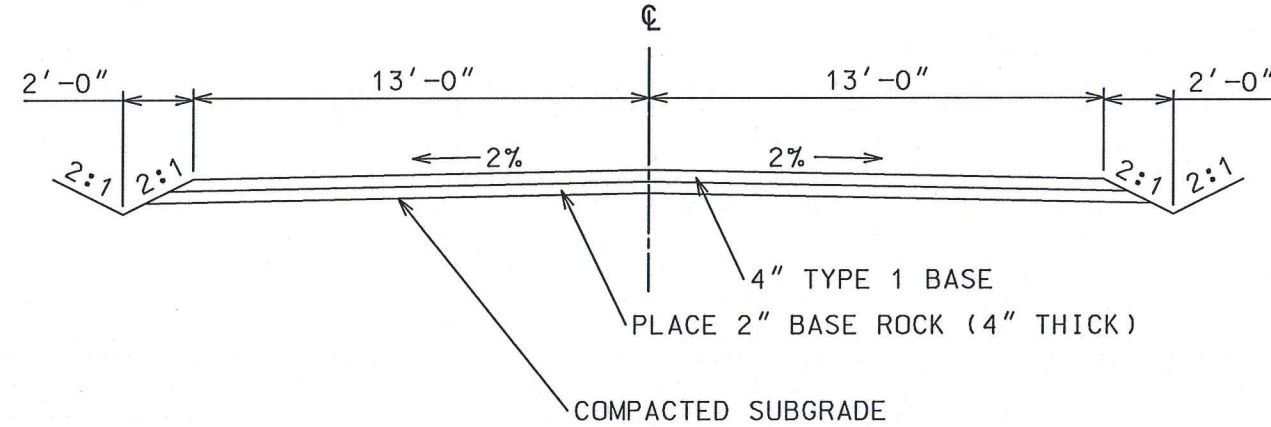
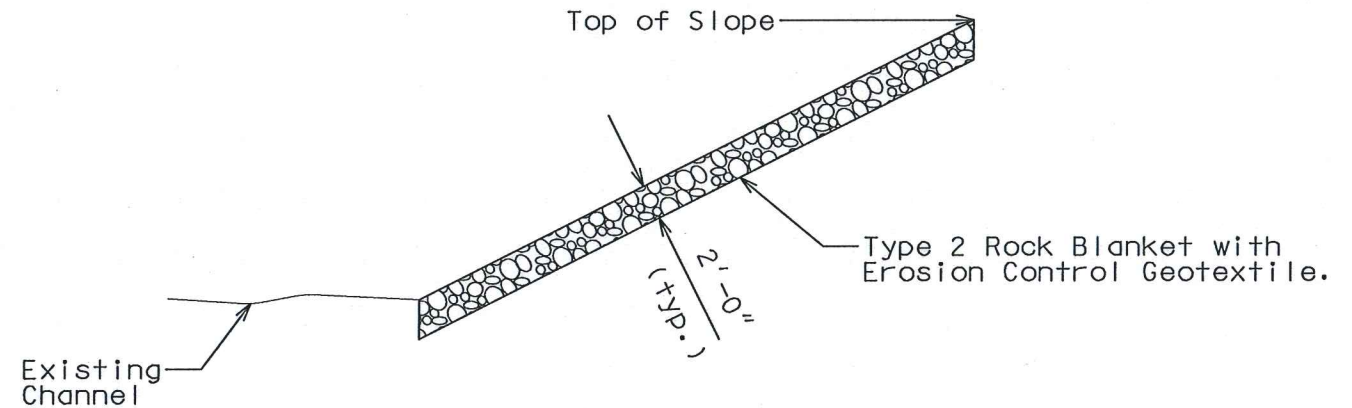


GENERAL NOTES

1. VERIFYING THE LOCATIONS OF THE UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY DAMAGE TO EXISTING OR PROPOSED FACILITIES, STRUCTURES OR UTILITIES SHALL BE REPAIRED OR REPLACED AT THE CONTRACTORS EXPENSE. NOTIFY MISSOURI ONE CALL FOR LOCATION OF THE UTILITIES AT LEAST 5 DAYS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL IMMEDIATELY REPAIR ALL DAMAGE TO PROPERTY OUTSIDE THE LIMITS OF CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.
3. REPORT ANY DISCREPANCIES FOUND WITH REGARD TO EXISTING CONDITIONS OR PROPOSED DESIGN IMMEDIATELY TO THE ENGINEER.
4. DO NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED WHERE DISCREPANCIES EXIST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REVISIONS TO THE WORK WHEN NO NOTICE WAS GIVEN TO THE ENGINEER.
5. THE GENERAL CONTRACTOR SHALL COORDINATE OTHER SITE RELATED OPERATIONS PERFORMED BY OTHER CONTRACTORS OR UTILITY COMPANIES TO ACCOMPLISH THE WORK.
6. CONTRACTOR SHALL PROTECT ALL EXISTING FACILITIES TO REMAIN INCLUDING ON-SITE PRIVATE AND PUBLIC PROPERTY.
7. ALL WORK SHALL BE IN COMPLIANCE WITH ALL LOCAL, STATE, AND FEDERAL CODES AND ORDINANCES.
8. LEAVE AREAS OF DEMOLITION IN A NEAT AND SAFE CONDITION AT THE END OF EACH WORK DAY. CONTRACTOR SHALL BARRICADE AREAS OF DEMOLITION AS NECESSARY TO PROTECT THE GENERAL PUBLIC. MAINTAIN SAFE PUBLIC ACCESS TO RESIDENCES.
9. LEGALLY DISPOSE OF ALL DEMOLITION ITEMS OFF SITE UNLESS NOTED TO RETURN ITEMS TO THE COUNTY.
10. SEE SITE PLAN LAYOUTS AND DETAILS FOR LOCATIONS AND DIMENSIONS OF AREAS OF IMPROVEMENTS RELATED TO DEMOLITION ACTIVITIES.
11. ALL UTILITIES NOT MARKED FOR REMOVAL SHALL REMAIN IN PLACE.
12. ALL REINFORCING STEEL SHALL BE A.S.T.M. A615, GRADE 60 UNLESS NOTED OTHERWISE.
13. UNLESS OTHERWISE SPECIFIED, ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND THE MISSOURI STANDARD PLANS FOR HIGHWAY CONSTRUCTION.
14. ALL EXISTING POLES AND SIGNS SHALL BE RE-INSTALLED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER, UNLESS OTHERWISE NOTED.



TYPICAL SECTION



TYPICAL TYPE 2 ROCK BLANKET DETAIL

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 of Authority #00214969

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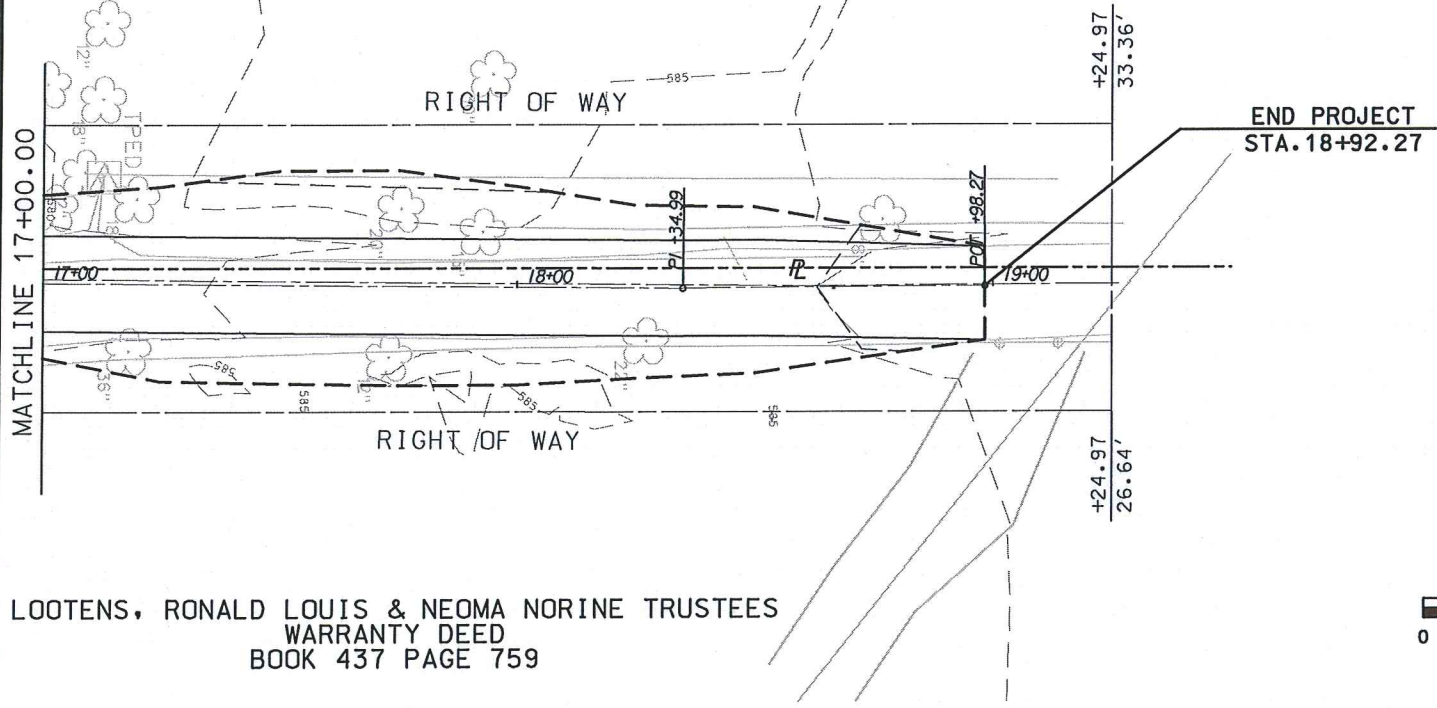
DATE PREPARED
 1/5/2018

