

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 227	*	HENRY	19	9
ILLINOIS PROJECT				

Sheet no. 1
of 8 Sheets

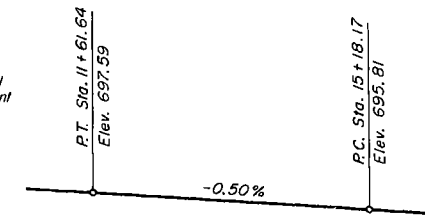
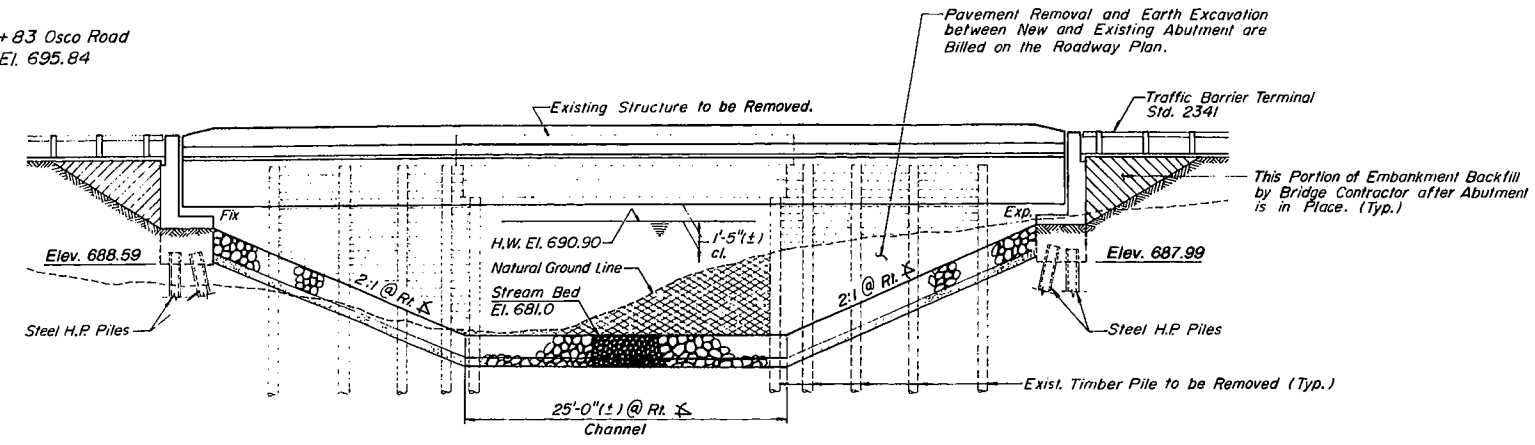
* P-92-028-87 (15-15D) BR

BENCH MARK:

TEMPORARY BM. - Chiselled "15" L.I. Sta. 13+83 Osco Road
N.W. Side Bridge Headwall El. 695.84

EXISTING STRUCTURE DATA:

Structure 037-0081 Built in 1953 as
SA-9 Sec. 15-15d.
Superstructure: 1 Span concrete deck on
wide flange beams.
Substructure: Timber pile bents.
Structure to be removed and replaced.
Channel to be cleaned and reshaped.
Bridge will be closed to vehicular traffic
which is to be rerouted during construction.
No salvage.



PROFILE GRADE

DESIGN SPECIFICATIONS

AASHTO (1983) with current Interim Specifications
(1984 thru 1988)

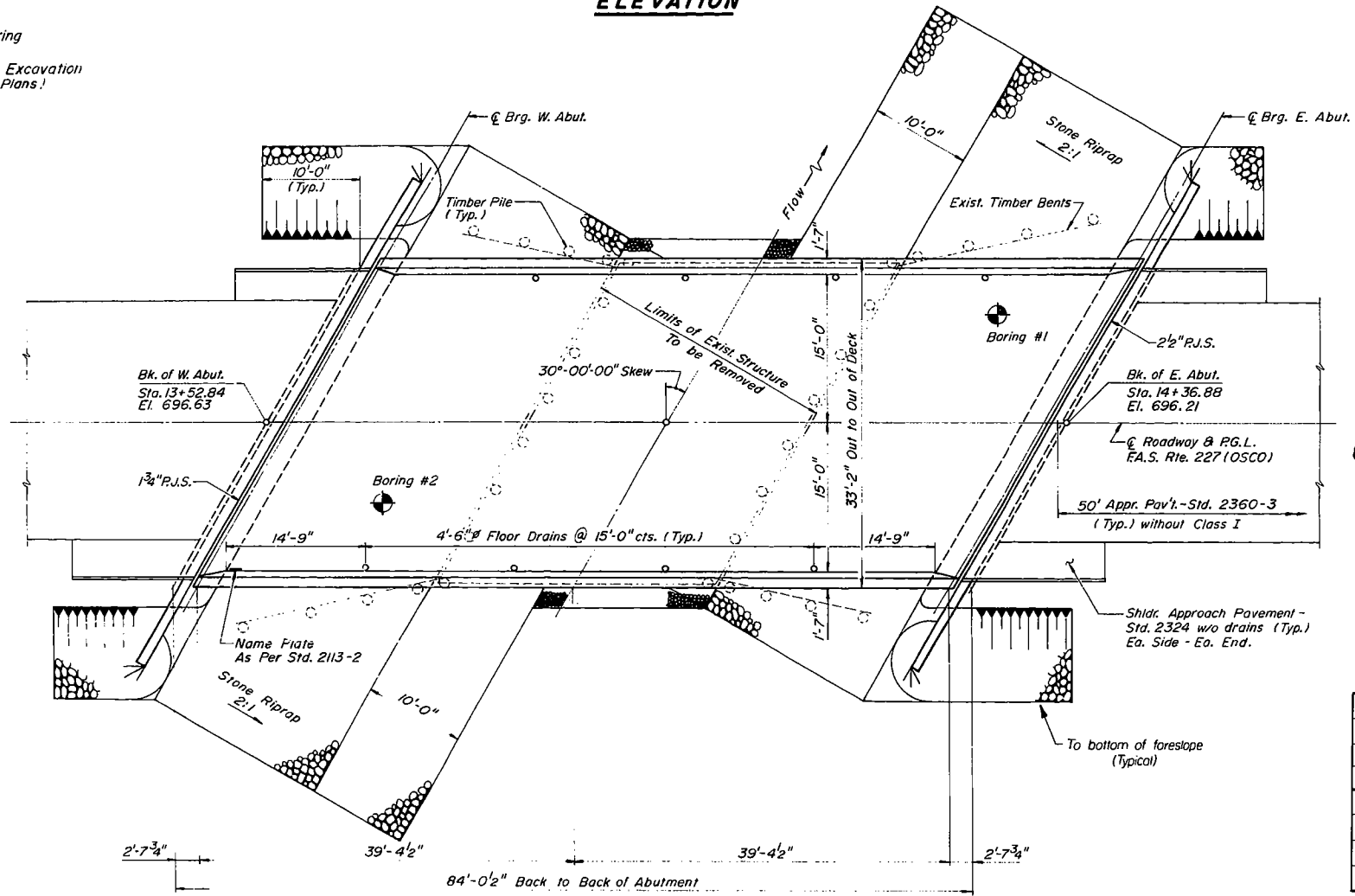
LOADING HS 20-44

Allow 25#/Sq. Ft. For Future Wearing Surface

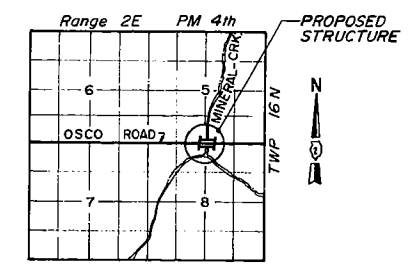
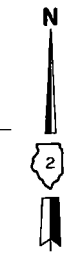
DESIGN STRESSES

