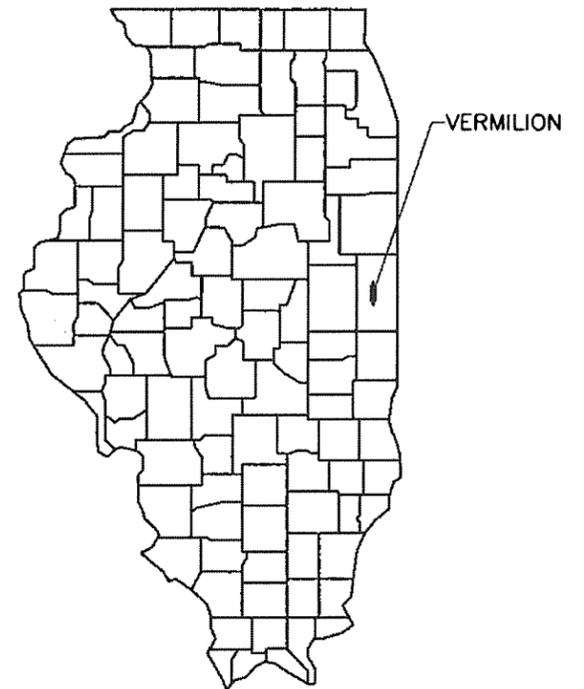


01-18-2019 LETTING ITEM 129

STATE OF ILLINOIS
ILLINOIS DEPARTMENT OF TRANSPORTATION
BRIDGE REPLACEMENT
FOR
VERMILION COUNTY
HIGHWAY DEPARTMENT
TR 54



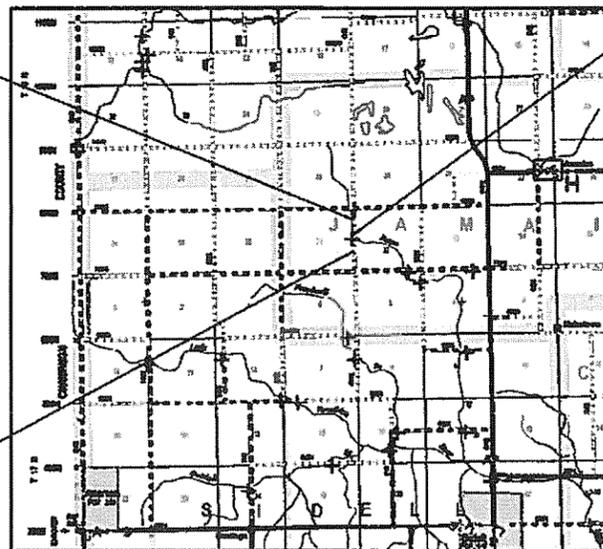
INDEX OF SHEETS	
SHEET NUMBER	SHEET TITLE
1	COVER
2	SUMMARY AND SCHEDULE OF QUANTITIES
3	TYPICAL SECTIONS
4	TIE POINTS
5	PLAN AND PROFILE SHEET
6	EROSION CONTROL PLAN
7-13	STRUCTURAL PLANS
14-15	SOIL BORING LOGS
16-20	CROSS SECTIONS

C-95-075-18

PROJECT NO. M2NN(809)
SECTION NO: 16-09129-00-BR
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
JAMAICA TOWNSHIP
FUNDING: STP-BRIDGE



PROJECT ENDS
STA. 102+00



STATION 100+00
SINGLE SPAN PPC DECK
BEAM BRIDGE

TWP 18N - R 13W - 2ND PM

LOCATION MAP

NET LENGTH OF SECTION = 425 FEET = 0.08 MILES

FEHR GRAHAM

ENGINEERING & ENVIRONMENTAL

ILLINOIS IOWA WISCONSIN

ILLINOIS PROFESSIONAL DESIGN FIRM NUMBER: 184003525



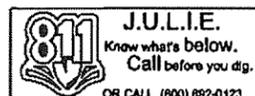
Keith E. Brandau 10/16/18
KEITH E. BRANDAU
ILLINOIS LICENSED
PROFESSIONAL ENGINEER NO. 062-044096
LICENSE EXPIRES 11-30-19

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	
APPROVED <u>10/22/18</u> <i>William E. Knight</i> TOWNSHIP ROAD COMMISSIONER	
APPROVED <u>10/22/18</u> <i>Adrian L. Greenwell</i> VERMILION COUNTY ENGINEER	
PASSED <u>NOVEMBER 7, 2018</u> <i>[Signature]</i> DISTRICT FIVE ENGINEER OF LOCAL ROADS & STREETS	
RELEASED FOR BID BASED ON LIMITED REVIEW <u>November 7, 2018</u> <i>[Signature]</i> REGION THREE ENGINEER	
PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS	

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
515001-03	NAME PLATE FOR BRIDGES
701901-08	TRAFFIC CONTROL DEVICES
B.L.R. 21-9	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

CURRENT ADT = 50
FUNCTIONAL CLASSIFICATION = LOCAL ROAD



ORIGINAL SET FOR PROJECT: 17-660		DATE CREATED: 10/16/2018
REVISIONS		
REV. NO.	DESCRIPTION	DATE

SUMMARY OF QUANTITIES

CODE #	ITEM NAME	UNIT	QUANTITY
20200100	EARTH EXCAVATION	CU YD	112
20300100	CHANNEL EXCAVATION	CU YD	167
25000200	SEEDING, CLASS 2	ACRE	0.25
25000400	NITROGEN FERTILIZER NUTRIENT	POUND	23
25000500	PHOSPHORUS FERTILIZER NUTRIENT	POUND	23
25000600	POTASSIUM FERTILIZER NUTRIENT	POUND	23
25100115	MULCH METHOD 2	ACRE	0.25
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	25
28000305	TEMPORARY DITCH CHECKS	FOOT	48
28000400	PERIMETER EROSION BARRIER	FOOT	699
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	240
28200200	FILTER FABRIC	SQ YD	290
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	384
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	133
50300225	CONCRETE STRUCTURES	CU YD	33.9
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	1718
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	3940
Δ 50900205	STEEL RAILING, TYPE S1	FOOT	128
51201600	FURNISHING STEEL PILES HP12X53	FOOT	340
51202305	DRIVING PILES	FOOT	340
51203600	TEST PILE STEEL HP12X53	EACH	2
51204650	PILE SHOES	EACH	12
51500100	NAME PLATES	EACH	1
59300100	CONTROLLED LOW STRENGTH MATERIAL	CU YD	45
67100100	MOBILIZATION	L SUM	1
72501000	TERMINAL MARKER DIRECT APPLIED	EACH	4
* X7011830	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	EACH	1
* XX004566	CONCRETE CUT-OFF WALL	CU YD	7.9
* Z0013798	CONSTRUCTION LAYOUT	L SUM	1
*SEE SPECIAL PROVISIONS			

Δ SPECIALTY ITEMS

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.

APPLICATION RATES AS FOLLOWS:

1.8 T/CY FOR AGGREGATE SURFACE COURSE TYPE B
1.75 T/CY FOR STONE DUMPED RIPRAP, CLASS A4

SCHEDULE OF QUANTITIES

25000200 SEEDING CLASS 2 AND 25100115 MULCH METHOD 2			28000250 TEMPORARY EROSION CONTROL SEEDING	
LOCATION TO LOCATION		ACRE	POUND	
97+75	99+60	LT 0.06	6.0	
97+75	99+78	RT 0.05	5.0	
100+41	102+00	LT 0.04	4.0	
100+23	102+00	RT 0.05	5.0	
TOTAL			0.25	25.0

NOTE: TEMPORARY EROSION CONTROL SEEDING IS APPLIED AT A RATE OF 100 LB / ACRE.
NOTE: NITROGEN, PHOSPHOROUS & POTASSIUM FERTILIZER NUTRIENTS ARE APPLIED AT A RATE OF 90 LB / ACRE.

28000300 TEMPORARY DITCH CHECKS		
STATION	FOOT	
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
TOTAL		48.0

28000400 PERIMETER EROSION BARRIER				
LOCATION TO LOCATION				FOOT
97+75	20' LT.	99+60	20' LT.	184.7
98+00	20' RT.	99+78	20' RT.	178.4
100+41	20' LT.	102+00	20' LT.	158.6
100+23	20' RT.	102+00	20' RT.	177.1
TOTAL				699.0

40200800 AGGREGATE SURFACE COURSE, TYPE B			
LOCATION TO LOCATION		TON	
97+75	99+67	205.1	
100+33	102+00	179.1	
TOTAL		384	

EARTHWORK SCHEDULE	APPROACH	TOTAL
	CU YD	CU YD
EARTH EXCAVATION	111.6	111.6
TOTAL CUT	112.0	112.0
EMBANKMENT	50.5	50.5
TOTAL FILL	50.0	50.0
BORROW = [FILL - (Excavation/1.25)] *1.25	-50.0	-50.0
BORROW = FURNISHED EXCAVATION		0.0
1.25 REPRESENTS 25% SHRINKAGE FACTOR		

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 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: MG
APPROVED BY: KEB
DATE: 11/13/2018
SCALE: N/A

REVISIONS		
REV. NO.	DESCRIPTION	DATE

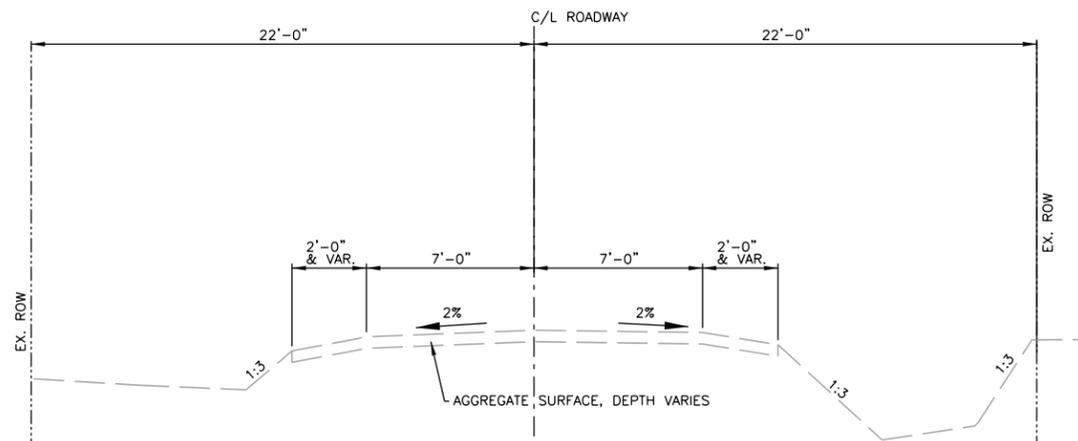
DRAWING:
SUMMARY AND SCHEDULE OF QUANTITIES

JOB NUMBER:
17-660

SHEET NUMBER:
02 of 20

CADD NAME: 17-660-S-Summary of quantities.dgn
PRINT DRIVER: \$PLTDRVS\$

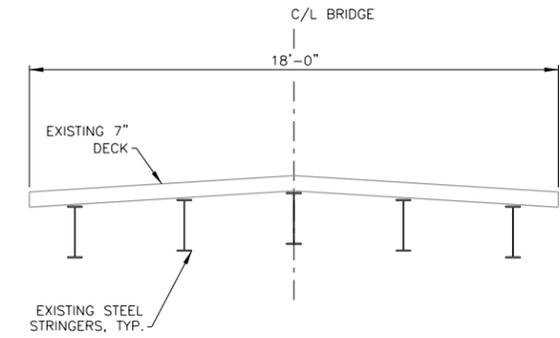
PRINT DATE: 11/13/2018
PRINT TIME: 8:16:58



