

SN 033-0012
 SUPER STR. R & R
 SUB STR. MODIFICATION

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

PROJECT NO.	SEC.	COUNTY	SHEET NO.	TOTAL SHEETS
FAP 849	114BR-1	HAMILTON	17	1

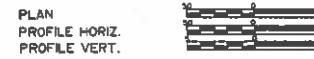
D-97-005-88

PLANS FOR PROPOSED
 FEDERAL AID HIGHWAY

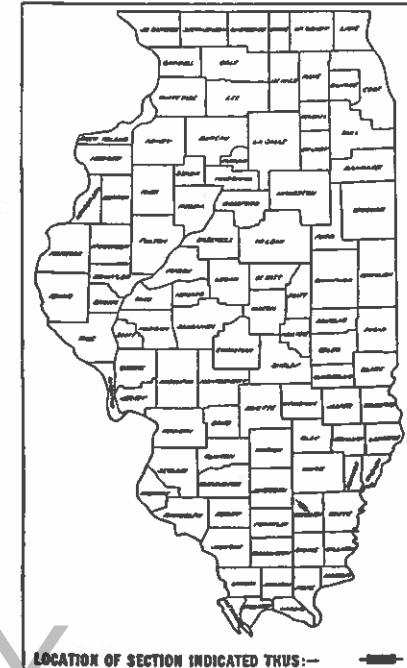
INDEX OF SHEETS

1. COVER SHEET
2. GENERAL NOTES & SUMMARY OF QUANTITIES
3. ROADWAY PLAN & PROFILE
4. STAGE CONSTRUCTION DETAILS
- 5.-17. BRIDGE PLANS

SCALE IN FEET



F.A.P. 849 (ILL. RTE. 142)
 SECTION 114BR-1
 HAMILTON COUNTY
 C-97-043-88



LOCATION OF SECTION INDICATED THUS:—

THE FOLLOWING STANDARDS ARE A PART OF THESE PLANS
 AND ARE INCLUDED AFTER SHEET NO. 17

- 1688-4 SYMBOLS AND ABBREVIATIONS
- 2113-2 NAME PLATE FOR BRIDGES
- 2230-13 STEEL PLATE BEAM GUARDRAIL
- 2288-7 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2289-10 DESIGN OF TRAFFIC CONTROL DEVICES
- 2300-3 FLAGMAN TRAFFIC CONTROL SIGN
- 2301-5 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2302-5 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2303-5 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2305-5 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2306-5 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2307-5 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2308-5 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2323-11 PAVEMENT JOINTS
- 2324-6 BRIDGE APPROACH SHOULDER PAVEMENT
- 2326-4 TRAFFIC BARRIER TERMINAL TYPE 1
- 2341-1 TRAFFIC BARRIER TERMINAL TYPE 2
- 2381 TEMPORARY EROSION CONTROL SYSTEMS
- 2382-2 BRIDGE APPROACH PAVEMENT
- 2383-1 TEMPORARY CONCRETE BARRIER
- 2385 TEMPORARY PAVEMENT MARKINGS
- 2405-1 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
- 2135 PERMANENT SEARCH MARKS



EXIST. STRUCTURE: No. 033-0012
 Two span R.C. Deck Girder.
 Remove and Replace Superstructure
 in stages.
 Use Substructure in new bridge.

PROP. STRUCTURE: No. 033-0012
 Two span Steel I-Beam with R.C.
 slab (66'-11" x 35'-2").

LOCATION OF PROJECT
 SECTION 114BR-1
 MIDDLE CREEK
 BEGINS STA. 288+95.40
 ENDS STA. 290+24.27

LOCATION MAP

NET LENGTH OF PROJECT = 128.87 FEET = 0.024 MILE



STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

Mac J. Juel
 Director of Highways

Ray St. Paul
 Director of Highways

CONTRACT NO. 94044

HAMILTON COUNTY SECTION 114BR-1 F.A.P. ROUTE 849



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 849	1148R-1	HAMILTON	17	2
PRELIMINARY ILLINOIS FED. AID PROJECT				

SUMMARY OF QUANTITIES

CODE NO.	ITEM	UNIT	QUANTITY	CONSTRUCTION TYPE CODE	
				X071-2A	SFTY-30
20900200	POROUS GRANULAR EMBANKMENT	CU YD	60		60
21500100	AGGREGATE SHOULDERS, TYPE A	TON	44		44
30850700	BASE COURSE WIDENING	SQ YD	202		202
40801150	BRIDGE APPROACH PAVEMENT (STANDARD 2382)	SQ YD	106.6		106.6
40801500	P.C. CONCRETE BRIDGE APPROACH SHOULDER PAVEMENT	SQ YD	26		26
50101500	REMOVAL OF EXISTING SUPERSTRUCTURES	EACH	1		1
50102400	CONCRETE REMOVAL	CU YD	15		15
50300100	FLOOR DRAINS	EACH	12		12
50300120	PREFORMED JOINT SEAL 2 1/2"	LIN FT	70		70
50300250	CLASS X CONCRETE SUPERSTRUCTURE	CU YD	94.0		94.0
50300300	PROTECTIVE COAT	SQ YD	400		400
50300310	ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	10		10
50400300	CLASS X CONCRETE	CU YD	30.2		30.2
50700100	FURNISHING AND ERECTING STRUCTURAL STEEL	L SUM	1		1
50700500	STUD SHEAR CONNECTORS	EACH	1410		1410
51200100	REINFORCEMENT BARS	POUND	6040		6040
51200200	REINFORCEMENT BARS, EPOXY COATED	POUND	28070		28070
51400100	NAME PLATES	EACH	1		1
60100107	STONE RIPRAP, CLASS A4	SQ YD	210		210
61700100	PAVEMENT REMOVAL	SQ YD	114		114
62800085	TRAFFIC BARRIER TERMINAL, TYPE 6	EACH	4		4
63300515	STEEL PLATE GUARD RAIL TYPE B REMOVAL AND SALVAGE	LIN. FT.	50		50
63301210	REMOVE AND RE-ERECT STEEL PLATE BEAM GUARD RAIL, TYPE A	LIN. FT.	50		50
63303700	REMOVE AND SALVAGE EXISTING TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	4		4
64201000	SEEDING CLASS 2 (SPECIAL)	ACRE	0.1		0.1
64600400	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	6		6
64700090	TEMPORARY PAVEMENT MARKING	LIN FT	141		141
64800405	TRAFFIC CONTROL AND PROTECTION, STANDARD 2409	EACH	1		1
65000100	MOBILIZATION	L SUM	1		1
65600200	RELOCATE TEMPORARY CONCRETE BARRIER	LIN FT	414		414
65600300	TEMPORARY CONCRETE BARRIER, TERMINAL SECTION	EACH	2		2
65600500	INSTALL TEMPORARY CONCRETE BARRIER	LIN FT	470		470
75020200	PAINT PAVEMENT MARKING - LINE 4"	LIN FT	271		271
20024405	FILTER FABRIC FOR USE WITH RIPRAP	SQ YD	210		210
20038700	PERMANENT BENCH MARKS	EACH	1		1
X#300595	REMOVAL AND SALVAGE EXISTING BRIDGE RAIL	LIN. FT.	171.6		171.6

○ SPECIALTY ITEM

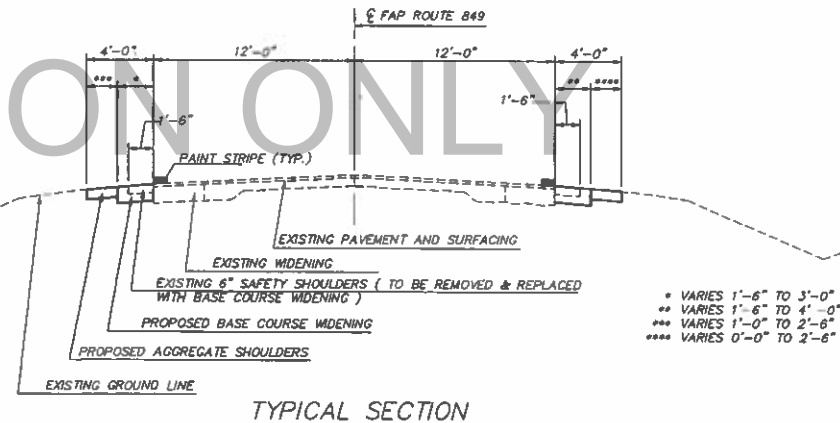
GENERAL NOTES

This section shall be constructed in accordance with the plans, the Standard Specifications for Road and Bridge Construction, adopted July 1, 1988, the Standard Specifications for Traffic Control Items, adopted April 1, 1989; the Supplemental Specifications and Recurring Special Provisions, and the Special Provisions included in this proposal.

The work included in Section 1148R-1 consists of the construction of a two span Steel I-Beam with concrete slab bridge carrying Illinois Route 142 over Middle Creek; the removal of the existing superstructure, the construction of approach pavements, approach shoulders, guardrail, and all other work necessary to complete the section.

Where section or sub-section monuments are encountered, the engineer shall be notified before such monuments are removed. The contractor shall protect and carefully preserve all property markers and monuments until the owner, an authorized surveyor or agent has witnessed, or otherwise referenced their location.

For Buried Utility Information, Call M.U.L.I.E. at 1-800-892-0123.

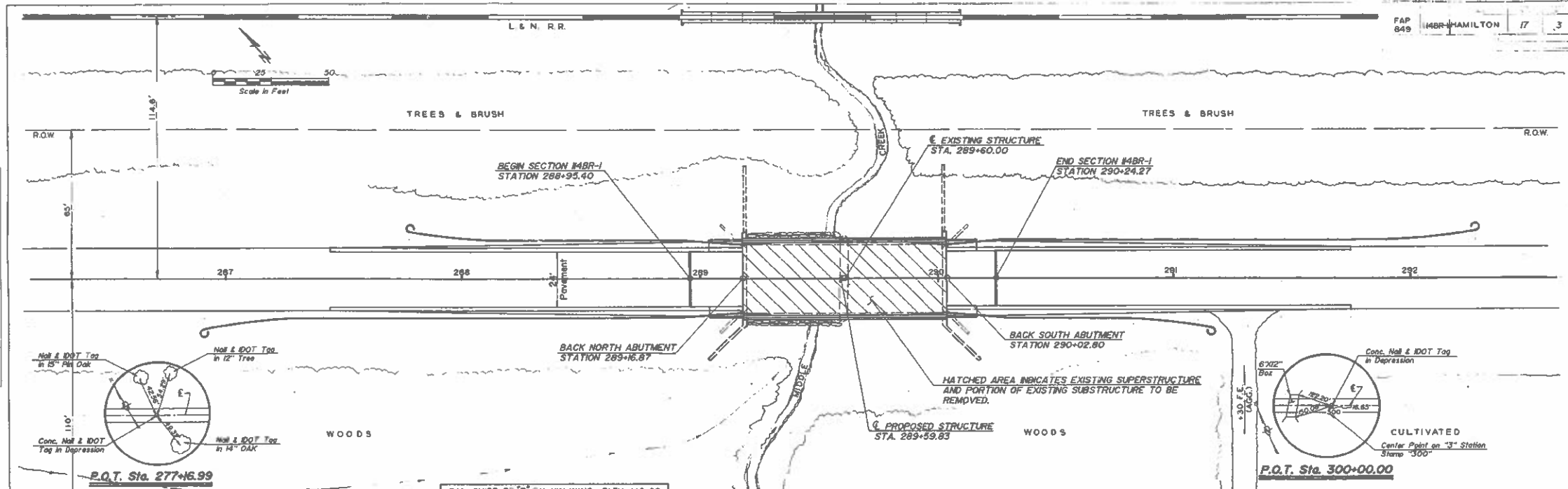


GENERAL NOTES
&
SUMMARY OF QUANTITIES

FAP RTE. 849 / MIDDLE CREEK
SECTION 1148R-1
STATION 289+59.83
HAMILTON COUNTY

GREENE & BRADFORD, INC.
CONSULTING ENGINEERS
1800 W. BROADWAY, SUITE 100
CHICAGO, ILLINOIS 60604
88536GV



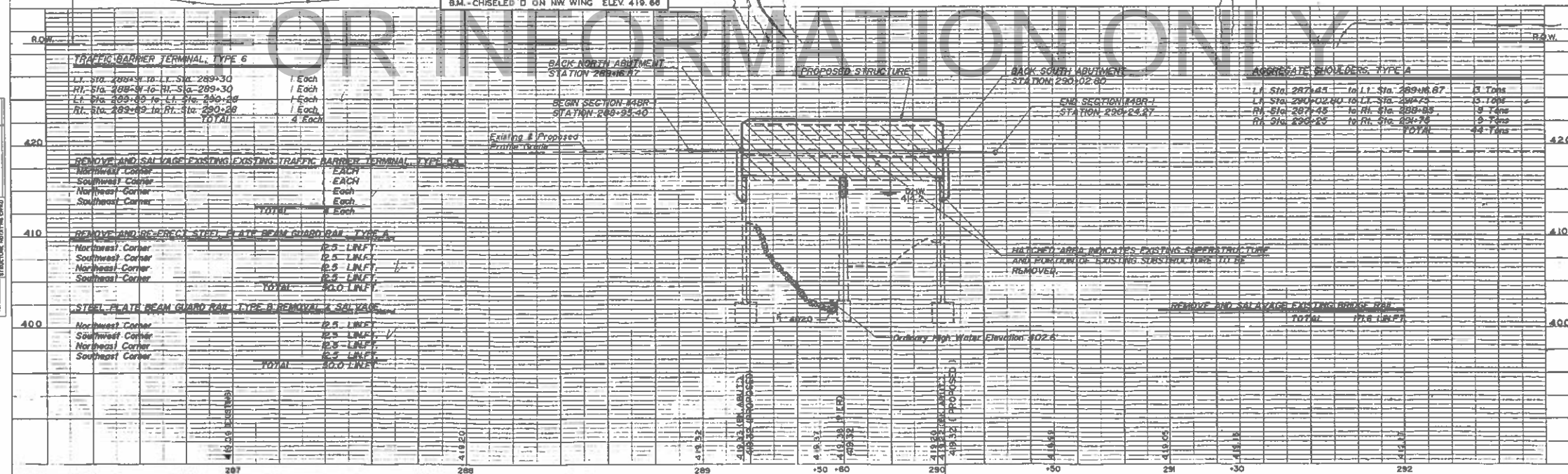


PLAN

DATE	
BY	
CHECKED	
APPROVED	
SCALE	1" = 40'