$f_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinf.)
 $f_y = 36,000$ psi (Struct.) M183

- Indicates Soil Boring
- Indicates Channel Excavation (Billed on Roadway Plans)



PLAN



LOCATION MAP

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUB	SUPER	TOTAL
* Protective Coat	Sq.Yd.	—	334	334
Class X Concrete Superstructure	Cu.Yd.	—	87.0	87.0
Class X Concrete	Cu.Yd.	65.2	—	65.2
F & E Structural Steel	L. S.	—	1	1
Preformed Joint Seal 1 3/4"	Lin. Ft.	—	39	39
Preformed Joint Seal 2 1/2"	Lin. Ft.	—	39	39
Elastomeric Bearing Assembly Type I	Each	—	5	5
Stud Shear Connectors	Each	—	945	945
Reinforcement Bars Epoxy Coated	Pound	5050	17920	22970
Removal of Existing Structure	Each	—	1	1
Name Plate	Each	—	1	1
Floor Drains, 6"Ø	Each	—	8	8
Filter Fabric For Use With Riprap	Sq.Yd.	560	—	560
Structure Excavation	Cu.Yd.	32.7	—	32.7
Furnishing Steel Pile HP10x42	Lin.Ft.	712	—	712
Driving Steel Piles	Lin.Ft.	712	—	712
Stone Riprap Class A5	Sq.Yd.	560	—	560
Test Pile Steel HP10x42	Each	2	—	2
** BRIDGE SEAT SEALER	L.S.	1	—	1

* Includes deck surface, See Special Provisions for Curing and Texturing Bridge Deck.
** EST. QUANTITY = 200 SQ. FT.

WATERWAY INFORMATION

Drainage Area = 6.7 Sq. Mi. Low Grade Elev. 695.18 @ Sta. 15+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.
Design	30	1500	237	436	690.9	0.7	0.0	691.6	690.9
Base	100	1949	252	462	691.5	1.0	0.5	692.5	692.0
Overtopping									
Max. Calc.	500	2530	268	488	692.1	1.8	0.5	693.9	692.6

DESIGNED	EMM
CHECKED	JMN
DRAWN	RAA jr
CHECKED	EMM

STATION 13+94.86
BUILT 19__ BY
STATE OF ILLINOIS
F.A.S. 227 SEC. (15-15d) BR
LOADING HS20
STR. NO. 037-0140

NAME PLATE
(STD. 2113)

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

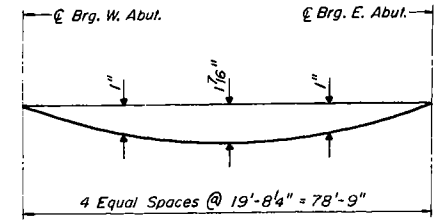
John W. Clark
Licensed Structural Engineer

James W. Robertson

GENERAL PLAN AND ELEVATION

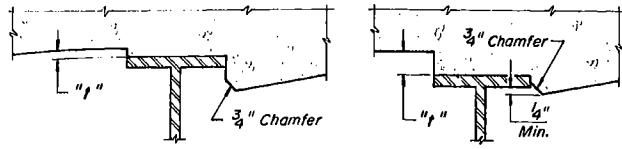
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
FAS 227 (OSCO ROAD) OVER MINERAL CREEK
SECTION (15-15d) BR
HENRY COUNTY
PROPOSED SN 037-014C
STATION 13+94.86

Makawala, Wynn & Associates, Inc.
ENGINEERS - ARCHITECTS - SURVEYORS
205 West Jackson Drive
Suite 1200 - Chicago, IL 60604



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.



At Minimum Fillet At Maximum Fillet

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

FILLET HEIGHTS

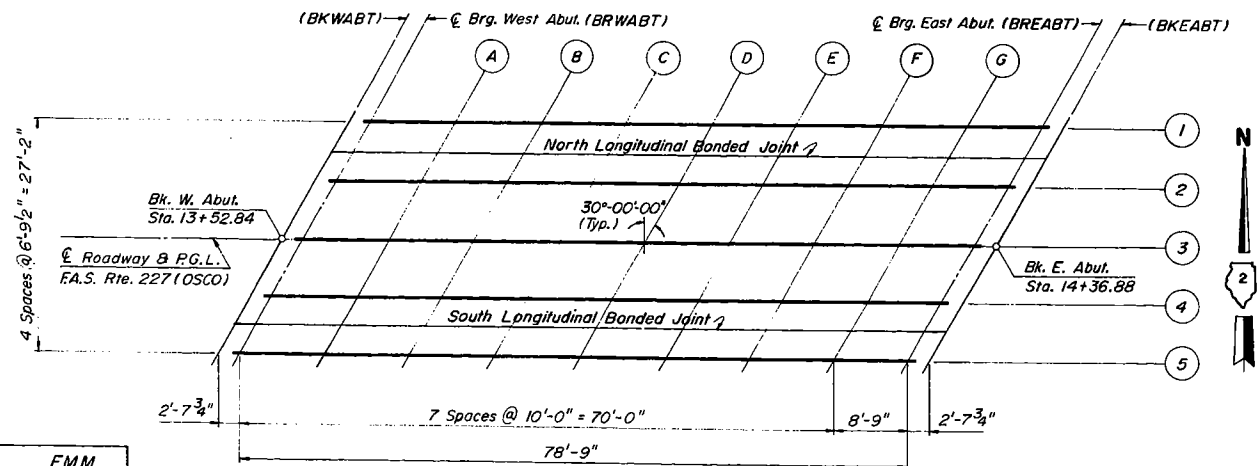
GIRDER NO. 1				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BKWABT	1360.68	13.5834	696.369	696.369
BRWABT	1363.33	13.5834	696.356	696.356
A	1373.33	13.5834	696.306	696.353
B	1383.33	13.5834	696.256	696.343
C	1393.33	13.5834	696.206	696.318
D	1403.33	13.5834	696.156	696.276
E	1413.33	13.5834	696.106	696.216
F	1423.33	13.5834	696.056	696.138
G	1433.33	13.5834	696.006	696.048
BREABT	1442.08	13.5834	695.962	695.962
BKEABT	1444.73	13.5834	695.949	695.949

GIRDER NO. 2				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BKWABT	1356.76	6.7917	696.508	696.508
BRWABT	1359.41	6.7917	696.495	696.495
A	1369.41	6.7917	696.445	696.492
B	1379.41	6.7917	696.395	696.482
C	1389.41	6.7917	696.345	696.457
D	1399.41	6.7917	696.295	696.415
E	1409.41	6.7917	696.245	696.355
F	1419.41	6.7917	696.195	696.277
G	1429.41	6.7917	696.145	696.187
BREABT	1438.16	6.7917	696.101	696.101
BKEABT	1440.81	6.7917	696.088	696.088

GIRDER NO. 3				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BKWABT	1352.84	0.0000	696.634	696.634
BRWABT	1355.49	0.0000	696.620	696.620
A	1365.49	0.0000	696.570	696.617
B	1375.49	0.0000	696.520	696.607
C	1385.49	0.0000	696.470	696.582
D	1395.49	0.0000	696.420	696.500
E	1405.49	0.0000	696.370	696.480
F	1415.49	0.0000	696.320	696.402
G	1425.49	0.0000	696.270	696.312
BREABT	1434.24	0.0000	696.227	696.227
BKEABT	1436.89	0.0000	696.213	696.213