STA 97+75.00 TO STA 99+87.04
STA 100+13.23 TO STA 102+00

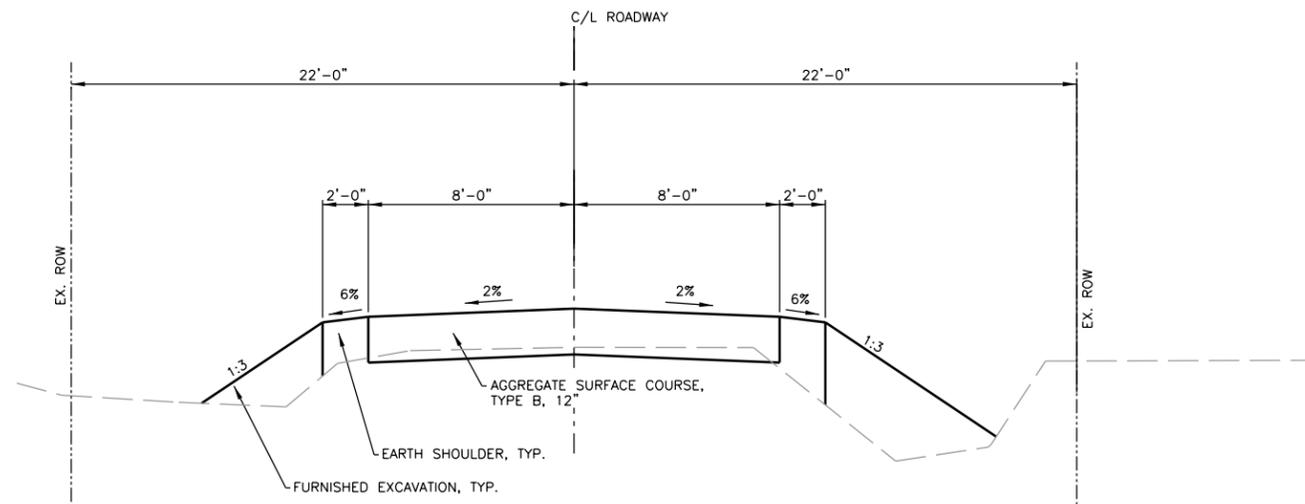
EXISTING TYPICAL PAVEMENT

- NOTES:
1. FUNCTIONAL CLASS - RURAL LOCAL ROAD
2. CURRENT ADT = 50



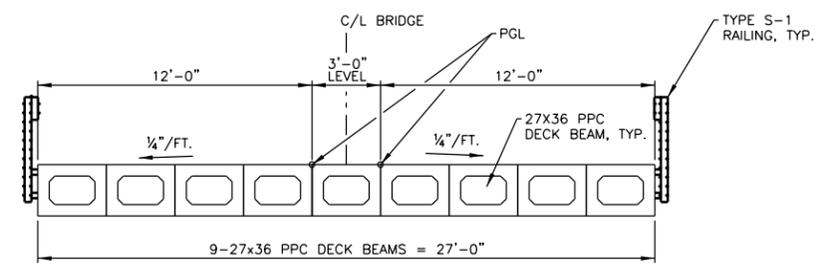
STA 99+87.04 TO STA 100+13.23

EXISTING BRIDGE SECTION



STA 97+75.00 TO STA 99+67.31
STA 100+32.69 TO STA 102+00

PROPOSED TYPICAL PAVEMENT



STA 99+67.31 TO STA 100+32.69

PROPOSED BRIDGE SECTION

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 REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: **MG**
APPROVED BY: **KEB**
DATE: **11/13/2018**
SCALE: **NTS**

REVISIONS		
REV. NO.	DESCRIPTION	DATE

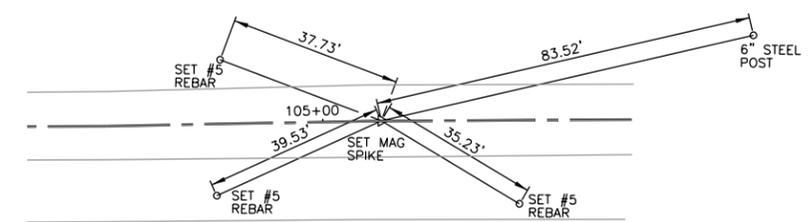
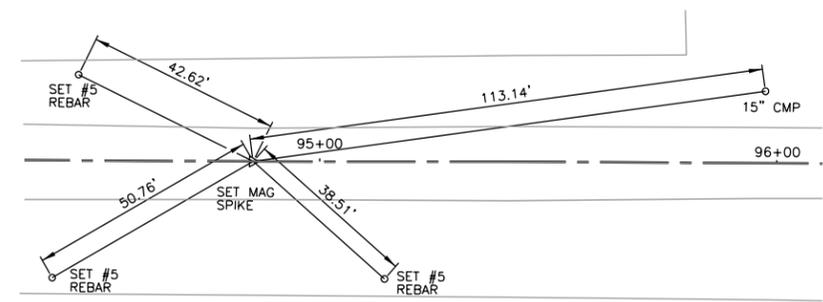
DRAWING:
TYPICAL SECTIONS

C:\Microstation\17\17-660\Plans\17-660-S-Typical Sections.dgn
CADD NAME: 17-660-S-Typical Sections.dgn
PRINT DRIVER: \$PLTDRVS\$

JOB NUMBER:
17-660

SHEET NUMBER:
03 of 20

PRINT DATE: 11/13/2018
PRINT TIME: 11:58



BENCHMARKS

- BM#1- SET #5 REBAR 476' NORTH OF CENTER OF BRIDGE & 29.3' EAST OF CENTERLINE OF C.R. 400 E
ELEV. 671.20
- BM#2- SET #5 REBAR WITH CAP 20.5' SOUTH OF CENTER OF BRIDGE AND 36.3' WEST OF CENTERLINE OF C.R. 400 E
ELEV. 670.14
- BM#3- SET #5 REBAR 487' SOUTH OF CENTERLINE OF BRIDGE AND 25.8' EAST OF CENTERLINE OF C.R. 400 E
ELEV. 670.66

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

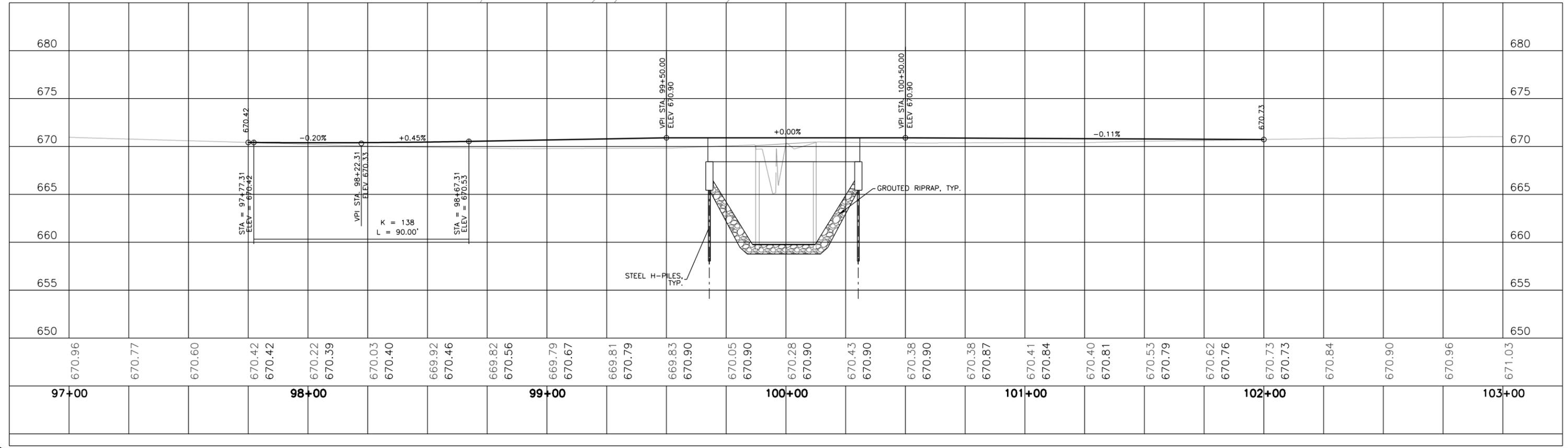
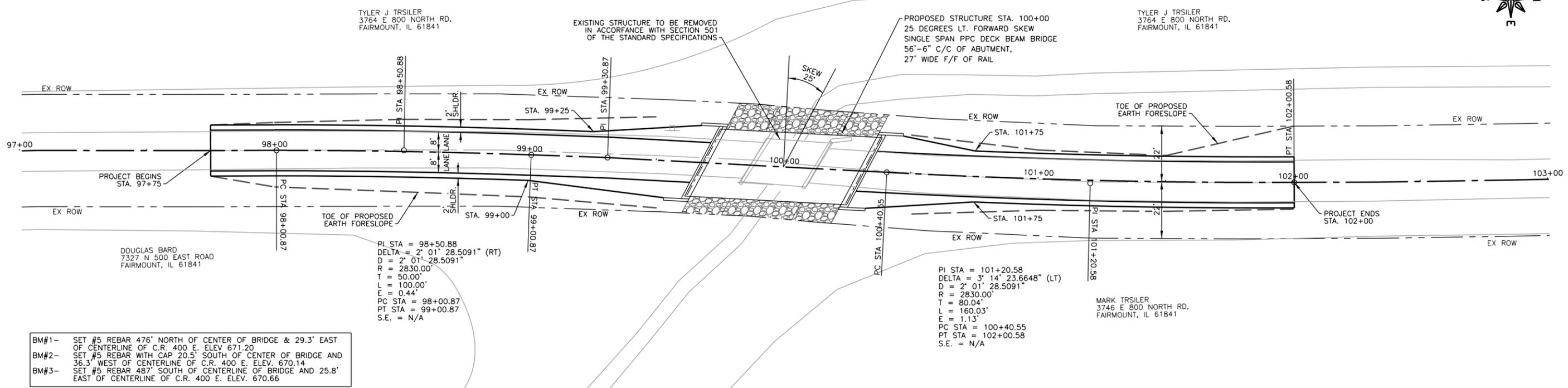
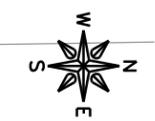
PROJECT AND LOCATION:
VERMILION COUNTY BRIDGE REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: **MG**
APPROVED BY: **KEB**
DATE: **11/13/2018**
SCALE: **AS SHOWN**

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
TIE POINTS
G:\Microstation\17\17-660\Plans\17-660-S-Design Tie Points.dgn
CADD NAME: 17-660-S-Design Tie Points.dgn
PRINT DRIVER: \$PLTDRVS\$

