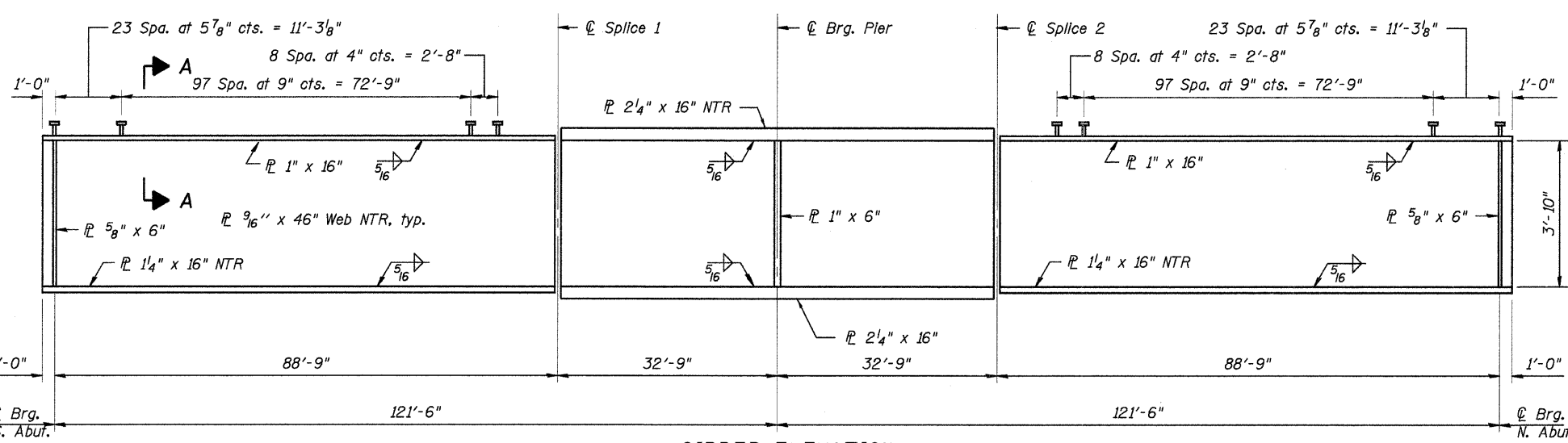
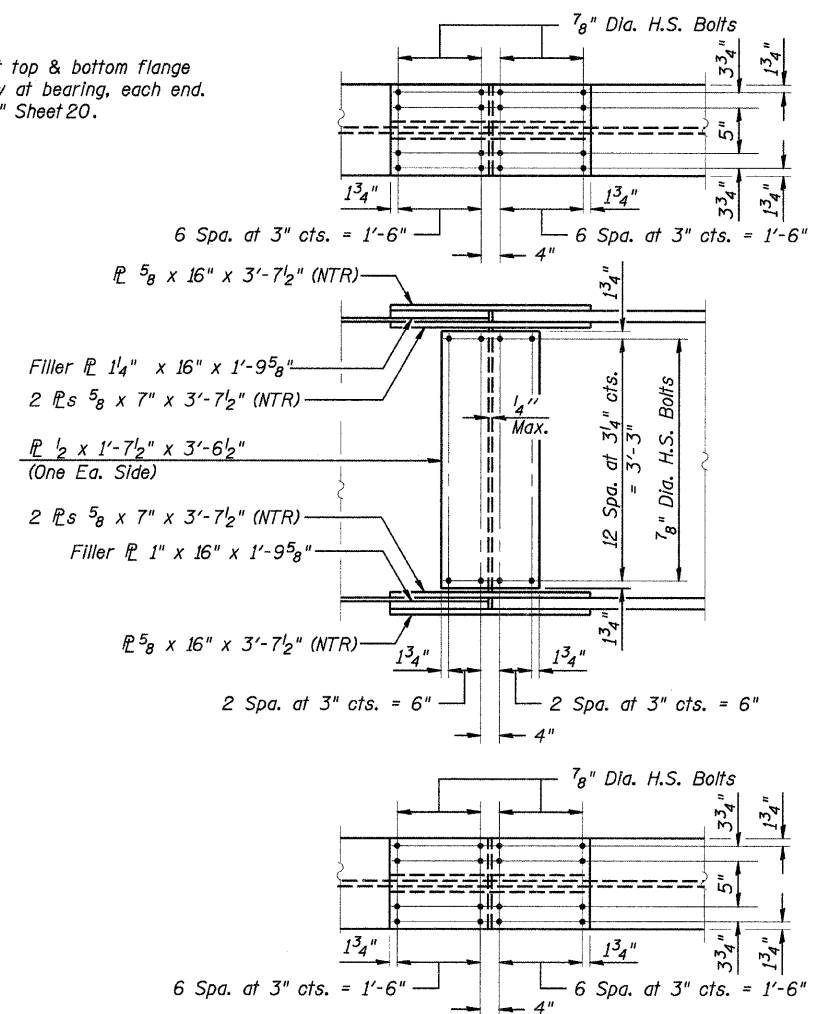
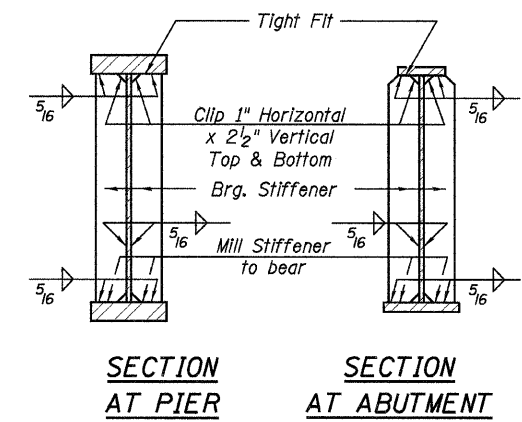
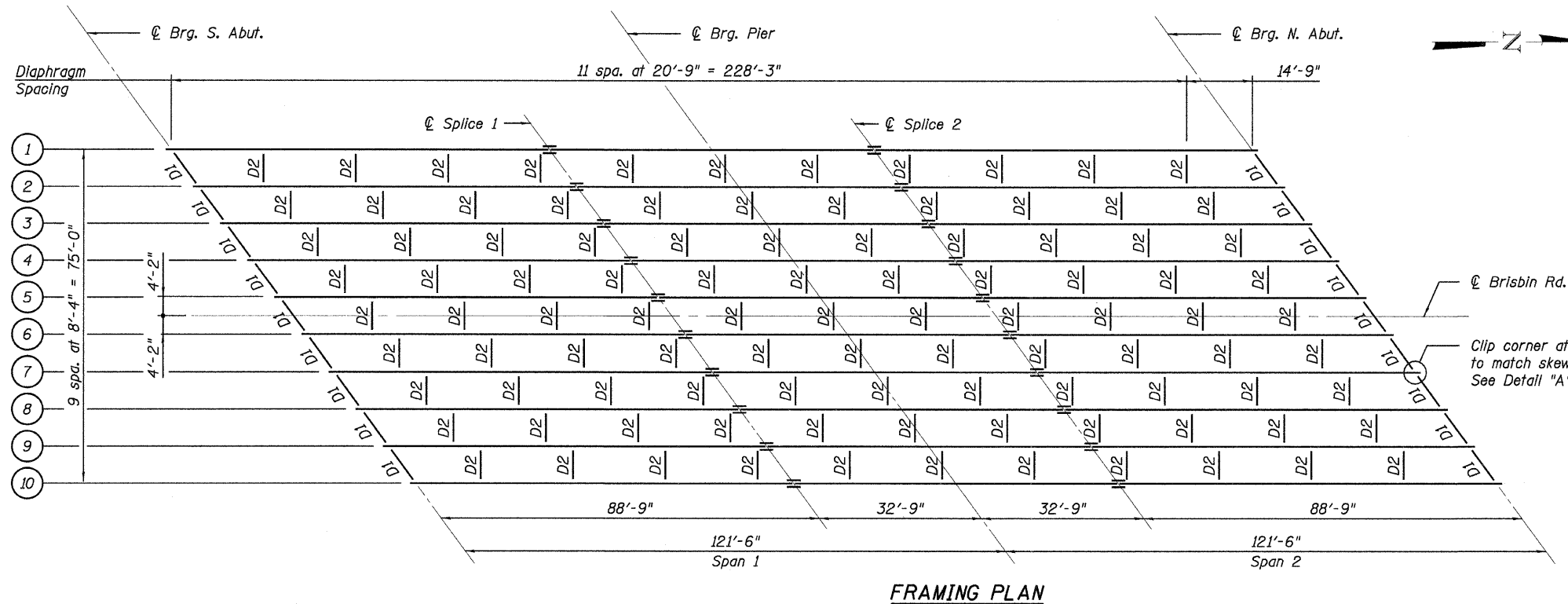


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DEPARTMENT OF TRANSPORTATION



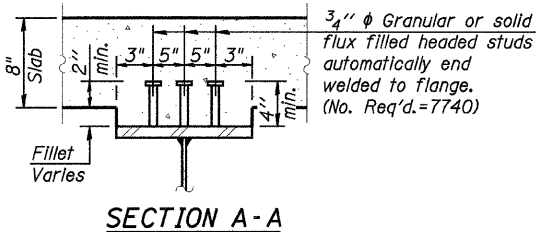
GIRDER ELEVATION
"NTR" denotes plates to which toughness requirements are applicable.

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Stud Shear Connectors	Each	7740

**FRAMING PLAN & DETAILS
STRUCTURE NO. 032-0115**

DESIGNED - DWH
CHECKED - JSD
DRAWN - GJS
CHECKED - JSD



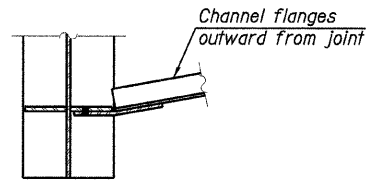
- Notes**
- All cross frames or diaphragms between beams or girders shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
 - Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.

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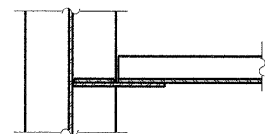
SHEET NO. 19 OF 31 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32, 47-4) HBK-4 & (G)N	GRUNDY	351	301
CONTRACT NO. 66408					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					
* FAI 80 & FAS 297 / FAU 392					

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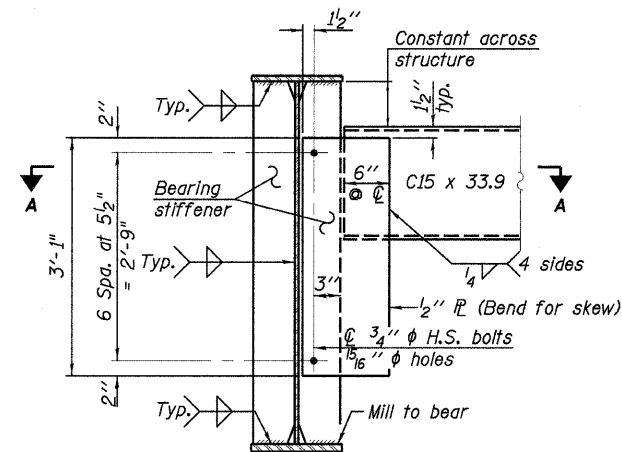
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SECTION A-A

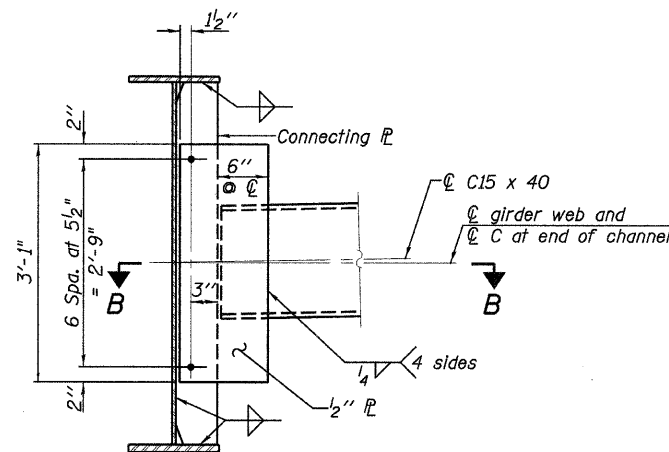


SECTION B-B



END DIAPHRAGM - D1

Note
Two hardened washers required for each set of oversized holes.



INTERIOR DIAPHRAGM - D2

Note
Two hardened washers required for each set of oversized holes.
* 3/4" φ HS bolts, 15/16" φ holes

Note
Diaphragms and connection plates shall be in accordance with AASHTO M270 Grade 36.

INTERIOR GIRDER MOMENT TABLE			
	0.4 Sp. 1 or 0.6 Sp. 2	Pier	
I_s	(in ⁴)	24415	46498
$I_c(n)$	(in ⁴)	57512	-
$I_c(3n)$	(in ⁴)	42748	-
S_s	(in ³)	1076	1842
$S_c(n)$	(in ³)	1420	-
$S_c(3n)$	(in ³)	1310	-
DC1	(k/ft)	1.11	1.23
M_{DC1}	(k)	997	2467
DC2	(k/ft)	0.16	0.16
M_{DC2}	(k)	160	299
DW	(k/ft)	0.36	0.36
M_{DW}	(k)	365	681
$M_L + IM$	(k)	1895	1769
M_u (Strength I)	(k)	5310	7575
$\phi_r M_n$, $\phi_r M_{nc}$	(k)	7111	-
f_s DC1	(ksi)	11.1	16.1
f_s DC2	(ksi)	1.5	1.9
f_s DW	(ksi)	3.3	4.4
f_s 1.3(L+IM)	(ksi)	20.8	15.0
f_s (Service II)	(ksi)	36.7	37.4
f_s (Total)(Strength I)	(ksi)	-	49.4
V_r	(k)	36.8	-

INTERIOR GIRDER REACTION TABLE			
	Abut.	Pier	
R_{DC1}	(k)	48.5	181.6
R_{DC2}	(k)	7.1	24.1
R_{DW}	(k)	16.3	55.0
$R_L + IM$	(k)	116.3	194.4
R_{Total}	(k)	188.2	455.1

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in⁴ and in³).

$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) due to short-term composite live loads (in⁴ and in³).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) due to long-term composite (superimposed) dead loads (in⁴ and in³).

DC1: Un-factored non-composite dead load (kips/ft.).

M_{DC1} : Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M_{DC2} : Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M_{DW} : Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

$M_L + IM$: Un-factored live load moment plus dynamic load allowance (Impact) (kip-ft.).

M_u (Strength I): Factored design moment (kip-ft.).
1.25 ($M_{DC1} + M_{DC2}$) + 1.5 M_{DW} + 1.75 $M_L + IM$

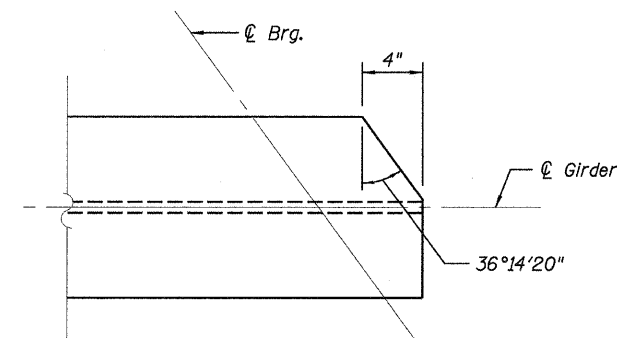
$\phi_r M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

$\phi_r M_{nc}$: Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).

f_s (Service II): Sum of stresses as computed from the moments below (ksi).
 $M_{DC1} + M_{DC2} + M_{DW} + 1.3 M_L + IM$

f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
1.25 ($M_{DC1} + M_{DC2}$) + 1.5 M_{DW} + 1.75 $M_L + IM$

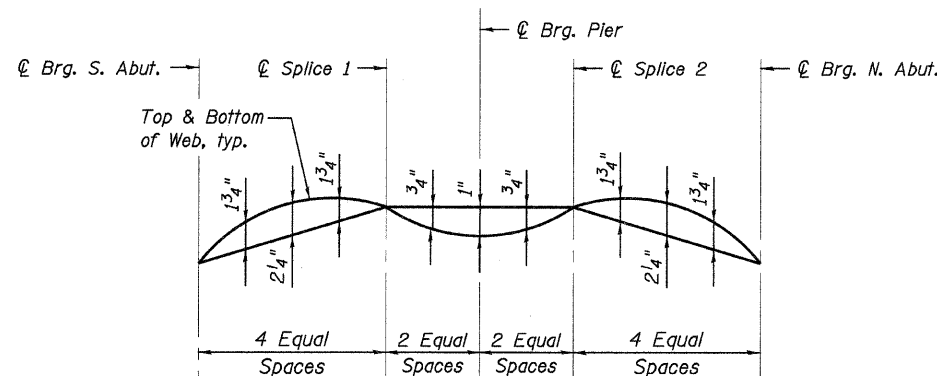
V_r : Maximum factored shear range in composite portion of span computed according to Article 6.10.10.