Michelle L. Mahoney
 Professional Engineer
 No. PE-030000

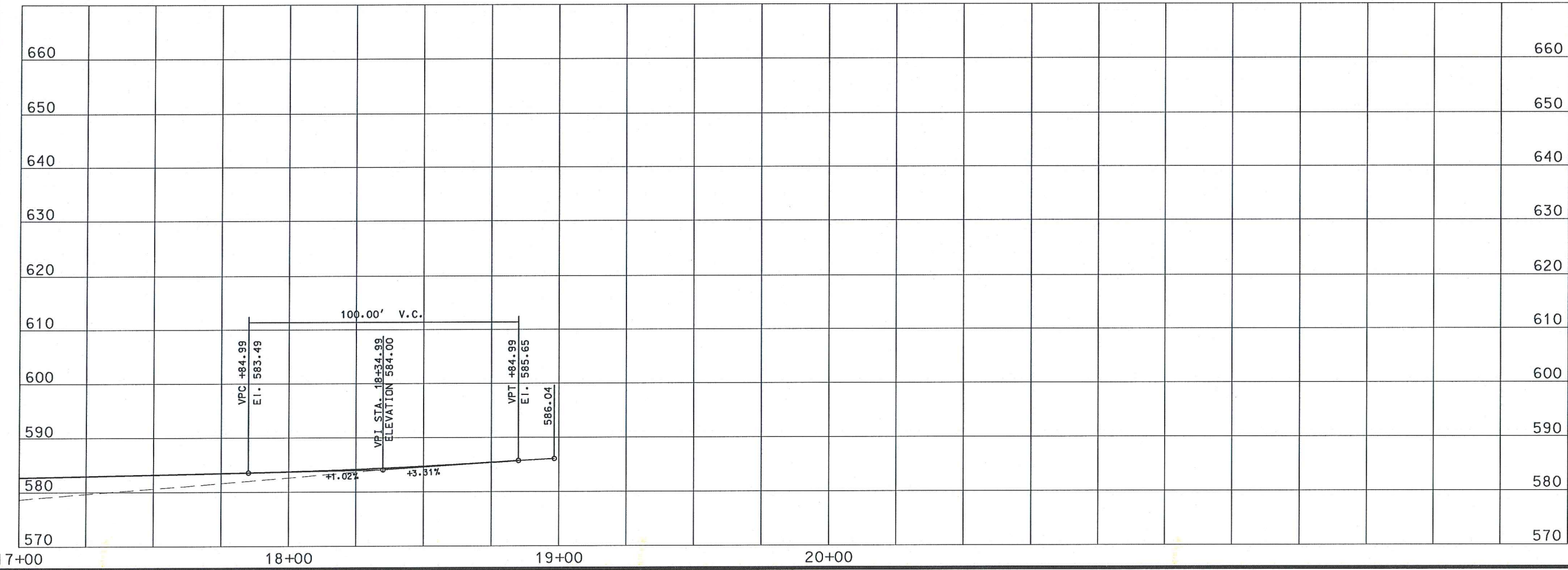
**COLE COUNTY OF
 DEPARTMENT OF
 PUBLIC WORKS**
 5055 MONTICELLO ROAD
 JEFFERSON CITY, MO 65109
 PHONE - 573-636-3614
 FAX - 573-636-8389

DESIGNED BY:	TK
DRAWN BY:	AKK
APPROVED BY:	MLM
DESIGN PROJ:	17-1019
SHEET TITLE	
TYPICAL SECTION	
SHEET NO.	
2	

HOFFMEYER, JASON ROGER & SHANNON JOLYN
DOCUMENT 200913160
BOOK 584, PAGE 144



LOOTENS, RONALD LOUIS & NEOMA NORINE TRUSTEES
WARRANTY DEED
BOOK 437 PAGE 759



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Professional Engineer
MO# PE-030000

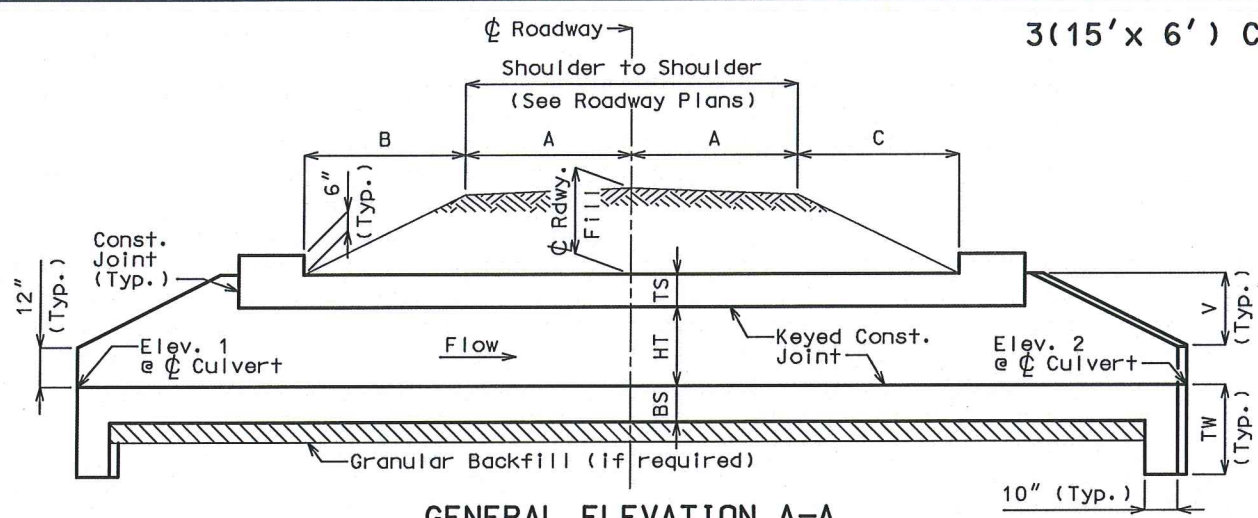
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DEPARTMENT OF
PUBLIC WORKS**
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JEFFERSON CITY, MO 65109
PHONE - 573-636-3614
FAX - 573-636-8389

DESIGNED BY: TK
DRAWN BY: AKK
APPROVED BY: MLM
DESIGN PROJ: 17-1019

SHEET TITLE
PLAN/PROFILE
STA. 17+00 TO
STA. 19+00

SHEET NO.
5

3(15' x 6') CONCRETE BOX CULVERT



GENERAL ELEVATION A-A

Construction joint key not shown for clarity, see standard plans for details.

If any part of the barrel is exposed, the roadway fill shall be warped to provide 12 inches minimum cover. (Roadway Item)

If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.

