

BM.: TBM #29 Railroad spike in power pole, North side of U.S. Route 24. Sta. 1912+00, Elev. 633.66'

Existing Structure: SM 038-0033. Three span reinforced concrete slab, 35'-8" Out to Out, and steel I beams (non-composite). Reinforced concrete, spill through abutments and pier caps on precast concrete piles. Remove and replace superstructure, replace abutments and widen pier substructure, to provide 40'-0" clear between parapets. Reconstruct end slopes with stone riprap. One lane of traffic is to be maintained at all times using staged construction. No salvage.

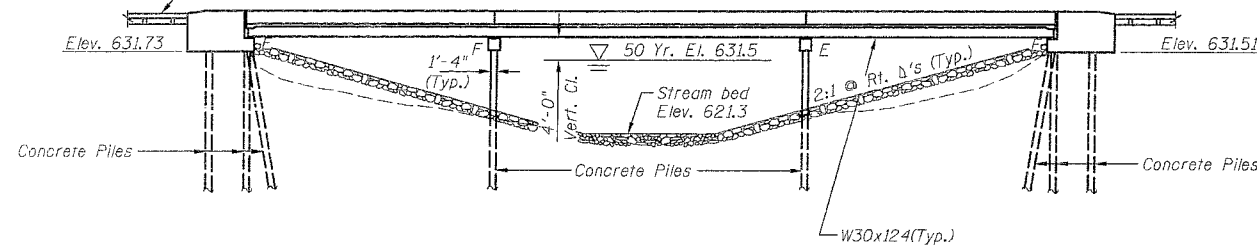
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 317	21BR-1	IROQUOIS	255	127

Bridge Sheet 1 of 20 Sheets

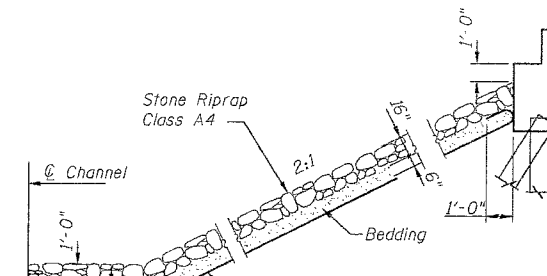
GENERAL NOTES

See Bridge Sheet 2 for General Notes.

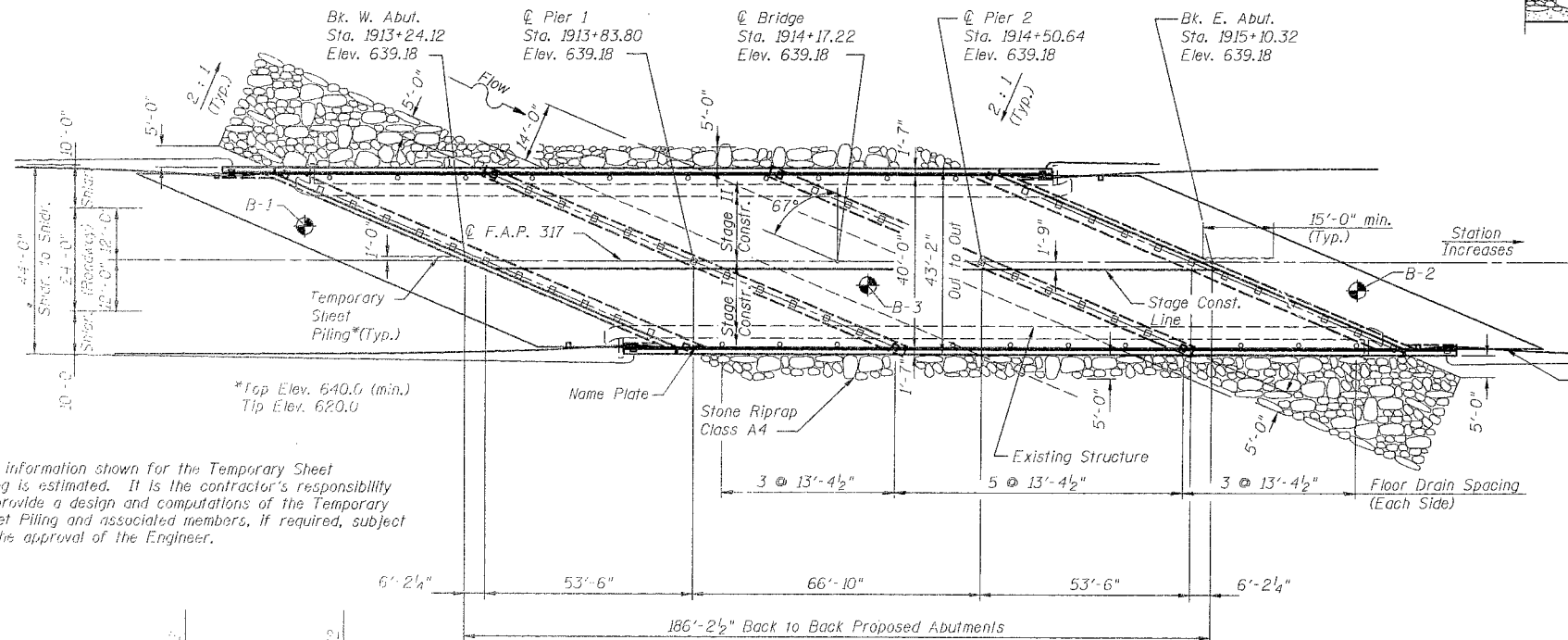
Traffic Barrier Terminal - Type 6 Typical Each end. See Std. 2341



