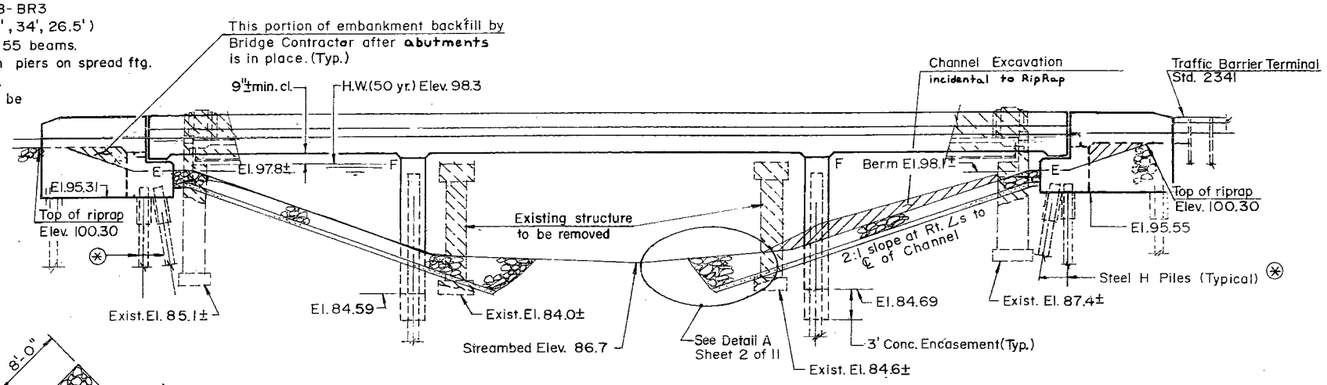
ROUTE NO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
F.A.P. 651	108-BR3	LIVINGSTON	46	28
FED. ROAD DIST. NO. 7		ILLINOIS PROJECT		
		SHEET 1 OF 12		

B.M. Chiseled "□" in S.W. wingwall 16' Rt. Sta. 479+83. Elev. 101.36

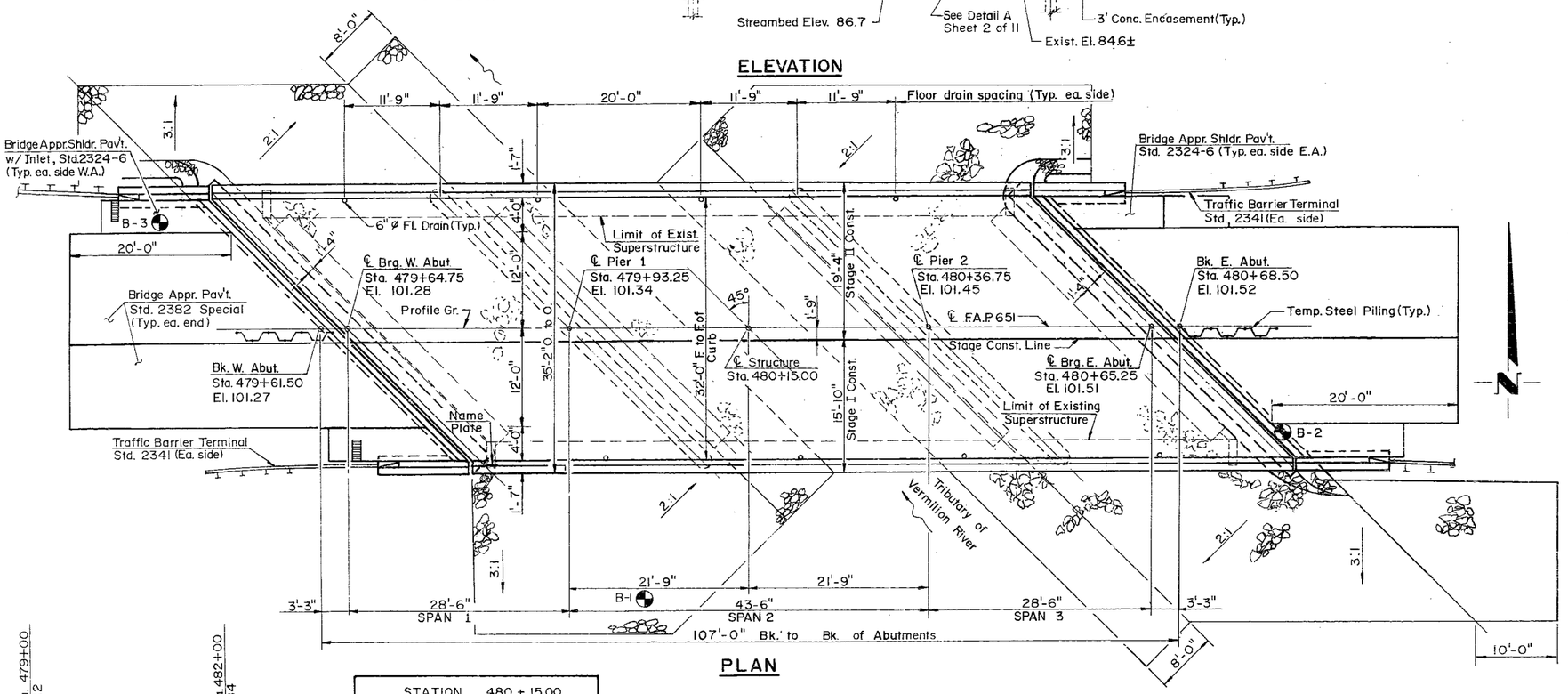
Exist. Structure: Sta. 480+15, F.A.P. Rte. 651, Sec. 108-BR3
S.N. 053-0028 Built in 1937. 3 spans (26.5', 34', 26.5')
Superstructure R.C. deck & conc. handrail. 18W-55 beams.
Substructure spill-thru abutments, 4 column piers on spread ftg.
91'-7" Bk. to Bk. of Abuts., 24' rdwy., 27'-8" O. to O.
Existing structure to be removed. Traffic to be maintained utilizing stage construction.

No Salvage.

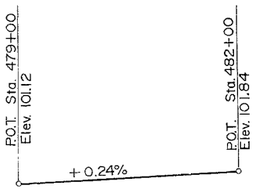
Ⓢ Place piles in precored holes to bottom of existing footing. Optional. See Special Provisions



ELEVATION



PLAN



PROFILE GRADE
(F.A.P. Rte. 651)

STATION 480 + 15.00
BUILT 199_ BY
STATE OF ILLINOIS
F.A.P. RTE. 651 SEC. 108-BR3
LOADING HS20
STR. NO. 053-0167

NAME PLATE
(Std. 2113)

WATERWAY INFORMATION

Drainage Area = 5.65 sq. mi. Low Grade Elev. 99.8 @ Sta. 474+00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head — Ft. Exist.	Head — Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
Design	50	1204	356	436	98.3	0.0	0.0	98.3	98.3
Base	100	1382	373	454	98.7	0.0	0.0	98.7	98.7
Overtopping	*								*
Max. Calc.	500	1796	373	454	99.8	0.44	0.34	100.24	100.14

DESIGN SPECIFICATIONS
1989 AASHTO

LOADING HS 20-44
Allow 25 #/sq. ft. for future wearing surface.

DESIGN STRESSES
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (Reinf.)

GENERAL NOTES

See Proposal for Boring Data.

All structural steel shall be shop painted with the zinc-silicate and vinyl paint system. The color of the vinyl finish coats shall be Munsell No.10Y 7/1 Light Grey.

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.

The Contractor shall make allowance for the deflection of forms, shrinkage and settlement of falsework, in addition to allowance for dead load deflection.

The contractor shall drive one steel test pile in a permanent location at the West Abutment and Pier 2 as directed by the Engineer before ordering the remainder of piles.

The existing substructure shall be removed in Stage II except as noted.

Bridge Seat Sealer shall be applied to the seat areas of both abutments. Estimated Quantity = 211 sq.ft.

BILL OF MATERIAL

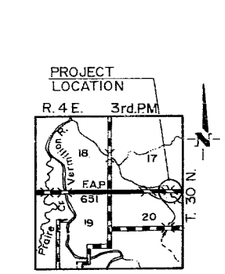
	ITEM	UNIT	SUPER	SUB	TOTAL
	Removal of Existing Structures	Each	——	——	1
	Structure Excavation	Cu.Yd.	——	202	202
	Floor Drains	Each	8	——	8
	Neoprene Expansion Joint 2"	Lin. Ft.	95	——	95
	Class X Concrete, Superstructure	Cu. Yd.	269.4	——	269.4
ⓘ	Protective Coat	Sq. Yd.	463	——	463
	Elastomeric Bearing Assembly, Type I	Each	——	12	12
	Class X Concrete	Cu. Yd.	——	170.0	170.0
	Reinforcement Bars, Epoxy Coated	Pound	38300	14930	53230
Ⓢ	Furnishing Steel Piles HP10X42	Lin. Ft.	——	1,360	1,360
	Driving Steel Piles	Lin. Ft.	——	1,360	1,360
	Test Pile Steel HP10X42	Each	——	2	2
	Temporary Sheet Piling	Sq. Ft.	——	558	558
	Name Plates	Each	1	——	1
	Stone Riprap, Class A 4	Sq. Yd.	——	700	700
	Bridge Seat Sealer	L. Sum	1	——	1
	Filter Fabric for use with Riprap	Sq. Yd.	——	700	700
	Temporary Bridge Rail	Lin. Ft.	170	——	170

ⓘ Includes bridge deck, parapets and wing walls.

The Earth Excavation between existing and new abutments is incidental to the "Removal of Existing Structures. For pavement removal between the abutments see Roadway Plans.

Ⓢ See Special Provisions and Sheet 2 of 12 for details.

Illinois Structural No. 81-2919

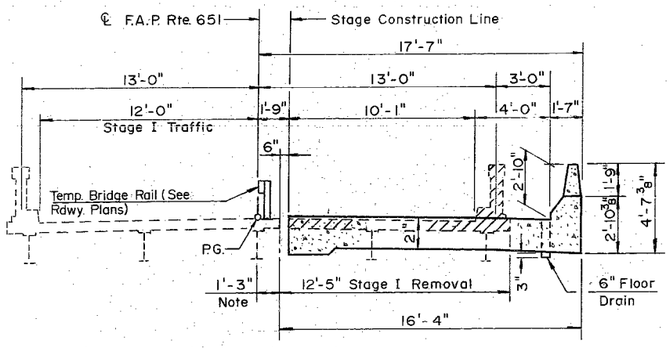


LOCATION SKETCH

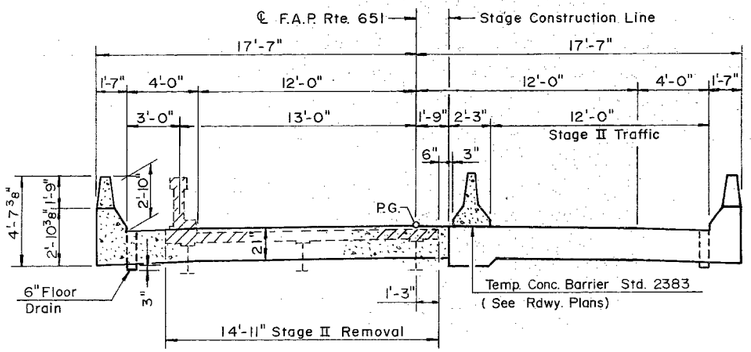
GENERAL PLAN & ELEVATION
IL. RTE. 17 OVER
TRIB. OF VERMILION RIVER
F.A.P. RTE. 651, SEC. 108-BR3
STA. 480+15.00
LIVINGSTON COUNTY
S.N. 053-0167

HSIONG ASSOCIATES LTD.
DESIGNED: W.H. CHECKED: G.J.G.
DRAWN: C.L. DATE: NO. H-063C

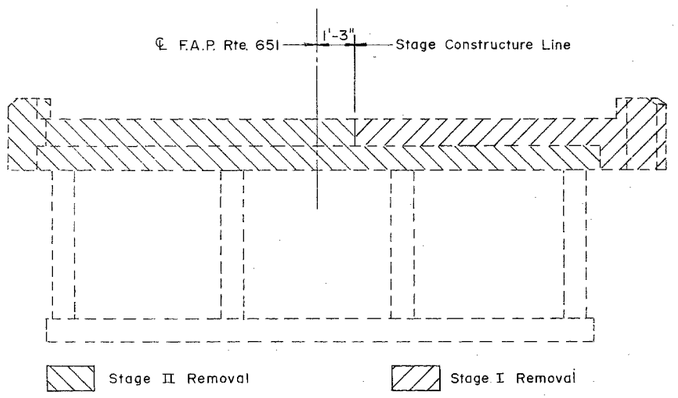
ROUTE NO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
F.A.P. 651	108-BR3	LIVINGSTON	46	29
FED. ROAD DIST NO. 7	ILLINOIS PROJECT			
		SHEET 2 OF 12		