Var.	Equation	Dim.	Var.	Equation	Dim.	Var.	Equation	Dim.
S	---	15'-0"	F	3S + 2TX + 2TI	47'-10"	W	2A + B + C + 2E	75'-1 1/4"
HT	---	6'-0"	G	2V	12'-6"	X	3" + TX(tan Z)	4 5/8"
TS	---	15"	H	(A + C + E)(tan Z)	6'-7 1/2"	Z	Skew Angle	10°
BS	---	10"	I	3"(cos Z)	3"	BB	(A + B)(sec Z)	23'-4 1/4"
TX	---	9"	J	(A + B + E)(tan Z)	6'-7 1/2"	CC	(A + C)(sec Z)	23'-4 1/4"
TI	---	8"	K	(3S/2 + TI)(sec Z)	23'-6 1/4"	EE	E(sec Z)	14'-9 3/8"
A	---	13'-0"	L	2EE + BB + CC	76'-3 1/4"	HH	20"(sec Z)	20 1/4"
B	---	10'-0"	O	I + YY	4 5/8"	QQ	TX(cos Z)	8 7/8"
C	---	10'-0"	T	G(sec Z)	12'-8 3/8"	YY	TX(sin Z)	1 5/8"
E	G + O + 20"	14'-6 5/8"	V	HT + TS - 12"	6'-3"	TW	---	3'-4"

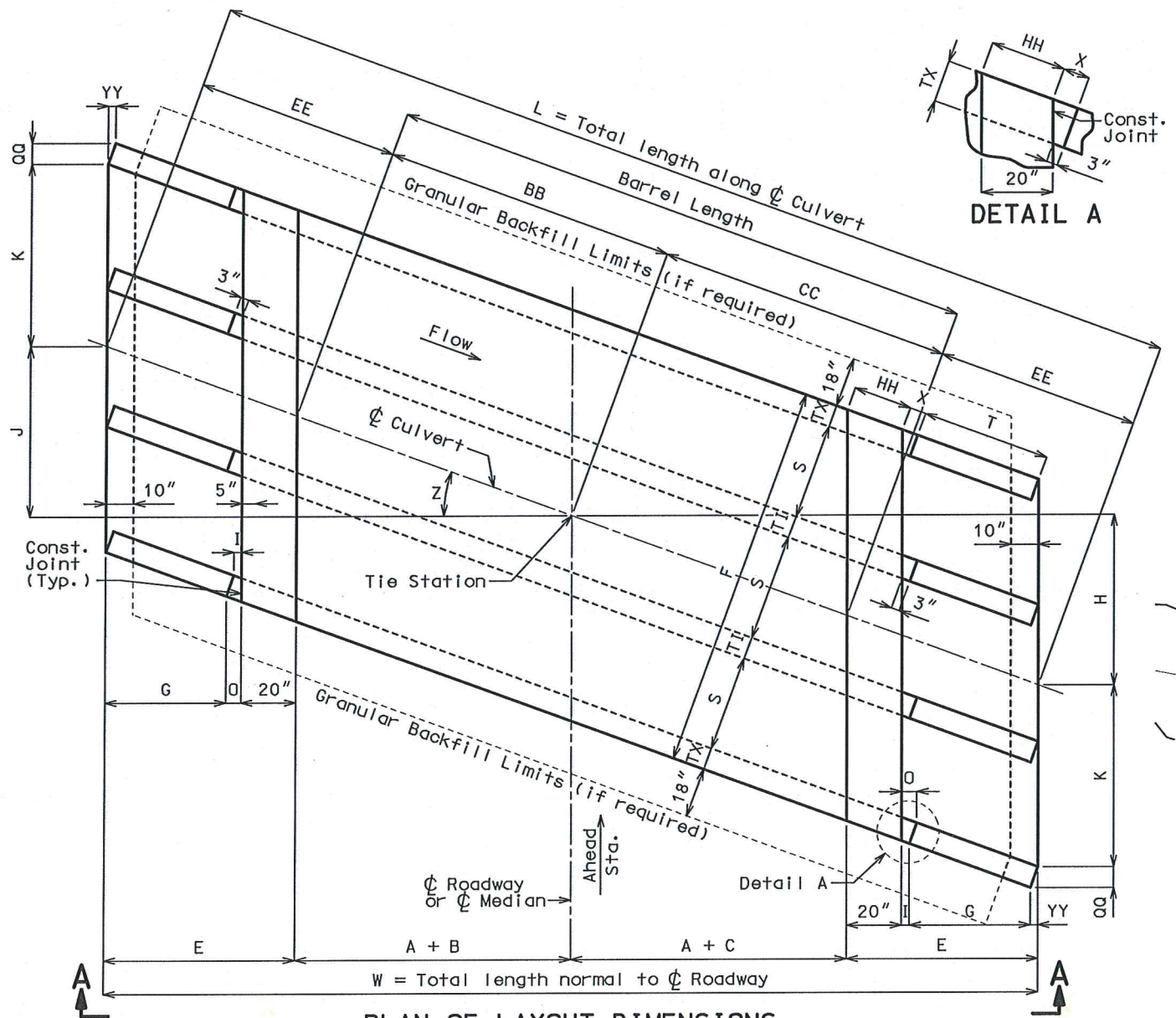
Drainage Area = 2.0 sq. mi.
Design Flood Frequency = 50 years
Design Flood Discharge = 1898 cfs
Design Flood (D.F.) Elevation = 581.80
Base Flood (100-year)
Base Flood Elevation = 582.60
Base Flood Discharge = 2239 cfs
Estimated Backwater = 1.54 ft
Outlet Velocity = 2.62 ft/s
Roadway Overtopping
Overtopping Flood Discharge = 1985 cfs
Overtopping Flood Frequency = 64 years
Overtopping Flood Elevation = 582.00

Upstream (Elev. 1) = 572.65
Downstream (Elev. 2) = 572.40
Pr. Gr. at Tie Sta. = 582.28

ϕ Rdwy at ϕ Culvert = 2.50 ft
Design (All units) = 2.27 ft

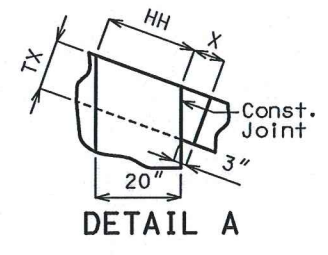
Dimensions are based on end units. Fill heights are measured from the top of top slab to the top of earth fill or roadway.

	Final
Class 4 Excavation cu. yard	620
Class 4 Excavation in Rock cu. yard	165
Class B-1 Concrete (Culverts-Bridge) cu. yard	276.8
Reinforcing Steel (Culverts-Bridge) pound	40,100

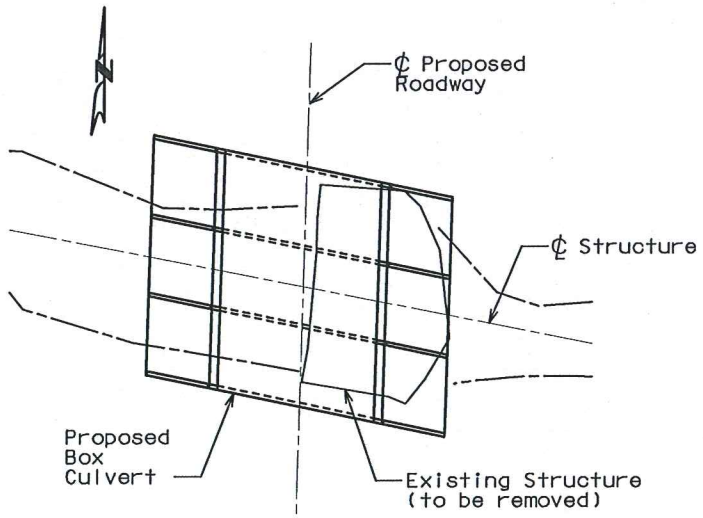


PLAN OF LAYOUT DIMENSIONS

Note: This drawing is not to scale. Follow dimensions.



DETAIL A



LOCATION SKETCH

General Notes:

Design Specifications:
2010 AASHTO LRFD Bridge Design Specifications and 2010 Interim Revisions

Design Loading:
Vehicular = HL-93 minus lane load, Earth = 120 lb/cf
Equivalent Fluid Pressure = 30 lb/cf (min.), 60 lb/cf (max.)

Design Unit Stresses:
Class B-1 Concrete (Box Culvert) f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi

Miscellaneous:
MoDOT Construction personnel will indicate the type of box culvert constructed:
 Precast Concrete Box used
 Cast-in-Place Concrete Box used

When alternate precast concrete box sections are used, the minimum distance from inside face of headwalls to precast sections measured along the shortest wall shall be 3 feet. Reinforcement and dimensions for wings and headwalls shall be in accordance with Missouri Standard Plans.

Channel bottom shall be graded within the right of way for transition of channel bed to culvert openings. Channel banks shall be tapered to match culvert openings. (Roadway Item)

Traffic Handling:
Structure to be closed during construction. Traffic to be maintained on other routes during construction. See roadway plans for traffic control.

B.M.
Aluminum cap on a 1" by 24" rebar in the center of a 9" by 12" Jefferson City Reference System monument, stamped "JC #37 LS1840" 1 mile west of the intersection of Highway 50/63 and Route J, 32.5' southwest of the center of Liberty Road.