ELEVATION



STONE RIPRAP DETAILS



PLAN

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Concrete Superstructure	Cu. Yd.	236.5		236.5
Concrete Structures	Cu. Yd.		270.1	270.1
Reinforcement Bars, Epoxy Coated	Pounds	56,970	82,490	139,460
Name Plates	Each	1		1
Floor Drains	Each	20		20
Furnishing Concrete Piles	Foot		1845	1845
Driving Concrete Piles	Foot		1845	1845
Test Piles, Concrete	Each		2	2
Temporary Sheet Piling	Sq. Ft.		600	600
Structure Excavation	Cu. Yd.		134	134
Removal of Existing Superstructures	Each		1	1
Structural Steel	L.S.	1		1
Elastomeric Bearing Assembly, Type I	Each		12	12
Elastomeric Bearing Assembly, Type II	Each		6	6
Neoprene Expansion Joint (2")	Foot	211		211
Stone Riprap, Class A4	Sq. Yd.		1230	1230
Filter Fabric for use with Riprap	Sq. Yd.		1230	1230
Concrete Removal	Cu. Yd.		163.4	163.4
Bar Splicers	Each	608	60	668
Protective Coat	Sq. Yd.	164	20	184
Bridge Deck Grooving	Sq. Yd.	750		750
Bridge Seat Sealer	Sq. Ft.		576	576
Str. Excav. Prop. for Pile Berms	Sq. Ft.		4	4
Stud Shear Connectors	Ea.	560		560

*Quantity is for top & inside of parapet only
*See Special Provisions

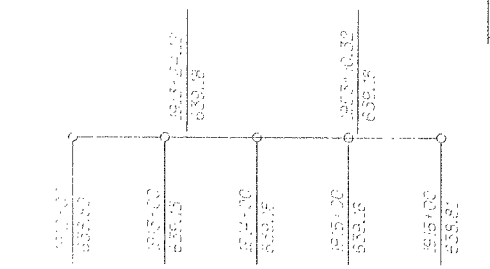
* NAF-ERF-ERF-317(26)

STATION 1914+17.22
REBUILT 199 BY
STATE OF ILLINOIS
F.A.P. RT. 317 * SEC. 21BR-1
LOADING HS20
STR. NO. 038-0033

NAME PLATE

See Sid. 2113
Relocate existing Name Plate to new parapet (Cost Incidental to Name Plates)

EXISTING/PROPOSED PROFILE GRADE



WATERWAY INFORMATION TABLE

DISCHARGE AREA:		Flow				Headwater El.			
Flow	Area	Vel.	Disch.	Headwater El.	Flow	Area	Vel.	Disch.	Headwater El.
Design	100	1.5	321	289	6.31.5	0	0	6.31.5	6.31.5
Base	100	1.3	341	303	6.31.8	0	0	6.31.8	6.31.8
Max. Calc.	400	1.5	1370	1370	6.32.4	0	0	6.32.4	6.32.4

SEISMIC DATA

S.P.C. = A
A = 0.045
S = 1.0

DESIGN SPECIFICATIONS

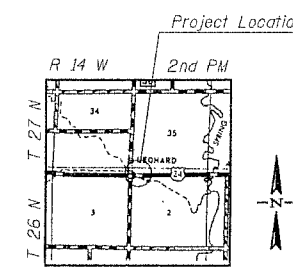
1992 AASHTO & 1993 Interims

DESIGN STRESSES

f'_c = 3,500 p.s.i.
 f_y = 60,000 p.s.i. (Reinforcement)
 F_y = 50,000 p.s.i. (Structural Steel - M270-GR50)
 F_y = 36,000 p.s.i. (Structural Steel - M270-GR36)

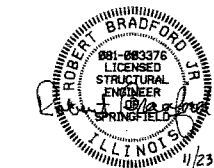
LOADING HS 20-44

Allow 25 lbs./sq.ft. for future wearing surface.



LOCATION PLAN

APPROVED FOR STRUCTURAL ADEQUACY ONLY



Robert Bradford
Engineer of Bridges and Structures

ILLINOIS DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION

FAP ROUTE 317 (U.S. RTE. 24) OVER TRIBUTARY TO SPRING CREEK, SEC 21BR-1, IROQUOIS COUNTY STA 1914+17.22, S.N. 038-0033

REVISIONS	NAME	DATE

SCALE: VERT. HORIZ.
DATE: 8/10/94
DRAWN BY: BAB/MAJ
DESIGNED BY: BRADFORD
CHECKED BY: BANE

GREENE & BRADFORD, INC.
CONSULTING ENGINEERS
OF SPRINGFIELD
1211 S. MAIN
SPRINGFIELD, ILLINOIS 62702
COMPUTER FILE NO. 93117GPE-20

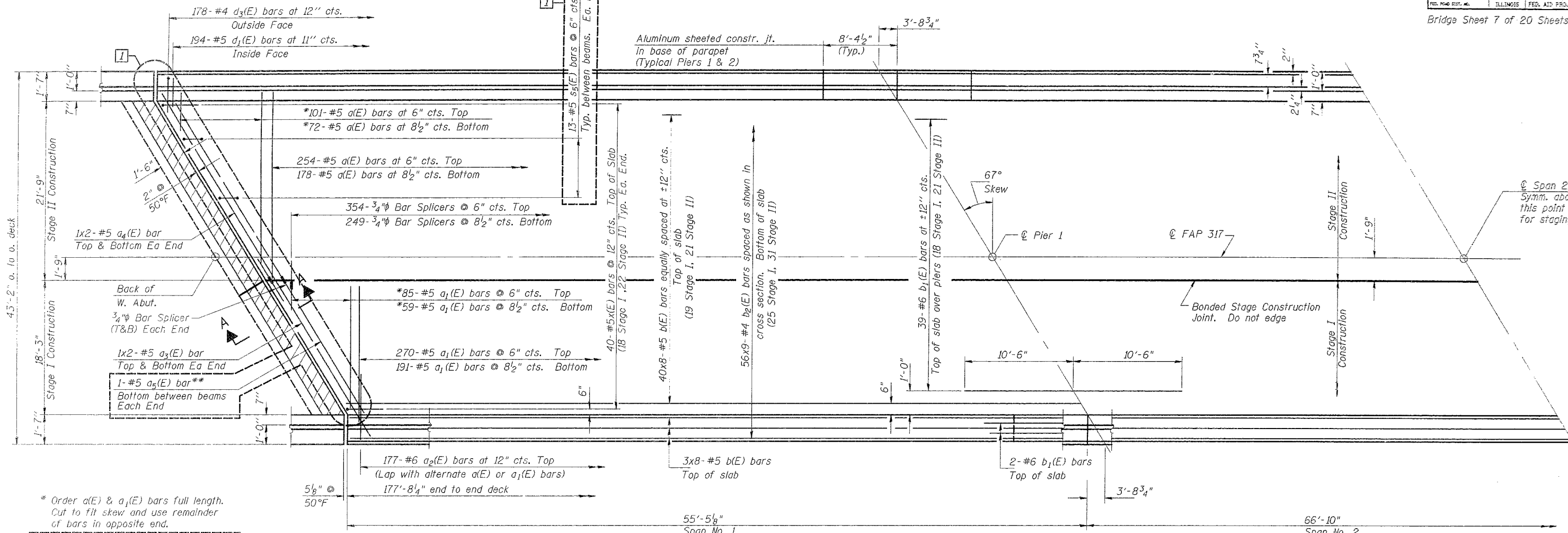
FAP ROUTE 317 (U.S. ROUTE. 24) IROQUOIS COUNTY

