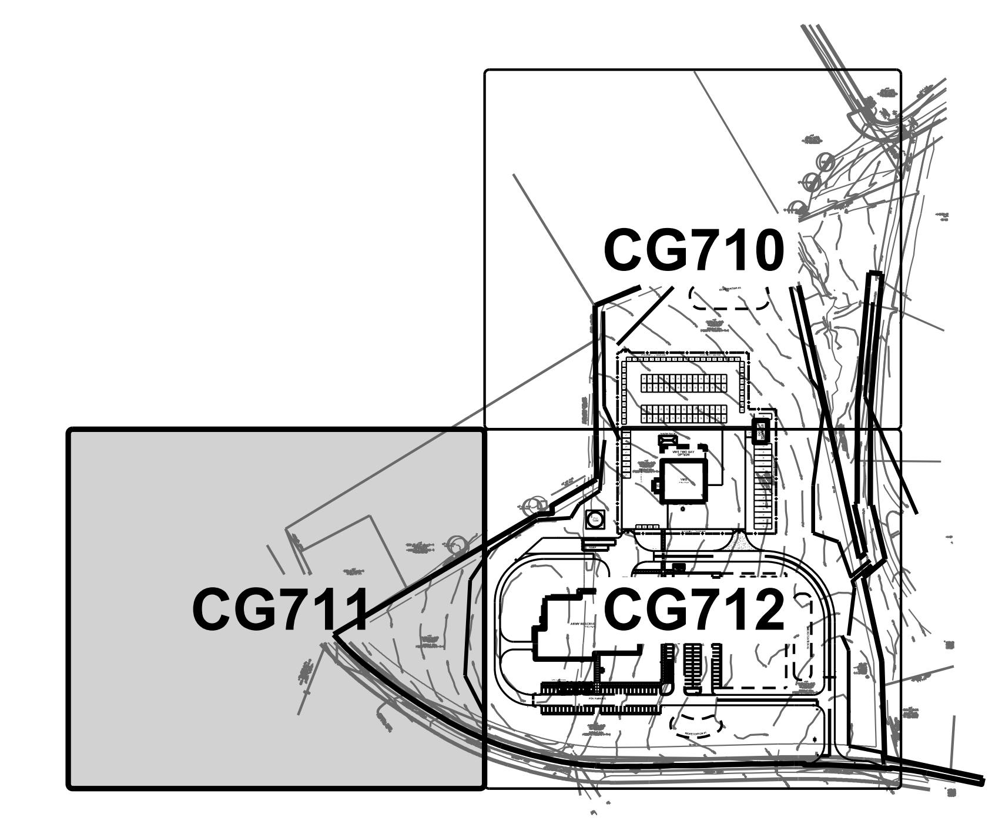


1/2" ANGLE IRON (5" BG)
2166.88
5/8" RBF (FLUSH)
2168.82
CATV
FO
T
E
2171
2172
2173
COR 100-1 POB MNS NC GRID COORDINATES NAD 83/2011 N=578010.020 E=986549.356
TV PED
TMH
FOC
#100 RB&C SET N=577987.96 E=986530.04 ELEV.=2,173.31'
COR 100-1-1
#103 RB&C N=578245.91 E=986540.50 ELEV.=2189.27'
48" WIRE FENCE (DOG PEN)
COR 100-1-3
COR 100-1-2
PROPERTY SETBACK
#31 TBM RR SPIKE IN 12" SWEET GUM N=578268 E=986613 ELEV.=2198.33'
2180
2185
2190
2195
2200
2205
SF
COR 100-15
COR 100-14
NGS "DEND" PID# DG4651 NAD 83 (2011) N=573827.40 E=989163.05 ELEV=2175.88' (NAVD 88)
REBAR WITH JKA CAP #3 GPS SITE CONTROL NC GRID COORDINATES NAD 83/2011 N=578047.869 E=986820.600 ELEV.=2188.63' COMBINED FACTOR=0.999773009 (LOCALIZED GROUND TO GRID)

KEY MAP



EROSION CONTROL LEGEND

1. NOTE 1 2. NOTE 2	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀ ←	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
DC	DUST CONTROL
	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
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	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
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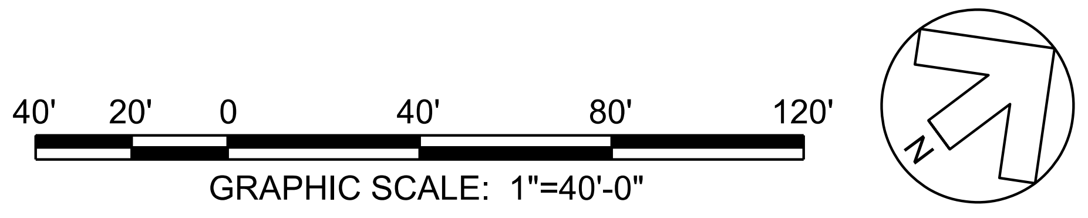

GRAPHIC SCALE: 1"=40'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD83.

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US Army Corps of Engineers®

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SIZE: ANSI D	FILENAME: ASHE_CG711.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

INITIAL PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG711

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15:06

CERTIFIED FINAL SUBMITTAL

GENERAL NOTES

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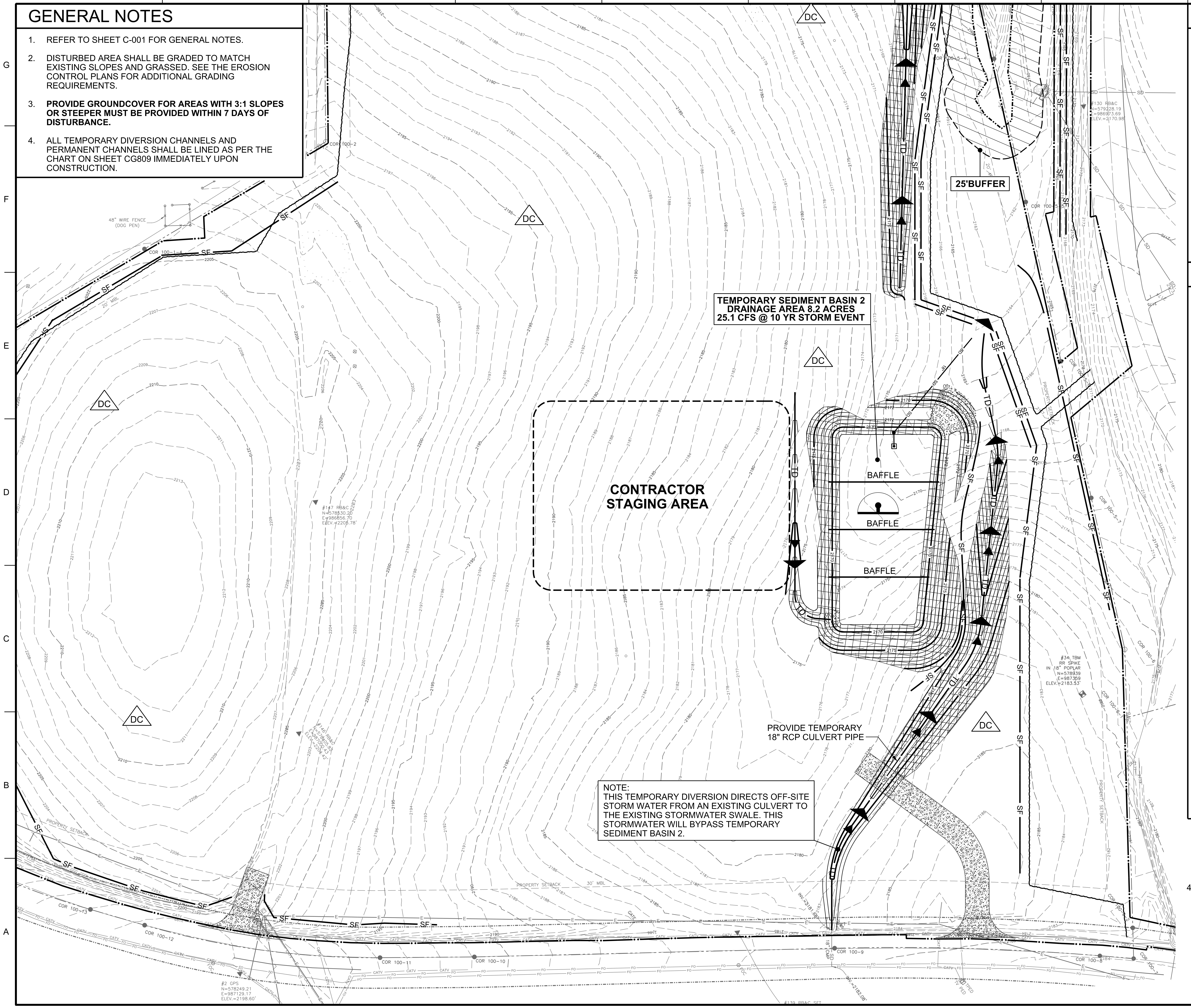
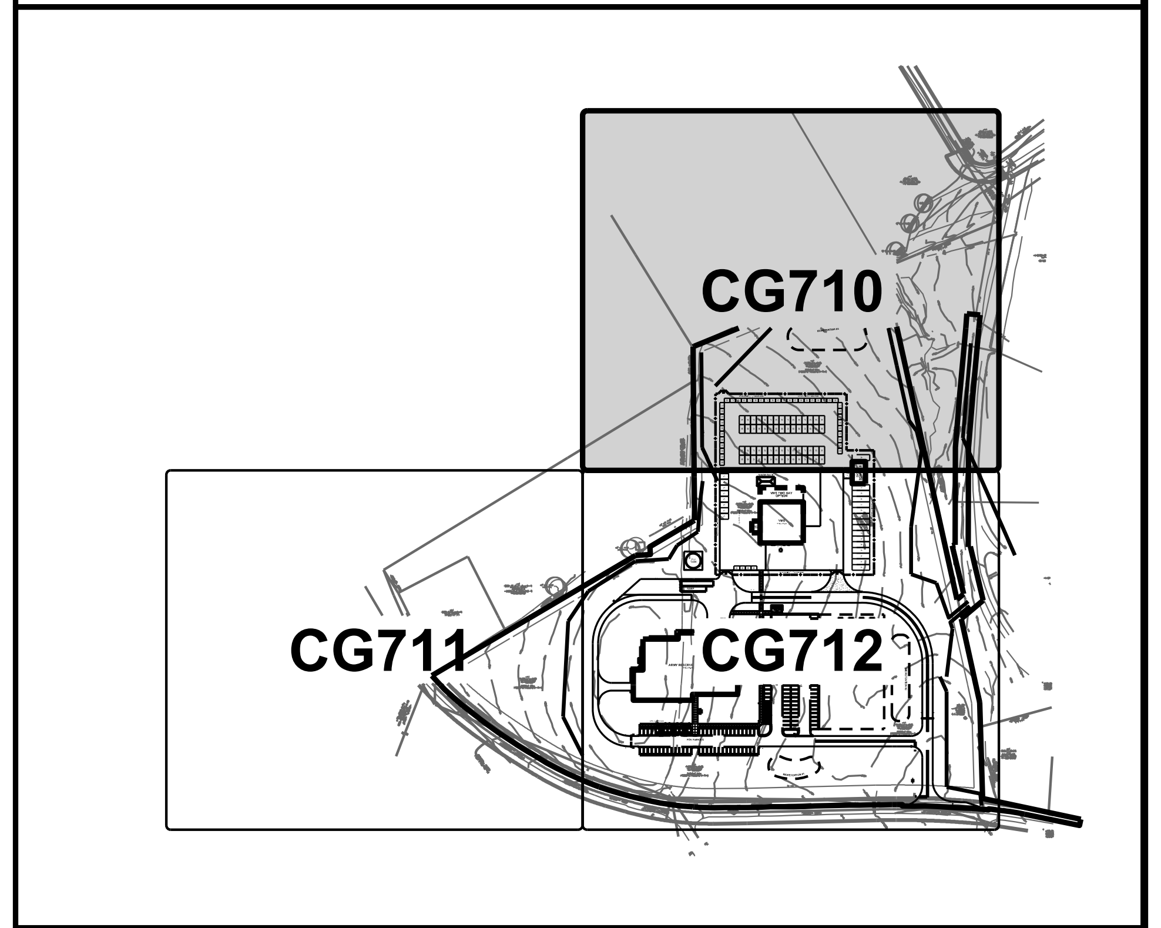

TEMPORARY SEDIMENT BASIN 2
DRAINAGE AREA 8.2 ACRES
25.1 CFS @ 10 YR STORM EVENT
CONTRACTOR STAGING AREA
BAFFLE
BAFFLE
BAFFLE
25'BUFFER
DC
SF
TD
PROVIDE TEMPORARY 18" RCP CULVERT PIPE
48" WIRE FENCE (DOG PEN)
PROPERTY SETBACK
30' MBL
#147 RB&C N=578530.20 E=986856.70 ELEV.=2205.78'
#130 RB&C N=579228.19 E=986973.69 ELEV.=2170.98'
#34 TBM RR SPIKE IN 18" POPLAR N=578939 E=987359 ELEV.=2183.53'
#2 CPS N=578249.21 E=987129.17 ELEV.=2198.60'
#139 RB&C SET
COR 100-1
COR 100-2
COR 100-9
COR 100-10
COR 100-11
COR 100-12
COR 100-13
CATV

NOTE:
THIS TEMPORARY DIVERSION DIRECTS OFF-SITE STORM WATER FROM AN EXISTING CULVERT TO THE EXISTING STORMWATER SWALE. THIS STORMWATER WILL BYPASS TEMPORARY SEDIMENT BASIN 2.

40' 20' 0 40' 80' 120'
GRAPHIC SCALE: 1"=40'-0"

KEY MAP



EROSION CONTROL LEGEND

─●●─	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
─ SF ─	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
─ TD ─	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀ ←	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
△ DC	DUST CONTROL
▨	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
◌	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
(TS)	TEMPORARY SEEDING
◒	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
(RR)	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
☐	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
RECP	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
GL1	PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.
▩	GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE
◠	ROCK PIPE INLET PROTECTION. REFER TO DETAIL 2, SHEET CG811.

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE CG712.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

INITIAL PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG712

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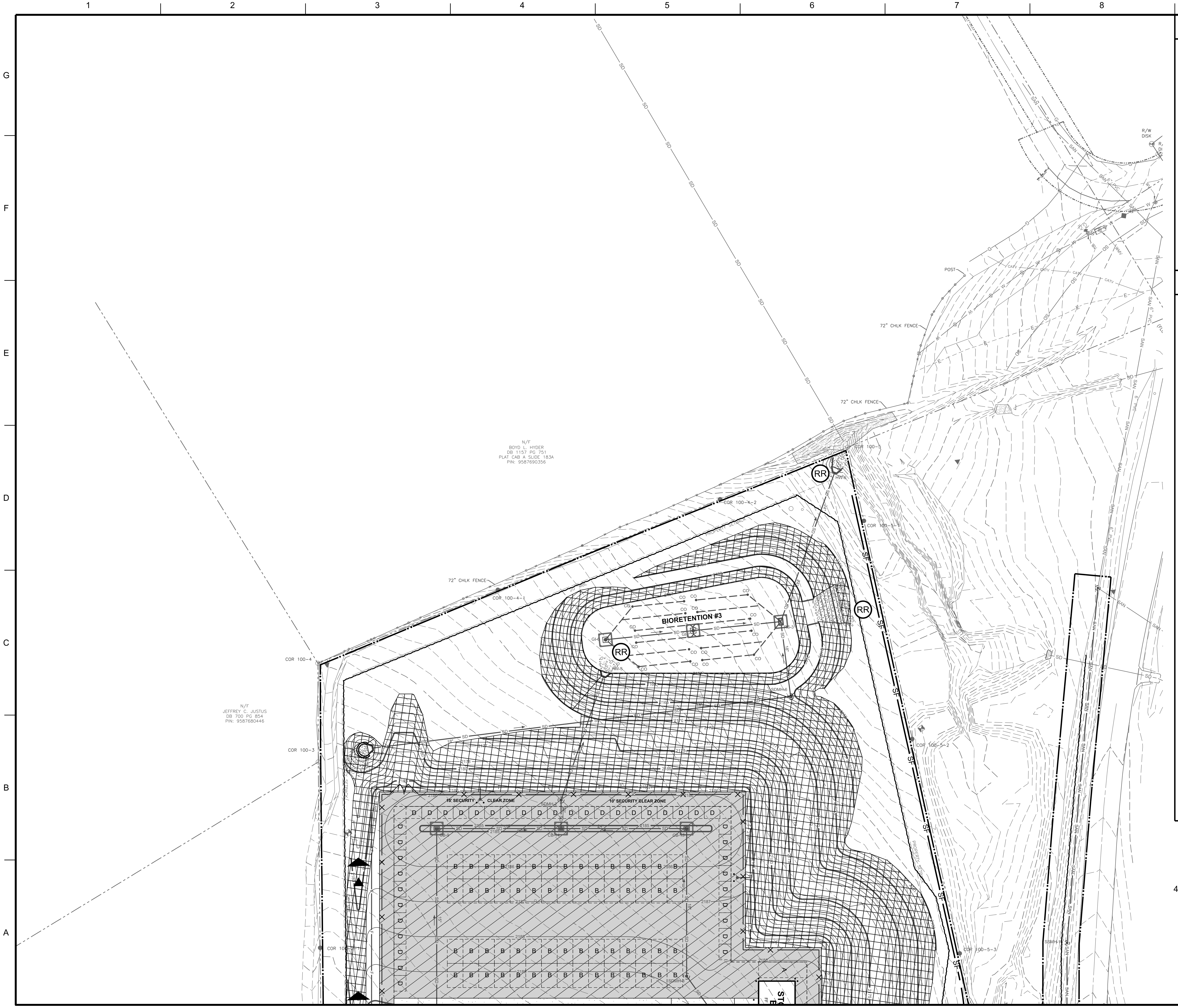
24-FEB-2022
15:06

CERTIFIED FINAL SUBMITTAL



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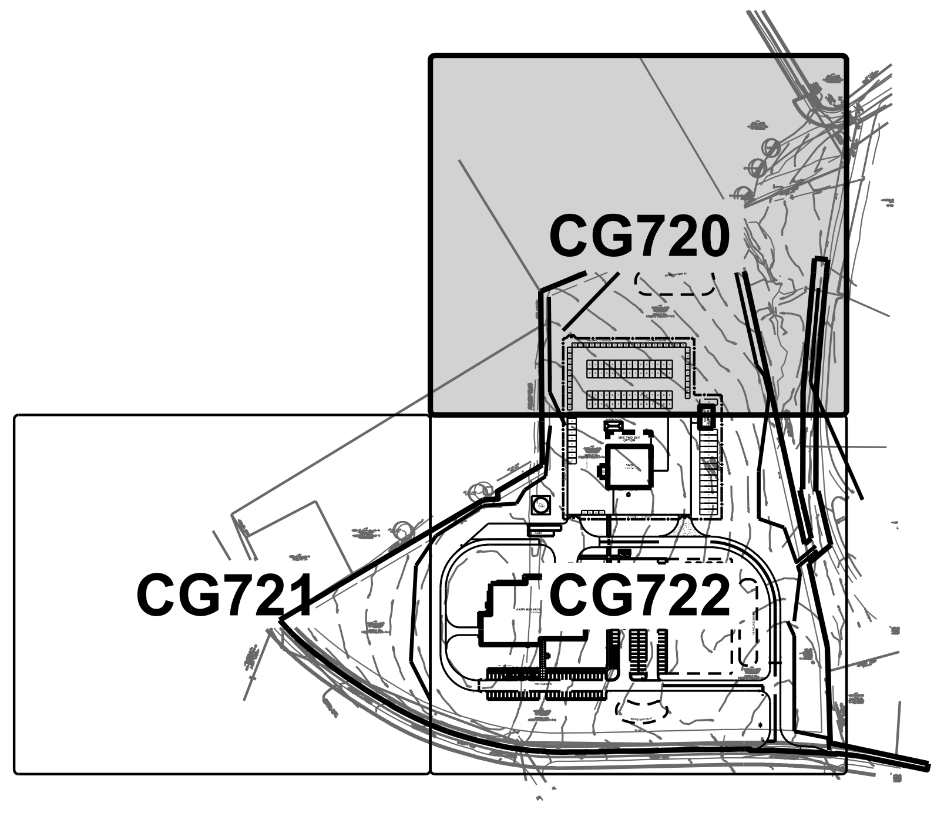
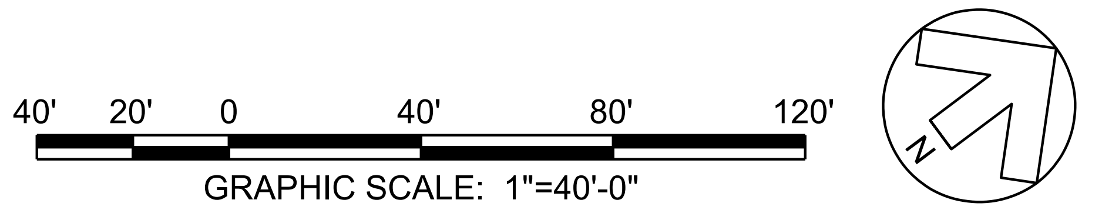


EROSION CONTROL LEGEND

—●●—	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀—	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
△ DC	DUST CONTROL
▨	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
◌	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
(TS)	TEMPORARY SEEDING
⏚	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
(RR)	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
☐	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
⊕ RECP ⊕	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
⊞GL1⊞	PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.
▩	GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE
⌒	ROCK PIPE INLET PROTECTION. REFER TO DETAIL 2, SHEET CG811.



GRAPHIC SCALE: 1"=40'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps
of Engineers®

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SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_CG720.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

INTERMEDIATE PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG720

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15:06

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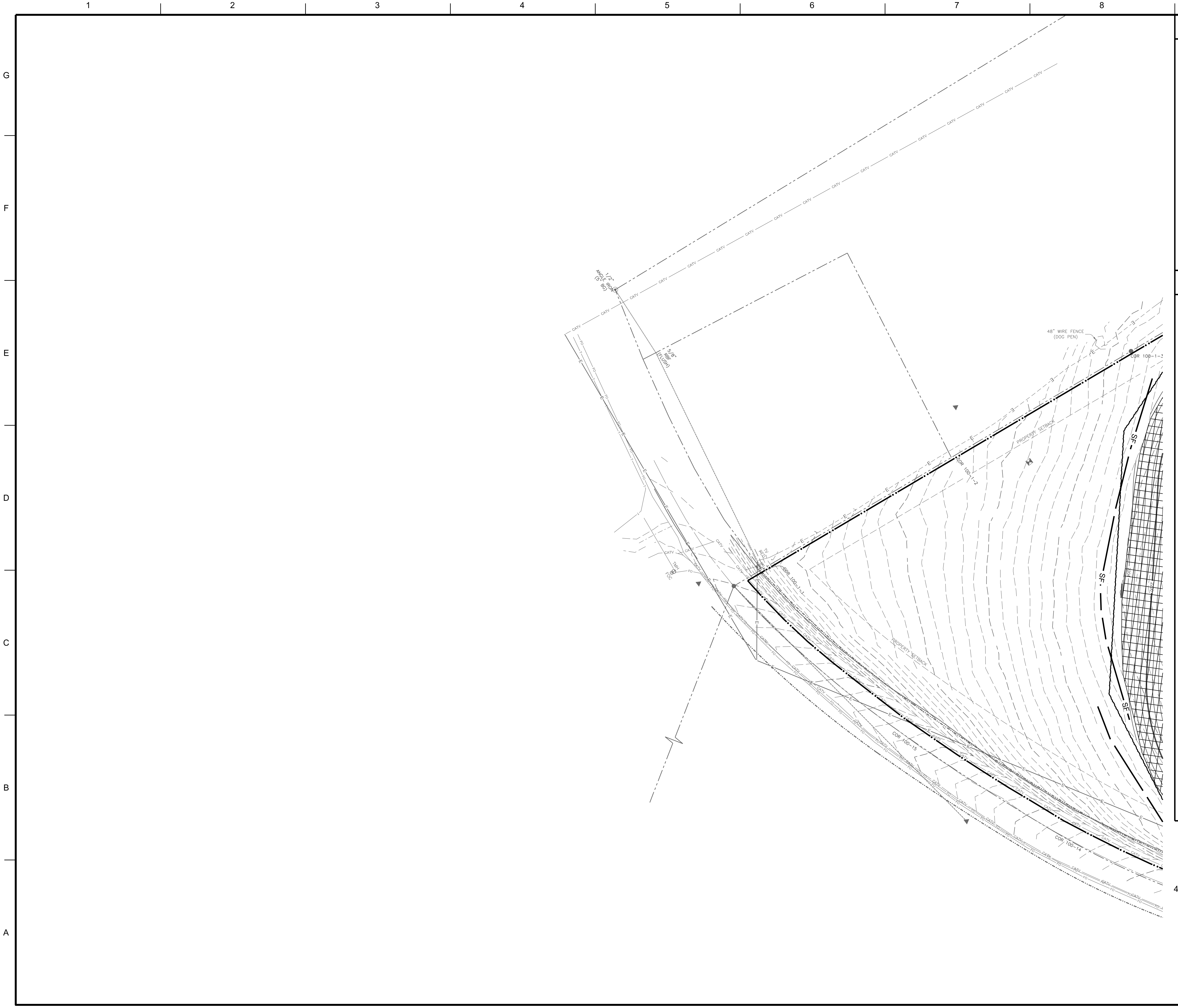

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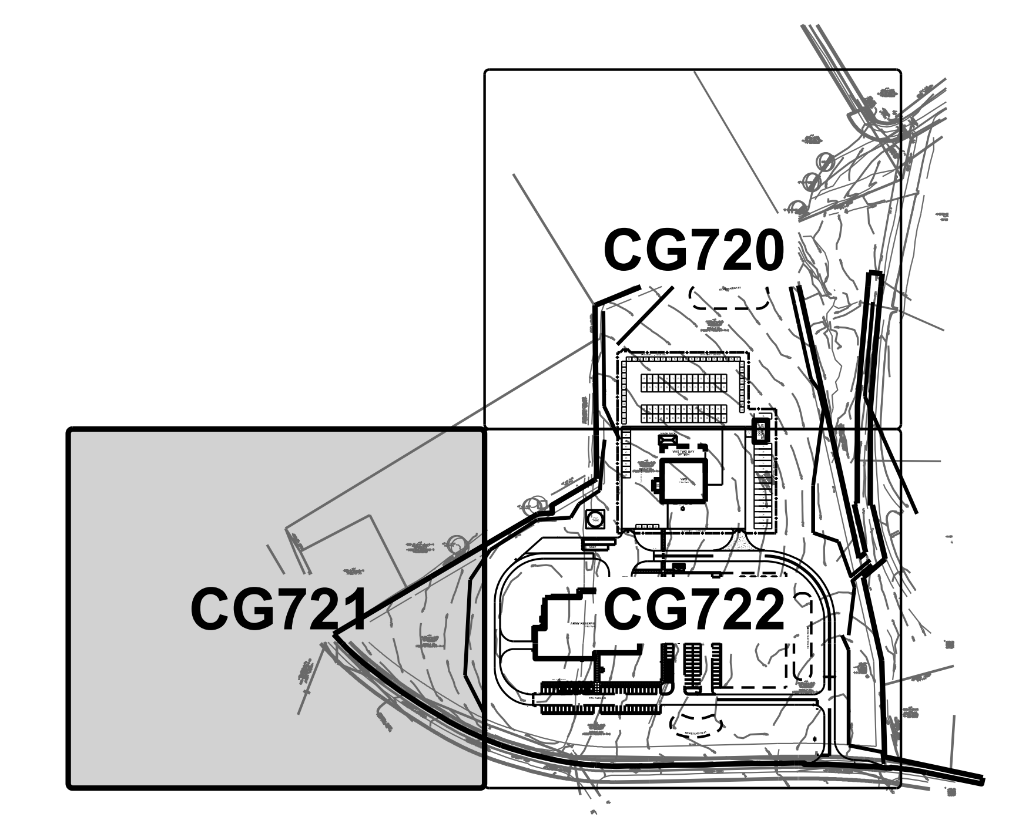

EROSION CONTROL LEGEND

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— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀ ←	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
DC	DUST CONTROL
	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
TS	TEMPORARY SEEDING
	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
RR	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
☐	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
RECP	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
GL1	PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.
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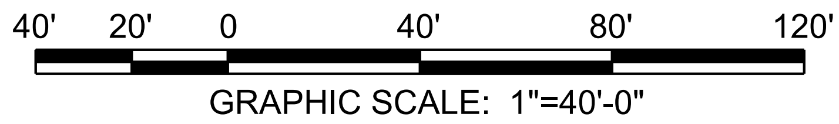

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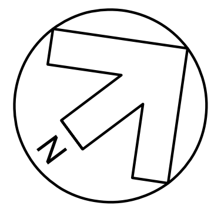

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

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SUBMITTED BY: D. HENSLEY	CATEGORY CODE	
SIZE: ANSI D	FILENAME: ASHE_CG721.dgn	

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

INTERMEDIATE PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG721

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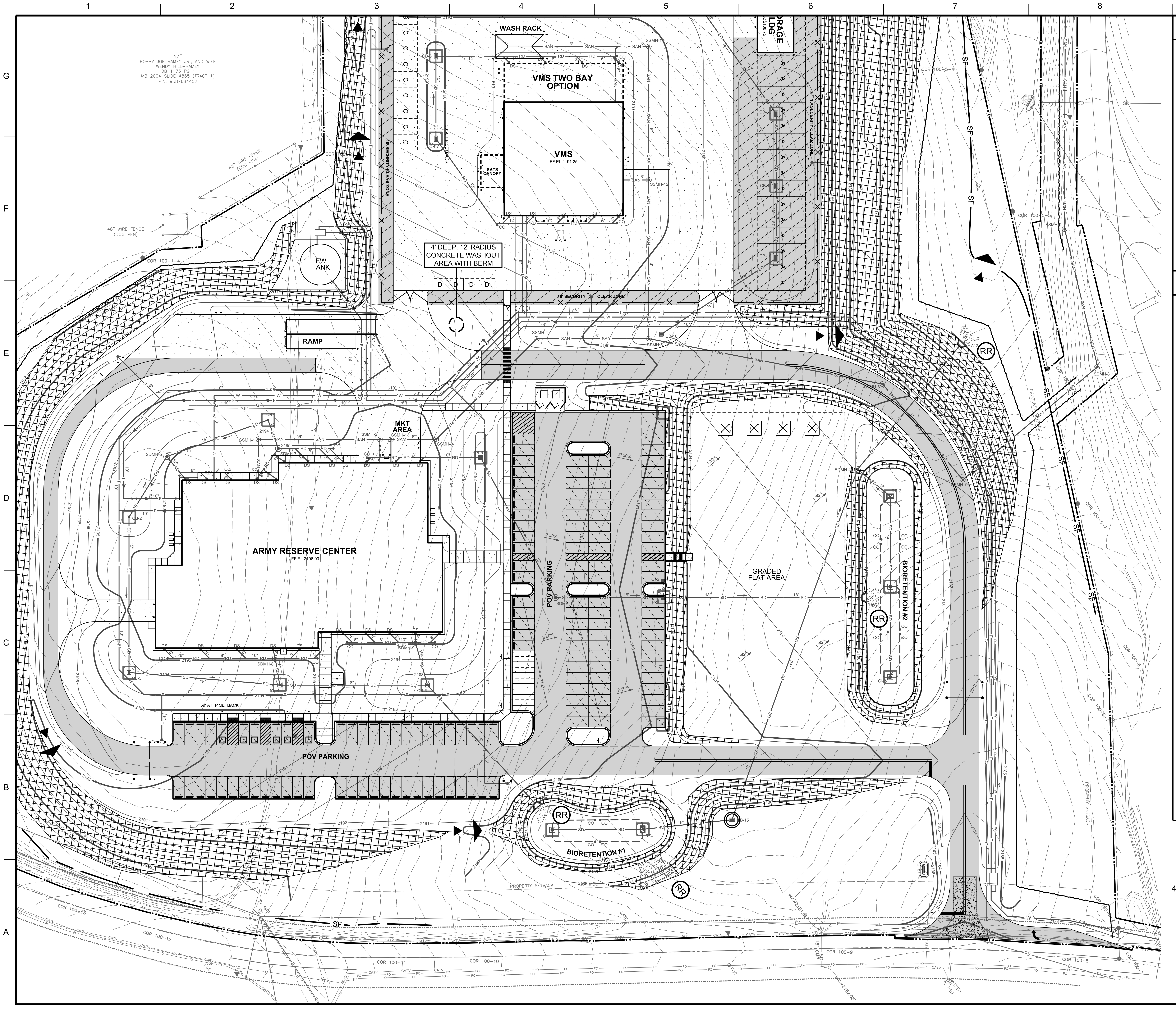
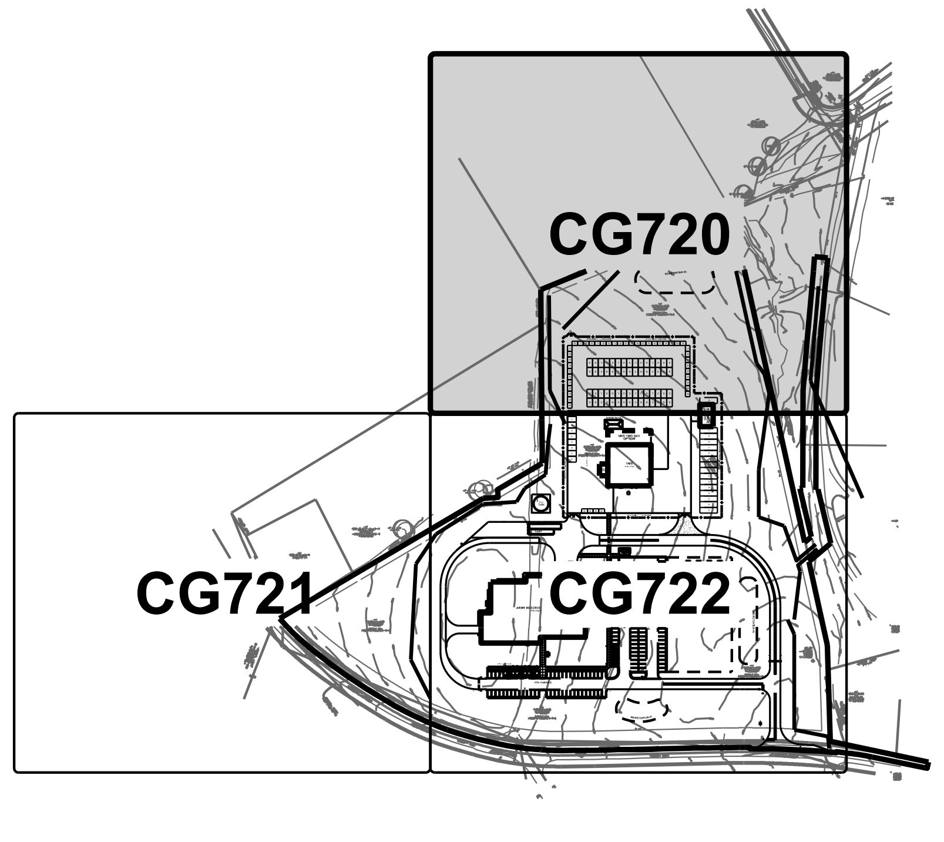


40' 20' 0 40' 80' 120'

GRAPHIC SCALE: 1"=40'-0"

KEY MAP



EROSION CONTROL LEGEND

—••—	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀—	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
DC	DUST CONTROL
▨	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
◌	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
TS	TEMPORARY SEEDING
◓	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
RR	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
☐	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
RECP	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
GL1	PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.
▩	GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE
◠	ROCK PIPE INLET PROTECTION. REFER TO DETAIL 2, SHEET CG811.

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

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DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022	
DRAWN BY: S.HAGGARD	SOLICITATION NO.:	
CHECKED BY: M.MAYER	CONTRACT NO.:	
SUBMITTED BY: D. HENSLEY	CATEGORY CODE	
SIZE: ANSI D	FILENAME: ASHE_CG722.dgn	

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

INTERMEDIATE PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG722

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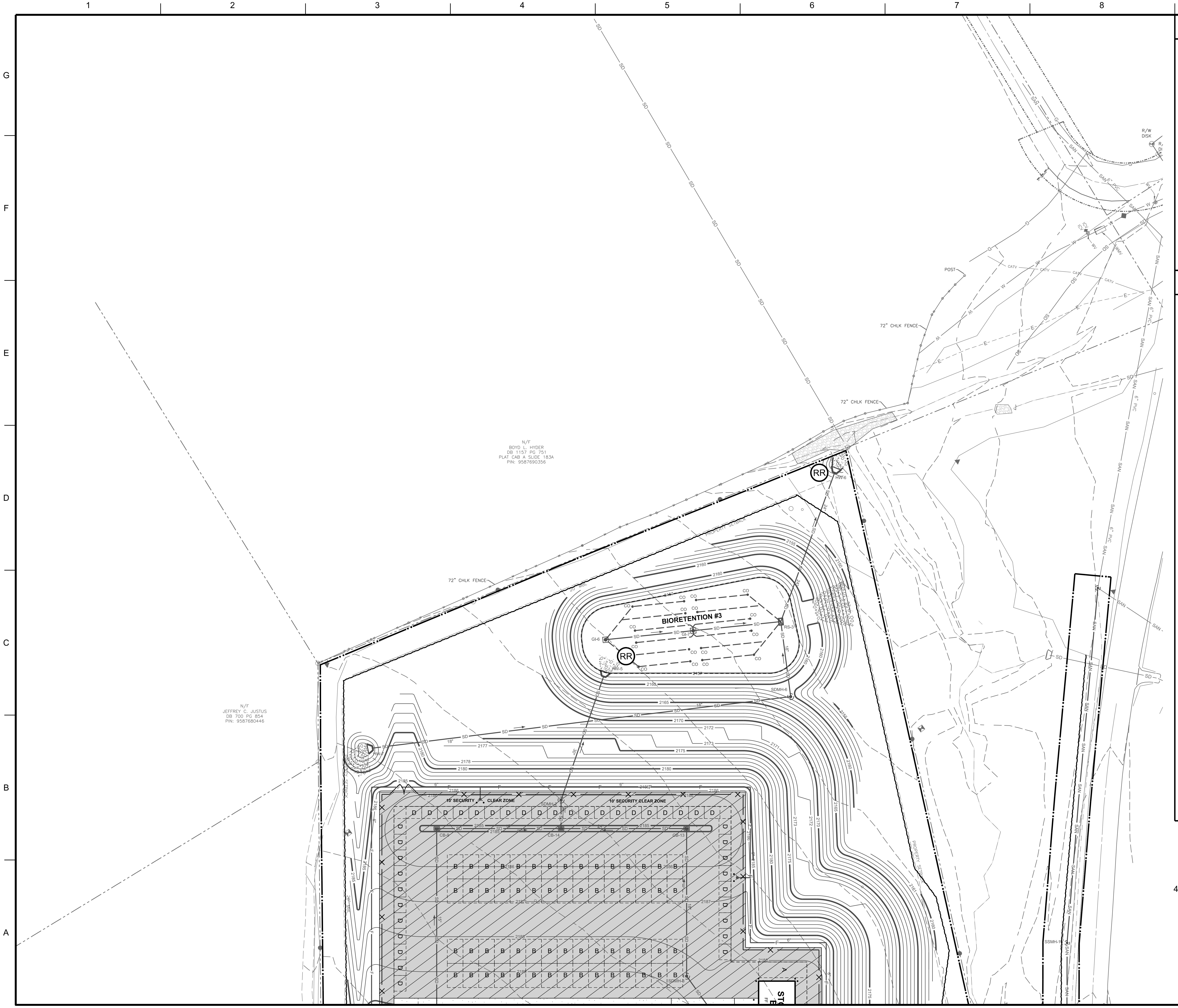

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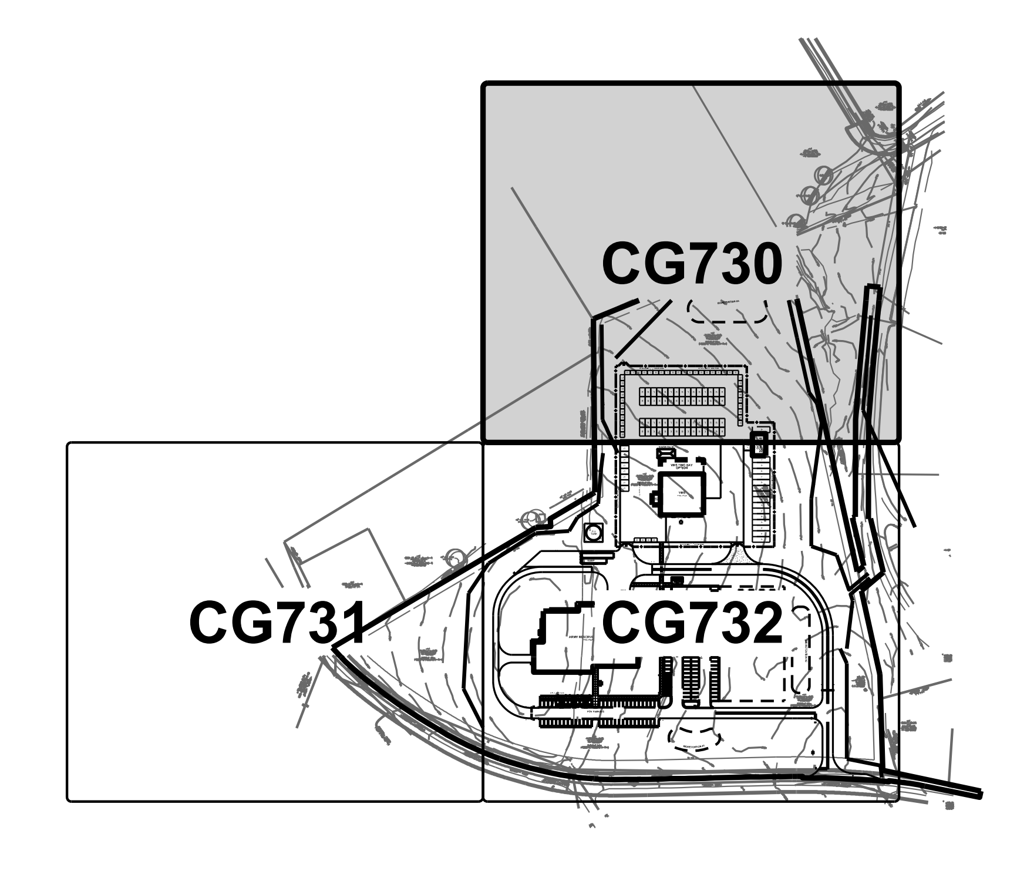

EROSION CONTROL LEGEND

—••—	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀ ←	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
DC	DUST CONTROL
▨	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
◌	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
TS	TEMPORARY SEEDING
⏚	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
RR	RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.
□	HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.
RECP	SOIL STABILIZATION MATTING REFER TO SHEET CG806.
GL1	PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.
▨	GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE
◠	ROCK PIPE INLET PROTECTION. REFER TO DETAIL 2, SHEET CG811.

40' 20' 0 40' 80' 120'

GRAPHIC SCALE: 1"=40'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

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SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_CG730.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

FINAL PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG730

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24-FEB-2022
15:08

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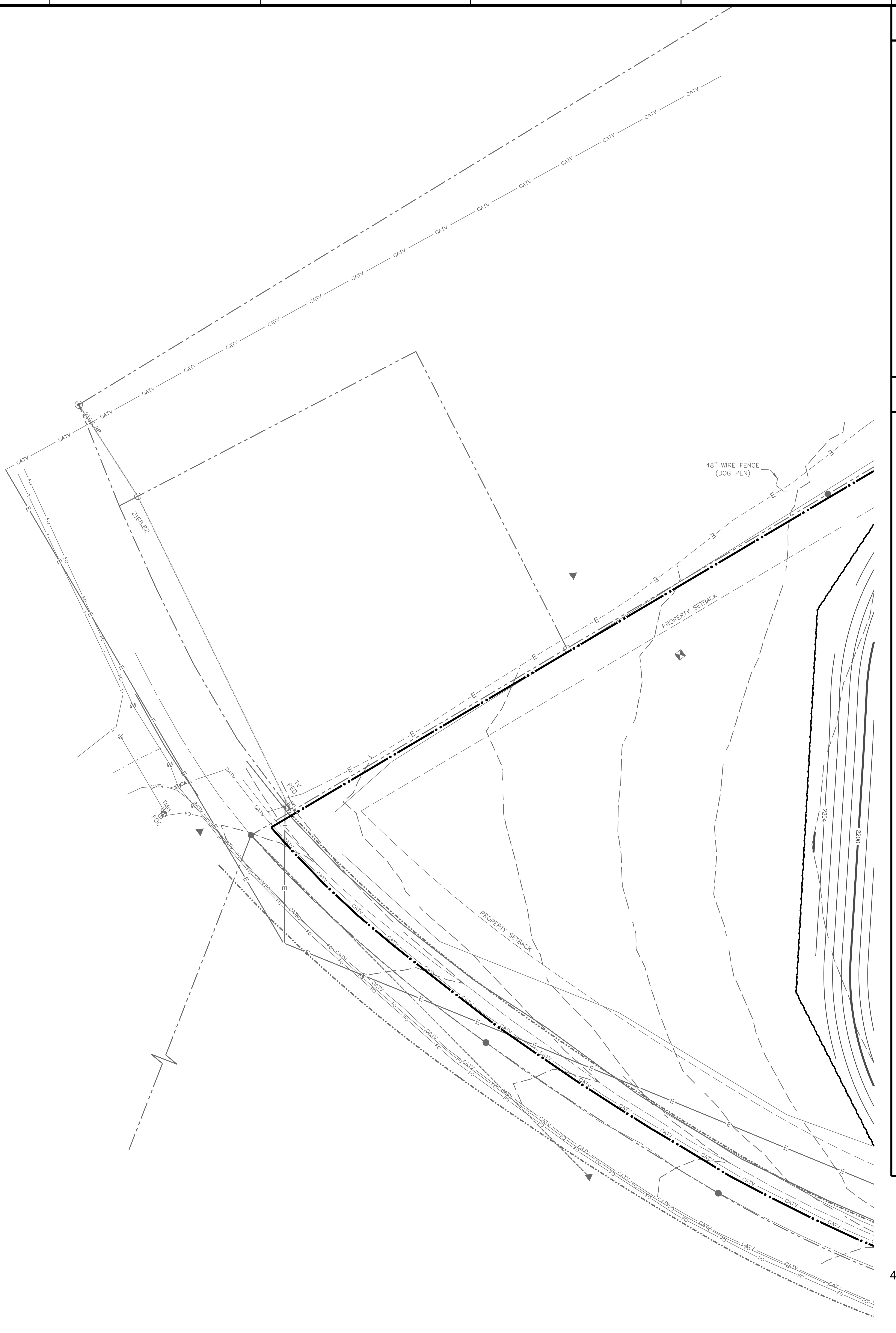

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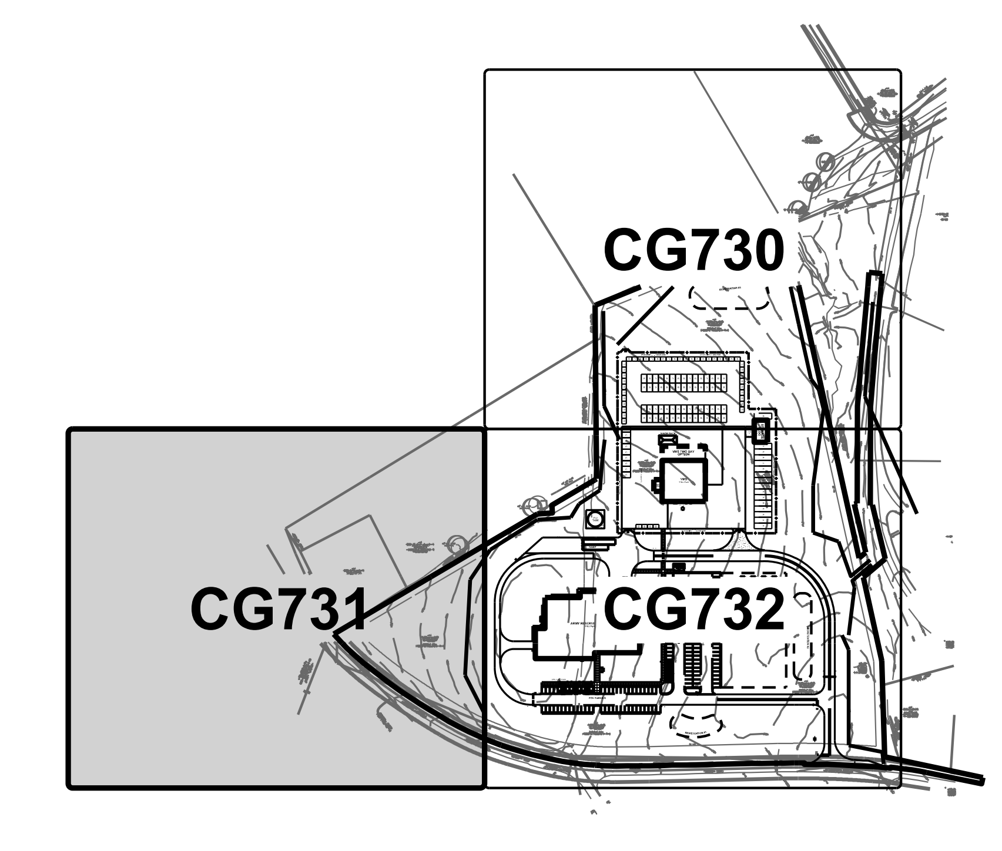

EROSION CONTROL LEGEND

—••— LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE

— SF — SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.

— TD — TEMPORARY DIVERSION, REFER TO SHEET CG811.

◀ ← ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.

DC DUST CONTROL

CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.

TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.

TS TEMPORARY SEEDING

SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.

RR RIPRAP OUTLET STABILIZATION REFER TO DETAIL 1, SHEET CG805.

☐ HARDWARE CLOTH AND GRAVEL INLET PROTECTION. REFER TO DETAIL 1, SHEET CG803.

RECP SOIL STABILIZATION MATTING REFER TO SHEET CG806.

GL1 PERMANENT GRASS LINED CHANNEL. REFER TO DETAIL 1, SHEET CG809.

▨ GROUNDCOVER FOR AREAS WITH 3:1 SLOPES OR STEEPER MUST BE PROVIDED WITHIN 7 DAYS OF DISTURBANCE

◠ ROCK PIPE INLET PROTECTION. REFER TO DETAIL 2, SHEET CG811.

40' 20' 0 40' 80' 120'

GRAPHIC SCALE: 1"=40'-0"

N

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CG731.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

FINAL PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG731

CERTIFIED FINAL SUBMITTAL

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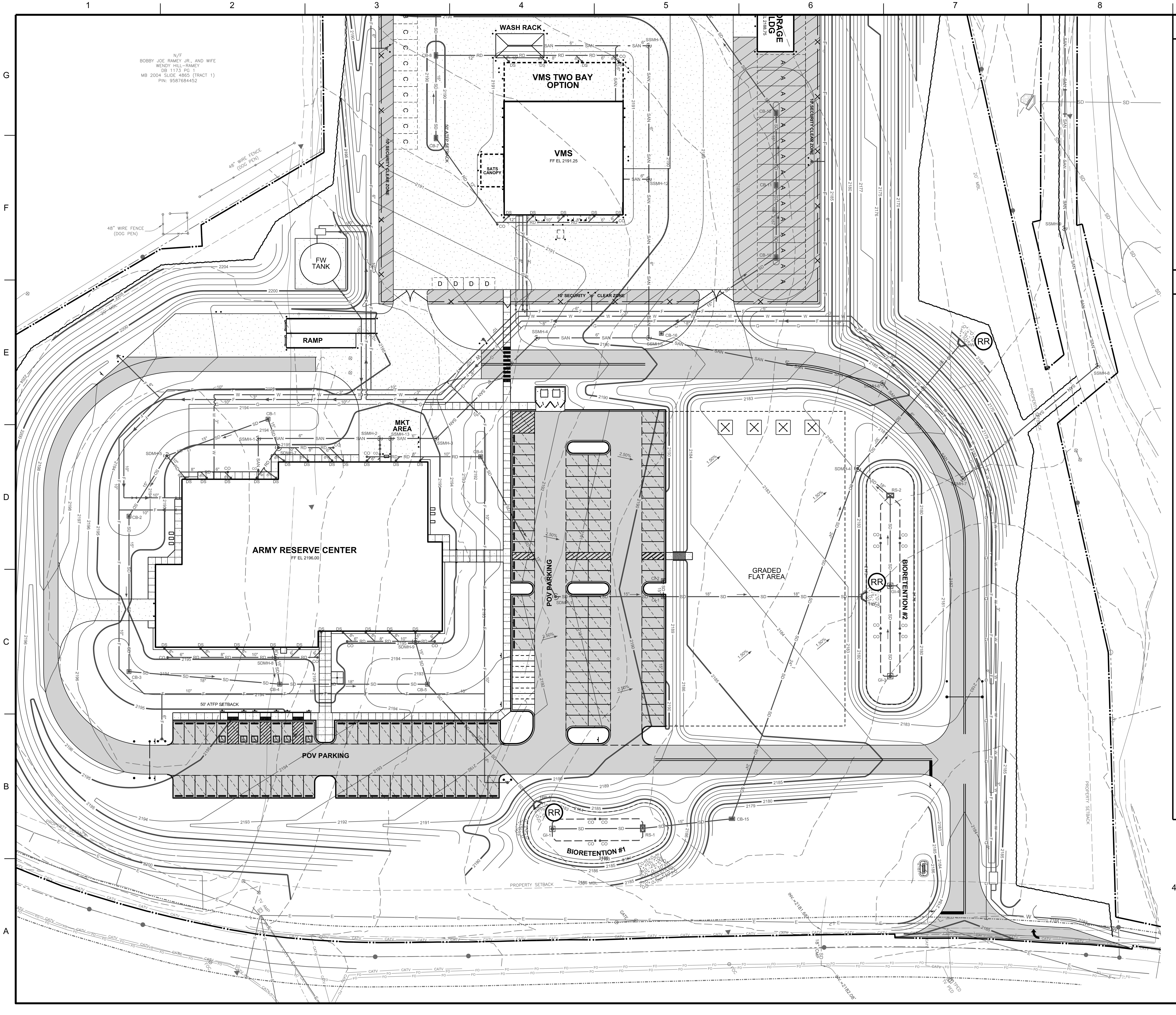
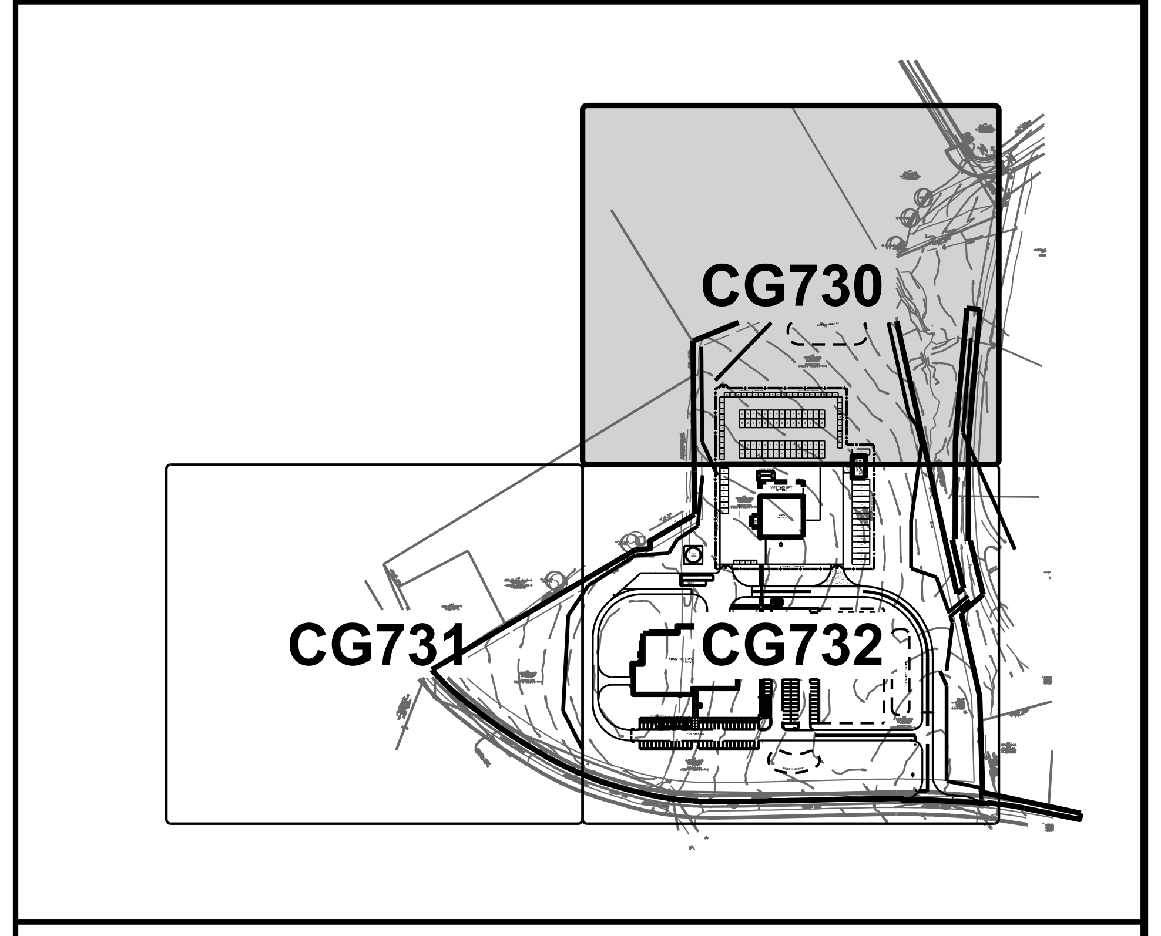


KEY MAP



EROSION CONTROL LEGEND

—●●—	LIMIT OF CONSTRUCTION/CLEARING LIMIT/LIMIT OF DISTURBANCE
— SF —	SEDIMENT FENCE REFER TO DETAIL 2, SHEET CG804.
— TD —	TEMPORARY DIVERSION, REFER TO SHEET CG811.
◀ ←	ROCK CHECK DAM REFER TO DETAIL 1, SHEET CG810.
DC	DUST CONTROL
	CONSTRUCTION ENTRANCE REFER TO DETAIL 1, SHEET CG804.
	TREE PROTECTION FENCE REFER TO DETAIL 2, SHEET CG810.
TS	TEMPORARY SEEDING
	SKIMMER SEDIMENT BASIN REFER TO DETAIL 1, SHEET CG807.
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GRAPHIC SCALE: 1"=40'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
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CHECKED BY: M.MAYER	SUBMITTED BY: D. HENSLEY
SIZE: ANSI D	FILENAME: ASHE CG732.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

FINAL PHASE
SEDIMENT AND EROSION CONTROL PLAN

SHEET ID
CG732

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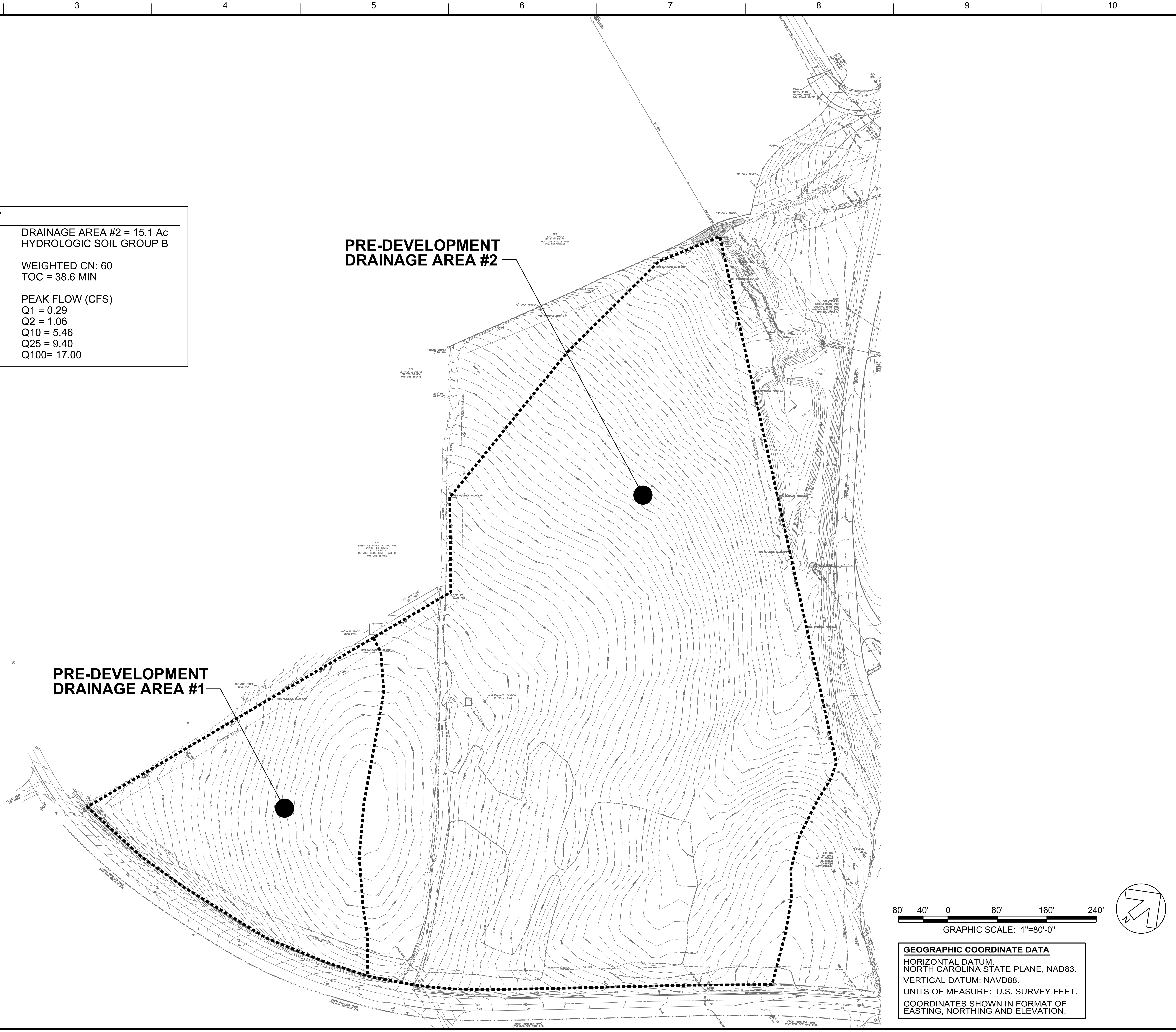
24-FEB-2022
15:09

CERTIFIED FINAL SUBMITTAL

PRE-DEVELOPMENT

DRAINAGE AREA #1	DRAINAGE AREA #2
DRAINAGE AREA #1 = 3.1 Ac	DRAINAGE AREA #2 = 15.1 Ac
HYDROLOGIC SOIL GROUP B	HYDROLOGIC SOIL GROUP B
WEIGHTED CN: 60	WEIGHTED CN: 60
TOC = 34.9 MIN	TOC = 38.6 MIN
PEAK FLOW (CFS)	PEAK FLOW (CFS)
Q1 = 0.06	Q1 = 0.29
Q2 = 0.23	Q2 = 1.06
Q10 = 0.68	Q10 = 5.46
Q25 = 1.19	Q25 = 9.40
Q100= 3.71	Q100= 17.00



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US Army Corps
of Engineers®

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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

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SIZE: ANSI D	FILENAME: ASHE CG750.dgn

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

PRE DEVELOPED HYDROLOGY

SHEET ID
CG750

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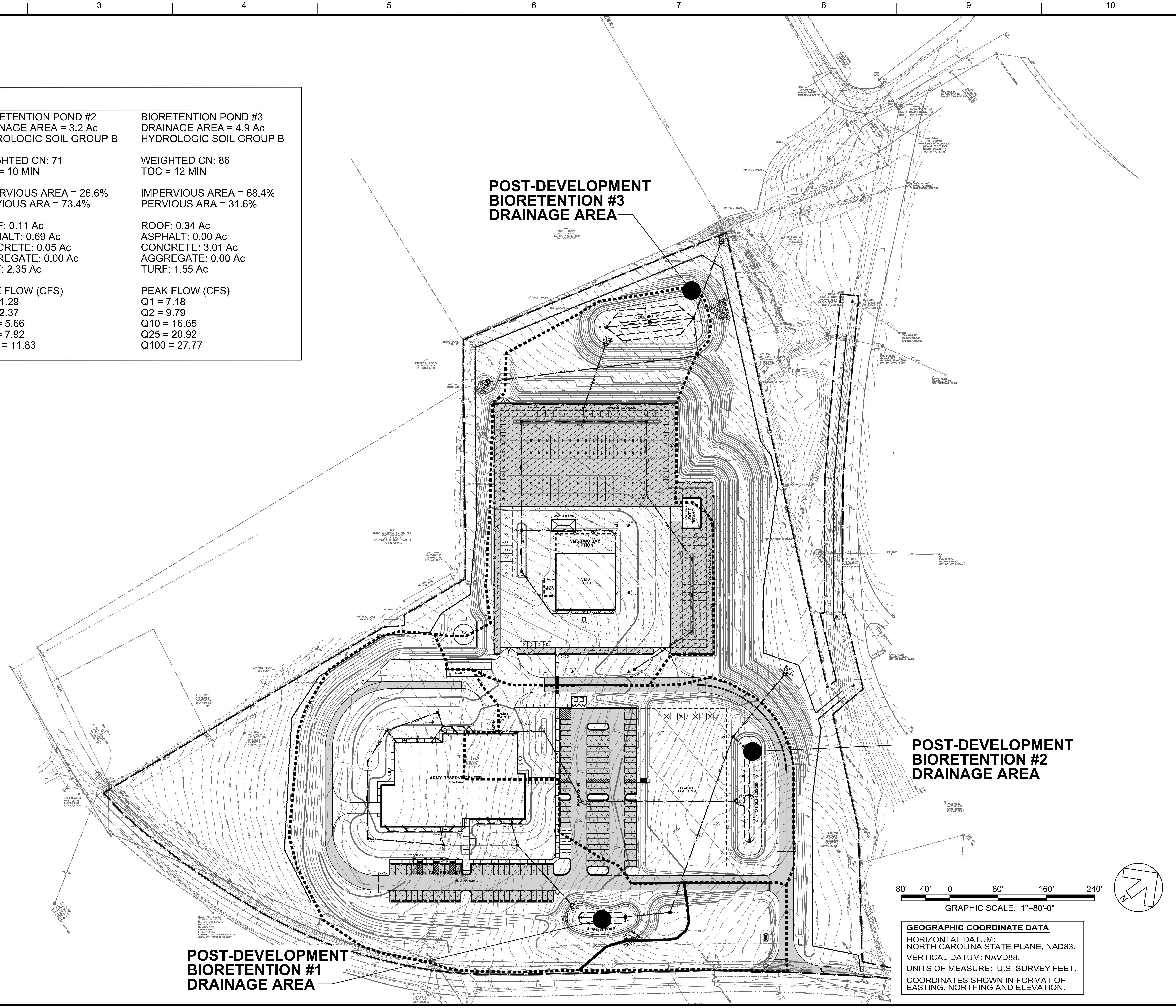
POST-DEVELOPMENT

BIORETENTION POND #1	BIORETENTION POND #2	BIORETENTION POND #3
DRAINAGE AREA = 5.0 Ac	DRAINAGE AREA = 3.2 Ac	DRAINAGE AREA = 4.9 Ac
HYDROLOGIC SOIL GROUP B	HYDROLOGIC SOIL GROUP B	HYDROLOGIC SOIL GROUP B
WEIGHTED CN: 68	WEIGHTED CN: 71	WEIGHTED CN: 86
TOC = 12 MIN	TOC = 10 MIN	TOC = 12 MIN
IMPERVIOUS AREA = 18.4%	IMPERVIOUS AREA = 26.6%	IMPERVIOUS AREA = 68.4%
PERVIOUS ARA = 81.6%	PERVIOUS ARA = 73.4%	PERVIOUS ARA = 31.6%
ROOF: 0.61 Ac	ROOF: 0.11 Ac	ROOF: 0.34 Ac
ASPHALT: 0.12 Ac	ASPHALT: 0.69 Ac	ASPHALT: 0.00 Ac
CONCRETE: 0.19 Ac	CONCRETE: 0.05 Ac	CONCRETE: 3.01 Ac
AGGREGATE: 0.00 Ac	AGGREGATE: 0.00 Ac	AGGREGATE: 0.00 Ac
TURF: 4.08 Ac	TURF: 2.35 Ac	TURF: 1.55 Ac
PEAK FLOW (CFS)	PEAK FLOW (CFS)	PEAK FLOW (CFS)
Q1 = 1.27	Q1 = 1.29	Q1 = 7.18
Q2 = 2.72	Q2 = 2.37	Q2 = 9.79
Q10 = 7.42	Q10 = 5.66	Q10 = 16.65
Q25 = 10.74	Q25 = 7.92	Q25 = 20.92
Q100 = 16.54	Q100 = 11.83	Q100 = 27.77



GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CG751.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

POST DEVELOPED HYDROLOGY

SHEET ID
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SITE DESCRIPTION:

A. DESCRIPTION OF THE NATURE OF THE CONSTRUCTION ACTIVITY:

THIS PROJECT IS TO PROVIDE THE DESIGN TO CONSTRUCT A UNITED STATES ARMY RESERVE CENTER (ARC) IN HENDERSON COUNTY, NORTH CAROLINA. THE PROJECT INCLUDES THE DESIGN AND CONSTRUCTION OF AN APPROXIMATE 34,455 SF ARMY RESERVE CENTER (ARC) AND A VEHICLE MAINTENANCE SHOP (VMS) THAT IS APPROXIMATELY 12,876 SF. ALSO, OTHER ASSOCIATED ITEMS SHALL INCLUDE ASSOCIATED PARKING, ACCESS ROADS, UTILITIES AND OTHER SITE APPURTENANCES.

B. DESCRIPTION AND TIMELINE OF CONSTRUCTION SCHEDULE:

REFER TO SHEET CG802 FOR A DETAILED CONSTRUCTION ACTIVITY SEQUENCE.

C. TOTAL SITE ACREAGE AND TOTAL DISTURBED AREA:

TOTAL SITE ACREAGE:	20 ACRES
TOTAL DISTURBED (PERMIT) ACREAGE:	15 ACRES
TOTAL IMPERVIOUS AREA (ROOF, PAVEMENT, ETC):	5.12 ACRES
TOTAL CUT (CY YDS - APPROXIMATE):	74,900 CY
TOTAL FILL (CU YDS - APPROXIMATE):	78,265 CY
RIVER BASIN:	FRENCH BROAD
RECEIVING WATER:	DUNN CREEK
STREAM INDEX:	6-55-8-1-1q
STREAM CLASSIFICATION:	C

FOR WATER QUALITY: NO DEMOLITION/CONSTRUCTION WASTE OR EXCESS CONSTRUCTION MATERIALS OF ANY KIND CAN BE DUMPED TO THE SANITARY SEWER SYSTEM, THE STORM SEWER SYSTEM, OR BE DISPOSED TO THE GROUND INCLUDING PAINT, PAINT PRIMER, PAINT THINNER, PAINT STRIPPER, SOLVENTS, ACIDS, BASES, OILS, GREASES, ADHESIVES, GLUES, PASTES, SEALANTS, SOLDER, CAULKING, GROUT, PUTTY, WAXES, SHEET ROCK, INSULATION, CARPET, CARPET PADDING, ACETATE, TILE, COOLANT, CORROSION INHIBITOR, CLEANING COMPOUNDS, HERBICIDES, TERMITICIDES, FUNGICIDES, WEED KILLERS OR PESTICIDES.

A. WASTE DISPOSAL: PRIMARY PERMITTEE SHALL ENSURE AND DEMONSTRATE THAT THEIR ESPCP IS IN COMPLIANCE WITH APPLICABLE STATE AND LOCAL WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS. PERMITTEE WILL FOLLOW NCDEQ REQUIREMENTS AND INCORPORATED BY REFERENCE CONTRACT SPECIFICATIONS FOR PROPER DISPOSAL REQUIREMENTS.

(a) THE CONTRACTOR SHALL SELECT A DESIGNATED WASTE COLLECTION AREA AND PROVIDE LIDS FOR WASTE CONTAINERS. CONSTRUCTION WASTE SHALL BE REMOVED ON A CONSISTENT SCHEDULE. SOLID MATERIALS, INCLUDING BUILDING MATERIALS, SHALL NOT BE DISCHARGED INTO WATERS OF THE STATE.

(b) THE CONTRACTOR SHOULD RECYCLE WASTE/MATERIALS GENERATED DURING CONSTRUCTION OR DEMOLITION. ITEMS NORMALLY RECYCLED FROM CONSTRUCTION AND DEMOLITION SITES ARE CONCRETE, BRICK, BLOCK, TREE WASTE, YARD WASTE, SCRAP METAL, CARDBOARD, PALLETS AND DIRT. CONCRETE, BRICK OR BLOCK SHOULD BE TESTED AND FREE OF ASBESTOS AND LEAD BASED PAINT TO BE RECYCLED. TREES AND LIMBS SHOULD BE CUT TO MANAGEABLE SIZE, 4 TO 6 FEET LENGTH. NOTE: IF THE TREE HAS A LARGE DIAMETER (EXAMPLE 3 FEET DIA.) IT SHOULD BE CUT TO LENGTHS OF 3 FEET OR LESS. THE TREE SHOULD BE CUT CLOSE TO THE STUMP. ALL WASTE, THAT CAN NOT BE RECYCLED, SHOULD BE DISPOSED PROPERLY.

(c) NO WASTE OR DEBRIS IS TO BE BURIED ON WITHIN PROJECT PROPERTY. ALL WASTE SHALL BE PROPERLY MANAGED AND DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

(d) ENSURE ALL WASTEWATER FROM CONSTRUCTION ACTIVITIES AND OR CLEANING OPERATIONS ARE PROPERLY MANAGED AND DISPOSED OF. DO NOT DISCHARGE ANY WASTEWATER INTO STORM WATER SEWER SYSTEM OR DRAINS.

(e) CONCRETE TRUCK PROHIBITIONS AND WASH OUT AREAS: DO NOT DISCHARGE ANY CONCRETE WASTEWATER INTO SANITARY OR STORM SEWER SYSTEM OR DRAINS. CONTRACTOR MUST DESIGNATE A PROPER WASH AREA FOR THIS TYPE OF OPERATION.

B. HAZARDOUS WASTE: PERMITTEE WILL FOLLOW NCDEQ REQUIREMENTS TO PROPERLY MANAGE HAZARDOUS WASTE (RCRA AND TSCA) GENERATED DURING CONSTRUCTION ACTIVITIES. ANY WASTE GENERATED MUST UNDERGO A WASTE STREAM ANALYSIS TO DETERMINE APPROPRIATE MANAGEMENT REQUIREMENTS. IF ANY HAZARDOUS WASTE IS GENERATED IT MUST BE MANAGED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

C. VEHICLE WASHING: VEHICLE ENGINE WASHING WITHIN THE CONSTRUCTION SITE IS **NOT AUTHORIZED** UNLESS CONDUCTED IN A DESIGNATED FACILITY/AREA WITH AN OIL/GREASE/SAND TRAP INTERCEPTOR OR AN OIL/ WATER SEPERATOR. THE PRETREATMENT DEVICE MUST BE ABLE TO HOLD ALL CONTAMINANTS PRIOR TO WASTEWATERS BEING DISCHARGED INTO AN APPROVED SANITARY SEWER LINE. VEHICLE EXTERIOR WASHING MAY BE ALLOWED AS LONG AS SEDIMENT OR DIRT IS CONTAINED WITHIN THE SITE AND NOT DISCHARGED INTO A WATERWAY.

D. SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS: FOR ENVIRONMENTAL CONSIDERATIONS TO PROTECT WATER QUALITY; ALL PORTABLE LATRINES, FOOD SERVICE FACILITIES AND WASTE COLLECTION AREAS (INCLUDING PORTA-POTTYS) MUST BE LOCATED OUT OF HIGH FLOW AREAS, AWAY FROM ANY WATER WELLS, STATE WATERS, AND WATERWAYS (INCLUDING DRAINAGE DITCHES AND/OR STORMDRAIN INLETS/CULVERTS) WITHIN OR IN THE VICINITY OF THE CONSTRUCTION SITE/LIMITS. RECOMMENDED DISTANCE OF APPROXIMATELY 100' FROM ANY WATER SOURCE.

(a) CONTRACTOR MUST OBTAIN A PERMIT PRIOR TO ANY DISCHARGE INTO SEWER SYSTEM TO MEET SANITARY SEWER AND SEWAGE DISPOSAL ORDINANCE REQUIREMENTS FOR PRIVATE DISPOSAL.

(b) LATRINE PUMPING OF SANITARY AND SEPTIC WASTE MUST BE APPROVED PRIOR TO PUMPING. THESE FACILITIES MUST BE REGULARLY SERVICED BY A QUALIFIED DOMESTIC WASTE HAULER.

SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) REQUIREMENTS: DURING THE IMPLEMENTATION (CONSTRUCTION/OPERATION) PHASE(S) OF THIS PROJECT, THE CONTRACTOR AND/OR PROPONENT MUST HAVE A SPCC PLAN, AND FOLLOW ALL NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS ASSOCIATED WITH TRANSPORTATION OF ANY HAZARDOUS MATERIALS. STORAGE OF HAZARDOUS MATERIAL/ CHEMICALS AND WASTE MUST COMPLY WITH NCDOT REGULATIONS, INCLUDING SECONDARY CONTAINMENT AS REQUIRED. DRIP PANS SHOULD BE AVAILABLE FOR VEHICLES AND EQUIPMENT TO PREVENT OIL AND OTHER PETROLEUM PRODUCTS FROM SPILLING ONTO THE SOIL OR WATER. SECONDARY CONTAINMENT IS REQUIRED FOR ANY REFUELING/TRANSFERRING ACTIVITIES. STORAGE AREAS FOR HAZARDOUS MATERIALS/CHEMICALS/ WASTE SHOULD BE DESIGNED TO ALLOW FOR SECURE PRODUCT STORAGE, TO PROVIDE SECONDARY CONTAINMENT, AND COVERED.

A. HAZARDOUS MATERIAL INVENTORY: HAZARDOUS MATERIAL INVENTORY AND MSDS SHOULD BE KEPT ON RECORD AT ALL TIMES FOR SPCC/ISCP AND EPCRA REQUIREMENTS. THE INVENTORY MUST INCLUDE ALL PETROLEUM PRODUCTS, CHEMICAL, HERBICIDES, PESTICIDES, FERTILIZERS, DETERGENTS, PAINTS AND ANY OTHER HAZARDOUS SUBSTANCES USED AND/OR STORED BY THE CONTRACTOR/PROPONENT ON THE PROJECT SITE.

B. BMPS FOR THE REMEDIATION OF ALL PETROLEUM SPILLS AND LEAKS: TO ENSURE BEST MANAGEMENT PRACTICES FOR THE REMEDIATION OF ALL PETROLEUM SPILLS AND LEAKS ARE SUITABLE, THE PRIMARY PERMITTEE (OPERATOR/CONTRACTOR) SHALL PROVIDE AND IMPLEMENT A SPILL CONTINGENCY PLAN WHICH MEETS ALL REQUIREMENTS OF THE GENERAL PERMIT.

(a) DESCRIPTION OF MEASUREMENTS TO REDUCE/PREVENT/MINIMIZE SPILL/RELEASES OF HAZARDOUS MATERIALS STORED AND USED AT THE SITE DURING CONSTRUCTION ACTIVITIES.

- PERMANENT VEGETATION TO BE INSTALLED IN ALL DISTURBED AREAS.
- RIPRAP INLET AND OUTLET PROTECTION TO BE INSTALLED AT ALL STORMDRAINS.

(b) LOCATION OF HAZARDOUS MATERIAL STORAGE AREAS; INCLUDING TANKS AND REFUELING OPERATIONS.

- SEE PLANS.

(c) EMERGENCY RESPONSE AND CLEAN-UP PROCEDURE. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. CONTRACTOR IS RESPONSIBLE TO COORIDATE ALL EMERGENCY RESPONSE ACTIONS AT THE SITE, TO INCLUDE REMOVAL AND DISPOSAL OF CONTAMINATED MATERIALS.

THE CONTRACTOR SHOULD ALSO NOTIFY NCDEQ OF ALL SPILL/RELEASES AND ALL CORRECTIVE ACTIONS TAKEN AFTER A SPILL/RELEASE. FOR EMERGENCY ASSISTANCE FROM THE FIRE DEPARTMENT CONTACT 911.

CONTRACTOR TO DESCRIBE SPECIFIC MEASUREMENTS AT THE SITE, AND TO SHOW LOCATION MAP. CONTRACTOR TO PROVIDE SPECIFIC INFORMATION OF THEIR EMERGENCY RESPONSE TEAM FOR CLEAN-UP IN THE ENVIRONMENTAL PROTECTION PLAN (EPP). ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY.

OFF-SITE VEHICLE TRACKING: OFF-SITE VEHICLE TRACKING OF DIRT, SOILS, AND SEDIMENTS AND THE GENERATION OF DUST SHALL BE MINIMIZED OR ELIMINATED TO THE MAXIMUM EXTENT POSSIBLE. RECOMMEND "WASHING STATIONS" BE IMPLEMENTED TO PREVENT SEDIMENT FROM WASHING INTO A PUBLIC ACCESS ROADWAY. ALL WASHING STATIONS MUST BE LOCATED WITH THE LAND DISTURBANCE LIMITS AND FOR ADDED EFFECTIVENESS, BE POSITIONED CLOSE TO OR ON THE CONTRUCTION ENTRANCE. IN SOME CASES DIVERSION CHANNELS AND SMALL SEDIMENT PONDS MAY BE REQUIRED TO DIRECT AND COLLECT WASTEWATERS FROM THESE CLEANING OPERATIONS.

OPEN BURNING: OPEN BURNING IS NOT AUTHORIZED.

STREAM BUFFER REQUIREMENTS:

NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25-FOOT UNDISTURBED STREAM BUFFER AS MEASURED FROM THE POINT OF WRESTED VEGETATION WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS THROUGH NCDEQ.

EROSION AND SEDIMENT CONTROL GENERAL NOTES:

THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND DISTURBING ACTIVITIES.

EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

FOLLOWING INITIAIL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN SEVEN (7) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND FOURTEEN DAYS (14) AS TO ALL OTHER DISTURBED OR GRADED AREAS.

AMENDMENTS AND REVISIONS TO THIS ES&PC PLAN WHICH MIGHT HAVE A SIGNIFICANT EFFECT ON BEST MANAGEMENT PRACTICES WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO PREVENT THE GENERATION OF FUGITIVE DUST AT THE CONSTRUCTION SITE FROM BECOMING AIRBORNE. CONTRACTOR MAY USE WATER OR CHEMICALS FOR CONTROL OF DUST. OPEN BODIED TRUCKS SHALL BE COVERED AT ALL TIMES WHEN IN MOTION AND TRANSPORTING MATERIALS LIKELY TO GIVE RISE TO AIRBORNE DUSTS.

WASTE MATERIALS SHALL NOT BE DISCHARGED INTO WATERS OF THE STATE EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

STORMWATER POLLUTANTS DURING CONSTRUCTION WILL BE CONTROLLED BY THE IMPLENTATION OF VARIOUS APPROVED BMP'S. THESE SHALL INCLUDE SILT FENCE, ROCK DAMS, SEDIMENT TRAPS, CHECK DAMS, TEMPORARY GRASSING, ETC.

STORMWATER POLLUTANTS FOR POST CONSTRUCTION WILL BE CONTROLLED BY THE IMPLEMENTATION OF PERMANENT GRASSING, MATTING BLANKETS, RIP-RAP PROTECTION, ETC.

NC GROUND COVER STATUTES:

GROUND COVER SHALL BE ESTABLISHED ON EXPOSED SLOPES WITHIN 14 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING. PERMANENT GROUND COVER SHALL BE ESTABLISHED WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT.

EROSION CONTROL COMPREHENSIVE MONITORING PLAN:

1. THE CONTRACTOR SHALL INSTALL A RAIN GAUGE AND THERMOMETER IN THE STAGING AREA OR ON SITE.

2. THE CONTRACTOR SHALL MEASURE THE TURBIDITY OF DRAINAGE AT THE OUTLET LOCATIONS AND IN THE CHANNELS WHICH DRAIN THE SITE AREA DURING A RAIN EVENT PRIOR TO START OF THE PROJECT.

3. THE CONTRACTOR SHALL INSPECT EROSION CONTROLS DAILY AND AFTER EACH RAIN EVENT FOR DAMAGES. REPAIRS TO DAMAGED EROSION CONTROL MEASURES ARE TO BE MADE IMMEDIATELY AFTER THE DAMAGE IS NOTED.

4. THE CONTRACTOR SHALL KEEP A DAILY LOG ON ALL EROSION CONTROL ACTIVITY. THE LOG SHALL INCLUDE THE FOLLOWING DATA AT A MINIMUM: REFER TO SHEET CG803 FOR SELF - INSPECTION REPORT REQUIREMENTS.

A) TURBIDITY MEASUREMENT MADE AT START OF PROJECT

B) DATE EACH EROSION CONTROL MEASURE (BMP) IS INSTALLED

C) DAILY RAINFALL AND TEMPERATURE MEASUREMENTS

D) CONDITION OF EACH BMP AFTER EACH RAINFALL EVENT

E) MEASUREMENT OF TURBIDITY DURING EACH RAINFALL EVENT AT THE ABOVE LOCATIONS

F) DATE AND ACTION TAKEN TO REPAIR DAMAGED BMPS

G) DATE AND ESTIMATE OF AMOUNT OF SILT REMOVED FROM EACH BMP

5. THE CONTRACTOR SHALL DETERMINE THE ACCEPTABLE LIMIT OF TURBIDITY AS MAY BE REQUIRED BY THE STATE OF NORTH CAROLINA OR LOCAL COUNTY REGULATIONS. THE INFORMATION SHALL BE PROVIDED TO THE CONTRACTING OFFICER. THE TURBIDITY TESTS AS OUTLINED ABOVE SHALL BE PERFORMED REGARDLESS OF LOCAL REGULATIONS.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING TO APPROPRIATE STATE AND FEDERAL AGENCIES ALL REQUIRED FORMS AND FEES PRIOR TO CONSTRUCTION. FORMS AND FEES SHALL INCLUDE THE NOTICE OF INTENT (NOI) FOR WATER QUALITY AND ANY OTHERS AS REQUIRED.

7. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS AND SHALL OBTAIN ALL NECESSARY FEDERAL, STATE, AND LOCAL ENVIRONMENTAL PERMITS, INCLUDING BUT NOT LIMITED TO, THOSE RELATED TO SEDIMENT CONTROL, STORM WATER, WETLAND, STREAMS, ENDANGERED SPECIES, AND HISTORICAL SITES.

STANDARD EROSION AND SEDIMENT CONTROL NOTES

THE CORPS OF ENGINEERS REQUIRES THAT THESE NOTES, IN THEIR ENTIRETY, BE INCLUDED ON THE EROSION AND SEDIMENT CONTROL PLAN. IT IS RECOGNIZED THAT EVERY NOTE MAY NOT APPLY TO ALL PROJECTS. THE REQUIREMENT OF ANY INDIVIDUAL NOTE NOT APPLICABLE TO THE SUBJECT PROJECT IS NOT BINDING UPON THE APPLICANT OR THE APPLICANT'S CONTRACTOR.

I. THE CONTRACTOR SHALL NOTIFY THE COE ENVIRONMENTAL SPECIALIST. SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND, UNLESS WAIVED BY THE COE, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND A REPRESENTATIVE OF COE.

2. THE CONTRACTOR MUST NOTIFY COE IN WRITING AND BY TELEPHONE AT THE FOLLOWING POINTS:

A. THE REQUIRED PRE-CONSTRUCTION MEETING.

B. FOLLOWING INSTALLATION OF SEDIMENT CONTROL MEASURES.

C. DURING THE INSTALLATION OF SEDIMENT BASINS (TO BE CONVERTED INTO PERMANENT STORMWATER MANAGEMENT STRUCTURES) AT THE REQUIRED INSPECTION POINTS (SEE INSPECTION CHECKLIST ON PLAN). NOTIFICATION PRIOR TO COMMENCING CONSTRUCTION OF EACH STEP IS MANDATORY.

D. PRIOR TO REMOVAL OR MODIFICATION OF ANY SEDIMENT CONTROL STRUCTURES

E. PRIOR TO REMOVAL OF ALL SEDIMENT CONTROL DEVICES.

F. PRIOR TO FINAL ACCEPTANCE.

3. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL MATERIALS DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.

4. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATION CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIMES AS THEY ARE REMOVED WITH PRIOR PERMISSION FROM COE INSPECTOR.

5. ALL SEDIMENT BASINS, TRAP EMBANKMENTS AND SLOPES, PERIMETER DIKES, SWALES AND ALL DISTURBED SLOPES STEEPER OR EQUAL TO 3:1 SHALL BE STABILIZED WITH SOD OR SEED AND ANCHORED STRAW MULCH OR OTHER APPROVED STABILIZATION MEASURES AS SOON AS POSSIBLE BUT NOT LATER THAN SEVEN (7) CALENDAR DAYS AFTER ESTABLISHMENT. ALL AREAS DISTURBED OUTSIDE THE PERIMETER SEDIMENT CONTROL SYSTEM MUST BE MINIMIZED. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION. (REQUIREMENT FOR STABILIZATION MAY BE REDUCED TO THREE (3) DAYS FOR SENSITIVE AREAS.)

6. THE CONTRACTOR SHALL APPLY SOD OR SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES TO ALL DISTURBED AREAS AND STOCKPILES WITHIN FOURTEEN (14) CALENDAR DAYS AFTER STRIPPING AND GRADING ACTIVITIES HAVE CEASED IN THE AREA. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION (REQUIREMENT MAY BE REDUCED TO SEVEN (7) DAYS FOR SENSITIVE AREAS).