CULVERT-BRIDGE: SOUTH LIBERTY ROAD OVER SANFORD CREEK
SOUTH LIBERTY ROAD FROM LIBERTY ROAD TO STONEY GAP ROAD
ABOUT 0.54 MILES SOUTH OF LIBERTY ROAD
TIE STA. 16+27.00

STD. 703.37
STD. 703.82
STD. 703.86
STD. 706.35

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Missouri State Certificate
of Authority #00214959

DESCRIPTION	DATE

DATE PREPARED
1/5/2018

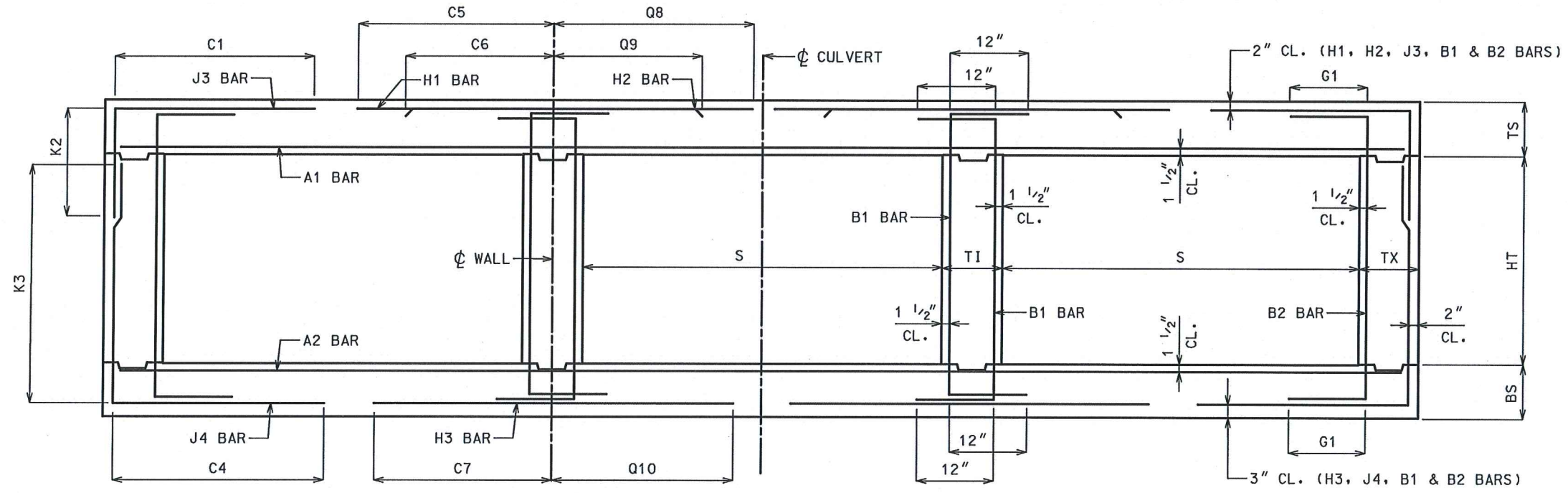
STATE OF MISSOURI
Professional Engineer
Ted S. Koester
Professional Engineer
MOR PE-2013000591

COLE COUNTY OF
DEPARTMENT OF
PUBLIC WORKS
5055 MONTICELLO ROAD
JEFFERSON CITY, MO 65109
PHONE - 573-636-3614
FAX - 573-636-8389

DESIGNED BY: TK
DRAWN BY: AKK
APPROVED BY: MLM
DESIGN PROJ: 17-1019
SHEET TITLE

CULVERT DETAILS
SHEET NO.
6

SPAN (S) = 15 FT HEIGHT (HT) = 6 FT																																					
DESIGN FILL	MEMBER THICKNESS				TOP SLAB BARS																BOTTOM SLAB BARS										WALL BARS						
					A1 BARS		J3 BARS				H1 BARS				H2 BARS				A2 BARS		J4 BARS				H3 BARS				B1 BARS			B2 BARS					
	TS	BS	TX	TI	SIZE	SPA.	SIZE	SPA.	C1	K2	SIZE	SPA.	C5	Q8	SIZE	SPA.	C6	Q9	SIZE	SPA.	SIZE	SPA.	C4	K3	SIZE	SPA.	C7	Q10	SIZE	SPA.	SIZE	SPA.	G1				
2 FT	15	10	9	8	6	7.5	5	8	73.5	35	6	16	146.5	111.5	6	16	49	53	5	6.5	6	7	60.4	78	6	6	59	65	5	12	5	12	12				



BAR DIMENSIONS DIAGRAM
SYMMETRICAL ABOUT ϕ CULVERT

NOTES:
DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED.

STANDARD REBAR PLACEMENT
PER MOSTANDARD PLANS
703.37
703.82
703.86

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DATE	DESCRIPTION

DATE PREPARED
1/5/2018

STATE OF MISSOURI
TED S. KOESTER
1/5/2018
NUMBER
PE-2013000591
PROFESSIONAL ENGINEER

Ted S. Koester
Professional Engineer
MO# PE-2013000591

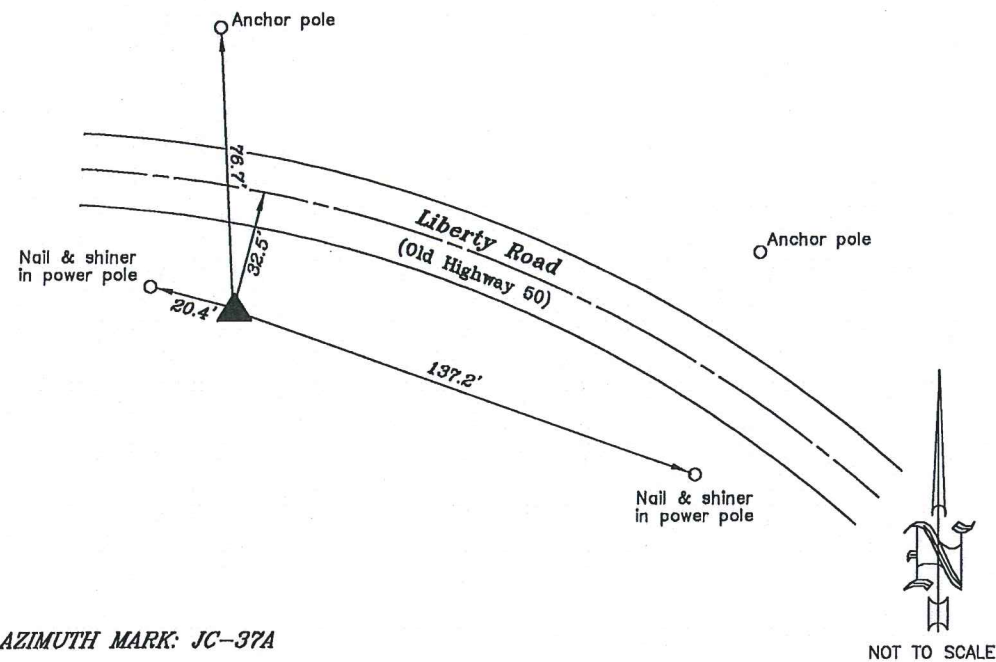
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FAX - 573-636-8389

DESIGNED BY:	TK
DRAWN BY:	AKK
APPROVED BY:	MLM
DESIGN PROJ:	17-1019

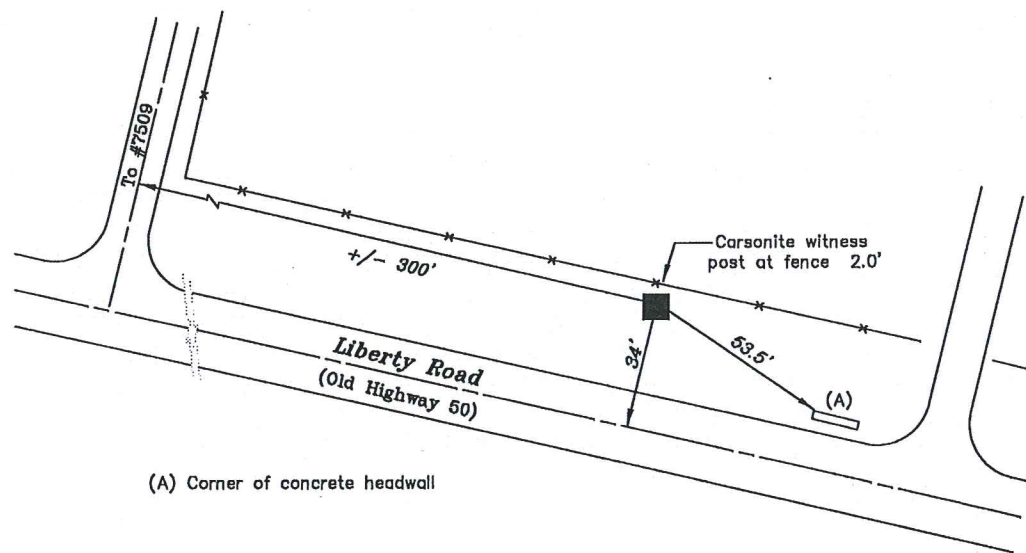
SHEET TITLE
CULVERT
DIMENSIONS

SHEET NO.
7

STATION: JC-37

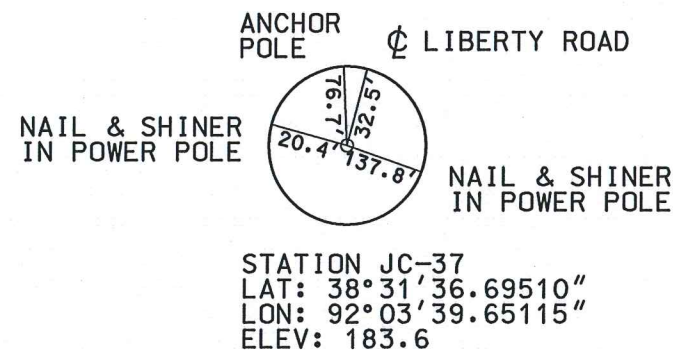


AZIMUTH MARK: JC-37A



(A) Corner of concrete headwall

CONTROL POINTS



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SHEET TITLE
CONTROL POINTS

SHEET NO.
9



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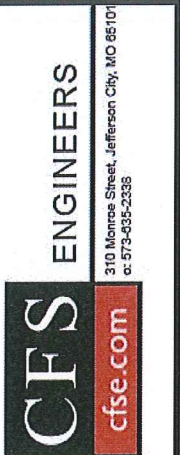
SOUTH LIBERTY ROAD BOX CULVERT PROJECT