Revised 7/24/95 RBjr

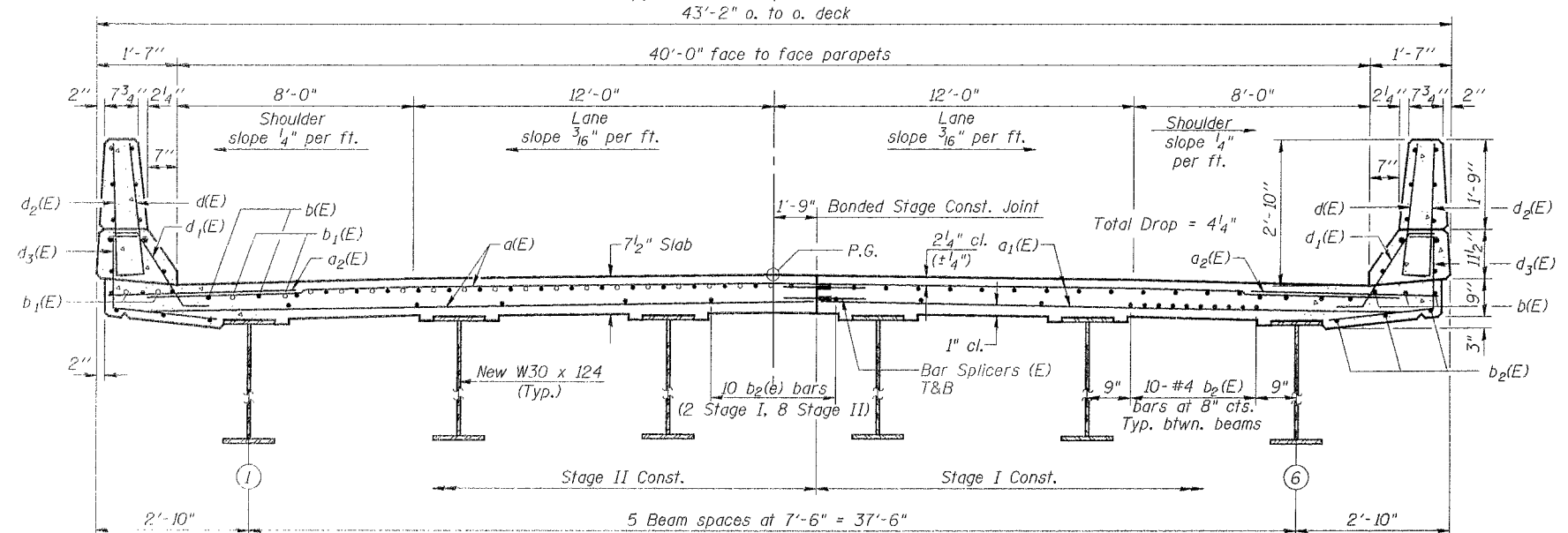
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 317	21BR-1	IROQUOIS	255	133
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS FED. AID PROJECT			

Bridge Sheet 7 of 20 Sheets



HALF PLAN



CROSS SECTION
(Looking East)

Notes: See Bridge Sheet 8 for superstructure details and Bill of Material.
Reinforcement bars designated (E) shall be epoxy coated.
Bars indicated thus 20 x 3-#5 etc. indicate 20 lines of bars with 3 lengths per line.
See Bridge Sheet 8 for parapet reinforcement.
See Bridge Sheet 8 for Section A-A.
See Bridge Sheet 10 for Bar Splicer Details.
Hatched area to be poured after superstructure forms have been removed. Quantity of Concrete included with Concrete Superstructure.

MIN. BAR LAP

#4	1'-4"
#5	1'-8"

ILLINOIS DEPARTMENT OF TRANSPORTATION
SUPERSTRUCTURE
FAP ROUTE 317 (US RTE. 24) OVER TRIBUTARY TO SPRING CREEK, SEC 21BR-1, IROQUOIS COUNTY STA. 1914+17.22, S.N. 036-0033

REVISIONS	
NAME	DATE

SCALE: VERT. HORIZ.
DATE: 8/9/94
DRAWN BY: LANDREY
DESIGNED BY: BRADFORD
CHECKED BY: BANE
GREENE & BRADFORD, INC.
CONSULTING ENGINEERS
OF SPRINGFIELD
COMPUTER FILE NO.
93117SS-1

DESIGNED BY: BRADFORD
CHECKED BY: LANDREY
DRAWN BY: BANE
APPROVED BY: BANE

S-2-R(30°)