PROFILE

DATE	
BY	
CHECKED	
APPROVED	
SCALE	1" = 10'

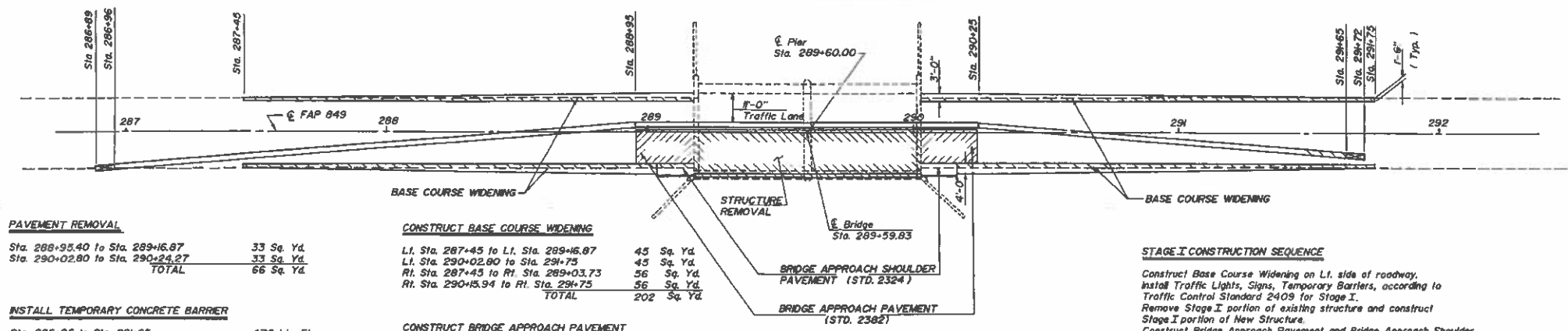


TRAFFIC BARRIER TERMINAL, TYPE 6			
LI Sta. 288+34 to LI Sta. 289+30	1 Each		
RI Sta. 288+46 to RI Sta. 289+30	1 Each		
LI Sta. 289+89 to LI Sta. 290+28	1 Each		
RI Sta. 289+89 to RI Sta. 290+28	1 Each		
TOTAL	4 Each		
REMOVE AND SALVAGE EXISTING EXISTING TRAFFIC BARRIER TERMINAL, TYPE 6A			
Northwest Corner	EACH		
Southeast Corner	EACH		
Northwest Corner	Each		
Southeast Corner	Each		
TOTAL	4 Each		
REMOVE AND RE-ERECT STEEL PLATE BEAM GUARD RAIL, TYPE A			
Northwest Corner	2.5 LINEY		
Southeast Corner	2.5 LINEY		
Northwest Corner	2.5 LINEY		
Southeast Corner	2.5 LINEY		
TOTAL	10.0 LINEY		
STEEL PLATE BEAM GUARD RAIL, TYPE B REMOVAL & SALVAGE			
Northwest Corner	2.5 LINEY		
Southeast Corner	2.5 LINEY		
Northwest Corner	2.5 LINEY		
Southeast Corner	2.5 LINEY		
TOTAL	10.0 LINEY		
AGGREGATE SHOULDER, TYPE A			
LI Sta. 287+64 to LI Sta. 289+8.67	3 Tons		
LI Sta. 289+02.80 to LI Sta. 289+25	15 Tons		
RI Sta. 287+48 to RI Sta. 288+88	9 Tons		
RI Sta. 289+25 to RI Sta. 291+75	9 Tons		
TOTAL	44 Tons		

BAD COPY

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
STAGE I CONSTRUCTION

ROUTE	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
FAP 849	448R-1	HAMILTON	17	4
FHWAYREGD.5		SLABS	FED. AID PROJECT -	



PAVEMENT REMOVAL

Sta. 288+95.40 to Sta. 289+16.87	33 Sq. Yd.
Sta. 290+02.80 to Sta. 290+24.27	33 Sq. Yd.
TOTAL	66 Sq. Yd.

INSTALL TEMPORARY CONCRETE BARRIER

Sta. 286+96 to Sta. 291+65	470 Lh. Ft.
TOTAL	470 Lh. Ft.

TEMPORARY CONCRETE BARRIER TERMINAL SECTIONS

Sta. 286+89 to Sta. 286+96	1 Each
Sta. 291+65 to Sta. 291+72	1 Each
TOTAL	2 Each

CONSTRUCT BASE COURSE WIDENING

L.I. Sta. 287+45 to L.I. Sta. 289+16.87	45 Sq. Yd.
L.I. Sta. 290+02.80 to Sta. 291+75	45 Sq. Yd.
R.I. Sta. 287+45 to R.I. Sta. 289+03.73	56 Sq. Yd.
R.I. Sta. 290+15.94 to R.I. Sta. 291+75	56 Sq. Yd.
TOTAL	202 Sq. Yd.

CONSTRUCT BRIDGE APPROACH PAVEMENT

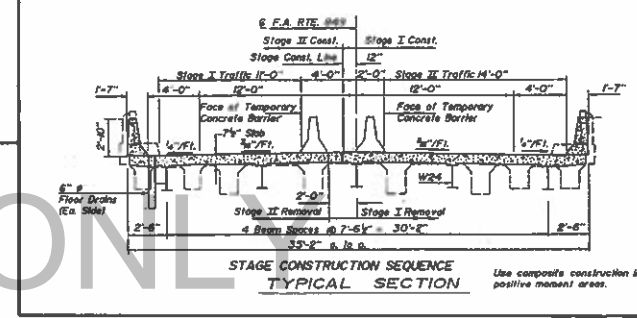
Sta. 288+95.73 to Sta. 289+15.73	28.9 Sq. Yd.
Sta. 290+03.94 to Sta. 290+23.94	28.9 Sq. Yd.
TOTAL	57.8 Sq. Yd.

CONSTRUCT BRIDGE APPROACH SHOULDER PAVEMENT

R.I. Sta. 289+03.73 to R.I. Sta. 289+15.73	6.6 Sq. Yd.
R.I. Sta. 290+03.94 to R.I. Sta. 290+15.94	6.6 Sq. Yd.
TOTAL	13.2 Sq. Yd.

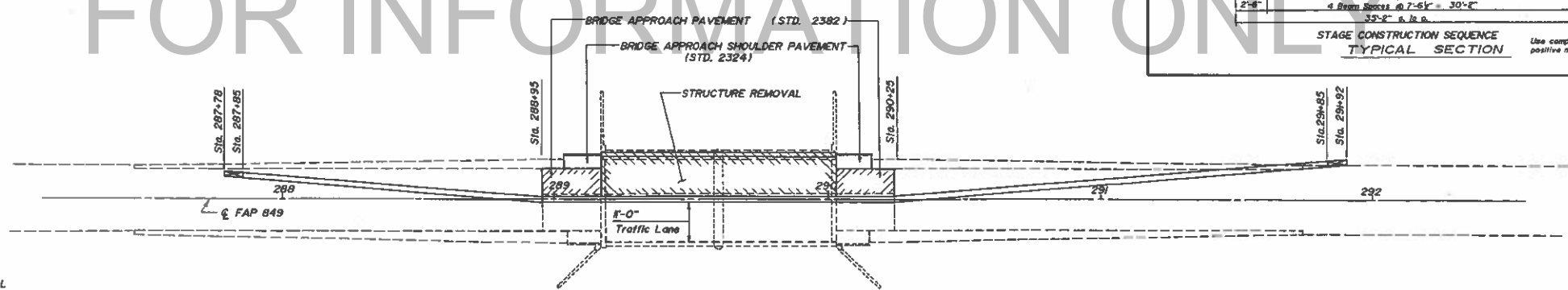
STAGE I CONSTRUCTION SEQUENCE

Construct Base Course Widening on L.I. side of roadway, install Traffic Lights, Signs, Temporary Barriers, according to Traffic Control Standard 2409 for Stage I.
Remove Stage I portion of existing structure and construct Stage I portion of New Structure.
Construct Bridge Approach Pavement and Bridge Approach Shoulder Pavement on R.I. side.
Construct Base Course Widening on R.I. side.
Construct guardrail on R.I. side.



FOR INFORMATION ONLY

STAGE II CONSTRUCTION



PAVEMENT REMOVAL

Sta. 288+95.40 to Sta. 289+16.87	24 Sq. Yd.
Sta. 290+02.80 to Sta. 290+24.27	24 Sq. Yd.
TOTAL	48 Sq. Yd.

RELOCATE TEMPORARY CONCRETE BARRIER

Sta. 287+78 to Sta. 291+92	414 Lh. Ft.
TOTAL	414 Lh. Ft.

CONSTRUCT BRIDGE APPROACH PAVEMENT

Sta. 288+95.73 to Sta. 289+15.73	24.4 Sq. Yd.
Sta. 290+03.94 to Sta. 290+23.94	24.4 Sq. Yd.
TOTAL	48.8 Sq. Yd.

CONSTRUCT BRIDGE APPROACH SHOULDER PAVEMENT

L.I. Sta. 289+03.73 to L.I. Sta. 289+15.73	6.6 Sq. Yd.
L.I. Sta. 290+03.94 to L.I. Sta. 290+15.94	6.6 Sq. Yd.
TOTAL	13.2 Sq. Yd.

STAGE II CONSTRUCTION SEQUENCE

Relocate Temporary concrete Barrier, Signs, etc. according to Traffic Control Standard 2409 for Stage II.
Remove Stage II portion of existing structure and construct Stage II portion of New Structure.
Construct Bridge Approach Pavement and Bridge Approach Shoulder Pavement on L.I. side.
Construct Guardrail on L.I. side.
Remove temporary traffic control device.

STAGE CONSTRUCTION DETAILS

FAP RTE. 849 over MIDDLE CREEK
SECTION 448R-1
HAMILTON COUNTY
STATION 289+59.83

GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONSULTING ENGINEERS
100 S. WASHINGTON ST. ST. 329-4444

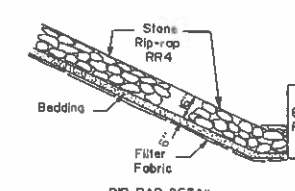
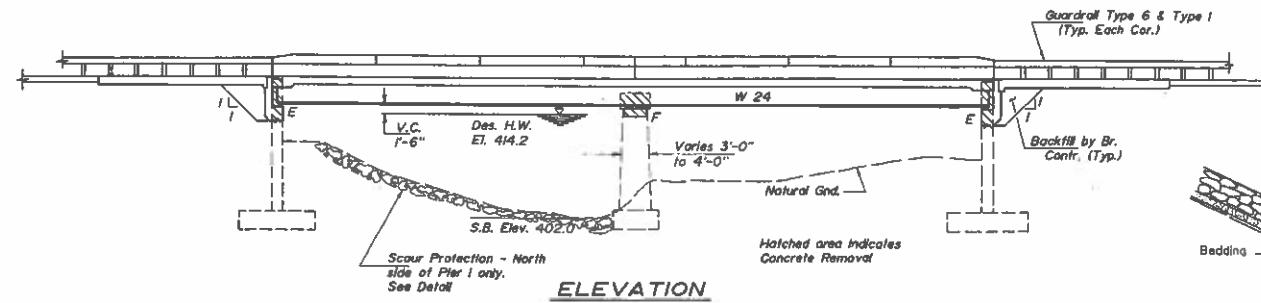


Exist. Struct. # 033-0012 Two simple span R.C. deck girder 36'-4" x 86'-0". Superstructure to be removed in stages to maintain one lane of traffic at all times. No salvage. Substructure to be revised to accommodate new superstructure.