JOB NUMBER:
17-660
SHEET NUMBER:
04 of 20



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

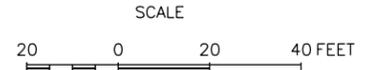
PROJECT AND LOCATION:
VERMILION COUNTY BRIDGE REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: **MG**
APPROVED BY: **KEB**
DATE: **11/13/2018**
SCALE: **AS SHOWN**

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
PLAN AND PROFILE SHEET

JOB NUMBER:
17-660
SHEET NUMBER:
05 of 20

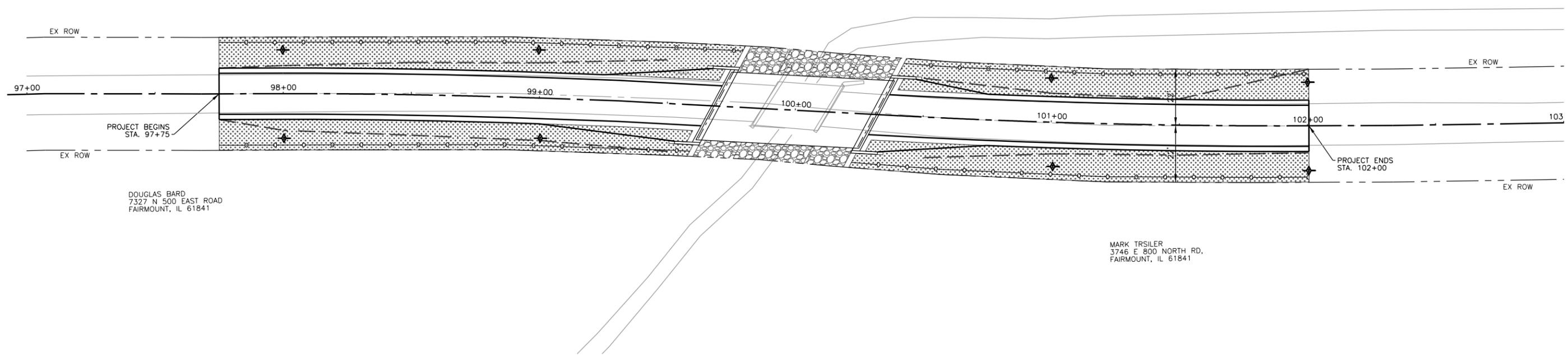


TYLER J TRSILER
3764 E 800 NORTH RD.
FAIRMOUNT, IL 61841

TYLER J TRSILER
3764 E 800 NORTH RD.
FAIRMOUNT, IL 61841

DOUGLAS BARD
7327 N 500 EAST ROAD
FAIRMOUNT, IL 61841

MARK TRSILER
3746 E 800 NORTH RD.
FAIRMOUNT, IL 61841



- EROSION CONTROL BARRIER
- TEMPORARY DITCH CHECKS
- SEEDING CLASS 2

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 REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: **MG**
APPROVED BY: **KEB**
DATE: **11/13/2018**
SCALE: **AS SHOWN**

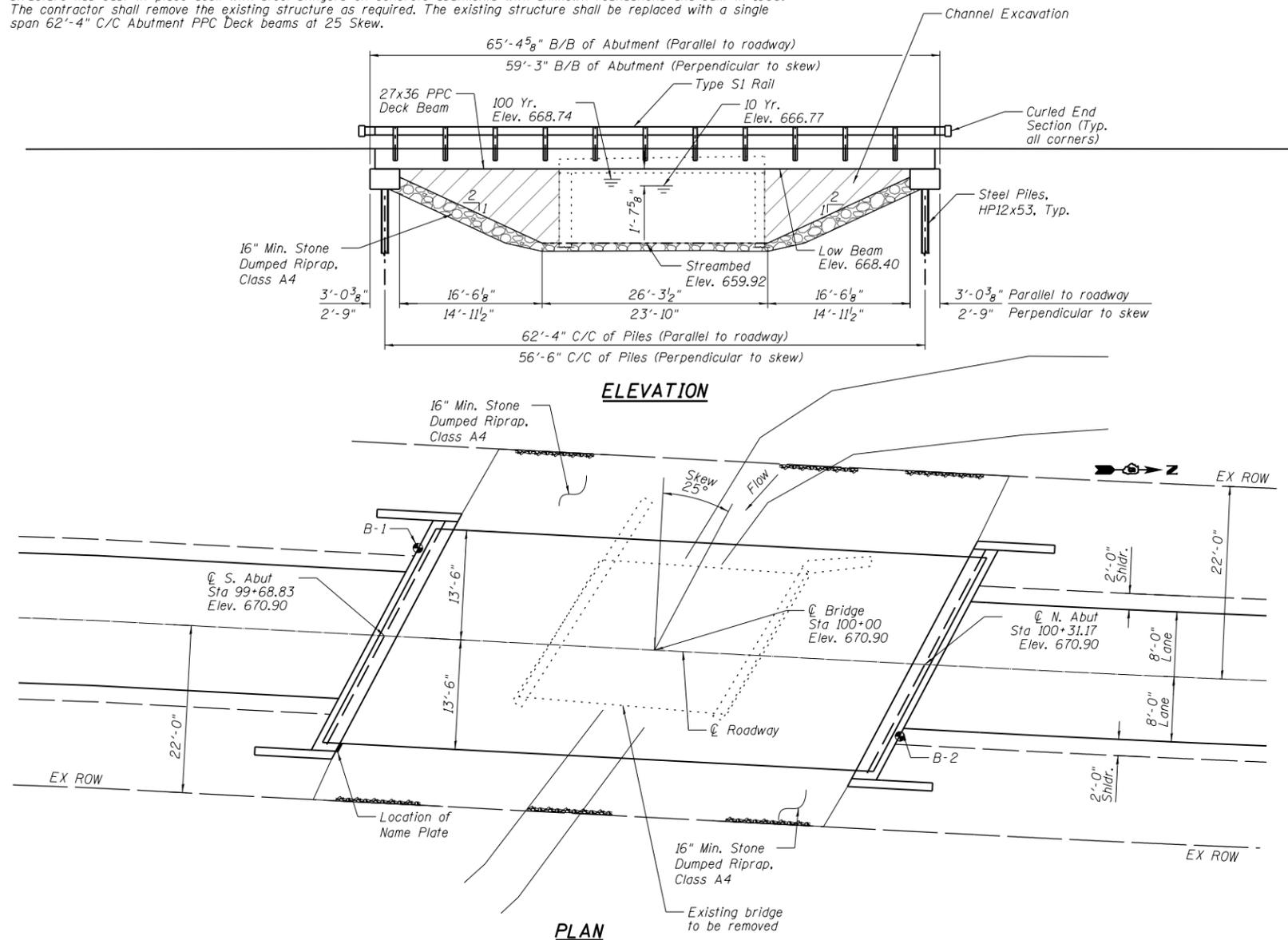
REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
SEEDING AND EROSION CONTROL PLAN
G:\Microstation\17-660\Plans\17-660-S-Design Erosion Control plan.dgn
CADD NAME: 17-660-S-Design Erosion Control plan.dgn
PRINT DRIVER: \$PLTDRVS\$

JOB NUMBER:
17-660
SHEET NUMBER:
06 of 20
PRINT DATE: 11/13/2018
PRINT TIME: \$TIME\$

Existing Structure:

No. 092-3062, single span 26'-3" long, back to back abutments, with a 18'-0" roadway width and 25° skew. Existing structure has cast-in-place deck with steel stingers on concrete abutments with unknown foundations and built in 1900. The contractor shall remove the existing structure as required. The existing structure shall be replaced with a single span 62'-4" C/C Abutment PPC Deck beams at 25 Skew.



DESIGN SPECIFICATIONS

2014 AASHTO LRFD Bridge Design Specifications, 7th Edition with 2015 and 2016 Interims.

DESIGN LOADING

HL-93
25 P.S.F. Future Wearing Surface

DESIGN STRESSES

f'c = 3,500 psi (Cast-in-Place Concrete)
f'c = 6,000 psi (P.P.C. Units)
f'ci = 5,000 psi (P.P.C. Units)
fy = 60,000 psi (Reinforcement)
f'c = 4,000 psi (Superstructure Concrete)

DESIGN SCOUR ELEVATION TABLE

Design Scour Elev. (Ft.)	E. Abut	W. Abut
	665.43	665.43

WATERWAY DATA

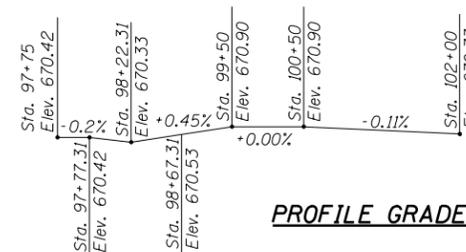
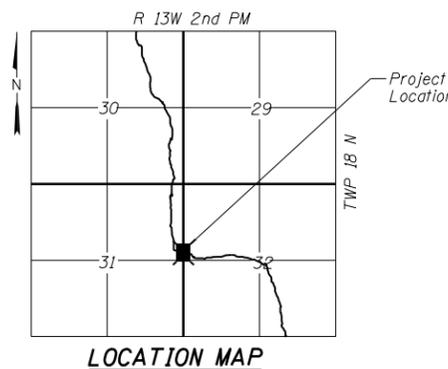
Drainage Area 2.11 Sq. Mi.
Existing Opening (10 Yr.) 103.3 Sq. Ft.
Required Opening (10 Yr.) 252.4 Sq. Ft.
Proposed Opening (10 Yr.) 257.1 Sq. Ft.
Design Discharge (10 Yr.) 313 C.F.S.
Computed Discharge (100 Yr.) 584 C.F.S.
10 Yr. Head 0.00 Ft.
100 Yr. Head 0.00 Ft.

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S₁) = 0.0975 g
Design Spectral Acceleration at 0.2 sec. (S_s) = 0.1947 g
Soil Site Class = D

STRUCTURE NO. 092-3536
SEC. 16-09129-00-BR BUILT 201X
JAMAICA ROAD DISTRICT
VERMILION COUNTY
LOADING HL-93

NAME PLATE
See Standard 515001



TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Structures	Each	1		1
Precast Prestressed Concrete Deck Beams (27" Deep)	Sq. Ft.	1,718		1,718
Steel Railing, Type S1	Foot	128		128
Concrete Structures	Cu. Yds.		33.9	33.9
Furnishing Steel Piles, HP12x53	Foot		340	340
Driving Piles	Foot		340	340
Test Piles, Steel HP12x53	Each		2	2
Pile Shoes	Each		12	12
Concrete Cut-off Wall	Cu. Yds.		7.9	7.9
Stone Dumped Riprap, Class A4	Tons		240	240
Name Plate	Each		1	1
Reinforcement Bars, Epoxy Coated	Pound		3940	3940
Structure Excavation	Cu. Yds.		133	133
Channel Excavation	Cu. Yds.		167	167
Terminal Marker Direct Applied	Each	4		4
Controlled low strength material	Cu. Yds.		44.6	44.6

GENERAL NOTES

- The contractor shall drive 1 steel test pile in a permanent location at each abutment as directed by the engineer before ordering the remainder of piles.
- Boring data is shown only as a guide to bidders in estimating soil conditions which may be encountered during construction.
- Class S1 or MS concrete shall be used in the abutments.
- Reinforcement bars shall conform to the requirements of ASTM A706 Grade 60. Reinforcement bars designated (E) shall be epoxy coated.
- Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.
- Controlled low strength material shall be IDOT Mix 2 per the Standard Specifications for Road and Bridge Construction.