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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U. S. ARMY RESERVE CENTER
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SEDIMENT AND EROSION CONTROL NOTES

SHEET ID
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STANDARD EROSION AND SEDIMENT CONTROL NOTES (CONT)

7. PRIOR TO THE REMOVAL OF SEDIMENT CONTROL MEASURES, THE CONTRACTOR SHALL STABILIZE AND HAVE ESTABLISHED PERMANENT STABILIZATION FOR ALL CONTRIBUTORY DISTURBED AREAS USING SOD OR AN APPROVED PERMANENT SEED MIXTURE WITH REQUIRED SOIL AMENDMENTS AND AN APPROVED ANCHORED MULCH. WOOD FIBER MULCH MAY ONLY BE USED IN SEEDING SEASON WHERE THE SLOPE DOES NOT EXCEED 10% AND GRADING HAS BEEN DONE TO PROMOTE SHEET FLOW DRAINAGE. AREAS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON SHALL BE PERMANENTLY STABILIZED AS SOON AS POSSIBLE, BUT NOT LATER THAN FOURTEEN (14) CALENDAR DAYS AFTER ESTABLISHMENT. REFER TO THE SEEDING AND SODDING SPECIFICATIONS THAT SHALL BE USED FOR ALL TEMPORARY AND PERMANENT SEEDING WITH THE EXCEPTION OF ANY DISTURBANCE IN WETLAND AREAS. FOR WETLAND AREAS THE ENDANGERED SPECIES BRANCH WILL GIVE GUIDANCE AND HAS THEIR OWN SEED SPECS TO BE USED IN WETLAND AREAS.

8. THE SITE'S APPROVAL LETTER, APPROVED EROSION AND SEDIMENT CONTROL PLANS, DAILY LOG BOOKS AND TEST REPORTS SHALL BE AVAILABLE AT THE SITE FOR INSPECTION BY DULY AUTHORIZED OFFICIALS OF COE AND THE WATER MANAGEMENT BRANCH (WMB) RESPONSIBLE FOR PROJECT.

9. SURFACE DRAINAGE FLOWS OVER UNSTABILIZED CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER PREVENTING DRAINAGE FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING PROTECTIVE DEVICES TO CONVEY THE WATER DOWNSLOPE WITHOUT CAUSING EROSION. DIKES SHALL BE INSTALLED AND MAINTAINED AT THE TOP OF A CUT OR FILL SLOPE UNTIL THE SLOPE AND DRAINAGE AREA TO IT ARE FULLY STABILIZED, AT WHICH TIME THEY MUST BE REMOVED AND FINAL GRADING DONE TO PROMOTE SHEET FLOW DRAINAGE. PROTECTIVE METHODS MUST BE PROVIDED AT POINTS OF CONCENTRATED FLOW WHERE EROSION IS LIKELY TO OCCUR.

10. PERMANENT SWALES OR OTHER POINTS OF CONCENTRATED WATER FLOW SHALL BE STABILIZED WITH SOD OR SEED WITH AN APPROVED EROSION CONTROL MATTING, OR BY OTHER APPROVED STABILIZATION MEASURES.

11. TEMPORARY SEDIMENT CONTROL DEVICES MAY BE REMOVED, WITH PERMISSION OF NCDEQ OR COE INSPECTOR AND WMB INSPECTORS, WITHIN THIRTY (30) CALENDAR DAYS FOLLOWING ESTABLISHMENT OF PERMANENT STABILIZATION IN ALL CONTRIBUTORY DRAINAGE AREAS. STORMWATER MANAGEMENT STRUCTURES USED TEMPORARILY FOR SEDIMENT CONTROL SHALL BE CONVERTED TO THE PERMANENT CONFIGURATION WITHIN THIS TIME PERIOD.

12. NO PERMANENT CUT OR FILL SLOPE WITH A GRADIENT STEEPER THAN 3:1 WILL BE PERMITTED IN LAWN MAINTENANCE AREAS. A SLOPE GRADIENT OF UP 2:1 WILL BE PERMITTED IN NON-MAINTENANCE AREAS PROVIDED THAT THOSE AREAS ARE INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN WITH A LOW-MAINTENANCE GROUND COVER SPECIFIED FOR PERMANENT STABILIZATION. SLOPE GRADIENT STEEPER THAN 2:1 WILL NOT BE PERMITTED WITH VEGETATIVE STABILIZATION.

13. FOR FINISHED GRADING, THE CONTRACTOR SHALL PROVIDE ADEQUATE GRADIENTS TO PREVENT WATER FROM PONDING FOR MORE THAN TWENTY FOUR (24) HOURS AFTER THE END OF A RAINFALL EVENT. DRAINAGE COURSES AND SWALE FLOW AREAS MAY TAKE AS LONG AS FORTY-EIGHT (48) HOURS AFTER THE END OF A RAINFALL EVENT TO DRAIN. AREAS DESIGNATED TO HAVE STANDING WATER SHALL NOT BE REQUIRED TO MEET THIS REQUIREMENT.

14. SEDIMENT TRAPS OR BASINS ARE NOT PERMITTED WITHIN 20 FEET OF A FOUNDATION THAT EXISTS OR IS UNDER CONSTRUCTION. NO STRUCTURE MAY BE CONSTRUCTED WITHIN 20 FEET OF AN ACTIVE SEDIMENT TRAP OR BASIN.

15. THE COE INSPECTOR HAS THE OPTION OF REQUIRING ADDITIONAL SAFETY OR SEDIMENT CONTROL MEASURES, IF DEEMED NECESSARY.

16. ALL TRAP DEPTH DIMENSIONS ARE RELATIVE TO THE OUTLET ELEVATION. ALL TRAPS MUST HAVE A STABLE OUTFALL. ALL TRAPS AND BASINS SHALL HAVE STABLE INFLOW POINTS.

17. VEGETATIVE STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. REFER TO APPROPRIATE PROJECT SPECIFICATIONS FOR TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING, SODDING, AND GROUND COVERS.

18. SEDIMENT SHALL BE REMOVED AND THE TRAP OR BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE QUARTER OF THE TOTAL DEPTH OF THE TRAP OR BASIN. TOTAL DEPTH SHALL BE MEASURED FROM THE TRAP OR BASIN BOTTOM TO THE CREST OF THE OUTLET.

19. SEDIMENT REMOVED FROM TRAPS (AND BASINS) SHALL BE PLACED AND STABILIZED IN APPROVED AREAS, BUT NOT WITHIN A FLOODPLAIN, WETLAND OR TREE-SAVE AREA. WHEN PUMPING SEDIMENT LADEN WATER, THE DISCHARGE MUST BE DIRECTED TO A SEDIMENT TRAPPING DEVICE PRIOR TO RELEASE FROM THE SITE. A SUMP PIT MAY BE USED IF SEDIMENT TRAPS THEMSELVES ARE BEING PUMPED OUT. ALL WATER REMOVED FROM EXCAVATED AREAS (E.G. UTILITY TRENCHES) SHALL BE PASSED THROUGH AN APPROVED DEWATERING PRACTICE OR PUMPED TO A SEDIMENT TRAP OR BASIN PRIOR TO DISCHARGE FROM THE SITE (IE. VIA FUNCTIONAL STORM DRAIN SYSTEM OR TO STABLE GROUND SURFACE).

20. SEDIMENT CONTROL FOR UTILITY CONSTRUCTION FOR AREAS OUTSIDE OF DESIGNED CONTROLS OR AS DIRECTED BY ENGINEER OR COE INSPECTOR:

A. CONTACT APPLICABLE UTILITY PROVIDERS 48 HOURS PRIOR TO THE START OF WORK.

B. EXCAVATED TRENCH MATERIAL SHALL BE PLACED ON HIGH SIDE OF THE TRENCH.

C. TRENCHES FOR UTILITY INSTALLATION SHALL BE BACKFILLED, COMPACTED, AND STABILIZED AT THE END OF EACH WORKING DAY. NO MORE TRENCH SHALL BE OPENED THAN CAN BE COMPLETED THE SAME DAY, UNLESS;

D. TEMPORARY SEDIMENT FENCE SHALL BE PLACED IMMEDIATELY DOWNSTREAM OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED FOR MORE THAN ONE DAY.

21. WHERE DEEMED APPROPRIATE BY THE ENGINEER OR INSPECTOR, SEDIMENT BASINS AND TRAPS MAY NEED TO BE SURROUNDED WITH AN APPROVED SAFETY FENCE. THE FENCE MUST CONFORM TO LOCAL ORDINANCES AND REGULATIONS. THE DEVELOPER OR OWNER SHALL CHECK WITH LOCAL BUILDING OFFICIALS ON APPLICABLE SAFETY REQUIREMENTS. WHERE SAFETY FENCE IS DEEMED APPROPRIATE AND LOCAL ORDINANCES DO NOT SPECIFY FENCING SIZES AND TYPES. THE FOLLOWING SHALL BE USED AS A MINIMUM STANDARD: THE SAFETY FENCE MUST BE MADE OF WELDED WIRE AND AT LEAST 42 INCHES HIGH, HAVE POSTS SPACED NO FARTHER APART THAN 8 FEET, HAVE MESH OPENINGS NO GREAT THAN 2 INCHES IN WIDTH AND 4 INCHES IN HEIGHT WITH A MINIMUM OF 14 GAUGE WIRE. SAFETY FENCE MUST BE MAINTAINED AND IN GOOD CONDITION AT ALL TIMES.

STANDARD EROSION AND SEDIMENT CONTROL NOTES (CONT)

22. SPOIL OR BORROW AREAS ON STATE OR FEDERAL PROPERTY MUST HAVE PRIOR APPROVAL BY COE AND OTHER APPLICABLE STATE, FEDERAL, AND LOCAL AGENCIES; OTHERWISE APPROVAL MUST BE GRANTED BY THE LOCAL AUTHORITIES. ALL WASTE AND BORROW AREAS OFF-SITE MUST BE PROTECTED BY SEDIMENT CONTROL MEASURES AND STABILIZED.

23. SITES WHERE INFILTRATION DEVICES ARE USED FOR CONTROL OF STORMWATER, EXTREME CARE MUST BE TAKEN TO PREVENT RUNOFF FROM UNSTABILIZED AREAS FROM ENTERING THE STRUCTURE DURING CONSTRUCTION. SEDIMENT CONTROL DEVICES PLACED IN INFILTRATION AREAS MUST HAVE BOTTOM ELEVATIONS AT LEAST TWO (2) FEET HIGHER THAN THE FINISH GRADE BOTTOM ELEVATION OF THE INFILTRATION PRACTICE. WHEN CONVERTING A SEDIMENT TRAP TO AN INFILTRATION DEVICE. ALL ACCUMULATED SEDIMENT MUST BE REMOVED AND DISPOSED OF PRIOR TO FINAL GRADING OF INFILTRATION DEVICE.

24. WHEN A STORM DRAIN SYSTEM IS DIRECTED TO A SEDIMENT TRAP OR SEDIMENT BASIN AND THE SYSTEM IS TO BE USED FOR A TEMPORARILY CONVEYING SEDIMENT LADEN WATER, ALL STORM DRAIN INLETS IN AREAS SHALL HAVE TEMPORARY ASPHALT BERMS CONSTRUCTED AT THE TIME OF BASE PAVING TO DIRECT GUTTER FLOW INTO THE INLETS TO AVOID SURCHARGING AND OVERFLOW INLETS IN SUMP AREAS.

EROSION CONTROL CONSTRUCTION ACTIVITY SEQUENCE

GENERAL SEQUENCE OF EROSION CONTROL ACTIVITIES:

ONCE A PLAN HAS BEEN APPROVED, NO VARIANCE WILL BE PERMITTED UNLESS IT IS PRESENTED IN WRITING, AND APPROVED BY THE COE. FAILURE TO COMPLY WILL RESULT IN ALL WORK BEING STOPPED UNTIL COMPLIANCE IS ACHIEVED.

PHASES 1 THROUGH 3 SEDIMENT AND EROSION CONTROL CONSTRUCTION SEQUENCE:

1. NOTIFICATION TO CORPS OF ENGINEERS AND NCDEQ OF INTENT TO BEGIN CONSTRUCTION.

2. PRE-CONSTRUCTION MEETING

3. PROVIDE CONSTRUCTION FENCING TO ENCLOSE CONSTRUCTION SITE

4. INSTALL INITIAL PHASE EROSION AND SEDIMENT CONTROL MEASURES TO INCLUDE BUT NOT LIMITED TO CONSTRUCTION ENTRANCES, AND PERIMETER SEDIMENT FENCING.

5. INSTALL TREE PROTECTION FENCING PRIOR TO ANY DEMOLITION AS SHOWN IN THE INITIAL PHASE.

6. INSTALL TEMPORARY SEDIMENT BASINS AS WELL AS TEMPORARY DIVERSION AS SHOWN ON THE INITIAL PHASE PLANS. BASINS MUST BE INSTALLED BEFORE COMMENCING ANY GRADING, EARTHWORK, AND CLEARING AND GRUBBING.

7. BEGIN DEMOLITION ACTIVITIES INCLUDING CLEARING AND GRUBBING AS SHOWN IN THE INITIAL PHASE.

8. BEGIN GRADING CONCURRENTLY WITH INSTALLATION OF INTERMEDIATE SEDIMENT AND EROSION CONTROL MEASURES INCLUDING BUT NOT LIMITED TO TEMPORARY DOWNDRAINS, ROCK CHECK DAMS AND NEW STORM DRAINAGE INLET AND OUTLET PROTECTION MEASURES AS EACH INLET IS BROUGHT TO FINISHED GRADE.

9. CONSTRUCT NEW FACILITIES AND OTHER SITE IMPROVEMENTS.

10. PROVIDE TEMPORARY GROUND COVER AS SPECIFIED IN THE SPECIFICATIONS WHILE THE REMAINING CONSTRUCTION IS FINISHED.

11. ESTABLISH PERMANENT GROUND COVER THROUGHOUT PHASES EXCEPT WHERE NOTED IN THIS SEQUENCE AND ON THE LANDSCAPING PLANS.

12. ESTABLISH PERMANENT GROUND COVER THROUGHOUT PROJECT.

13. FINAL INSPECTIONS AND REMOVAL OF SEDIMENT AND EROSION CONTROLS IN PHASES 1, 2 AND 3 AFTER COE AND NCDEQ HAS GIVEN APPROVAL TO DO SO. AT THIS POINT THE SEDIMENT BASIN CAN BE CONVERTED TO A WET POND AS SPECIFIED IN THE PLANS.

14. LANDSCAPING PLANS SHALL SERVE AS FINAL PHASE OF SEDIMENT AND EROSION CONTROL ACTIVITIES.

15. FINAL INSPECTIONS AND REMOVAL OF SEDIMENT AND CONTROLS AFTER COE AND NCDEQ HAVE GIVEN APPROVAL TO DO SO.

POND CONVERSION SEQUENCE

CALL FOR INSPECTION OF STABILIZED SITE. IF APPROVED, REMOVE TEMPORARY SEDIMENT BASIN, BAFFLES, AND OTHER TEMPORARY COMPONENTS AND GRADE TO FINISH CONTOURS. INSTALL PERMANENT CHANNELS AND OUTLET PROTECTION AND MODIFY WET POND OUTLET STRUCTURE TO PERMANENT PROPOSED CONDITIONS.

PROJECT SEEDING

REFER TO SPECIFICATIONS FOR TEMPORARY SEEDING, PERMANENT SEEDING, AND SODDING REQUIREMENTS.

ALL PERIMETER DIKES, DITCHES, SWALES, PERIMETER SLOPES OR SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) SHALL BE PROVIDED TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER AS SOON AS PRACTICABLE BUT IN ANY EVENT WITHIN 7 CALENDAR DAYS.

1) Ground Stabilization*

Site Area Description	Stabilization Time Frame	Stabilization Time Frame Exceptions
• Perimeter dikes, swales, ditches and slopes	7 days	None
• High Quality Water (HQW) Zones	7 days	None
• Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
• Slopes 3:1 or flatter	14 days	7-days for slopes greater than 50 feet in length
• All other areas with slopes flatter than 4:1	14 days	None (except for perimeters and HQW Zones)

*"Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable." (Section II.B(2)(b))

MAINTENANCE DURING ESTABLISHMENT PERIOD

MAINTENANCE OF THE SEEDED AREAS SHALL INCLUDE PROTECTING EMBANKMENTS AND DITCHES FROM SURFACE EROSION; MAINTAINING EROSION CONTROL MATERIALS AND MULCH; PROTECTING INSTALLED AREAS FROM TRAFFIC; MOWING; WATERING; AND POST-FERTILIZATION.

MOWING
A. TURF AREAS: TURF AREAS SHALL BE MOWED TO A MINIMUM 3-INCH HEIGHT WHEN THE TURF IS A MAXIMUM 4 INCHES HIGH. CLIPPINGS SHALL BE REMOVED WHEN THE AMOUNT CUT PREVENTS SUNLIGHT FROM REACHING THE GROUND SURFACE.

B. EROSION CONTROL AREAS: EROSION CONTROL AREAS SHALL BE MOWED TO A MINIMUM 4 INCH HEIGHT WHEN THE PLANTS ARE A
MAXIMUM 8 INCHES HIGH. CLIPPINGS SHALL BE REMOVED WHEN THE AMOUNT CUT PREVENTS SUNLIGHT FROM REACHING THE GROUND
SURFACE.

POST-FERTILIZATION
AFTER THE PERMANENT GRASS HAS BEEN ACCEPTED, AND BETWEEN THE DATES OF APRIL 15 AND OCTOBER 15, APPLY 425 POUNDS OF FERTILIZER PER ACRE.

REPAIR OR REINSTALL
UNSATISFACTORY STAND OF GRASS PLANTS AND MULCH SHALL BE REPAIRED OR REINSTALLED, AND ERODED AREAS SHALL BE REPAIRED UNTIL A SATISFACTORY STAND OF GRASS RESULTS.

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CG802.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

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TIMELINE OF MAJOR SOIL DISTURBING ACTIVITIES:

CONSTRUCTION ACTIVITY	MONTH												
	NTP/ 1	2	3	4	5	6	7	8	9	10	11	12	13
CLEAR AND GRUB AREAS REQ'D TO INSTALL INITIAL PERIMETER E&SC BMPS	▬												
INSTALL INITIAL PERIMETER BMPS (RETROFITTING, CHANNEL STABLIZATION, CONSTRUCTION EXIT, SILT FENCE, ETC.)	▬												
MAINTAIN INITIAL PERIMETER BMPS	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
PERFORM INITIAL CLEARING	▬	▬											
INSTALL SEDIMENTATION BASIN		▬											
CLEAR AND GRUB WITHIN LOD		▬	▬										
INSTALL INTERMEDIATE BMPS (EROSION CONTROL BLANKETS, TEMPORARY STABILIZATION, ETC.)			▬	▬	▬	▬	▬	▬					
MAINTAIN INTERMEDIATE PERIMETER BMPS			▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
PERFORM INTERMEDIATE GRADING AND INSTALL UTILITIES					▬	▬	▬	▬					
PERFORM FINAL GRADING									▬	▬	▬		
INSTALL FINAL BMPS (PERMANENT SEEDING, SOD, EROSION CONTROL BLANKETS, ETC)									▬	▬	▬	▬	▬
CONVERT SEDIMENTATION BASIN TO BIORETENTION BASIN												▬	▬
REMOVE ALL TEMPORARY BMPS AND STABILIZE									▬	▬	▬	▬	▬

SELF-INSPECTION REPORT FOR LAND DISTURBING ACTIVITY AS REQUIRED BY NCGS 113A-54.1
15A NCAC 04B .0131 SELF-INSPECTIONS

WHERE INSPECTIONS ARE REQUIRED BY G.S. 113A-54.1(E), THE FOLLOWING APPLY:

1. THE PERSON WHO PERFORMS THE INSPECTION SHALL MAKE A RECORD OF THE SITE INSPECTION BY DOCUMENTING THE FOLLOWING ITEMS:
   A. ALL OF THE EROSION AND SEDIMENTATION CONTROL MEASURES, PRACTICES AND DEVICES, AS CALLED FOR IN A CONSTRUCTION SEQUENCE CONSISTENT WITH THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN, INCLUDING BUT NOT LIMITED TO SEDIMENTATION CONTROL BASINS, SEDIMENTATION TRAPS, SEDIMENTATION PONDS, ROCK DAMS, TEMPORARY DIVERSIONS, TEMPORARY SLOPE DRAINS, ROCK CHECK DAMS, SEDIMENT FENCE OR BARRIERS, ALL FORMS OF INLET PROTECTION, STORM DRAINAGE FACILITIES, ENERGY DISSIPATERS, AND STABILIZATION METHODS OF OPEN CHANNELS, HAVE INITIALLY BEEN INSTALLED AND DO NOT SIGNIFICANTLY DEVIATE (AS DEFINED IN SUB-ITEM (1)(E) OF THIS RULE) FROM THE LOCATIONS, DIMENSIONS AND RELATIVE ELEVATIONS SHOWN ON THE APPROVED EROSION AND SEDIMENTATION PLAN. SUCH DOCUMENTATION SHALL BE ACCOMPLISHED BY INITIALING AND DATING EACH MEASURE OR PRACTICE SHOWN ON A COPY OF THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN OR BY COMPLETING, DATING AND SIGNING AN INSPECTION REPORT THAT LISTS EACH MEASURE, PRACTICE OR DEVICE SHOWN ON THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. THIS DOCUMENTATION IS REQUIRED ONLY UPON THE INITIAL INSTALLATION OF THE EROSION AND SEDIMENTATION CONTROL MEASURES, PRACTICES AND DEVICES AS SET FORTH BY THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN OR IF THE MEASURES, PRACTICES AND DEVICES ARE MODIFIED AFTER INITIAL INSTALLATION;

   B. THE COMPLETION OF ANY PHASE OF GRADING FOR ALL GRADED SLOPES AND FILLS SHOWN ON THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN, SPECIFICALLY NOTING THE LOCATION AND CONDITION OF THE GRADED SLOPES AND FILLS. SUCH DOCUMENTATION SHALL BE ACCOMPLISHED BY INITIALING AND DATING A COPY OF THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN OR BY COMPLETING, DATING AND SIGNING AN INSPECTION REPORT;

   C. THE LOCATION OF TEMPORARY OR PERMANENT GROUND COVER, AND THAT THE INSTALLATION OF THE GROUND COVER DOES NOT SIGNIFICANTLY DEVIATE (AS DEFINED IN SUB-ITEM (1)(E) OF THIS RULE) FROM THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN. SUCH DOCUMENTATION SHALL BE ACCOMPLISHED BY INITIALING AND DATING A COPY OF THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN OR BY COMPLETING, DATING AND SIGNING AN INSPECTION REPORT;

   D. THAT MAINTENANCE AND REPAIR REQUIREMENTS FOR ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES, PRACTICES AND DEVICES HAVE BEEN PERFORMED. SUCH DOCUMENTATION SHALL BE ACCOMPLISHED BY COMPLETING, DATING AND SIGNING AN INSPECTION REPORT (THE GENERAL STORM WATER PERMIT MONITORING FORM MAY BE USED TO VERIFY THE MAINTENANCE AND REPAIR REQUIREMENTS); AND

   E. ANY SIGNIFICANT DEVIATIONS FROM THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN, CORRECTIVE ACTIONS REQUIRED TO CORRECT THE DEVIATION AND COMPLETION OF THE CORRECTIVE ACTIONS. SUCH DOCUMENTATION SHALL BE ACCOMPLISHED BY INITIALING AND DATING A COPY OF THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN OR BY COMPLETING, DATING AND SIGNING AN INSPECTION REPORT. A SIGNIFICANT DEVIATION MEANS AN OMISSION, ALTERATION OR RELOCATION OF AN EROSION OR SEDIMENTATION CONTROL MEASURE THAT PREVENTS THE MEASURE FROM PERFORMING AS INTENDED.

2. THE DOCUMENTATION, WHETHER ON A COPY OF THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN OR AN INSPECTION REPORT, SHALL INCLUDE THE NAME, ADDRESS, AFFILIATION, TELEPHONE NUMBER, AND SIGNATURE OF THE PERSON CONDUCTING THE INSPECTION AND THE DATE OF THE INSPECTION. ANY RELEVANT LICENSES AND CERTIFICATIONS MAY ALSO BE INCLUDED. ANY DOCUMENTATION OF INSPECTIONS THAT OCCUR ON A COPY OF THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN SHALL OCCUR ON A SINGLE COPY OF THE PLAN AND THAT PLAN SHALL BE MADE AVAILABLE ON THE SITE. ANY INSPECTION REPORTS SHALL ALSO BE MADE AVAILABLE ON THE SITE.

3. THE INSPECTION SHALL BE PERFORMED DURING OR AFTER EACH OF THE FOLLOWING PHASES OF A PLAN:
   A. INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROL MEASURES;

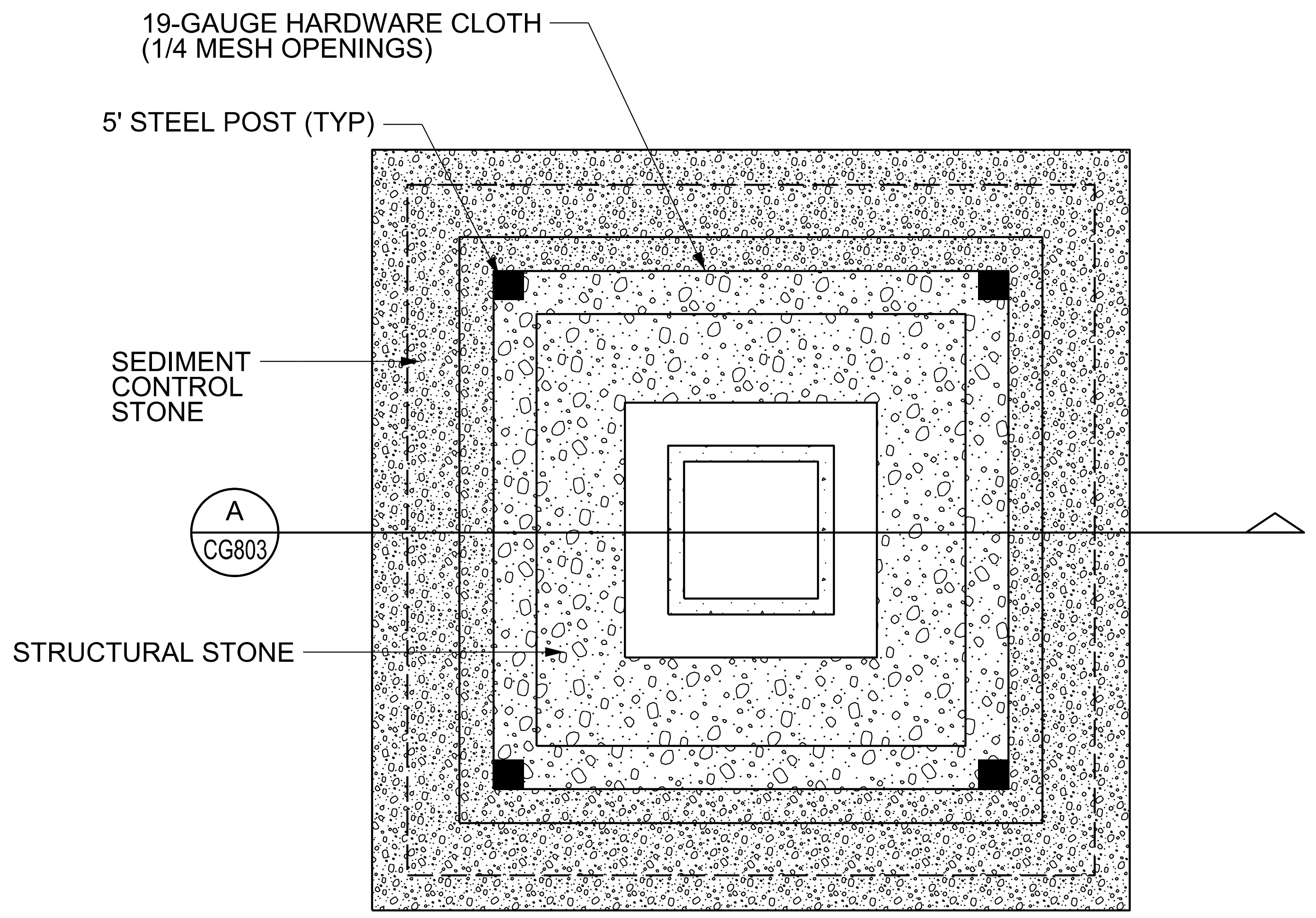
   B. CLEARING AND GRUBBING OF EXISTING GROUND COVER;

   C. COMPLETION OF ANY PHASE OF GRADING OF SLOPES OR FILLS THAT REQUIRES PROVISION OF TEMPORARY OR PERMANENT GROUND COVER PURSUANT TO G.S. 113A-57(2);

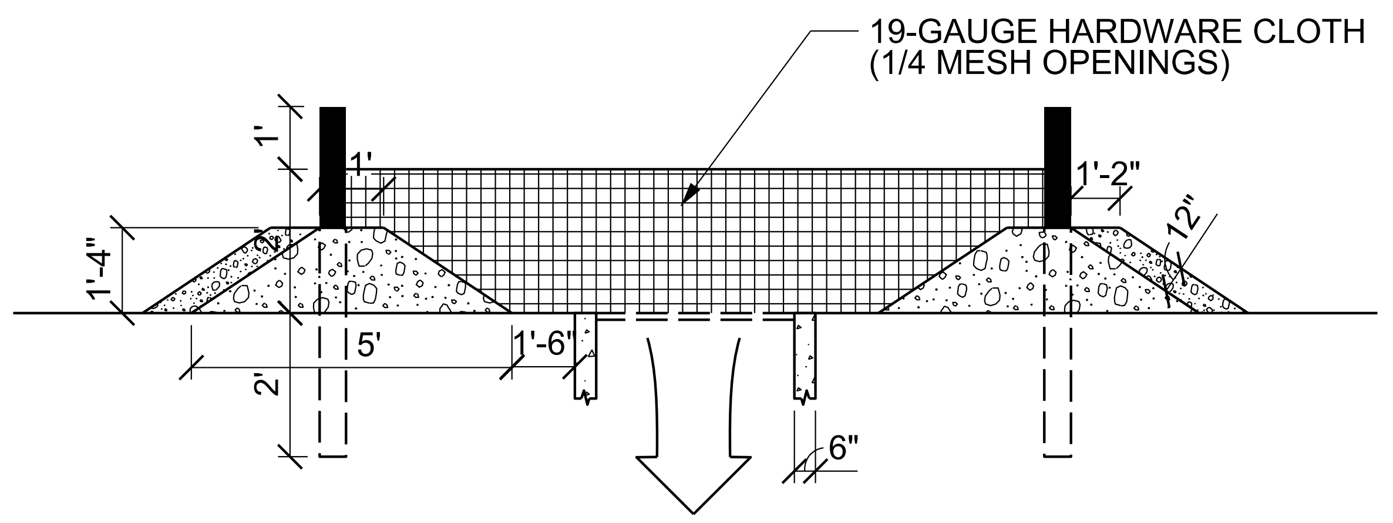
   D. COMPLETION OF STORM DRAINAGE FACILITIES;

   E. COMPLETION OF CONSTRUCTION OR DEVELOPMENT; AND

   F. QUARTERLY UNTIL THE ESTABLISHMENT OF PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION OR UNTIL THE FINANCIALLY RESPONSIBLE PARTY HAS CONVEYED OWNERSHIP OR CONTROL OF THE TRACT OF LAND FOR WHICH THE EROSION AND SEDIMENTATION CONTROL PLAN HAS BEEN APPROVED AND THE AGENCY THAT APPROVED THE PLAN HAS BEEN NOTIFIED. IF THE FINANCIALLY RESPONSIBLE PARTY HAS CONVEYED OWNERSHIP OR CONTROL OF THE TRACT OF LAND FOR WHICH THE EROSION AND SEDIMENTATION CONTROL PLAN HAS BEEN APPROVED, THE NEW OWNER OR PERSON IN CONTROL SHALL CONDUCT AND DOCUMENT INSPECTIONS QUARTERLY UNTIL THE ESTABLISHMENT OF PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION.



PLAN VIEW



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SECTION

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CONSTRUCTION

1. UNIFORMLY GRADE A SHALLOW DEPRESSION APPROACHING THE INLET.

2. DRIVE 5-FOOT STEEL POSTS 2 FEET INTO THE GROUND SURROUNDING THE INLET. SPACE POSTS EVENLY AROUND THE PERIMETER OF THE INLET, A MAXIMUM OF 4 FEET APART.

3. SURROUND THE POSTS WITH WIRE MESH HARDWARE CLOTH. SECURE THE WIRE MESH TO THE STEEL POSTS AT THE TOP, MIDDLE, AND BOTTOM. PLACING A 2-FOOT FLAP OF THE WIRE MESH UNDER THE GRAVEL FOR ANCHORING IS RECOMMENDED.

4. PLACE CLEAN GRAVEL (NC DOT #5 OR #57 STONE) ON A 2:1 SLOPE WITH A HEIGHT OF 16 INCHES AROUND THE WIRE, AND SMOOTH TO AN EVEN GRADE.

5. ONCE THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE ACCUMULATED SEDIMENT, AND ESTABLISH FINAL GRADING ELEVATIONS.

6. COMPACT THE AREA PROPERLY AND STABILIZED IT WITH GROUNDCOVER.

MAINTENANCE

INSPECT INLETS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (½ INCH OR GREATER) RAINFALL EVENT. CLEAR THE MESH WIRE OF ANY DEBRIS OR OTHER OBJECTS TO PROVIDE ADEQUATE FLOW FOR SUBSEQUENT RAINS. TAKE CARE NOT TO DAMAGE OR UNDERCUT THE WIRE MESH DURING SEDIMENT REMOVAL. REPLACE STONE AS NEEDED.

REFER TO NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL 6.51 FOR ADDITIONAL INFORMATION

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HARDWARE CLOTH AND GRAVEL INLET PROTECTION DETAIL

NOT TO SCALE

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE
FILENAME:
ASHE_CG803.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

SHEET ID
CG803

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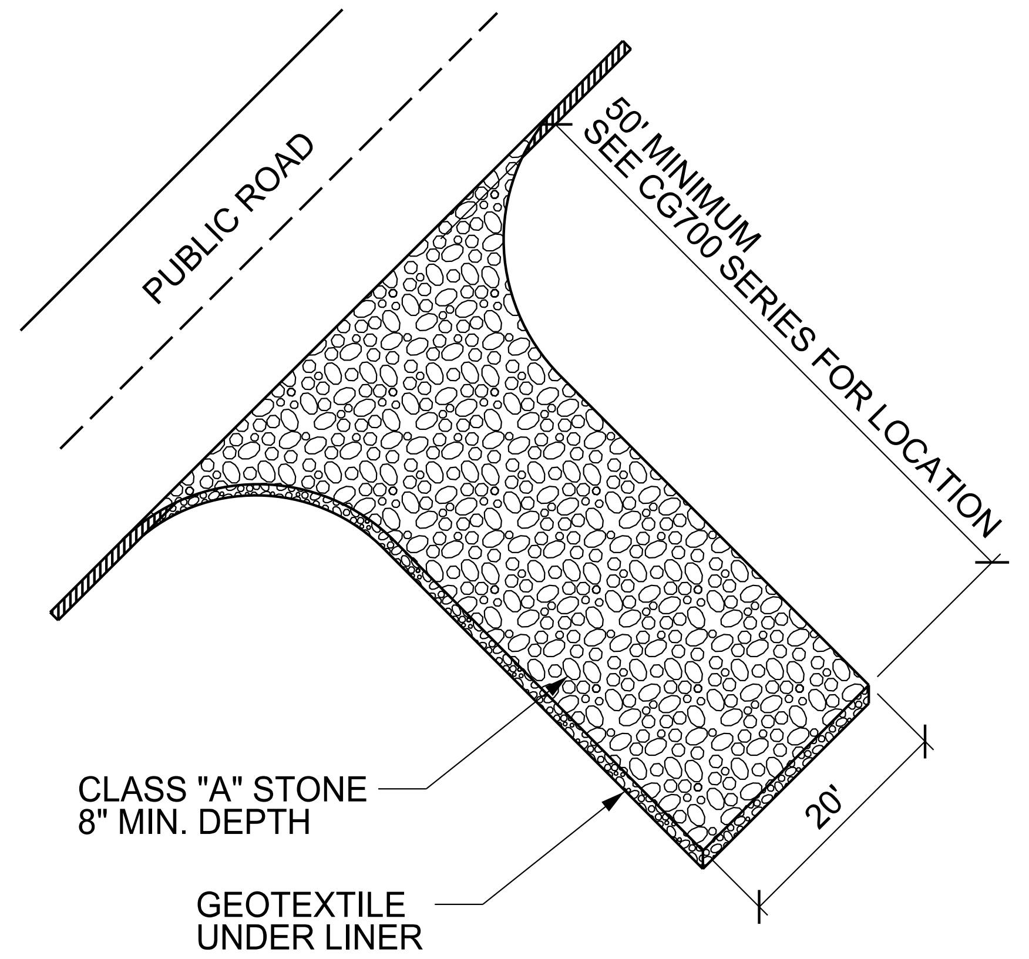

DESIGN CRITERIA

AGGREGATE SIZE—USE 1½ TO 3½ INCH WASHED STONE.
DIMENSIONS OF GRAVEL PAD—THICKNESS: 8 INCHES MINIMUM
WIDTH: 20-FEET MINIMUM OR FULL WIDTH AT ALL POINTS OF THE VEHICULAR ENTRANCE AND EXIT AREA, WHICHEVER IS GREATER
LENGTH: 50-FEET MINIMUM

LOCATION—LOCATE CONSTRUCTION ENTRANCES AND EXITS TO LIMIT SEDIMENT FROM LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES AVOID STEEP GRADES, AND ENTRANCES AT CURVES IN PUBLIC ROADS.

WASHING—IF CONDITIONS AT THE SITE ARE SUCH THAT MOST OF THE MUD AND SEDIMENT ARE NOT REMOVED BY VEHICLES TRAVELING OVER THE GRAVEL, THE TIRES SHOULD BE WASHED. WASHING SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO A SEDIMENT TRAP OR OTHER SUITABLE DISPOSAL AREA. A WASH RACK MAY ALSO BE USED TO MAKE WASHING MORE CONVENIENT AND EFFECTIVE.

CONSTRUCTION

1. CLEAR THE ENTRANCE AND EXIT AREA OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL AND PROPERLY GRADE IT.

2. PLACE THE GRAVEL TO THE SPECIFIC GRADE AND DIMENSIONS SHOWN ON THE PLANS, AND SMOOTH IT.

3. PROVIDE DRAINAGE TO CARRY WATER TO A SEDIMENT TRAP OR OTHER SUITABLE OUTLET.

4. USE GEOTEXTILE FABRICS BECAUSE THEY IMPROVE STABILITY OF THE FOUNDATION IN LOCATIONS SUBJECT TO SEEPAGE OR HIGH WATER TABLE.

MAINTENANCE

MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH 2-INCH STONE. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.

POST CONSTRUCTION

CONTRACTOR TO RESTORE PAVEMENT IN ACCESS PARKING LOT TO EXISTING CONDITIONS AFTER ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

REFER TO NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL 6.06 FOR ADDITIONAL INFORMATION

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT DETAIL

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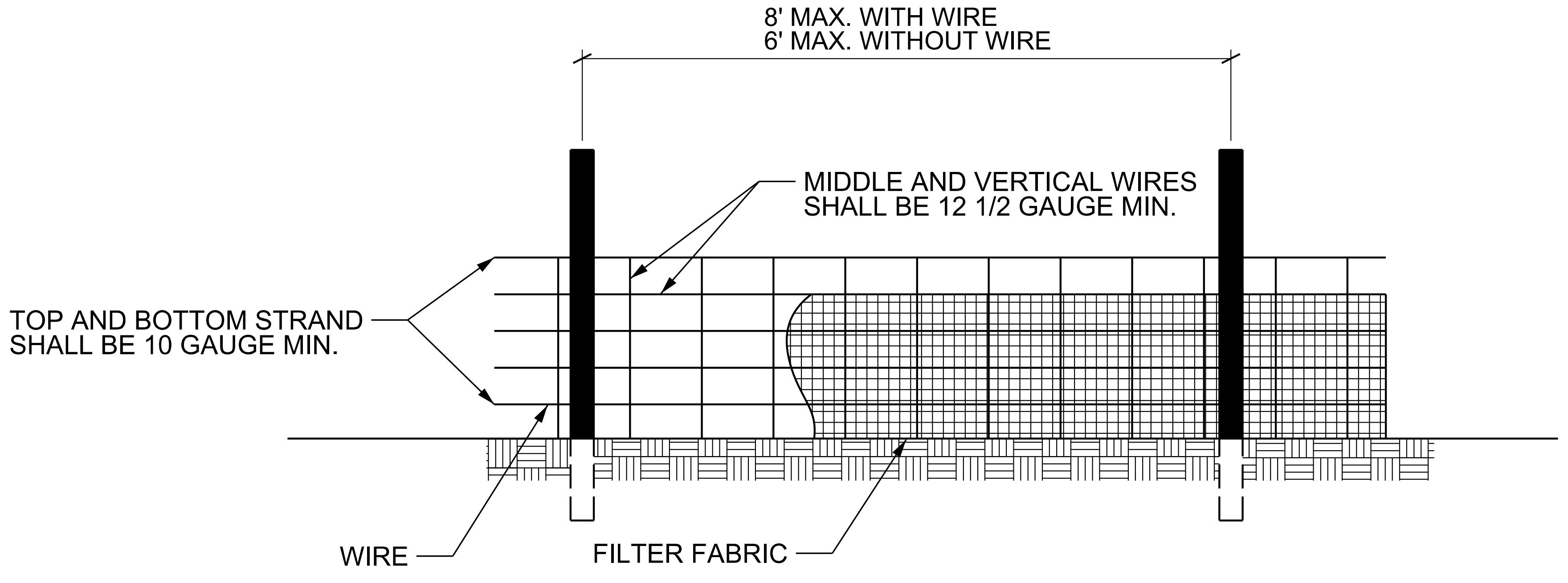
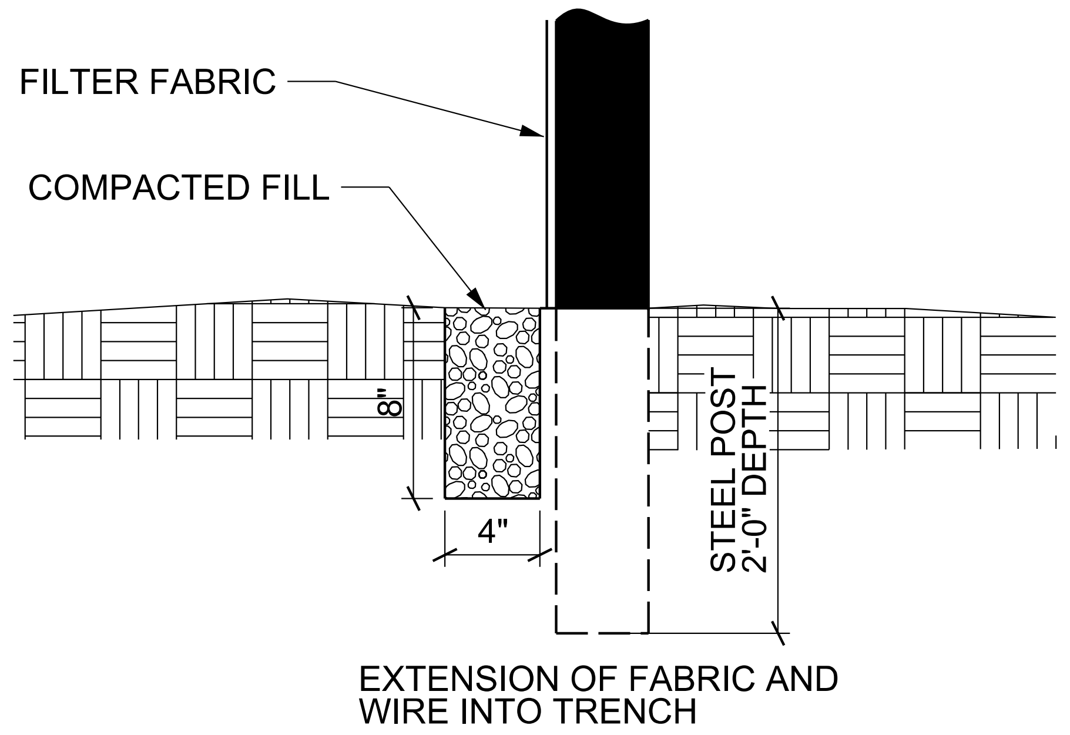
NOT TO SCALE





EXTENSION OF FABRIC AND WIRE INTO TRENCH

DESIGN CRITERIA

1. USE A SYNTHETIC FILTER FABRIC OF AT LEAST 95% BY WEIGHT OF POLYOLEFINS OR POLYESTER, WHICH IS CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE REQUIREMENTS OF ASTM D 6461.

SYNTHETIC FILTER FABRIC SHOULD CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 TO 120 DEGREES F.

2. ENSURE THAT POSTS FOR SEDIMENT FENCES ARE 1.33 LB/LINEAR FT STEEL WITH A MINIMUM LENGTH OF 5 FEET. MAKE SURE THAT STEEL POSTS HAVE PROJECTIONS TO FACILITATE FASTENING THE FABRIC.

3. FOR REINFORCEMENT OF STANDARD STRENGTH FILTER FABRIC, USE WIRE FENCE WITH A MINIMUM 14 GAUGE AND A MAXIMUM MESH SPACING OF 6 INCHES.

CONSTRUCTION

1. CONSTRUCT THE SEDIMENT BARRIER OF STANDARD STRENGTH OR EXTRA STRENGTH SYNTHETIC FILTER FABRICS.

2. ENSURE THAT THE HEIGHT OF THE SEDIMENT FENCE DOES NOT EXCEED 24 INCHES ABOVE THE GROUND SURFACE. (HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.)

3. CONSTRUCT THE FILTER FABRIC FROM A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, SECURELY FASTEN THE FILTER CLOTH ONLY AT A SUPPORT POST WITH 4 FEET MINIMUM OVERLAP TO THE NEXT POST.

4. SUPPORT STANDARD STRENGTH FILTER FABRIC BY WIRE MESH FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS. EXTEND THE WIRE MESH SUPPORT TO THE BOTTOM OF THE TRENCH. FASTEN THE WIRE REINFORCEMENT, THEN FABRIC ON THE UPSLOPE SIDE OF THE FENCE POST. WIRE OR PLASTIC ZIP TIES SHOULD HAVE A MINIMUM 50 POUND TENSILE STRENGTH.

5. WHEN A WIRE MESH SUPPORT FENCE IS USED, SPACE POSTS A MAXIMUM OF 8 FEET APART. SUPPORT POSTS SHOULD BE DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES.

6. EXTRA STRENGTH FILTER FABRIC WITH 6 FEET POST SPACING DOES NOT REQUIRE WIRE MESH SUPPORT FENCE. SECURELY FASTEN THE FILTER FABRIC DIRECTLY TO POSTS. WIRE OF PLASTIC ZIP TIES SHOULD HAVE A MINIMUM 50 POUND TENSILE STRENGTH.

7. EXCAVATE A TRENCH APPROXIMATELY 4 INCHES WIDE AND 8 INCHES DEEP ALONG THE PROPOSED LINE OF POSTS AND UPSLOPE FROM THE BARRIER.

8. PLACE 12 INCHES OF THE FABRIC ALONG THE BOTTOM OF AND SIDE OF THE TRENCH.

9. BACKFILL THE TRENCH WITH SOIL PLACED OVER THE FILTER FABRIC AND COMPACT. THOROUGH COMPACTION OF THE BACKFILL IS CRITICAL TO SILT FENCE PERFORMANCE.

10. DO NOT ATTACH FILTER FABRIC TO EXISTING TREES.

MAINTENANCE

INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.

SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OF BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

REFER TO NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL 6.62 FOR ADDITIONAL INFORMATION

SEDIMENT FENCE DETAIL

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S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
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FILENAME:
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ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

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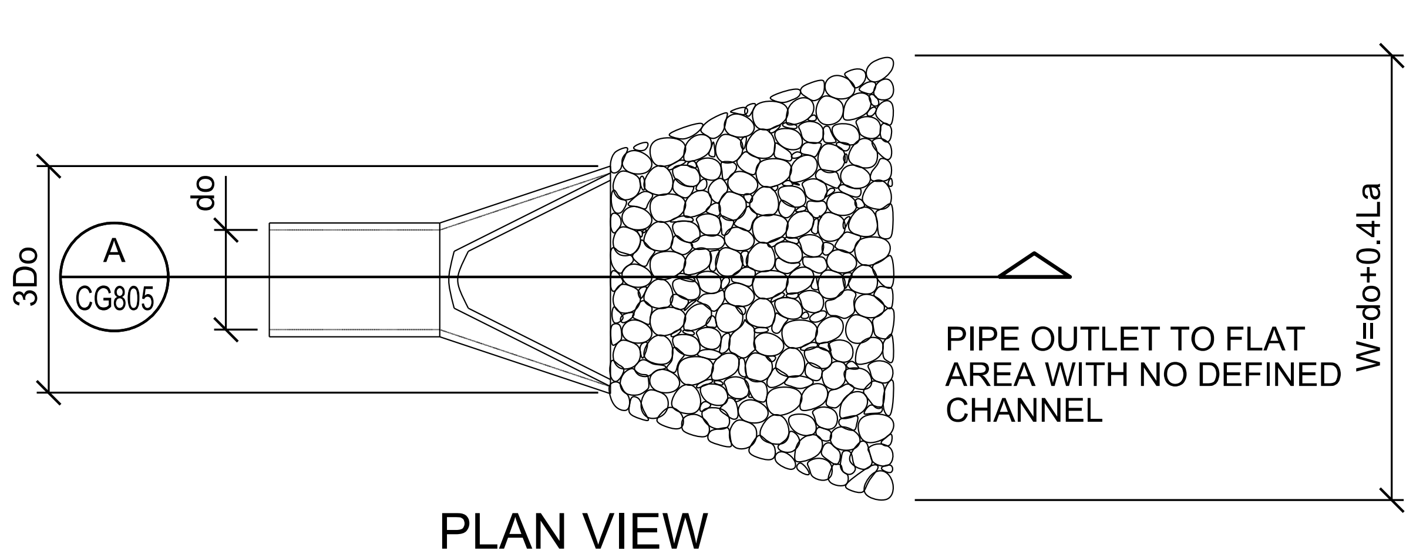
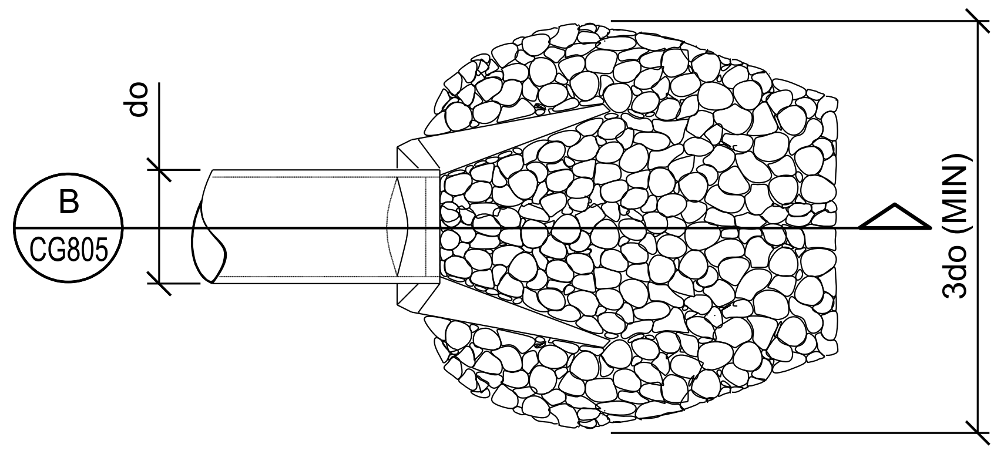
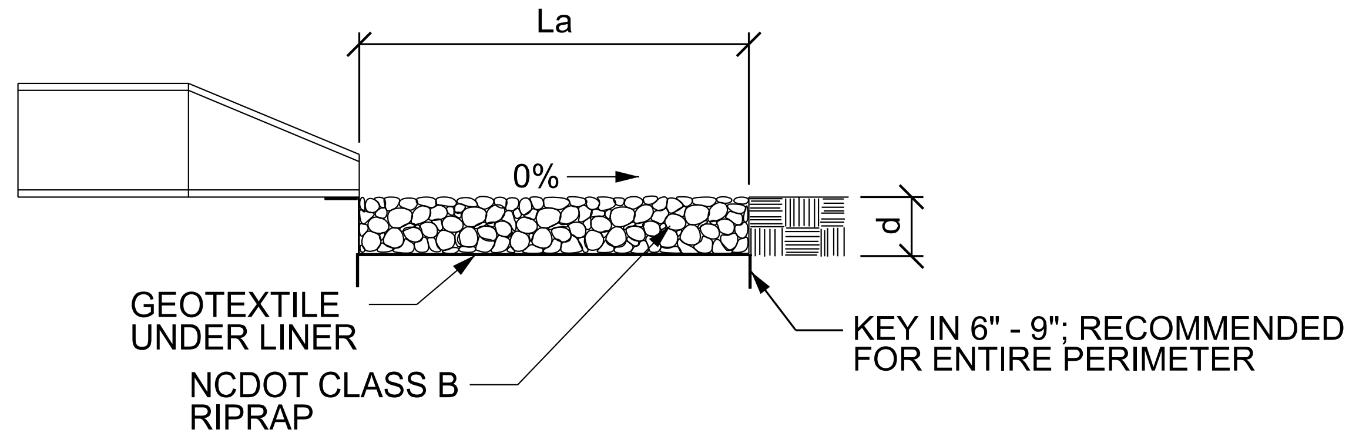


PLAN VIEW

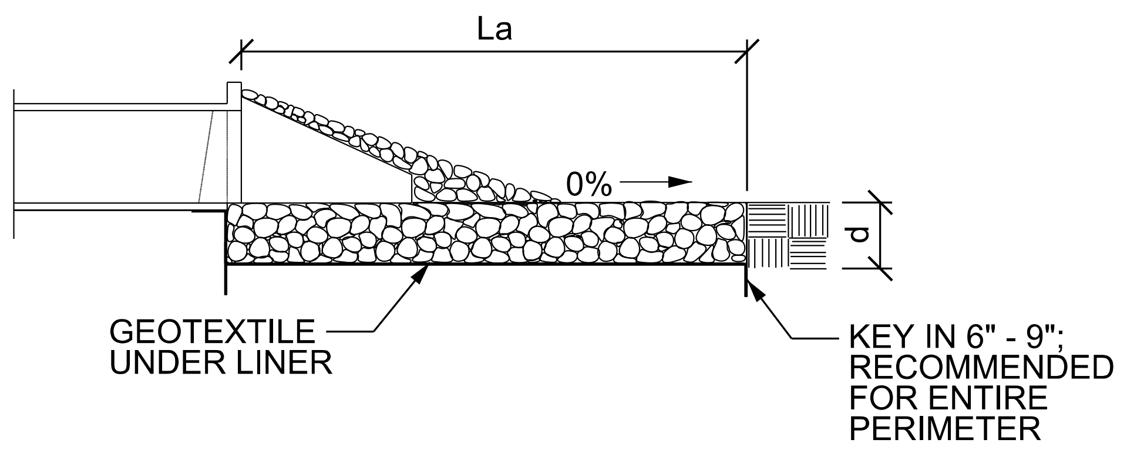


PLAN VIEW

PIPE OUTLET TO WELL DEFINED CHANNEL



OUTLET TO FLAT AREA - NO WELL DEFINED CHANNEL



OUTLET TO WELL-DEFINED CHANNEL

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CONSTRUCTION

1. ENSURE THAT THE SUBGRADE FOR THE FILTER AND RIPRAP FOLLOWS THE REQUIRED LINES AND GRADES SHOWN IN THE PLAN. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL. LOW AREAS IN THE SUBGRADE ON UNDISTURBED SOIL MAY ALSO BE FILLED BY INCREASING THE RIPRAP THICKNESS.
2. THE RIPRAP AND GRAVEL FILTER MUST CONFORM TO THE SPECIFIED GRADING LIMITS SHOWN ON THE PLANS.
3. FILTER CLOTH, WHEN USED, MUST MEET DESIGN REQUIREMENTS AND BE PROPERLY PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION. REPAIR ANY DAMAGE BY REMOVING THE RIPRAP AND PLACING ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA. ALL CONNECTING JOINTS SHOULD OVERLAP SO THE TOP LAYER IS ABOVE THE DOWNSTREAM LAYER A MINIMUM OF 1 FOOT. IF THE DAMAGE IS EXTENSIVE, REPLACE THE ENTIRE FILTER CLOTH.
4. RIPRAP MAY BE PLACED BY EQUIPMENT, BUT TAKE CARE TO AVOID DAMAGING THE FILTER.
5. THE MINIMUM THICKNESS OF THE RIPRAP SHOULD BE 1.5 TIMES THE MAXIMUM STONE DIAMETER. REFER TO TABLE FOR LOCATION, DEPTH AND LENGTH OF PROTECTION.
6. RIPRAP MAY BE FIELD STONE OR ROUGH QUARRY STONE. IT SHOULD BE HARD, ANGULAR, HIGHLY WEATHER-RESISTANT AND WELL GRADED.
7. CONSTRUCT THE APRON ON ZERO GRADE WITH NO OVERFILL AT THE END. MAKE THE TOP OF THE RIPRAP AT THE DOWNSTREAM END LEVEL WITH THE RECEIVING AREA OR SLIGHTLY BELOW IT.
8. ENSURE THAT THE APRON IS PROPERLY ALIGNED WITH THE RECEIVING STREAM AND PREFERABLY STRAIGHT THROUGHOUT ITS LENGTH. IF A CURVE IS NEEDED TO FIT SITE CONDITIONS, PLACE IT IN THE UPPER SECTION OF THE APRON.
9. IMMEDIATELY AFTER CONSTRUCTION, STABILIZE ALL DISTURBED AREAS WITH VEGETATION

MAINTENANCE

INSPECT RIPRAP OUTLET STRUCTURES WEEKLY AND AFTER SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

REFER TO NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL 6.41 FOR ADDITIONAL INFORMATION

RR OUTLET PROTECTION SCHEDULE

HW	PIPE DIA (in)	Tw (in)	DISCHARGE (CFS)	VELOCITY (CF+/s)	d50 (ft)	La (ft)	d (ft)	WIDTH AT OUTLET (ft)	WIDTH AT END (ft)
HW-1	18	9.72	6.00	6.14	0.50	10	1.50	4.5	5.5
BioPond #1 Spillway	N/A	2.2 (100 yr)	12.76	6.14	0.50	20	1.50	25.0	30.0
BioPond #1 Swale Inlet	N/A	5.8 (10 yr)	7.10	3.16	0.50	10	1.50	10.0	20.0
HW-2	30	10.56 (25 yr)	19.50	9.54	0.75	15	1.75	7.5	17.5
HW-3	18	6.12	4.60	8.80	0.50	10	1.50	4.5	11.5
HW-5	30	6.7	18.16	22.30	1.00	15	2.25	7.5	17.5
BioPond #3 Spillway	N/A	1.32 (100 yr)	9.70	22.30	1.00	20	2.25	25.0	30.0
HW-6	24	4.6	5.41	12.98	0.50	10	1.50	6.0	12.0
Sediment Basin 1-Spillway	N/A	N/A	16.50	3.40	0.50	32	1.50	20.0	40.0
Sediment Basin 2-Spillway	N/A	N/A	25.10	3.10	0.50	27	1.50	25.0	35.0

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OUTLET STABILIZATION STRUCTURE DETAIL

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S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
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600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

SHEET ID
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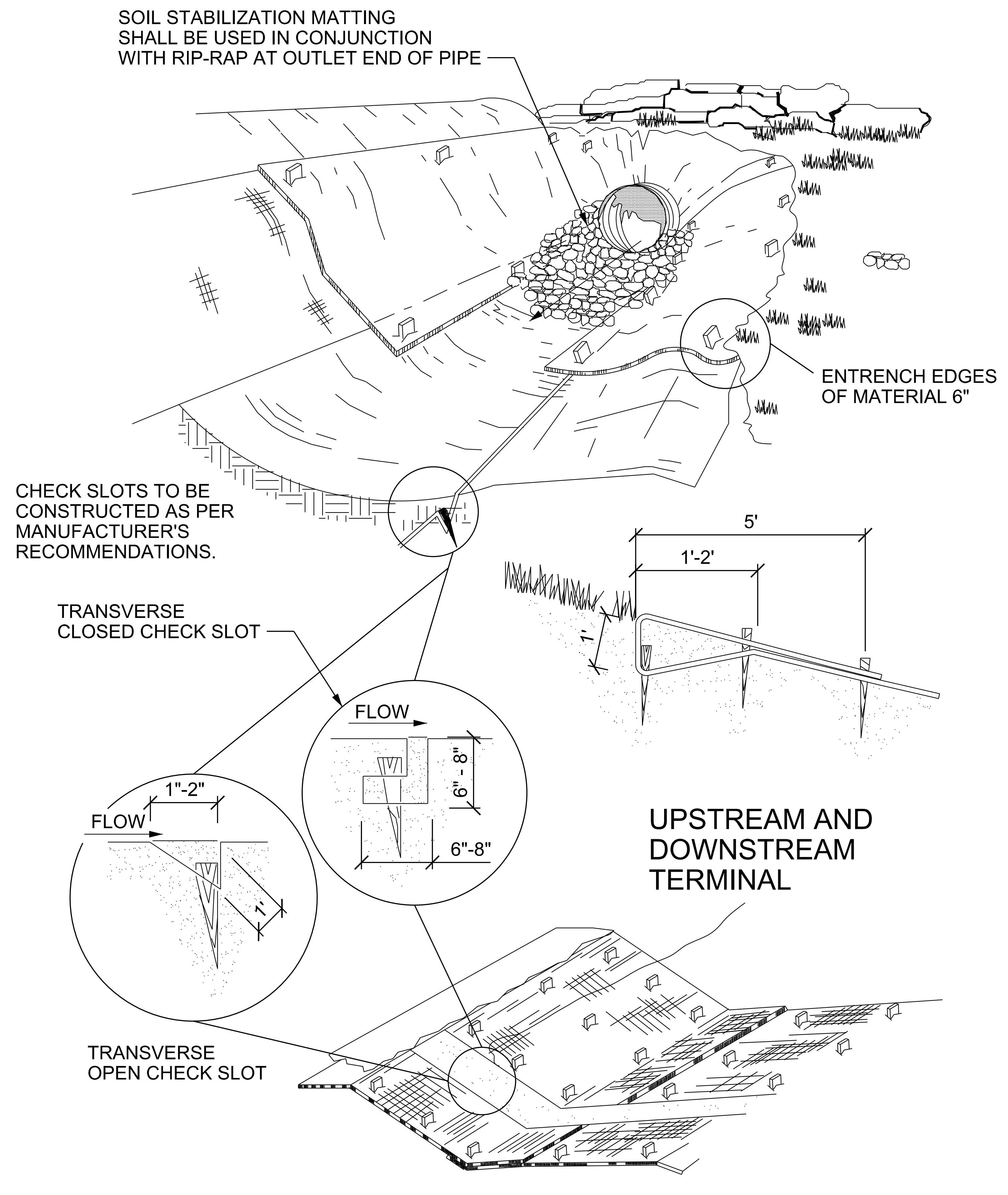


MAINTENANCE NOTES:

1. INSPECT ROLLED EROSION CONTROL PRODUCTS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAIN FALL EVENT REPAIR IMMEDIATELY.
2. GOOD CONTACT WITH THE GROUND MUST BE MAINTAINED, AND EROSION MUST NOT OCCUR BENEATH THE RECP.
3. ANY AREAS OF THE RECP THAT ARE DAMAGED OR NOT IN CLOSE CONTACT WITH THE GROUND SHALL BE REPAIRED AND STAPLED.
4. IF EROSION OCCURS DUE TO POORLY CONTROLLED DRAINAGE, THE PROBLEM SHALL BE FIXED AND THE ERODED AREA PROTECTED.
5. MONITOR AND REPAIR THE RECP AS NECESSARY UNTIL GROUND COVER IS ESTABLISHED.

NOTE:
REFER TO CG808 FOR CONSTRUCTION NOTES.

1 / CG705

ROLLED EROSION CONTROL PRODUCT INSTALLATION DETAIL

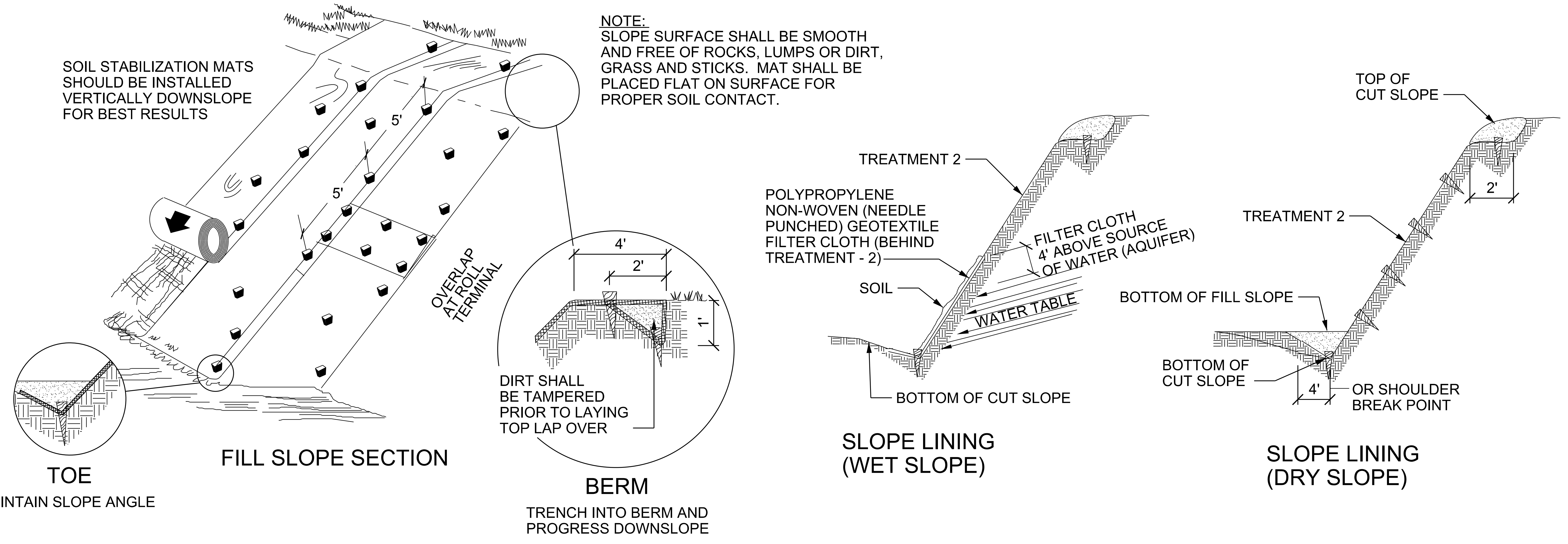
NOT TO SCALE

NOTE

SOIL STABILIZATION BLANKET AND MATTING SHALL BE PER SPECIFICATIONS FOR NORTH CAROLINA DENR FULLY VEGETATED MATS OR SINGLE NET DEGRADABLE ROLLED EROSION CONTROL PRODUCTS.

SLOPE PROTECTION IS BASED UPON NCDENR ROLLED EROSION CRITERIA:
A=R*K*CS*C*P, WHERE R=225, K=0.25, CS=1.12, C=0.07, P=1.0.

REFER TO NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL 6.17 FOR ADDITIONAL INFORMATION.



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ROLLED EROSION CONTROL PRODUCT INSTALLATION DETAIL

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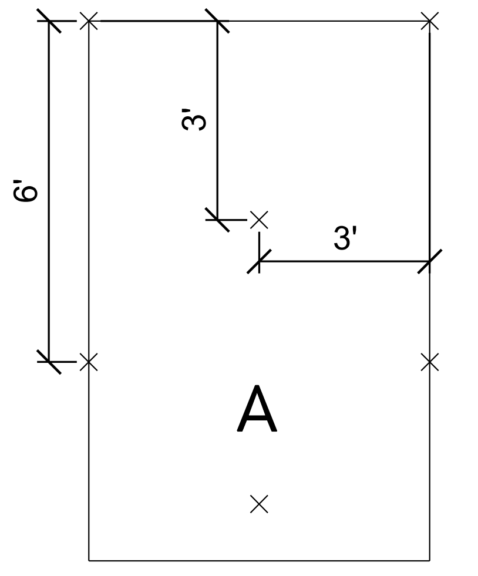
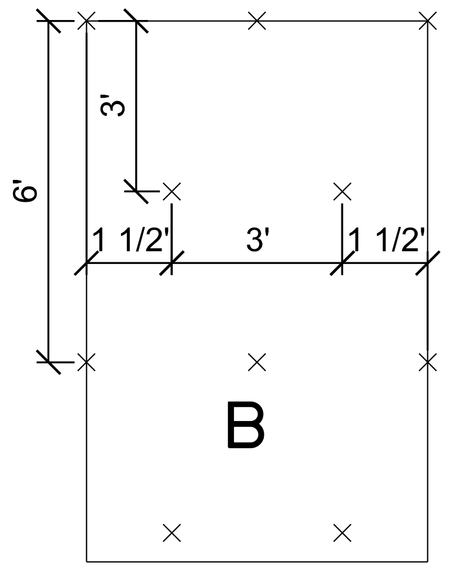
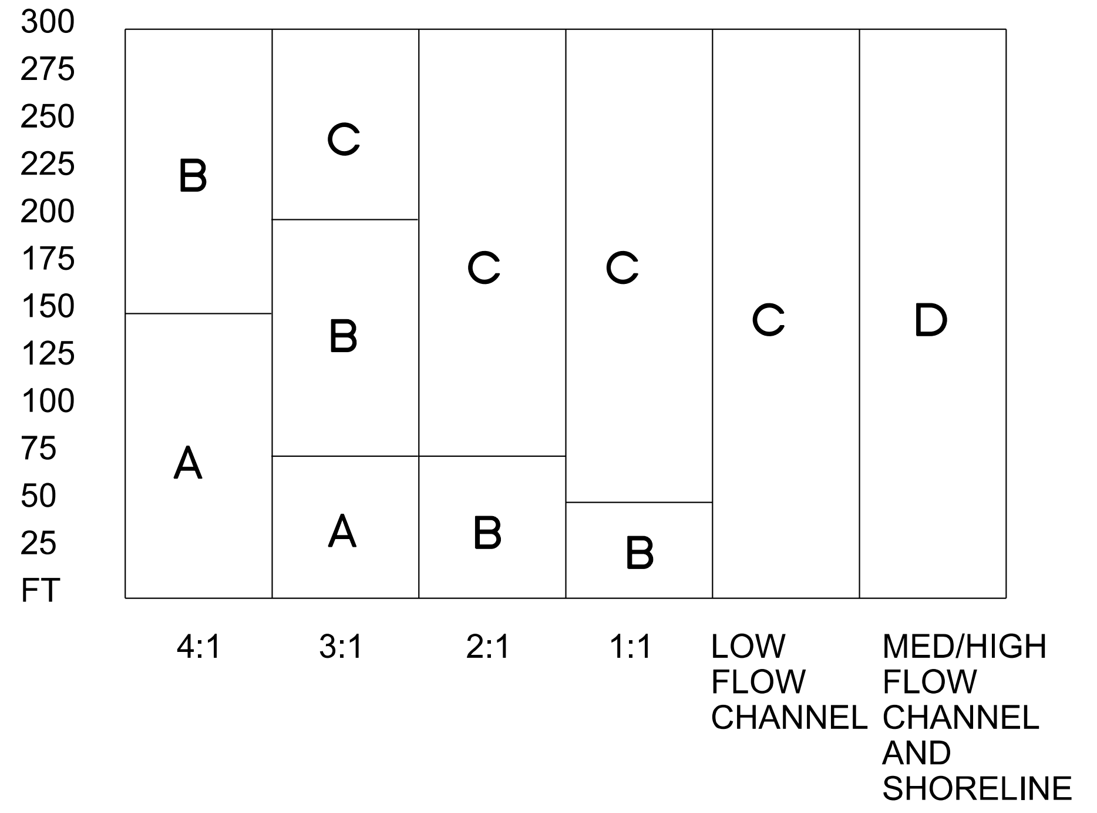
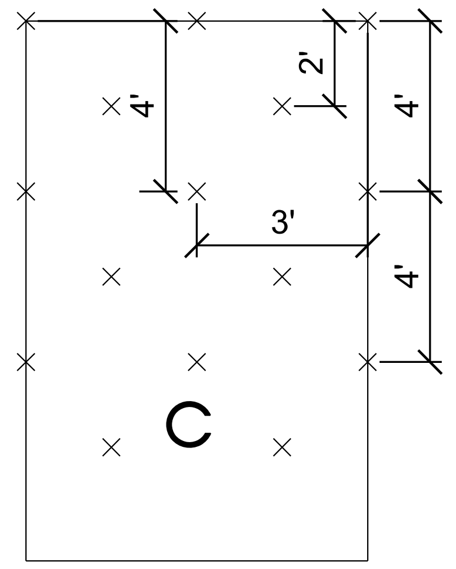


1 STAPLE PER SQ. YD.

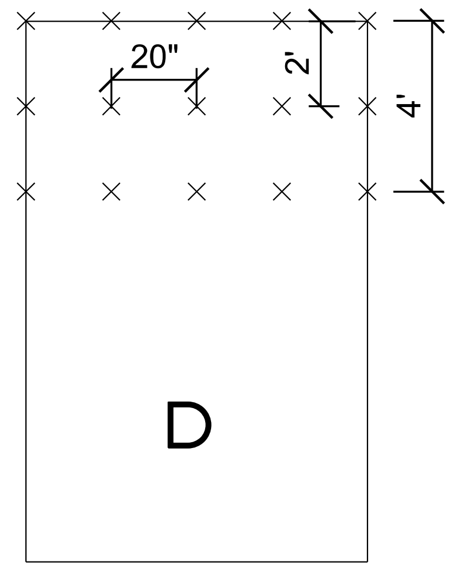


1 ½ STAPLES PER SQ. YD.





2 STAPLES PER SQ. YD.



3 ½ STAPLES PER SQ. YD.

NOTE:
FOR OPTIMUM RESULTS, THESE RECOMMENDED STAPLE PATTERN GUIDES MUST BE FOLLOWED. SUGGESTED ANCHORING METHODS VARY ACCORDING TO THE MANUFACTURER. THIS CHART SHOWS HOW SLOPE LENGTHS AND GRADIENTS AFFECT STAPLING PATTERNS.

3 / CG705

GENERAL STAPLE PATTERN GUIDE FOR ROLLED EROSION CONTROL DETAIL

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S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
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ISSUE DATE:
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LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger

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TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

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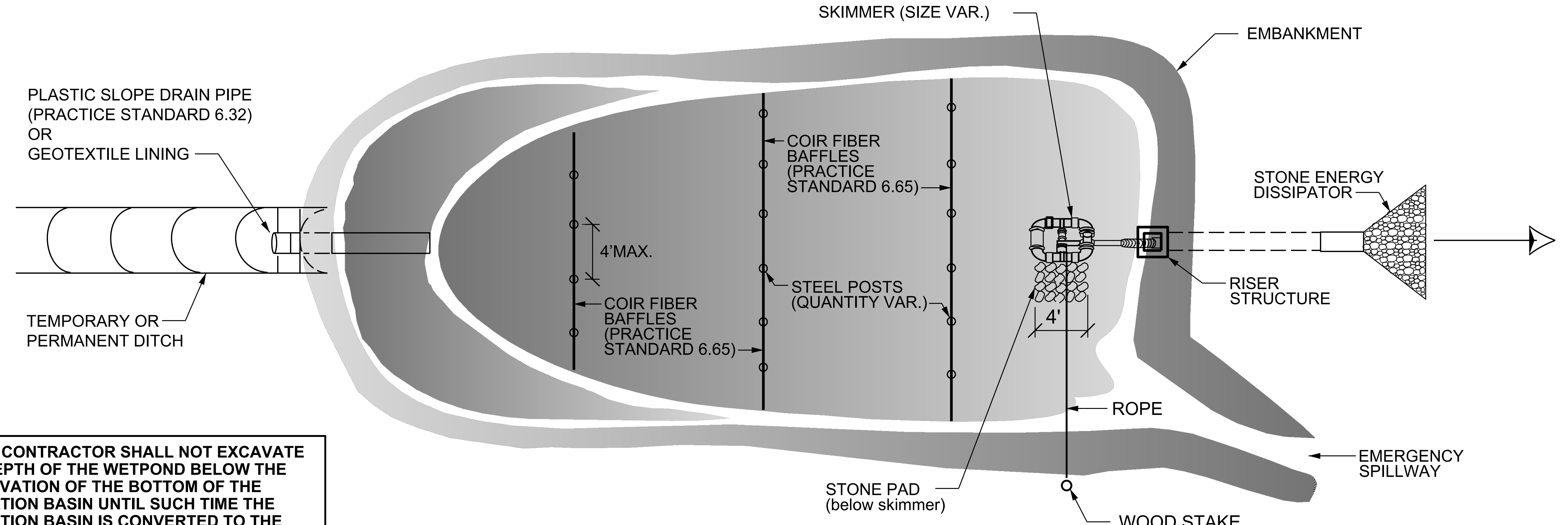
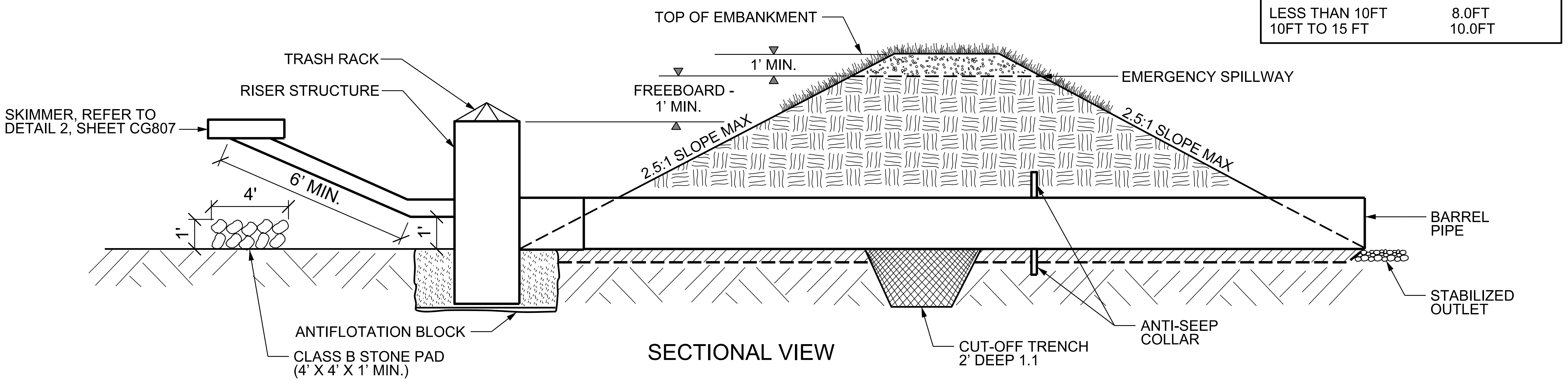

SKIMMER (SIZE VAR.)
EMBANKMENT
PLASTIC SLOPE DRAIN PIPE (PRACTICE STANDARD 6.32) OR GEOTEXTILE LINING
COIR FIBER BAFFLES (PRACTICE STANDARD 6.65)
STONE ENERGY DISSIPATOR
4'MAX.
TEMPORARY OR PERMANENT DITCH
COIR FIBER BAFFLES (PRACTICE STANDARD 6.65)
STEEL POSTS (QUANTITY VAR.)
4'
RISER STRUCTURE
ROPE
EMERGENCY SPILLWAY
STONE PAD (below skimmer)
WOOD STAKE OR METAL POST

NOTE: THE CONTRACTOR SHALL NOT EXCAVATE FOR THE DEPTH OF THE WETPOND BELOW THE GRADE ELEVATION OF THE BOTTOM OF THE SEDIMENTATION BASIN UNTIL SUCH TIME THE SEDIMENTATION BASIN IS CONVERTED TO THE BIORETENTION BASIN AT THE CONCLUSION OF CONSTRUCTION AND STABILIZATION OF THE SITE.

PLAN VIEW

FILL HEIGHT	MINIMUM TOP WIDTH
LESS THAN 10FT	8.0FT
10FT TO 15 FT	10.0FT



SECTIONAL VIEW

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CG701
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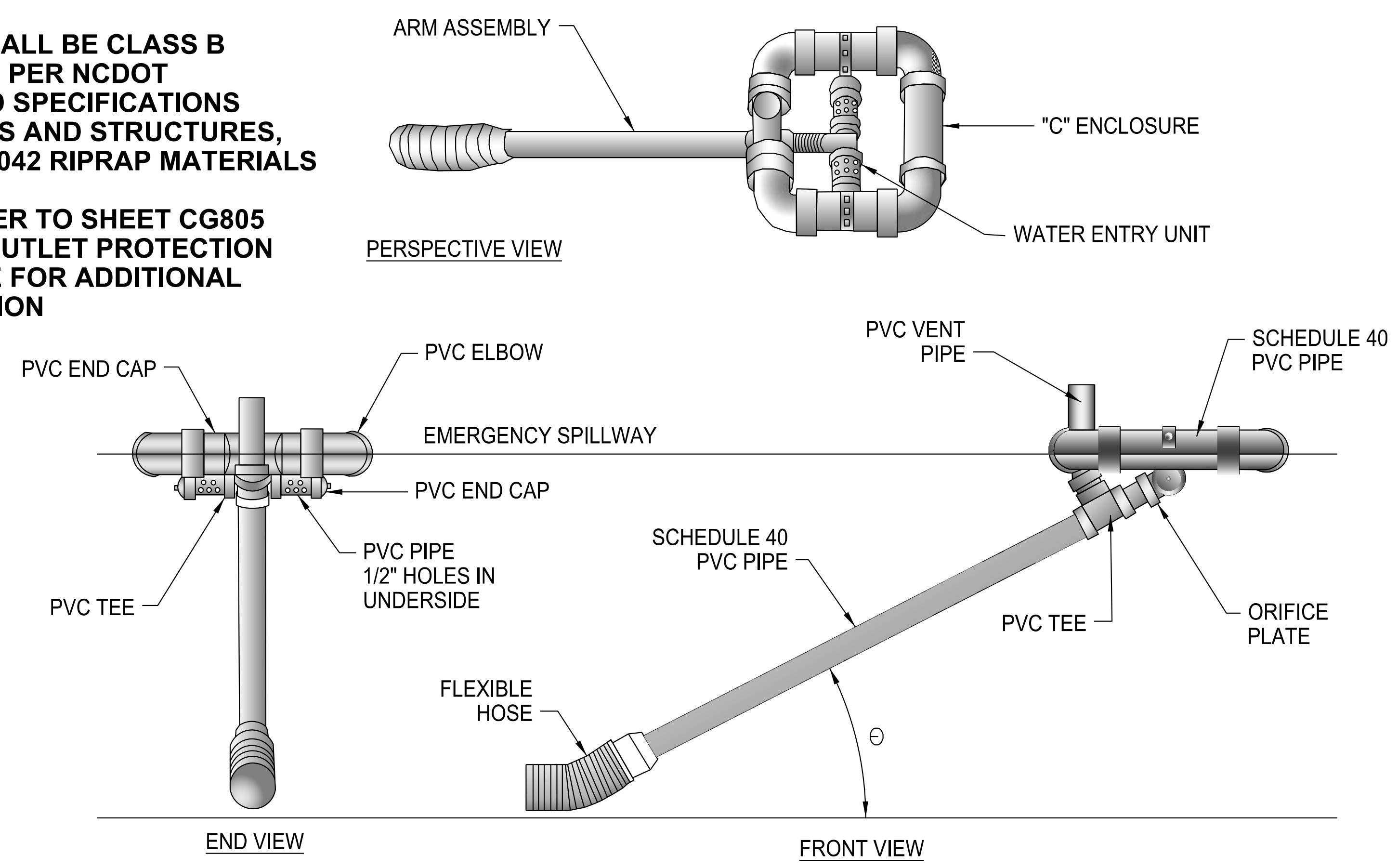
SEDIMENT BASIN DETAIL

NOT TO SCALE

	BASIN 1	BASIN 2
AREA DRAINING TO BASIN (AC)	4.9	8.2
PEAK FLOW FROM 10-YR STORM (CFS)	16.65	25.1
DISTURBED AREA (AC)	4.9	8.2
REQ'D STORAGE (CU FT) (DIST AREA X 1800)	8,820	14,760
REQ'D SURFACE AREA (SF) (PEAK FLOW X 435)	7,243	10,919
PROVIDED STORAGE (CU FT)	27,590	
PROVIDED SURFACE AREA (BOTTOM OF BASIN, SF)	12,250	11,000
BOTTOM OF BASIN ELEV (FT)	2157.00	2168.00
CLEANOUT DEPTH	1	1
CLEAN-OUT ELEV. (FT)	2158.00	2169.00
SKIMMER SIZE (IN)	4	4
SKIMMER ORIFICE SIZE (IN)	1.5	1.75
DEWATERING TIME (DAYS)	2.94	3.62
EMERGENCY SPILLWAY CREST ELEV. (FT)	2160.00	2171.00
EMERGENCY SPILLWAY BOTTOM WIDTH (FT)	20	20
EMERGENCY SPILLWAY EXIT CHANNEL LENGTH (FT)	20	20
EMERGENCY SPILLWAY LINING MATERIAL	RIPRAP*	RIPRAP*
EMERGENCY SPILLWAY EMBANKMENT SLOPE (SE,%)	33%	33%
EMERGENCY SPILLWAY OUTLET CHANNEL SLOPE (SO,%)	15%	2.00%
EMERGENCY SPILLWAY DEPTH OF FLOW	0.5	0.75
EMERGENCY SPILLWAY HEAD (HP, FT)	2160.50	2171.75
TOP OF RISER STRUCTURE	2159.00	2170.00
FREEBOARD (FT)	1	1
TOP OF BERM ELEV. (FT)	2161.50	2172.75
TOP OF BERM WIDTH (FT)	8' MIN	8' MIN
OUTLET PIPE DIAMETER (IN)	24"	18"
OUTLET PIPE LENGTH (FT)	148'	100'
OUTLET PIPE INLET INVERT ELEV. (FT)	2141.50	2164.70
OUTLET PIPE OUTLET INVERT ELEV. (FT)	2137.00	2164.20
CORE TRENCH DEPTH (FT)	2.5	2
CORE TRENCH SIDE SLOPES (X:X)	1:1	1:01
CORE TRENCH BOTTOM WIDTH (FT)	6	4
CONCRETE ANTIFLOATATION BLOCK WIDTH (IN)	48	42
CONCRETE ANTIFLOATATION BLOCK LENGTH (IN)	60	48
CONCRETE ANTIFLOATATION BLOCK DEPTH (FT)	2	1.5
ANTISEEP COLLAR PROTECTION (IN)	24"	18"

*** RIPRAP SHALL BE CLASS B RIPRAP AS PER NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, SECTION 1042 RIPRAP MATERIALS**

ALSO REFER TO SHEET CG805 FOR THE OUTLET PROTECTION SCHEDULE FOR ADDITIONAL INFORMATION



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CG807

SKIMMER DETAIL

NOT TO SCALE

SEDIMENT BASIN NOTES

CONSTRUCTION SPECIFICATIONS

1. SITE PREPARATIONS- CLEAR, GRUB, AND STRIP TOPSOIL FROM AREAS UNDER THE EMBANKMENT TO REMOVE TREES, VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL. DELAY CLEARING THE POOL AREA UNTIL THE DAM IS COMPLETE AND THEN REMOVE BRUSH, TREES, AND OTHER OBJECTIONABLE MATERIALS TO FACILITATE SEDIMENT CLEANOUT. STOCKPILE ALL TOPSOIL OR SOIL CONTAINING ORGANIC MATTER FOR USE ON THE OUTER SHELL OF THE EMBANKMENT TO FACILITATE VEGETATIVE ESTABLISHMENT. PLACE TEMPORARY SEDIMENT CONTROL MEASURES BELOW THE BASIN AS NEEDED.

2. CUT-OFF TRENCH- EXCAVATE A CUT-OFF TRENCH ALONG THE CENTER LINE OF THE EARTH FILL EMBANKMENT. CUT THE TRENCH TO STABLE SOIL MATERIAL, BUT IN NO CASE MAKE IT LESS THAN 2 FEET DEEP. THE CUT-OFF TRENCH MUST EXTEND INTO BOTH ABUTMENTS TO AT LEAST THE ELEVATION OF THE RISER CREST. MAKE THE MINIMUM BOTTOM WIDTH WIDE ENOUGH TO PERMIT OPERATION OF EXCAVATION AND COMPACTION EQUIPMENT, BUT IN NO CASE LESS THAN 2 FEET. MAKE SIDE SLOPES OF THE TRENCH NO STEEPER THAN 1:1. COMPACTION REQUIREMENTS ARE THE SAME AS THOSE FOR THE EMBANKMENT. KEEP THE TRENCH DRY DURING BACKFILLING AND COMPACTION OPERATIONS.

3. EMBANKMENT- TAKE FILL MATERIAL FROM THE APPROVED AREAS SHOWN ON THE PLANS. IT SHOULD BE CLEAN MINERAL SOIL, FREE OF ROOTS, WOODY VEGETATION, ROCKS, AND OTHER OBJECTIONABLE MATERIAL. SCARIFY AREAS ON WHICH FILL IS TO BE PLACED BEFORE PLACING FILL. THE FILL MATERIAL MUST CONTAIN SUFFICIENT MOISTURE SO IT CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. PLACE FILL MATERIAL IN 6 TO 8 INCH CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL AREA AND COMPACT IT. COMPACTION MAY BE OBTAINED BY ROUTING THE CONSTRUCTION HAULING EQUIPMENT OVER THE FILL SO THAT THE ENTIRE SURFACE OF EACH LAYER IS TRAVERSED BY AT LEAST ONE WHEEL OR TREAD TRACK OF HEAVY EQUIPMENT, OR A COMPACTOR MAY BE USED. CONSTRUCT THE EMBANKMENT TO AN ELEVATION 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLING.

