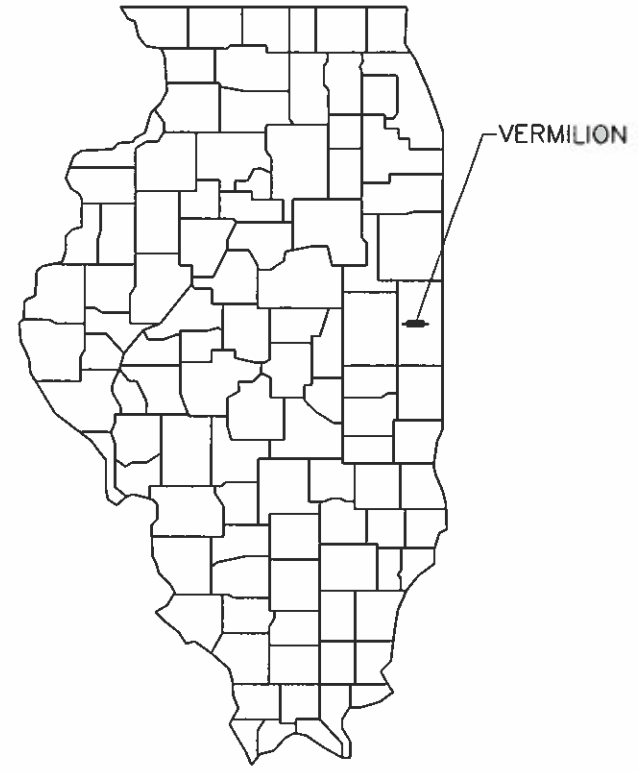


01-17-2020 LETTING ITEM 148

STATE OF ILLINOIS  
ILLINOIS DEPARTMENT OF TRANSPORTATION  
**BRIDGE REPLACEMENT**  
FOR  
**VERMILION COUNTY**  
**HIGHWAY DEPARTMENT**  
**TR 42A**



INDEX OF SHEETS	
SHEET NUMBER	SHEET TITLE
1	COVER
2	SUMMARY AND SCHEDULE OF QUANTITIES
3	TYPICAL SECTIONS
4	TIE POINTS
5-7	PLAN AND PROFILE SHEETS
8-9	EROSION CONTROL PLANS
10-16	STRUCTURAL PLANS
17-18	SOIL BORING LOGS
19-27	CROSS SECTIONS

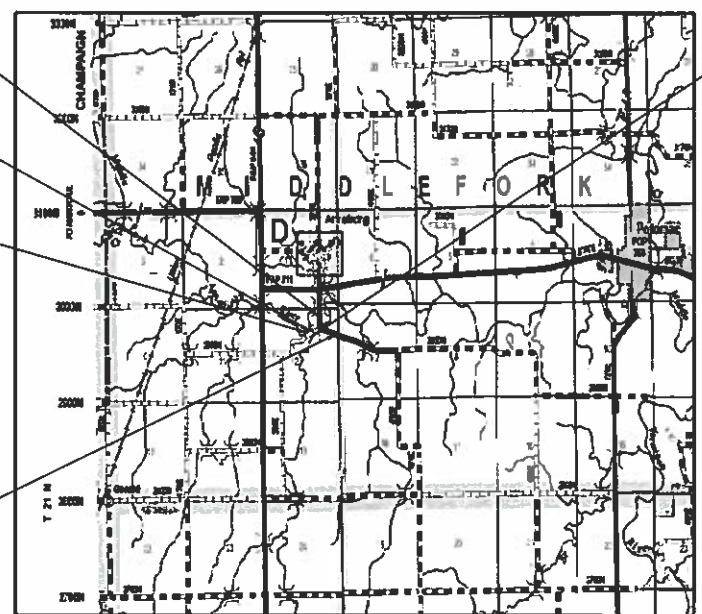
FEDERAL PROJECT NO. OCTN(953)  
SECTION NO: 13-12151-00-BR  
EXISTING S.N. 092-0112  
PROPOSED S.N. 092-3532  
MIDDLEFORK TOWNSHIP  
C-95-068-18  
FUNDING: STP-BRIDGE

PROJECT ENDS (SIDE ROAD)  
STA. 405+03.59

PROJECT BEGINS (SIDE ROAD)  
STA. 400+09.14

PROJECT BEGINS (MAINLINE)  
STA. 96+50.00

PROJECT ENDS (MAINLINE)  
STA. 103+46.40



STATION 100+00. PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE. SINGLE SPAN AT 56'-2"; 57'-9" BK. TO BK. ABUTM. 30'-0" ROADWAY, SKEW = 0°

**ILLINOIS DEPT. OF TRANSPORTATION STANDARD DRAWINGS**

STANDARD NO.	DESCRIPTION
000001-07	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
001001-02	AREAS OF REINFORCEMENT BARS
001006	DECIMAL OF AN INCH AND OF A FOOT
280001-07	TEMPORARY EROSION CONTROL SYSTEMS
515001-04	NAME PLATE FOR BRIDGES
701901-08	TRAFFIC CONTROL DEVICES
725001-01	OBJECT AND TERMINAL MARKERS
B.L.R. 21-9	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

CURRENT ADT = 125  
FUNCTIONAL CLASSIFICATION = LOCAL ROAD  
3R GUIDELINES

NET LENGTH OF SECTION (MAINLINE) = 696.40 FEET = 0.132 MILES  
NET LENGTH OF SECTION (SIDE ROAD) = 494.45 FEET = 0.094 MILES

**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS IOWA WISCONSIN

ILLINOIS PROFESSIONAL DESIGN FIRM NUMBER: 184003525

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
APPROVED	<u>Oct 30 2019</u> <i>Donnie Morgan</i> TOWNSHIP ROAD COMMISSIONER
APPROVED	<u>10/30/19</u> <i>Adrian R. Greenwell</i> VERMILION COUNTY ENGINEER
PASSED	<u>November 14, 2019</u> <i>[Signature]</i> DISTRICT FIVE ENGINEER OF LOCAL ROADS & STREETS
RELEASED FOR BID BASED ON LIMITED REVIEW	<u>November 14, 2019</u> <i>[Signature]</i> REGION THREE ENGINEER
PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS	



*M. Jawad*  
10-28-19  
MUHAMAD S. JAWAD  
ILLINOIS LICENSED PROFESSIONAL ENGINEER NO. 062-066150  
LICENSE EXPIRES 11-30-19

ORIGINAL SET FOR PROJECT: 17-659		DATE CREATED: 10/29/2019
REV. NO.	DESCRIPTION	DATE

**SUMMARY OF QUANTITIES**

**SCHEDULE OF QUANTITIES**

CODE #	ITEM NAME	UNIT	QUANTITY
20200100	EARTH EXCAVATION	CU YD	1,279
20300100	CHANNEL EXCAVATION	CU YD	277
20400800	FURNISHED EXCAVATION	CU YD	21
25000200	SEEDING CLASS 2	ACRE	0.50
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	45
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	45
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	45
25100115	MULCH METHOD 2	ACRE	0.50
25100630	EROSION CONTROL BLANKET	SQ YD	367
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	150
28000305	TEMPORARY DITCH CHECKS	FOOT	132
28000400	PERIMETER EROSION BARRIER	FOOT	2158
28000500	INLET AND PIPE PROTECTION	EACH	3
40200800	AGGREGATE SURFACE COURSE TYPE B	TON	1661
* 50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	61
50300225	CONCRETE STRUCTURES	CU YD	28.4
50400405	PRECAST PRESTRESSED CONCRETE DECK BEAMS (21" DEPTH)	SQ FT	1685
50800105	REINFORCEMENT BARS	POUND	4,340
50900205	STEEL RAILING TYPE S1	FOOT	113
51201600	FURNISHING STEEL PILES HP12X53	FOOT	330
51202305	DRIVING PILES	FOOT	330
51203600	TEST PILE STEEL HP12X53	EACH	2
51204650	PILE SHOES	EACH	12
51500100	NAME PLATES	EACH	1
* 54205050	PIPE CULVERTS SPECIAL, 15"	FOOT	108
* 54205059	PIPE CULVERTS SPECIAL, 24"	FOOT	38
59300100	CONTROLLED LOW STRENGTH MATERIAL	CU YD	44
67100100	MOBILIZATION	L SUM	1
72501000	TERMINAL MARKER DIRECT APPLIED	EACH	4
* X0100002	GRADING AND SHAPING SPECIAL	SQ YD	4350
* X2010400	STUMP REMOVAL ONLY	UNIT	308
* X2810808	STONE DUMPED RIPRAP CLASS A4 (SPECIAL)	TON	240
* XX004586	CONCRETE CUT-OFF WALL	CU YD	7.2
* XX009290	TRAFFIC CONTROL AND PROTECTION STANDARD BLR 21	EACH	1.0
* Z0013798	CONSTRUCTION LAYOUT	L SUM	1

Δ SPECIALTY ITEMS

25000200 SEEDING CLASS 2 AND 25100115 MULCH METHOD 2				28000250 TEMPORARY EROSION CONTROL SEEDING	28000400 28000500 28000600 NITROGEN, PHOS, POTASS FERT.
LOCATION TO LOCATION	ACRE	POUND	POUND		
96+50 99+71 RT	0.04				
96+50 99+71 LT	0.03				
100+29 103+46 RT	0.04				
100+29 103+46 LT	0.05				
400+00 405+03 LT	0.08				
400+00 405+03 RT	0.07				
<b>ROUNDED TOTAL</b>	<b>0.50</b>	<b>150.0</b>	<b>45.0</b>		

NOTE: TEMPORARY EROSION CONTROL SEEDING IS APPLIED AT A RATE OF 100 LB / ACRE PE APPLICATION AND 3 APPLICATIONS.

NOTE: NITROGEN, PHOSPHOROUS & POTASSIUM FERTILIZER NUTRIENTS ARE APPLIED AT A RATE OF 90 LB / ACRE.

28000400 PERIMETER EROSION BARRIER				
LOCATION TO LOCATION				FOOT
96+50 18' RT.	99+71 23' RT.			321.0
96+50 23' LT.	98+09 23' LT.			159.0
99+14 23' LT.	99+71 23' LT.			57.0
100+29 23' RT.	103+46 23' RT.			317.0
100+29 23' LT.	103+46 23' LT.			317.0
400+00 23' RT.	405+03 23' RT.			485.0
400+00 23' LT.	405+03 23' LT.			502.0
<b>TOTAL</b>				<b>2158.0</b>

28000300 TEMPORARY DITCH CHECKS		
STATION		FOOT
97+00	LT	6.0
97+00	RT	6.0
98+00	LT	6.0
98+00	RT	6.0
99+00	LT	6.0
99+00	RT	6.0
101+00	LT	6.0
101+00	RT	6.0
102+00	LT	6.0
102+00	RT	6.0
103+00	LT	6.0
103+00	RT	6.0
401+00	LT	6.0
401+00	RT	6.0
402+00	LT	6.0
402+00	RT	6.0
403+00	LT	6.0
403+00	RT	6.0
404+00	LT	6.0
404+00	RT	6.0
405+00	LT	6.0
405+00	RT	6.0
<b>TOTAL</b>		<b>132.0</b>

X2010400 STUMP REMOVAL ONLY		
LOCATION TO LOCATION		UNITS
4 RT.	99+38	18.0
C/L	99+47	30.0
4 LT.	99+65	8.0
8 LT.	99+66	8.0
8 LT.	99+68	30.0
28' LT.	99+75	30.0
31' LT.	99+75	24.0
33' LT.	99+75	24.0
4 LT.	100+14	6.0
C/L	100+16	12.0
22' LT.	100+27	36.0
2' RT.	100+30	18.0
19' LT.	100+32	12.0
30' LT.	100+35	24.0
27' LT.	100+36	10.0
33' LT.	100+38	6.0
22' LT.	100+42	12.0
<b>TOTAL</b>		<b>308.0</b>

25100630 EROSION CONTROL BLANKET				
LOCATION TO LOCATION				SQ YD
100+60	RT	101+10	RT	56.0
101+60	RT	103+40	RT	200.0
400+70	LT	401+70	LT	111.0
<b>TOTAL</b>				<b>367.0</b>

40200800 AGGREGATE SURFACE COURSE, TYPE B		
LOCATION TO LOCATION		TON
96+50 99+71.13		436.3
100+28.88 103+46.40		434.5
100+35 100+35		52.5
400+09.14 405+03.59		737.2
<b>TOTAL</b>		<b>1661</b>

28000500 INLET & PIPE PROTECTION		
LOCATION		EACH
RT	101+67	1
LT	401+00	1
LT	403+13.8	1
<b>TOTAL</b>		<b>3</b>

54205050 PIPE CULVERTS SPECIAL, 15"	
LOCATION	FOOT
101+35	66.0
403+00	42.0
<b>TOTAL</b>	<b>108.0</b>

AT 45 DEG. SKEW

54205059 PIPE CULVERTS SPECIAL, 24"	
LOCATION	FOOT
401+00	38.0
<b>TOTAL</b>	<b>38.0</b>

**GENERAL NOTES**

ANY AREAS DAMAGED OR DESTROYED DURING THE PROJECT AS A DIRECT OR INDIRECT RESULT OF CONTRACTOR OPERATIONS, SHALL BE RESTORED TO THAT CONDITION OR BETTER WHICH EXISTED PRIOR TO STARTING CONSTRUCTION. THE COST OF SAID RESTORATION OR REPAIR SHALL BE BORNE TOTALLY BY THE CONTRACTOR, WITH NO EXTRA COMPENSATION BEING AWARDED UNDER THIS CONTRACT. THE RESPONSIBILITY FOR THE REPAIR OR REPLACEMENT OF ANY UTILITY, STRUCTURE, LANDSCAPING, ETC DAMAGED OR DESTROYED BY THE CONTRACTOR DURING MOBILIZATION OR CONSTRUCTION SHALL BE BORNE SOLELY BY THE CONTRACTOR, WITH NO EXPENSE BEING CHARGED TO THE ENGINEER OR OWNER. PRIOR TO ACCEPTANCE OF THIS REPAIR OR REPLACEMENT, THE CONTRACTOR SHALL PRESENT THE OWNER WITH A "SIGNOFF LETTER", SIGNED BY A RESPONSIBLE OFFICIAL OF THE OWNER OF THE DAMAGED UTILITY STATING THAT THE REPAIR OR REPLACEMENT IS ACCEPTABLE. CHANNEL EXCAVATION IS DEEMED UNSUITABLE FOR USE AS EMBANKMENT.

**APPLICATION RATES AS FOLLOWS:**

2.05 T/CY FOR AGGREGATE SURFACE COURSE TYPE B  
1.75 T/CY FOR STONE DUMPED RIPRAP, CLASS A4 (SPECIAL)

EARTHWORK SCHEDULE		TOTAL
		CU YD
<b>EARTH EXCAVATION</b>		
MAINLINE STA 96+92 TO STA 103+46		623.6
SIDE ROAD STA 400+09 TO STA 405+03		655.0
<b>TOTAL CUT</b>		<b>1,279.0</b>
<b>EMBANKMENT</b>		
MAINLINE STA 96+92 TO STA 103+46		121.1
SIDE ROAD STA 400+09 TO STA 405+03		859.0
<b>TOTAL FILL</b>		<b>980.0</b>
<b>FURNISHED EXCAVATION = [FILL - (1 - 0.25)(EX)]</b>		<b>21</b>
<b>25% SHRINKAGE FACTOR</b>		



ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION  
VERMILION COUNTY BRIDGE  
CONSTRUCTION  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

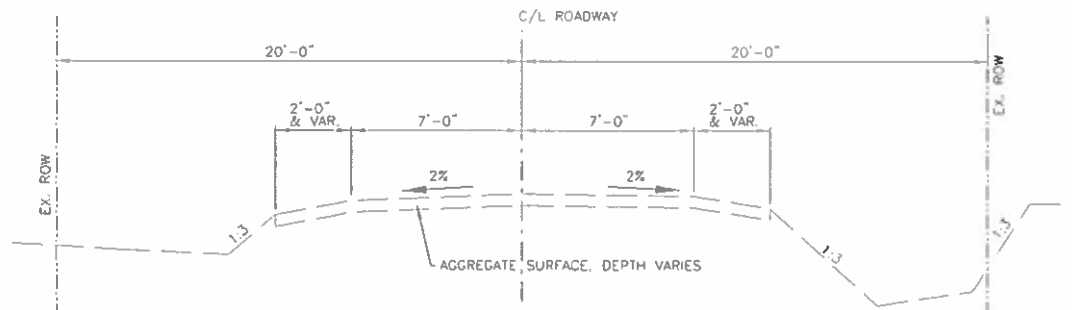
DRAWN BY: MG  
APPROVED BY: MJJ  
DATE 10/31/2019  
SCALE N/A

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
**SUMMARY AND SCHEDULE OF QUANTITIES**