DETAIL A

(North end shown, South end similar by rotation)

Note
See Sheet 19 for beam end flange clipping locations.



CAMBER DIAGRAM

TOP OF WEB ELEVATIONS					
Girder	℄ Brg. S. Abut.	℄ Splice 1	℄ Brg. Pier	℄ Splice 2	℄ Brg. N. Abut.
1	568.26	568.76	568.73	568.86	568.66
2	568.49	569.05	568.91	569.03	568.80
3	568.71	569.25	569.09	569.20	568.94
4	568.94	569.44	569.27	569.37	569.07
5	569.16	569.62	569.44	569.53	569.30
6	569.25	569.64	569.44	569.52	569.16
7	569.07	569.47	569.27	569.33	568.94
8	568.94	569.31	569.09	569.14	568.71
9	568.80	569.14	568.91	568.95	568.49
10	568.66	568.97	568.73	568.76	568.26

Note: For Fabrication Only.

DESIGNED - DWH
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

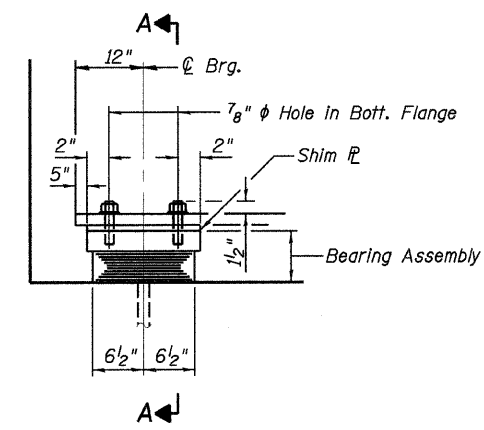
STRUCTURAL STEEL DETAILS
STRUCTURE NO. 032-0115

LOCHNER

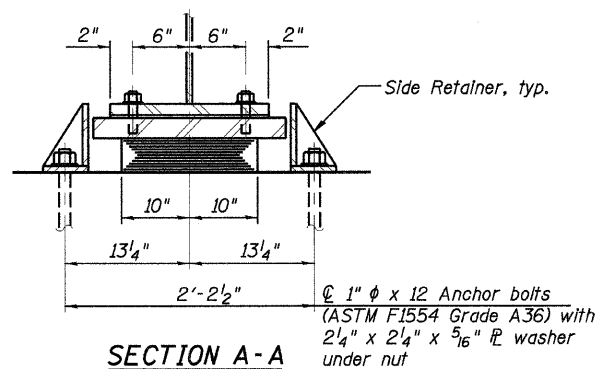
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 20 OF 31 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32, 47-4) HBK-4 & (G)N	GRUNDY	351	302
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			
* FAI 80 & FAS 297 / FAU 392					

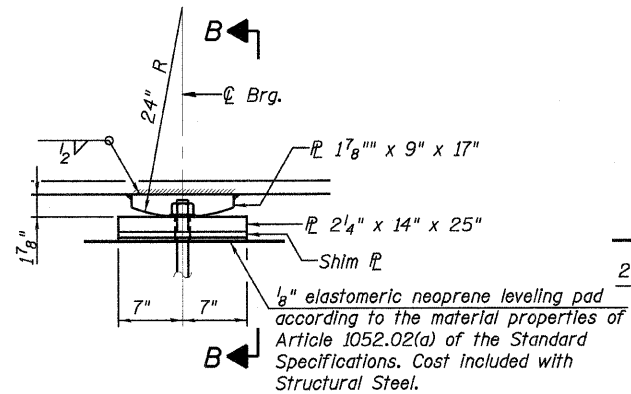
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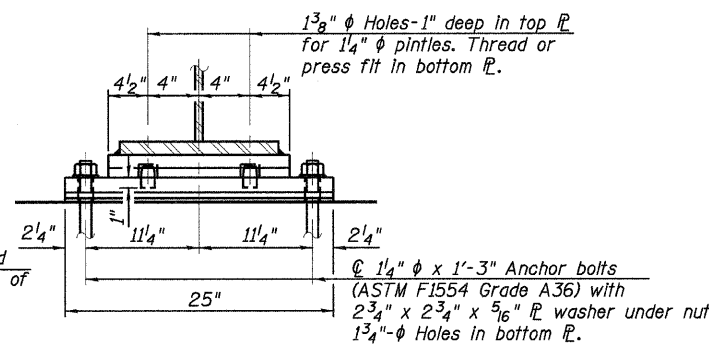
ELEVATION AT ABUT.



SECTION A-A

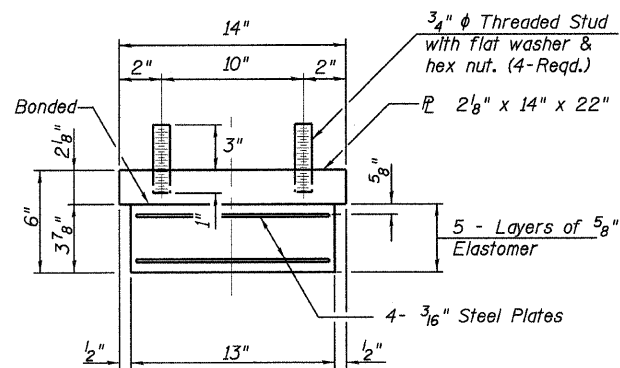


ELEVATION AT PIER



SECTION B-B

TYPE I ELASTOMERIC EXP. BRG.



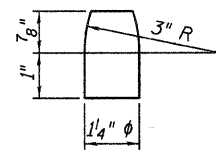
BEARING ASSEMBLY

Note
Shim plates shall not be placed under Bearing Assembly.

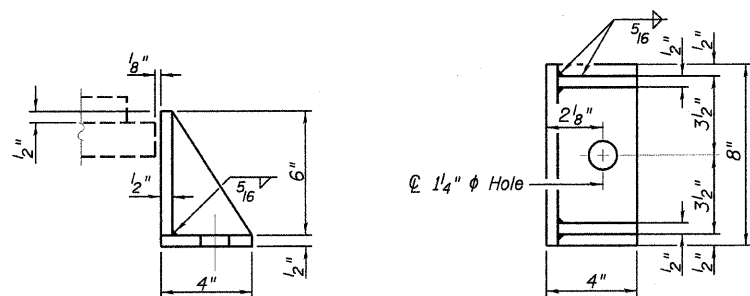
Notes

- Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
- Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
- Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.
- Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
- Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.
- Two 1/8 inch adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
- The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.

FIXED BEARING



PINTLE



SIDE RETAINER

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

DESIGNED - MWM
CHECKED - BJN
DRAWN - MWM
CHECKED - BJN

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly, Type I	Each	20
Anchor Bolts, 1"	Each	40
Anchor Bolts, 1 1/4"	Each	20

BEARING DETAILS
STRUCTURE NO. 032-0115

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CHICAGO, IL 60606

SHEET NO.	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
21 OF 31 SHEETS	*	(32, 47-4) HKB-4 & (G)N	GRUNDY	351	303
			CONTRACT NO. 66408		
FED. ROAD DIST. NO. - ILLINOIS FED. AID PROJECT					

* FAI 80 & FAS 297 / FAU 392

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TABLE "A"

Pile-to-Pile Spacing	Number of Bars
4'-7"	3
3'-3"	2
4'-2"	3
5'-4"	4

TABLE "B"

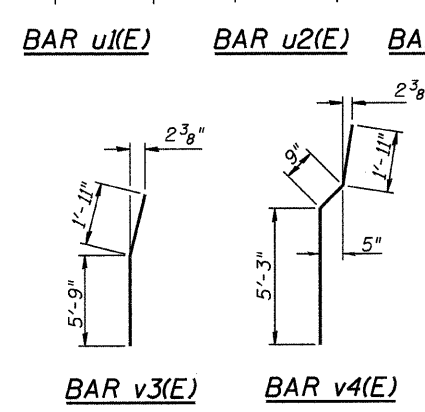
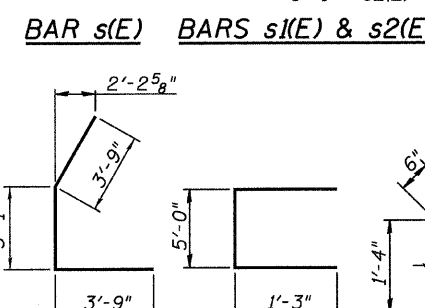
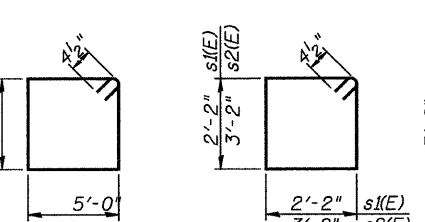
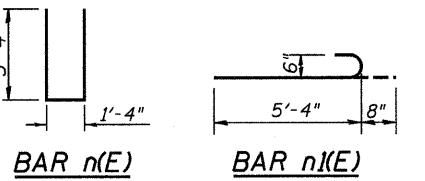
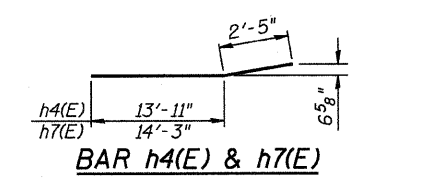
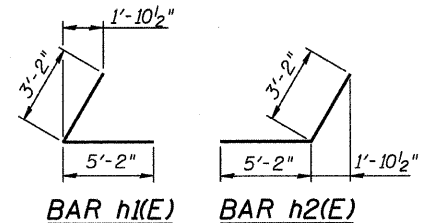
Beam	Beam Seat Elevation
1	563.82
2	564.05
3	564.28
4	564.50
5	564.72
6	564.82
7	564.63
8	564.50
9	564.36
10	564.22

SOUTH ABUTMENT
BILL OF MATERIAL

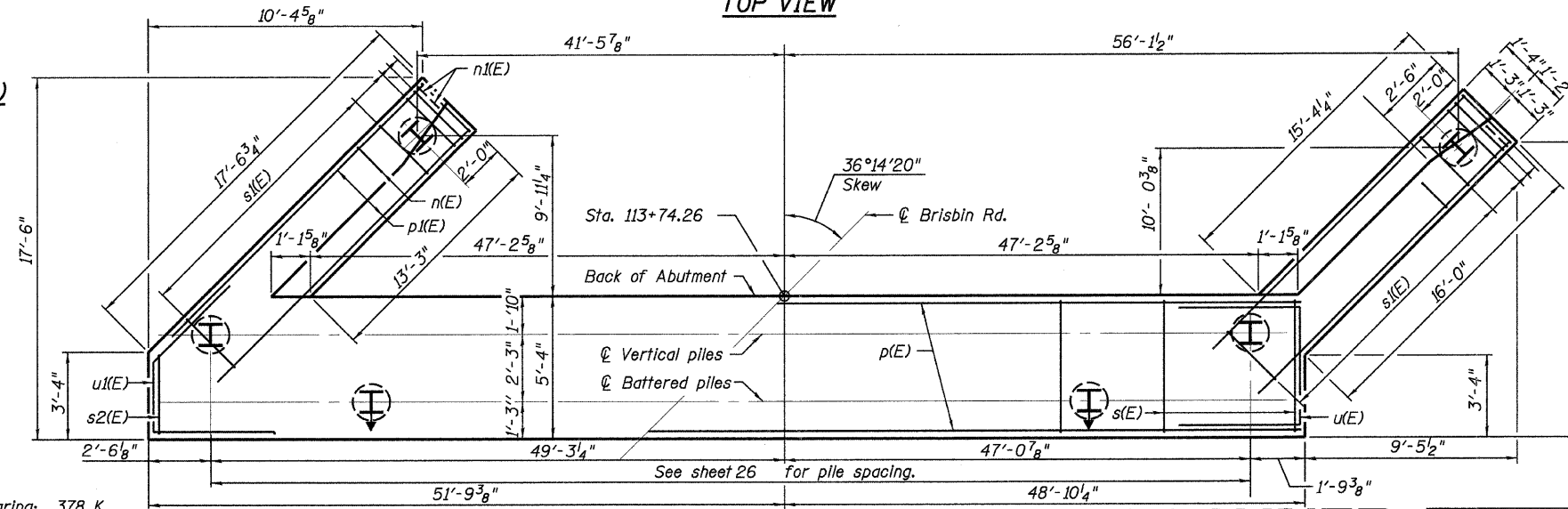
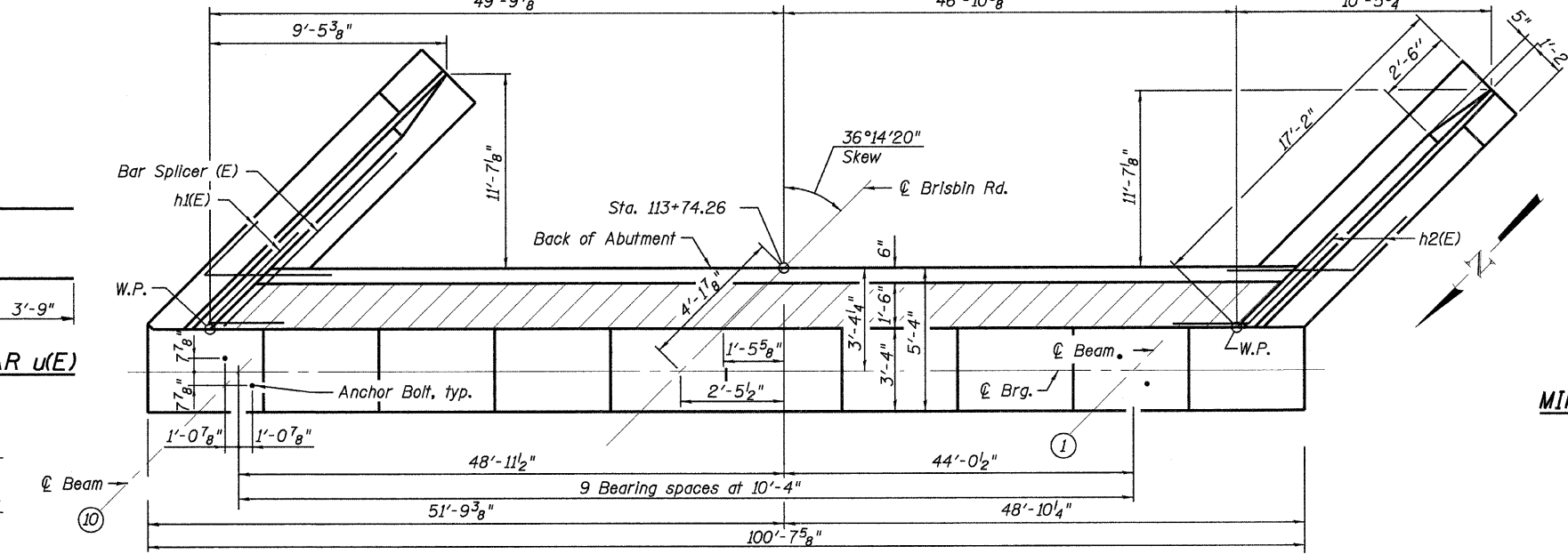
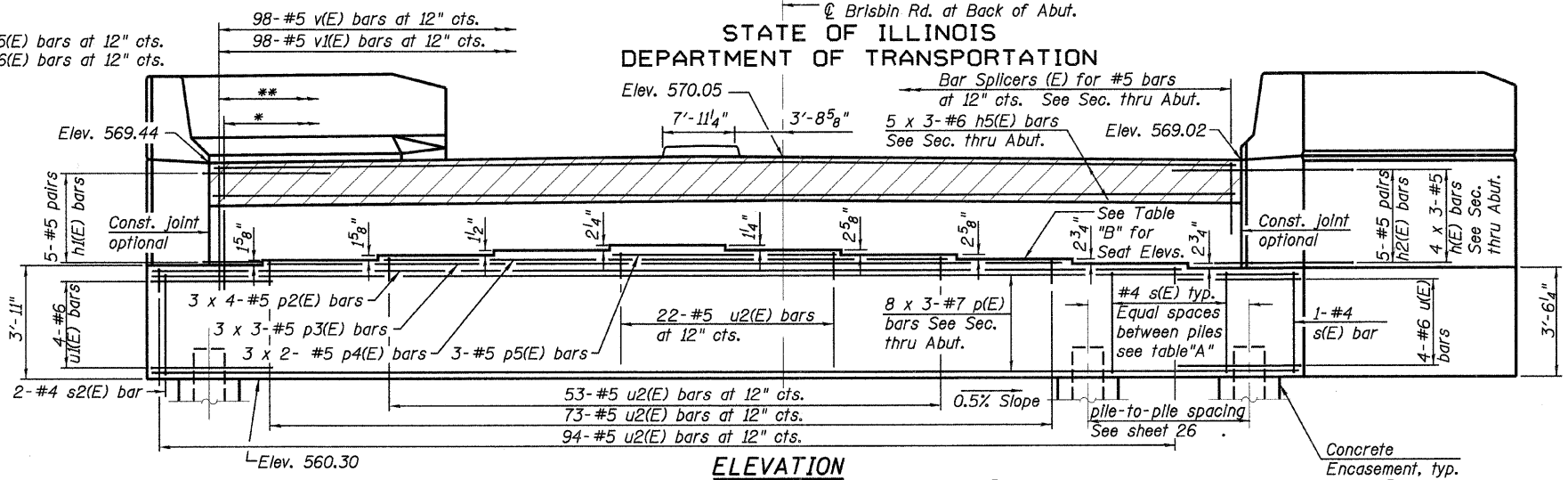
Bar No.	Size	Length	Shape
h(E)	12	#5	34'-2"
h1(E)	10	#5	8'-4"
h2(E)	10	#5	8'-4"
h3(E)	11	#4	16'-11"
h4(E)	8	#4	16'-4"
h5(E)	15	#6	34'-8"
h6(E)	11	#4	15'-9"
h7(E)	8	#4	16'-8"
n(E)	31	#6	12'-0"
n1(E)	12	#6	6'-0"
p(E)	24	#7	36'-8"
p1(E)	12	#7	17'-5"
p2(E)	12	#5	25'-1"
p3(E)	9	#5	26'-0"
p4(E)	6	#5	27'-2"
p5(E)	3	#5	20'-4"
s(E)	66	#4	17'-1"
s1(E)	28	#4	9'-5"
s2(E)	2	#4	13'-1"
u(E)	3	#6	12'-6"
u1(E)	3	#6	10'-7"
u2(E)	242	#5	7'-6"
v(E)	98	#5	2'-9"
v1(E)	98	#5	2'-11"
v2(E)	35	#6	7'-9"
v3(E)	6	#6	7'-8"
v4(E)	32	#6	7'-11"
v5(E)	98	#5	6'-9"
v6(E)	98	#5	6'-4"
Structure Excavation	Cu. Yd.	180.0	
Concrete Structures	Cu. Yd.	134.7	
Reinforcement Bars, Epoxy Coated	Pound	11,210	
Furnishing Steel Piles HP14x89	Foot	806	
Driving Piles	Foot	806	
Test Pile Steel HP14x89	Each	1	
Concrete Encasement	Cu. Yd.	14.2	
Concrete Sealer	Sq. Ft.	892	

MINIMUM BAR LAPS

- #5 bar = 3'-0"
- #6 bar = 3'-7"
- #7 bar = 4'-10"



* 98-#5 v5(E) bars at 12" cts.
** 98-#5 v6(E) bars at 12" cts.