4. CONDUIT SPILLWAYS- SECURELY ATTACH THE RISER TO THE BARREL OR BARREL STUB TO MAKE A WATERTIGHT STRUCTURAL CONNECTION. SECURE ALL CONNECTIONS BETWEEN BARREL SECTIONS BY APPROVED WATERTIGHT ASSEMBLIES. PLACE THE BARREL AND RISER ON A FIRM, SMOOTH FOUNDATION OF IMPERVIOUS SOIL. DO NOT USE PERVIOUS MATERIAL SUCH AS SAND, GRAVEL, OR CRUSHED STONE AS BACKFILL AROUND THE PIPE OR ANTI-SEEP COLLARS. PLACE THE FILL MATERIAL AROUND THE PIPE SPILLWAY IN 4-INCH LAYERS, AND COMPACT IT UNDER AND AROUND THE PIPE TO AT LEAST THE SAME DENSITY AS THE ADJACENT EMBANKMENT. **CARE MUST BE TAKEN NOT TO RAISE THE PIPE FROM FIRM CONTACT WITH ITS FOUNDATION WHEN COMPACTING UNDER THE PIPE HAUNCHES.**

PLACE A MINIMUM DEPTH OF 2 FEET OF COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT. ANCHOR THE RISER IN PLACE BY CONCRETE OR OTHER SATISFACTORY MEANS TO PREVENT FLOTATION. IN NO CASE SHOULD THE PIPE CONDUIT BE INSTALLED BY CUTTING A TRENCH THROUGH THE DAM AFTER THE EMBANKMENT IS COMPLETE.

5. EMERGENCY SPILLWAY- INSTALL THE EMERGENCY SPILLWAY IN UNDISTURBED SOIL. THE ACHIEVEMENT OF PLANNED ELEVATIONS, GRADE, DESIGN WIDTH, AND ENTRANCE AND EXIT CHANNEL SLOPES ARE CRITICAL TO THE SUCCESSFUL OPERATION OF THE EMERGENCY SPILLWAY.

6. INLETS- DISCHARGE WATER INTO THE BASIN IN A MANNER TO PREVENT EROSION. USE DIVERSIONS WITH OUTLET PROTECTION TO DIVERT SEDIMENT-LADEN WATER TO THE UPPER END OF THE POOL AREA TO IMPROVE BASIN TRAP EFFICIENCY (REFERENCES: RUNOFF CONTROL MEASURES AND OUTLET PROTECTION).

7. EROSION CONTROL- CONSTRUCT THE STRUCTURE SO THAT THE DISTURBED AREA IS MINIMIZED. DIVERT SURFACE WATER AWAY FROM BARE AREAS. COMPLETE THE EMBANKMENT BEFORE THE AREA IS CLEARED. STABILIZE THE EMERGENCY SPILLWAY EMBANKMENT AND ALL OTHER DISTURBED AREAS ABOVE THE CREST OF THE PRINCIPAL SPILLWAY IMMEDIATELY AFTER CONSTRUCTION (REFERENCES: SURFACE STABILIZATION).

8. INSTALL POROUS BAFFLES AS SPECIFIED IN PRACTICE 6.65, POROUS BAFFLES.

9. SAFETY- SEDIMENT BASINS MAY ATTRACT CHILDREN AND CAN BE DANGEROUS. AVOID STEEP SIDE SLOPES, AND FENCE AND MARK BASINS WITH WARNING SIGNS IF TRESPASSING IS LIKELY. **FOLLOW ALL STATE AND LOCAL REQUIREMENTS.**

MAINTENANCE

INSPECT TEMPORARY SEDIMENT BASINS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN IT ACCUMULATES TO ONE-HALF THE DESIGN DEPTH. PLACE REMOVED SEDIMENT IN AN AREA WITH SEDIMENT CONTROLS. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREA.

REFER TO NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL, SEDIMENT BASIN 6.61.1 FOR ADDITIONAL INFORMATION

SKIMMER NOTES

CONSTRUCTION SPECIFICATIONS

1. SHAPE THE BASIN TO THE SPECIFIED DIMENSIONS. PREVENT THE SKIMMING DEVICE FROM SETTLING INTO THE MUD BY EXCAVATING A SHALLOW PIT UNDER THE SKIMMER OR PROVIDING A LOW SUPPORT UNDER THE SKIMMER OF STONE OR TIMBER.

2. ASSEMBLE THE SKIMMER FOLLOWING THE MANUFACTURERS INSTRUCTIONS, OR AS DESIGNED.

3. LAY THE ASSEMBLED SKIMMER ON THE BOTTOM OF THE BASIN WITH THE FLEXIBLE JOINT AT THE INLET OF THE BARREL PIPE. ATTACH THE FLEXIBLE JOINT TO THE BARREL PIPE AND POSITION THE SKIMMER OVER THE EXCAVATED PIT OR SUPPORT. BE SURE TO ATTACH A ROPE TO THE SKIMMER AND ANCHOR IT TO THE SIDE OF THE BASIN. THIS WILL BE USED TO PULL THE SKIMMER TO THE SIDE FOR MAINTENANCE.

MAINTENANCE

IF THE SKIMMER IS CLOGGED WITH TRASH AND THERE IS WATER IN THE BASIN, USUALLY JERKING ON THE ROPE WILL MAKE THE SKIMMER BOB UP AND DOWN AND DISLODGE THE DEBRIS AND RESTORE FLOW. IF THIS DOES NOT WORK, PULL THE SKIMMER OVER TO THE SIDE OF THE BASIN AND REMOVE THE DEBRIS. ALSO CHECK THE ORIFICE INSIDE THE SKIMMER TO SEE IF IT IS CLOGGED; IF SO REMOVE THE DEBRIS.

IF THE SKIMMER ARM OR BARREL PIPE IS CLOGGED, THE ORIFICE CAN BE REMOVED AND THE OBSTRUCTION CLEARED WITH A PLUMBER'S SNAKE OR BY FLUSHING WITH WATER. BE SURE AND REPLACE THE ORIFICE BEFORE REPOSITIONING THE SKIMMER.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_CG807.dgn

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LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

SHEET ID
CG807

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Table 6.60a
Design of Spillways

Drainage Area (acres)	Weir Length[1] (ft)
1	4.0
2	6.0
3	8.0
4	10.0
5	12.0

[1] Dimensions shown are minimum.

Construction Specifications

1. Clear, grub, and strip the area under the embankment of all vegetation and root mat. Remove all surface soil containing high amounts of organic matter, and stockpile or dispose of it properly. Haul all objectionable material to the designated disposal area.

2. Ensure that fill material for the embankment is free of roots, woody vegetation, organic matter, and other objectionable material. Place the fill in lifts not to exceed 9 inches, and machine compact it. Over fill the embankment 6 inches to allow for settlement.

3. Construct the outlet section in the embankment. Protect the connection between the riprap and the soil from piping by using filter fabric or a keyway cutoff trench between the riprap structure and soil.

- Place the filter fabric between the riprap and the soil. Extend the fabric across the spillway foundation and sides to the top of the dam; or
- Excavate a keyway trench along the center line of the spillway foundation extending up the sides to the height of the dam. The trench should be at least 2 feet deep and 2 feet wide with 1:1 side slopes.

4. Clear the pond area below the elevation of the crest of the spillway to facilitate sediment cleanout.

5. All cut and fill slopes should be 2:1 or flatter.

6. Ensure that the stone (drainage) section of the embankment has a minimum bottom width of 3 feet and maximum side slopes of 1:1 that extend to the bottom of the spillway section.

7. Construct the minimum finished stone spillway bottom width, as shown on the plans, with 2:1 side slopes extending to the top of the over filled embankment. Keep the thickness of the sides of the spillway outlet structure at a minimum of 21 inches. **The weir must be level and constructed to grade to assure design capacity.**

8. Material used in the stone section should be a well-graded mixture of stone with a d_{50} size of 9 inches (class B erosion control stone is recommended) and a maximum stone size of 14 inches. The stone may be machine placed and the smaller stones worked into the voids of the larger stones. The stone should be hard, angular, and highly weather-resistant.

9. Discharge inlet water into the basin in a manner to prevent erosion. Use temporary slope drains or diversions with outlet protection to divert sediment-laden water to the upper end of the pool area to improve basin trap efficiency (*References: Runoff Control Measures and Outlet Protection*).

10. Ensure that the stone spillway outlet section extends downstream past the toe of the embankment until stable conditions are reached and outlet velocity is acceptable for the receiving stream. Keep the edges of the stone outlet section flush with the surrounding ground, and shape the center to confine the outflow stream (*References: Outlet Protection*).

11. Direct emergency bypass to natural, stable areas. Locate bypass outlets so that flow will not damage the embankment.

12. Stabilize the embankment and all disturbed areas above the sediment pool and downstream from the trap immediately after construction (*References: Surface Stabilization*).

13. Show the distance from the top of the spillway to the sediment cleanout level (1/2 the design depth) on the plans and mark it in the field.

14. Install porous baffles as specified in Practice 6.65, *Porous Baffles*.

Maintenance

Inspect temporary sediment traps at least weekly and after each significant (½ inch or greater) rainfall event and repair immediately. Remove sediment, and restore the trap to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Place the sediment that is removed in the designated disposal area, and replace the part of the gravel facing that is impaired by sediment.

Check the structure for damage from erosion or piping. Periodically check the depth of the spillway to ensure it is a minimum of 1.5 feet below the low point of the embankment. Immediately fill any settlement of the embankment to slightly above design grade. **Any riprap displaced from the spillway must be replaced immediately.**

After all sediment-producing areas have been permanently stabilized, remove the structure and all unstable sediment. Smooth the area to blend with the adjoining areas, and stabilize properly (*References: Surface Stabilization*).

References

Outlet Protection
6.41, Outlet Stabilization Structure

Runoff Control Measures
6.20, Temporary Diversions
6.21, Permanent Diversions
6.22, Diversion Dike (Perimeter Protection)
6.23, Right-of-way Diversion (Water Bars)

Surface Stabilization
6.10, Temporary Seeding
6.11, Permanent Seeding
6.15, Riprap

Sediment Traps and Barriers
6.61, Sediment Basins
6.64, Skimmer Basins
6.65, Porous Baffles

North Carolina Department of Transportation
Standard Specifications for Roads and Structures

US Army Corps of Engineers®

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ISSUE DATE:
FEBRUARY 25, 2022
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SEDIMENT AND EROSION CONTROL DETAILS

SHEET ID
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CONSTRUCTION NOTES

1. GRADE THE SURFACE OF INSTALLATION AREAS SO THAT THE GROUND IS SMOOTH AND LOOSE. WHEN SEEDING PRIOR TO INSTALLATION, FOLLOW THE STEPS FOR SEED BED PREPARATION, SOIL AMENDMENTS, AND SEEDING IN SURFACE STABILIZATION, 6.1. ALL GULLIES, RILLS, AND ANY OTHER DISTURBED AREAS MUST BE FINE GRADED PRIOR TO INSTALLATION. SPREAD SEED BEFORE RECP INSTALLATION. (IMPORTANT: REMOVE ALL LARGE ROCKS, DIRT CLODS, STUMPS, ROOTS, GRASS CLUMPS, TRASH, AND OTHER OBSTRUCTIONS FROM THE SOIL SURFACE TO ALLOW FOR DIRECT CONTACT BETWEEN THE SOIL SURFACE AND THE RECP.)

2. TERMINAL ANCHOR TRENCHES ARE REQUIRED AT RECP ENDS AND INTERMITTENT TRENCHES MUST BE CONSTRUCTED ACROSS CHANNELS AT 25-FOOT INTERVALS. TERMINAL ANCHOR TRENCHES SHOULD BE A MINIMUM OF 12 INCHES IN DEPTH AND 6 INCHES IN WIDTH, WHILE INTERMITTENT TRENCHES NEED BE ONLY 6 INCHES DEEP AND 6 INCHES WIDE.

3. INSTALLATION FOR SLOPES— PLACE THE RECP 2-3 FEET OVER THE TOP OF THE SLOPE AND INTO AN EXCAVATED END TRENCH MEASURING APPROXIMATELY 12 INCHES DEEP BY 6 INCHES WIDE. PIN THE RECP AT 1 FOOT INTERVALS ALONG THE BOTTOM OF THE TRENCH, BACKFILL, AND COMPACT. UNROLL THE RECP DOWN (OR ALONG) THE SLOPE MAINTAINING DIRECT CONTACT BETWEEN THE SOIL AND THE RECP. OVERLAP ADJACENT ROLLS A MINIMUM OF 3 INCHES. PIN THE RECP TO THE GROUND USING STAPLES OR PINS IN A 3 FOOT CENTER-TO-CENTER PATTERN. LESS FREQUENT STAPLING/PINNING IS ACCEPTABLE ON MODERATE SLOPES.

4. INSTALLATION IN CHANNELS— EXCAVATE TERMINAL TRENCHES (12 INCHES DEEP AND 6 INCHES WIDE) ACROSS THE CHANNEL AT THE UPPER AND LOWER END OF THE LINED CHANNEL SECTIONS. AT 25-FOOT INTERVALS ALONG THE CHANNEL, ANCHOR THE RECP ACROSS THE CHANNEL EITHER IN 6 INCH BY 6 INCH TRENCHES OR BY INSTALLING TWO CLOSELY SPACED ROWS OF ANCHORS. EXCAVATE LONGITUDINAL TRENCHES 6 INCHES DEEP AND WIDE ALONG CHANNEL EDGES (ABOVE WATER LINE) IN WHICH TO BURY THE OUTSIDE RECP EDGES. PLACE THE FIRST RECP AT THE DOWNSTREAM END OF THE CHANNEL. PLACE THE END OF THE FIRST RECP IN THE TERMINAL TRENCH AND PIN IT AT 1 FOOT INTERVALS ALONG THE BOTTOM OF THE TRENCH.

5. NOTE: THE RECP SHOULD BE PLACED UPSIDE DOWN IN THE TRENCH WITH THE ROLL ON THE DOWNSTREAM SIDE OF THE BENCH.

6. ONCE PINNED AND BACKFILLED, THE RECP IS DEPLOYED BY WRAPPING OVER THE TOP OF THE TRENCH AND UNROLLING UPSTREAM. IF THE CHANNEL IS WIDER THAN THE PROVIDED ROLLS, PLACE ENDS OF ADJACENT ROLLS IN THE TERMINAL TRENCH, OVERLAPPING THE ADJACENT ROLLS A MINIMUM OF 3 INCHES. PIN AT 1 FOOT INTERVALS, BACKFILL, AND COMPACT. UNROLL THE RECP IN THE UPSTREAM DIRECTION UNTIL REACHING THE FIRST INTERMITTENT TRENCH. FOLD THE RECP BACK OVER ITSELF, POSITIONING THE ROLL ON THE DOWNSTREAM SIDE OF THE TRENCH, AND ALLOWING THE MAT TO CONFORM TO THE TRENCH.

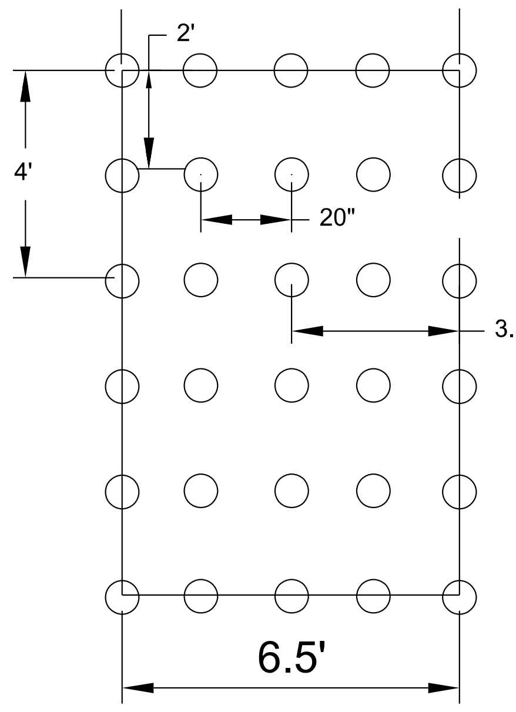
7. THEN PIN THE RECP (TWO LAYERS) TO THE BOTTOM OF THE TRENCH, BACKFILL, AND COMPACT. CONTINUE UP THE CHANNEL (WRAPPING OVER THE TOP OF THE INTERMITTENT TRENCH) REPEATING THIS STEP AT OTHER INTERMITTENT TRENCHES, UNTIL REACHING THE UPPER TERMINAL TRENCH.

8. AT THE UPPER TERMINAL TRENCH, ALLOW THE RECP TO CONFORM TO THE TRENCH, SECURE WITH PINS OR STAPLES, BACKFILL, COMPACT AND THEN BRING THE MAT BACK OVER THE TOP OF THE TRENCH AND ONTO THE EXISTING MAT (2 TO 3 FEET OVERLAP IN THE DOWNSTREAM DIRECTION), AND PIN AT 1 FOOT INTERVALS ACROSS THE RECP. WHEN STARTING INSTALLATION OF A NEW ROLL, BEGIN IN A TRENCH OR SHINGLE-LAP ENDS OF ROLLS A MINIMUM OF 1 FOOT WITH UPSTREAM RECP ON TOP TO PREVENT UPLIFTING. PLACE THE OUTSIDE EDGES OF THE RECP(S) IN LONGITUDINAL TRENCHES, PIN, BACKFILL, AND COMPACT.

9. ANCHORING DEVICES—11 GAUGE, AT LEAST 6 INCHES LENGTH BY 1 INCH WIDTH STAPLES OR 12 INCH MINIMUM LENGTH WOODEN STAKES ARE RECOMMENDED FOR ANCHORING THE RECP TO THE GROUND.

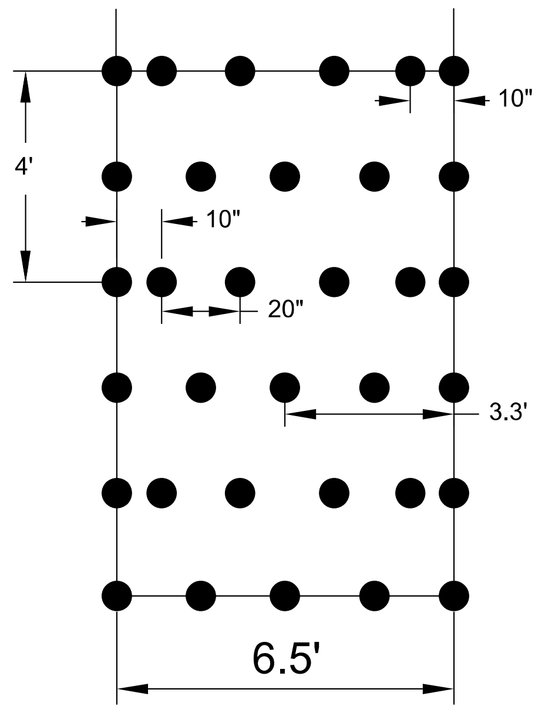
10. DRIVE STAPLES OR PINS SO THAT THE TOP OF THE STAPLE OR PIN IS FLUSH WITH THE GROUND SURFACE. ANCHOR EACH RECP EVERY 3 FEET ALONG ITS CENTER. LONGITUDINAL OVERLAPS MUST BE SUFFICIENT TO ACCOMMODATE A ROW OF ANCHORS AND UNIFORM ALONG THE ENTIRE LENGTH OF OVERLAP AND ANCHORED EVERY 3 FEET ALONG THE OVERLAP LENGTH. ROLL ENDS MAY BE SPLICED BY OVERLAPPING 1 FOOT (IN THE DIRECTION OF WATER FLOW), WITH THE UPSTREAM/UPSLOPE MAT PLACED ON TOP OF THE DOWNSTREAM/ DOWNSLOPE RECP. THIS OVERLAP SHOULD BE ANCHORED AT 1 FOOT SPACING ACROSS THE RECP. WHEN INSTALLING MULTIPLE WIDTH MATS HEAT SEAMED IN THE FACTORY, ALL FACTORY SEAMS AND FIELD OVERLAPS SHOULD BE SIMILARLY ANCHORED.

CHANNEL	BOTTOM WIDTH (FT)	SIDE SLOPE (H:V)	CHANNEL GRADE	CHANNEL LENGTH	DRAINAGE AREA (AC)	Q10 MAX (CFS)	V10 (FT/S)	DEPTH (FT)	TEMPORARY LINING	Permissible Shear Stress Td (lb per SF)	PERMANENT LINING	MIN WIDTH LINING (FT)	MIN DEPTH LINING (IN)
TD-1 (Initial Phase)	3	3:1	0.71%	212	2.50	11.31	3.84	0.61	Synthetic Mat	0.27	N/A	3	12
TD-2 (Initial & Intermediate Phase)	3	3:1	4.50%	290	2.20	9.96	7.03	0.35	Synthetic Mat	0.98	N/A	3	8
GL-1	8	3:1	0.50%	402	3.40	4.74	1.65	0.32	N/A	0.10	SOD	3	12
GL-2	3	3:1	0.86%	190	0.62	0.86	1.35	0.18	N/A	0.10	SOD	3	12



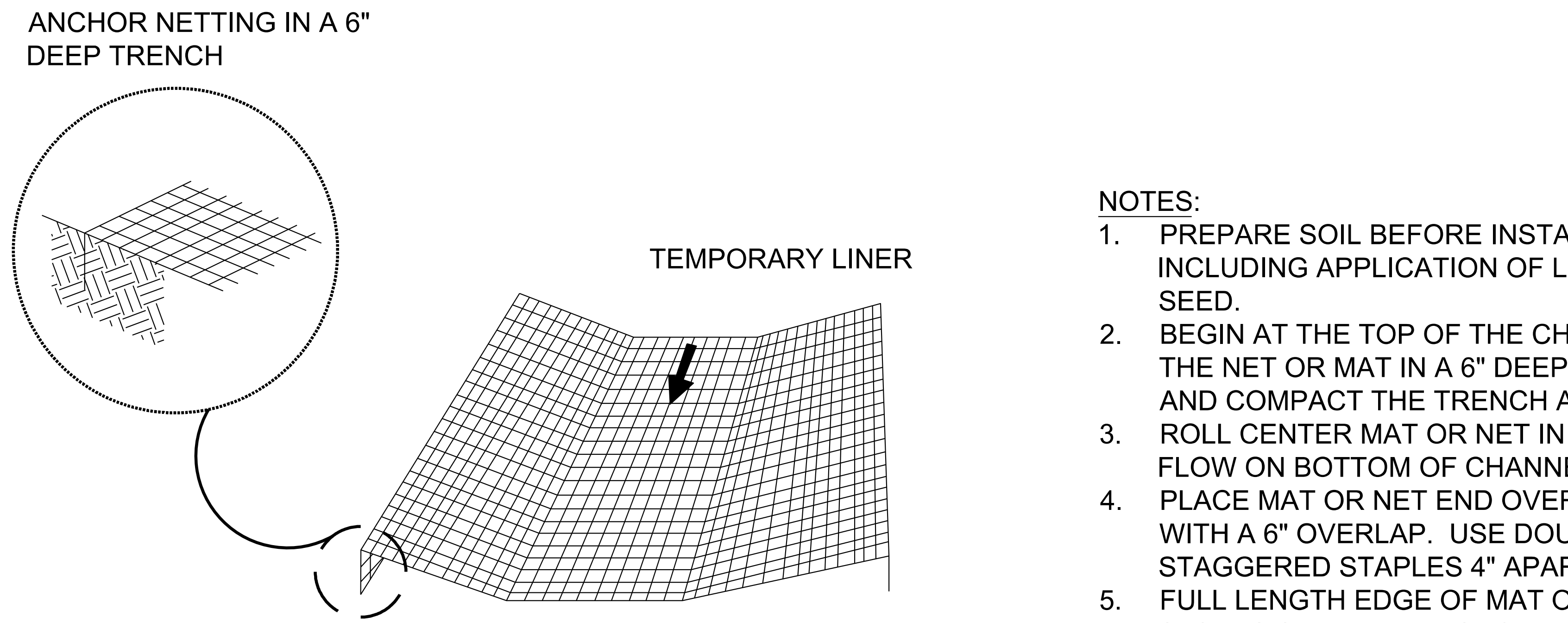
3.5 STAPLES/SY USING 6", 11 GAUGE WIRE "U" STAPLES.
USE 8" STAPLES FOR LOOSE SOILS.
9 GAUGE STAPLES OR HEAVIER IN HARD OR ROCKY SOILS.

STRAW MAT STAPLE PATTERN



3.8 STAPLES/SY USING 6", 11 GAUGE WIRE "U" STAPLES.
USE 8" STAPLES FOR LOOSE SOILS.
9 GAUGE STAPLES OR HEAVIER IN HARD OR ROCKY SOILS.

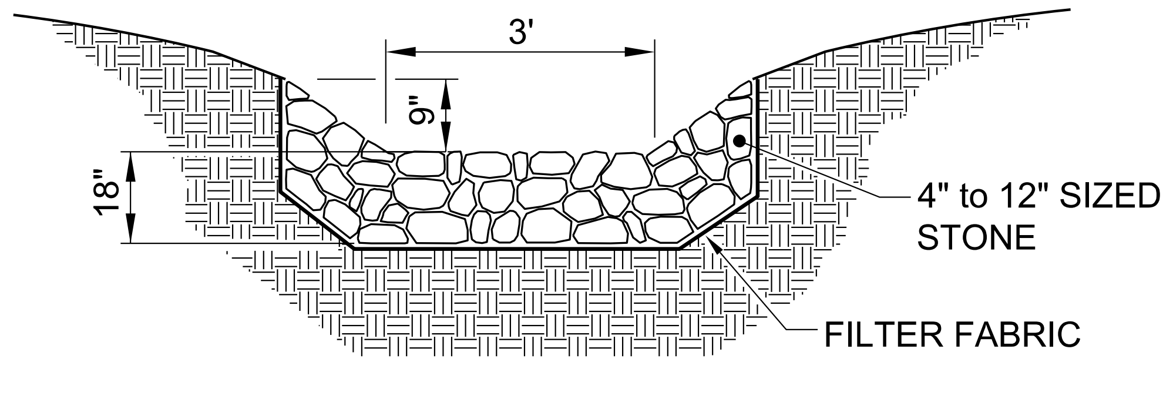
SYNTHETIC MAT STAPLE PATTERN



CHANNEL LINER

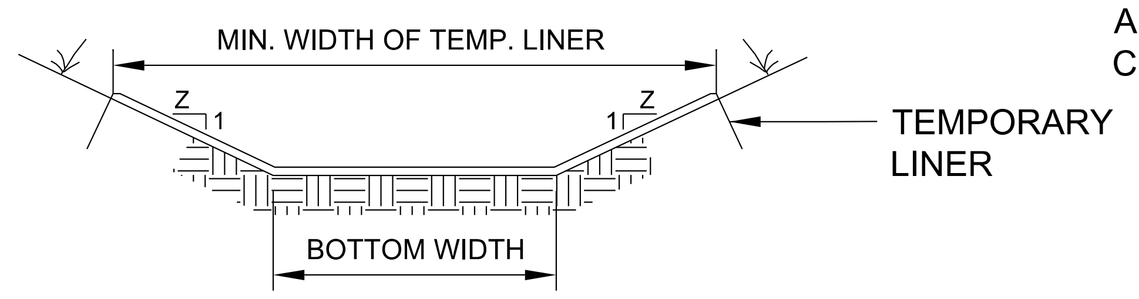
NOTES:

1. PREPARE SOIL BEFORE INSTALLING MATS OR NETS, INCLUDING APPLICATION OF LIME, FERTILIZER AND SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE NET OR MAT IN A 6" DEEP TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL CENTER MAT OR NET IN DIRECTION OF WATER FLOW ON BOTTOM OF CHANNEL.
4. PLACE MAT OR NET END OVER END (SHINGLE STYLE) WITH A 6" OVERLAP. USE DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE.
5. FULL LENGTH EDGE OF MAT OR NET AT TOP SIDE SLOPES SHALL BE ANCHORED IN 6" DEEP TRENCH AFTER STAPLING.
6. MATS OR NETS SHALL BE OVERLAPPED 4" OVER THE CENTER BLANKET AND STAPLED.
7. THE TERMINAL END OF THE MAT OR NET MUST BE ANCHORED IN A 6" DEEP TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



TRAPEZOIDAL

TYPICAL RIP RAP CHANNEL



GRASS-LINED CHANNEL

NOTE

SOIL STABILIZATION MATTING SHALL BE PER SPECIFICATIONS FOR NCDENR ROLLED EROSION CONTROL PRODUCTS.

REFER TO NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL 6.17 FOR ADDITIONAL INFORMATION AND MAINTENANCE REQUIREMENTS.

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CG705

CHANNEL DETAIL

NOT TO SCALE

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ISSUE DATE:
FEBRUARY 25, 2022
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CATEGORY CODE

DESIGNED BY:
S.CURRY
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SEDIMENT AND EROSION CONTROL DETAILS

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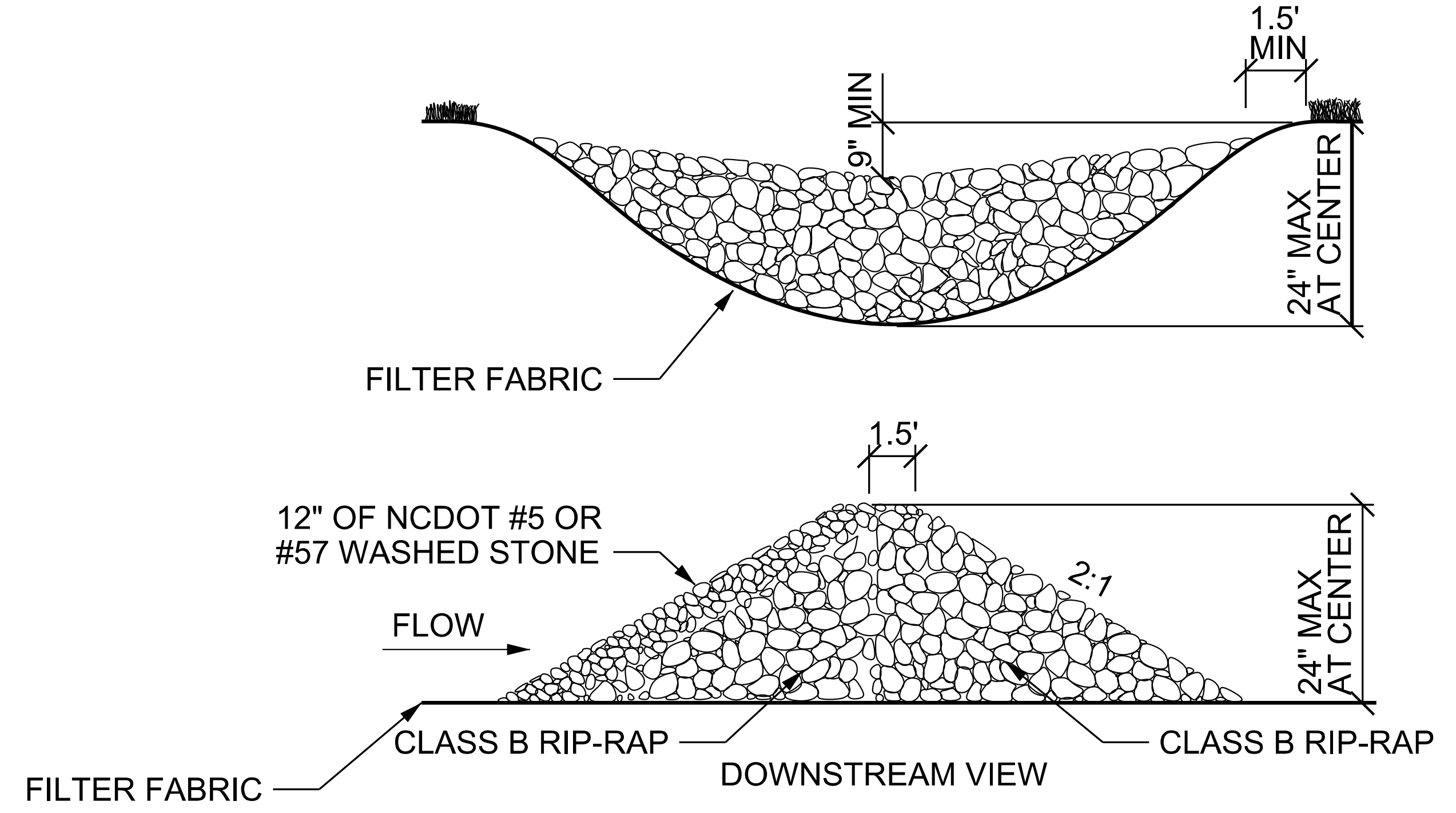

CONSTRUCTION

1. PLACE STONE TO THE LINES AND DIMENSIONS SHOWN IN THE PLAN ON A FILTER FABRIC FOUNDATION.

2. KEEP THE CENTER STONE SECTION AT LEAST 9 INCHES BELOW NATURAL GROUND LEVEL WHERE THE DAM ABUTS THE CHANNEL BANKS.

3. EXTEND STONE AT LEAST 1.5 FEET BEYOND THE DITCH BANK TO KEEP WATER FROM CUTTING AROUND THE ENDS OF THE CHECK DAM.

4. SET SPACING BETWEEN DAMS TO ASSURE THAT THE ELEVATION AT THE TOP OF THE LOWER DAM IS THE SAME AS THE TOE ELEVATION OF THE UPPER DAM.

5. PROTECT THE CHANNEL AFTER THE LOWEST CHECK DAM FROM HEAVY FLOW THAT COULD CAUSE EROSION.

6. MAKE SURE THAT THE CHANNEL REACH ABOVE THE MOST UPSTREAM DAM IS STABLE.

7. ENSURE THAT OTHER AREAS OF THE CHANNEL, SUCH AS CULVERT ENTRANCES BELOW THE CHECK DAMS, ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.

MAINTENANCE

INSPECT CHECK DAMS AND CHANNELS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2" OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. CLEAN OUT SEDIMENT, STRAW, LIMBS, OR OTHER DEBRIS THAT COULD CLOG THE CHANNEL WHEN NEEDED.

ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, ADDITIONAL MEASURES CAN BE TAKEN SUCH AS, INSTALLING A PROTECTIVE RIPRAP LINER IN THAT PORTION OF THE CHANNEL.

REMOVE SEDIMENT ACCUMULATED BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO CHANNEL VEGETATION, ALLOW THE CHANNEL TO DRAIN THROUGH TO THE STONE CHECK DAM, AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. ADD STONES TO DAMS AS NEEDED TO MAINTAIN DESING HEIGHT AND CROSS SECTION.

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CHECK DAM DETAIL

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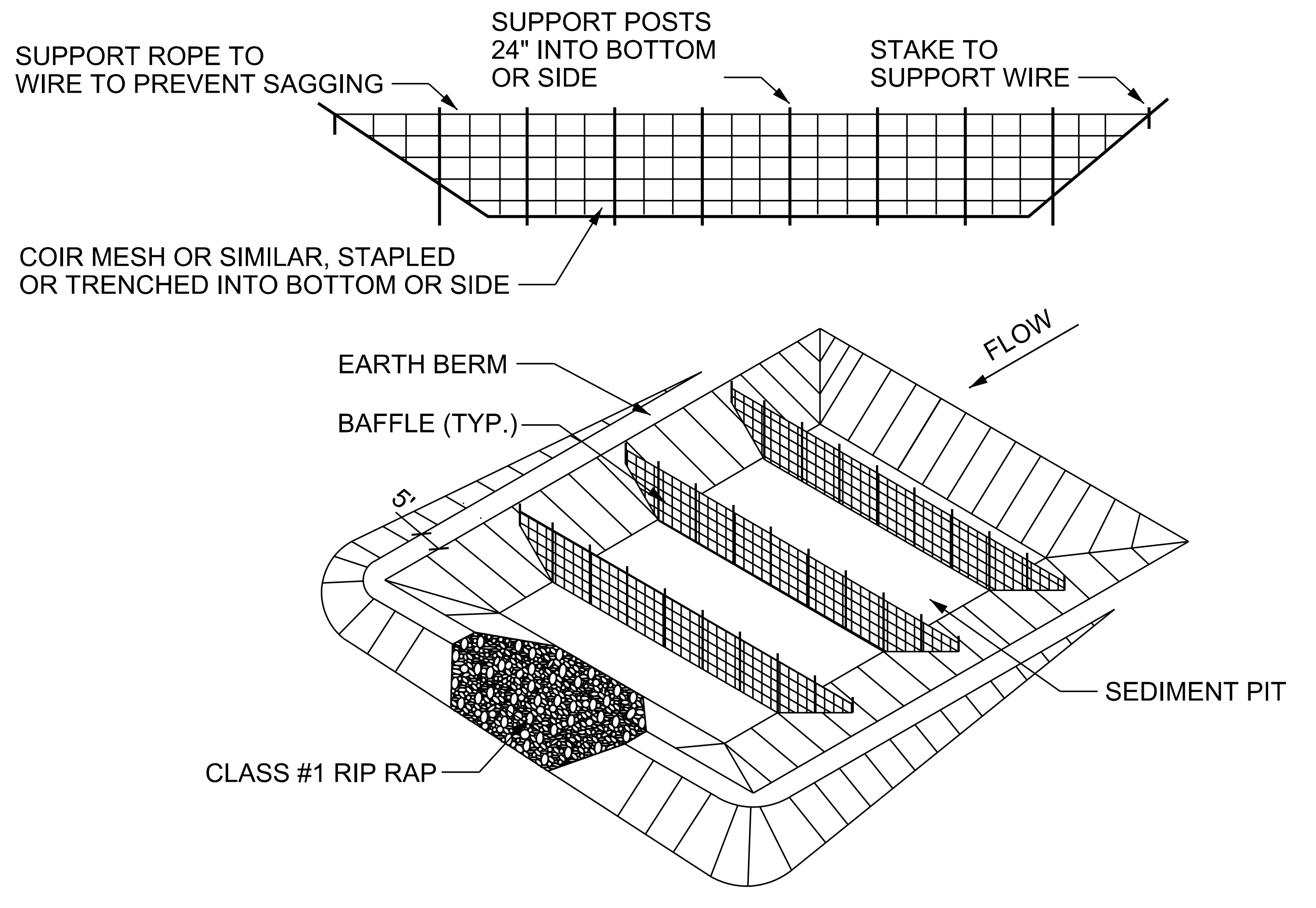

3
CG701
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POROUS BAFFLES DETAIL

NOT TO SCALE

CONSTRUCTION

1. GRADE THE BASIN SO THAT THE BOTTOM IS LEVEL FRONT TO BACK AND SIDE TO SIDE.

2. INSTALL POSTS OR SAW HORSES ACROSS THE WIDTH OF THE SEDIMENT TRAP.

3. STEEL POSTS SHOULD BE DRIVEN TO A DEPTH OF 24 INCHES, SPACED A MAXIMUM OF 4 FEET APART, AND INSTALLED UP THE SIDES OF THE BASIN AS WELL. THE TOP OF THE FABRIC SHOULD BE 6 INCHES HIGHER THAN THE INVERT OF THE SPILLWAY. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS.

4. INSTALL AT LEAST THREE ROWS OF BAFFLES BETWEEN THE INLET AND OUTLET DISCHARGE POINT. BASINS LESS THAN 20 FEET IN LENGTH MAY USE 2 BAFFLES. REFER TO SHEET CG724 FOR BAFFLE SPACING.

5. WHEN USING POSTS, ADD A SUPPORT WIRE OR ROPE ACROSS THE TOP OF THE MEASURE TO PREVENT SAGGING.

6. WRAP POROUS MATERIAL, LIKE JUTE BACKED BY COIR MATERIAL, OVER A SAWHORSE OR THE TOP WIRE. HAMMER REBAR INTO THE SAWHORSE LEGS FOR ANCHORING. THE FABRIC SHOULD HAVE FIVE TO TEN PERCENT OPENINGS IN THE WEAVE. ATTACH FABRIC TO A ROPE AND A SUPPORT STRUCTURE WITH ZIP TIES, WIRE, OR STAPLES.

7. THE BOTTOM AND SIDES OF THE FABRIC SHOULD BE ANCHORED IN A TRENCH OR PINNED WITH 8-INCH EROSION CONTROL MATTING STAPLES.

8. DO NOT SPLICE THE FABRIC, BUT USE A CONTINUOUS PIECE ACROSS THE BASIN.

MAINTENANCE

INSPECT BAFFLES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.

BE SURE TO MAINTAIN ACCESS TO THE BAFFLES. SHOULD THE FABRIC OF A BAFFLE COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS WHEN IT REACHES HALF FULL TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE BAFFLES. TAKE CARE TO AVOID DAMAGING THE BAFFLES DURING CLEANOUT. SEDIMENT DEPTH SHOULD NEVER EXCEED HALF THE DESIGNED STORAGE DEPTH.

AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED, REMOVE ALL BAFFLE MATERIALS AND UNSTABLE SEDIMENT DEPOSITS, BRING THE AREA TO GRADE, AND STABILIZE IT.

1. ALL RETAINED TREES AS SHOWN SHALL BE IDENTIFIED ON THE SITE IN SUCH A WAY SO THAT ALL WORKERS SHALL KNOW THAT THE VEGETATION IS TO BE RETAINED.

2. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN FOR EACH PROTECTED TREE OR GROUP OF TREES ON THE SITE A PROTECTIVE FENCING WHICH ENCIRCLES THE OUTER LIMITS OF THE CRITICAL ROOT ZONE OF THE TREE TO PROTECT THEM FROM CONSTRUCTION ACTIVITY. ALL PROTECTIVE FENCING SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF ANY SITE WORK AND REMAIN IN PLACE UNTIL ALL EXTERIOR WORK HAS BEEN COMPLETED.

3. ORANGE VINYL CONSTRUCTION FENCING, CHAIN LINK FENCING, SNOW FENCING OR SIMILAR FENCING AT LEAST FOUR FEET (4') HIGH AND SUPPORTED AT A MAXIMUM OF TEN-FOOT (10') INTERVALS BY APPROVED METHODS SUFFICIENT ENOUGH TO KEEP THE FENCE UPRIGHT AND IN PLACE. THE FENCING SHALL BE OF A HIGHLY VISIBLE MATERIAL, AND SHALL HAVE A TREE PROTECTION SIGN AFFIXED TO THE FENCE EVERY TWENTY FEET (20') IN SUCH A MANNER TO BE CLEARLY VISIBLE.

MAINTENANCE

CONTINUE TO CARE FOR THE SITE UNTIL THE NEW OWNER TAKES POSSESSION. TAKE THESE STEPS AFTER ALL MATERIALS AND EQUIPMENT HAVE BEEN REMOVED FROM THE SITE:

- REMOVE TREE PROTECTION ZONE FENCES.

- PRUNE ANY DAMAGED TREES. IN SPITE OF PRECAUTIONS, SOME DAMAGE TO PROTECTED TREES MAY OCCUR. IN SUCH CASES, REPAIR ANY DAMAGE TO THE CROWN, TRUNK, OR ROOT SYSTEM IMMEDIATELY.

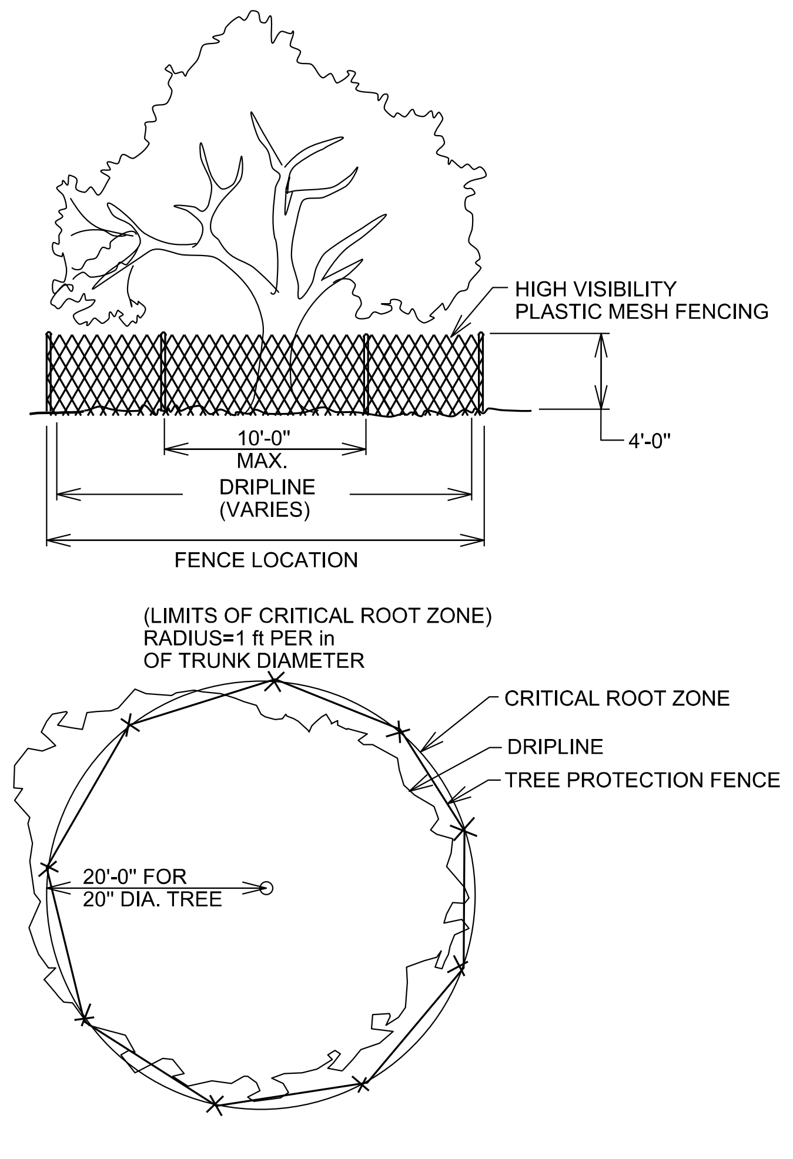
- REPAIR ROOTS BY CUTTING OFF THE DAMAGED AREAS AND PAINTING THEM WITH TREE PAINT. SPREAD PEAT MOSS OR MOIST TOPSOIL OVER EXPOSED ROOTS.

- REPAIR DAMAGE TO BARK BY TRIMMING AROUND THE DAMAGED AREA, TAPER THE CUT TO PROVIDE DRAINAGE, AND PAINT WITH TREE PAINT.

- CUT OFF ALL DAMAGED TREE LIMBS ABOVE THE TREE COLLAR AT THE TRUNK OR MAIN BRANCH. USE THREE SEPARATE CUTS TO AVOID PEELING BARK FROM HEALTHY AREAS OF THE TREE.

- CONTINUE MAINTENANCE CARE. PAY SPECIAL ATTENTION TO ANY STRESSED, DISEASED, OR INSECT-INFESTED TREES. REDUCE TREE STRESS CAUSED BY UNINTENDED CONSTRUCTION DAMAGE BY OPTIMIZING PLANT CARE WITH WATER, MULCH, AND FERTILIZER WHERE APPROPRIATE. CONSULT YOUR TREE EXPERT IF NEEDED.

- INFORM THE PROPERTY OWNER ABOUT THE MEASURES EMPLOYED DURING CONSTRUCTION, WHY THOSE MEASURES WERE TAKEN, AND HOW THE EFFORT CAN BE CONTINUED.



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TREE PROTECTION FENCE DETAIL

NOT TO SCALE

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
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FILENAME:
ASHE CG810.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

SHEET ID
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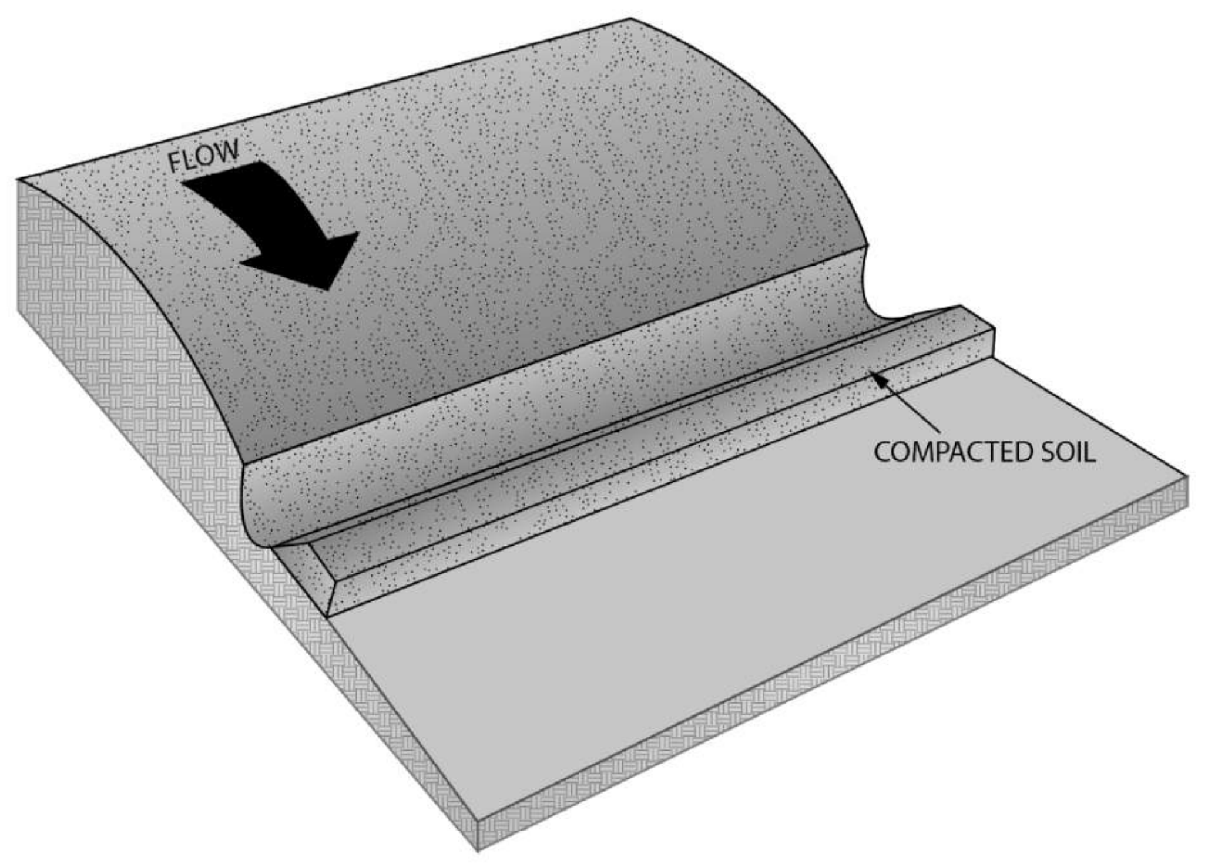
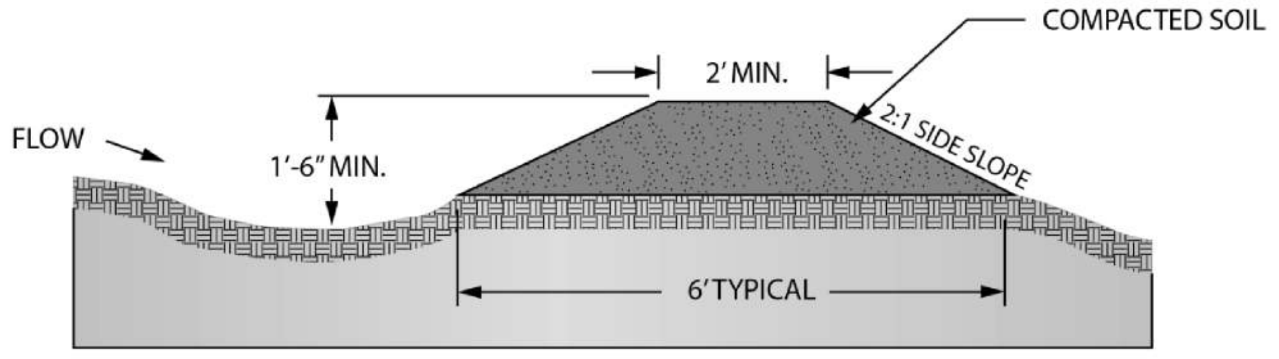


ISOMETRIC VIEW



CROSS SECTION

TEMPORARY DIVERSION NOTES

1. THE TEMPORARY DIVERSION AND BERM SHALL BE CONSIDERED UNCLASSIFIED EARTH MATERIAL AND STABILIZED WITH SEED, FERTILIZER AND MULCH OR OTHER APPROVED STABILIZATION TECHNIQUES.
2. BOTTOM OF EXCAVATION TO TOP OF BERM SHOULD BE 1.5-FEET MINIMUM DEPTH.
3. BERM SHOULD BE 2-FEET MINIMUM WIDTH AT THE TOP, AND 6 FEET AT THE BOTTOM.
4. BERM CREATED BY THE EXCAVATED MATERIAL PLACED ON THE DOWNSLOPE SIDE OF THE DITCH SHOULD BE STABILIZED IN ACCORDANCE WITH SECTIONS 1620 AND 1660 OF THE STANDARD SPECIFICATIONS
5. SIDE SLOPES SHOULD BE 2:1 OR OF SUFFICIENT ANGLE TO ALLOW VEGETATIVE GROWTH TO PREVENT EROSION.

TEMPORARY DIVERSION MAINTENANCE

1. DEVICES SHOULD BE INSPECTED ON REGULAR BASIS AND AFTER EACH SIGNIFICANT RAINFALL
2. AT A MINIMUM, SEDIMENT SHOULD BE REMOVED FROM THE CHANNEL WHEN THE TEMPORARY DIVERSION IS 50 PERCENT OF THE DESIGN DEPTH
3. TEMPORARY DIVERSIONS SHOULD BE IMMEDIATELY REPAIRED IF DAMAGED BY EQUIPMENT OR BREACHED BY RUNOFF
4. SEDIMENT SHOULD BE REMOVED WHEN THE TEMPORARY DIVERSION IS 50 PERCENT OF THE DESIGN DEPTH.
5. IMMEDIATE REPAIRS SHOULD BE PERFORMED IF ANY DAMAGE IS IDENTIFIED WITHIN THE DIVERSION.
6. STABILIZATION WITHIN THE DIVERSION SHOULD BE MAINTAINED TO PREVENT EROSION.

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TEMPORARY DIVERSION DETAIL

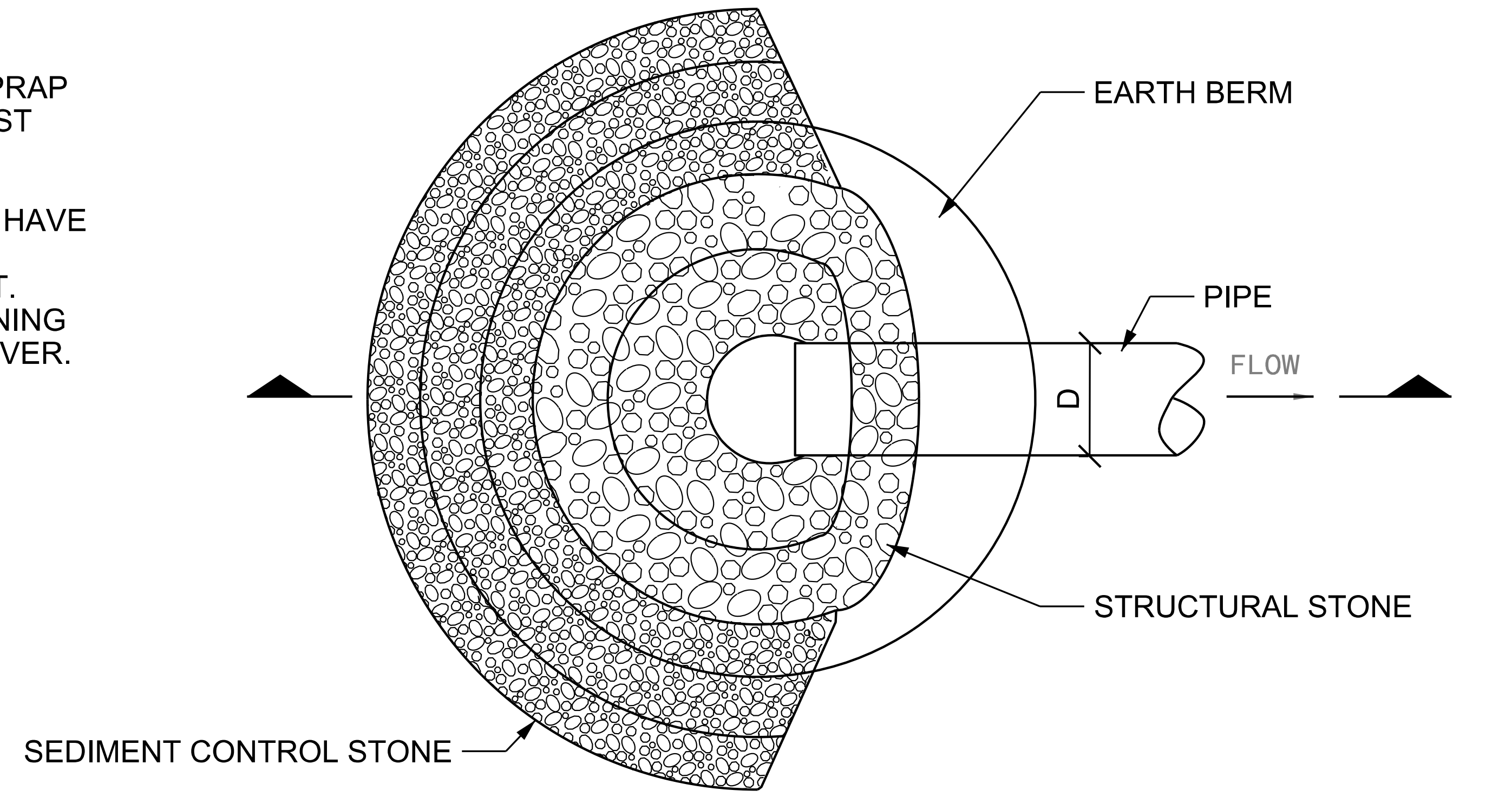
NOT TO SCALE

ROCK PIPE INLET MAINTENANCE

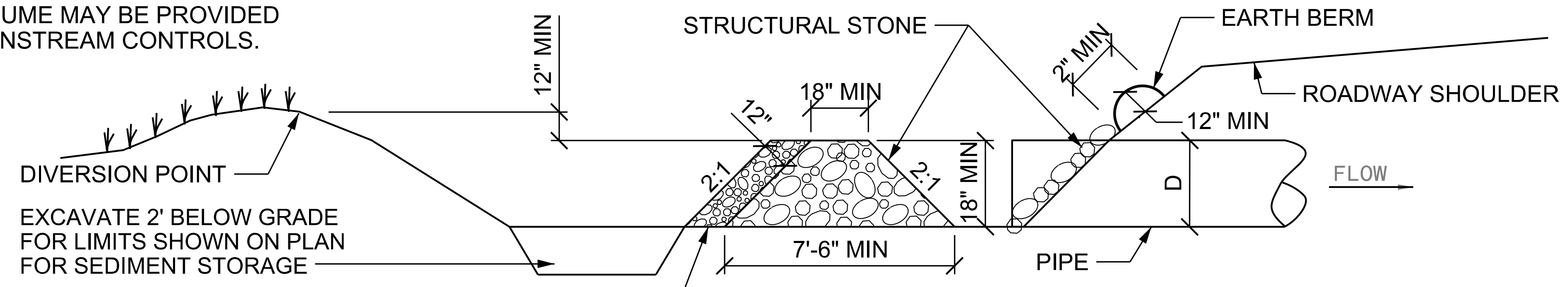
1. INSPECT ROCK PIPE INLET PROTECTION AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2" OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. REMOVE SEDIMENT AND RESTORE THE SEDIMENT STORAGE AREA TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE -HALF THE DESIGN DEPTH OF THE TRAP. PLACE THE SEDIMENT THAT IS REMOVED IN THE DESIGNATED DISPOSAL AREA AND REPLACE THE CONTAMINATED PART OF THE GRAVEL FACING.
2. CHECK THE STRUCTURE FOR DAMAGE. ANY RIPRAP DISPLACED FROM THE STONE HORSESHOE MUST BE REPLACED IMMEDIATELY.
3. AFTER ALL THE SEDIMENT -PRODUCING AREAS HAVE BEEN PERMANENTLY STABILIZED, REMOVE THE STRUCTURE AND ALL THE UNSTABLE SEDIMENT. SMOOTH THE AREA TO BLEND WITH THE ADJOINING AREAS AND PROVIDE PERMANENT GROUND COVER.

ROCK PIPE INLET PROTECTION NOTES:

1. USE CLASS A EROSION CONTROL STONE FOR STRUCTURAL STONE.
2. USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
3. CONSTRUCT TOP OF BERM A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR DIVERSION POINT.
4. PROVIDE A TOTAL SEDIMENT TRAP VOLUME OF 3600± CUBIC FEET PER ACRE OF DISTURBED AREA. SOME OF THE REQUIRED VOLUME MAY BE PROVIDED BY UP OR DOWNSTREAM CONTROLS.



PLAN



SECTION

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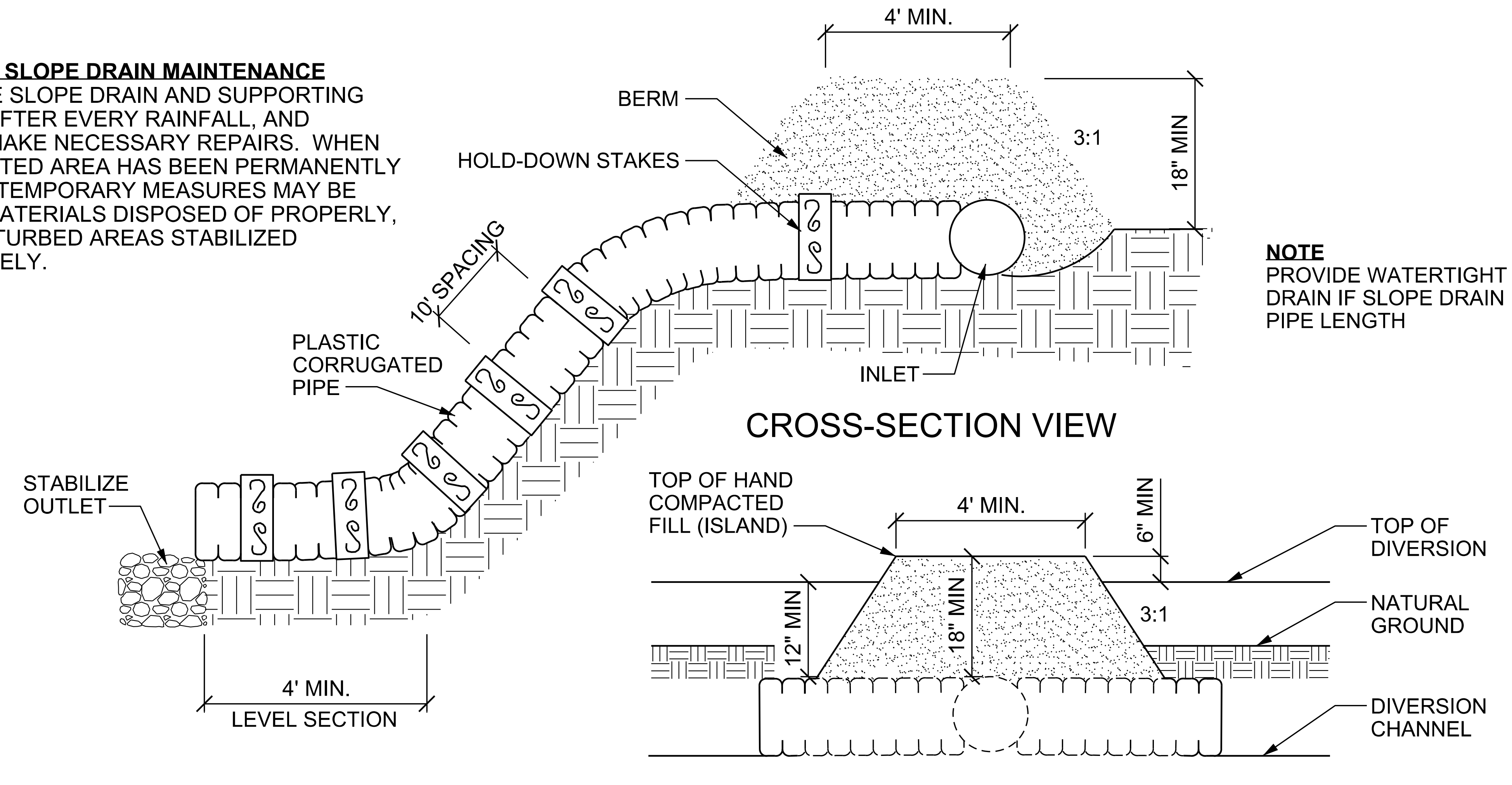
ROCK PIPE INLET PROTECTION DETAIL

NOT TO SCALE

TEMPORARY SLOPE DRAIN MAINTENANCE
INSPECT THE SLOPE DRAIN AND SUPPORTING DIVERSION AFTER EVERY RAINFALL, AND PROMPTLY MAKE NECESSARY REPAIRS. WHEN THE PROTECTED AREA HAS BEEN PERMANENTLY STABILIZED, TEMPORARY MEASURES MAY BE REMOVED, MATERIALS DISPOSED OF PROPERLY, AND ALL DISTURBED AREAS STABILIZED APPROPRIATELY.



NOTE
PROVIDE WATERTIGHT JOINT FOR SLOPE DRAIN IF SLOPE DRAIN LENGTH EXCEEDS PIPE LENGTH

CROSS-SECTION VIEW

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CG701

TEMPORARY SLOPE DRAIN DETAIL

NOT TO SCALE

US Army Corps
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MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
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TRAINING BUILDING - VMS - UNHEATED STORAGE
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SEDIMENT AND EROSION CONTROL DETAILS

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GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

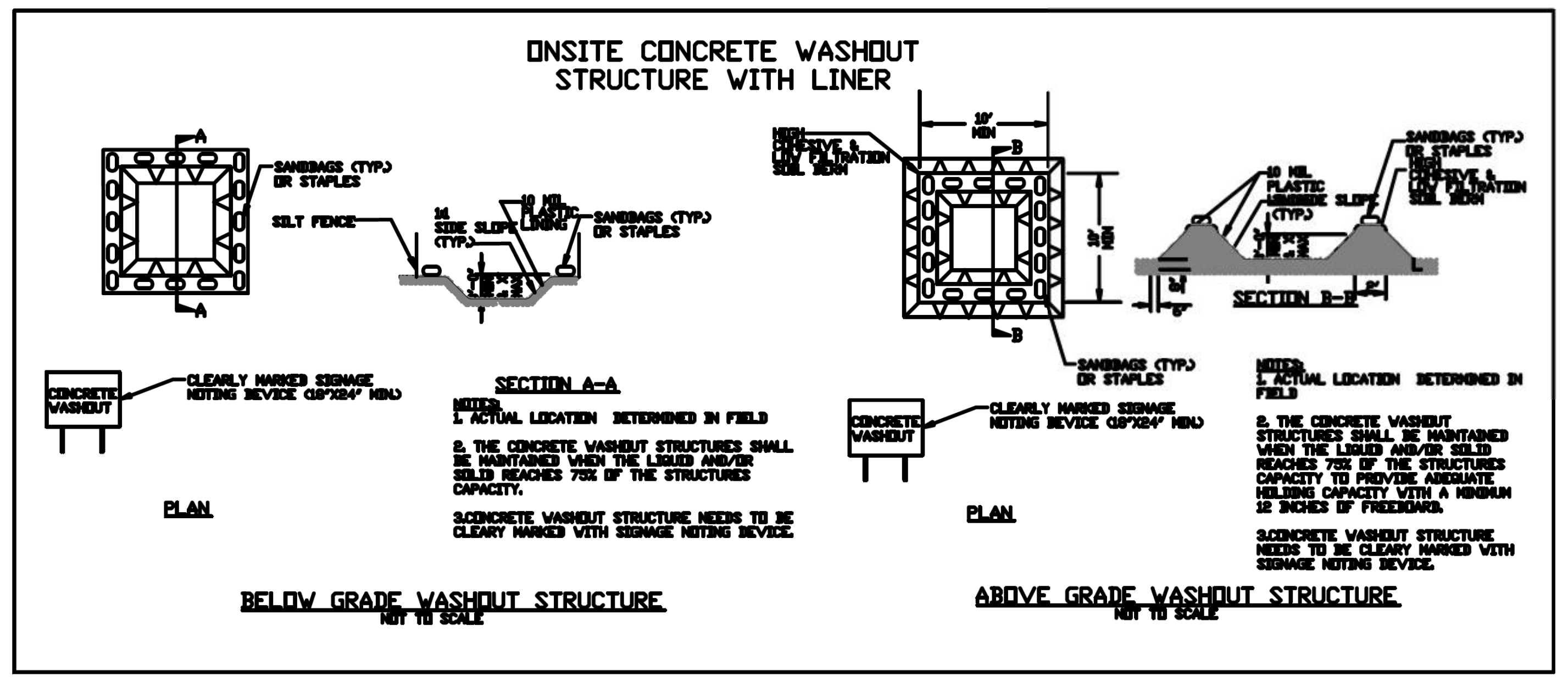
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

NORTH CAROLINA
Environmental Quality


ONSITE CONCRETE WASHOUT
STRUCTURE WITH LINER
A
A
SANDBAGS (TYP.) OR STAPLES
SILT FENCE
1:1 SIDE SLOPE (TYP.)
10 MIL PLASTIC LINING
SANDBAGS (TYP.) OR STAPLES
CLEARLY MARKED SIGNAGE NOTING DEVICE (18"X24" MIN.)
CONCRETE WASHOUT
SECTION A-A
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.
PLAN
BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE
HIGH COHESIVE & LOW FILTRATION SOIL BERM
10' MIN
10' MIN
B
B
SANDBAGS (TYP.) OR STAPLES
10 MIL PLASTIC
1:1 SIDE SLOPE (TYP.)
SANDBAGS (TYP.) OR STAPLES
HIGH COHESIVE & LOW FILTRATION SOIL BERM
SECTION B-B
CLEARLY MARKED SIGNAGE NOTING DEVICE (18"X24" MIN.)
CONCRETE WASHOUT
PLAN
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.
ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

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PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be documented in the manner described:

Item to Document	Documentation Requirements
(a) Each E&SC Measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC Plan.	Initial and date each E&SC Measure on a copy of the approved E&SC Plan or complete, date and sign an inspection report that lists each E&SC Measure shown on the approved E&SC Plan. This documentation is required upon the initial installation of the E&SC Measures or if the E&SC Measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC Plan.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC Measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC Measures.	Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation

In addition to the E&SC Plan documents above, the following items shall be kept on the site and available for agency inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This general permit as well as the certificate of coverage, after it is received.

(b) Records of inspections made during the previous 30 days. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

(c) All data used to complete the Notice of Intent and older inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that must be reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:

- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(a) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(b) Anticipated bypasses and unanticipated bypasses.

(c) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

NORTH CAROLINA
Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CG813.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

SHEET ID
CG813

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CERTIFIED FINAL SUBMITTAL

Compost socks may be used as check dams in ditches not exceeding 3 feet in depth. Normally, 8 to 12 inch diameter socks should be used. Be sure to stake the sock perpendicular to the slope of the ditch. When used as check dams, installation should be similar to that of natural fiber wattles. The ends and middle of the sock should be staked, and additional stakes placed at a 2-foot maximum interval. See Table 6.66b for spacing.

Design Criteria

The sediment and pollutant removal process characteristic to a compost sock allows deposition of settling solids. Ponding occurs when water flowing to the sock accumulates faster than the hydraulic flow through rate of the sock. Typically, initial hydraulic flow-through rates for a compost sock are 50% greater than geotextile fabric (silt fence). However, installation and maintenance is especially important for proper function and performance. Design consideration should be given to the duration of the project, total area of disturbance, rainfall/runoff potential, soil erosion potential, and sediment loading when specifying a compost sock.

Runoff Flow:

The depth of runoff ponded above the compost sock should not exceed the height of the compost sock. If overflow of the device is a possibility, a larger diameter sock should be constructed, other sediment control devices may be used, or management practices to reduce runoff should be installed. Alternatively, a second sock may be constructed or used in combination with Practice 6.17, *Rolled Erosion Control Products* or Practice 6.18, *Compost Blankets* to slow runoff and reduce erosion.

Level Contour:

The compost sock should be placed on level contours to assist in dissipating low concentrated flow into sheet flow and reducing runoff flow velocity. Do not construct compost socks to concentrate runoff or channel water. Sheet flow of water should be perpendicular to the sock at impact and un-concentrated. Placing compost socks on undisturbed soil will reduce the potential for undermining by concentrated runoff flows.

Runoff and Sediment Accumulation:

The compost sock should be placed at a 10 foot minimum distance away from the toe of the slope to allow for proper runoff accumulation for sediment deposition and to allow for maximum sediment storage capacity behind the device. On flat areas, the sock should be placed at the edge of the land-disturbance.

End Around Flow:

In order to prevent water flowing around the ends of the compost sock, the ends of the sock must be constructed pointing upslope so the ends are at a higher elevation. A minimum of 10 linear feet at each end placed at a 30 degree angle is recommended.

Vegetated Compost Sock:

For permanent areas the compost sock can be directly seeded to allow vegetation established directly on the device. Vegetation on and around the compost sock will assist in slowing runoff velocity for increased deposition of pollutants. The option of adding vegetation should be shown on the erosion and sedimentation control plan. No additional soil amendments or fertilizer are required for vegetation establishment in the vegetated compost sock.

Slope Spacing & Drainage Area:

Maximum drainage area to and spacing between the compost socks is dependent on rainfall intensity and duration used for specific design/plan, slope steepness, and width of area draining to the sock.

A compost sock across the full length of the slope is normally used to ensure that stormwater does not break through at the intersection of socks placed end-to-end. Ends are jointed together by sleeving one sock end into the other. The diameter of the compost sock used will vary depending upon the steepness and length of the slope; example slopes and slope lengths used with different diameter compost socks are presented in Table 6.66b.

Table 6.66b - Compost Sock Spacing versus Channel Slope

Channel Slope (%)	Spacing Between Socks (feet)	
	8-inch Diameter Sock	12-inch Diameter Sock
1	67	100
2	33	50
3	22	33
4	17	25
5	13	20

Source: B. Faucette – 2010

Material:

The compost media shall be derived from well-decomposed organic matter source produced by controlled aerobic (biological) decomposition that has been sanitized through the generation of heat and stabilized to the point that it is appropriate for this particular application. Compost material shall be processed through proper thermophilic composting, meeting the US Environmental Protection Agency's definition for a 'Process to Further Reduce Pathogens' (PFRP), as defined at 40 CFR Part 503. The compost portion shall meet the chemical, physical and biological properties specified in Practice 6.18, *Compost Blankets* Table 6.18a, with the exception of particle size. Slightly more coarse compost is recommended for the socks, as follows:

Particle Size Distribution

Sieve Size	Percent Passing Selected Sieve Mesh Size, Dry Weight Basis
2"	99 % (3" Maximum Particle Size)
3/8"	30-50 %

See Practice 6.18, *Compost Blankets* for complete information on compost parameters and tests. Installer should provide documentation to support compliance of testing required in the compost specification.

This specification covers compost produced from various organic by-products, for use as an erosion and sediment control measure on sloped areas. The product's parameters will vary based on whether vegetation will be established on the treated slope. Only compost products that meet all applicable state and federal regulations pertaining to its production and distribution may be used in this application. Approved compost products must meet related state and federal chemical contaminant (e.g., heavy metals, pesticides, etc.) and pathogen limit standards pertaining to the feedstocks (source materials) in which it are derived.

In regions subjected to higher rates of precipitation and/or greater rainfall intensity, larger compost socks should be used. In these particular regions, coarser compost products are preferred as the compost sock must allow for an improved water percolation rate. The designer should check the flow rate per foot of sock in order to ensure drainage rate of the compost sock being used is adequate. The required flow rates are outlined in Table 6.66c.

Table 6.66c – Compost Sock Initial Flow Rates

Compost Sock Design Diameter	8 inch (200mm)	12 inch (300mm)	18 inch (450mm)	24 inch (600mm)	32 inch (800mm)
Maximum Slope Length (<2%)	600 ft (183m)	750 ft (229m)	1,000 ft (305m)	1,300 ft (396m)	1,650 ft (500m)
Hydraulic Flow Through Rate	7.5 gpm/ft (94 l/m/m)	11.3 gpm/ft (141 l/m/m)	15.0 gpm/ft (188 l/m/m)	22.5gpm/ft (281 l/m/m)	30.0 gpm/ft (374 l/m/m)

Source: B. Faucette-2010

Construction Specifications

INSTALLATION

1. Materials used in the compost sock must meet the specifications outlined above and in Practice 6.18, Compost Blankets.

2. Compost socks should be located as shown on the erosion and sedimentation control plan.

3. Prior to installation, clear all obstructions including rocks, clods, and other debris greater than one inch that may interfere with proper function of the compost sock.

4. Compost socks should be installed parallel to the toe of a graded slope, a minimum of 10 feet beyond the toe of the slope. Socks located below flat areas should be located at the edge of the land-disturbance. The ends of the socks should be turned slightly up slope to prevent runoff from going around the end of the socks.

5. Fill sock netting uniformly with compost to the desired length such that logs do not deform.

6. Oak or other durable hardwood stakes 2" X 2" in cross section should be driven vertically plumb, through the center of the compost sock. Stakes should be placed at a maximum interval of 4 feet, or a maximum interval of 8 feet if the sock is placed in a 4 inch trench. See Figure 6.66b. The stakes should be driven to a minimum depth of 12 inches, with a minimum of 3 inches protruding above the compost sock.

7. In the event staking is not possible (i.e., when socks are used on pavement) heavy concrete blocks shall be used behind the sock to hold it in place during runoff events.

8. If the compost sock is to be left as part of the natural landscape, it may be seeded at time of installation for establishment of permanent vegetation using the seeding specification in the erosion and sedimentation control plan.

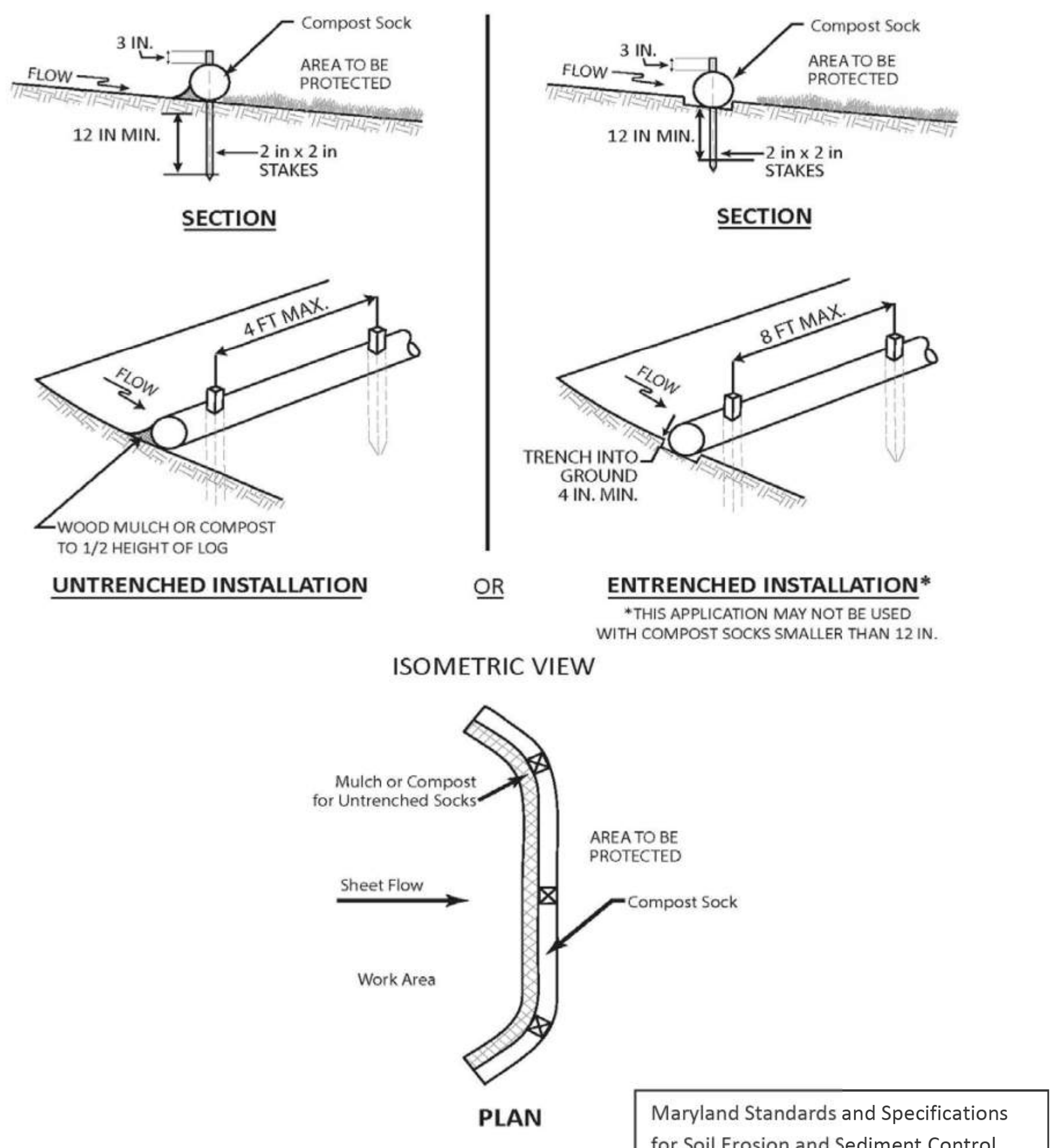
9. Compost socks are not to be used in perennial or intermittent streams.

Maintenance

Inspect compost socks weekly and after each significant rainfall event (1/2 inch or greater). Remove accumulated sediment and any debris. The compost sock must be replaced if clogged or torn. If ponding becomes excessive, the sock may need to be replaced with a larger diameter or a different measure. The sock needs to be reinstalled if undermined or dislodged. The compost sock shall be inspected until land disturbance is complete and the area above the measure has been permanently stabilized.

DISPOSAL/RECYCLING

Compost media is a composted organic product recycled and manufactured from locally generated organic, natural, and biologically based materials. Once all soil has been stabilized and construction activity has been completed, the compost media may be dispersed with a loader, rake, bulldozer or similar device and may be incorporated into the soil as an amendment or left on the soil surface to aid in permanent seeding or landscaping. Leaving the compost media on site reduces removal and disposal costs compared to other sediment control devices. The mesh netting material will be extracted from the media and disposed of properly. The photodegradable mesh netting material will degrade in 2 to 5 years if left on site. Biodegradable mesh netting material is available and does not need to be extracted and disposed of, as it will completely decompose in approximately 6 to 12 months. Using biodegradable compost socks completely eliminates the need and cost of removal and disposal.



Maryland Standards and Specifications for Soil Erosion and Sediment Control, 2011, Maryland Department of Environment, Water Management Administration

Figure 6.66b Compost Sock Installation

COMPOST SOCK DETAIL

1 TYP

NOT TO SCALE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CG814.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

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CERTIFIED FINAL SUBMITTAL

6.52

BLOCK AND GRAVEL INLET PROTECTION (Temporary)

Definition A sediment control barrier formed around a storm drain inlet by the use of standard concrete block and gravel.

Purpose To help prevent sediment from entering storm drains before stabilizing the contributing watershed. This practice allows early use of the storm drain system.

Conditions Where Practice Applies Where storm drain inlets are to be made operational before permanent stabilization of the disturbed drainage area. This method of inlet protection applies to both drop inlets and curb inlets where heavy flows are expected, and an overflow capacity is necessary to prevent excessive ponding around the structure. Shallow temporary flooding after rainfall should be expected, however.

This practice must not be used near the edge of fill material, and must not divert water away from the storm drain.

Design Criteria Keep the drainage area no greater than 1 acre unless site conditions allow for frequent removal and adequate disposal of accumulated sediment.

Keep the height of the barrier at least 12 inches and no greater than 24 inches. Do not use mortar. Limit the height to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Support subsequent courses laterally if needed by placing a 2 x 4-inch wood stud through the block openings that are perpendicular to the block course needing support. Lay some blocks on their side in the bottom row for dewatering the pool (Figure 6.52a).

Place gravel just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth or comparable wire mesh with 1/2-inch openings over all block openings to hold gravel in place.

The top elevation of the structure must be at least 6 inches lower than the ground elevation downslope from the inlet. It is important that all storm flows pass over the structure and into the storm drain and not past the structure. Temporary diking below the structure may be necessary to prevent bypass flow. Material may be excavated from inside the sediment pool for this purpose.

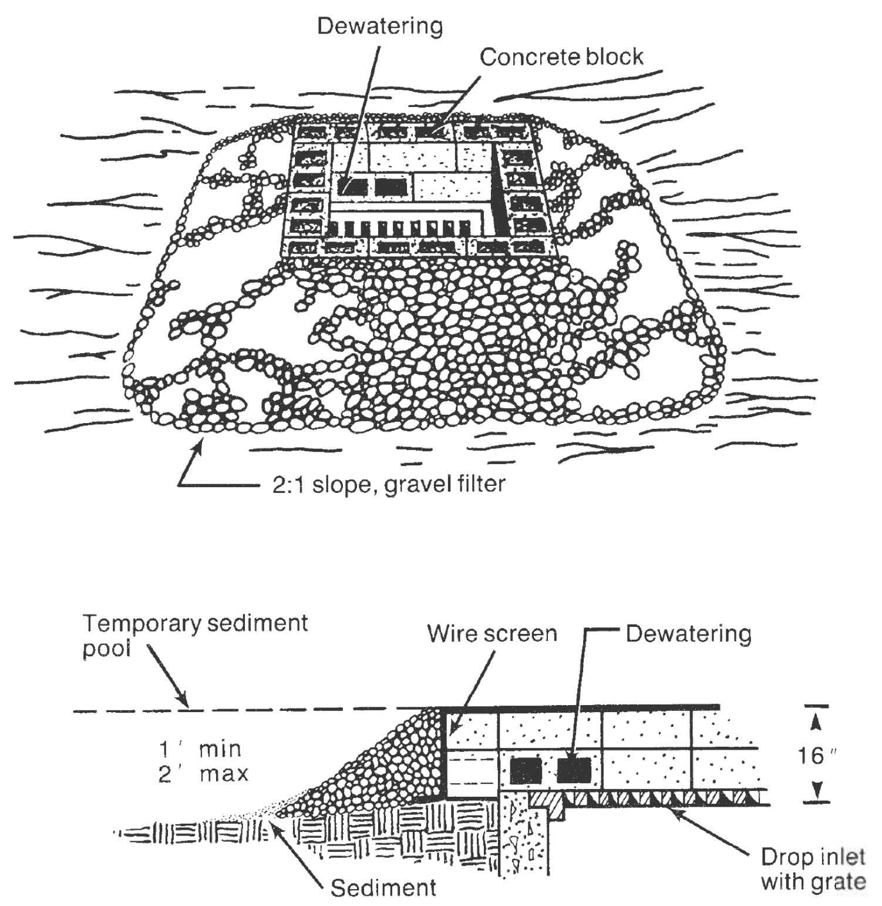

Figure 6.52a Block and gravel drop inlet protection.

Construction Specifications **1.** Lay one block on each side of the structure on its side in the bottom row to allow pool drainage. The foundation should be excavated at least 2 inches below the crest of the storm drain. Place the bottom row of blocks against the edge of the storm drain for lateral support and to avoid washouts when overflow occurs. If needed, give lateral support to subsequent rows by placing 2 x 4 wood studs through block openings.

2. Carefully fit hardware cloth or comparable wire mesh with ½-inch openings over all block openings to hold gravel in place.

3. Use clean gravel, ¾- to ½-inch in diameter, placed 2 inches below the top of the block on a 2:1 slope or flatter and smooth it to an even grade. DOT #57 washed stone is recommended.

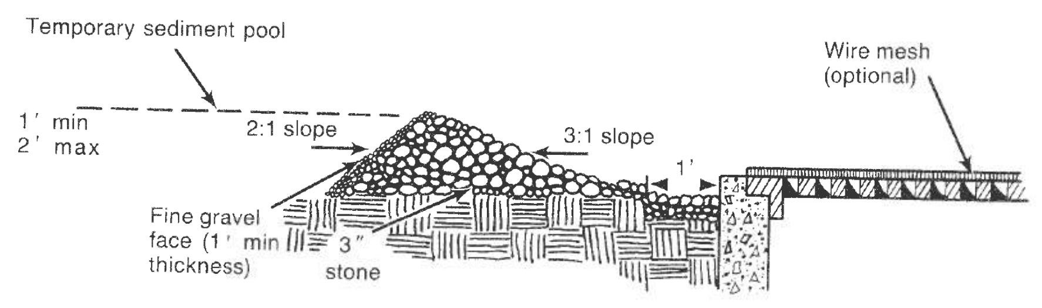

Figure 6.52b Gravel drop inlet protection (gravel donut).

4. If only stone and gravel are used, keep the slope toward the inlet no steeper than 3:1. Leave a minimum 1-foot wide level stone area between the structure and around the inlet to prevent gravel from entering inlet. On the slope toward the inlet, use stone 3 inches in diameter or larger. On the slope away from the inlet use ½ - ¾-inch gravel (NCDOT #57 washed stone) at a minimum thickness of 1 foot.

Maintenance Inspect the barrier at least weekly and after each significant (½ inch or greater) rainfall and make repairs as needed.

Remove sediment as necessary to provide adequate storage volume for subsequent rains.

When the contributing drainage area has been adequately stabilized, remove all materials and any unstable soil, and either salvage or dispose of it properly. Bring the disturbed area to proper grade, then smooth and compact it. Appropriately stabilize all bare areas around the inlet.