I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with the requirements of the current "AASHTO Standard Specifications for Highway Bridges."

KEITH E. BRANDAU Date
Illinois Licensed Structural Engineer Number 4905
License Expires 11/30/18

GENERAL PLAN AND ELEVATION
TR 54
SECTION 16-09129-00-BR
JAMAICA TOWNSHIP
STATION 100+00
S.N. 092-3536

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 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

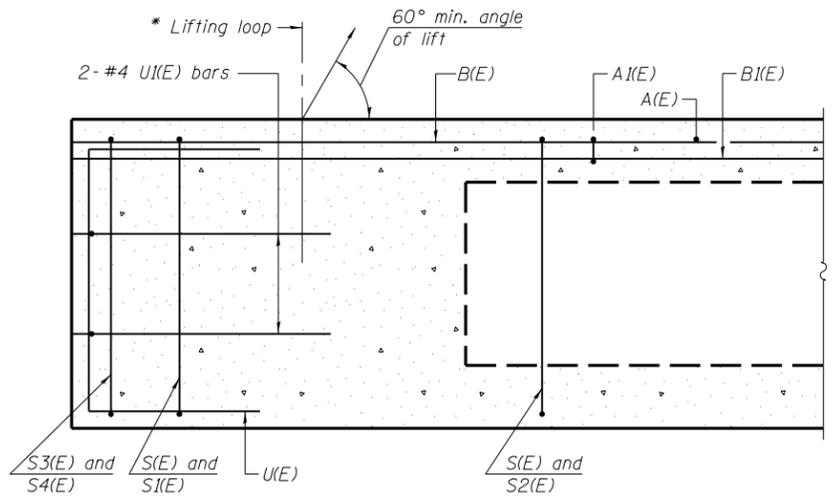
DRAWN BY: MG
APPROVED BY: KEB
DATE: 11/13/2018
SCALE: N/A

REVISIONS		
REV. NO.	DESCRIPTION	DATE

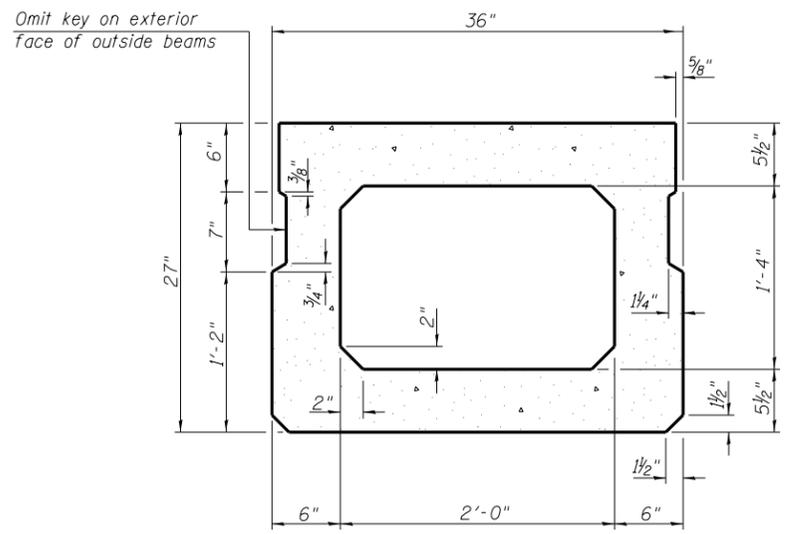
DRAWING:
GENERAL PLAN AND ELEVATION

JOB NUMBER:
17-660

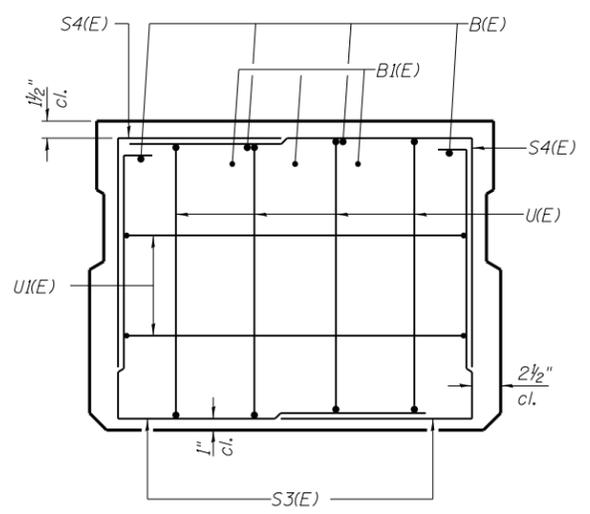
SHEET NUMBER:
07 of 20



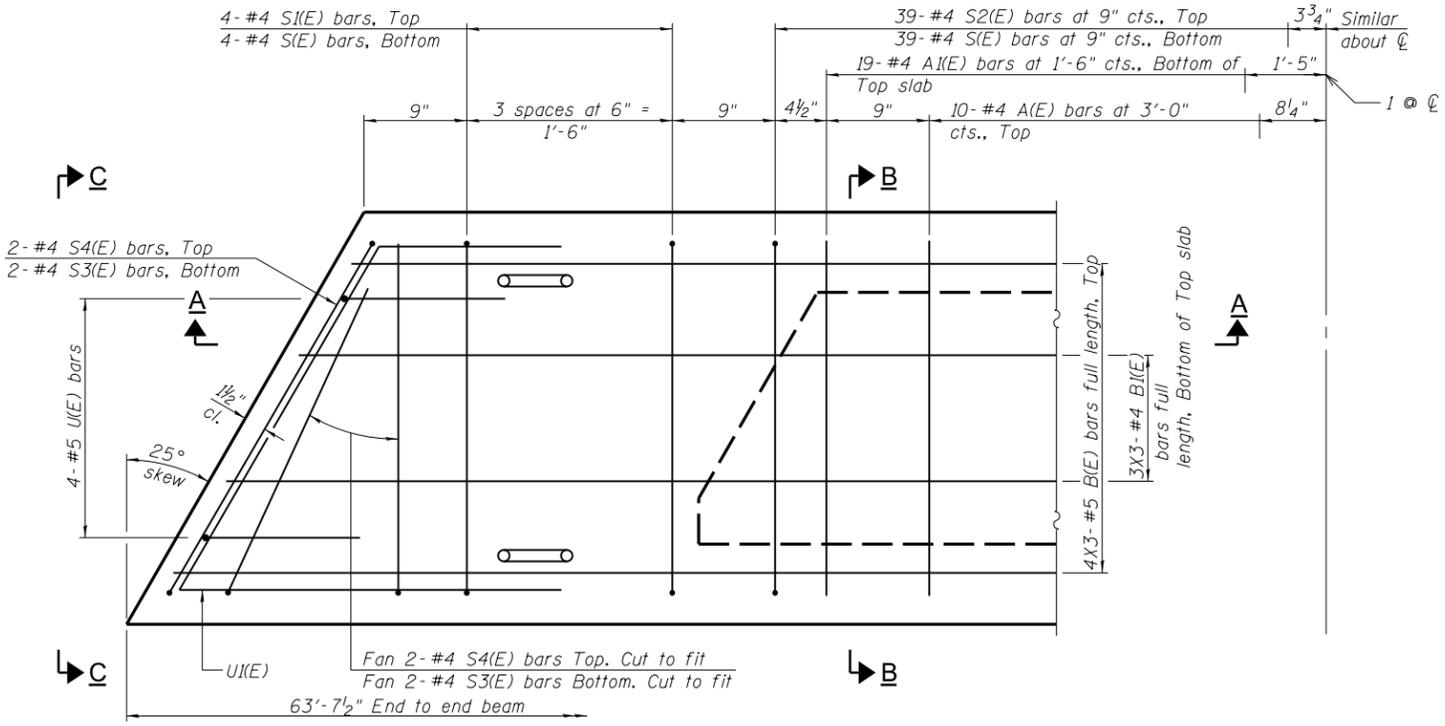
SECTION A-A



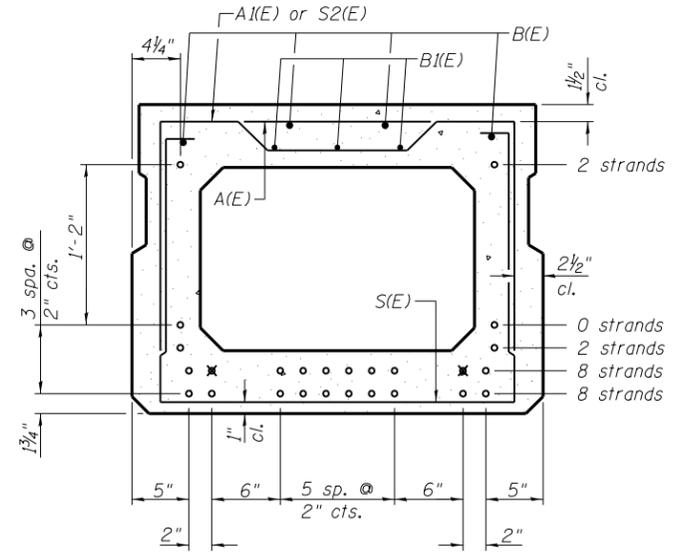
SECTION B-B
(Showing dimensions)



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)	20	#4	2'-7"	—
A1(E)	39	#4	2'-10"	—
B(E)	12	#5	22'-10"	—
B1(E)	9	#4	22'-6"	—
S(E)	86	#4	7'-5"	┌
S1(E)	8	#4	5'-11"	┌
S2(E)	78	#4	6'-2"	┌
S3(E)	8	#4	4'-9"	┌
S4(E)	8	#4	4'-0"	┌
U(E)	8	#5	4'-6"	┌
U1(E)	4	#4	6'-5 1/2"	┌

Note:
See sheet 13 of 22 for additional details and Bill of Material.

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

Note: Spacing of S(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.