DESIGNED - MWM
CHECKED - JSD
DRAWN - MWM
CHECKED - JSD

PILE DATA
Type: HP 14 x 89
Nominal Required Bearing: 378 K
Factored Resistance Available: 189 K
Est. Length: 31 ft
No. Production Piles: 26
No. Test Piles: 1

PLAN-PILE CAP

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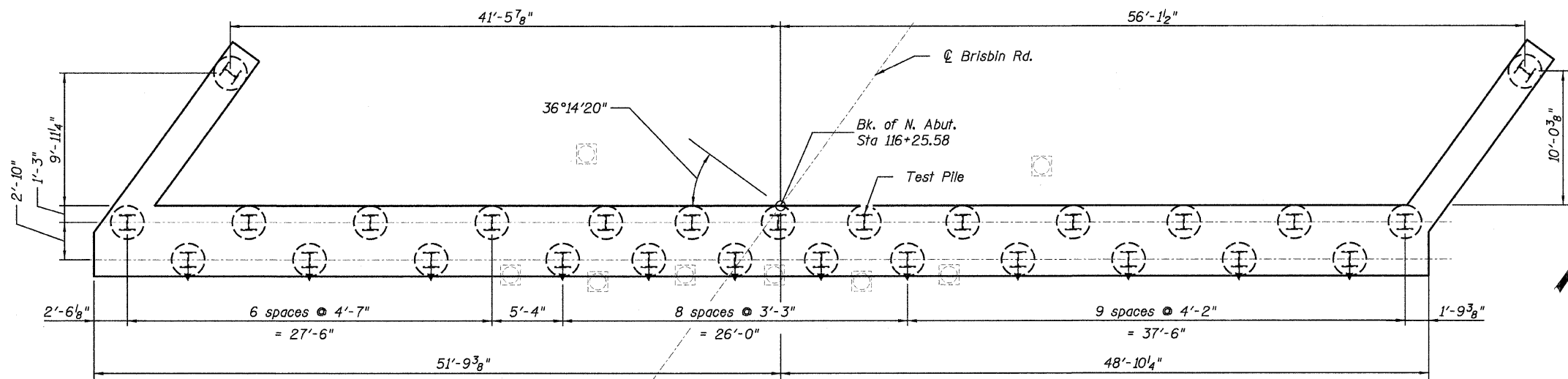
SHEET NO.
24 OF 31
SHEETS

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(32, 47-4) HBK-4 & (G)N	GRUNDY	351	306
CONTRACT NO. 66408				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				
* FAI 80 & FAS 297 / FAU 392				

SOUTH ABUTMENT PLAN & ELEVATION
STRUCTURE NO. 032-0115




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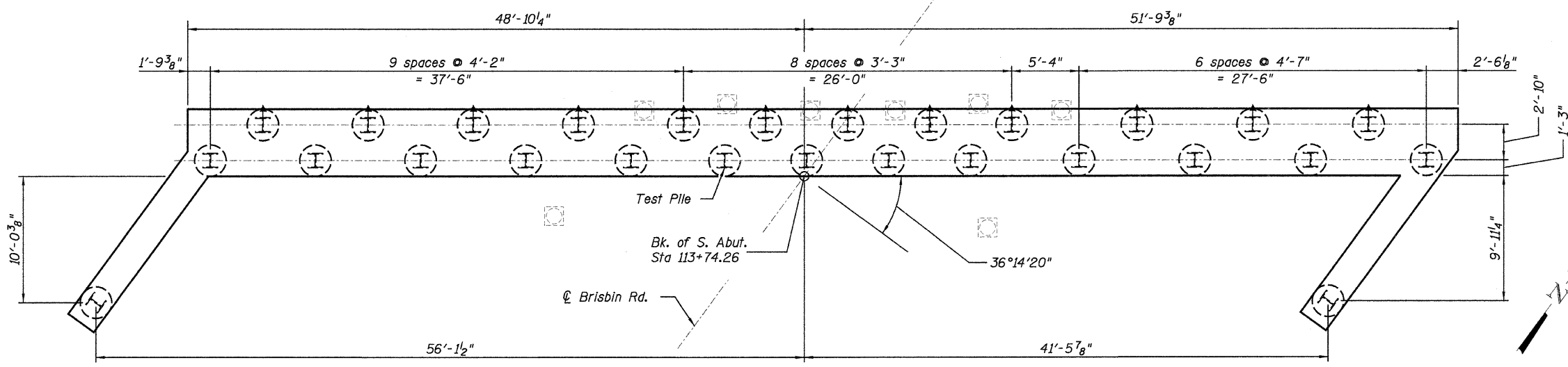
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NORTH ABUTMENT PILE LAYOUT

LEGEND

-  Indicates Battered Piles in direction of arrow
-  Indicates Vertical Piles
-  Indicates Existing Piles



SOUTH ABUTMENT PILE LAYOUT

DESIGNED - MWM
CHECKED - JSD
DRAWN - MWM
CHECKED - JSD

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CHICAGO, IL 60606

SHEET NO. 26 OF 31 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32, 47-4) HKB-4 & (G)N	GRUNDY	351	308
	CONTRACT NO. 66408				
FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT					
* FAI 80 & FAS 297 / FAU 392					

**ABUTMENT PILE LAYOUT
STRUCTURE NO. 032-0115**

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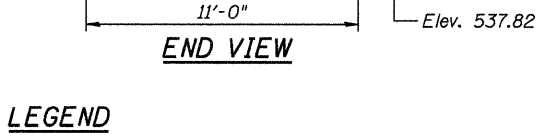
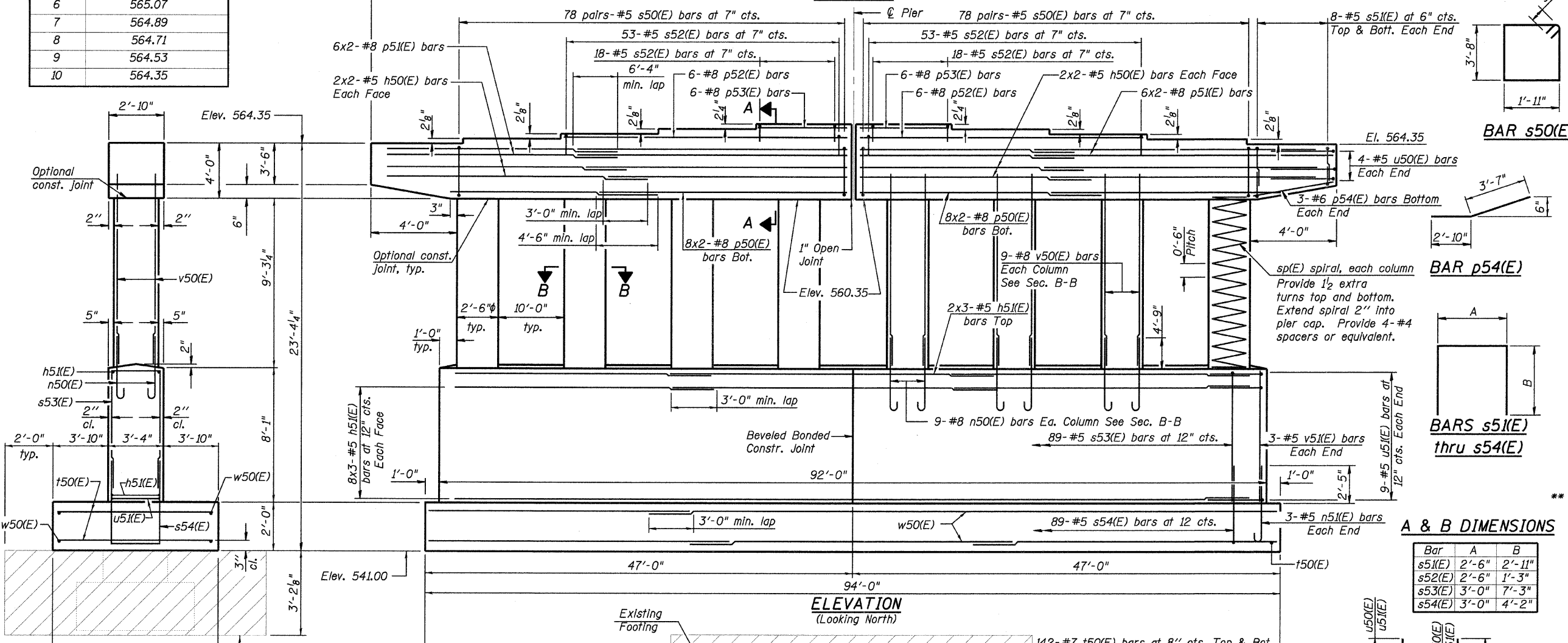
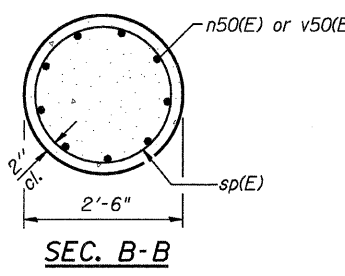
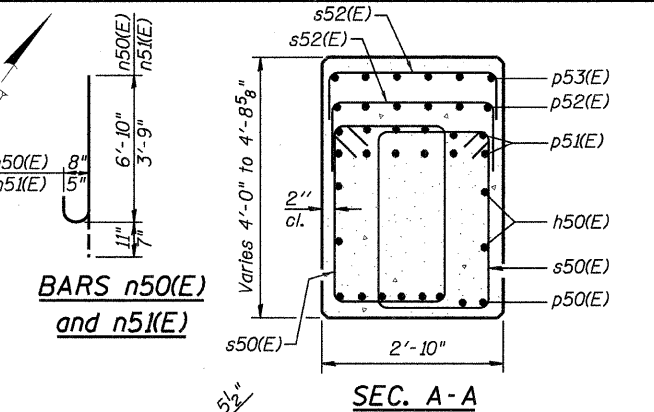
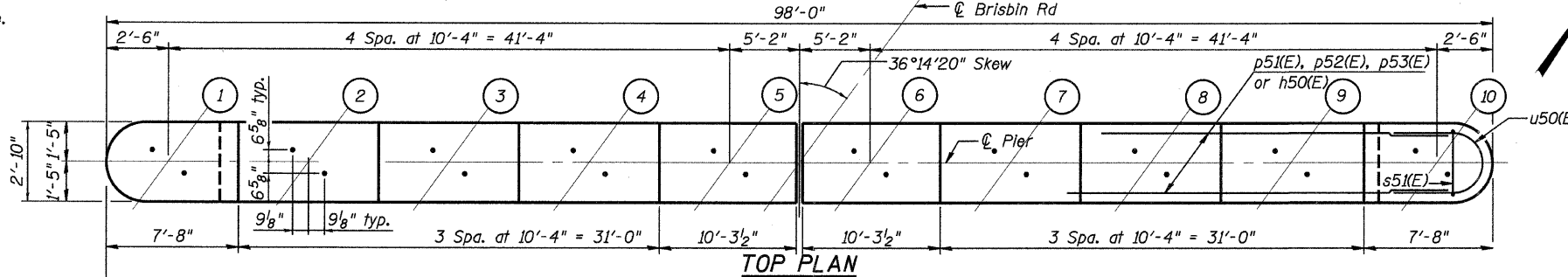
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

- Notes
1. Space reinforcement in cap to miss anchor bolts.
2. Pour steps monolithically with cap.
3. Bars Indicated thus 12x3-#5 etc.
Indicates 12 lines of bars with 3 lengths per line.

4. Sealer shall be applied to all exposed above ground surfaces of the crashwall, columns and pier cap, including the beam seats.

BEARING SEAT ELEVATIONS

Beam	Seat Elevation
1	564.35
2	564.53
3	564.71
4	564.89
5	565.07
6	565.07
7	564.89
8	564.71
9	564.53
10	564.35



LEGEND
Pay Limits of Granular Subbase and additional Braced Excavation for removal of existing pier & footing

DESIGNED - CMM
CHECKED - JSD
DRAWN - GJS
CHECKED - JSD

Allowable Bearing Pressure 7.0 ksf

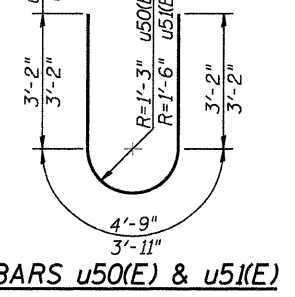
FOOTING PLAN

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h50(E)	16	#5	25'-3"	—
h51(E)	54	#5	32'-7"	—
n50(E)	72	#8	7'-9"	U
n51(E)	6	#5	4'-4"	U
p50(E)	32	#8	24'-10"	—
p51(E)	48	#8	27'-6"	—
p52(E)	12	#8	30'-7"	—
p53(E)	12	#8	9'-11"	—
p54(E)	6	#6	6'-5"	—
s50(E)	312	#5	12'-1"	□
s51(E)	32	#5	8'-4"	□
s52(E)	142	#5	5'-0"	□
s53(E)	89	#5	17'-6"	□
s54(E)	89	#5	11'-4"	□
sp(E)	8	#4	9'-6"	~
f50(E)	284	#7	10'-8"	U
u50(E)	8	#5	10'-3"	—
u51(E)	18	#5	11'-1"	—
v50(E)	72	#8	11'-10"	—
v51(E)	6	#5	7'-9"	—
w50(E)	72	#5	33'-3"	—

A & B DIMENSIONS

Bar	A	B
s51(E)	2'-6"	2'-11"
s52(E)	2'-6"	1'-3"
s53(E)	3'-0"	7'-3"
s54(E)	3'-0"	4'-2"



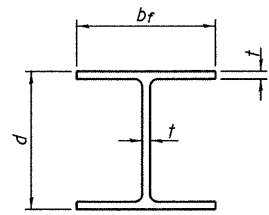
PIER
STRUCTURE NO. 032-0115

LOCHNER
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 27 OF 31 SHEETS	RTE. *	SECTION (32, 47-4) HBK-4 & (G)N	COUNTY GRUNDY	TOTAL SHEETS 351	SHEET NO. 309
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT		
* FAI 80 & FAS 297 / FAU 392					

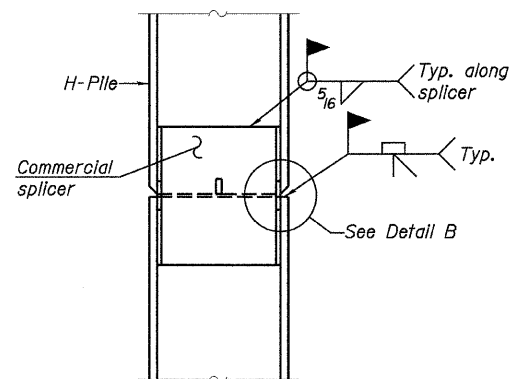
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