References *Inlet Protection*
6.50, Excavated Drop Inlet Protection (Temporary)
6.51, Hardware Cloth, and Gravel Inlet Protection (Temporary)

North Carolina Department of Transportation
Standard Specifications for Roads and Structures

1 TYP BLOCK AND GRAVEL INLET PROTECTION DETAIL

NOT TO SCALE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CG815.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SEDIMENT AND EROSION CONTROL DETAILS

SHEET ID
CG815

CERTIFIED FINAL SUBMITTAL

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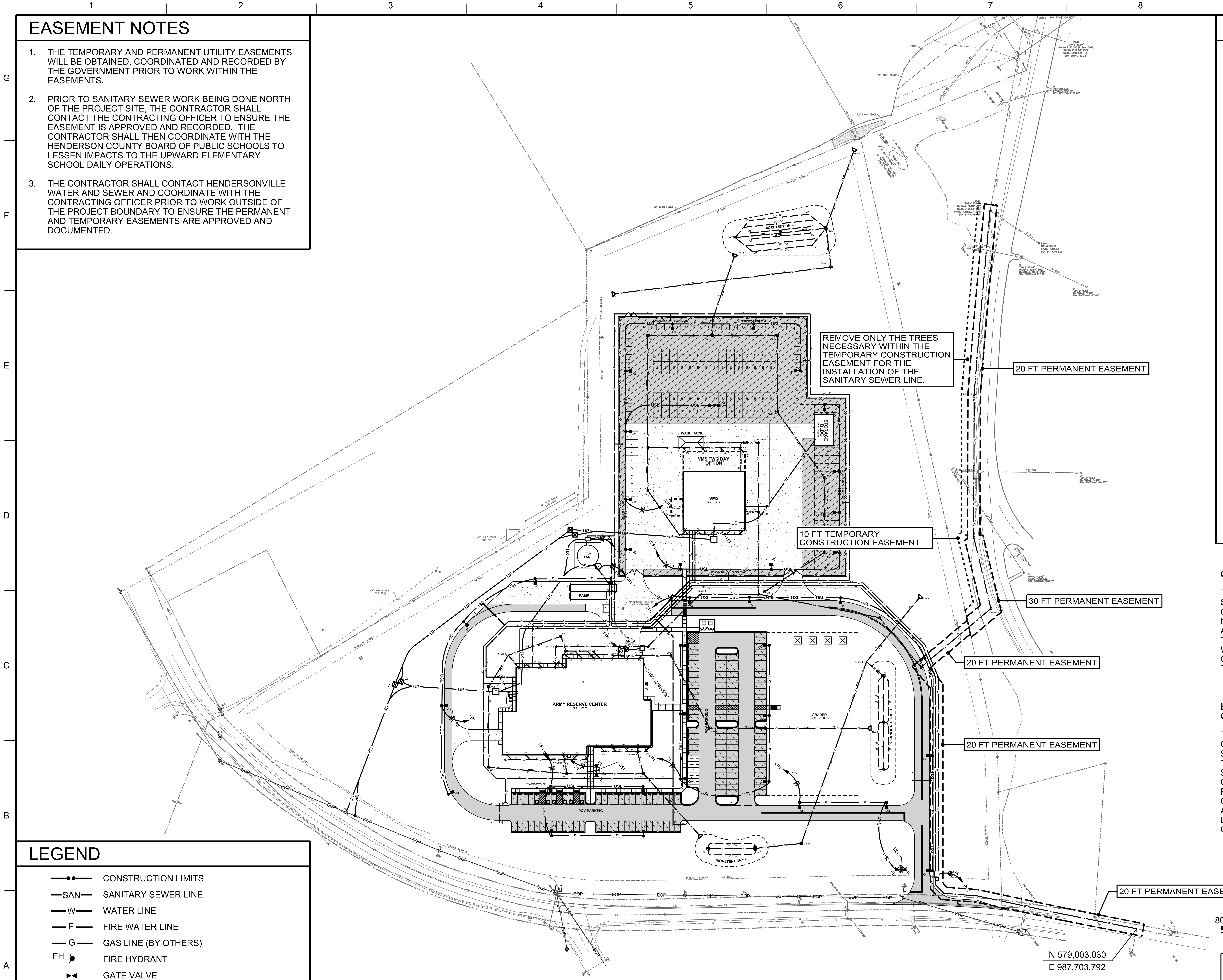
EASEMENT NOTES

1. THE TEMPORARY AND PERMANENT UTILITY EASEMENTS WILL BE OBTAINED, COORDINATED AND RECORDED BY THE GOVERNMENT PRIOR TO WORK WITHIN THE EASEMENTS.
2. PRIOR TO SANITARY SEWER WORK BEING DONE NORTH OF THE PROJECT SITE, THE CONTRACTOR SHALL CONTACT THE CONTRACTING OFFICER TO ENSURE THE EASEMENT IS APPROVED AND RECORDED. THE CONTRACTOR SHALL THEN COORDINATE WITH THE HENDERSON COUNTY BOARD OF PUBLIC SCHOOLS TO LESSEN IMPACTS TO THE UPWARD ELEMENTARY SCHOOL DAILY OPERATIONS.
3. THE CONTRACTOR SHALL CONTACT HENDERSONVILLE WATER AND SEWER AND COORDINATE WITH THE CONTRACTING OFFICER PRIOR TO WORK OUTSIDE OF THE PROJECT BOUNDARY TO ENSURE THE PERMANENT AND TEMPORARY EASEMENTS ARE APPROVED AND DOCUMENTED.



LEGEND

——●●——	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
—F—	FIRE WATER LINE
—G—	GAS LINE (BY OTHERS)
FH	FIRE HYDRANT
⋈	GATE VALVE
PIV ⋈	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE

REFER TO SHEET ES001 AND TS001 FOR SITE ELECTRICAL AND COMMUNICATION LEGENDS

UTILITY CONTACTS

Water & Sanitary Sewer:
Hendersonville Water & Sewer
https://www.hendersonvillenc.gov/water-sewer

305 Williams St.
Hendersonville, NC 2879

Telephone:
(828) 697-3073 (8:00-5:00 M-F)
(828) 891-7779 (after hours, weekends and holidays)

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asteurer@hvlnc.gov

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Davis H Swaim
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Henderson County Board of Public Schools
Martin Ballard
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mballard@henderson.k12.nc.us

414 Fourth Avenue West
Hendersonville, NC 28739-4261

Hendersonville Fire Chief
D. James Miller
(828) 697-3024
dmiller@hvlnc.gov

CONSTRUCTION WATER SOURCE NOTE

THE CONTRACTOR SHALL USE THE PROPOSED WATER LINE SHOWN IN THE DRAWINGS FOR THE SOURCE OF WATER FOR CONSTRUCTION ACTIVITIES. IF THE CONTRACTOR CHOOSES NOT TO USE THE PROPOSED LINE SHOWN FOR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL COORDINATE THE TEMPORARY SERVICE LINE DIRECTLY WITH HENDERSONVILLE WATER & SEWER. ANY ADDITIONAL FEES, PERMITS, AND COSTS NECESSARY FOR THE TEMPORARY SERVICE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

HENDERSONVILLE WATER & SEWER CHECKLIST COORDINATION NOTE

THE CONTRACTOR SHALL COORDINATE WITH THE CONTRACTING OFFICER, THE HENDERSONVILLE WATER & SEWER PROJECT PERMIT AND PROJECT CHECKLIST WITH THE DESIGNER-OF-RECORD. THE CHECKLIST HAS BEEN STARTED BY THE DESIGNER-OF-RECORD BUT MUST BE COMPLETE BY THE CONTRACTOR. THE CHECKLIST PROVIDES STEP BY STEP INSTRUCTIONS FOR THE PRE-CONSTRUCTION, CONSTRUCTION, TESTING, AND PROJECT ACCEPTANCE FOR THE WATER AND SEWER SERVICE LINES. THE CONTRACTOR IS RESPONSIBLE FOR CHECKLIST SECTIONS C,D,E, AND F.

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.
VERTICAL DATUM: NAVD88.
UNITS OF MEASURE: U.S. SURVEY FEET.
COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CU001.dgn
ISSUE DATE:
FEBRUARY 25, 2022
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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

EASEMENT PLAN

SHEET ID
CU001

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CERTIFIED FINAL SUBMITTAL

UTILITY CONTACTS

Water & Sanitary Sewer:
Hendersonville Water & Sewer
https://www.hendersonvillenc.gov/water-sewer

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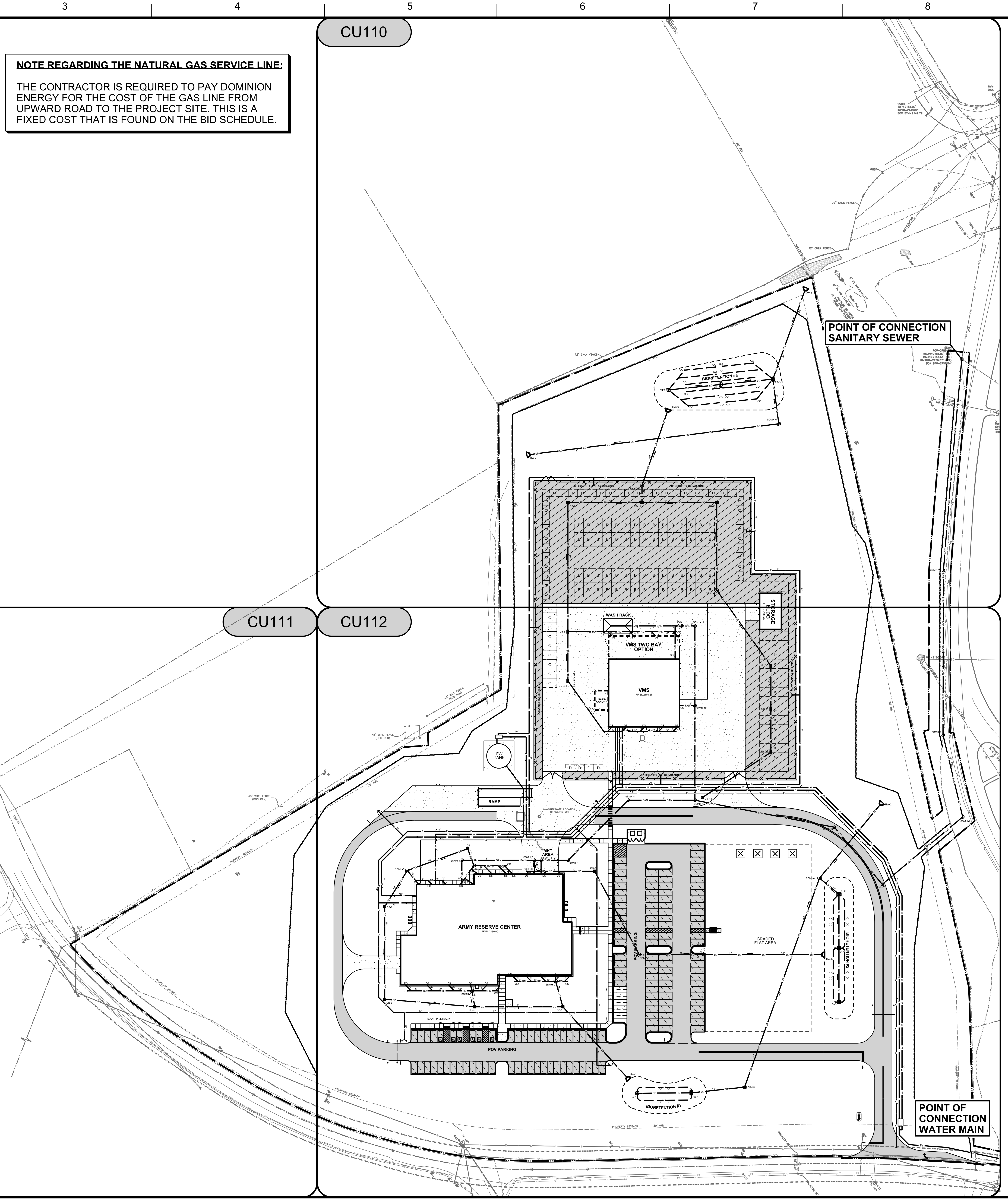
Hendersonville, NC 28739-4261

Hendersonville Fire Chief
D. James Miller
(828) 697-3024
dmiller@hvlnc.gov

NOTE REGARDING THE NATURAL GAS SERVICE LINE:

THE CONTRACTOR IS REQUIRED TO PAY DOMINION ENERGY FOR THE COST OF THE GAS LINE FROM UPWARD ROAD TO THE PROJECT SITE. THIS IS A FIXED COST THAT IS FOUND ON THE BID SCHEDULE.



CONSTRUCTION WATER SOURCE NOTE

THE CONTRACTOR SHALL USE THE PROPOSED WATER LINE SHOWN IN THE DRAWINGS FOR THE SOURCE OF WATER FOR CONSTRUCTION ACTIVITIES. IF THE CONTRACTOR CHOOSES NOT TO USE THE PROPOSED LINE SHOWN FOR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL COORDINATE THE TEMPORARY SERVICE LINE DIRECTLY WITH HENDERSONVILLE WATER & SEWER. ANY ADDITIONAL FEES, PERMITS, AND COSTS NECESSARY FOR THE TEMPORARY SERVICE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

HENDERSONVILLE WATER & SEWER CHECKLIST COORDINATION NOTE

THE CONTRACTOR SHALL COORDINATE WITH THE CONTRACTING OFFICER, THE HENDERSONVILLE WATER & SEWER PROJECT PERMIT AND PROJECT CHECKLIST WITH THE DESIGNER-OF-RECORD. THE CHECKLIST HAS BEEN STARTED BY THE DESIGNER-OF-RECORD BUT MUST BE COMPLETE BY THE CONTRACTOR. THE CHECKLIST PROVIDES STEP BY STEP INSTRUCTIONS FOR THE PRE-CONSTRUCTION, CONSTRUCTION, TESTING, AND PROJECT ACCEPTANCE FOR THE WATER AND SEWER SERVICE LINES. THE CONTRACTOR IS RESPONSIBLE FOR CHECKLIST SECTIONS C,D,E, AND F.

THE EXISTING UNDERGROUND UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE SURVEYS AND RECORDS AND THEREFORE LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UTILITIES AND STRUCTURES EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL FIELD VERIFY LOCATION WITHOUT ADDITIONAL COST TO THE GOVERNMENT. IF ANY DISCREPANCIES EXIST, THE CONTRACTOR SHALL NOTIFY THE GOVERNMENT IMMEDIATELY.

GENERAL NOTES

1. REFER TO CG SERIES DRAWINGS FOR STORM DRAINAGE PIPING AND STRUCTURES.
2. CONTRACTOR TO COORDINATE UTILITY INSTALLATION WITH FINAL PAVING TO AVOID UTILITY CUTS IN NEW PAVEMENT.
3. DOMINION ENERGY WILL PROVIDE NATURAL GAS SERVICE LINES, METERS, AND REGULATORS TO BOTH THE ARMY RESERVE CENTER AND VMS. THE CONTRACTOR SHALL COORDINATE WITH DOMINION ENERGY ACCORDINGLY.
4. ALL EXISTING MANHOLES, VALVE COVERS, HANDHOLES. ETC SHOWN ON CG SHEETS, ES SHEETS, AND V- SHEETS SHALL BE RAISED OR LOWERED TO MATCH THE NEW FINISHED GRADES UNLESS NOTED OTHERWISE ON THESE SHEETS.
5. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ALL DOMESTIC AND FIRE WATER CONSTRUCTION EXCEPT FOR THE METER. THE METER WILL BE INSTALLED BY HENDERSONVILLE WATER AND SEWER, BUT THE CONTRACTOR IS RESPONSIBLE FOR THE METER COST PLUS A 10% FEE.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND CONNECTION OF THE WATER MAIN ALONG CREST ROAD APPROXIMATELY 200-FT NORTH-EAST OF THE MAIN ENTRANCE. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ALL TRAFFIC CONTROL, SAFETY, AND APPLICABLE LOCAL AND NCDOT REQUIREMENTS.
7. ALL WATER AND SEWER WORK SHALL BE COORDINATED WITH HENDERSONVILLE WATER AND SEWER PRIOR TO INSTALLATION.
8. THE BACKFLOW PREVENTER SHALL BE ABOVE GRADE AND INSTALLED JUST BEHIND THE WATER METER. THE MAKE AND MODEL SHALL BE COORDINATED WITH GRACIE ERWIN, HENDERSONVILLE ENVIRONMENTAL COMPLIANCE OFFICER.
9. ANY WORK ALONG CREST ROAD SHALL BE COORDINATED WITH LONNIE WATKINS, NCDOT DISTRICT ENGINEER.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ALL SANITARY SEWER LINES, CONNECTIONS, AND MANHOLES.
11. DOMINION ENERGY IS RESPONSIBLE FOR THE INSTALLATION OF THE GAS SERVICE LINE, REGULATOR, AND METER TO BOTH RESERVE CENTER AND VMS. THE CONTRACTOR SHALL COORDINATE SITE CONSTRUCTION WITH DOMINION ENERGY IN A TIMELY MANNER.
12. THE CONTRACTOR SHALL STAY WITHIN THE EASEMENTS SHOWN ON SHEET CU001, EASEMENT PLAN.

LEGEND

—●●—	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
— F —	FIRE WATER LINE
— G —	GAS LINE (BY OTHERS)
FH	FIRE HYDRANT
⋈	GATE VALVE
PIV ⋈	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE

80' 40' 0 80' 160' 240'
GRAPHIC SCALE: 1"=80'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CU101.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

OVERALL
UTILITY PLAN

SHEET ID
CU101

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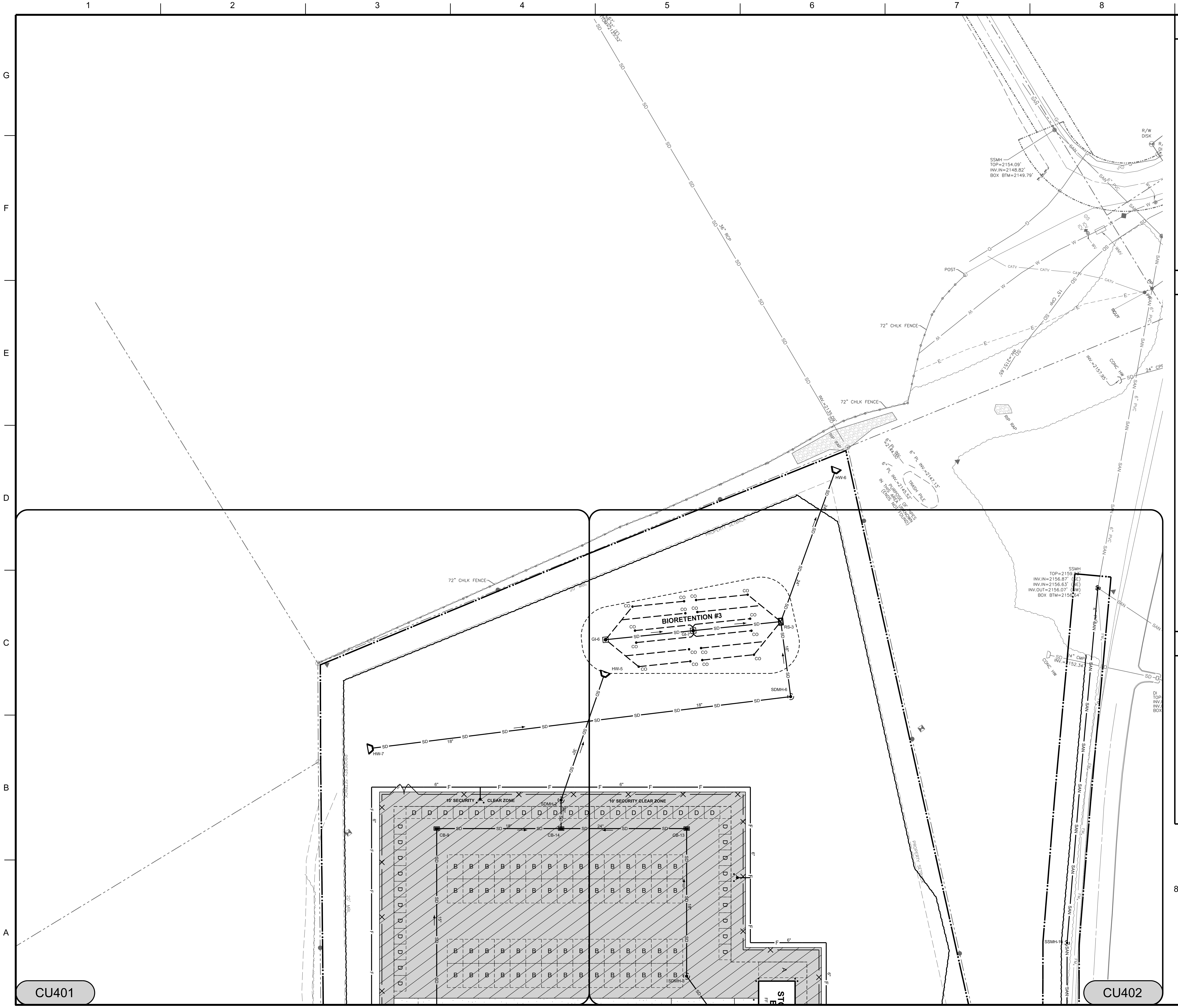

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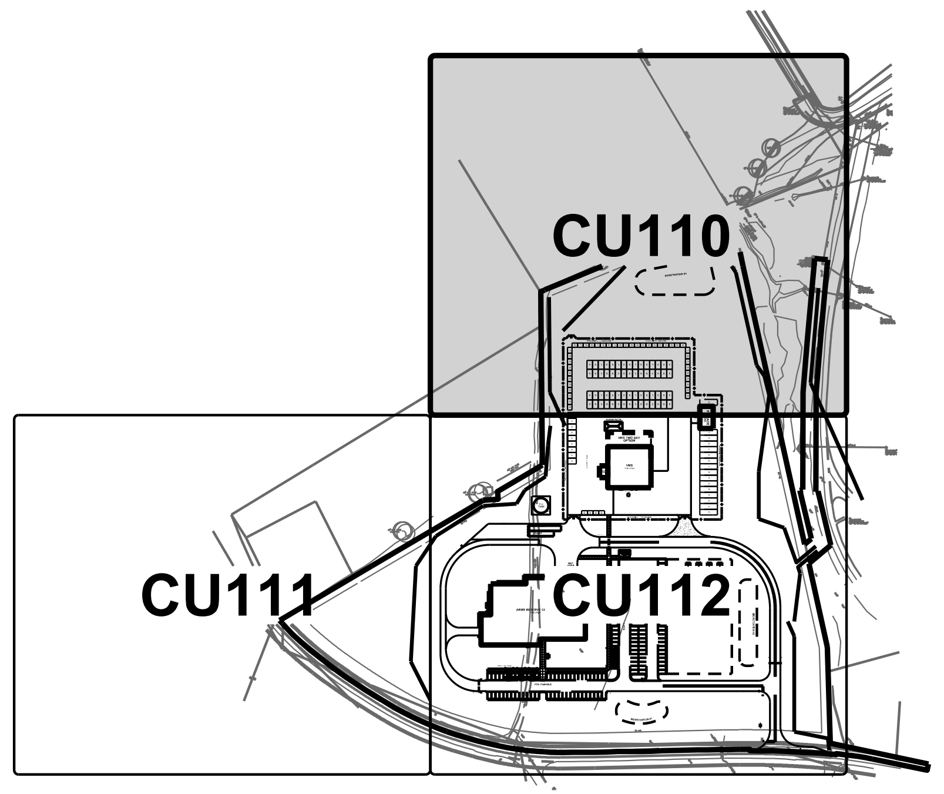

GENERAL NOTES

1. REFER TO CG SERIES DRAWINGS FOR STORM DRAINAGE PIPING AND STRUCTURES.
2. CONTRACTOR TO COORDINATE UTILITY INSTALLATION WITH FINAL PAVING TO AVOID UTILITY CUTS IN NEW PAVEMENT.
3. DOMINION ENERGY WILL PROVIDE NATURAL GAS SERVICE LINES, METERS, AND REGULATORS TO BOTH THE ARMY RESERVE CENTER AND VMS. THE CONTRACTOR SHALL COORDINATE WITH DOMINION ENERGY ACCORDINGLY.
4. ALL EXISTING MANHOLES, VALVE COVERS, HANDHOLES. ETC SHOWN ON CG SHEETS, ES SHEETS, AND V- SHEETS SHALL BE RAISED OR LOWERED TO MATCH THE NEW FINISHED GRADES UNLESS NOTED OTHERWISE ON THESE SHEETS.

LEGEND

—●●—	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
F	FIRE WATER LINE
G	GAS LINE (BY OTHERS)
FH	FIRE HYDRANT
⧓	GATE VALVE
PIV ⧓	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE

80' 40' 0 80' 160' 240'
GRAPHIC SCALE: 1"=80'-0"

N

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

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DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CU110.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

UTILITY PLAN

SHEET ID
CU110

CERTIFIED FINAL SUBMITTAL

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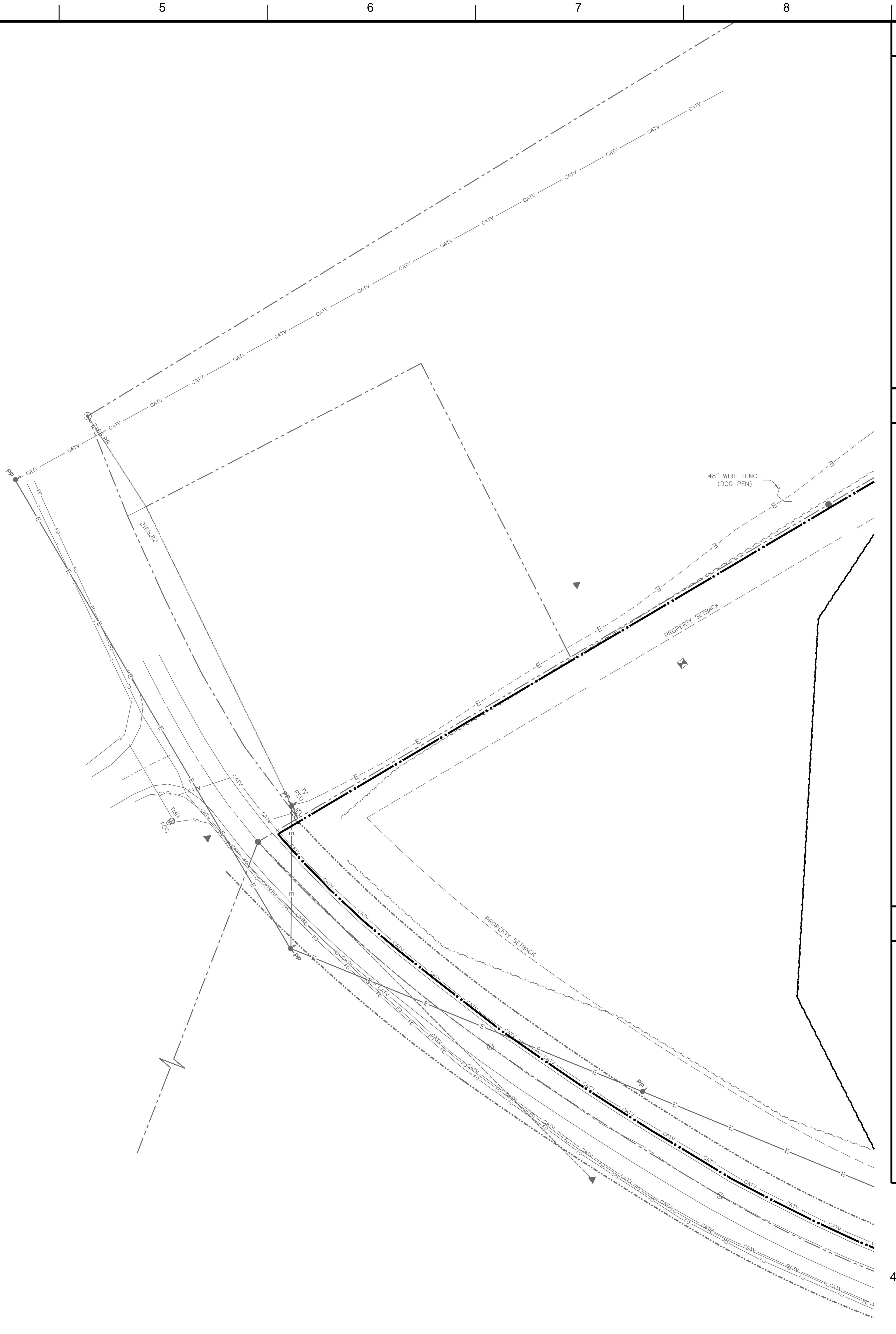

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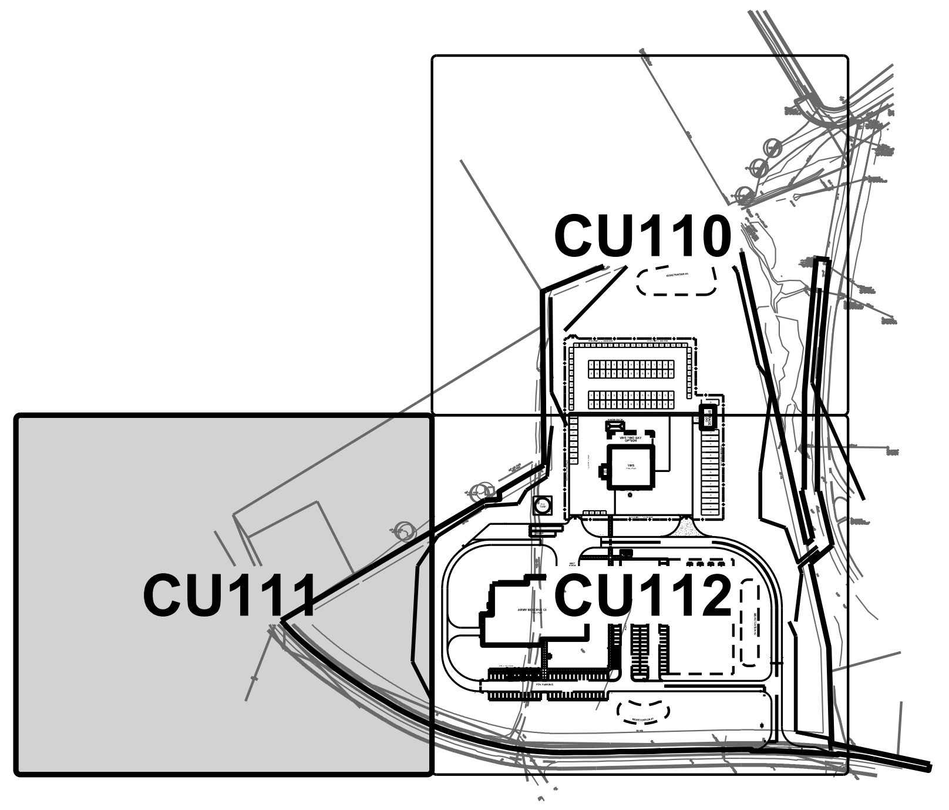

GENERAL NOTES

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— G —	GAS LINE (BY OTHERS)
FH ●	FIRE HYDRANT
⋈	GATE VALVE
PIV ⋈	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ◉	SANITARY SEWER MANHOLE

40' 20' 0 40' 80' 120'

GRAPHIC SCALE: 1"=40'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CU111.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

UTILITY PLAN

SHEET ID
CU111

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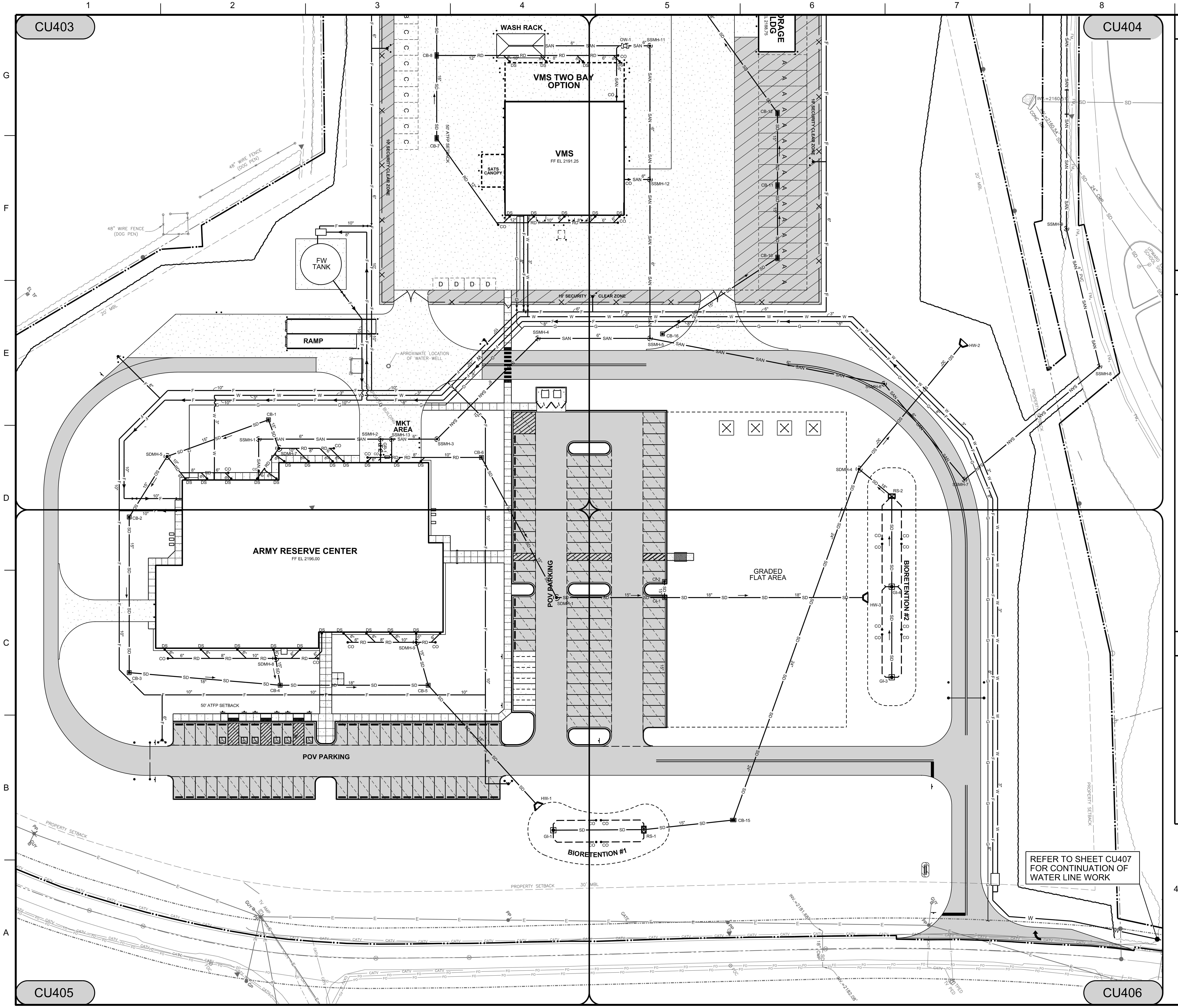
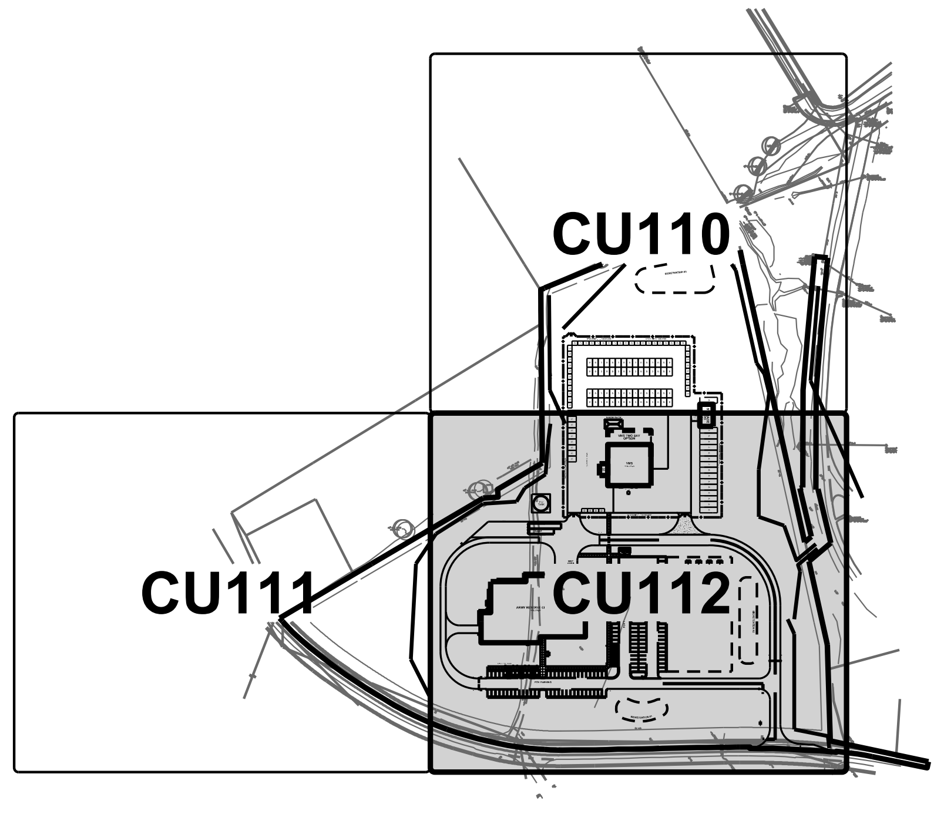


KEY MAP



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FH	FIRE HYDRANT
⋈	GATE VALVE
PIV ⋈	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE

40' 20' 0 40' 80' 120'

GRAPHIC SCALE: 1"=40'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

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US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE CU112.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

UTILITY PLAN

SHEET ID
CU112

CERTIFIED FINAL SUBMITTAL

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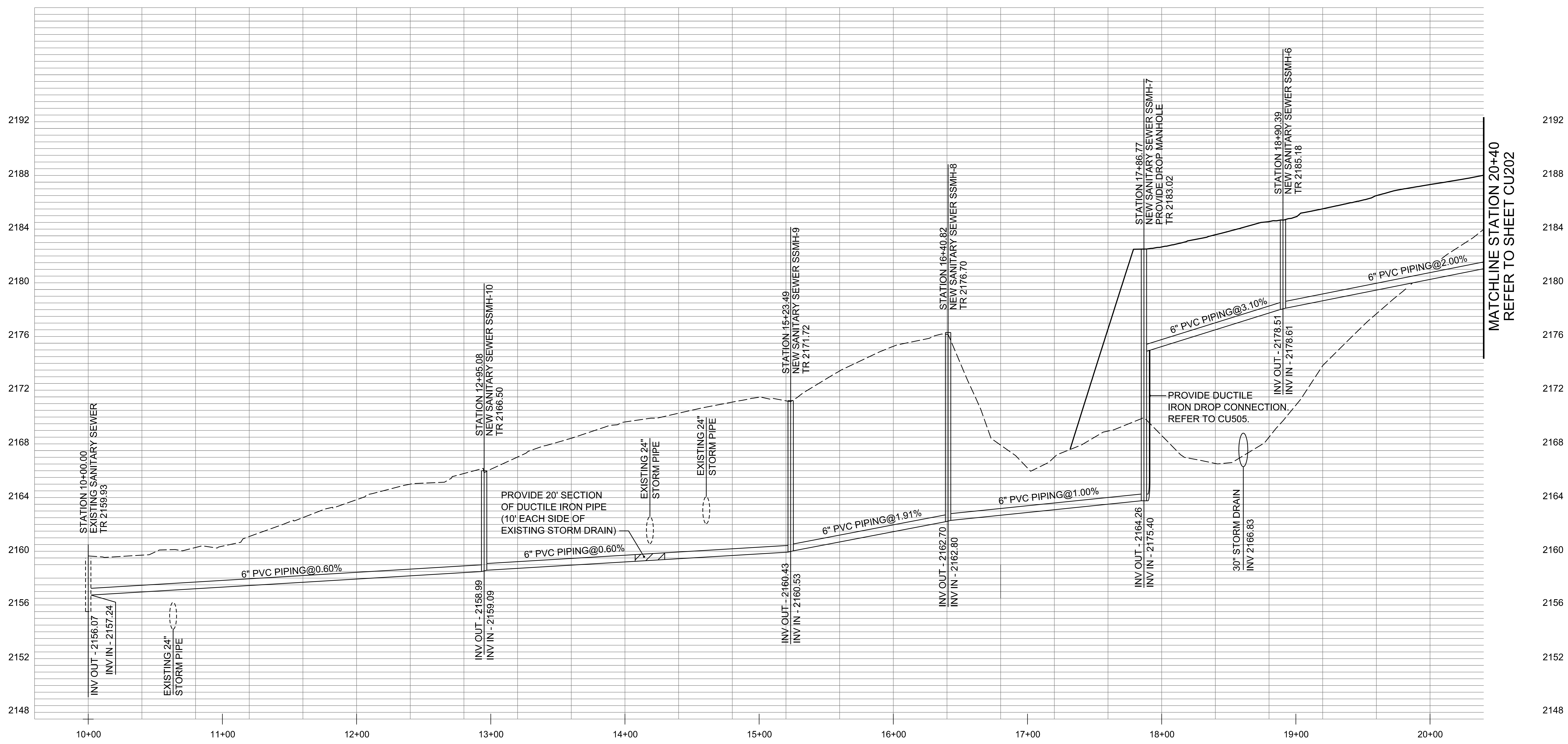
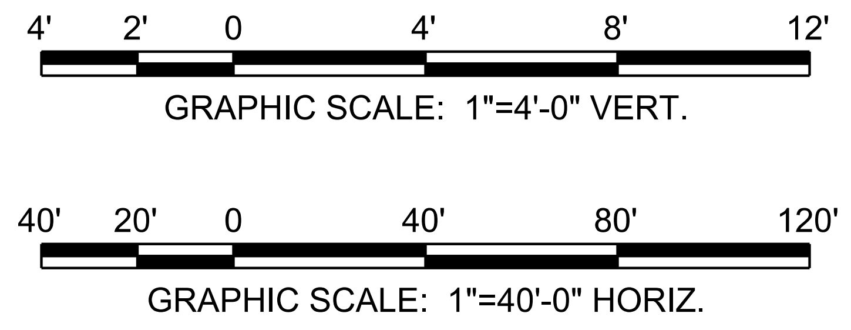


SANITARY SEWER PROFILE "A"

SCALE: 1"=40' HORIZ.
1"=4' VERT.


4'
2'
0
4'
8'
12'
GRAPHIC SCALE: 1"=4'-0" VERT.
40'
20'
0
40'
80'
120'
GRAPHIC SCALE: 1"=40'-0" HORIZ.

US Army Corps
of Engineers®

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S.HAGGARD
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M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CU201.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SANITARY SEWER PROFILES

SHEET ID
CU201

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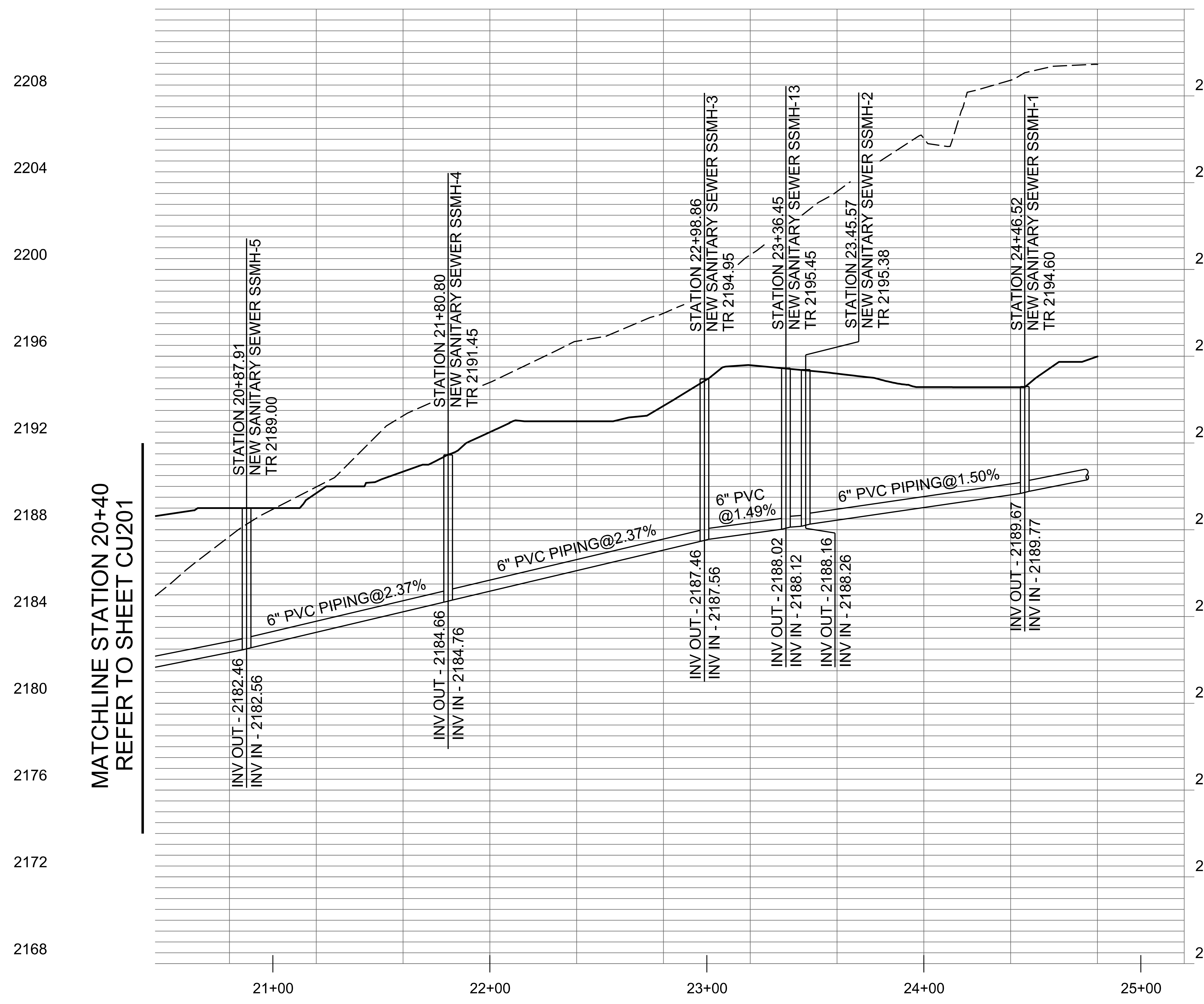
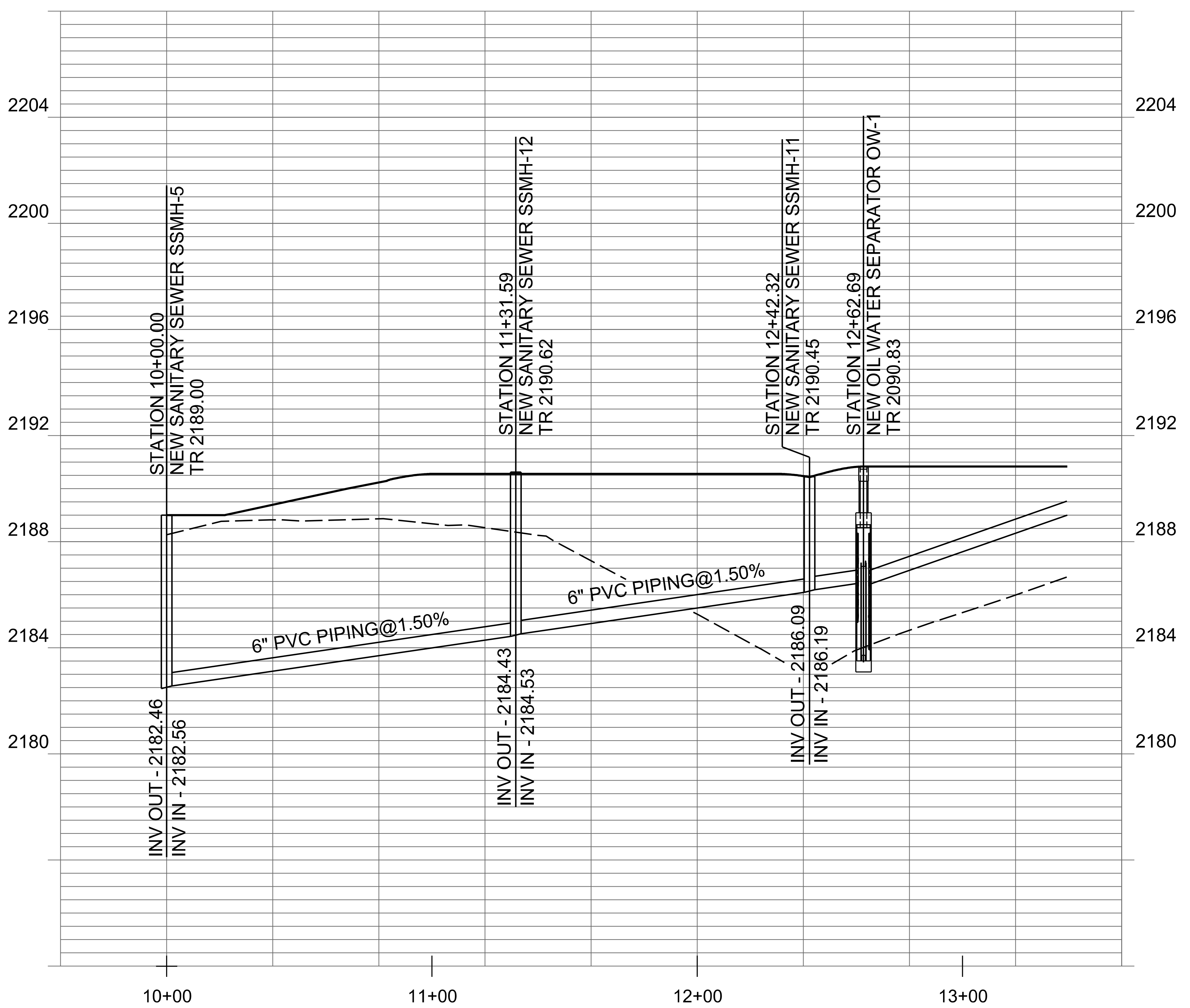


SANITARY SEWER PROFILE "A"

SCALE: 1"=40' HORIZ.
1"=4' VERT.



SANITARY SEWER PROFILE "B"

SCALE: 1"=40' HORIZ.
1"=4' VERT.

4' 2' 0 4' 8' 12'
GRAPHIC SCALE: 1"=4'-0" VERT.

40' 20' 0 40' 80' 120'
GRAPHIC SCALE: 1"=40'-0" HORIZ.

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE CU202.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SANITARY SEWER PROFILES

SHEET ID
CU202

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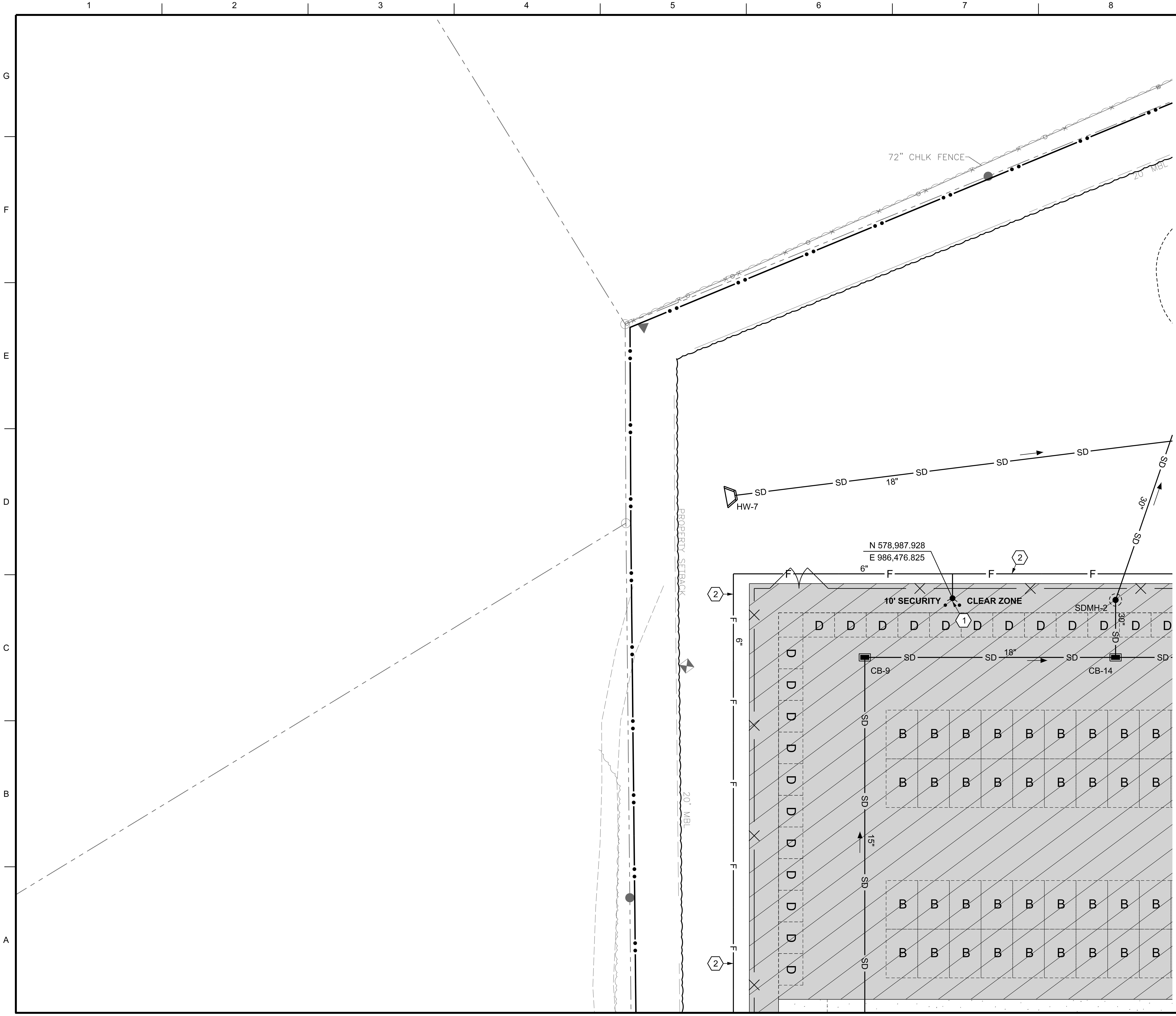

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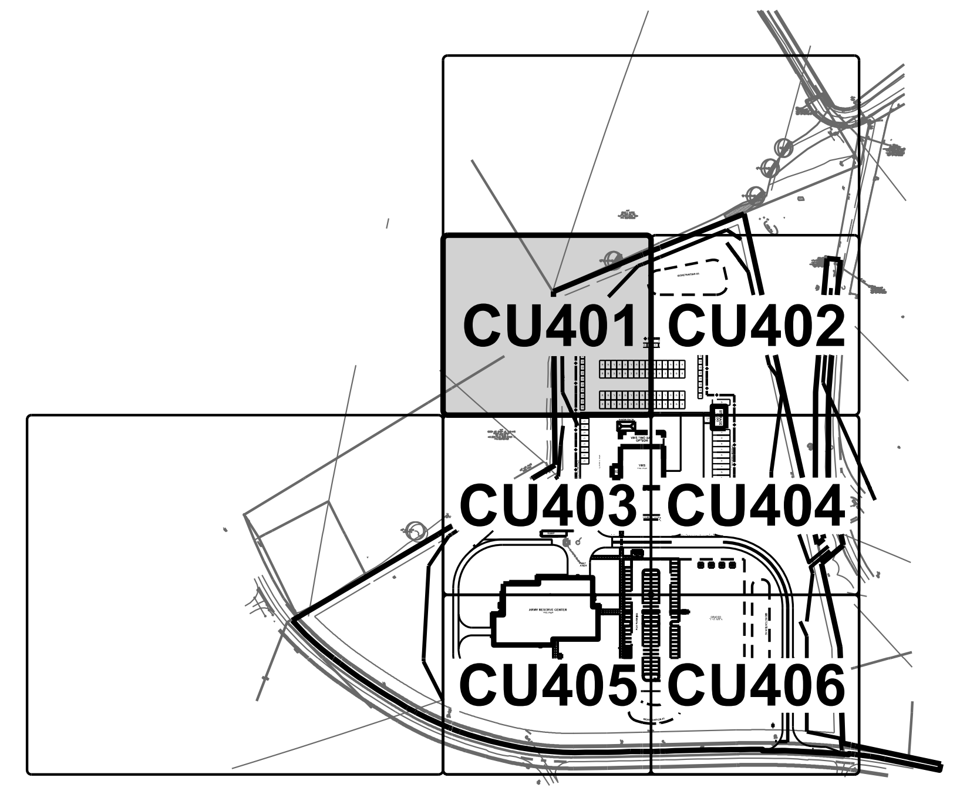
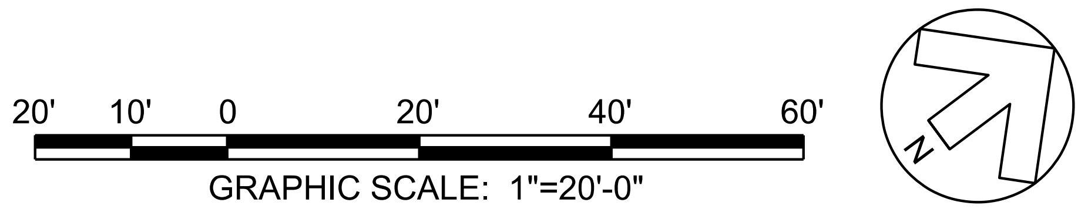


SHEET KEYNOTES

1. PROVIDE FIRE HYDRANT ASSEMBLY AND GATE VALVE. REFER TO DETAIL ON SHEET CU512.
2. PROVIDE 6" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.

LEGEND

—●●—	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
— F —	FIRE WATER LINE
— G —	GAS LINE (BY OTHERS)
FH ●	FIRE HYDRANT
▸◂	GATE VALVE
PIV ▸◂	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE



GRAPHIC SCALE: 1"=20'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.
VERTICAL DATUM: NAVD88.
UNITS OF MEASURE: U.S. SURVEY FEET.
COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

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S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CU401.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED
UTILITY PLAN

SHEET ID
CU401

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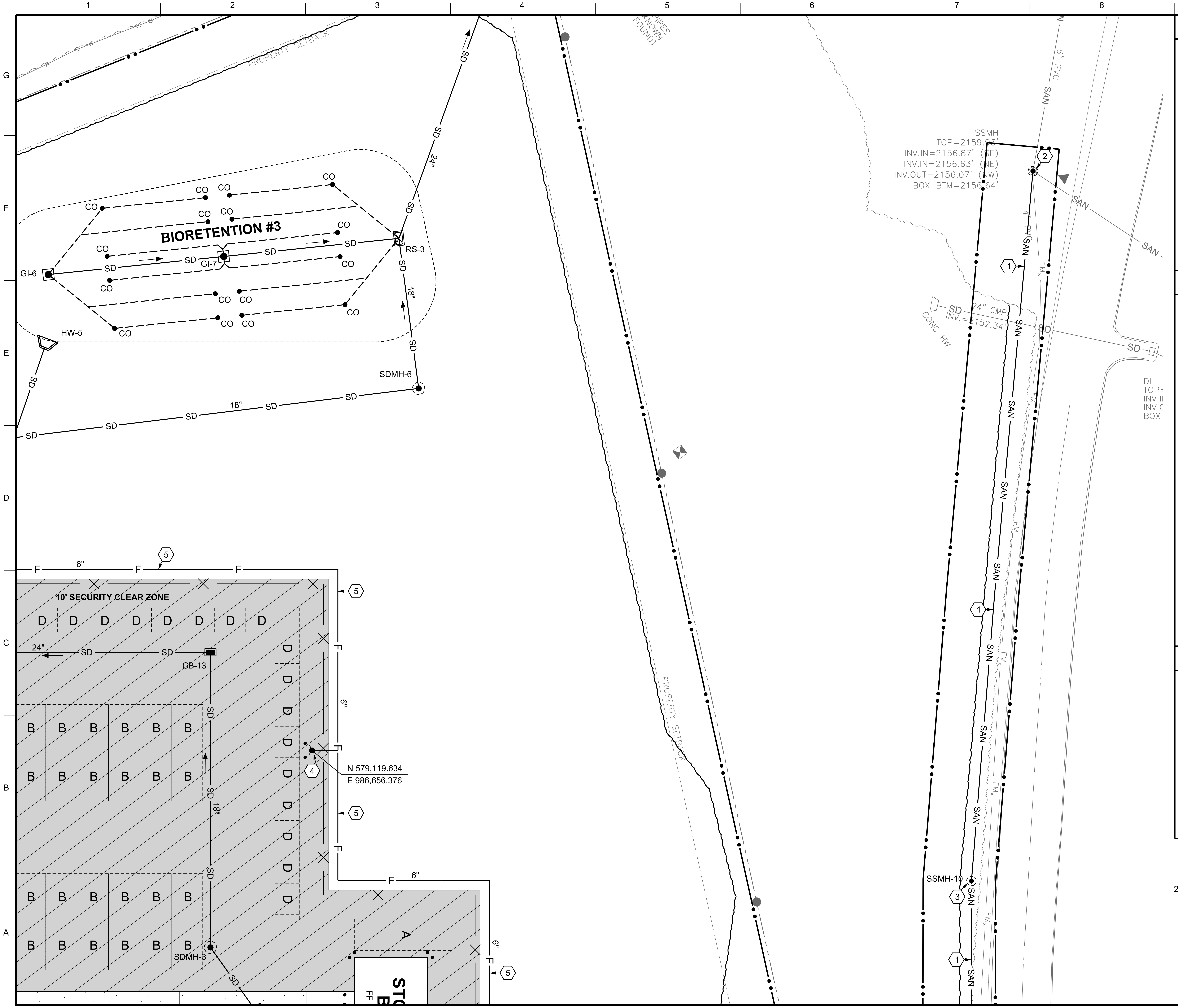
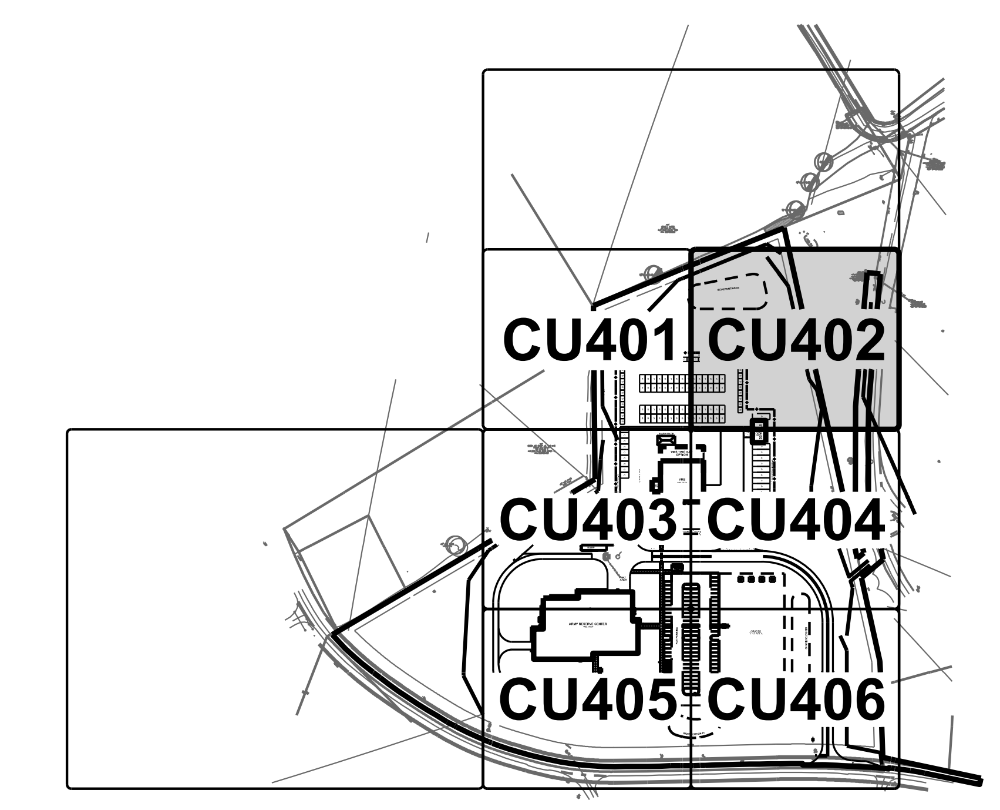


KEY MAP

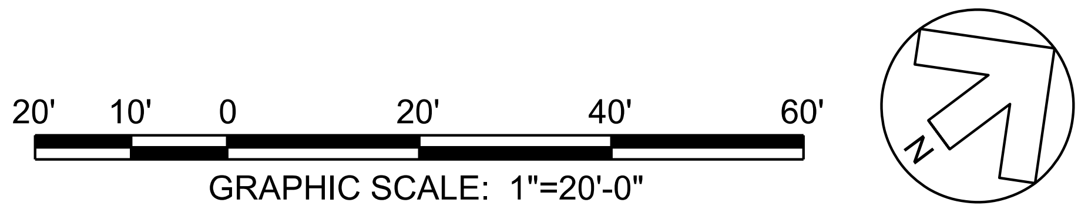


⬡ SHEET KEYNOTES

1. PROVIDE 6" SANITARY SEWER LINE.
2. CONNECT NEW 6" SANITARY LINE TO EXISTING SANITARY SEWER MANHOLE,
3. PROVIDE SANITARY SEWER MANHOLE. REFER TO SHEET CU505.
4. PROVIDE FIRE HYDRANT ASSEMBLY. REFER TO DETAIL ON SHEET CU512.
5. PROVIDE 6" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.

LEGEND

—●●—	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
—F—	FIRE WATER LINE
—G—	GAS LINE (BY OTHERS)
FH ●	FIRE HYDRANT
⋈	GATE VALVE
PIV ⋈	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE



GRAPHIC SCALE: 1"=20'-0"

GEOGRAPHIC COORDINATE DATA

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VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

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SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_CU402.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED
UTILITY PLAN

SHEET ID
CU402

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LEGEND

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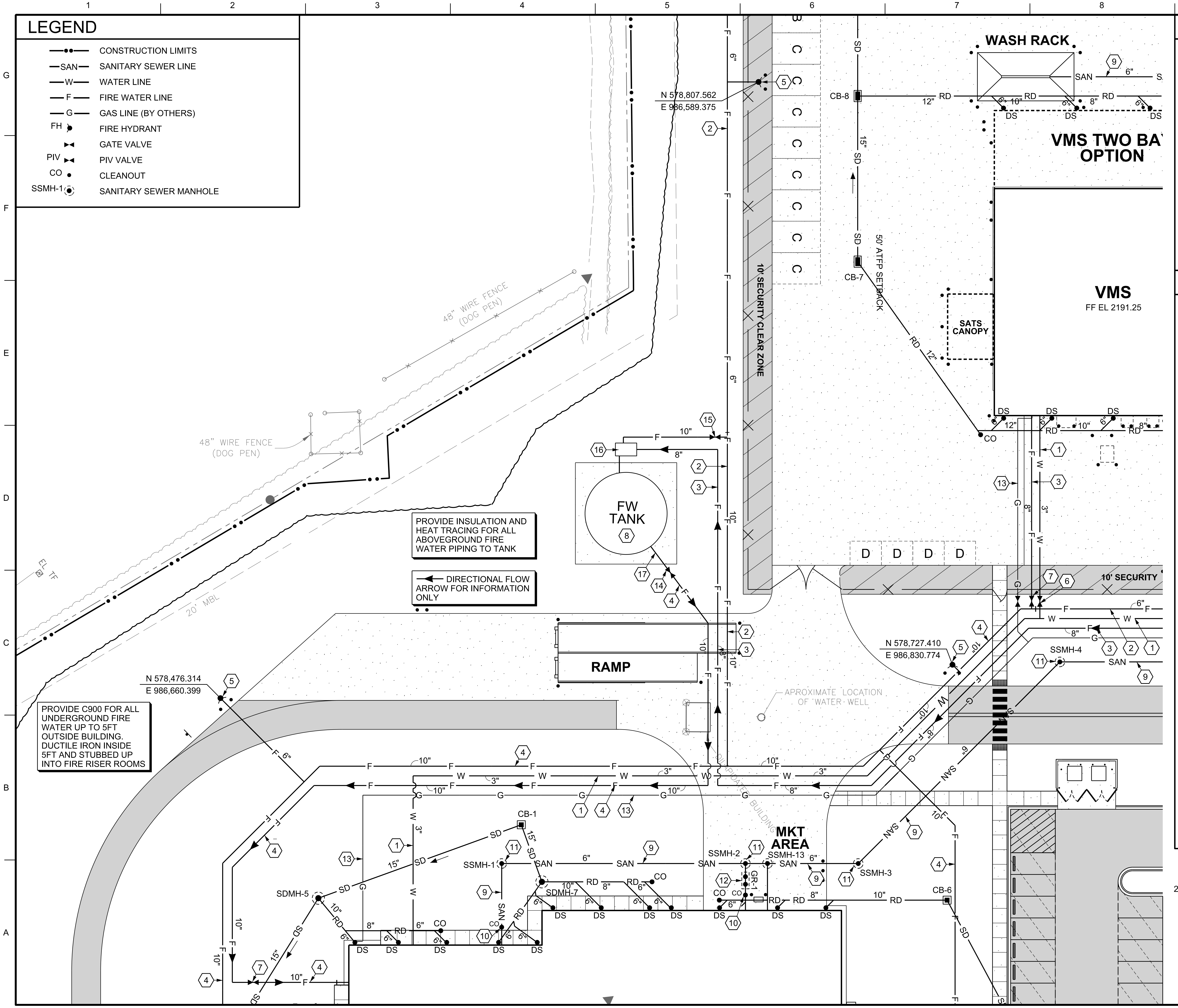
SSMH-1 ⊙	SANITARY SEWER MANHOLE

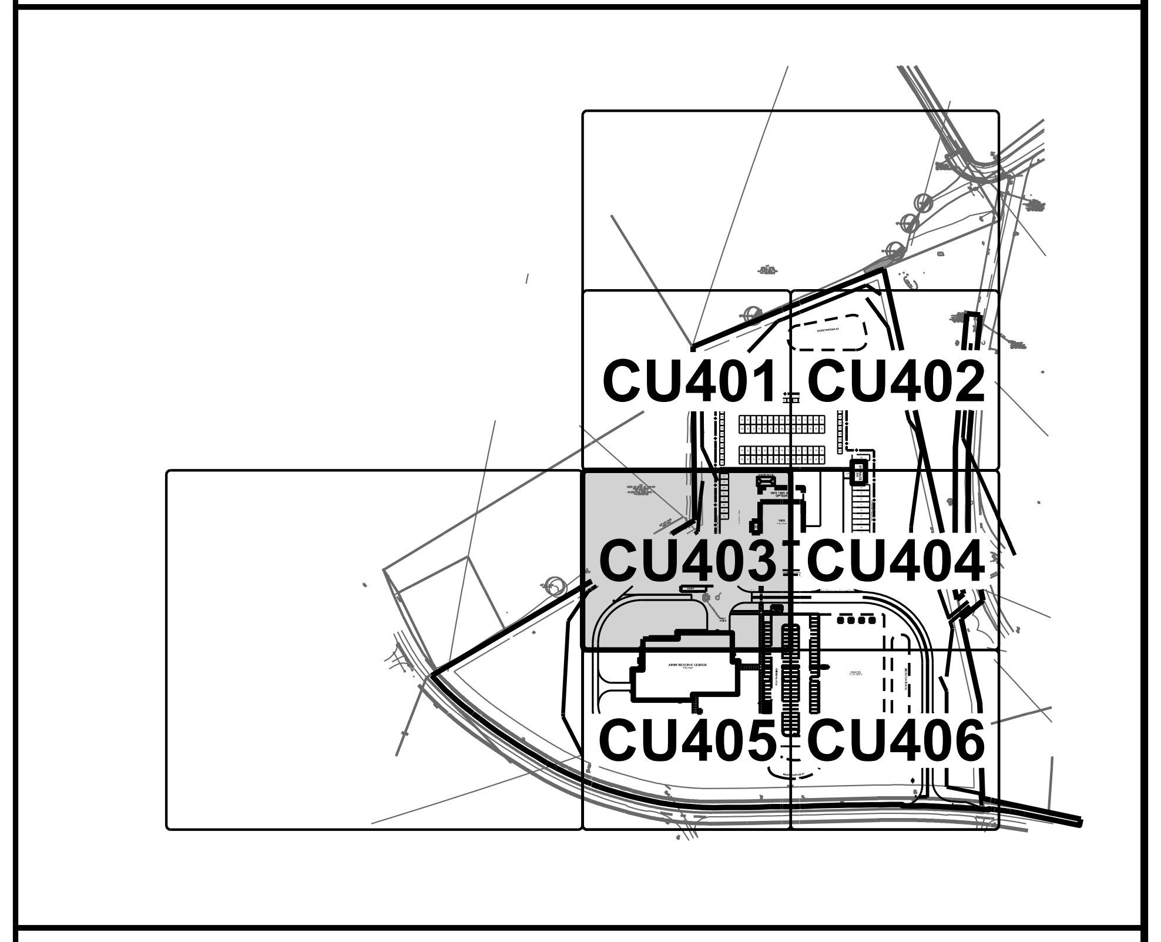


PROVIDE INSULATION AND HEAT TRACING FOR ALL ABOVEGROUND FIRE WATER PIPING TO TANK

⟵ DIRECTIONAL FLOW ARROW FOR INFORMATION ONLY

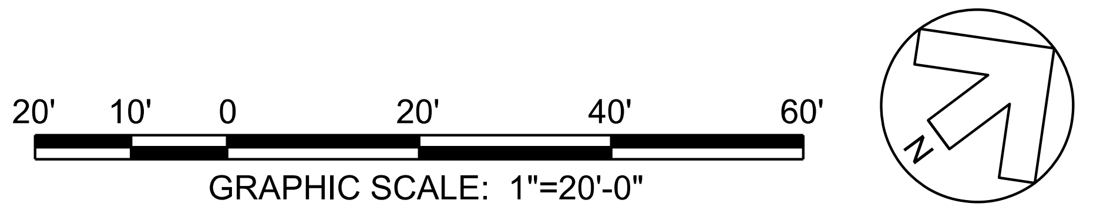
PROVIDE C900 FOR ALL UNDERGROUND FIRE WATER UP TO 5FT OUTSIDE BUILDING. DUCTILE IRON INSIDE 5FT AND STUBBED UP INTO FIRE RISER ROOMS

KEY MAP



SHEET KEYNOTES

1. PROVIDE 3" DOMESTIC WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
2. PROVIDE 6" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
3. PROVIDE 8" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
4. PROVIDE 10" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
5. PROVIDE FIRE HYDRANT ASSEMBLY. REFER TO DETAIL ON SHEET CU512.
6. PROVIDE WATER VALVE AND BOX. REFER TO SHEET CU510.
7. PROVIDE PIV VALVE. REFER TO DETAIL 2, SHEET CU514.
8. PROVIDE 34FT DIAMETER WELDED FIRE WATER TANK. REFER TO DETAIL 1, SHEET CU515
9. PROVIDE 6" SANITARY SEWER LINE,
10. PROVIDE SANITARY SEWER CLEANOUT. REFER TO SHEET CU502.
11. PROVIDE SANITARY SEWER MANHOLE. REFER SHEET CU505.
12. PROVIDE GREASE INTERCEPTOR. REFER TO PLUMBING DRAWINGS.
13. PROVIDE GAS LINE. GAS LINE TO BE INSTALLED BY DOMINION ENERGY TO THE METER/REGULATOR AT BUILDINGS AS SHOWN.
14. PROVIDE POST INDICATOR VALVE (PIV) FOR TANK DISCHARGE PIPING. PROVIDE TAMPER SWITCH. REFER TO DETAIL 2, SHEET CU514.
15. PROVIDE POST INDICATOR VALVE (PIV) FOR FIRE PUMP RECIRCULATION LINE. PROVIDE TAMPER SWITCH AND SIGNAGE STATING "FIRE PUMP RECIRCULATION VALVE". REFER TO DETAIL 2,SHEET CU514.
16. PROVIDE ABOVE GROUND HOT BOX, PILOT CONTROLLED ALTITUDE VALVE, AND CONTROL VALVES FOR TANK WATER SUPPLY. PROVIDE TAMPER SWITCHES FOR EACH VALVE. SENSING LINE TO BE INSULATED AND HEAT TRACED. INSTALL PER MANUFACTURER RECOMMENDATIONS.
17. PROVIDE LONG RADIUS FITTINGS FOR FIRE TANK SUPPLY PIPING UP TO WATER TO FIRE PUMP.



GRAPHIC SCALE: 1"=20'-0"

GEOGRAPHIC COORDINATE DATA

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DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_CU403.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED
UTILITY PLAN

SHEET ID
CU403

CERTIFIED FINAL SUBMITTAL

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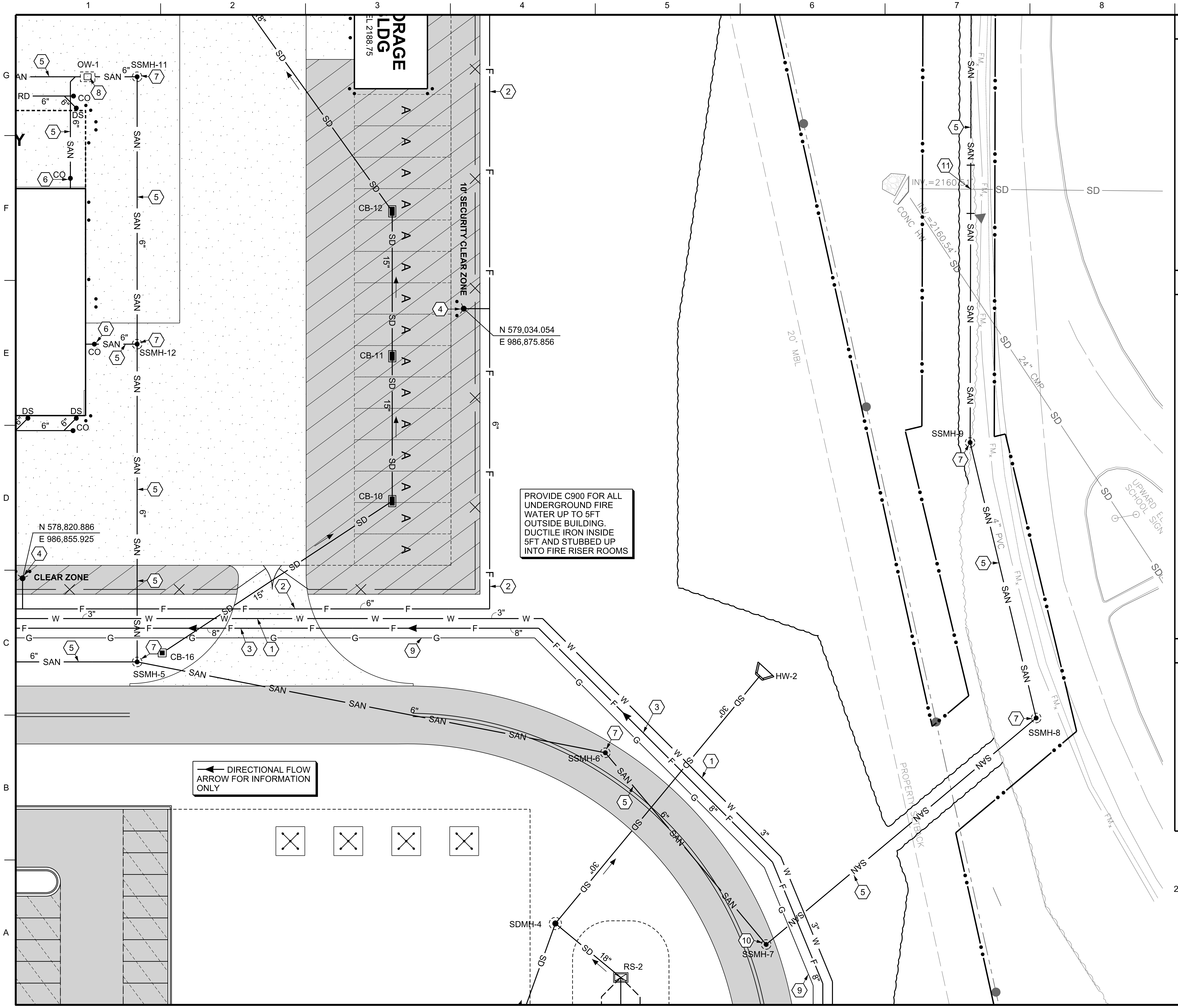
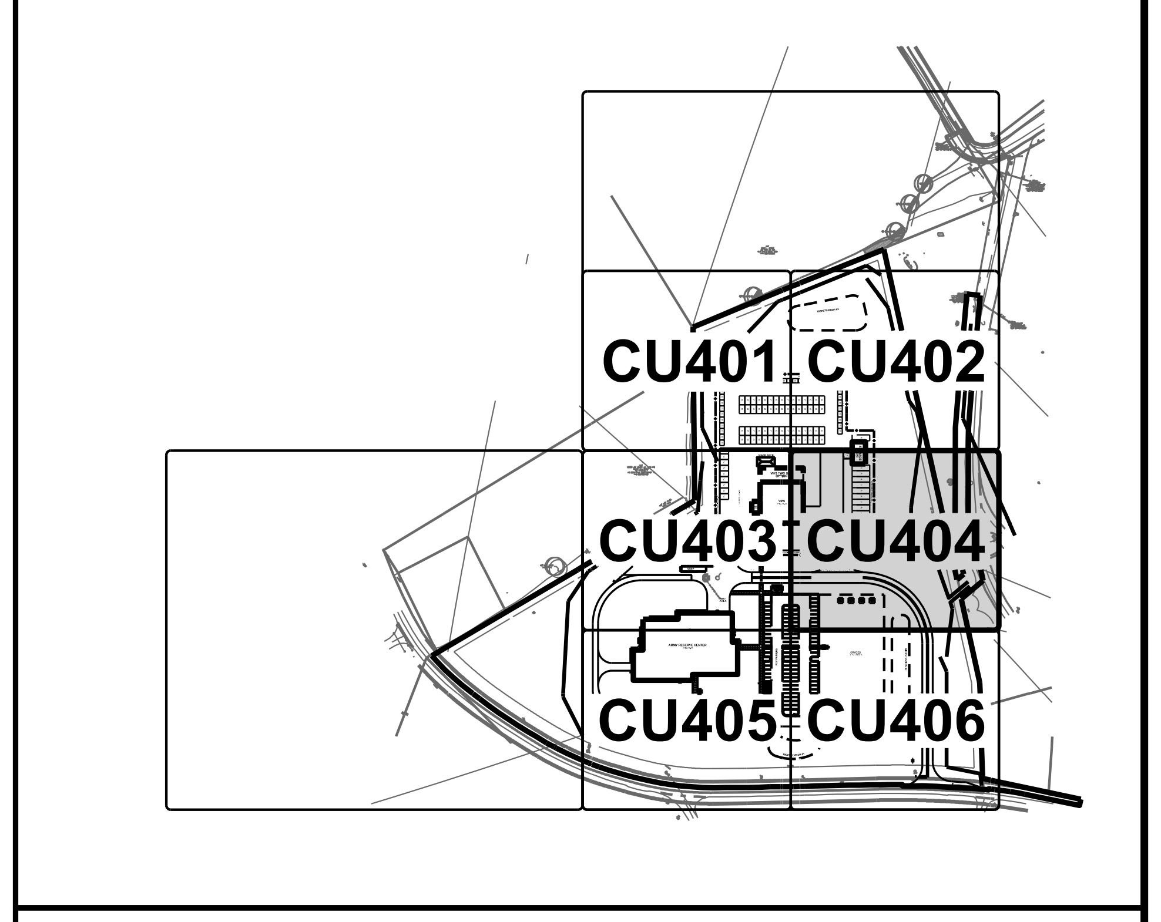


PROVIDE C900 FOR ALL UNDERGROUND FIRE WATER UP TO 5FT OUTSIDE BUILDING. DUCTILE IRON INSIDE 5FT AND STUBBED UP INTO FIRE RISER ROOMS

DIRECTIONAL FLOW ARROW FOR INFORMATION ONLY

KEY MAP

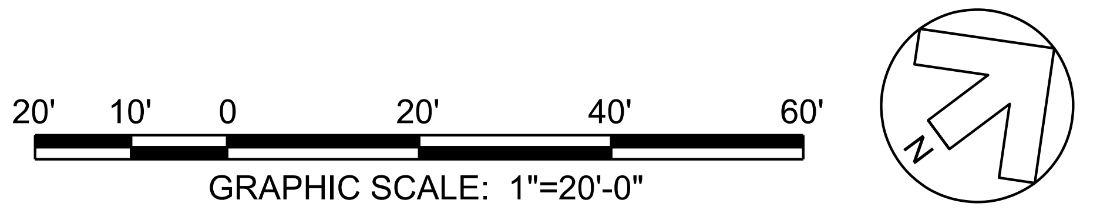


SHEET KEYNOTES

1. PROVIDE 3" DOMESTIC WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
2. PROVIDE 6" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
3. PROVIDE 8" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
4. PROVIDE FIRE HYDRANT ASSEMBLY AND GATE VALVE. REFER TO DETAIL ON SHEET CU512.
5. PROVIDE 6" SANITARY SEWER LINE,
6. PROVIDE SANITARY SEWER CLEANOUT. REFER TO SHEET CU502.
7. PROVIDE SANITARY SEWER MANHOLE. REFER TO SHEET CU505.
8. PROVIDE OIL/WATER SEPARATOR. REFER TO SHEET CU506.
9. PROVIDE GAS LINE. GAS LINE TO BE INSTALLED BY DOMINION ENERGY GAS COMPANY TO THE METER/REGULATOR AT BUILDINGS AS SHOWN.
10. PROVIDE SANITARY SEWER DROP MANHOLE. REFER TO SHEET CU505.
11. PROVIDE 20' SECTION OF DUCTILE IRON PIPE (10' EACH SIDE OF EXISTING STORM DRAIN)

LEGEND

—●●—	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
— F —	FIRE WATER LINE
— G —	GAS LINE (BY OTHERS)
FH	FIRE HYDRANT
⋈	GATE VALVE
PIV ⋈	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE



GRAPHIC SCALE: 1"=20'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD83.
VERTICAL DATUM: NAVD88.
UNITS OF MEASURE: U.S. SURVEY FEET.
COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

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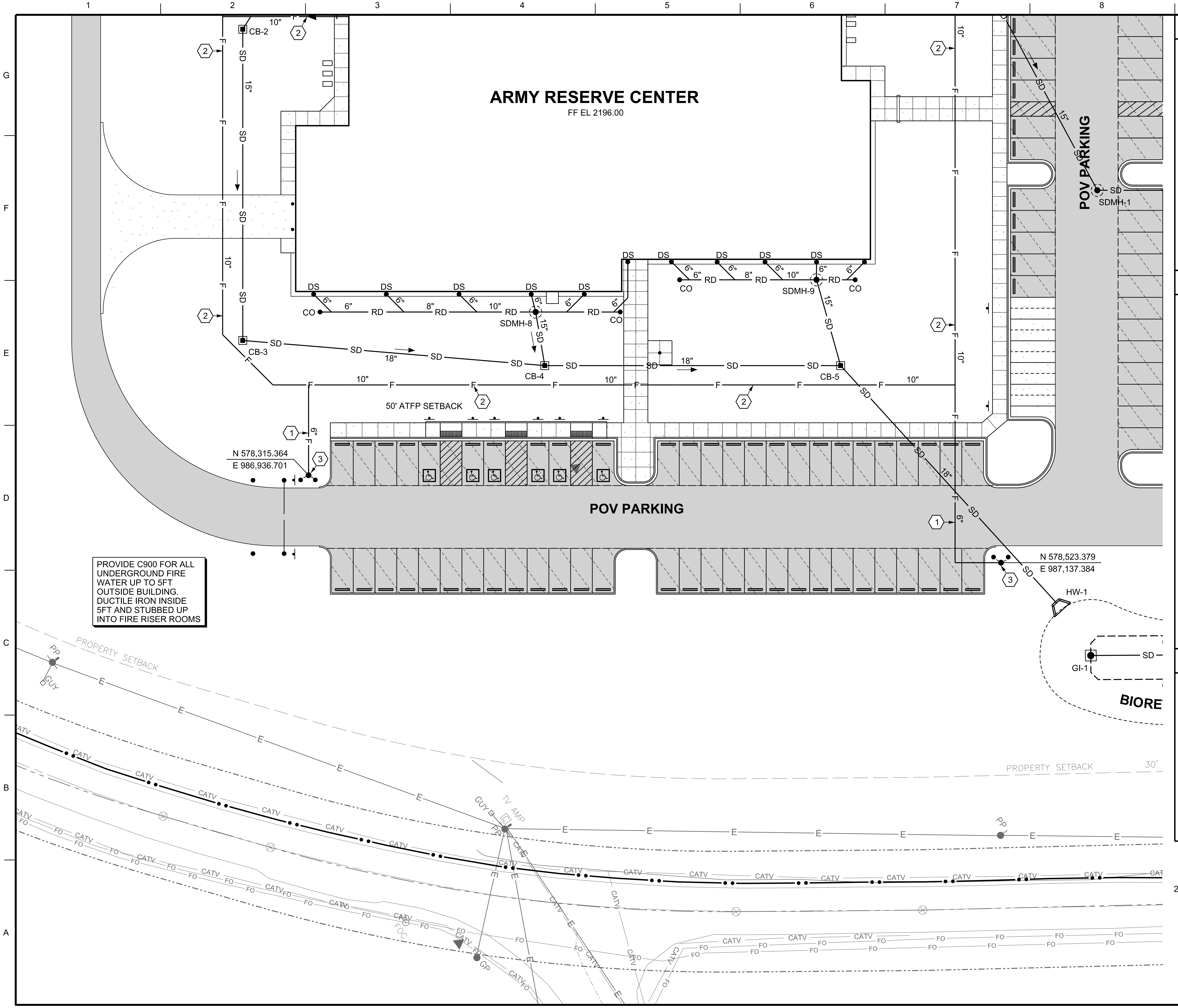
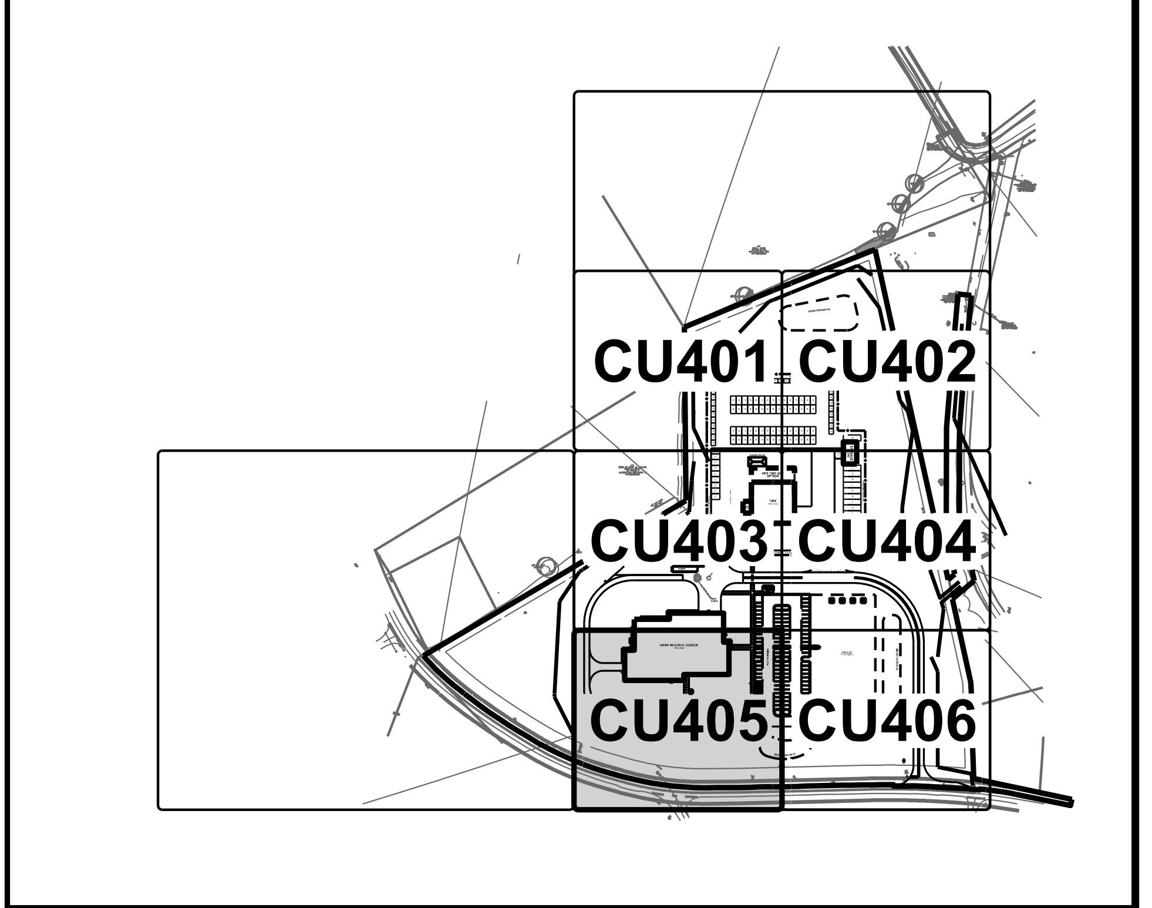


PROVIDE C900 FOR ALL UNDERGROUND FIRE WATER UP TO 5FT OUTSIDE BUILDING. DUCTILE IRON INSIDE 5FT AND STUBBED UP INTO FIRE RISER ROOMS

KEY MAP

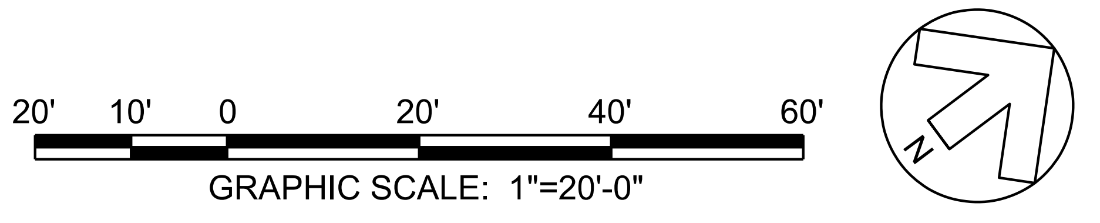


SHEET KEYNOTES

1. PROVIDE 6" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
2. PROVIDE 10" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
3. PROVIDE FIRE HYDRANT ASSEMBLY AND GATE VALVE. REFER TO DETAIL ON SHEET CU512.

