

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.S	SECTION NUMBER	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	1
		ILLINOIS	CONTRACT NO. 91631	

INDEX OF SHEETS

1	COVER SHEET
2	SUMMARY OF QUANTITIES, TYPICALS, AND GENERAL NOTES
3	SCHEDULES
4	PLAN & PROFILE
5-21	BRIDGE PLANS
22	CROSS SECTIONS

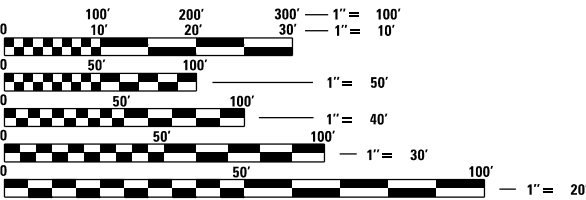
HIGHWAY STANDARDS

000001-08	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
630301-09	SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
631032-10	TRAFFIC BARRIER TERMINAL, TYPE 6A
701901-10	TRAFFIC CONTROL DEVICES
725001-01	OBJECT AND TERMINAL MARKERS
782006-01	GUARDRAIL AND BARRIER WALL REFLECTOR MOUNTING DETAILS
B.L.R. 21-9	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

UTILITIES

POWER:	ENERSTAR ELECTRIC COOPERATIVE 11597 IL 1 PARIS, IL 61944 (217) 466-7617
WATER:	CLARK-EDGAR RURAL WATER DISTRICT CHASTAIN & ASSOCIATES LLC 330 N. CENTRAL AVE PARIS, IL 61944 (217) 465-5306
PHONE:	FRONTIER 112 W ELM ST SYCAMORE, IL 60178 (815) 895-1515

FUNCTIONAL CLASSIFICATION: MAJOR COLLECTOR
DESIGN SPEED = 40 MPH
DESIGN TRAFFIC = 325 ADT (2032)



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123
OR 811

TYLER ZIEGLER, PE, SE

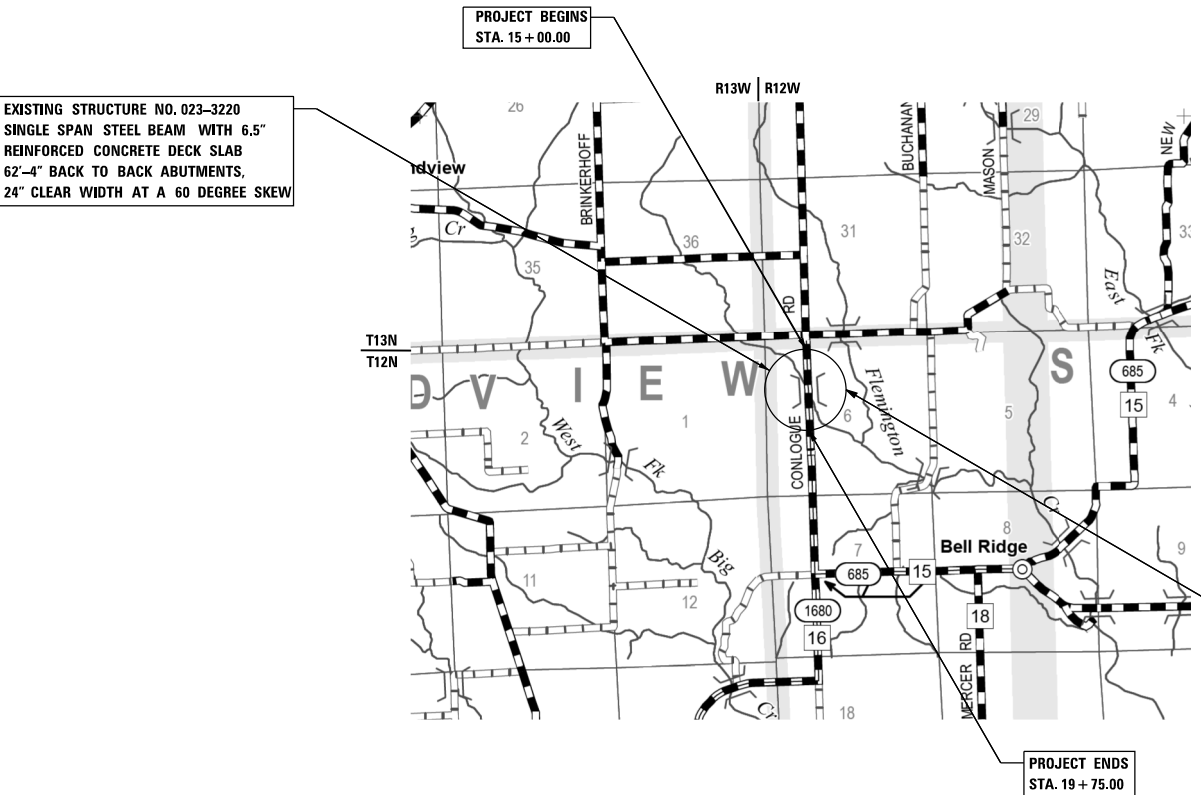
CONTRACT NO. 91631



PLANS FOR PROPOSED
BRIDGE REPLACEMENT
REBUILD IL

FAS 1680 (CH 16) OVER FLEMINGTON TRIBUTARY
SECTION 17-00134-00-BR
PROJECT LKZ7(044)
GRANDVIEW TOWNSHIP
EDGAR COUNTY

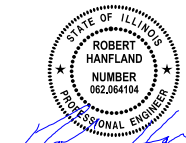
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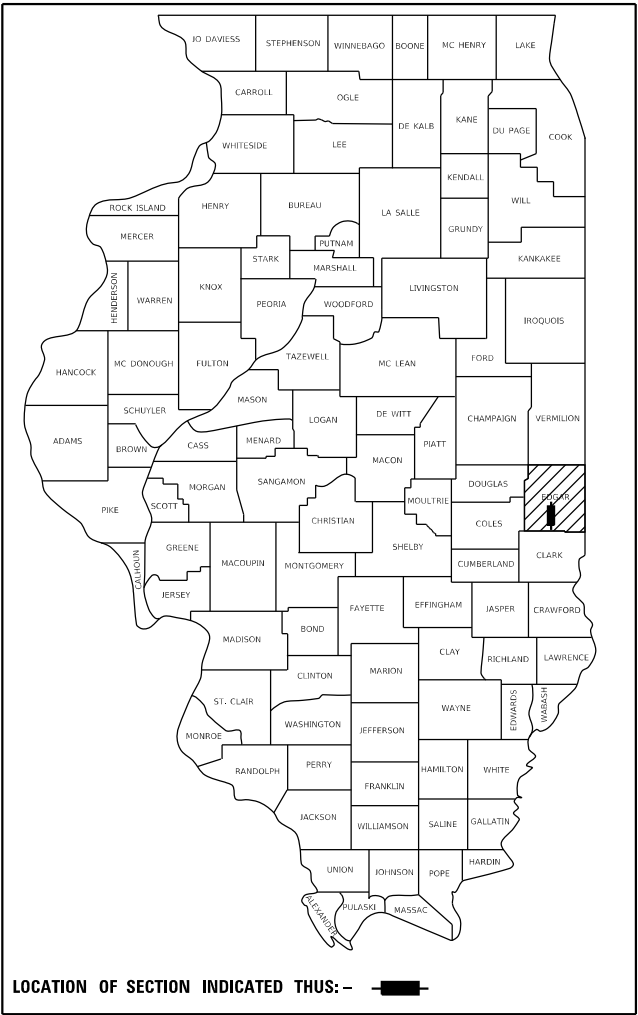
LOCATION MAP
NET LENGTH OF SECTION = 475.00 FEET = 0.09 MILES



STATION 17+50.40, PR SN 023-3277
THREE-SPAN STEEL BEAM
CONCRETE DECK STRUCTURE.
123'-6" BACK TO BACK ABUTMENTS
ON 60 DEGREE SKEW



SIGNED: 3/25/2025
SHEETS 1-4, 22
ROBERT HANFLAND, PE
STATE OF ILLINOIS NO. 062-064104
EXPIRES 11-30-2025



LOCATION OF SECTION INDICATED THUS: - [Black Rectangle] -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

APPROVED MARCH 28, 2025
[Signature]
EDGAR COUNTY ENGINEER

PASSED April 1, 2025
Kensil A. Garnett
DISTRICT FIVE ENGINEER OF LOCAL ROADS AND STREETS

Released for
Bid Based on
Limited Review April 1, 2025
Kensil A. Garnett
REGION THREE ENGINEER

PRINTED BY THE AUTHORITY
OF THE STATE OF ILLINOIS

MODEL Default
FILE Name: E:\Effingham\200 - Edgar Co - CH 16 over Effingham.Trib\CAD\Sheet\Sheet_R4200_15_Notes_S00.dgn

* SPECIALTY ITEM #0042 SUMMARY OF QUANTITIES			
CODE NO.	ITEM	UNIT	QUANTITY
20200100	EARTH EXCAVATION	CU YD	198
20300100	CHANNEL EXCAVATION	CU YD	657
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	19
35101400	AGGREGATE BASE COURSE, TYPE B	TON	441
40600275	BITUMINOUS MATERIALS (PRIME COAT)	POUND	2090
40600290	BITUMINOUS MATERIALS (TACK COAT)	POUND	209
40603080	HOT-MIX ASPHALT BINDER COURSE, 1L-19.0, N50	TON	117
40604050	HOT-MIX ASPHALT SURFACE COURSE, 1L-9.5, MIX "C", N50	TON	78
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	243
50200300	COFFERDAM EXCAVATION	CU YD	167
50201101	COFFERDAM (TYPE 1)(LOCATION-1)	EACH	1
50201102	COFFERDAM (TYPE 1)(LOCATION-2)	EACH	1
50300225	CONCRETE STRUCTURES	CU YD	190.0
50300255	CONCRETE SUPERSTRUCTURE	CU YD	120.8
50300300	PROTECTIVE COAT	SQ YD	454
50500105	FURNISHING AND ERECTING STRUCTURAL STEEL	L SUM	1
50500505	STUD SHEAR CONNECTORS	EACH	3000
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	47,320
50901050	STEEL RAILING, TYPE SM	FOOT	245
51201800	FURNISHING STEEL PILES HP 14X73	FOOT	1,732
51202305	DRIVING PILES	FOOT	1,732
51203800	TEST PILE STEEL HP 14X73	EACH	4
51500100	NAME PLATES	EACH	1
52100010	ELASTOMERIC BEARING ASSEMBLY, TYPE 1	EACH	15
52100510	ANCHOR BOLTS, 3/4"	EACH	40
58600101	GRANULAR BACKFILL FOR STRUCTURES	CU YD	174
59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	104
60146304	PIPE UNDERDRAINS FOR STRUCTURES 4"	FOOT	210
63100167	TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT	EACH	2
63100087	TRAFFIC BARRIER TERMINAL, TYPE 6A	EACH	2
63200310	GUARDRAIL REMOVAL	FOOT	136
67100100	MOBILIZATION	L SUM	1
72501000	TERMINAL MARKER - DIRECT APPLIED	EACH	4
78200006	GUARDRAIL REFLECTORS, TYPE B	EACH	8
X2501000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.25
# Z0076600	TRAINEES	HOURL	500
X2810208	STONE RIPRAP, CLASS A4 (SPECIAL)	TON	544
# Z0076604	TRAINEES TRAINING PROGRAM GRADUATE	HOURL	500
X7011800	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L SUM	1
Z0013798	CONSTRUCTION LAYOUT	L SUM	1



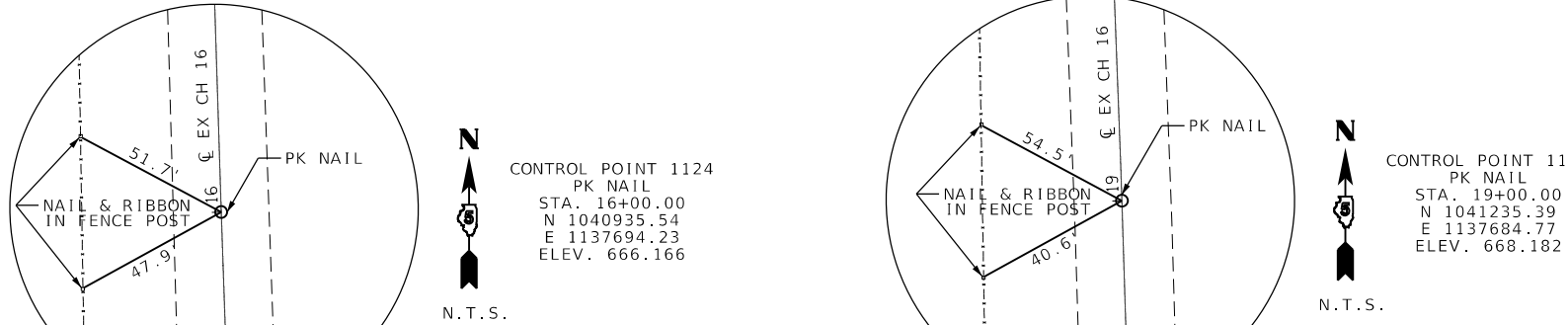
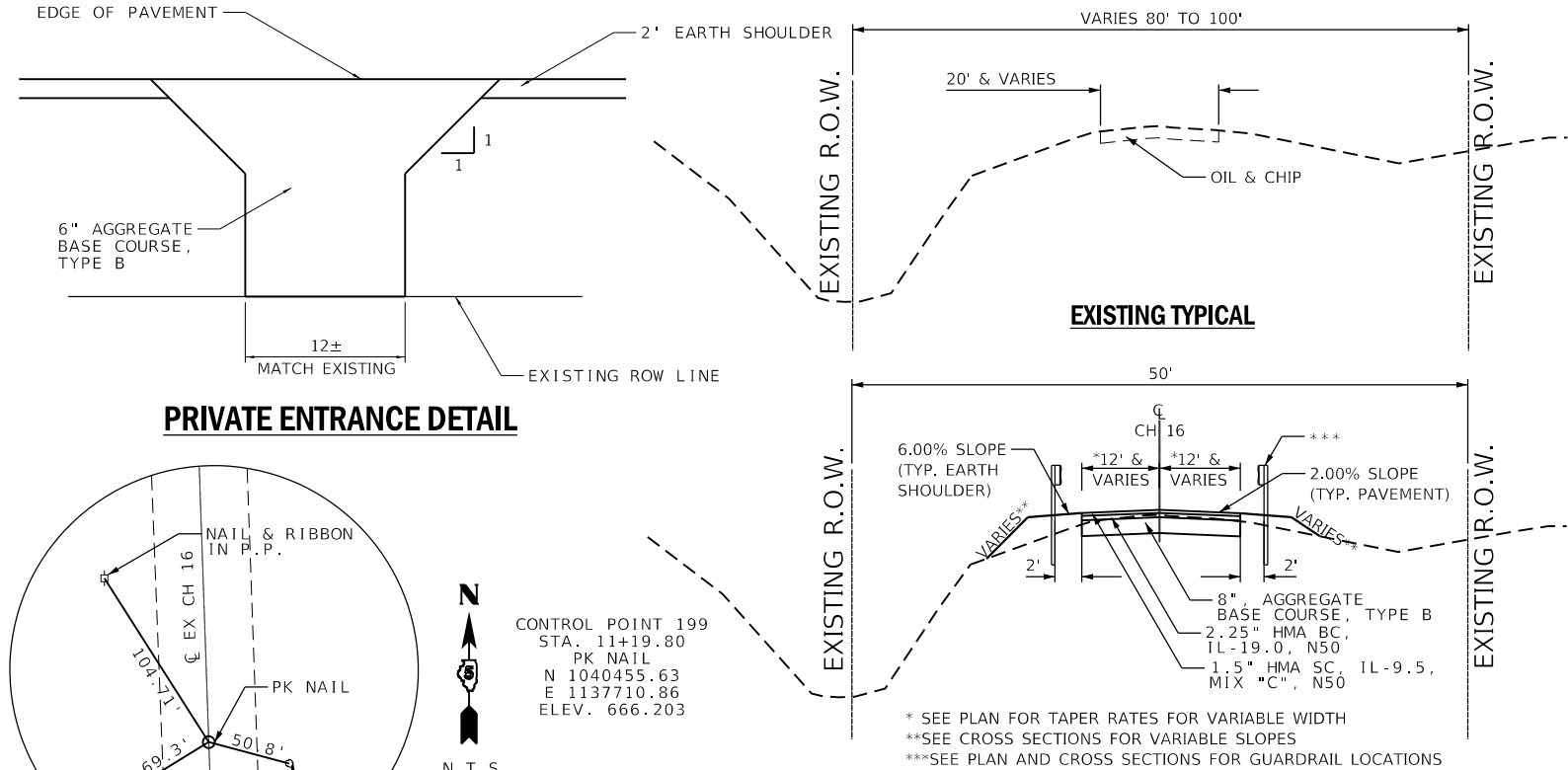
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PLOT SCALE	= 40,0000 ' / in.
PLOT DATE	= 3/25/2025

DESIGNED -	DMM	REVISED -	
DRAWN -	DMM	REVISED -	
CHECKED -	RLH	REVISED -	
DATE -	3/25/2025	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES, TYPICALS AND GENERAL NOTES			
SCALE:	SHEET 1 OF 1 SHEETS	STA.	TO STA.