CROSS SECTION - STAGE I CONSTRUCTION

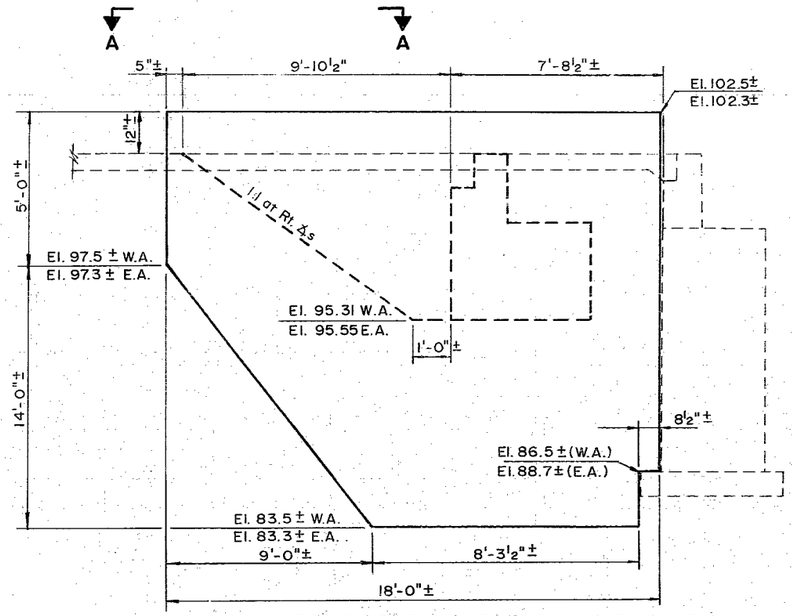


CROSS SECTION - STAGE II CONSTRUTION



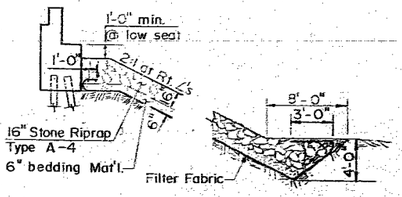
EXISTING WEST ABUTMENT

East Abutment similar

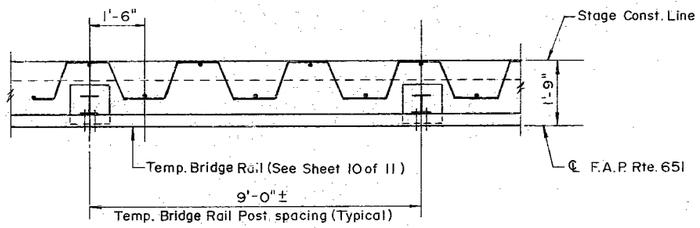


TEMPORARY SHEET PILING ELEVATION

(West Abut. shown East Abut. similar)



DETAIL A



VIEW A-A

(Suggested placement of Bridge Rail Post)

The Information shown for the Temporary Sheet Piling is estimated. It is the Contractor's responsibility to provide a design and computations of the Temporary Sheet Piling and associated members, if required, subject to the approval of the Engineer.

NORTH GUTTER LINE

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS	THEORETICAL GRADE ELEV'S ADJ. FOR D.L. DEFLECTION
BK. W. ABUT	479+45.500	16.000	100.963	100.963
CL BRG. W. ABUT	479+48.750	16.000	100.971	100.971
A	479+58.750	16.000	100.995	100.995
B	479+68.750	16.000	101.019	101.019
CL PIER 1	479+77.250	16.000	101.039	101.039
C	479+87.250	16.000	101.063	101.063
D	479+97.250	16.000	101.087	101.093
E	480+07.250	16.000	101.111	101.116
CL PIER 2	480+20.750	16.000	101.144	101.144
F	480+30.750	16.000	101.168	101.168
G	480+40.750	16.000	101.192	101.192
CL BRG. E. ABUT	480+49.250	16.000	101.212	101.212
BK. E. ABUT	480+52.500	16.000	101.220	101.220

DECK ELEVATIONS AND STAGE CONSTRUCTION DETAILS F.A.P. RTE. 651, SEC. 108-BR3 LIVINGSTON COUNTY STA. 480+15.00

HSIONG ASSOCIATES LTD.

DESIGNED: W.H. CHECKED: G.J.G.

DRAWN: R.H.H. DATE: NO. H-063C

ROUTE NO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
F.A.P. 651	108-BR3	LIVINGSTON	46	30
FED. ROAD DIST NO. 7		ILLINOIS PROJECT		
		SHEET 3 OF 12		

NORTH EDGE OF PAVEMENT

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS	THEORETICAL GRADE ELEV'S ADJ. FOR D.L. DEFLECTION
BK. W. ABUT	479+48.500	13.000	101.033	101.033
CL BRG. W. ABUT	479+51.750	13.000	101.041	101.041
A	479+61.750	13.000	101.065	101.066
B	479+71.750	13.000	101.089	101.089
CL PIER 1	479+80.250	13.000	101.110	101.110
C	479+90.250	13.000	101.134	101.138
D	480+00.250	13.000	101.158	101.163
E	480+10.250	13.000	101.182	101.187
CL PIER 2	480+23.750	13.000	101.214	101.214
F	480+33.750	13.000	101.238	101.238
G	480+43.750	13.000	101.262	101.262
CL BRG. E. ABUT	480+52.250	13.000	101.282	101.282
BK. E. ABUT	480+55.500	13.000	101.290	101.290

PROFILE GRADE

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS	THEORETICAL GRADE ELEV'S ADJ. FOR D.L. DEFLECTION
BK. W. ABUT	479+61.500	0.000	101.268	101.268
CL BRG. W. ABUT	479+64.750	0.000	101.275	101.275
A	479+74.750	0.000	101.299	101.300
B	479+84.750	0.000	101.323	101.324
CL PIER 1	479+93.250	0.000	101.344	101.344
C	480+03.250	0.000	101.368	101.372
D	480+13.250	0.000	101.392	101.397
E	480+23.250	0.000	101.416	101.421
CL PIER 2	480+36.750	0.000	101.448	101.448
F	480+46.750	0.000	101.472	101.472
G	480+56.750	0.000	101.496	101.497
CL BRG. E. ABUT	480+65.250	0.000	101.517	101.517
BK. E. ABUT	480+68.500	0.000	101.524	101.524

STAGE CONSTRUCTION LINE

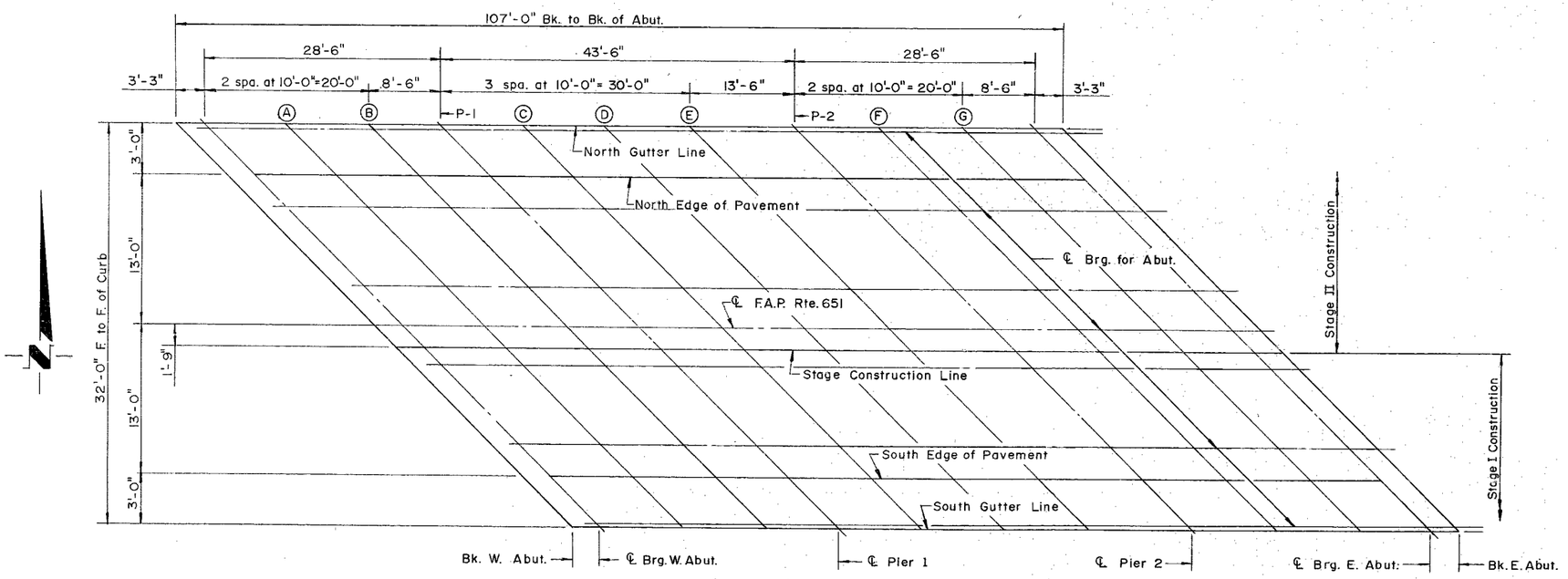
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS	THEORETICAL GRADE ELEV'S ADJ. FOR D.L. DEFLECTION
BK. W. ABUT	479+63.250	-1.750	101.245	101.245
CL BRG. W. ABUT	479+66.500	-1.750	101.253	101.253
A	479+76.500	-1.750	101.277	101.277
B	479+86.500	-1.750	101.301	101.301
CL PIER 1	479+95.000	-1.750	101.321	101.321
C	480+05.000	-1.750	101.345	101.349
D	480+15.000	-1.750	101.369	101.375
E	480+25.000	-1.750	101.393	101.398
CL PIER 2	480+38.500	-1.750	101.425	101.425
F	480+48.500	-1.750	101.449	101.450
G	480+58.500	-1.750	101.473	101.474
CL BRG. E. ABUT	480+67.000	-1.750	101.494	101.494
BK. E. ABUT	480+70.250	-1.750	101.502	101.502

SOUTH EDGE OF PAVEMENT

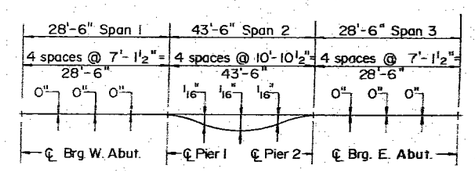
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS	THEORETICAL GRADE ELEV'S ADJ. FOR D.L. DEFLECTION
BK. W. ABUT	479+74.500	-13.000	101.096	101.096
CL BRG. W. ABUT	479+77.750	-13.000	101.104	101.104
A	479+87.750	-13.000	101.128	101.128
B	479+97.750	-13.000	101.152	101.152
CL PIER 1	480+06.250	-13.000	101.172	101.172
C	480+16.250	-13.000	101.196	101.200
D	480+26.250	-13.000	101.220	101.226
E	480+36.250	-13.000	101.244	101.249
CL PIER 2	480+49.750	-13.000	101.276	101.276
F	480+59.750	-13.000	101.300	101.301
G	480+69.750	-13.000	101.324	101.325
CL BRG. E. ABUT	480+78.250	-13.000	101.345	101.345
BK. E. ABUT	480+81.500	-13.000	101.353	101.353

SOUTH GUTTER LINE

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS	THEORETICAL GRADE ELEV'S ADJ. FOR D.L. DEFLECTION
BK. W. ABUT	479+77.500	-16.000	101.040	101.040
CL BRG. W. ABUT	479+80.750	-16.000	101.048	101.048
A	479+90.750	-16.000	101.072	101.072
B	480+00.750	-16.000	101.096	101.096
CL PIER 1	480+09.250	-16.000	101.116	101.116
C	480+19.250	-16.000	101.140	101.145
D	480+29.250	-16.000	101.164	101.170
E	480+39.250	-16.000	101.188	101.193
CL PIER 2	480+52.750	-16.000	101.221	101.221
F	480+62.750	-16.000	101.245	101.245
G	480+72.750	-16.000	101.269	101.269
CL BRG. E. ABUT	480+81.250	-16.000	101.289	101.289
BK. E. ABUT	480+84.500	-16.000	101.297	101.297



PLAN



DEAD LOAD DEFLECTION DIAGRAM

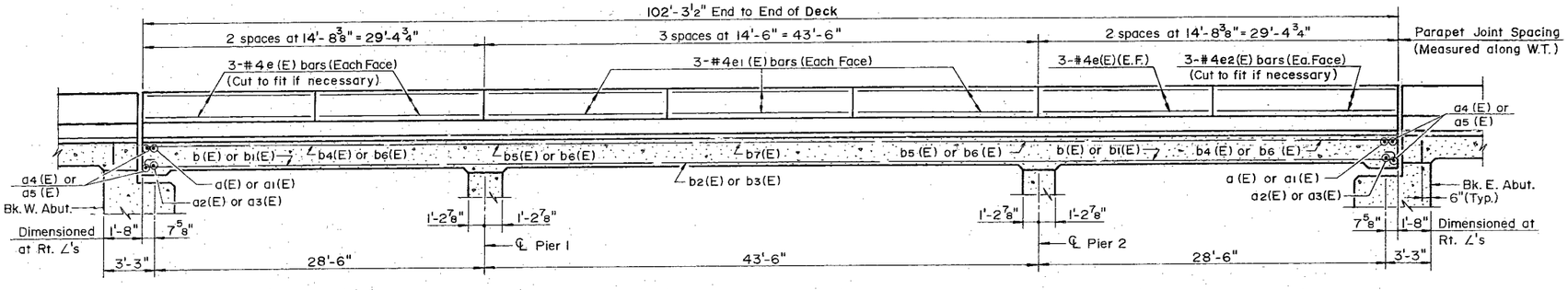
The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections.