S-2-R31 12 31 87

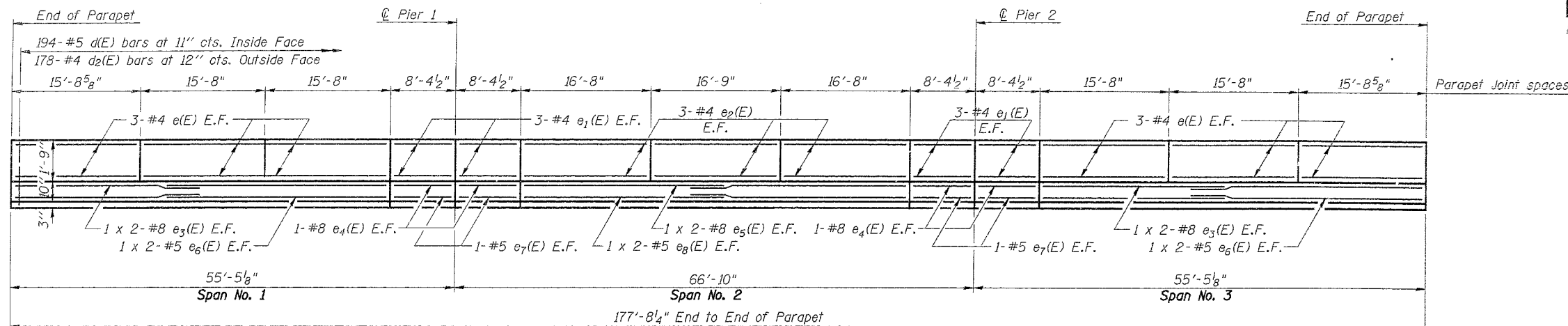
FAP ROUTE 317 (US RTE. 24) IROQUOIS COUNTY

Revised 7/24/95 RBjr

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 317	21BR-1	IROQUOIS	255	134
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

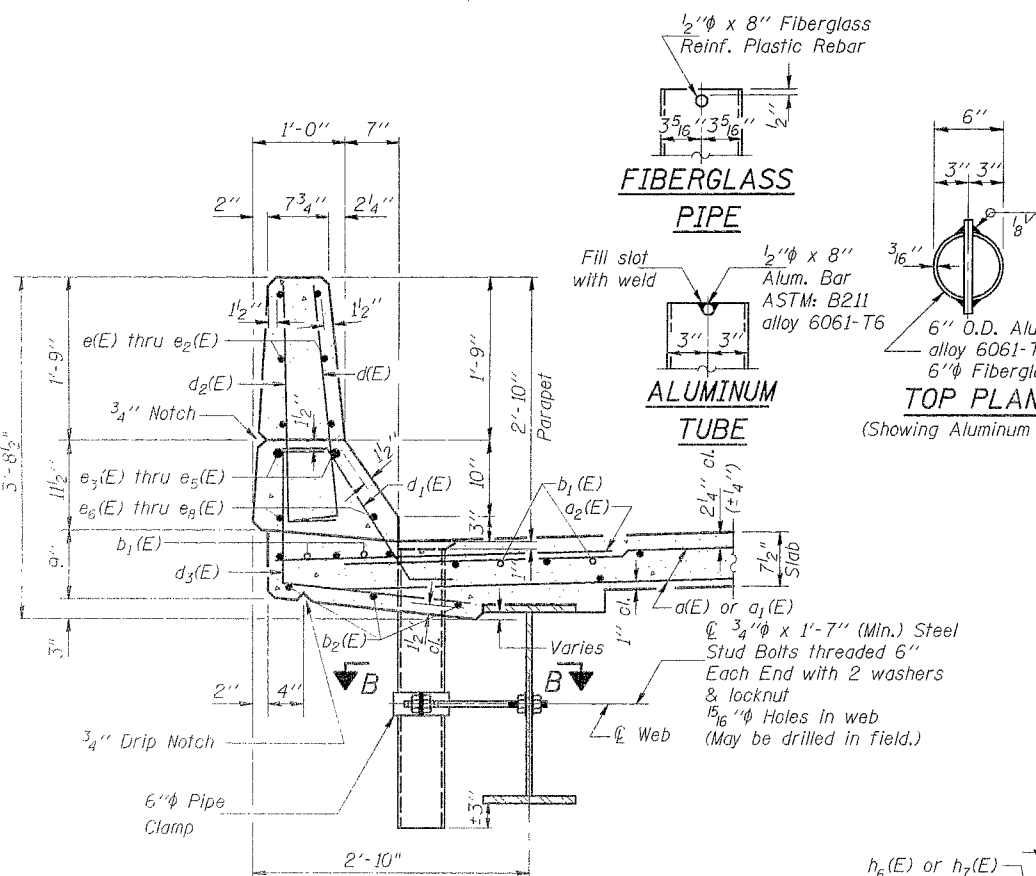
Bridge Sheet 8 of 20 Sheets



INSIDE ELEVATION OF PARAPET

SUPERSTRUCTURE
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a(E)	605	#5	22'-6"	—
a1(E)	605	#5	19'-0"	—
a2(E)	354	#6	4'-0"	—
a3(E)	10	#5	25'-3"	—
a4(E)	10	#5	29'-6"	—
a5(E)	10	#5	18'-10"	—
b(E)	368	#5	23'-9"	—
b1(E)	86	#6	21'-0"	—
b2(E)	504	#4	21'-0"	—
d(E)	388	#5	3'-0"	—
d1(E)	388	#5	2'-7"	—
d2(E)	356	#4	3'-0"	—
d3(E)	356	#4	3'-10"	—
e(E)	72	#4	15'-4"	—
e1(E)	48	#4	8'-0"	—
e2(E)	36	#4	15'-5"	—
e3(E)	16	#8	25'-4"	—
e4(E)	16	#8	8'-0"	—
e5(E)	8	#8	27'-0"	—
e6(E)	16	#5	24'-4"	—
e7(E)	16	#5	8'-0"	—
e8(E)	8	#5	25'-10"	—
s5(E)	130	#5	5'-5"	—
x(E)	80	#5	4'-1"	—
Reinforcement Bars, Epoxy Coated		Lbs.		56,970
Concrete Superstructure		Cu. Yds.		236.5