F.A.S.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	2
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				



- GENERAL NOTES**
- ALL CLEARING, GRUBBING, AND REMOVAL OF EXISTING DRAINAGE STRUCTURES OR PIPES SHALL BE INCLUDED IN THE COST OF EARTH EXCAVATION. THE REMOVAL AND DISPOSAL OF EXISTING BITUMINOUS AND AGGREGATE PAVEMENT SHALL BE INCLUDED IN THE COST OF EARTH EXCAVATION AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
 - TEMPORARY EROSION CONTROL TO BE IMPLEMENTED PER THE PLANS AND AS DIRECTED BY THE ENGINEER.
 - THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES WITHIN THE CONSTRUCTION AREAS AND PREVENT DRAINAGE OR PONDING OF WATER ONTO PRIVATE PROPERTY.
 - ALL DISTURBED EARTH SURFACES WITHIN THE LIMITS OF THE R.O.W. AND EASEMENTS SHALL BE SEEDED AS DIRECTED BY THE ENGINEER.
 - NO PAYMENT FOR OVERHAUL WILL BE MADE FOR THIS SECTION.
 - THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THE PLANS ARE BASED ON FIELD INVESTIGATION AND THE BEST INFORMATION AVAILABLE. HOWEVER, THE EXACT LOCATIONS ARE NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THEIR EXACT LOCATION FROM THE INDIVIDUAL UTILITY COMPANIES AND BY FIELD INSPECTION.
 - TREES WITHIN THE R.O.W. WHICH INTERFERE WITH CONSTRUCTION ACTIVITIES SHALL BE REMOVED ONLY AT THE DIRECTION OF THE ENGINEER.
 - ELEVATIONS ARE BASED ON NAVD88. THE PROPOSED GRADE ELEVATIONS SHOWN ON THE PLAN AND PROFILE SHEET AND STATION CROSS SECTIONS ARE THE ELEVATIONS FOR THE FINISHED SURFACE AT THE LOCATIONS INDICATED.
 - THE FOLLOWING RATES OF APPLICATION HAVE BEEN USED IN CALCULATING PLAN QUANTITIES:
AGGREGATE BASE COURSE 2.05 TON/CU YD BINDER COURSE: 112 LBS/SQ YD/INCH
STONE RIP RAP 1.75 TON/CU YD SURFACE COURSE: 112 LBS/SQ YD/INCH
TEMPORARY EROSION PRIME COAT: 0.25 LBS/SQ FT
CONTROL SEEDING 100 LB/ACRE TACK COAT: 0.025 LBS/SQ FT

SEE SCHEDULES FOR MIX DESIGN TABLE

1	2	3	4	5	6	7	8	9	10
	20200100 EARTH EXCAVATION	50200100 STRUCTURE EXCAVATION	50200300 COFFERDAM EXCAVATION	20300100 CHANNEL EXCAVATION	ESTIMATED UNSUITABLE MATERIAL	ESTIMATED SUITABLE MATERIAL	ESTIMATE SUITABLE MATERIAL ADJUSTED FOR SHRINKAGE	EMBANKMENT	EARTHWORK BALANCE WASTE (+) OR SHORTAGE (-)
LOCATION	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD
STA 15+00 TO 16+88.65	118.12	0.00	0.00	0.00	0.00	118.12	88.59	16.49	72.10
STA 16+88.65 TO 18+12.15	0	243.00	167.00	657.00	320.10	746.90	560.18	0.00	560.18
STA 18+12.15 TO 19+75	79.71	0.00	0.00	0.00	0.00	79.71	59.78	24.12	35.66
TOTAL	197.83	243.00	167.00	657.00	320.10	944.73	709.55	40.61	667.94
USE	198	243	167	657	320	945	709	41	668
COLUMN 1, 2, & 8 - LOCATION AND QUANTITIES FROM CROSS SECTIONS, CUT = EARTH EXCAVATION FILL = EMBANKMENT COLUMN 3 - QUANTITIES FOR STRUCTURAL EXCAVATION (CUT) FROM BRIDGE PLANS COLUMN 4 - QUANTITIES FOR COFFERDAM EXCAVATION (CUT) FROM BRIDGE PLANS COLUMN 5 - QUANTITIES FOR CHANNEL EXCAVATION (CUT) FROM BRIDGE PLANS COLUMN 6 - ESTIMATED UNSUITABLE MATERIAL (ESTIMATED AT 30% OF STRUCTURE, COFFERDAM AND CHANNEL EXCAVATION) COLUMN 7 - ESTIMATED SUITABLE MATERIAL (ESTIMATED AT 70% OF STRUCTURE, COFFERDAM AND CHANNEL EXCAVATION) COLUMN 8 - QUANTITY OF SUITABLE EARTH EXCAVATION (CUT) ADJUSTED FOR A SHRINKAGE FACTOR OF 25% COLUMN 10 - EARTHWORK BALANCE (-) = QUANTITY OF FURNISHED EXCAVATION NEEDED EARTHWORK BALANCE (+) = QUANTITY OF EARTH EXCAVATION ADJUSTED FOR SHRINKAGE TO BE WASTED									

LOCATION	X2501000 SEEDING CLASS 2 (SPECIAL)	28000250 TEMP. EROSION CONTROL SEEDING (2 @ 100) LBS/ACRE
	ACRE	POUND
	STA 15+00 TO 19+75	19
USE	0.25	19

LOCATION	63200310 GUARDRAIL REMOVAL	63100167 TRAFFIC BARRIER TERMINAL TYPE 1 (SPECIAL) TANGENT	63100087 TRAFFIC BARRIER TERMINAL TYPE 6A
	FOOT	EACH	EACH
STA. 15+89.47 TO 16+92.38 RT	40.7	1	1
STA. 17+11.07 TO 17+38.04 LT	27.1		
STA. 18+05.69 TO 19+11.39 LT	40.6	1	1
STA. 17+60.10 TO 17+87.15 RT	27.1		
TOTAL	135.5	2	2
USE	136.0	2	2

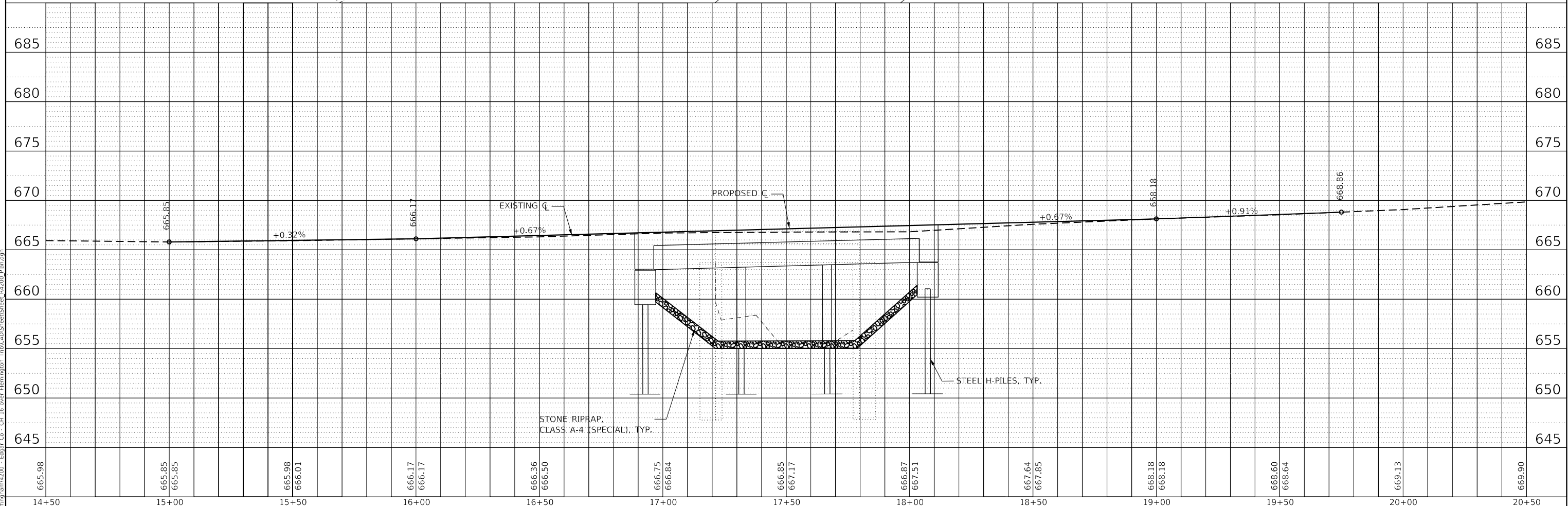
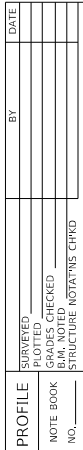
LOCATION	AREA (SQ YD)	40604050 HMA SC	40603080 HMA BC	40600275 BIT MATLS	40600290 BIT MATLS
		IL-9.5 C N50	IL-19.0 N50	PR CT	TACK CT
		TON	TON	POUND	POUND
STA 15+00.00 TO 16+88.65 LT/RT	498.6	41.90	62.80	1,121.94	112.19
STA 18+12.15 TO 19+75.00 LT/RT	429.1	36.00	54.10	965.50	96.55
	TOTAL	77.9	116.90	2,087.44	208.74
	USE	78.0	117.0	2,090.0	209.0

35101400 AGGREGATE BASE COURSE, TYPE B				
LOCATION	THICKNESS	AREA	LENGTH	TONS
STA 15+00.00 TO 16+88.65	8"	VARIES	188.65	227.16
STA 18+12.15 TO 19+75.00	8"	VARIES	162.85	196.46
STA 18+38.88 F.E.	6"	VARIES	VARIES	16.89
			TOTAL	440.51
			USE	441.00

HOT-MIX ASPHALT MIXTURE REQUIREMENTS		
MIXTURE USES:	HMA SURFACE COURSE	HMA BINDER COURSE
PG:	PG 64-22	PG 64-22
DESIGN AIR VOIDS	4% @ 50 GYR	4% @ 50 GYR
MIXTURE COMPOSITION (MIXTURE GRADATION)	IL 9.5	IL 19.0
FRICTION AGGREGATE	MIXTURE C	NONE
MIXTURE WEIGHT	112 LBS/SY/INCH THICKNESS	112 LBS/SY/INC THICKNESS
QUALITY MANAGEMENT PROGRAM	QC/QA	QC/QA

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PLAN	SURVEYED _____	BY _____	DATE _____
	PLOTTED _____ ALIGNMENT CHECKED _____ RT. OF WAY CHECKED _____ CADD FILE NAME _____		
NOTE BOOK			
NO. _____			

MODEL: Default

Bench Mark #1 – Spike & placard in PP located on west side of CH 16, 37'± LT., Sta. 15+00, Elev. 664.10.
Bench Mark #2 – Spike & placard in PP located on west side of CH 16, 37'± LT., Sta. 18+75, Elev. 665.78.
Bench Mark #3 – Spike & placard in PP located on west side of CH 16, 37'± LT., Sta. 21+75, Elev. 669.75.

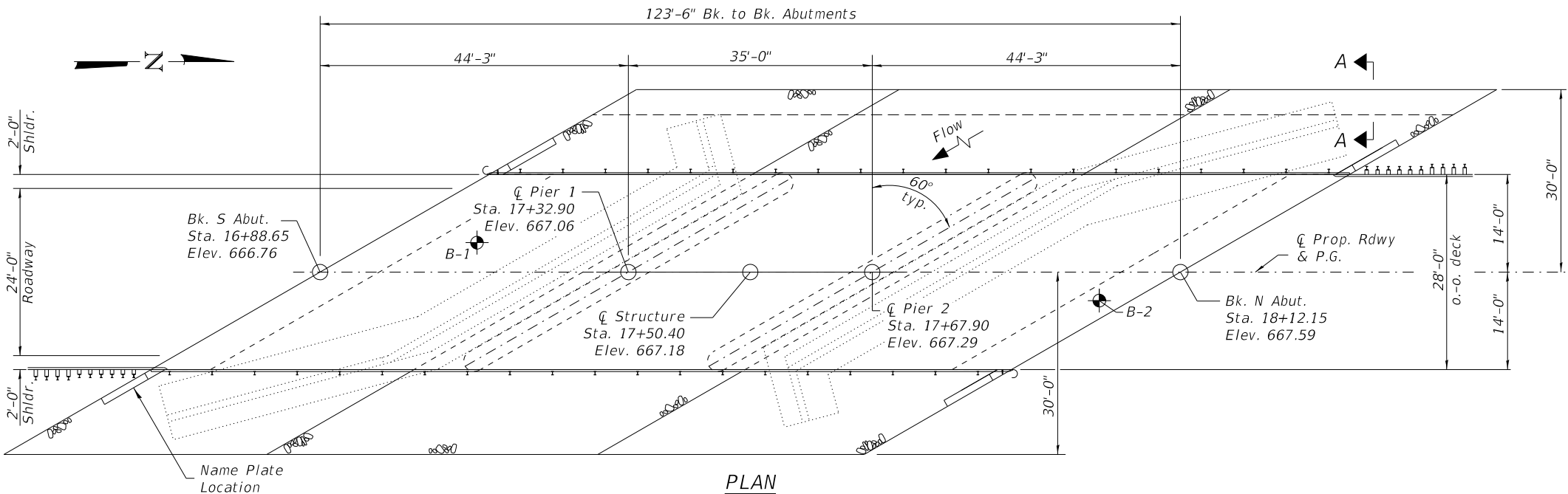
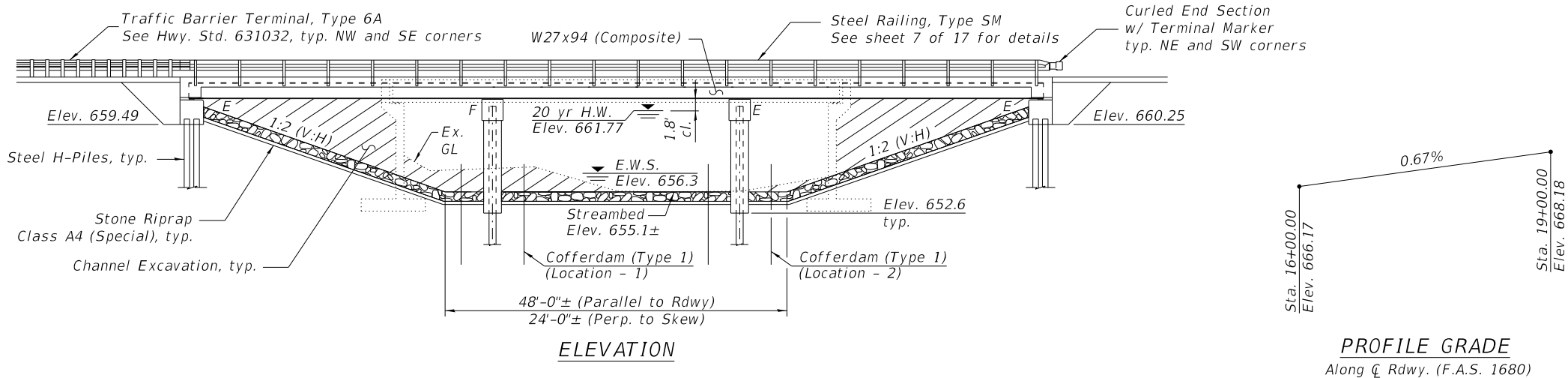
Existing Structure: SN 023-3220, single span, 62'-4" back to back abutments with a 24'-0" roadway width and 60° skew.
The existing structure has a concrete slab on steel beams supported on concrete abutments supported by piles.

Salvage: None

Note: See Sheet 2 for Bill of Material, General Notes and Section A-A.

INDEX OF SHEETS

1. General Plan & Elevation
2. General Notes & Details
3. Top of Slab Elevations Layout
4. Top of Slab Elevations
5. Superstructure
6. Superstructure Details
7. Steel Rail
8. Steel Rail Details
9. Structural Steel
10. Structural Steel Details
11. Bearing Details
12. South Abutment
13. North Abutment
14. Abutment Details
15. Piers
16. HP Pile Details
17. Boring Logs



DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

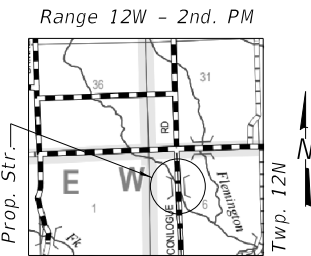
DESIGN STRESSES

FIELD UNITS

f'_c = 4,000 psi (Superstructure)
 f'_c = 3,500 psi (Substructure)
 f_y = 60,000 psi (Reinforcement)
 f_y = 50,000 psi (Structural Steel, M270 Grade 50W)

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.115g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.242g
Soil Site Class = C



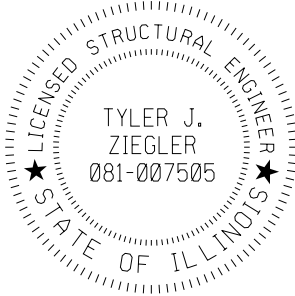
LOCATION SKETCH

WATERWAY INFORMATION

Item	Unit	Quantity
Drainage Area	mi ²	1.35
Existing Opening (20 Yr.)	ft ²	176
Required Opening (20 Yr.)	ft ²	151
Proposed Opening (20 Yr.)	ft ²	216
Design Discharge (20 Yr.)	ft ³ /s	819
Computed Discharge (100 Yr.)	ft ³ /s	1310
20 Yr. Head	ft	0.00
100 Yr. Head	ft	0.00

DESIGN SCOUR ELEVATION TABLE

Event / Limit	Design Scour Elevations (ft.)				Item 113
	S. Abut	Pier 1	Pier 2	N. Abut	
Q100	-	650.3	650.3	-	8
Q200	-	650.3	650.3	-	
Design	659.4	650.3	650.3	660.2	
Check	659.4	650.3	650.3	660.2	



Expires 11-30-2026

I here 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 requirements of the current "AASHTO LRFD Specifications."

[Signature] 3/25/25

ILLINOIS STRUCTURAL NO. 081-007505

GENERAL PLAN AND ELEVATION
CH 16 OVER FLEMINGTON TRIBUTARY

F.A.S. 1680 - SEC. 17-00134-00-BR

EDGAR COUNTY

STATION 17+50.40

STRUCTURE NO. 023-3277

GENERAL NOTES

Fasteners shall be ASTM A325 Type 3 weathering bolts. Bolts $\frac{7}{8}$ in. Ø, holes $\frac{15}{16}$ in. Ø, unless otherwise noted.

Calculated weight of Structural Steel = 65,540 lbs.

All structural steel shall be AASHTO M270 Grade 50W.

No field welding is permitted except as specified in the contract documents.

Reinforcement bars designated (E) shall be epoxy coated.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.

Excavation behind existing abutment walls shall be performed to balance front and back soil pressure before removing the existing superstructure.

Structural steel shall be painted for a distance equal to the depth of embedment into the concrete cap plus 18 inches. Painted areas shall be primed in the shop with a Department approved zinc rich primer. Field painting will not be required.

Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.

Protective coat shall be applied to the top surface and exposed sides of the concrete deck and wing walls.

The concrete for bridge decks finished according to Article 503.16(a) of the Standard Specifications shall be placed and compacted parallel to the skew in uniform increments along centerline of bridge. The machine used for finishing shall be set parallel to the skew for striking off and screeding the concrete.

The finishing machine rails shall be placed on the top of the top flange of the exterior beams within the deck pour. Beam blocks shall be placed between beams at all tie locations in each bay for the full width of the deck pour.