JOB NUMBER:  
**17-659**

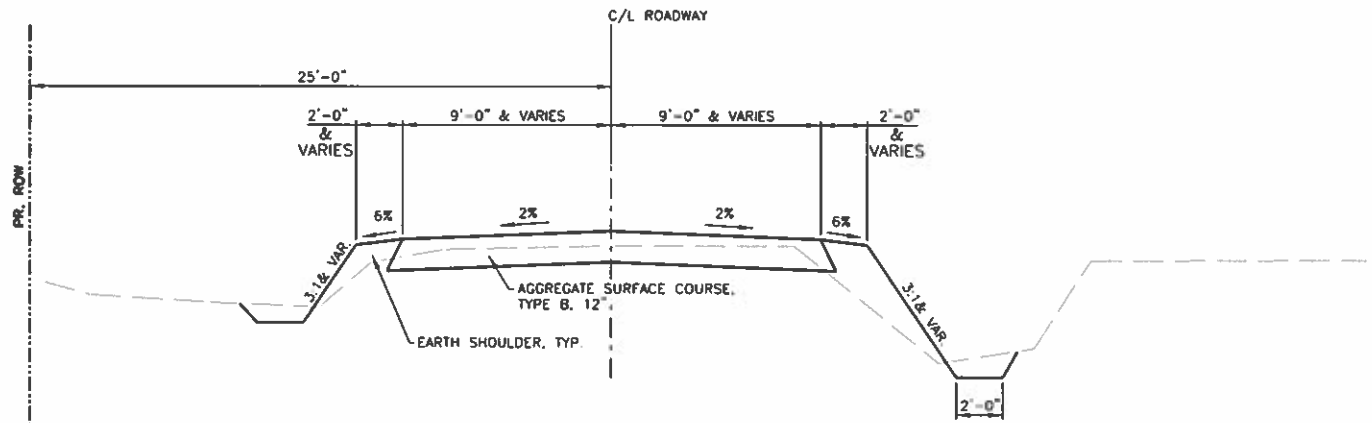
SHEET NUMBER:  
**02 of 27**



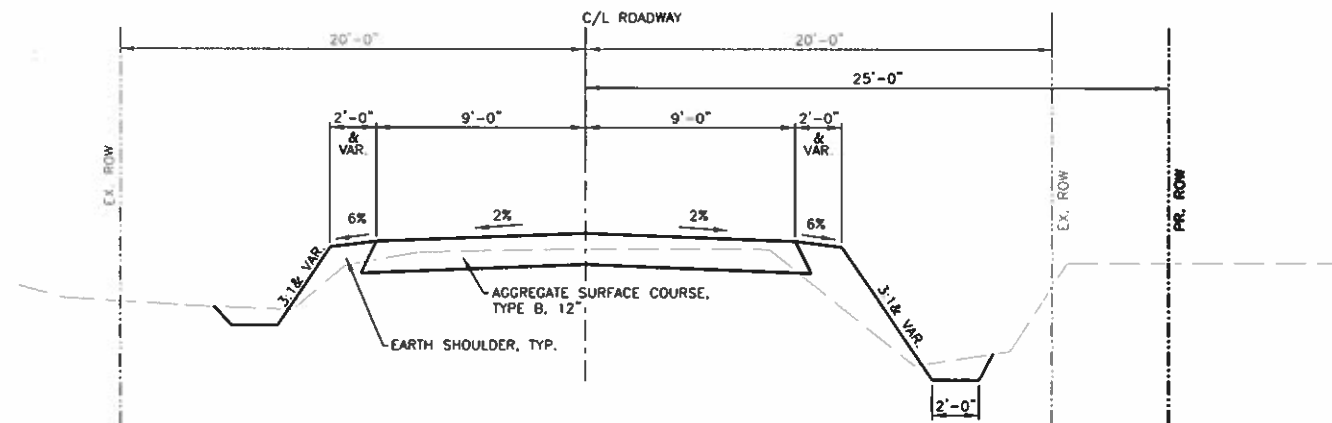
STA 96+50.00 TO STA 99+71.125  
 STA 100+28.875 TO STA 103+46.40

**EXISTING TYPICAL PAVEMENT**

- NOTES:  
 1. FUNCTIONAL CLASS - RURAL LOCAL ROAD  
 2. CURRENT ADT = 125



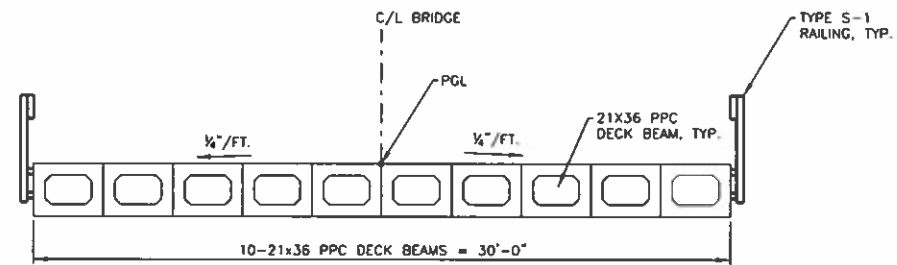
STA 400+09.14 TO STA 405+03.59  
**PROPOSED TYPICAL PAVEMENT**  
 SIDE ROAD



STA 96+50.00 TO STA 99+71.125  
 STA 100+28.875 TO STA 103+46.40

**PROPOSED TYPICAL PAVEMENT**

MAINLINE

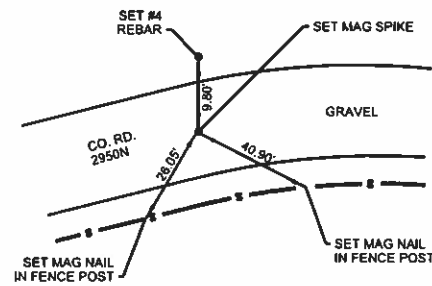


STA 99+71.125 TO STA 100+28.875  
**PROPOSED BRIDGE SECTION**

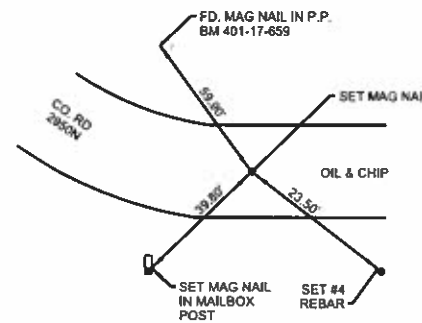
REVISIONS		
REV. NO.	DESCRIPTION	DATE



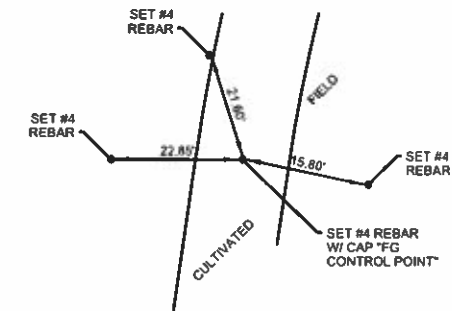
**P.O.T. STA. 95+63.72**



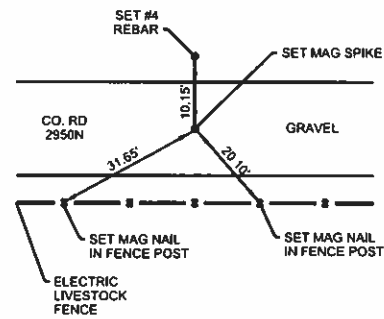
**P.I. STA. 102+19.79**



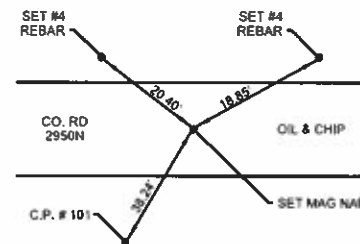
**P.C. STA. 400+75.05**



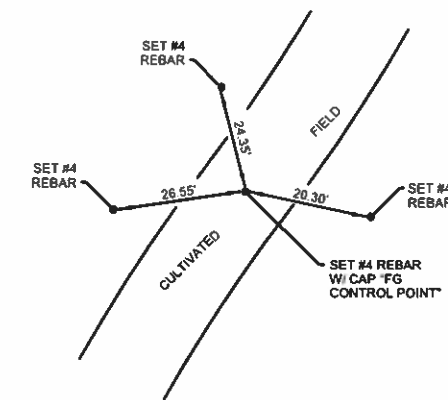
**P.I. STA. 96+92.37**



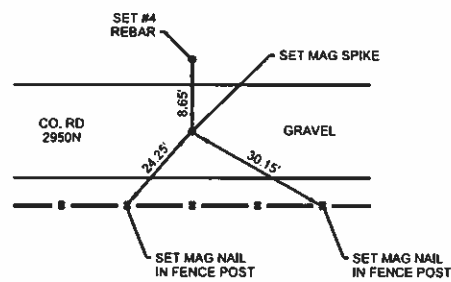
**P.T. STA. 103+46.40**



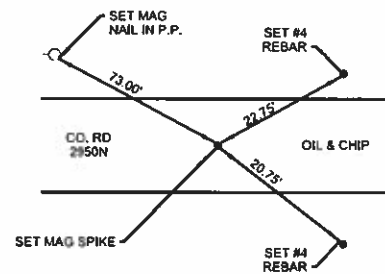
**P.R.C. STA. 402+62.86**



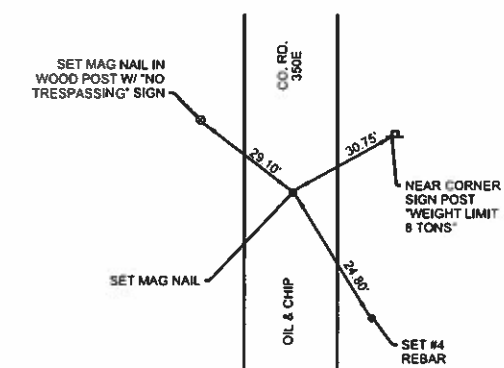
**P.C. STA. 97+80.38**



**P.O.T. STA. 105+07.51**

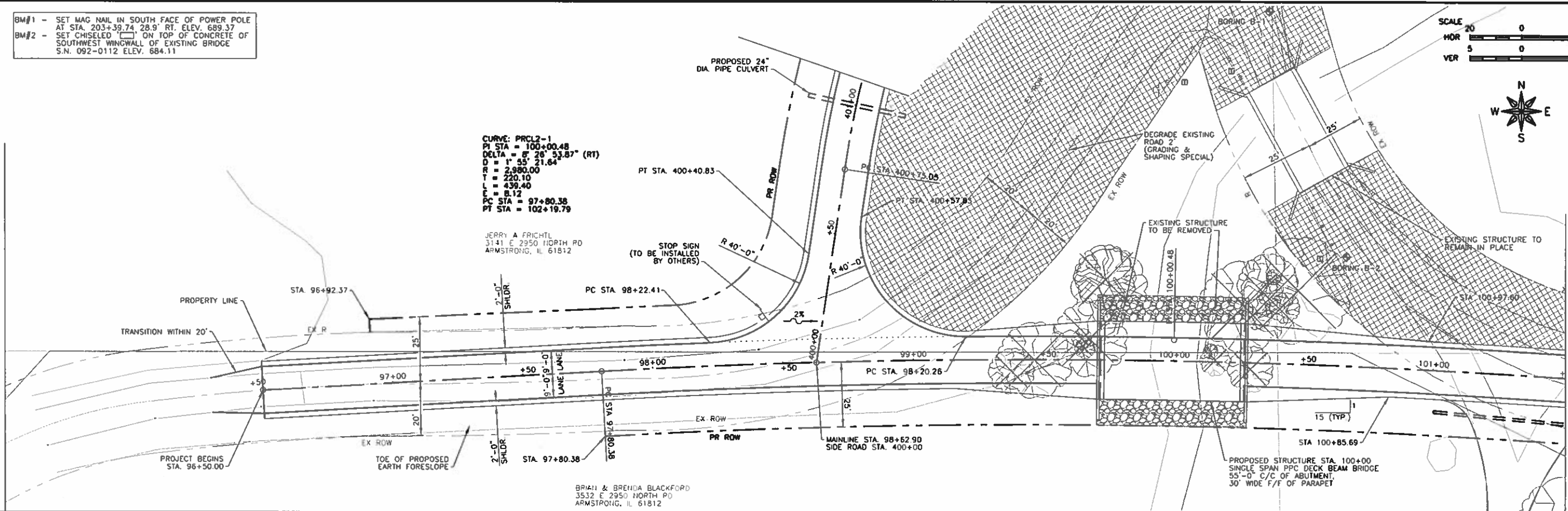
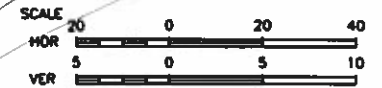


**P.T. STA. 405+03.59**

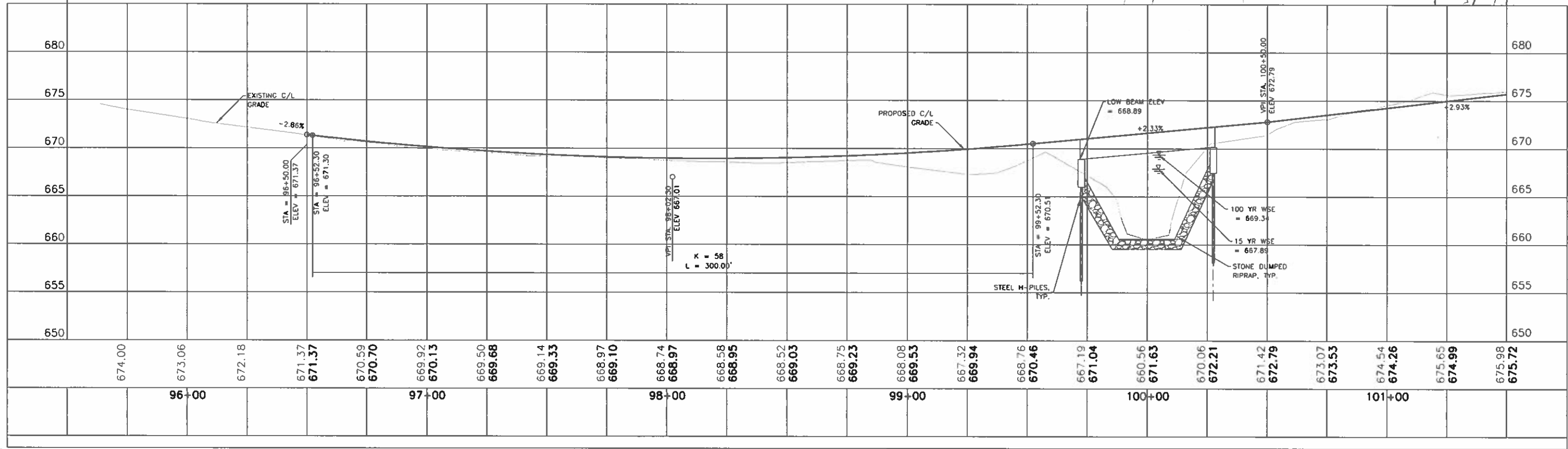


REVISIONS		
REV. NO.	DESCRIPTION	DATE

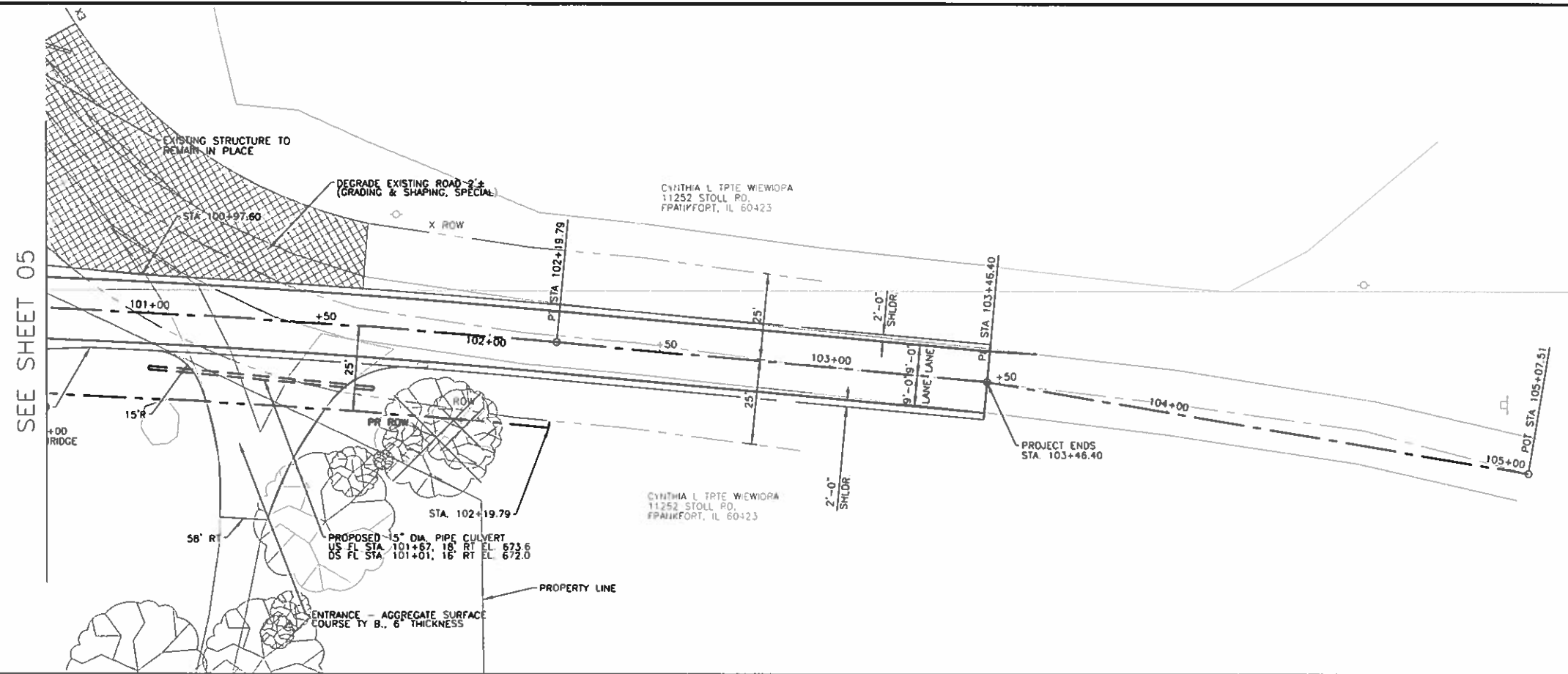
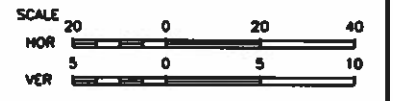
BM#1 - SET MAG NAIL IN SOUTH FACE OF POWER POLE AT STA. 203+39.74 28.9' RT. ELEV. 689.37  
 BM#2 - SET CHISELED " " ON TOP OF CONCRETE OF SOUTHWEST WINGWALL OF EXISTING BRIDGE S.N. 092-0112 ELEV. 684.11