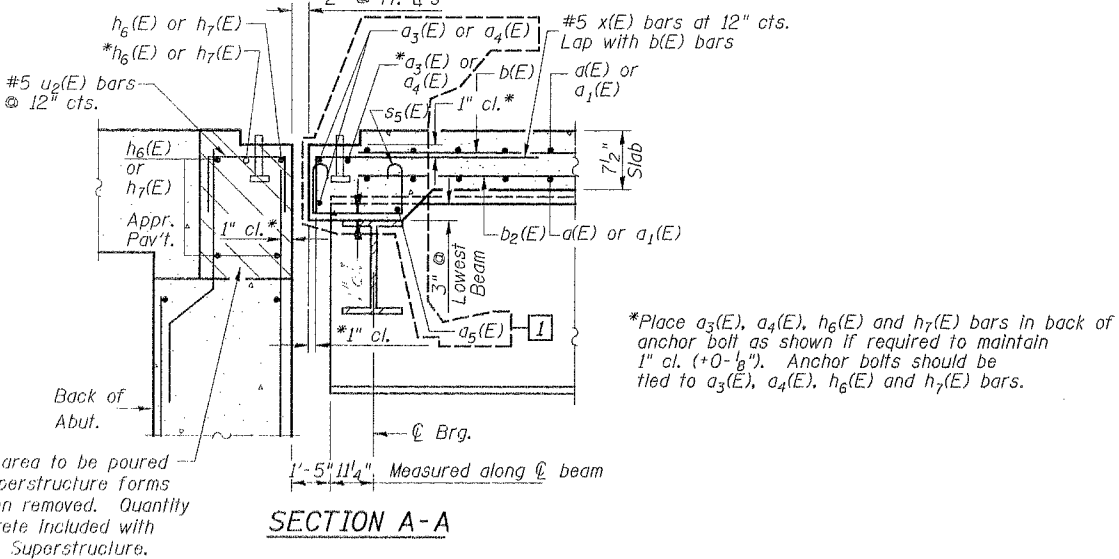
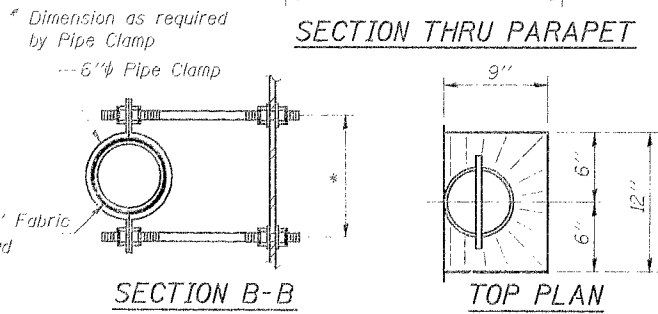
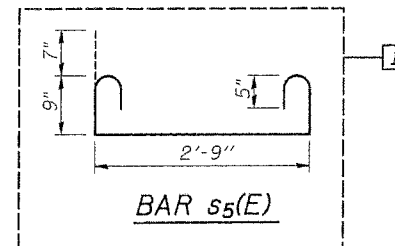


PARAPET JOINT DETAILS

BARS d(E) & d2(E) BAR d1(E) BAR d3(E)

BAR x(E)

MIN. BAR LAP



ILLINOIS DEPARTMENT OF TRANSPORTATION
SUPERSTRUCTURE DETAILS

FAP ROUTE 317 (US RTE. 24) OVER TRIBUTARY TO SPRING CREEK, SEC 21 BR-1, IROQUOIS COUNTY STA. 1914+17.22; S.N. 038-0033

REVISIONS	NAME	DATE

SCALE: VERT. HORIZ.
DATE: 8/9/94
DRAWN BY: LANDREY
DESIGNED BY: BRADFORD
CHECKED BY: BANE

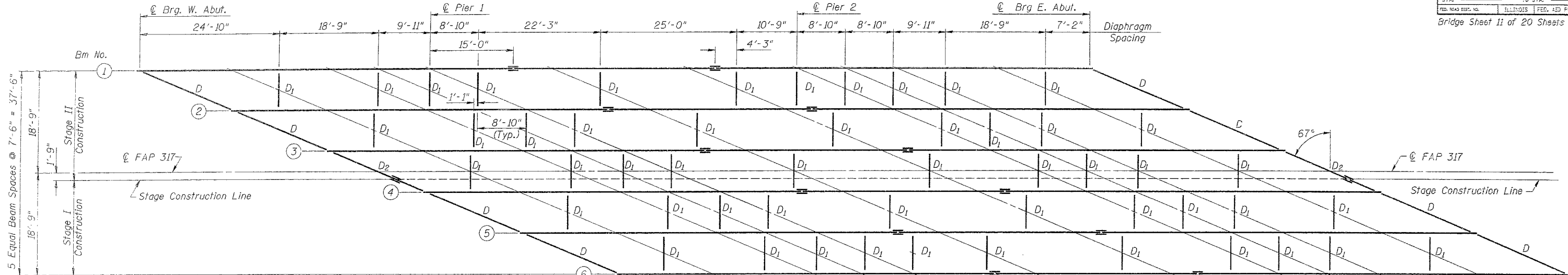
GREENE & BRADFORD, INC.
CONSULTING ENGINEERS
1000 SPRINGFIELD
SPRINGFIELD, ILLINOIS 62761
TEL: 217-253-0000