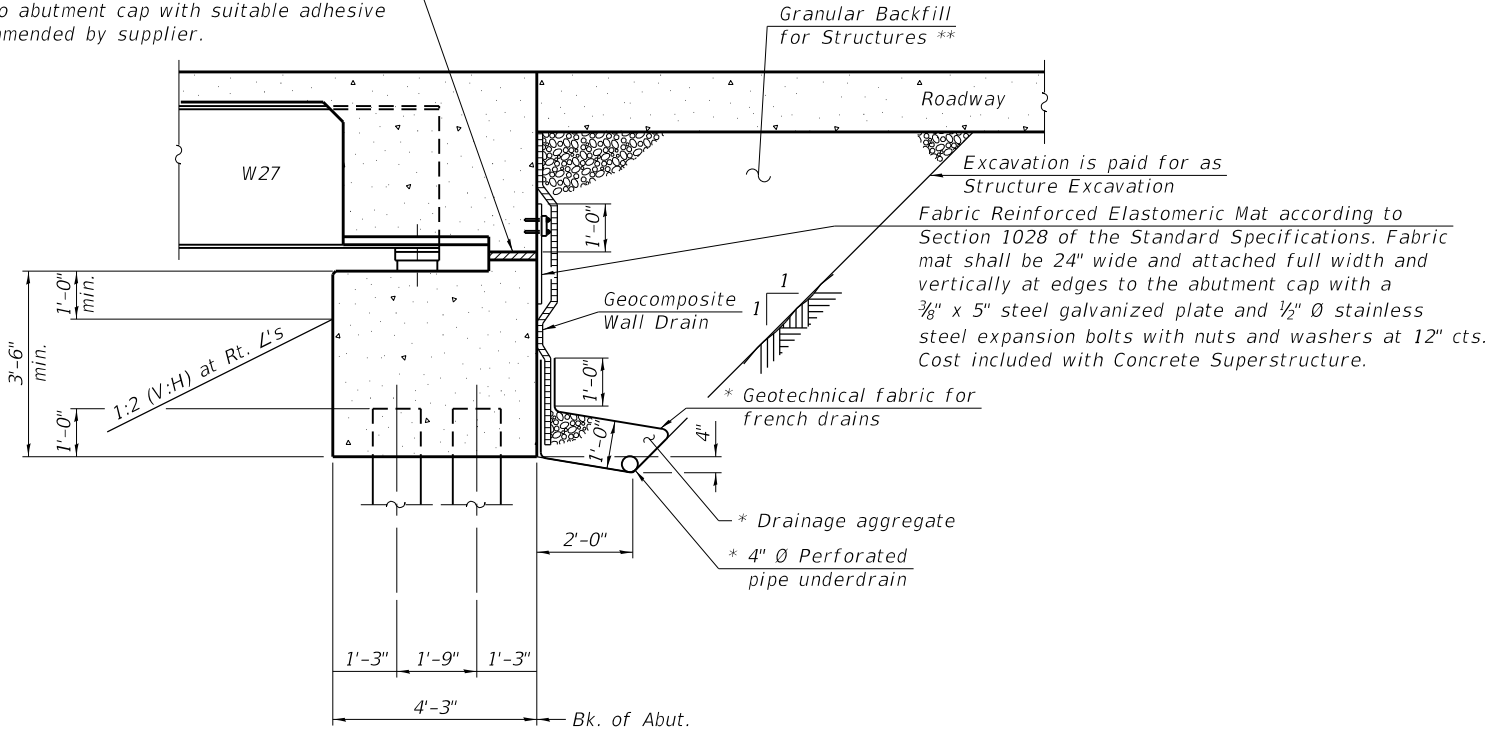
Slipforming of the parapets is not allowed.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Channel Excavation	Cu. Yd.		657	657
* Stone Riprap, Class A4 (Special)	Ton		544	544
* Removal of Existing Structures	Each			1
Structure Excavation	Cu. Yd.		243	243
Cofferdam Excavation	Cu. Yd.		167	167
Cofferdam (Type 1) (Location-1)	Each		1	1
Cofferdam (Type 1) (Location-2)	Each		1	1
Concrete Structures	Cu. Yd.		190.0	190.0
Concrete Superstructure	Cu. Yd.	120.8		120.8
Protective Coat	Sq. Yd.	440	14	454
Furnishing and Erecting Structural Steel	L. Sum	1		1
Stud Shear Connectors	Each	3,000		3,000
Reinforcement Bars, Epoxy Coated	Pound	31,620	15,700	47,320
Steel Railing, Type SM	Foot	245		245
Furnishing Steel Piles HP14x73	Foot		1,732	1,732
Driving Piles	Foot		1,732	1,732
Test Pile Steel HP14x73	Each		4	4
Name Plates	Each		1	1
Elastomeric Bearing Assembly, Type I	Each		15	15
Anchor Bolts, $\frac{3}{4}$ "	Each		40	40
Granular Backfill for Structures	Cu. Yd.		174	174
Geocomposite Wall Drain	Sq. Yd.		104	104
Pipe Underdrains for Structures 4"	Foot		210	210
Terminal Marker, Direct Applied	Each		2	2

* See Special Provisions

2" PJF (per Article 1051.09 of the Standard Specifications) full width and vertically at edges bonded to abutment cap with suitable adhesive as recommended by supplier.



SECTION THRU SEMI-INTEGRAL ABUTMENT

(Horiz. dim. at Rt. L's)

* Included in the cost of Pipe Underdrains for Structures. (See Special Provisions)

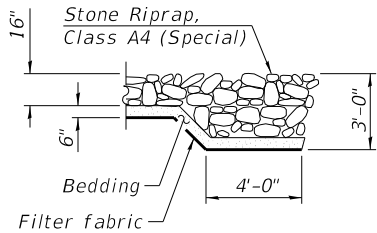
** Granular Backfill behind the abutments shall be compacted according to Article 205.06 of the Standard Specifications.

Note:
All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101).

FLEMINGTON TRIBUTARY
BUILT 202_
EDGAR COUNTY
SEC. 17-00134-00-BR
F.A.S. 1680 STA. 17+50.40
STR. NO. 023-3277 HL93 LOADING

NAME PLATE

See Std. 515001



SECTION A-A

MODEL: 02 General Details
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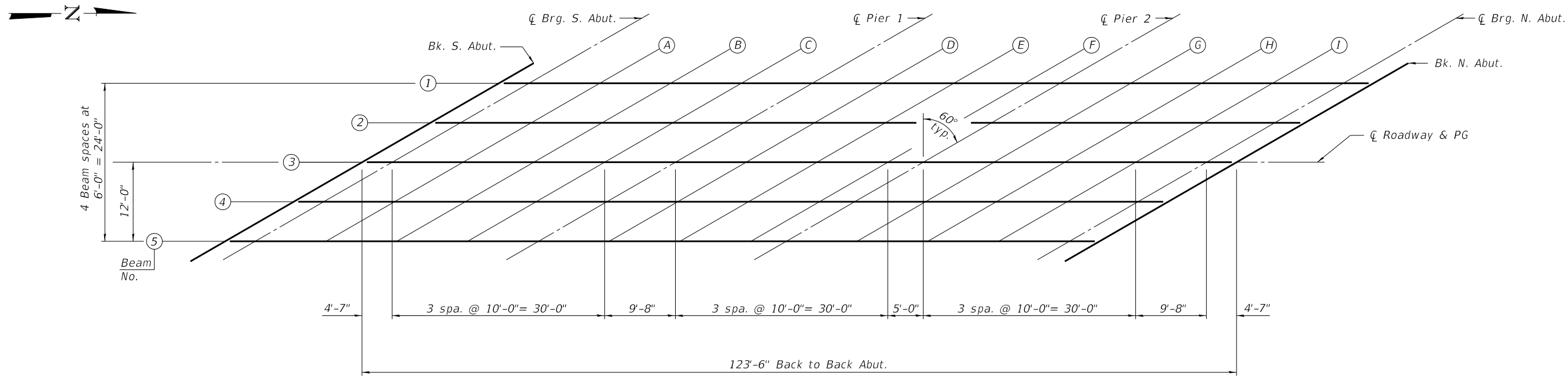
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PLOT DATE =	CHECKED - TJZ	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

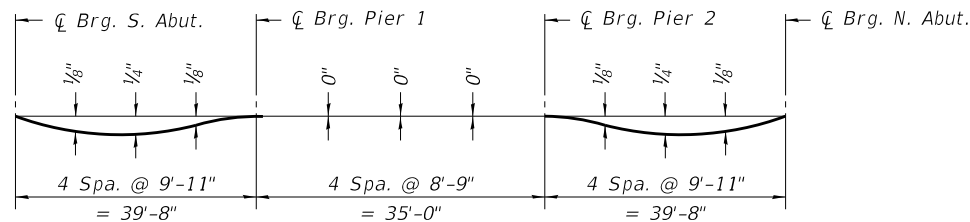
GENERAL NOTES & DETAILS
STRUCTURE NO. 023-3277

SHEET 2 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	6
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				



PLAN

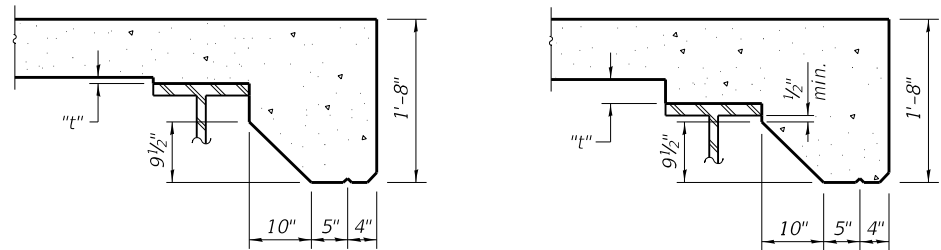


DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only.)

Note:

The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown on sheet 4 of 17.



At Minimum Fillet

At Maximum Fillet

To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown above. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown on sheet 4 of 17, minus slab thickness, equals the fillet heights "t" above top flange of beams.

FILLET HEIGHTS

MODEL: 04_Top of Slab Elevations
FILE NAME: P:\Effingham\4200 - Edgar Co - CH 16 over Flemington Trib\CAD\Sheet\4200_Plan Sheets.dgn

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	17+09.43	-12.00	666.65	666.65
☒ Brg. S. Abut.	17+14.02	-12.00	666.68	666.68
A	17+24.02	-12.00	666.75	666.76
B	17+34.02	-12.00	666.82	666.84
C	17+44.02	-12.00	666.88	666.89
☒ Pier 1	17+53.68	-12.00	666.95	666.95
D	17+63.68	-12.00	667.02	667.02
E	17+73.68	-12.00	667.08	667.08
F	17+83.68	-12.00	667.15	667.15
☒ Pier 2	17+88.68	-12.00	667.18	667.18
G	17+98.68	-12.00	667.25	667.26
H	18+08.68	-12.00	667.32	667.34
I	18+18.68	-12.00	667.39	667.40
☒ Brg. N. Abut.	18+28.35	-12.00	667.45	667.45
Bk. N. Abut.	18+32.93	-12.00	667.48	667.48

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	16+99.04	-6.00	666.71	666.71
☒ Brg. S. Abut.	17+03.63	-6.00	666.74	666.74
A	17+13.63	-6.00	666.81	666.82
B	17+23.63	-6.00	666.87	666.89
C	17+33.63	-6.00	666.94	667.95
☒ Pier 1	17+43.29	-6.00	667.01	667.01
D	17+53.29	-6.00	667.07	667.07
E	17+63.29	-6.00	667.14	667.14
F	17+73.29	-6.00	667.21	667.21
☒ Pier 2	17+78.29	-6.00	667.24	667.24
G	17+88.29	-6.00	667.31	667.32
H	17+98.29	-6.00	667.37	667.39
I	18+08.29	-6.00	667.44	667.45
☒ Brg. N. Abut.	18+17.96	-6.00	667.51	667.51
Bk. N. Abut.	18+22.54	-6.00	667.54	667.54

☒ BEAM 3, PROP. RDWY. AND P.G.

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	16+88.65	0.00	666.76	666.76
☒ Brg. S. Abut.	16+93.23	0.00	666.79	666.79
A	17+03.23	0.00	666.86	666.87
B	17+13.23	0.00	666.93	666.95
C	17+23.23	0.00	667.00	667.01
☒ Pier 1	17+32.90	0.00	667.06	667.06
D	17+42.90	0.00	667.13	667.13
E	17+52.90	0.00	667.19	667.19
F	17+62.90	0.00	667.26	667.26
☒ Pier 2	17+67.90	0.00	667.29	667.29
G	17+77.90	0.00	667.36	667.37
H	17+87.90	0.00	667.43	667.45
I	17+97.90	0.00	667.50	667.51
☒ Brg. N. Abut.	18+07.57	0.00	667.56	667.56
Bk. N. Abut.	18+12.15	0.00	667.59	667.59

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	16+78.26	6.00	666.57	666.57
☒ Brg. S. Abut.	16+82.84	6.00	666.60	666.60
A	16+92.84	6.00	666.67	666.68
B	17+02.84	6.00	666.73	666.75
C	17+12.84	6.00	666.80	666.81
☒ Pier 1	17+22.51	6.00	666.87	666.87
D	17+32.51	6.00	666.93	666.93
E	17+42.51	6.00	667.00	667.00
F	17+52.51	6.00	667.07	667.07
☒ Pier 2	17+57.51	6.00	667.10	667.10
G	17+67.51	6.00	667.17	667.18
H	17+77.51	6.00	667.23	667.25
I	17+87.51	6.00	667.30	667.31
☒ Brg. N. Abut.	17+97.17	6.00	667.37	667.37
Bk. N. Abut.	18+01.76	6.00	667.40	667.40

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	16+67.87	12.00	666.37	666.37
☒ Brg. S. Abut.	16+72.45	12.00	666.41	666.41
A	16+82.45	12.00	666.47	666.48
B	16+92.45	12.00	666.54	666.56
C	17+02.45	12.00	666.61	666.62
☒ Pier 1	17+12.12	12.00	666.67	666.67
D	17+22.12	12.00	666.74	666.74
E	17+32.12	12.00	666.81	666.81
F	17+42.12	12.00	666.87	666.87
☒ Pier 2	17+47.12	12.00	666.91	666.91
G	17+57.12	12.00	666.97	666.98
H	17+67.12	12.00	667.04	667.06
I	17+77.12	12.00	667.11	667.12
☒ Brg. N. Abut.	17+86.78	12.00	667.17	667.17
Bk. N. Abut.	17+91.37	12.00	667.20	667.20



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LICENSE #184.003222

USER NAME	=	DESIGNED	-	JAG
		CHECKED	-	TJZ
PLOT SCALE	=	DRAWN	-	JAG
PLOT DATE	=	CHECKED	-	TJZ

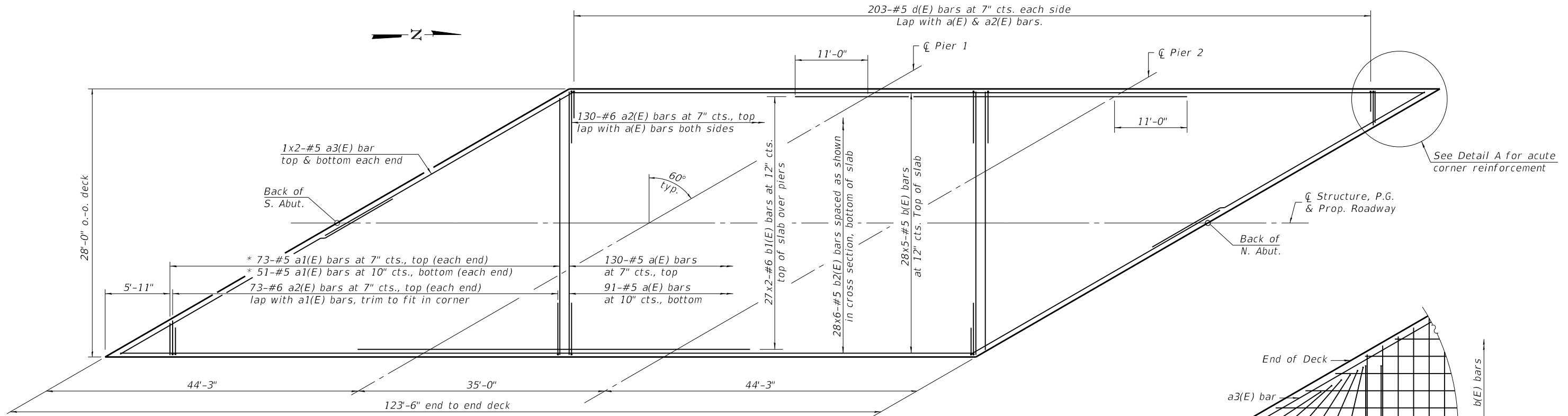
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REVISED	-	
REVISED	-	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS
STRUCTURE NO. 023-3277

SHEET 4 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	8
		CONTRACT NO. 91631		
		ILLINOIS	FED. AID PROJECT	



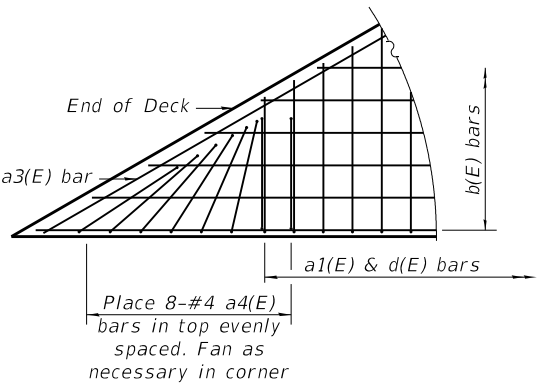
PLAN

MINIMUM BAR LAP

#5 bar = 3'-6"
#6 bar = 4'-10"

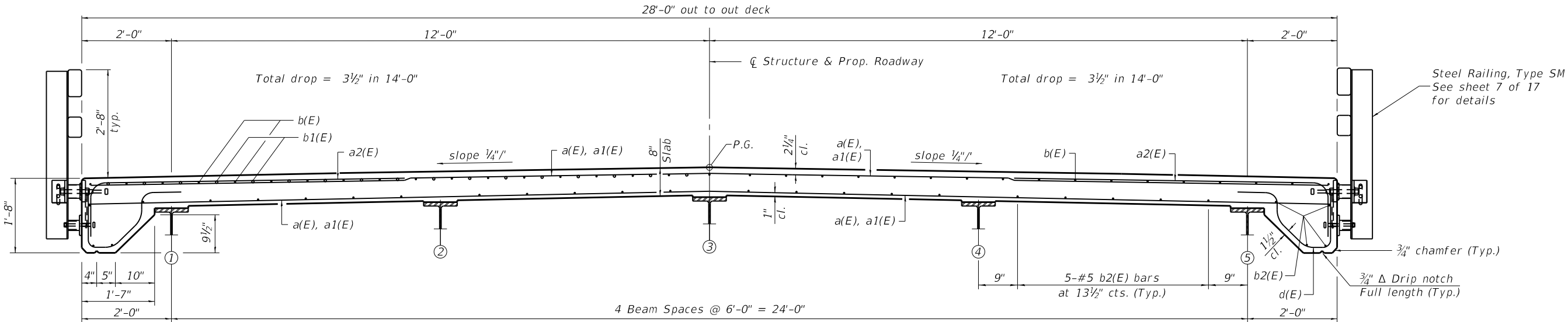
* See Field Cutting Diagram on sheet 6.