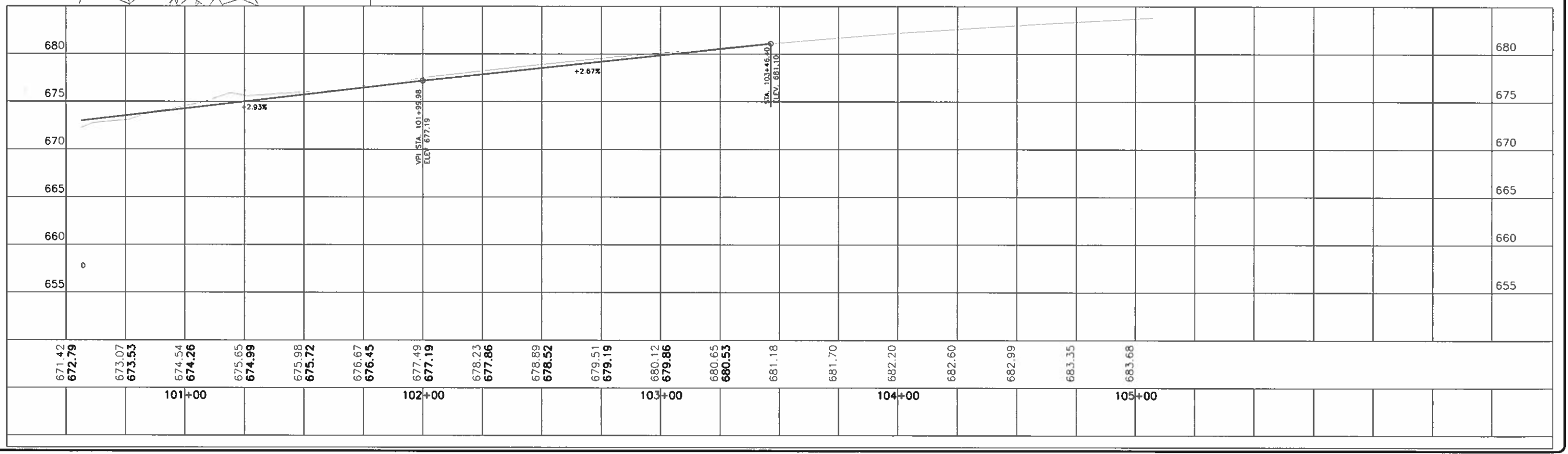
SEE SHEET 06



<b>FEHR GRAHAM</b> ENGINEERING & ENVIRONMENTAL <small>ILLINOIS DESIGN FIRM NO. 184-003525</small> © 2018 FEHR GRAHAM	ILLINOIS IOWA WISCONSIN	OWNER/DEVELOPER: VERMILION COUNTY HIGHWAY DEPARTMENT 2732 BATESTOWN ROAD OAKWOOD, IL 61858	PROJECT AND LOCATION: VERMILION COUNTY BRIDGE CONSTRUCTION TR 42A PROPOSED S.N. 092-3532 SECTION NO: 13-12151-00-BR	DRAWN BY: MG APPROVED BY: MJ DATE: 10/29/2019 SCALE: AS SHOWN	REVISIONS <table border="1"> <tr> <th>REV. NO.</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REV. NO.	DESCRIPTION	DATE										DRAWING: PLAN AND PROFILE SHEET STA. 95+63.72 TO STA. 101+50	JOB NUMBER: 17-659
		REV. NO.	DESCRIPTION	DATE															
SHEET NUMBER: 05 of 27																			



SEE SHEET 05



**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS DESIGN FIRM NO. 184-003523  
© 2018 FEHR GRAHAM

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
CONSTRUCTION  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

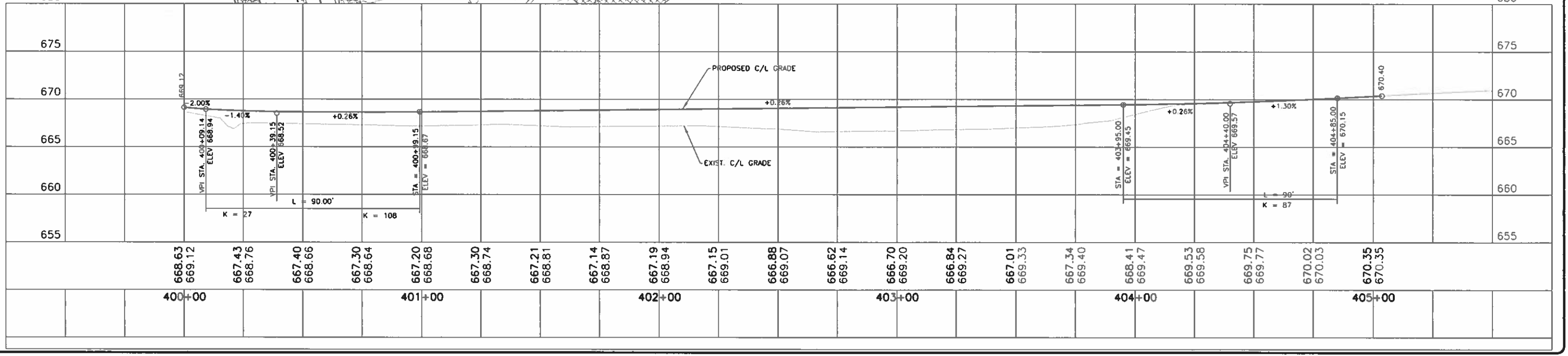
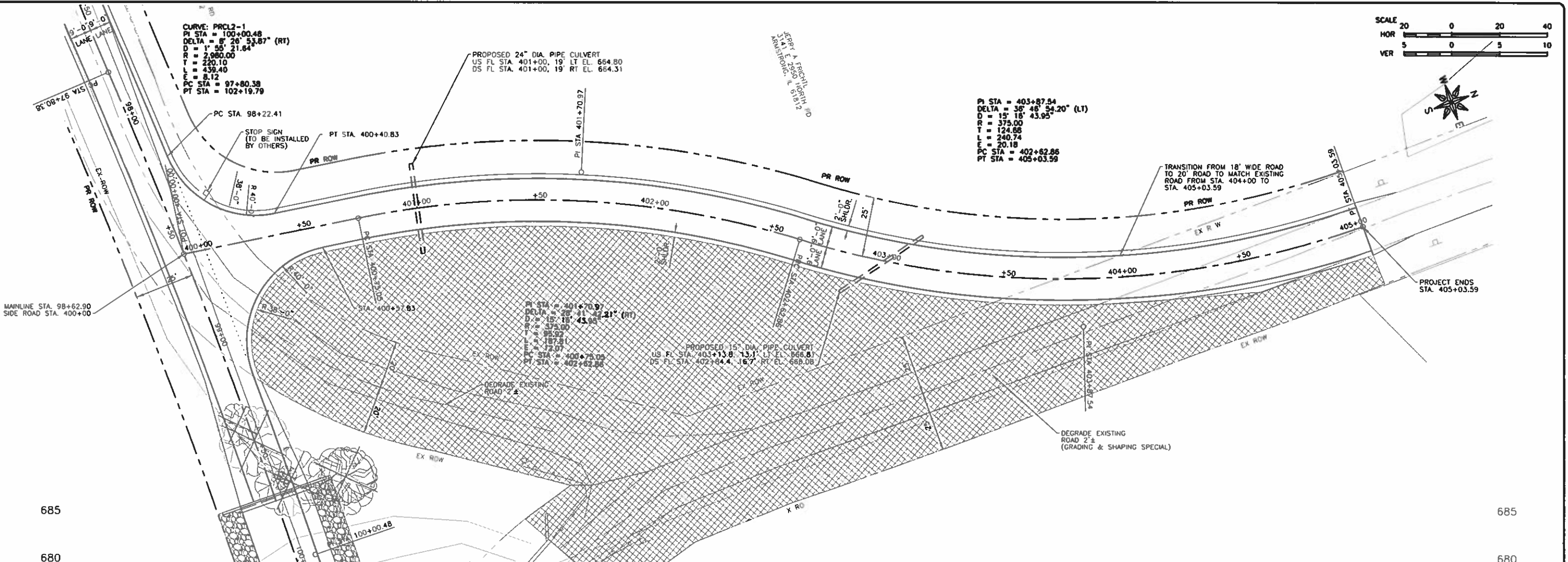
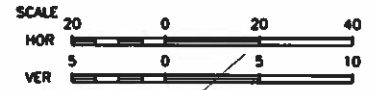
DRAWN BY: MG  
APPROVED BY: MJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
PLAN AND PROFILE SHEET  
STA. 101+50 TO STA. 105+00

JOB NUMBER:  
17-659  
SHEET NUMBER:  
06 of 27





**FEHR GRAHAM**  
 ENGINEERING & ENVIRONMENTAL  
 ILLINOIS DESIGN FIRM NO. 184-003525  
 © 2018 FEHR GRAHAM

ILLINOIS  
 IOWA  
 WISCONSIN

OWNER/DEVELOPER:  
 VERMILION COUNTY HIGHWAY  
 DEPARTMENT  
 2732 BATESTOWN ROAD  
 OAKWOOD, IL 61858

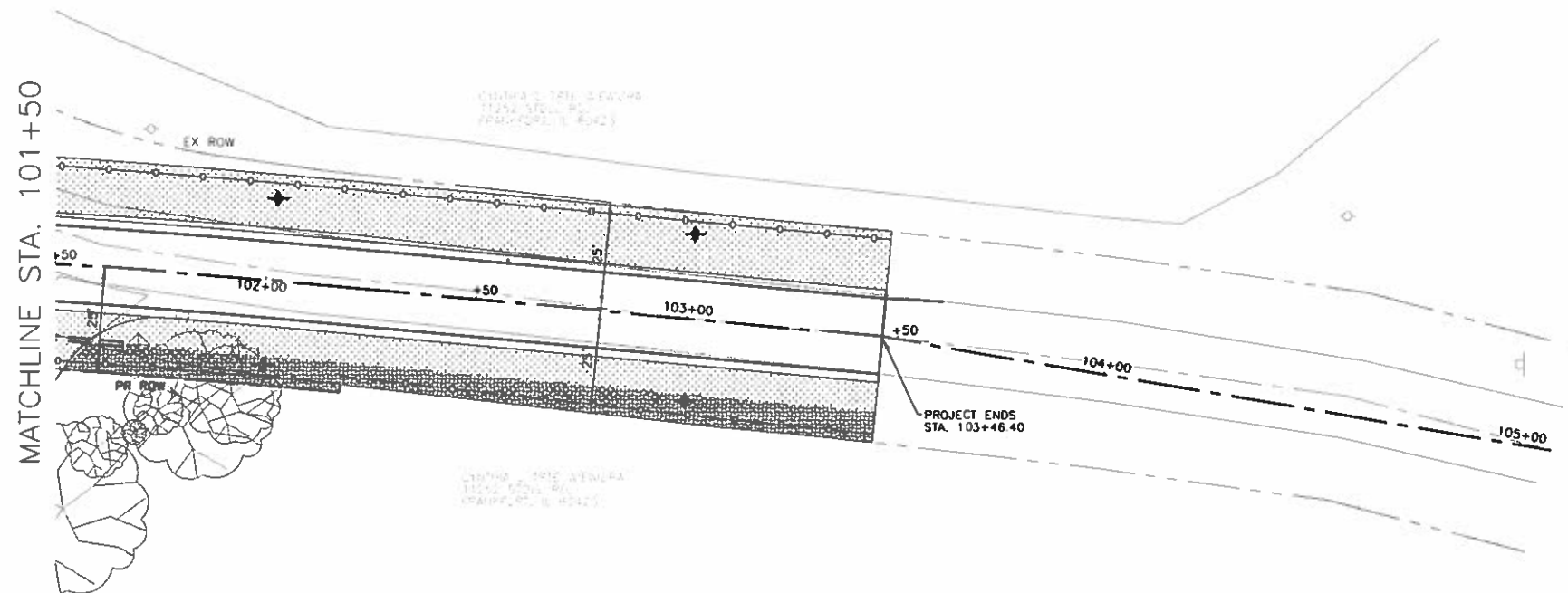
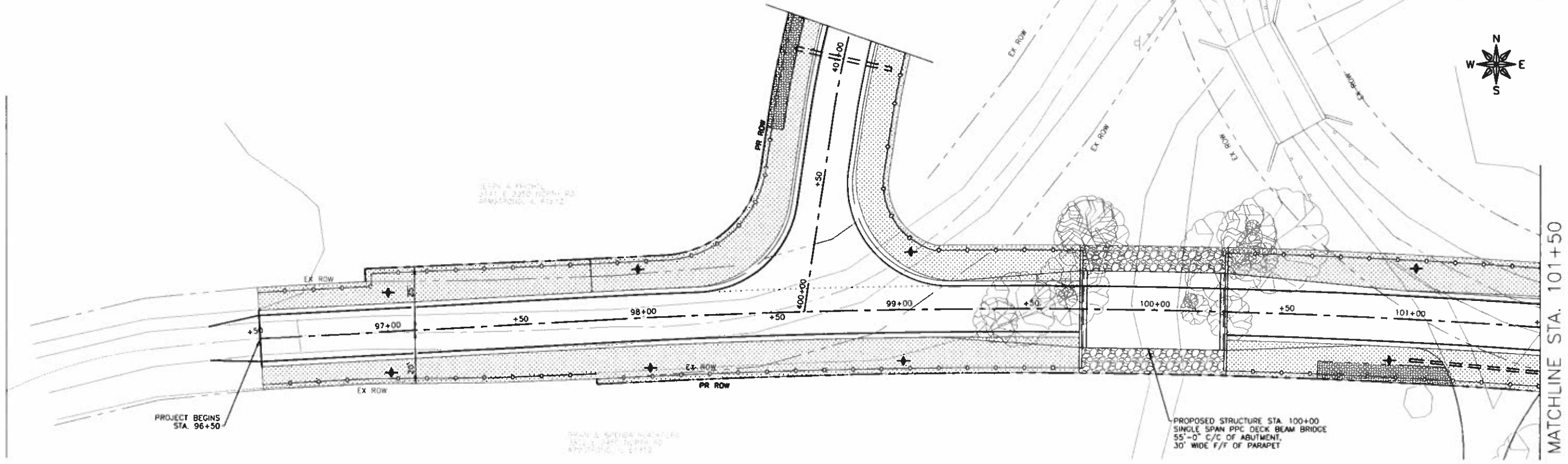
PROJECT AND LOCATION:  
 VERMILION COUNTY BRIDGE  
 CONSTRUCTION  
 TR 42A  
 PROPOSED S.N. 092-3532  
 SECTION NO: 13-12151-00-BR

DRAWN BY: MG  
 APPROVED BY: MJ  
 DATE: 10/29/2019  
 SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
 PLAN AND PROFILE SHEET  
 STA. 400+00 TO STA. 405+03.59

JOB NUMBER:  
 17-659  
 SHEET NUMBER:  
 07 of 27



**LEGEND**

- EROSION CONTROL BARRIER
- TEMPORARY DITCH CHECKS
- SEEDING CLASS 2
- EROSION CONTROL BLANKET
- INLET & PIPE PROTECTION

**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS DESIGN FIRM NO. 184-003525  
© 2018 FEHR GRAHAM

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
CONSTRUCTION  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

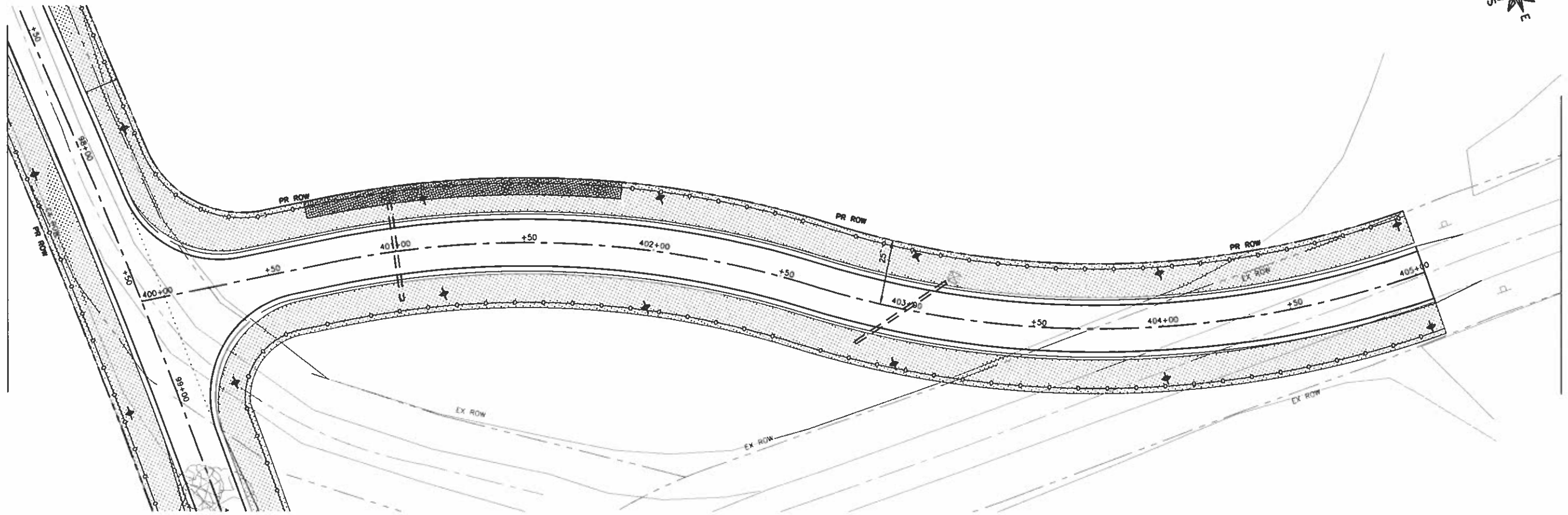
DRAWN BY: MG  
APPROVED BY: MJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
**EROSION CONTROL PLAN**  
STA. 96+50.00 TO STA. 103+46.40

JOB NUMBER:  
17-659  
SHEET NUMBER:  
08 of 27





**LEGEND**

- ◆— EROSION CONTROL BARRIER
- ◇— TEMPORARY DITCH CHECKS
- ▨ SEEDING CLASS 2
- ▩ EROSION CONTROL BLANKET
- ◆ INLET & PIPE PROTECTION

**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS DESIGN FIRM NO. 184-003523

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
CONSTRUCTION  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

DRAWN BY: MG  
APPROVED BY: MJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