LEGEND

—●●—	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
—F—	FIRE WATER LINE
—G—	GAS LINE (BY OTHERS)
FH ●	FIRE HYDRANT
⋈	GATE VALVE
PIV ⋈	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE



GRAPHIC SCALE: 1"=20'-0"

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600 DR. MARTIN LUTHER KING PL
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LOUISVILLE, KENTUCKY

Mason&Hanger

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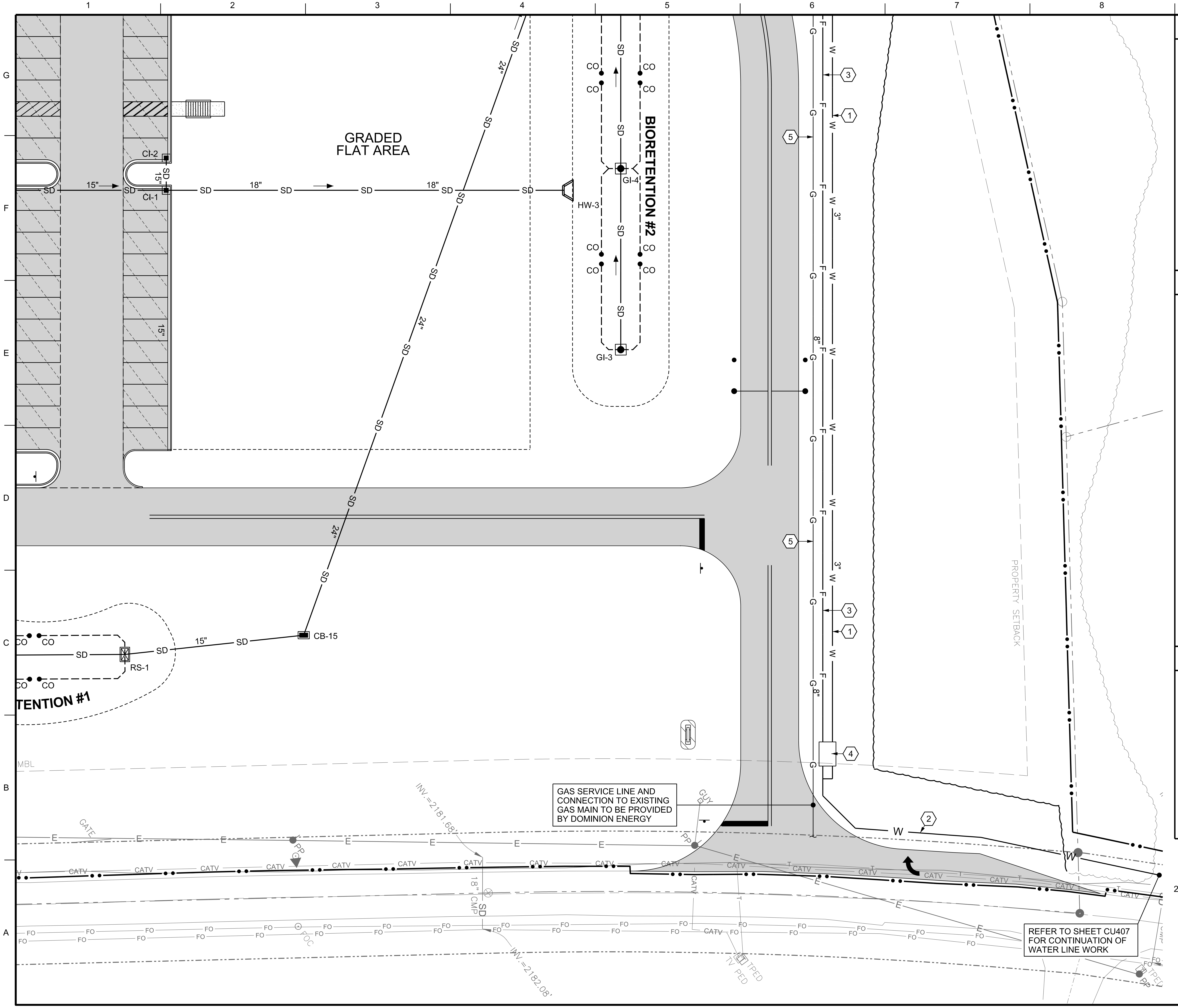
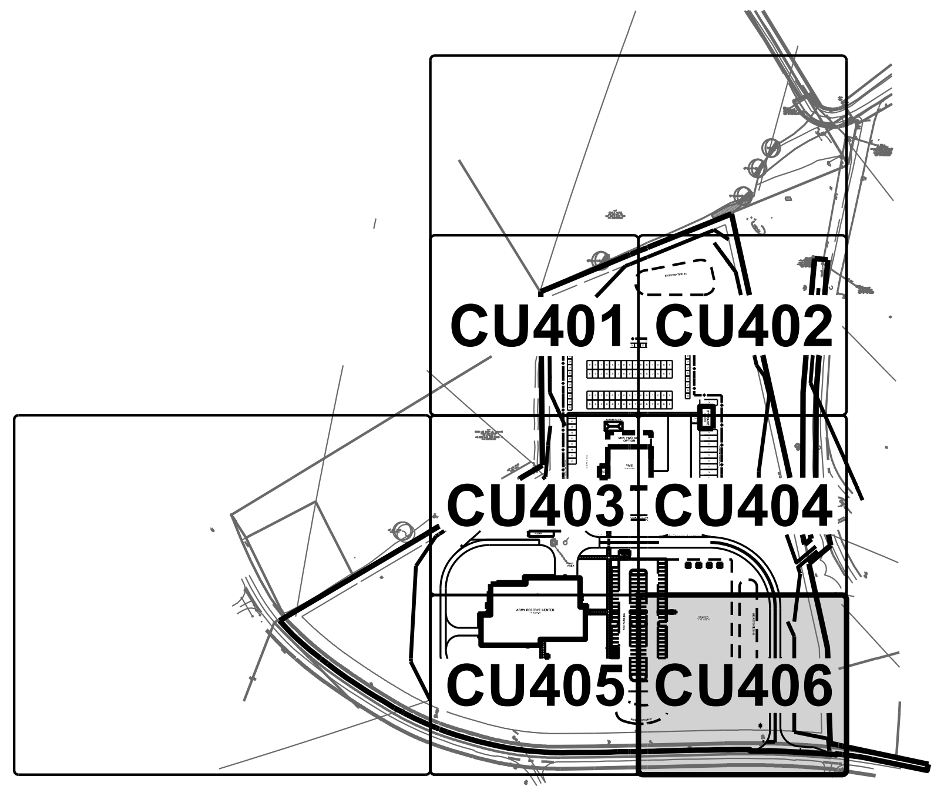


GAS SERVICE LINE AND CONNECTION TO EXISTING GAS MAIN TO BE PROVIDED BY DOMINION ENERGY

REFER TO SHEET CU407 FOR CONTINUATION OF WATER LINE WORK

KEY MAP



SHEET KEYNOTES

1. PROVIDE 3" DOMESTIC WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
2. PROVIDE 8" DOMESTIC WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
3. PROVIDE 8" FIRE WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.
4. PROVIDE NEW WATER VAULT. REFER TO SHEET CU513.
5. PROVIDE GAS LINE. GAS LINE TO BE INSTALLED BY DOMINION ENERGY GAS COMPANY TO THE METER/REGULATOR AT BUILDINGS AS SHOWN.

LEGEND

—••—	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
— F —	FIRE WATER LINE
— G —	GAS LINE (BY OTHERS)
FH	FIRE HYDRANT
⋈	GATE VALVE
PIV ⋈	PIV VALVE
CO •	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE

20' 10' 0 20' 40' 60'
GRAPHIC SCALE: 1"=20'-0"

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LOUISVILLE, KENTUCKY

Mason&Hanger

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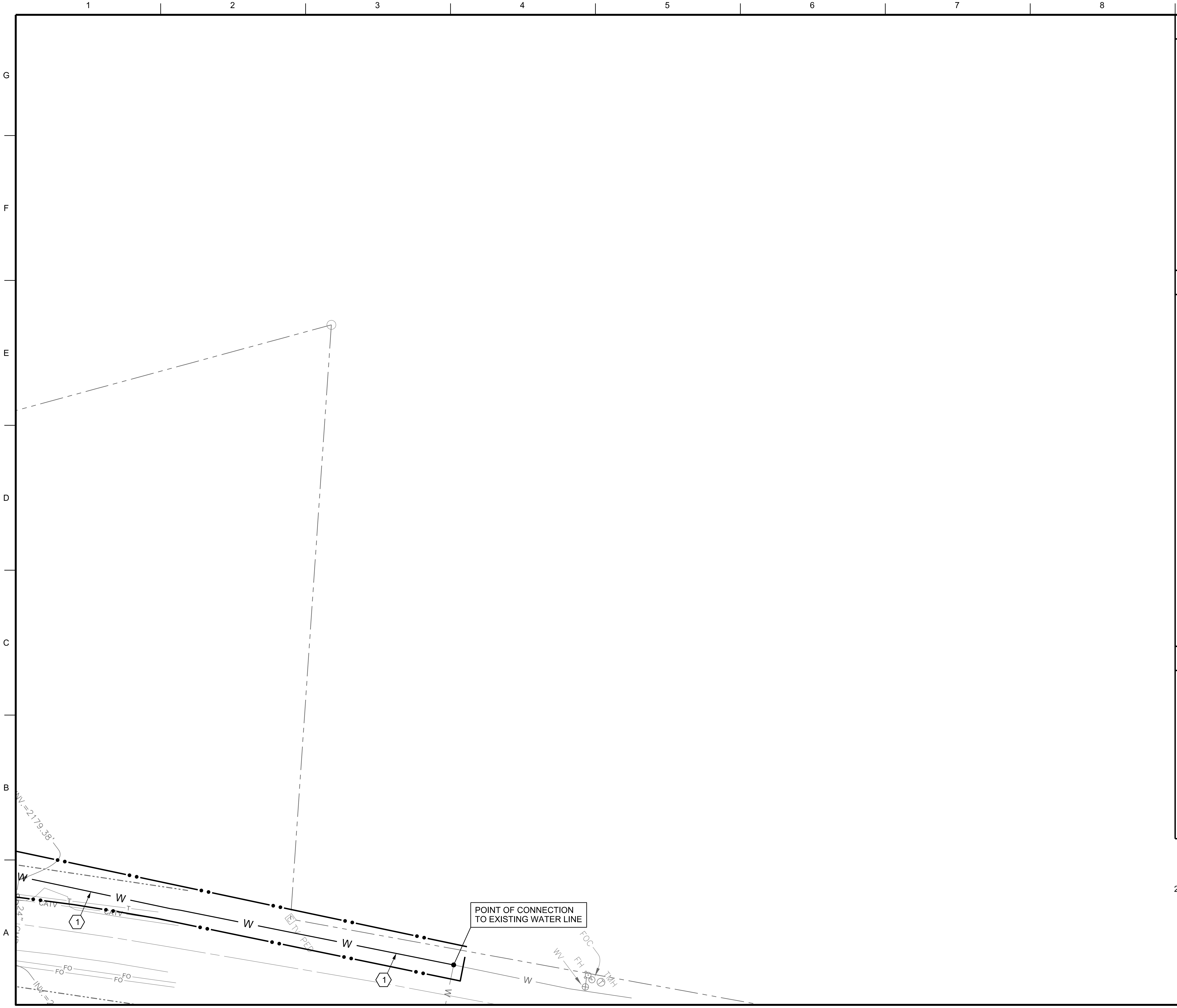
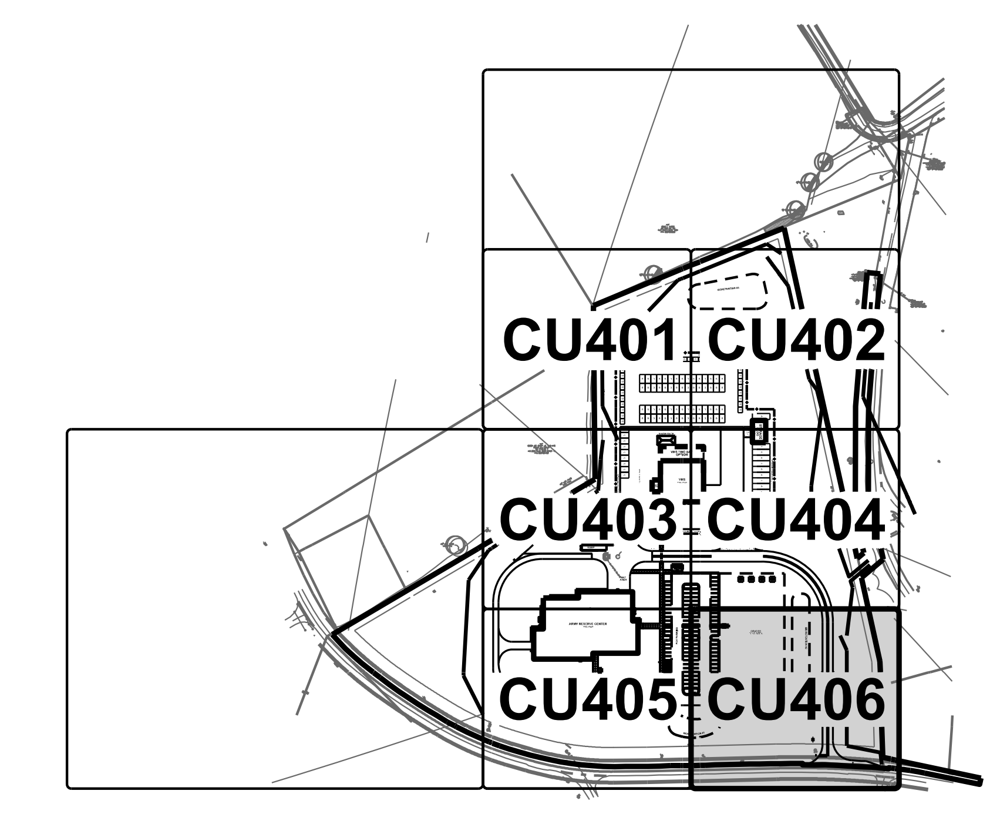


POINT OF CONNECTION
TO EXISTING WATER LINE

KEY MAP

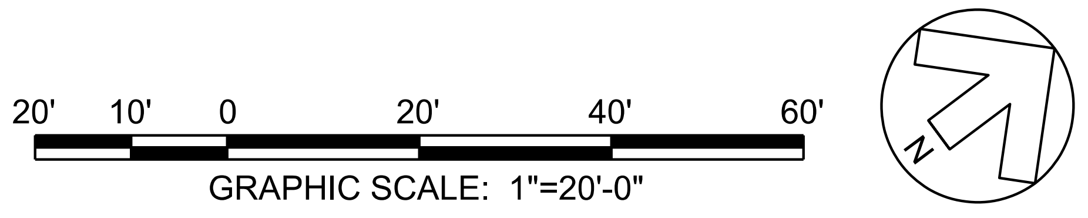


⬡ SHEET KEYNOTES

1. PROVIDE 8" DOMESTIC WATER LINE. PROVIDE 36" MINIMUM COVER OVER PIPE.

LEGEND

—••—	CONSTRUCTION LIMITS
—SAN—	SANITARY SEWER LINE
—W—	WATER LINE
— F —	FIRE WATER LINE
— G —	GAS LINE (BY OTHERS)
FH ●	FIRE HYDRANT
▶◀	GATE VALVE
PIV ▶◀	PIV VALVE
CO ●	CLEANOUT
SSMH-1 ⊙	SANITARY SEWER MANHOLE



GRAPHIC SCALE: 1"=20'-0"

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U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
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LOUISVILLE, KENTUCKY

Mason&Hanger
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PN: CAR 21-79351 P2#: 481815

ENLARGED
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SHEET ID
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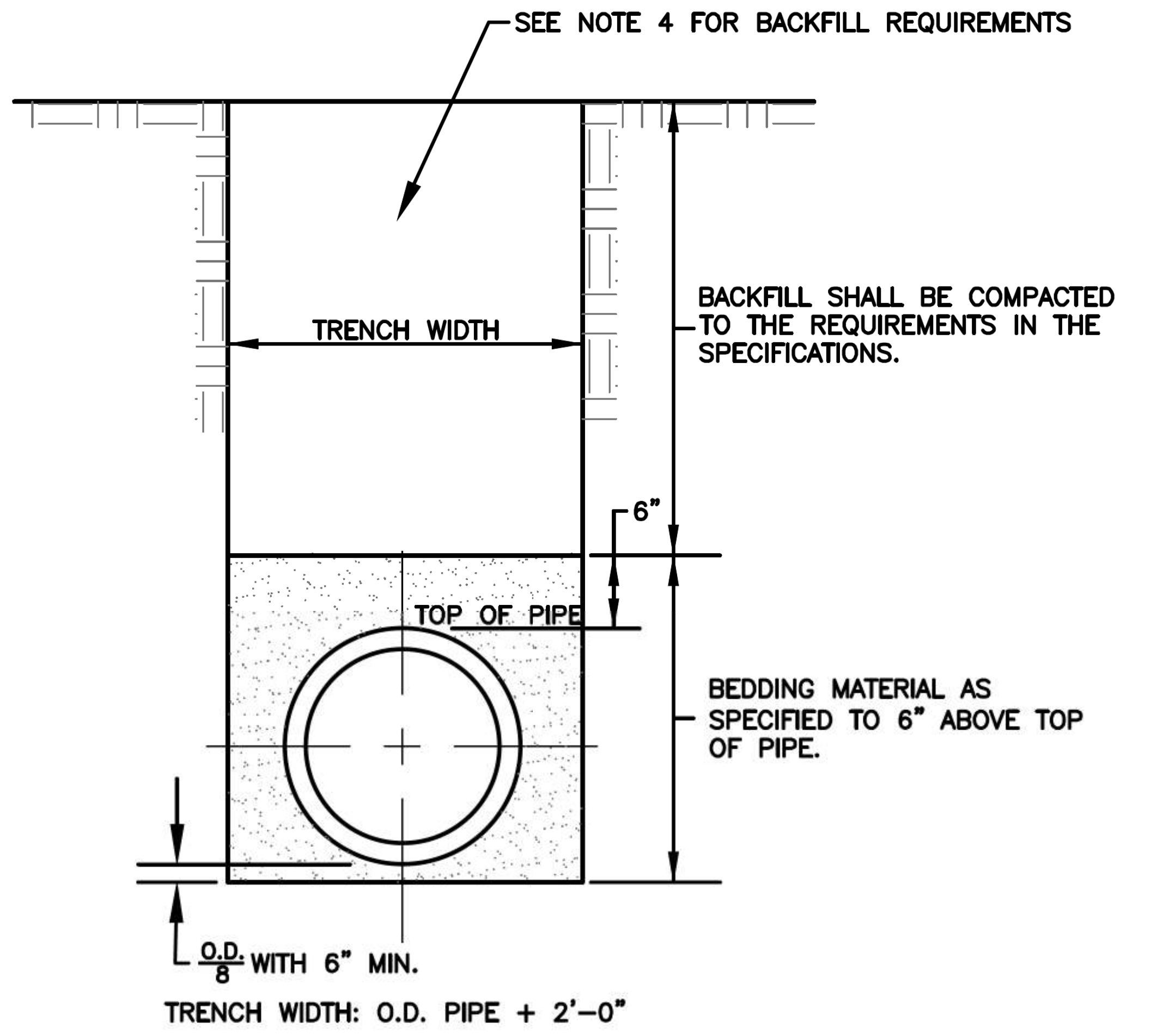
SEE NOTE 4 FOR BACKFILL REQUIREMENTS
TRENCH WIDTH
BACKFILL SHALL BE COMPACTED TO THE REQUIREMENTS IN THE SPECIFICATIONS.
6"
TOP OF PIPE
BEDDING MATERIAL AS SPECIFIED TO 6" ABOVE TOP OF PIPE.
O.D./8 WITH 6" MIN.

TRENCH WIDTH: O.D. PIPE + 2'–0"

NOTES:

1. BEDDING CLASSIFICATION SHALL MEET OR EXCEED ASTM D2321 CLASS 1 BEDDING FOR FLEXIBLE PIPING, AND ASTM C12, CLASS 'B' BEDDING FOR RIGID PIPING IN ROCK OR WET SOIL, PIPE MUST BE BEDDED IN AT LEAST 6" OF #57 WASHED STONE.
2. FORCE MAIN BEDDING SHALL BE SELECT NATURAL SAND WELL COMPACTED IN 6" LIFTS.
3. TRENCHES EXCAVATED OUTSIDE EXISTING ROAD AND RAILWAY RIGHTS–OF–WAY SHALL BE BE BACKFILLED WITH COMMON BACKFILL MATERIAL CONSISTING OF EXCAVATED MATERIALS EXCEPT HIGHLY ORGANIC SILTS AND CLAYS AND TAMPED THOROUGHLY. FILL SHALL BE DEPOSITED IN SUCCESSIVE, UNIFORM, APPROXIMATELY HORIZONTAL LAYERS. MATERIAL SHALL BE FREE OF ROOTS, STONES, AND DEBRIS. ALL MATERIAL SHALL HAVE AN IN–PLACE DENSITY OF AT LEAST 85% OF MAXIMUM DRY DENSITY (STANDARD PROCTOR) OR AS APPROVED BY THE ENGINEER. COMMON BACKFILL SHALL NOT CONTAIN STONE BLOCKS, BROKEN CONCRETE, MASONRY RUBBLE, OR OTHER SIMILAR MATERIALS. IT SHALL HAVE PHYSICAL PROPERTIES SUCH THAT IT CAN BE READILY SPREAD AND COMPACTED DURING FILLING. SNOW, ICE, AND FROZEN SOIL WILL NOT BE PERMITTED.
4. WHERE EXCAVATED MATERIAL, AFTER REMOVAL OF ROCKS, STUMPS, PLANT MATERIAL, AND OTHER EXTRANEOUS MATERIAL AND PROPER DEWATERING, DRYING, PROTECTION, AND STORAGE OF THE EXCAVATION BY THE CONTRACTOR, CANNOT BE PREPARED TO MEET THE REQUIREMENTS FOR COMMON BACKFILL, DUE TO THE NATURE OF THE MATERIAL (E.G., EXCESSIVE ROCK, MUCK, ORGANICS, CLAY, SILT, OR OTHER MATERIAL), AND AS DETERMINED BY THE ENGINEER, THE UNACCEPTABLE EXCAVATION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AND REPLACED BY IMPORTED BACKFILL MEETING THE REQUIREMENTS OF STRUCTURAL BACKFILL. IMPORTED STRUCTURAL BACKFILL SHALL BE FREE OF ORGANICS, ROOTS OR OTHER DELETERIOUS MATERIALS AND SHALL NOT CONTAIN MORE THAN FIVE PERCENT (BY WEIGHT) ORGANIC MATERIAL, HAVE A PLASTICITY INDEX (PI) GREATER THAN 25, OR HAVE A MAXIMUM DRY DENSITY LESS THAN 90 POUNDS PER CUBIC FOOT. IMPORTED STRUCTURAL FILL SHOULD CONSIST OF MATERIAL CLASSIFIED AS ML, CL, SC, OR SM, OR BETTER PER ASTM D–2487 AND BE CAPABLE OF BEING COMPACTED TO 85% STANDARD PROCTOR.
5. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL COMPACTION REQUIREMENTS.

DATE: 06/19/2019 SS-D DWG. NO. 1

SCALE: NOT TO SCALE

City of Hendersonville Engineering Department
305 Williams Street
Hendersonville, NC 28792
(828) 697-3000 (office)
www.cityofhendersonville.org

GRAVITY SEWER
TRENCH CONSTRUCTION
OUTSIDE PAVEMENT

1847

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1 TYP **DETAIL**
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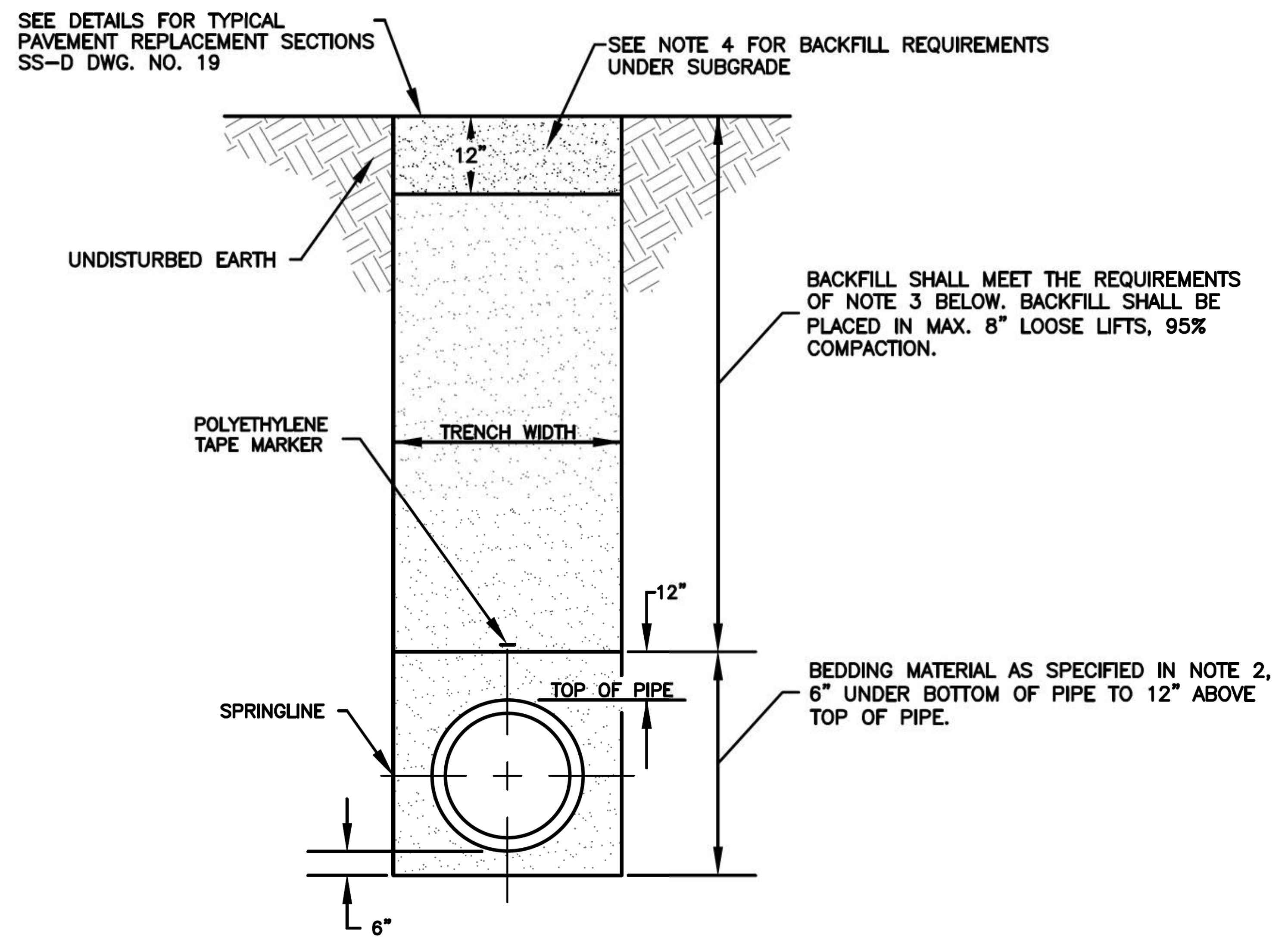
SEE DETAILS FOR TYPICAL PAVEMENT REPLACEMENT SECTIONS SS–D DWG. NO. 19
SEE NOTE 4 FOR BACKFILL REQUIREMENTS UNDER SUBGRADE
12"
UNDISTURBED EARTH
BACKFILL SHALL MEET THE REQUIREMENTS OF NOTE 3 BELOW. BACKFILL SHALL BE PLACED IN MAX. 8" LOOSE LIFTS, 95% COMPACTION.
POLYETHYLENE TAPE MARKER
TRENCH WIDTH
12"
TOP OF PIPE
BEDDING MATERIAL AS SPECIFIED IN NOTE 2, 6" UNDER BOTTOM OF PIPE TO 12" ABOVE TOP OF PIPE.
SPRINGLINE
6"

TRENCH WIDTH: OUTSIDE DIAMETER OF PIPE + 2'–0"

NOTES:

1. THIS TRENCH BACKFILL DETAIL APPLIES TO AREAS UNDER PAVEMENT. CURB AND GUTTER, AND SIDEWALK.
2. BEDDING CLASSIFICATION SHALL MEET OR EXCEED ASTM D2321 CLASS 1 BEDDING FOR FLEXIBLE PIPING, AND ASTM C12, CLASS B BEDDING FOR RIGID PIPING.
3. COMMON BACKFILL MATERIAL SHALL CONSIST OF EXCAVATED MATERIALS EXCEPT HIGHLY ORGANIC SILTS AND CLAYS. FILL SHALL BE DEPOSITED IN SUCCESSIVE, UNIFORM, APPROXIMATELY HORIZONTAL LAYERS NOT EXCEEDING EIGHT (8) INCHES IN DEPTH FOR THE FULL WIDTH. MATERIAL SHALL BE FREE OF ROOTS, STONES, AND DEBRIS AND CAPABLE OF BEING COMPACTED TO 95% STANDARD PROCTOR. COMMON BACKFILL SHALL NOT CONTAIN STONE BLOCKS, BROKEN CONCRETE, MASONRY RUBBLE, OR OTHER SIMILAR MATERIALS. IT SHALL HAVE PHYSICAL PROPERTIES SUCH THAT IT CAN BE READILY SPREAD AND COMPACTED DURING FILLING. SNOW, ICE, AND FROZEN SOIL WILL NOT BE PERMITTED.

   WHERE EXCAVATED MATERIAL, AFTER REMOVAL OF ROCKS, STUMPS, PLANT MATERIAL, AND OTHER EXTRANEOUS MATERIAL AND PROPER DEWATERING, DRYING, PROTECTION, AND STORAGE OF THE EXCAVATION BY THE CONTRACTOR, CANNOT BE PREPARED TO MEET THE REQUIREMENTS FOR COMMON BACKFILL, DUE TO THE NATURE OF THE MATERIAL (E.G., EXCESSIVE ROCK, MUCK, ORGANICS, CLAY, SILT, OR OTHER MATERIAL), AND AS DETERMINED BY THE ENGINEER, THE UNACCEPTABLE EXCAVATION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AND REPLACED BY IMPORTED BACKFILL MEETING THE REQUIREMENTS OF STRUCTURAL BACKFILL. IMPORTED STRUCTURAL BACKFILL SHALL BE FREE OF ORGANICS, ROOTS OR OTHER DELETERIOUS MATERIALS AND SHALL NOT CONTAIN MORE THAN FIVE PERCENT (BY WEIGHT) ORGANIC MATERIAL, HAVE A PLASTICITY INDEX (PI) GREATER THAN 25, OR HAVE A MAXIMUM DRY DENSITY LESS THAN 90 POUNDS PER CUBIC FOOT. IMPORTED STRUCTURAL FILL SHOULD CONSIST OF MATERIAL CLASSIFIED AS ML, CL, SC, OR SM, OR BETTER PER ASTM D–2487 AND BE CAPABLE OF BEING COMPACTED TO 95% STANDARD PROCTOR.
4. THE TOP 12 INCHES OF FINAL BACKFILL FOR ROAD OR STREET SUBGRADE SHALL BE COMPACTED TO 98% STANDARD PROCTOR.
5. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL COMPACTION REQUIREMENTS.

DATE: 05/14/2019 SS-D DWG. NO. 2

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GRAVITY SEWER
TRENCH CONSTRUCTION
UNDER PAVEMENT

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SANITARY SEWER DETAILS

SHEET ID
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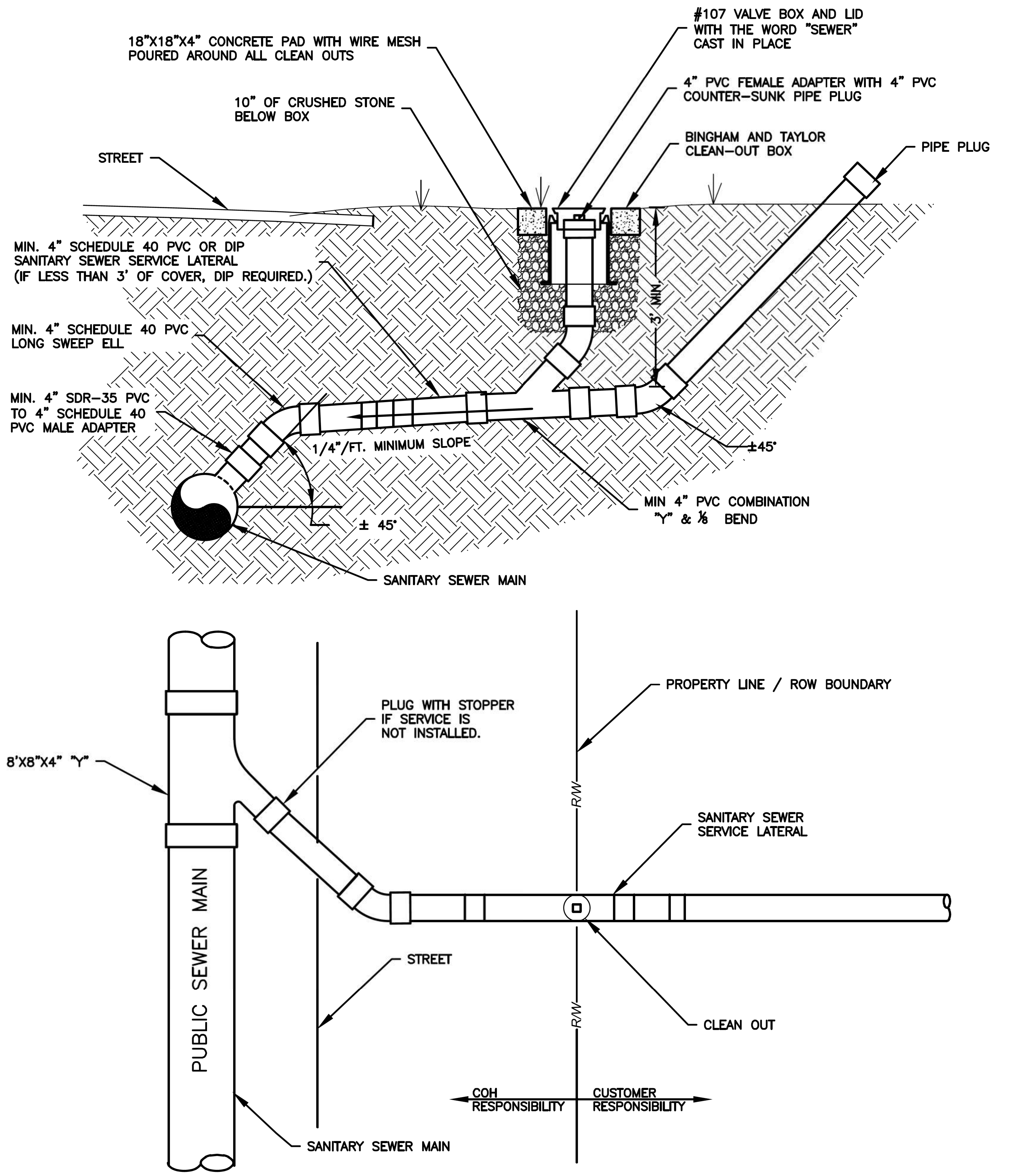

18"X18"X4" CONCRETE PAD WITH WIRE MESH POURED AROUND ALL CLEAN OUTS
#107 VALVE BOX AND LID WITH THE WORD "SEWER" CAST IN PLACE
4" PVC FEMALE ADAPTER WITH 4" PVC COUNTER–SUNK PIPE PLUG
10" OF CRUSHED STONE BELOW BOX
BINGHAM AND TAYLOR CLEAN–OUT BOX
PIPE PLUG
STREET
MIN. 4" SCHEDULE 40 PVC OR DIP SANITARY SEWER SERVICE LATERAL (IF LESS THAN 3' OF COVER, DIP REQUIRED.)
3' MIN
MIN. 4" SCHEDULE 40 PVC LONG SWEEP ELL
MIN. 4" SDR–35 PVC TO 4" SCHEDULE 40 PVC MALE ADAPTER
1/4"/FT. MINIMUM SLOPE
±45°
± 45°
MIN 4" PVC COMBINATION "Y" & ⅛ BEND
SANITARY SEWER MAIN
PROPERTY LINE / ROW BOUNDARY
PLUG WITH STOPPER IF SERVICE IS NOT INSTALLED.
8"X8"X4" "Y"
R/W
SANITARY SEWER SERVICE LATERAL
PUBLIC SEWER MAIN
STREET
CLEAN OUT
R/W
COH RESPONSIBILITY
CUSTOMER RESPONSIBILITY
SANITARY SEWER MAIN

DATE: 01/12/2019 SS-D DWG. NO. 4

SCALE: NOT TO SCALE

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STANDARD SERVICE CONNECTION

LATERAL AND CLEANOUT

1847

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1 TYP **DETAIL**

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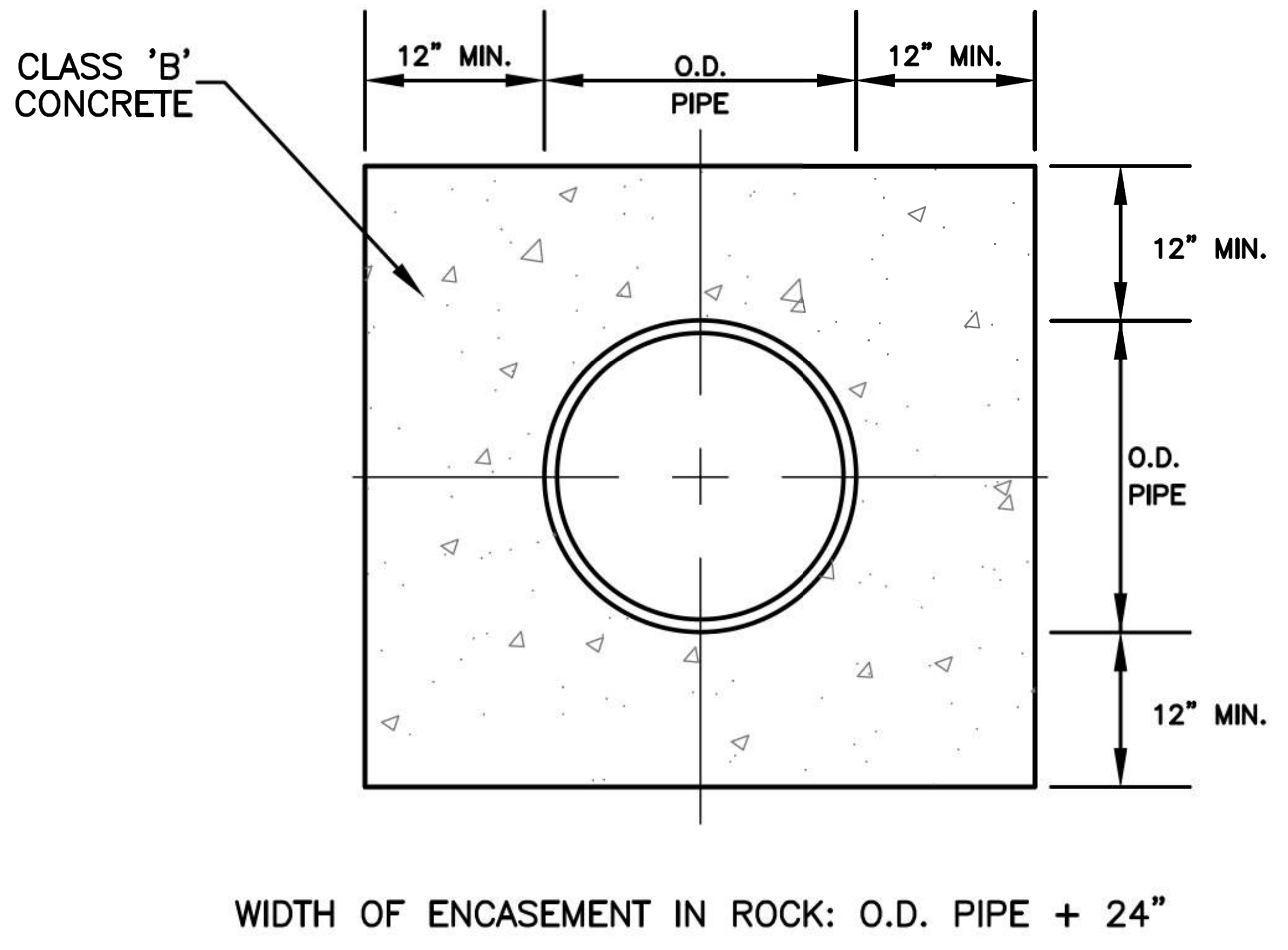

DATE: 01/12/2019 SS-D DWG. NO. 3

SCALE: NOT TO SCALE

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(828) 697-3000 (office)
www.cityofhendersonville.org

CONCRETE PIPE ENCASEMENT

1847

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2 TYP **DETAIL**

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CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
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FILENAME:
ASHE_CU502.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SANITARY SEWER DETAILS

SHEET ID
CU502

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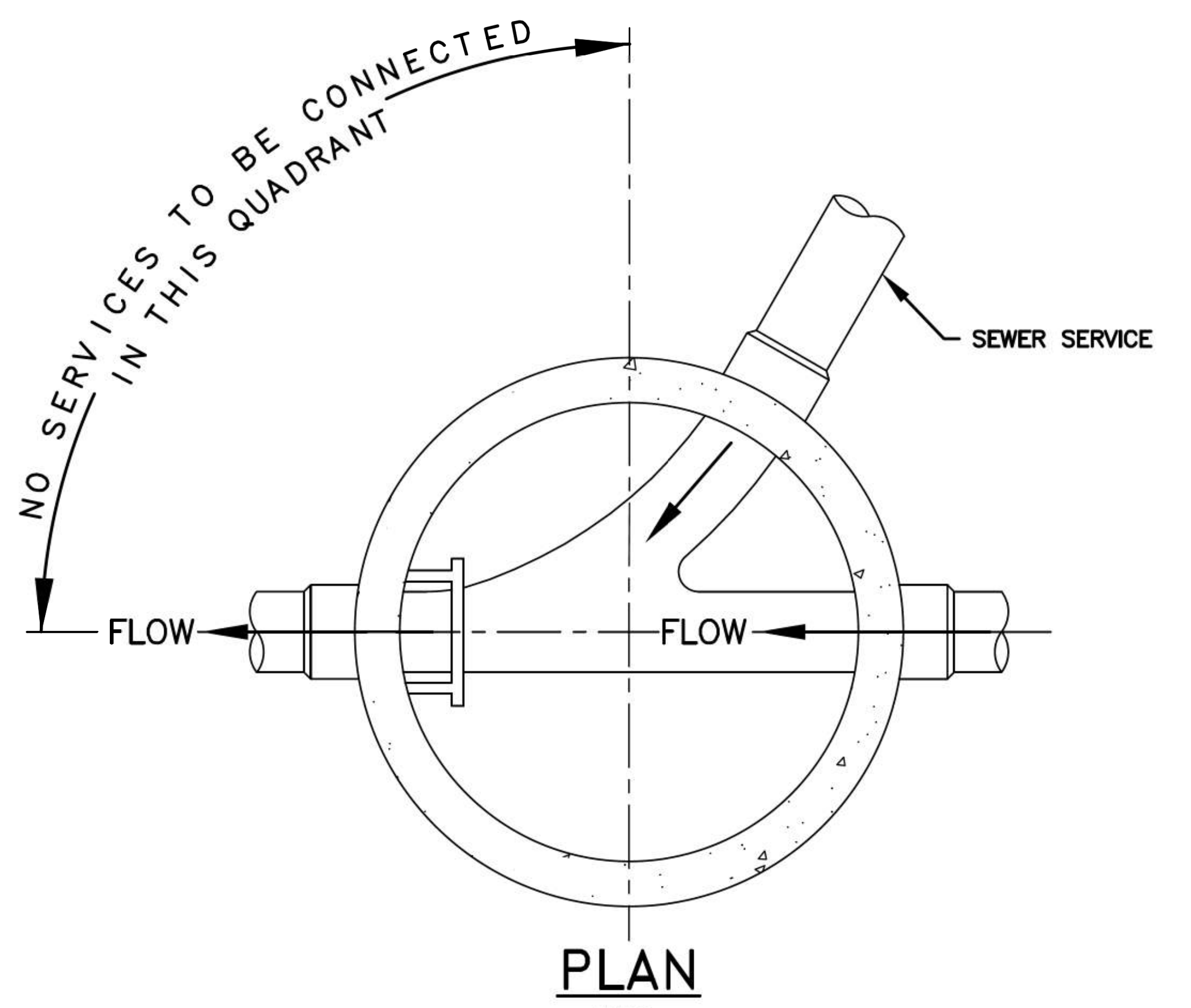
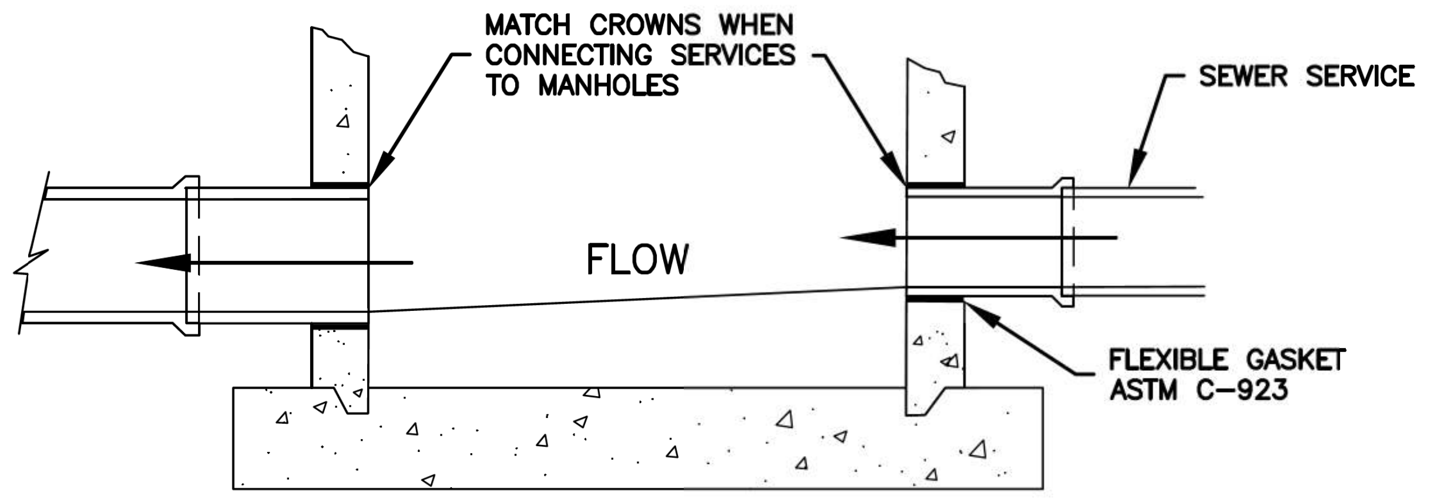


PLAN

N.T.S.


MATCH CROWNS WHEN CONNECTING SERVICES TO MANHOLES
SEWER SERVICE
FLOW
FLEXIBLE GASKET ASTM C-923

SECTION

N.T.S.

DATE: 01/12/2019	SS-D DWG. NO. 5
SCALE: NOT TO SCALE	

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SERVICE CONNECTIONS
AT MANHOLES

1847

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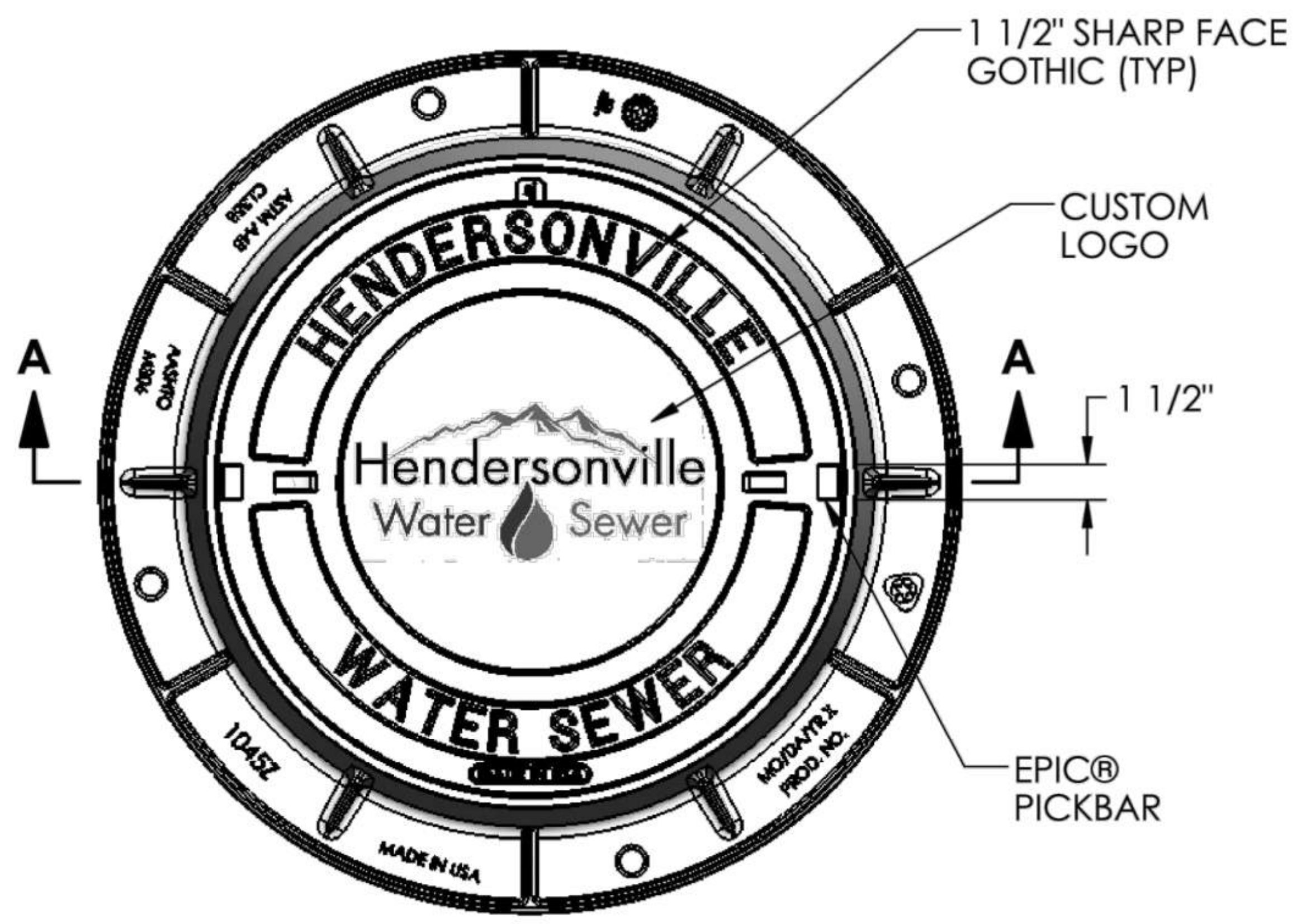
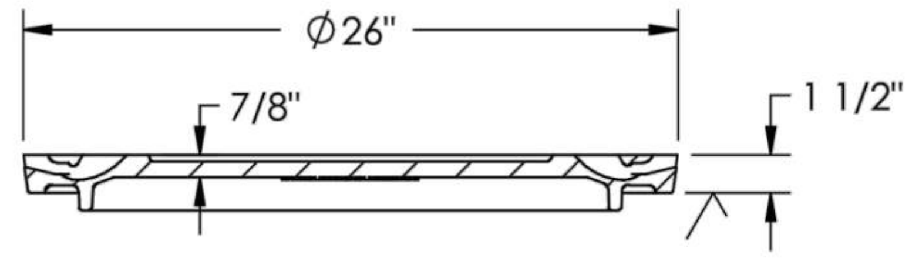
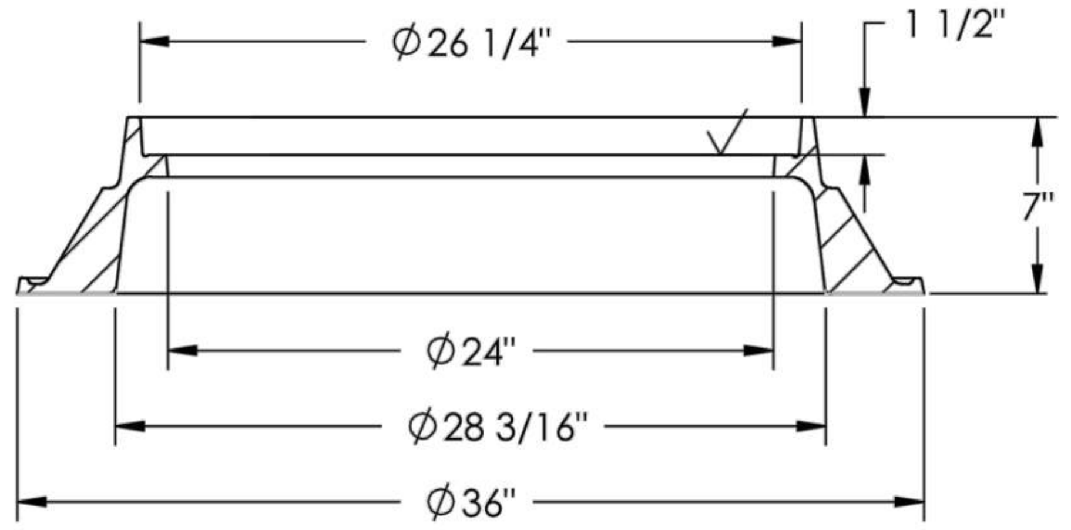




MANHOLE COVER



SECTION A-A

MANHOLE CASTING

NOTE:
COVER SHALL BEAR THE WORDS:
"SANITARY SEWER"

DATE: 01/12/2019	SS-D DWG. NO. 11
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STANDARD MANHOLE
CASTING AND COVER

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MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_CU503.dgn

U.S. ARMY CORPS OF ENGINEERS
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LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

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ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SANITARY SEWER DETAILS

SHEET ID
CU503

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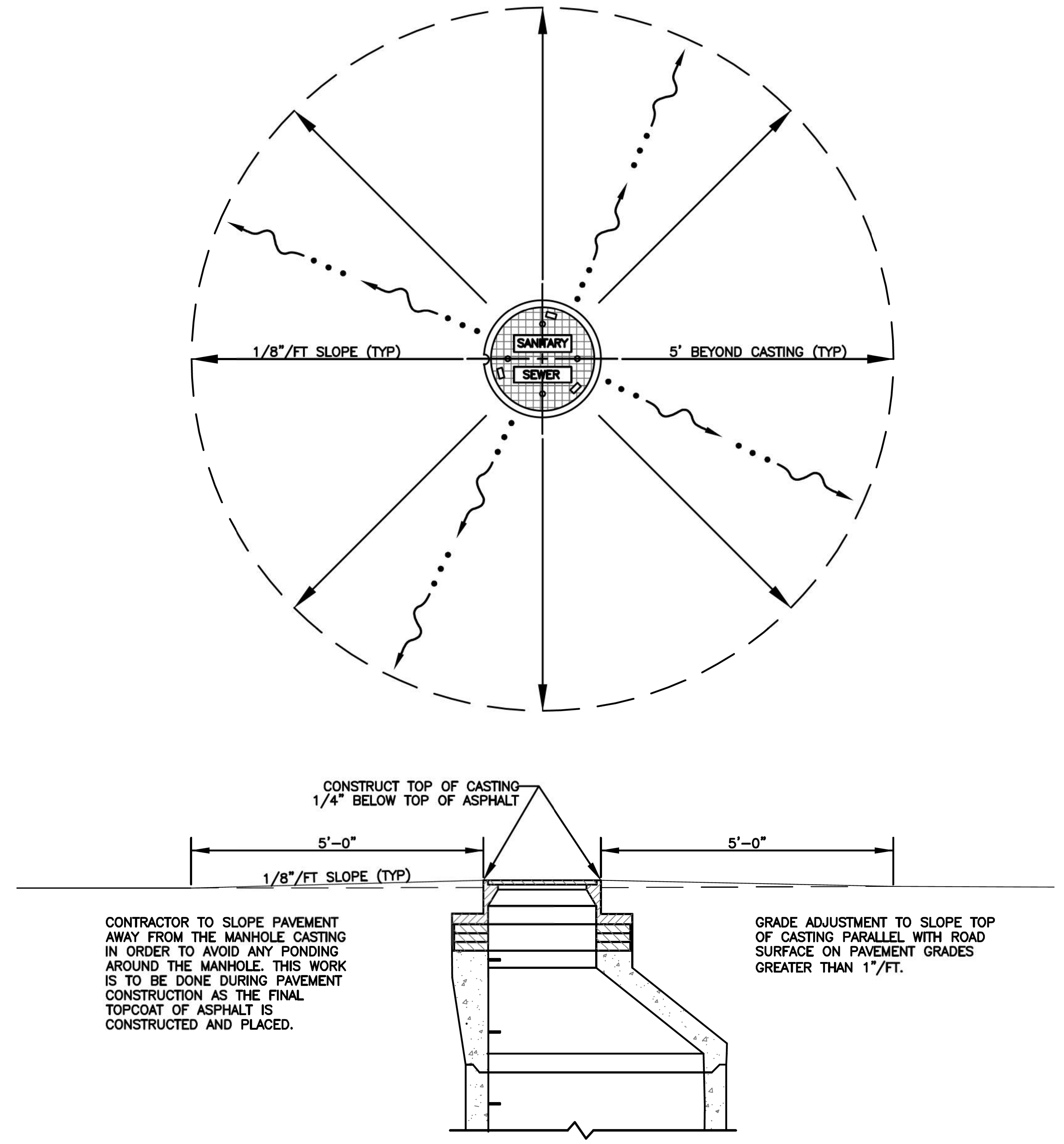
THIS DRAWING IS FOR ROAD GRADES LESS THAN 1" PER FOOT (i.e. LEVEL ±). SEE DRAWING 34 FOR ROAD GRADES GREATER THAN 1" PER FOOT.



CONTRACTOR TO SLOPE PAVEMENT AWAY FROM THE MANHOLE CASTING IN ORDER TO AVOID ANY PONDING AROUND THE MANHOLE. THIS WORK IS TO BE DONE DURING PAVEMENT CONSTRUCTION AS THE FINAL TOPCOAT OF ASPHALT IS CONSTRUCTED AND PLACED.

GRADE ADJUSTMENT TO SLOPE TOP OF CASTING PARALLEL WITH ROAD SURFACE ON PAVEMENT GRADES GREATER THAN 1"/FT.

DATE: 01/12/2019 SS-D DWG. NO. 15

SCALE: NOT TO SCALE

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MH CASTING IN NEW ASPHALT PAVEMENT

ROAD GRADES LESS THAN 1" PER FOOT

1847

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DETAIL

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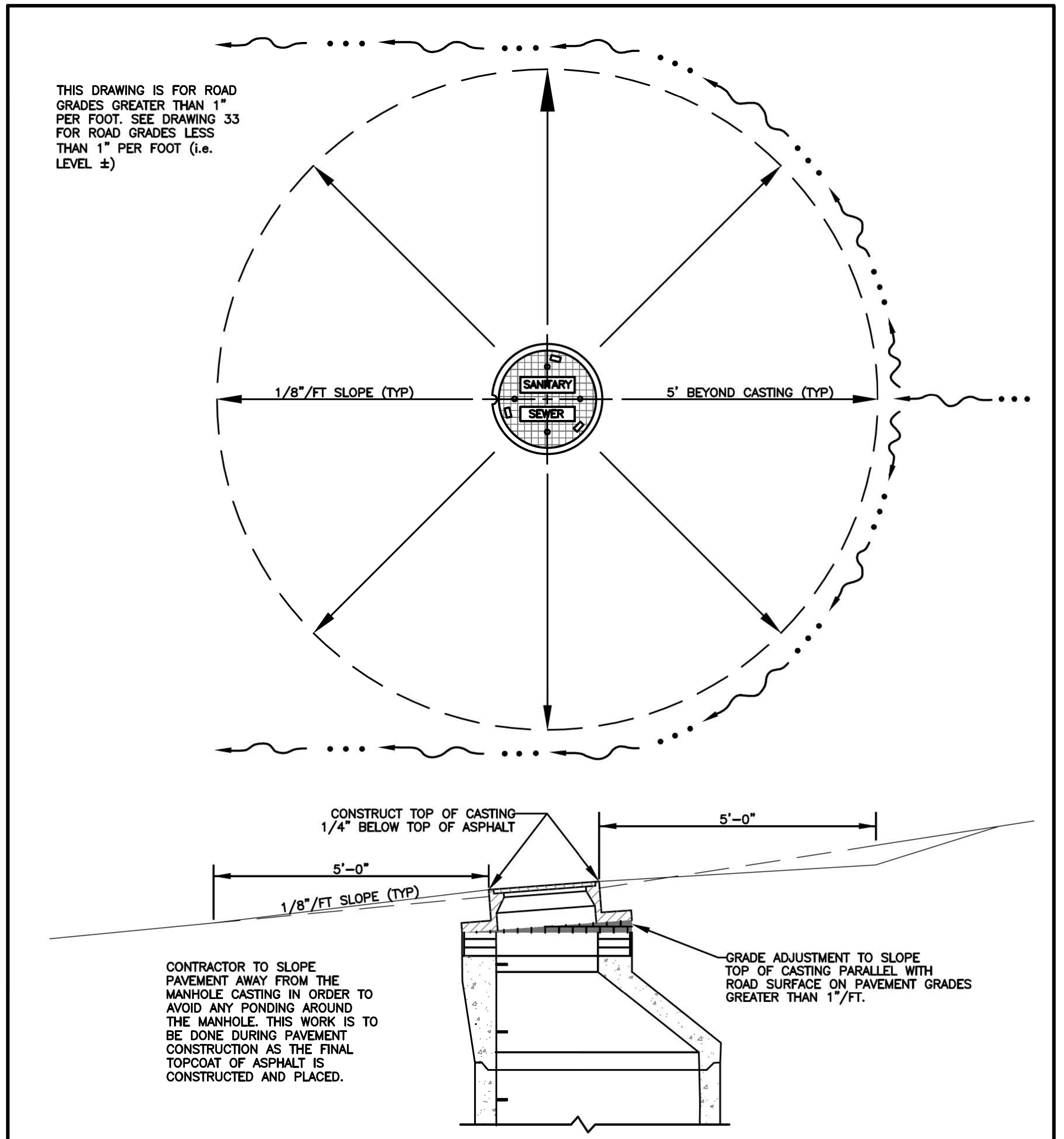
THIS DRAWING IS FOR ROAD GRADES GREATER THAN 1" PER FOOT. SEE DRAWING 33 FOR ROAD GRADES LESS THAN 1" PER FOOT (i.e. LEVEL ±)



CONTRACTOR TO SLOPE PAVEMENT AWAY FROM THE MANHOLE CASTING IN ORDER TO AVOID ANY PONDING AROUND THE MANHOLE. THIS WORK IS TO BE DONE DURING PAVEMENT CONSTRUCTION AS THE FINAL TOPCOAT OF ASPHALT IS CONSTRUCTED AND PLACED.

GRADE ADJUSTMENT TO SLOPE TOP OF CASTING PARALLEL WITH ROAD SURFACE ON PAVEMENT GRADES GREATER THAN 1"/FT.

DATE: 01/12/2019 DETAIL DWG. NO. 16

SCALE: NOT TO SCALE

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MH CASTING IN NEW ASPHALT PAVEMENT

ROAD GRADES GREATER THAN 1" PER FOOT

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TYP

DETAIL

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US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CU504.dgn
ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

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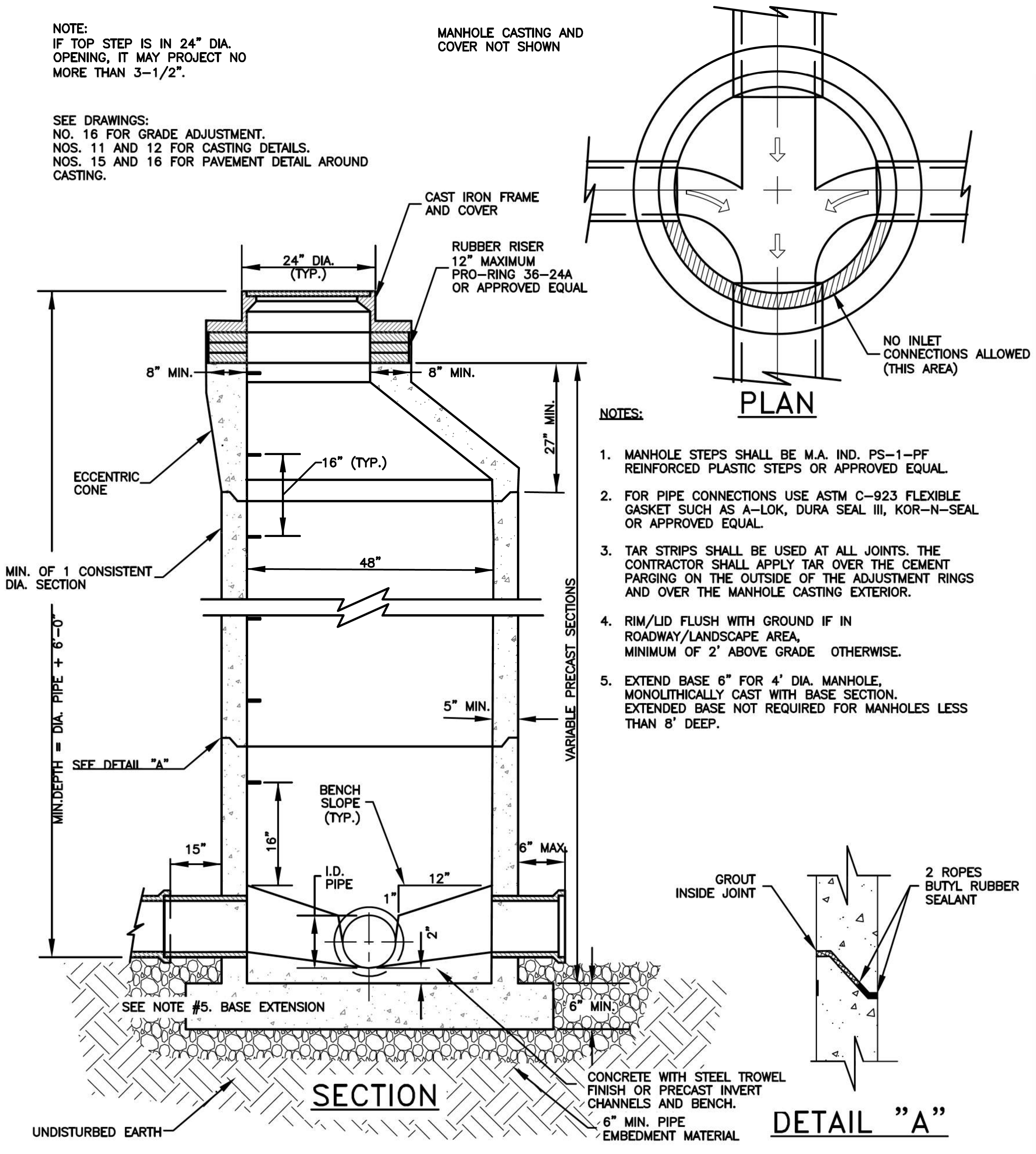
MANHOLE CASTING AND COVER NOT SHOWN
CAST IRON FRAME AND COVER
RUBBER RISER 12" MAXIMUM PRO–RING 36–24A OR APPROVED EQUAL
24" DIA. (TYP.)
8" MIN.
8" MIN.
27" MIN.
ECCENTRIC CONE
16" (TYP.)
MIN. OF 1 CONSISTENT DIA. SECTION
48"
MIN.DEPTH = DIA. PIPE + 6'–0"
VARIABLE PRECAST SECTIONS
5" MIN.
SEE DETAIL "A"
BENCH SLOPE (TYP.)
16"
15"
6" MAX.
I.D. PIPE
12"
1"
2"
SEE NOTE #5. BASE EXTENSION
6" MIN.
SECTION
UNDISTURBED EARTH
CONCRETE WITH STEEL TROWEL FINISH OR PRECAST INVERT CHANNELS AND BENCH.
6" MIN. PIPE EMBEDMENT MATERIAL
NO INLET CONNECTIONS ALLOWED (THIS AREA)
PLAN
GROUT INSIDE JOINT
2 ROPES BUTYL RUBBER SEALANT
DETAIL "A"

NOTE:
IF TOP STEP IS IN 24" DIA. OPENING, IT MAY PROJECT NO MORE THAN 3–1/2".

SEE DRAWINGS:
NO. 16 FOR GRADE ADJUSTMENT.
NOS. 11 AND 12 FOR CASTING DETAILS.
NOS. 15 AND 16 FOR PAVEMENT DETAIL AROUND CASTING.

NOTES:

1. MANHOLE STEPS SHALL BE M.A. IND. PS–1–PF REINFORCED PLASTIC STEPS OR APPROVED EQUAL.
2. FOR PIPE CONNECTIONS USE ASTM C–923 FLEXIBLE GASKET SUCH AS A–LOK, DURA SEAL III, KOR–N–SEAL OR APPROVED EQUAL.
3. TAR STRIPS SHALL BE USED AT ALL JOINTS. THE CONTRACTOR SHALL APPLY TAR OVER THE CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.
4. RIM/LID FLUSH WITH GROUND IF IN ROADWAY/LANDSCAPE AREA, MINIMUM OF 2' ABOVE GRADE OTHERWISE.
5. EXTEND BASE 6" FOR 4' DIA. MANHOLE, MONOLITHICALLY CAST WITH BASE SECTION. EXTENDED BASE NOT REQUIRED FOR MANHOLES LESS THAN 8' DEEP.

DATE: 02/10/2021 SS-D DWG. NO. 6

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PRECAST MANHOLE

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DETAIL

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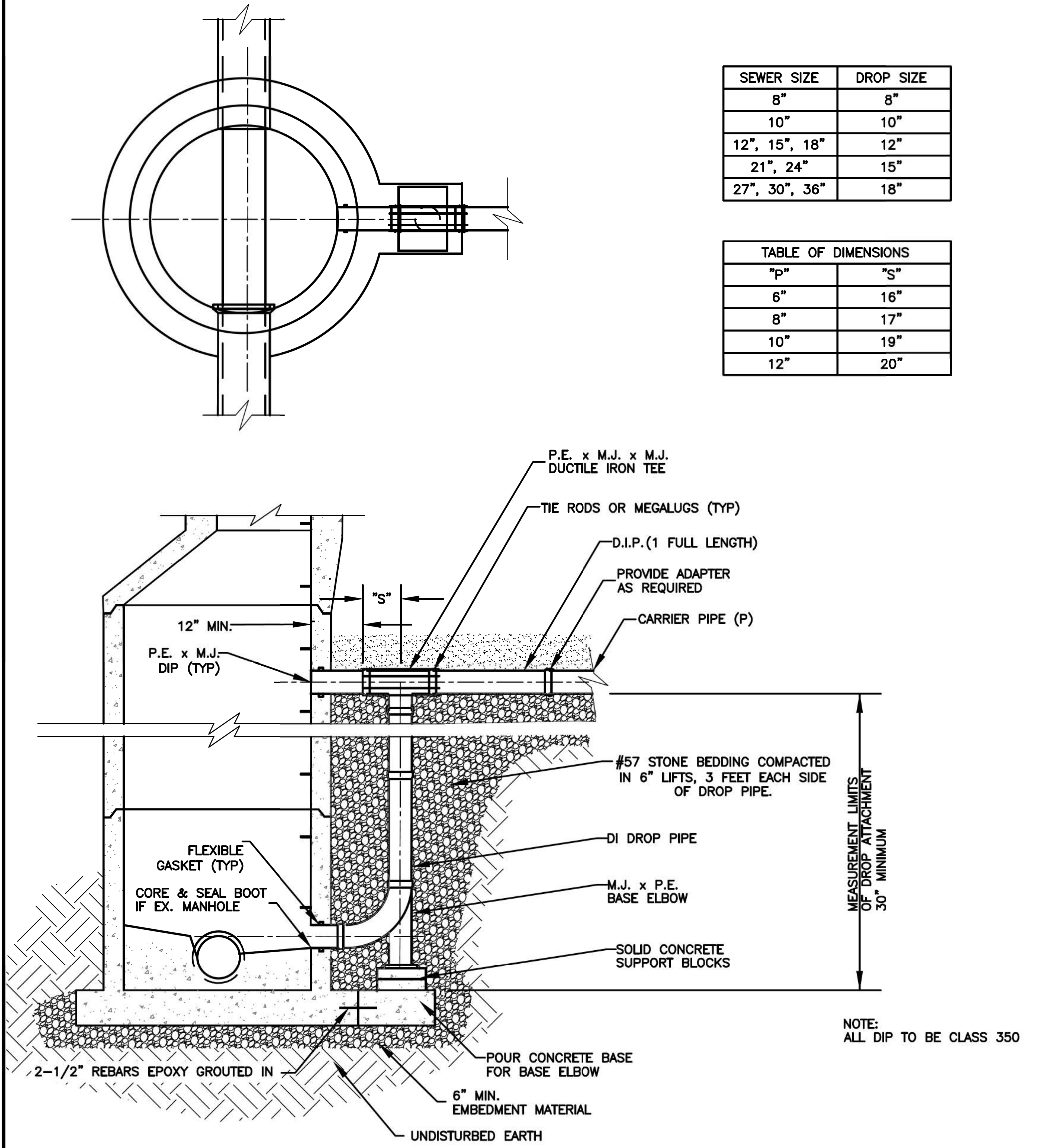
"S"
12" MIN.
P.E. x M.J. DIP (TYP)
P.E. x M.J. x M.J. DUCTILE IRON TEE
TIE RODS OR MEGALUGS (TYP)
D.I.P.(1 FULL LENGTH)
PROVIDE ADAPTER AS REQUIRED
CARRIER PIPE (P)
#57 STONE BEDDING COMPACTED IN 6" LIFTS, 3 FEET EACH SIDE OF DROP PIPE.
MEASUREMENT LIMITS OF DROP ATTACHMENT 30" MINIMUM
DI DROP PIPE
FLEXIBLE GASKET (TYP)
CORE & SEAL BOOT IF EX. MANHOLE
M.J. x P.E. BASE ELBOW
SOLID CONCRETE SUPPORT BLOCKS
2–1/2" REBARS EPOXY GROUTED IN
POUR CONCRETE BASE FOR BASE ELBOW
6" MIN. EMBEDMENT MATERIAL
UNDISTURBED EARTH

SEWER SIZE	DROP SIZE
8"	8"
10"	10"
12", 15", 18"	12"
21", 24"	15"
27", 30", 36"	18"

TABLE OF DIMENSIONS	
"P"	"S"
6"	16"
8"	17"
10"	19"
12"	20"

NOTE:
ALL DIP TO BE CLASS 350

DATE: 02/15/2021 SS-D DWG. NO. 9

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DROP MANHOLE

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DETAIL

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MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE CU505.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SANITARY SEWER DETAILS

SHEET ID
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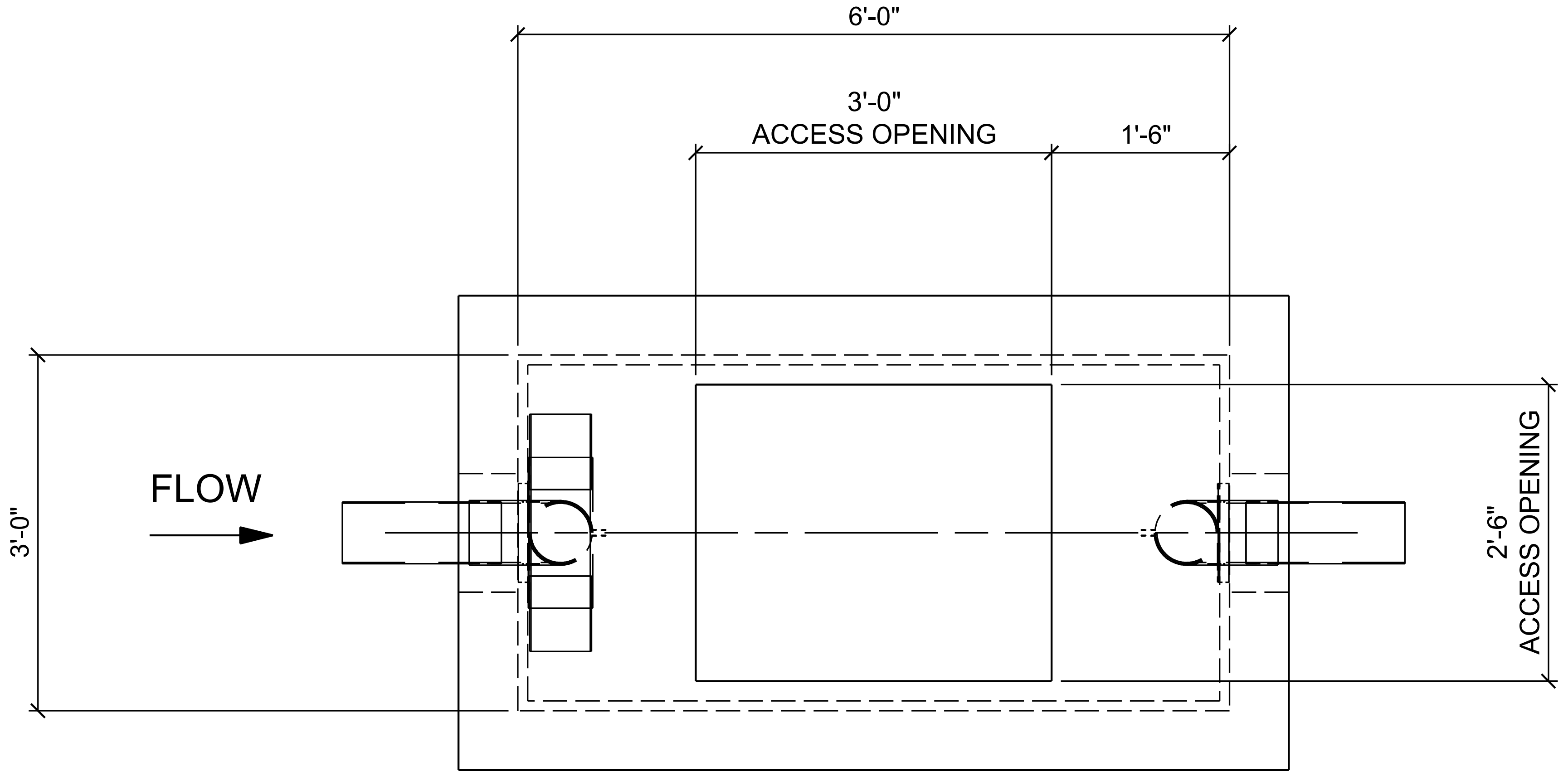
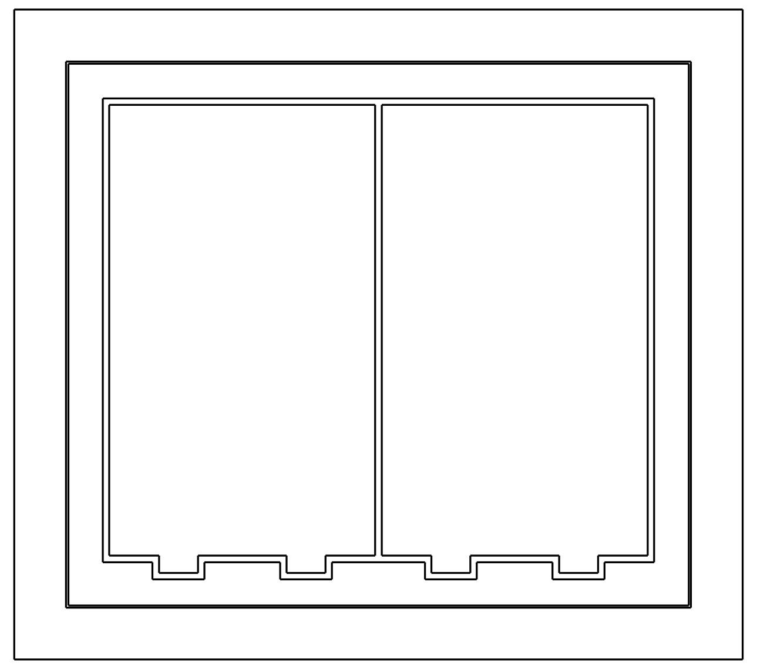


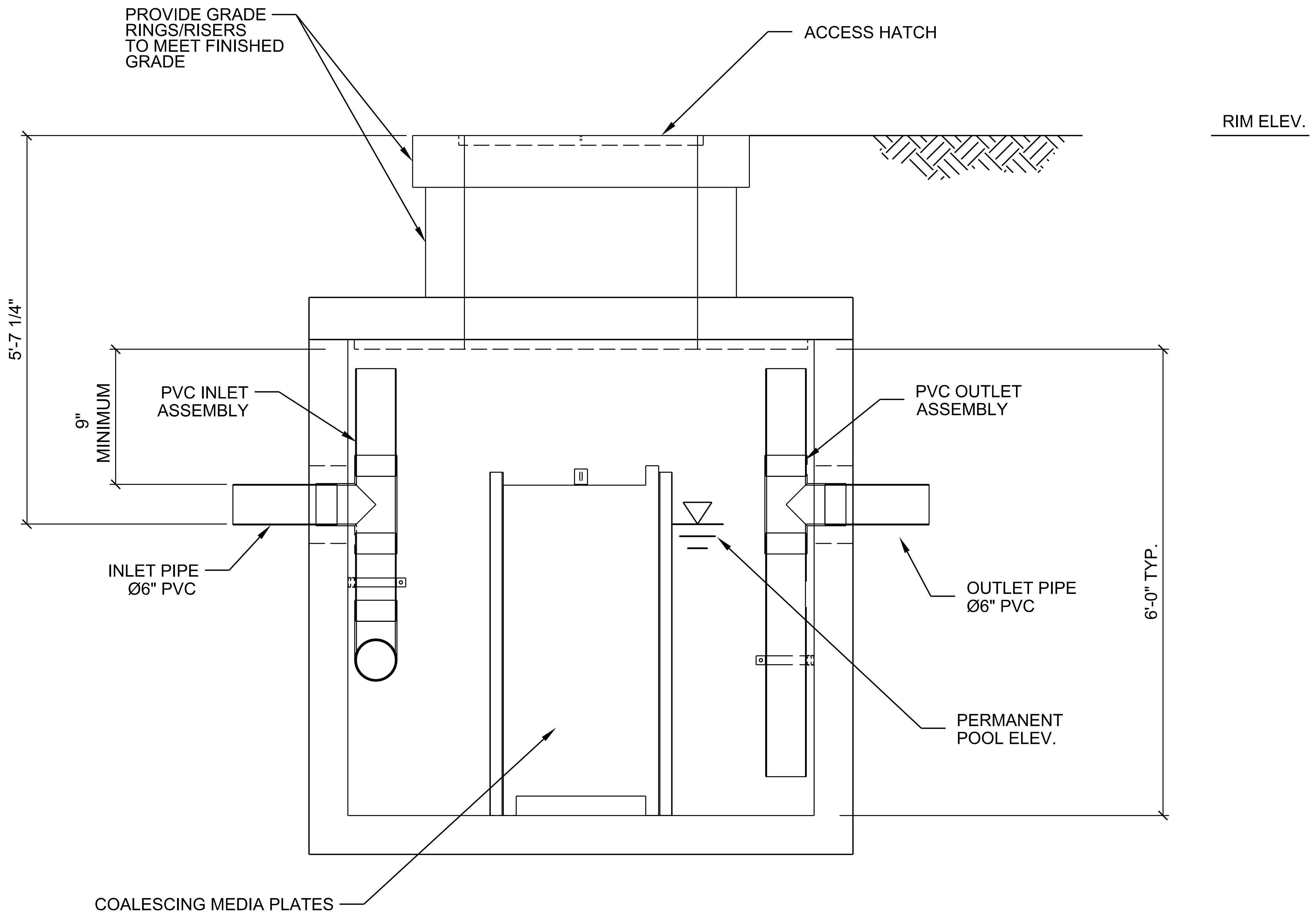
PLAN VIEW



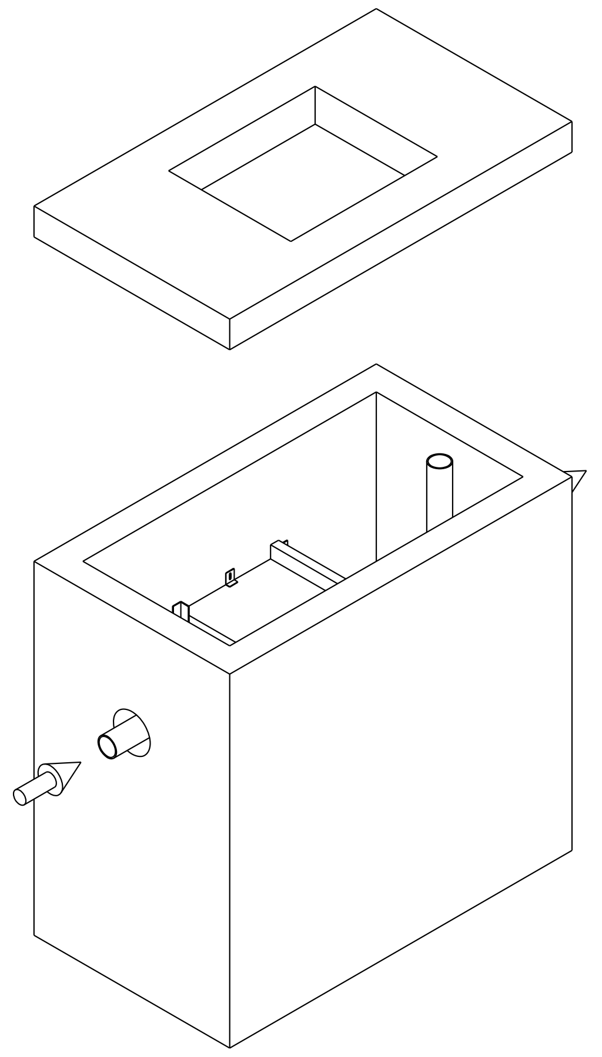
30" x 36" ACCESS HATCH

NOTES:

1. FLOW LINE IN AND OUT OF THE OIL/WATER SEPARATOR IS TO BE AT THE SAME ELEVATION.
2. MANUFACTURER SHALL BE RESPONSIBLE FOR INSTALLATION OF INTERNAL COMPONENTS.
3. VAULT SHALL MEET HS20 MINIMUM LOAD REQUIREMENTS.
4. RECTANGULAR HATCH SUPPLIED WITH SYSTEM, NOT INSTALLED.
5. HATCH RISERS, GRADE RINGS OR BLOCK REQUIRED BETWEEN THE TOP OF THE OIL/WATER SEPARATOR SYSTEM AND BASE OF THE HATCH SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL STANDARDS. NOT SUPPLIED BY MANUFACTURER. CONTRACTOR TO FURNISH AND INSTALL.
6. CONTRACTOR TO PREPARE EXCAVATION, PROVIDE LIFTING EQUIPMENT AND SET STRUCTURE.
7. CONTRACTOR TO CONNECT THE PROVIDED PIPE STUB TO THE EXTERNAL PIPE BY MEANS OF A COUPLER, NOT SUPPLIED BY THE MANUFACTURER.
8. SOME HIDDEN LINES HAVE BEEEN OMITTED FOR CLARITY.
9. INLET/OUTLET PIPE DIAMETER ARE AS SHOWN ON THE DRAWINGS.
10. THE OIL/WATER SEPARATOR SHALL REMOVE ESSENTIALLY ALL FREE AND DISPERSED NON-EMULSIFIED OIL FROM THE WATER STREAM AND PRODUCE A DESIRED EFFLUENT BASED ON AN OIL DROPLET TYPICAL OF THE SITE.