B.M. : Chiseled square on the Northwest Wing of Existing Bridge Elevation 419.66

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A. 849	14 BR-1	HAMILTON	17	5
BRIDGE SHEET 1 of 13				



- GENERAL NOTES**
- Fasteners shall be high strength bolts AASHTO M164. Bolts 3/4" # with 3/8" # open holes unless otherwise noted.
 - Calculated weight of structural steel equals 50,480 pounds. (M223 Gr 50 = 33,880) (M163 = 16,600)
 - The Zinc Silicate and Vinyl Paint System shall be used for shop and field painting of structural steel, except where otherwise noted. The Color of the Vinyl Finish Coat shall be Munsel No. 7.5G 4/B
 - Field welding of construction accessories will not be permitted to the bottom flange of beams nor to the top flange for a distance equal to one-fourth the span length each way from the pier supports. Field welding in other areas will be permitted only when approved by the Engineer.
 - The main load carrying member components subject to tensile stress shall conform to the supplemental requirements for Notch Toughness Zone 2. These components are the steel wide flange beam, web and flange splice plates.
 - Reinforcement bars shall conform to the requirements of AASHTO M-31, M-42 or M-53 Grade 60.
 - Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.

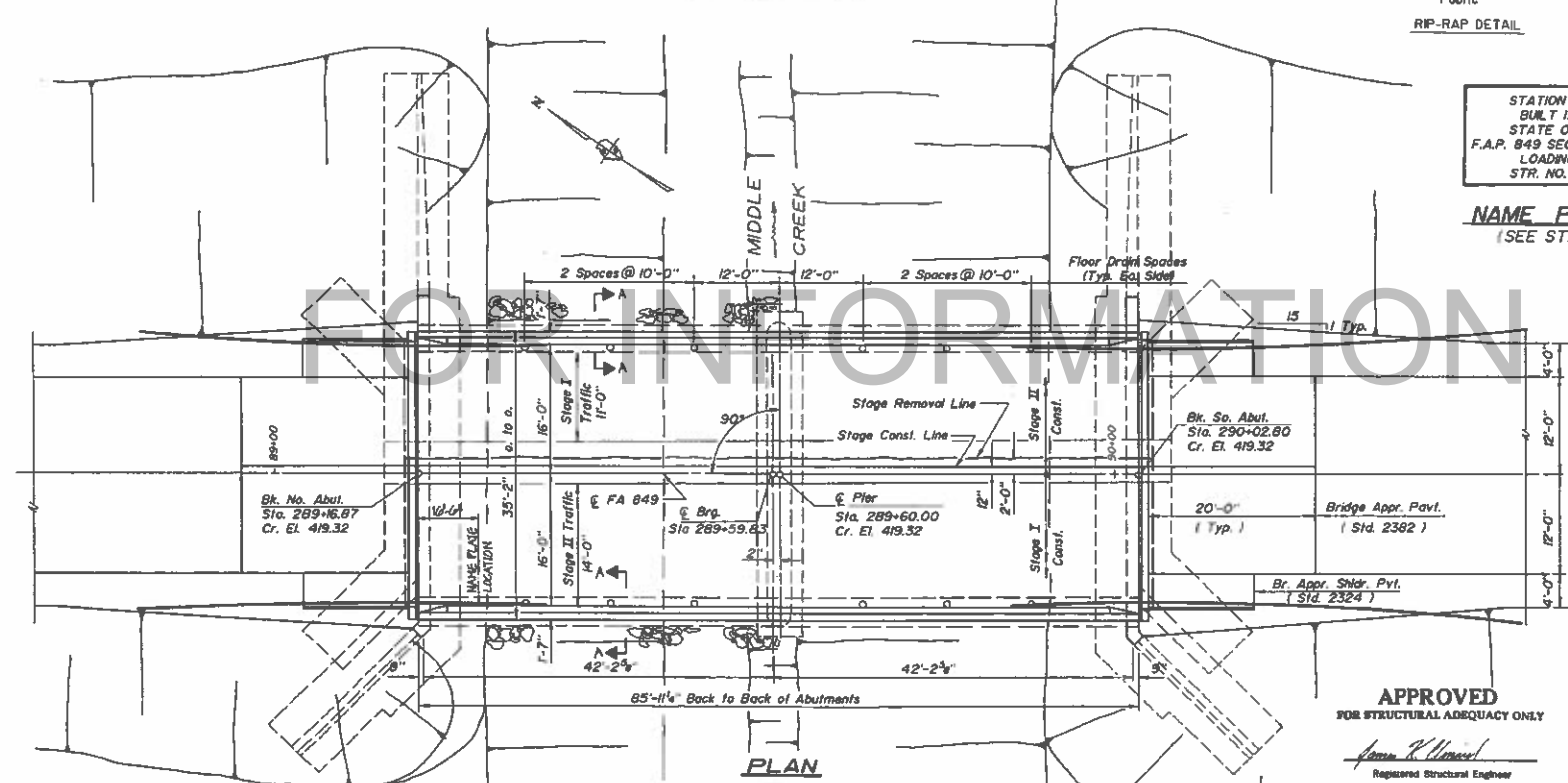
STATION 289+59.83
BUILT BY
STATE OF ILLINOIS
F.A.P. 849 SECTION 14 BR-1
LOADING HS-20
STR. NO. 033-0012

NAME PLATE
(SEE STD. 2113)

TOTAL BILL OF MATERIALS

ITEM	UNIT	SUB	SUPER	TOTAL
Class X Concrete	Cu.Yd.	30.2		30.2
Class X Concrete - Superstructure	Cu.Yd.		94.0	94.0
Furn. & Erect Struct. Steel	L.Sum		1	1
Stud Shear Connectors	Ea.		1410	1410
Porous Granular Embankment	Cu. Yd.	60		60
Reinforcement Bars (Epoxy Coated)	Lb.	4870	23200	28070
Name Plate	Ea.		1	1
Concrete Removal	Cu.Yd.	15		15
Formed Joint Seal 25"	Lin.Ft.		70	70
Stone Riprap Class A4	Sq.Yd.	210		210
Floor Drains	Ea.		12	12
Protective Coat	Sq.Yd.		400	400
Removal of Existing Superstructures	Ea.		1	1
Filter Fabric for use with Rip-rap	Sq.Yd.	210		210
Elastomeric Bearing Assembly Ty. I	Ea.		10	10

* Includes top of bridge deck.



WATERWAY INFORMATION

Drainage Area: 5.2 sq. mi. Low Grade Elev. 418.15 @ Sta. 300+00

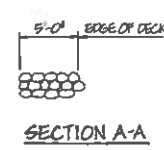
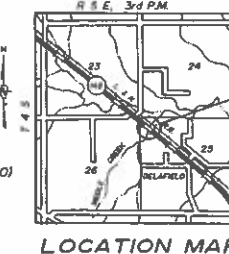
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.		Head - Ft.		Headwater El.	
			Exist.	Prop.	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Design	50	1930	580	580	414.2	0.6	0.6	414.8	414.8	
Base	100	2225	595	595	414.4	0.7	0.7	415.1	415.1	
Max. Calc.	500	2910	620	620	414.7	1.1	1.1	415.8	415.8	

PAVEMENT PROFILE

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
284+00	418.82	286+00	418.80	288+00	418.30	290+00	418.20	292+00	418.17	294+00	418.04

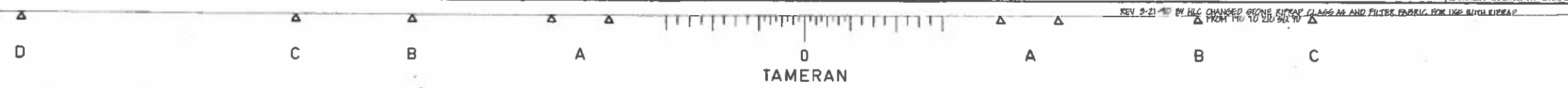
APPROVED
FOR STRUCTURAL ADEQUACY ONLY
James R. Howard
Registered Structural Engineer

DESIGN STRESSES
f_c = 3,500 p.s.i.
f_y = 60,000 p.s.i. (Reinf.)
f_y = 50,000 p.s.i. (Str. St. M223 Gr. 50)
n = 9.0
LOADING HS20-44
Design modifications: 1989 A.A.S.H.T.O.



GENERAL PLAN & ELEVATION
FAP RTE. 849 over MIDDLE CREEK
SECTION 14 BR-1
HAMILTON COUNTY
STATION 289+59.83
S.N. 033-0012

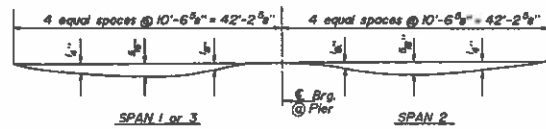
GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONSULTING ENGINEERS
100 STEVENS AVE. SPRINGFIELD, ILL.



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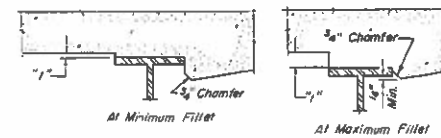
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
FAP 849	114BR-1	HAMILTON	17	6
FED. AID PROJECT NO. ILLINOIS				
Bridge Sheet 2 of 13				



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 below.

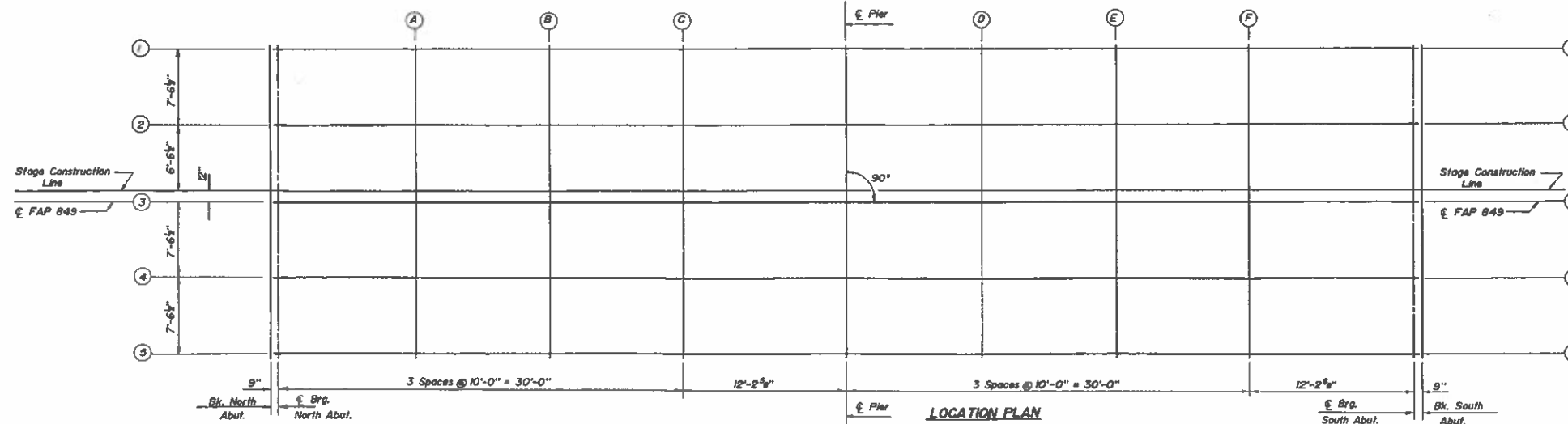


To determine "i": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown below, minus slab thickness, equals the fillet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

FILLET HEIGHTS

BEAM 1				STAGE CONSTRUCTION LINE				BEAM 4			
LINE	STATION	OFFSET	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION	LINE	STATION	OFFSET	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION	LINE	STATION	OFFSET	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BRKAB	28916.870	15.083	419.069	BRKAB	28916.870	1.000	419.304	BRKAB	28918.870	-7.542	419.202
BRKAB	28917.620	15.083	419.069	BRKAB	28917.620	1.000	419.304	BRKAB	28917.620	-7.542	419.202
A	28927.620	15.083	419.069	A	28927.620	1.000	419.304	A	28927.620	-7.542	419.202
B	28937.620	15.083	419.069	B	28937.620	1.000	419.304	B	28937.620	-7.542	419.202
C	28947.620	15.083	419.069	C	28947.620	1.000	419.304	C	28947.620	-7.542	419.202
PIER	28959.830	15.083	419.069	PIER	28959.830	1.000	419.304	PIER	28959.830	-7.542	419.202
D	28969.830	15.083	419.069	D	28969.830	1.000	419.304	D	28969.830	-7.542	419.202
E	28979.830	15.083	419.069	E	28979.830	1.000	419.304	E	28979.830	-7.542	419.202
F	28989.830	15.083	419.069	F	28989.830	1.000	419.304	F	28989.830	-7.542	419.202
BRKAB	29002.800	15.083	419.069	BRKAB	29002.800	1.000	419.304	BRKAB	29002.800	-7.542	419.202
BRKAB	29002.800	15.083	419.069	BRKAB	29002.800	1.000	419.304	BRKAB	29002.800	-7.542	419.202

BEAM 2				BEAM 3				BEAM 5			
LINE	STATION	OFFSET	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION	LINE	STATION	OFFSET	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION	LINE	STATION	OFFSET	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BRKAB	28916.870	7.542	419.202	BRKAB	28916.870	.000	419.320	BRKAB	28916.870	-15.083	419.069
BRKAB	28917.620	7.542	419.202	BRKAB	28917.620	.000	419.320	BRKAB	28917.620	-15.083	419.069
A	28927.620	7.542	419.202	A	28927.620	.000	419.320	A	28927.620	-15.083	419.069
B	28937.620	7.542	419.202	B	28937.620	.000	419.320	B	28937.620	-15.083	419.069
C	28947.620	7.542	419.202	C	28947.620	.000	419.320	C	28947.620	-15.083	419.069
PIER	28959.830	7.542	419.202	PIER	28959.830	.000	419.320	PIER	28959.830	-15.083	419.069
D	28969.830	7.542	419.202	D	28969.830	.000	419.320	D	28969.830	-15.083	419.069
E	28979.830	7.542	419.202	E	28979.830	.000	419.320	E	28979.830	-15.083	419.069
F	28989.830	7.542	419.202	F	28989.830	.000	419.320	F	28989.830	-15.083	419.069
BRKAB	29002.800	7.542	419.202	BRKAB	29002.800	.000	419.320	BRKAB	29002.800	-15.083	419.069
BRKAB	29002.800	7.542	419.202	BRKAB	29002.800	.000	419.320	BRKAB	29002.800	-15.083	419.069