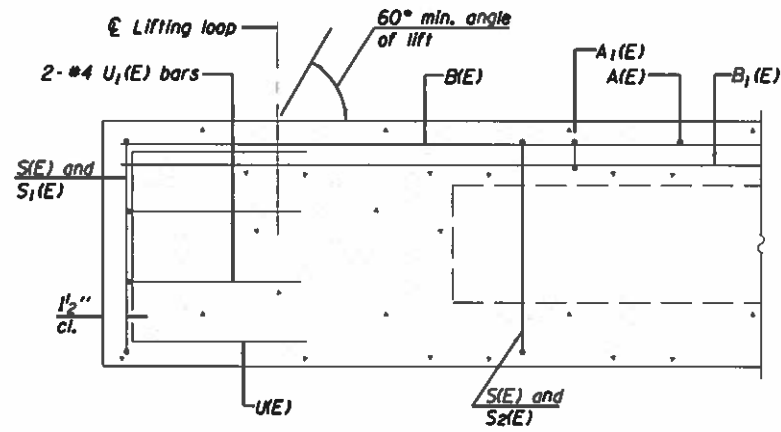
REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
EROSION CONTROL PLAN  
STA. 400+00 TO STA. 405+03.59

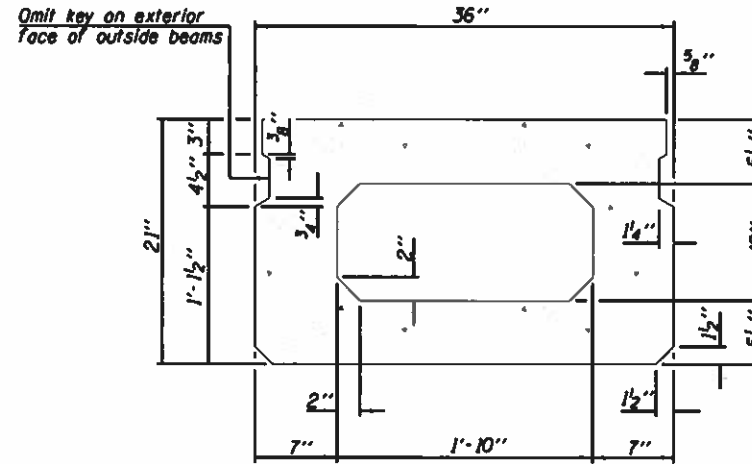
JOB NUMBER:  
17-659

SHEET NUMBER:  
09 of 27

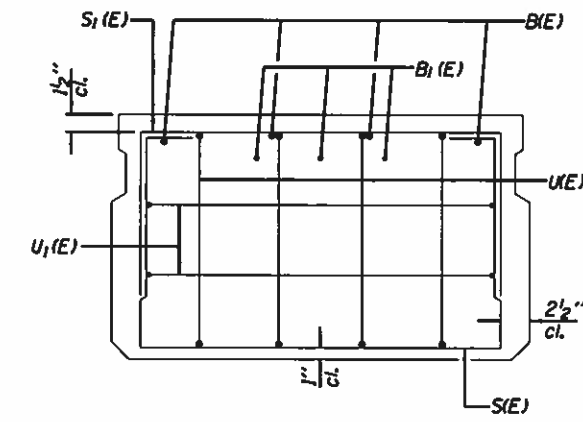




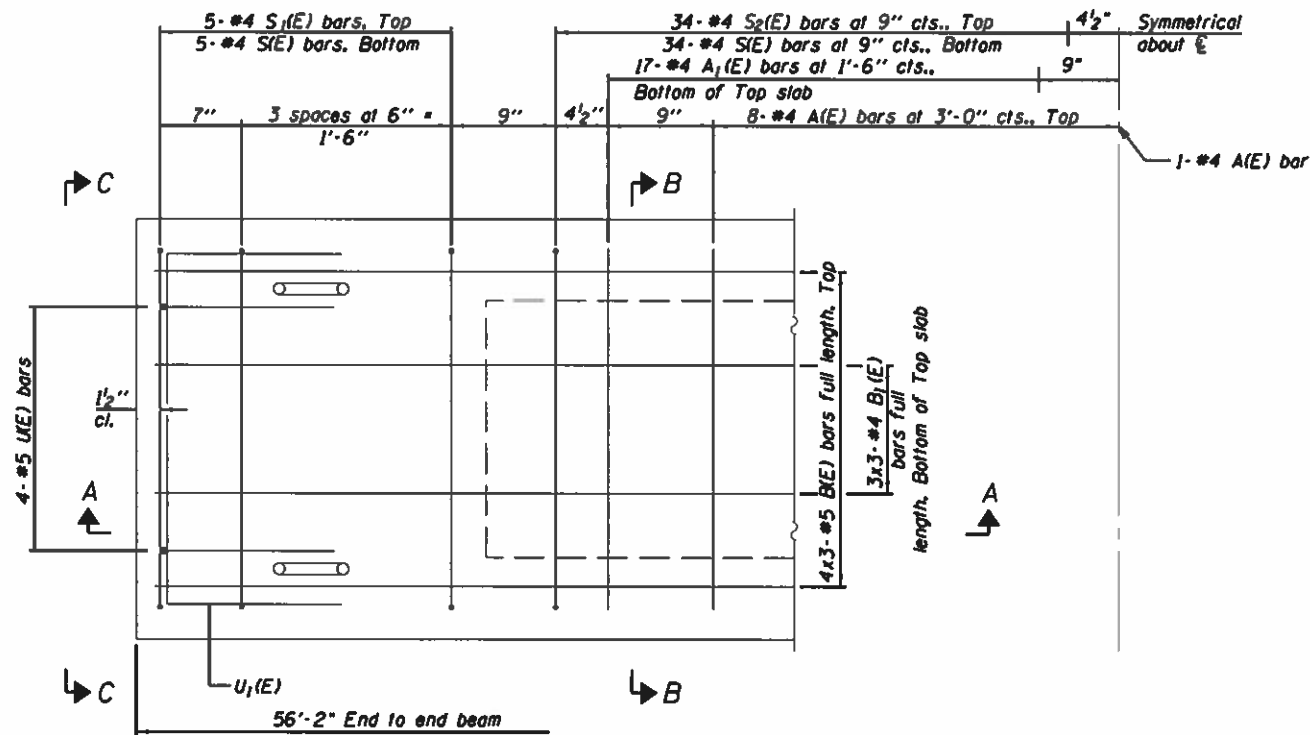
SECTION A-A



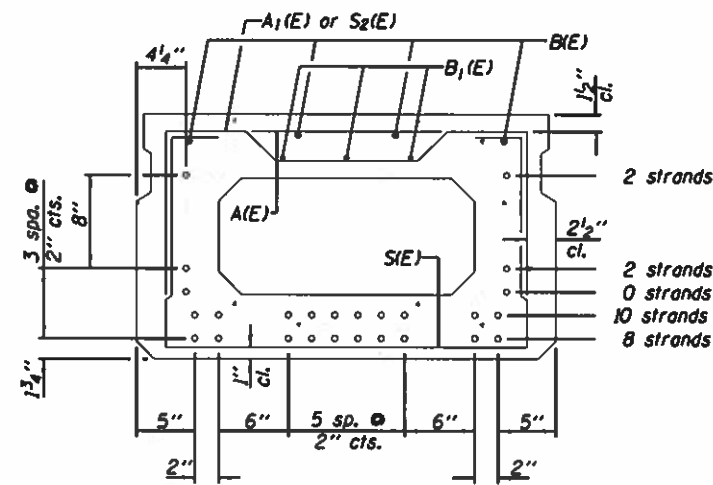
SECTION B-B  
(Showing dimensions)



VIEW C-C



PLAN VIEW



SECTION B-B  
(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

BAR LIST  
ONE BEAM ONLY  
(For information only)

Bar	No.	Size	Length	Shape
A(E)	17	#4	2'-7"	—
A1(E)	34	#4	2'-10"	—
B(E)	12	#5	20'-4"	—
B1(E)	9	#4	20'-0"	—
S(E)	78	#4	6'-5"	□
S1(E)	10	#4	4'-11"	□
S2(E)	68	#4	5'-2"	□
U(E)	8	#5	4'-0"	□
U1(E)	4	#4	5'-0"	□

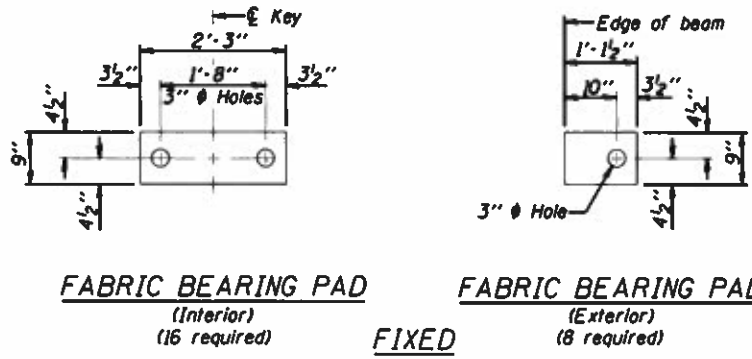
Estimated Total Weight One Beam = 32,239 lbs

PD-2136-0 06-01-16

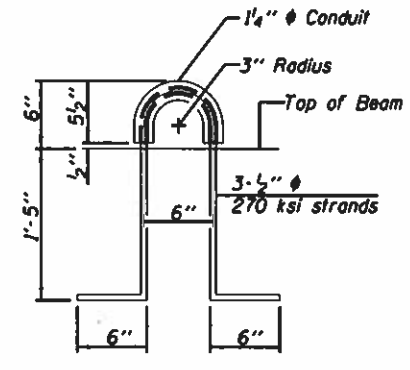
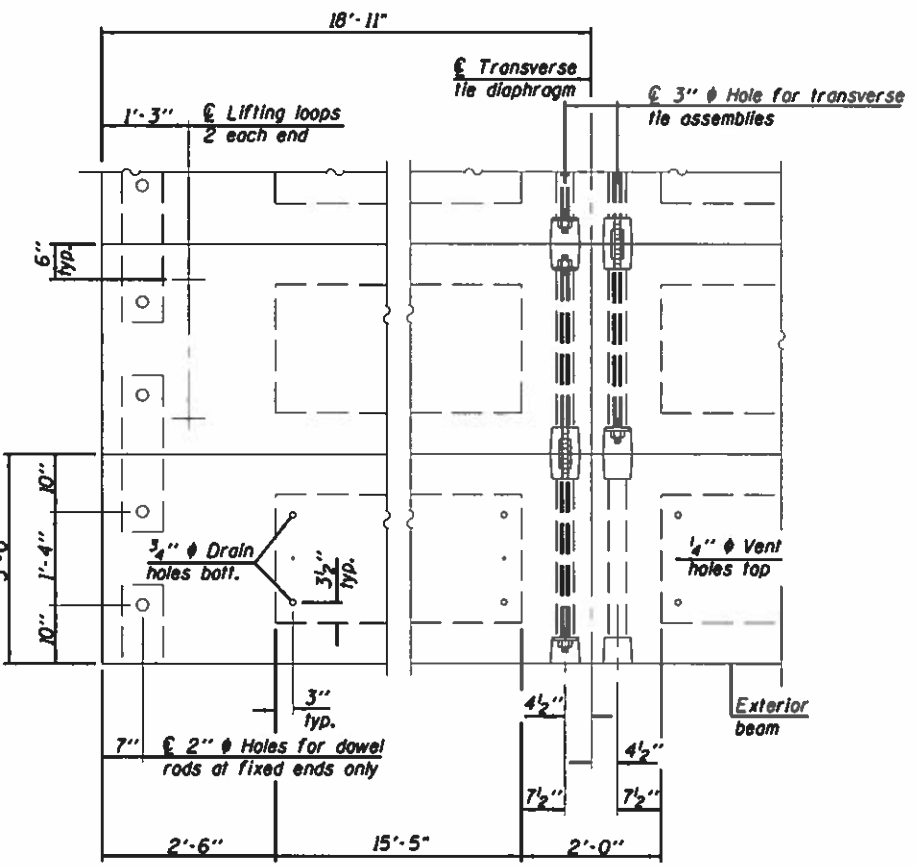
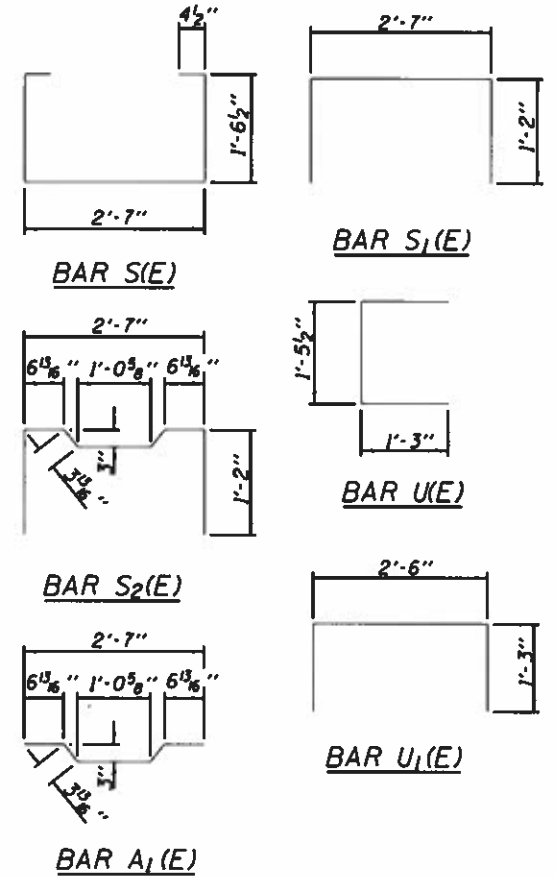
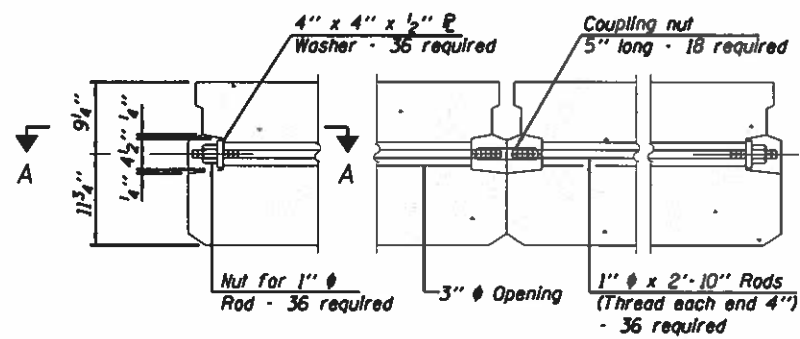
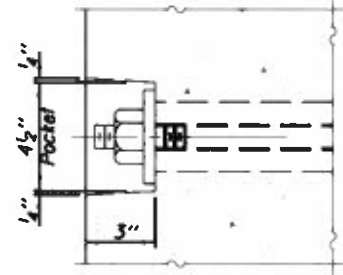
Note: Spacing of S1(E) and S2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.

MINIMUM BAR LAP  
#4 bar = 1'-11"  
#5 bar = 2'-6"

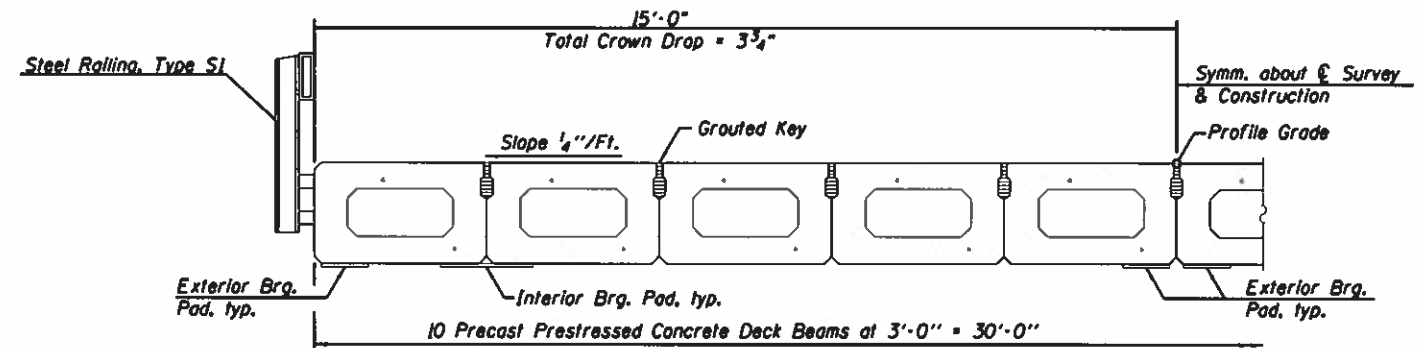
PPC DECK BEAM  
TR 42A  
SECTION 13-12151-00-BR  
MIDDLEFORK TOWNSHIP  
STATION 100+00  
S.N. 092-3532



**Notes:**  
All bearing pads shall be 1" thick.  
Omit holes when using expansion bearings.  
Expansion bearing pad shall be bonded to the substructure.



**NOTES**  
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.  
Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.  
A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling.  
Corrosion Inhibitor, per Article 1020.05(b)(10) and 1021.07 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.  
Compressive strength of prestressed concrete, f'c, shall be 6000 psi.  
Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



**BILL OF MATERIAL**

Precast Prestressed Conc. Deck Bms. (21" depth)	Sq. Ft.	1,685
---	---------	-------

Note: Connect beams in pairs with the transverse tie configuration shown.