Notes:
See sheet 6 for superstructure details,
diaphragm details, and Bill of Material.
Bars indicated thus 20x3-#5 etc. indicates
20 lines of bars with 3 lengths per line.



DETAIL A

(Showing top reinforcement only)



CROSS SECTION

(Looking North)

NEAR PIER

NEAR MIDSPAN

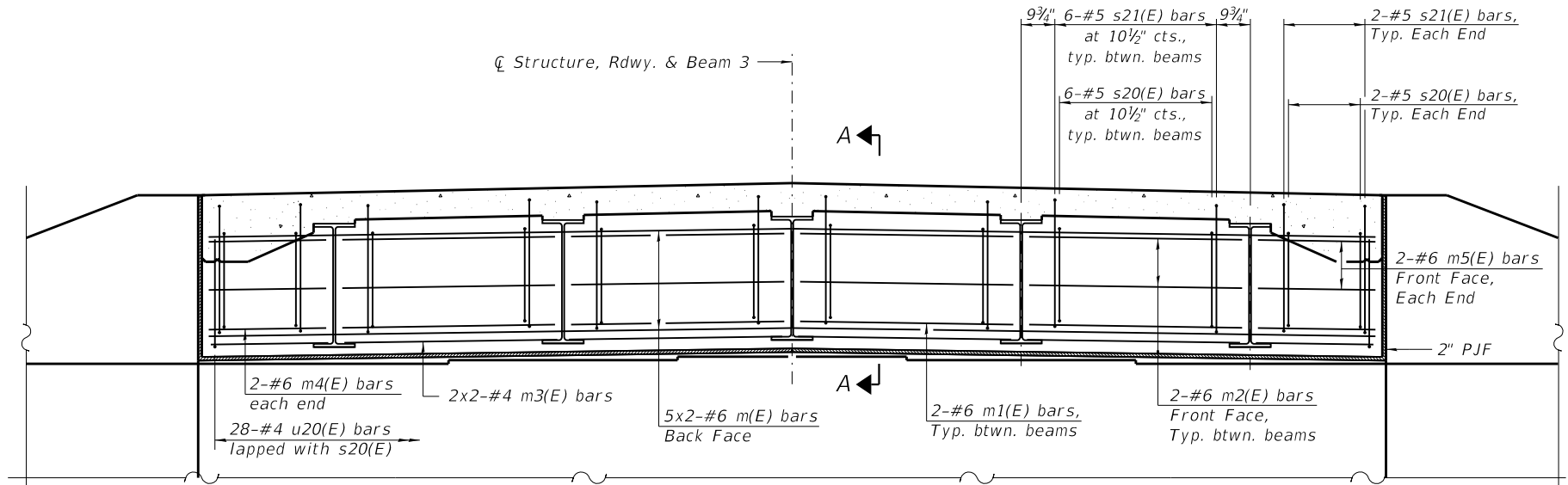
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE
STRUCTURE NO. 023-3277

SHEET 5 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	9
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				

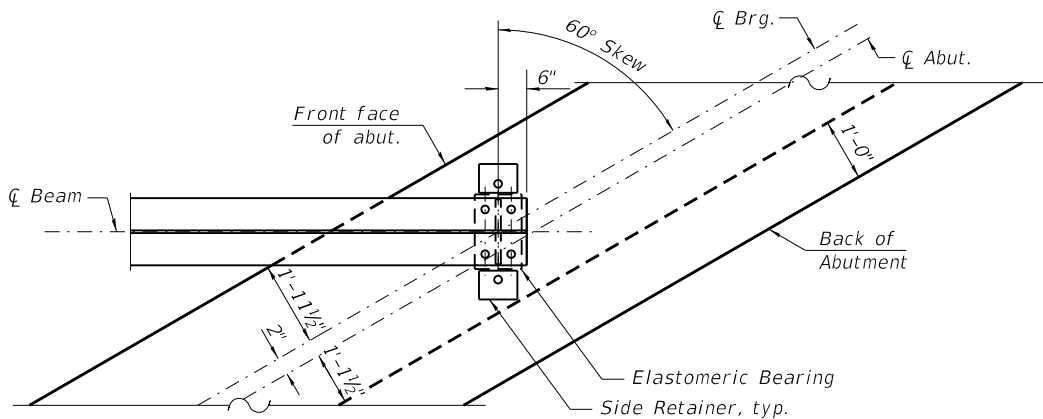
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	CHECKED - TJZ	REVISED -
PLOT SCALE =	DRAWN - JAG	REVISED -
PLOT DATE =	CHECKED - TJZ	REVISED -



DIAPHRAGM AT ABUTMENT

MINIMUM BAR LAP

#4 bar = 2'-5"
#6 bar = 4'-10"

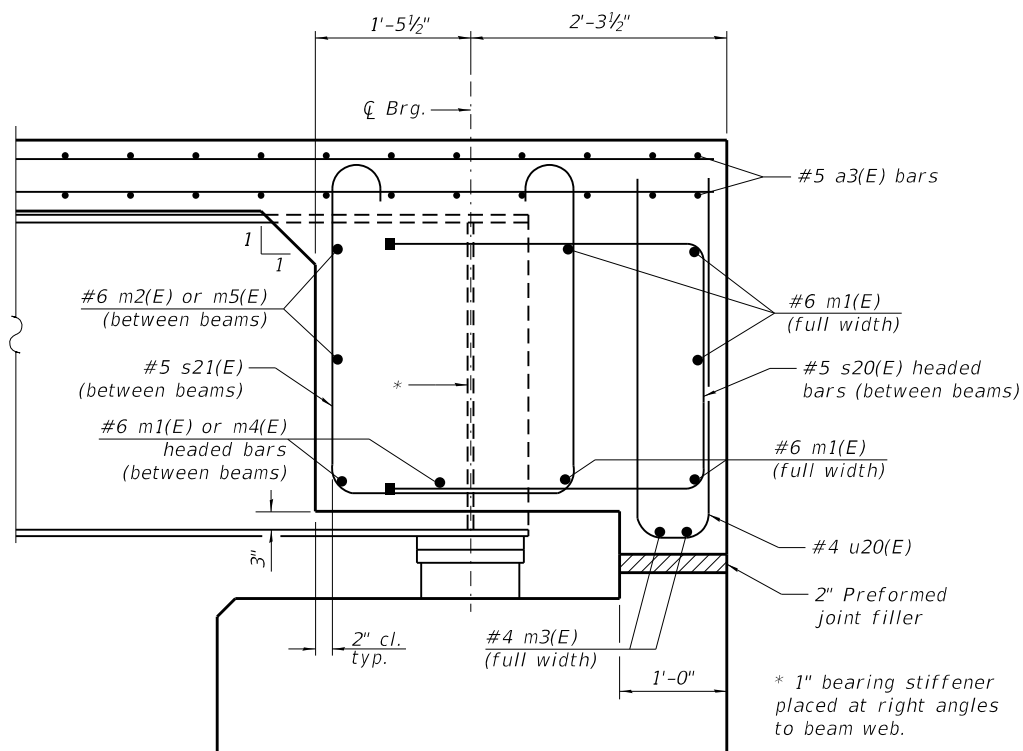


PLAN AT ABUTMENT

(Showing bottom flange of beam)

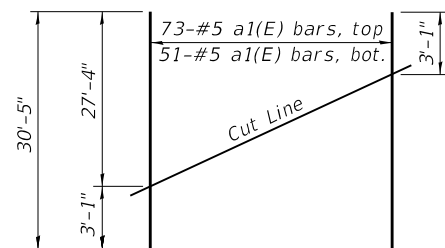
Notes:

Headed bars shall conform to ASTM A970 with threaded attachment; Class HA; and reinforcement bars conforming to ASTM A706. Cost included with Reinforcement Bars, Epoxy Coated.
Bars indicated thus 20x3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
The s20(E), s21(E), and u20(E) bars are placed parallel to beams and spaced at right angles to beams.
Concrete in diaphragm is included with Concrete Superstructure.



SECTION A-A

(Horizontal dimensions are at right angles)

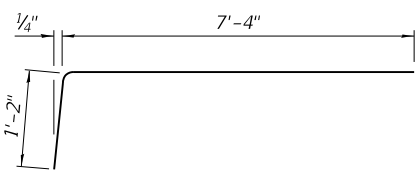


FIELD CUTTING DIAGRAM

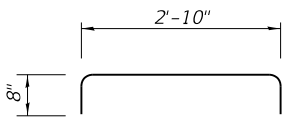
Order a1(E) bars full length.
Cut as shown and use remainder of bars in opposite end of deck.

SUPERSTRUCTURE
BILL OF MATERIAL

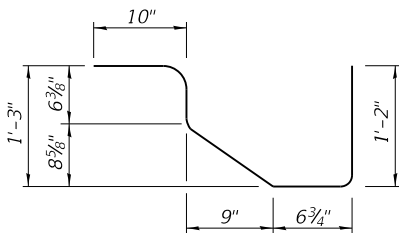
Bar	No.	Size	Length	Shape
a(E)	221	#5	27'-8"	
a1(E)	124	#5	30'-5"	
a2(E)	406	#6	8'-6"	
a3(E)	8	#5	29'-5"	
a4(E)	16	#4	4'-2"	
b(E)	140	#5	27'-6"	
b1(E)	54	#6	30'-11"	
b2(E)	168	#5	23'-5"	
d(E)	406	#5	4'-2"	
m(E)	20	#6	30'-1"	
m1(E)	16	#6	11'-4"	
m2(E)	16	#6	11'-4"	
m3(E)	8	#4	28'-11"	
m4(E)	8	#6	3'-4"	
m5(E)	8	#6	3'-4"	
s20(E)	56	#5	14'-6"	
s21(E)	56	#5	9'-6"	
u20(E)	56	#4	6'-4"	
Protective Coat		Sq. Yd.	440	
Concrete		Cu. Yd.	120.8	
Superstructure		Pound	31,620	
Reinforcement Bars, Epoxy Coated				



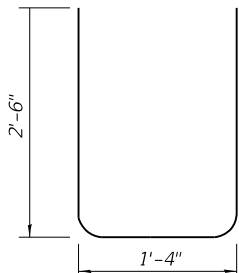
BAR a2(E)



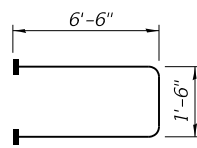
BAR a4(E)



BAR d(E)

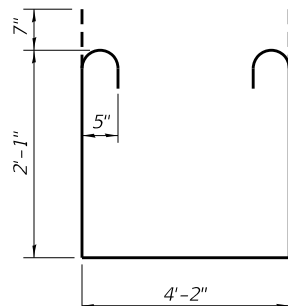


BAR u20(E)



BAR s20(E)

(Headed: 56-#5 Bar Terminators)



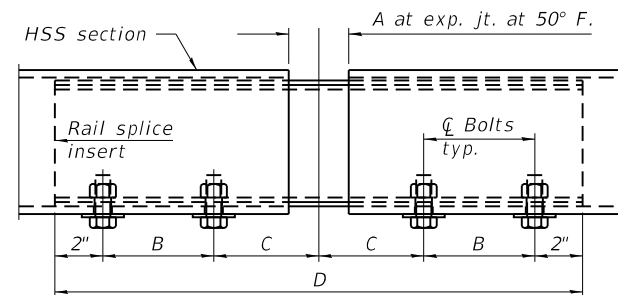
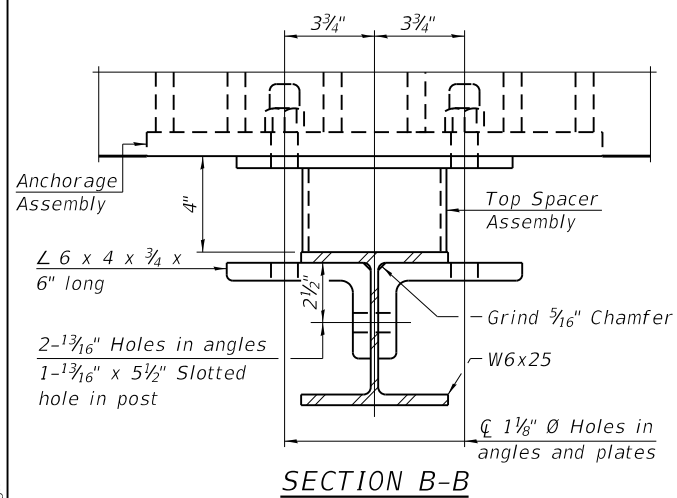
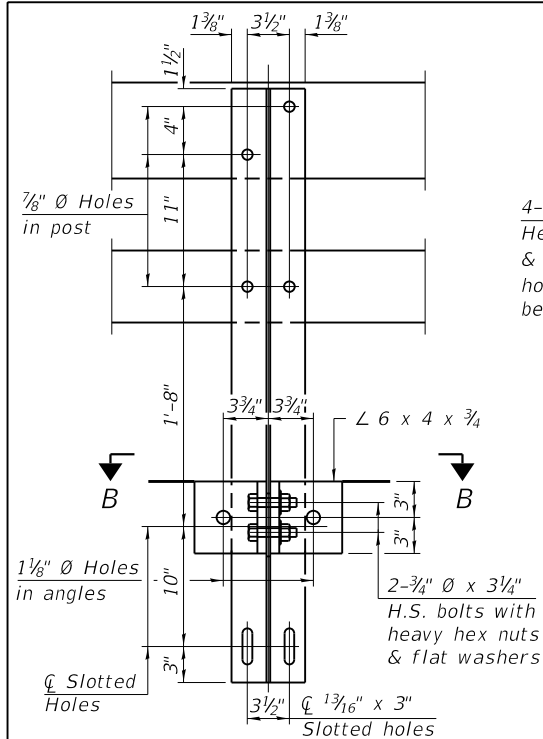
BAR s21(E)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE DETAILS
STRUCTURE NO. 023-3277

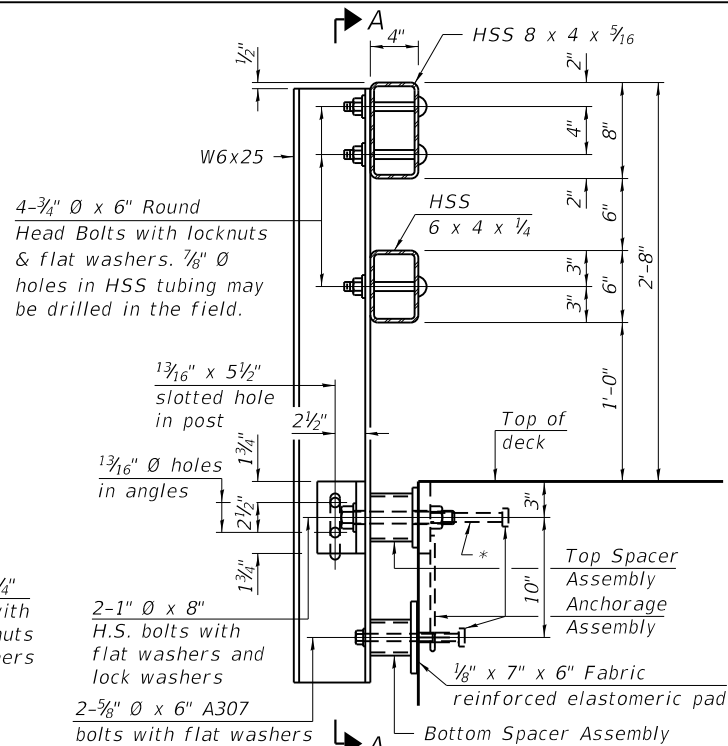
SHEET 6 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	10
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				

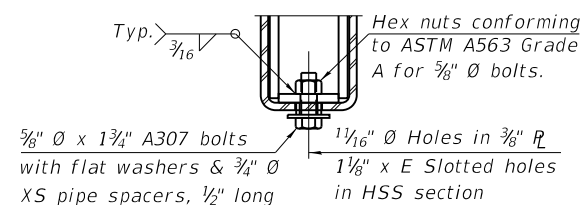
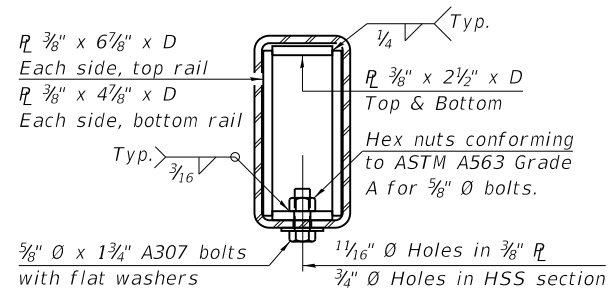


RAILING CRITERIA

MASH 2016 Test Level	2
Railing Weight (plf)	90
Min f'c (psi)	5,000
Max Post Spacing	6'-3"
HMA thickness range (in)	1¼ - 3⅝