GIRDER NO. 4				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BKWABT	1348.92	-6.7917	696.547	696.547
BRWABT	1351.57	-6.7917	696.534	696.534
A	1361.57	-6.7917	696.484	696.531
B	1371.57	-6.7917	696.434	696.521
C	1381.57	-6.7917	696.384	696.496
D	1391.57	-6.7917	696.334	696.454
E	1401.57	-6.7917	696.284	696.394
F	1411.57	-6.7917	696.234	696.316
G	1421.57	-6.7917	696.184	696.226
BREABT	1430.32	-6.7917	696.140	696.140
BKEABT	1432.97	-6.7917	696.127	696.127

GIRDER NO. 5				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BKWABT	1345.00	-13.5834	696.447	696.447
BRWABT	1347.65	-13.5834	696.434	696.434
A	1357.65	-13.5834	696.384	696.431
B	1367.65	-13.5834	696.334	696.421
C	1377.65	-13.5834	696.284	696.396
D	1387.65	-13.5834	696.234	696.354
E	1397.65	-13.5834	696.184	696.294
F	1407.65	-13.5834	696.134	696.216
G	1417.65	-13.5834	696.084	696.126
BREABT	1426.40	-13.5834	696.040	696.040
BKEABT	1429.05	-13.5834	696.027	696.027



PLAN

DESIGNED	EMM
CHECKED	JMN
DRAWN	RAAjr
CHECKED	EMM

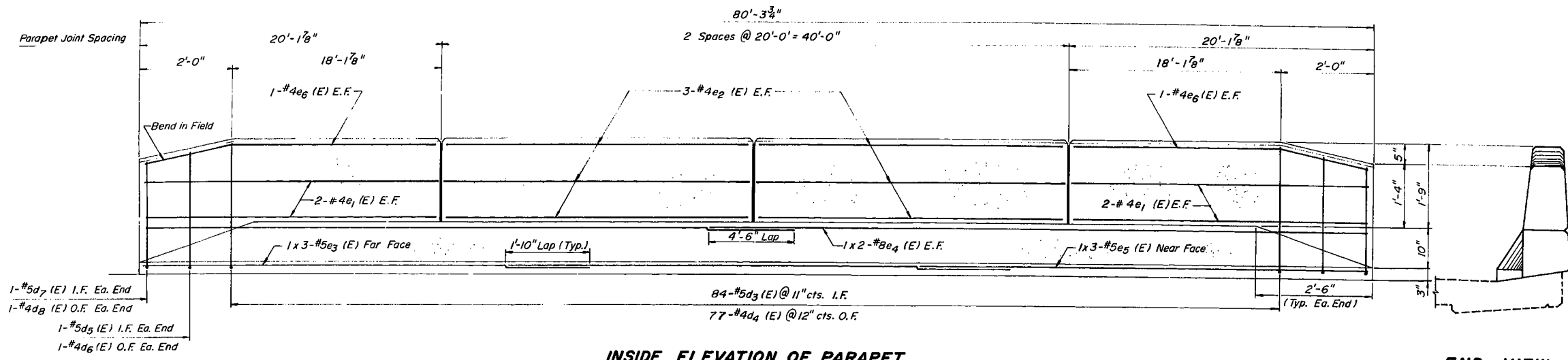
NORTH LONGITUDINAL BONDED JT.				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BKWABT	1359.18	11.000	696.430	696.430
BRWABT	1361.83	11.000	696.417	696.417
A	1371.83	11.000	696.367	696.414
B	1381.83	11.000	696.317	696.404
C	1391.83	11.000	696.267	696.379
D	1401.83	11.000	696.217	696.337
E	1411.83	11.000	696.167	696.277
F	1421.83	11.000	696.117	696.199
G	1431.83	11.000	696.067	696.113
BREABT	1439.75	11.000	696.023	696.023
BKEABT	1442.40	11.000	696.010	696.010

SOUTH LONGITUDINAL BONDED JT.				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
BKWABT	1346.48	-11.000	696.494	696.494
BRWABT	1349.13	-11.000	696.481	696.481
A	1359.13	-11.000	696.431	696.478
B	1369.13	-11.000	696.381	696.468
C	1379.13	-11.000	696.331	696.443
D	1389.13	-11.000	696.281	696.401
E	1399.13	-11.000	696.231	696.341
F	1409.13	-11.000	696.181	696.263
G	1419.13	-11.000	696.131	696.177
BREABT	1427.88	-11.000	696.087	696.087
BKEABT	1430.53	-11.000	696.074	696.074

TOP OF SLAB ELEVATIONS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
FAS 227 (OSCO ROAD) OVER MINERAL CREEK
SECTION (15-15d) BR
HENRY COUNTY PROPOSED SN Q37-014C
STATION 13+94.86

Hokanson, Wynn & Associates, Inc.
ENGINEERS-ARCHITECTS-SURVEYORS
285 West Wacker Drive
Suite 1200 - Chicago, IL 60601



INSIDE ELEVATION OF PARAPET
 Note: For section thru parapet, See sheet #4 of 8

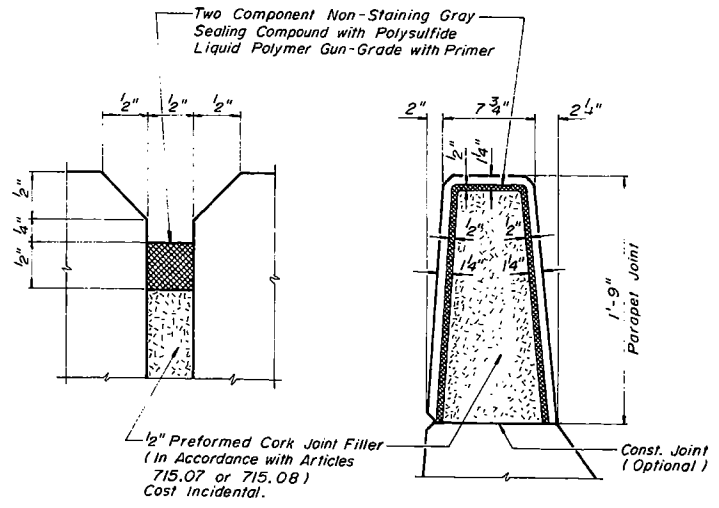
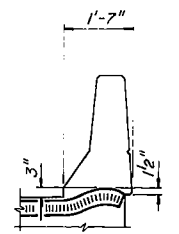
END VIEW

E.F. = Each Face
 I.F. = Inside Face
 O.F. = Outside Face

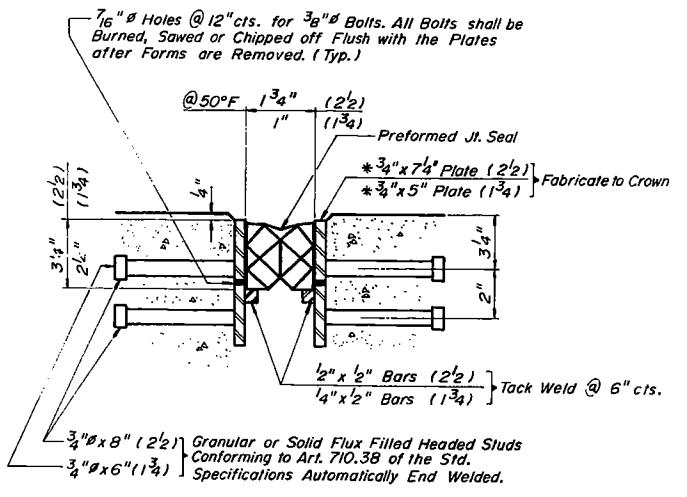
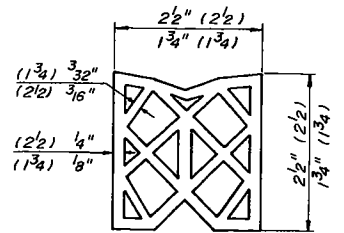
BAR	A
d ₃ (E)	2'-6"
d ₄ (E)	2'-6"
d ₅ (E)	2'-4"
d ₆ (E)	2'-3"
d ₇ (E)	2'-2"
d ₈ (E)	2'-1"