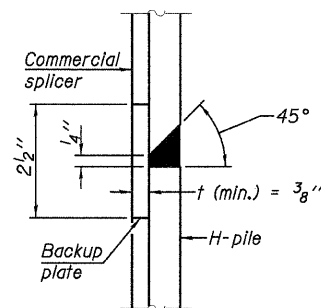


STEEL PILE TABLE

Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A
HP 14x17	14 1/4"	14 7/8"	13/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"

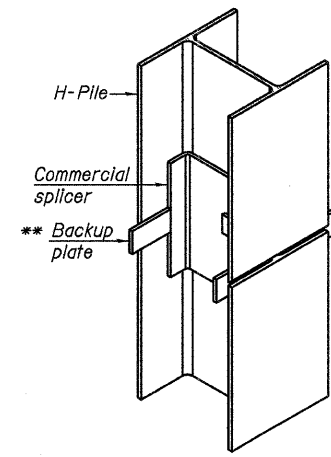


ELEVATION

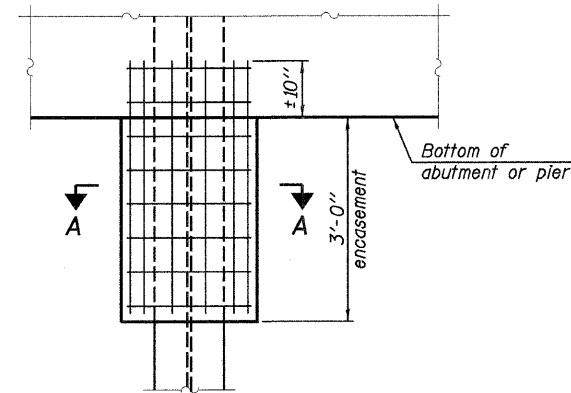


DETAIL "B"

WELDED COMMERCIAL SPLICE

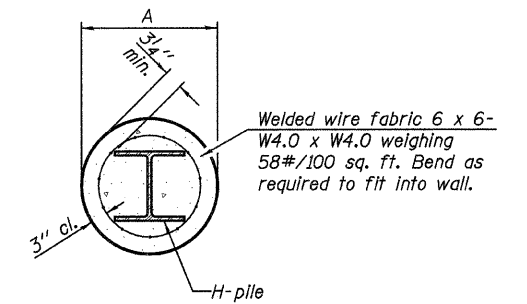


ISOMETRIC VIEW



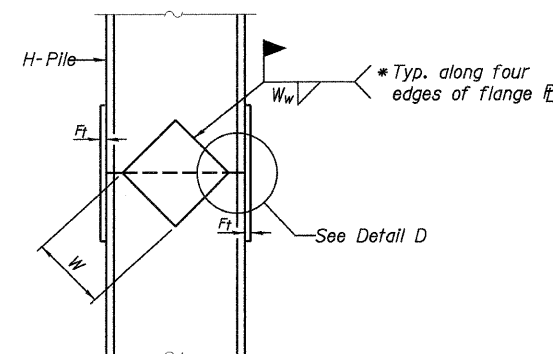
ELEVATION

PILE ENCASEMENT

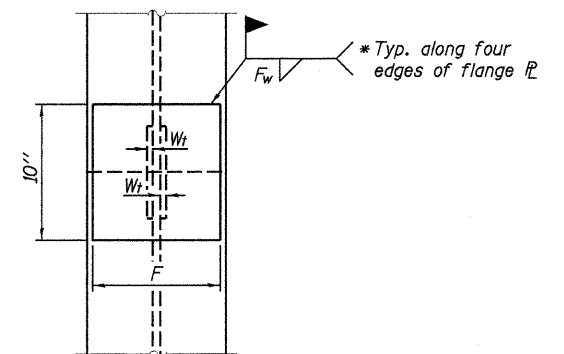


SECTION A-A

Note:
Forms for encasement may be omitted when soil conditions permit.

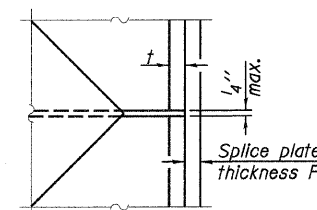


ELEVATION



END VIEW

Designation	F	F _t	F _w	W	W _t	W _w
HP 14x17	12 1/2"	1"	7/8"	7 3/4"	5 8/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5 8/8"	1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5 8/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5 8/8"	1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5 8/8"	1/2"
x74	10"	7/8"	1/16"	6 1/2"	5 8/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

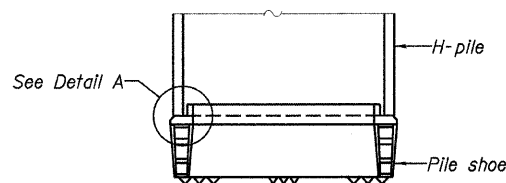


DETAIL D

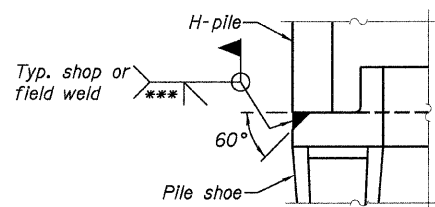
WELDED PLATE FIELD SPLICE

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

HP PILE DETAILS
STRUCTURE NO. 032-0115

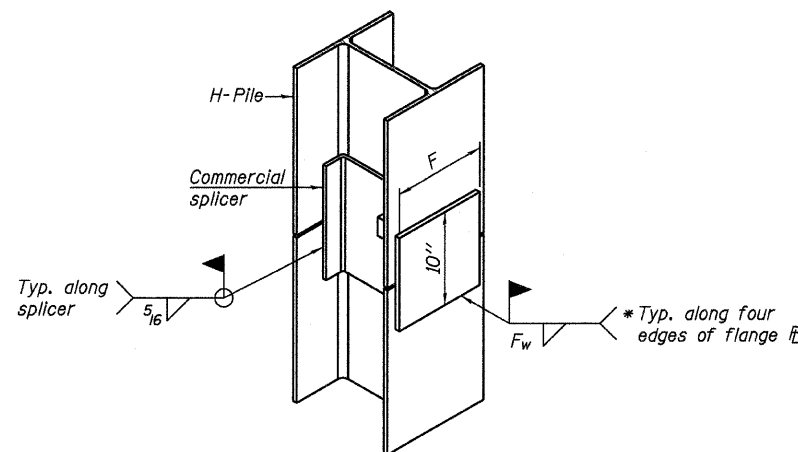


ELEVATION



DETAIL A

H-PILE SHOE ATTACHMENT



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

- * Interrupt welds 1/4" from end of web and/or each flange.
- ** Remove portions of backup plates that extend outside the flanges.
- *** Weld size per pile shoe manufacturer (5/16" min.).

DESIGNED - MWM
CHECKED - JSD
DRAWN - MWM
CHECKED - JSD

F-HP 7-1-10

LOCHNER

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20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 28 OF 31 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32, 47-4) HBK-4 & (G)N	GRUNDY	351	310
CONTRACT NO. 66408					
FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT					
* FAI 80 & FAS 297 / FAU 392					

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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

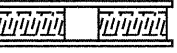
The diameter of this part is the same as the diameter of the bar spliced.

ROLLED THREAD DOWEL BAR



** ONE PIECE

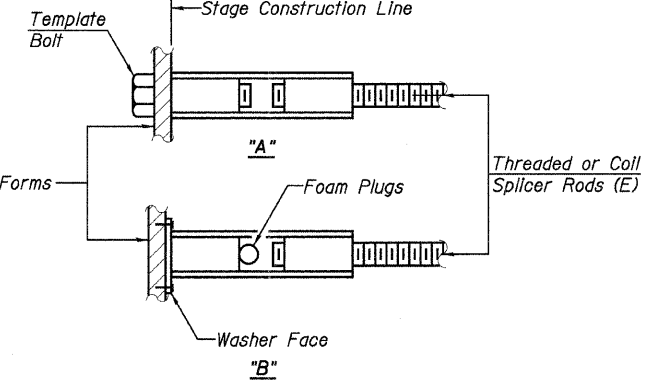
Wire Connector



WELDED SECTIONS

BAR SPLICER ASSEMBLY ALTERNATIVES

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



INSTALLATION AND SETTING METHODS

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

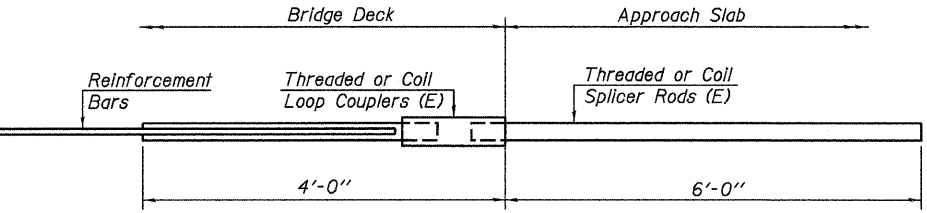
NOTES:

1. Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.
2. Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.
3. All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.
4. Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.
5. 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 bar splicer assembly satisfies the following requirements:

- ① Minimum Capacity = $1.25 \times f_y \times A_t$
(Tension in kips)
- ② Minimum *Pull-out Strength = $0.66 \times f_y \times A_t$
(Tension in kips)

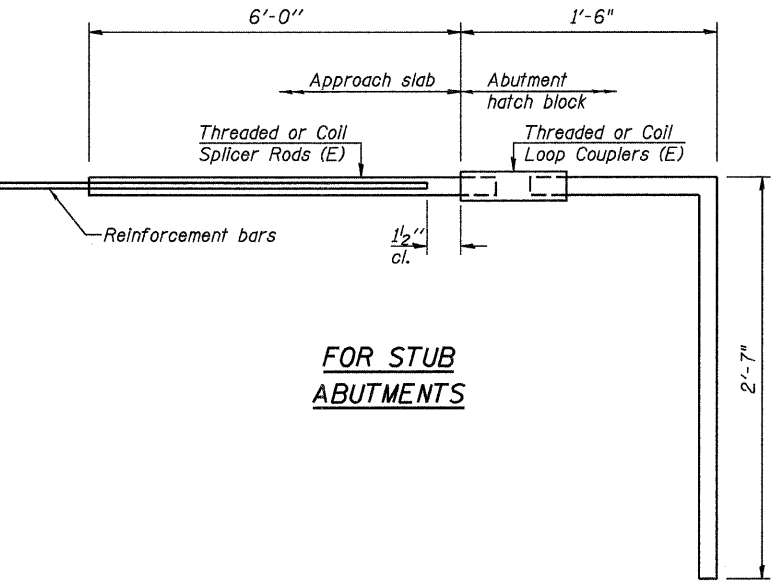
Where f_y = Yield strength of lapped reinforcement bars in ksi.
 A_t = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



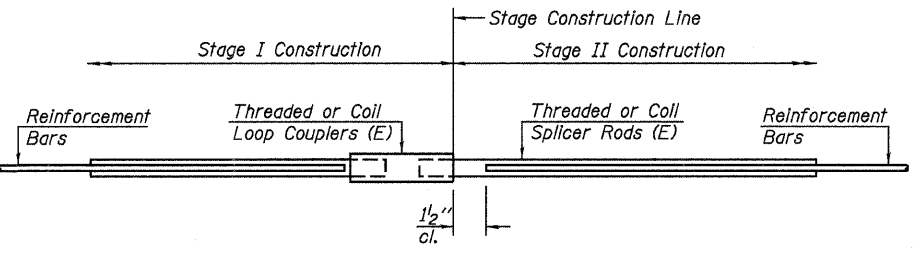
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 12.3 kips - tension
No. Required =



FOR STUB ABUTMENTS

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 12.3 kips - tension
No. Required = 196



STANDARD

Bar Size	No. Assemblies Required	Location

**BAR SPLICER ASSEMBLY DETAILS
STRUCTURE NO. 032-0115**

DESIGNED - MWM
CHECKED - JSD
DRAWN - MWM
CHECKED - JSD

BSD-1 10-1-08

LOCHNER
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CONSULTING ENGINEERS & PLANNERS
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CHICAGO, IL 60606

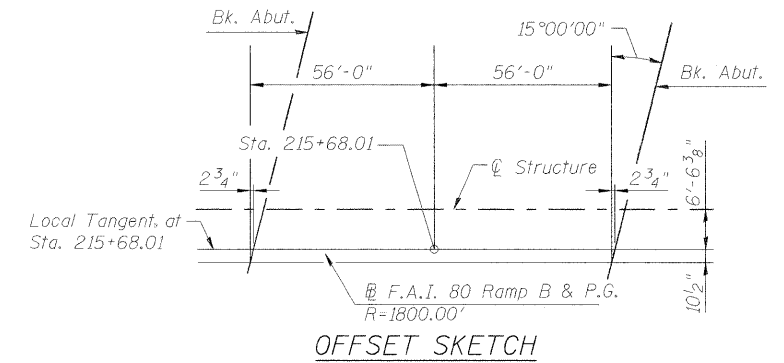
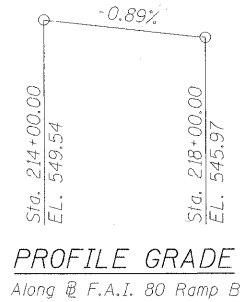
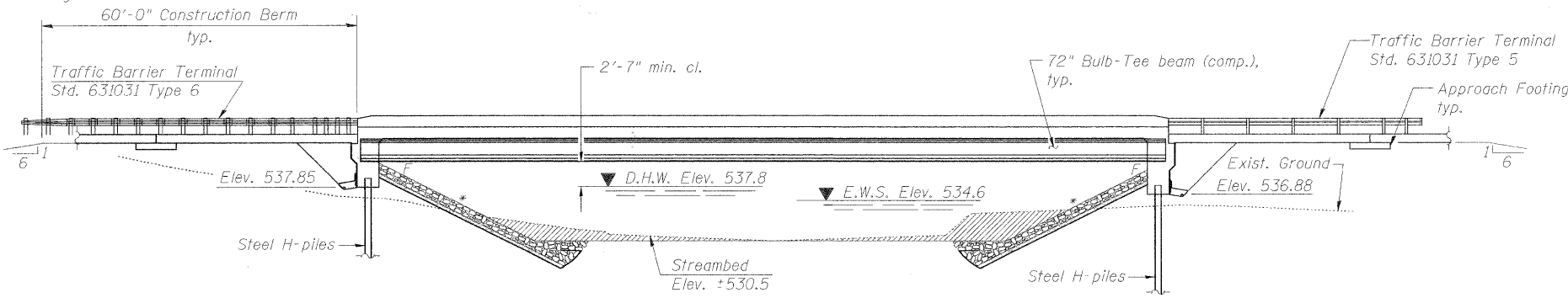
SHEET NO. 29 OF 31 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32, 47-4) HKB-4 & (G)N	GRUNDY	351	311
CONTRACT NO. 66408					
FED. ROAD DIST. NO. - ILLINOIS FED. AID PROJECT					
* FAI 80 & FAS 297 / FAU 392					

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Bench Mark: B.M. #1409 chiseled square on S.E. wingwall of F.A.I. Route 80 bridge over Collins Run, S.N. 032-0104, Elev. 546.22.

Existing Structure: None



CURVE DATA

$\Delta = 27^{\circ}-11'-35''$
 $D = 3^{\circ}-10'-59''$
 $T = 435.35'$
 $L = 854.29'$
 $E = 51.90'$
 $R = 1800.00'$
 $S.E. = 0.0467'$
 $P.C. = Sta. 212+45.83$
 $P.T. = Sta. 221+00.12$
 $P.I. = Sta. 216+81.17$

LOADING HL-93
Allow 50#/sq. ft. for future wearing surface.