ELEVATION VIEW



ASSEMBLY VIEW

OIL/WATER SEPARATOR DETAIL

1
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DRAWN BY:
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SIZE:
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FILENAME:
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ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
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U. S. ARMY RESERVE CENTER
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OIL/WATER SEPARATOR DETAILS

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GENERAL NOTES:

1. WATER CONSTRUCTION ON THIS SITE IS AUTHORIZED BY PERMITS ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND AUTHORIZED BY THE CITY OF HENDERSONVILLE. THE WORK IS SUBJECT TO INSPECTIONS AT ALL TIMES BY REPRESENTATIVES OF NCDEQ, THE CITY OF HENDERSONVILLE, THE OWNER OR THE ENGINEER. THE PERMITS REQUIRE CERTIFICATION OF COMPLETION OF THE WATER SYSTEMS BY THE ENGINEER AND THE APPLICANT PRIOR TO ISSUANCE OF FINAL OPERATION APPROVAL.
2. MATERIALS AND INSTALLATION FOR WATER CONSTRUCTION SHALL CONFORM TO THE LATEST VERSIONS OF CITY SPECIFICATION AND DETAILS AND AWWA STANDARDS AND REQUIREMENTS.
3. CONTRACTOR SHALL NOTIFY NC811 & APPROPRIATE UTILITIES AGENCIES PRIOR TO PERFORMING ANY WORK.
4. REGULAR WORKING HOURS SHALL BE FROM 7:00 AM TO 5:00 PM MONDAY THROUGH FRIDAY, EXCEPT IN CASES OF EMERGENCY OR OTHERWISE APPROVED IN WRITING BY THE CITY OR AUTHORIZED REPRESENTATIVES. THE CONTRACTOR SHALL ENSURE THE CONSTRUCTION SITE IS SAFE FOR ANY PERSONS WHO MAY BE ON SITE DURING NON–WORKING HOURS.
5. ALL PERSONS SHALL BE COURTEOUS AND RESPECTFUL TO THE PUBLIC. CURSING OUR FOUL LANGUAGE IS NOT PERMITTED AND WILL NOT BE TOLERATED.
6. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL ON ALL ROADWAYS DURING THE PROJECT. THE CONTRACTOR SHALL NOTIFY LOCAL EMERGENCY, SCHOOL AND OTHER NECESSARY AUTHORITIES PRIOR TO ANY STREET CLOSING OR TRAFFIC CHANGE.
7. THE CONTRACTOR AT HIS OWN EXPENSE SHALL KEEP THE CONSTRUCTION SITE AND ADJACENT PUBLIC AND PRIVATE ROADWAYS CLEAN DURING THE PROJECT. THE CONTRACTOR IS ALSO RESPONSIBLE FOR CONTROLLING DUST WITHIN THE PROJECT AREA.
8. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION IN ACCORDANCE WITH THE LINES, GRADES AND ELEVATIONS SHOWN ON THE PLANS OR AS GIVEN BY THE ENGINEER IN THE FIELD.
9. CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND THE ELEVATION FOR ALL UTILITIES, DRAINAGE AND OTHER UNDERGROUND FACILITIES BOTH EXISTING AND PROPOSED, AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO CONSTRUCTION.
10. CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION. REPAIRS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.
11. DURING CONSTRUCTION THE CONTRACTOR SHALL MAINTAIN THE OPERATION OF EXISTING UTILITIES WITH THE LEAST AMOUNT OF SERVICE INTERRUPTION POSSIBLE IN COORDINATION WITH THE CITY OF HENDERSONVILLE. CONTINUOUS SERVICE, PUBLIC HEALTH AND SAFETY CONSIDERATIONS SHALL EXCEED ALL OTHERS AND CONTRACTOR'S SCHEDULE, PLANS AND WORK SHALL AT ALL TIMES BE SUBJECT TO ALTERATION AND REVISION IF NECESSARY FOR THESE CONSIDERATIONS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY OR PERMANENT RELOCATION OF STRUCTURES AND UTILITIES, INCLUDING BUT NOT LIMITED TO POLES, SIGNS, FENCES, HYDRANTS, VALVES, PIPING, CONDUITS AND DRAINS THAT INTERFERE WITH THE POSITIONING OF THE WORK AS SHOWN ON THE DRAWINGS.
13. CONTRACTOR SHALL BE REQUIRED TO CONFORM AND COMPLY WITH ALL RESTRICTIONS AND EASEMENT CONDITIONS AND IS RESPONSIBLE FOR ALL RELATED INCIDENTAL COSTS INVOLVED.
14. EXISTING WATER SERVICES SHALL BE REPLACED TO THE EXISTING METER UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY. SPLICING OF THE WATER SERVICE ON THE DOWNSTREAM SIDE OF THE METER IS NOT PERMITTED.
15. ALL DISTURBED AREAS, INCLUDING BUT NOT LIMITED TO ASPHALT, CONCRETE, DRIVEWAYS, ROADS, LANDSCAPING, SHALL BE REPAIRED TO EQUAL OR BETTER CONDITION THAN THE ORIGINAL SITE. GRASS AND LANDSCAPED AREAS FILL MATERIAL MUST BE REPLACED IN TRENCH TO GRADE AS SOON AS WATERLINE CONSTRUCTION ALLOWS. ADEQUATE SEEDING AND STRAW OR MULCH SHALL THEN BE APPLIED TO THE DISTURBED TRENCH AREA. ADDITIONAL FILL AND SITE RESTORATION MAY BE REQUIRED WITHIN THE WARRANTY PERIOD AT THE CITY'S DISCRETION.
16. CONTRACTOR SHALL PROVIDE EROSION CONTROL DEVICES TO CONTROL RUNOFF AS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR ANY FINES THAT MAY BE LEVIED DUE TO RUNOFF FROM CONSTRUCTION.
17. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW ALL APPLICABLE FEDERAL, STATE AND LOCAL HEALTH AND SAFETY REGULATIONS PERTAINING TO CONSTRUCTION OPERATIONS.
18. ALL WATER MAINS SHALL HAVE 3 FEET MINIMUM COVER.
19. INSTALL FERROUS PIPING FOR BOTH WATER AND SEWER WITHIN 10 FT. OF A CROSSING IF:

19.1. SEWER LINE CROSSES OVER WATER, OR

19.2. VERTICAL CLEARANCE BETWEEN WATER AND SEWER IS LESS THAN 18 INCHES.

19.3. MAINTAIN 10 FEET HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAINS UNLESS LAID IN SEPARATE TRENCHES WITH THE BOTTOM OF THE WATER LINE AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER LINE OR USE FERROUS MATERIAL FOR BOTH WATER AND SEWER.

20. MAINTAIN 18 INCHES VERTICAL SEPARATION BETWEEN STORM DRAIN AND WATER, OR INSTALL FERROUS MATERIAL WATER LINE WITHIN 10 FEET EACH SIDE OF CROSSING.
21. TAPS GREATER THAN ONE–INCH IN DIAMETER IN EXISTING, ACTIVE WATER MAIN ARE TO BE PERFORMED BY THE CITY UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY. TAPS IN NEW CONSTRUCTION ARE TO BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH CITY REQUIREMENTS.
22. ALL WATER METERS WILL BE SET BY CITY STAFF UNLESS THE CONTRACTOR IS GRANTED WRITTEN PERMISSION BY THE CITY.

22.1. THE CONTRACTOR WILL PROVIDE THE CITY NOTICE OF 10 WORKING DAYS MINIMUM PRIOR TO THE DATE OF METER INSTALLATION.

22.2. THE CONTRACTOR WILL PROVIDE A LICENSED PLUMBER DURING THE METER INSTALLATION TO VERIFY LINE SERVICES IN ALL MULTI–METER BOXES.

23. ALL PUBLIC WATER MAIN CONSTRUCTION SHALL BE PERFORMED BY A NORTH CAROLINA LICENSED UTILITY CONTRACTOR.
24. ALL WATER APPURTENANCES ARE TO BE MADE USING LEAD FREE MATERIALS. PIPE, FITTINGS, VALVES, HYDRANTS, PIPE CLAMPS, RESTRAINTS, FLANGES, CASTINGS, REBAR, HATCHES, INLETS, METER BOXES AND ALL OTHER CAST IRON COMPONENTS SHALL BE MANUFACTURED IN THE USA.
25. RESTRAINED JOINTS BY AN APPROVED PIPE MANUFACTURER ARE TO BE USED FOR ALL PUBLIC WATER LINES WHERE THRUST RESTRAINING IS REQUIRED IN ACCORDANCE WITH THE PLANS AND MANUFACTURER'S SPECIFICATION. CONCRETE THRUST BLOCKS ARE PERMITTED ONLY WHERE CONNECTIONS ARE MADE TO EXISTING WATER LINES OR WHERE THE USE OF MECHANICAL RESTRAINT IS NOT FEASIBLE.
26. ALL FIRE HYDRANTS, VAULTS, BACKFLOW PREVENTERS, HOT BOXES AND WATER METERS ARE TO BE INSTALLED ON RELATIVELY FLAT AREAS OUTSIDE OF PAVEMENT.
27. TAMPERING WITH OR ILLEGAL USE OF THE PUBLIC WATER SUPPLY WILL RESULT IN SUSPENSION OF WATER SERVICE, INCLUDING DOMESTIC AND COMMERCIAL, UNTIL FINAL APPROVAL BY THE CITY IS ISSUED. A PERSON FOUND TO BE USING WATER ILLEGALLY SHALL BE SUBJECT TO PENALTIES OR FINES, AS PRESCRIBED AND APPROVED BY CITY COUNCIL.

TESTING & INSPECTION:

1. NOTIFY THE CITY OF HENDERSONVILLE AND ENGINEER AT LEAST 5 WORKING DAYS BEFORE STARTING CONSTRUCTION OF WATER FACILITIES TO SCHEDULE A PRE–CONSTRUCTION CONFERENCE. THE ENGINEER SHALL PERIODICALLY INSPECT THE PROGRESS OF INSTALLATION AT A MINIMUM AND SHALL COMPLETE A FINAL WATER CERTIFICATION.
2. ALL CHANGES TO THE APPROVED CONSTRUCTION PLANS AND SUBMITTALS MUST BE APPROVED IN WRITING BY THE CITY PRIOR TO IMPLEMENTATION IN THE FIELD.
3. THE CONTRACTOR SHALL FURNISH SECURE AND PROVIDE ALL NECESSARY TESTING MATERIALS, EQUIPMENT, LABOR. THE CONTRACTOR SHALL COORDINATE TESTING, FLUSHING, DISINFECTION, AND BACTERIOLOGICAL SAMPLING WITH CITY INSPECTOR.
4. THE ENGINEER OR CONTRACTOR SHALL NOTIFY THE CITY CONSTRUCTION INSPECTORS 72 HOURS (MINIMUM) PRIOR TO ANY WATER MAIN OR TESTING OPERATIONS. AT A MINIMUM CITY STAFF SHALL BE NOTIFIED PRIOR TO TAPS, TESTING, FLUSHING, DISINFECTION, AND SAMPLING.
5. PRESSURE TEST WATER MAINS TO 200 PSI MIN. FOR A MINIMUM OF TWO HOURS IN ACCORDANCE WITH CITY REQUIREMENTS AND AWWA C600.
6. DISINFECT WATER LINES AND PROVIDE ACCEPTABLE BACTERIOLOGICAL TEST FROM A CERTIFIED TESTING LABORATORY IN ACCORDANCE WITH CITY REQUIREMENTS AND AWWA C651. THE CONTRACTOR MAY ELECT TO USE THE CITY'S CERTIFIED TESTING LABORATORY.
7. PRIVATELY OWNED FIRE SYSTEMS SHALL BE APPROVED BY THE APPROPRIATE LOCAL PERMITTING AUTHORITY. THE CITY ENGINEERING OR WATER AND SEWER DEPARTMENTS ARE NOT RESPONSIBLE FOR ENSURING COMPLIANCE WITH APPROPRIATE FIRE PROTECTION REGULATIONS. THE CITY DOES NOT PROVIDE ANY GUARANTEE OF ITS WATER SYSTEM'S CAPABILITY TO DELIVER WATER FLOW AND RESIDUAL PRESSURE THE FIRE PERMITTING AUTHORITY MAY REQUIRE.
8. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE USC APPROVED AND REVIEWED BY THE CITY'S. PROTECTION OF THE PUBLIC WATER DISTRIBUTION SYSTEM SHALL BE ASSURED BY INSPECTION OF THE INSTALLATION AND TESTING OF BACKFLOW PREVENTION DEVICES IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE, AND FEDERAL REGULATIONS.
9. CONSTRUCTION WATER SOURCING MUST BE APPROVED IN WRITING BY THE CITY. CONSTRUCTION WATER CONNECTIONS SHALL BE PAIRED WITH AN IRRIGATION METER AND APPROVED BACKFLOW PREVENTION ASSEMBLY. THIS ASSEMBLY INSTALLATION MUST BE TESTED BY A LICENSED PLUMBER AND TEST RESULTS SUBMITTED TO THE CITY BEFORE USE OF CONSTRUCTION WATER.
10. SECURE FINAL WRITTEN ACCEPTANCE FROM THE CITY OF HENDERSONVILLE PRIOR TO ACTIVATION OF THE SYSTEM. WATER SERVICE WILL NOT BE PROVIDED UNTIL WRITTEN ACCEPTANCE OF THE SYSTEM IS ISSUED BY THE CITY.
11. THE ENGINEER SHALL SUPPLY THE CITY WITH FINAL AS–BUILT DRAWINGS AND COMPLETE ALL PROJECT CLOSE OUT REQUIREMENTS.

DISCLAIMER:

THE STANDARD WATER DETAILS ARE FOR THE SOLE USE OF PROJECTS DIRECTLY FOR, OR THOSE PROJECTS IN WHICH OWNERSHIP WILL BE TRANSFERRED TO THE CITY OF HENDERSONVILLE. THESE TYPICALS ARE INTENDED TO SHOW THE CITY OF HENDERSONVILLE'S EXPECTATIONS FOR THE GENERAL LAYOUT, ARRANGEMENT, AND THE QUALITY OF EQUIPMENT AND MATERIALS FOR WATER DISTRIBUTION SYSTEM ITEMS AND THEIR RELATED APPURTENANCES. IT REMAINS THE SOLE RESPONSIBILITY OF THE ENGINEER IN RESPONSIBLE CHARGE (ERC) OF EACH APPLICATION TO DETERMINE, DESIGN TO, AND CERTIFY TO THE DESIGN PARAMETERS FOR EACH INSTALLATION. THE ERC MUST ALSO ENSURE THE DESIGN COMPLIES WITH THE MINIMUM DESIGN CRITERIA OF NC DIVISION OF ENVIRONMENTAL QUALITY AND ALL LOCAL AND STATE LAWS AND REGULATIONS.

DATE: 03/14/2019 WD DWG. NO. 1

SCALE: NOT TO SCALE

City of Hendersonville Engineering Department
305 Williams Street
Hendersonville, NC 28792
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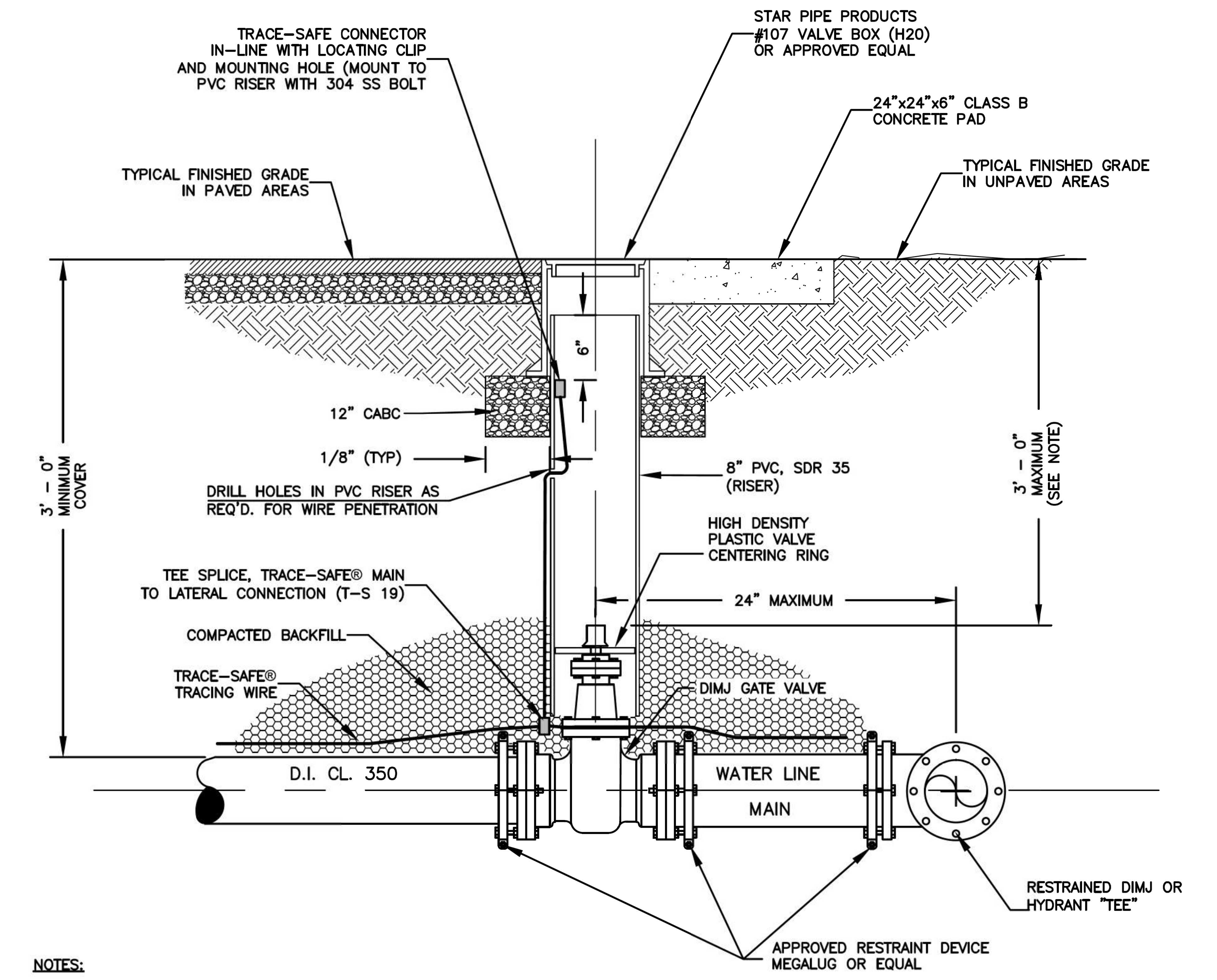
WATER DETAILS
GENERAL NOTES

1847


TRACE–SAFE CONNECTOR IN–LINE WITH LOCATING CLIP AND MOUNTING HOLE (MOUNT TO PVC RISER WITH 304 SS BOLT
STAR PIPE PRODUCTS #107 VALVE BOX (H20) OR APPROVED EQUAL
24"x24"x6" CLASS B CONCRETE PAD
TYPICAL FINISHED GRADE IN PAVED AREAS
TYPICAL FINISHED GRADE IN UNPAVED AREAS
6"
12" CABC
1/8" (TYP)
DRILL HOLES IN PVC RISER AS REQ'D. FOR WIRE PENETRATION
8" PVC, SDR 35 (RISER)
3' – 0" MINIMUM COVER
3' – 0" MAXIMUM (SEE NOTE)
HIGH DENSITY PLASTIC VALVE CENTERING RING
TEE SPLICE, TRACE–SAFE® MAIN TO LATERAL CONNECTION (T–S 19)
24" MAXIMUM
COMPACTED BACKFILL
TRACE–SAFE® TRACING WIRE
DIMJ GATE VALVE
D.I. CL. 350
WATER LINE
MAIN
RESTRAINED DIMJ OR HYDRANT "TEE"
APPROVED RESTRAINT DEVICE MEGALUG OR EQUAL

NOTES:

1. TOP OF COVER SHALL BE STAMPED "WATER"
2. VALVE PAD REQUIREMENTS SHALL NOT BE APPLICABLE FOR PAVED SURFACES.
3. PAVEMENT REPAIR SHALL MATCH EXISTING ROAD PAVING SECTION. SEE NCDOT ASPHALT REPAIR DETAIL # 654.01.
4. WHEN OPERATING NUT DEPTH EXCEEDS 3'–0" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STANDARD 2" SQUARE OPERATING NUT. TOP OF NUT SHALL BE WITHIN 5" TO 9" OF FINISHED GRADE.
5. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION. CORE MATERIAL COMPRISED OF HIGH–TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE AND CONNECTORS SHALL BE TRACE–SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC., OR APPROVED EQUIVALENT, AND PRODUCED IN THE UNITED STATES OF AMERICA.

DATE: 01/12/2019 WD DWG. NO. 5

SCALE: NOT TO SCALE

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VALVE INSTALLATION DETAIL

1847

1
CU403

DETAIL
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US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE CU510.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

WATER DETAILS

SHEET ID
CU510

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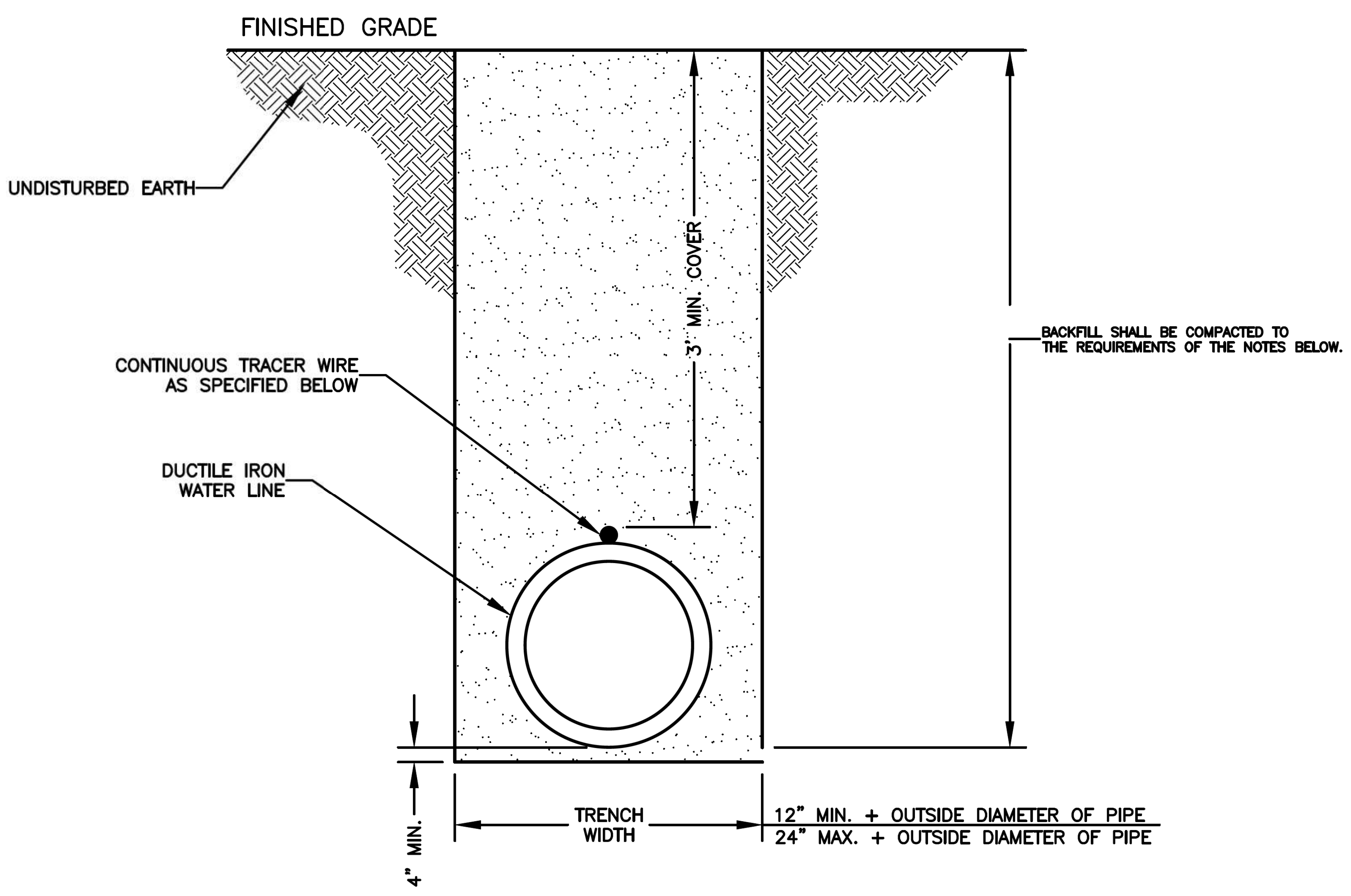
FINISHED GRADE
UNDISTURBED EARTH
CONTINUOUS TRACER WIRE AS SPECIFIED BELOW
DUCTILE IRON WATER LINE
3' MIN. COVER
BACKFILL SHALL BE COMPACTED TO THE REQUIREMENTS OF THE NOTES BELOW.
4" MIN.
TRENCH WIDTH
12" MIN. + OUTSIDE DIAMETER OF PIPE
24" MAX. + OUTSIDE DIAMETER OF PIPE

NOTES:

1. TRENCHES EXCAVATED OUTSIDE EXISTING ROAD AND RAILWAY RIGHTS-OF-WAY SHALL BE BE BACKFILLED WITH COMMON BACKFILL MATERIAL CONSISTING OF EXCAVATED MATERIALS EXCEPT HIGHLY ORGANIC SILTS AND CLAYS AND TAMPED THOROUGHLY. FILL SHALL BE DEPOSITED IN SUCCESSIVE, UNIFORM, APPROXIMATELY HORIZONTAL LAYERS. MATERIAL SHALL BE FREE OF ROOTS, STONES, AND DEBRIS. ALL MATERIAL SHALL HAVE AN IN-PLACE DENSITY OF AT LEAST 85% OF MAXIMUM DRY DENSITY (STANDARD PROCTOR) OR AS APPROVED BY THE ENGINEER. COMMON BACKFILL SHALL NOT CONTAIN STONE BLOCKS, BROKEN CONCRETE, MASONRY RUBBLE, OR OTHER SIMILAR MATERIALS. IT SHALL HAVE PHYSICAL PROPERTIES SUCH THAT IT CAN BE READILY SPREAD AND COMPACTED DURING FILLING. SNOW, ICE, AND FROZEN SOIL WILL NOT BE PERMITTED.

   WHERE EXCAVATED MATERIAL, AFTER REMOVAL OF ROCKS, STUMPS, PLANT MATERIAL, AND OTHER EXTRANEOUS MATERIAL AND PROPER DEWATERING, DRYING, PROTECTION, AND STORAGE OF THE EXCAVATION BY THE CONTRACTOR, CANNOT BE PREPARED TO MEET THE REQUIREMENTS FOR COMMON BACKFILL, DUE TO THE NATURE OF THE MATERIAL (E.G., EXCESSIVE ROCK, MUCK, ORGANICS, CLAY, SILT, OR OTHER MATERIAL), AND AS DETERMINED BY THE ENGINEER, THE UNACCEPTABLE EXCAVATION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AND REPLACED BY IMPORTED BACKFILL MEETING THE REQUIREMENTS OF STRUCTURAL BACKFILL. IMPORTED STRUCTURAL BACKFILL SHALL BE FREE OF ORGANICS, ROOTS OR OTHER DELETERIOUS MATERIALS AND SHALL NOT CONTAIN MORE THAN FIVE PERCENT (BY WEIGHT) ORGANIC MATERIAL, HAVE A PLASTICITY INDEX (PI) GREATER THAN 25, OR HAVE A MAXIMUM DRY DENSITY LESS THAN 90 POUNDS PER CUBIC FOOT. IMPORTED STRUCTURAL FILL SHOULD CONSIST OF MATERIAL CLASSIFIED AS ML, CL, SC, OR SM, OR BETTER PER ASTM D-2487 AND BE CAPABLE OF BEING COMPACTED TO 85% STANDARD PROCTOR.

2. THE WATER LINE SHALL HAVE A MINIMUM OF 3' OF COVER AT FINISHED GRADE.

   TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION. CORE MATERIAL COMPRISED OF HIGH-TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC., OR EQUIVALENT APPROVED BY ENGINEER, AND PRODUCED IN THE UNITED STATES OF AMERICA.

   TRACER WIRE SHALL BE EXTENDED ALONG ALL WATER LINES, FITTINGS, VALVES, SERVICES, AND HYDRANTS. LOCATING CLIPS SHALL BE PROVIDED AT ALL VALVES, HYDRANT VALVES AND METER BOXES. THE CONTRACTOR SHALL DUCT TAPE TRACER WIRE ON CROWN OF WATER LINE EVERY FIVE FEET.

DATE: 01/12/2019 WD DWG. NO. 2
SCALE: NOT TO SCALE

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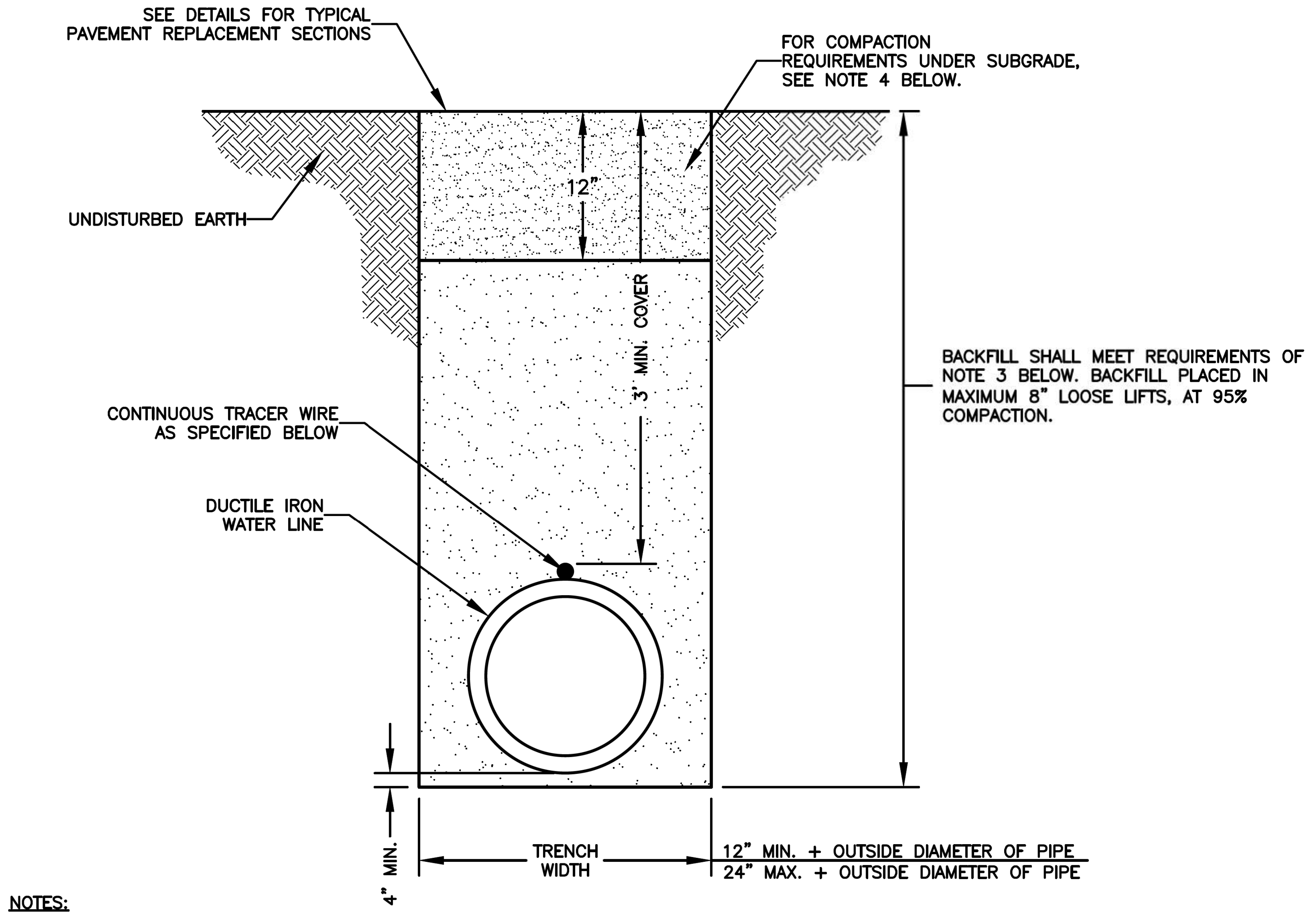
WATER TRENCH CONSTRUCTION
OUTSIDE PAVEMENT

1
TYP
DETAIL
NOT TO SCALE


SEE DETAILS FOR TYPICAL PAVEMENT REPLACEMENT SECTIONS
FOR COMPACTION REQUIREMENTS UNDER SUBGRADE, SEE NOTE 4 BELOW.
UNDISTURBED EARTH
12"
3' MIN. COVER
BACKFILL SHALL MEET REQUIREMENTS OF NOTE 3 BELOW. BACKFILL PLACED IN MAXIMUM 8" LOOSE LIFTS, AT 95% COMPACTION.
CONTINUOUS TRACER WIRE AS SPECIFIED BELOW
DUCTILE IRON WATER LINE
4" MIN.
TRENCH WIDTH
12" MIN. + OUTSIDE DIAMETER OF PIPE
24" MAX. + OUTSIDE DIAMETER OF PIPE

NOTES:

1. THIS TRENCH BACKFILL DETAIL APPLIES TO AREAS UNDER PAVEMENT, CURB, GUTTER, SIDEWALK OR AREAS WHERE THE TRENCH IS WITHIN FIVE (5) FEET OF THE EDGE OF PAVEMENT.

2. COMPACTION OF THE BACKFILL SHALL BE ACHIEVED THROUGH THE USE OF AN APPROVED VIBRATORY PLATE TAMPER OR ROLLER. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL COMPACTION REQUIREMENTS.

3. COMPACTION TESTING OF THE BACKFILL SHALL BE PROVIDED, DIRECTED AND COORDINATED BY THE OWNER. INTERVALS OF TESTING SHALL BE AT THE TOTAL DISCRETION OF THE OWNER AND MAY BE CHANGED AT ANY TIME.

   IF A TEST DOES NOT PASS, THE CONTRACTOR SHALL REMOVE THE DEFECTIVE BACKFILL, REDO THE WORK AND THE AREA WILL BE RETESTED. THE CONTRACTOR SHALL BE AWARE OF THE LEVEL OF COMPACTION REQUIRED.

   IF THE WORK IS SUSPECT TO BE DEFECTIVE BY THE OWNER, THE WORK SHALL BE RETESTED.

   THE WATER CONTENT OF THE BACKFILL MATERIAL SHALL ALSO BE TESTED AND RECORDED FOR EACH TEST COMPLETED. THE CONTRACTOR WILL BE ALLOWED TO ADD WATER TO THE BACKFILL MATERIAL IN ORDER TO OBTAIN THE OPTIMUM WATER CONTENT. HOWEVER, THE CONTRACTOR WILL NOT BE ALLOWED TO UTILIZE THE ADDITION OF WATER AS A MEANS OF COMPACTION. FURTHERMORE, SHOULD THE BACKFILL MATERIAL BE FOUND TO HAVE WATER CONTENT RATIOS WHICH IN THE OPINION OF THE ENGINEER OR THE OWNER PREVENTS THE APPROPRIATE COMPACTION OF THE TRENCH, THE CONTRACTOR SHALL REMOVE ALL DEFECTIVE MATERIAL AND UNDERTAKE THE NECESSARY CORRECTIVE WORK.

4. THE TOP TWELVE INCHES OF THE FINAL BACKFILL SHALL BE COMPACTED TO 98% STANDARD PROCTOR,

5. THE WATER LINE SHALL HAVE A MINIMUM OF 3' OF COVER AT FINISHED GRADE.

6. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION. CORE MATERIAL COMPRISED OF HIGH-TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC., OR EQUIVALENT APPROVED BY ENGINEER, AND PRODUCED IN THE UNITED STATES OF AMERICA.

   TRACER WIRE SHALL BE EXTENDED ALONG ALL WATER LINES, FITTINGS, VALVES, SERVICES, AND HYDRANTS. LOCATING CLIPS SHALL BE PROVIDED AT ALL VALVES, HYDRANT VALVES AND METER BOXES. THE CONTRACTOR SHALL DUCT TAPE TRACER WIRE ON CROWN OF WATER LINE EVERY FIVE FEET.

DATE: 06/10/2019 WD DWG. NO. 3
SCALE: NOT TO SCALE

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WATER TRENCH CONSTRUCTION
UNDER PAVEMENT

2
TYP
DETAIL
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US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CU511.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

WATER DETAILS

SHEET ID
CU511

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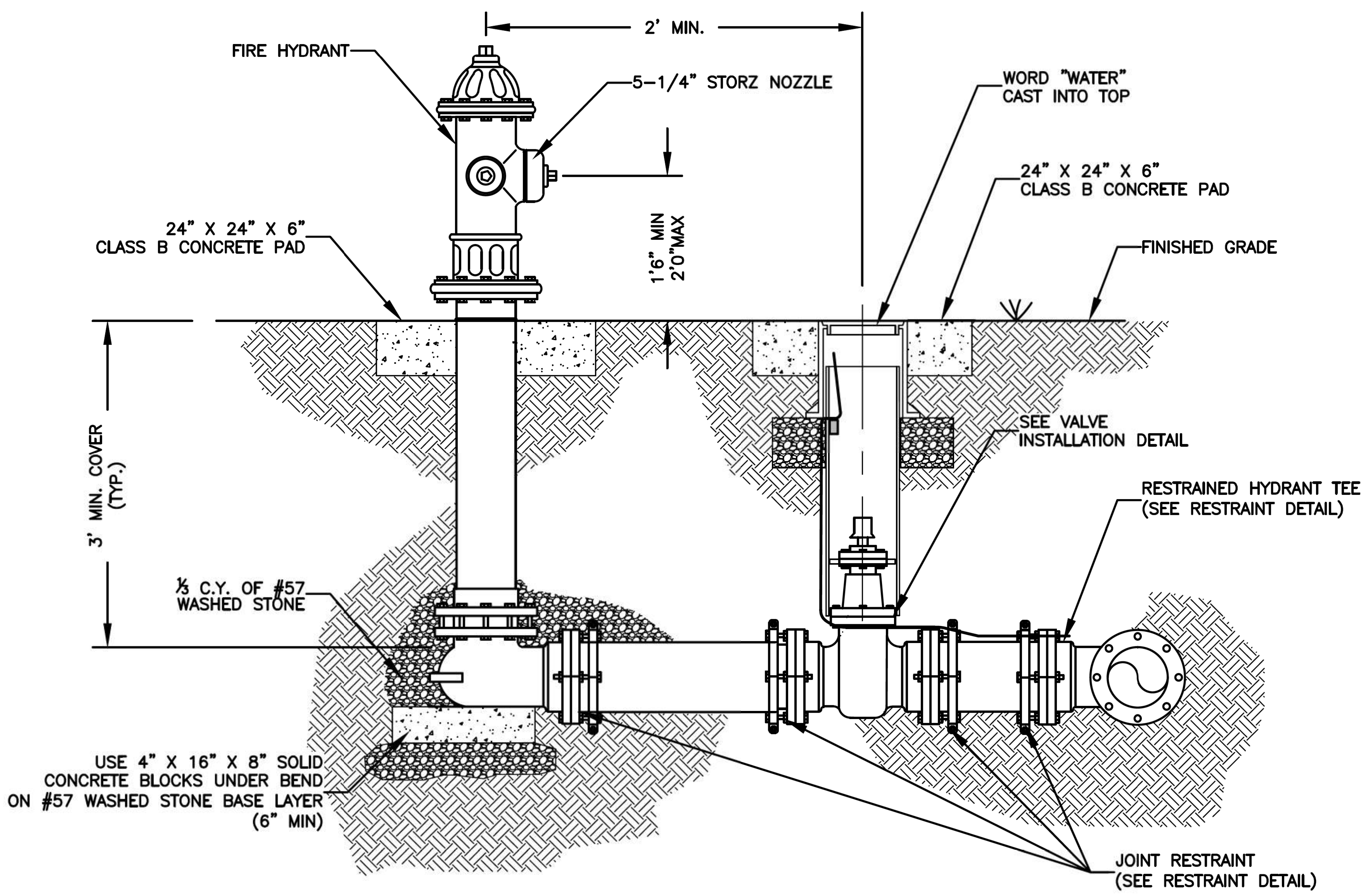
2' MIN.
FIRE HYDRANT
5-1/4" STORZ NOZZLE
WORD "WATER" CAST INTO TOP
24" X 24" X 6" CLASS B CONCRETE PAD
24" X 24" X 6" CLASS B CONCRETE PAD
FINISHED GRADE
1'6" MIN 2'0"MAX
3' MIN. COVER (TYP.)
SEE VALVE INSTALLATION DETAIL
RESTRAINED HYDRANT TEE (SEE RESTRAINT DETAIL)
⅓ C.Y. OF #57 WASHED STONE
USE 4" X 16" X 8" SOLID CONCRETE BLOCKS UNDER BEND ON #57 WASHED STONE BASE LAYER (6" MIN)
JOINT RESTRAINT (SEE RESTRAINT DETAIL)

NOTES:

1. FIRE HYDRANTS SHALL BE RATED TO A MINIMUM 250 PSI WORKING PRESSURE IN ACCORDACE WITH AWWA C-502 UNLESS SPECIFIED AS 350 PSI BY THE CITY. HYDRANTS SHALL HAVE A 5¼-INCH BARREL AND STORZ CONNECTION.
2. ALL VALVES AND HYDRANTS SHALL HAVE M. J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
3. FIRE HYDRANT SHALL BE FACTORY PAINTED YELLOW, WITH FIELD PAINTED TOUCH-UP, BEFORE PROJECT IS ACCEPTED.
4. HYDRANT VALVE SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE MAIN, BUT DO NOT PLACE VALVE IN PROPOSED OR EXISTING CURB AND GUTTER. IF THE STREET IS SOIL AND NO PAVING IS TO BE DONE AT THIS TIME, THE LOCATION OF THE VALVE IS TO BE DETERMINED BY THE ENGINEER.
5. FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
6. HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY THE ENGINEER.
7. GATE VALVE AND BOX SHALL BE IN ACCORDANCE WITH STANDARD DETAIL.
8. HYDRANT EXTENSIONS AND/OR OFFSETS SHALL BE APPROVED BY THE ENGINEER.
9. FIRE HYDRANTS WHICH HAVE BEEN INSTALLED MUST BE TAGGED "OUT OF SERVICE" AND BAGGED, UTILIZING A RED CANVAS BAG WITH WHITE LETTERING, UNTIL SUCH TIME AS THE WATER MAIN TO WHICH CONNECTED IS DISINFECTED AND CONNECTED TO THE ACTIVE WATER SYSTEM.

DATE: 04/24/2019 WD DWG. NO. 12

SCALE: NOT TO SCALE

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FIRE HYDRANT
STANDARD INSTALLATION
DETAIL

1847

1 CU401 **DETAIL**
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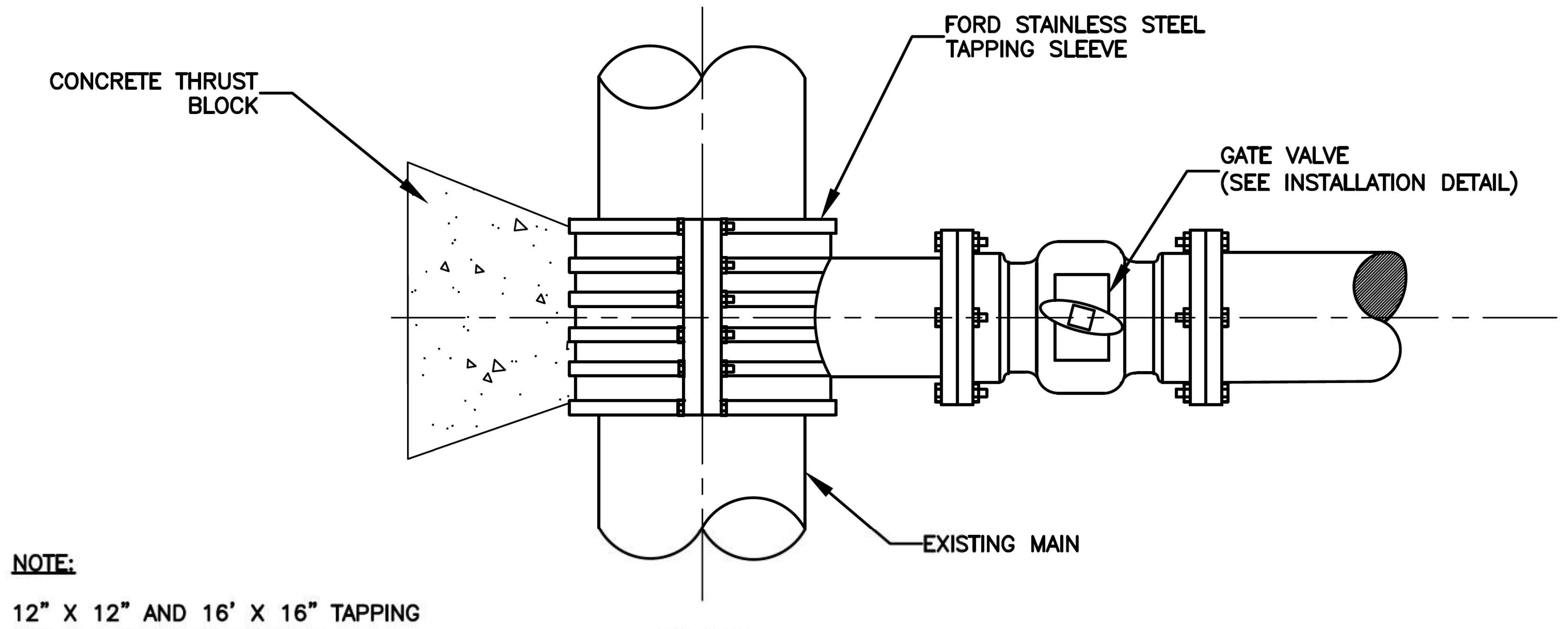
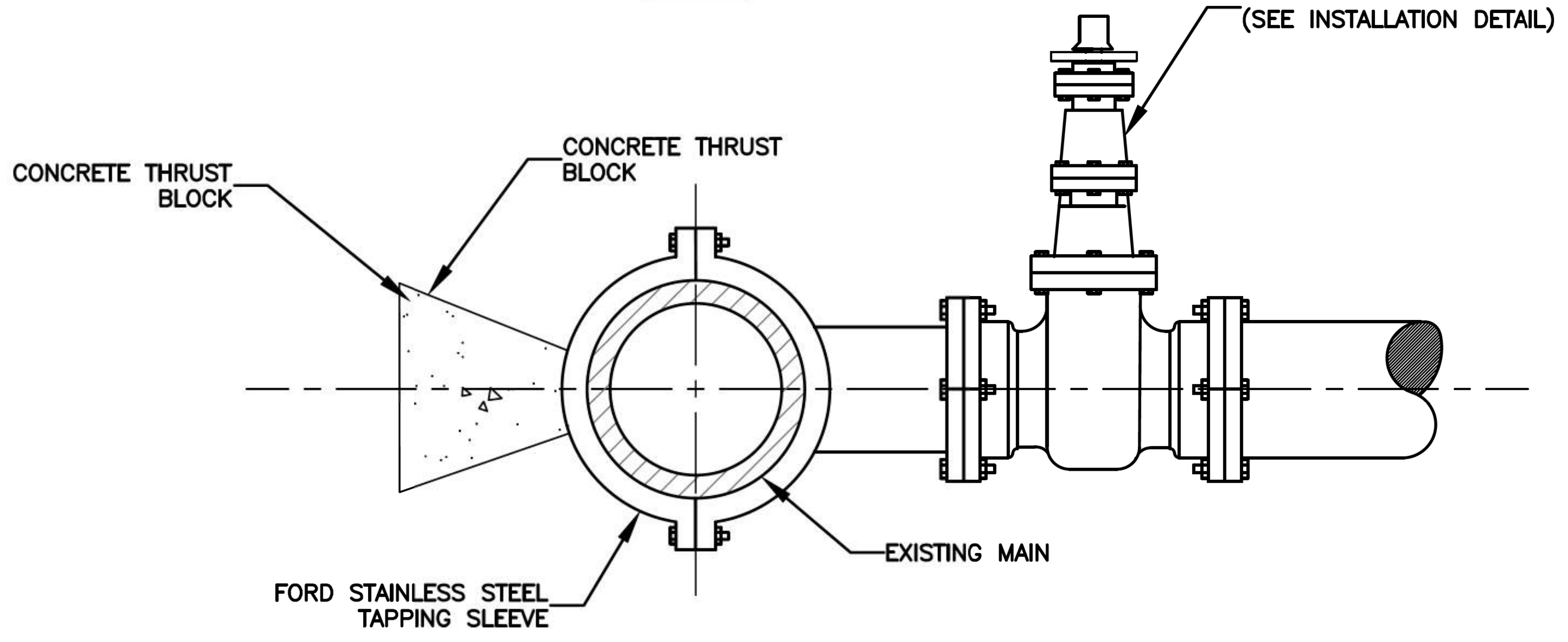
CU402
CU403
CU404
CU405


CONCRETE THRUST BLOCK
FORD STAINLESS STEEL TAPPING SLEEVE
GATE VALVE (SEE INSTALLATION DETAIL)
EXISTING MAIN

NOTE:

12" X 12" AND 16' X 16" TAPPING SLEEVES ARE NOT ALLOWED.

PLAN


GATE VALVE (SEE INSTALLATION DETAIL)
CONCRETE THRUST BLOCK
CONCRETE THRUST BLOCK
FORD STAINLESS STEEL TAPPING SLEEVE
EXISTING MAIN

ELEVATION

NOTE:

12" X 12" AND 16' X 16" TAPPING SLEEVES ARE NOT ALLOWED.

TABLE A-1

TBD

NOTE:

1. CONCRETE SHALL BE 3000 PSI.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS BY THE INSTALLATION OF POLYETHYLENE FILM PLACED BETWEEN THE FITTINGS AND POURED CONCRETE.
3. SEE TABLE A-1 FOR AREA OF CONCRETE REQUIRED FOR MAIN SIZED 6-INCH THROUGH 16-INCH.

DATE: 01/12/2019 WD DWG. NO. 6

SCALE: NOT TO SCALE

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STANDARD TAPPING SLEEVE
AND VALVE ASSEMBLY

1847

2 TYP **DETAIL**
NOT TO SCALE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

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S.CURRY
DRAWN BY:
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CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CU512.dgn
ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

WATER DETAILS

SHEET ID
CU512

CERTIFIED FINAL SUBMITTAL

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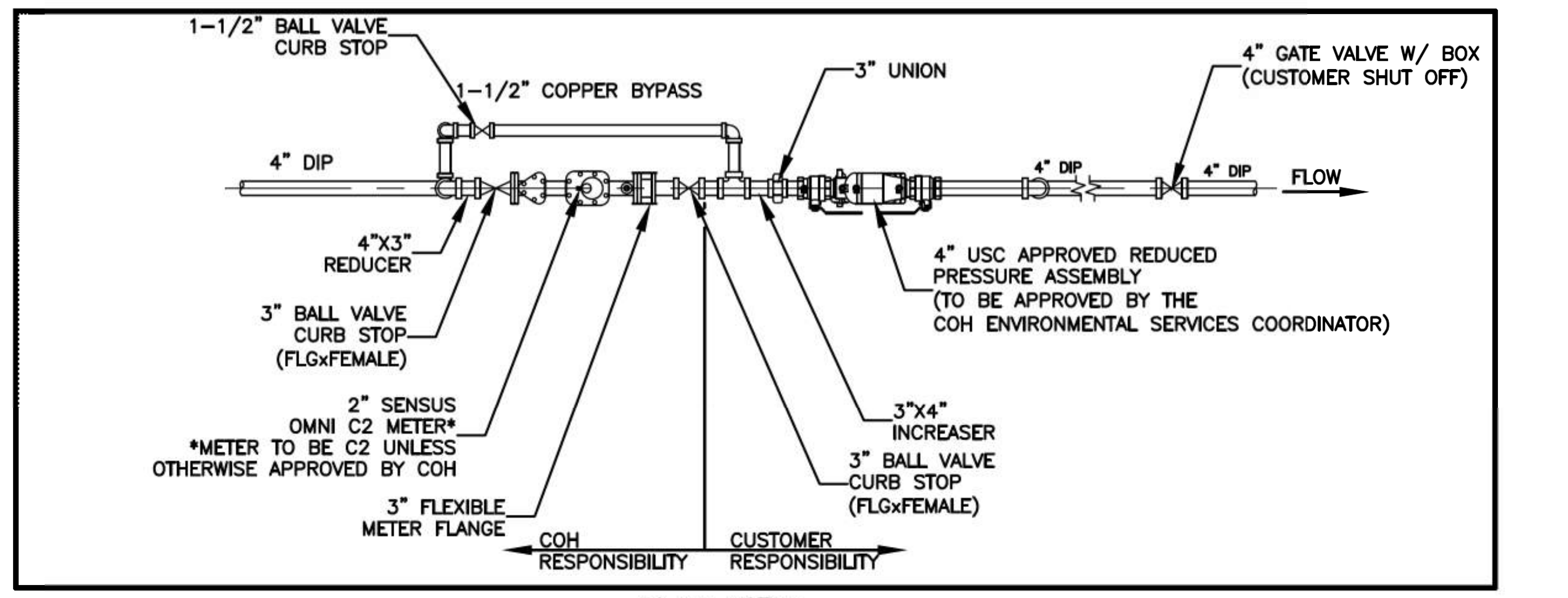
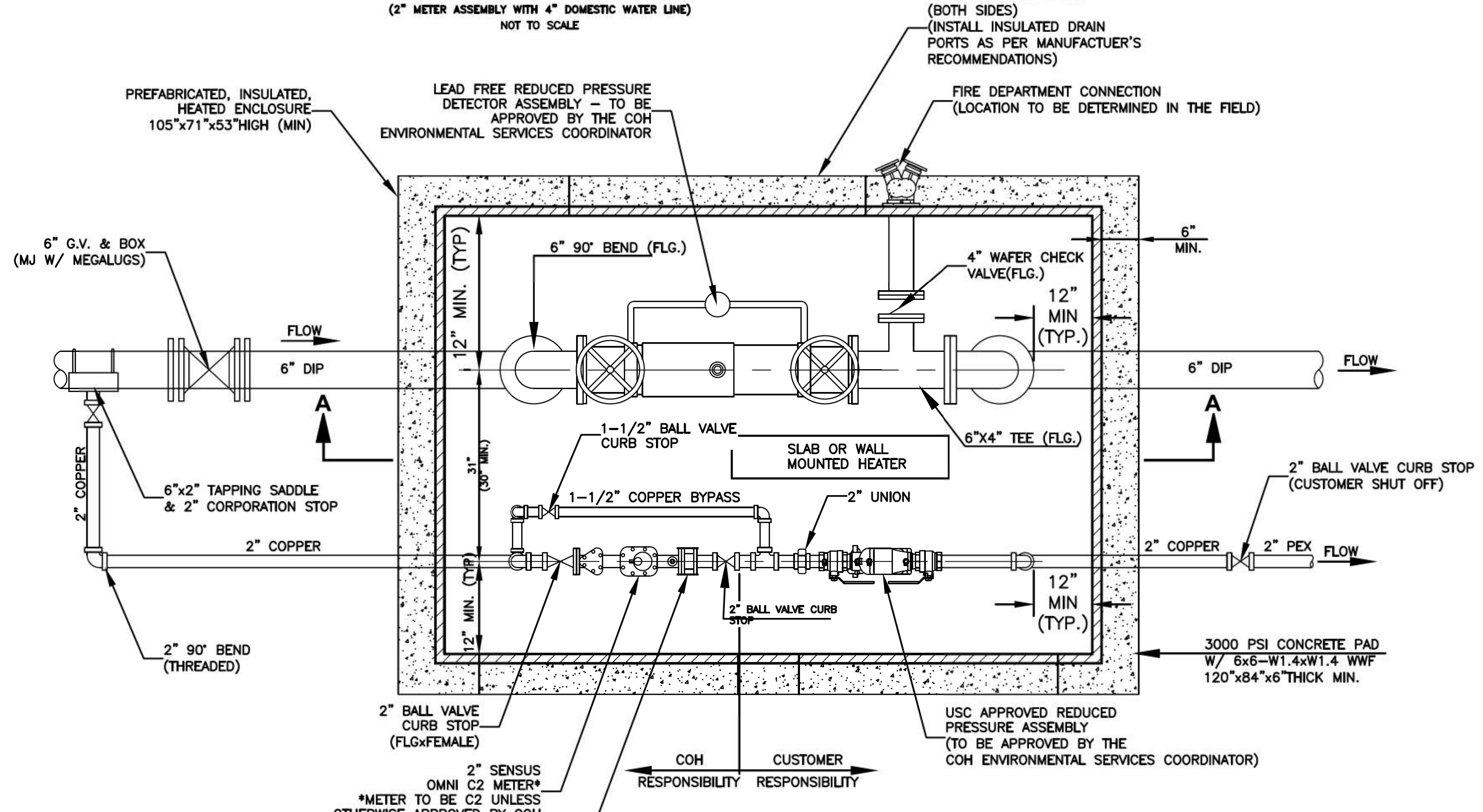
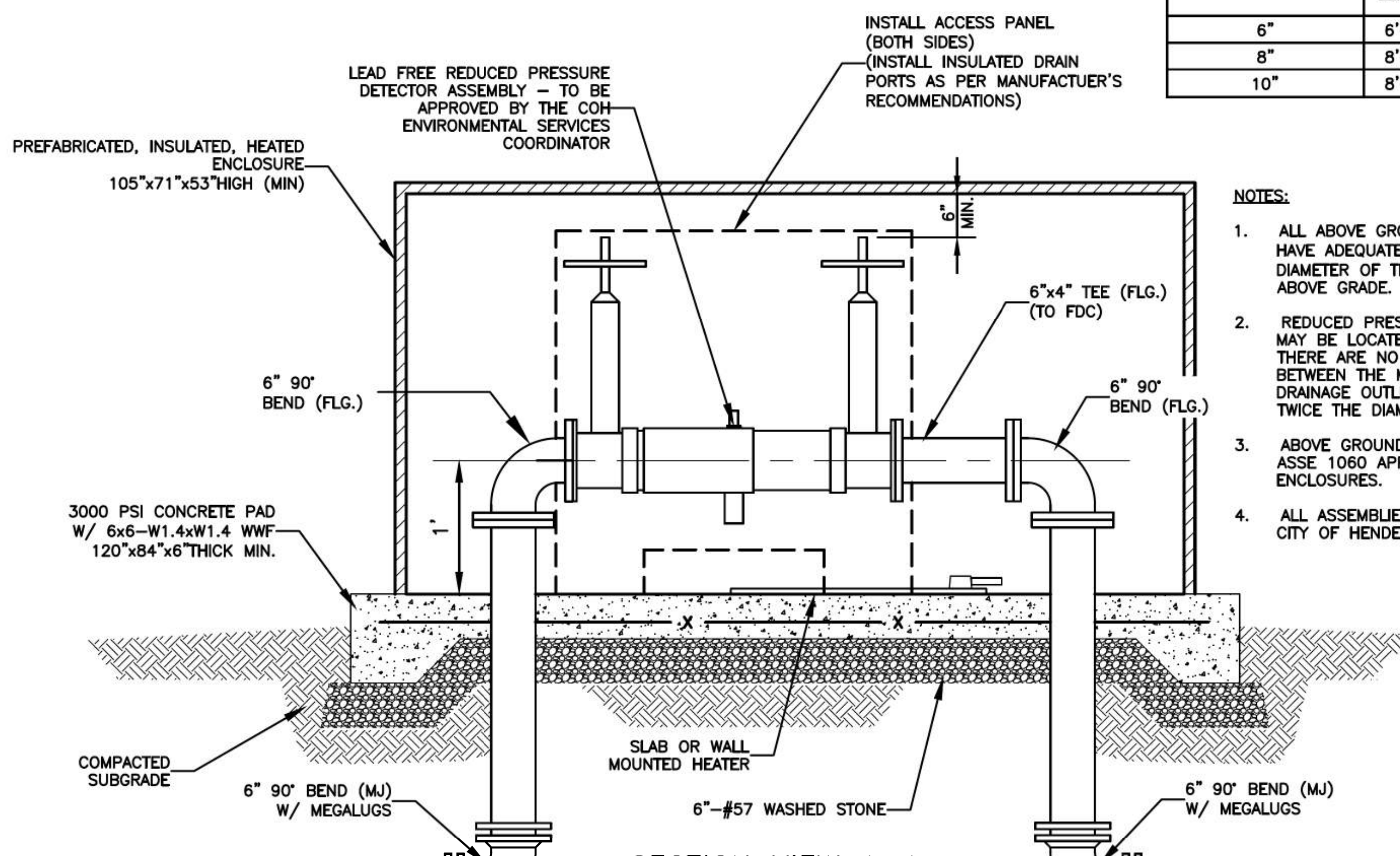

1-1/2" BALL VALVE CURB STOP
1-1/2" COPPER BYPASS
3" UNION
4" GATE VALVE W/ BOX (CUSTOMER SHUT OFF)
4" DIP
4" DIP
4" DIP
FLOW
4"X3" REDUCER
3" BALL VALVE CURB STOP (FLGxFEMALE)
2" SENSUS OMNI C2 METER* *METER TO BE C2 UNLESS OTHERWISE APPROVED BY COH
3" FLEXIBLE METER FLANGE
4" USC APPROVED REDUCED PRESSURE ASSEMBLY (TO BE APPROVED BY THE COH ENVIRONMENTAL SERVICES COORDINATOR)
3"X4" INCREASER
3" BALL VALVE CURB STOP (FLGxFEMALE)
COH RESPONSIBILITY
CUSTOMER RESPONSIBILITY

PLAN VIEW
(2" METER ASSEMBLY WITH 4" DOMESTIC WATER LINE)
NOT TO SCALE


INSTALL ACCESS PANEL (BOTH SIDES) (INSTALL INSULATED DRAIN PORTS AS PER MANUFACTUER'S RECOMMENDATIONS)
PREFABRICATED, INSULATED, HEATED ENCLOSURE 105"x71"x53"HIGH (MIN)
LEAD FREE REDUCED PRESSURE DETECTOR ASSEMBLY – TO BE APPROVED BY THE COH ENVIRONMENTAL SERVICES COORDINATOR
FIRE DEPARTMENT CONNECTION (LOCATION TO BE DETERMINED IN THE FIELD)
6" G.V. & BOX (MJ W/ MEGALUGS)
6" 90° BEND (FLG.)
4" WAFER CHECK VALVE(FLG.)
6" MIN.
12" MIN. (TYP)
12" MIN (TYP.)
FLOW
6" DIP
6" DIP
FLOW
A
A
6"X4" TEE (FLG.)
1-1/2" BALL VALVE CURB STOP
SLAB OR WALL MOUNTED HEATER
31" (30" MIN.)
2" COPPER
6"x2" TAPPING SADDLE & 2" CORPORATION STOP
1-1/2" COPPER BYPASS
2" UNION
2" BALL VALVE CURB STOP (CUSTOMER SHUT OFF)
2" COPPER
2" COPPER
2" PEX
FLOW
12" MIN. (TYP)
2" BALL VALVE CURB STOP
12" MIN (TYP.)
2" 90° BEND (THREADED)
3000 PSI CONCRETE PAD W/ 6x6–W1.4xW1.4 WWF 120"x84"x6"THICK MIN.
2" BALL VALVE CURB STOP (FLGxFEMALE)
USC APPROVED REDUCED PRESSURE ASSEMBLY (TO BE APPROVED BY THE COH ENVIRONMENTAL SERVICES COORDINATOR)
2" SENSUS OMNI C2 METER* *METER TO BE C2 UNLESS OTHERWISE APPROVED BY COH
COH RESPONSIBILITY
CUSTOMER RESPONSIBILITY
2" FLEXIBLE METER FLANGE

PLAN VIEW
(2" METER ASSEMBLY WITH 2" DOMESTIC WATER LINE)
NOT TO SCALE

FIRE LINE SIZE (IN)	INSIDE VAULT DIMENSIONS		
	LENGTH	WIDTH	DEPTH
6"	6'–0"	6'–0"	6'–6"
8"	8'–0"	6'–0"	7'–0"
10"	8'–0"	6'–0"	7'–0"


INSTALL ACCESS PANEL (BOTH SIDES) (INSTALL INSULATED DRAIN PORTS AS PER MANUFACTUER'S RECOMMENDATIONS)
LEAD FREE REDUCED PRESSURE DETECTOR ASSEMBLY – TO BE APPROVED BY THE COH ENVIRONMENTAL SERVICES COORDINATOR
PREFABRICATED, INSULATED, HEATED ENCLOSURE 105"x71"x53"HIGH (MIN)
6" MIN.
6"x4" TEE (FLG.) (TO FDC)
6" 90° BEND (FLG.)
6" 90° BEND (FLG.)
1'
3000 PSI CONCRETE PAD W/ 6x6–W1.4xW1.4 WWF 120"x84"x6"THICK MIN.
X
X
COMPACTED SUBGRADE
SLAB OR WALL MOUNTED HEATER
6"-#57 WASHED STONE
6" 90° BEND (MJ) W/ MEGALUGS
6" 90° BEND (MJ) W/ MEGALUGS
6" DIP
6" DIP

SECTION VIEW A–A
NOT TO SCALE

NOTES:

1. ALL ABOVE GROUND ENCLOSURES MUST HAVE ADEQUATE DRAINAGE (TWICE THE DIAMETER OF THE SUPPLY PIPE) TO DAYLIGHT ABOVE GRADE.
2. REDUCED PRESSURE BACKFLOW ASSEMBLIES MAY BE LOCATED IN A BUILDING PROVIDED THERE ARE NO OTHER UNPROTECTED TAPS BETWEEN THE MAIN AND THE BUILDING. DRAINAGE OUTLET N THE BUILDING MUST BE TWICE THE DIAMETER OF THE SUPPLY PIPE.
3. ABOVE GROUND INSULATED VAULTS MUST BE ASSE 1060 APPROVED ABOVE GROUND ENCLOSURES.
4. ALL ASSEMBLIES MUST BE ON THE CURRENT CITY OF HENDERSONVILLE APPROVAL LIST.

DATE: 01/12/2019 WD DWG. NO. 15
SCALE: NOT TO SCALE

City of Hendersonville Engineering Department
305 Williams Street
Hendersonville, NC 28792
(828) 697-3000 (office)
www.cityofhendersonville.org
8/2/2019 9:40:38 AM, mpomraning

COMMERCIAL WATER SERVICE WITH FIRE LINE

1847

1
CU406

DETAIL

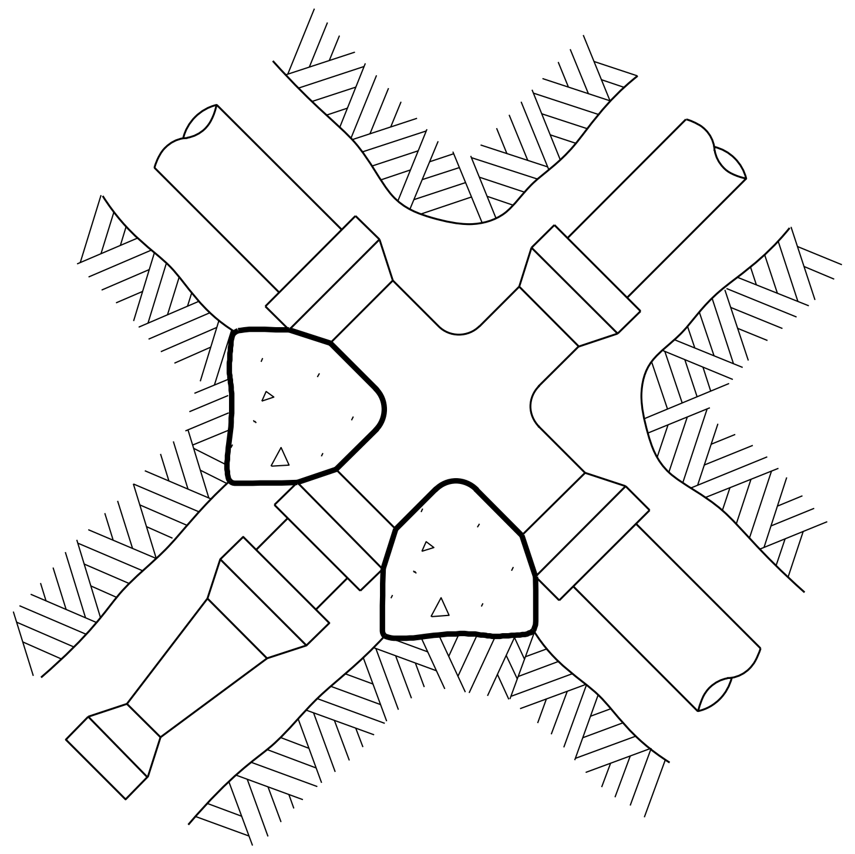
NOT TO SCALE

Size	Test Pressure PSI	THRUST AT FITTINGS IN POUNDS				
		A	B	C	D	E
		Tee & Dead Ends	90° Bend	45° Bend	22.5° Bend	11.25° Bend
4"	250	3,140	4,440	2,405	1,225	615
6"	250	7,070	9,995	5,410	2,760	1,385
8"	250	12,565	17,770	9,620	4,905	2,465
10"	250	19,635	27,770	15,030	7,660	3,850
12"	250	28,275	39,985	21,640	11,030	5,545
14"	250	38,485	54,425	29,455	15,015	7,545
16"	250	50,265	71,085	38,470	19,615	9,855

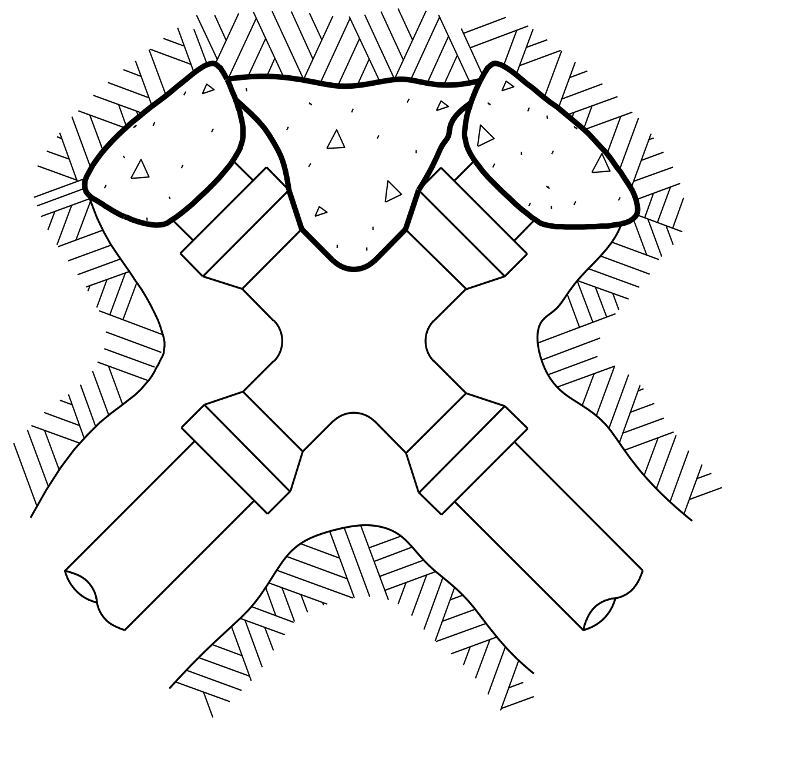
Soil Type	Safe Bearing Load (PSF)
Muck, peat, etc.	0
Soft clay	1,000
Sand	2,000
Sand and gravel	3,000
Sand and gravel cemented with clay	4,000
Hard shale	10,000

NOTES:

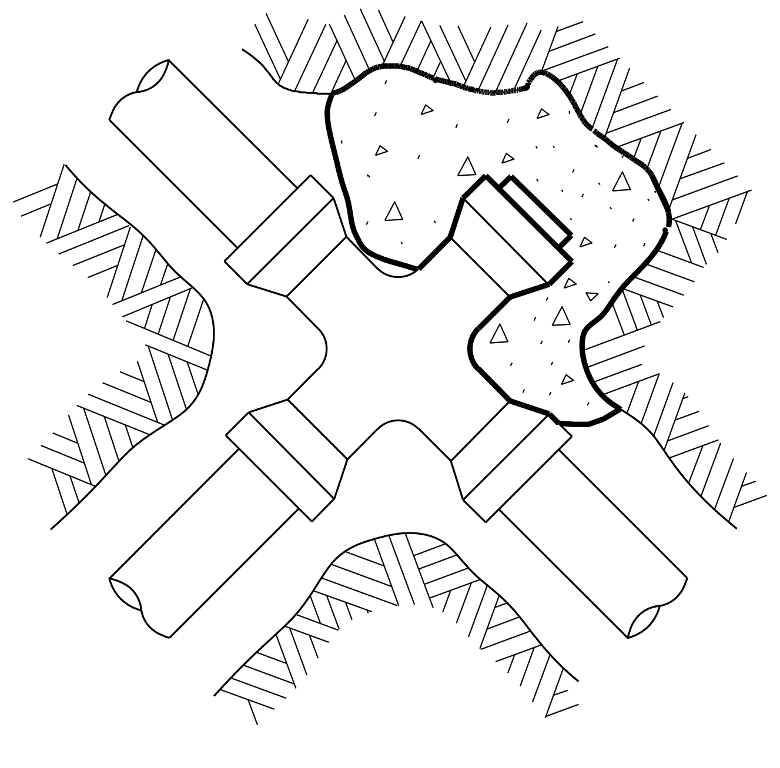
1. CONTRACTOR TO PROVIDE BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE.
2. DIVIDE THRUST BY SAFE BEARING LOAD TO DETERMINE REQUIRED AREA (IN SQUARE FEET) OF CONCRETE TO DISTRIBUTE LOAD.
3. AREAS TO BE ADJUSTED FOR OTHER PRESSURE CONDITIONS.
4. PROVIDE TWO 1" MINIMUM DIAMETER RODS ON VALVES UP THROUGH 10" DIAMETER. VALVES LARGER THAN 10" REQUIRE SPECIAL TIE ROD DESIGN.



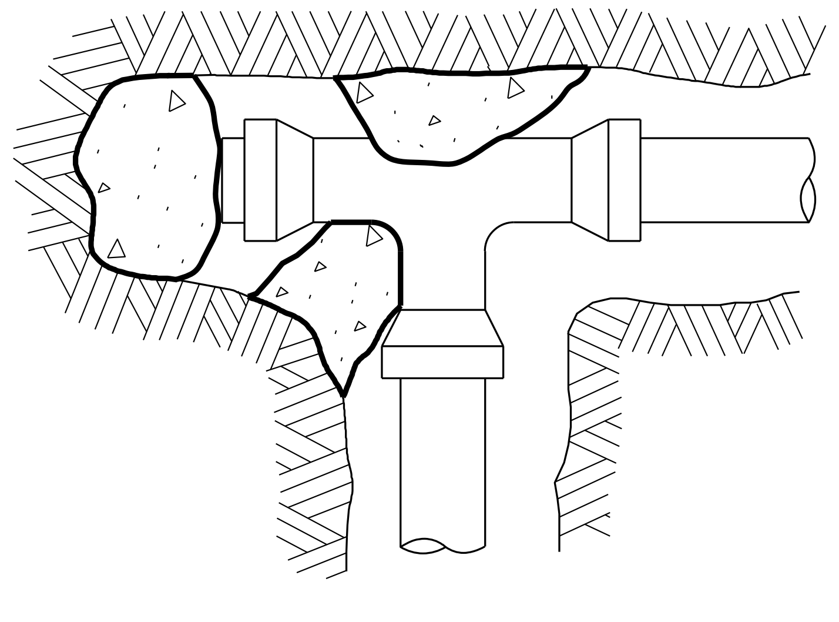
UNBALANCED CROSS
(Use column A)



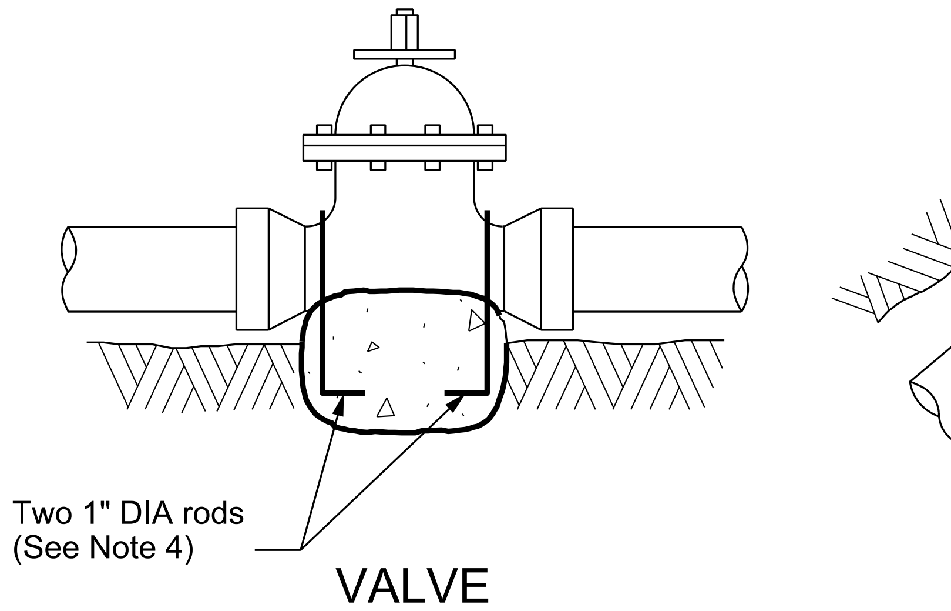
PLUGGED CROSS
(Use column B)



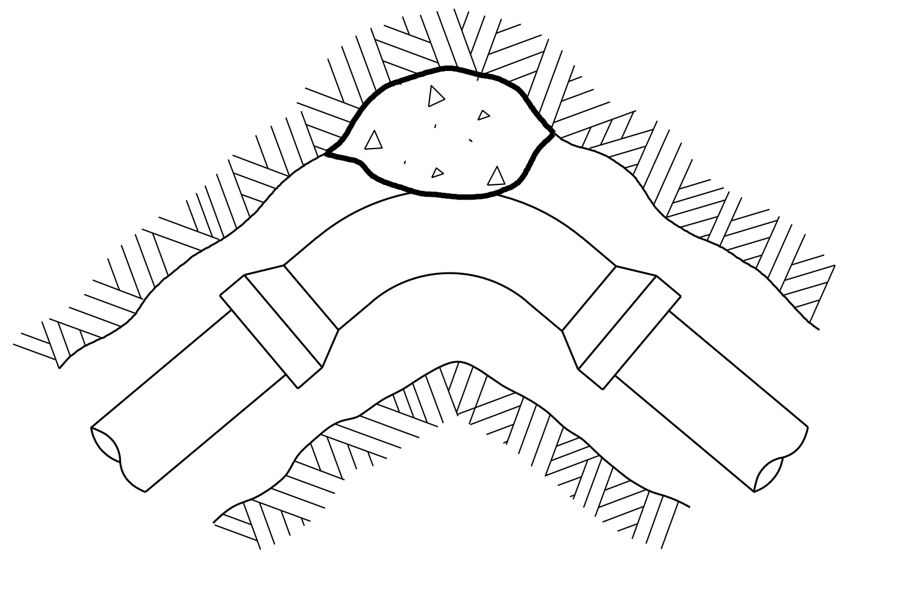
PLUGGED CROSS
(Use column A)



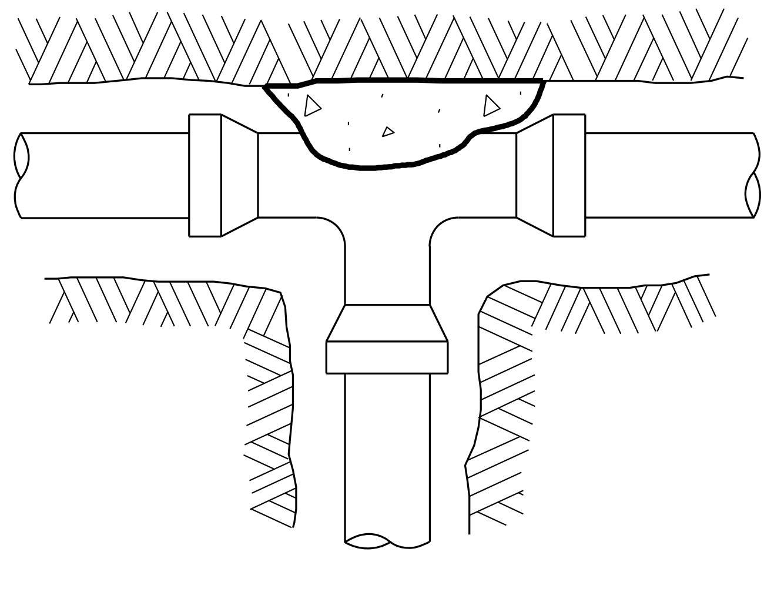
PLUGGED TEE
(Use column B)



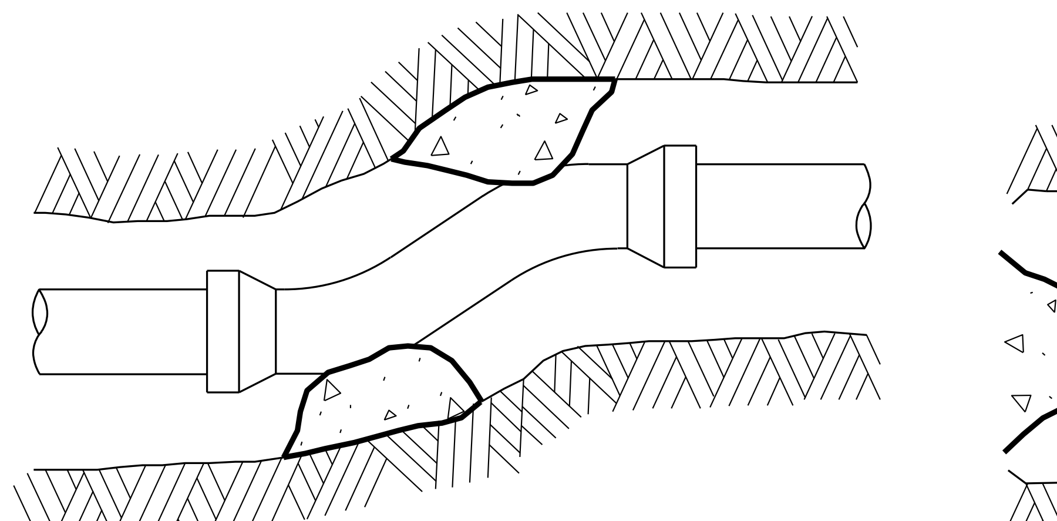
VALVE
(Use column A)



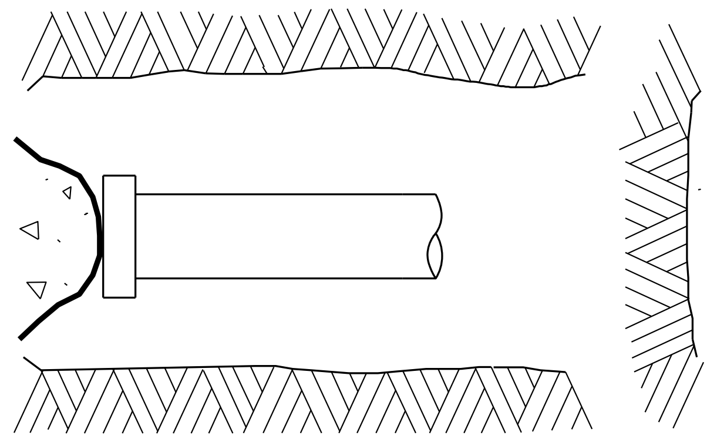
BEND



TEE



OFFSET
(Use columns B - E)



DEAD END

2
TYP

CONCRETE THRUST BLOCK DETAIL

NOT TO SCALE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CU513.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

WATER DETAILS

SHEET ID
CU513

CERTIFIED FINAL SUBMITTAL

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24-FEB-2022
15:19

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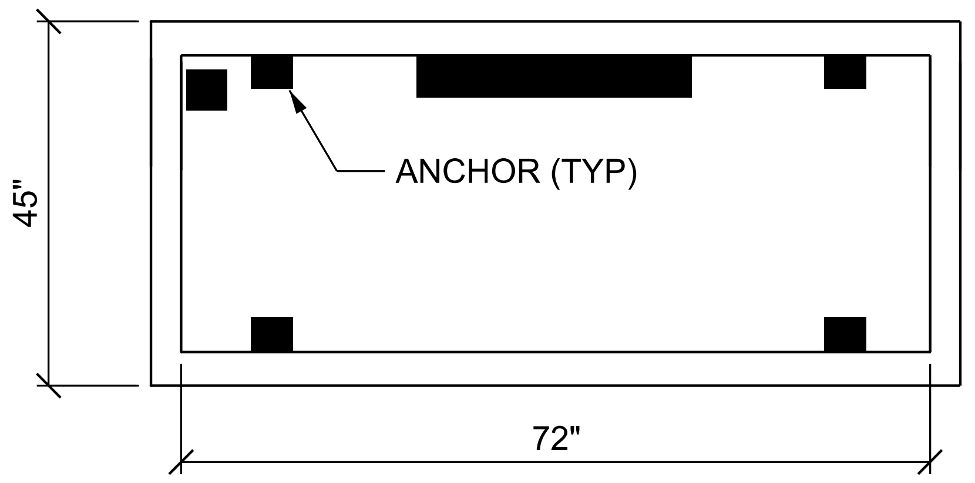
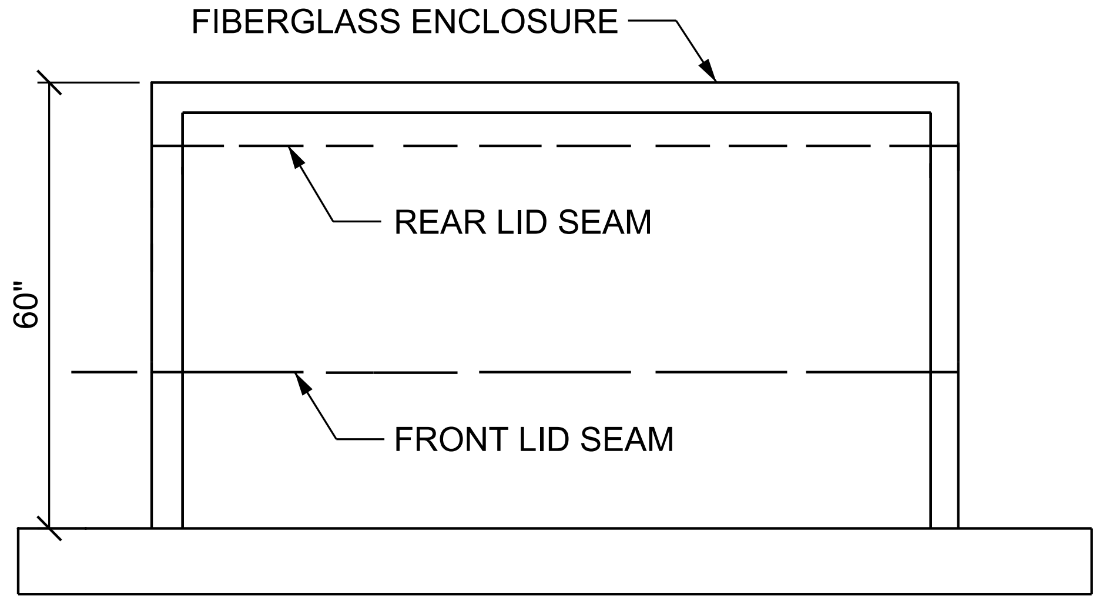
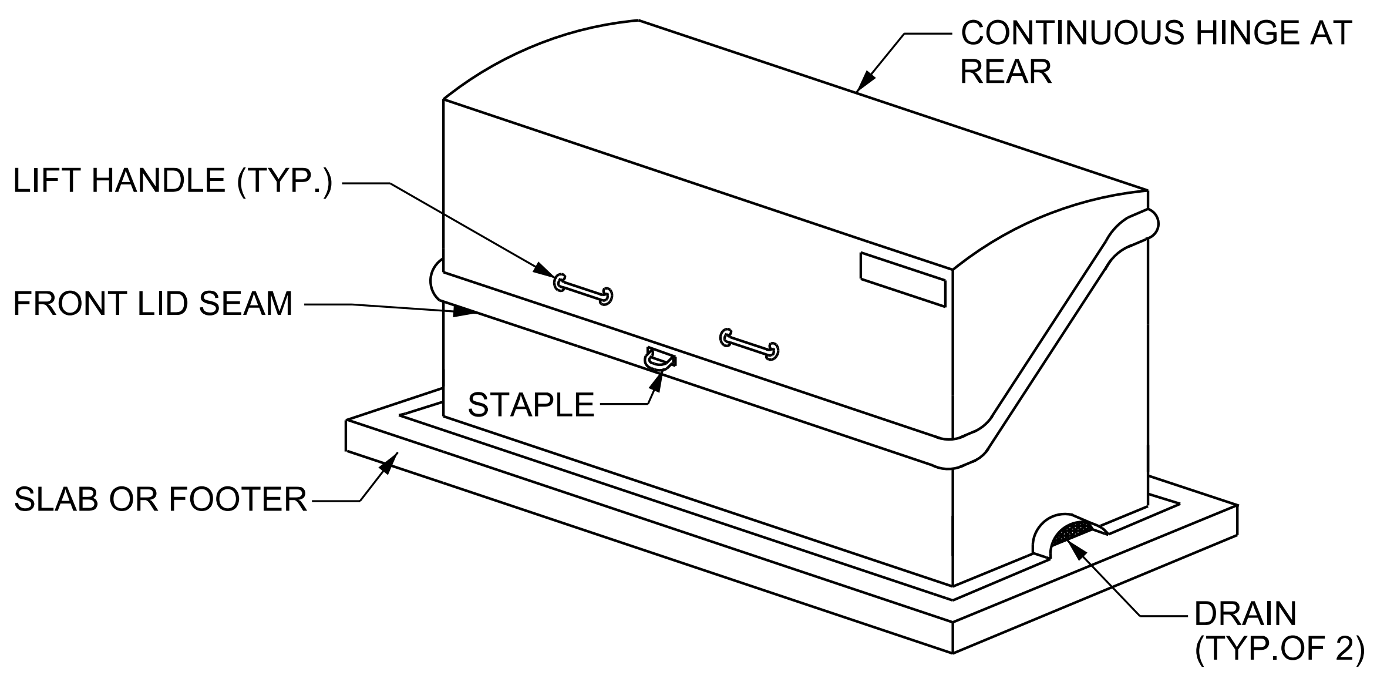
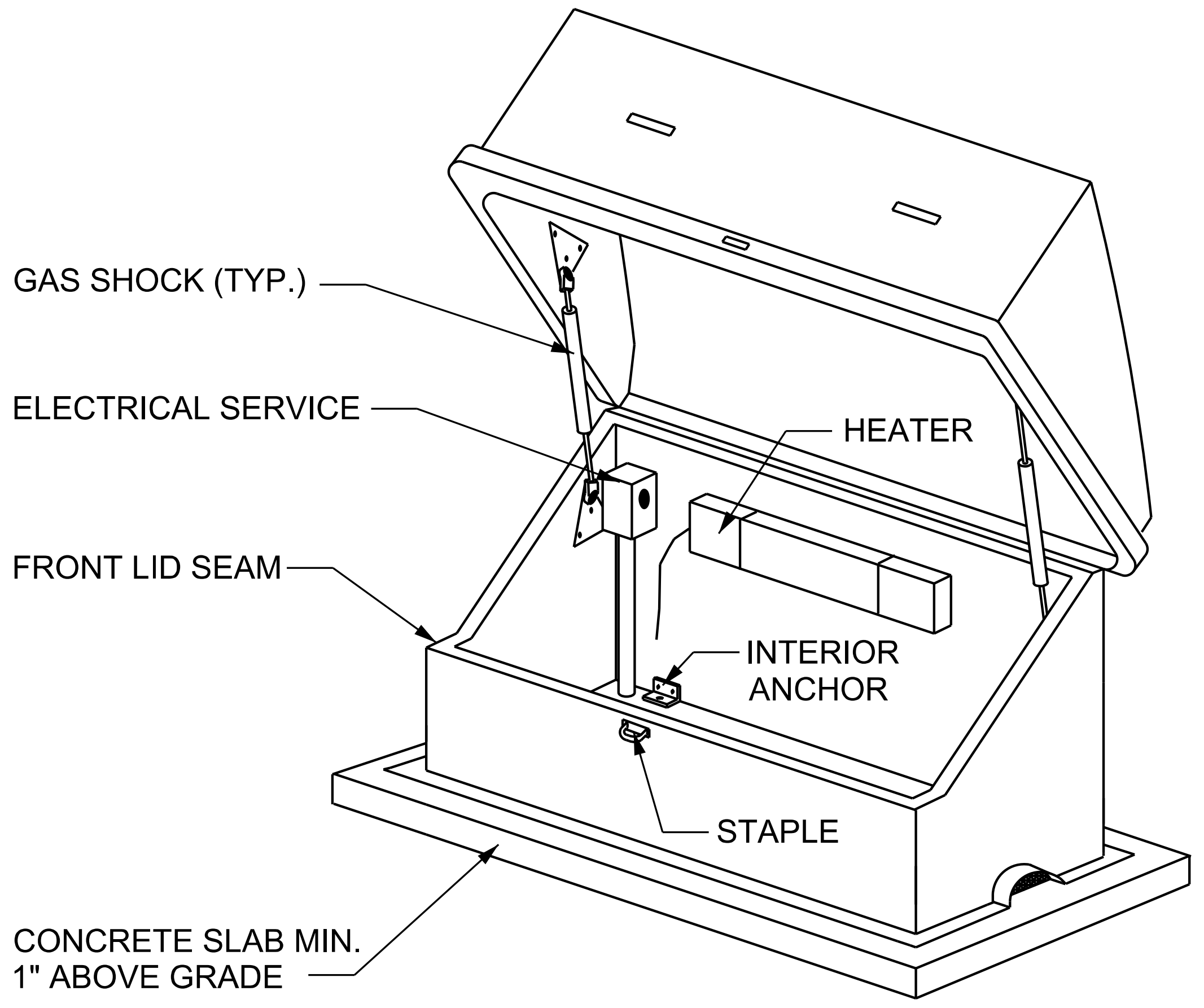


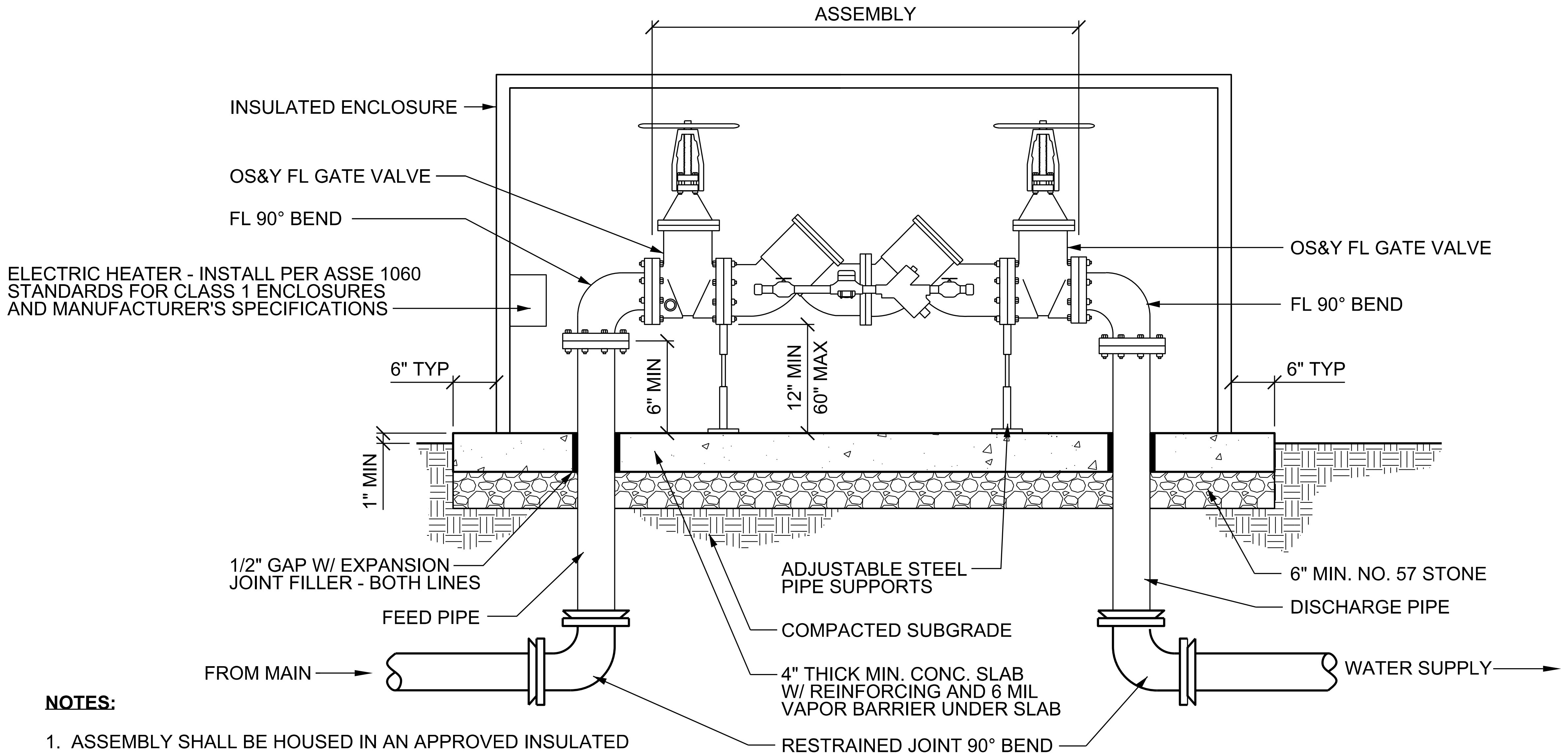


ENCLOSURE NOTES

1. ALL DIMENSIONS ARE APPROXIMATED IN INCHES.
2. RECOMMENDED SLAB SIZE : 84"L x 67"W x 4" MINIMUM THICKNESS. 3000 PSI REINF. CONCRETE W/ WWM.
3. THE ENCLOSURE IS DESIGNED AS A FLIP-TOP TO ASSURE EASIER ACCESS AND MAINTENANCE.
4. HEAT SHALL BE PROVIDED AND ENCLOSURES INSTALLED ON FIRE SERVICE LINES BY A 1500W, 120V, SINGLE-PHASE HEAT UNIT.
5. COLOR SHALL BE SHERWIN WILLIAMS # 20059 FEDERAL STANDARD BROWN OR NEAREST EQUIVALENT.
6. ENCLOSURE SHALL MEET ASSE 1060 SEAL CERTIFICATION STANDARDS.