Bars d₃ (E) Thru d₈ (E)

TYPICAL END OF SEAL TREATMENTS



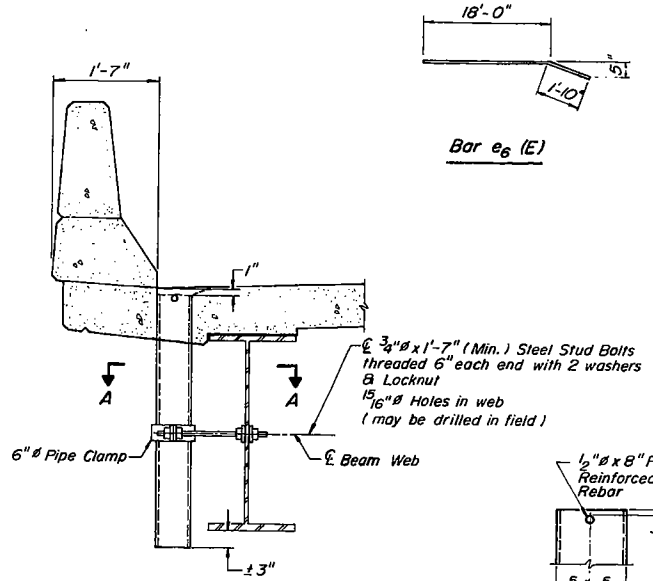
DETAILS OF PARAPET JOINT



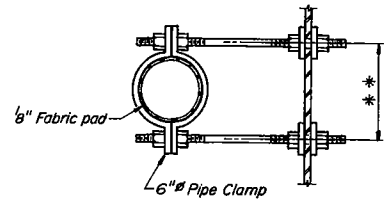
PREFORMED JOINT SEAL 2 1/2" & 1 3/4"
 (AT ABUTMENT)

Note: After fabrication all surfaces of the Steel Plates shall be given one Shop Coat of paint specified for Structural Steel.
 * Furnish in segments of 20 ft. maximum length. Maximum space between installed segments shall be 3/16" Seal space with Silicon Sealant suitable for Structural Steel.

Wt. of Structural Steel this Sheet = 2610 Pounds

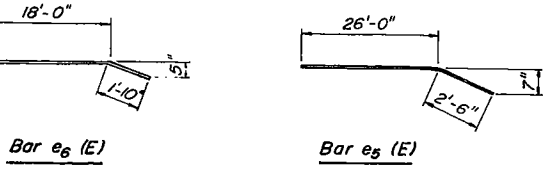


FLOOR DRAIN
 (Section at Parapet)
 The surface of the Fiberglass pipe shall be free of bond inhibiting agents.



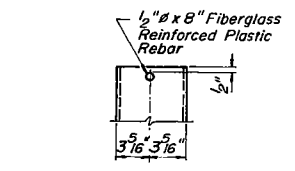
SECTION A-A
 ** Dimension as required by Pipe Clamp.

Note: Fiberglass pipe shall conform to ASTM: D2996, with short-time rupture strength hoop tensile stress of 30,000 p.s.i. minimum.
 The exterior surfaces of the Floor Drain shall be painted with the vinyl enamel coat painting specified for Structural Steel. The exterior surfaces of the aluminum tube shall be cleaned and given a washcoat pretreatment in accordance with Steel Structures Painting Council's Spec. SSPC-SP1 & SSPC-Paint 27 prior to painting. Fiberglass to have prewash as per MIL-P-1532B.

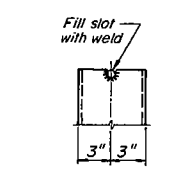


Bar e₆ (E)

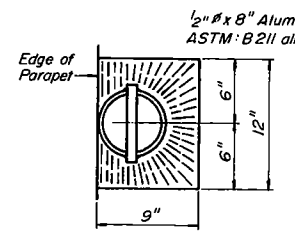
Bar e₅ (E)



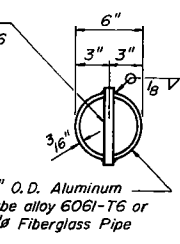
FIBERGLASS PIPE



ALUMINUM TUBE



TOP PLAN



TOP PLAN
 (Showing Aluminum Tube)

FLOOR DRAIN TOP PLAN

BILL OF MATERIAL

BAR	NO	SIZE	LENGTH	SHAPE
d ₃ (E)	168	#5	3'-0"	
d ₄ (E)	154	#4	3'-0"	
d ₅ (E)	4	#5	2'-10"	
d ₆ (E)	4	#4	2'-9"	
d ₇ (E)	4	#5	2'-8"	
d ₈ (E)	4	#4	2'-7"	
e ₁ (E)	16	#4	19'-10"	
e ₂ (E)	24	#4	19'-8"	
e ₃ (E)	6	#5	28'-0"	
e ₄ (E)	8	#8	42'-3"	
e ₅ (E)	6	#5	28'-0"	
e ₆ (E)	8	#4	19'-10"	
ITEM		UNIT	TOTAL	
Reinforcement Bars Epoxy Coated		Pound	2760	
Class X Concrete Superstructure		Cu. Yd.	16.6	
Preformed Jt. Seal 2 1/2"		L. F.	39.0	
Preformed Jt. Seal 1 3/4"		L. F.	39.0	

Notes:
 1. Reinforcement Bars Designated (E) shall be Epoxy Coated.
 2. Reinforcement Bars Designated Thus: 1x2-#5e Etc. Indicates 1 Line of Bars with 2 Lengths Per Line.

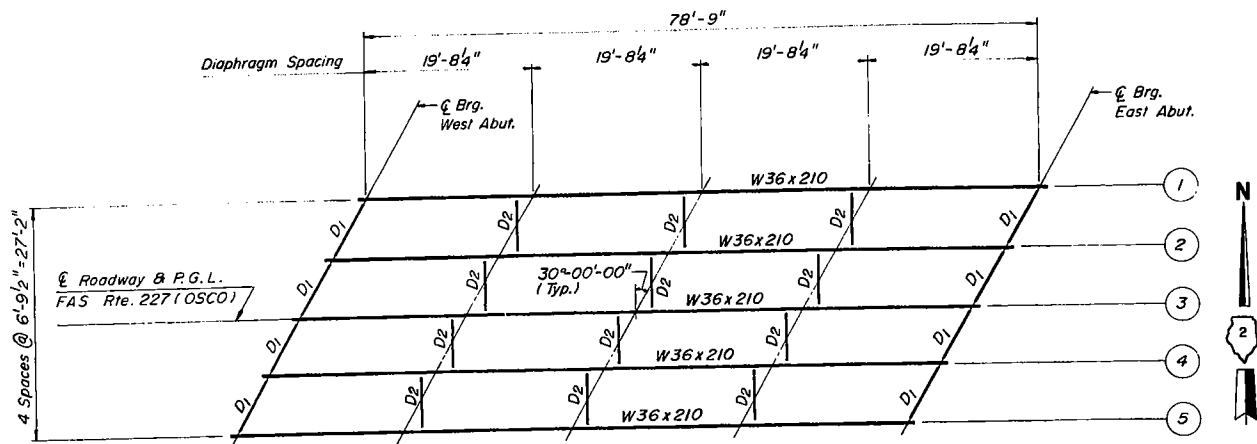
SUPERSTRUCTURE DETAILS

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION
 FAS 227 (OSCO ROAD) OVER MINERAL CREEK
 SECTION (15-15d) BR
 HENRY COUNTY PROPOSED SN Q37-0140
 STATION 13+94.86