DESIGN SPECIFICATIONS

AASHTO LRFD Bridge Design Specifications, 4th Edition with 2008 and 2009 Interims

DESIGN STRESSES

FIELD UNITS

$f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)

PRECAST PRESTRESSED UNITS

$f'_c = 6,000$ psi
 $f'_ci = 5,000$ psi
 $f'_s = 270,000$ psi (1/2" ϕ low lax. strands)
 $f_{si} = 201,960$ psi (1/2" ϕ low lax. strands)

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Response Acceleration at 1.0 sec. (SD1) = 0.070g
Design Spectral Response Acceleration at 0.2 sec. (SDS) = 0.128g
Soil Site Class = C

STATION 215+68.01
BUILT 20 BY
STATE OF ILLINOIS
F.A.I. 80 SEC. (32, 47-4) HBK-4
LOADING HL-93
STRUCTURE NO. 032-0117

NAME PLATE

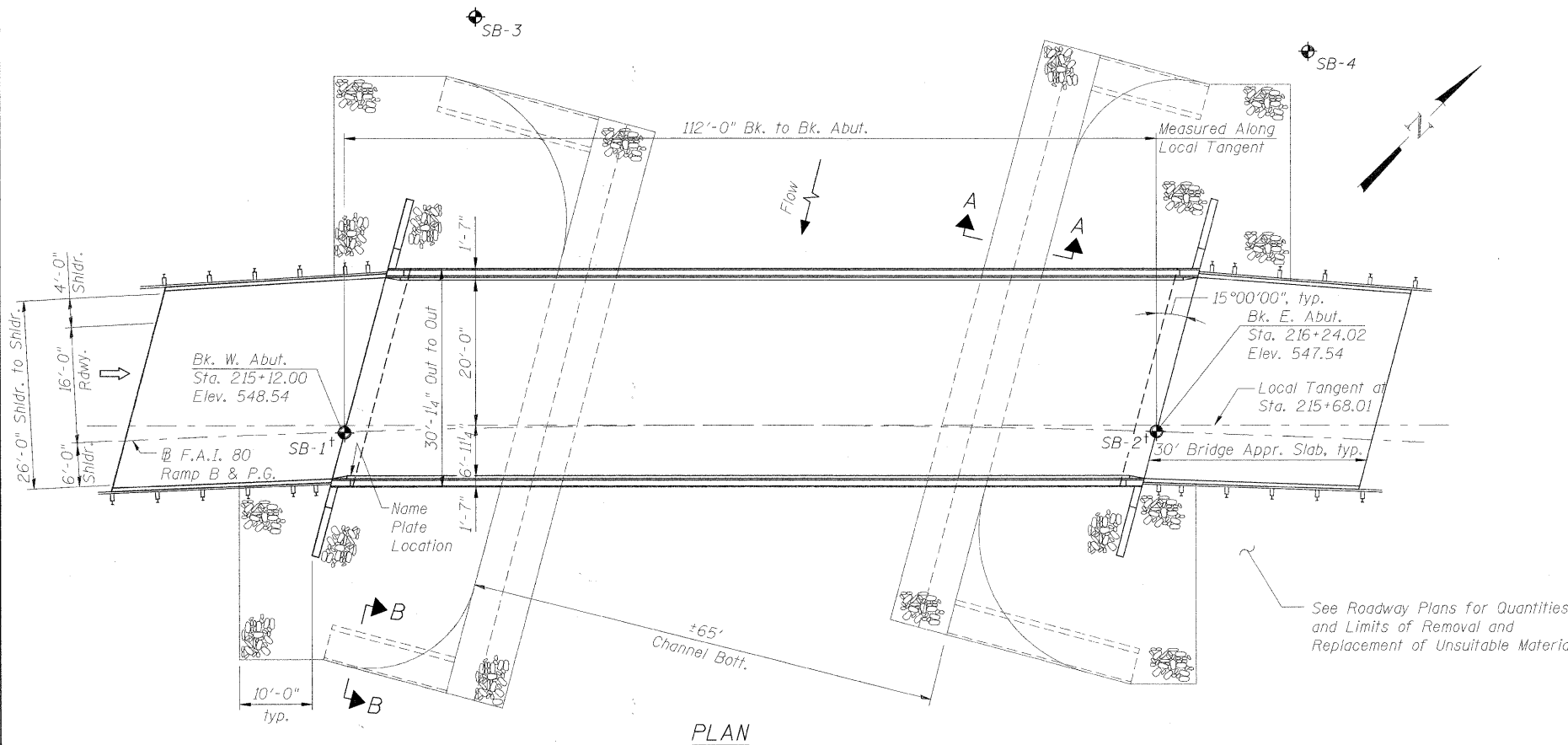
See Std. 515001

DESIGN SCOUR ELEVATION TABLE

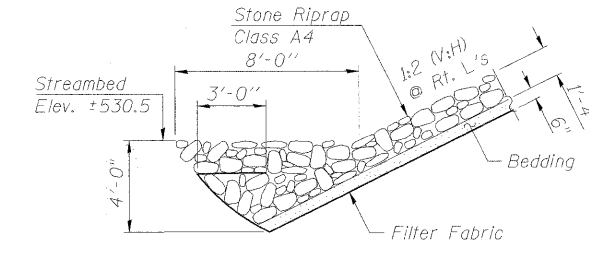
Design Scour Elevation (ft.)	W. Abut. E. Abut.	E. Abut.
	534.85	533.88

ELEVATION

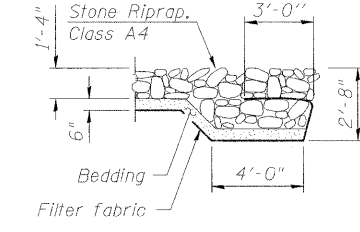
* 1:2 (V:H) @ Rt. L's



SECTION A-A



SECTION B-B



See Roadway Plans for Quantities and Limits of Removal and Replacement of Unsuitable Material

WATERWAY INFORMATION

Drainage Area = 30.30 S.M. Low Grade Elev. 547.07 @ Sta. 308+82.89

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	10	1227	470.4	536.9	537.8	0.33	0.33	537.2	537.2
Base	50	1801	494.1	561.9	537.8	0.39	0.23	538.2	538.1
Overtopping	100	2031	522.0	597.4	538.2	0.42	0.29	538.6	538.5
Max. Calc.	500	2560	576.9	670.6	538.8	0.42	0.36	539.3	539.2

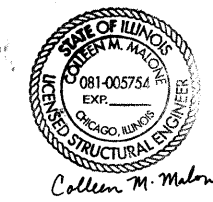
LEGEND

- ⊕ - Soil Boring
- ▨ - Channel Excavation
- + - Hand Auger Boring

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

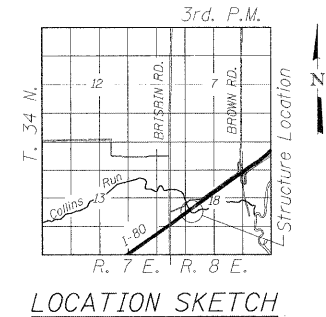
APPROVED
FOR STRUCTURAL ADEQUACY ONLY

Ralph E. Anderson
ENGINEER OF BRIDGES AND STRUCTURES



LOCHNER

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CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606



GENERAL PLAN AND ELEVATION
F.A.I. 80 RAMP B OVER
COLLINS RUN, SEC. (32,47-4) HBK-4
GRUNDY COUNTY
STATION 215+68.01
STRUCTURE NO. 032-0117

SHEET NO.	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1 OF 19 SHEETS	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	314
FED. ROAD DIST. NO.			ILLINOIS	FED. AID PROJECT	
CONTRACT NO. 66408					

* FAI 80 & FAS 297 / FAU 392

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GENERAL NOTES

1. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
2. Reinforcement bars designated (E) shall be epoxy coated.
3. Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.
4. The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.
5. The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.
6. Slip forming of the parapets is not allowed.

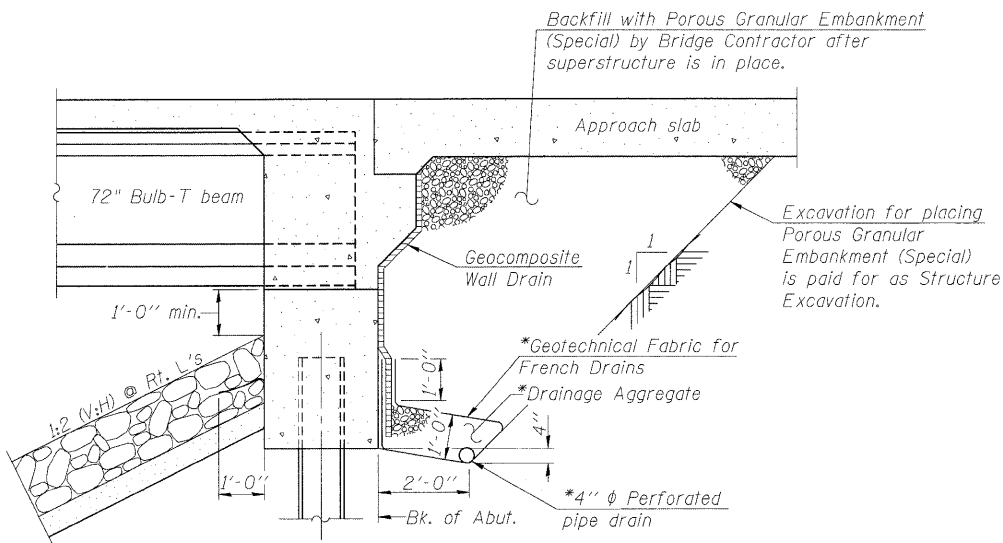
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Porous Granular Embankment, Special	Cu. Yd.		228	228
Stone Riprap, Class A4	Sq. Yd.		1,261	1,261
Filter Fabric	Sq. Yd.		1,430	1,430
Structure Excavation	Cu. Yd.		3	3
Concrete Structures	Cu. Yd.		59.2	59.2
Concrete Superstructure	Cu. Yd.	247.3		247.3
Bridge Deck Grooving	Sq. Yd.	477		477
Concrete Encasement	Cu. Yd.		5.0	5.0
Protective Coat	Sq. Yd.	621		621
Furnishing and Erecting Precast Prestressed Concrete Bulb T-Beams, 72"	Foot	661		661
Reinforcement Bars, Epoxy Coated	Pound	48,610	9,780	58,390
Bar Splicers	Each	54		54
Furnishing Steel Piles HP12X63	Foot		246	246
Driving Piles	Foot		246	246
Test Pile Steel HP12X63	Each		2	2
Pile Shoes	Each		14	14
Name Plates	Each	1		1
Geocomposite Wall Drain	Sq. Yd.		106	106
Pipe Underdrain for Structures 4"	Foot		110	110
Conduit Embedded in Structure, 2" Dia., PVC	Foot	112		

INDEX OF SHEETS

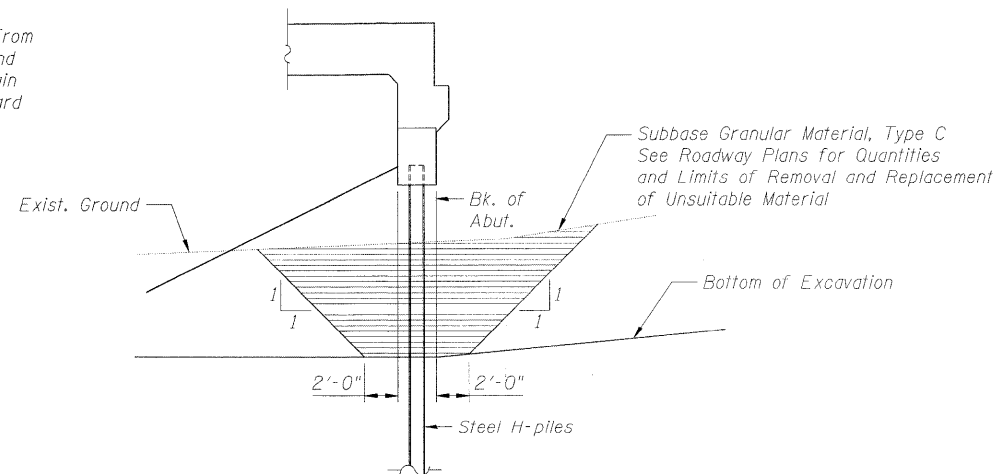
SHEET NO.	TITLE
1	GENERAL PLAN & ELEVATION
2	GENERAL NOTES, INDEX OF SHEETS & BILL OF MATERIAL
3	TOP OF SLAB ELEVATION PLAN
4	TOP OF SLAB ELEVATIONS
5	TOP OF APPROACH SLAB ELEVATIONS
6	DECK PLAN & CROSS SECTION
7	DIAPHRAGM DETAILS
8	SUPERSTRUCTURE DETAILS
9	BRIDGE APPROACH SLAB DETAILS I
10	BRIDGE APPROACH SLAB DETAILS II
11	FRAMING PLAN & DETAILS
12	72" PPC BULB T-BEAM
13	72" PPC BULB T-BEAM DETAILS
14	WEST ABUTMENT PLAN & ELEVATION
15	EAST ABUTMENT PLAN & ELEVATION
16	HP PILE DETAILS
17	BAR SPLICER ASSEMBLY DETAILS
18	SOIL BORING LOGS I
19	SOIL BORING LOGS II



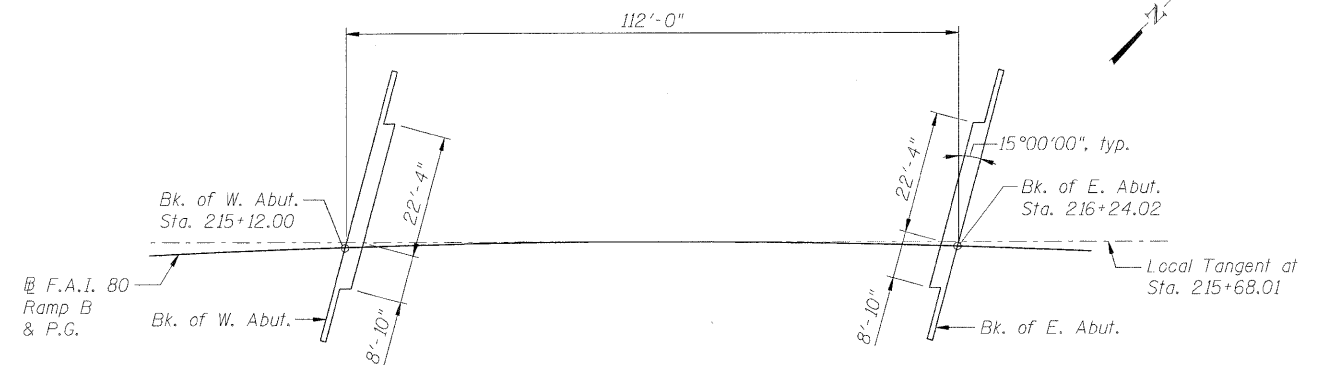
ABUTMENT DRAINAGE DETAIL
(Horiz. dim. @ Rt. L's)

*Included in the cost of Pipe Underdrains for Structures 4".

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



SECTION THRU ABUTMENT



FOOTING LAYOUT

GENERAL NOTES, INDEX OF SHEETS & BILL OF MATERIAL
STRUCTURE NO. 032-0117

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

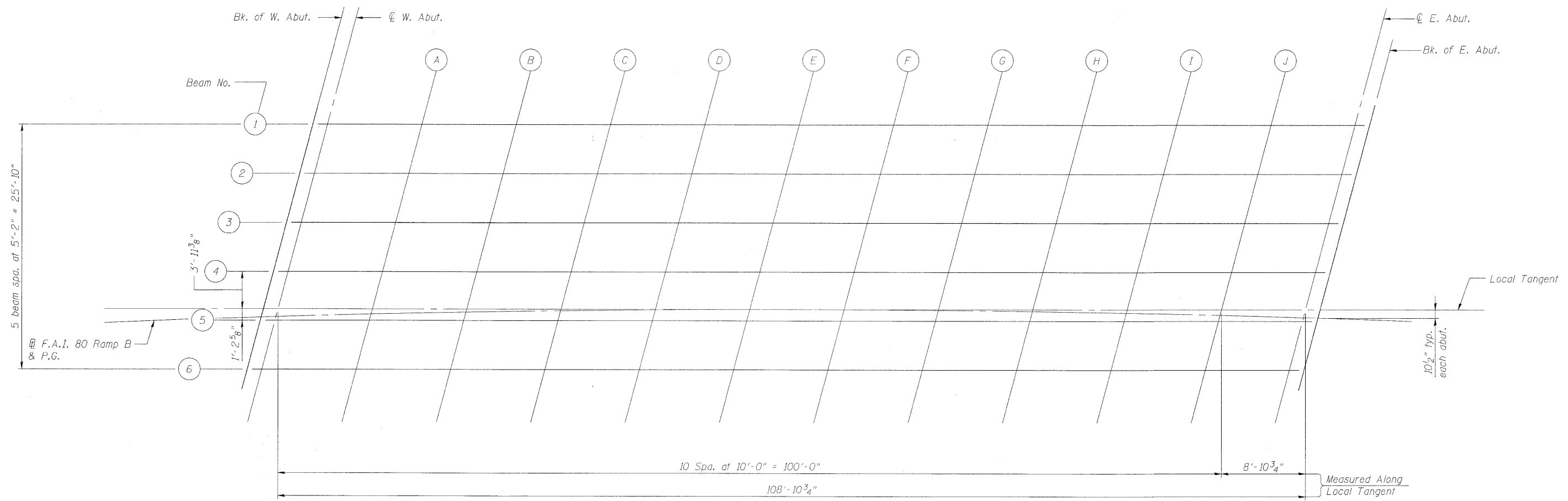
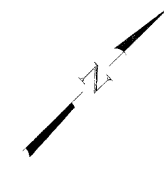
LOCHNER

H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 2 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	315
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PLAN

TOP OF SLAB ELEVATION PLAN
STRUCTURE NO. 032-0117

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 3 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	316
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT		
CONTRACT NO. 66408					