TOP OF SLAB ELEVATIONS
FAP 849 over MIDDLE CREEK
SEC. 114BR-1
HAMILTON COUNTY
STATION 289+59.83

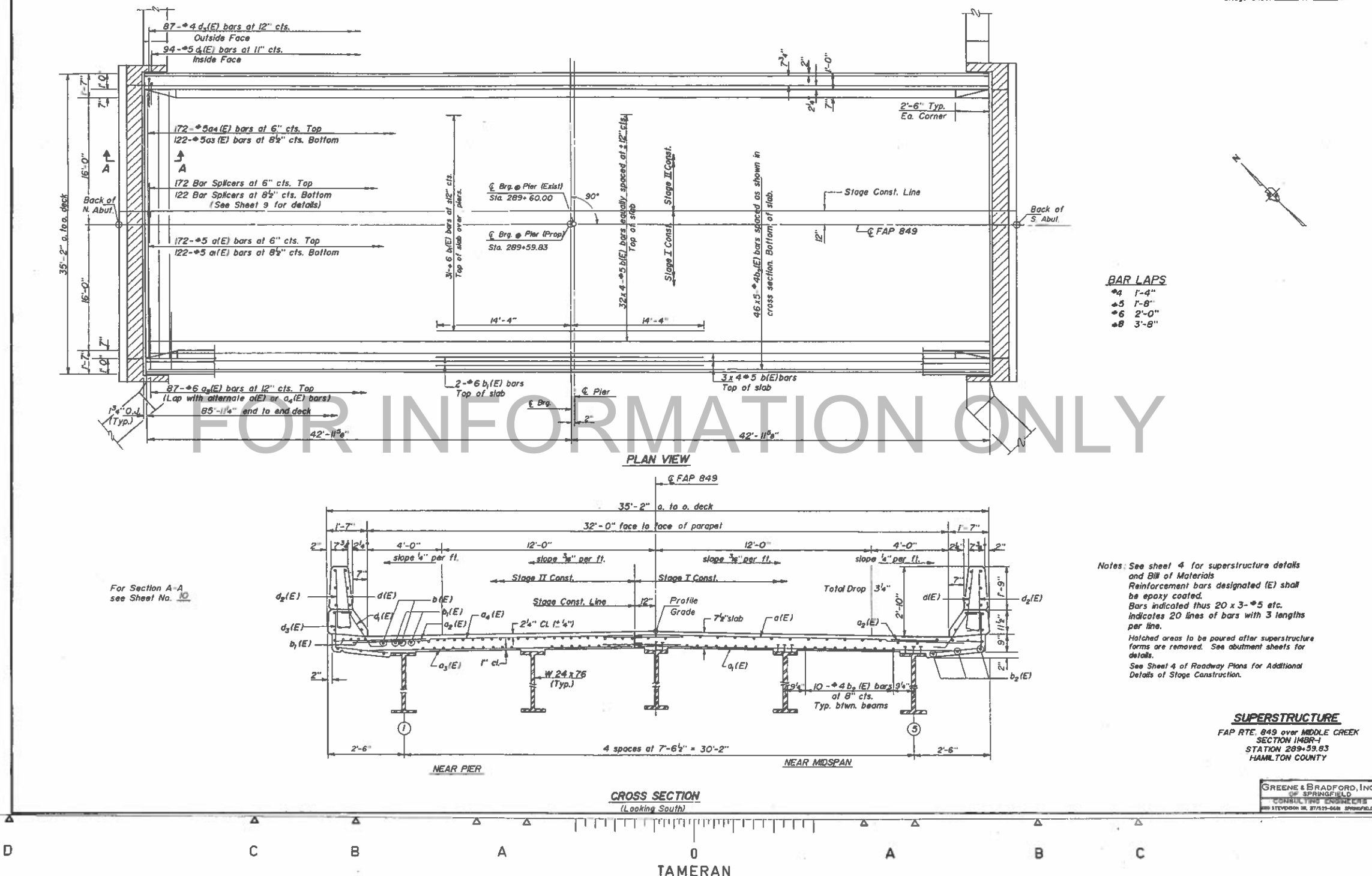
GREENE & BRADFORD, INC.
CONSULTING ENGINEERS
100 STEVENSON ST. SPRINGFIELD, ILL.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
FAP 849	14BR-1	HAMILTON	17	7
DRAWING NO. 81-118-117-AS-PROJECT				
Bridge Sheet 3 of 13				



FOR INFORMATION ONLY

For Section A-A see Sheet No. 10

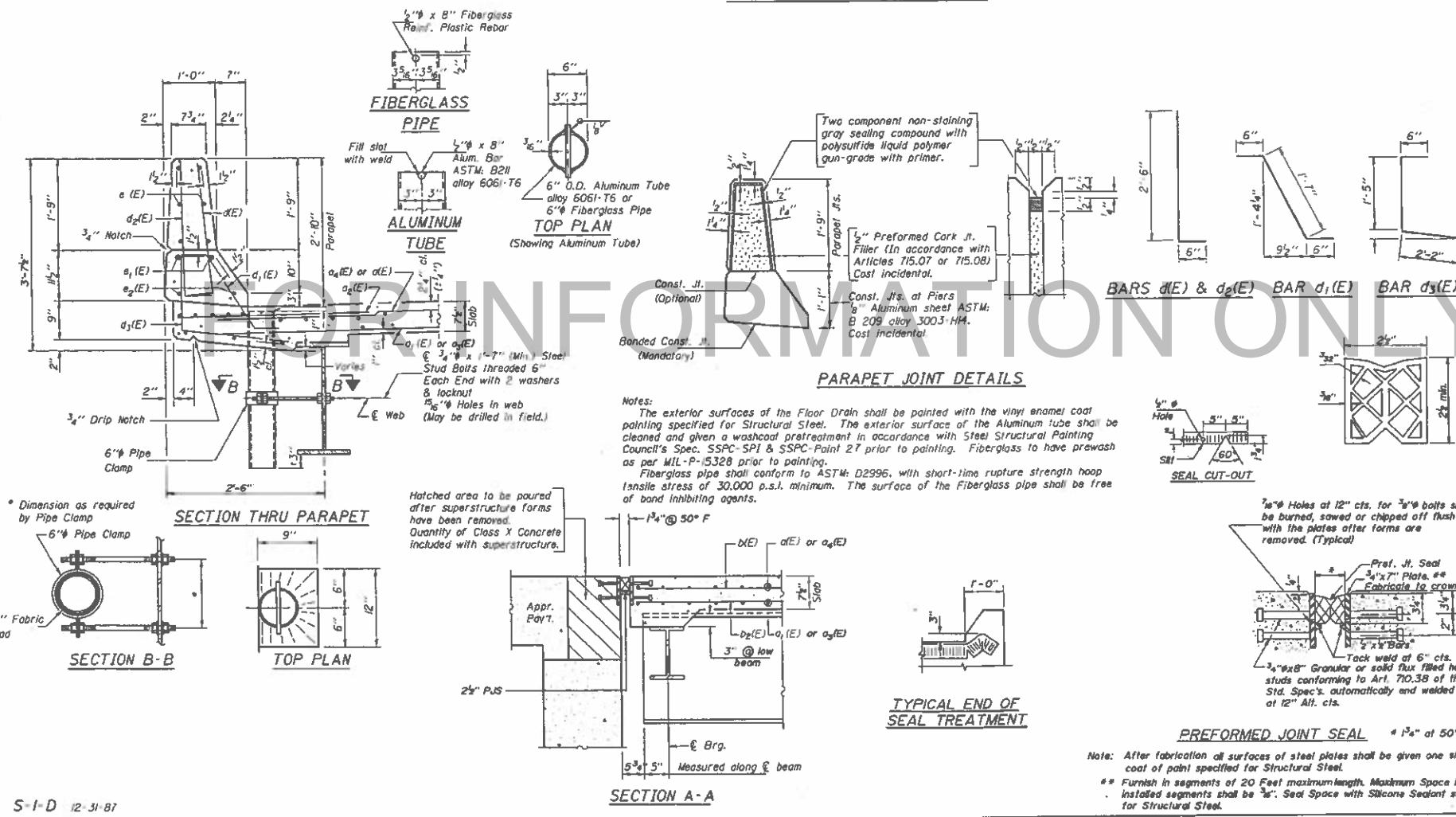
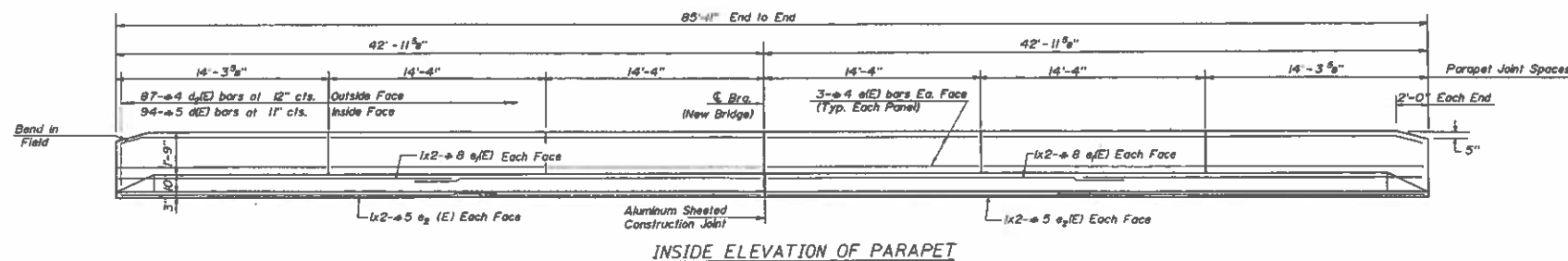
Notes: See sheet 4 for superstructure details and Bill of Materials. Reinforcement bars designated (E) shall be epoxy coated. Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line. Hatched areas to be poured after superstructure forms are removed. See abutment sheets for details. See Sheet 4 of Roadway Plans for Additional Details of Stage Construction.



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 849	148R-1	HAMILTON	17	8

ILLINOIS IRRIGATION PROJECT -
Bridge Sheet 4 of 13.



**SUPERSTRUCTURE
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
d4(E)	172	#5	18'-0"	
d1(E)	122	#5	17'-6"	
d2(E)	174	#6	4'-0"	
d3(E)	122	#5	15'-6"	
d4(E)	172	#6	16'-0"	
d1(E)	152	#5	22'-9"	
d1(E)	35	#6	28'-8"	
d2(E)	230	#4	18'-6"	
d1(E)	188	#5	3'-0"	
d1(E)	188	#5	2'-7"	
d2(E)	174	#4	3'-0"	
d3(E)	174	#4	4'-1"	
d1(E)	72	#4	14'-0"	
d1(E)	16	#6	23'-1"	
d2(E)	16	#5	22'-3"	
Reinforcement Bars (Epoxy Coated)	Lbs.			23,200
Class X Concrete Superstructure	Cu. Yds.			94.0

Bars indicated thus 1x3-#5 etc. indicates 1 line of bars with 3 lengths per line.