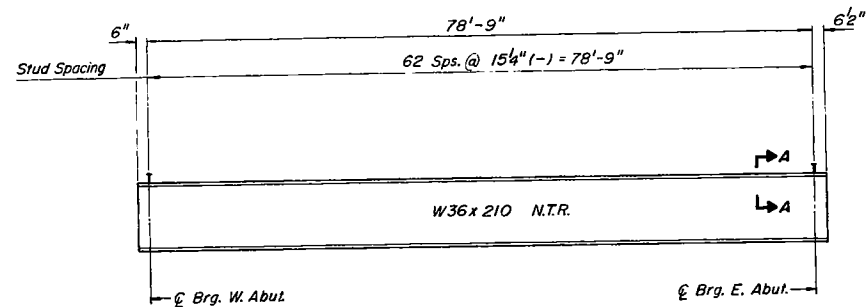
Makawase, Wyns & Associates, Inc.
 ENGINEERS-ARCHITECTS-SURVEYORS
 385 West Wacker Drive
 Suite 1200 - Chicago, IL 60606

DESIGNED	EMM
CHECKED	JMN
DRAWN	RAA jr.
CHECKED	EMM

* P-92-028-87 (15-15D) BR

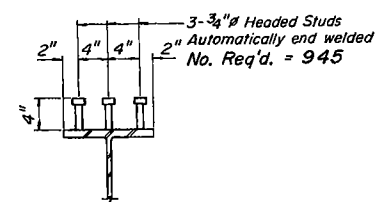


FRAMING PLAN



ELEVATION

N.T.R. Indicates Notch Toughness Requirements



SECTION A-A

**TOP OF BEAM ELEVATIONS
(FOR FABRICATION)**

BM.	W. ABUT.	E. ABUT.
1	695.690	695.296
2	695.829	695.435
3	695.954	695.561
4	695.868	695.474
5	695.768	695.374

	0.5 Span l
I_s	(in ⁴) 13200
I_c	(in ⁴) 29214
S_s	(in ³) 719
S_c	(in ³) 986
\bar{Q}	(K/I) 0.908
$M \bar{Q}$	(I-K) 704
$s \bar{Q}$	(K/I) 0.336
$M s \bar{Q}$	(K) 260
$M \bar{L}$	(K) 712
$M imp$	(K) 178
$S_3 (M \bar{L} + I)$	(K) 1483
M_a	(K) 3181
M_u	(K) 4035
$f_s \bar{Q} non-comp$	(k.s.i.) 11.75
$f_s \bar{Q} (comp)$	(k.s.i.) 3.16
$f_s S_3 (\bar{L} + I)$	(k.s.i.) 18.05
$f_s (Overload)$	(k.s.i.) 32.96
VR	(K) 48.6

	Abut.
R \bar{Q}	(K) 49.0
R \bar{L}	(K) 38.9
Imp.	(K) 9.7
R (Total)	(K) 97.6

I_s and S_s are the moment of inertia and section modulus of the steel section used in computing f_s overload.

I_c and S_c are the moment of inertia and section modulus of the composite section used in computing f_s overload.

VR is the maximum live load + Impact shear range in span.

$f_s (Overload)$ is the sum of the stresses due to $M \bar{Q} + M s \bar{Q} + \frac{5}{3} (M \bar{L} + I)$

$M \bar{Q}$ - Moment due to dead loads on non-composite section.

$M s \bar{Q}$ - Moment due to dead loads on composite section.

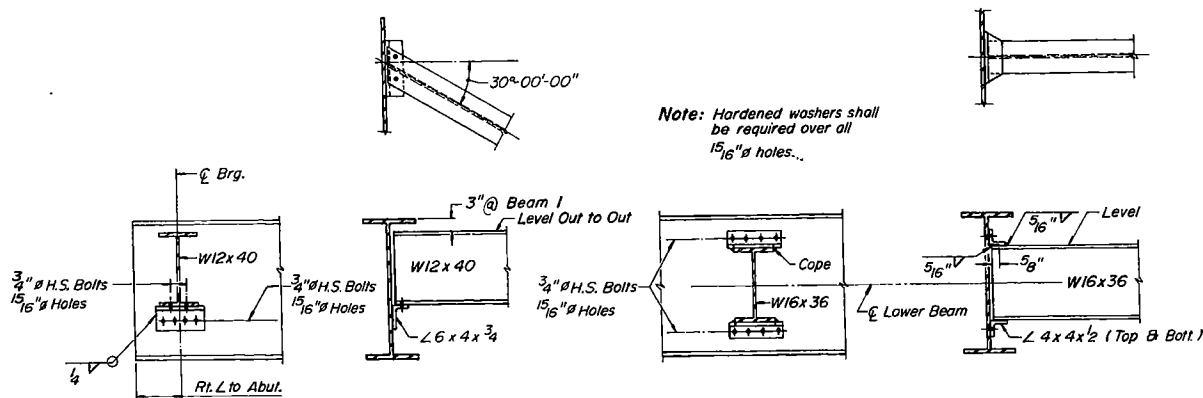
$M \bar{L}$ - Moment due to live load on composite section.

M_a (Applied Moment) = 1.3 $[M \bar{Q} + M s \bar{Q} + \frac{5}{3} (M \bar{L} + I)]$

M_u - is the full Plastic Moment Capacity.

I - Live Load Impact.

Wt. of Structural Steel this Sheet = 90180 Pounds



END DIAPHRAGM D1

INTERIOR DIAPHRAGM D2

Note: Hardened washers shall be required over all 15/16" holes.

DESIGNED	EMM
CHECKED	JMN
DRAWN	RAA Jr.
CHECKED	EMM

Nakawatase, Wyns & Associates, Inc.
ENGINEERS - ARCHITECTS - SURVEYORS
205 West Jackson Drive
Suite 1200 - Chicago, IL 60606

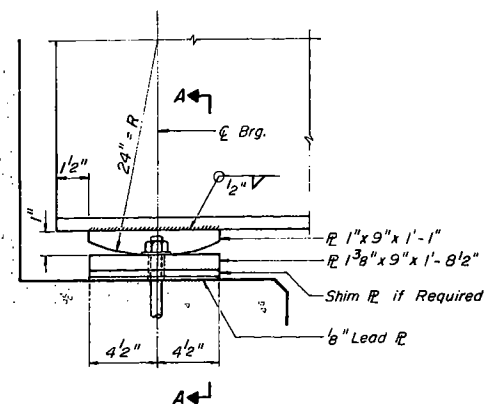
FRAMING PLAN & DETAILS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
FAS 227 (OSCO ROAD) OVER MINERAL CREEK
SECTION (15-15d) BR
HENRY COUNTY PROPOSED SN 037-0140
STATION 13 + 94.86