* FAI 80 & FAS 297 / FAU 392

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	215+18.01	-20.15	549.42	549.42
CL W. Abut.	215+19.54	-20.11	549.40	549.40
A	215+29.43	-19.87	549.30	549.32
B	215+39.32	-19.68	549.21	549.24
C	215+49.21	-19.55	549.11	549.17
D	215+59.10	-19.47	549.02	549.09
E	215+69.00	-19.45	548.93	549.00
F	215+78.89	-19.48	548.84	548.91
G	215+88.78	-19.57	548.76	548.82
H	215+98.67	-19.71	548.68	548.73
I	216+08.56	-19.91	548.60	548.64
J	216+18.45	-20.16	548.52	548.54
CL E. Abut.	216+27.24	-20.43	548.46	548.46
Bk. E. Abut.	216+28.78	-20.49	548.45	548.45

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	215+16.49	-15.02	549.19	549.19
CL W. Abut.	215+18.03	-14.98	549.18	549.18
A	215+27.95	-14.73	549.08	549.10
B	215+37.87	-14.54	548.98	549.02
C	215+47.79	-14.40	548.89	548.94
D	215+57.71	-14.31	548.79	548.86
E	215+67.63	-14.28	548.71	548.78
F	215+77.55	-14.31	548.62	548.69
G	215+87.47	-14.39	548.53	548.60
H	215+97.39	-14.52	548.45	548.50
I	216+07.31	-14.71	548.37	548.41
J	216+17.22	-14.96	548.29	548.31
CL E. Abut.	216+26.04	-15.22	548.23	548.23
Bk. E. Abut.	216+27.58	-15.27	548.22	548.22

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	215+14.97	-9.90	548.97	548.97
CL W. Abut.	215+16.51	-9.86	548.96	548.96
A	215+26.46	-9.60	548.86	548.88
B	215+36.40	-9.39	548.76	548.80
C	215+46.35	-9.25	548.66	548.72
D	215+56.30	-9.15	548.57	548.64
E	215+66.25	-9.12	548.48	548.55
F	215+76.20	-9.13	548.39	548.46
G	215+86.15	-9.21	548.31	548.37
H	215+96.10	-9.34	548.22	548.28
I	216+06.04	-9.52	548.14	548.18
J	216+15.99	-9.76	548.07	548.09
CL E. Abut.	216+24.83	-10.02	548.00	548.00
Bk. E. Abut.	216+26.37	-10.07	547.99	547.99

BEAM 4

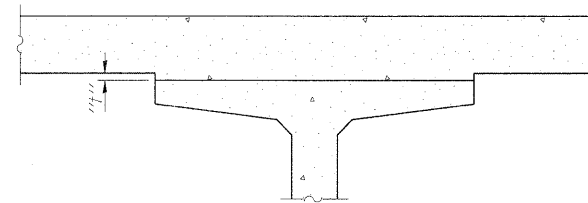
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	215+13.44	-4.78	548.75	548.75
CL W. Abut.	215+14.99	-4.73	548.73	548.73
A	215+24.96	-4.46	548.63	548.65
B	215+34.93	-4.25	548.53	548.57
C	215+44.91	-4.10	548.44	548.49
D	215+54.88	-4.00	548.35	548.41
E	215+64.86	-3.95	548.25	548.33
F	215+74.84	-3.96	548.17	548.24
G	215+84.82	-4.03	548.08	548.15
H	215+94.79	-4.15	548.00	548.05
I	216+04.77	-4.32	547.92	547.95
J	216+14.74	-4.56	547.84	547.86
CL E. Abut.	216+23.61	-4.81	547.77	547.77
Bk. E. Abut.	216+25.16	-4.86	547.76	547.76

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	215+12.00	0.00	548.54	548.54
CL W. Abut.	215+13.57	0.00	548.53	548.53
A	215+23.64	0.00	548.44	548.46
B	215+33.71	0.00	548.35	548.39
C	215+43.75	0.00	548.26	548.32
D	215+53.78	0.00	548.17	548.24
E	215+63.79	0.00	548.08	548.15
F	215+73.80	0.00	547.99	548.06
G	215+83.78	0.00	547.90	547.97
H	215+93.75	0.00	547.82	547.87
I	216+03.70	0.00	547.73	547.76
J	216+13.65	0.00	547.64	547.66
CL E. Abut.	216+22.48	0.00	547.56	547.56
Bk. E. Abut.	216+24.02	0.00	547.55	547.55

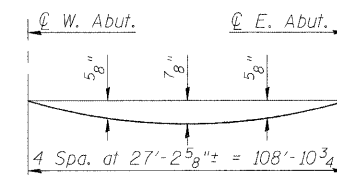
BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut.	215+10.35	5.46	548.31	548.31
CL W. Abut.	215+11.91	5.51	548.29	548.29
A	215+21.93	5.80	548.19	548.21
B	215+31.96	6.03	548.09	548.13
C	215+42.00	6.20	547.99	548.05
D	215+52.03	6.31	547.90	547.96
E	215+62.07	6.38	547.80	547.88
F	215+72.10	6.38	547.71	547.79
G	215+82.14	6.33	547.63	547.69
H	215+92.17	6.22	547.54	547.60
I	216+02.20	6.06	547.46	547.50
J	216+12.23	5.84	547.38	547.40
CL E. Abut.	216+21.15	5.60	547.31	547.31
Bk. E. Abut.	216+22.71	5.56	547.30	547.30



To determine "t": After all precast prestressed beams have 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 Deflections" show below, minus slab thickness, equals the fillet heights "t" above top flanges of beams.

FILLET HEIGHTS



DEAD LOAD DEFLECTION DIAGRAM
(Includes weight of concrete, excluding beams).

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.

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

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CHICAGO, IL 60606

SHEET NO. 4 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	317
CONTRACT NO. 66408					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

* FAI 80 & FAS 297 / FAU 392

TOP OF SLAB ELEVATIONS
STRUCTURE NO. 032-0117

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NORTH EDGE OF SHOULDER

Location	Station	Offset	Theoretical Grade Elevations
End W. Appr. Pavement	214+87.98	-20.00	549.68
A	214+97.99	-20.00	549.59
B	215+07.99	-20.00	549.50
Bk. W. Abut.	215+17.96	-20.00	549.41
Bk. E. Abut.	216+28.66	-20.00	548.42
C	216+38.46	-20.00	548.34
D	216+48.25	-20.00	548.25
End E. Appr. Pavement	216+58.03	-20.00	548.16

SOUTH EDGE OF PAVEMENT, @ F.A.I. 80 RAMP B & P.G.

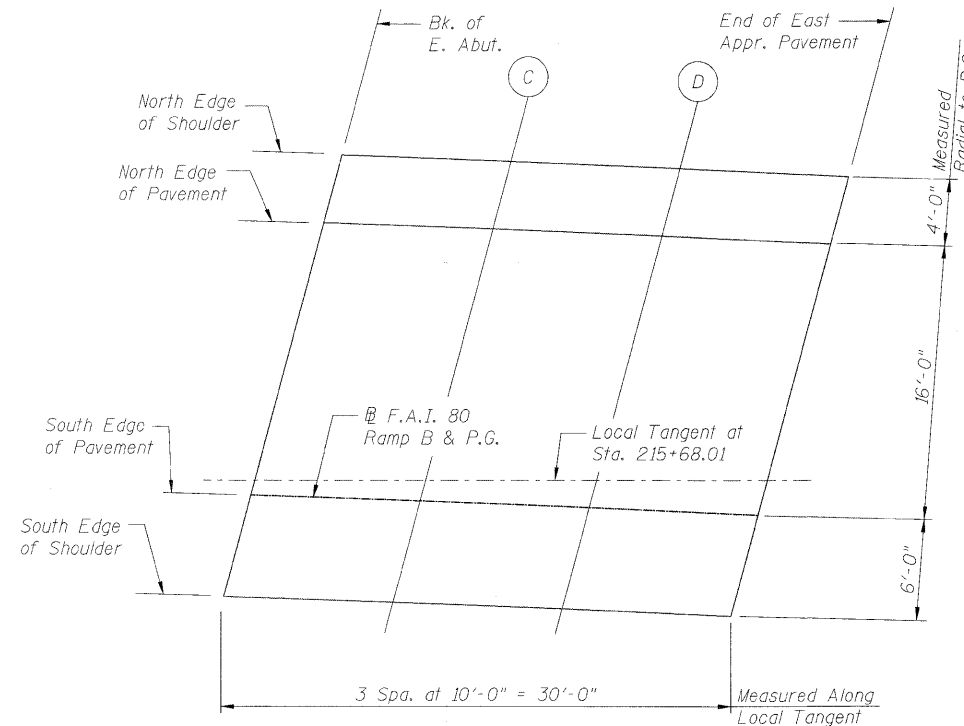
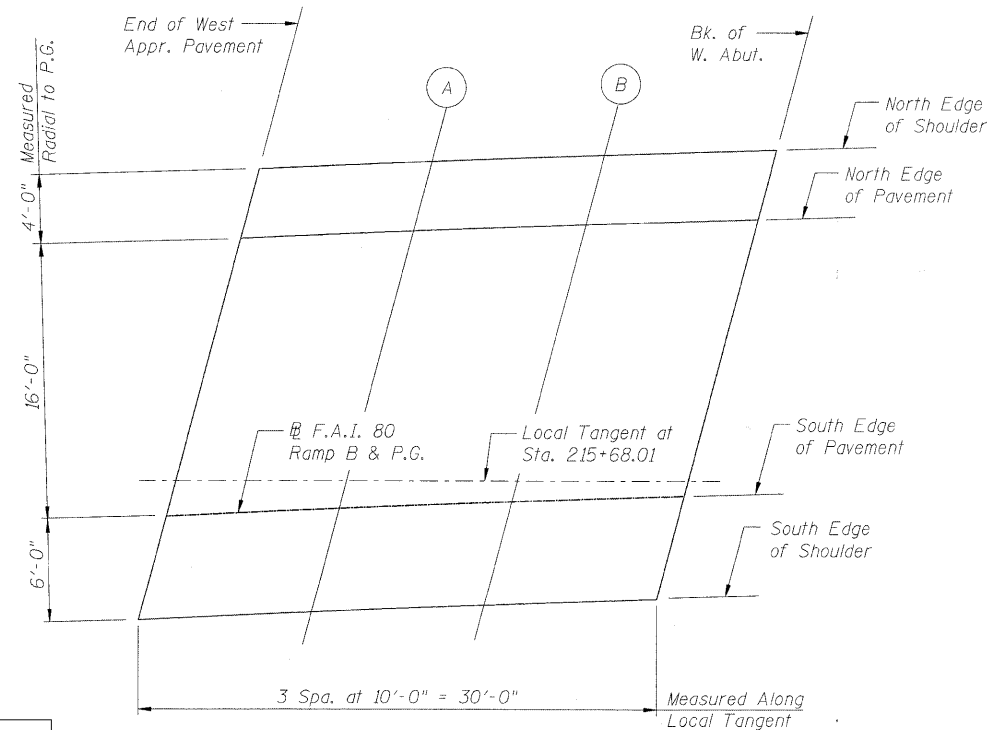
Location	Station	Offset	Theoretical Grade Elevations
End W. Appr. Pavement	214+81.66	0.00	548.81
A	214+91.78	0.00	548.72
B	215+01.89	0.00	548.63
Bk. W. Abut.	215+12.00	0.00	548.54
Bk. E. Abut.	216+24.02	0.00	547.55
C	216+33.93	0.00	547.46
D	216+43.83	0.00	547.37
End E. Appr. Pavement	216+53.73	0.00	547.28

NORTH EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevations
End W. Appr. Pavement	214+86.73	-16.00	549.50
A	214+96.76	-16.00	549.41
B	215+06.78	-16.00	549.33
Bk. W. Abut.	215+16.78	-16.00	549.24
Bk. E. Abut.	216+27.74	-16.00	548.25
C	216+37.57	-16.00	548.16
D	216+47.38	-16.00	548.07
End E. Appr. Pavement	216+57.18	-16.00	547.99

SOUTH EDGE OF SHOULDER

Location	Station	Offset	Theoretical Grade Elevations
End W. Appr. Pavement	214+79.72	6.00	548.55
A	214+89.90	6.00	548.46
B	215+00.05	6.00	548.37
Bk. W. Abut.	215+10.18	6.00	548.28
Bk. E. Abut.	216+22.60	6.00	547.28
C	216+32.55	6.00	547.19
D	216+42.49	6.00	547.11
End E. Appr. Pavement	216+52.42	6.00	547.02



PLAN

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER

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20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

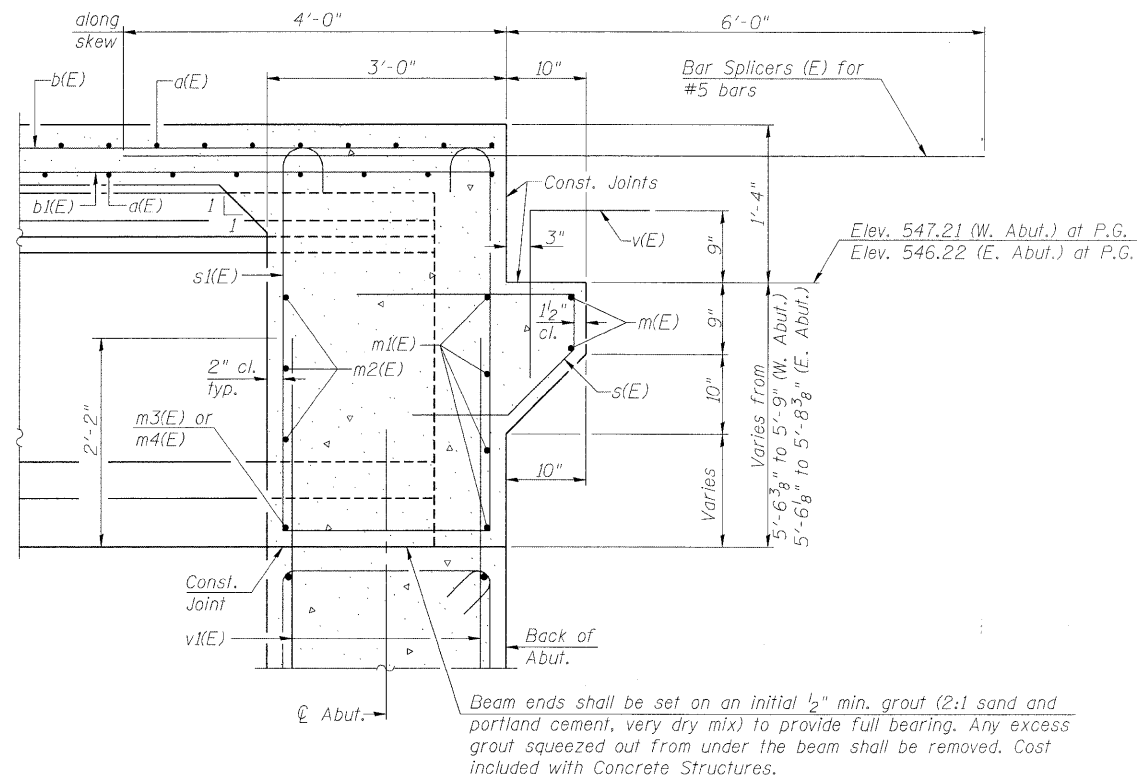
SHEET NO.
5 OF 19
SHEETS

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	318
CONTRACT NO. 66408				
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT		

* FAI 80 & FAS 297 / FAU 392

TOP OF APPROACH
SLAB ELEVATIONS
STRUCTURE NO. 032-0117

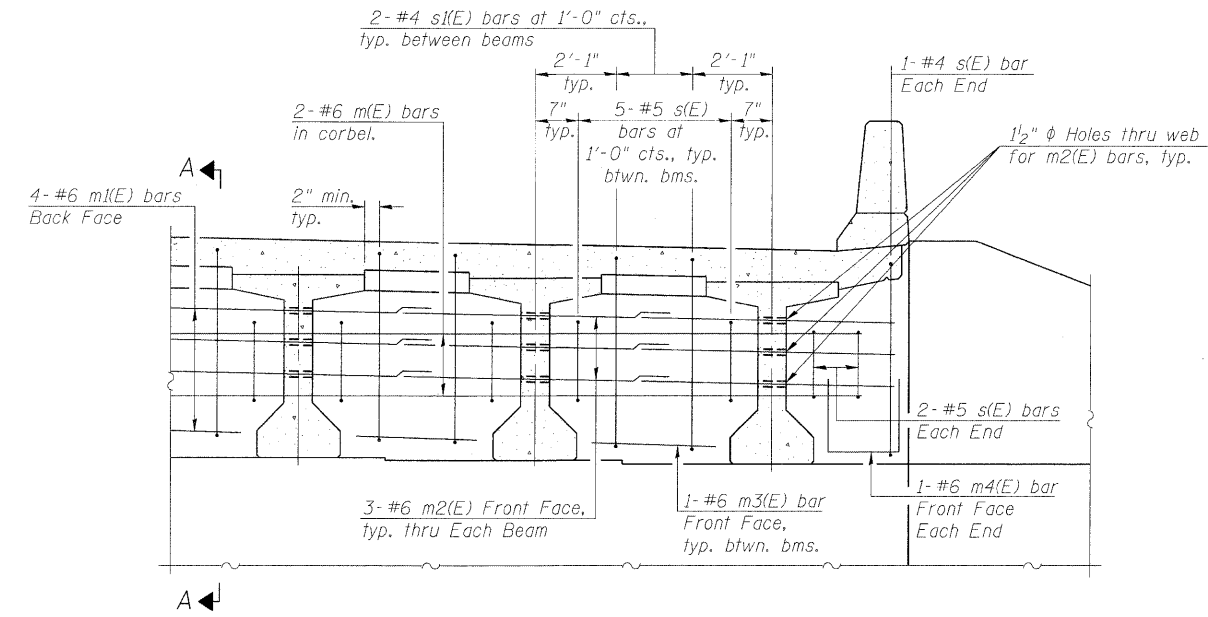
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SECTION A-A

Dimensions at right angles to abutment, except as shown.

- Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet 8.
 - Concrete in diaphragm is included with Concrete Superstructure on sheet 8.
 - For details of bars s(E) and s1(E) see sheet 8.
 - The s(E) and s1(E) bars shall be placed parallel to the beams.
 - Spacing for these bars shall be at right angles to the beams.



DIAPHRAGM ELEVATION AT ABUTMENT

MIN. BAR LAP

#6 bar = 2'-9"

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DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

**DIAPHRAGM DETAILS
STRUCTURE NO. 032-0117**

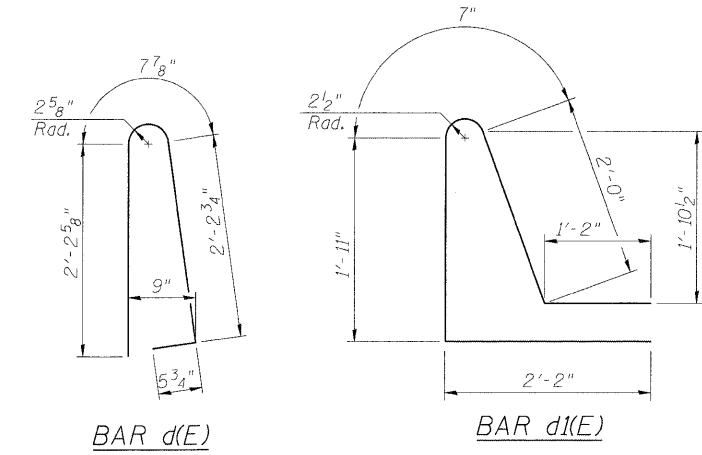
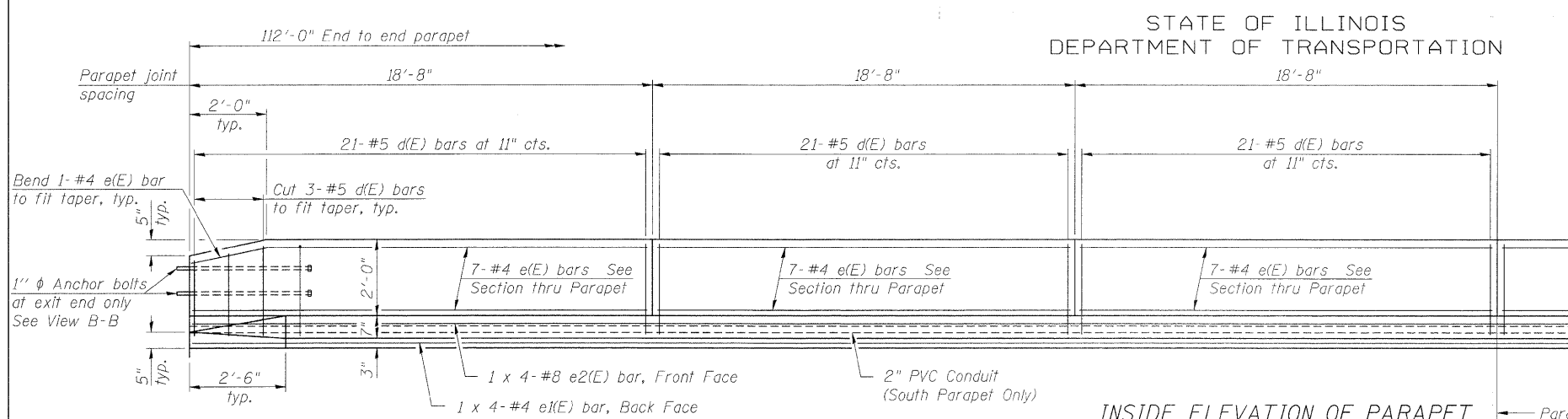
LOCHNER

H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 7 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	320
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT		
CONTRACT NO. 66408					

* FAI 80 & FAS 297 / FAU 392

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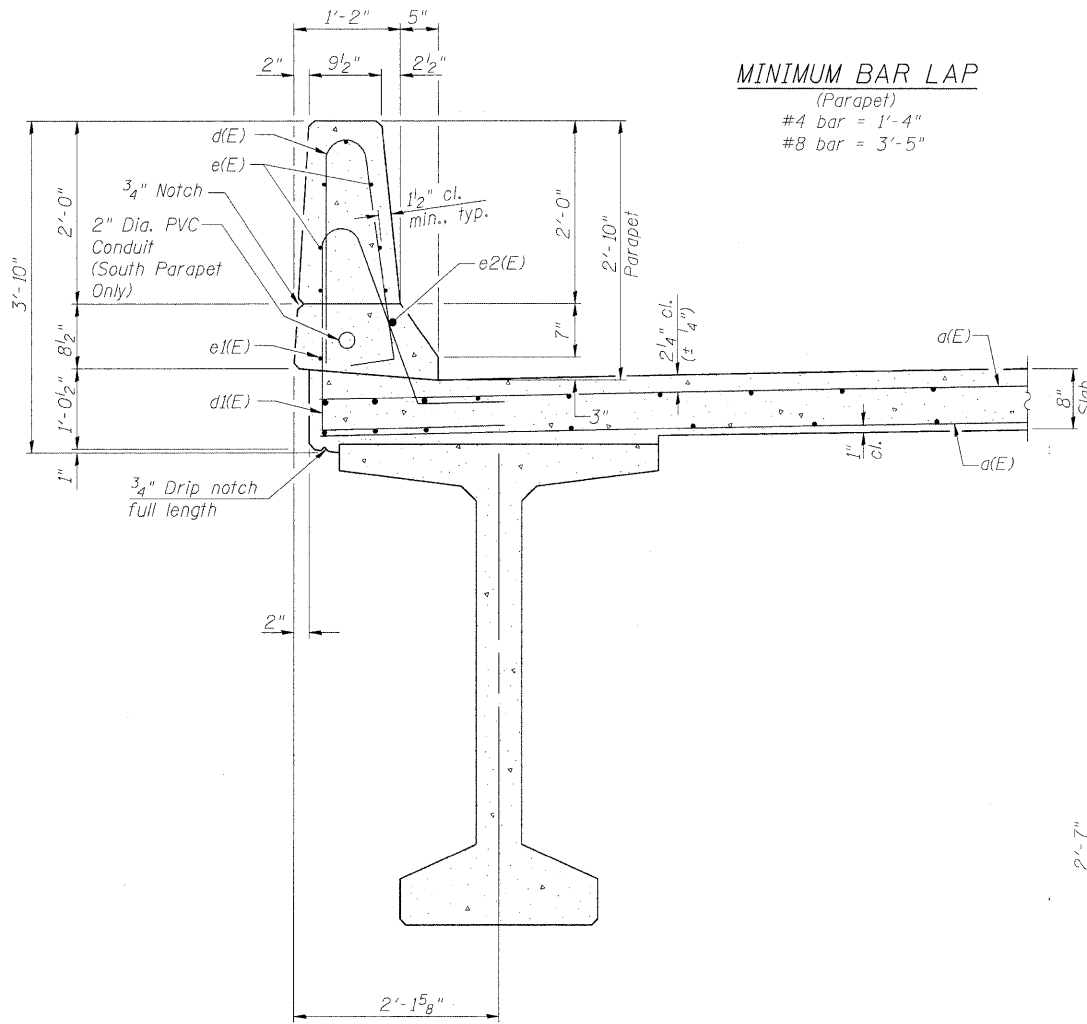


INSIDE ELEVATION OF PARAPET

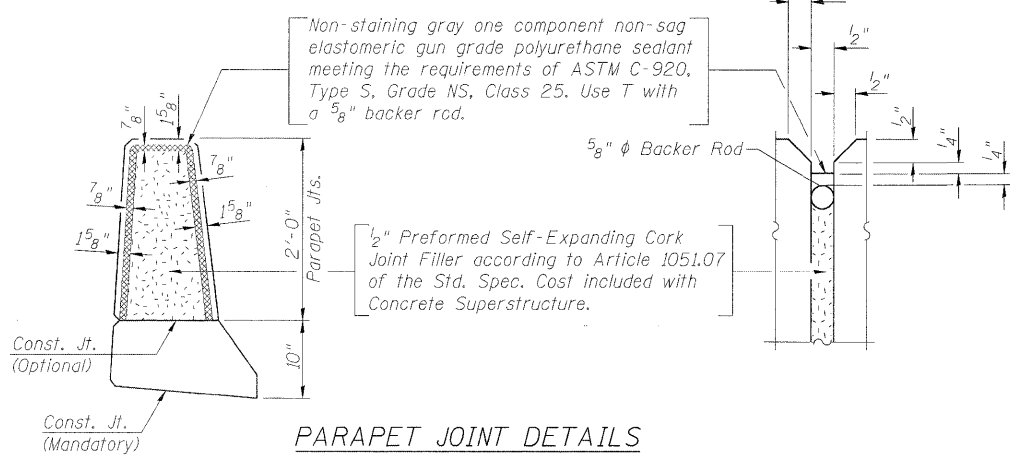
Parapet Symmetric About this Line

MINIMUM BAR LAP

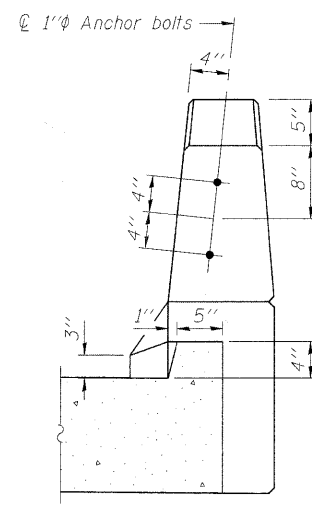
(Parapet)
#4 bar = 1'-4"
#8 bar = 3'-5"



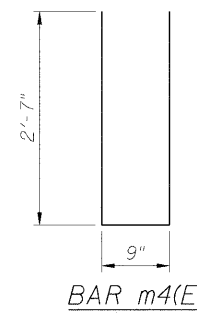
SECTION THRU PARAPET



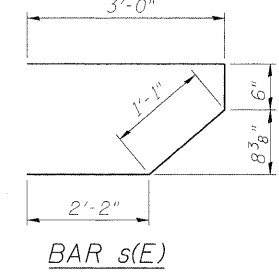
PARAPET JOINT DETAILS



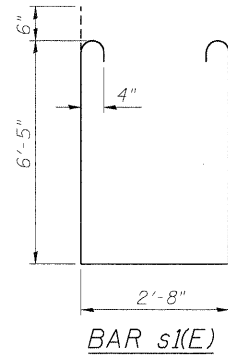
VIEW B-B
(Exit ends only)



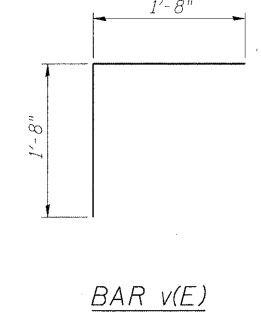
BAR m4(E)



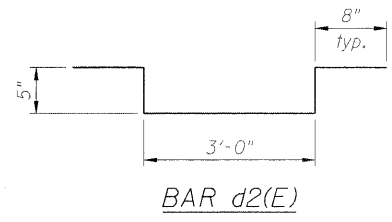
BAR s(E)



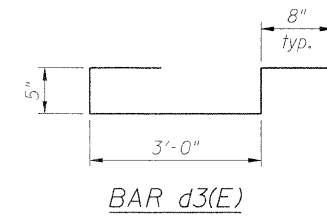
BAR s1(E)



BAR v(E)



BAR d2(E)



BAR d3(E)

SUPERSTRUCTURE
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
d(E)	329	#5	29'-5"	—
a1(E)	4	#5	30'-6"	—
b(E)	132	#5	30'-5"	—
b1(E)	130	#5	25'-0"	—
b2(E)	48	#4	28'-5"	—
d(E)	252	#5	5'-7"	⌋
d1(E)	246	#5	7'-10"	⌋
d2(E)	512	#4	5'-2"	⌋
d3(E)	256	#4	5'-2"	⌋
e(E)	84	#4	18'-4"	—
e1(E)	8	#4	28'-11"	—
e2(E)	8	#8	30'-6"	—
m(E)	4	#6	29'-5"	—
m1(E)	8	#6	30'-10"	—
m2(E)	36	#6	8'-1"	—
m3(E)	10	#6	2'-9"	—
m4(E)	4	#6	5'-11"	⌋
s(E)	58	#5	6'-9"	⌋
s1(E)	24	#4	16'-6"	⌋
v(E)	60	#5	3'-4"	⌋
Reinforcement Bars, Epoxy Coated		Pound	28,620	
Concrete Superstructure		Cu. Yds.	167.8	

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

SUPERSTRUCTURE DETAILS
STRUCTURE NO. 032-0117

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

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CHICAGO, IL 60606

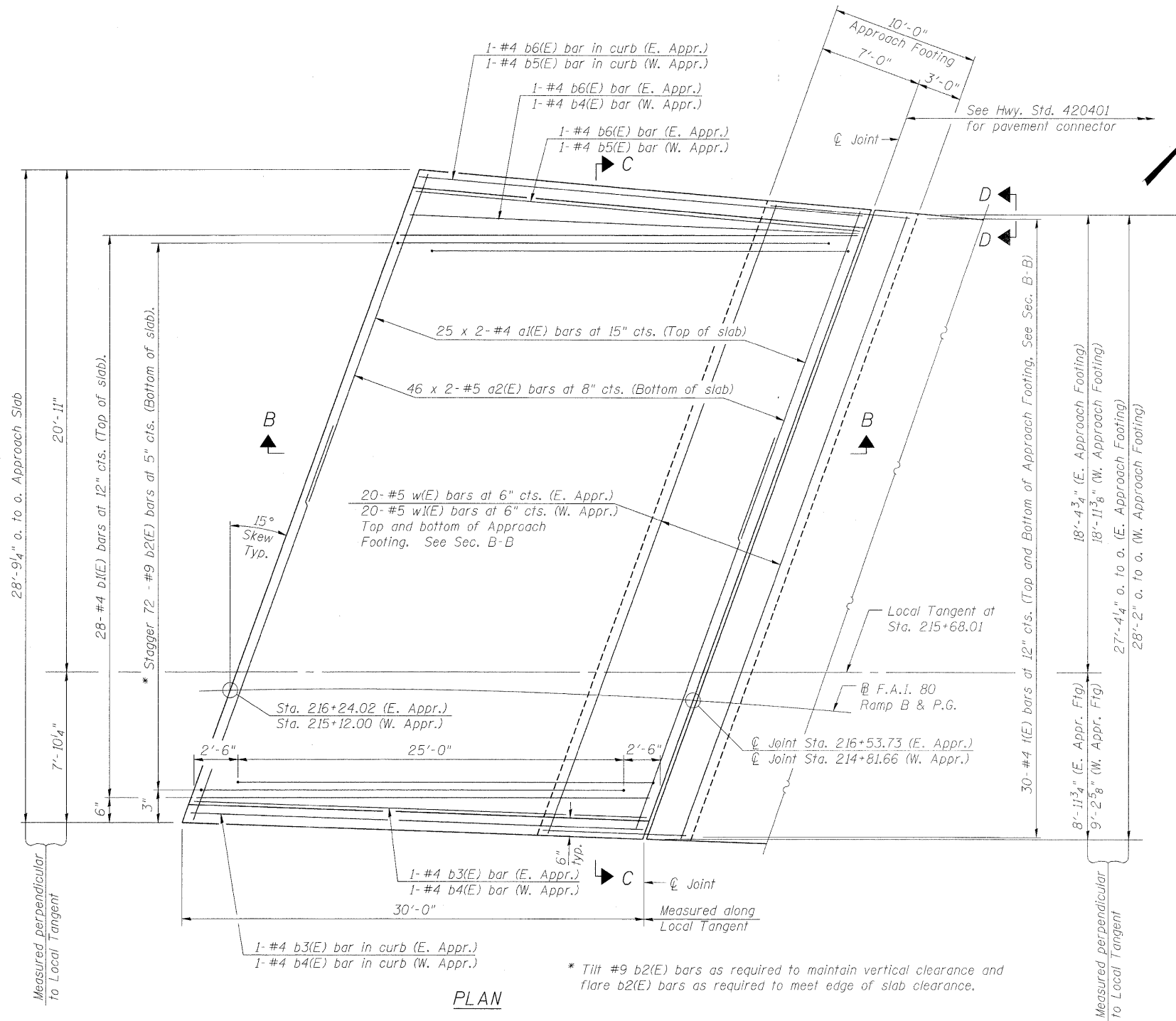
SHEET NO. 8 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	321
	CONTRACT NO. 66408				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