PD-2136-0D 1-28-16

**PPC DECK BEAM DETAILS**  
**TR 42A**  
**SECTION 13-12151-00-BR**  
**MIDDLEFORK TOWNSHIP**  
**STATION 100+00**  
**S.N. 092-3532**

**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS DESIGN FIRM NO. 184-003525  
© 2018 FEHR GRAHAM

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

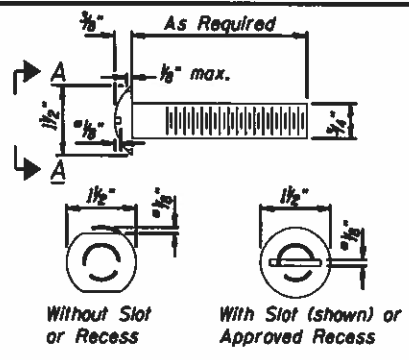
PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE CONSTRUCTION  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

DRAWN BY: MG  
APPROVED BY: MJJ  
DATE: 10/29/2019  
SCALE: N/A

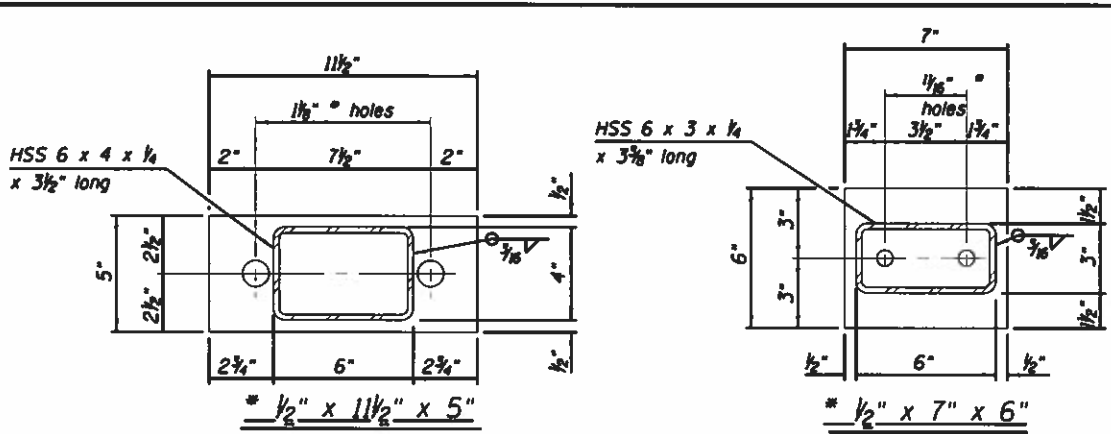
REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
21X36 PPC DECK BEAM DETAILS  
C:\Microstation\17\17-659\Plans\17-659-S-Design PPC Deck Beam 2.dgn  
CADD NAME: 17-659-S-Design PPC Deck Beam 2.dgn  
PRINT DRIVER: SPLTDVRS

JOB NUMBER:  
17-659  
SHEET NUMBER:  
12 of 27  
PRINT DATE: 10/29/2019  
PRINT TIME: 8:16AM



VIEW A-A  
ROUND HEAD BOLT



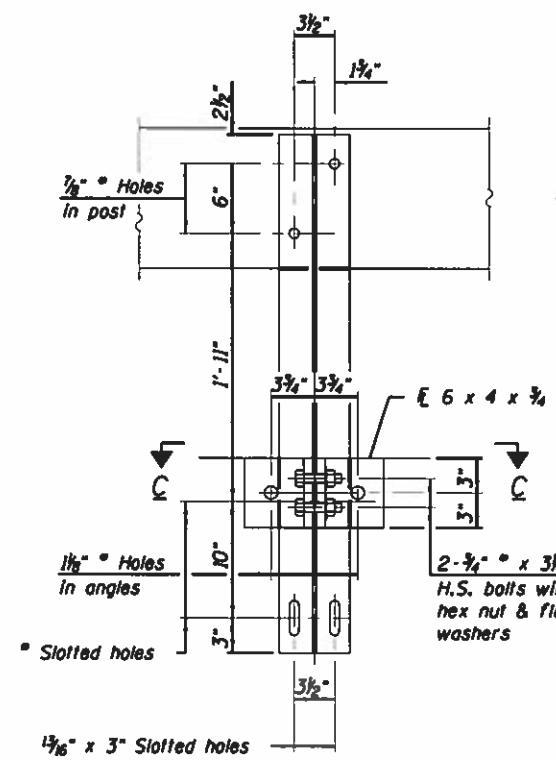
**SPLICE DIMENSIONS**

T	D	A	B	C	E
4"	2 1/2"	1'-8"	2"	4"	2 1/2"
6"	3 1/2"	2'-0"	2 1/2"	5 1/2"	3 1/2"
8"	4 1/2"	2'-4"	3 1/2"	6 1/2"	4 1/2"
10"	5 1/2"	2'-8"	4 1/2"	7 1/2"	5 1/2"
12"	6 1/2"	3'-0"	5 1/2"	8 1/2"	6 1/2"
14"	7 1/2"	3'-4"	6 1/2"	9 1/2"	7 1/2"
16"	8 1/2"	3'-8"	7 1/2"	10 1/2"	8 1/2"
18"	9 1/2"	4'-0"	8 1/2"	11 1/2"	9 1/2"
20"	10 1/2"	4'-4"	9 1/2"	12 1/2"	10 1/2"
22"	11 1/2"	4'-8"	10 1/2"	13 1/2"	11 1/2"
24"	12 1/2"	5'-0"	11 1/2"	14 1/2"	12 1/2"
26"	13 1/2"	5'-4"	12 1/2"	15 1/2"	13 1/2"
28"	14 1/2"	5'-8"	13 1/2"	16 1/2"	14 1/2"
30"	15 1/2"	6'-0"	14 1/2"	17 1/2"	15 1/2"
32"	16 1/2"	6'-4"	15 1/2"	18 1/2"	16 1/2"
34"	17 1/2"	6'-8"	16 1/2"	19 1/2"	17 1/2"
36"	18 1/2"	7'-0"	17 1/2"	20 1/2"	18 1/2"
38"	19 1/2"	7'-4"	18 1/2"	21 1/2"	19 1/2"
40"	20 1/2"	7'-8"	19 1/2"	22 1/2"	20 1/2"
42"	21 1/2"	8'-0"	20 1/2"	23 1/2"	21 1/2"
44"	22 1/2"	8'-4"	21 1/2"	24 1/2"	22 1/2"
46"	23 1/2"	8'-8"	22 1/2"	25 1/2"	23 1/2"
48"	24 1/2"	9'-0"	23 1/2"	26 1/2"	24 1/2"
50"	25 1/2"	9'-4"	24 1/2"	27 1/2"	25 1/2"
52"	26 1/2"	9'-8"	25 1/2"	28 1/2"	26 1/2"
54"	27 1/2"	10'-0"	26 1/2"	29 1/2"	27 1/2"
56"	28 1/2"	10'-4"	27 1/2"	30 1/2"	28 1/2"
58"	29 1/2"	10'-8"	28 1/2"	31 1/2"	29 1/2"
60"	30 1/2"	11'-0"	29 1/2"	32 1/2"	30 1/2"

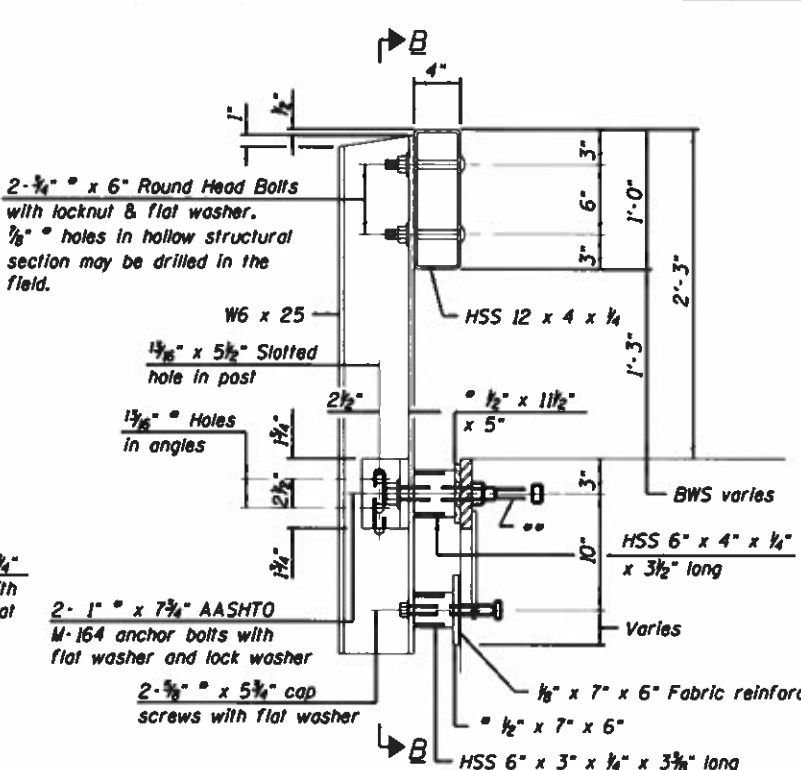
T = Total movement at expansion joint as shown on the design plans.

**Notes:**  
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S-1.  
All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.

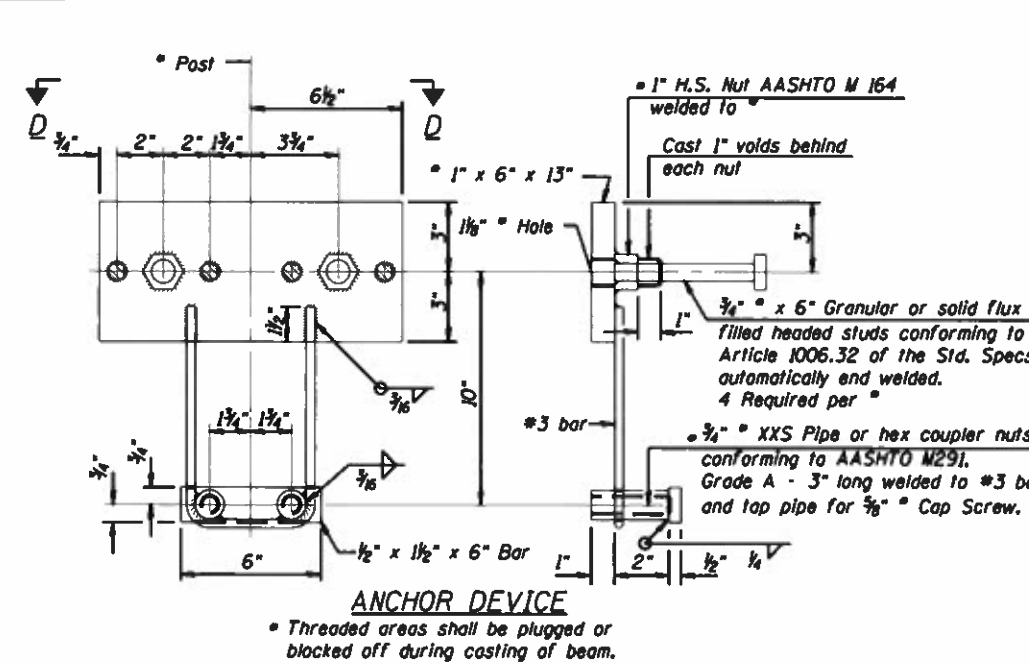
\*\* The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device. The anchorage studs may be bent down 1/2" to accommodate the top reinforcement bar placement.



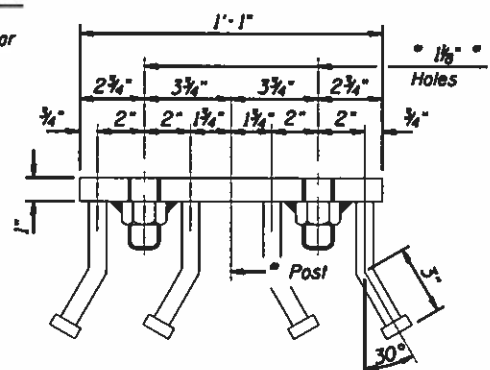
SECTION B-B



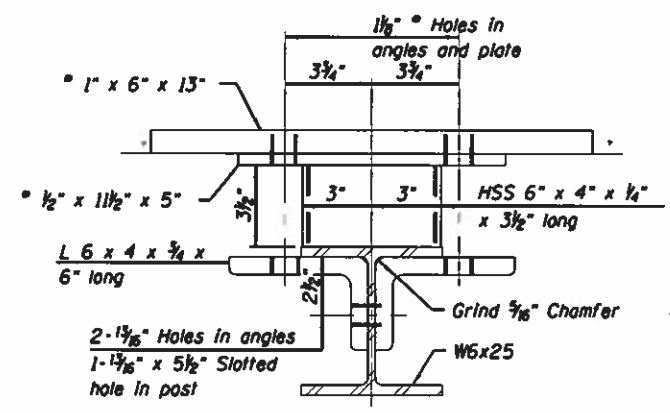
SECTION AT RAILING POST



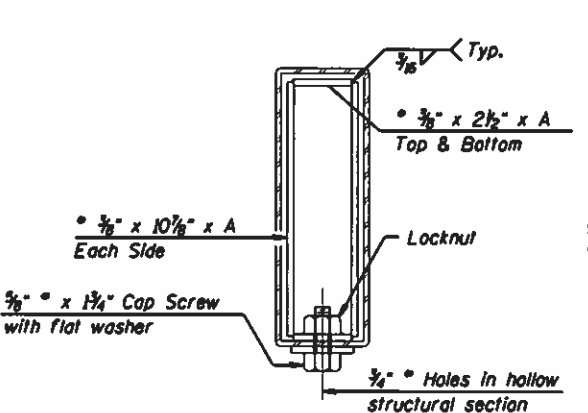
ANCHOR DEVICE



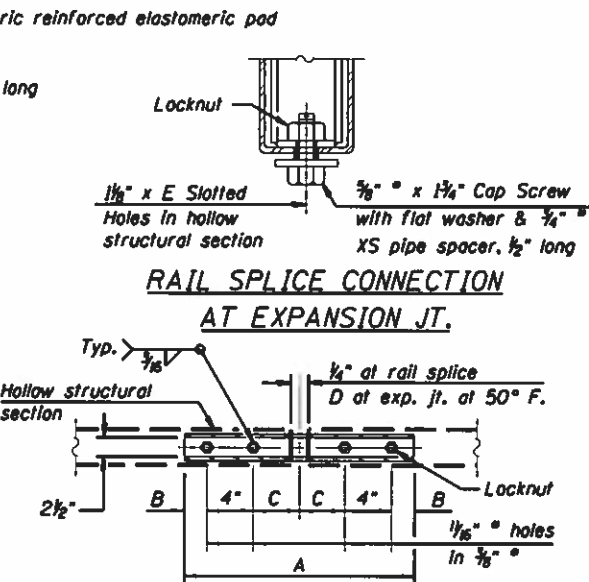
VIEW D-D



SECTION C-C

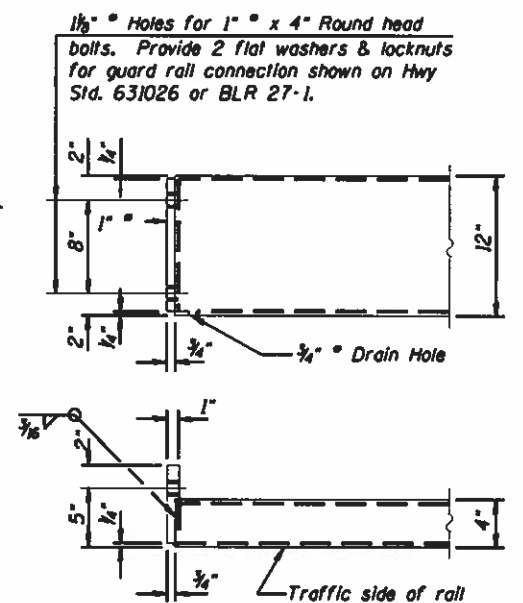


SECTIONS AT RAIL SPLICE



RAIL SPLICE CONNECTION AT EXPANSION JT.

PLAN-BOTT. SPLICE TYPICAL



END OF RAIL DETAILS

**BILL OF MATERIAL**

Item	Unit	Quantity
Steel Railing, Type S-1	Foot	113

**STEEL RAILING**  
TR 42A  
SECTION 13-12151-00-BR  
MIDDLEFORK TOWNSHIP  
STATION 100+00  
S.N. 092-3532

**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS DESIGN FIRM NO. 184-003525  
© 2018 FEHR GRAHAM

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE CONSTRUCTION  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

DRAWN BY: MG  
APPROVED BY: MJJ  
DATE: 10/29/2019  
SCALE: N/A

**REVISIONS**

REV. NO.	DESCRIPTION	DATE

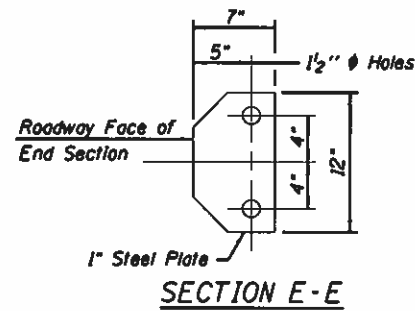
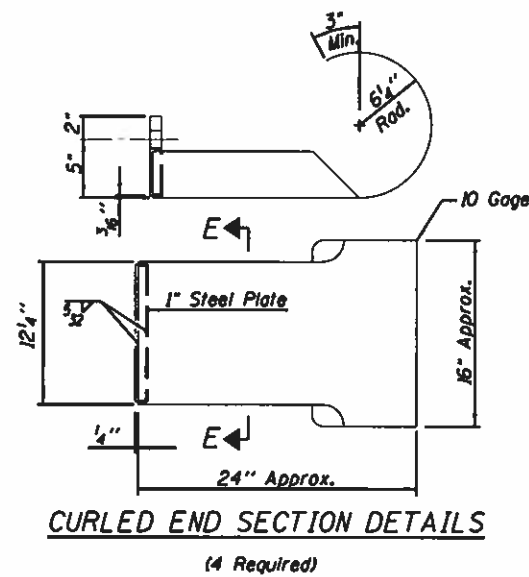
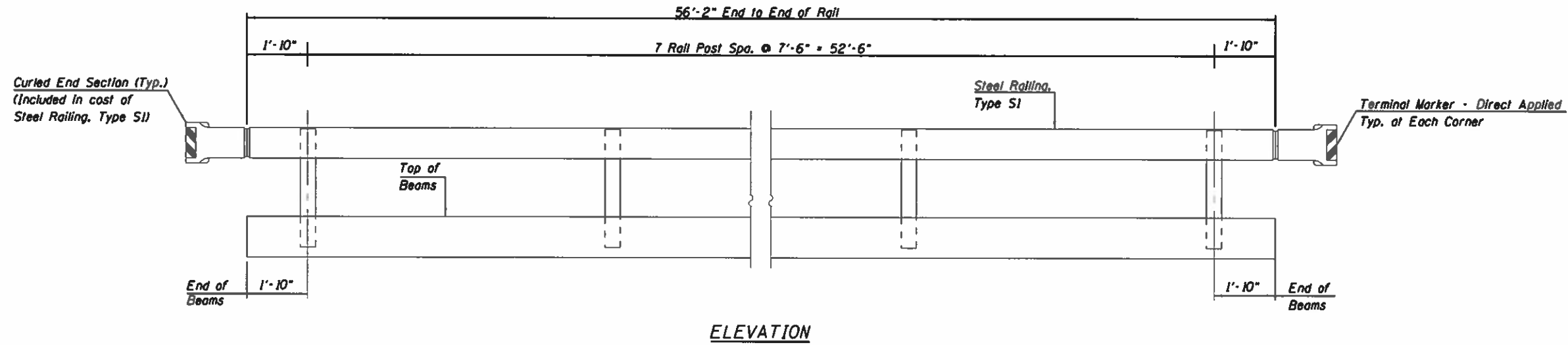
DRAWING:  
STEEL RAILING - TYPE S1