DEPTH TO ROCK DATA

FIELD WORK COMPLETED ON: SEPTEMBER 22, 2017

SITES MARKED AND MEASURED BY: SPENCER COONCE w/COLE COUNTY PUBLIC WORKS

<p>SITE #1 STA 13+91 ON ϕ N974267.37 E1769607.79 SURFACE ELEV. 628.49 DEPTH TO ROCK 3.50'</p> <p>SITE #2 STA 13+99 19' RIGHT N974274.40 E1769626.75 SURFACE ELEV. 628.34 DEPTH TO ROCK 3.00'</p> <p>SITE #3 STA 14+41 ON ϕ N974317.80 E1769610.85 SURFACE ELEV. 619.95 DEPTH TO ROCK 5.00'</p> <p>SITE #4 STA 14+76 14' LEFT N974353.13 E1769595.27 SURFACE ELEV. 612.74 DEPTH TO ROCK 5.50'</p>	<p>SITE #5 STA 14+74 9.0' RIGHT N974350.27 E1769618.91 SURFACE ELEV. 613.76 DEPTH TO ROCK 7.50'</p>
--	--



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1/5/2018



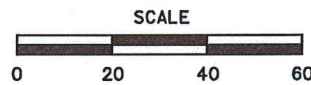
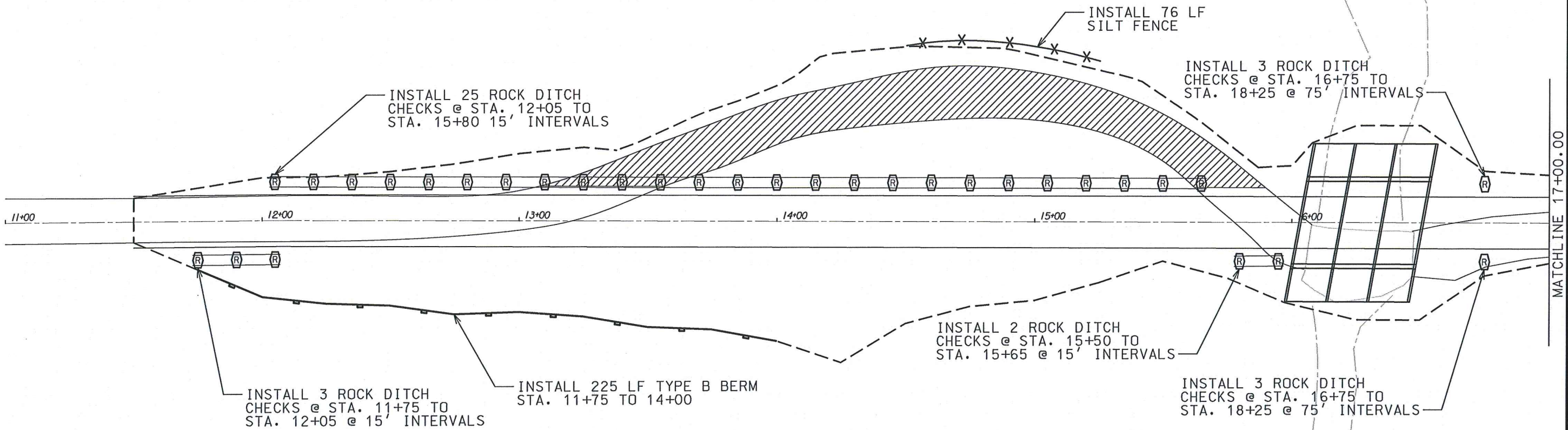
Michelle L. Mahoney
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MO# PE-030000

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DESIGN PROJ: 17-1019

SHEET TITLE
BORING
DATA

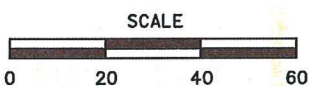
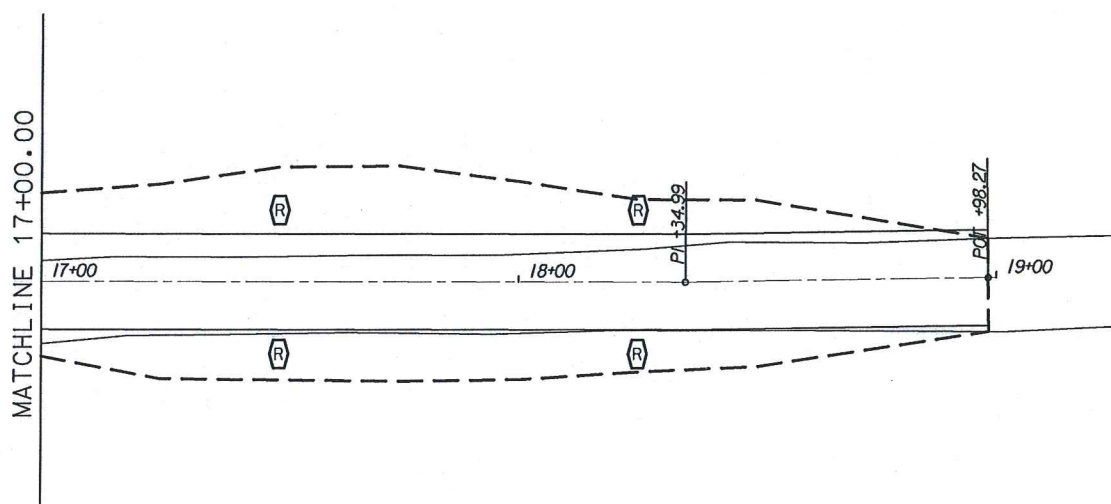
SHEET NO.
11



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DESIGN PROJ:	17-1019

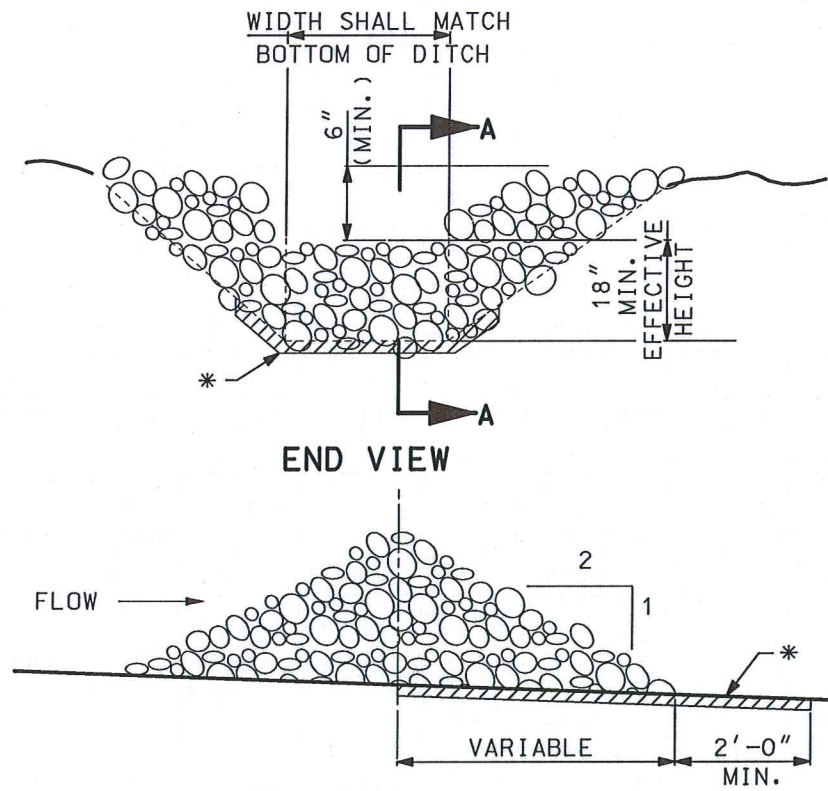
EROSION CONTROL

SHEET NO.
 12

- NOTES:**
1. ACTUAL PLACEMENT AND MEASURES USED FOR EROSION CONTROL WILL BE DICTATED BY FIELD CONDITIONS.
 2. SEEDING SHALL BE PERFORMED IMMEDIATELY UPON COMPLETION OF GRADING.
 3. TEMPORARY EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH SEC. 806.
 4. ALL ROCK DITCH CHECKS SHALL HAVE AN EFFECTIVE HEIGHT OF 9".