DECK ELEVATIONS
F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY
STA. 480+15.00

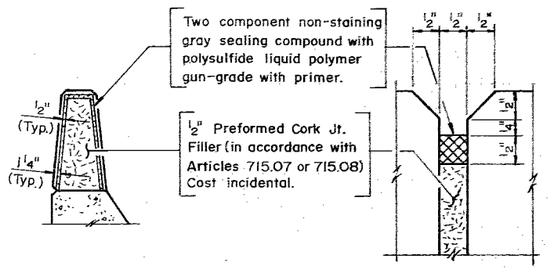
HSIONG ASSOCIATES LTD.

DESIGNED: W.H. CHECKED: G.J.G.
DRAWN: R.H.H. DATE: NOH-063C

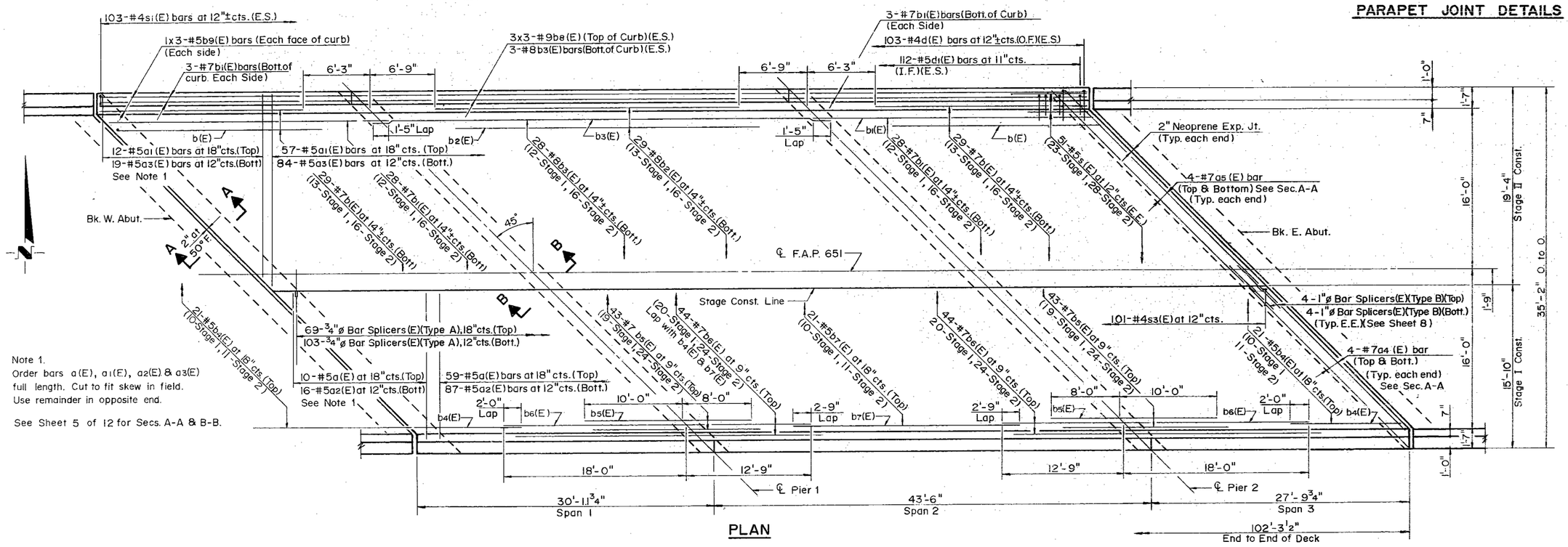
ROUTE NO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 651	108-BR3	LIVINGSTON	46	31
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		
		SHEET 4 OF 12		



LONGITUDINAL SECTION



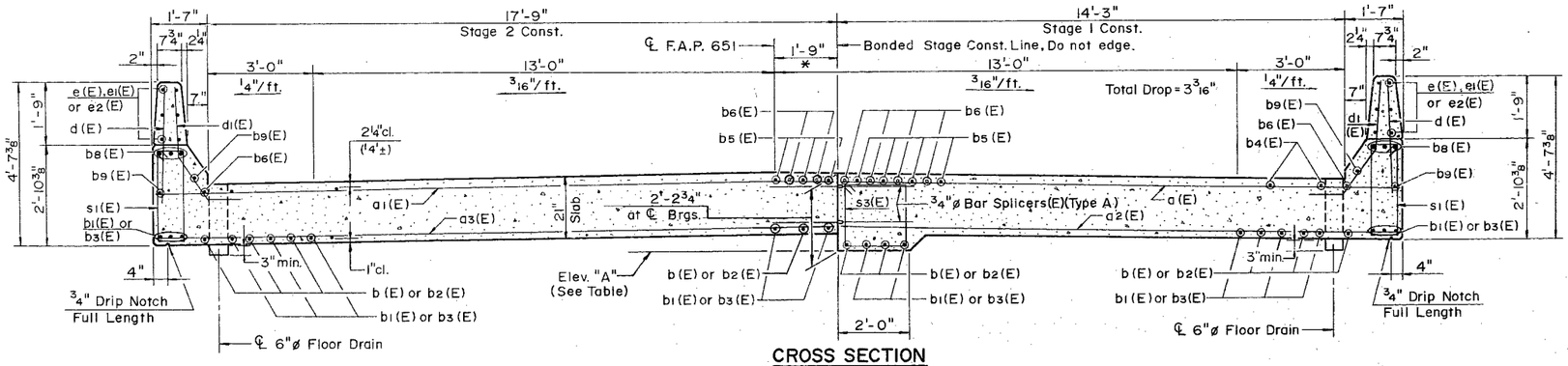
PARAPET JOINT DETAILS



PLAN

Note 1.
Order bars a(E), a1(E), a2(E) & a3(E) full length. Cut to fit skew in field. Use remainder in opposite end.

See Sheet 5 of 12 for Secs. A-A & B-B.



CROSS SECTION

TABLE OF VALUE "A"

	West Abut.	P-1	P-2	East Abut.
A	99.02	99.09	99.19	99.26

* Lapped Bars at this location shall be tied with double the number of ties normally used.

MIN. BAR LAP

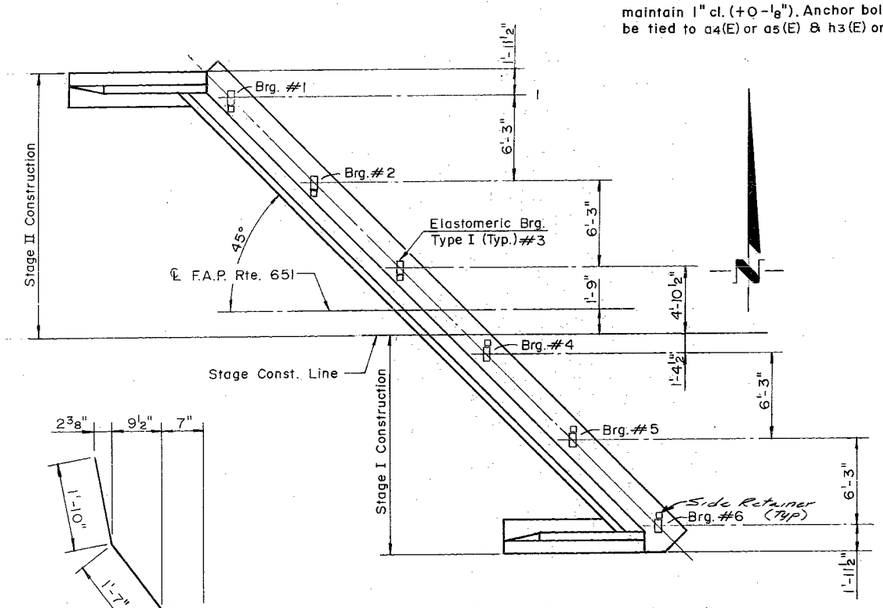
	Other bars	Top bars
#5	2'-2"	N.A.
#9	5'-9"	8'-1"

Work this Sheet with Sheet 5

SUPERSTRUCTURE
F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY
STA. 480 + 15.00

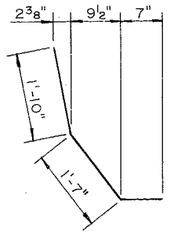
HSIONG ASSOCIATES LTD.
DESIGNED: W.H. CHECKED: G.J.G.
DRAWN: T.G. & L.M.L. DATE: NO. H-063C

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 651	108-BR3	LIVINGSTON	46	32
FED. ROAD DIST. NO. 7	ILLINOIS PROJECT			
	SHEET 5 OF 12			



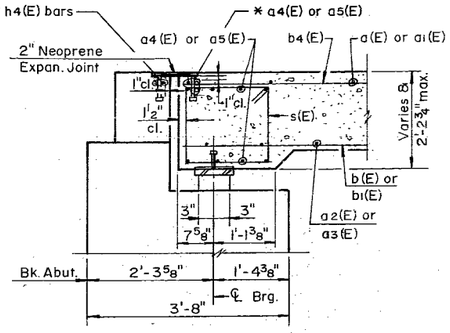
PLAN OF ABUTMENT

(Showing layout of Bearings) (Typ.)

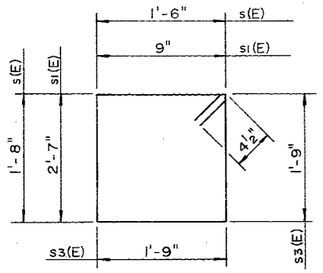


BAR d1(E)

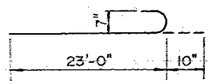
* Place a4(E) or a5(E) bars & h3(E) or h4(E) in back of anchor bolts as shown if required to maintain 1" cl. (+0 -⅛"). Anchor bolts should be tied to a4(E) or a5(E) & h3(E) or h4(E) bars.



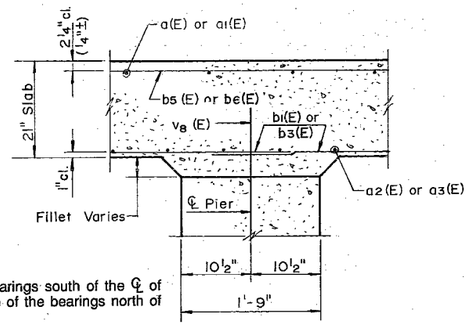
SECTION A-A



BARS s(E), s1(E) & s3(E)



BAR b(E)

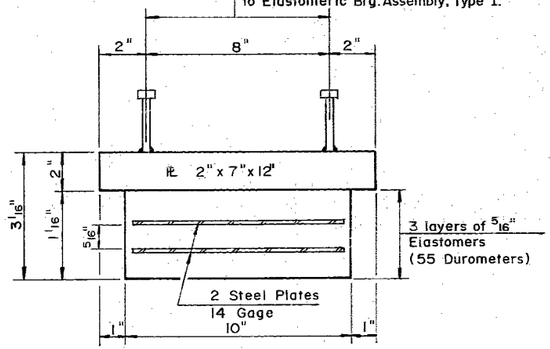


SECTION B-B

Place side retainers on the north side of the bearings south of the ℄ of roadway. Place side retainers on the south side of the bearings north of the ℄ of roadway.