C:\Microstation\17-17-659\Plans\17-659-S-Design Steel Railing 1.dgn  
CADD NAME: 17-659-S-Design Steel Railing 1.dgn  
PRINT DRIVER: SPLTDPS5

JOB NUMBER:  
17-659

SHEET NUMBER:  
13 of 27

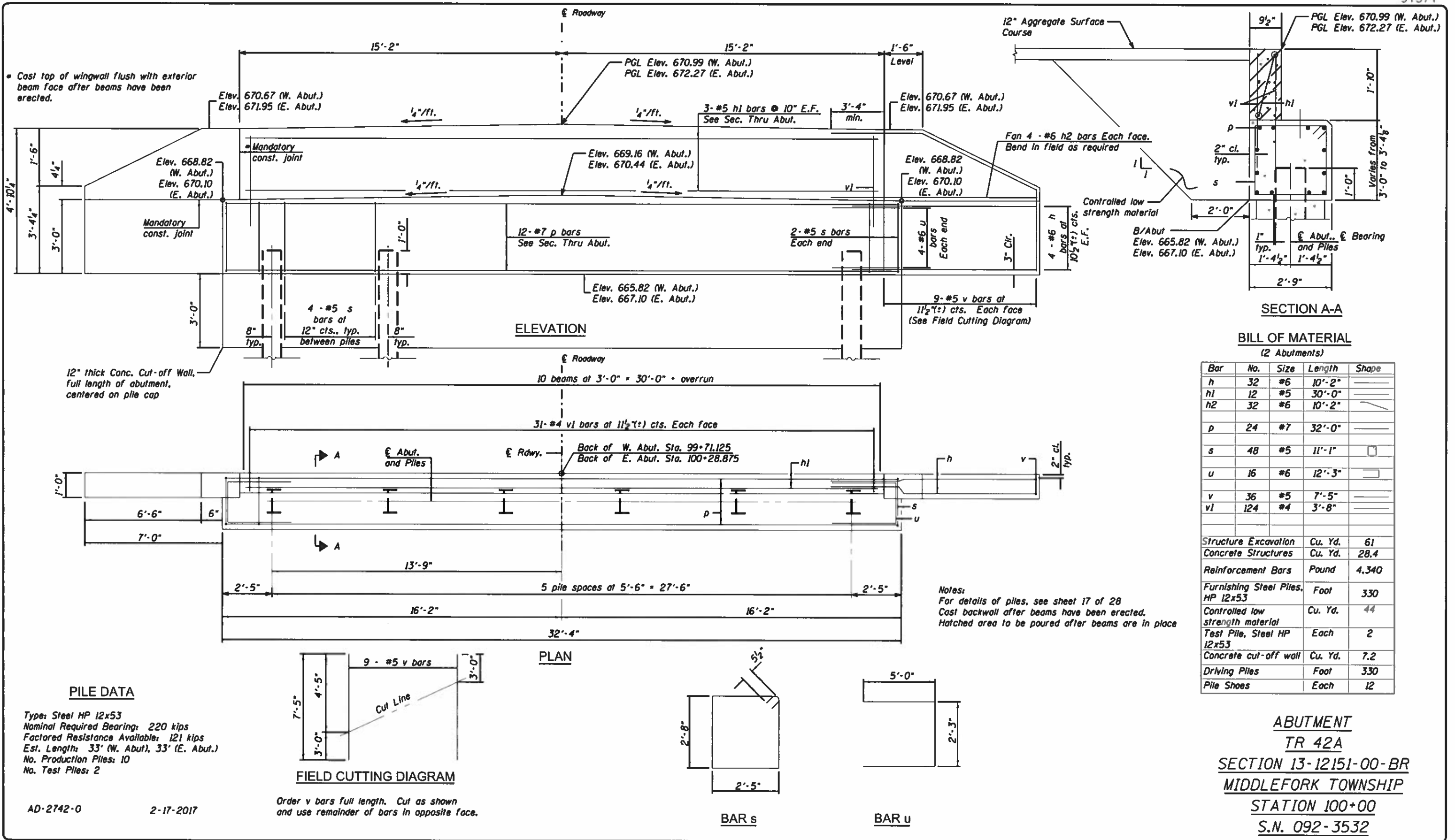
PRINT TIME: 8:16AM



**STEEL RAILING**  
**TR 42A**  
**SECTION 13-12151-00-BR**  
**MIDDLEFORK TOWNSHIP**  
**STATION 100+00**  
**S.N. 092-3532**

REVISIONS		
REV. NO.	DESCRIPTION	DATE





• Cast top of wingwall flush with exterior beam face after beams have been erected.

Elev. 670.67 (W. Abut.)  
Elev. 671.95 (E. Abut.)

Elev. 668.82 (W. Abut.)  
Elev. 670.10 (E. Abut.)

12" thick Conc. Cut-off Wall, full length of abutment, centered on pile cap

**PILE DATA**  
Type: Steel HP 12x53  
Nominal Required Bearing: 220 kips  
Factored Resistance Available: 121 kips  
Est. Length: 33' (W. Abut.), 33' (E. Abut.)  
No. Production Piles: 10  
No. Test Piles: 2

AD-2742-0      2-17-2017

Order v bars full length. Cut as shown and use remainder of bars in opposite face.

Notes:  
For details of piles, see sheet 17 of 28  
Cast backwall after beams have been erected.  
Hatched area to be poured after beams are in place

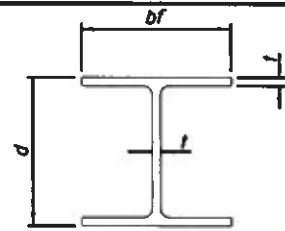
**SECTION A-A**

**BILL OF MATERIAL**  
(2 Abutments)

Bar	No.	Size	Length	Shape
h	32	#6	10'-2"	—
h1	12	#5	30'-0"	—
h2	32	#6	10'-2"	—
p	24	#7	32'-0"	—
s	48	#5	11'-1"	□
u	16	#6	12'-3"	—
v	36	#5	7'-5"	—
vi	124	#4	3'-8"	—
Structure Excavation		Cu. Yd.	61	
Concrete Structures		Cu. Yd.	28.4	
Reinforcement Bars		Pound	4,340	
Furnishing Steel Piles, HP 12x53		Foot	330	
Controlled low strength material		Cu. Yd.	44	
Test Pile, Steel HP 12x53		Each	2	
Concrete cut-off wall		Cu. Yd.	7.2	
Driving Piles		Foot	330	
Pile Shoes		Each	12	

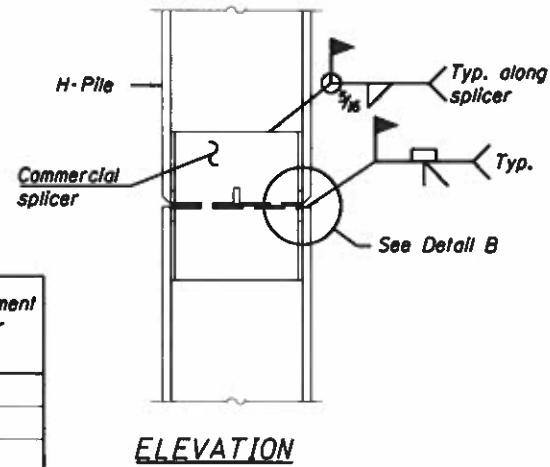
**ABUTMENT**  
**TR 42A**  
**SECTION 13-12151-00-BR**  
**MIDDLEFORK TOWNSHIP**  
**STATION 100+00**  
**S.N. 092-3532**

<b>FEHR GRAHAM</b> ENGINEERING & ENVIRONMENTAL ILLINOIS DESIGN FIRM NO. 184-003525 © 2018 FEHR GRAHAM	ILLINOIS IOWA WISCONSIN	OWNER/DEVELOPER: VERMILION COUNTY HIGHWAY DEPARTMENT 2732 BATESTOWN ROAD OAKWOOD, IL 61858	PROJECT AND LOCATION: VERMILION COUNTY BRIDGE CONSTRUCTION TR 42A PROPOSED S.N. 092-3532 SECTION NO: 13-12151-00-BR	DRAWN BY: MG APPROVED BY: MJ DATE: 10/29/2019 SCALE: N/A	REVISIONS <table border="1"> <tr> <th>REV. NO.</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REV. NO.	DESCRIPTION	DATE				DRAWING: ABUTMENT	JOB NUMBER: 17-659
		REV. NO.	DESCRIPTION	DATE									
G:\Microstation\17-659-Design\17-659-5-Design Abutment.dgn CADD NAME: 17-659-5-Design Abutment.dgn PRINT DRIVER: SPLTDVSS						SHEET NUMBER: 15 of 27	PRINT DATE: 10/29/2019 PRINT TIME: 8:15						

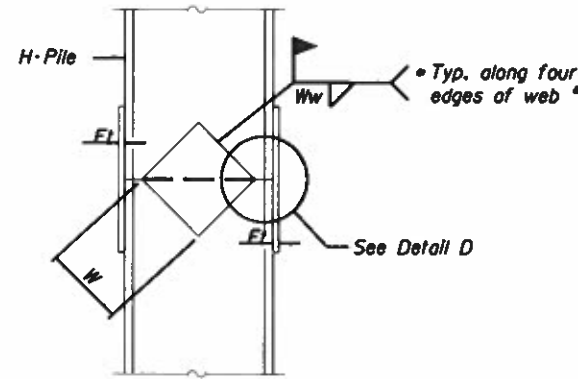


STEEL PILE TABLE

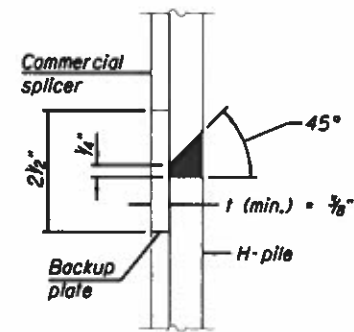
Designation	Depth d	Flange width bf	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



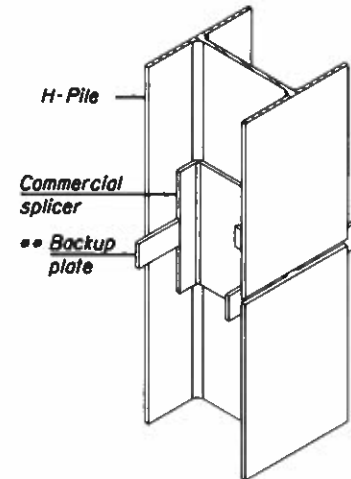
ELEVATION



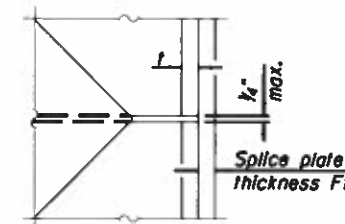
ELEVATION



DETAIL "B"

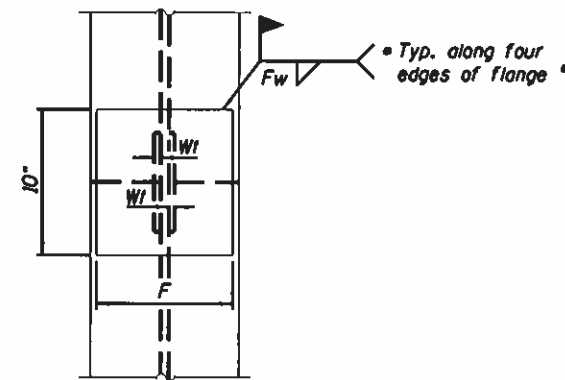


ISOMETRIC VIEW



DETAIL D

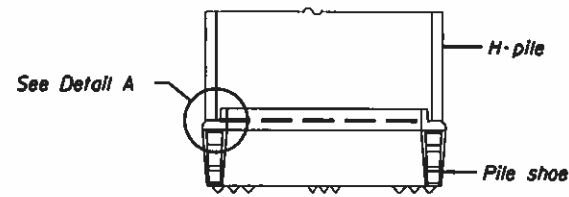
WELDED COMMERCIAL SPLICE



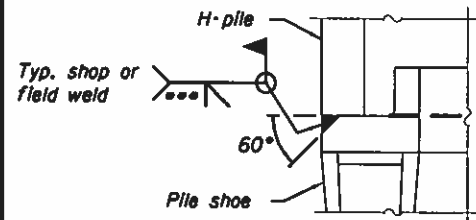
END VIEW

WELDED PLATE FIELD SPLICE

Designation	F	Ft	Fw	W	Wt	Ww
HP 14x117	12 1/2"	1"	3/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	3/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	3/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	3/8"	1/16"	6 1/2"	5/8"	1/2"
x74	10"	3/8"	1/16"	6 1/2"	5/8"	1/2"
x63	10"	3/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	3/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	3/16"	5 1/4"	1/2"	3/8"
x42	8"	3/8"	3/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	3/8"	1/16"	4 1/4"	1/2"	3/8"

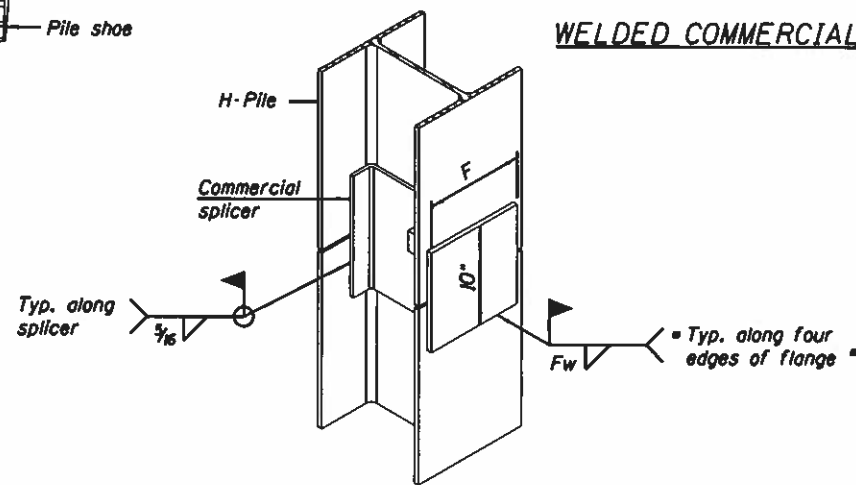


ELEVATION



DETAIL A

SHOE ATTACHMENT



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

- Interrupt welds 1/4" from end of web and/or each flange.
- Remove portions of backup plates that extend outside the flanges.
- Weld size per pile shoe manufacturer (3/16" min.).

Note:  
The steel H-piles shall be according to AASHTO M270 Grade 50.

STEEL H PILES

TR 42A

SECTION 13-12151-00-BR

MIDDLEFORK TOWNSHIP

STATION 100+00

S.N. 092-3532

A-HP

8-11-2017

**FEHR GRAHAM**

ENGINEERING & ENVIRONMENTAL

ILLINOIS DESIGN FIRM NO. 184-003525

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:

VERMILION COUNTY HIGHWAY DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:

VERMILION COUNTY BRIDGE CONSTRUCTION  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

DRAWN BY: MG  
APPROVED BY: MJ  
DATE: 10/29/2019  
SCALE: N/A

REVISIONS

REV. NO.	DESCRIPTION	DATE

DRAWING:

STEEL H-PILES

JOB NUMBER:

17-659

SHEET NUMBER:

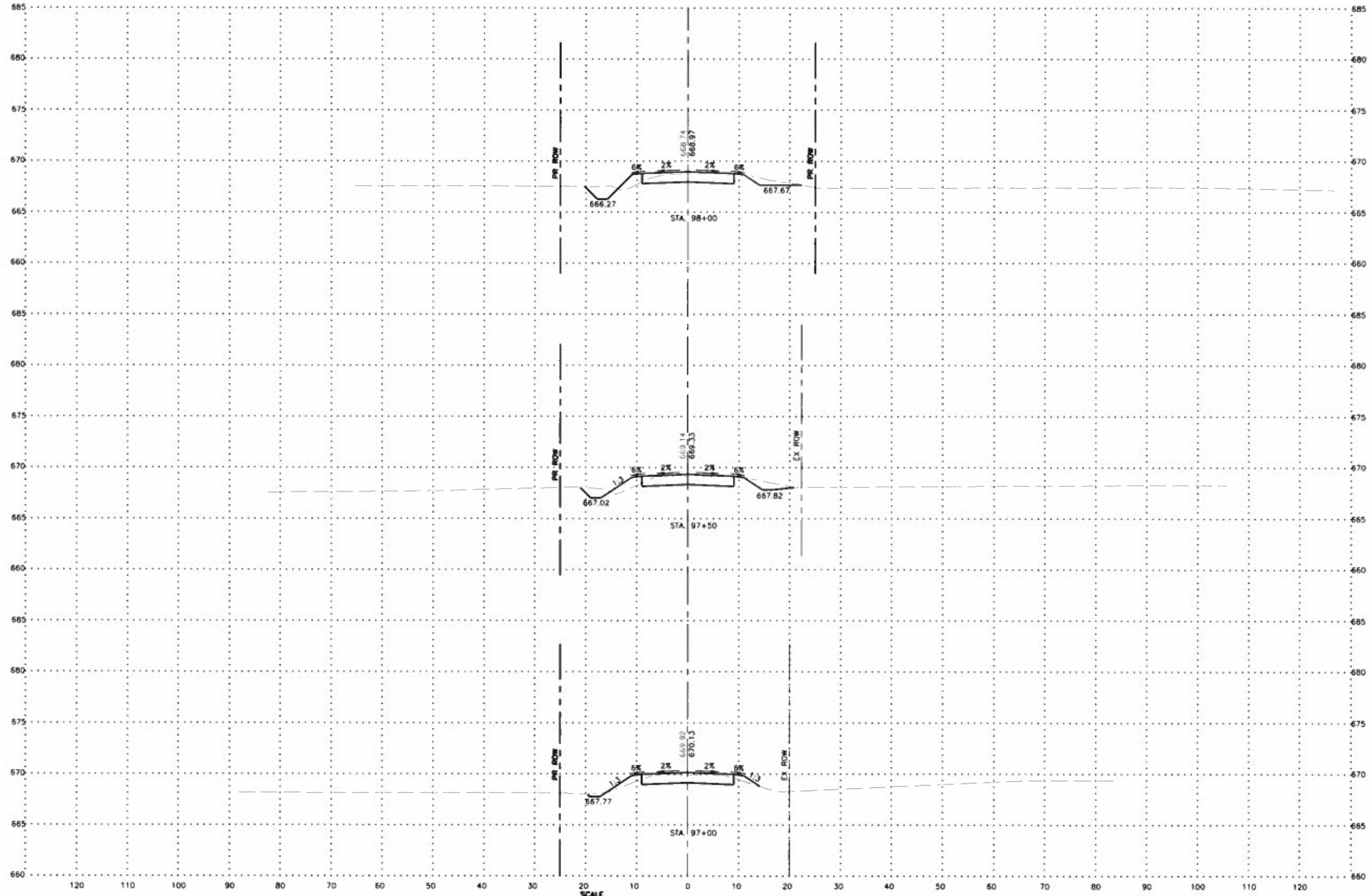
16 of 27

CADD NAME: 17-659-S-Design Steel H Piles.dgn  
PRINT DRIVER: SPLTDV55

PRINT DATE: 10/29/2019  
PRINT TIME: 8:08







**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS DESIGN FIRM NO. 184-003525

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
REPLACEMENT  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