SUPERSTRUCTURE DETAILS
FAP RTE 849 over MIDDLE CREEK
SECTION 148R-1
HAMILTON COUNTY
STATION 289+53.83

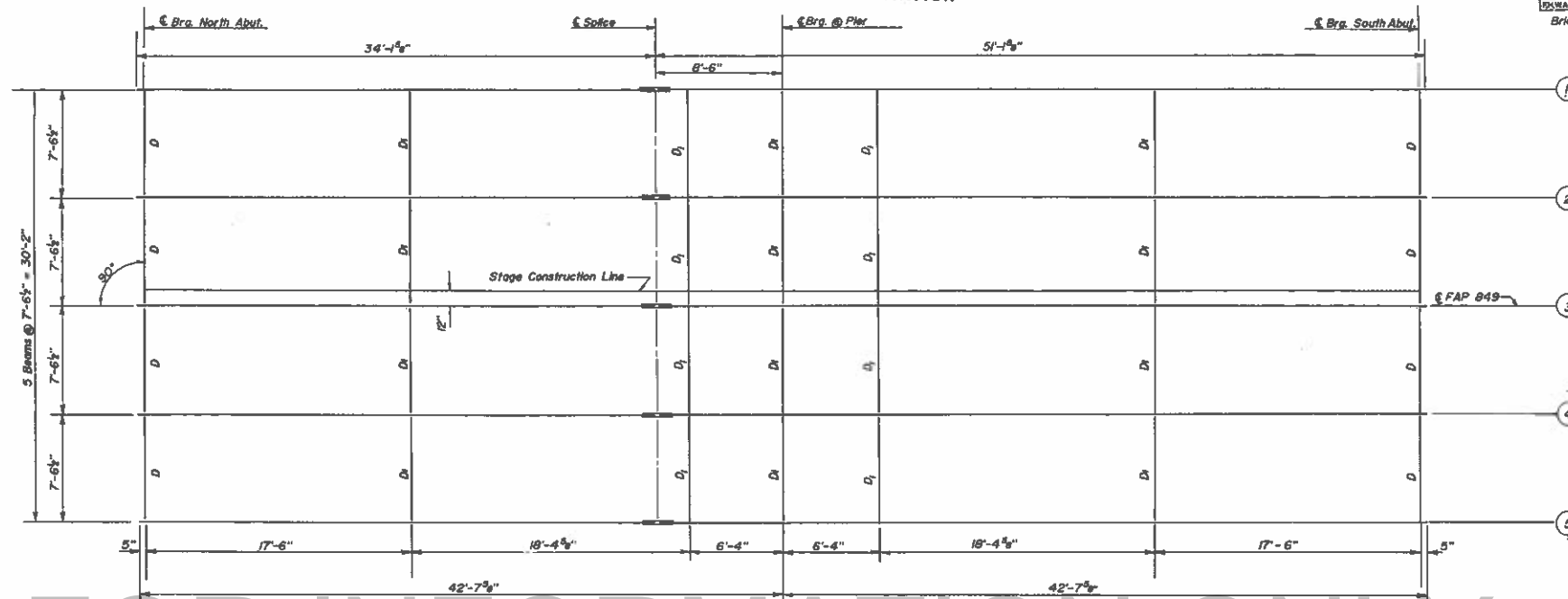
GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONSULTING ENGINEERS
205 STEVENSON DA 307/320-4528 SPRINGFIELD, IL

S-1-D 12-31-87

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DEPARTMENT OF TRANSPORTATION

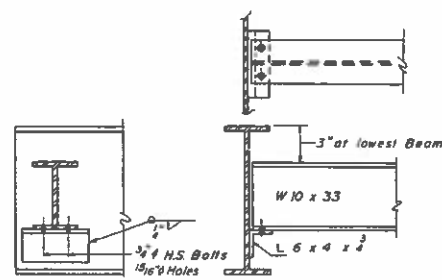
ROUTE	SECTION	COUNTY	SHEET	TOTAL SHEETS
FAP 049	114BR-1	HAMILTON	17	9
ILLINOIS FEDERAL AID PROJECT - Bridge Sheet 5 of 13.				



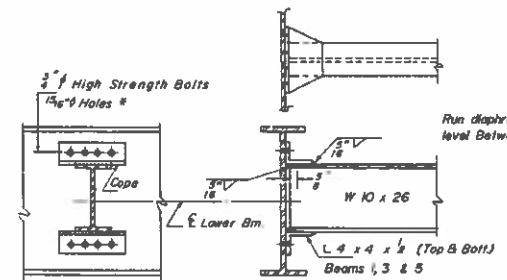
FOR INFORMATION ONLY

NOTE: All beams W24 x 76

FRAMING PLAN



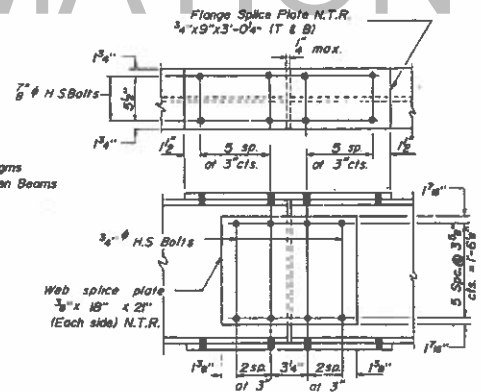
DIAPHRAGM D
B Required



DIAPHRAGM D
20 Required

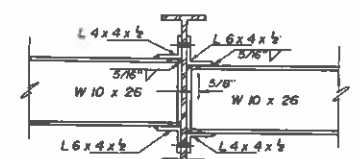
Note: Two hardened washers shall be required over all 3/4" holes. All contact surfaces of joints shall be free of paint or lacquer.

* Beams 2 and 3 shall have 16" long x 3/8" slotted holes for the intermediate diaphragm connection. The slotted holes shall have a 3/8" plate washer placed over them. Bolts shall be finger tightened until the placement of Stage II deck concrete. Long dimension of slots shall be vertical.



SPLICE

N.T.R. - Must conform to Supplemental Requirements for Notch Toughness Zone 2. See General Note No. 5.



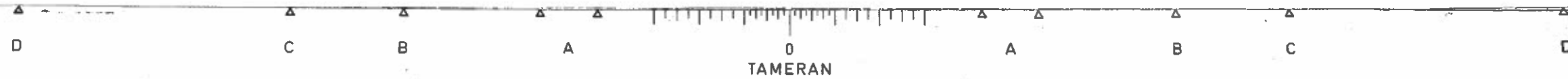
DIAPHRAGM D
at Beams 2 and 4
(Beam 4 is shown)

Run Diaphragms level Between Beams

FRAMING PLAN

FAP RTE. 049 over MIDDLE CREEK
SECTION 114BR-1
STATION 289+59.63
HAMILTON COUNTY

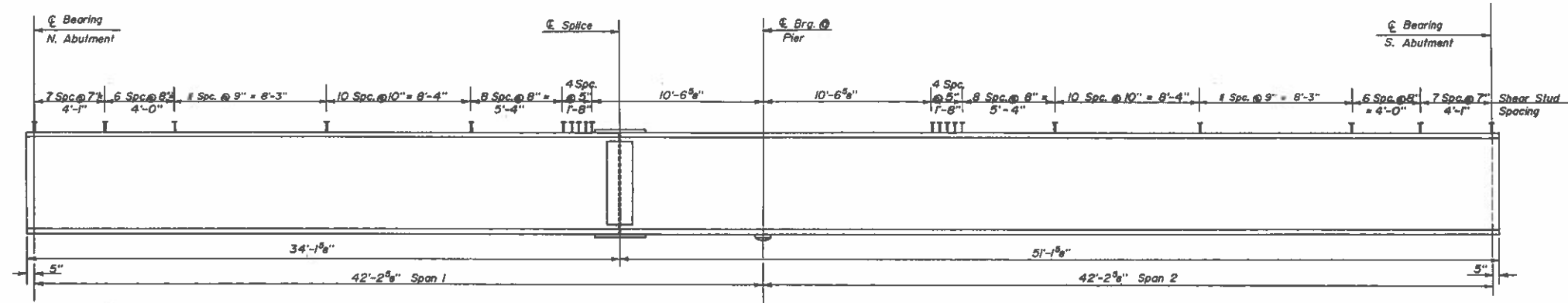
GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONSULTING ENGINEERS
1117 NORTH OLIVE ST. SPRINGFIELD, ILL.



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ROUTE	SECTION	COUNTY	SHEET
FAP 849	148R-1	HAMILTON	17 10

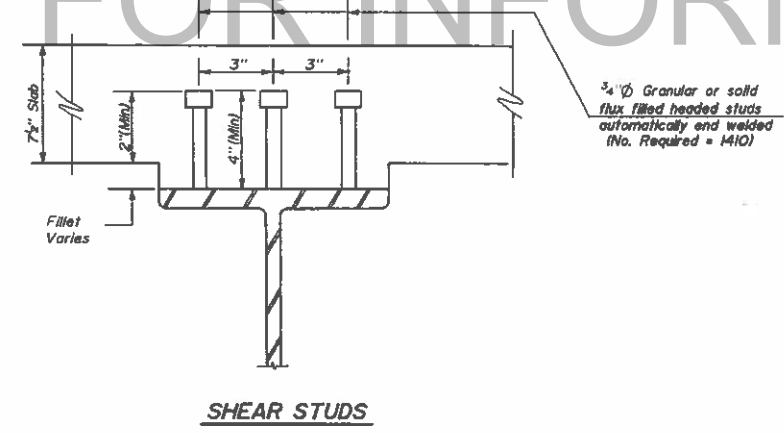
PHILADELPHIA & HAMILTON STEEL AND IRON WORKS
 Bridge Sheet 6 of 13.



ELEVATION VIEW
 (Use W 24 x76 throughout, N.T.R.)
 (M223 Gr 50)

NTR - Must conform to Supplemental Requirements for Notch Toughness Zone 2. See General Note No. 5.

FOR INFORMATION ONLY



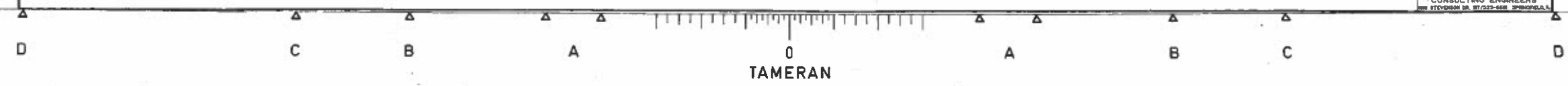
TOP OF WF ELEVATIONS*

Beam Location	①	②	③	④	⑤
No. Abut.	418.34	418.47	418.59	418.47	418.34
€ Splice	418.34	418.47	418.59	418.47	418.34
€ Brg. Pier	418.34	418.47	418.59	418.47	418.34
So. Abut.	418.34	418.47	418.59	418.47	418.34

* Use for Fabrication only.

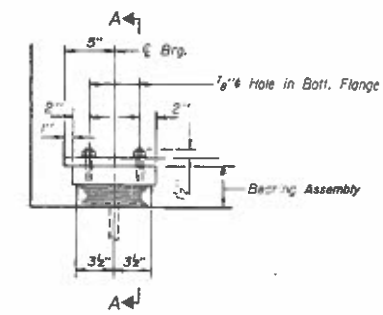
STRUCTURAL STEEL DETAILS
 FAP RTE. 849 over MIDDLE CREEK
 SECTION 148R-1
 STATION 289+59.83
 HAMILTON COUNTY

GREENE & BRADFORD, INC.
 OF SPRINGFIELD
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 200 STEVENSON DR. ST/237-668 SPRINGFIELD, IL

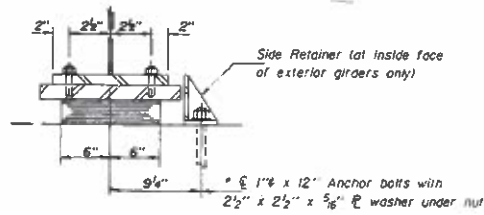


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

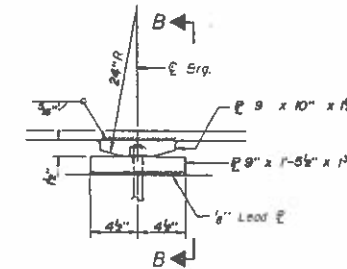
ROUTE	SECTION	COUNTY	TOTAL SHEETS
FAP 049	114BR-1	HAMILTON	17 11
ILLINOIS FED. AID PROJECT - Bridge Sheet 7 of 13.			



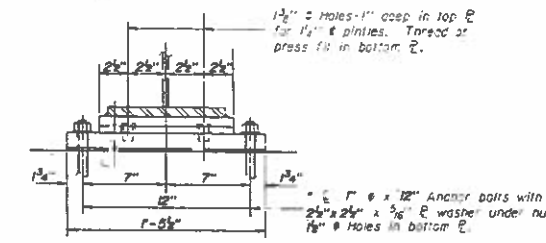
ELEVATION AT ABUT.



SECTION A-A

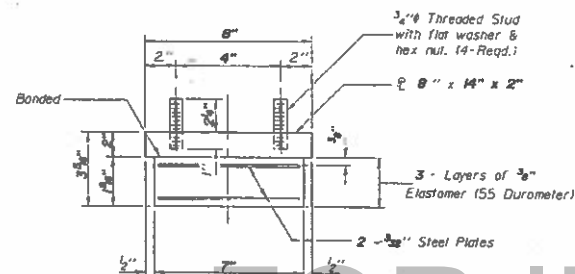


ELEVATION AT PIER



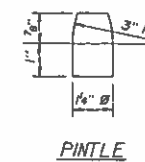
SECTION B-B

TYPE I ELASTOMERIC EXP. BRG.



BEARING ASSEMBLY

* Notes: Anchor bolts at fixed bearings may be built into the masonry.
See sheet # 8 for Anchor Bolt installation.