½" ø x 6" studs automatically end welded.

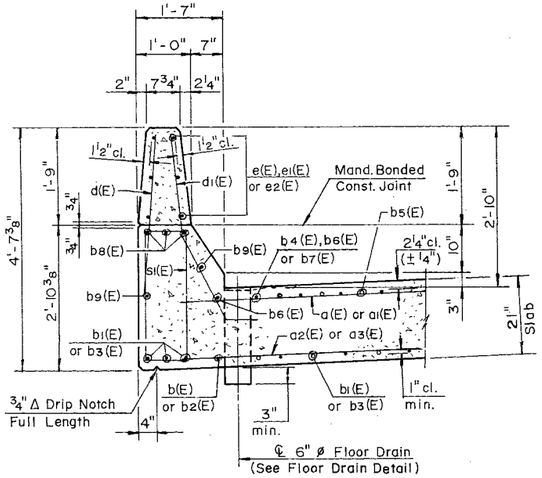
Granular or solid flux filled conforming to Sec. 507 of the Std. Secs. Cost incidental to Elastomeric Brg. Assembly, Type I.



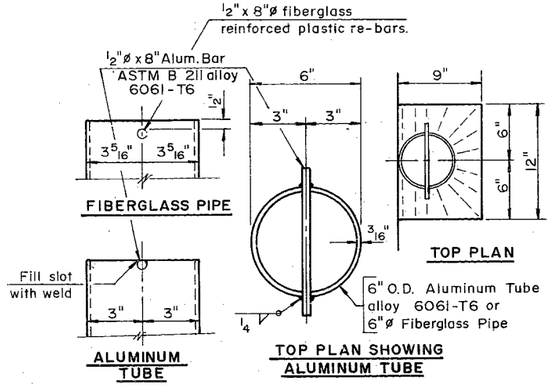
BILL OF MATERIAL

Bar	No	Size	Length	Shape
a(E)	69	#5	15'-6"	
a1(E)	69	#5	19'-0"	
a2(E)	103	#5	15'-6	
a3(E)	103	#5	19'-0"	
a4(E)	16	#7	22'-0"	
a5(E)	16	#7	27'-0	
b(E)	58	#7	23'-10"	
b1(E)	68	#7	30'-0"	
b2(E)	29	#8	30'-0"	
b3(E)	34	#8	45'-0"	
b4(E)	42	#5	13'-3"	
b5(E)	86	#7	18'-0"	
b6(E)	88	#7	30'-9"	
b7(E)	21	#5	23'-6"	
b8(E)	18	#9	39'-6"	
b9(E)	12	#5	35'-6"	
d(E)	206	#4	3'-0"	
d1(E)	224	#5	4'-0"	
e(E)	36	#4	14'-6"	
e1(E)	36	#4	14'-3"	
e2(E)	12	#4	15'-6"	
s(E)	103	#5	7'-1"	
s1(E)	204	#4	7'-5"	
s3(E)	101	#4	7'-9"	
Class X Conc., Superstructure		Cu.Yd.	269.4	
Reinforcement Bars Epoxy-Coated		Lb.	38,300	

Reinforcement bars indicated with (E), shall be Epoxy Coated.

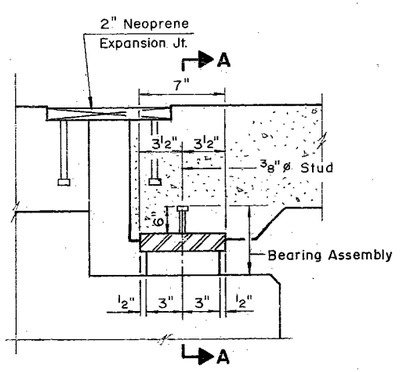


SECTION THRU PARAPET

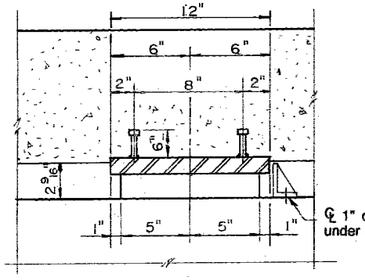


FLOOR DRAIN DETAILS

The exterior surfaces of the aluminum drains shall be cleaned and given a washcoat pretreatment in accordance with the steel structures Painting Council's Specs SSPC-SPI & SSPC- Paint 27 followed by the vinyl enamel coat painting specified for Structural Steel.
Fiberglass Pipe shall conform to ASTM 2996, with short-time rupture strength hoop tensile stress of 30,000 psi min. Fiberglass to have prewash as per MIL-P-15328 prior to painting. The surface of the Fiberglass pipe shall be free of bond inhibiting agents. The exterior surfaces of the fiberglass floor drains shall be painted with a vinyl enamel coat. The color shall be Munsel Std. 10Y7/1 light grey. Painting of the fiberglass floor drains will not be required when the exterior surfaces of the furnished drains are coated by the manufacturer with silver pigment or a pigment that matches the color of the concrete slab.



ELEVATION AT ABUT.

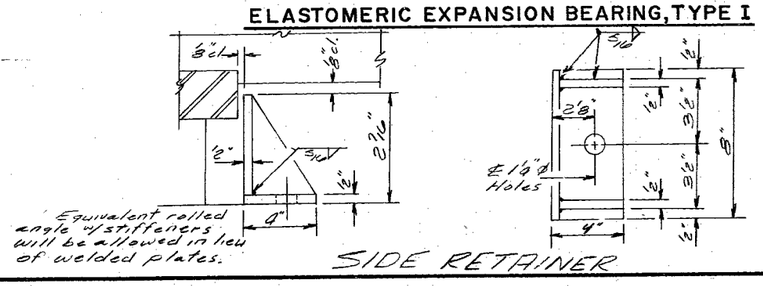


SECTION A-A

℄ 1" dia. x 12" Anchor bolts with 2 1/2" x 2 1/2" x 5/16" plate washer under nut.

The cost of the side retainers and anchor bolts shall be included with the pay item, ELASTOMERIC BEARING ASSEMBLY, TYPE I.

ELASTOMERIC EXPANSION BEARING, TYPE I



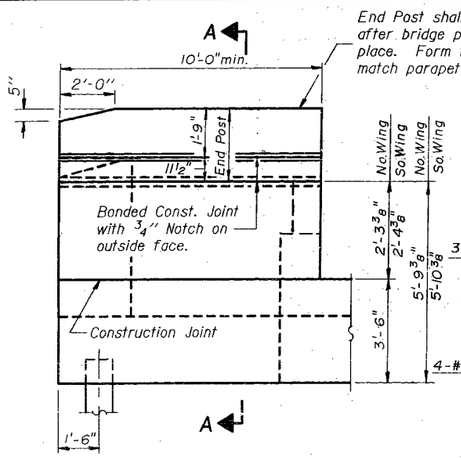
SUPERSTRUCTURE DETAILS
F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY
STA. 480+15.00

HSIONG ASSOCIATES LTD.

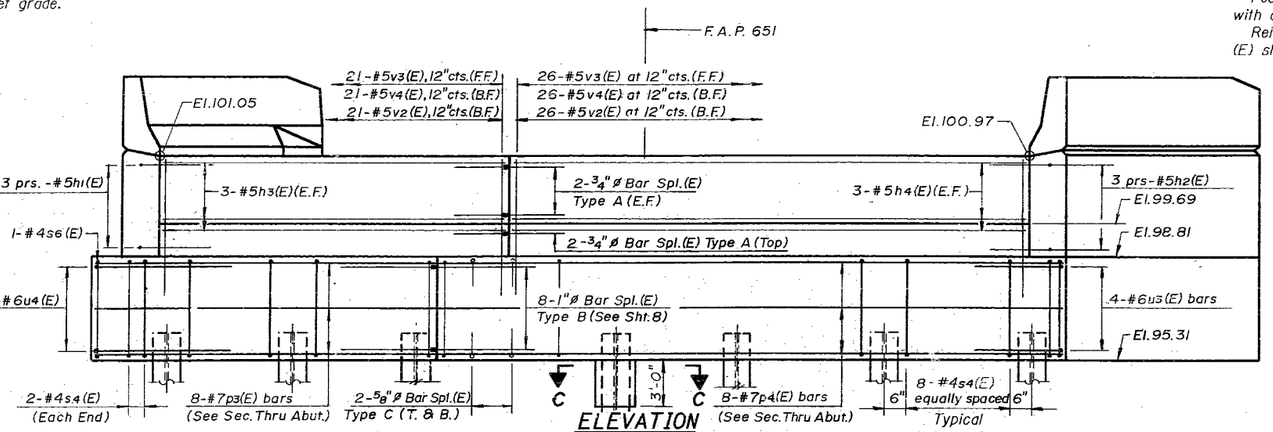
DESIGNED: W.H. CHECKED: G.J.G.
DRAWN: R.H.H. DATE: NO. H-063C

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 651	108-BR3	LIVINGSTON	46	33
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		
	SHEET 6 OF 12			

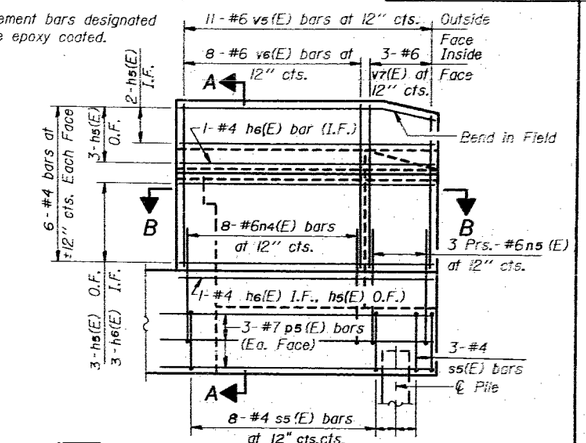
Notes: Space reinforcement in cap to miss anchor bolts.
Pour steps monolithically with cap.
Reinforcement bars designated (E) shall be epoxy coated.



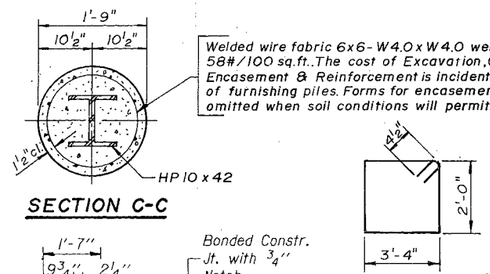
WING WALL ELEVATION



ELEVATION
(Looking West)



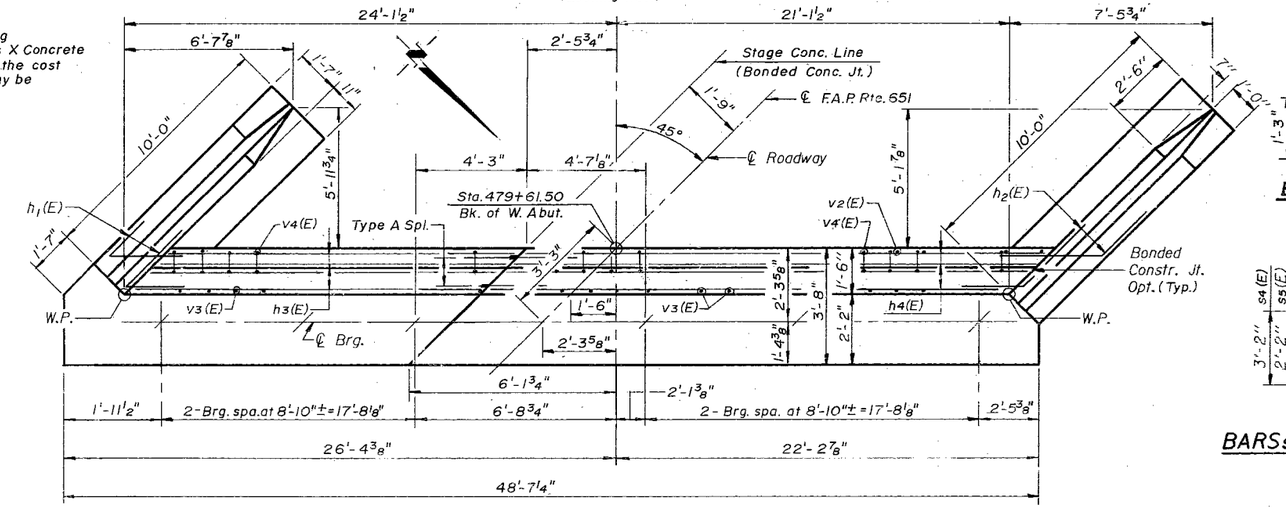
WING WALL ELEVATION
Reinforcement



SECTION C-C

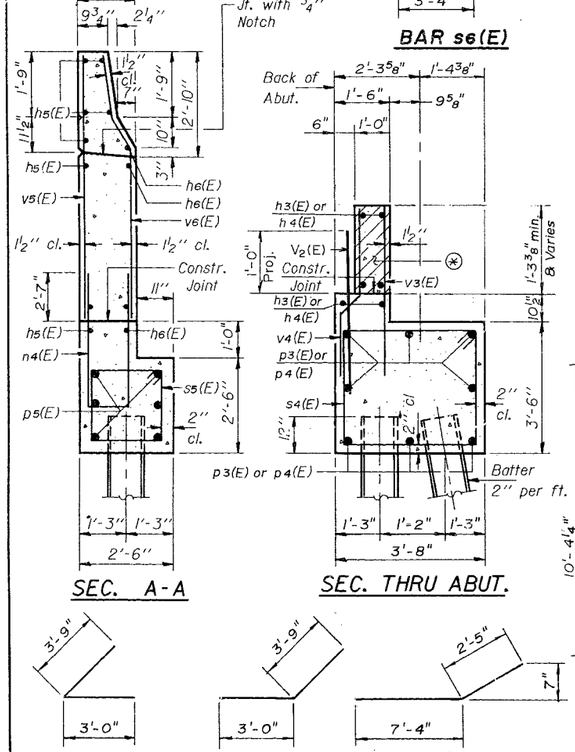
Welded wire fabric 6x6-W4.0xW4.0 weighing 58#/100 sq.ft. The cost of Excavation, Class X Concrete Encasement & Reinforcement is incidental to the cost of furnishing piles. Forms for encasement may be omitted when soil conditions will permit.