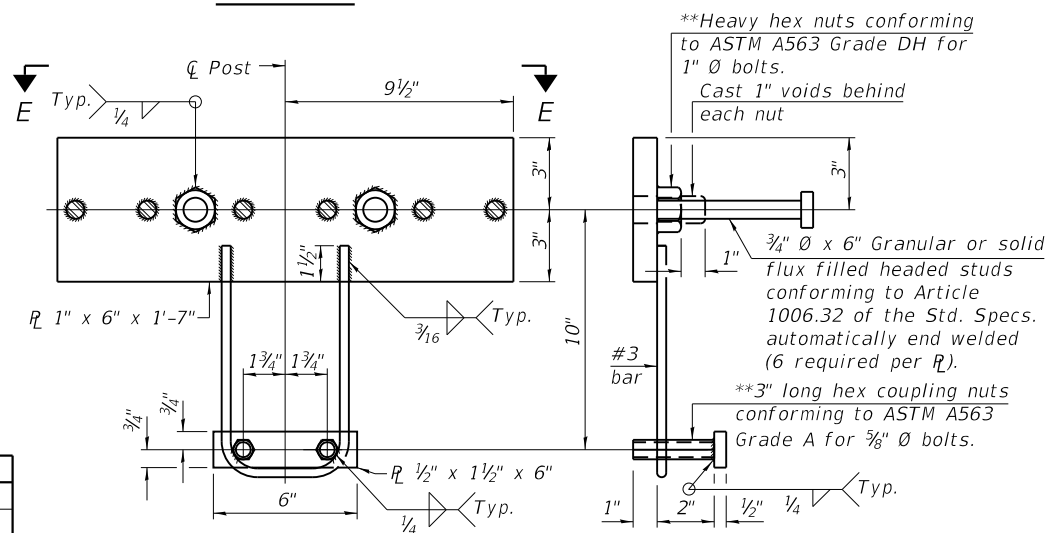
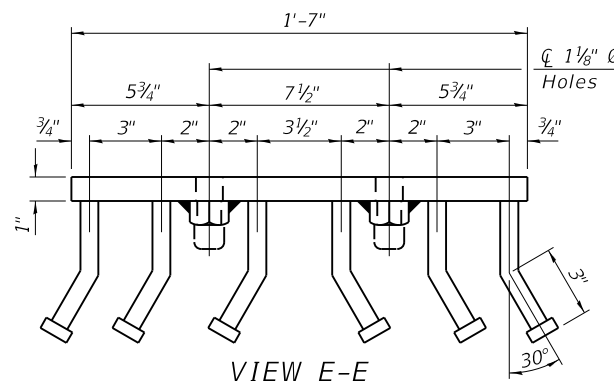
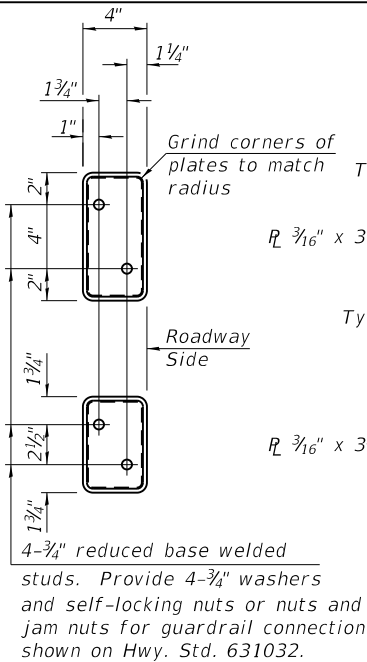


* The outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchorage assembly. The anchorage studs may be bent down $\frac{1}{2}$ " to accommodate the top reinforcement bar placement.

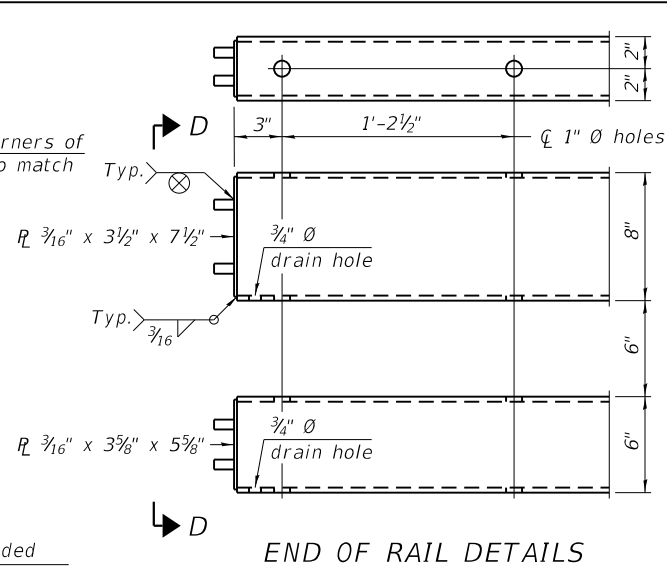


SPLICE DIMENSIONS

Location	T	A	B	C	D	E
All locs. not over exp. jts.	0	1/4"	4"	4"	1'-8"	-
Over Strip Seal Jt.	≤4"	2 1/2"	4 5/8"	4 3/8"	1'-10"	3 1/16"
Over Finger or Modular Jt.	≤9 1/2"	5 1/2"	7 3/8"	7 1/4"	2'-9 1/4"	5 13/16"
Over Finger or Modular Jt.	≤15"	8 1/2"	10 1/2"	10"	3'-8 1/4"	8 1/2"



**** Threaded areas shall be plugged or blocked off during casting of concrete.**



Notes:

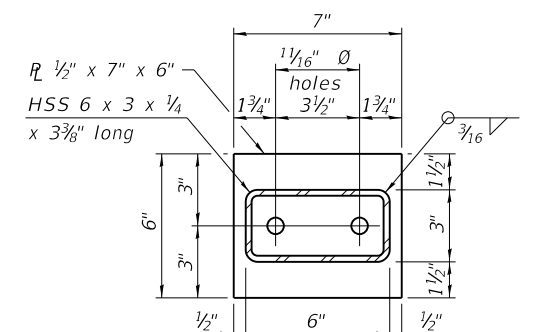
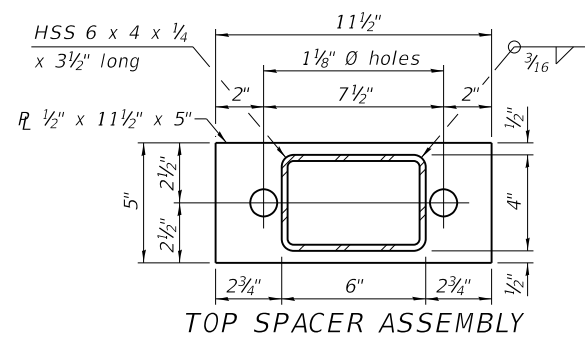
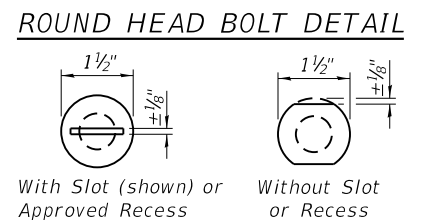
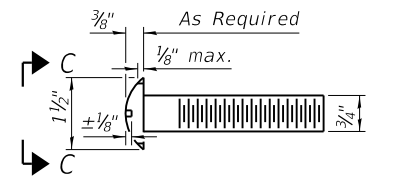
A sufficient number of shims of various thicknesses, sized to fit behind the top spacer assembly, 5" x 11½", and bottom spacer assembly, 6" x 7", shall be provided to adjust posts for proper alignment. If the summation of shims is greater than ¼" (top) or ½" (bottom), longer bolts are required. Cost included with Steel Railing, Type SM.

All steel rail elements including shims shall be galvanized according to Article 509.05 of the Standard Specifications.

All HSS tubing serving as railing shall be CVN tested according to Article 1006.34(b) of the Standard Specifications.

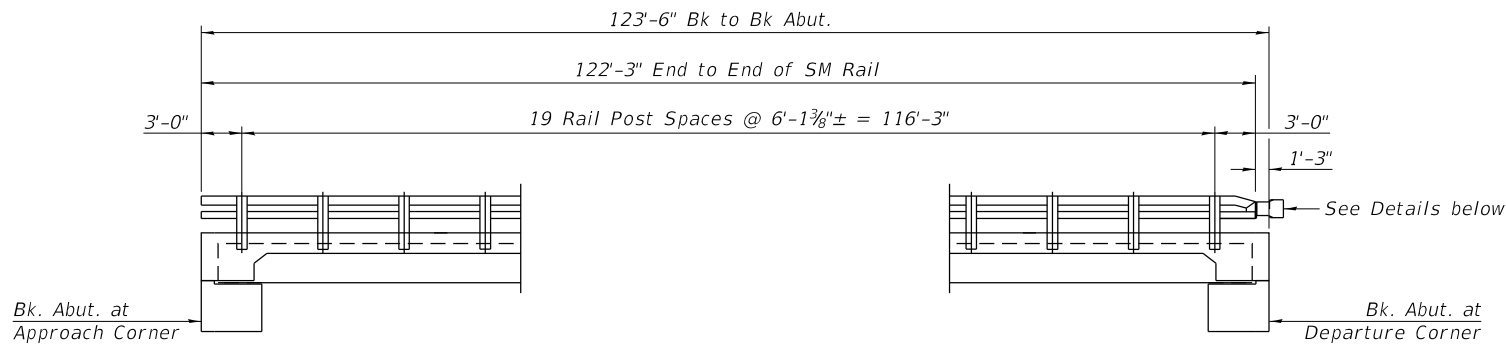
Rail splice inserts may be built out of 2 - $\frac{3}{8}$ " bent plates in lieu of the 4 plate rail splice inserts shown, provided the outside dimensions are matched.

All round head bolts shall be ASTM A307 with locknuts according to ASTM A563 grade A.

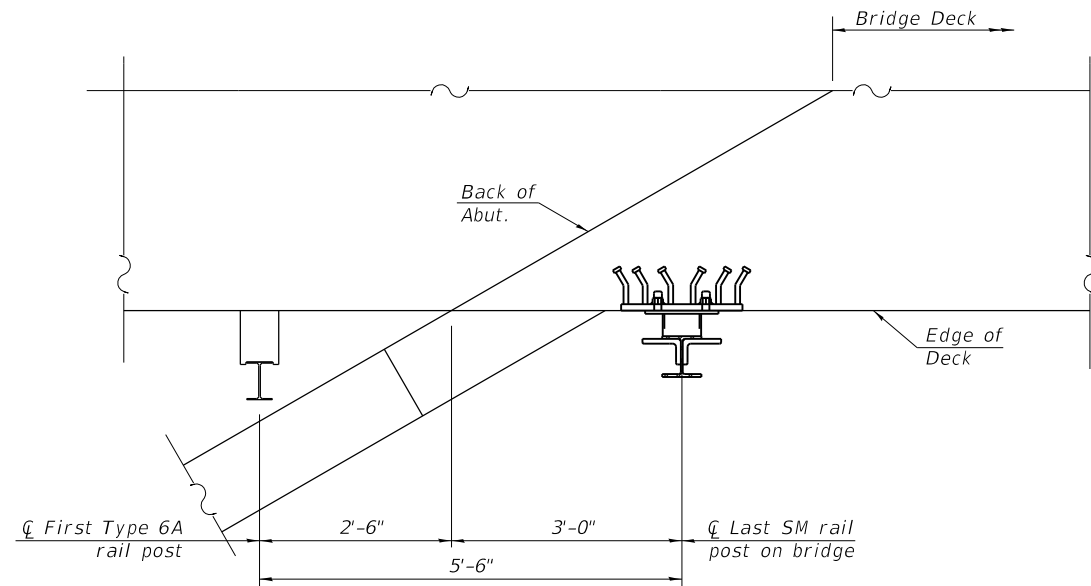


BILL OF MATERIAL

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>
<i>Steel Railing, Type SM</i>	<i>Foot</i>	245

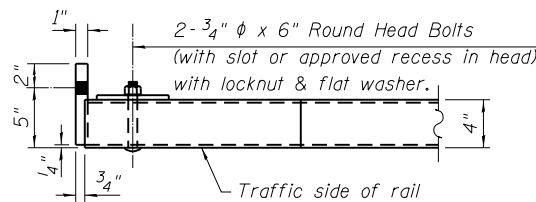
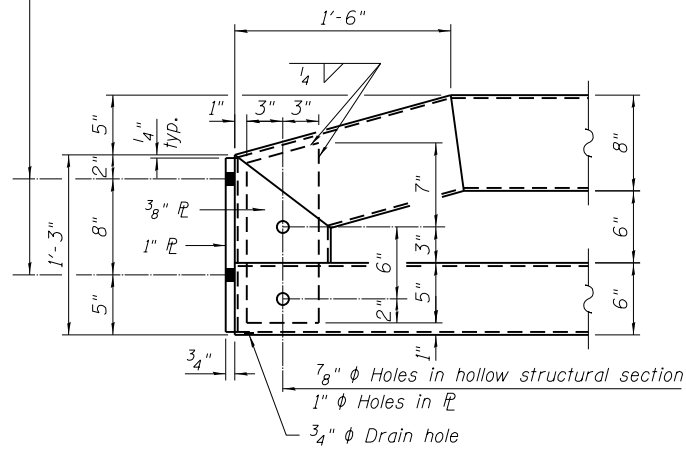


RAIL POST SPACING

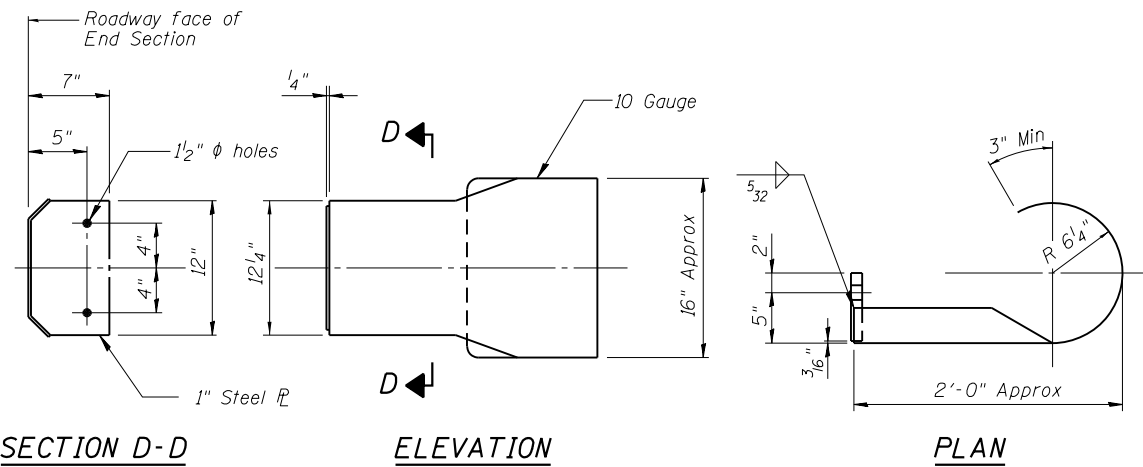


APPROACH CORNER RAILING DETAIL

1 $\frac{1}{8}$ " ϕ Holes for 1" ϕ x 4" Round Head Bolts.
Provide 2 flat washers & locknuts for
End Section Connection.



END OF RAIL DETAILS



DETAILS OF CURLED END SECTION

(Cost included with Steel Railing, Type SM)

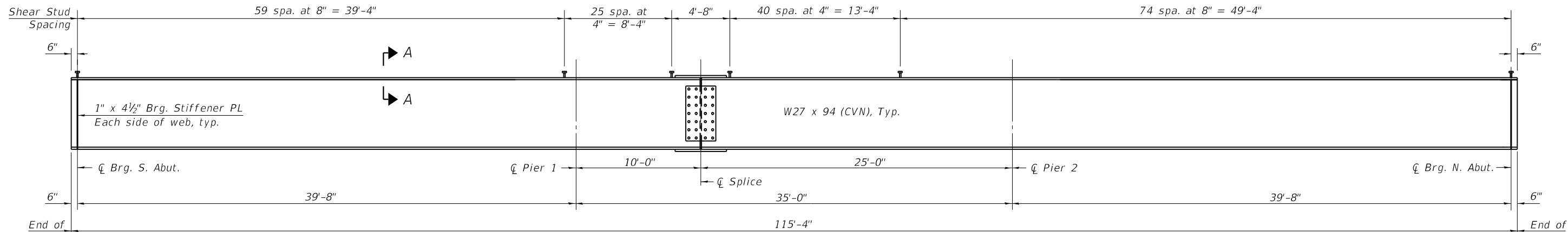
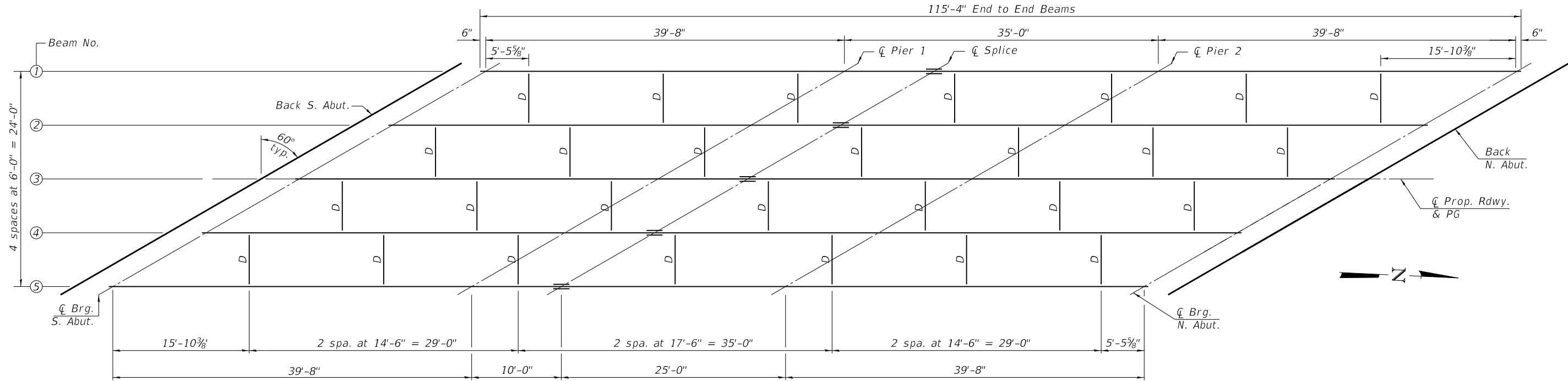
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL RAIL DETAILS
STRUCTURE NO. 023-3277

SHEET 8 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	12
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				

MODEL: 09 Structural Steel
FILE NAME: P:\Effingham\4200 - Edgar Co - CH 16 over Flemington Trib\CAD\Sheet\4200_Plan Sheets.dgn



* TOP OF BEAM ELEVATIONS

Location	CL Brg. S. Abut	CL Pier 1	CL Splice	CL Pier 2	CL Brg. N. Abut
Beam 1	665.90	666.17	666.24	666.40	666.67
Beam 2	665.96	666.23	666.29	666.46	666.73
Beam 3	666.02	666.28	666.35	666.52	666.78
Beam 4	665.82	666.09	666.15	666.32	666.59
Beam 5	665.63	665.89	665.96	666.13	666.39

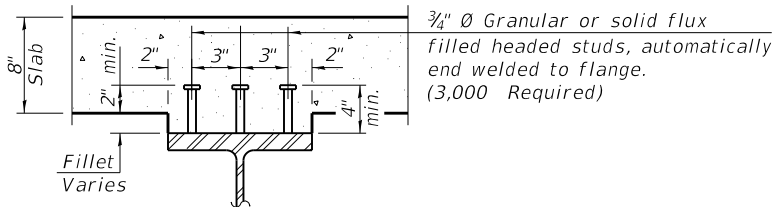
* For Fabrication Only

Notes:

All splice plates, diaphragms and bearing stiffeners shall be ASTM M270, Grade 50W.