PINTLE

INTERIOR GIRDER MOMENT TABLE		
	0.4 Sp.1	Pier
I_s (in ⁴)	2100	2100
I_c (in ⁴)	5991	
S_x (in ³)	176	176
S_y (in ³)	286	
Z (in ³)		200
M (K/ft)	0.803	1.148
M^* (K)	100.2	235.6
I^* (K/ft)	0.345	
M_{pl}^* (K)	51.00	
M_{pl}^* (K)	287.5	-133.4
M_{max} (K)	86.3	-40.0
M_{min} (K)	623.0	-289.0
M_{a} (K)	1006.5	-682.0
M_{a} (K)	1677	-833.3
V_{pl} (K)	6.83	-16.06
V_{pl} (K)	2.36	
V_{pl} (K)	26.14	-19.70
V_s (K)	35.33	-35.76
V_s (K)		46.43
V_R (K)	91.7	

INTERIOR GIRDER REACTION TABLE		
	Abut.	Pier
R^* (K)	18.6	99.6
R^* (K)	37.1	44.9
R_{imp} (K)	8.1	13.5
R_{total} (K)	66.8	189.0

* M_u = Full Plastic Moment Capacity for Compact, Braced section
** Non-compact section
 M_a (Applied Moment) = $1.3 [M_u + M_p (0.5 M_u + 1)]$

DESIGN DATA TABLES

I_s and S_x are the moment of inertia and section modulus of the steel section used in computing f_s (Total and Overload).
 I_c and S_y are the moment of inertia and section modulus of the composite section used in computing f_s (Total and Overload).
 V_R is the maximum V + impact shear range in span.
 Z is the plastic section modulus used to determine the Fully Plastic Moments in the non-composite areas.
The Fully Plastic Moment capacity (M_p) is computed according to AASHTO 10.48.1 & 10.50.1.1.
 f_s (Total) is the sum of the stresses due to $1.3 (M_R + M_D E + \frac{1}{2} (M_L + I))$
 f_s (Overload) is the sum of the stresses due to $M_R + M_D E + \frac{1}{2} (M_L + I)$
 M_R = Moment due to dead loads on non-composite section.
 $M_D E$ = Moment due to dead loads on composite section.
 M_L = Moment due to live load on non-composite or composite section.
 I = Live load impact

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type 1	Each	10

BEARING DETAILS

FAP RTE. 049 over MIDDLE CREEK
SECTION 114BR-1
STATION 289+59.83
HAMILTON COUNTY

GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONSULTING ENGINEERS
809 STEVENSON ST. SPRINGFIELD, ILL.

I-2-EI 12-1-83

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	SHEET	TOTAL SHEETS
FAP 849	114 BR-1	HAMILTON	17	12
DRAWING NO. 51 ILLINOIS FED. AID PROJECT -				
BRIDGE SHEET 6 OF 13				

The Illinois Coil-Lock Anchor Bolt is a proprietary item which is the property of the Illinois Department of Transportation. Use, reproduction or disclosure without express written permission is prohibited and protected under Federal copyright laws. The production and the fabrication of this bolt for use on highway projects in the State of Illinois shall be permitted and there shall be no incurred charges or fees to the manufacturer or the fabricator for producing or fabricating this bolt.

D	E	H	K	d"
1"	1 1/8"	1 3/8"	1 3/4"	3/8"
1 1/2"	1 5/8"	1 7/8"	2 1/8"	1/2"
2"	2 1/8"	2 1/4"	2 7/8"	3/4"
2 1/2"	2 5/8"	2 7/8"	3 3/4"	1"

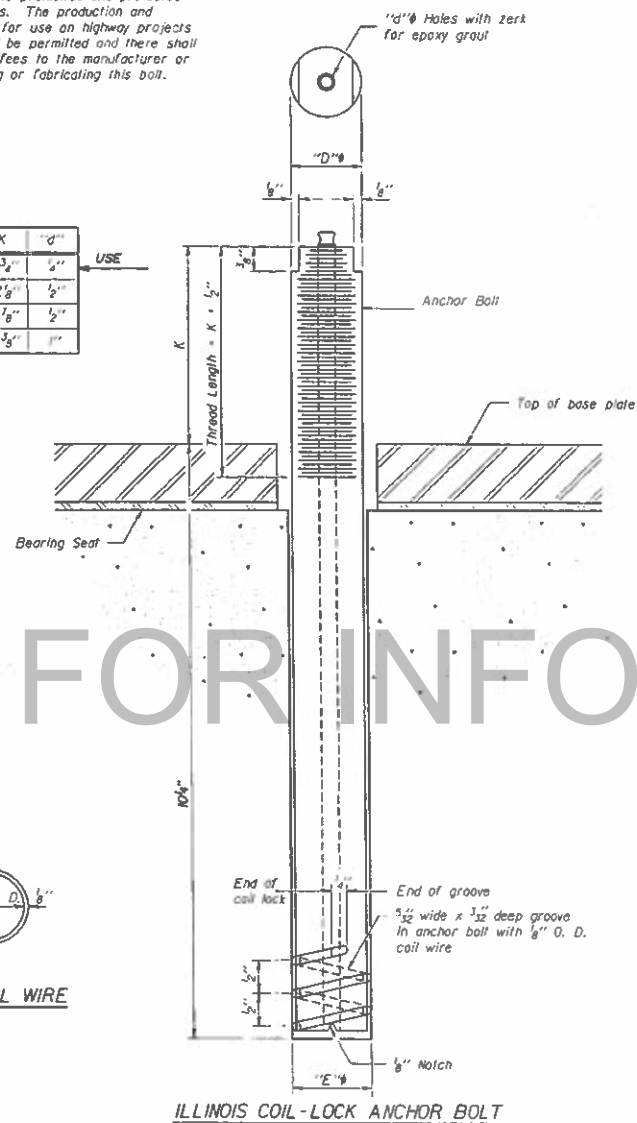


ABB-1 12-1-83

MATERIALS FOR ILLINOIS COIL-LOCK ANCHOR BOLT

The anchor bolt shall be fabricated from cold drawn or hot finished seamless carbon steel mechanical tubing conforming to ASTM A519, Grade 1026 and supplied with hexagonal nuts and cotter washers.
The coil wire shall be made of any suitable soft steel wire.
The finished anchor bolt shall be cleaned of rust and other foreign materials and wrapped or packaged to prevent contamination until they are installed.
The epoxy grout shall be a two-component, epoxy resin bonding system conforming to ASTM C881, Type I, Grade I and of a Class suitable for the temperature of installation.

INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT

1. With the coil wire in place, the bolt shall be inserted into the hole and turned clockwise to a snug fit in the hole. Nut and washer shall be placed on the bolt. The nut shall be tensioned until the WF Beam plates are held securely to the concrete bearing seat.
2. Epoxy grout shall be pumped through the zerk filling with a pressure gun. Pumping shall continue until the epoxy overflows the hole around the bolt shank. After pumping is discontinued, excess epoxy shall be immediately wiped off.

ALTERNATE ANCHOR BOLTS

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre drilled holes in accordance with the manufacturer's recommendations and procedures.
The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:
1. A threaded rod stud with nut and washer conforming to ASTM A307.
2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

GENERAL NOTES

Holes in the masonry for anchor bolts shall be drilled to the diameter and depth shown or in accordance with the manufacturer's recommendation after beams or girders have been erected and adjusted.
Prior to setting the bolts, the holes shall be dry and all dust and loose particles shall be removed by the use of compressed air or vacuuming.
The anchor bolts, furnished and installed and including the epoxy grout or capsules shall not be add'l for accounting but shall be included in the unit bid price for "Furnishing and Erecting Structural Steel".

FOR INFORMATION ONLY

ANCHOR BOLT DETAILS FOR BEARINGS

FAP RTE. 849 over MIDDLE CREEK
SECTION 114BR-1
STATION 285+33.83
HAMILTON COUNTY

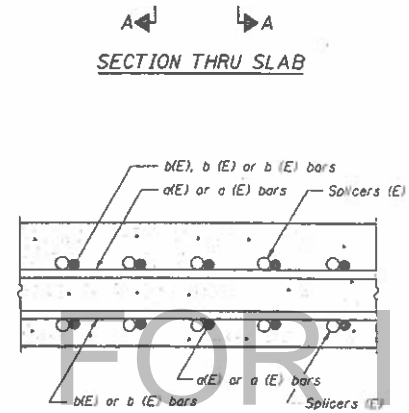
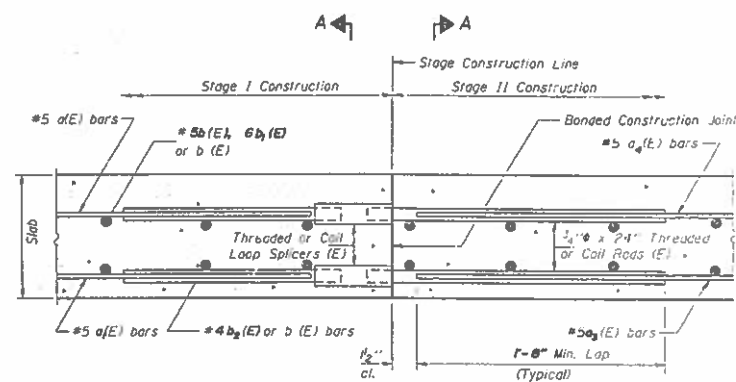
GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONSULTING ENGINEERS
BY JACOBI & JACOBI



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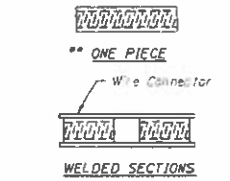
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	SHEET
F.A. 849	#4BR-1	HAMILTON	17 13
DRAWING NO. 9 EMBERS PER. AD. PROJECT			
Bridge Sheet 9 of 13 Sheets.			



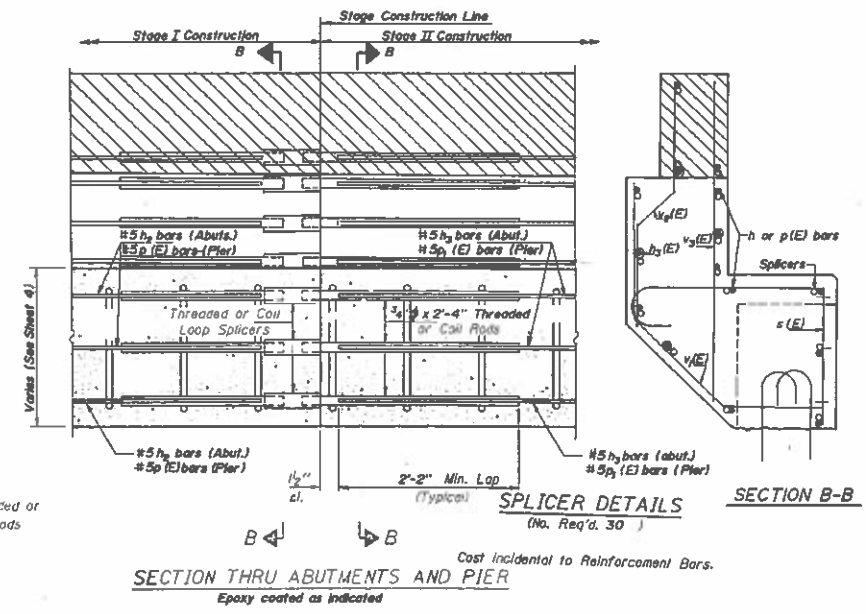
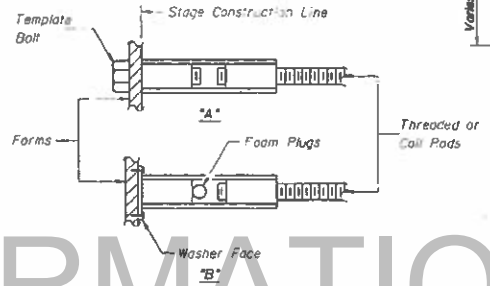
The diameter of this part of splicer is the same as the diameter of the bar spliced.

ROLLED THREAD DOWEL BAR



SPLICER ALTERNATIVES

Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or D1 may be used.



NOTES

Steel Splicer (Coupler) assembly shall be of an approved type and shall develop in tension at least 25 percent of the yield strength of the lapped reinforcement bars.

Steel Splicer rods shall be of minimum 60 ksi yield strength, threaded or coated full length and have effective tensile stress area equal to or greater than that of the lapped reinforcement bars.

All reinforcement bars shall be lapped and tied to the splicer rods.

Splicer (coupler) assembly in the slab shall be epoxy coated in accordance with the requirements for reinforcement bars.

Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed splicer (coupler) assembly satisfies the following requirements:

- Minimum Capacity (Tension in kips) = $1.25 \times f_y \times A_s$
- Minimum Pull-out Strength (Tension in kips) = $1.25 \times f_{s_{allow}} \times A_s$

Where f_y = Yield strength of lapped reinforcement bars in ksi.
 $f_{s_{allow}}$ = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load)
 A_s = Tensile stress area of lapped reinforcement bars.
 n = 28 day concrete

Typical Splicer (Coupler) Assembly Sizes:

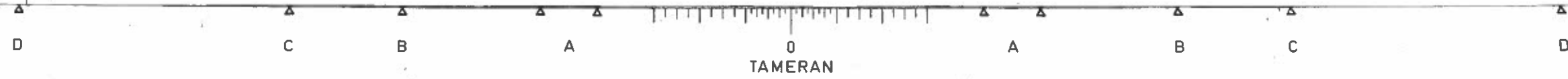
In Slabs	#5 bar lap with 3/4" Splicer (Coupler) x 2'-0" Splicer Rods	Minimum Capacity = 23.0 kips-tension Minimum Pull-out Strength = 9.2 kips-tension
In Sub-Structure	#7 bar lap with 1" Splicer (Coupler) x 3'-5" Splicer Rods	Minimum Capacity = 45.1 kips-tension Minimum Pull-out Strength = 18.0 kips-tension
In Sub-Structure	#8 bar lap with 1 1/4" Splicer (Coupler) x 4'-6" Splicer Rods	Minimum Capacity = 58.9 kips-tension Minimum Pull-out Strength = 23.6 kips-tension

BAR SPLICER (COUPLER) DETAILS
AT STAGE CONSTRUCTION

FAP RTE. 849 / MIDDLE CREEK
SECTION #4 BR-1
STATION 289+59.83
HAMILTON COUNTY

GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONSULTING ENGINEERS
200 STEVENSON DR. #2124-448 SPRINGFIELD, IL

BSD-1 12-31-87

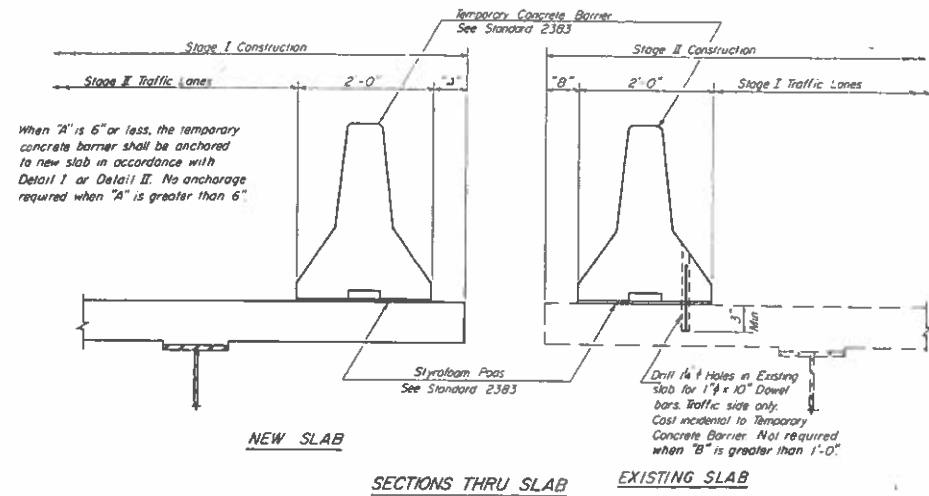


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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 849	#4BR-1	HAMILTON	17	14

ILLINOIS FED AID PROJECT -
Bridge Sheet 10 of 13.

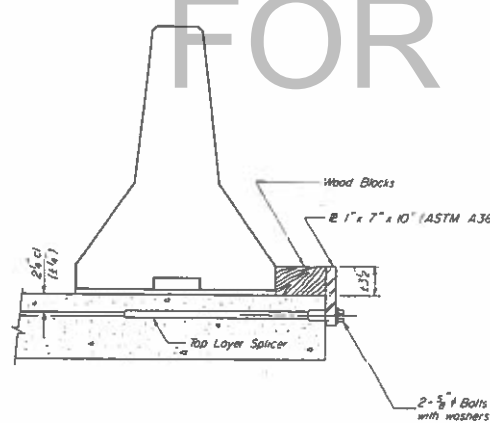


NOTES

Detail I - With Bar Splicer or Couplers
Connect one (1) 1" x 7" x 10" steel *I* to the top layer of couplers with 2-5/8" bolts screwed to coupler at approximately 1/2" of each 10'-0" barrier panel.

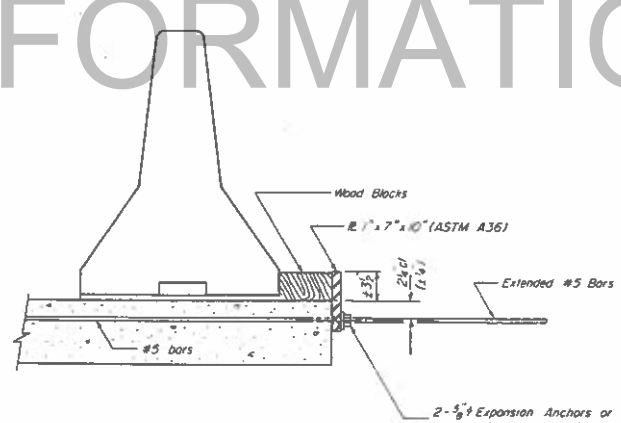
Detail II - With Extended Reinforcement Bars
Connect one (1) 1" x 7" x 10" steel *I* to the concrete slab with 2-5/8" Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximately 1/2" of each 10'-0" barrier panel.

Cost of anchorage is incidental to Temporary Concrete Barrier.



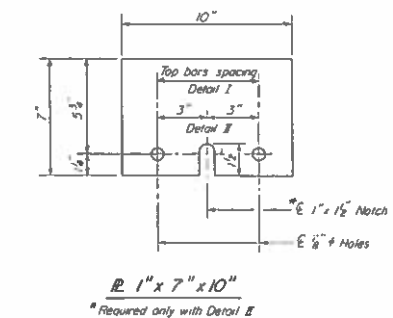
DETAIL I

The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and reinforcement bars are in place.



DETAIL II

The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and all reinforcement bars are in place and the concrete is ready to be placed.



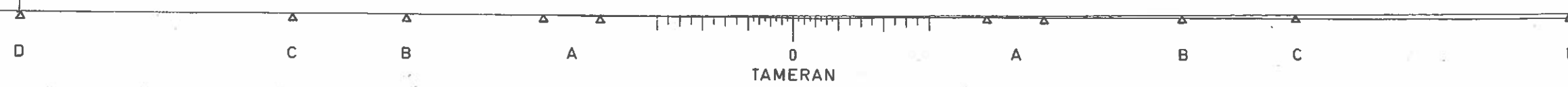
NOTE:
SEE SHEET NO. 4 OF THE ROADWAY PLANS,
STAGE CONSTRUCTION DETAILS FOR TEMPORARY
BARRIER LOCATIONS.

TEMPORARY CONCRETE BARRIER FOR
STAGE CONSTRUCTION

FAP RTE. 849 /over MIDDLE CREEK
SECTION #4BR-1
STATION 209+59.83
HAMILTON COUNTY

GREENE & BRADFORD, INC.
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CONSULTING ENGINEERS
309 SEVENSON DR. 217-527-6200

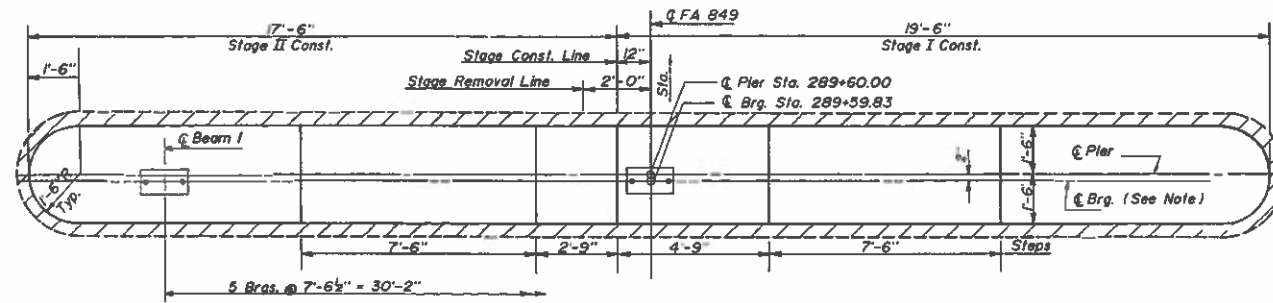
R-27 6-15-83



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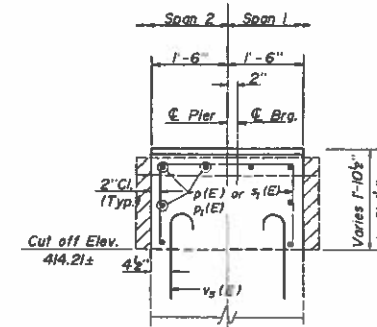
STATE OF ILLINOIS
ILLINOIS DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
FAP 849	148R-1	HAMILTON	17	15
FED. AID PROJ. NO. 3 ILLINOIS FED. AID PROJECT - Bridge Sheet 11 of 13				

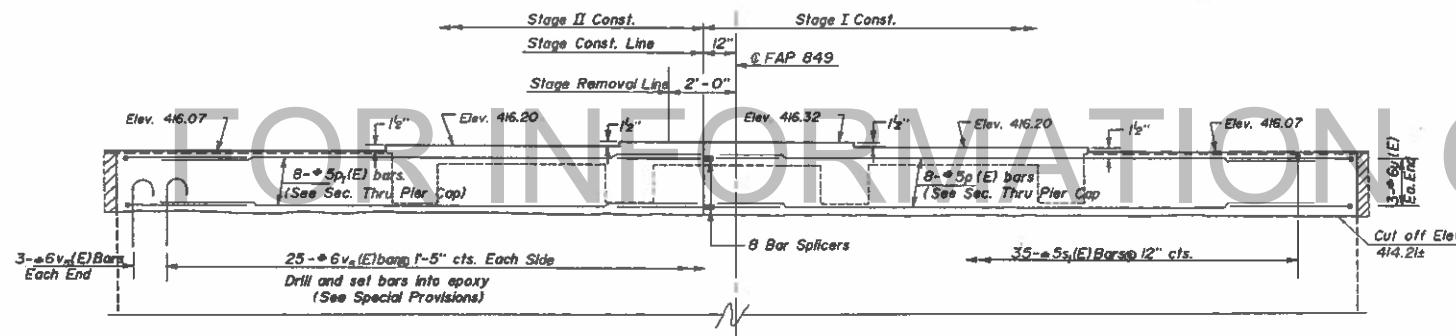


Hatched area shows portion of existing pier cap to be removed.

NOTE: Brg. set 2" off of Pler C towards Span 1.

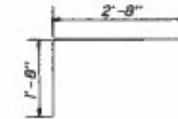
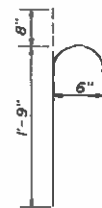
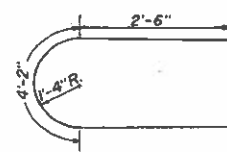
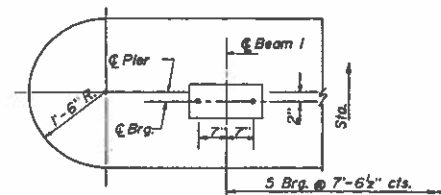


NOTE: Existing reinforcement that extends above the cut-off elevation shall be cleaned of old concrete and incorporated into the new concrete.



PIER
BILL OF MATERIALS

Bar	No.	Size	Length	Shape	
p(E)	8	#5	17'-9"	—	
s(E)	8	#5	15'-9"	—	
s(E)	35	#5	6'-0"	—	
v(E)	6	#6	9'-2"	—	
v_s(E)	56	#6	2'-5"	—	
Reinf. Bars (Epoxy Coated)				Lbs.	790
Class X Concrete				Cu. Yds.	8.0
Concrete Removal				Cu. Yds.	7.8



PIER
FAP RTE 849 over MIDDLE CREEK
SECTION 148R-1
STATION 289+59.83
HAMILTON COUNTY

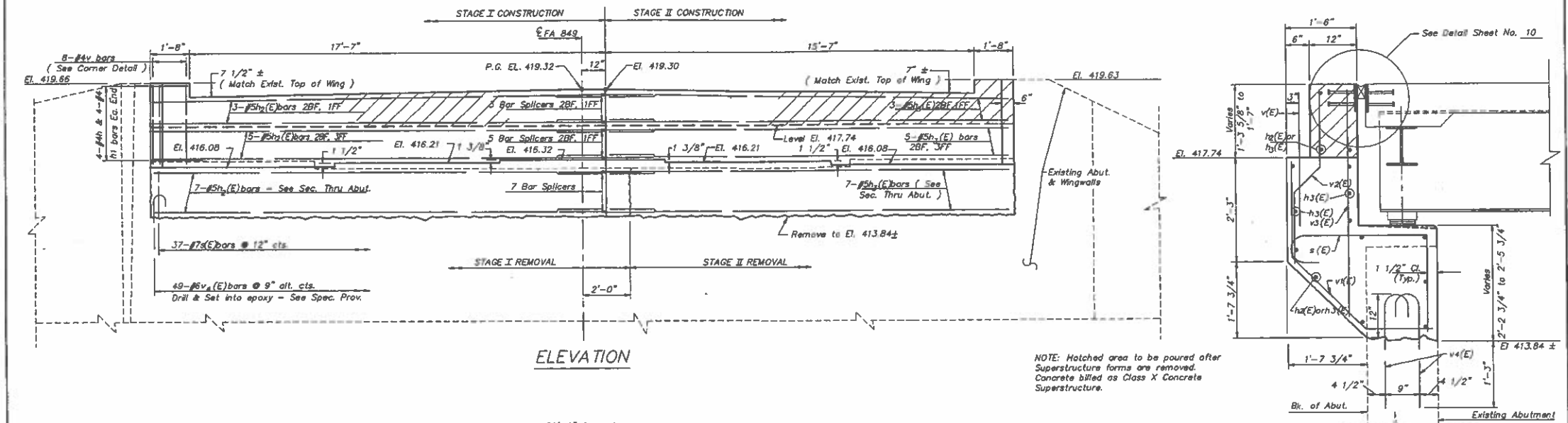
GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONSULTING ENGINEERS
AND ARCHITECTS
215 S. SPRINGFIELD ST.
SPRINGFIELD, ILL.