BAR s6(E)



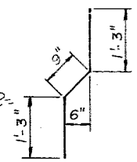
TOP VIEW

STAGE I CONSTRUCTION — PLAN-PILE CAP — STAGE II CONSTRUCTION

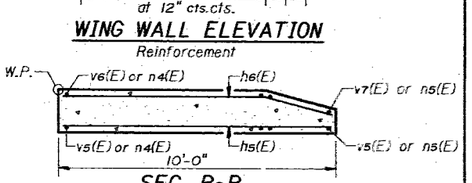


SEC. A-A — SEC. THRU ABUT.

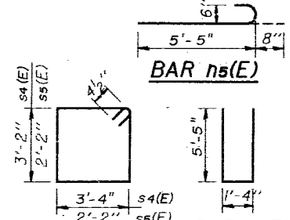
BAR h1(E) — BAR h2(E) — BAR h6(E)



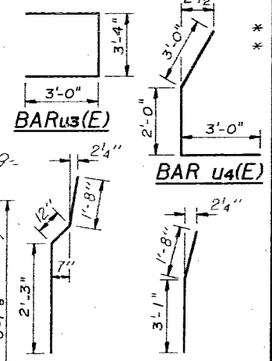
BAR v4(E)



SEC. B-B



BAR h5(E) — BARS s4(E) & s5(E) — BAR n4(E)



BAR u3(E) — BAR u4(E) — BAR v6(E) — BAR v7(E)

WEST ABUTMENT BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h1(E)	6	#5	6'-9"	
h2(E)	6	#5	6'-9"	
h3(E)	6	#5	19'-9"	
h4(E)	6	#5	24"-9"	
h5(E)	18	#4	9'-9"	
h6(E)	10	#4	9'-9"	
n4(E)	16	#6	12'-2"	
n5(E)	12	#6	6'-1"	
p3(E)	8	#7	22'-0"	
p4(E)	8	#7	28'-0"	
p5(E)	12	#7	11'-3"	
s4(E)	52	#4	13'-9"	
s5(E)	22	#4	9'-5"	
s6(E)	1	#4	11'-5"	
u3(E)	4	#6	9'-4"	
u4(E)	4	#6	8'-0"	
V2(E)	47	#5	2'-9"	
v3(E)	47	#5	3'-0"	
v4(E)	47	#5	3'-3"	
v5(E)	22	#6	4'-9"	
v6(E)	16	#6	4'-11"	
v7(E)	6	#6	4'-9"	
Test Pile Steel HP10x42		Each	1	
Structure Excavation		Cu. Yd.	60	
Class X Concrete		Cu. Yd.	35.3	
Reinforcement Bars (Epoxy Coated)		Lbs.	3,530	
Steel Piles HP10x42		Lin. Ft.	320	

WEST ABUTMENT
F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY

* Cut to fit Section

⊛ Hatched area to be poured after superstructure falsework has been removed. Quantity of concrete included with Class X Concrete Superstructure.

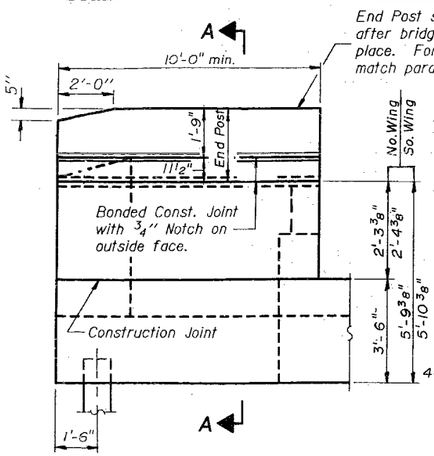
HSIONG ASSOCIATES LTD.

DESIGNED: G.J.G. CHECKED: W.H.
DRAWN: R.H.H. DATE: NO. H-063C

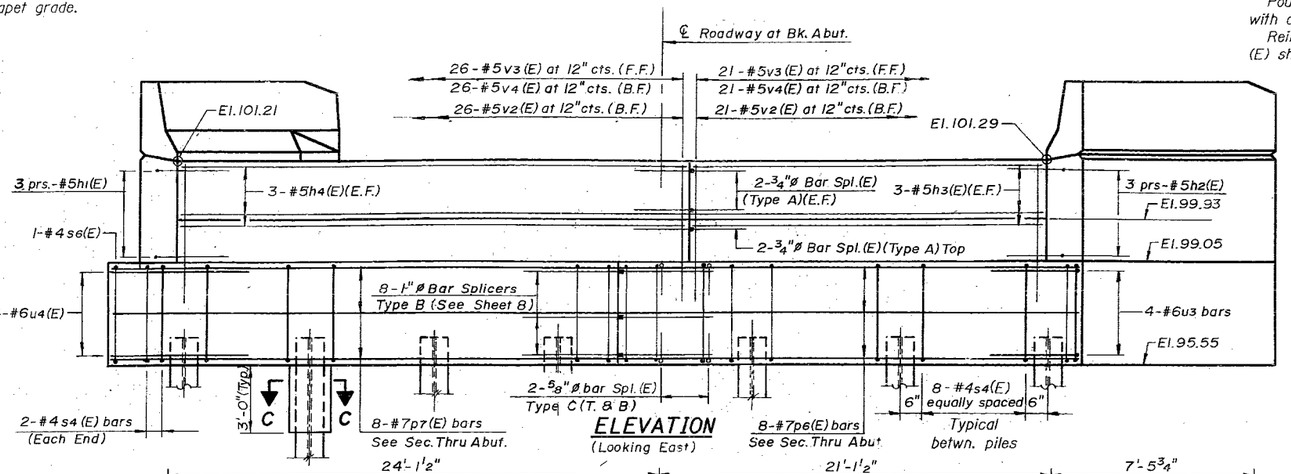
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 651	108-BR3	LIVINGSTON	46	34
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		

SHEET 7 OF 12

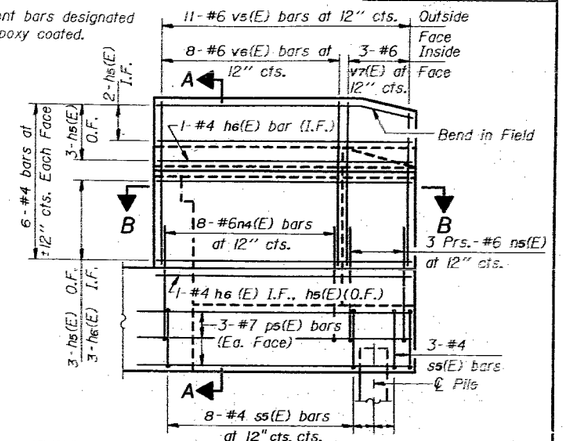
Notes: Space reinforcement in cap to miss anchor bolts.
Pour steps monolithically with cap.
Reinforcement bars designated (E) shall be epoxy coated.



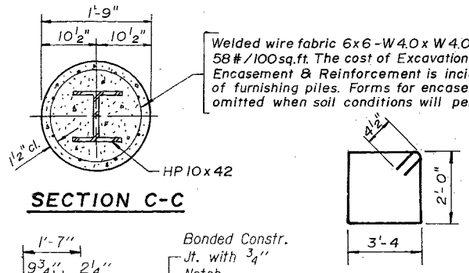
WING WALL ELEVATION



ELEVATION
(Looking East)



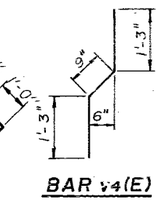
WING WALL ELEVATION
Reinforcement



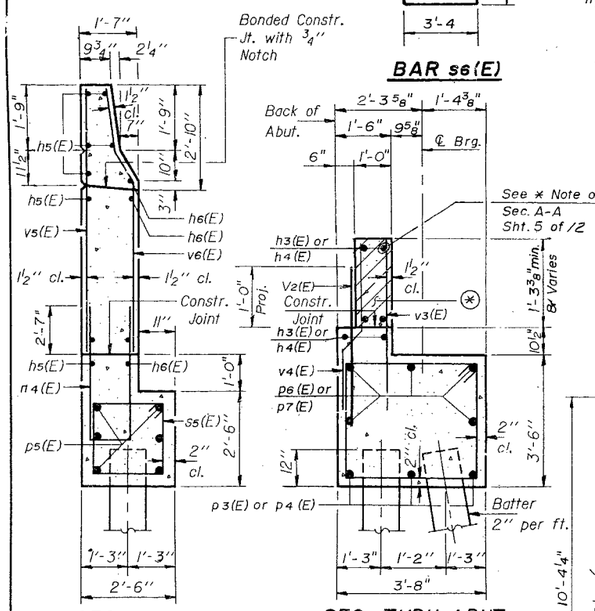
SECTION C-C

Welded wire fabric 6x6-W4.0xW4.0 weighing 58#/100sq.ft. The cost of Excavation, Class X Concrete Encasement & Reinforcement is incidental to the cost of furnishing piles. Forms for encasement may be omitted when soil conditions will permit.

BAR s6(E)

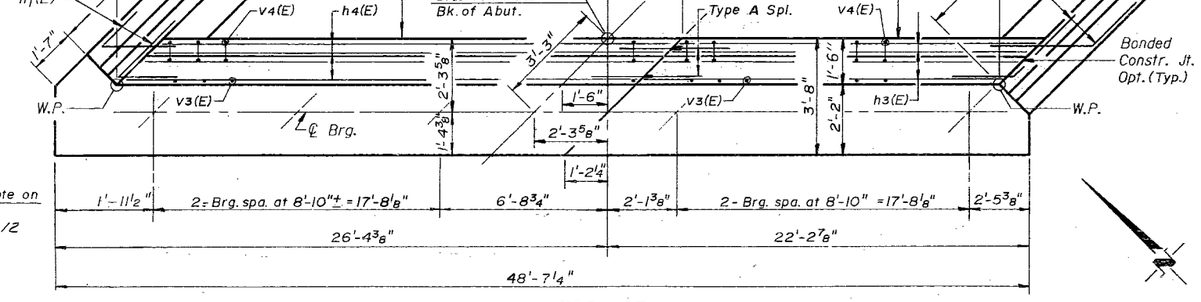


BAR v4(E)

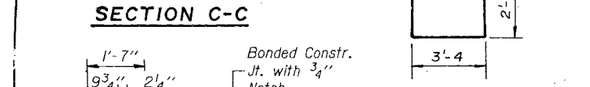


SEC. A-A

SEC. THRU ABUT.