PPC DECK BEAM
T.R. 54
SECTION 16-09129-00-BR
JAMAICA TOWNSHIP
STATION 100+00
S.N. 092-3062

PD-2736-L 2-17-2017

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

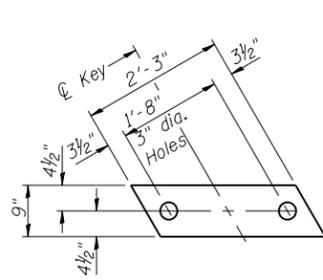
PROJECT AND LOCATION:
VERMILION COUNTY BRIDGE
REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: MG
APPROVED BY: KEB
DATE: 11/13/2018
SCALE: N/A

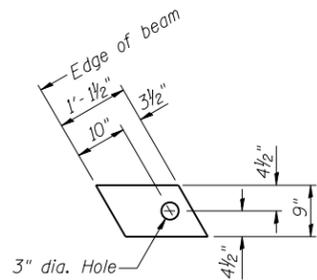
REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
27X36 PPC DECK BEAM

JOB NUMBER:
17-660
SHEET NUMBER:
08 of 20



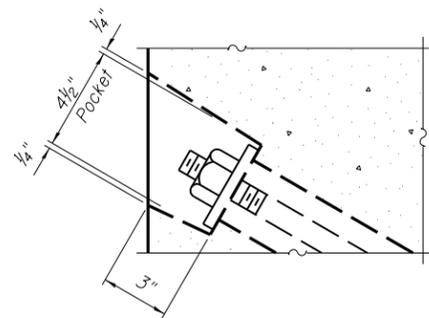
FABRIC BEARING PAD
(Interior)



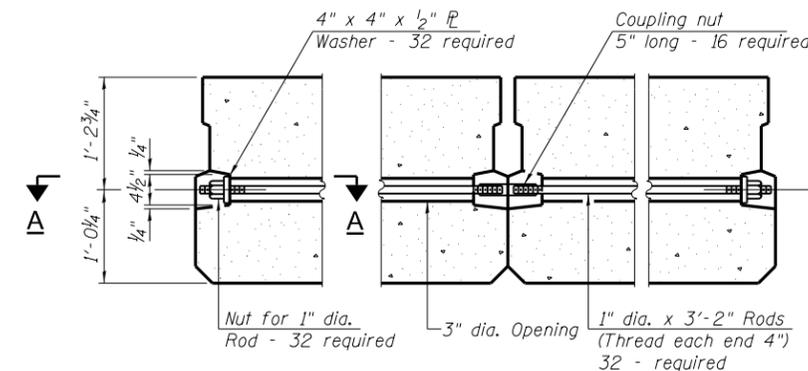
FABRIC BEARING PAD
(Exterior)

FIXED

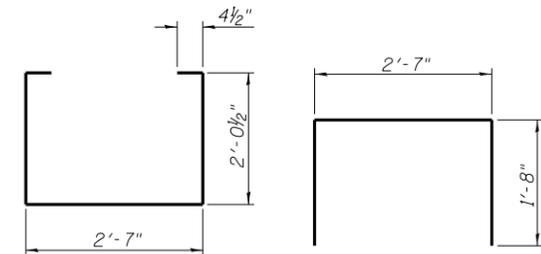
Notes:
All bearing pads shall be 1" thick.
Omit holes when using expansion bearings.
Expansion bearing pad shall be bonded to the substructure.



SECTION A-A

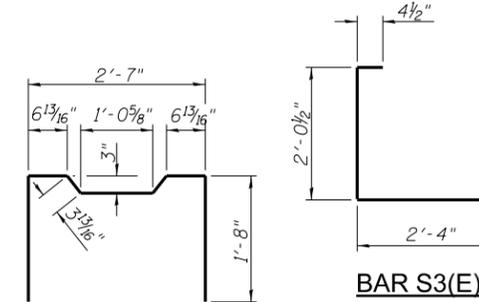


TYPICAL TRANSVERSE TIE ASSEMBLY



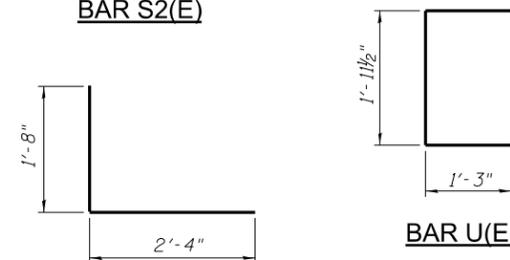
BAR S(E)

BAR S1(E)

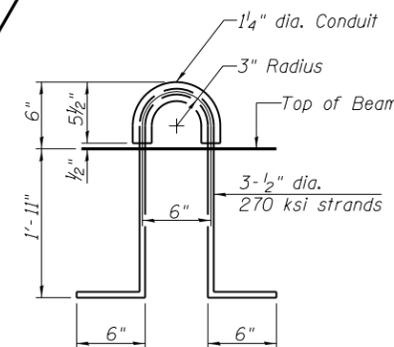


BAR S2(E)

BAR S3(E)



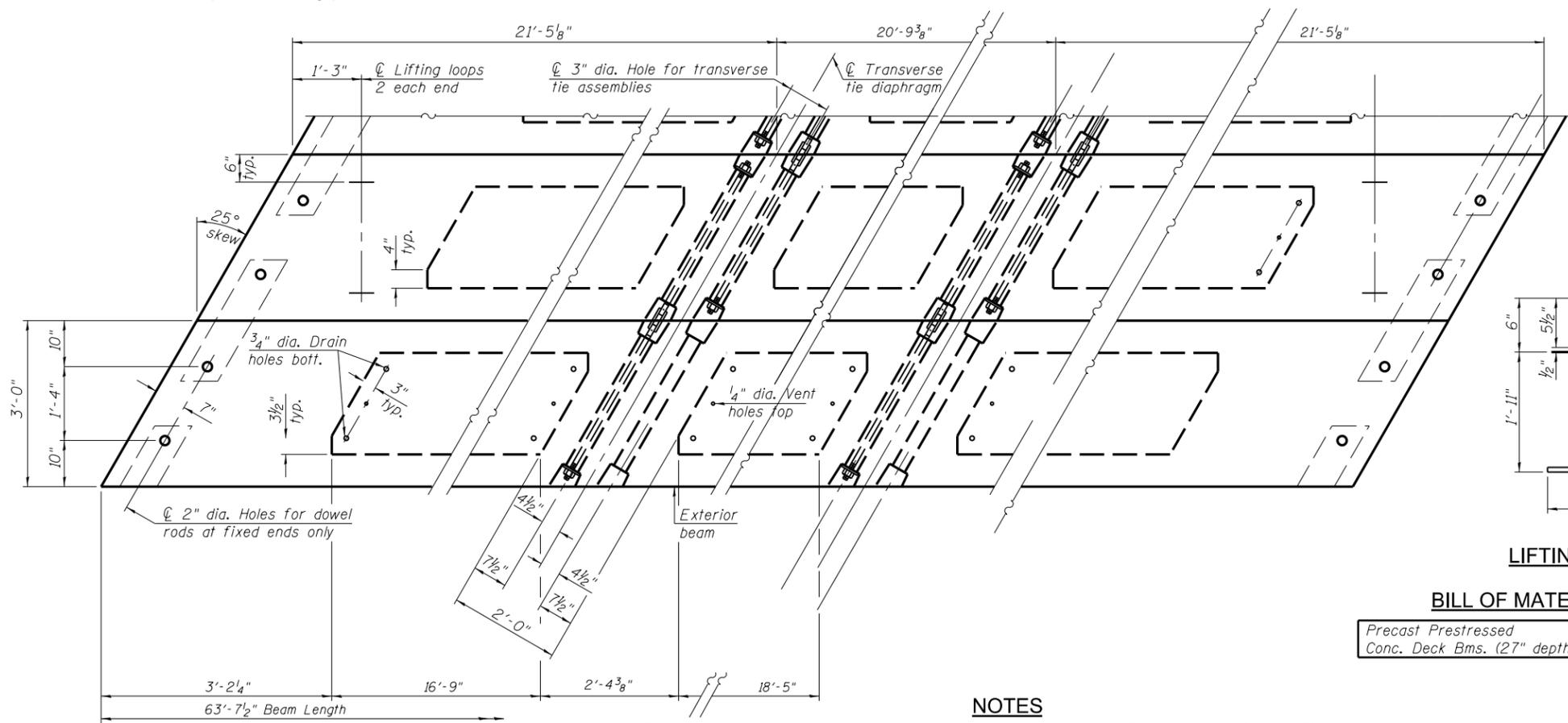
BAR U(E)



LIFTING LOOP DETAIL

BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (27" depth)	Sq. Ft.	1,718
---	---------	-------



PLAN VIEW

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" dia. 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" dia. 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.

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

PD-2736-LD

2-17-2017

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
REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: MG
APPROVED BY: KEB
DATE: 11/13/2018
SCALE: N/A

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
27X36 PPC DECK BEAM DETAILS

G:\Microstation\17\17-660\Plans\17-660-S-Design PPC Deck Beam 2.dgn

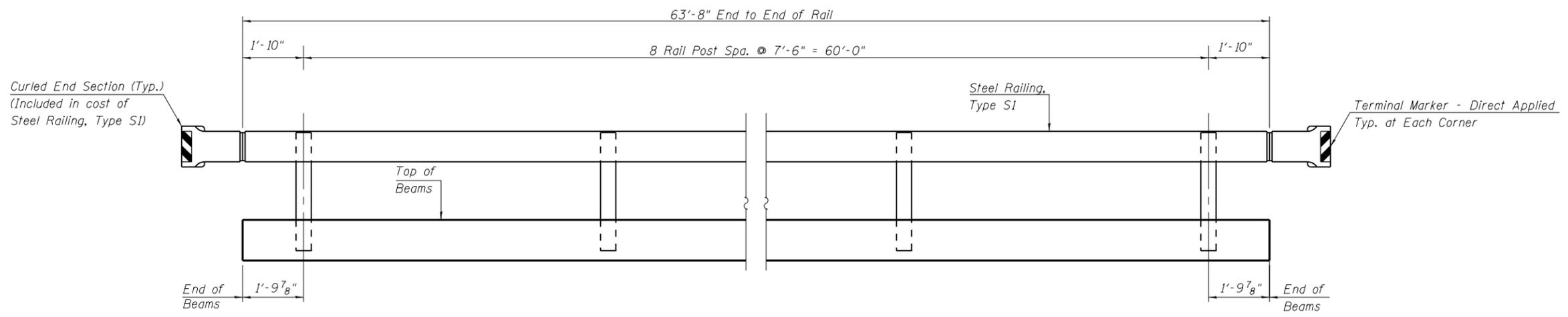
CADD NAME: 17-660-S-Design PPC Deck Beam 2.dgn
PRINT DRIVER: \$PLTDRVS\$

JOB NUMBER:
17-660

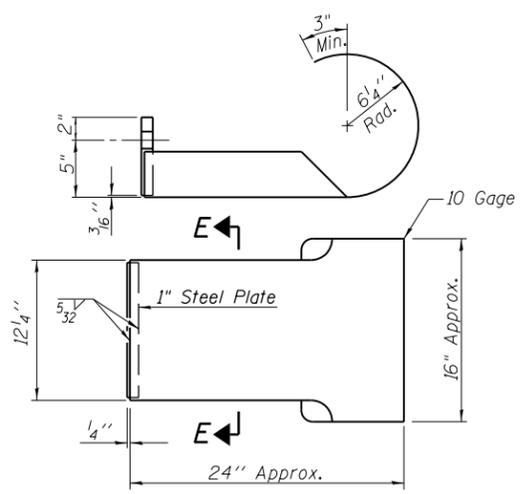
SHEET NUMBER:
09 of 20

PRINT DATE: 11/13/2018
PRINT TIME: 8:15:53

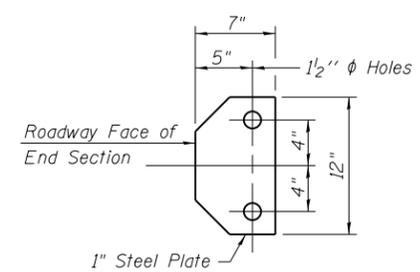
PPC DECK BEAM DETAILS
T.R. 54
SECTION 16-09129-00-BR
JAMAICA TOWNSHIP
STATION 100+00
S.N. 092-3062