Load carrying components designated "CVN" shall conform to the Charpy-V-Notch Impact Testing Requirement, Zone 2.

All diaphragms between beams shall be installed with erection pins and bolts in accordance with the erection plan approved by the Engineer. Individual diaphragms at supports may be temporarily disconnected to install bearing anchor bolts.



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USER NAME =	DESIGNED - JAG	REVISED -
	CHECKED - TJZ	REVISED -
PLOT SCALE =	DRAWN - JAG	REVISED -
PLOT DATE =	CHECKED - TJZ	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL
STRUCTURE NO. 023-3277

SHEET 9 OF 17 SHEETS

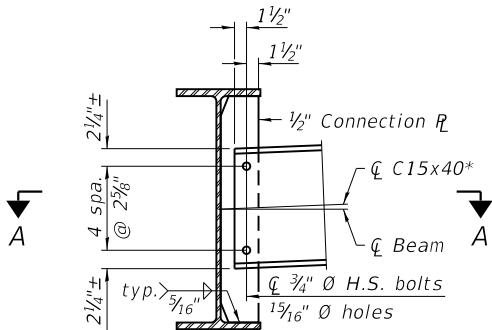
F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	13
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				

MODEL: 10 Structural Steel Details 1
FILE NAME: P:\Effingham\4200 - Edgar Co - CH 16 over Flemington Trib\CAD\Sheet\4200_Plan Sheets.dgn

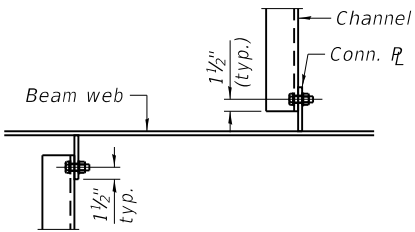
INTERIOR GIRDER MOMENT TABLE				
		0.4 Sp. 1 or 0.6 Sp. 3	Pier 1 & 2	0.5 Sp. 2
I_s	(in ⁴)	3,270	3,270	3,270
$I_c(n)$	(in ⁴)	10,192	—	10,192
$I_c(3n)$	(in ⁴)	7,486	—	7,486
$I_c(cr)$	(in ⁴)	—	4,982	—
S_s	(in ³)	243	243	243
$S_c(n)$	(in ³)	387	—	387
$S_c(3n)$	(in ³)	348	—	348
$S_c(cr)$	(in ³)	—	298	—
S_x	(in ³)	349	279	382
DC1	(k/')	0.822	0.822	0.822
M_{DC1}	('k)	111	-117	8
DC2	(k/')	0.03	0.03	0.03
M_{DC2}	('k)	4	-4	0
DW	(k/')	0.28	0.28	0.28
M_{DW}	('k)	38	-40	2
LLDF		0.605	0.612	0.619
$M_{\ell + IM}$	('k)	351	-269	258
f_t (Strength I)	(ksi)	10	-10	10
$M_u + \frac{1}{3} f_t S_x$	('k)	912	-760	571
$\phi_r M_n$	('k)	1,981	—	2,088
f_s DC1	(ksi)	5.5	-5.8	0.4
f_s DC2	(ksi)	0.1	-0.2	0.0
f_s DW	(ksi)	1.3	-1.6	0.1
f_s ($\ell + IM$)	(ksi)	10.9	-10.8	8.0
f_t (Service II)	(ksi)	10.0	-10.0	10.0
$f_s + \frac{f_t}{2}$ (Service II)	(ksi)	26.1	-26.6	15.9
Service II Resistance	(ksi)	47.5	-47.5	47.5
$f_s + \frac{f_t}{3}$ (Strength I)	(ksi)	—	-32.1	—
$\phi_r F_n$	(ksi)	—	-50.0	—
V_f	(k)	27.3	23.6	21.8

INTERIOR GIRDER REACTION TABLE		
	S. Abut. & N. Abut	Piers 1 & 2
LLDF	0.6706	0.6706
OCF	1.346	—
R_{DC1}	(k) ***28.6	33.8
R_{DC2}	(k) 0.5	1.2
R_{DW}	(k) 4.6	11.5
R_{ℓ}	(k) 56.2	63.5
R_{IM}	(k) 16.2	15.2
R_{Total} (Strength I)(Impact)	(k) 170.0	198.7
R_{Total} (Strength I)(No Impact)	(k) 141.6	172.2

*** Includes Concrete Diaphragm Weight



Notes:
Two hardened washers required for each set of oversized holes.
*Alternate channels of equal depth and larger weight are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.
The alternate, if utilized, shall be provided at no additional cost to the County.



SECTION A-A

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in.⁴ and in.³).

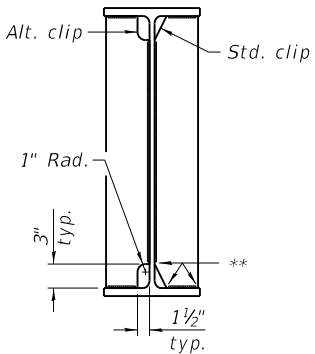
$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.⁴ and in.³).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.⁴ and in.³).

$I_c(cr), S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.⁴ and in.³).

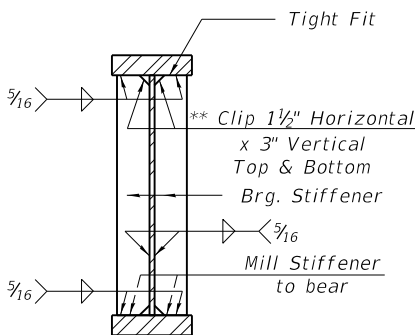
S_x : Section modulus about the major axis of a section to the controlling flange, tension or compression, taken as yield moment with respect to the controlling flange over the yield strength of the controlling flange (in.³).

DC1: Un-factored non-composite dead load (kips/ft.).
 M_{DC1} : Un-factored moment due to non-composite dead load (kip-ft.).
DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
 M_{DC2} : Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
 M_{DW} : Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
LLDF: Live Load Distribution Factor for moment and shear computed according to Article 4.6.2.2 and further IDOT provisions.
 $M_{\ell + IM}$: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).
 M_u : Strength I load combination of factored design moments (kip-ft.).
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{\ell + IM}$
 f_{ℓ} : Factored calculated flange lateral bending stress as calculated using Article 6.10.1.6 and as further simplified by IDOT provisions (ksi).
 $\phi_r M_n$: Factored nominal flexural resistance of the section determined as specified in Article 6.10.7.1 or A6 as applicable (kip-ft.).
 f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).
 M_{DC1} / S_s
 f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).
 $M_{DC2} / S_c(3n)$ or $M_{DC2} / S_c(cr)$ as applicable.
 f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).
 $M_{DW} / S_c(3n)$ or $M_{DW} / S_c(cr)$ as applicable.



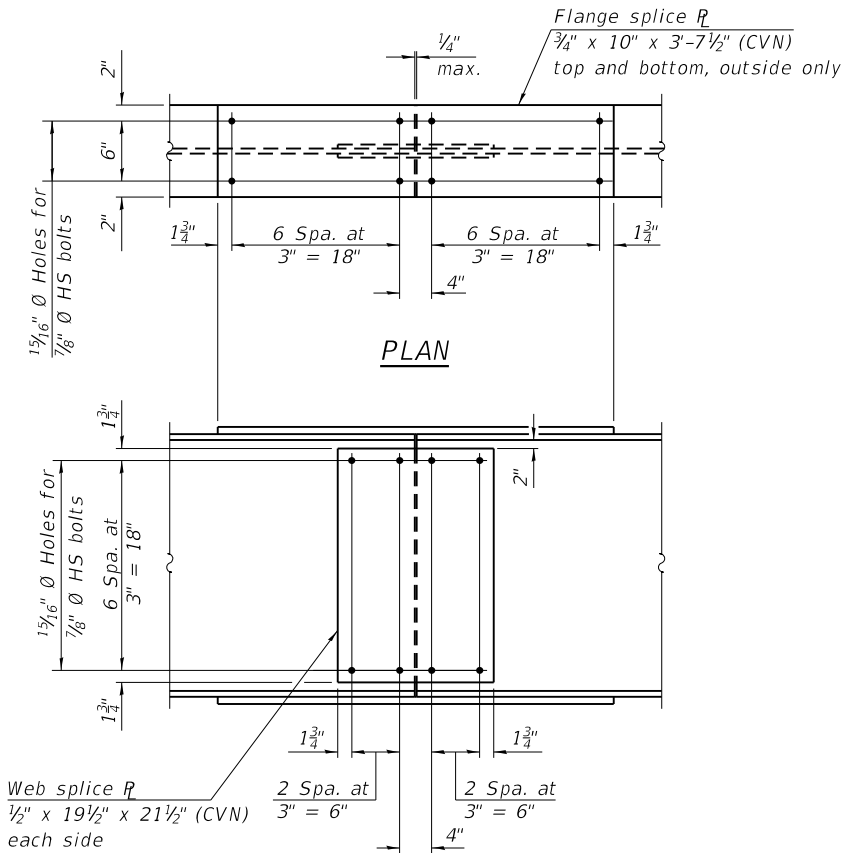
WELD LIMITS AND CLIP DETAILS

** Stop welds 1/4" ($\pm 1/8$ ") from edges as shown.
Typical.



BEARING STIFFENER
AT ABUTMENT

f_s ($\ell + IM$): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).
 $M_{\ell + IM} / S_c(n)$ or $M_{\ell + IM} / S_c(cr)$ as applicable.
 $f_s + f_t / 2$ (Service II): Sum of stresses as computed below (ksi).
 f_s DC1 + f_s DC2 + f_s DW + 1.3 f_s ($\ell + IM$) + $f_t / 2$
Service II Resistance: Composite (0.95 $R_n F_{yf}$) or noncomposite (0.80 $R_n F_{yf}$) stress capacity according to Article 6.10.4.2 (ksi).
 $f_s + f_t / 3$ (Strength I): Sum of stresses as computed below on non-compact sections (ksi).
 $1.25 (f_s$ DC1 + f_s DC2) + 1.5 f_s DW + 1.75 f_s ($\ell + IM$) + $f_t / 3$
 $\phi_r F_n$: Factored nominal flexural resistance of the section as specified in Article 6.10.7.2 or 6.10.8 as applicable (ksi).
 V_f : Maximum factored shear range in span computed according to Article 6.10.10.
OCF: Obtuse Correction Factor according to Article 4.6.2.2.3c or as further simplified by IDOT provisions.
 R_{DC1} : Un-factored reaction due to non-composite dead load (kip).
 R_{DC2} : Un-factored reaction due to long-term composite (superimposed excluding future wearing surface) dead load (kip).
 R_{DW} : Un-factored reaction due to long-term composite (superimposed future wearing surface only) dead load (kip).
 R_{ℓ} : Un-factored live load reaction (kip).
 R_{IM} : Un-factored dynamic load allowance (impact) (kip).
 R_{Total} (Strength I)(Impact): Strength I load combination of factored design reactions (kip).
 $1.25 (R_{DC1} + R_{DC2}) + 1.5 R_{DW} + 1.75 (R_{\ell} + R_{IM})$
 R_{Total} (Strength I)(No Impact): Strength I load combination of factored design reactions, not including dynamic load allowance (Impact) (kip).
 $1.25 (R_{DC1} + R_{DC2}) + 1.5 R_{DW} + 1.75 (R_{\ell})$



ELEVATION

SPICE DETAIL

(5 Required)

Notes:
All splices are symmetrical about ℓ splice.
H.S. bolts shall be 7/8" ϕ ASTM A325, Type 3.
Load carrying components designated "CVN" shall conform to the Charpy-V-Notch Impact Testing Requirement, Zone 2.



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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS
STRUCTURE NO. 023-3277

SHEET 10 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	14
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				

(Shown at Abutment, Pier 2 Similar)

SECTION A-A

ELEVATION AT PIER 1

SECTION B-B

TYPE I ELASTOMERIC EXP. BRG.

(15 Required)

BEARING ASSEMBLY

Note:
Shim plates shall not be placed
under bearing assembly.

SIDE RETAINER

*Equivalent rolled angle with stiffeners
will be allowed in lieu of welded plates.*

PINTLE

FIXED BEARING

(5 Required)

Notes:

Side retainers and stainless steel plates shall be included in the cost of Elastomeric Bearing Assembly, Type I.

Anchor bolts and side retainers at all supports shall be installed as each member is erected unless an equivalent temporary means of lateral restraint is used.

Two 1/8" adjusting shims shall be provided for each bearing in addition to all other plates or shims an placed as shown on Bearing Details.

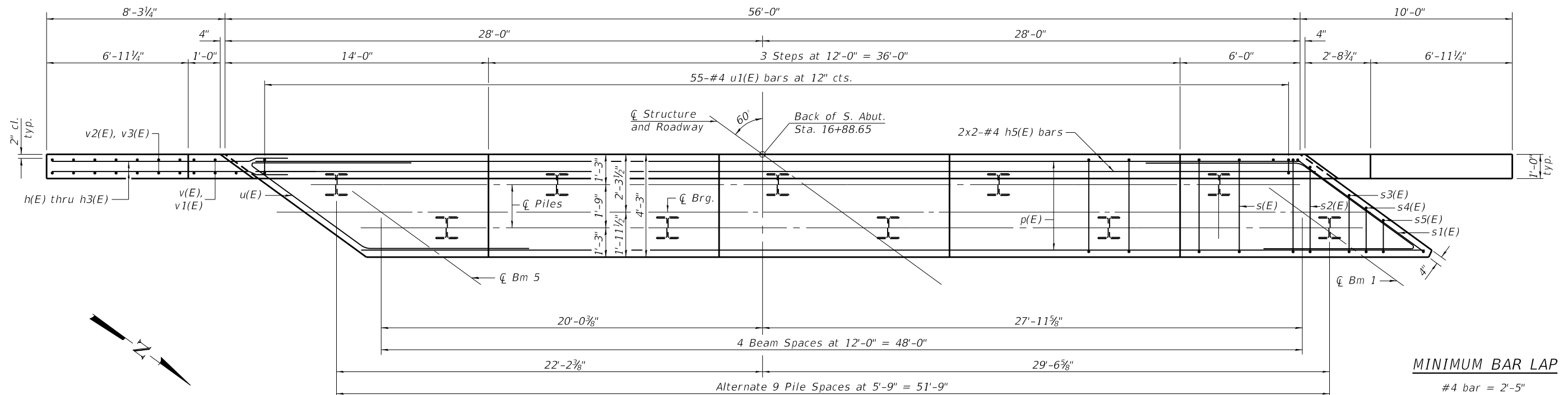
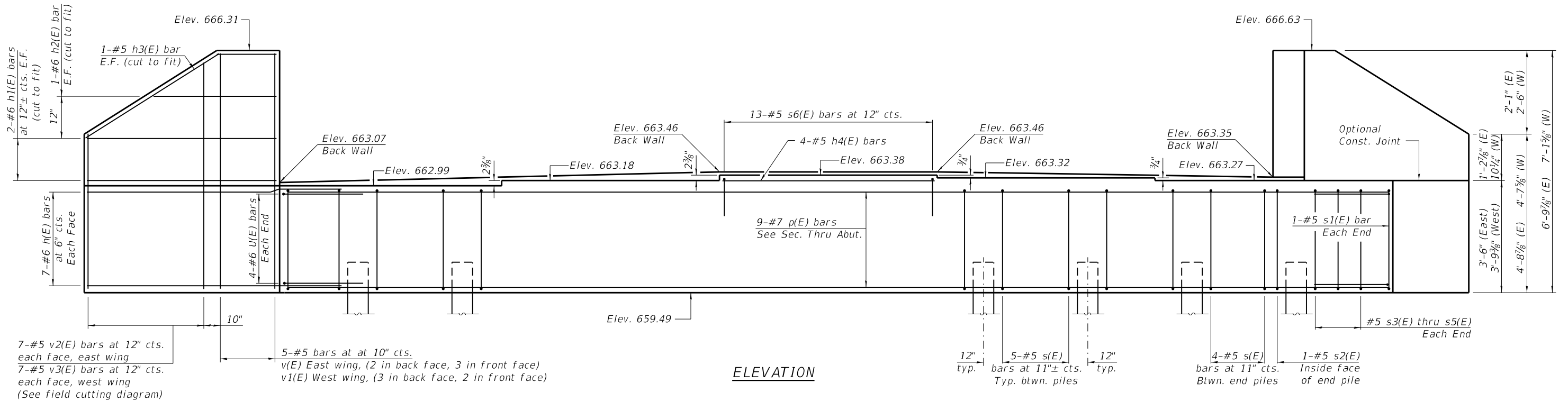
Structural steel plates and pintles shall conform to the requirements of AASHTO M270, Grade 50W.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

BILL OF MATERIAL

<i>Item</i>	<i>Unit</i>	<i>Total</i>
Elastomeric Bearing Assembly Type I	Each	15
Anchor Bolts. 3/4"	Each	40

MODEL: 12 South Abutment
FILE NAME: P:\Effingham\4200 - Edgar Co - CH 16 over Flemington Trib\CAD\Sheet\4200_Plan Sheets.dgn