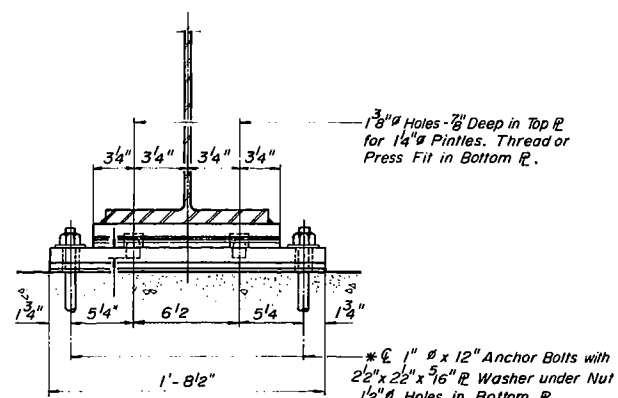
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
EAS. 227	*	HENRY	19	15
ENR. REG. #	ILLINOIS	PROJECT		

Sheet no. 7
of 8 Sheets

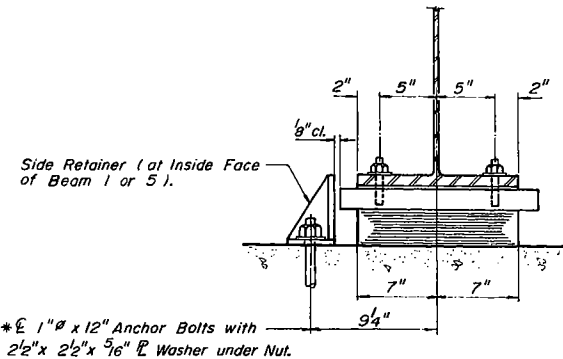
* P-92-028-87 (15-15D) BR



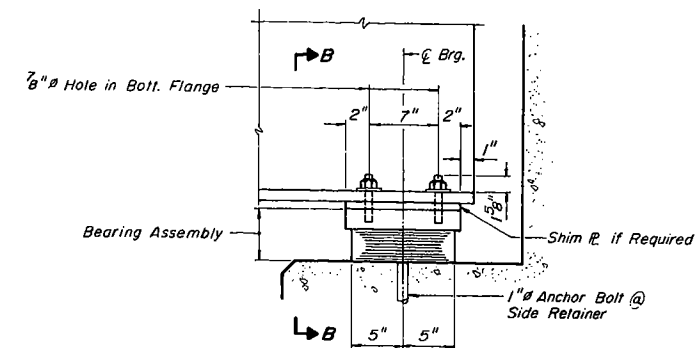
ELEVATION AT WEST ABUTMENT
(Dimensions Along Beam)



SECTION A-A



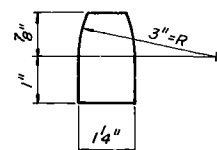
SECTION B-B



ELEVATION AT EAST ABUTMENT
(Dimensions Along Beam)

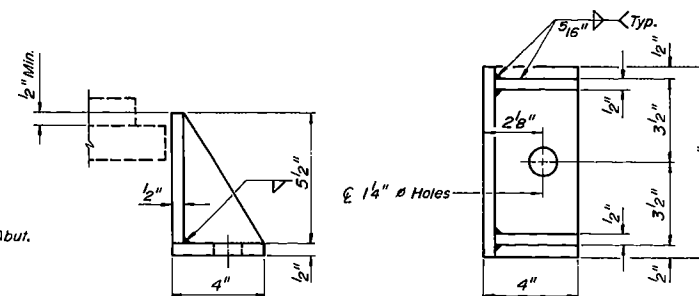
* Note: Anchor Bolts at Fixed Bearings may be Built into the Masonry.

FIXED BEARING
(No. Req'd. = 5)

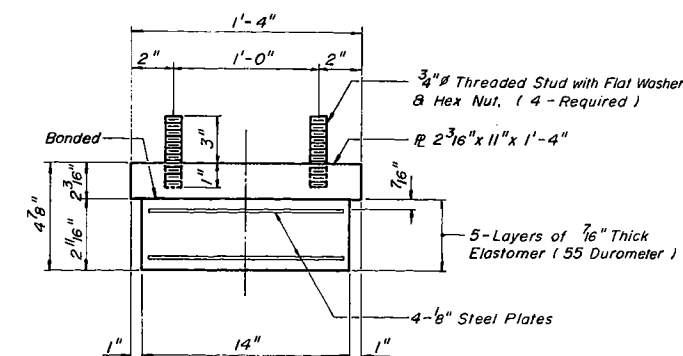


PINTLE

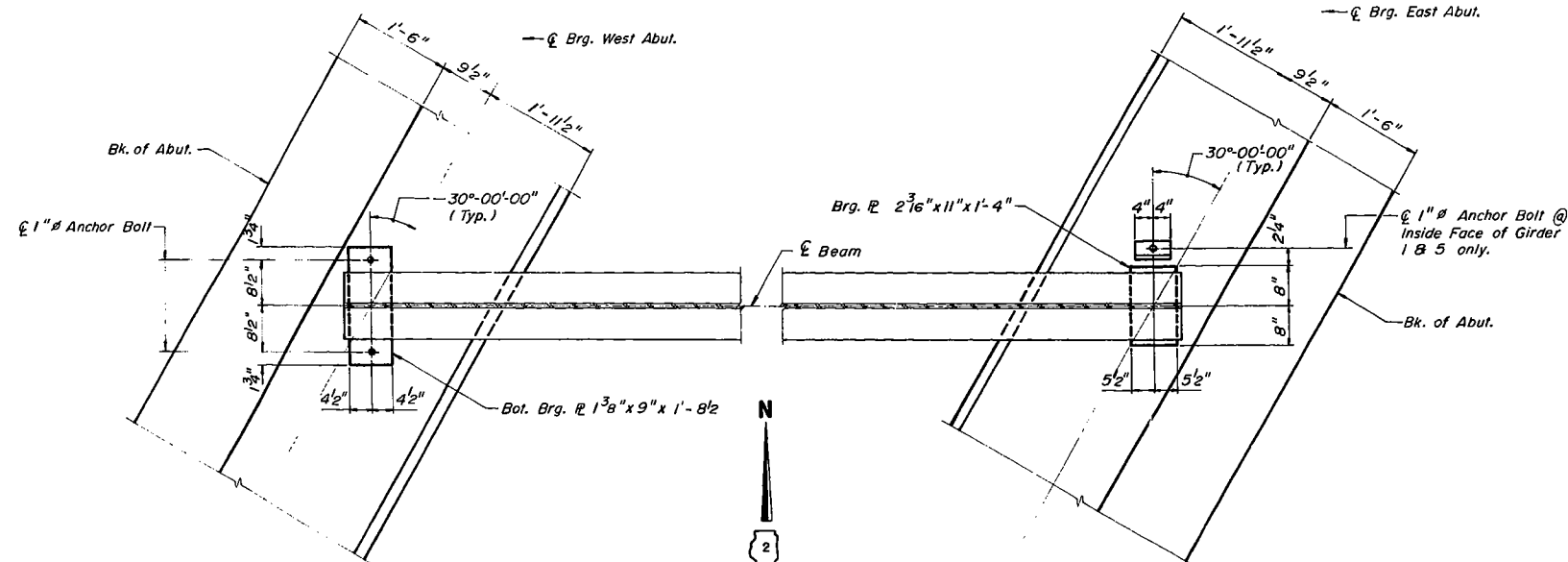
TYPE I ELASTOMERIC EXP. BEARING
(No. Req'd. = 5)



SIDE RETAINER
Equivalent Rolled Angle with Stiffeners will be Allowed in Lieu of Welded Plates.
(No. Req'd. = 2)



BEARING ASSEMBLY
Note: Shim Plates shall not be Placed under Bearing Assembly.