ASSEMBLY
INSULATED ENCLOSURE
OS&Y FL GATE VALVE
FL 90° BEND
ELECTRIC HEATER - INSTALL PER ASSE 1060 STANDARDS FOR CLASS 1 ENCLOSURES AND MANUFACTURER'S SPECIFICATIONS
OS&Y FL GATE VALVE
FL 90° BEND
6" TYP
6" MIN
12" MIN
60" MAX
6" TYP
1" MIN
1/2" GAP W/ EXPANSION JOINT FILLER - BOTH LINES
FEED PIPE
FROM MAIN
ADJUSTABLE STEEL PIPE SUPPORTS
COMPACTED SUBGRADE
4" THICK MIN. CONC. SLAB W/ REINFORCING AND 6 MIL VAPOR BARRIER UNDER SLAB
RESTRAINED JOINT 90° BEND
6" MIN. NO. 57 STONE
DISCHARGE PIPE
WATER SUPPLY

NOTES:

1. ASSEMBLY SHALL BE HOUSED IN AN APPROVED INSULATED ENCLOSURE.
2. CONTRACTOR SHALL PROVIDE ELECTRICAL SERVICE FROM BUILDING TO HEATER.
3. FOR LINES 3" AND LARGER PIPE MATERIAL SHALL BE DIP.
4. CONTRACTOR SHALL VISIT EACH SITE, CONFIRM ALL DIMENSIONS AND VERIFY MINIMUM ENCLOSURE DIMENSIONS PRIOR TO ORDERING MATERIALS.
5. ALL ENCLOSURES SHALL BE MISSION BROWN IN COLOR.

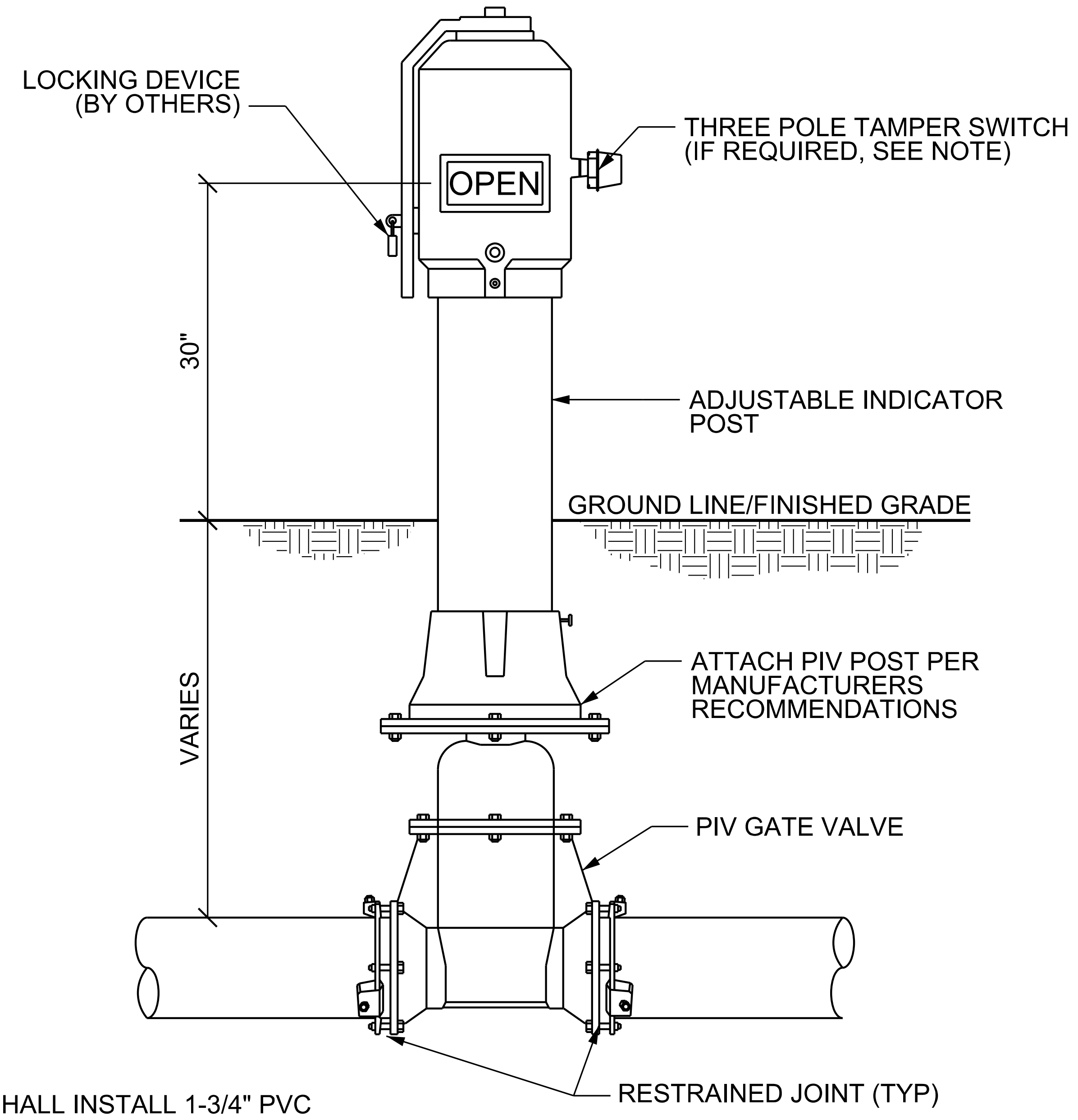
1
CU403

HOT BOX DETAIL

NOT TO SCALE

TAMPER SWITCH SHALL BE PROVIDED FOR EACH OS&Y VALVE BY CONTRACTOR.

TAMPER SWITCH WIRING TO THE BUILDING FIRE ALARM SYSTEM IS REQUIRED AND SHALL BE INSTALLED BY OTHERS.



LOCKING DEVICE (BY OTHERS)
OPEN
THREE POLE TAMPER SWITCH (IF REQUIRED, SEE NOTE)
30"
ADJUSTABLE INDICATOR POST
GROUND LINE/FINISHED GRADE
VARIES
ATTACH PIV POST PER MANUFACTURERS RECOMMENDATIONS
PIV GATE VALVE
RESTRAINED JOINT (TYP)

NOTE:

CONTRACTOR SHALL INSTALL 1-3/4" PVC CONDUIT LINE FROM 5' LINE AT BUILDING, STUBBED UP 1' ABOVE FINISHED GRADE AT PIV IF TAMPER SWITCH IS REQUIRED. SEE PLAN FOR TAMPER SWITCH REQUIREMENT.

2
CU403

POST INDICATOR VALVE DETAIL

NOT TO SCALE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE
FILENAME:
ASHE_CU514.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

FIRE WATER TANK DETAILS

SHEET ID
CU514

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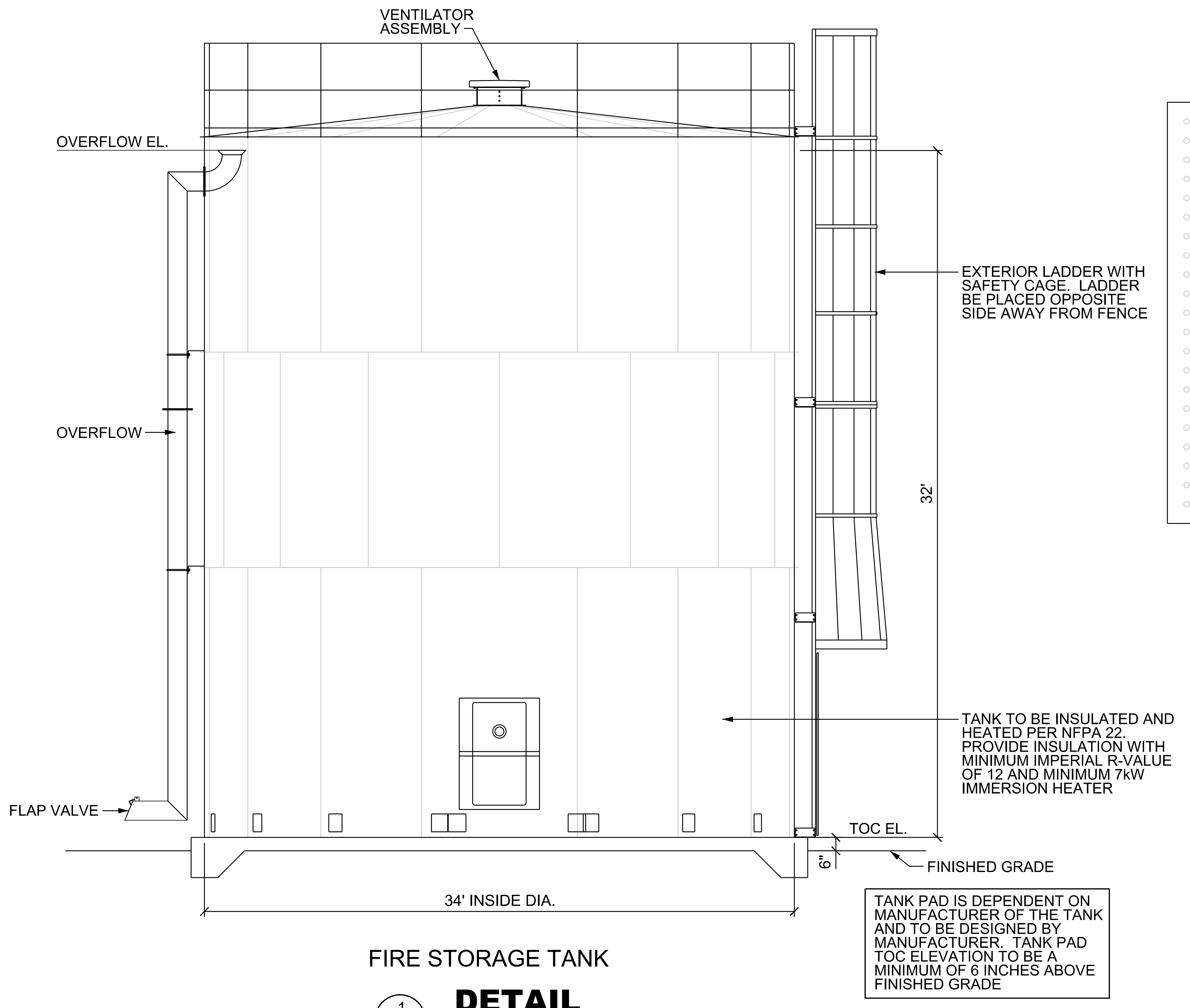
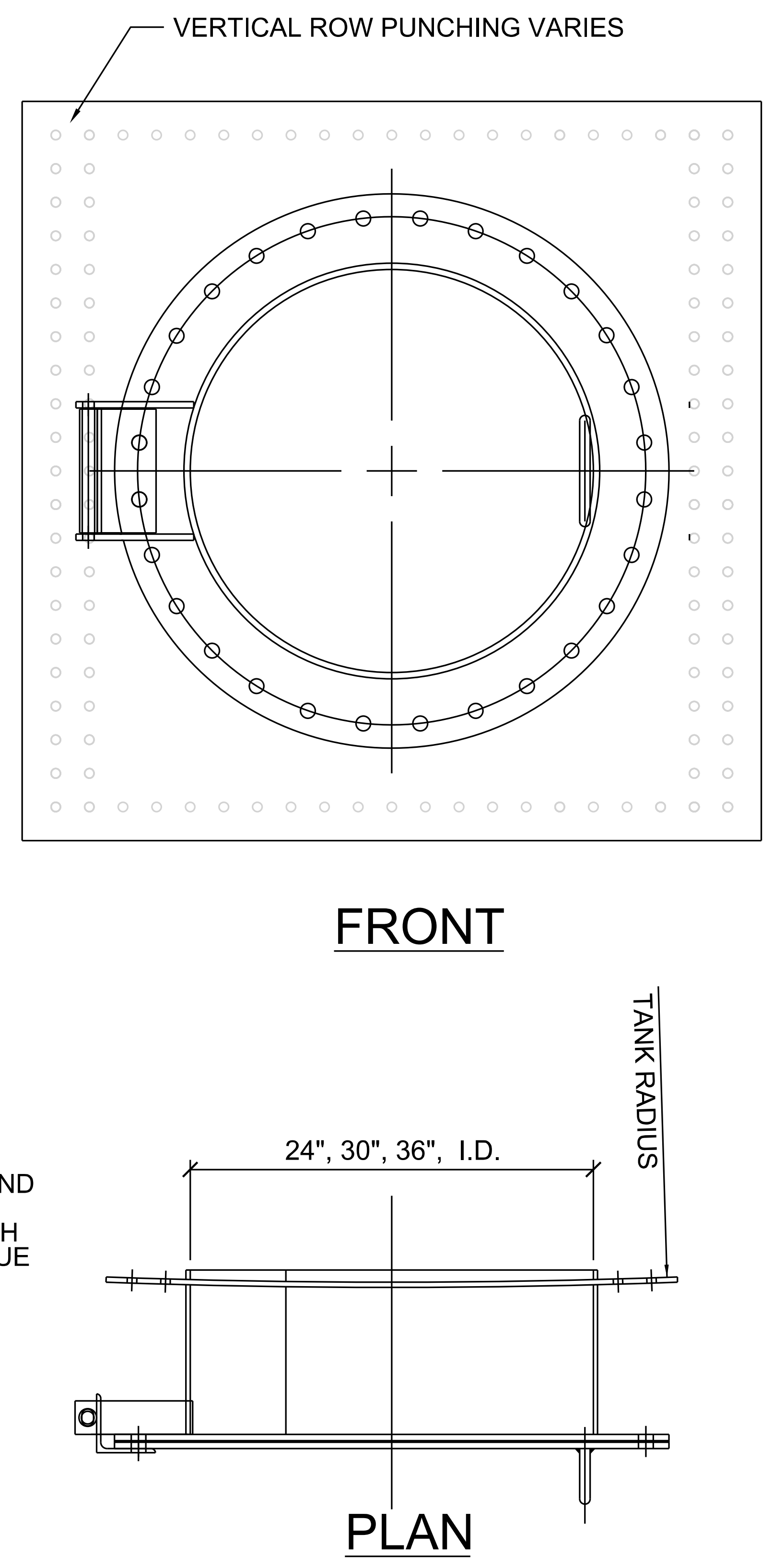

VENTILATOR ASSEMBLY
OVERFLOW EL.
OVERFLOW
FLAP VALVE
EXTERIOR LADDER WITH SAFETY CAGE. LADDER BE PLACED OPPOSITE SIDE AWAY FROM FENCE
32'
TANK TO BE INSULATED AND HEATED PER NFPA 22. PROVIDE INSULATION WITH MINIMUM IMPERIAL R-VALUE OF 12 AND MINIMUM 7kW IMMERSION HEATER
TOC EL.
6"
FINISHED GRADE
34' INSIDE DIA.

TANK PAD IS DEPENDENT ON MANUFACTURER OF THE TANK AND TO BE DESIGNED BY MANUFACTURER. TANK PAD TOC ELEVATION TO BE A MINIMUM OF 6 INCHES ABOVE FINISHED GRADE

FIRE STORAGE TANK

① CU403 **DETAIL**
NOT TO SCALE

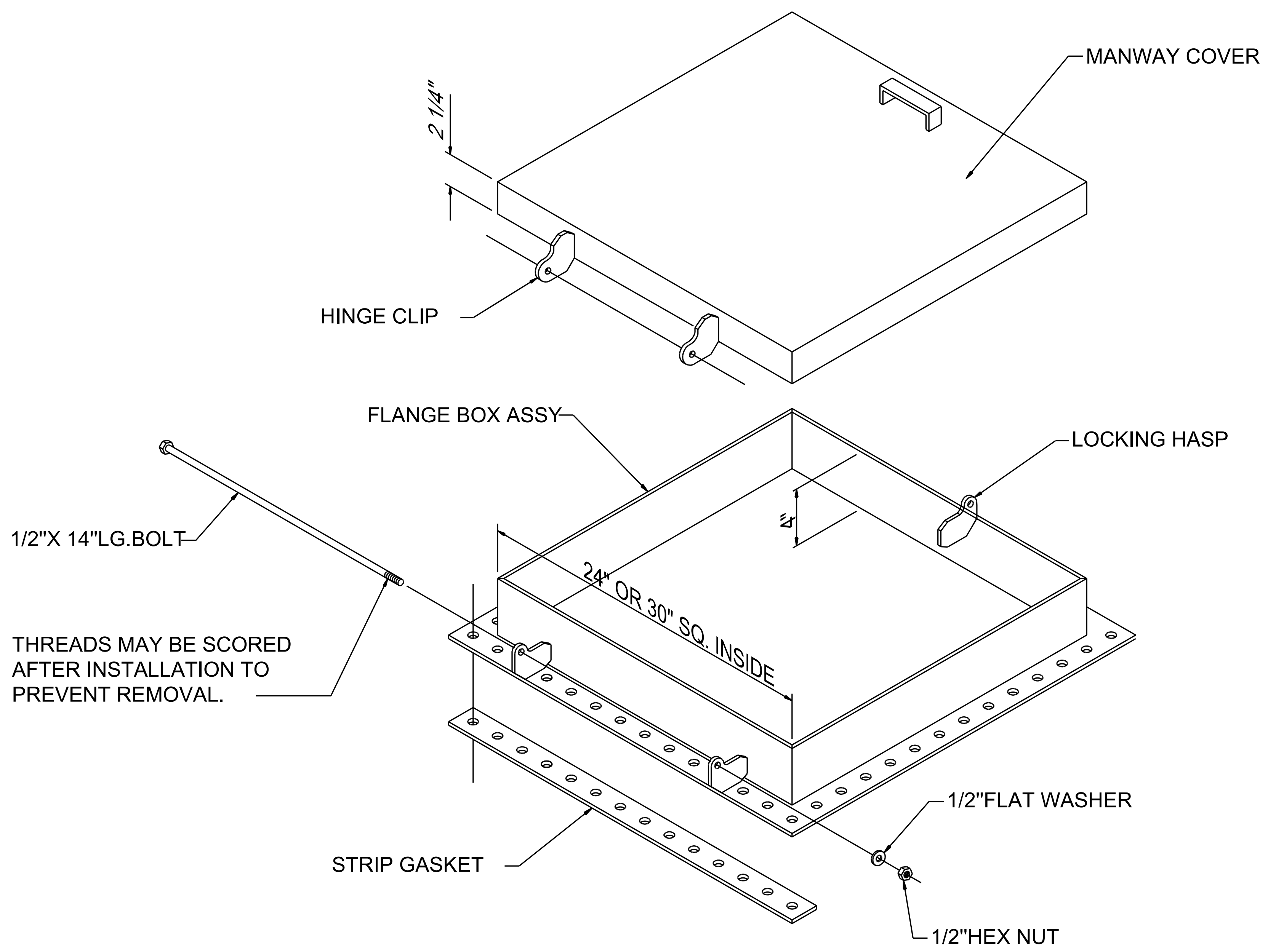


FRONT

PLAN

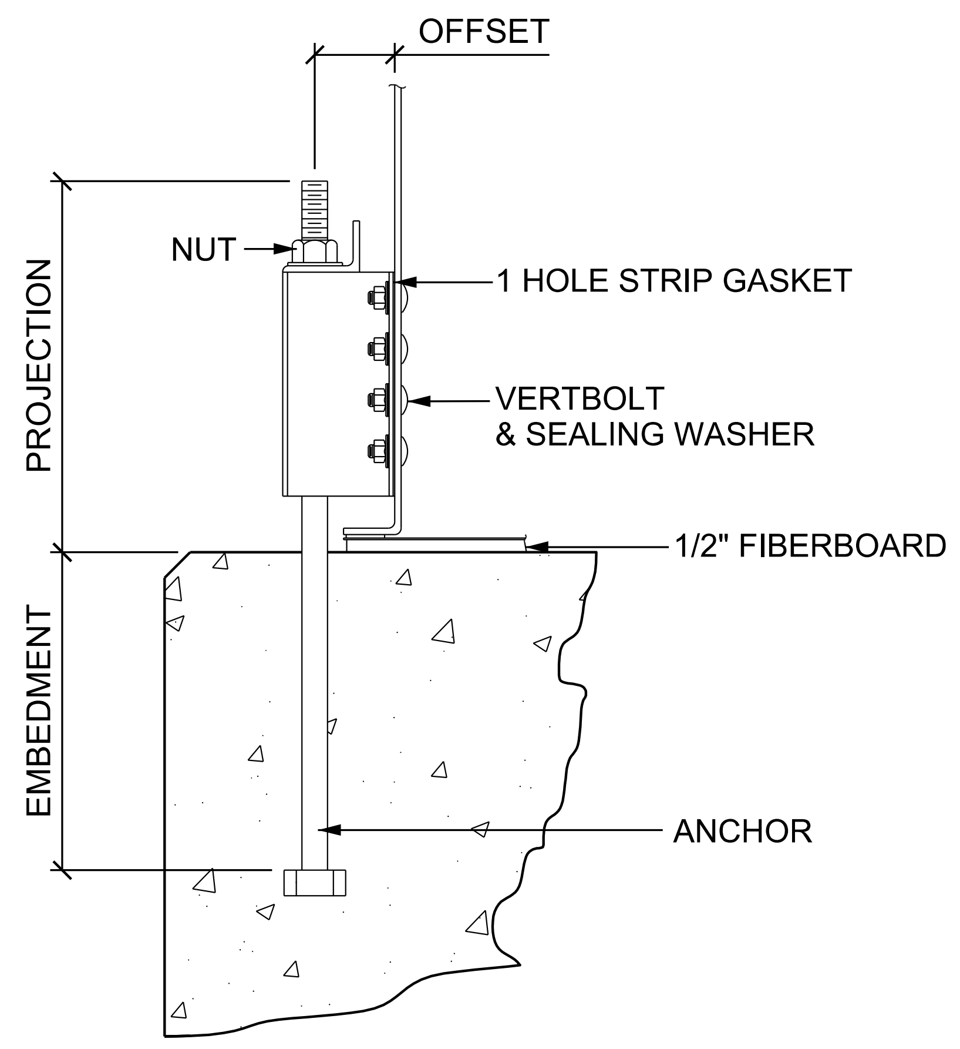
TYPICAL SHELL MANWAY

② CU515 **DETAIL**
NOT TO SCALE



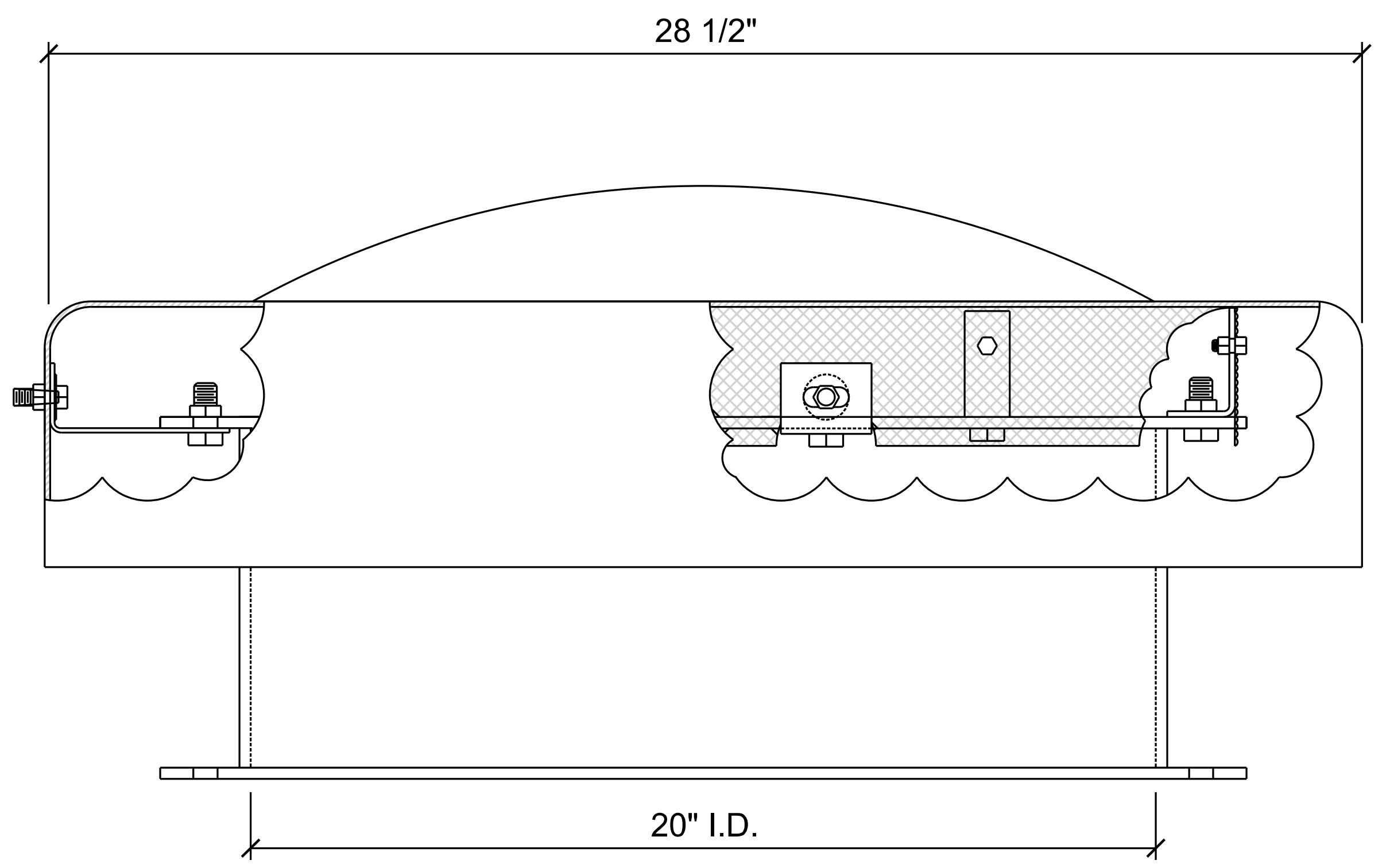
TYPICAL BOLT-ON MANWAY W/ LOCKABLE HASP

③ CU515 **DETAIL**
NOT TO SCALE



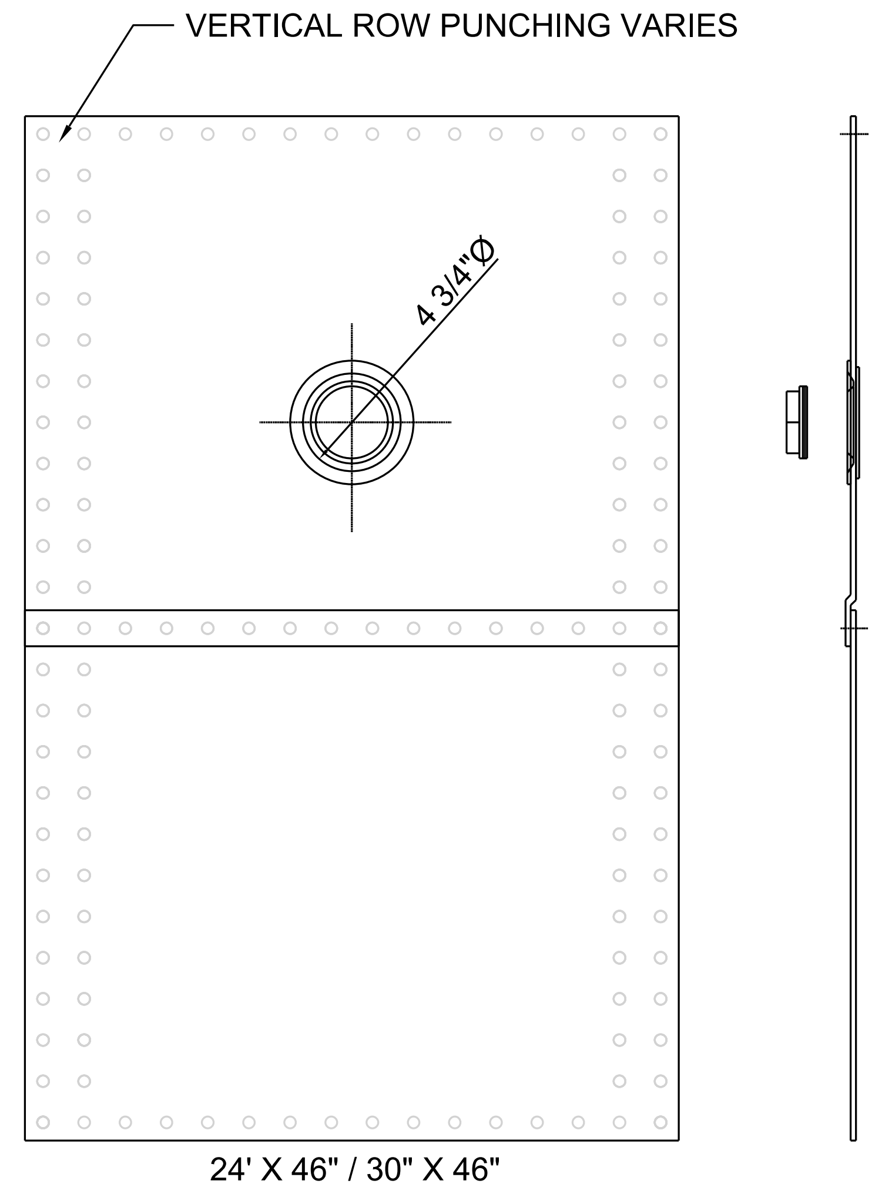
ANCHOR BOLT ASSEMBLY

④ CU515 **DETAIL**
NOT TO SCALE



TYPICAL MANHOLE COLLAR W/VENTILATOR ASSEMBLY

⑤ CU515 **DETAIL**
NOT TO SCALE



TYPICAL CLEAN OUT

⑥ CU515 **DETAIL**
NOT TO SCALE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE CU515.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

FIRE WATER TANK DETAILS

SHEET ID
CU515

CERTIFIED FINAL SUBMITTAL

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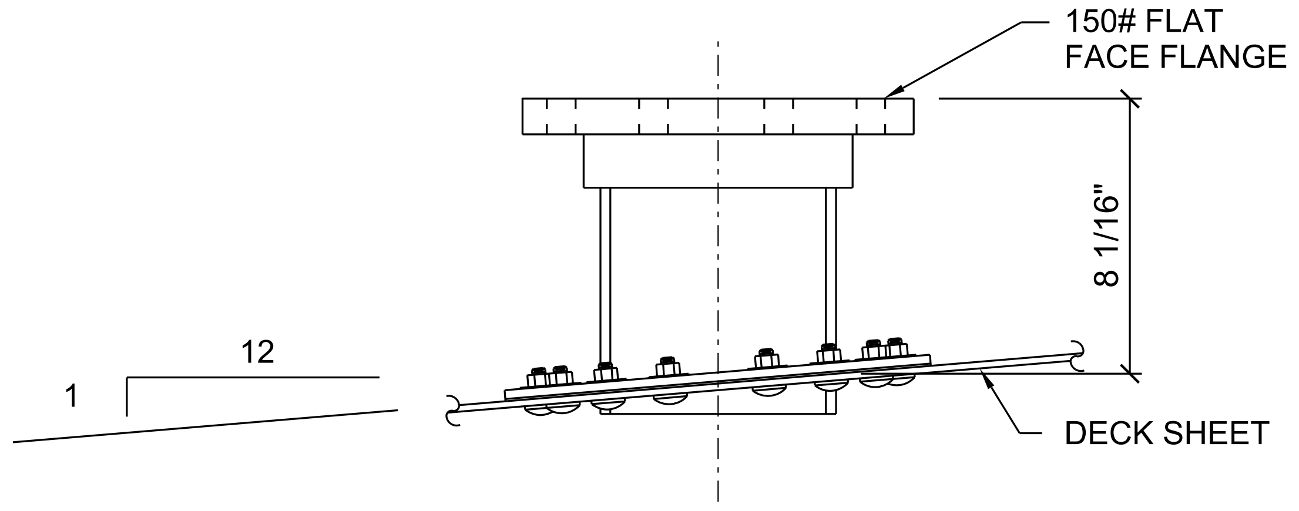
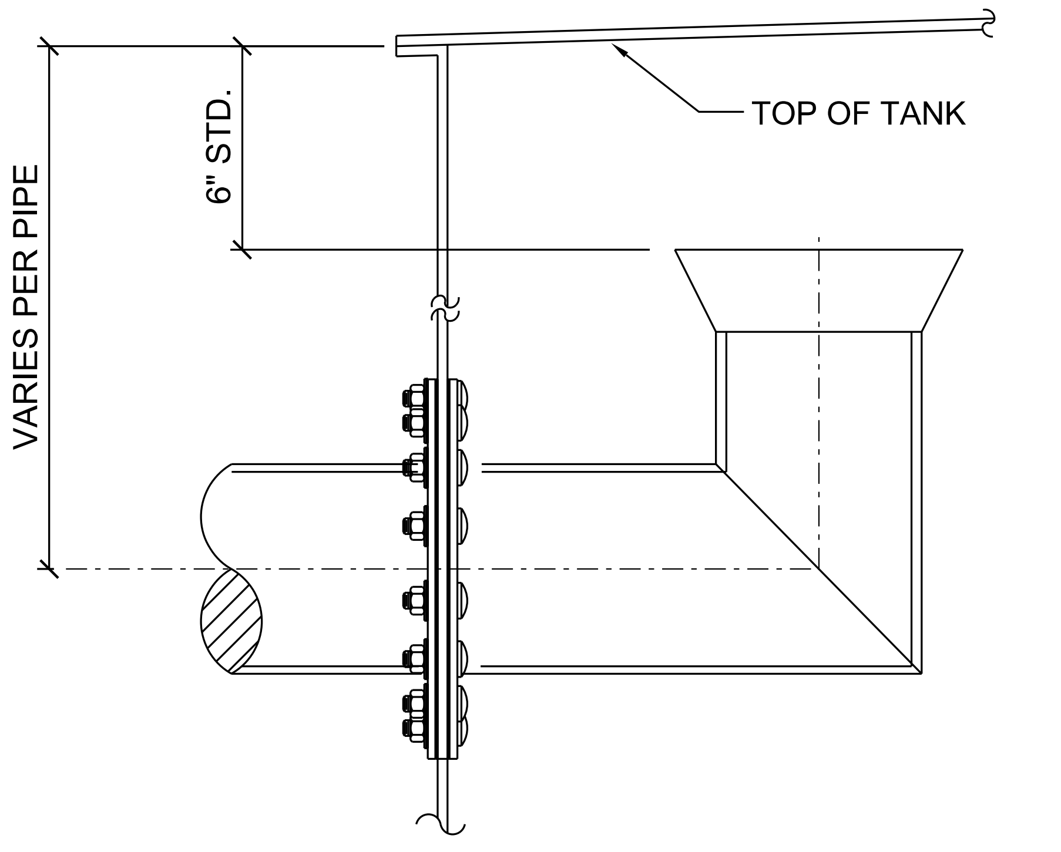


TYPICAL HILLSIDE NOZZLE INSTALLATION

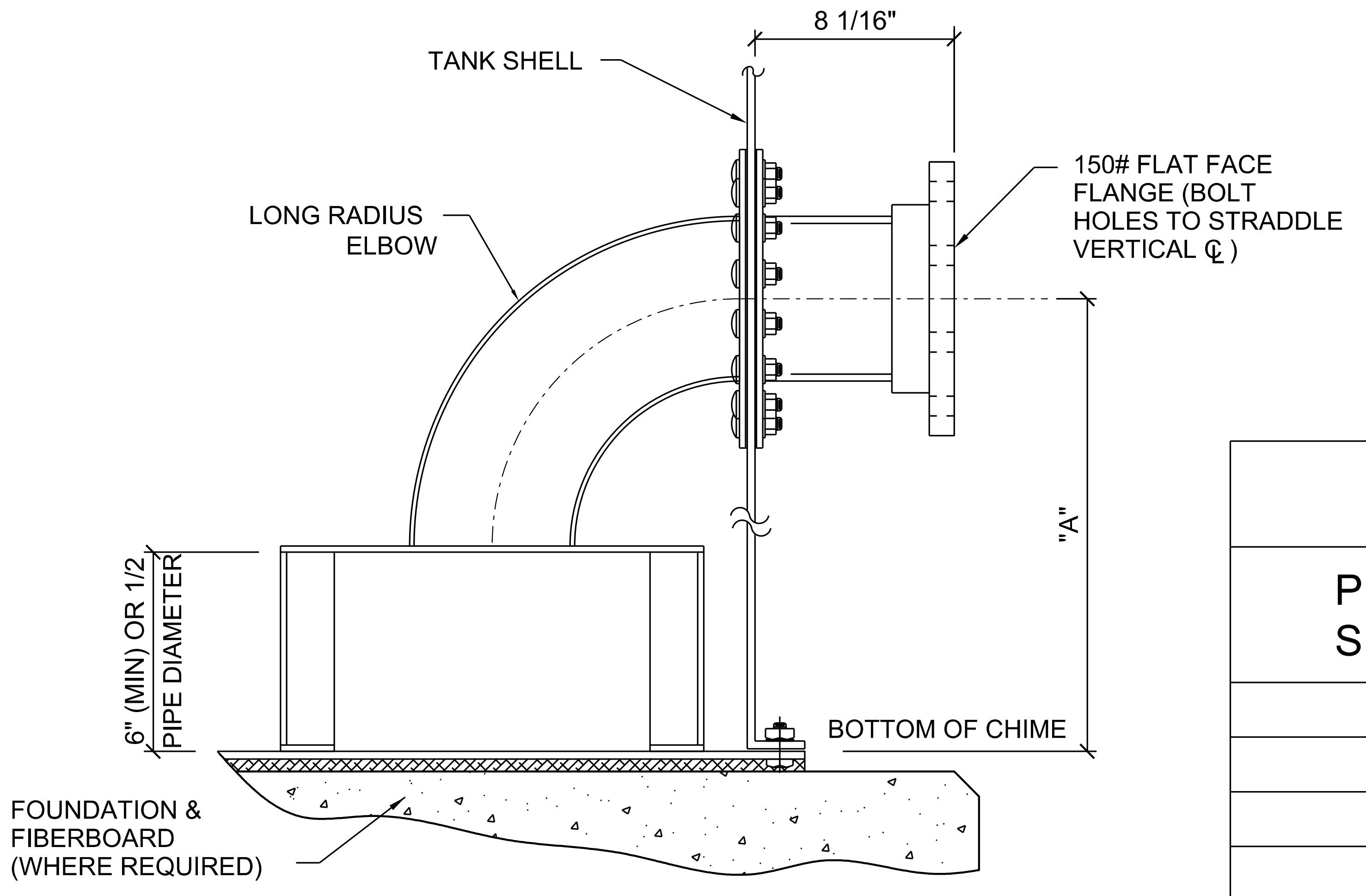
DETAIL 1 CU516
NOT TO SCALE



NOTE:
ALL NOZZLES ARE RADIAL UNLESS
NOTED AS PARALLEL

TYPICAL OVERFLOW WIER CONE INSTALLATION

DETAIL 2 CU516
NOT TO SCALE


8 1/16"
TANK SHELL
150# FLAT FACE FLANGE (BOLT HOLES TO STRADDLE VERTICAL ℄)
LONG RADIUS ELBOW
"A"
6" (MIN) OR 1/2 PIPE DIAMETER
BOTTOM OF CHIME
FOUNDATION & FIBERBOARD (WHERE REQUIRED)

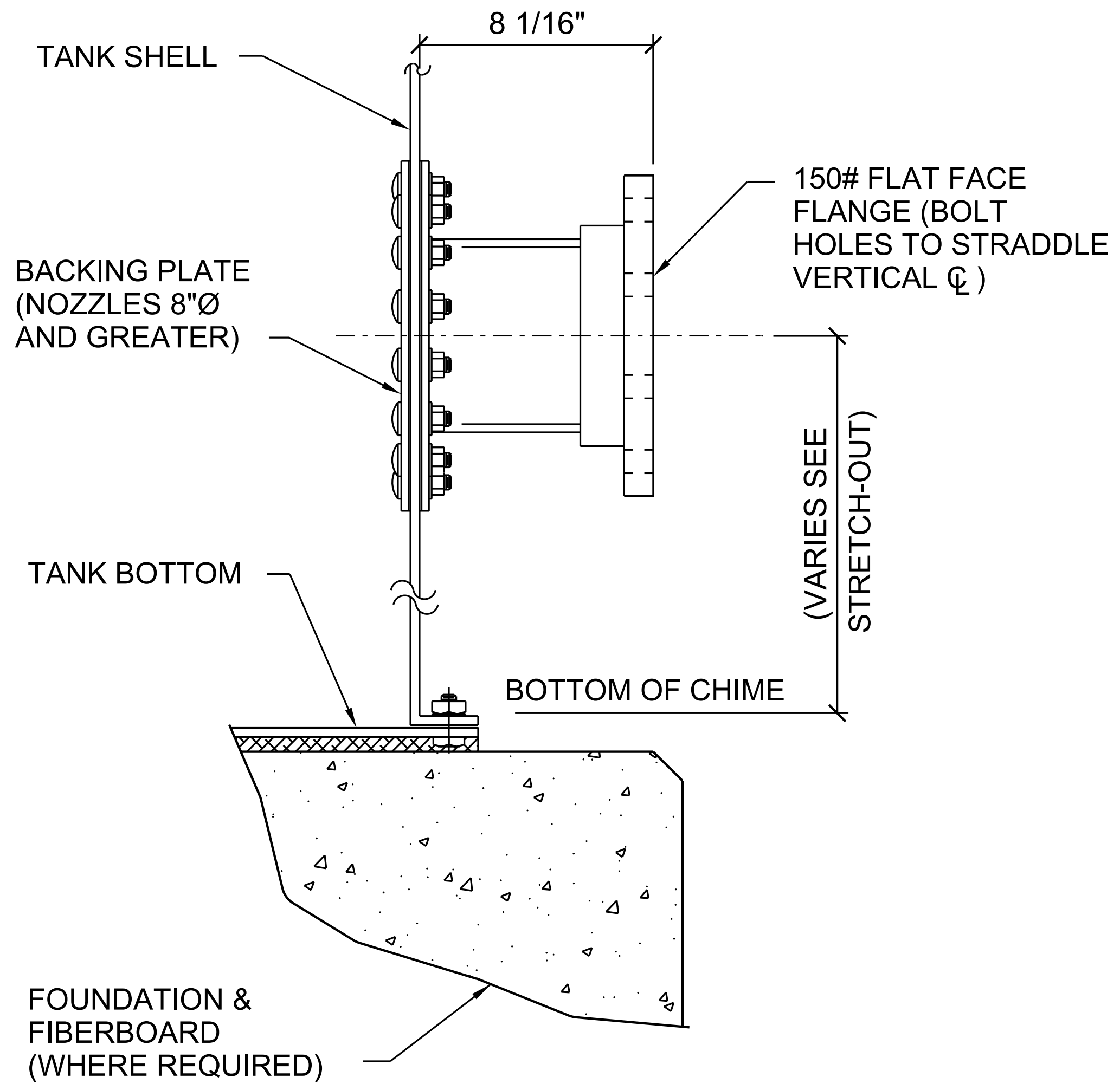
NOTE:
ALL NOZZLES ARE RADIAL UNLESS
NOTED AS PARALLEL

TYPICAL SUCTION NOZZLE INSTALLATION

DETAIL 3 CU516
NOT TO SCALE

ANTI-VORTEX SUCTION NOZZLE DIMENSIONS

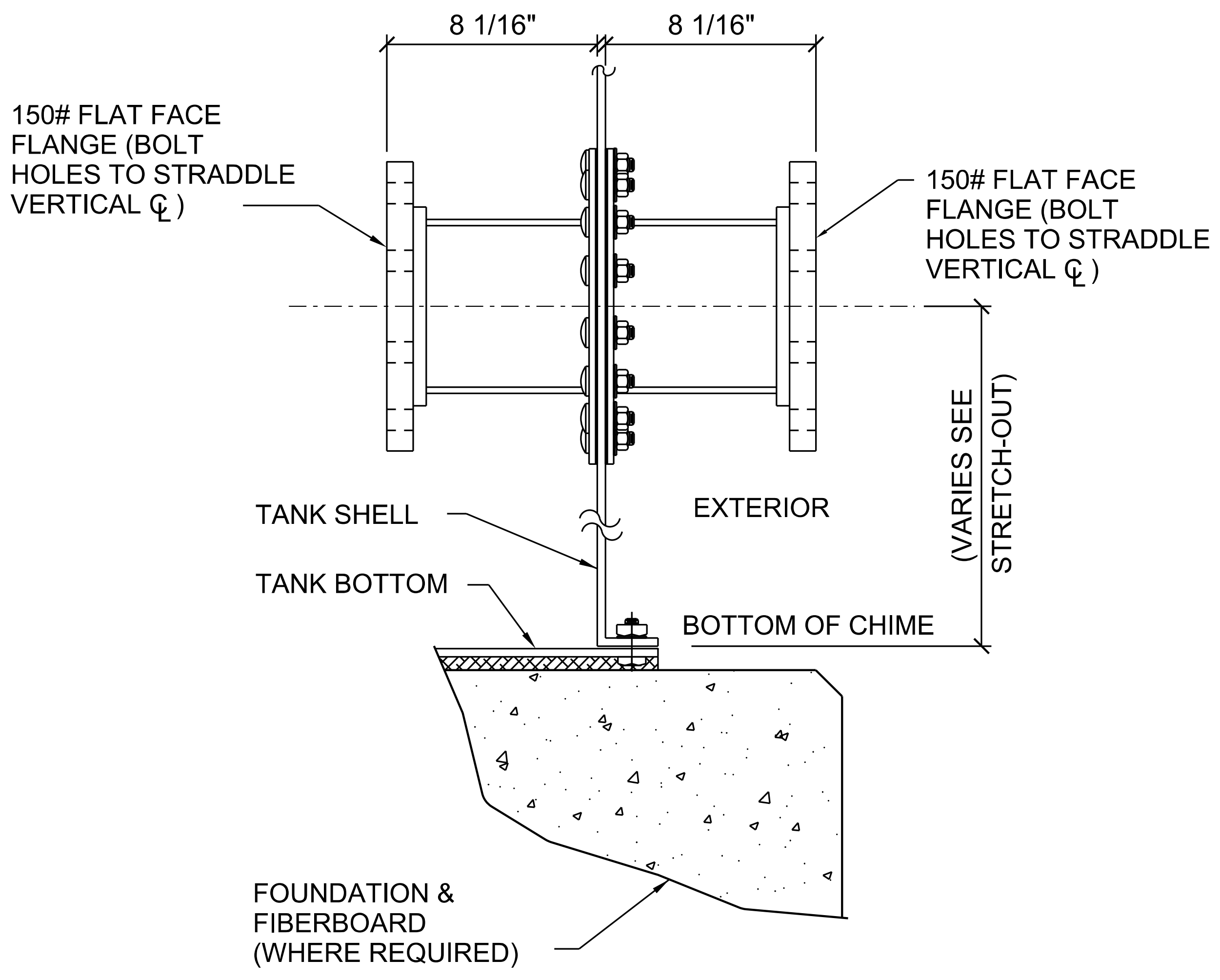
PIPE SIZE	DIMENSIONS
	"A"
2"	9 1/4"
3"	10 3/4"
4"	12 1/4"
5"	13 3/4"
6"	15 1/4"
8"	18 1/4"
10"	21 1/4"
12"	24 9/16"
14"	28 9/16"
16"	32 1/4"
18"	36 1/4"
20"	40 1/4"
24"	48 1/4"


TANK SHELL
8 1/16"
150# FLAT FACE FLANGE (BOLT HOLES TO STRADDLE VERTICAL ℄)
BACKING PLATE (NOZZLES 8"Ø AND GREATER)
(VARIES SEE STRETCH-OUT)
TANK BOTTOM
BOTTOM OF CHIME
FOUNDATION & FIBERBOARD (WHERE REQUIRED)

NOTE:
ALL NOZZLES ARE RADIAL UNLESS
NOTED AS PARALLEL

TYPICAL EXTERIOR NOZZLE INSTALLATION

DETAIL 4 CU516
NOT TO SCALE


8 1/16"
8 1/16"
150# FLAT FACE FLANGE (BOLT HOLES TO STRADDLE VERTICAL ℄)
150# FLAT FACE FLANGE (BOLT HOLES TO STRADDLE VERTICAL ℄)
(VARIES SEE STRETCH-OUT)
TANK SHELL
EXTERIOR
TANK BOTTOM
BOTTOM OF CHIME
FOUNDATION & FIBERBOARD (WHERE REQUIRED)

NOTE:
ALL NOZZLES ARE RADIAL UNLESS
NOTED AS PARALLEL

TYPICAL DOUBLE NOZZLE INSTALLATION

DETAIL 5 CU516
NOT TO SCALE

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
ANSI D
FILENAME:
ASHE_CU516.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

FIRE WATER TANK DETAILS

SHEET ID
CU516

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24-FEB-2022
15:19

CERTIFIED FINAL SUBMITTAL

SANITARY SEWER SCHEDULE

FROM STRUCTURE	NORTHING	EASTING	T/R	INVERT IN	INVERT OUT	TO STRUCTURE	NORTHING	EASTING	T/R	INVERT IN	INVERT OUT	LENGTH	SIZE (INCHES)	PIPE MATERIAL	PLAN SHEET	NOTES
SSMH-1	578528.602	986784.971	2194.60	2189.77	2189.67	SSMH-2	578609.466	986845.403	2195.38	2188.26	2188.16	100.95	6"	PVC	CU403	REFER TO PROFILE "A", SHEET CU202
SSMH-2	578609.466	986845.403	2195.38	2188.26	2188.16	SSMH-13	578616.775	986850.865	2195.45	2188.12	2188.02	9.12	6"	PVC	CU403	REFER TO PROFILE "A", SHEET CU202
SSMH-3	578,646.876	986,873.361	2194.95	2187.56	2187.46	SSMH-4	578763.728	986856.465	2191.45	2184.76	2184.66	118.07	6"	PVC	CU403	REFER TO PROFILE "A", SHEET CU202
SSMH-4	578763.728	986856.465	2191.45	2184.76	2184.66	SSMH-5	578838.135	986912.072	2189.00	2182.56	2182.46	92.89	6"	PVC	CU403/CU404	REFER TO PROFILE "A", SHEET CU202
SSMH-5	578838.135	986912.072	2189.00	2182.56	2182.46	SSMH-6	578970.936	987058.275	2185.18	2178.61	2178.51	197.51	6"	PVC	CU404	REFER TO PROFILE "A", SHEET CU202
SSMH-6	578970.936	987058.275	2185.18	2178.61	2178.51	SSMH-7	578976.747	987161.736	2183.02	2175.40	2164.26	103.62	6"	PVC	CU404	REFER TO PROFILE "A", SHEET CU201
SSMH-7	578976.747	987161.736	2183.02	2175.40	2164.26	SSMH-8	579122.464	987153.552	2176.80	2162.80	2162.70	145.95	6"	PVC	CU404	REFER TO PROFILE "A", SHEET CU201
SSMH-8	579122.464	987153.552	2176.80	2162.80	2162.70	SSMH-9	579168.856	987045.780	2171.72	2160.53	2160.43	117.33	6"	PVC	CU404	REFER TO PROFILE "A", SHEET CU201
SSMH-9	579168.856	987045.780	2171.72	2160.53	2160.43	SSMH-10	579306.035	986863.151	2166.50	2159.09	2158.99	228.41	6"	PVC	CU404/CU402	REFER TO PROFILE "A", SHEET CU201
SSMH-10	579306.035	986863.151	2166.50	2159.09	2158.99	EX SSMH	579502.422	986642.917	2159.93	2157.24	2156.07	295.08	6"	PVC	CU402	REFER TO PROFILE "A", SHEET CU201
SSMH-11	578983.197	986717.966	2190.45	2186.19	2186.09	SSMH-12	578916.911	986806.663	2190.62	2184.53	2184.43	110.73	6"	PVC	CU404	REFER TO PROFILE "B", SHEET CU202
SSMH-12	578916.911	986806.663	2190.62	2184.53	2184.43	SSMH-5	578838.135	986912.072	2189.00	2182.56	2182.46	131.59	6"	PVC	CU404	REFER TO PROFILE "B", SHEET CU202
SSMH-13	578616.775	986850.865	2195.45	2188.12	2188.02	SSMH-3	578,646.876	986,873.361	2194.95	2187.56	2187.46	37.58	6"	PVC	CU403	REFER TO PROFILE "A", SHEET CU202
OW-1	578966.772	986705.691	2090.83	2186.41	2186.41	SSMH-11	578983.197	986717.966	2190.45	2186.19	2186.09	20.37	6"	PVC	CU404	REFER TO PROFILE "B", SHEET CU202

US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_CU601.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

SANITARY SEWER SCHEDULE

SHEET ID
CU601

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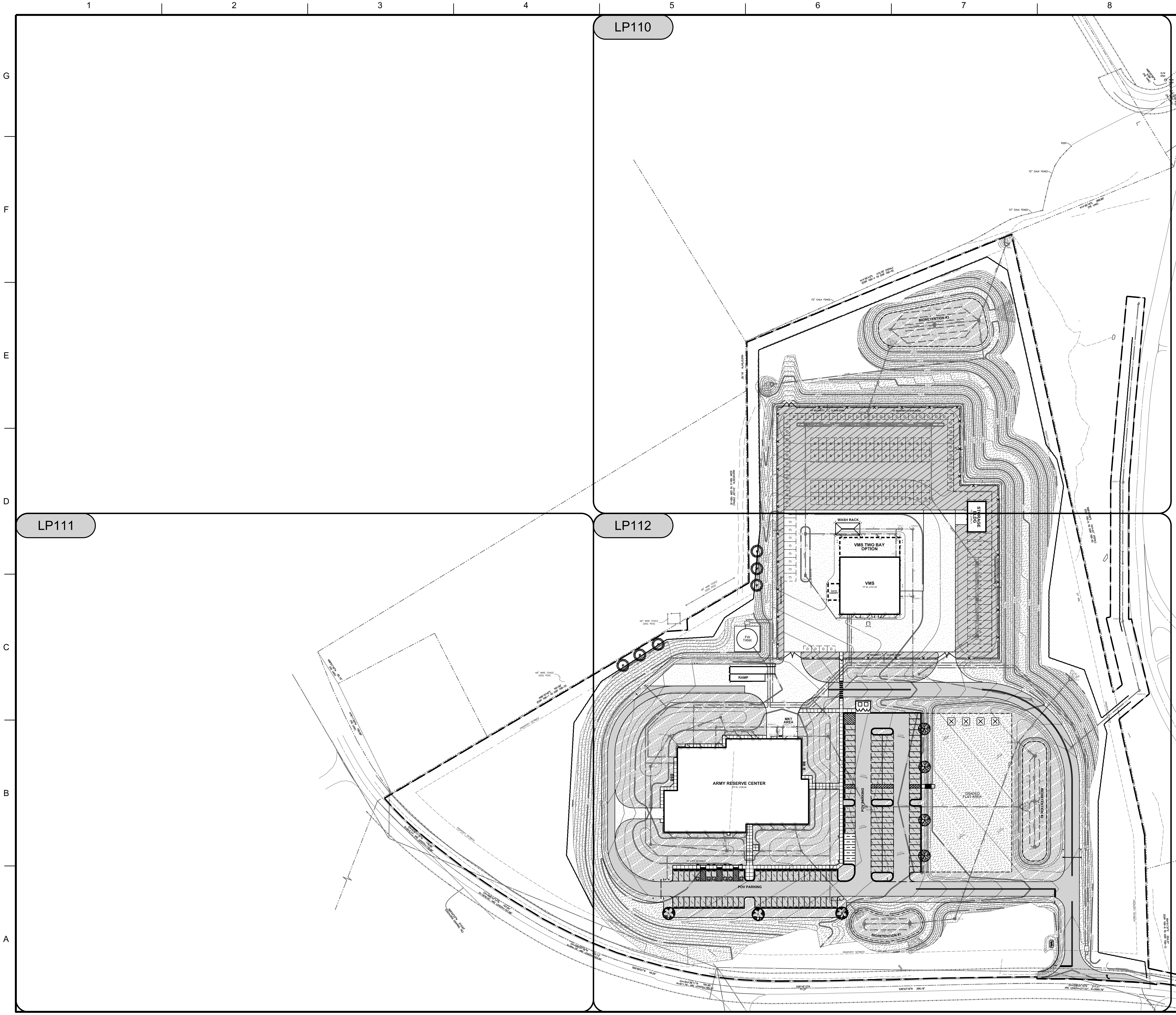

LANDSCAPE GENERAL NOTES

1. TREES SHALL NOT BE LOCATED WITHIN 4 FEET OF CURBS AND WALKS.
2. TREES AND SHRUBS SHALL BE LOCATED AT LEAST 8 LATERAL FEET AWAY FROM BURIED UTILITY LINES
3. PROVIDE 3" DEPTH, 1'-6" RADIUS (3'-0" DIAMETER) OF SHREDDED HARDWOOD MULCH AROUND EACH NEWLY PLANTED TREE AND SHRUB. PERENNIALS TO ALSO RECEIVE MULCH SPREAD AROUND EACH PLANT TO CREATE A PLANTER BED LOOK.
4. ALL NEW LANDSCAPE PLANT MATERIAL, E.G. TREES, SHRUBS AND PERENNIALS SHALL BE LOCATED A MINIMUM OF 13 FEET AWAY FROM THE PERIMETER OF THE BUILDING.
5. REFER TO LANDSCAPE SHEETS LP501 FOR LANDSCAPE DETAILS. REFER TO LANDSCAPE SHEET LP601 FOR LANDSCAPE PLANT SCHEDULE.

PLANT LEGEND

△ XX / X	TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER QUANTITY
⬡ XX / X	TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER QUANTITY
—●●—	CONSTRUCTION LIMITS
▨	AREA TO BE SODDED
☐	AREA TO BE SEEDED

80' 40' 0 80' 160' 240'

GRAPHIC SCALE: 1"=80'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_LP101.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

OVERALL LANDSCAPE PLAN

SHEET ID
LP101

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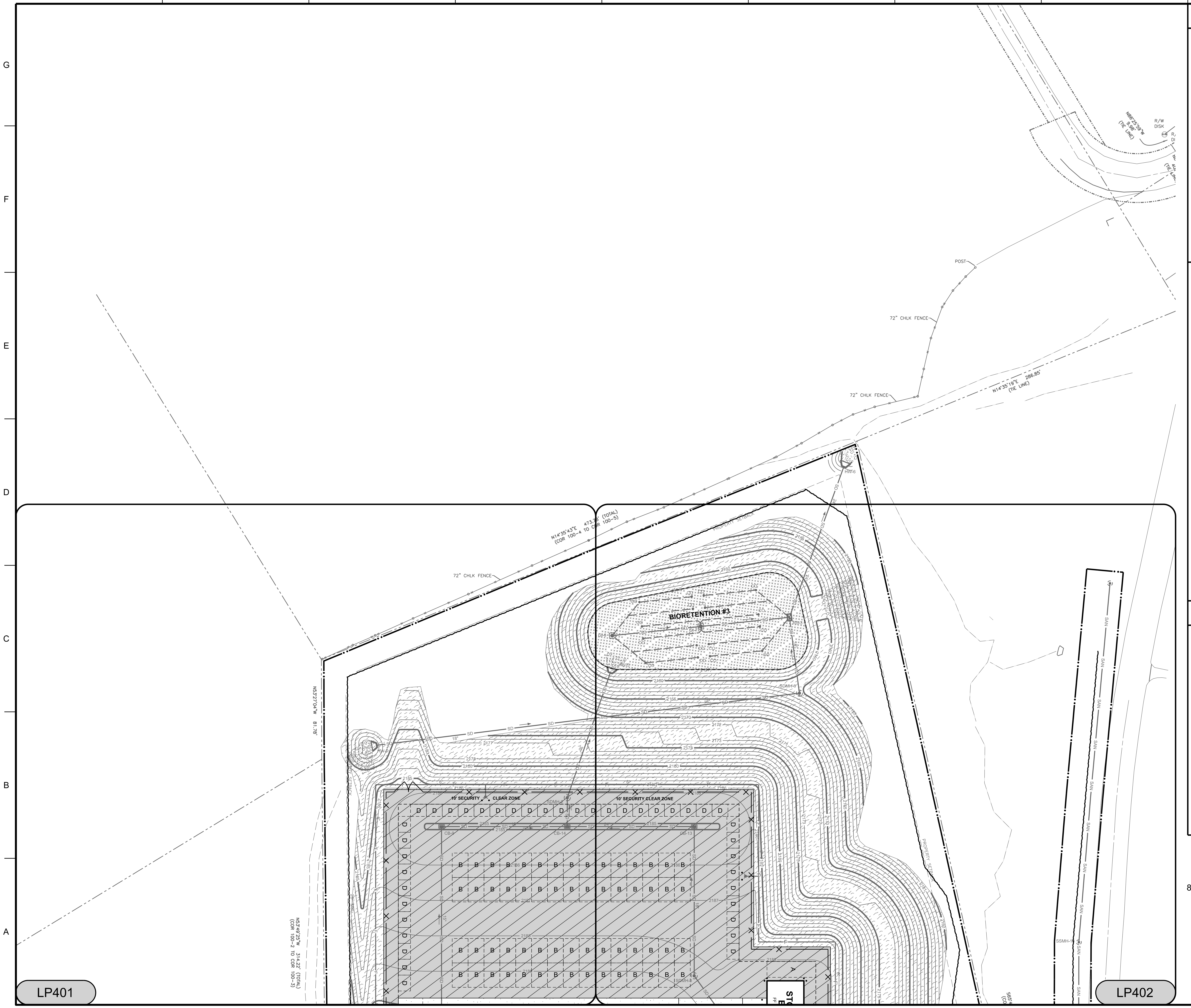
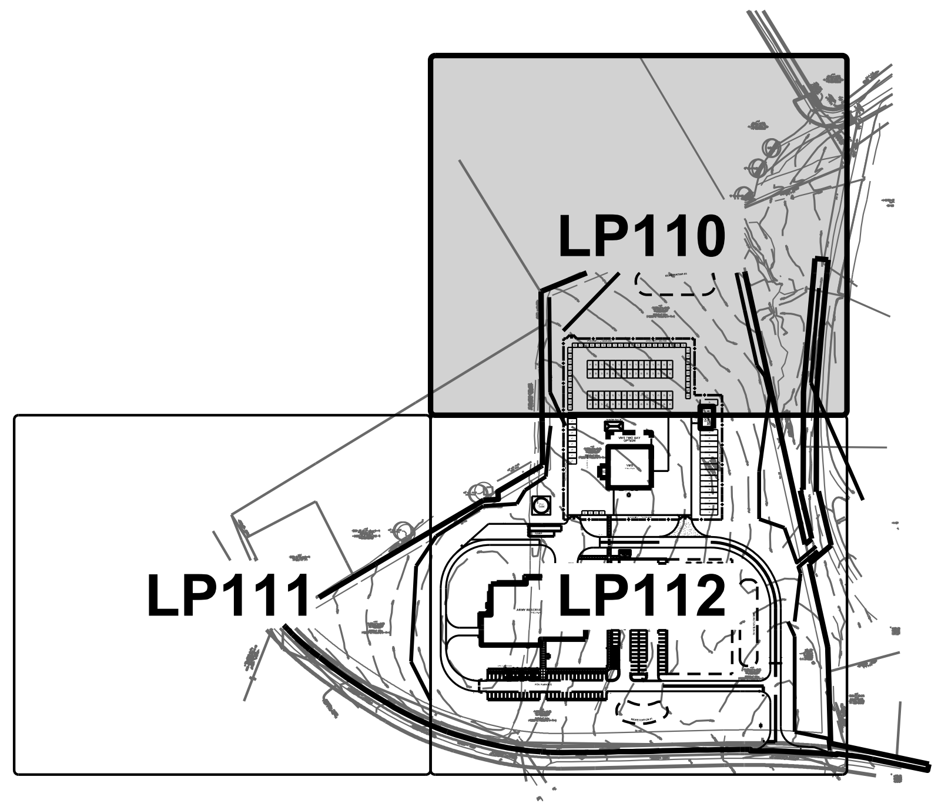
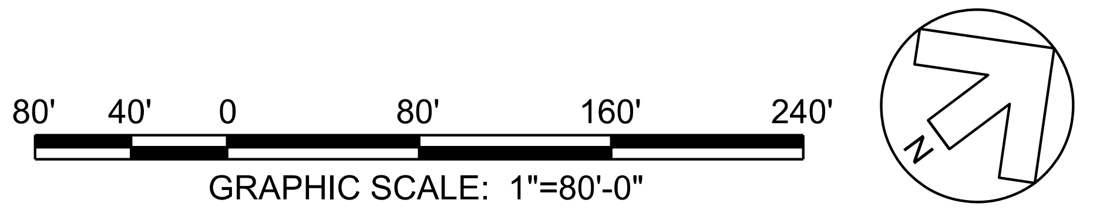

1
2
3
4
5
6
7
8
G
F
E
D
C
B
A
72" CHLK FENCE
POST
N14°35'19"E 286.85' (TIE LINE)
N88°25'59"W 9.89' (TIE LINE)
R/W DISK
N14°35'43"E 473.70' (TOTAL) (COR 100-4 TO COR 100-5)
N05°27'04"W 81.78'
N53°49'25"W 314.22' (TOTAL) (COR 100-2 TO COR 100-3)
BIORETENTION #3
SDMH-8
10' SECURITY CLEAR ZONE
D
B
SAN
LP401
LP402

KEY MAP



PLANT LEGEND

- TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER (XX) QUANTITY (X)
- TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER (XX) QUANTITY (X)
- CONSTRUCTION LIMITS
- ▨ AREA TO BE SODDED
- ▨ AREA TO BE SEEDED



GRAPHIC SCALE: 1"=80'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF
EASTING, NORTHING AND ELEVATION.