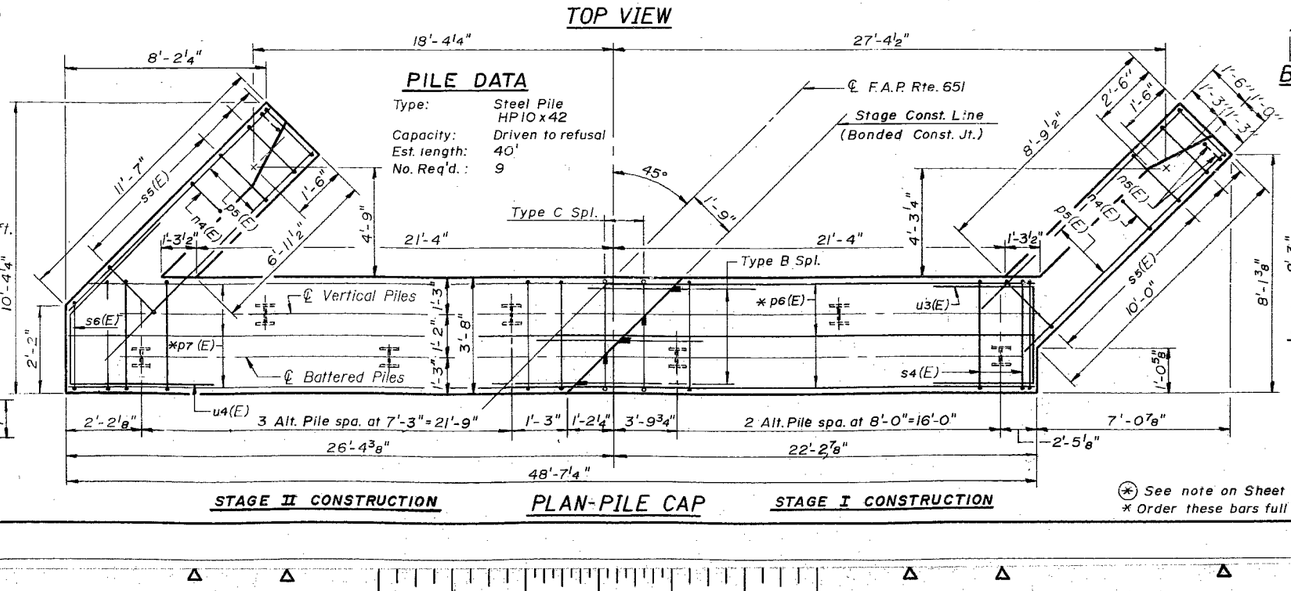
TOP VIEW



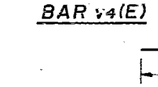
BAR h1(E)

BAR h2(E)

BAR h6(E)



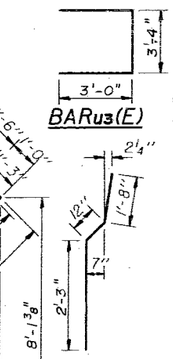
STAGE II CONSTRUCTION — PLAN-PILE CAP — STAGE I CONSTRUCTION



BAR n5(E)

BARS s4(E) & s5(E)

BAR n4(E)



BAR u3(E)

BAR u4(E)

BAR v6(E)

BAR v7(E)

EAST ABUTMENT
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h_1(E)	6	#5	6'-9"	
h_2(E)	6	#5	6'-9"	
h_3(E)	6	#5	19'-9"	
h_4(E)	6	#5	24'-9"	
h5(E)	18	#4	9'-9"	
h6(E)	10	#4	9'-9"	
n4(E)	16	#6	12'-2"	
n5(E)	12	#6	6'-1"	
p5(E)	12	#7	11'-3"	
p6(E)	8	#7	23'-3"	
p7(E)	8	#7	27'-0"	
s4(E)	52	#4	13'-9"	
s5(E)	22	#4	9'-5"	
s6(E)	1	#4	11'-5"	
u3(E)	4	#6	9'-4"	
u4(E)	4	#6	8'-0"	
V2(E)	47	#5	2'-9"	
v3(E)	47	#5	3'-0"	
v4(E)	47	#5	3'-3"	
v5(E)	22	#6	4'-9"	
v6(E)	16	#6	4'-11"	
v7(E)	6	#6	4'-9"	
Structure Excavation		Cu. Yd.	60	
Class X Concrete		Cu. Yd.	35.3	
Reinforcement Bars (Epoxy Coated)		Lbs.	3530	
Steel Piles HP10x42		Lin. Ft.	360	

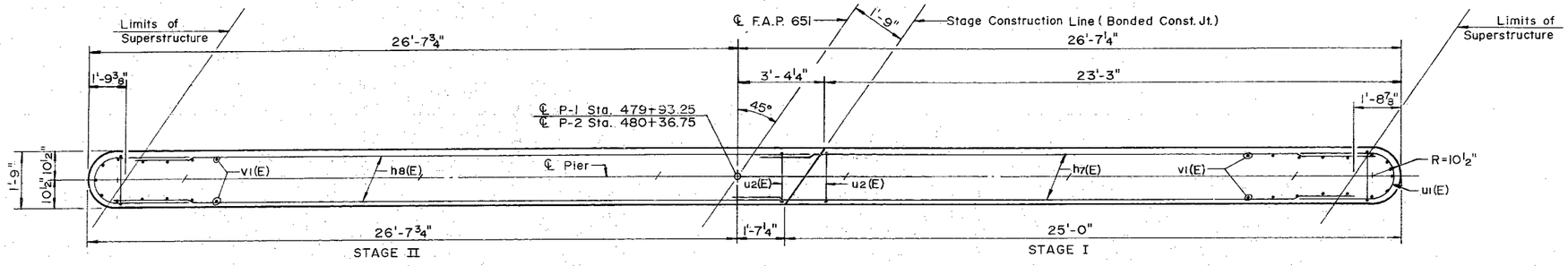
EAST ABUTMENT
F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY

HSIONG ASSOCIATES LTD.

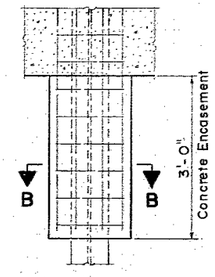
DESIGNED: G.J.G. CHECKED: W.H.
DRAWN: R.H.H. DATE: NO. H-063C

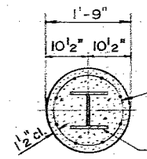
⊛ See note on Sheet 6 of 12.
* Order these bars full length cut in field to fit.

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 651	108-BR3	LIVINGSTON	40	35
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		
		SHEET 8 OF 12		



PLAN



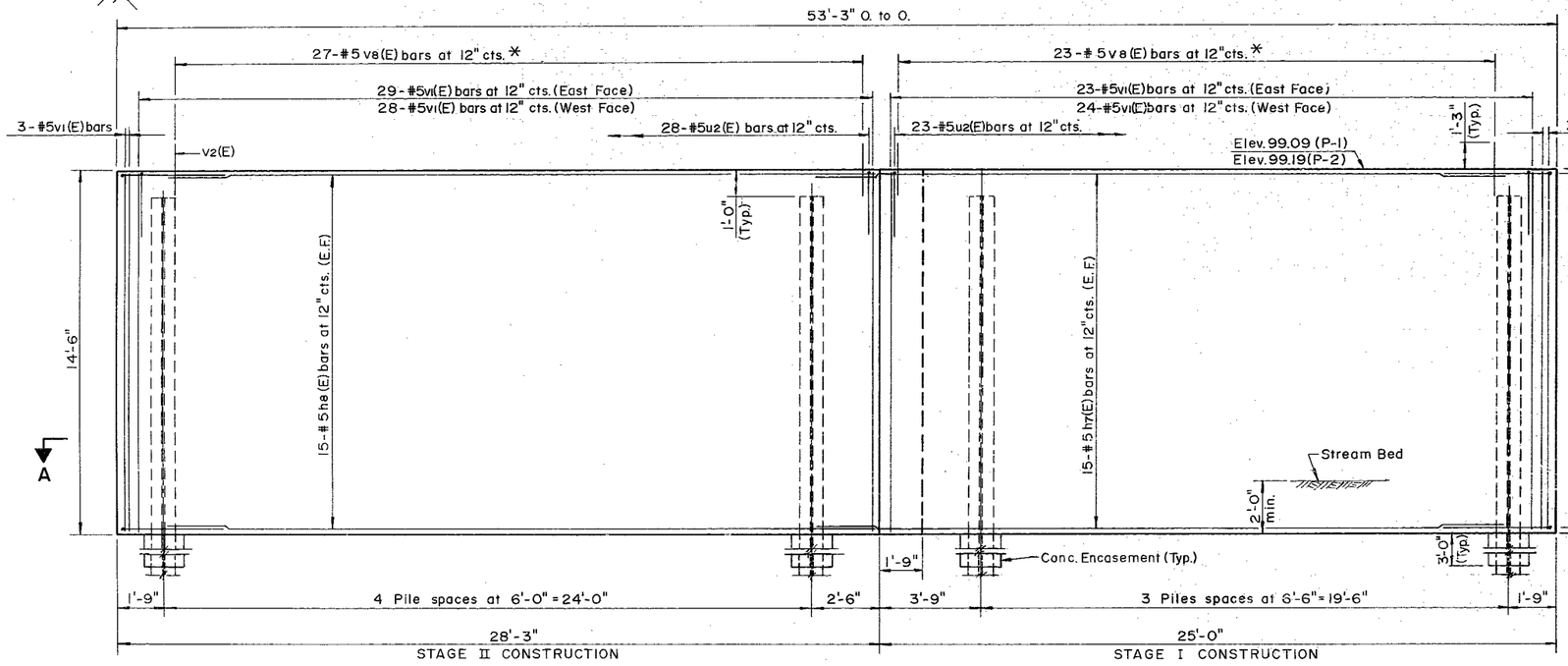


W.W. fabric 6x6-W4.0xW4.0 58/100 sq.ft.. Cost of Excav., Class X Conc. Encasement & Reinf. is incidental to the cost of Furnishing Piles. Forms may be omited when soil condition permit.

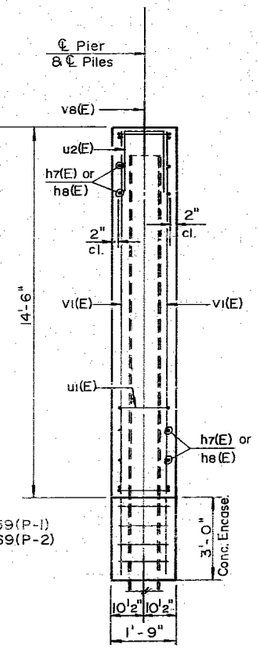
SECTION B-B

DETAIL OF PILE ENCASEMENT

* Place v8(E) bars within the limits of superstructure.



ELEVATION



END VIEW

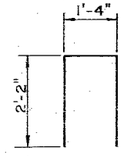
BILL OF MATERIAL

Bar	No	Size	Length	Shape
h7(E)	60	# 5	23'-0"	
h8(E)	60	# 5	28'-0"	
u1(E)	60	# 5	8'-9"	
u2(E)	102	# 5	5'-8"	
v1(E)	220	# 5	14'-3"	
v8(E)	100	# 5	2'-6"	
Class X Concrete			Cu.Yd.	99.4
Reinf. Bars, Epoxy Coated			Lb.	7870
Test Pile, Steel HP 10 x 42			Each	1
Steel Piles, HP 10 x 42			Lin.Ft.	680
Structure Excavation			Cu.Yd.	82

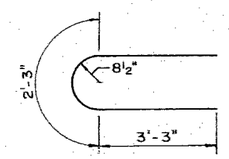
⊛ NOTE: Cut h (E) & h (E) bars in field to fit if necessary.
Bars indicated (E) shall be Epoxy Coat.