DRAWN BY: **MG**  
APPROVED BY: **MJ**  
DATE: **10/29/2019**  
SCALE: **AS SHOWN**

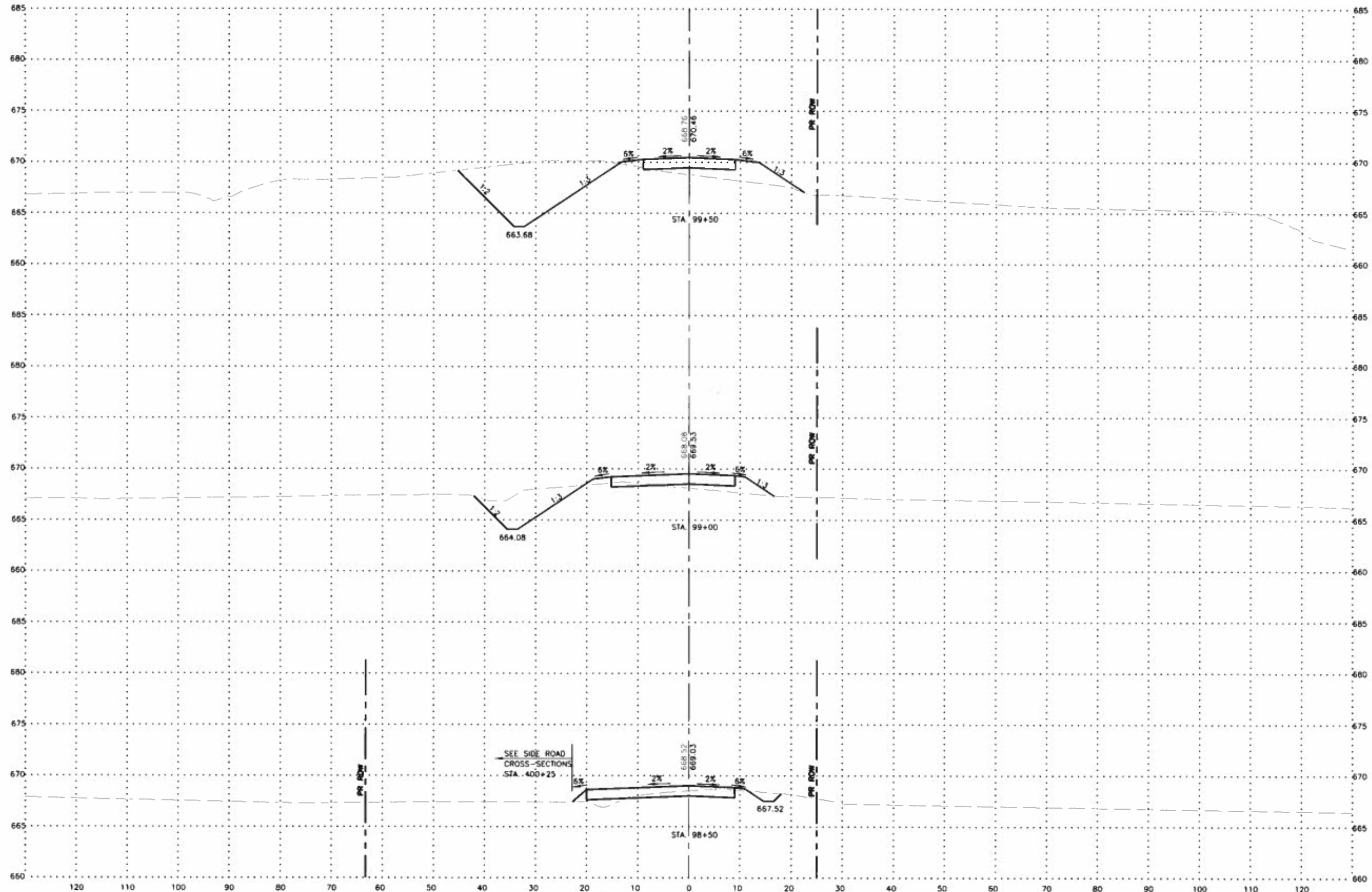
REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
**CROSS SECTIONS**

JOB NUMBER:  
**17-659**

SHEET NUMBER:  
**19 of 27**





SEE SIDE ROAD  
CROSS-SECTIONS  
STA. 400+25



**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS DESIGN FIRM NO. 184-003525

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
REPLACEMENT  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

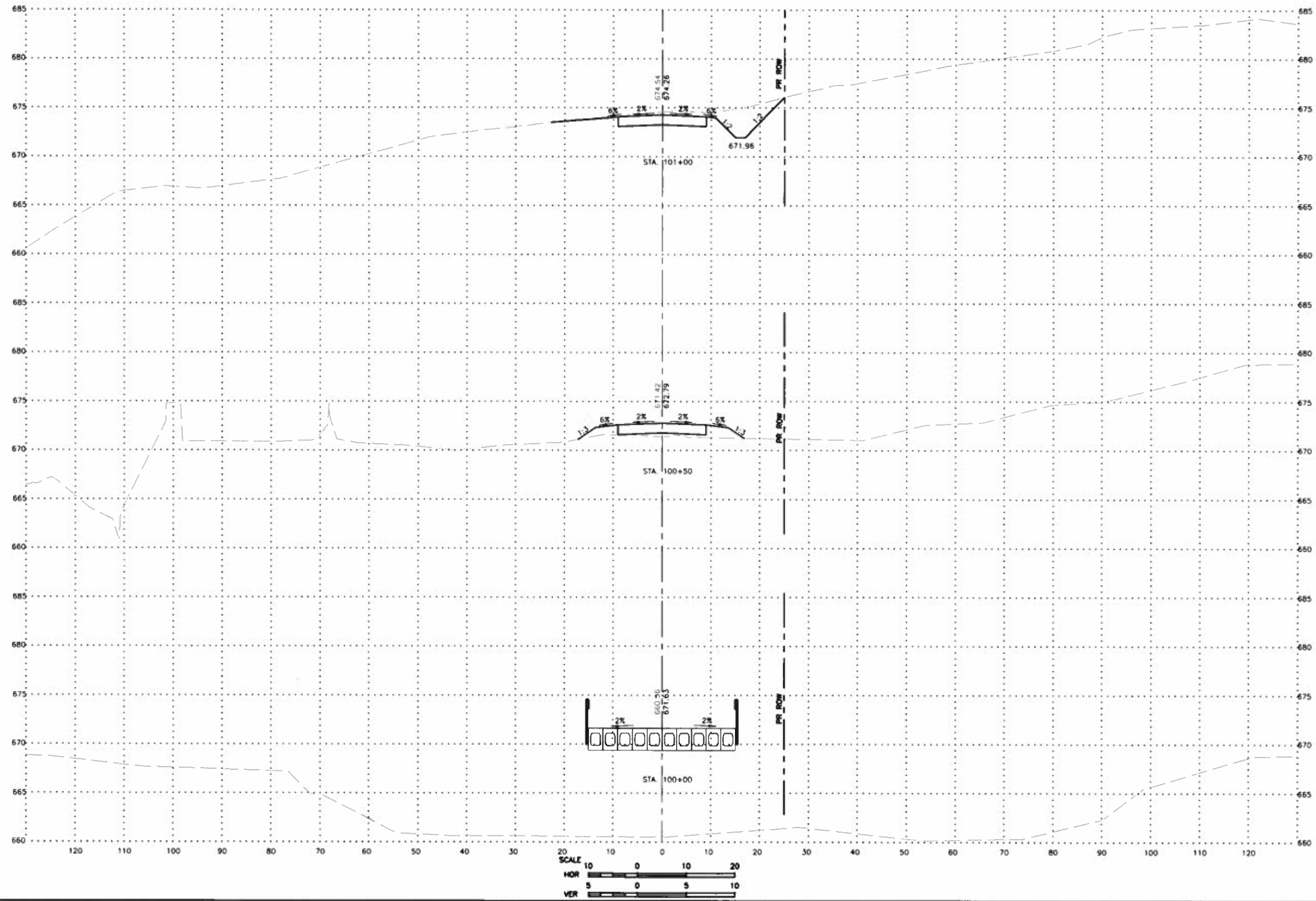
DRAWN BY: MG  
APPROVED BY: MJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
**CROSS SECTIONS**

JOB NUMBER:  
17-659  
SHEET NUMBER:  
20 of 27





**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION  
VERMILION COUNTY BRIDGE  
REPLACEMENT  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

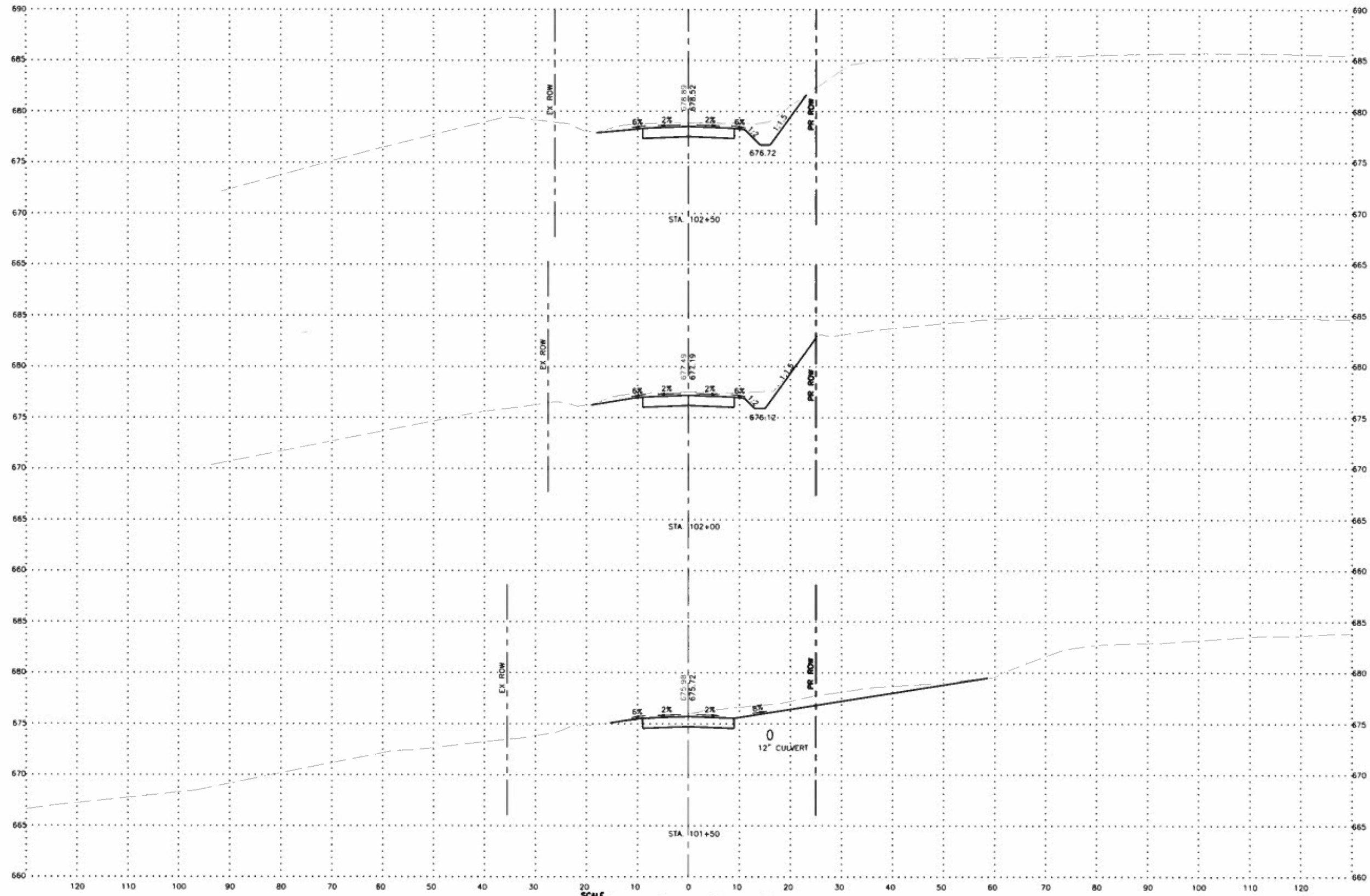
DRAWN BY: MG  
APPROVED BY: MJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
CROSS SECTIONS

JOB NUMBER:  
17-659

SHEET NUMBER:  
21 of 27



**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
REPLACEMENT  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

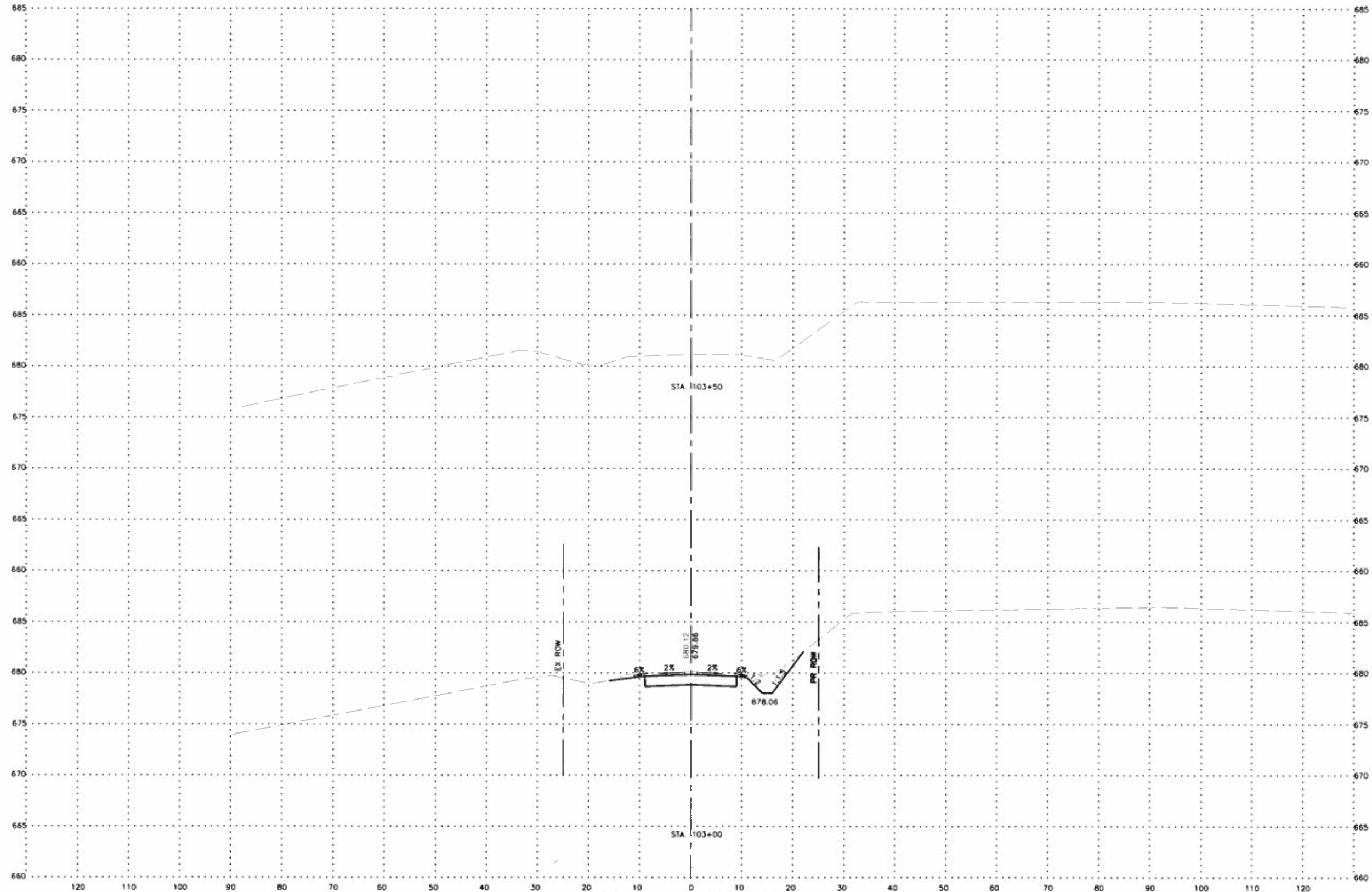
DRAWN BY: MG  
APPROVED BY: MJJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
**CROSS SECTIONS**