PLAN - FIXED BEARING
(WEST ABUTMENT)

PLAN - ELASTOMERIC BEARING
(EAST ABUTMENT)

Wt. of Structural Steel this Sheet = 670 Pounds

ITEM	UNIT	TOTAL
Elastomeric Bearing Assembly Type I	Each	5

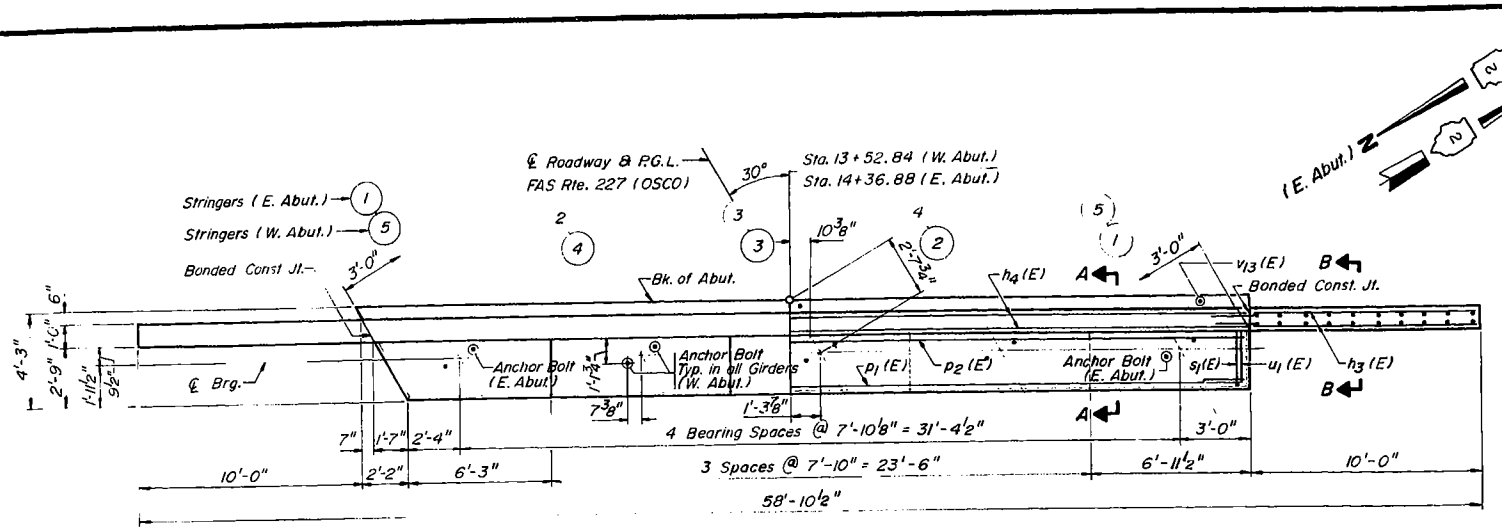
DESIGNED	EMM
CHECKED	JMN
DRAWN	RAA jr.
CHECKED	EMM

Hokawase, Wynn & Associates, Inc.
ENGINEERS-ARCHITECTS-SURVEYORS
285 West Jackson Drive
Suite 1200 - Chicago, IL 60606

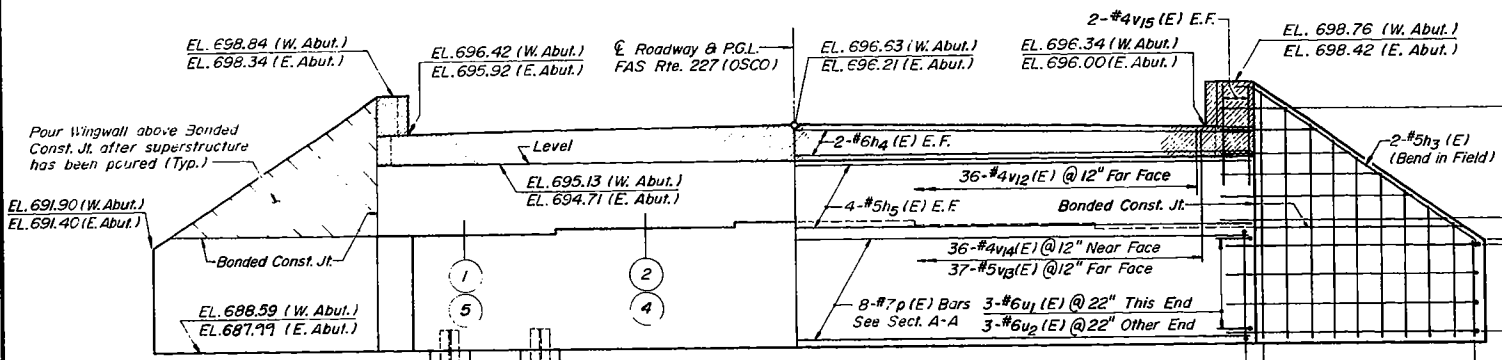
BEARING DETAILS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
FAS 227 (OSCO ROAD) OVER MINERAL CREEK
SECTION (15-15d) BR
HENRY COUNTY
PROPOSED SN Q37-0140
STATION 13+94.86