- LEGEND**
- X- SILT FENCE
 - (R) ROCK DITCH CHECK
 - TYPE B BERM

ROCK DITCH CHECK

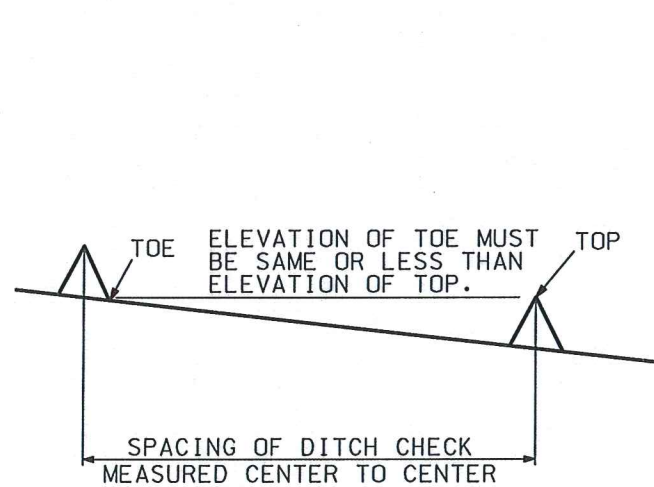


SECTION A-A

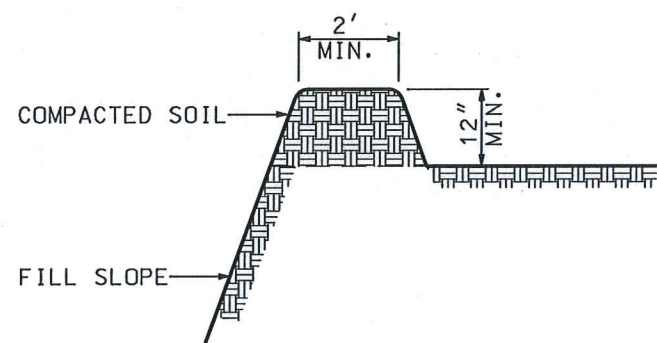
* GEOTEXTILE LINING MAY BE INSTALLED AS REQUIRED BY THE ENGINEER.

NOTE:

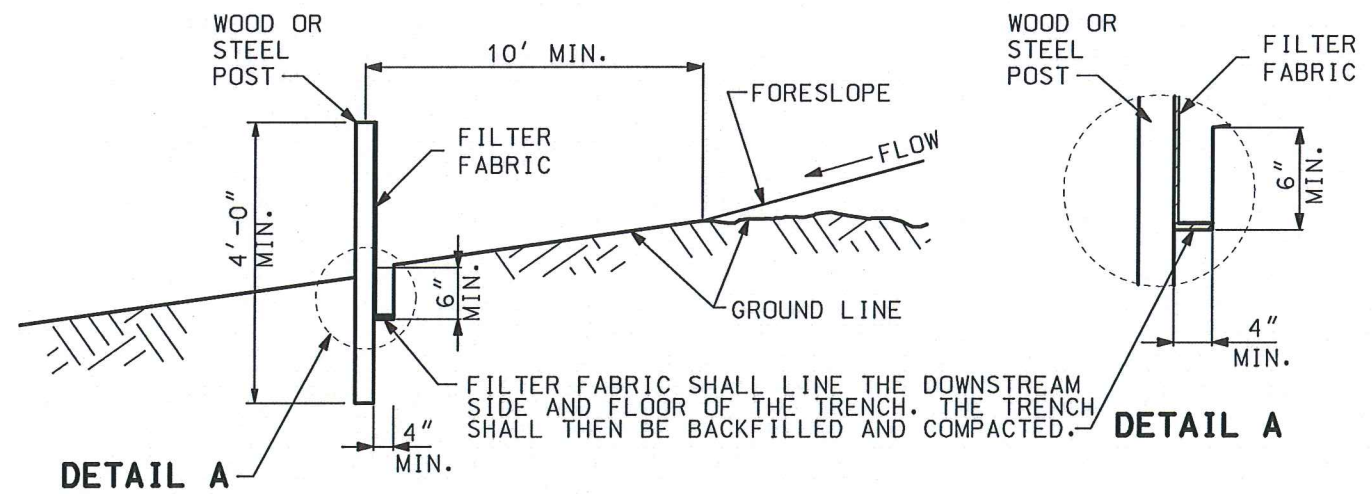
ROCK DITCH CHECK IN THE CLEAR ZONE SHALL BE REMOVED OR LEVELED (IF ALLOWABLE) AFTER THE VEGETATION HAS SUFFICIENTLY MATURED TO PROTECT THE DITCH OR SWALE.



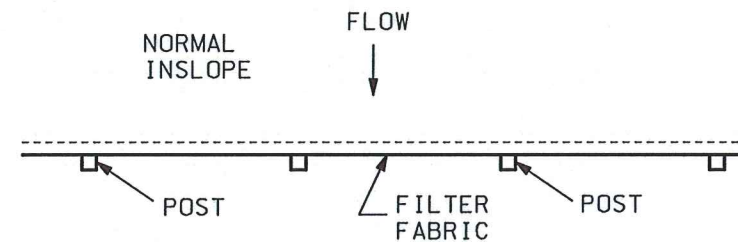
MINIMUM DITCH CHECK SPACING



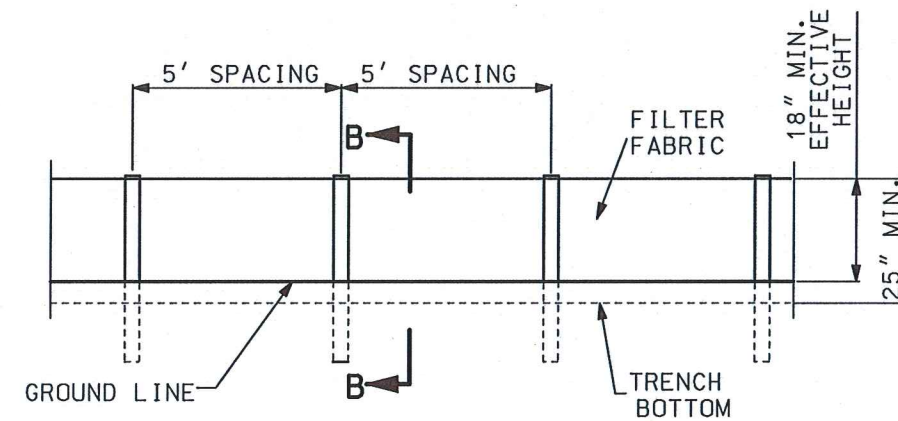
TYPE B BERM



TYPICAL B-B



PLAN VIEW



ELEVATION DETAIL FABRIC SILT FENCE

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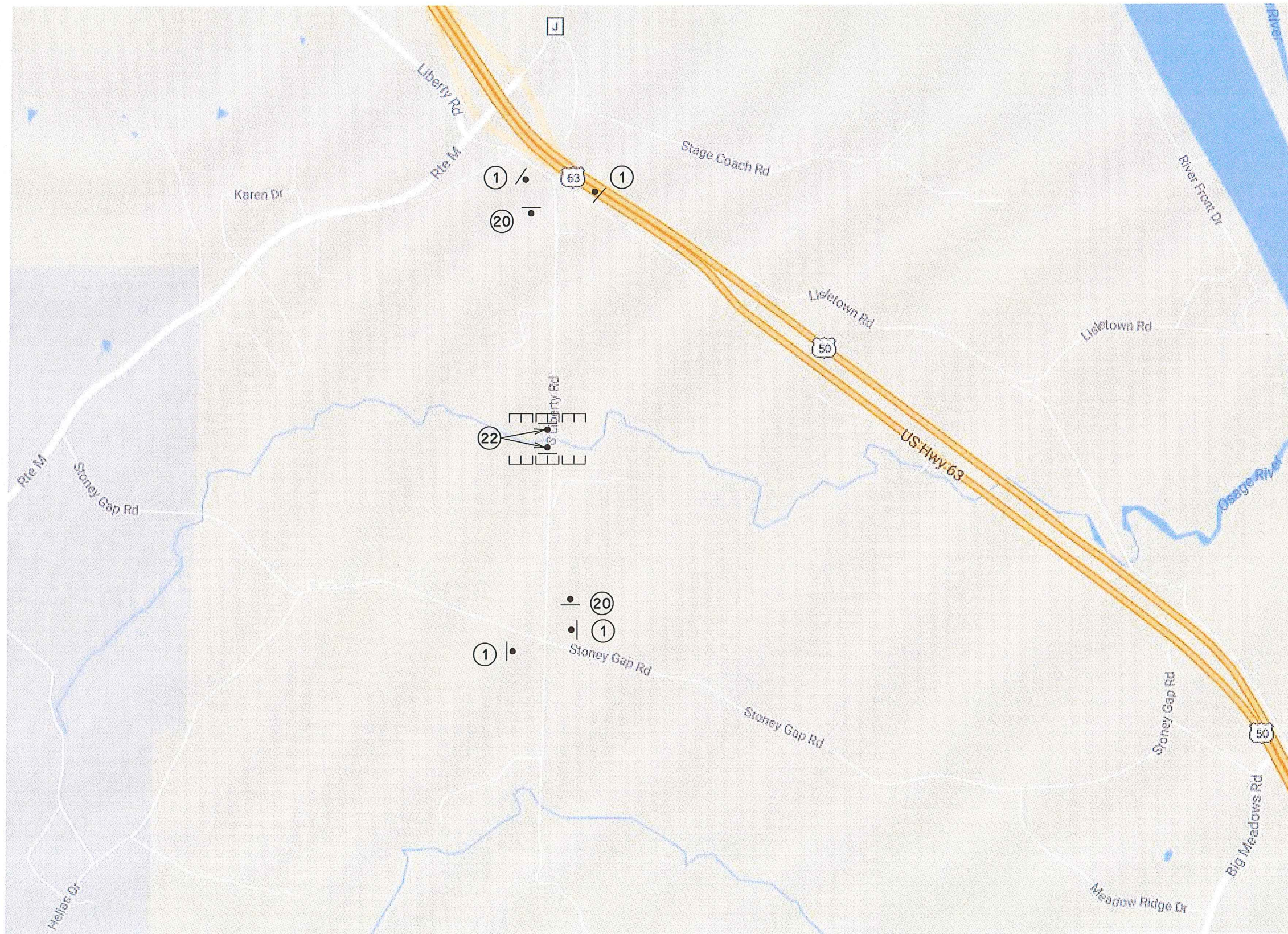
Michelle L. Mahoney
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 MO# PE-030000