JOB NUMBER:  
17-659

SHEET NUMBER:  
22 of 27



**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
REPLACEMENT  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

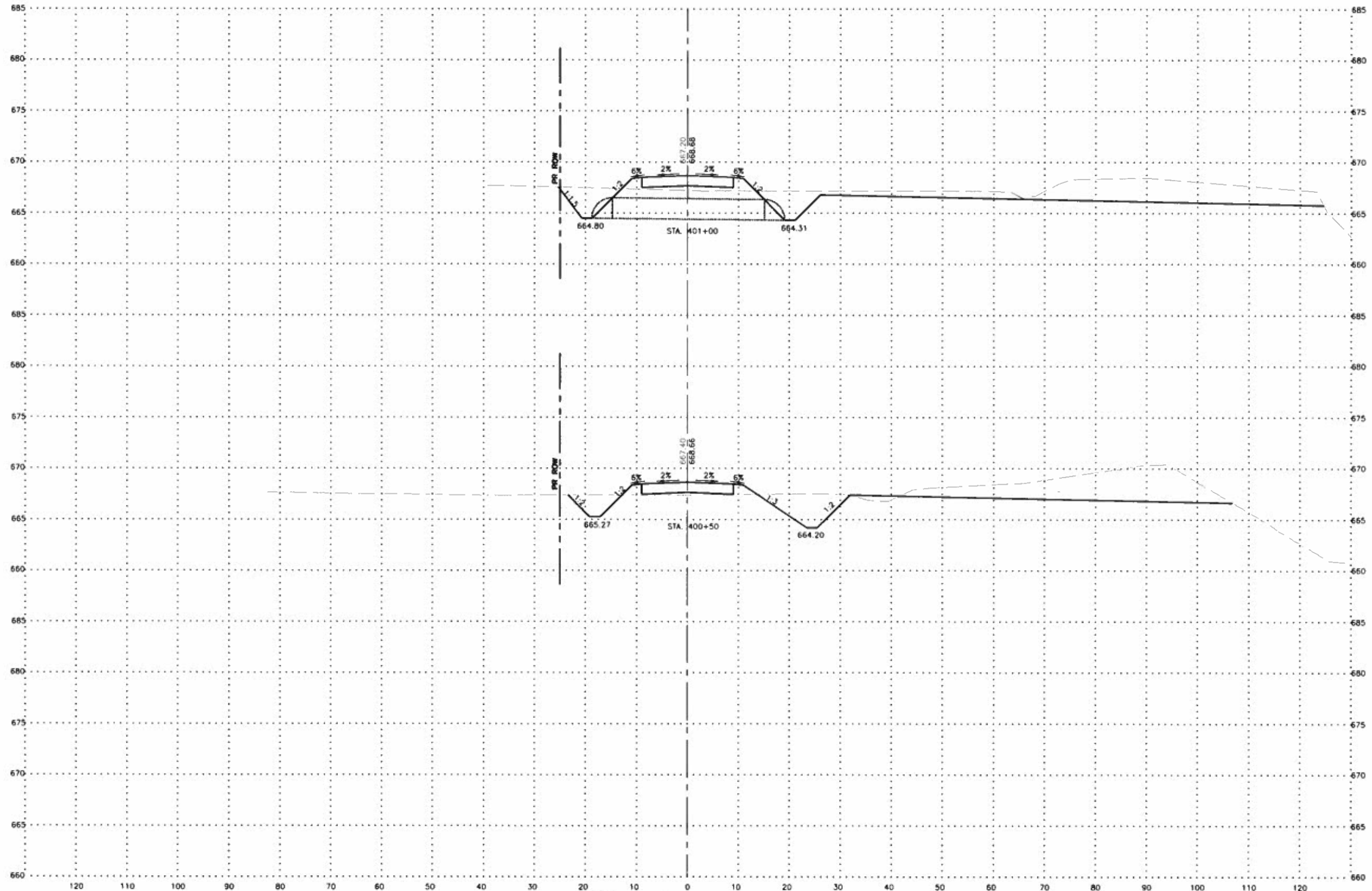
DRAWN BY: MG  
APPROVED BY: MJJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
**CROSS SECTIONS**

JOB NUMBER:  
17-659

SHEET NUMBER:  
23 of 27



**FEHR GRAHAM**  
 ENGINEERING & ENVIRONMENTAL

ILLINOIS  
 IOWA  
 WISCONSIN

OWNER/DEVELOPER:  
 VERMILION COUNTY HIGHWAY  
 DEPARTMENT  
 2732 BATESTOWN ROAD  
 OAKWOOD, IL 61858

PROJECT AND LOCATION:  
 VERMILION COUNTY BRIDGE  
 REPLACEMENT  
 TR 42A  
 PROPOSED S.N. 092-3532  
 SECTION NO: 13-12151-00-BR

DRAWN BY: MG  
 APPROVED BY: MJ  
 DATE: 10/29/2019  
 SCALE: AS SHOWN

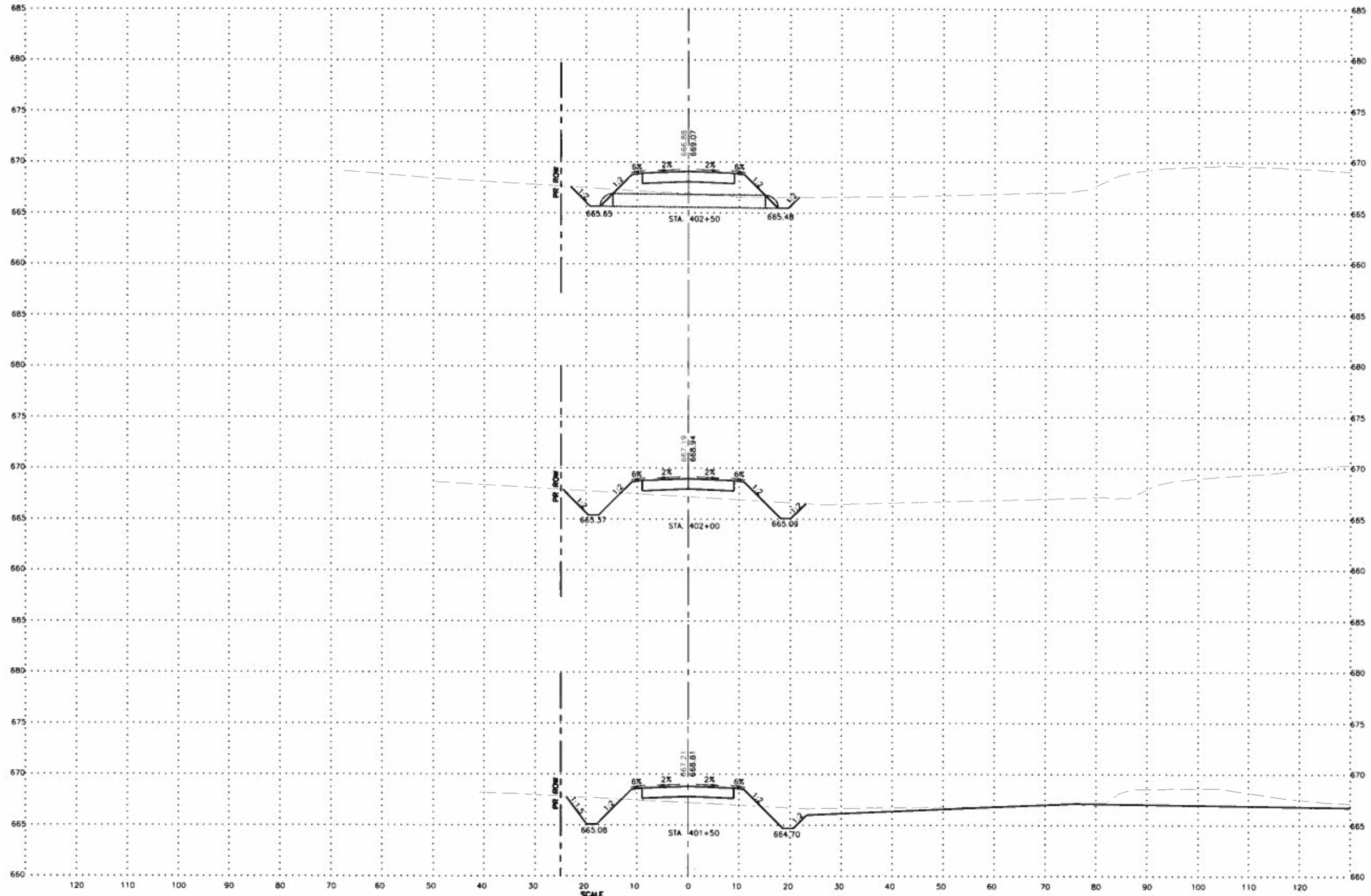
REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
**CROSS SECTIONS**

JOB NUMBER:  
 17-659

SHEET NUMBER:  
 24 of 27





**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
REPLACEMENT  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

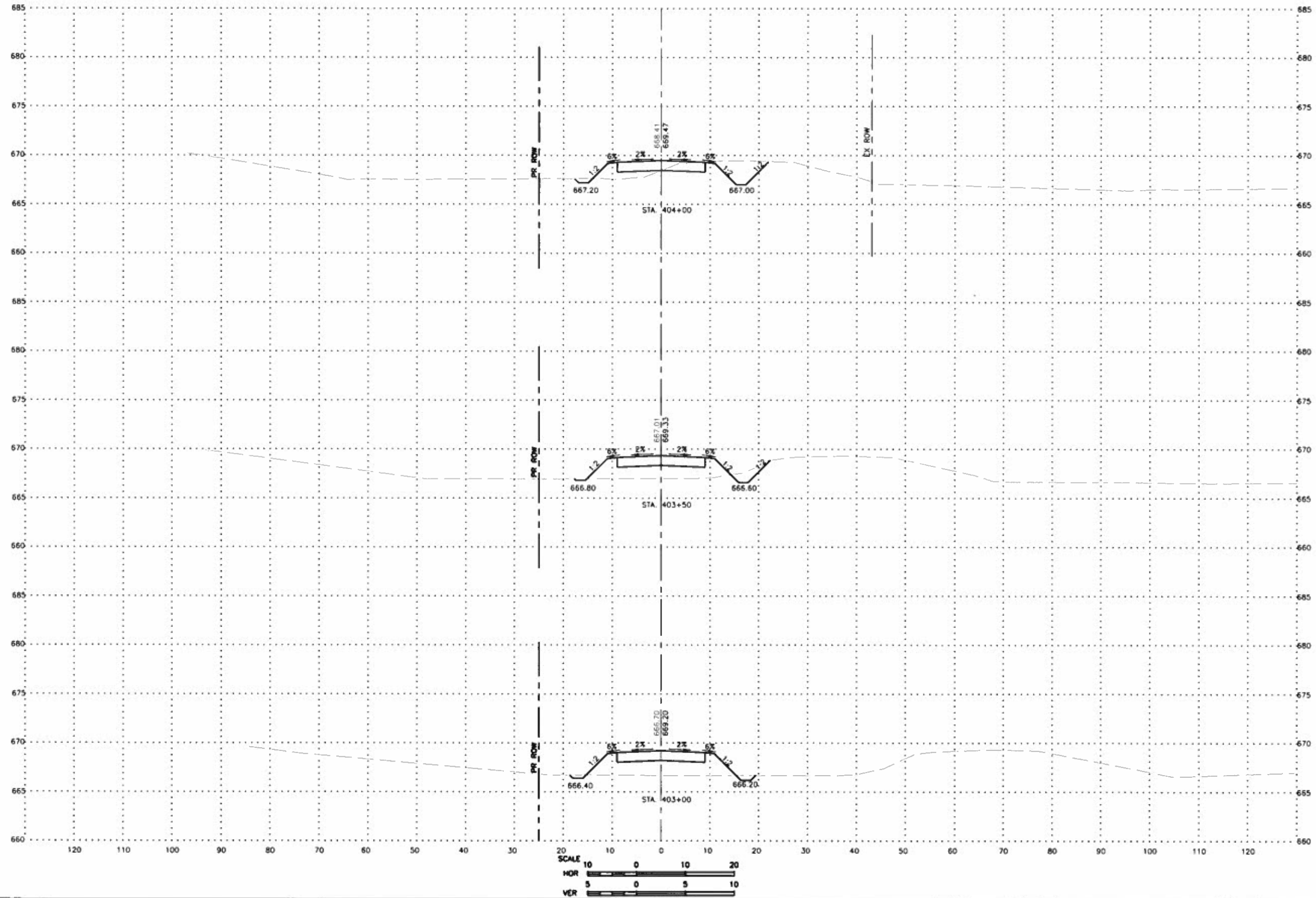
DRAWN BY: MC  
APPROVED BY: MJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
CROSS SECTIONS

JOB NUMBER:  
17-659

SHEET NUMBER:  
25 of 27



**FEHR GRAHAM**  
 ENGINEERING & ENVIRONMENTAL

ILLINOIS  
 IOWA  
 WISCONSIN

OWNER/DEVELOPER  
 VERMILION COUNTY HIGHWAY  
 DEPARTMENT  
 2732 BATESTOWN ROAD  
 OAKWOOD, IL 61858

PROJECT AND LOCATION  
 VERMILION COUNTY BRIDGE  
 REPLACEMENT  
 TR 42A  
 PROPOSED S.N. 092-3532  
 SECTION NO: 13-12151-00-BR

DRAWN BY: MC  
 APPROVED BY: MJ  
 DATE: 10/29/2019  
 SCALE: AS SHOWN

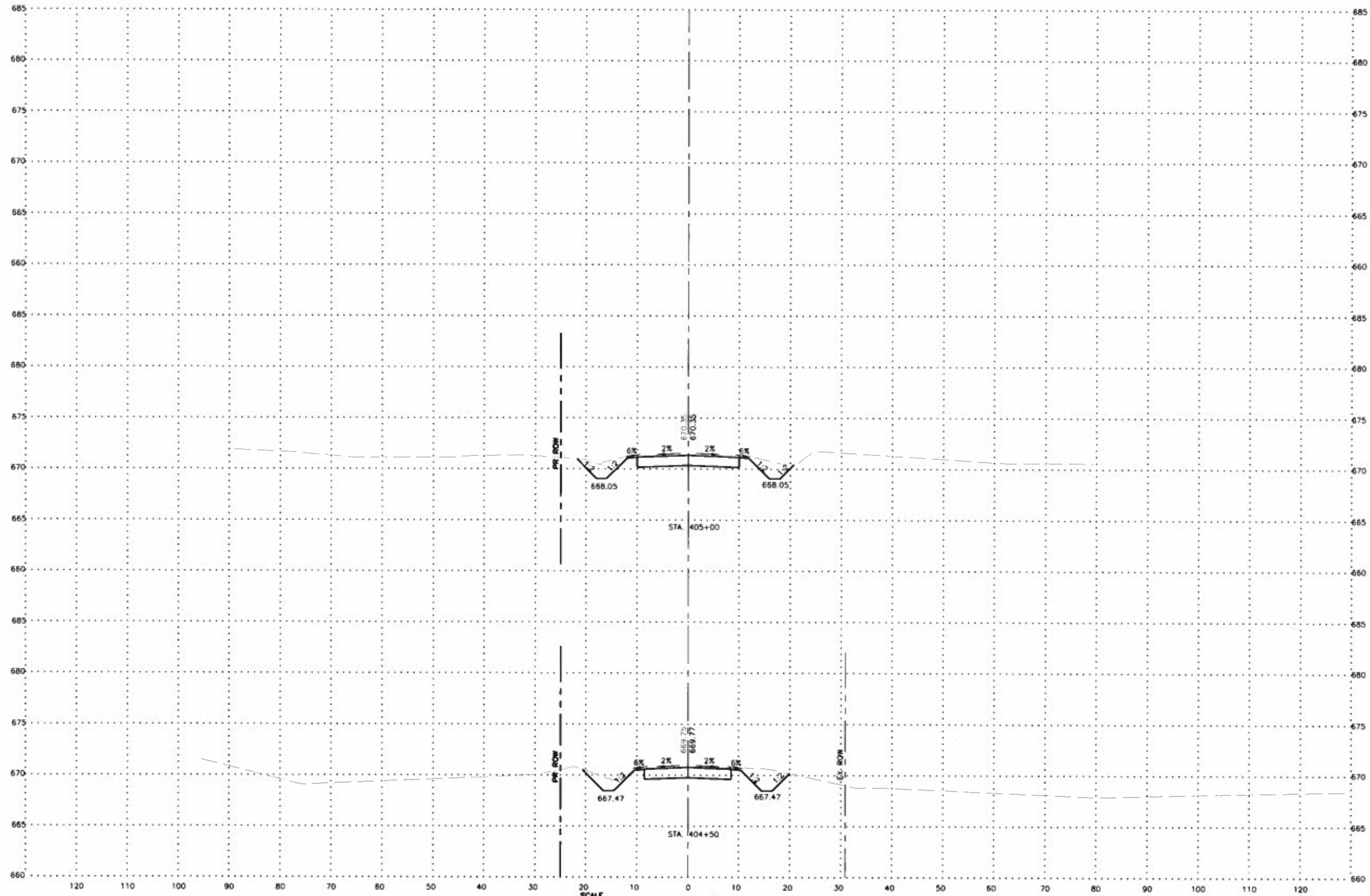
REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
 CROSS SECTIONS

JOB NUMBER:  
 17-659

SHEET NUMBER:  
 26 of 27





**FEHR GRAHAM**  
ENGINEERING & ENVIRONMENTAL  
ILLINOIS DESIGN FIRM NO. 184-003325

ILLINOIS  
IOWA  
WISCONSIN

OWNER/DEVELOPER:  
VERMILION COUNTY HIGHWAY  
DEPARTMENT  
2732 BATESTOWN ROAD  
OAKWOOD, IL 61858

PROJECT AND LOCATION:  
VERMILION COUNTY BRIDGE  
REPLACEMENT  
TR 42A  
PROPOSED S.N. 092-3532  
SECTION NO: 13-12151-00-BR

DRAWN BY: MG  
APPROVED BY: MJJ  
DATE: 10/29/2019  
SCALE: AS SHOWN

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:  
CROSS SECTIONS

JOB NUMBER:  
17-659

SHEET NUMBER:  
27 of 27