ELEVATION



CURLLED END SECTION DETAILS
(4 Required)



SECTION E-E

STEEL RAILING
T.R. 54
SECTION 16-09129-00-BR
JAMAICA TOWNSHIP
STATION 100+00
S.N. 092-3536

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

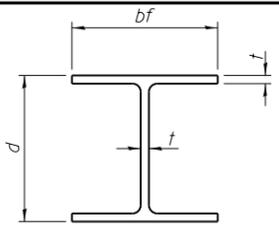
PROJECT AND LOCATION:
VERMILION COUNTY BRIDGE
REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: MG
APPROVED BY: KEB
DATE: 11/13/2018
SCALE: N/A

REVISIONS		
REV. NO.	DESCRIPTION	DATE

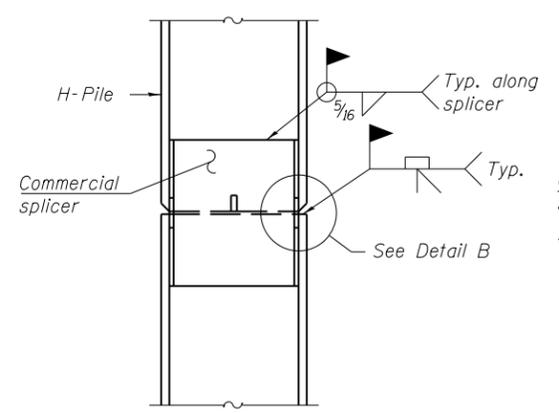
DRAWING:
STEEL RAILING - TYPE S1

JOB NUMBER:
17-660
SHEET NUMBER:
11 of 20

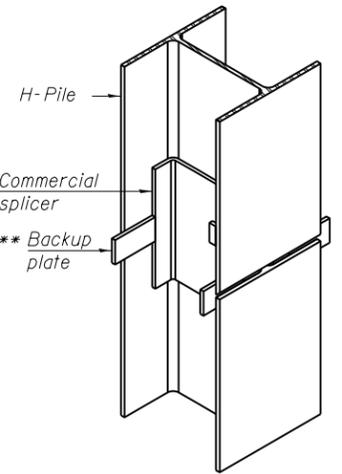


STEEL PILE TABLE

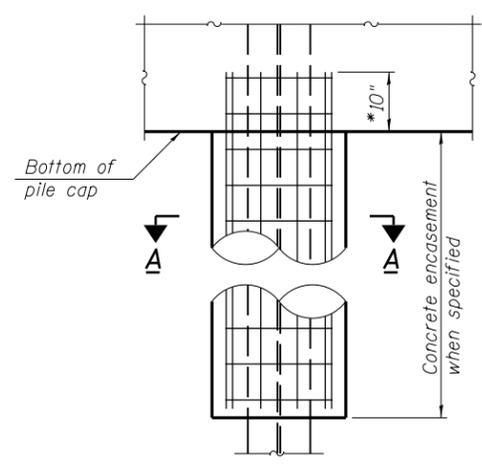
Designation	Depth d	Flange width bf	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1 1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1 1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"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



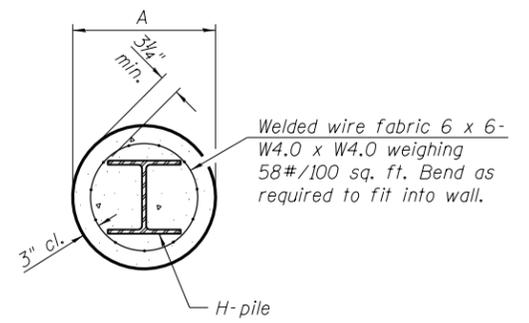
ELEVATION



ISOMETRIC VIEW



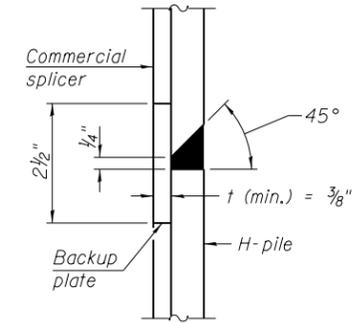
ELEVATION



SECTION A-A

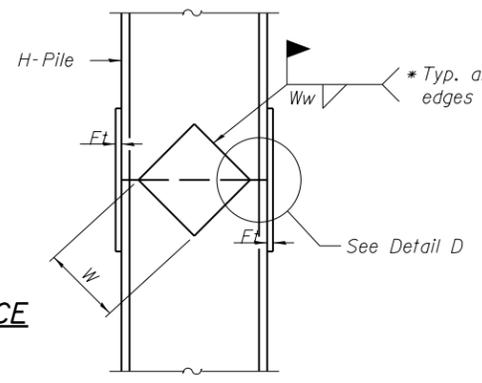
INDIVIDUAL PILE CONCRETE ENCASUREMENT

(Forms for encasement may be omitted when soil conditions permit).

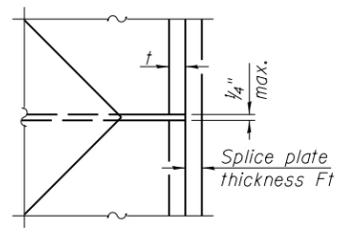


DETAIL "B"

WELDED COMMERCIAL SPLICE

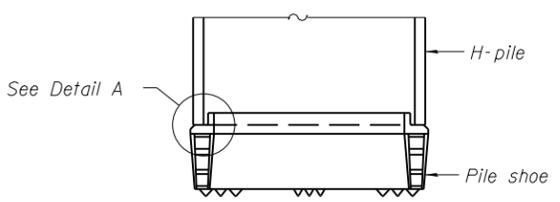


ELEVATION

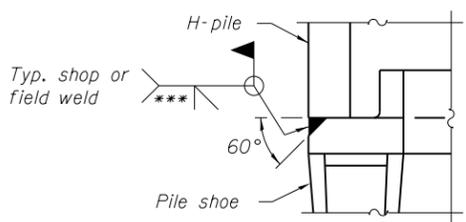


DETAIL D

Designation	F	Ft	Fw	W	Wt	Ww
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1 1/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	1 1/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	1 1/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

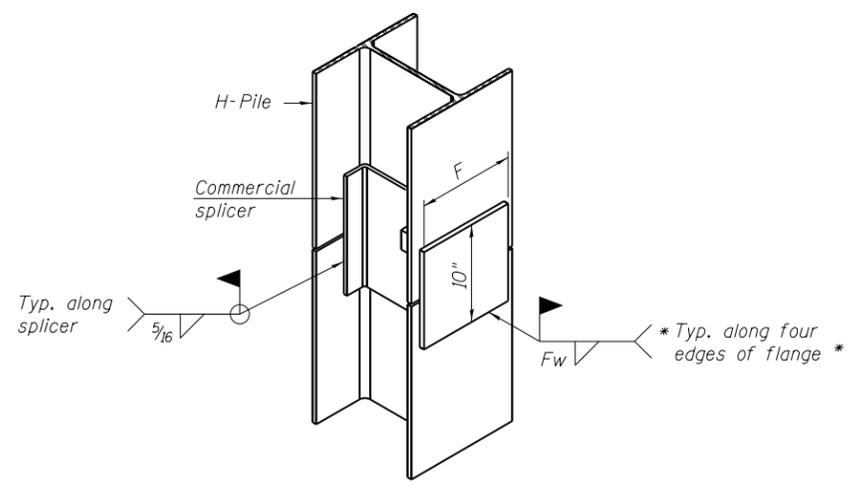


ELEVATION



DETAIL A

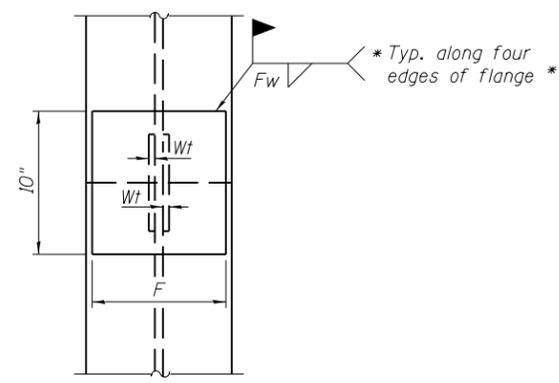
SHOE ATTACHMENT



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 (5/16" min.).



END VIEW

WELDED PLATE FIELD SPLICE

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

F-HP 2-17-2017

STEEL H PILES
TR 54
SECTION 16-09129-00-BR
JAMAICA TOWNSHIP
STATION 100+00
S.N. 092-3536

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 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: MG
APPROVED BY: KEB
DATE: 11/13/2018
SCALE: N/A

REV. NO.	DESCRIPTION	DATE

DRAWING:
STEEL H-PILES

JOB NUMBER:
17-660

SHEET NUMBER:
13 of 20



3705 Progress Blvd
Peru, IL 61354
815 780-8486

SOIL BORING LOG

Solutions You Can Build On

SW Quad of Structure Carrying TR 54 over Baum Branch

Date 1/24/18

ROUTE TR 54 DESCRIPTION LOGGED BY TLM

SECTION 16-09129-00-BR LOCATION SEC., TWP., RNG. Latitude, Longitude

COUNTY Vermillion DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 092-3062
Station

BORING NO. B-01
Station 20' behind S. Abut
Offset 11.0 ft West
Ground Surface Elev. 100.10 ft

DEPTH (ft)	BLOW COUNT (/6")	UCS (tsf)	MOIST (%)	DESCRIPTION	DEPTH (ft)	BLOW COUNT (/6")	UCS (tsf)	MOIST (%)
				Surface Water Elev. 9.20 ft				
				Stream Bed Elev. 10.30 ft				
				Groundwater Elev.: First Encounter 79.1 ft				
				Upon Completion - ft				
				After Hrs. -				
0			24	Stiff to Very Stiff Gray Silty Clay Loam Till, moist (continued) many pieces of broken limestone in the sample	22			
1					35	2.5	6	
2				Dense Gray Sand & Gravel w/ some Clay, wet	16			
3	1.5	26		Very Hard Brown Silty Clay Loam Till, moist	26	4.5	7	
4	P				47	P		
5								
6					24			
7					38	4.5	6	
8					28	P		
9								
10					10			
11					18	10.1	11	
12					31	S		
13								
14					8			
15					19	10.9	11	
16					34	B		
17								
18								
19								
20								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, form 137 (Rev. 8-99)



3705 Progress Blvd
Peru, IL 61354
815 780-8486

SOIL BORING LOG

Solutions You Can Build On

NE Quad of Structure Carrying TR 54 over Baum Branch

Date 1/24/18

ROUTE TR 54 DESCRIPTION LOGGED BY TLM

SECTION 16-09129-00-BR LOCATION SEC., TWP., RNG. Latitude, Longitude

COUNTY Vermillion DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. 092-3062
Station

BORING NO. B-02
Station 20' behind N. Abut
Offset 9.0 ft East
Ground Surface Elev. 100.00 ft