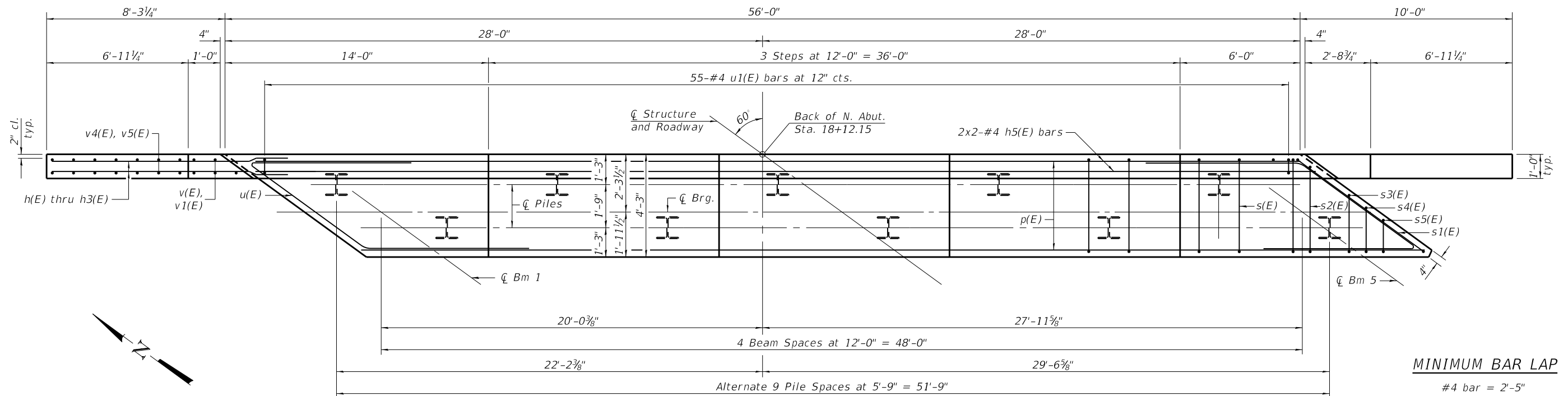
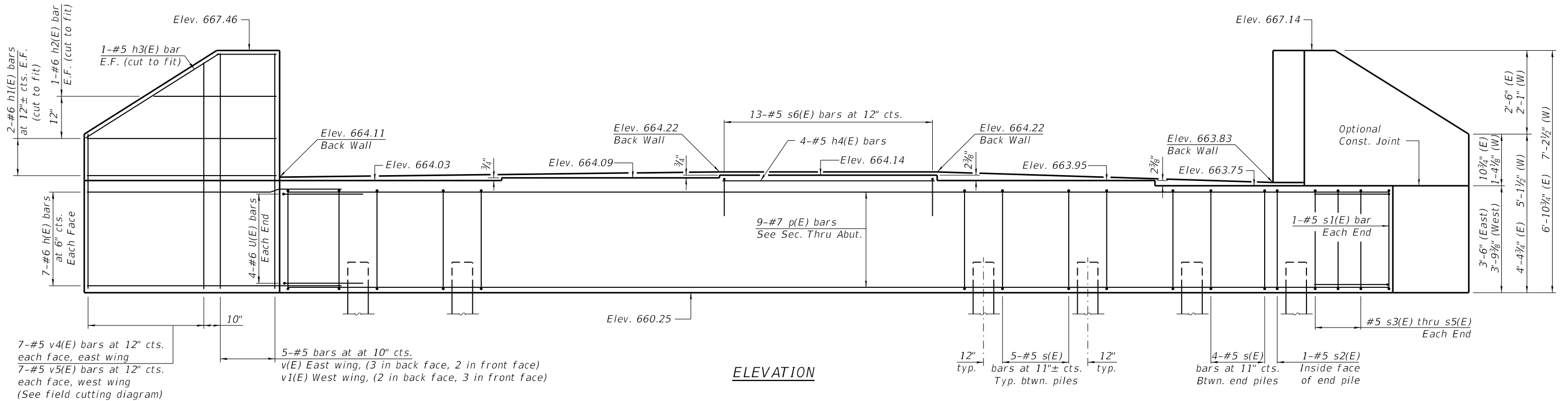


MINIMUM BAR LAP
#4 bar = 2'-5"

Note:
Work this sheet with sheet 14 of 17.

 CIVIL DESIGN, INC. WBE DBE EFFINGHAM, IL LICENSE #184.003222	USER NAME =	DESIGNED – JAG	REVISED –	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SOUTH ABUTMENT STRUCTURE NO. 023-3277	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CHECKED – TJZ	REVISED –			1680	17-00134-00-BR	EDGAR	22	16
	PLOT SCALE =	DRAWN – JAG	REVISED –			CONTRACT NO. 91631				
	PLOT DATE =	CHECKED – TJZ	REVISED –			ILLINOIS FED. AID PROJECT				
SHEET 12 OF 17 SHEETS										

MODEL: 13 North Abutment
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Note:
Work this sheet with sheet 14 of 17.

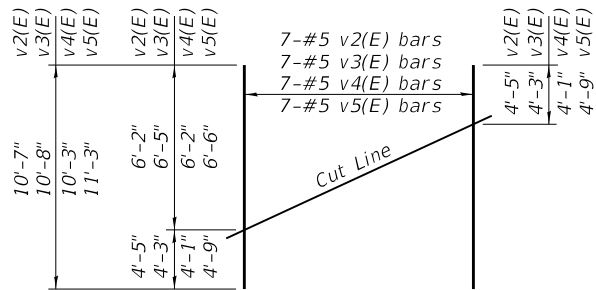
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	PLOT DATE =	CHECKED - TJZ	REVISED -			ILLINOIS FED. AID PROJECT				
						SHEET 13 OF 17 SHEETS				

PILE DATA – S. ABUT.

Type: HP14x73
Nominal Required Bearing: 288 k
Factored Resistance Available: 158 k
Est. Length: 44 ft.
No. Production Piles: 9
No. Test Piles: 1

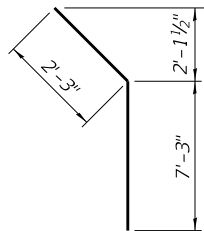
PILE DATA – N. ABUT.

Type: HP14x73
Nominal Required Bearing: 226 k
Factored Resistance Available: 124 k
Est. Length: 44 ft.
No. Production Piles: 9
No. Test Piles: 1

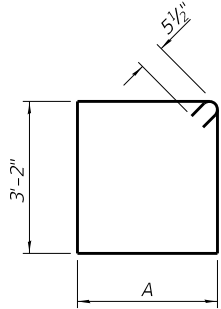


FIELD CUTTING DIAGRAM

Order v2(E) thru v5(E) full length. Cut as shown and use remainder of bars in opposite face.

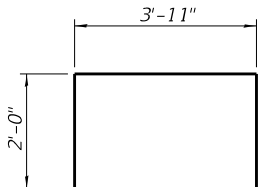


BAR h3(E)

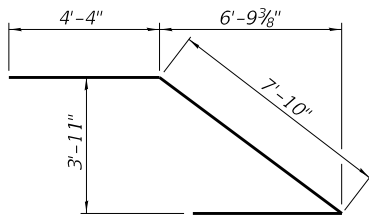


BAR s(E)
THRU s5(E)

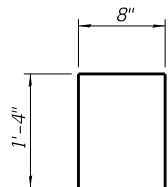
Bar	A
s(E)	3'-11"
s1(E)	7'-9"
s2(E)	3'-7"
s3(E)	2'-5"
s4(E)	1'-10"
s5(E)	1'-3"



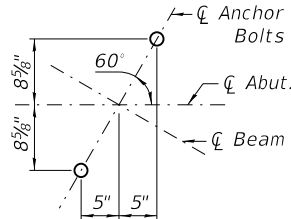
BAR s6(E)



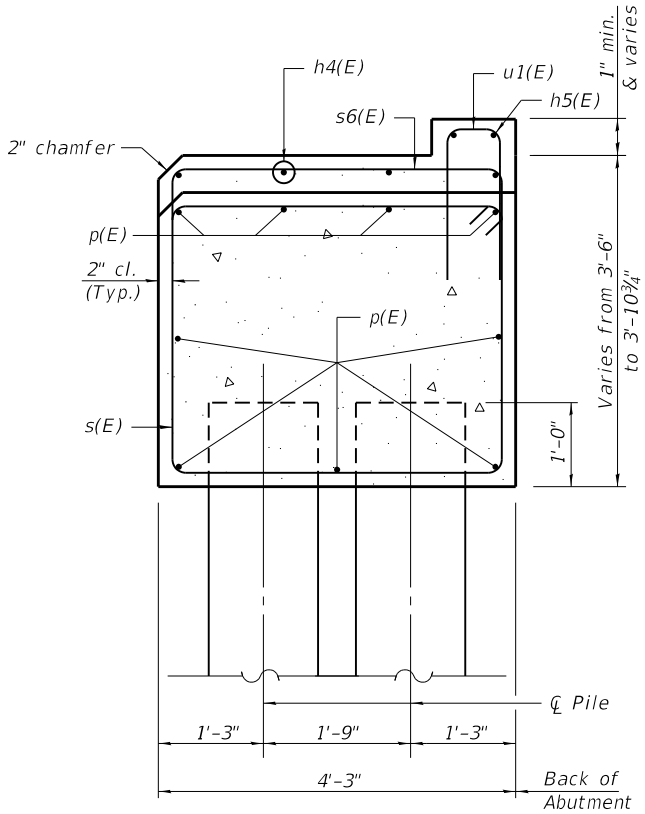
BAR u(E)



BAR u1(E)



ANCHOR BOLT LAYOUT



SEC. THRU ABUT.

BILL OF MATERIAL
2 ABUTMENTS

Bar	No.	Size	Length	Shape
h(E)	56	#6	13'-8"	—
h1(E)	16	#6	9'-0"	—
h2(E)	8	#6	5'-9"	—
h3(E)	8	#5	9'-6"	—
h4(E)	8	#5	11'-8"	—
h5(E)	8	#4	29'-1"	—
p(E)	18	#7	55'-8"	—
s(E)	86	#5	15'-1"	□
s1(E)	4	#5	22'-9"	□
s2(E)	4	#5	14'-5"	□
s3(E)	4	#5	12'-1"	□
s4(E)	4	#5	10'-11"	□
s5(E)	4	#5	9'-9"	□
s6(E)	26	#5	7'-11"	□
u(E)	16	#6	16'-6"	—
u1(E)	110	#4	3'-4"	□
v(E)	10	#5	6'-5"	—
v1(E)	10	#5	6'-9"	—
v2(E)	7	#5	10'-7"	—
v3(E)	7	#5	10'-8"	—
v4(E)	7	#5	10'-3"	—
v5(E)	7	#5	11'-3"	—
Protective Coat			Sq. Yd.	14
Structure Excavation			Cu. Yd.	243
Concrete Structures			Cu. Yd.	74.4
Reinforcement Bars, Epoxy Coated			Pound	6,770
Furnishing Steel Piles HP14x73			Foot	792
Driving Piles			Foot	792
Test Pile Steel HP14x73			Each	2

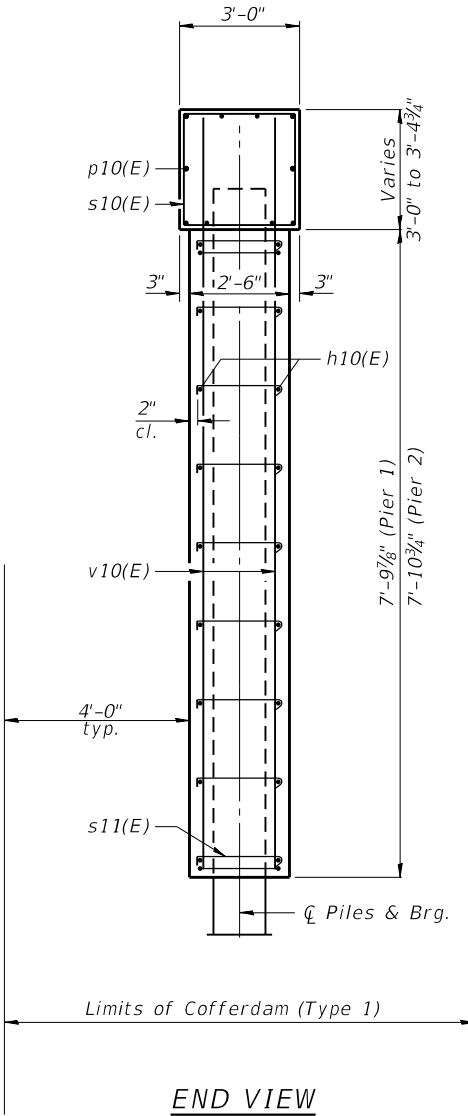
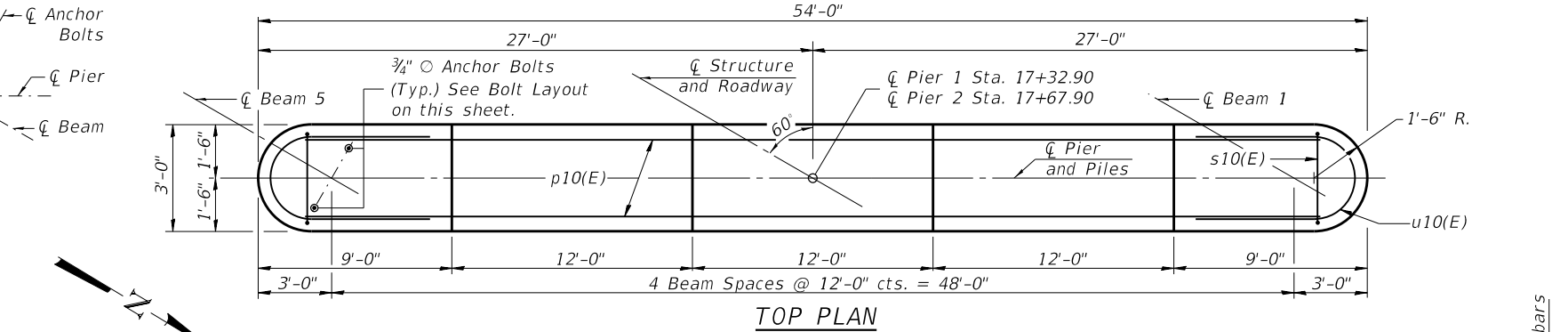
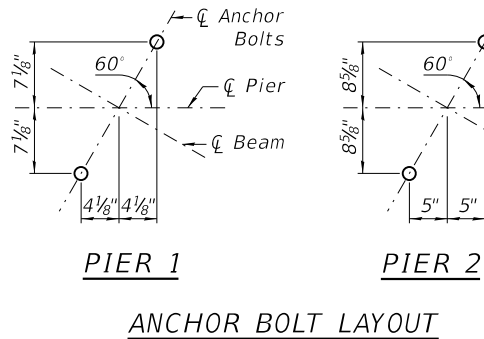
Notes:

Pour steps monolithically with cap.

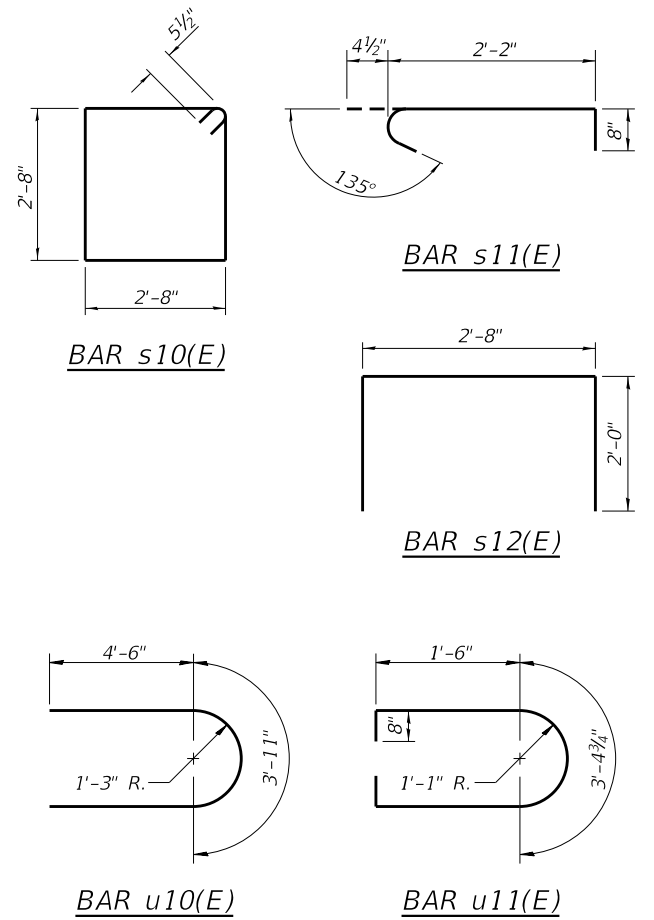
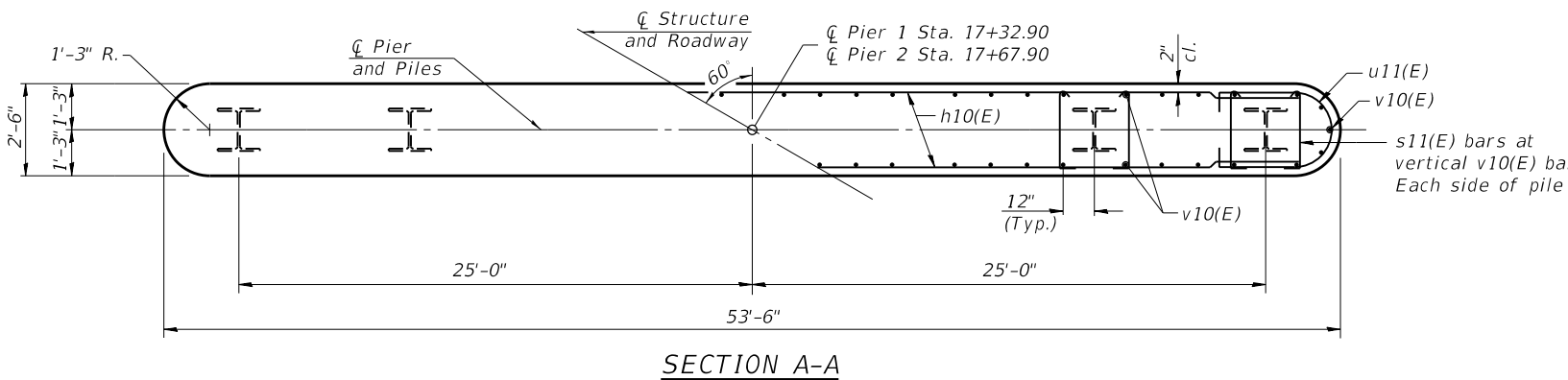
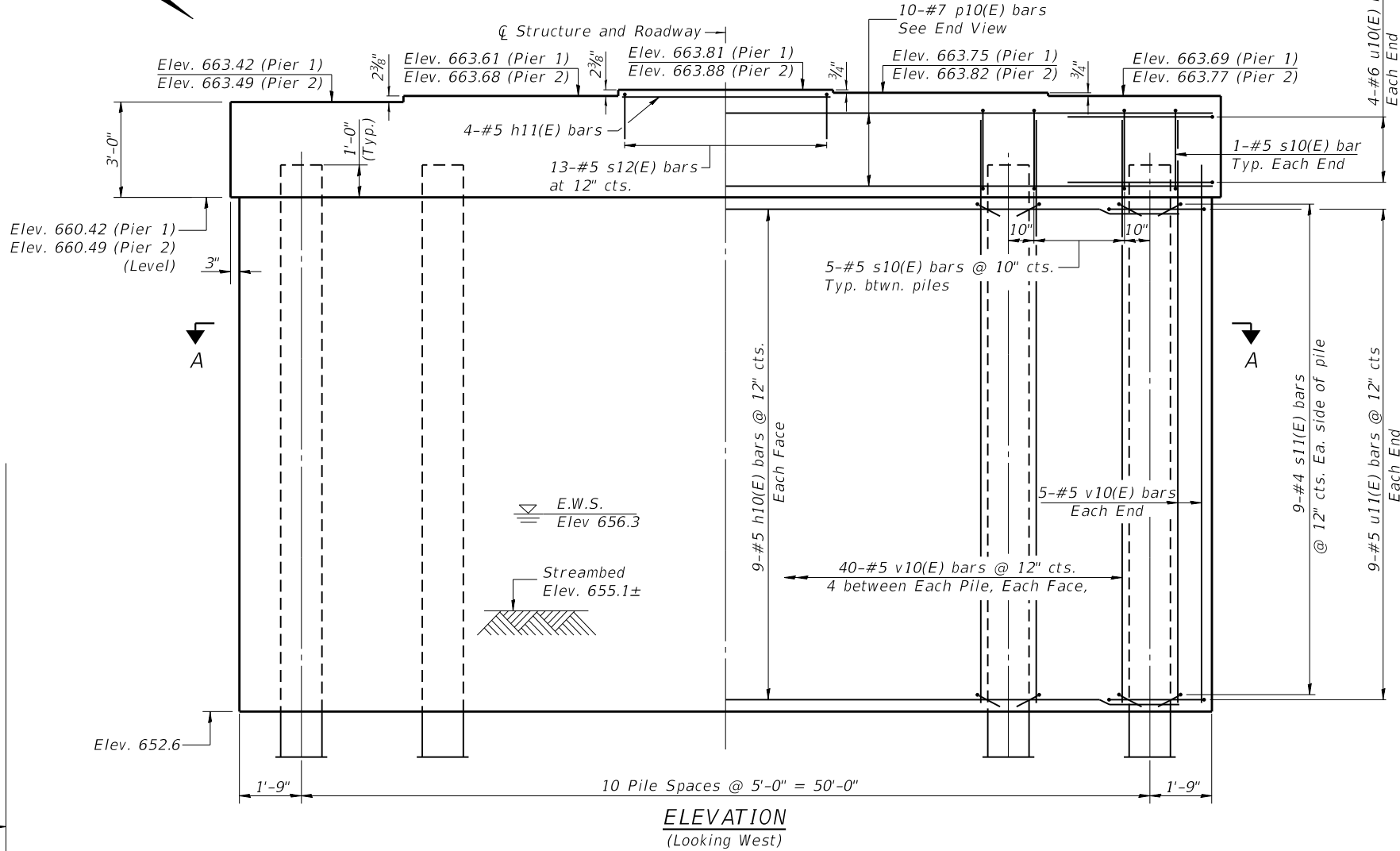
For details of piles, see sheet 16 of 17.