COMPUTER FILE NO.
93117SD-1

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

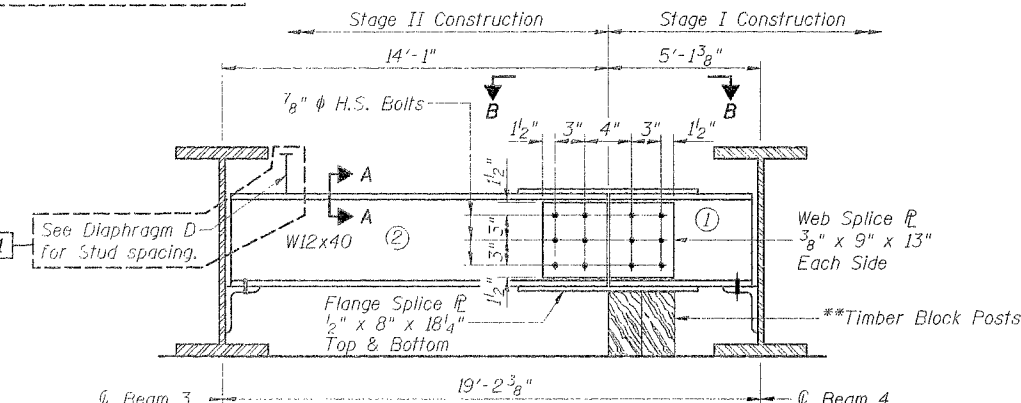
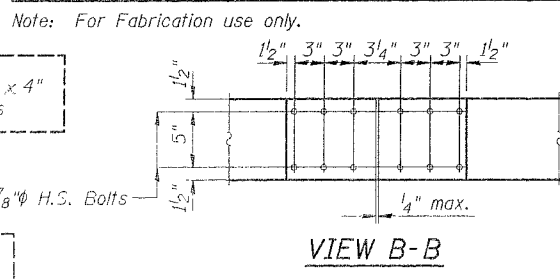
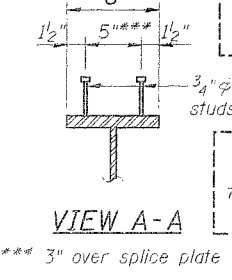
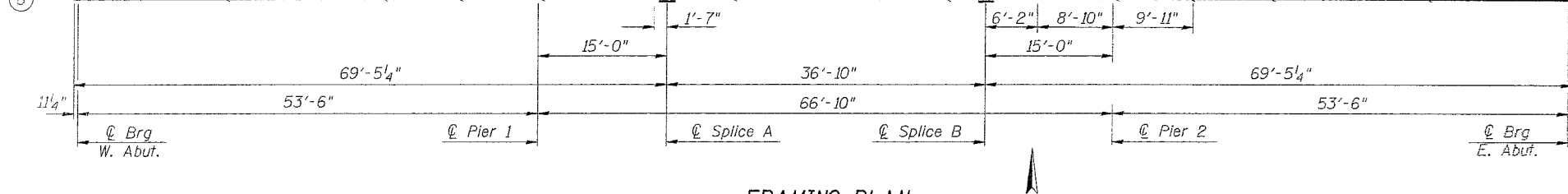
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 317	21BR-1	IROQUOIS	255	137
STA.		TO STA.		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJ. NO.		

Bridge Sheet 11 of 20 Sheets



TOP OF BEAM ELEVATIONS

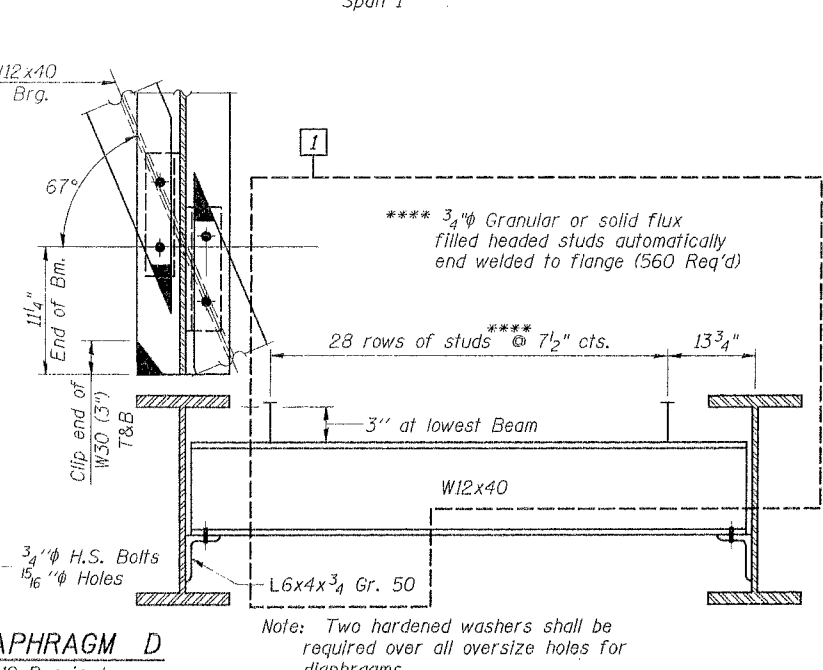
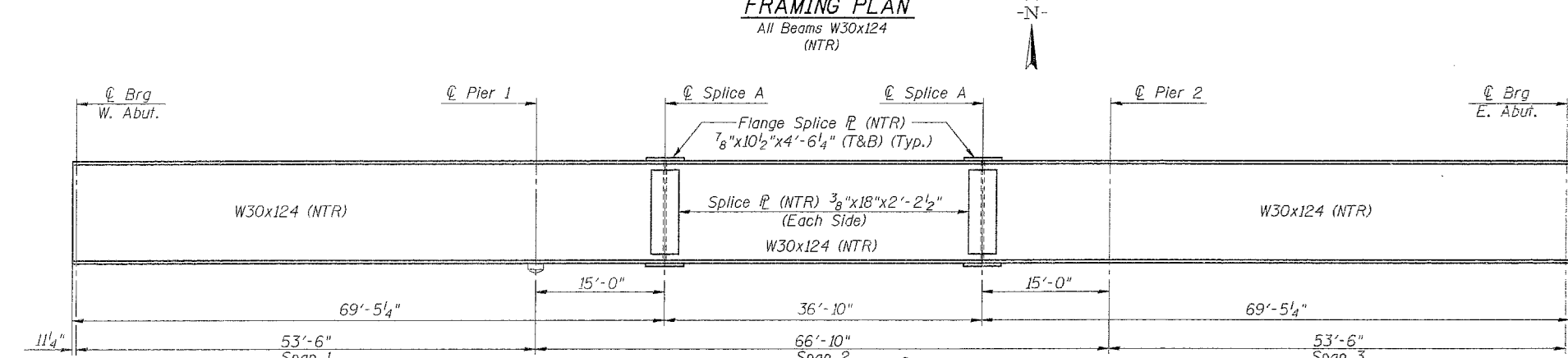
BM	LOC	℄ Brg W. Abut.	℄ Pier 1	Splice A	Splice B	℄ Pier 2	℄ Brg E. Abut.
1		638.11	638.11	638.11	638.11	638.11	638.11
2		638.26	638.26	638.26	638.26	638.26	638.26
3		638.38	638.38	638.38	638.38	638.38	638.38
4		638.38	638.38	638.38	638.38	638.38	638.38
5		638.26	638.26	638.26	638.26	638.26	638.26
6		638.11	638.11	638.11	638.11	638.11	638.11



DIAPHRAGM D₂
2 Required (Looking East)
For details of connections to beams see diaphragm D.