DEPTH (ft)	BLOW COUNT (/6")	UCS (tsf)	MOIST (%)	DESCRIPTION	DEPTH (ft)	BLOW COUNT (/6")	UCS (tsf)	MOIST (%)
				Surface Water Elev. 9.20 ft				
				Stream Bed Elev. 10.30 ft				
				Groundwater Elev.: First Encounter 75.0 ft				
				Upon Completion - ft				
				After Hrs. -				
0			5	Stiff brown Clay Loam	5			
1					37	5.6	11	
2					68	B		
3								
4					14			
5	3.5	22			26	4.5	8	
6	P				37	P		
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, form 137 (Rev. 8-99)



ILLINOIS
IOWA
WISCONSIN

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

PROJECT AND LOCATION:
VERMILION COUNTY BRIDGE
REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

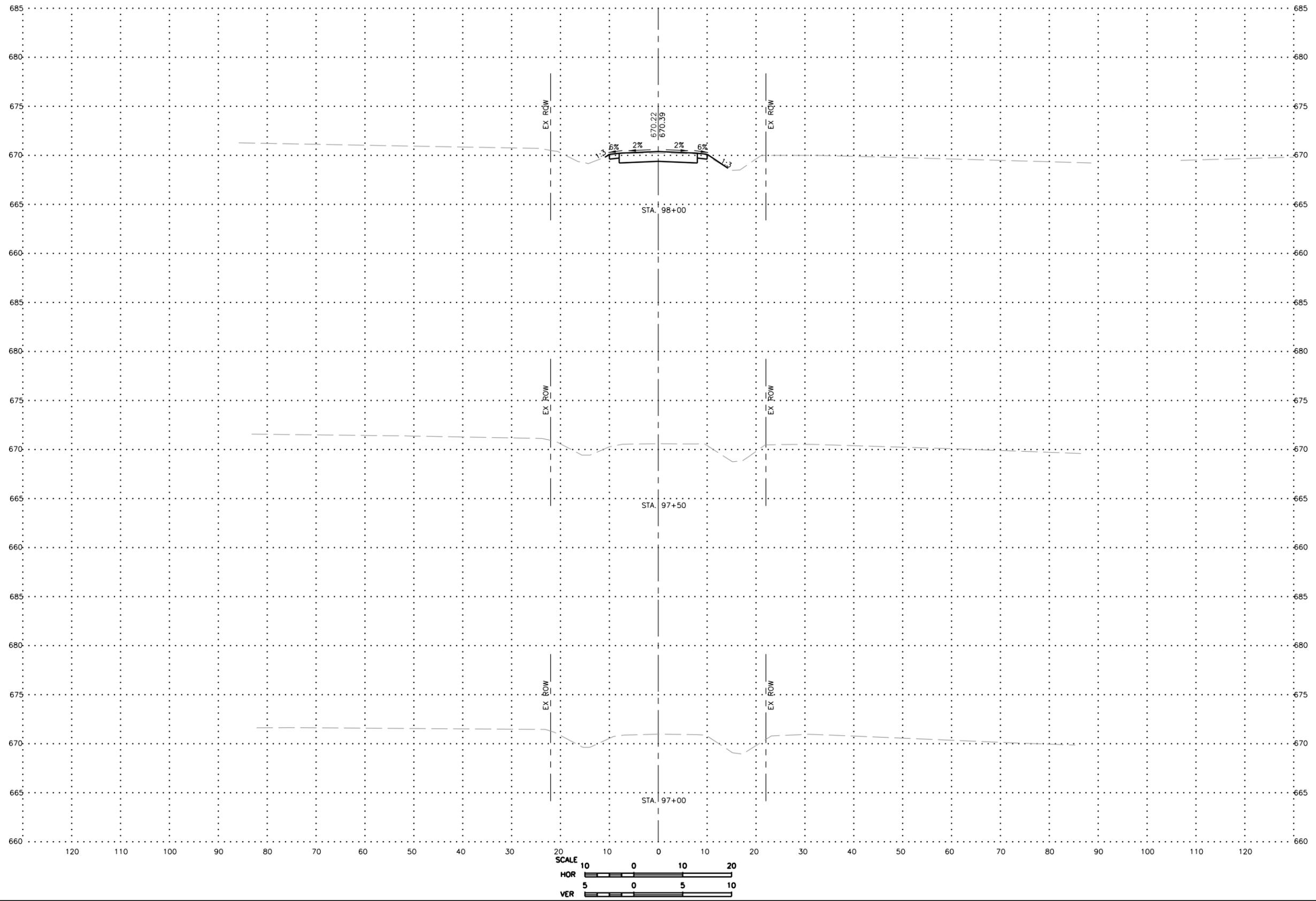
DRAWN BY: MG
APPROVED BY: KEB
DATE: 11/13/2018
SCALE: N/A

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
SOIL BORING LOGS

JOB NUMBER:
17-660

SHEET NUMBER:
14 of 20



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 54
 EXISTING S.N. 092-3062
 PROPOSED S.N. 092-3536
 SECTION NO: 16-09129-00-BR

DRAWN BY: **MG**
 APPROVED BY: **KEB**
 DATE: **11/13/2018**
 SCALE: **AS SHOWN**

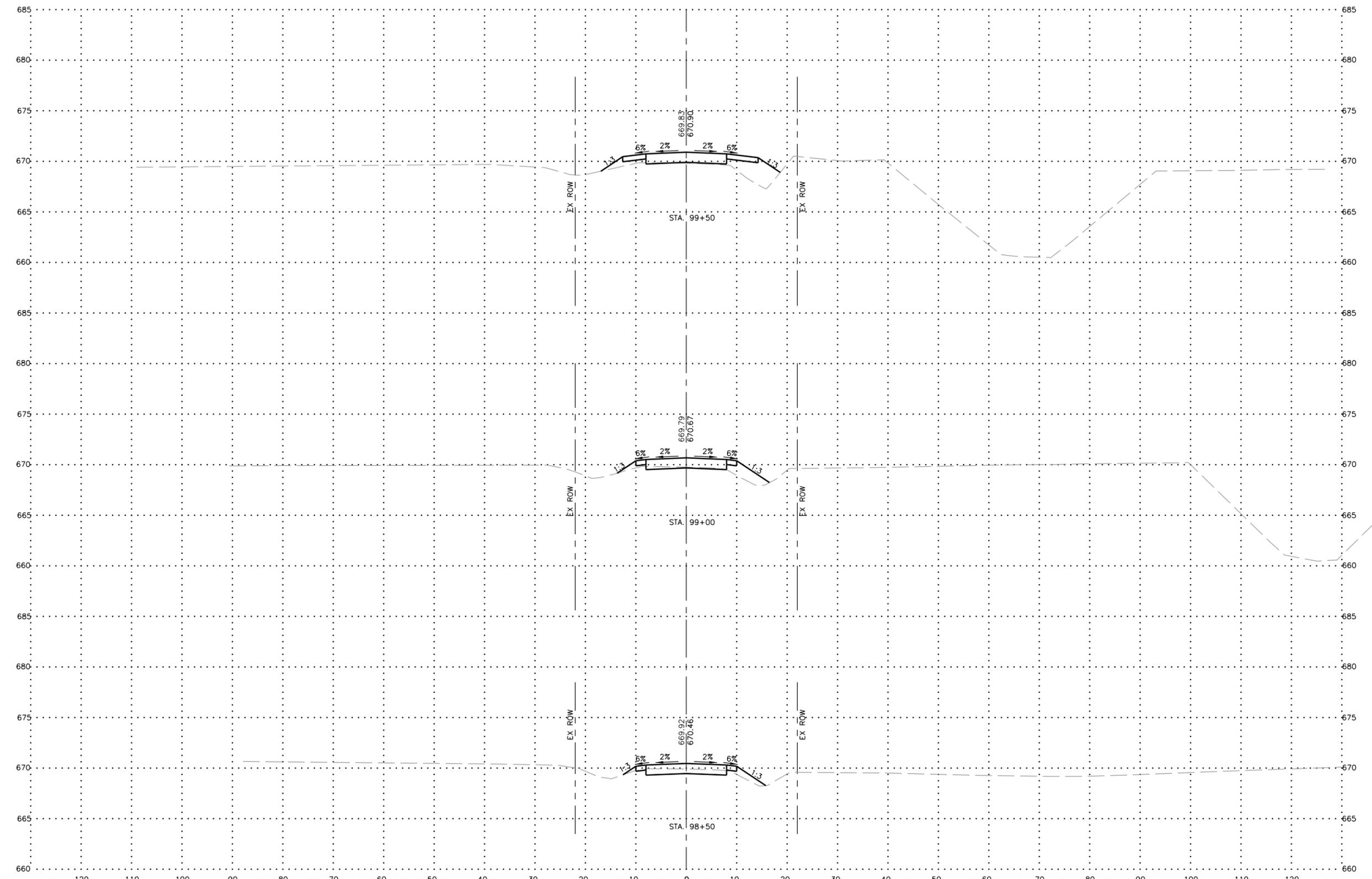
REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
CROSS SECTIONS

G:\Microstation\17\17-660\Plans\17-660-S-Design XS 1.dgn

JOB NUMBER:
17-660

SHEET NUMBER:
16 of 20



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

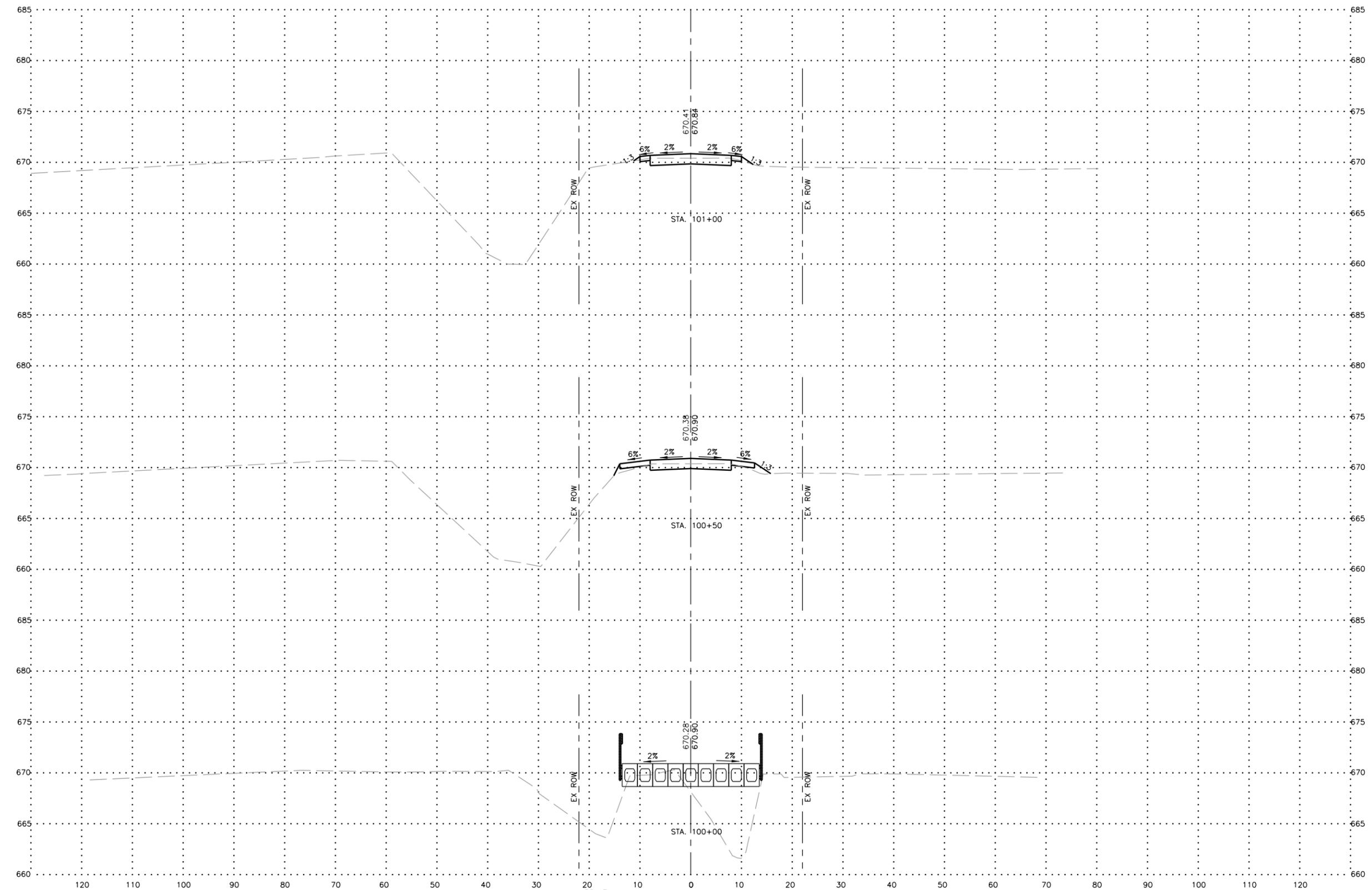
PROJECT AND LOCATION:
VERMILION COUNTY BRIDGE REPLACEMENT
TR 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