PILE DATA

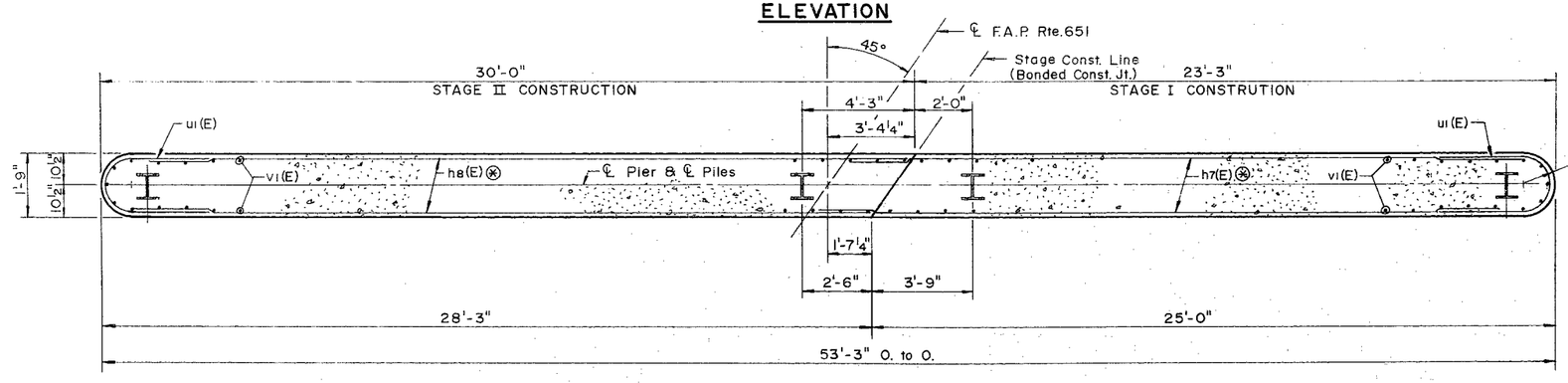
Type ____ Steel Piles HP10x42
Capacity ____ driven to refusal
Est. length ____ 40'
No. Req'd. ____ 18 including 1 test pile at Pier 2



BAR u2(E)



BAR u1(E)



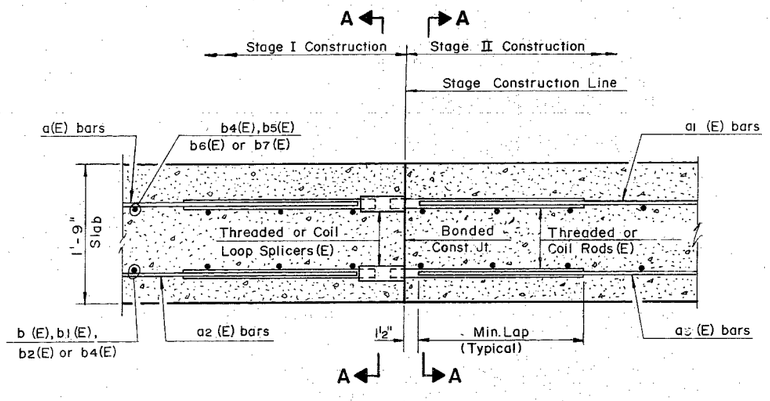
SECTION A-A

PIER DETAILS
F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY
STA. 480+15.00

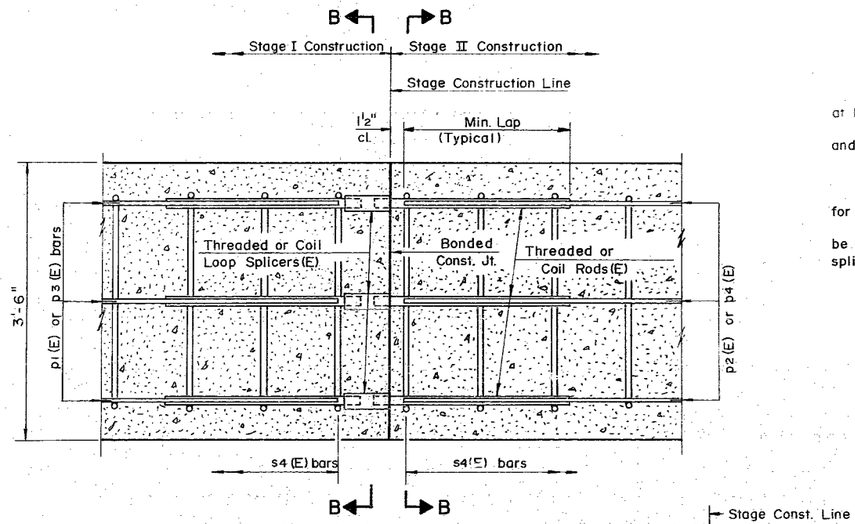
HSIONG ASSOCIATES LTD.

DESIGNED: W.H. CHECKED: G.J.G.
DRAWN: R.H.H. DATE: NO. H-063C

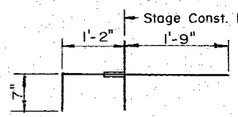
ROUTE NO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
F.A.P. 651	108-BR3	LIVINGSTON	46	36
FED ROAD DIST NO 7	ILLINOIS	PROJECT		
		SHEET 9 OF 12		



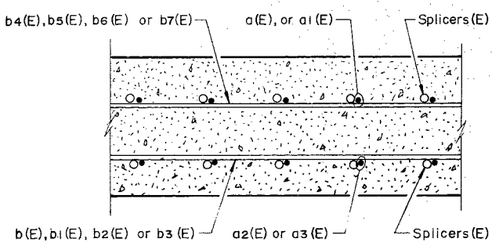
SECTION THRU SLAB



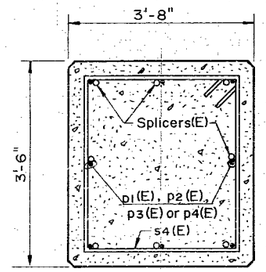
SECTION THRU ABUTMENTS



TYPE C SPLICER



SECTION A-A



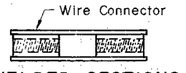
SECTION B-B

SPLICER DETAILS

Cost incidental to Reinforcement Bars (Epoxy Coated).

** ONE PIECE

** Heavy Hex Nuts conforming to ASTM A563, Grade C,D or DH may be used.



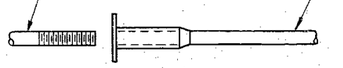
WELDED SECTIONS

SPLICER DETAILS

Cost incidental to Reinforcement Bars (Epoxy Coated).

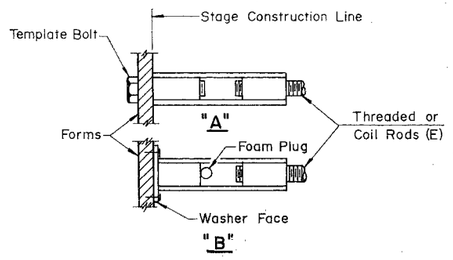
The diameter of this portion of the splicer is the same as the diameter of the bar being spliced

The diameter of this portion is equal or larger than the diameter of bar spliced.



ROLLED THREAD DOWEL BAR

SPLICER ALTERNATIVES



INSTALLATION AND SETTING METHODS

"A" Set splicer by means of a template bolt.
"B" Set splicer by nailing to wood forms or cementing to steel forms.
(E) Indicates epoxy coating.

NOTES

Steel Splicer (Coupler) assembly shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.

Steel Splicer rods shall be of minimum 60 ksi. yield strength, threaded or coiled full length and have effective tensile stress area equal 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:

① Minimum Capacity = $1.25 \times fy \times A_t$ (Tension in kips)

② Minimum *Pull-out Strength = $1.25 \times fs_{allow} \times A_t$ (Tension in kips)

Where fy = Yield strength of lapped reinforcement bars in k.s.i.

fs_{allow} = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load).

* = 28 day concrete

Typical Splicer (Coupler) Assembly Sizes:

- Type A — #5 bar lap with ¾"ø Splicer (Coupler) x 2'-0" Splicer Rods — Minimum Capacity = 23.0 kips-tension; Minimum Pull-out Strength = 9.2 kips-tension
- Type B — #7 bar lap with 1"ø Splicer (Coupler) x 3'-5" Splicer Rods — Minimum Capacity = 45.1 kips-tension; Minimum Pull-out Strength = 180 kips-tension
- Type C — #4 bar lap with ⅝"ø Splicer (Coupler) x 1'-9" Splicer Rods — Minimum Capacity = 58.9 kips-tension; Minimum Pull-out Strength = 23.6 kips-tension

At = Tensile stress area of lapped reinforcement bars.

BAR SPLICER LIST

Type	Location	No. Req'd.
A	Deck	172
A	Abut.	12
B	Abut.	16
C	Abut.	8
B	Deck	16

BAR SPLICER (COUPLER) DETAILS AT STAGE CONSTRUCTION

F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY
STA. 460+15.00

HSIONG ASSOCIATES LTD.

DESIGNED: W.H. CHECKED: G.J.G.
DRAWN: R.H.H. DATE: NO. H-063C

ROUTE NO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
F.A.P. 651	108-BR3	LIVINGSTON	46	37
FED ROAD DIST NO 7	ILLINOIS PROJECT			
		SHEET 10 OF 12		

Joint Size	"C" at 50°F	"D" at 50°F
2	2"	1½" min.

INSTALLATION NOTES

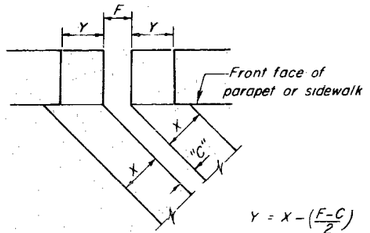
1. Install sponge mandrels into positions shown to form flap convolution.
2. Install parapet or sidewalk piece (trim roadway flap to fit before applying epoxy).
3. Install continuous seal in roadway.
4. Install anchor blocks as indicated.

NOTE A.. Maximum spacing of anchor bolts shall be 12" centers

SKEW LIMITATIONS

The details of the anchor blocks and the elastomeric membrane in the parapet, as shown, are for up to 50° skews.

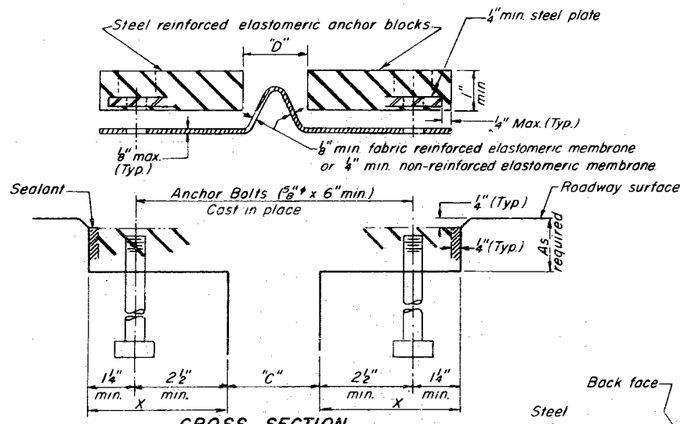
For skews greater than 50°, the anchor blocks and the elastomeric membrane, installed in accordance with dimension "D", might require modifications to insure a minimum clearance of 1½" from centerline of anchor studs to edge of parapet opening. The anchor blocks and the elastomeric membrane shall also be installed to the top of the parapet with the anchor studs spaced at ±12" cts.



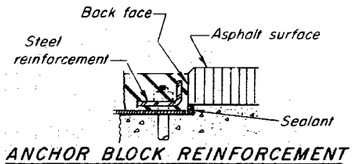
FORMING BLOCKOUT SKETCH

$Y = X - \left(\frac{F-C}{2}\right)$

For dimension "F" see sheet #



CROSS SECTION



ANCHOR BLOCK REINFORCEMENT with ASPHALT SURFACE

GENERAL NOTES

Continuous Seal Neoprene Expansion Joint shall consist of molded anchor blocks of elastomer and steel, field assembled over continuous lengths of elastomeric membrane.

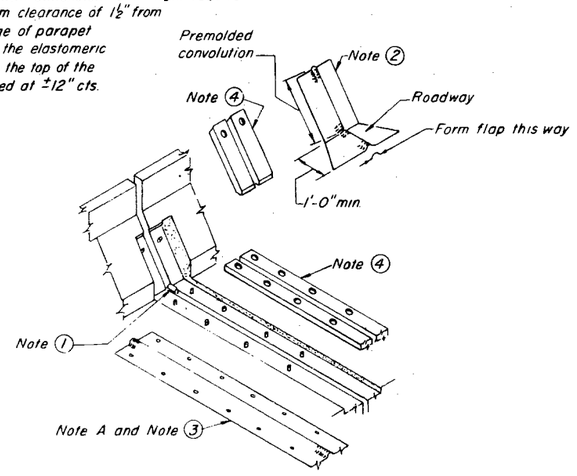
The elastomeric membrane shall be premolded with a single or a double upward convolution that will have a "memory" to return to its molded position upon joint closure.

The steel reinforcement must extend up the back face of anchor blocks when asphalt surfaces are used but is optional in concrete blockout.

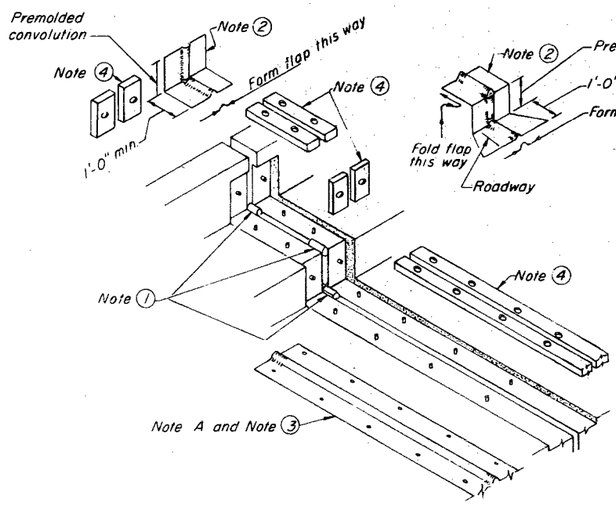
The convolution length shall be such that the extended length will not be greater than the manufactured length when the joint is fully expanded in its design range and will not protrude above the anchor blocks when the joint is fully compressed.