Space reinforcement in cap to miss anchors bolts. See Anchor Bolt Layout.

MODEL: 15 Pier Details
FILE NAME: P:\Effingham\4200 - Edgar Co - CH 16 over Flemington Trib\CAD\Sheet\4200_Plan Sheets.dgn



PILE DATA
Type: HP14x73
Nominal Required Bearing: 245 k
Factored Resistance Available: 135 k
Est. Length: 47 ft.
No. Production Piles: 20 (10 at each Pier)
No. Test Piles: 2 (1 at each Pier)



**BILL OF MATERIAL
2 PIERS**

Bar	No.	Size	Length	Shape
h10(E)	36	#5	50'-9"	—
h11(E)	8	#5	11'-8"	—
p10(E)	20	#7	50'-9"	—
s10(E)	104	#5	11'-7"	□
s11(E)	396	#4	3'-3"	U
s12(E)	26	#5	6'-8"	U
u10(E)	16	#6	12'-11"	U
u11(E)	36	#5	8'-1"	U
v10(E)	180	#5	10'-4"	—
Cofferdam Excavation				Cu. Yd. 167
Cofferdam (Type 1) (Location-1)				Each 1
Cofferdam (Type 1) (Location-2)				Each 1
Concrete Structures				Cu. Yd. 115.6
Reinforcement Bars, Epoxy Coated				Pound 8,930
Furnishing Steel Piles HP14x73				Foot 940
Driving Piles				Foot 940
Test Pile Steel HP14x73				Each 2

Notes:
Space reinforcement in cap to miss anchor bolts.
Pour steps monolithically with cap.
For details of piles, see sheet 16 of 17.



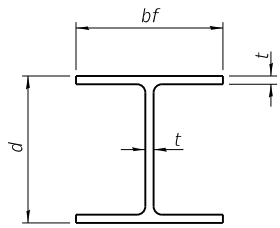
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIERS
STRUCTURE NO. 023-3277

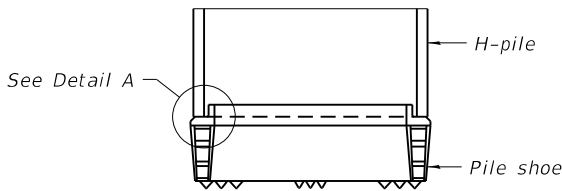
SHEET 15 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	19
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				

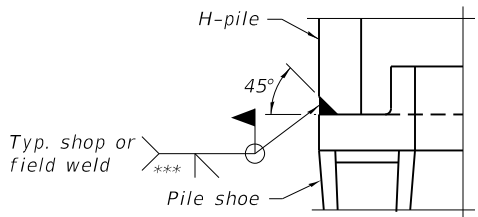


STEEL PILE TABLE

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"



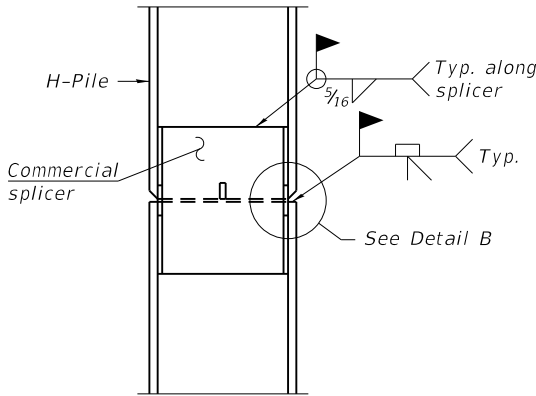
ELEVATION



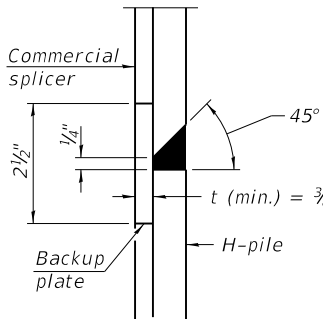
DETAIL A

SHOE ATTACHMENT

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

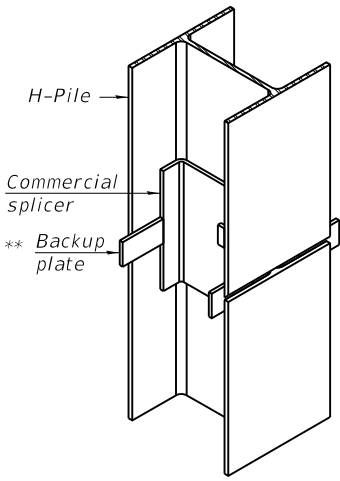


ELEVATION

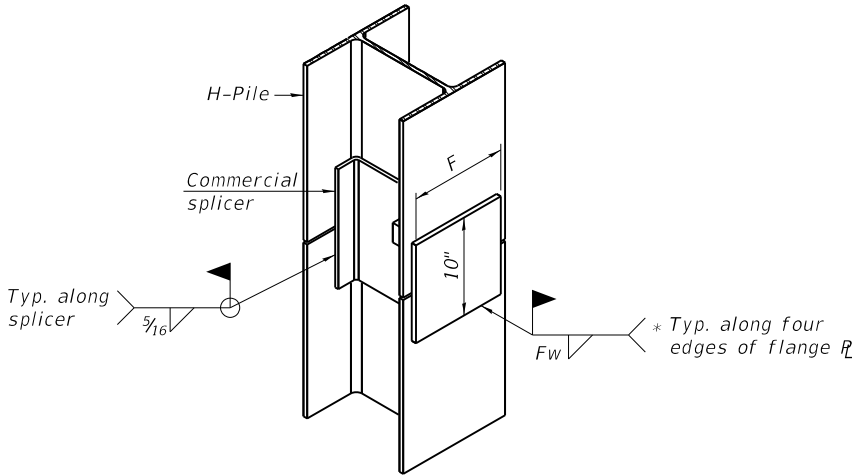


DETAIL "B"

WELDED COMMERCIAL SPLICE



ISOMETRIC VIEW



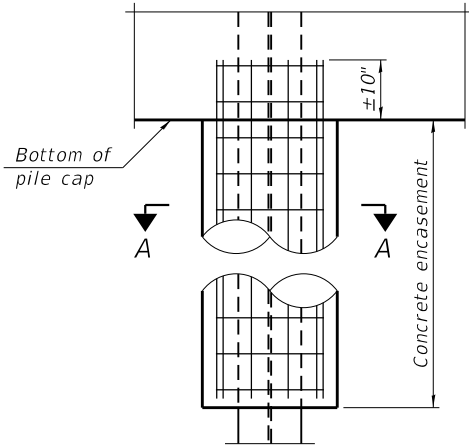
ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

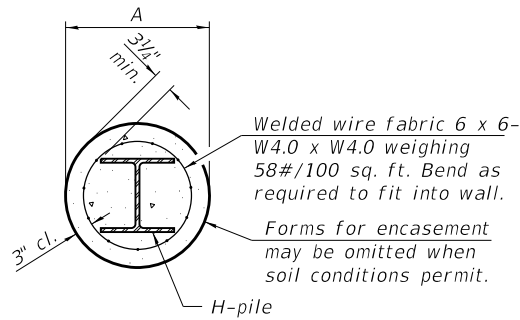
* Interrupt welds 1/4" from end of web and/or each flange.

** Remove portions of backup plates that extend outside the flanges.

*** Weld size per pile shoe manufacturer (5/16" min.).

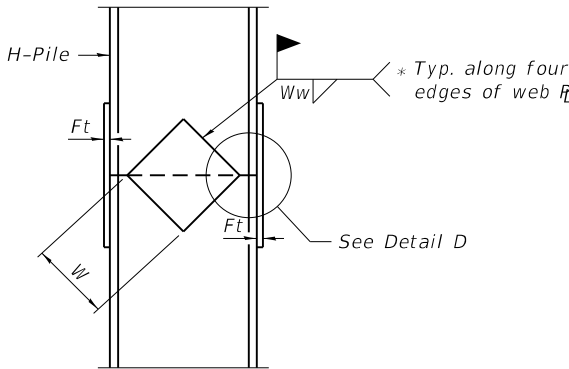


ELEVATION

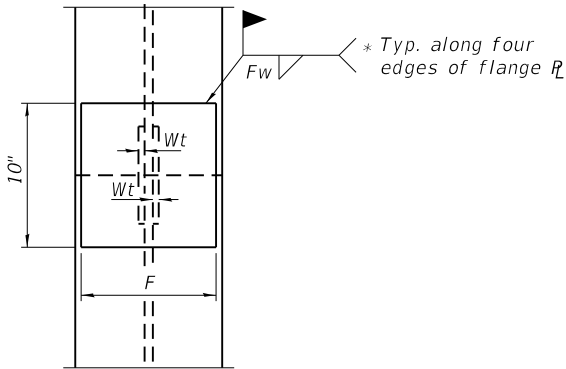


SECTION A-A

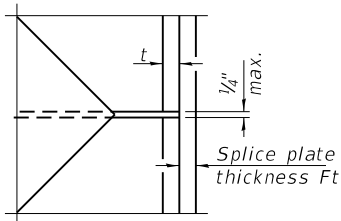
INDIVIDUAL PILE
CONCRETE ENCASEMENT
(when specified)



ELEVATION



END VIEW



DETAIL D

WELDED PLATE FIELD SPLICE

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"

F-HP

2-1-2023



USER NAME =	DESIGNED - JAG	REVISED -
	CHECKED - TJZ	REVISED -
PLOT SCALE =	DRAWN - JAG	REVISED -
PLOT DATE =	CHECKED - TJZ	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

HP PILE DETAILS
STRUCTURE NO. 023-3277

SHEET 16 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	20
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				

MODEL: 16 HP Pile Details
FILE NAME: P:\Effingham\4200 - Edgar Co - CH 16 over Flemington Trib\CAD\Sheet\4200_Plan Sheets.dgn
2/7/2025 8:33:47 AM

BRIDGE FOUNDATION SOIL BORING LOG

Route: County Highway 16
Section: Unknown
County: Edgar
Structure No. Unknown
Station: 100+47
Offset: 6' RT

MET Midwest Engineering and Testing, Inc.

Boring: B-1
Page: Page 1 of 1
Date of Boring: April 4, 2017
Drilled By: Zach Wilcoxon
Checked By: Daniel E. Tappendorf, P.E.
MET Project No: 73028

Surface Water Elevation: 88.0 ft. Ground Water Elevation: when drilling: 72.5 ft. at completion: 84.0 ft.	DEPTH (ft.)	BLOW S (6")	Qu (tsf)	MC (%)	Center of Bridge: STA 100+00 Elevation:100.0	DEPTH (ft.)	BLOW S (6")	Qu (tsf)	MC (%)
Ground Surface Elevation: 100.0 ft.									
5" Oil and Chip		-	-	9					
Brown clayey SAND (SC) Elev: 98.0							6 10 14	3.2B	12
Brown mottled gray silty CLAY (CL) with sand Elev: 95.5		2 2 3	1.4B	20	30		8 12 18	3.4B	12
Brown clayey SAND (SC) Elev: 93.0	5	3 5 4	1.1S	13					
Brown mottled gray silty CLAY (CL) with sand Elev: 90.5		1 2 2	0.6B	24	35		6 11 14	4.0B	12
Brown mottled gray clayey SILT (ML) Elev: 88.0	10	1 1 2	0.5P	23					
Gray silty CLAY (CL) with sand and small gravel - Till Elev: 80.5		3 4 6	2.4B	11	40		7 9 14	2.8B	12
Gray clayey SILT (ML) with sand Elev: 78.0	20	6 9 7	2.2S	15	45		11 16 19	4.0S	10
Gray silty CLAY (CL) with sand and small gravel - Till		3 4 8	1.6S	12	50		33 50/4"	-	22
End of Boring @ Elev: 48.5	25	11 7 11	2.5B	11					
N - Standard Penetration Test (SPT) = Sum of last two blow values in sample MC- Moisture Content - Percent of dry weight Qu- Unconfined Compressive Strength- tons per square foot (tsf) Type Failure Qu test B-Bulge S-Shear P-Penetrometer									

BRIDGE FOUNDATION SOIL BORING LOG

Route: County Highway 16
Section: Unknown
County: Edgar
Structure No. Unknown
Station: 99+66
Offset: 6' LT

MET Midwest Engineering and Testing, Inc.

Boring: B-2
Page: Page 1 of 1
Date of Boring: April 4, 2017
Drilled By: Zach Wilcoxon
Checked By: Daniel E. Tappendorf, P.E.
MET Project No: 73028

Surface Water Elevation: 88.0 ft. Ground Water Elevation: when drilling: 86.0 ft. at completion: 88.0 ft.	DEPTH (ft.)	BLOW S (6")	Qu (tsf)	MC (%)	Center of Bridge: STA 100+00 Elevation:100.0	DEPTH (ft.)	BLOW S (6")	Qu (tsf)	MC (%)
Ground Surface Elevation: 99.9 ft.									
5" Oil and Chip		-	-	13					
Brown clayey SAND (SC) Elev: 97.9							7 11 12	5.4B	11
Brown sandy CLAY (CL) Elev: 90.4	5	4 5 6	1.4B	13	30		5 9 11	5.2B	10
Gray silty CLAY (CL) with sand and small gravel - Till Elev: 83.9		5 3 4	1.8B	17	35		5 8 11	3.5B	13
Gray sandy CLAY (CL) Elev: 77.9	10	4 2 3	1.6B	19	40		10 12 17	3.0B	12
Gray silty CLAY (CL) with sand and small gravel - Till Elev: 73.4	15	8 8 4	0.5P	18	45		15 20 21	2.2B	14
Gray sandy CLAY (CL) with small gravel - Till		6 4 4	0.3P	14	50		40 50/5"	1.5P	24
End of Boring @ Elev: 48.4	20	6 10 13	3.5P	10					
	25	2 2 2	0.6B	13					
N - Standard Penetration Test (SPT) = Sum of last two blow values in sample MC- Moisture Content - Percent of dry weight Qu- Unconfined Compressive Strength- tons per square foot (tsf) Type Failure Qu test B-Bulge S-Shear P-Penetrometer									

Boring Elev. 100.0 = Plan Elev. 666.9

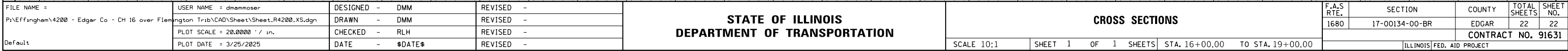
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS
STRUCTURE NO. 023-3277

SHEET 17 OF 17 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	21
CONTRACT NO. 91631				
ILLINOIS FED. AID PROJECT				

ORIGINAL SURVEY			BY _____	DATE _____
NOTE BOOK	SURVEYED _____			
	PLOTTED _____			
	TEMPLATE _____			
	AREAS _____			
	AREAS CHECKED _____			
NO. _____				



F.A.S RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1680	17-00134-00-BR	EDGAR	22	22
		CONTRACT NO. 91631		
ILLINOIS		FED. AID PROJECT		