DRAWN BY: **MG**
APPROVED BY: **KEB**
DATE: **11/13/2018**
SCALE: **AS SHOWN**

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
CROSS SECTIONS
G:\Microstation\17\17-660\Plans\17-660-5-Design XS 2.dgn

JOB NUMBER:
17-660
SHEET NUMBER:
17 of 20



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 54
EXISTING S.N. 092-3062
PROPOSED S.N. 092-3536
SECTION NO: 16-09129-00-BR

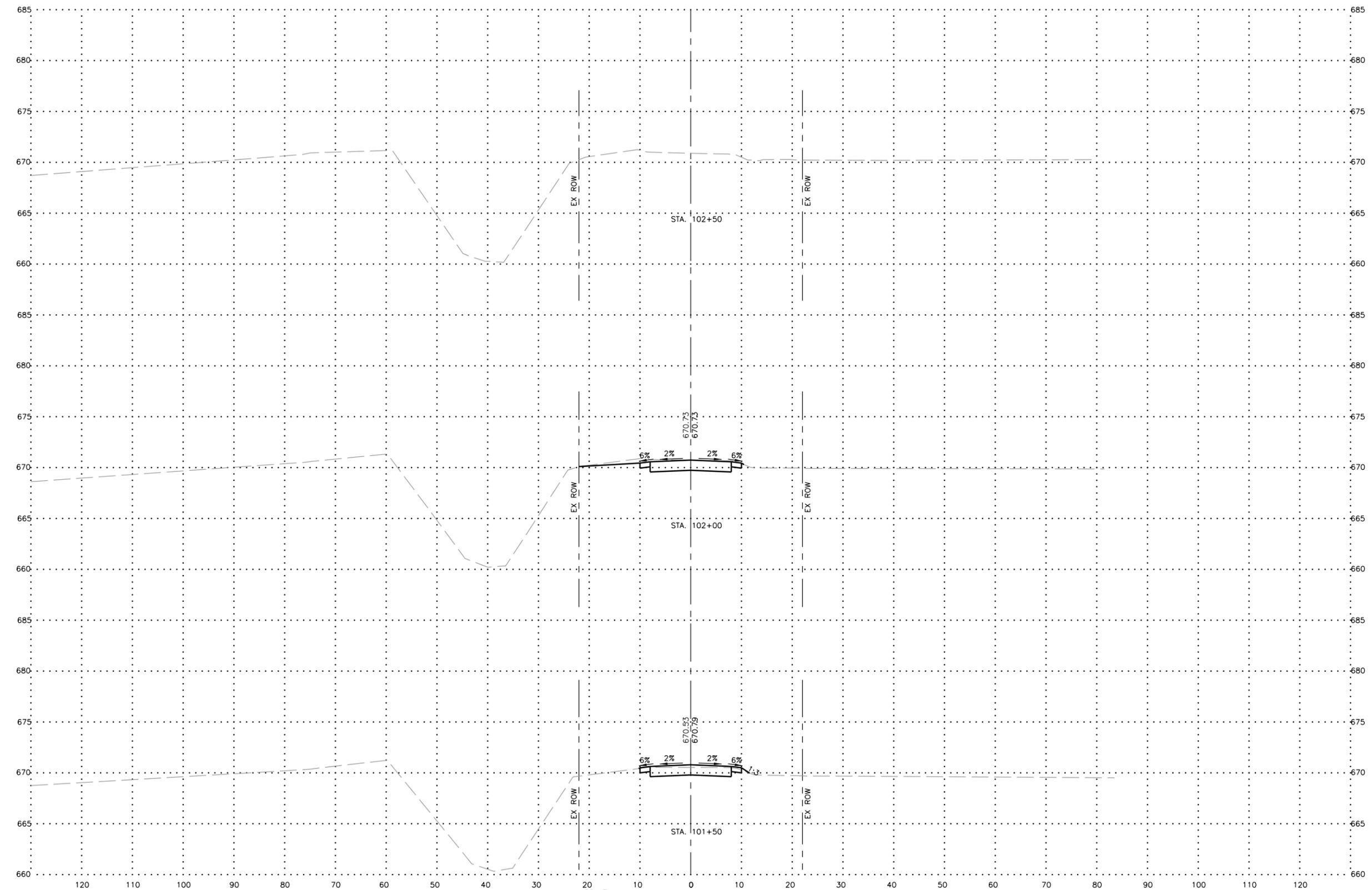
DRAWN BY: **MG**
APPROVED BY: **KEB**
DATE: **11/13/2018**
SCALE: **AS SHOWN**

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
CROSS SECTIONS

JOB NUMBER:
17-660

SHEET NUMBER:
18 of 20



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

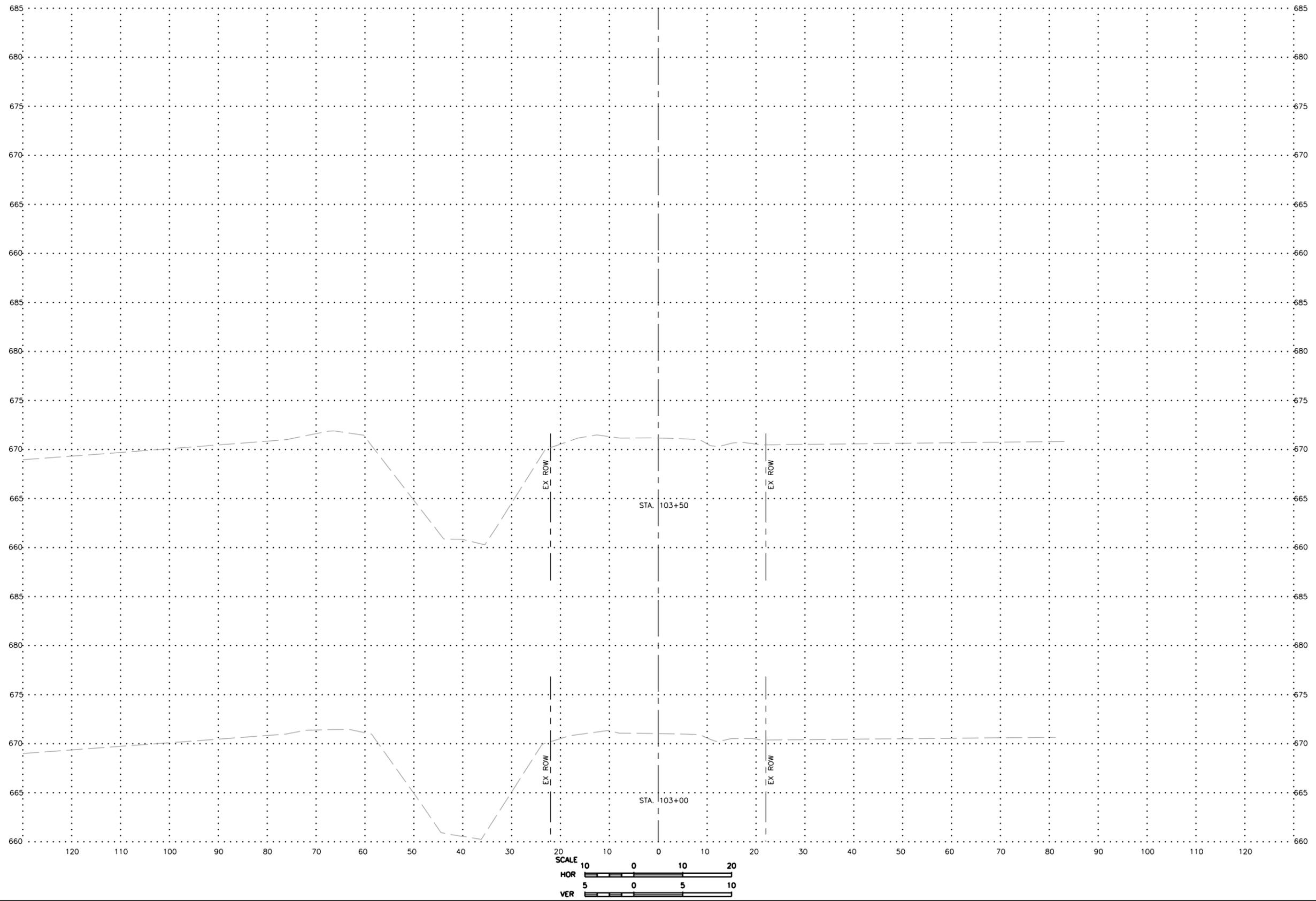
PROJECT AND LOCATION:
VERMILION COUNTY BRIDGE REPLACEMENT
 TR 54
 EXISTING S.N. 092-3062
 PROPOSED S.N. 092-3536
 SECTION NO: 16-09129-00-BR

DRAWN BY: **MG**
 APPROVED BY: **KEB**
 DATE: **11/13/2018**
 SCALE: **AS SHOWN**

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING:
CROSS SECTIONS
G:\Microstation\17\17-660\Plans\17-660-S-Design.XS 4.dgn

JOB NUMBER:
17-660
 SHEET NUMBER:
19 of 20



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 54
 EXISTING S.N. 092-3062
 PROPOSED S.N. 092-3536
 SECTION NO: 16-09129-00-BR

DRAWN BY: **MG**
 APPROVED BY: **KEB**
 DATE: **11/13/2018**
 SCALE: **AS SHOWN**

REVISIONS		
REV. NO.	DESCRIPTION	DATE

DRAWING: **CROSS SECTIONS**
G:\Microstation\17\17-660\Plans\17-660-S-Design XS 5.dgn

JOB NUMBER:
17-660
 SHEET NUMBER:
20 of 20