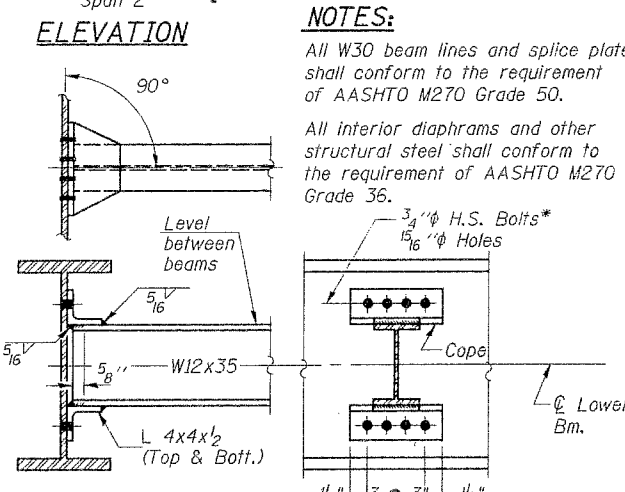
** Cost of Timber Block Posts is incidental to Structural Steel.

- DIAPHRAGM D₂ CONSTRUCTION SEQUENCE**
- Order Diaphragm D₂ in two sections with lengths of 13'-11 5/8" & 5'-0".
 - Attach section (1) of Diaphragm to Beam 4 and top flange splice ℄ during Stage I Construction.
 - Place Timber Block Posts between section (1) of diaphragm and abutment bearing seat.
 - Attach section (2) of diaphragm to both Beam 3 and top flange splice ℄ during Stage II Construction.
 - Attach web splice plates to sections (1) and (2) of diaphragms.
 - Remove Timber Block Posts.
 - Attach bottom flange splice plate to sections (1) and (2) of diaphragms.



DIAPHRAGM D₁
52 Required

Note: Two hardened washers shall be required over all oversize holes for diaphragms.



DIAPHRAGM D₁
52 Required

*Provide 1/2" vertical by 13/16" φ holes in the 4"x4"x1/2" connecting angles for Beam 3 on south side only. Cover w/ 5/16" structural plate washer.

- NOTES:**
- All W30 beam lines and splice plates shall conform to the requirement of AASHTO M270 Grade 50.
 - All interior diaphragms and other structural steel shall conform to the requirement of AASHTO M270 Grade 50.
 - The following structural steel components shall conform to the Supplemental Requirements for Notch Toughness (Zone 2) (NTR):
 - All Splice plate material
 - The webs and flanges of the W30x124 beams.
 - End diaphragms and splice material for D₂ diaphragms shall conform to the requirement of AASHTO M270 Grade 50.
- See Bridge Sheet 12 for Splice A & B detail.

ILLINOIS DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS

FAP ROUTE 317 (US RTE. 24) OVER TRIBUTARY TO SPRING CREEK, SEC 21BR-1, IROQUOIS COUNTY STA. 1914+17.22, S.N. 038-0033

REVISIONS	NAME	DATE
DIAPHRAM SPACING		5/3/94
REVISE D & D2		4/12/95

SCALE: VERT. 1"=4'-0" HORIZ. 1"=40'-0"

DATE: 4/12/95-MML

GREENE & BRADFORD, INC. OF SPRINGFIELD

CONSULTING ENGINEERS

DESIGNED BY: LANDREY
DESIGNED BY: BRADFORD
CHECKED BY: BAILE

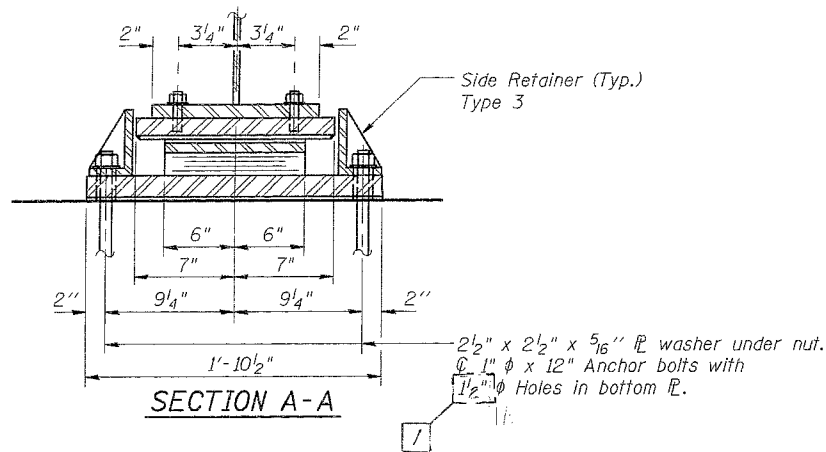
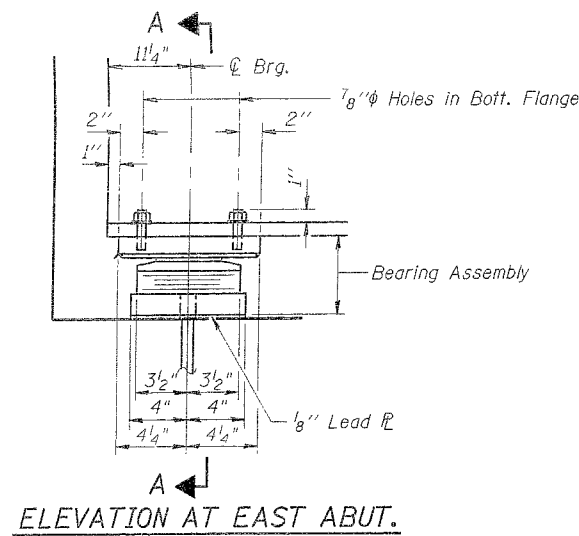
COMPUTER FILE NO. 93117SSD-1