D C B A 0 A B C D

TAMERAN

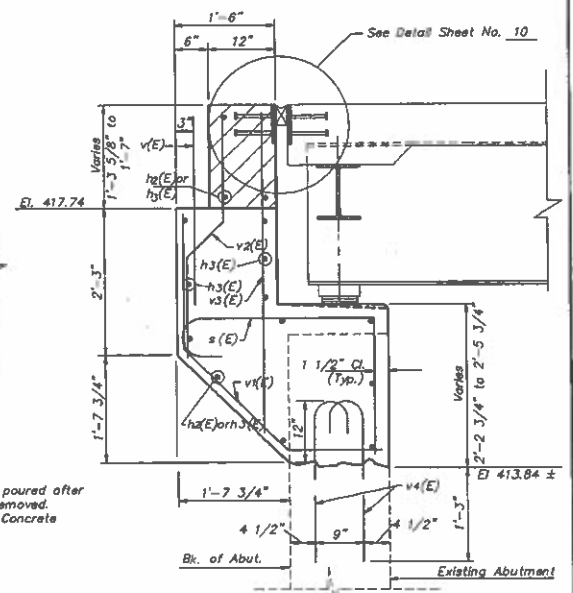
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
FA 849	114	HAMILTON	17	16

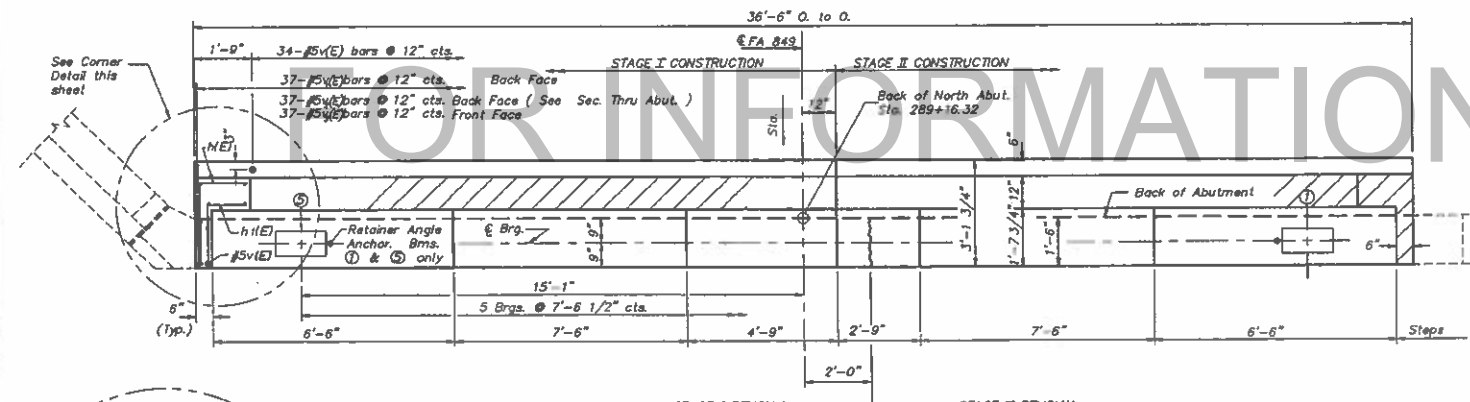


ELEVATION

NOTE: Hatched area to be poured after Superstructure forms are removed. Concrete billed as Class X Concrete Superstructure.



SECTION THRU ABUT.



PLAN

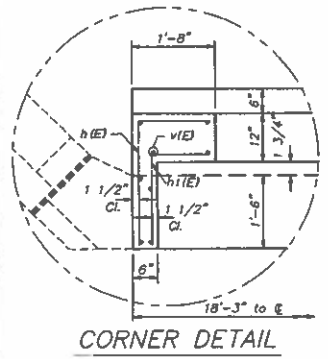
BILL OF MATERIAL
ONE ABUTMENT

BAR	NO.	SIZE	LENGTH	SHAPE
h(E)	8	#4	4'-4"	
h ₁ (E)	8	#4	2'-8"	
h ₂ (E)	15	#5	19'-0"	
h ₃ (E)	15	#5	17'-0"	
s(E)	37	#7	5'-10"	
v(E)	30	#5	3'-4"	
v ₁ (E)	37	#5	7'-4"	
v ₂ (E)	37	#5	3'-2"	
v ₃ (E)	37	#5	4'-4"	
v ₄ (E)	49	#5	3'-3"	
Reinforcement Bars (Epoxy Coated)		LBS.	2040	
Class X Concrete		CU.YD.	11.1	
Concrete Removal		CU.YD.	4.0	

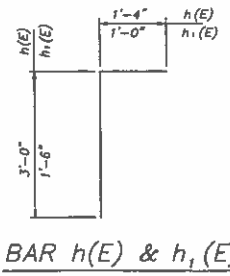
NORTH ABUTMENT

FA 849 over MIDDLE CREEK
SECTION 114BR-1
HAMILTON COUNTY
STA. 289+59.83

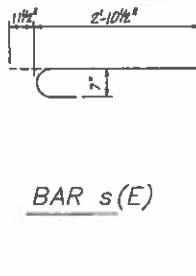
GREENE & BRADFORD, INC.
OF REINFORCED
CONCRETE PRODUCTS
100 (Continental Building)
CHICAGO, ILL. 60601



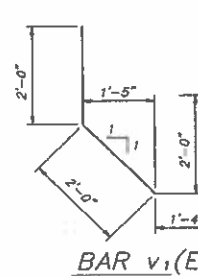
CORNER DETAIL



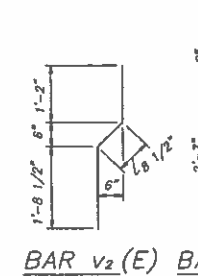
BAR h(E) & h₁(E)



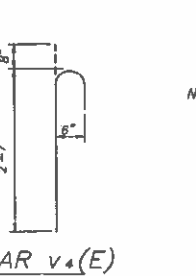
BAR s(E)



BAR v₁(E)



BAR v₂(E)



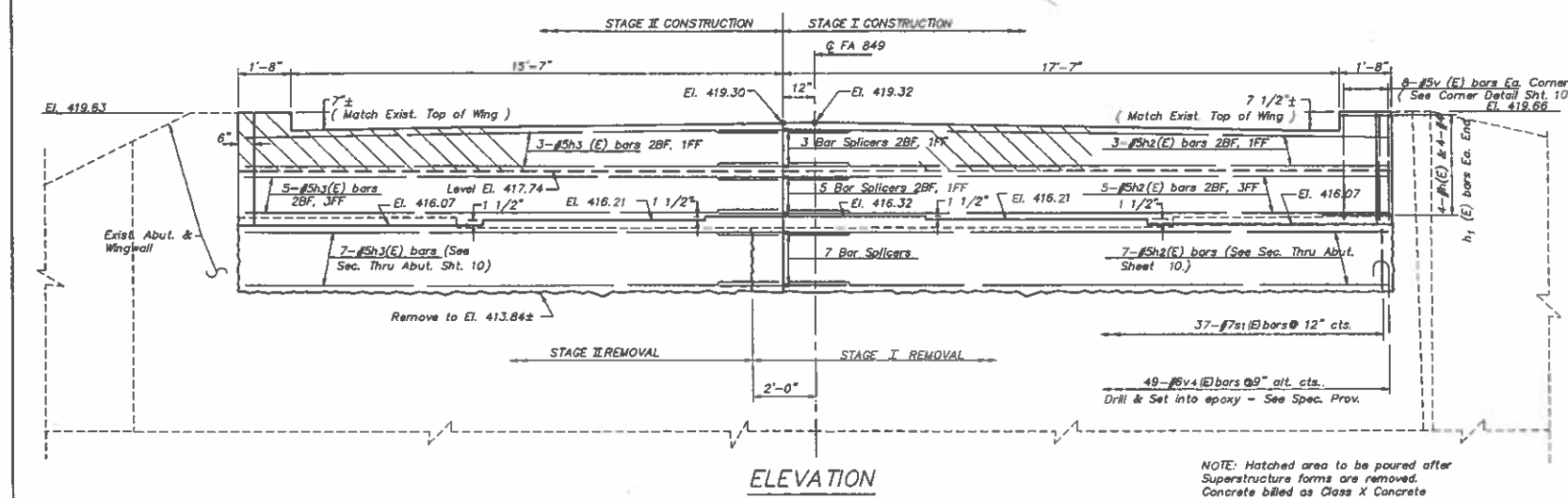
BAR v₄(E)

NOTE: Existing reinforcement that extends above the cut-off elevation shall be cleaned of old concrete and incorporated into the new concrete.

D C B A 0 A B C D
TAMERAN

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

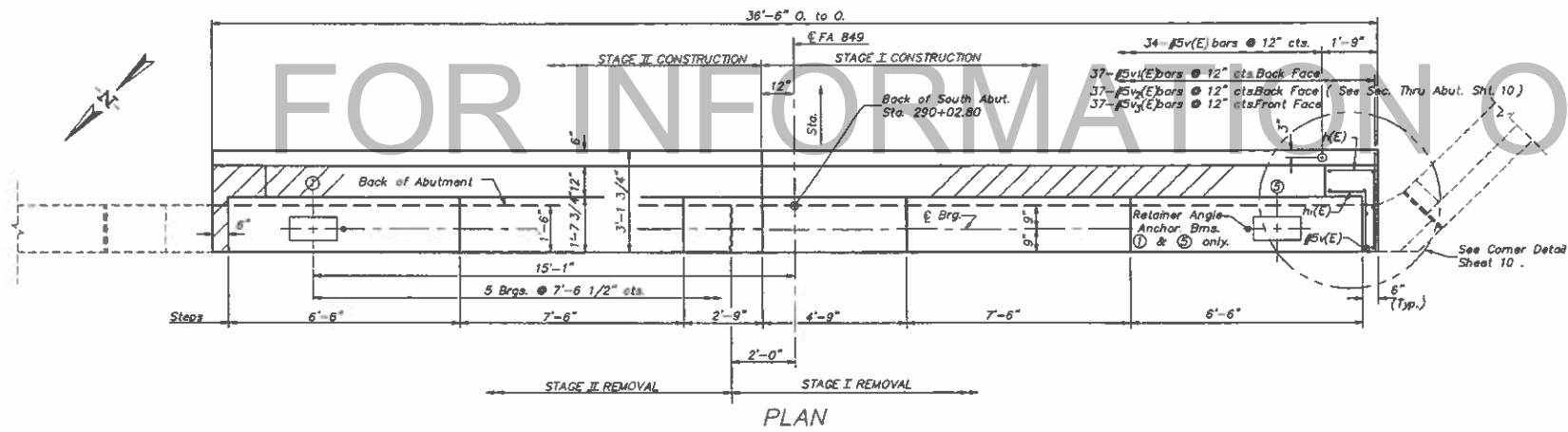
ROUTE	SECTION	COUNTY	TOTAL SHEETS
FA 849	114 BR-1	HAMILTON	17 17
BRIDGE SHEET 13 OF 13			



NOTE: Existing reinforcement that extends above the cut-off elevation shall be cleaned of old concrete and incorporated into the new concrete.

FOR SECTION THRU ABUTMENT SEE SHET NO. 10.

NOTE: Hatched area to be poured after Superstructure forms are removed. Concrete billed as Class X Concrete Superstructure.



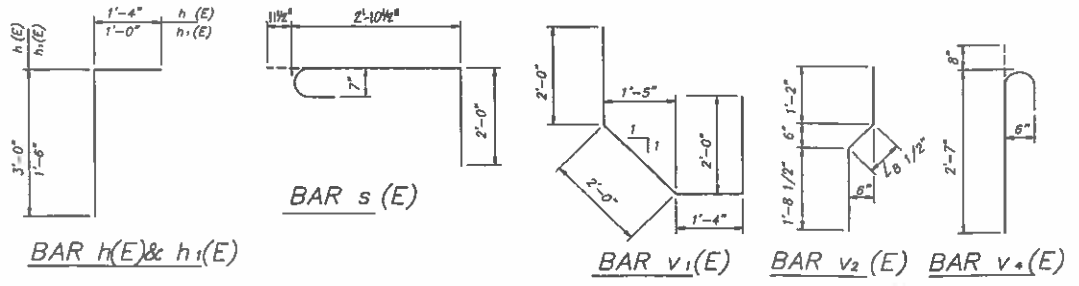
BILL OF MATERIAL
ONE ABUTMENT

BAR	NO.	SIZE	LENGTH	SHAPE
h (E)	8	#4	4'-4"	
h1(E)	8	#4	2'-6"	
h2(E)	15	#5	19'-0"	
h3(E)	15	#5	17'-0"	
s1 (E)	37	#7	5'-10"	
v (E)	50	#5	3'-4"	
v1(E)	37	#5	7'-4"	
v2(E)	37	#5	3'-7"	
v3(E)	37	#5	4'-4"	
v4(E)	49	#6	3'-3"	
Reinforcement Bars (Epoxy Coated)				LBS. 2040
Class X Concrete				CU. YD. 11.1
Concrete Removal				CU. YD. 3.6

SOUTH ABUTMENT

FA 849 over MIDDLE CREEK
SECTION 114BR-1
HAMILTON COUNTY
STA. 287+59.83

GREENE & BRADFORD, INC.
OF SPRINGFIELD
CONCRETE REINFORCEMENT
1000 INDUSTRIAL BLVD. (217-262-1100)
SPRINGFIELD, ILLINOIS 62761
8853658



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