US Army Corps
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MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_LP110.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

LANDSCAPE PLAN

SHEET ID
LP110

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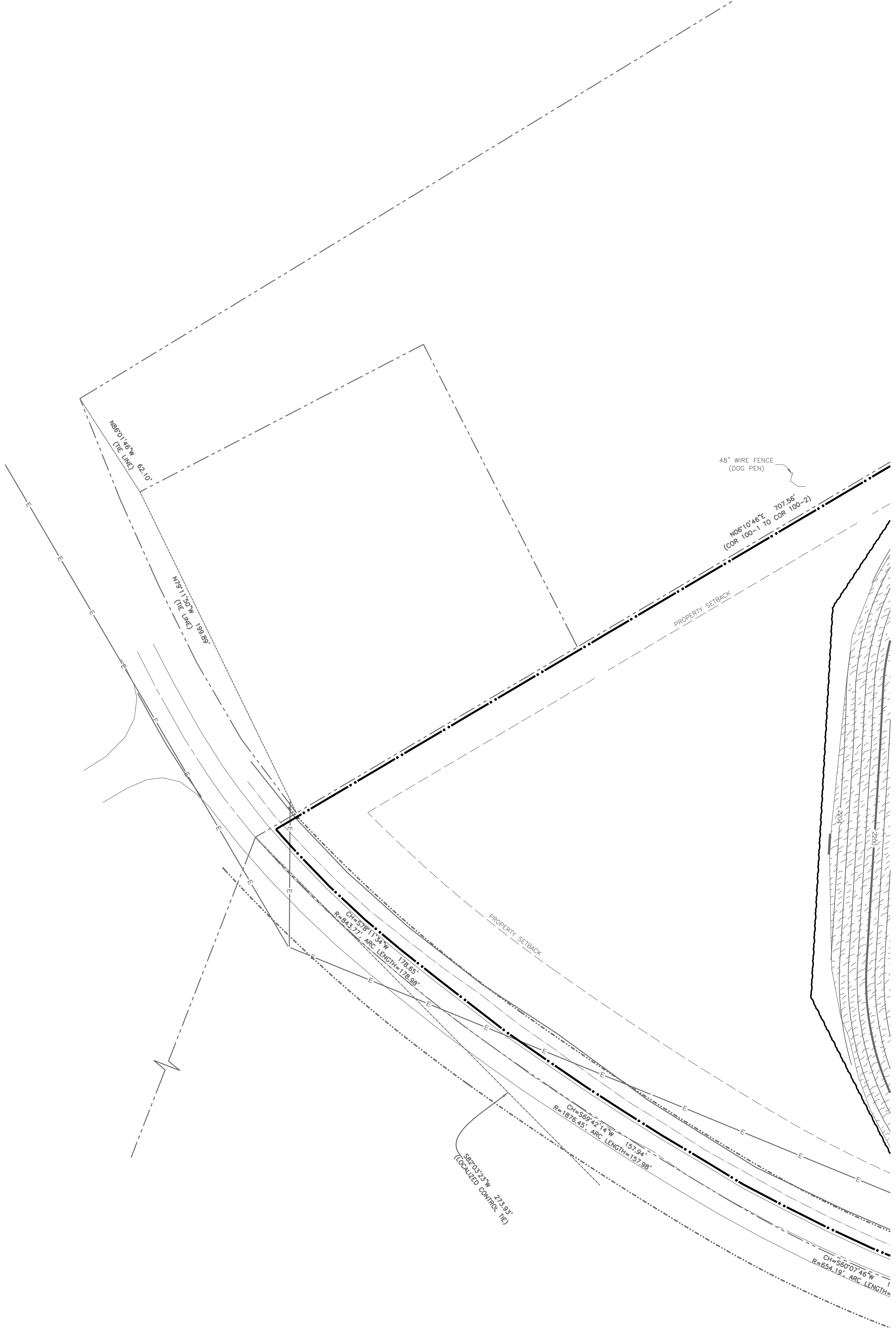

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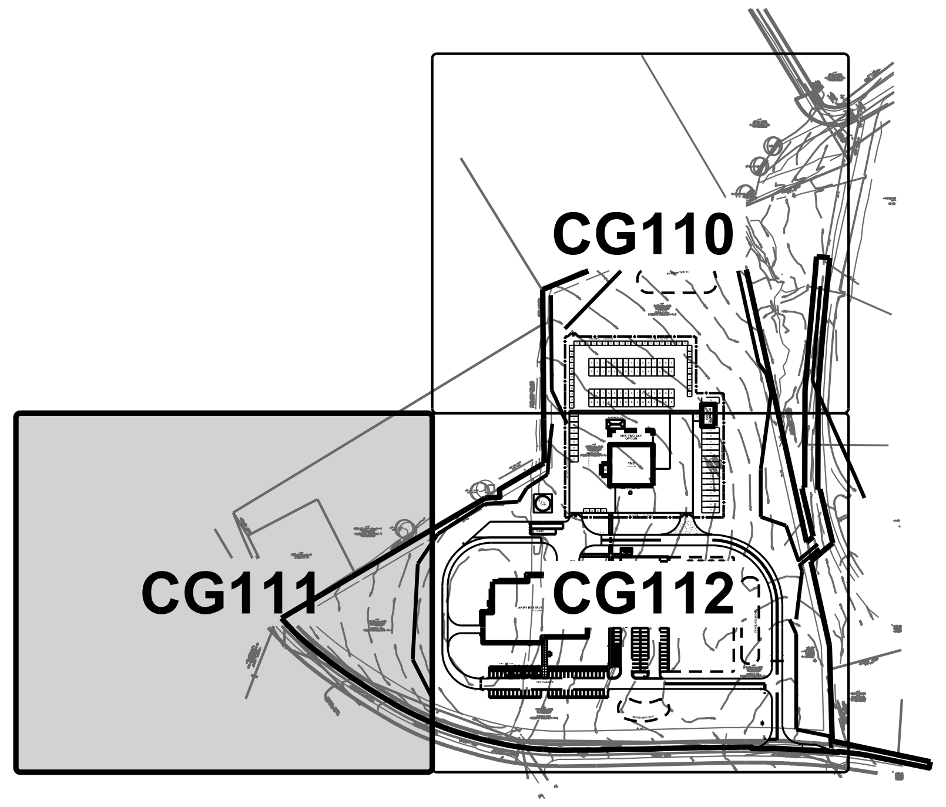

PLANT LEGEND

XX / X	TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER QUANTITY
XX / X	TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER QUANTITY
—••	CONSTRUCTION LIMITS
▨	AREA TO BE SODDED
▭	AREA TO BE SEEDED

40' 20' 0 40' 80' 120'

GRAPHIC SCALE: 1"=40'-0"

N

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

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CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_LP111.dgn

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

LANDSCAPE PLAN

SHEET ID
LP111

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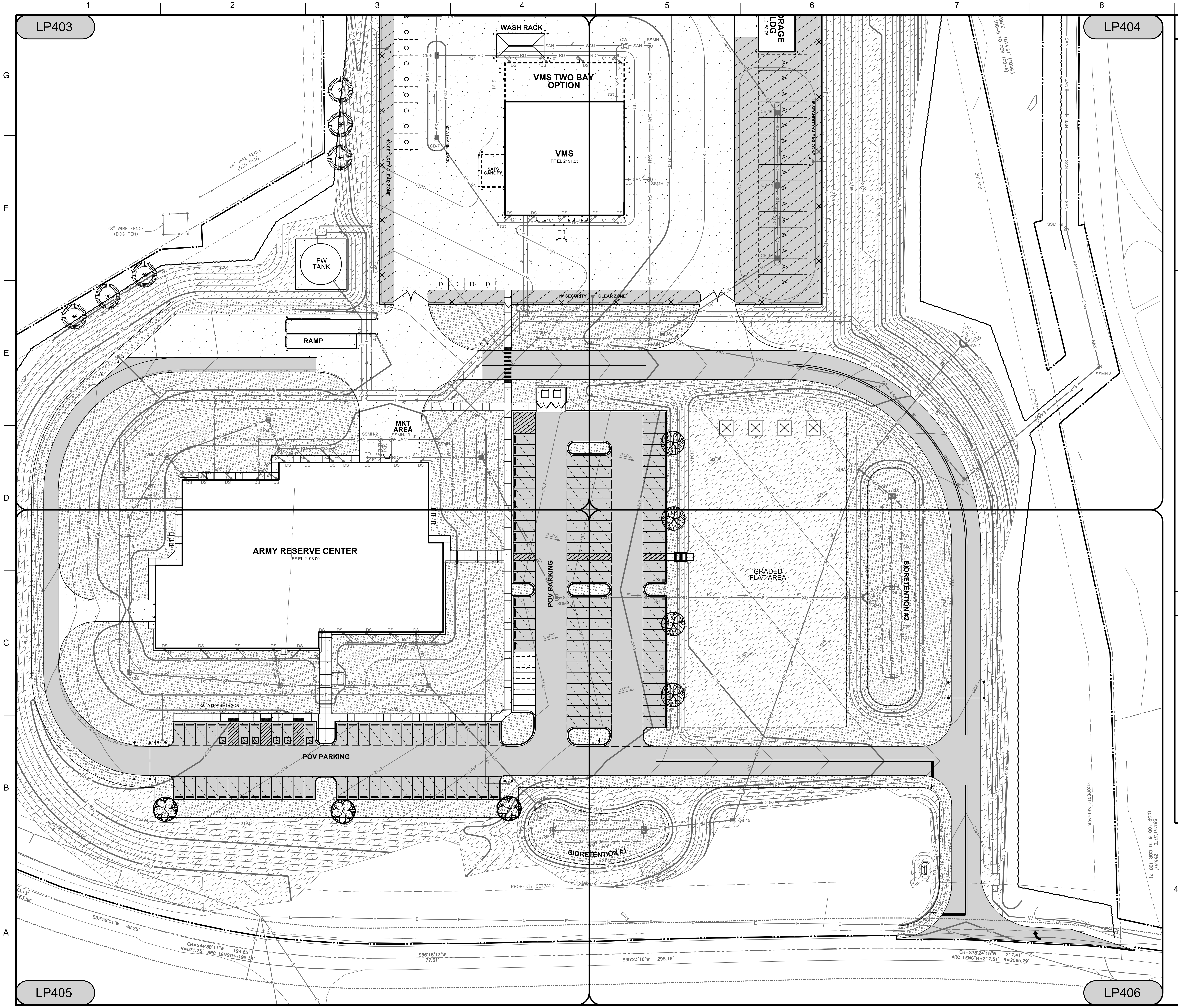

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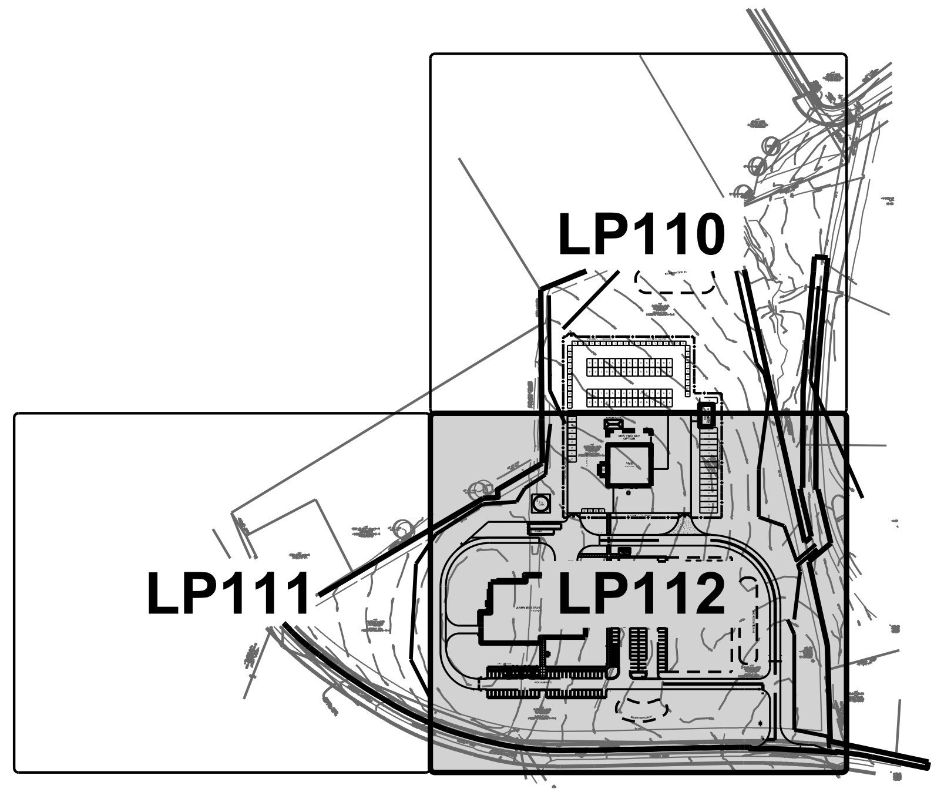

PLANT LEGEND

XX / X	TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER QUANTITY
XX / X	TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER QUANTITY
—••	CONSTRUCTION LIMITS
▨	AREA TO BE SODDED
▭	AREA TO BE SEEDED

40' 20' 0 40' 80' 120'

GRAPHIC SCALE: 1"=40'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

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SUBMITTED BY: D. HENSLEY	CATEGORY CODE	
SIZE: ANSI D	FILENAME: ASHE_LP112.dgn	

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
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TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

LANDSCAPE PLAN

SHEET ID
LP112

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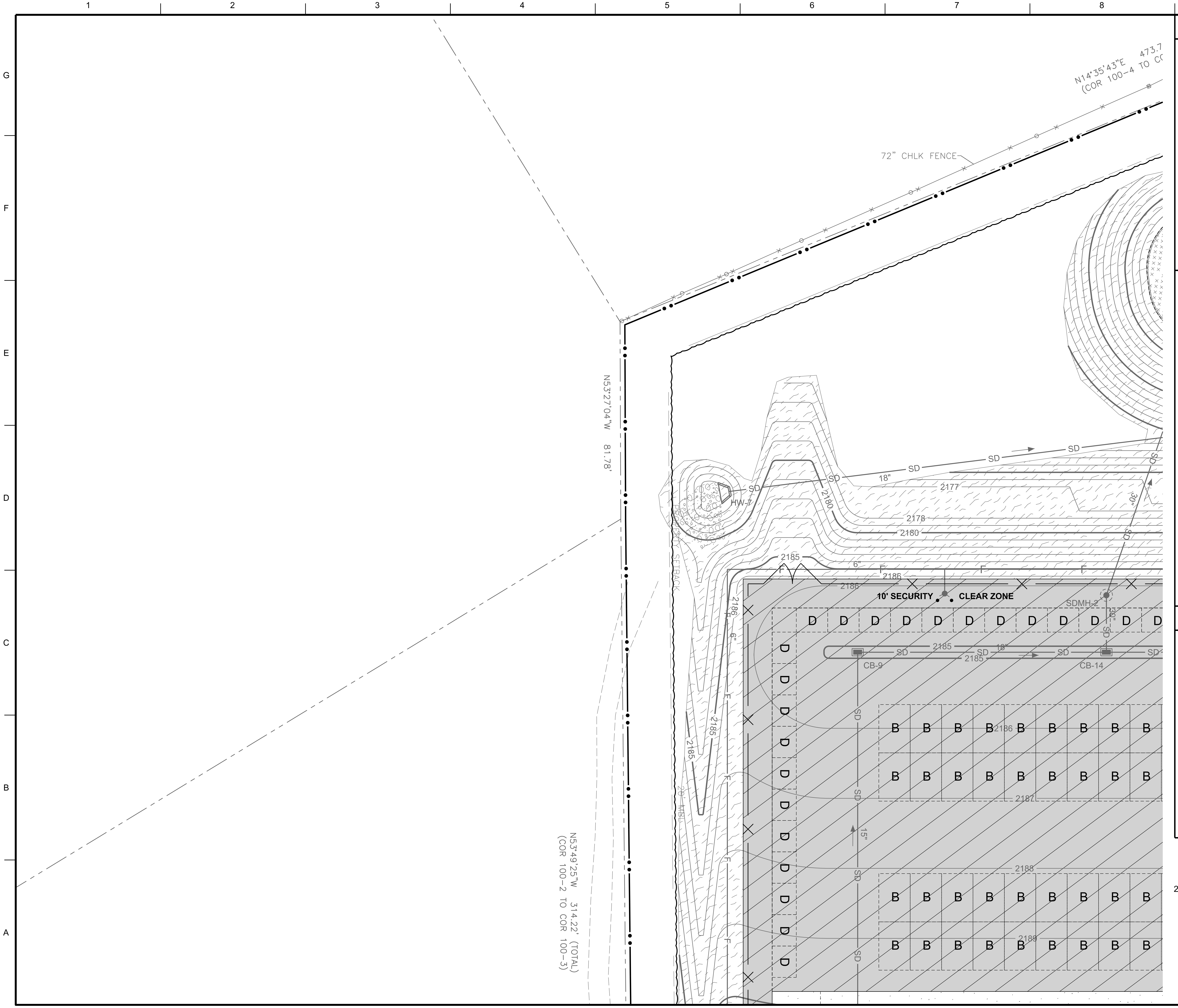

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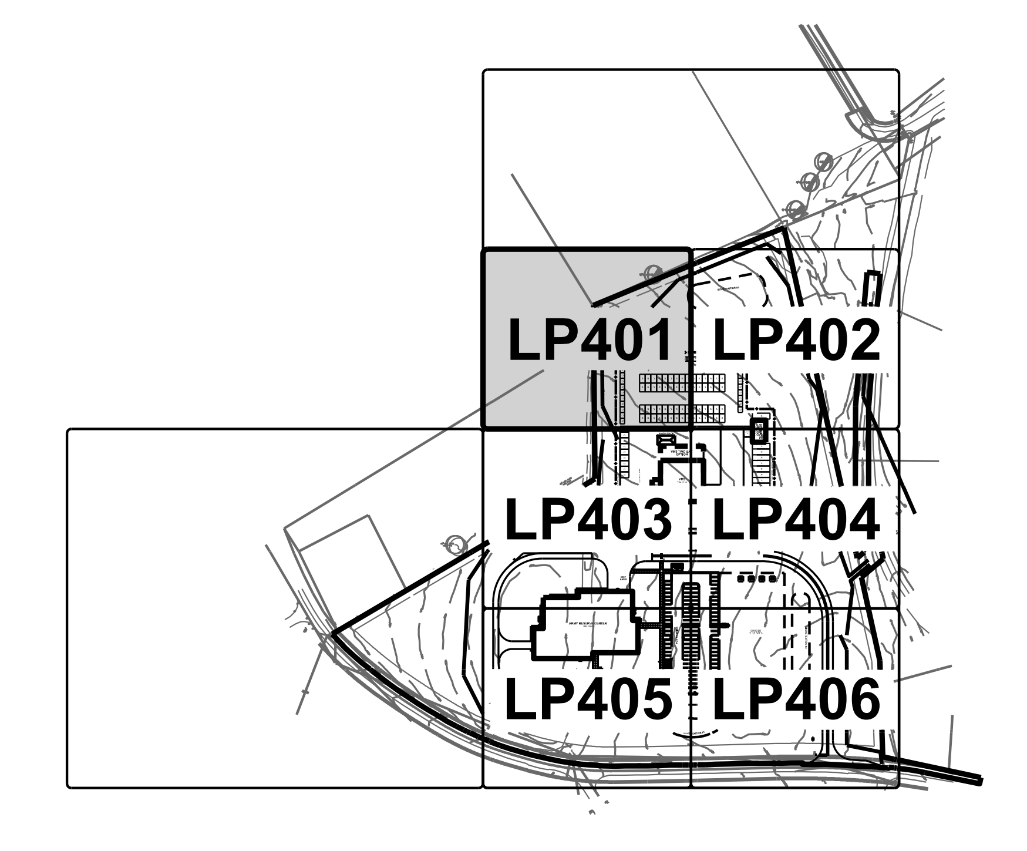


PLANT LEGEND

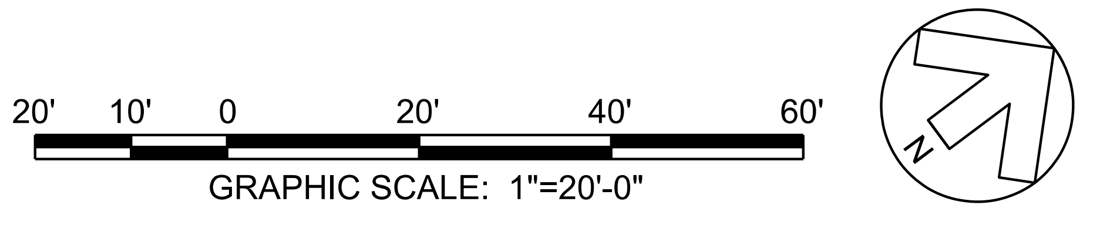
TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER — QUANTITY

TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER — QUANTITY

CONSTRUCTION LIMITS

▨ AREA TO BE SODDED

▨ AREA TO BE SEEDED



GRAPHIC SCALE: 1"=20'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM: NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

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SIZE: ANSI D
FILENAME: ASHE_LP401.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
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U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED
LANDSCAPE PLAN

SHEET ID
LP401

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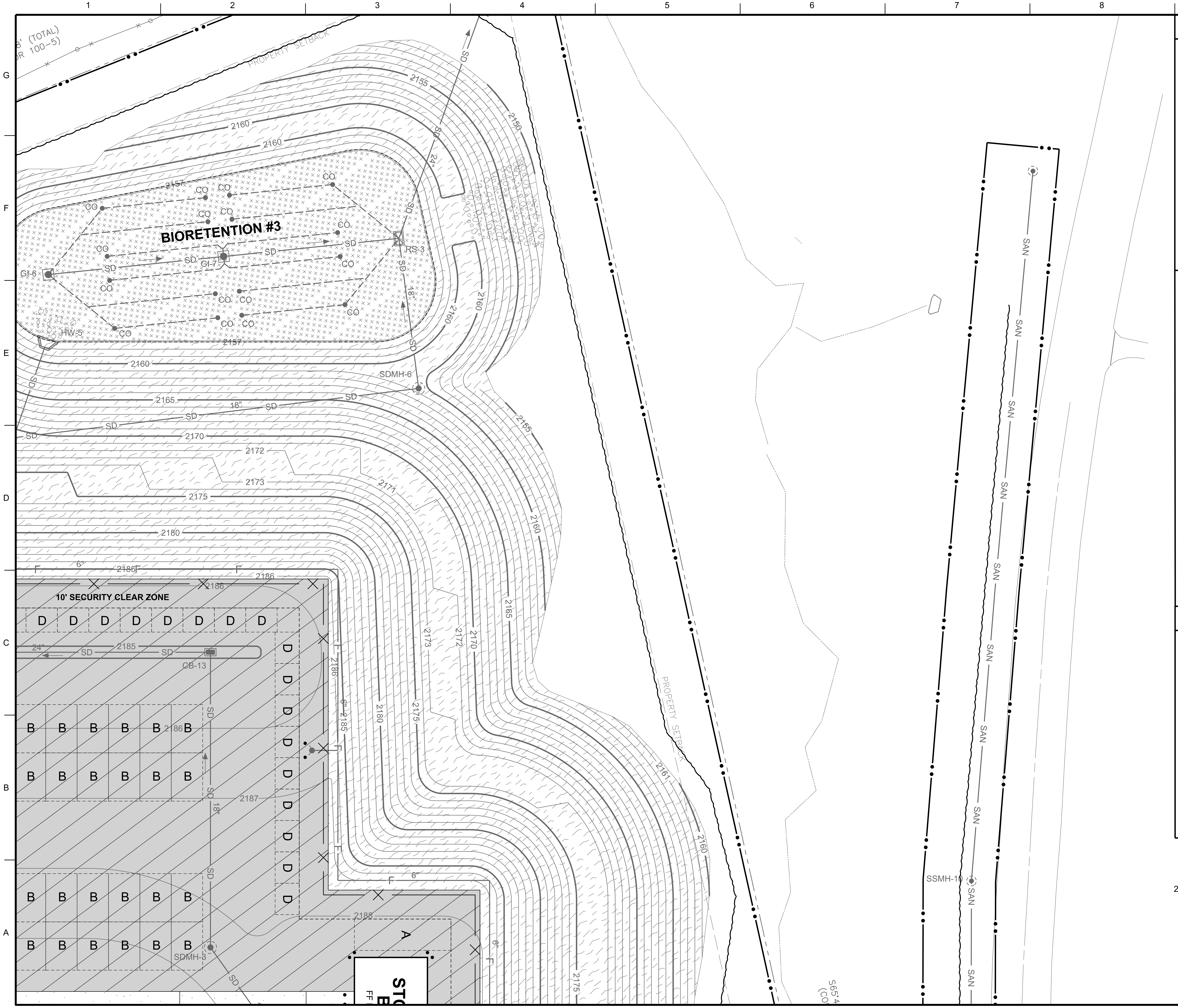

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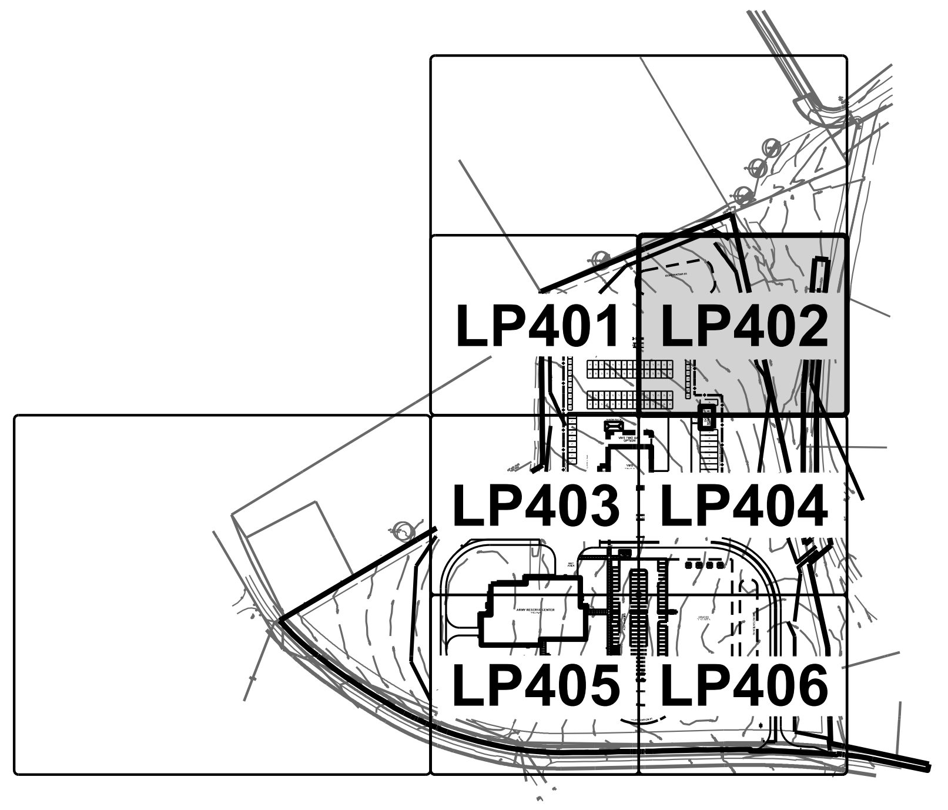

PLANT LEGEND

- TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER — XX / X-, QUANTITY
- TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER — XX / X-, QUANTITY
- —●●— CONSTRUCTION LIMITS
- ▨ AREA TO BE SODDED
- ▨ AREA TO BE SEEDED

20' 10' 0 20' 40' 60'

GRAPHIC SCALE: 1"=20'-0"

N

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

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MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022	
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SUBMITTED BY: D. HENSLEY	CATEGORY CODE	
SIZE: ANSI D	FILENAME: ASHE_LP402.dgn	

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED
LANDSCAPE PLAN

SHEET ID
LP402

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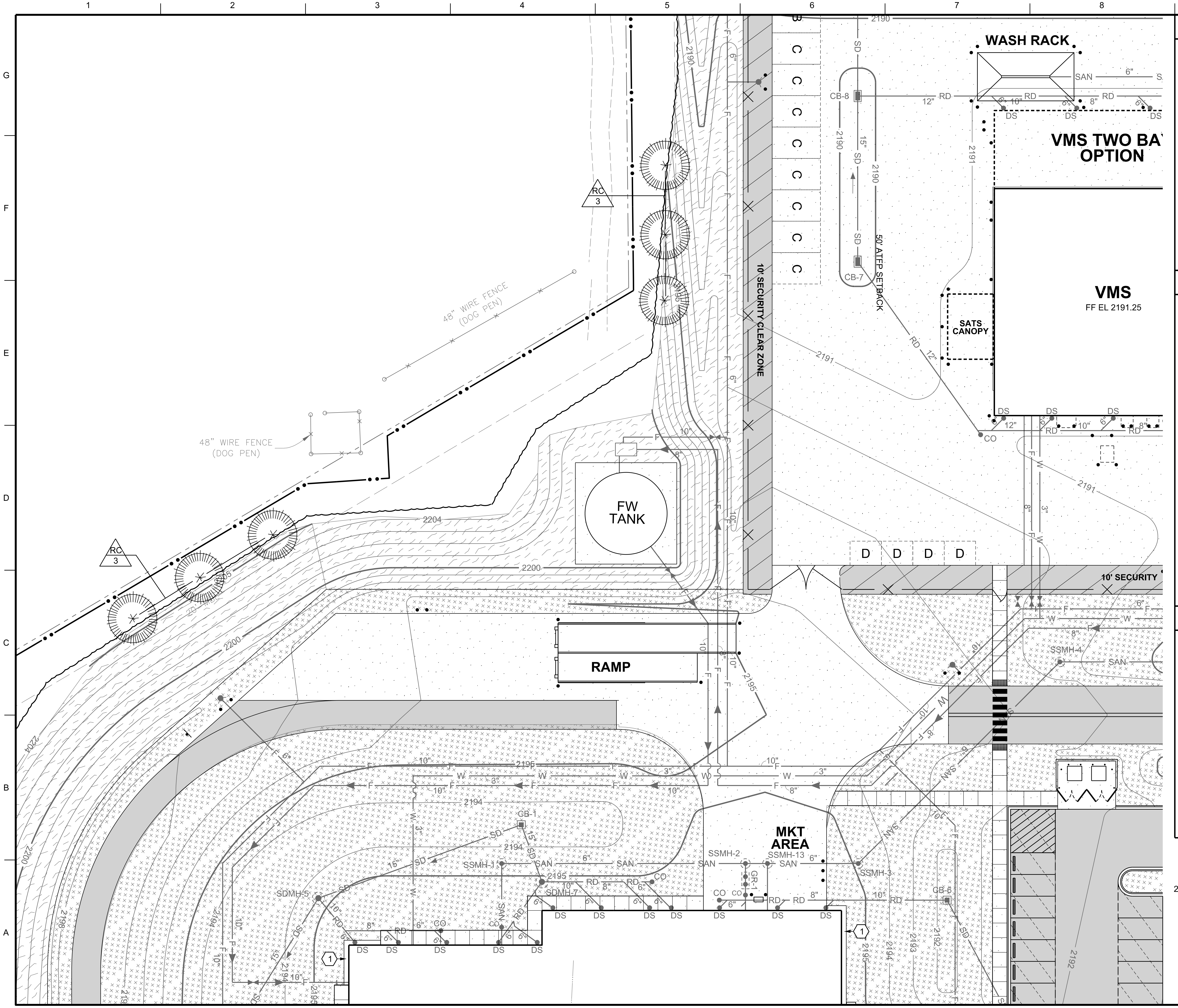

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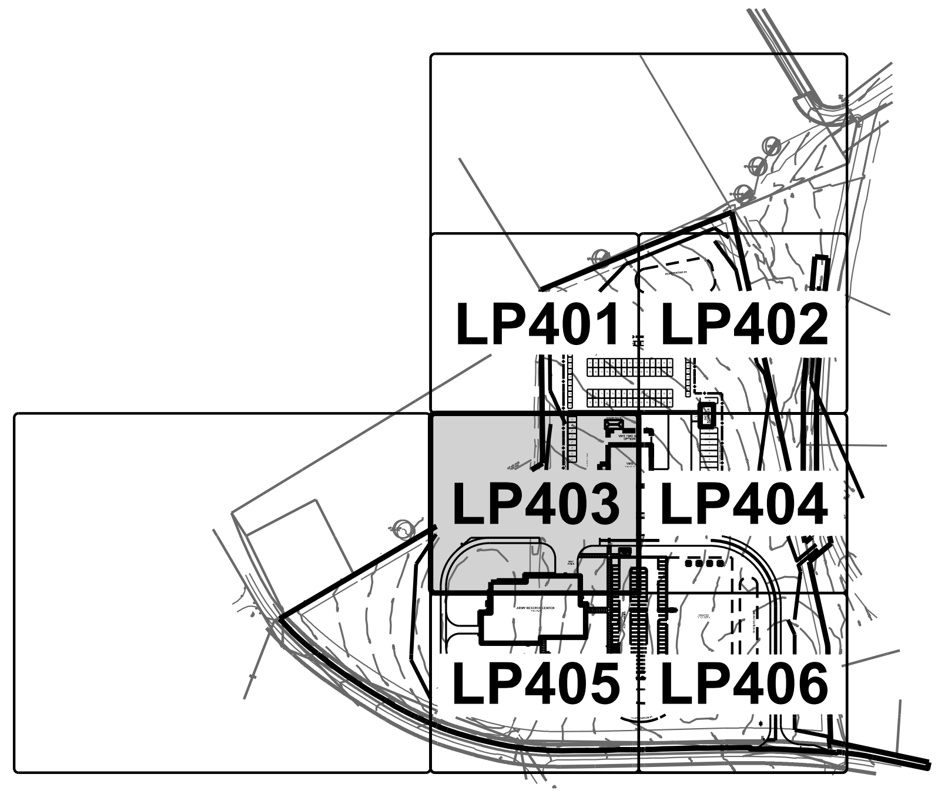

SHEET KEYNOTES

1. PROVIDE 2' WIDE LANDSCAPE STONE MULCH STRIP WITH COATED STEEL EDGING. REFER TO DETAIL 2, SHEET LP502.

PLANT LEGEND

TREE - (Large: 30' to 100' in Height at Maturity)
XX IDENTIFICATION NUMBER
X- QUANTITY

TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity)
XX IDENTIFICATION NUMBER
X- QUANTITY

CONSTRUCTION LIMITS

▨ AREA TO BE SODDED

▨ AREA TO BE SEEDED

20' 10' 0 20' 40' 60'
GRAPHIC SCALE: 1"=20'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

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DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE_LP403.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED LANDSCAPE PLAN

SHEET ID
LP403

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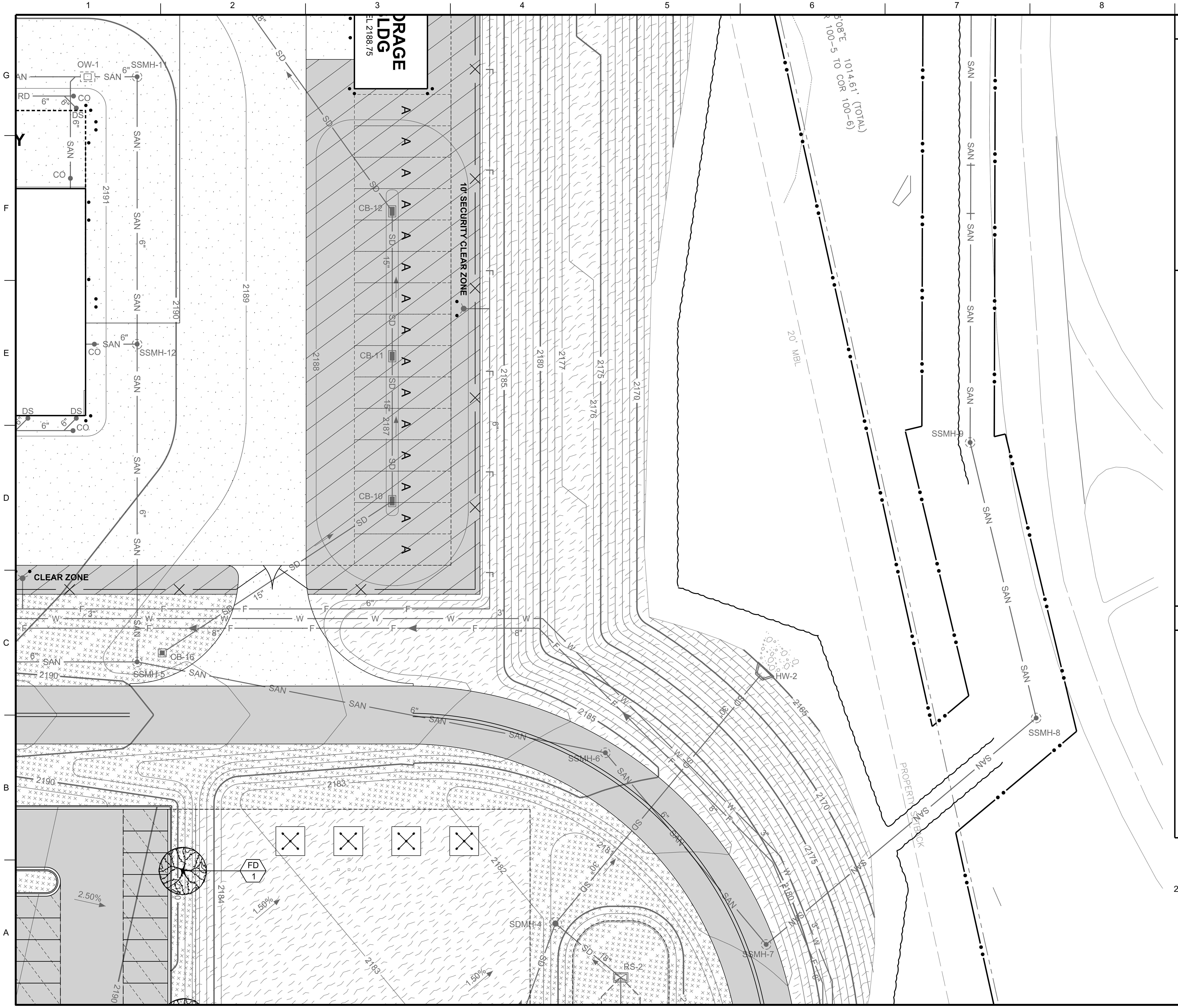
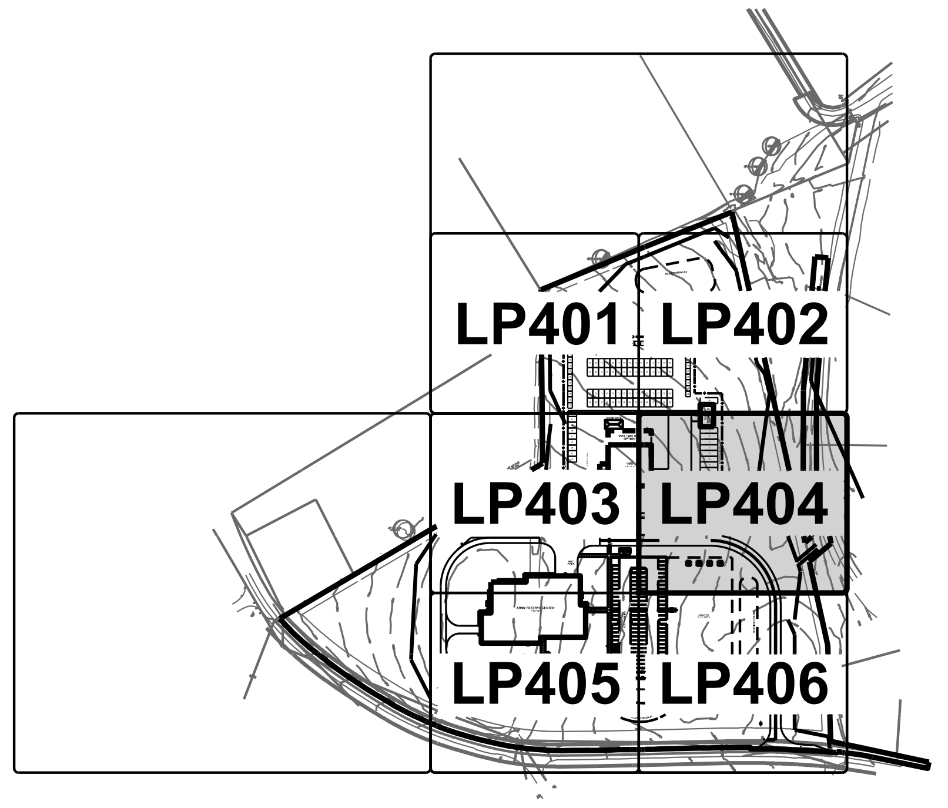


KEY MAP



PLANT LEGEND

- △ XX / X — TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER; QUANTITY
- ⬡ XX / X — TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER; QUANTITY
- —●●— CONSTRUCTION LIMITS
- ▦ AREA TO BE SODDED
- ▭ AREA TO BE SEEDED

20' 10' 0 20' 40' 60'
GRAPHIC SCALE: 1"=20'-0"

N

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF
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US Army Corps
of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY:
S.CURRY
DRAWN BY:
S.HAGGARD
CHECKED BY:
M.MAYER
SUBMITTED BY:
D. HENSLEY
SIZE:
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FILENAME:
ASHE_LP404.dgn

ISSUE DATE:
FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day & Zimmermann Company

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

ENLARGED
LANDSCAPE PLAN

SHEET ID
LP404

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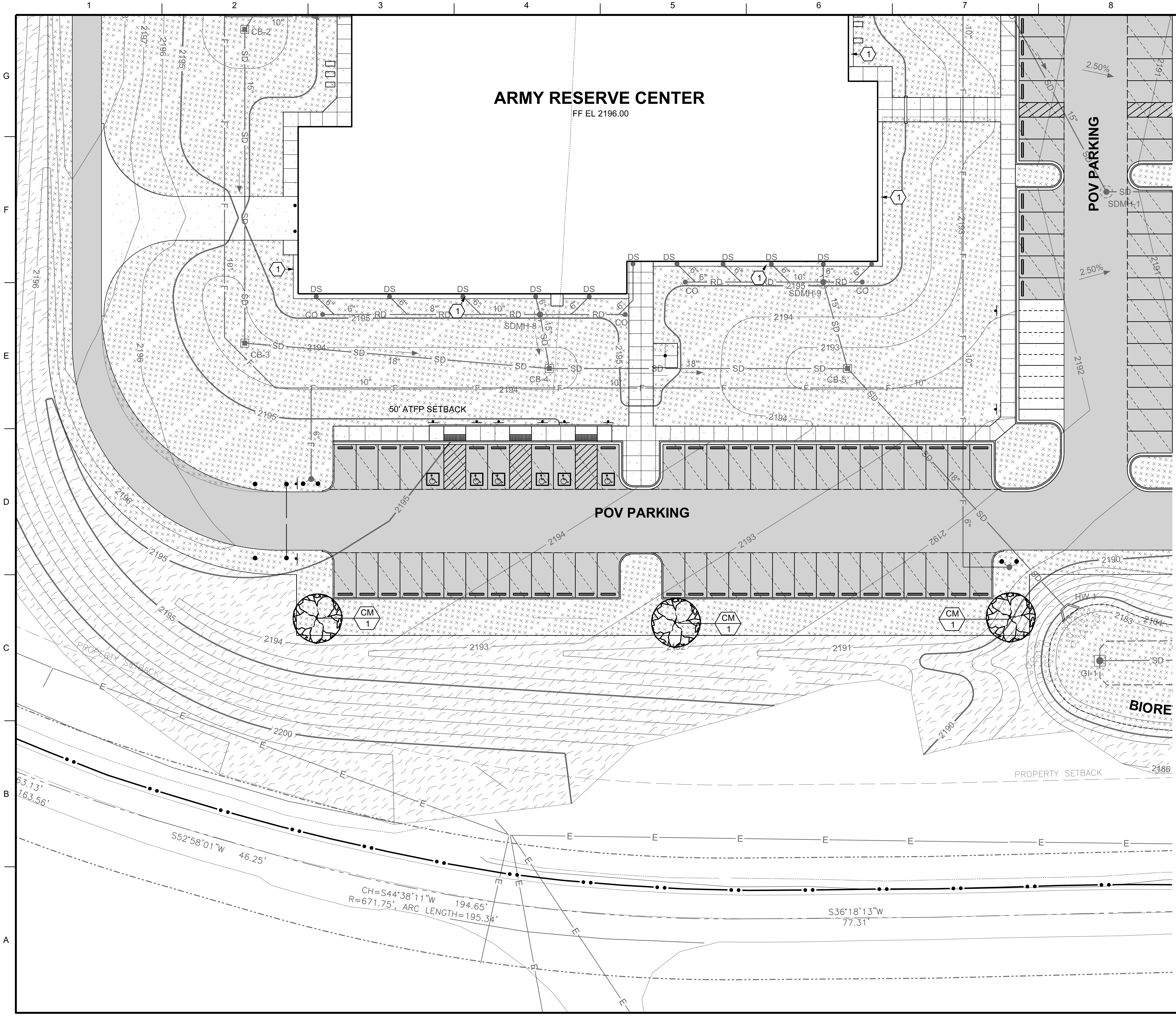
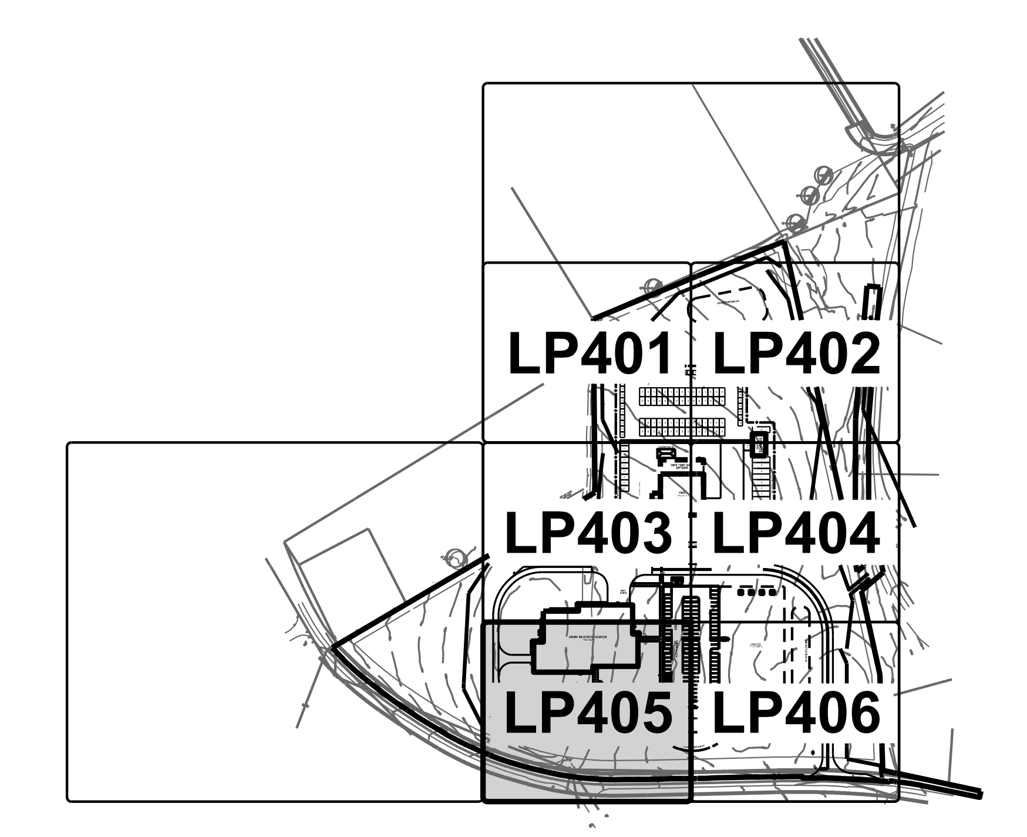


KEY MAP



⬡ SHEET KEYNOTES

1. PROVIDE 2' WIDE LANDSCAPE STONE MULCH STRIP WITH COATED STEEL EDGING. REFER TO DETAIL 2, SHEET LP502.

PLANT LEGEND

△ XX / X	TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER QUANTITY
⬡ XX / X	TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER QUANTITY
—••—	CONSTRUCTION LIMITS
▒	AREA TO BE SODDED
≈	AREA TO BE SEEDED

20' 10' 0 20' 40' 60'

GRAPHIC SCALE: 1"=20'-0"

GEOGRAPHIC COORDINATE DATA

HORIZONTAL DATUM:
NORTH CAROLINA STATE PLANE, NAD83.

VERTICAL DATUM: NAVD88.

UNITS OF MEASURE: U.S. SURVEY FEET.

COORDINATES SHOWN IN FORMAT OF EASTING, NORTHING AND ELEVATION.

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: S.CURRY	ISSUE DATE: FEBRUARY 25, 2022
DRAWN BY: S.HAGGARD	SOLICITATION NO.:
CHECKED BY: M.MAYER	CONTRACT NO.:
SUBMITTED BY: D. HENSLEY	CATEGORY CODE
SIZE: ANSI D	FILENAME: ASHE_LP405.dgn

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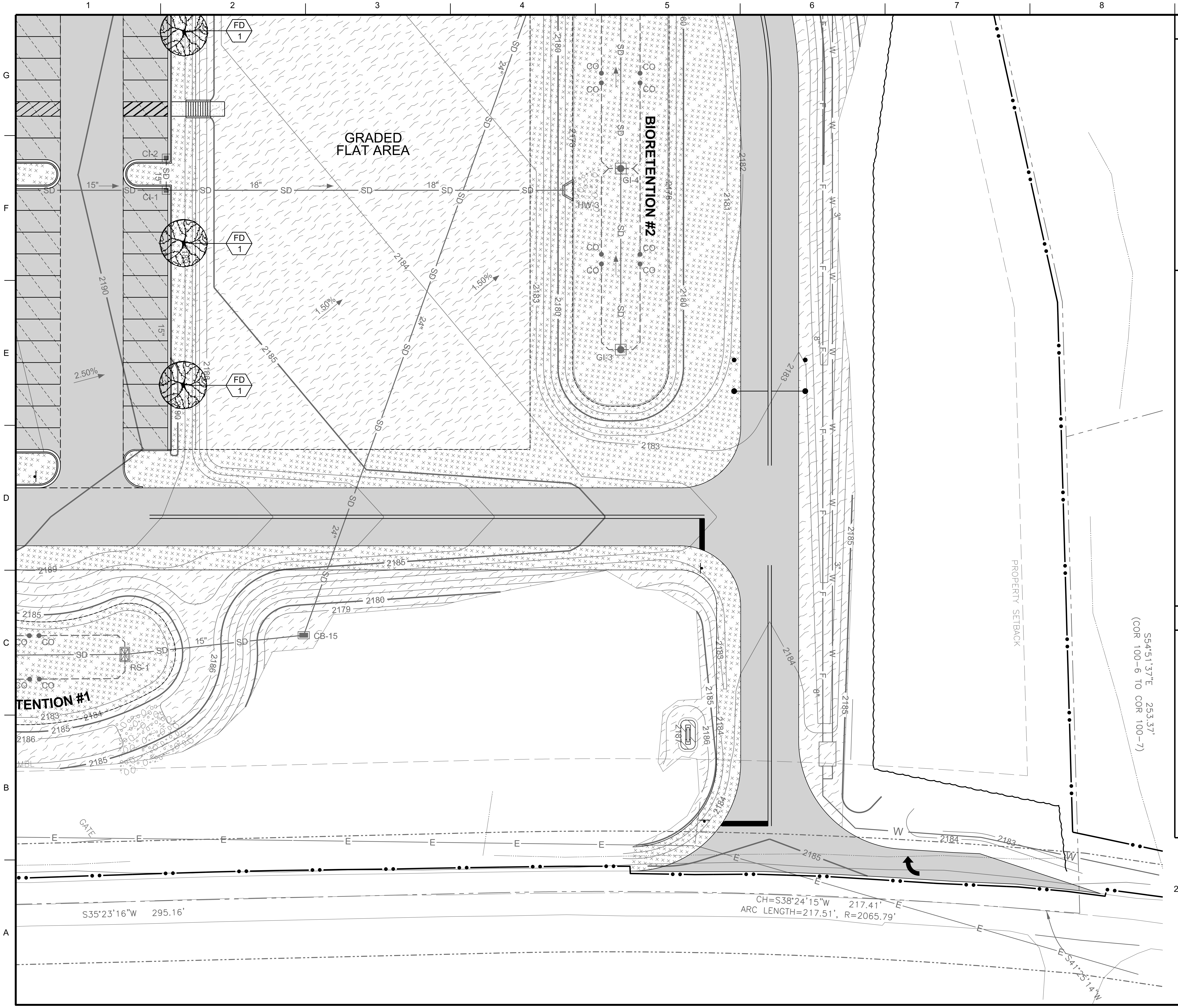
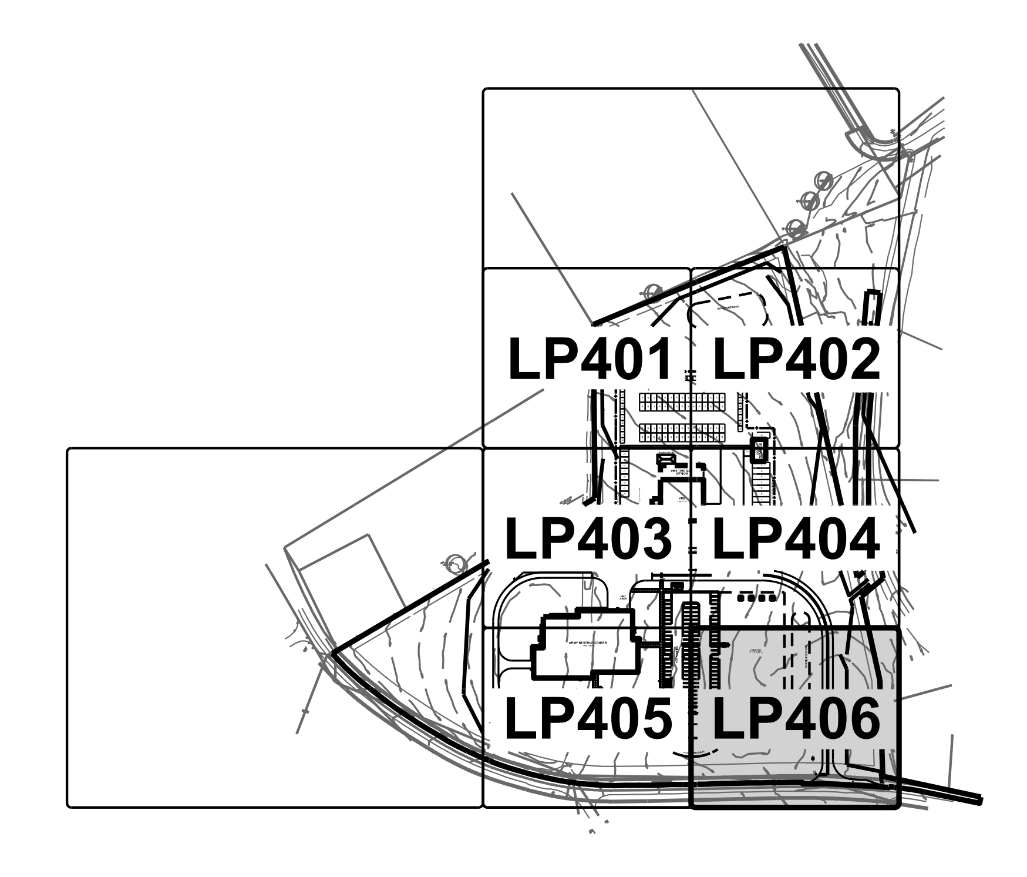
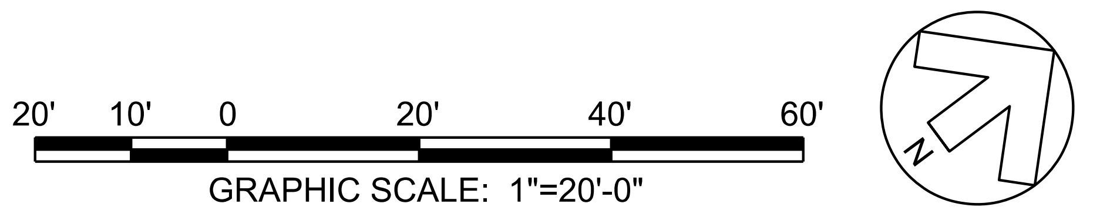


KEY MAP



PLANT LEGEND

- TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER — QUANTITY
- TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER — QUANTITY
- •-•• CONSTRUCTION LIMITS
- ▨ AREA TO BE SODDED
- ▨ AREA TO BE SEEDED



GRAPHIC SCALE: 1"=20'-0"

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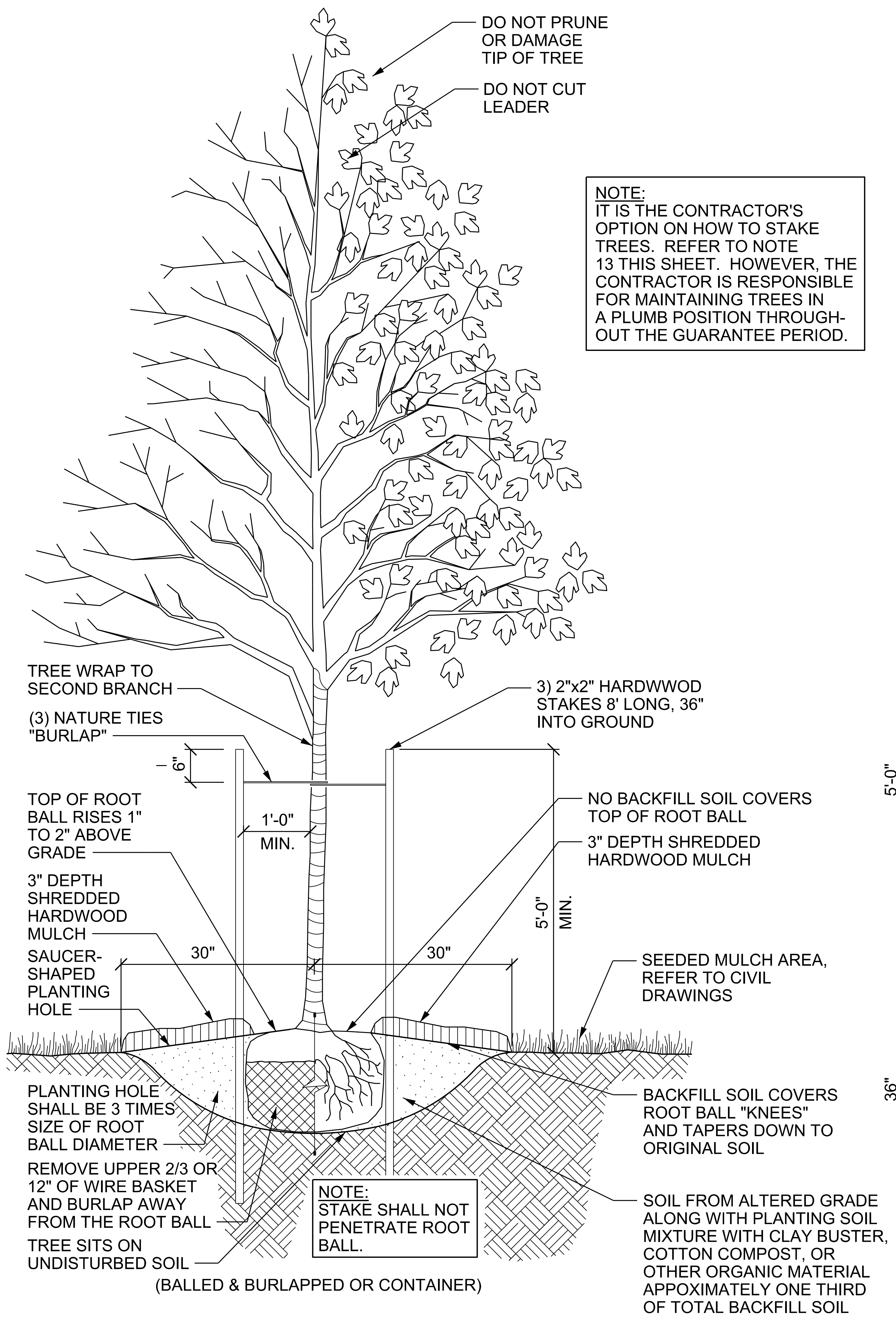

DO NOT PRUNE OR DAMAGE TIP OF TREE
DO NOT CUT LEADER
TREE WRAP TO SECOND BRANCH
(3) NATURE TIES "BURLAP"
6"
1'-0" MIN.
3) 2"x2" HARDWWOD STAKES 8' LONG, 36" INTO GROUND
TOP OF ROOT BALL RISES 1" TO 2" ABOVE GRADE
NO BACKFILL SOIL COVERS TOP OF ROOT BALL
3" DEPTH SHREDDED HARDWOOD MULCH
5'-0" MIN.
3" DEPTH SHREDDED HARDWOOD MULCH
30"
30"
SAUCER-SHAPED PLANTING HOLE
SEEDED MULCH AREA, REFER TO CIVIL DRAWINGS
PLANTING HOLE SHALL BE 3 TIMES SIZE OF ROOT BALL DIAMETER
BACKFILL SOIL COVERS ROOT BALL "KNEES" AND TAPERS DOWN TO ORIGINAL SOIL
REMOVE UPPER 2/3 OR 12" OF WIRE BASKET AND BURLAP AWAY FROM THE ROOT BALL
SOIL FROM ALTERED GRADE ALONG WITH PLANTING SOIL MIXTURE WITH CLAY BUSTER, COTTON COMPOST, OR OTHER ORGANIC MATERIAL APPOXIMATELY ONE THIRD OF TOTAL BACKFILL SOIL
TREE SITS ON UNDISTURBED SOIL
(BALLED & BURLAPPED OR CONTAINER)

NOTE:
IT IS THE CONTRACTOR'S OPTION ON HOW TO STAKE TREES. REFER TO NOTE 13 THIS SHEET. HOWEVER, THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TREES IN A PLUMB POSITION THROUGHOUT THE GUARANTEE PERIOD.

NOTE:
STAKE SHALL NOT PENETRATE ROOT BALL.

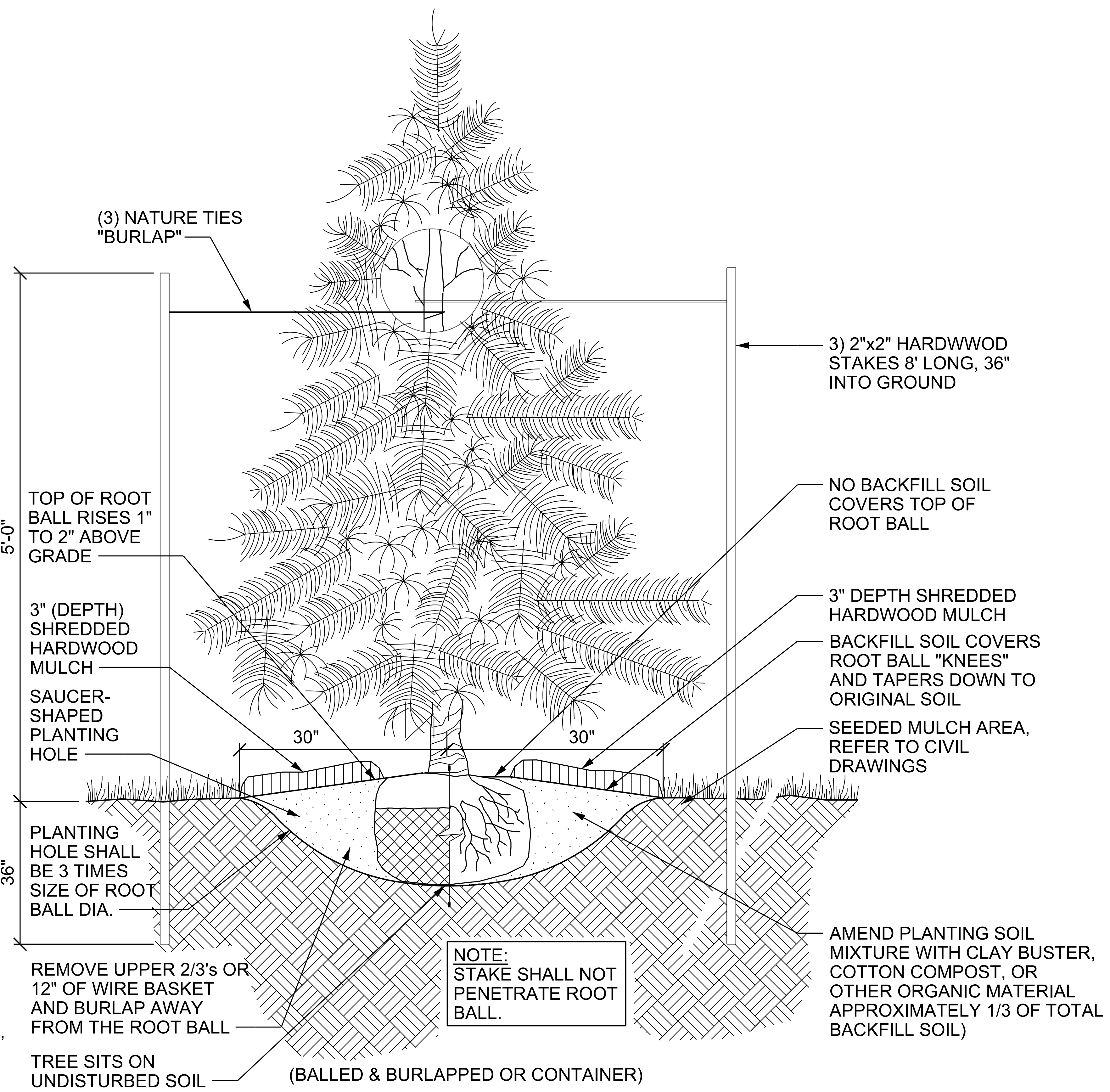
1
LP501

DECIDUOUS TREE PLANTING AND STAKING DETAIL

NO SCALE

NOTE:
BIODEGRADABLE TIES AND POST SHALL BE USED FOR GUY AND STAKING OF TREES

NOTE:
1. CONIFER TO HAVE SHREDDED HARDWOOD MULCH UNLESS NOTED OTHERWISE. NO MULCH TO BE IN CONTACT WITH TRUNK.
2. SCARIFY BOTTOM AND SIDES OF HOLE PRIOR TO PLANTING.

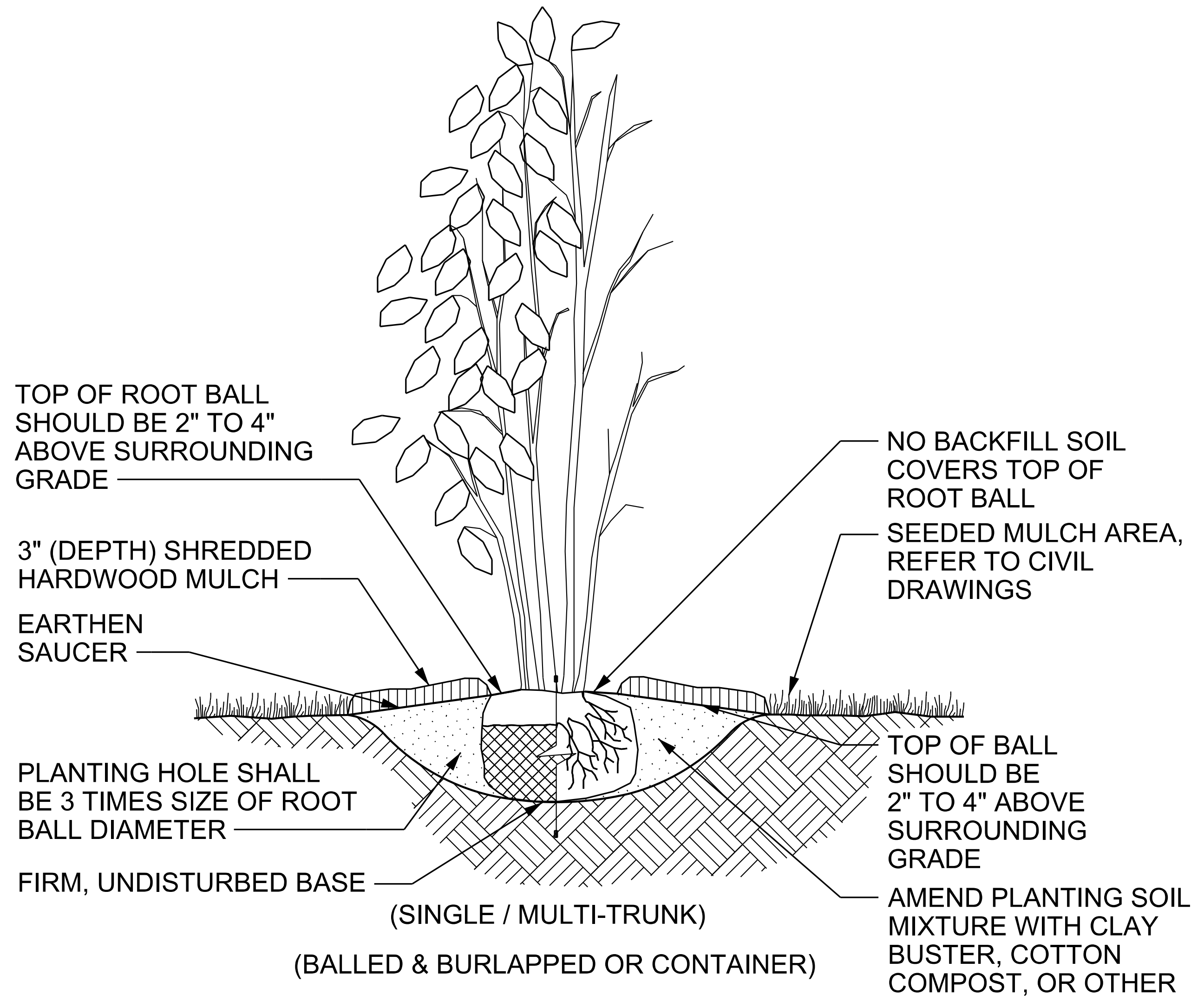

(3) NATURE TIES "BURLAP"
3) 2"x2" HARDWWOD STAKES 8' LONG, 36" INTO GROUND
5'-0"
TOP OF ROOT BALL RISES 1" TO 2" ABOVE GRADE
NO BACKFILL SOIL COVERS TOP OF ROOT BALL
3" (DEPTH) SHREDDED HARDWOOD MULCH
3" DEPTH SHREDDED HARDWOOD MULCH
BACKFILL SOIL COVERS ROOT BALL "KNEES" AND TAPERS DOWN TO ORIGINAL SOIL
SAUCER-SHAPED PLANTING HOLE
30"
30"
SEEDED MULCH AREA, REFER TO CIVIL DRAWINGS
36"
PLANTING HOLE SHALL BE 3 TIMES SIZE OF ROOT BALL DIA.
AMEND PLANTING SOIL MIXTURE WITH CLAY BUSTER, COTTON COMPOST, OR OTHER ORGANIC MATERIAL APPROXIMATELY 1/3 OF TOTAL BACKFILL SOIL)
REMOVE UPPER 2/3's OR 12" OF WIRE BASKET AND BURLAP AWAY FROM THE ROOT BALL
TREE SITS ON UNDISTURBED SOIL
(BALLED & BURLAPPED OR CONTAINER)

NOTE:
STAKE SHALL NOT PENETRATE ROOT BALL.

2
LP501

EVERGREEN TREE PLANTING AND STAKING DETAIL

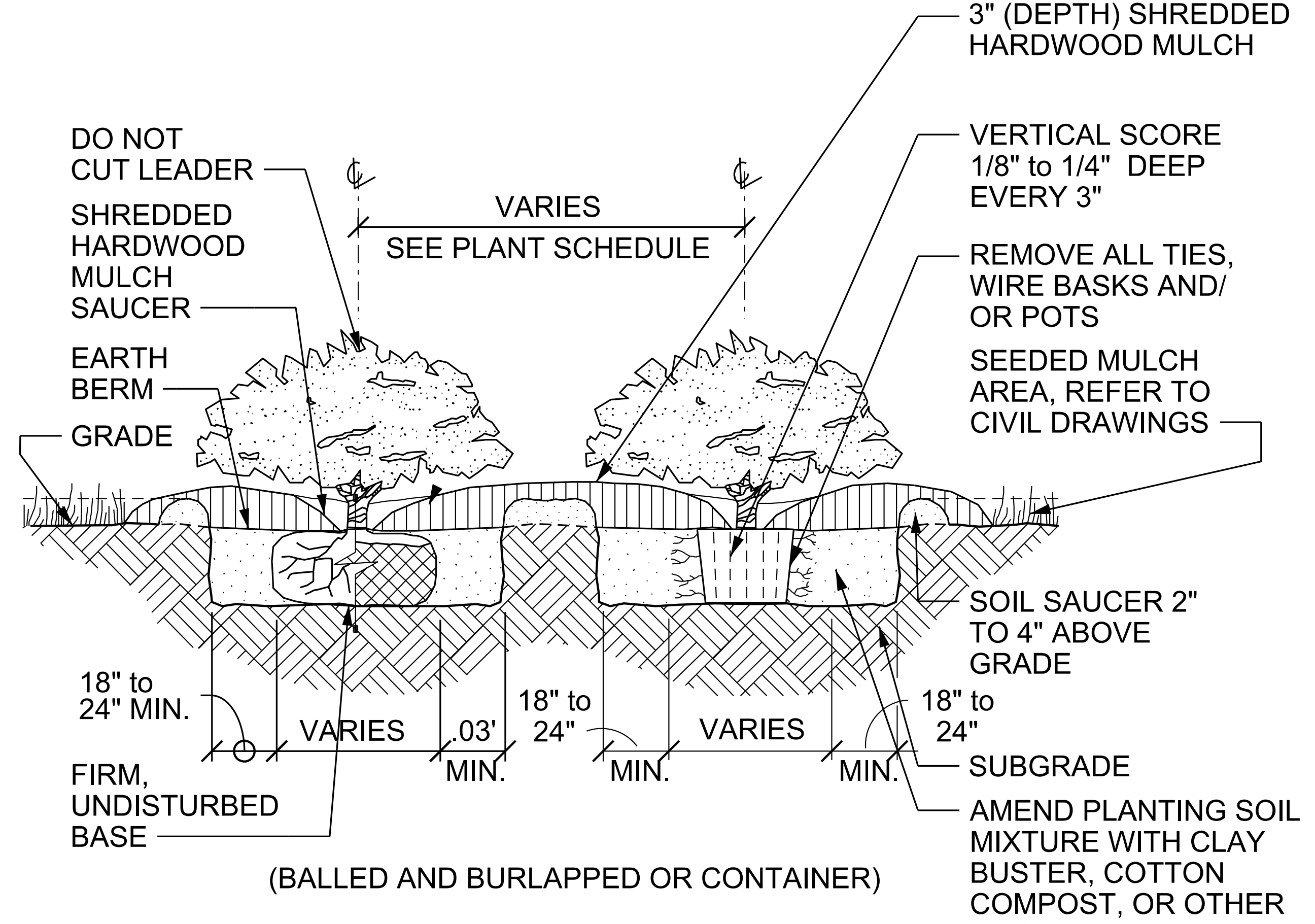
NO SCALE


TOP OF ROOT BALL SHOULD BE 2" TO 4" ABOVE SURROUNDING GRADE
NO BACKFILL SOIL COVERS TOP OF ROOT BALL
3" (DEPTH) SHREDDED HARDWOOD MULCH
SEEDED MULCH AREA, REFER TO CIVIL DRAWINGS
EARTHEN SAUCER
TOP OF BALL SHOULD BE 2" TO 4" ABOVE SURROUNDING GRADE
PLANTING HOLE SHALL BE 3 TIMES SIZE OF ROOT BALL DIAMETER
FIRM, UNDISTURBED BASE
AMEND PLANTING SOIL MIXTURE WITH CLAY BUSTER, COTTON COMPOST, OR OTHER ORGANIC MATERIAL APPROXIMATELY 1/3 OF TOTAL BACKFILL SOIL)
(SINGLE / MULTI-TRUNK)
(BALLED & BURLAPPED OR CONTAINER)

3
LP501

MEDIUM SHRUB PLANTING DETAIL

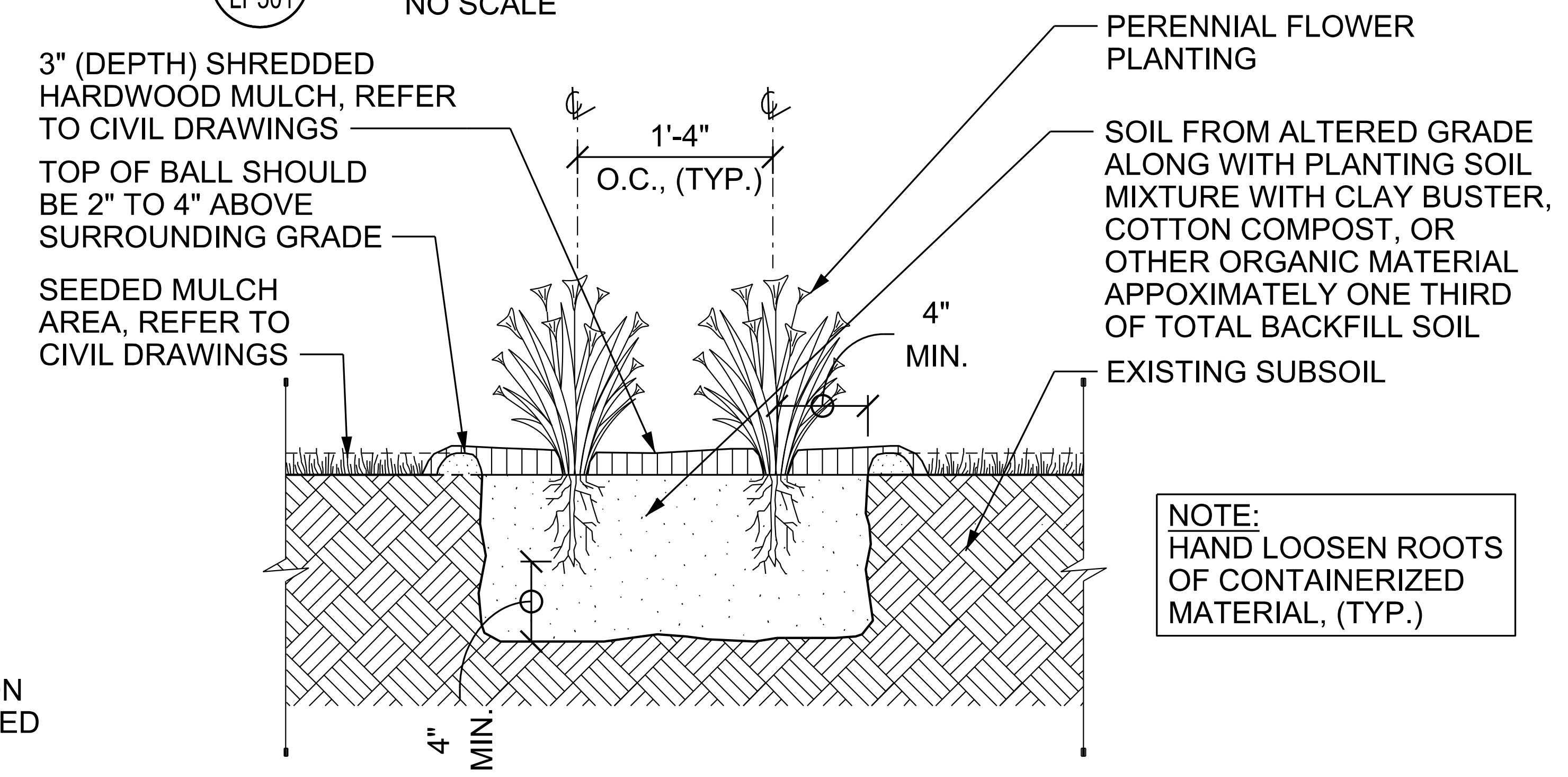
NO SCALE


3" (DEPTH) SHREDDED HARDWOOD MULCH
DO NOT CUT LEADER
VARIES
SEE PLANT SCHEDULE
VERTICAL SCORE 1/8" to 1/4" DEEP EVERY 3"
SHREDDED HARDWOOD MULCH SAUCER
REMOVE ALL TIES, WIRE BASKS AND/ OR POTS
EARTH BERM
SEEDED MULCH AREA, REFER TO CIVIL DRAWINGS
GRADE
SOIL SAUCER 2" TO 4" ABOVE GRADE
18" to 24" MIN.
VARIES
.03' MIN.
18" to 24"
MIN.
VARIES
MIN.
18" to 24"
SUBGRADE
FIRM, UNDISTURBED BASE
AMEND PLANTING SOIL MIXTURE WITH CLAY BUSTER, COTTON COMPOST, OR OTHER ORGANIC MATERIAL APPROXIMATELY 1/3 OF TOTAL BACKFILL SOIL)
(BALLED AND BURLAPPED OR CONTAINER)

4
LP501

SMALL SHRUB PLANTING DETAIL

NO SCALE


PERENNIAL FLOWER PLANTING
3" (DEPTH) SHREDDED HARDWOOD MULCH, REFER TO CIVIL DRAWINGS
1'-4"
O.C., (TYP.)
SOIL FROM ALTERED GRADE ALONG WITH PLANTING SOIL MIXTURE WITH CLAY BUSTER, COTTON COMPOST, OR OTHER ORGANIC MATERIAL APPOXIMATELY ONE THIRD OF TOTAL BACKFILL SOIL
TOP OF BALL SHOULD BE 2" TO 4" ABOVE SURROUNDING GRADE
SEEDED MULCH AREA, REFER TO CIVIL DRAWINGS
4" MIN.
EXISTING SUBSOIL
4" MIN.

NOTE:
HAND LOOSEN ROOTS OF CONTAINERIZED MATERIAL, (TYP.)

5
LP501

PERENNIAL FLOWER / PLANTING DETAIL

NO SCALE

SHEET NOTES:

1. ALL TOPSOIL SHALL BE RETAINED AND REUSED IN PLANTING HOLES AFTER DIGGING HAS BEEN COMPLETED. USE ANY EXCESS SOIL FROM THE PLANTING PIT AS WELL TO FORM A SAUCER 2" TO 3" HIGH AROUND THE PLANT. SAUCERS SHALL BE THE SAME DIAMETER OR SLIGHTLY LARGER THAN THE ROOT BALL.
2. ALL PLANTS SHALL BE "WATERED IN" BY FLOODING THE BACKFILLED HOLE WITHIN THE SAME WORKING DAY UPON WHICH THEY WERE PLANTED. DURING AND IMMEDIATELY AFTER WATERING, ALL PLANTS SHALL BE ADJUSTED AS NECESSARY TO ENSURE CORRECT DEPTH OF PLANTING, VERTICAL ALIGNMENT AND/OR TO COMPENSATE FOR SETTLING. SOIL SHALL BE FIRMED AROUND EACH PLANT AS FINAL ADJUSTMENTS ARE MADE.
3. PLANTS SHALL BE SET PLUMB AND HELD IN POSITION UNTIL SUFFICIENT SOIL HAS BEEN FIRMLY PLACED AROUND THE ROOTS OR BALL. PLANTS SHALL BE SET AT GROUND LEVEL OR NO MORE THAN 2" ABOVE THE EXISTING GRADE. THIS IS TO ENSURE ADEQUATE RECEPTION OF OXYGEN AND MOISTURE TO THE ROOTS OF THE PLANT.
4. PLANT ALL NEW PLANT MATERIAL AT ORIGINAL FIELD GROWN LEVEL. TAMP SOIL MIX BELOW ROOT BALL.
5. CLEAR, REMOVE AND DISPOSE OF BRUSH, SNAGS, AND RUBBISH WITHIN 5'-0" OF THE PLANTING HOLE. GRADE THE AREA TO MEET THE EXISTING LANDSCAPE UNLESS PLANTING ON A SLOPE.
6. INSTALLATION OF SHREDDED HARDWOOD MULCH AROUND PLANT MATERIAL SHALL BE COMPLETED WITHIN 48 HOURS AFTER PLANTING OF NEW PLANT MATERIAL. SHREDDED HARDWOOD MULCH SHALL BE SPREAD TO A DEPTH OF 3" AND AT A RADIUS OF 16" AROUND EACH INDIVIDUALLY PLANTED TREE, SHRUB AND PERENNIAL FLOWER AND SHOULD COVER THE ENTIRE SAUCER AREA OF EACH PLANT.
7. SPRING PLANTING FOR TREES AND SHRUBS SHALL BE ACCOMPLISHED BEGINNING MARCH 1 AND COMPLETED PRIOR TO JUNE 1. FALL PLANTING SHALL BE ACCOMPLISHED BEGINNING OCTOBER 15 AND COMPLETED PRIOR TO DECEMBER 15, DEPENDING ON WEATHER CONDITIONS. NO PLANTING SHALL OCCUR IF THE GROUND IS MUDDY OR FROZEN.
8. PERMANENT AND TEMPORARY SEEDING FOR "COOL SEASON" AND "WARM SEASON" GRASSES SHALL BE PERFORMED FROM SEPTEMBER 1 THROUGH FEBRUARY 28 DEPENDING ON WEATHER CONDITIONS. REFER TO SEEDING SPECIFICATION 32 92 19.
9. REMOVE TREE STAKES 360 DAYS AFTER PLANTING.
10. PLANTING SOIL SHALL NOT BE COMPACTED AND SHALL CONTAIN SUFFICIENT MOISTURE TO SUPPORT THE TREES.
11. CONTRACTOR TO PROVIDE TEMPORARY IRRIGATION OR OTHER WATERING METHODS FOR ALL PLANTED TREES FOR THE DURATION OF THE ESTABLISHMENT PERIOD. GATOR BAGS SHALL NOT BE USED DURING THE ESTABLISHMENT PERIOD.
12. STAKE AND GUY PLANTS USING 3-2"x2" HARDWOOD STAKES AND GUYS PER TREE. DRIVE STAKES 3 FEET IN THE GROUND, DO NOT INJURE THE ROOT BALL. TIES SHOULD NOT ALLOW FOR TRUNK MOVEMENT.

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LANDSCAOE DETAILS

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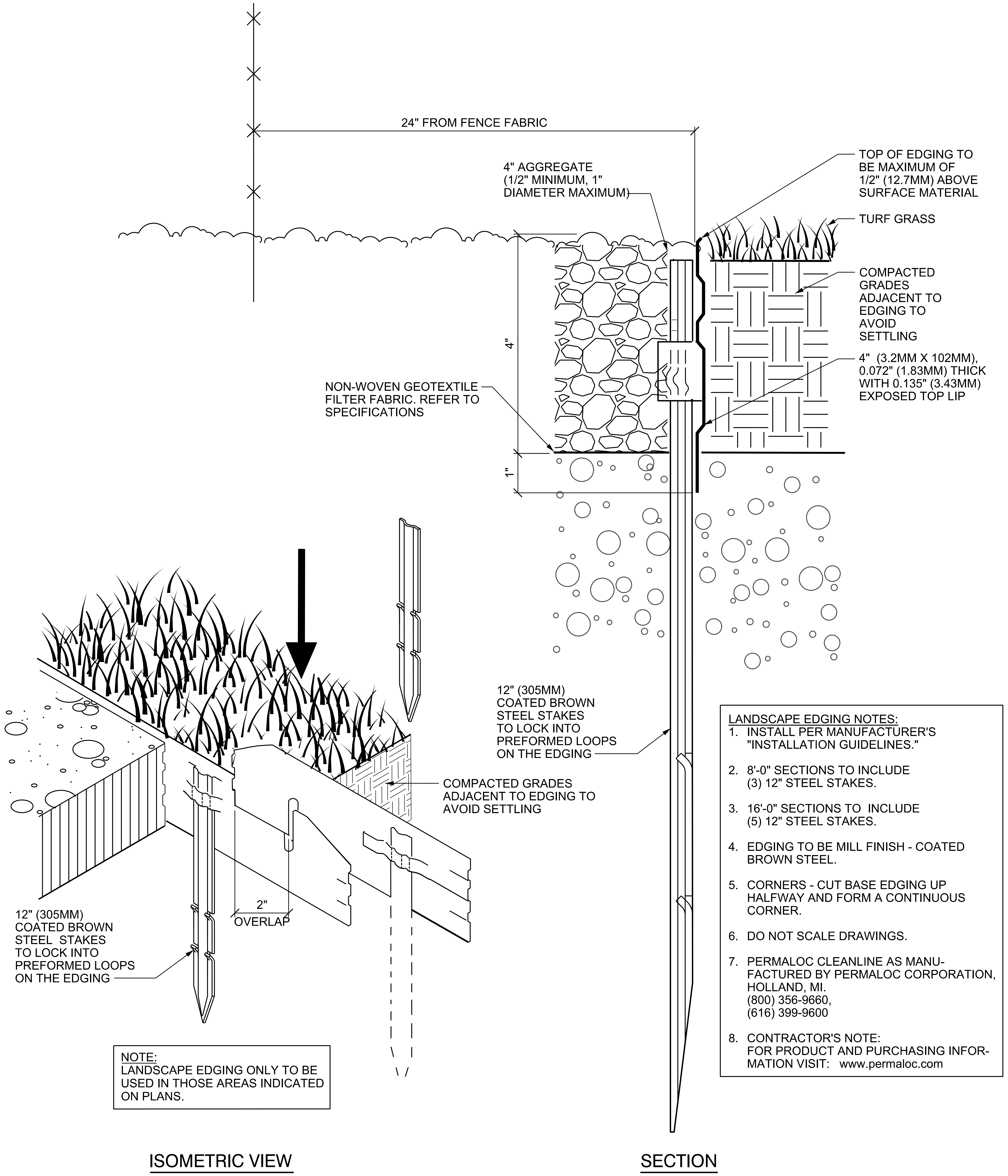

24" FROM FENCE FABRIC
4" AGGREGATE (1/2" MINIMUM, 1" DIAMETER MAXIMUM)
TOP OF EDGING TO BE MAXIMUM OF 1/2" (12.7MM) ABOVE SURFACE MATERIAL
TURF GRASS
COMPACTED GRADES ADJACENT TO EDGING TO AVOID SETTLING
4"
1"
4" (3.2MM X 102MM), 0.072" (1.83MM) THICK WITH 0.135" (3.43MM) EXPOSED TOP LIP
NON-WOVEN GEOTEXTILE FILTER FABRIC. REFER TO SPECIFICATIONS
12" (305MM) COATED BROWN STEEL STAKES TO LOCK INTO PREFORMED LOOPS ON THE EDGING
COMPACTED GRADES ADJACENT TO EDGING TO AVOID SETTLING
2" OVERLAP
12" (305MM) COATED BROWN STEEL STAKES TO LOCK INTO PREFORMED LOOPS ON THE EDGING
ISOMETRIC VIEW
SECTION

NOTE:
LANDSCAPE EDGING ONLY TO BE USED IN THOSE AREAS INDICATED ON PLANS.

LANDSCAPE EDGING NOTES:

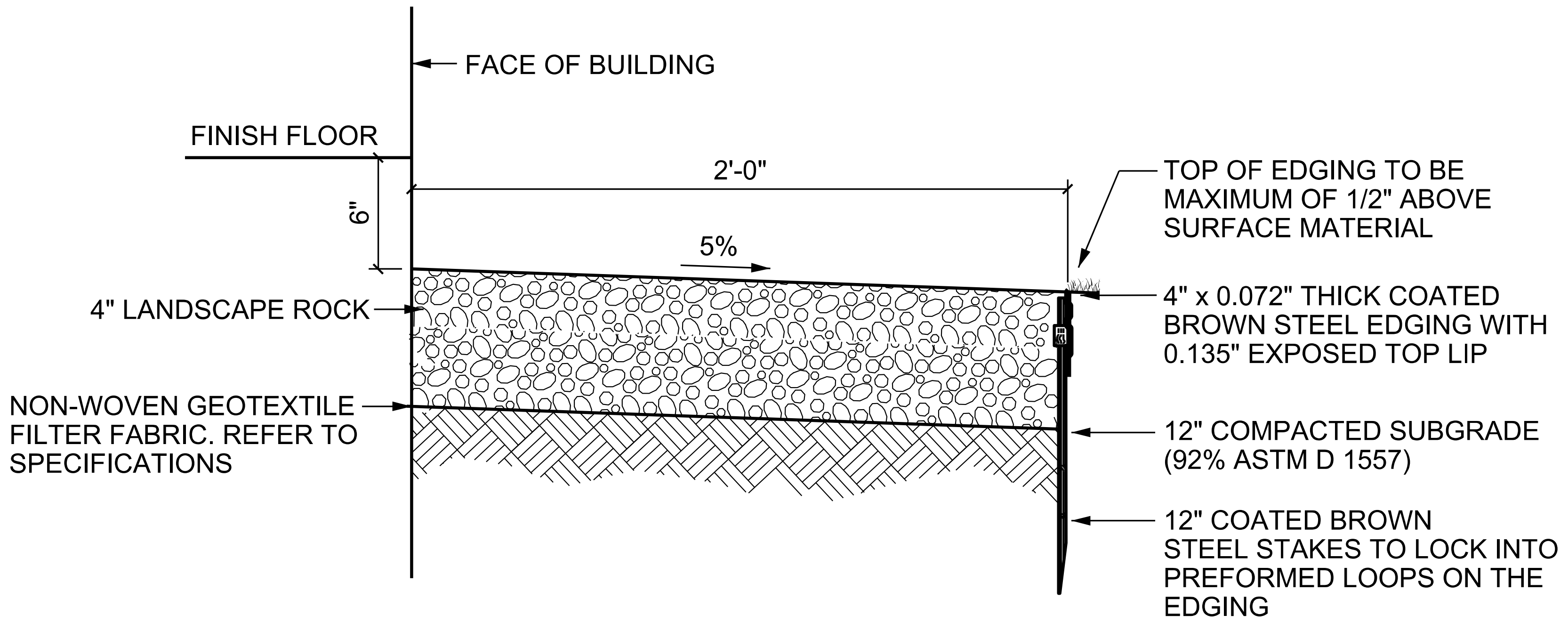
1. INSTALL PER MANUFACTURER'S "INSTALLATION GUIDELINES."
2. 8'-0" SECTIONS TO INCLUDE (3) 12" STEEL STAKES.
3. 16'-0" SECTIONS TO INCLUDE (5) 12" STEEL STAKES.
4. EDGING TO BE MILL FINISH - COATED BROWN STEEL.
5. CORNERS - CUT BASE EDGING UP HALFWAY AND FORM A CONTINUOUS CORNER.
6. DO NOT SCALE DRAWINGS.
7. PERMALOC CLEANLINE AS MANUFACTURED BY PERMALOC CORPORATION, HOLLAND, MI.
   (800) 356-9660,
   (616) 399-9600
8. CONTRACTOR'S NOTE:
   FOR PRODUCT AND PURCHASING INFORMATION VISIT: www.permaloc.com

1 LP101 COATED BROWN STEEL LANDSCAPE EDGING

NOT TO SCALE

INSTALLATION GUIDELINES:

1. THE EDGING IS NORMALLY INSTALLED WITH THE STAKES ON THE INSIDE OF THE LANDSCAPE BED AREA (SEE SECTION). IT IS IDEAL TO HAVE ANOTHER PERSON HOLD THE EDGING WHILE YOU ARE STAKING IT INTO PLACE, BUT NOT NECESSARY. KEEP SNAPPING THE SECTIONS TOGETHER WELL AHEAD OF STAKING.
2. LOCATE BORDER LINE OF EDGING WITH STRING OR OTHER MEANS TO ASSURE BORDER STRAIGHTNESS AND CURVES AS DESIGNED. DIG LANDSCAPE TRENCH 1" (25mm) DEEPER THAN THE EDGING BEING SET.
3. SET THE EDGING INTO THE LANDSCAPE TRENCH WITH THE TOP 1/2" (12.5cm) ABOVE WHAT WILL BECOME THE COMPACTED FINISH GRADE. (THE INSTALLER CAN CONNECT THE ADJACENT SECTIONS OF THE EDGING PRIOR TO OR AFTER THE SECTIONS ARE PLACED IN THE TRENCH.) WHERE CONNECTIONS ARE NEEDED ON CURVES, THE INSTALLER WILL FIND THAT CONNECTING SECTIONS PRIOR TO INSTALLING WILL ALLOW FOR FASTER COMPLETION.
4. START AT THE BEGINNING OF THE BED AREA AND BEGIN DRIVING THE 12" (30.5cm) COATED BROWN STEEL STAKES.
5. CONNECT ADJACENT EDGING SECTIONS BY SLIDING THE ENDS INTO EACH OTHER WITH A MINIMUM OF 2 INCHES (50.8mm) OF OVERLAP. (SEE ISOMETRIC VIEW.)
6. AT THE END OF THE BED AREA, CUT THE SECTION TO THE DESIRED LENGTH AND STAKE DOWN. BEGIN YOUR NEXT BED AREA WITH THE REMAINING PORTION OF THE CUT SECTION.
7. FORMING ANGLES: CUT THE BOTTOM OF THE EDGING HALF-WAY UP USING A HACKSAW, LAY ON A HARD SURFACE PLACING A BRICK OR 4 x 4 OVER THE CUT. BEND UP TO THE DESIRED ANGLE USING A HAMMER TO STIFFEN ANGLE. THIS FORMS A 1/2" RADIUS ON TOP AVOIDING SHARP CORNERS.
8. OPTION: PRE-MANUFACTURED CORNERS ARE ALSO AVAILABLE.
9. NOTE: WHEN INSTALLING STEEL EDGING IN DIRECT CONTACT WITH ACQ TREATED LUMBER WE RECOMMEND INSTALLING A BARRIER MATERIAL SUCH AS GRACE VYCOR DECK PROTECTOR


FACE OF BUILDING
FINISH FLOOR
2'-0"
6"
5%
TOP OF EDGING TO BE MAXIMUM OF 1/2" ABOVE SURFACE MATERIAL
4" LANDSCAPE ROCK
4" x 0.072" THICK COATED BROWN STEEL EDGING WITH 0.135" EXPOSED TOP LIP
NON-WOVEN GEOTEXTILE FILTER FABRIC. REFER TO SPECIFICATIONS
12" COMPACTED SUBGRADE (92% ASTM D 1557)
12" COATED BROWN STEEL STAKES TO LOCK INTO PREFORMED LOOPS ON THE EDGING

2 LP403 LP405 LANDSCAPE STONE MULCH STRIP

NOT TO SCALE

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PLANT SCHEDULE

PLANT SYMBOL	COMMON NAME	SCIENTIFIC NAME	COND.	QTY	SIZE	HEIGHT	DETAIL	REMARKS
	TREES - (Large: 30' to 100' Height)							
RC 1	EASTERN RED CEDAR	Juniperus virginiana	CONT.	6	1 1/2" to 2" CALIPER	4'-0"to 6'-0" HEIGHT	2/LP501	PLANT APPROX. AT 20'-0" O.C. REACHES 30'-0" to 45'-0" IN HEIGHT. THE TRUNK IS STRAIGHT AND HAS A POINTED, DENSE CONICAL CROWN (VARIED OR IRREGULAR). DARK BLUE FRUIT IS BERRY-LIKE. CAN GROW ON VARIETY OF SOILS. VERY DROUGHT RESISTANT. WOOD IS FRAGRANT. FOLIAGE IS BRIGHT GREEN TO DARK GREEN.
	TREES - (Medium/Ornamental: 15' to 30' Height)							
FD 1	FLOWERING DOGWOOD	Cornus florida	CONT.	4	1 1/2" to 2" CALIPER	4'-0"to 6'-0" HEIGHT	1/LP501	PLANT APPROX. AT 25'-0" O.C. REACHES 25'-0" to 30'-0" IN HEIGHT. SHORT TRUNK WITH FULL, ROUNDED CROWN WITH HORIZONTAL BRANCHES. OPPOSITE, DECIDUOUS MIDGREEN LEAVES THAT TURNS RED AND PURPLE IN AUTUMN. BRACTS BLOOM WHITE IN SPRING FOR 2-3 WEEKS. CLUSTERS OF BRIGHT RED FRUIT INTO WINTER.
CM 1	NATCHEZ CRAPE MYRTLE	Lagerstroemia (indica x fauriei) 'Natchez'	CONT.	3	1 1/2" to 2" CALIPER	4'-0"to 6'-0" HEIGHT	2/LP501	PLANT APPROX. AT 20'-0" O.C. REACHES 25'-0" TO 30'-0" IN HEIGHT. DECIDUOUS, MULTIPLE OR SINGLE STEMMED LARGE SHRUB TO MEDIUM-SIZED TREE WITH SINUOUS, EXFOLIATING, MOTTLED, DARK CINNAMON BROWN TRUNK). FOLIAGE IS GLOSSY, DARK GREEN LEAVES. FLOWERS: PURE WHITE FLOWERS.
	SHRUBS - (Medium: 4' to 12' Height)							
	SHRUBS - (Small: 2' to 8' Height)							
	PERENNIAL FLOWER / GRASS - (Small to Medium: .5' to 4' Height)							

GENERAL NOTES

1. REFER TO SHEET LP101 FOR OVERALL LANDSCAPE PLAN AND SHEETS LP111THROUGH LP114 FOR ENLARGED LANDSCAPE PLANS.
2. ALL RELATED PLANT SPECIES SHALL BE SIMILAR IN APPEARANCE.

PLANT SYMBOL LEGEND

LT X — TREE - (Large: 30' to 100' in Height at Maturity) IDENTIFICATION NUMBER; QUANTITY

MT X — TREE - (Medium/Ornamental: 15' to 30' in Height at Maturity) IDENTIFICATION NUMBER; QUANTITY

MS X — SHRUB - (Medium to Large: 4' to 12' in Height at Maturity) INDENTIFICATION NUMBER; QUANTITY

SS X — SHRUB - (Small: 2' to 8' in Height at Maturity) IDENTIFICATION NUMBER; QUANTITY

FG X — PERENNIAL FLOWER / GRASS - (.5' to 4' in Height at Maturity) IDENTIFICATION NUMBER; QUANTITY

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

U.S. ARMY CORPS OF ENGINEERS
600 DR. MARTIN LUTHER KING PL
LOUISVILLE DISTRICT
LOUISVILLE, KENTUCKY

Mason&Hanger
A Day&Zimmermann Company

DESIGNED BY: S.CURRY
DRAWN BY: S.HAGGARD
CHECKED BY: M.MAYER
SUBMITTED BY: D. HENSLEY
SIZE: ANSI D
FILENAME: ASHE LP601.dgn
ISSUE DATE: FEBRUARY 25, 2022
SOLICITATION NO.:
CONTRACT NO.:
CATEGORY CODE

U. S. ARMY RESERVE CENTER
TRAINING BUILDING - VMS - UNHEATED STORAGE
ASHEVILLE, NORTH CAROLINA
PN: CAR 21-79351 P2#: 481815

PLANT SCHEDULE

SHEET ID
LP601

P:\Projects\017701\03 CAD_BIM_Sheets\06_Lndscp\ASHE_LP601.dgn
24-FEB-2022
15:20

CERTIFIED FINAL SUBMITTAL