DESIGNED BY: BRADFORD APPROVED BY: BAILE

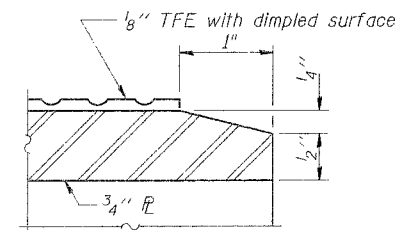
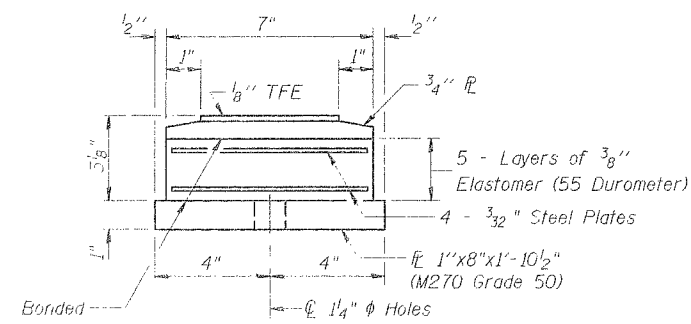
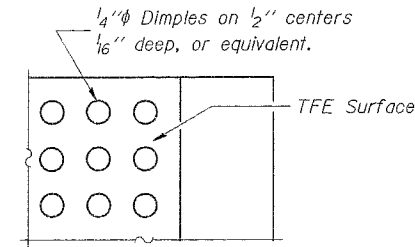
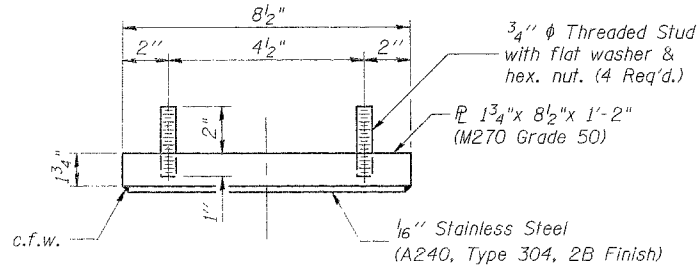
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 317	21BR-1	IROQUOIS	255	139
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

Bridge Sheet 13 of 20 Sheets

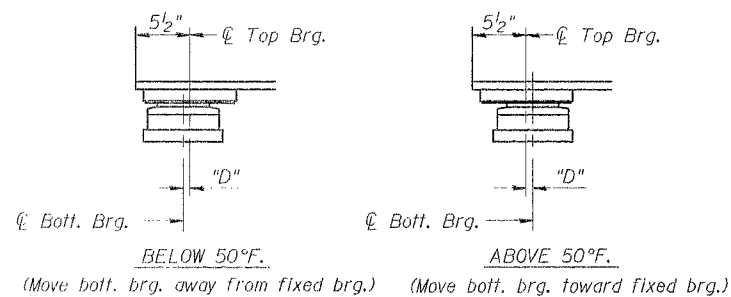


TYPE II TFE ELASTOMERIC EXP. BRG.



Note: The 1/8" TFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.

Bonding of 1/8" TFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.



SETTING ANCHOR BOLTS AT EXP. BRG.

D = 1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.

	0.4 Sp. 1	Pier 1	0.5 Span 2	Pier 2	0.6 Sp. 2
Is (in ⁴)	5360	5360	5360	5360	5360
Ss (in ³)	355	355	355	355	355
Z (in ³)	408	408	408	408	408
D (K/ft.)	1.189	1.189	1.189	1.189	1.189
M _l (K)	232.4	-434.0	225.9	-434.0	232.4
M _t (K)	379.0	-313.7	388.1	-313.7	379.0
M (Imp) (K)	106.1	-84.7	101.1	-84.7	106.1
S ₃ (M _t +I) (K)	808.5	-664.0	815.3	-664.0	808.5
Ma (K)	1353.2	-1427.4	1353.6	-1427.4	1353.2
Mu (K)	1700.0		1700.0	1700.0	1700.0
f _s (k.s.i.)	7.86	-14.67	7.64	-14.67	7.86
f _s ⁵ ₃ (t+I) (k.s.i.)	27.33	-22.45	27.56	-22.45	27.33
f _s (Overload) (k.s.i.)	35.19	-37.12	35.20	-37.12	35.19
f _s (Total) (k.s.i.)		-48.26		-48.26	

	W. Abut.	Pier 1	Pier 2	E. Abut.
R _l (K)	23.5	79.2	79.2	23.5
R _t (K)	38.8	48.8	48.8	38.8
Imp. (K)	10.9	13.2	13.2	10.9
R (Total) (K)	73.2	141.2	141.2	73.2

Is and Ss are the moment of inertia and section modulus of the steel section used in computing Is (Total & Overload).

Z is the plastic section modulus used to determine the fully plastic moments in the non-composite areas.

Ma (Applied Moment) = 1.3IM_l + Ms_l + S₃(M_t + I).

Mu is the Full Plastic Moment Capacity for Compact, Braced section.

f_s (Overload) is the sum of the stresses due to M_l + Ms_l + S₃(M_t + I).

f_s (Total) (Non-compact section) is the sum of the stresses due to 1.3[IM_l + Ms_l + S₃(M_t + I)].

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type II	Each	6

ILLINOIS DEPARTMENT OF TRANSPORTATION

BEARING ASSEMBLY DETAILS

FAP ROUTE 317 (US RTE. 24) OVER TRIBUTARY TO SPRING CREEK, SEC. 21BR-1, IROQUOIS COUNTY STA. 1914+17.22, S.N. 038-0033

REVISIONS	
NAME	DATE

SCALE: VERT. HORIZ. DATE: 8/9/94 DRAWN BY: LANDREY DESIGNED BY: BRADFORD CHECKED BY: BANE

GREENE & BRADFORD, INC. CONSULTING ENGINEERS 200 WEST 11TH ST. SPRINGFIELD, ILLINOIS 62701 TEL: 217-789-8844	COMPUTER FILE NO. 93117B2-1
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DESIGNED BY: BRADFORD APPROVED BY: BANE
CHECKED BY: LANDREY DRAWN BY: LANDREY