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 DRAWN BY: AKK
 APPROVED BY: MLM
 DESIGN PROJ: 17-1019

SHEET TITLE
EROSION CONTROL

SHEET NO.
 13



SOUTH LIBERTY ROAD
CLOSED AT
SANFORD CREEK

SPECIAL
60" X 30"
①



W020-3
②0

ROAD
CLOSED

R11-2
②2



• SIGN (SINGLE SIDED)

⌋ TYPE III MOVABLE BARRICADE

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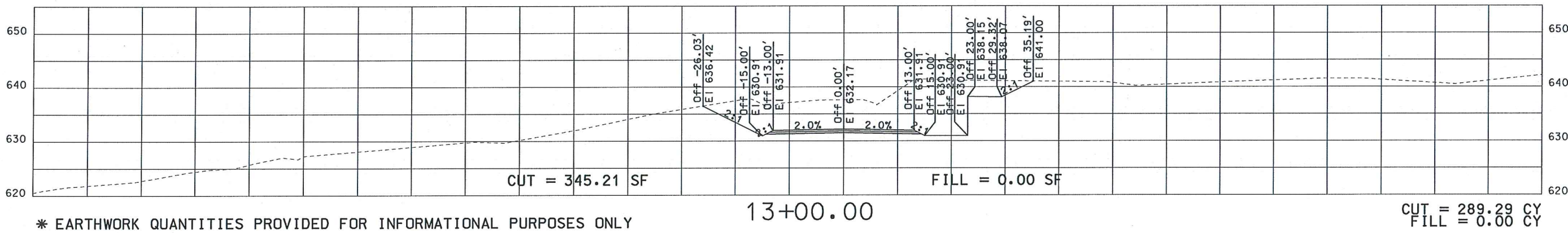
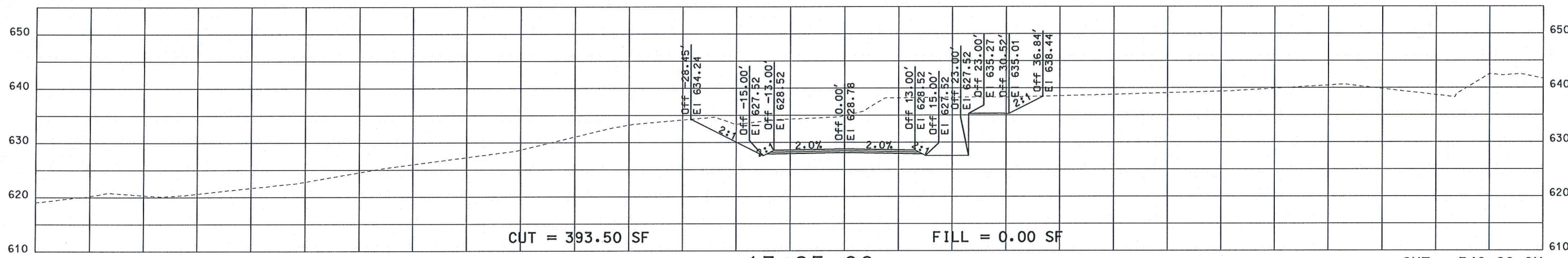
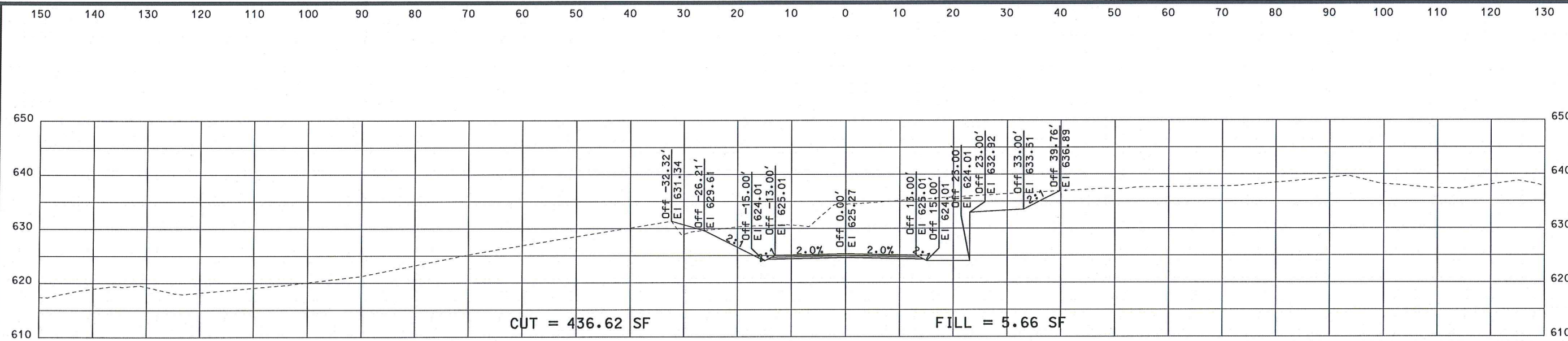
STATE OF MISSOURI
MICHELLE L. MAHONEY
Professional Engineer
NUMBER PE-030000
PROFESSIONAL ENGINEER