Joint openings shall be adjusted in accordance with Article 503.07(c) of the Standard Specifications when the deck is poured at an ambient temperature other than 50° F.

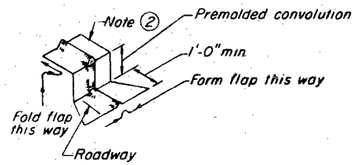
The parapet and sidewalk flaps may be furnished factory vulcanized to the roadway membrane provided the centerline of the convolution is maintained and the process and method meet the approval of the Engineer.

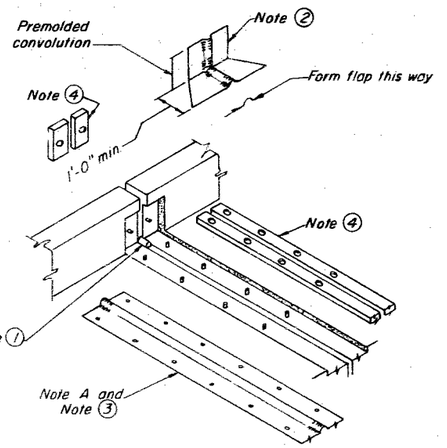


AT PARAPET

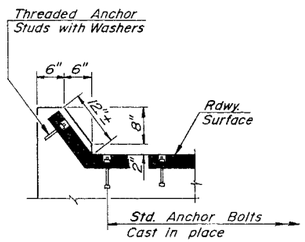


AT SIDEWALK or MEDIAN

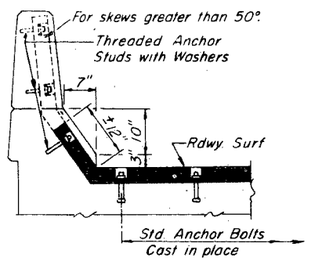




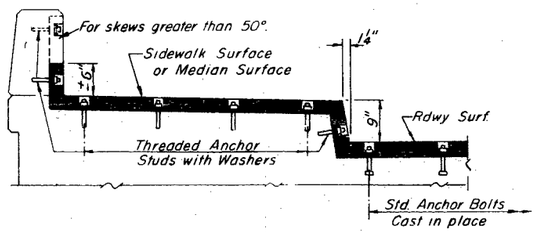
AT WALL



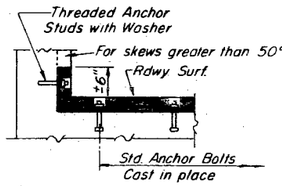
AT CURB



AT PARAPET



AT SIDEWALK OR MEDIAN TYPICAL END TREATMENT



AT WALL

CONTINUOUS SEAL TYPE NEOPRENE EXPANSION JOINTS

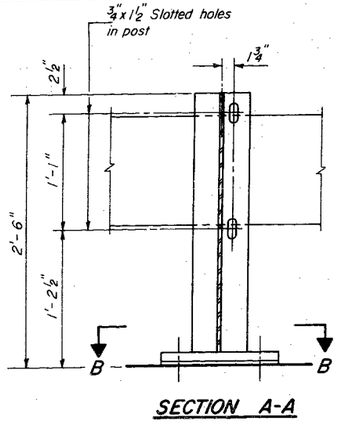
FOR 2", 2½" AND 4" MOVEMENT

F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY
STA. 480+15.00

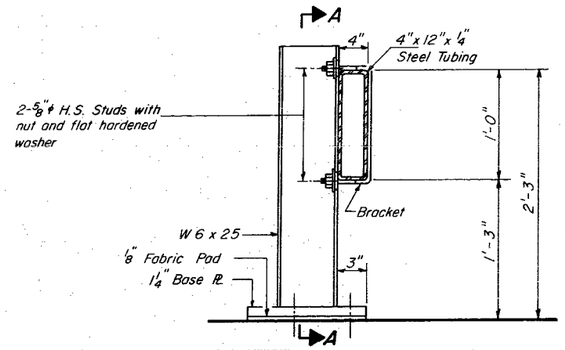
HSIONG ASSOCIATES LTD.

DESIGNED: W.H. CHECKED: G.J.G.
DRAWN: R.H.H. DATE: NO. H-063

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 651	108-BR3	LIVINGSTON	46	38
FED. ROAD DIST NO. 7	ILLINOIS	PROJECT		
		SHEET 11 OF 12		



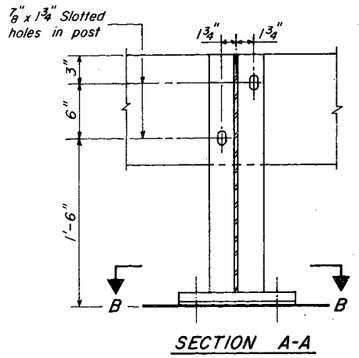
SECTION A-A



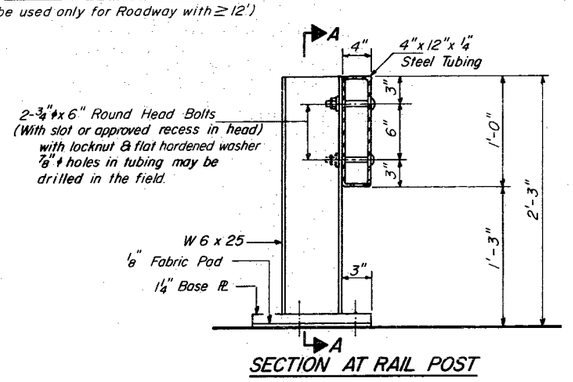
SECTION AT RAIL POST

ALTERNATE I

(To be used only for Roadway with ≥ 12')

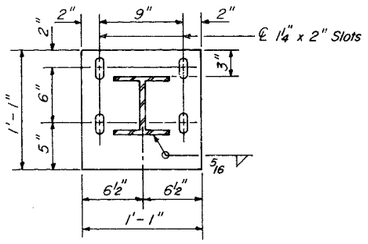


SECTION A-A

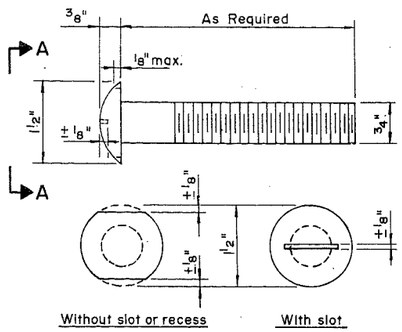


SECTION AT RAIL POST

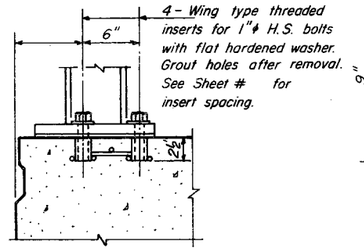
ALTERNATE II



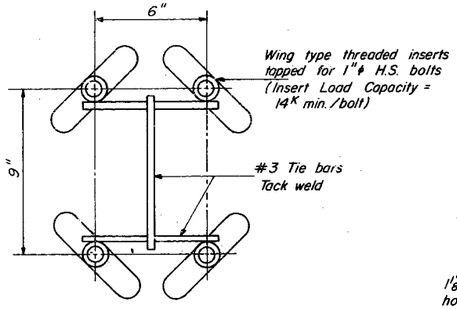
SECTION B-B



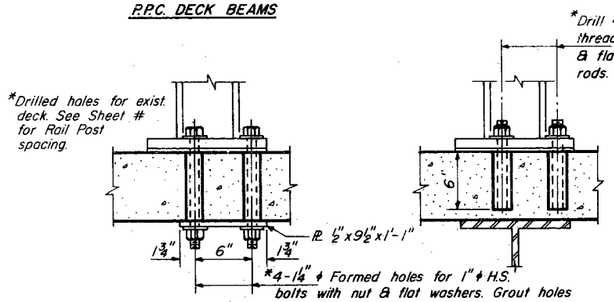
VIEW A-A
ROUND HEAD BOLT



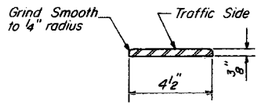
P.P.C. DECK BEAMS



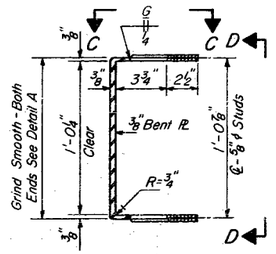
INSERT DETAIL



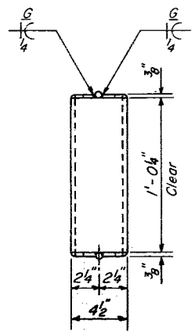
NEW & EXISTING DECKS
ANCHORAGE DETAILS



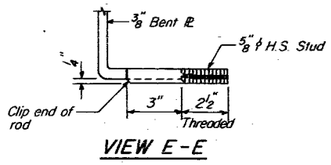
DETAIL A



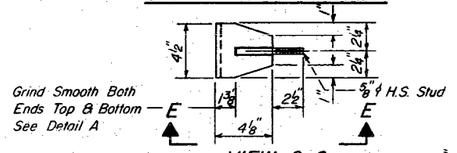
SECTION THRU BRACKET



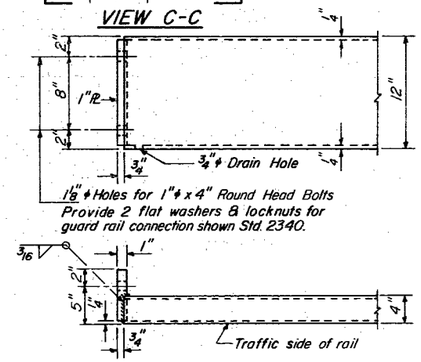
VIEW D-D



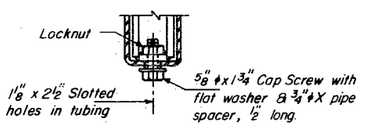
VIEW E-E



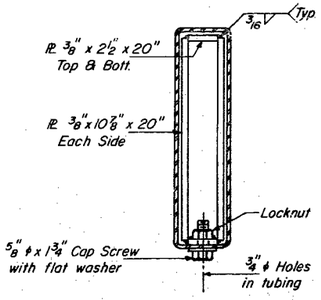
VIEW C-C



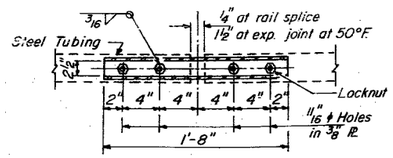
END OF RAIL DETAILS



RAIL SPLICE CONNECTION AT EXPANSION JT.



SECTION AT RAIL SPLICE



PLAN - BOTT. SPLICE PL. TYPICAL

NOTES

Hollow structural steel tubing shall conform to the requirements of A.S.T.M. designation A-500 Grade B Structural Steel Tubing.

All other steel shapes and plates shall conform to the requirements of A.A.S.H.T.O. M-183 except posts and brackets shall conform to A.A.S.H.T.O. M 223 Grade 50.

Bolts, cap screws, and nuts shall conform to the requirement of A.S.T.M. designation A-307 except for high strength bolts, threaded rods, studs, nuts and washers noted which shall conform to A.A.S.H.T.O. M-164.

The bridge rail shall receive one shop coat of a steel prime paint.

The 1"ϕ high strength bolts or threaded rods used to connect the railposts shall be tightened in accordance with Article 507.04(g)(3) of the Standard Specification.

See Special Provisions for Temporary Bridge Rail.

See sheet # for Rail Post spacing.

The contact surfaces between post flange, rail and inside face of bracket for Alternate I shall be free of all lubricants.

The nut for 5/8"ϕ high strength studs used in Alternate I to connect bracket to post shall be tightend to a snug fit and given an additional one half turn.

BILL OF MATERIAL

Item	Unit	Quantity
Temporary Bridge Rail	Lin.Ft.	170

TEMPORARY BRIDGE RAIL

F.A.P. RTE. 651, SEC. 108-BR3
LIVINGSTON COUNTY
STA. 480+15.00

HSIONG ASSOCIATES LTD.

DESIGNED: W.H. CHECKED: G.J.G.
DRAWN: R.H.H. DATE: NO. H-063C