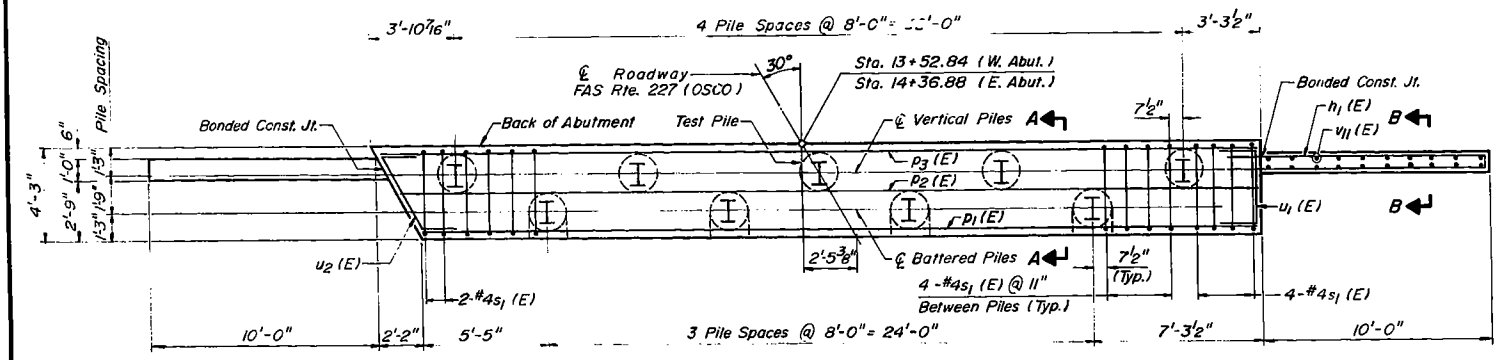
* P-92-028-87 (15-15D) BR



TOP PLAN
E. Abut. - as Drawn
W. Abut. - by 180° Rotation



ELEVATION



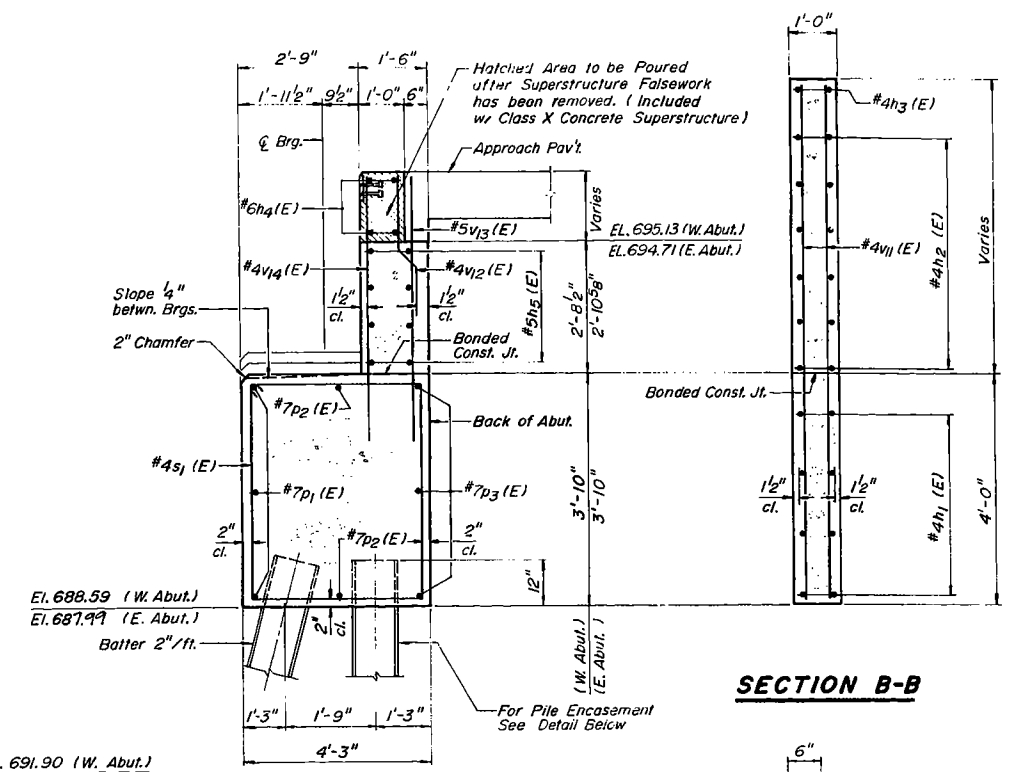
PLAN - PILE CAP

DESIGNED	EMM
CHECKED	JMN
DRAWN	RAAjr
CHECKED	EMM

STRINGER	1	2	3	4	5
West Abutment	692.416	692.555	692.680	692.594	692.494
East Abutment	691.822	691.961	692.087	692.000	691.900

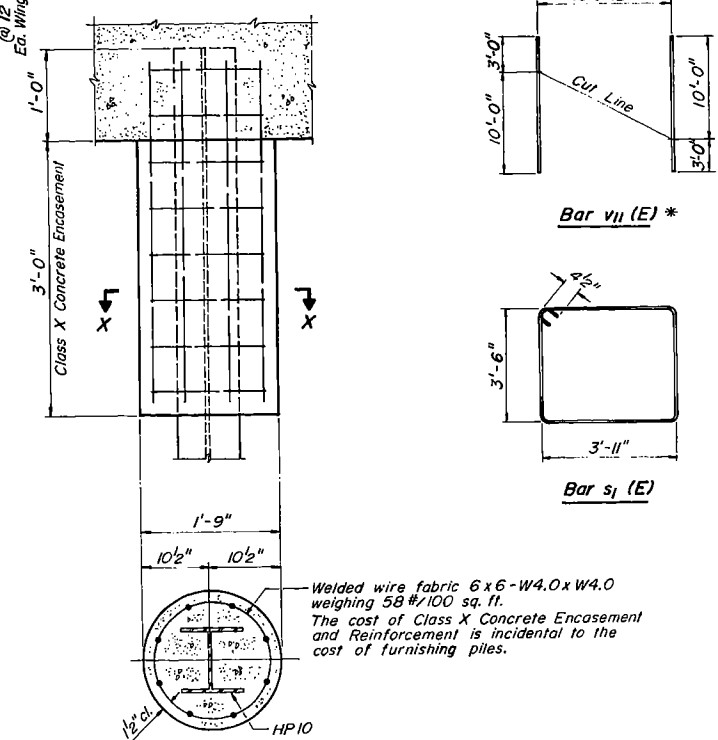
ABUTMENT PILE DATA

Type	Steel HPI0 x 42
Capacity	Drive to Refusal
Est. Length	W. Abut. - 41'-0" E. Abut. - 48'-0"
No. Required	8 Each Abut.
Test Pile	1 Each Abut.

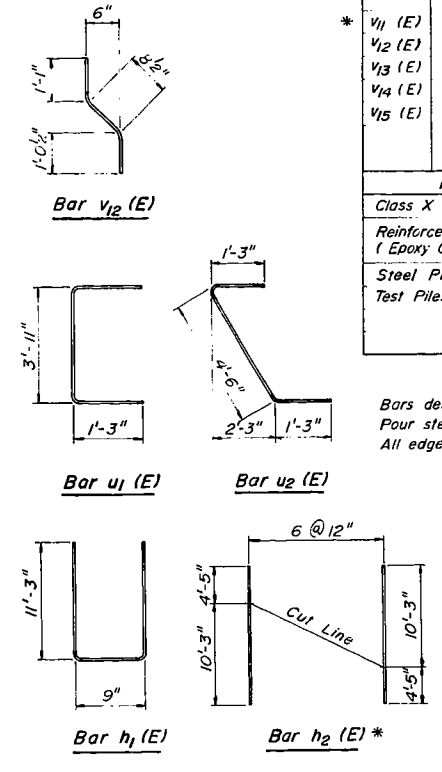


SECTION A-A
At Rt. 4

SECTION B-B



SECTION X-X
H.P. Pile Encasement



BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	SHAPE
h ₁ (E)	16	#4	23'-3"	[Shape]
h ₂ (E)	24	#4	14'-8"	[Shape]
h ₃ (E)	8	#5	13'-4"	[Shape]
h ₄ (E)	8	#6	38'-2"	[Shape]
h ₅ (E)	16	#5	38'-2"	[Shape]
p ₁ (E)	6	#7	36'-4"	[Shape]
p ₂ (E)	4	#7	37'-5"	[Shape]
p ₃ (E)	6	#7	38'-10"	[Shape]
s ₁ (E)	76	#4	15'-7"	[Shape]
u ₁ (E)	6	#6	6'-5"	[Shape]
u ₂ (E)	6	#6	7'-0"	[Shape]
v ₁₁ (E)	40	#4	13'-0"	[Shape]
v ₁₂ (E)	72	#4	2'-10"	[Shape]
v ₁₃ (E)	74	#5	5'-4"	[Shape]
v ₁₄ (E)	72	#4	5'-4"	[Shape]
v ₁₅ (E)	16	#4	4'-4"	[Shape]

ITEM	UNIT	TOTAL
Class X Concrete	Cu. Yds.	65.2
Reinforcement Bars (Epoxy Coated)	Lbs.	5050
Steel Pile HPI0x42	Lin. Ft.	712
Test Piles (HPI0x42)	Each	2

Bars designated "E" shall be Epoxy Coated. Pour steps monolithically with Pier Cap. All edges shall have 3/4" chamfer.

EAST & WEST ABUTMENT

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