Michelle L. Mahoney
Professional Engineer
MOR PE-030000

COLE COUNTY OF
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SHEET TITLE
TRAFFIC CONTROL



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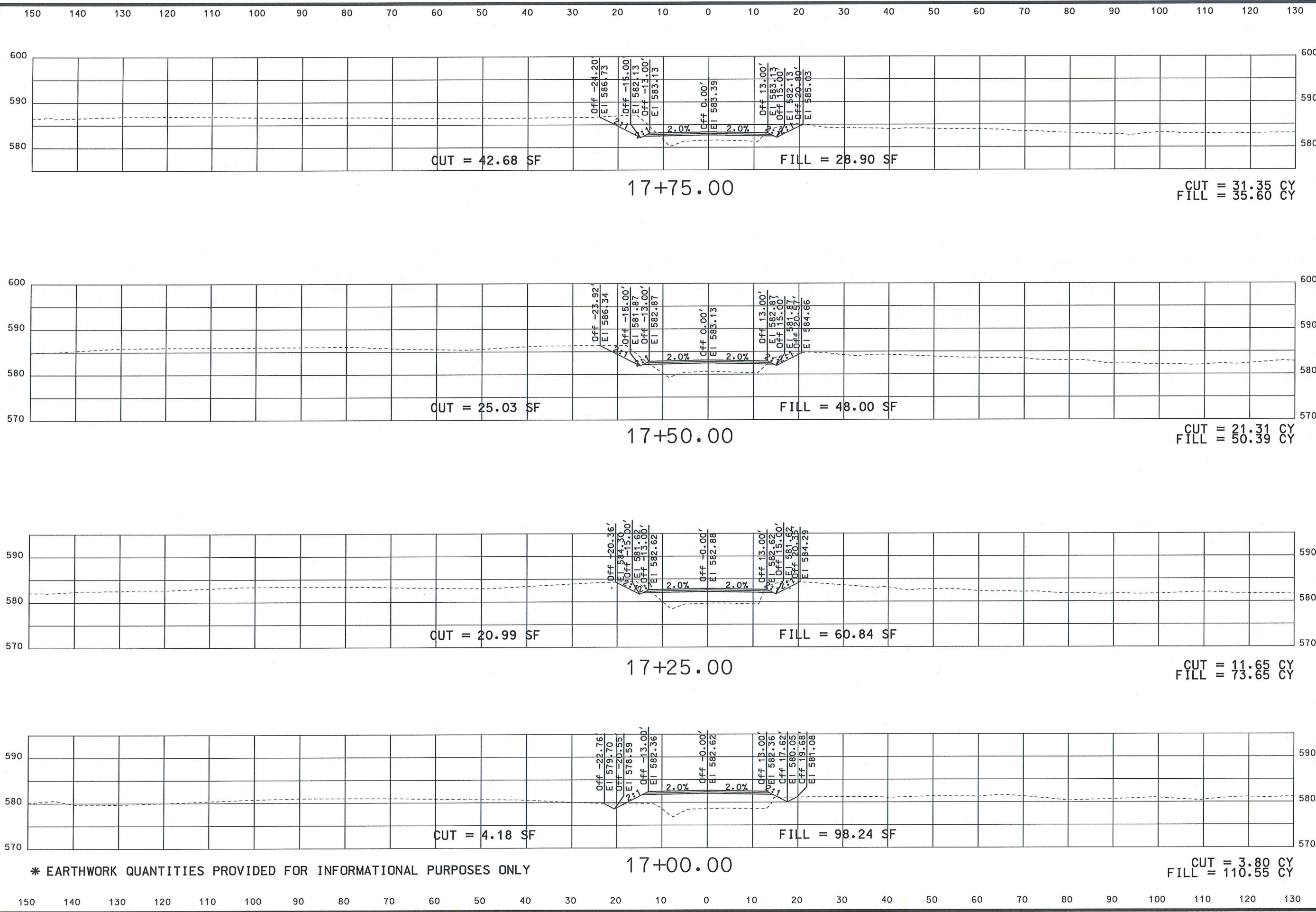
Michelle L. Mahoney
Professional Engineer
No. PE-030000

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SHEET TITLE
CROSS SECTIONS

SHEET NO.
17



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DATE PREPARED
 1/5/2018



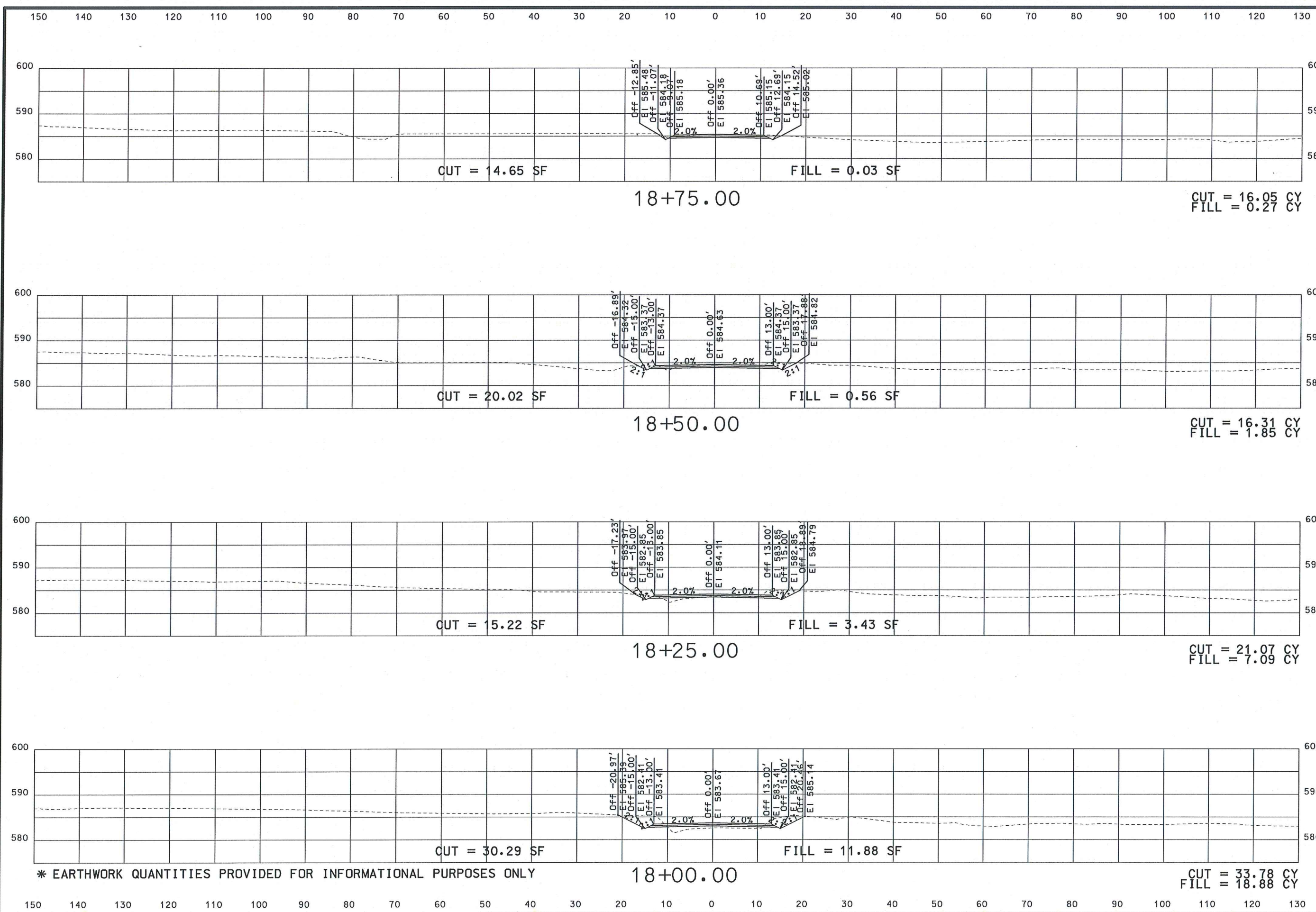
Michelle L. Mahoney
 Professional Engineer
 MO# PE-030000

COLE COUNTY DEPARTMENT OF PUBLIC WORKS
 5055 MONTICELLO ROAD
 JEFFERSON CITY, MO 65109
 PHONE - 573-636-3614
 FAX - 573-636-8389

DESIGNED BY: TR
 DRAWN BY: AKK
 APPROVED BY: MLM
 DESIGN PROJ: 17-1019

SHEET TITLE
CROSS SECTIONS

SHEET NO.
 22



* EARTHWORK QUANTITIES PROVIDED FOR INFORMATIONAL PURPOSES ONLY

CFS ENGINEERS

310 Maroon Street, Jefferson City, MO 65101
c. 573-635-3338


CFS

cfse.com

Cook, Flatt, & Strobel
Engineers, P.A.
Missouri State Certificate
of Authority #00214969

DATE	DESCRIPTION

DATE PREPARED
1/5/2018



Michelle L. Mahoney
Professional Engineer
No. PE-030000

**COLE COUNTY
DEPARTMENT OF
PUBLIC WORKS**

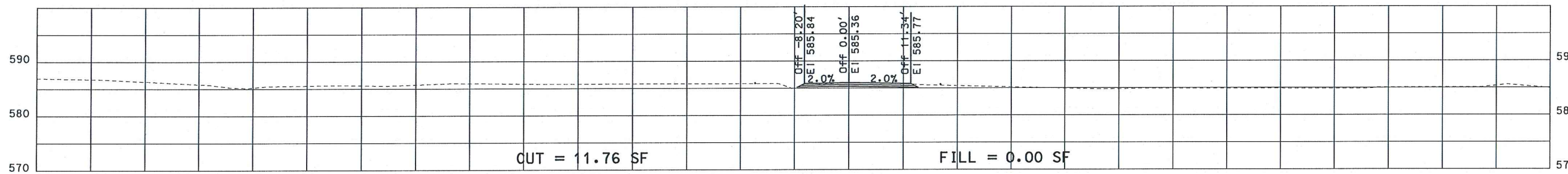
5055 MONTICELLO ROAD
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PHONE - 573-636-3614
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DESIGNED BY:	TK
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DESIGN PROJ:	17-1019

SHEET TITLE
CROSS SECTIONS

SHEET NO.
23

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130

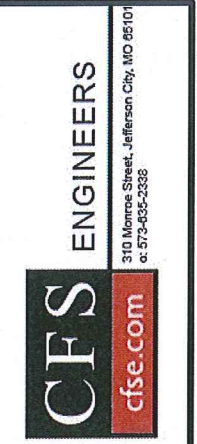


18+98.27

CUT = 11.38 CY
FILL = 0.01 CY

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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130



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SHEET TITLE
CROSS SECTIONS

SHEET NO.
24