* FAI 80 & FAS 297 / FAU 392

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STATE OF ILLINOIS
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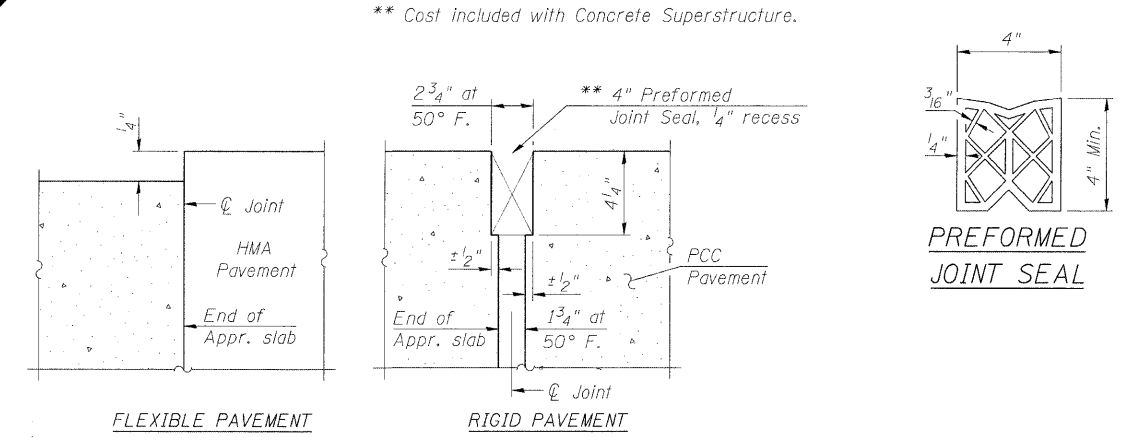
Notes:
See sheet 10 of 19 for Sections B-B & C-C.
a1(E), a2(E), w(E), and w1(E) bar spacings measured perpendicular to
Local Tangent at Sta. 215+68.01.
Bars indicated thus 24 x 2-#4 etc. indicates
24 lines of bars with 2 lengths per line.



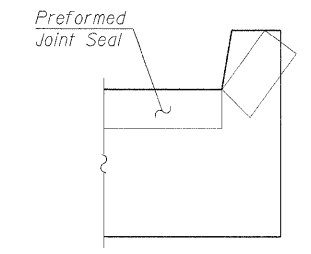
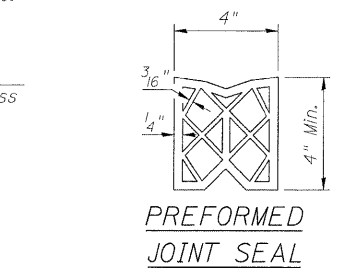
PLAN

(East Approach shown - West Approach similar, opposite hand)

* Tilt #9 b2(E) bars as required to maintain vertical clearance and flare b2(E) bars as required to meet edge of slab clearance.



DETAIL A



Angle Preformed Joint Seal at 45° at curbs when req'd for drainage.

DESIGNED - BJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

BRIDGE APPROACH SLAB DETAILS I
STRUCTURE NO. 032-0117

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CHICAGO, IL 60606

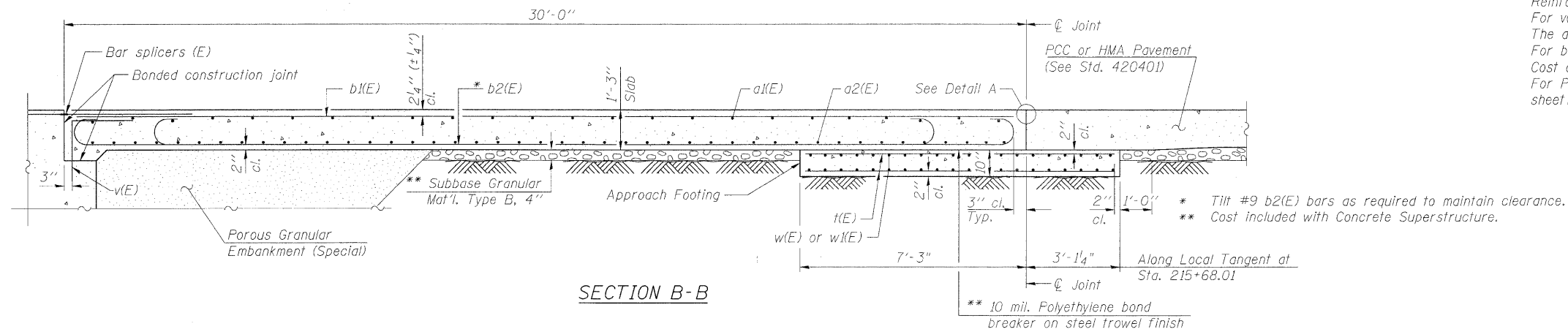
SHEET NO. 9 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	322
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Notes:

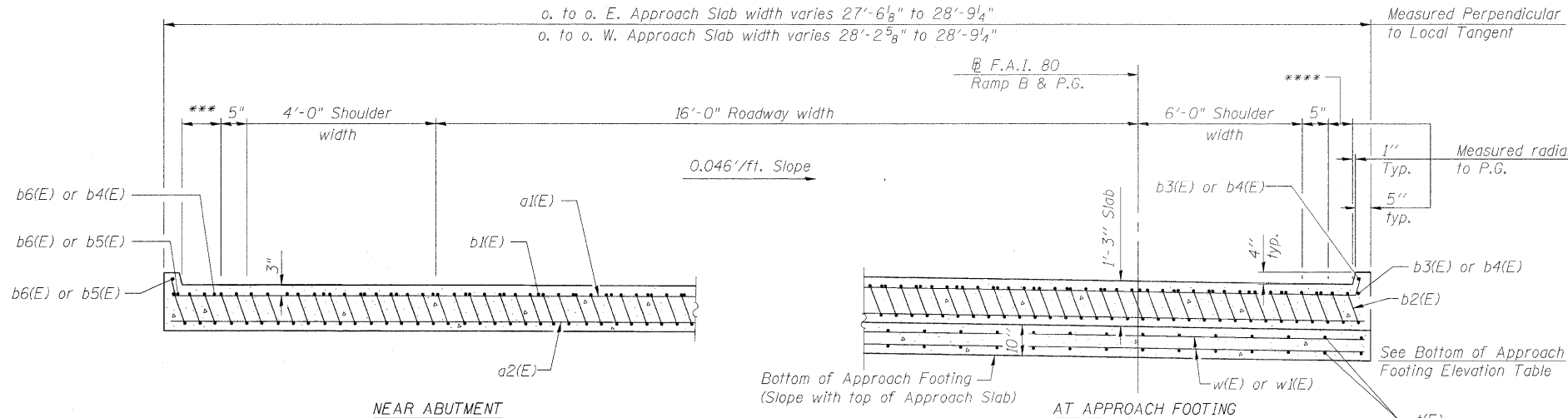
See sheet 9 of 19 for Detail A.
Approach slab and curb concrete shall be paid for as Concrete Superstructure.
Approach footing concrete shall be paid for as Concrete Structures.
Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
For v(E) bar details, see sheet 8 of 19.
The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.
For bar splicer details, see sheet 17 of 19.
Cost of excavation for approach footing included with Concrete Structures.
For Porous Granular Embankment (Special) and drainage treatment details, see sheet 2 of 19.



SECTION B-B

BOTTOM OF APPROACH FOOTING
ELEVATION TABLE

East Approach		West Approach	
Corner Location	Elevation	Corner Location	Elevation
NW	548.28	NW	549.74
NE	548.17	NE	549.66
SE	546.95	SE	548.45
SW	547.04	SW	548.54



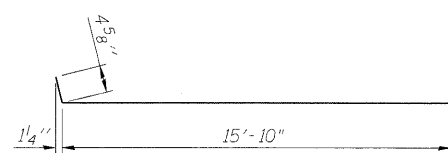
SECTION C-C

(See Plan for dimensions not shown)

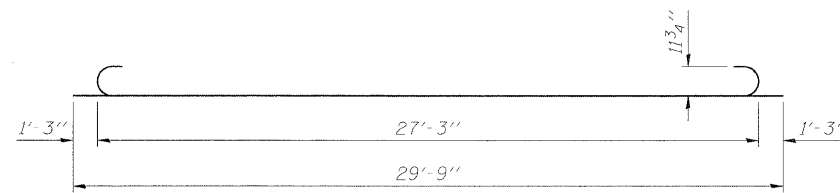
TWO APPROACHES
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a1(E)	100	#4	16'-3"	—
a2(E)	184	#5	15'-10"	—
b1(E)	56	#4	29'-6"	—
b2(E)	144	#9	29'-9"	—
b3(E)	2	#4	29'-3"	—
b4(E)	3	#4	29'-10"	—
b5(E)	2	#4	30'-0"	—
b6(E)	3	#4	28'-11"	—
t(E)	120	#4	10'-0"	—
w(E)	40	#5	28'-1"	—
w1(E)	40	#5	28'-10"	—
Concrete Superstructure		Cu. Yd.	79.5	
Concrete Structures		Cu. Yd.	17.8	
Reinforcement Bars, Epoxy Coated		Pound	23,170	

*** Width varies 0" to 1'-0⁵/₈" (E. Approach)
Width varies 0" to 8¹/₄" (W. Approach)
**** Width varies 0" to 1³/₈" (E. Approach)
Width varies 0" to 0³/₄" (W. Approach)



BAR a1(E)



BAR b2(E)

DESIGNED -	BJN
CHECKED -	CMM
DRAWN -	GJS
CHECKED -	CMM

LOCHNER

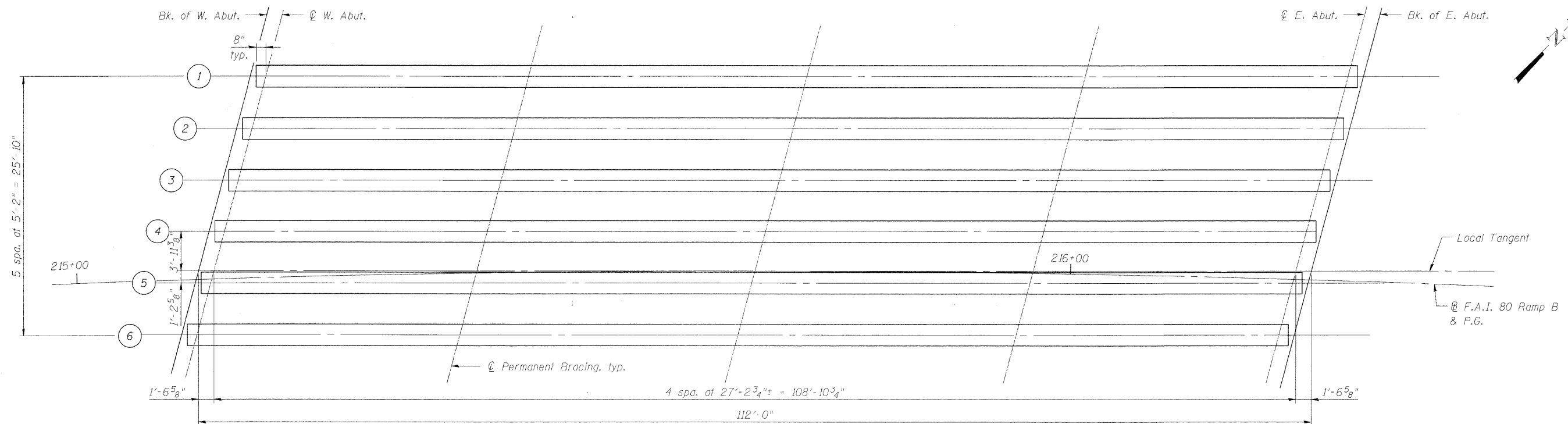
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CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

BRIDGE APPROACH SLAB DETAILS II
STRUCTURE NO. 032-0117

SHEET NO. 10 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	323
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

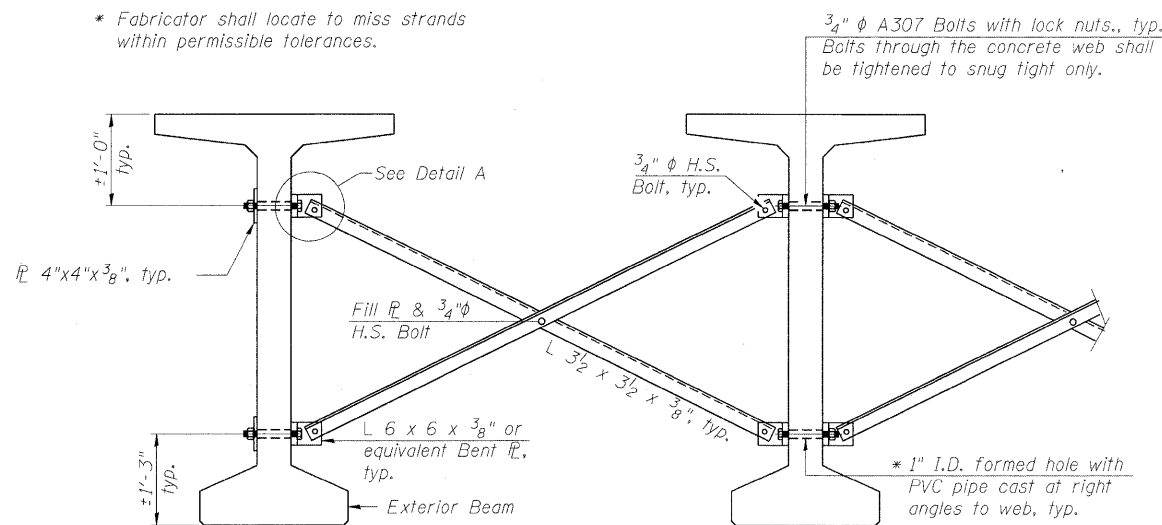
* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

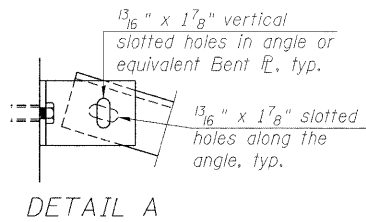


FRAMING PLAN

* Fabricator shall locate to miss strands within permissible tolerances.



Notes:
All material for bracing shall be hot dip galvanized according to AASHTO M111 unless otherwise noted.
Two hardened washers are required for each set of oversized holes.
All holes shall be $\frac{1}{16}$ " unless otherwise noted.
 5_8 " x 3" x 3" plate washers are required over all slotted holes.
All bolts shall be galvanized according to AASHTO M232.
Bracing shall be installed as beams are erected and tightened as soon as possible during erection.
Permanent bracing shall not be paid for separately, but shall be included in the cost of Furnishing and Erecting Precast Prestressed Concrete Bulb T-Beams.



PERMANENT BRACING DETAILS
FOR BULB-T BEAMS

INTERIOR BEAM MOMENT TABLE		
I	(in ⁴)	545,894
I'	(in ⁴)	1,032,099
S _b	(in ³)	14,915
S _b '	(in ³)	19,871
S _t	(in ³)	15,421
S _t '	(in ³)	51,451
DC1	(k/ft)	1.42
M _{DC1}	(k)	2076.1
DC2	(k/ft)	0.15
M _{DC2}	(k)	222.3
DW	(k/ft)	0.22
M _{DW}	(k)	332.7
M _{L + IM}	(k)	1617.0

INTERIOR BEAM REACTION TABLE		
R _{DC1}	(k)	77.6
R _{DC2}	(k)	8.2
R _{DW}	(k)	12.2
R _{L + IM}	(k)	122.4
R _{Total}	(k)	220.4

I: Non-composite moment of inertia of beam section (in⁴).
I': Composite moment of inertia of beam section (in⁴).
S_b: Non-composite section modulus for the bottom fiber of the prestressed beam (in³).
S_b': Composite section modulus for the bottom fiber of the prestressed beam (in³).
S_t: Non-composite section modulus for the top fiber of the prestressed beam (in³).
S_t': Composite section modulus for the top fiber of the prestressed beam (in³).
DC1: Un-factored non-composite dead load (kips/ft.).
M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).
DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
M_{L + IM}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

FRAMING PLAN & DETAILS
STRUCTURE NO. 032-0117

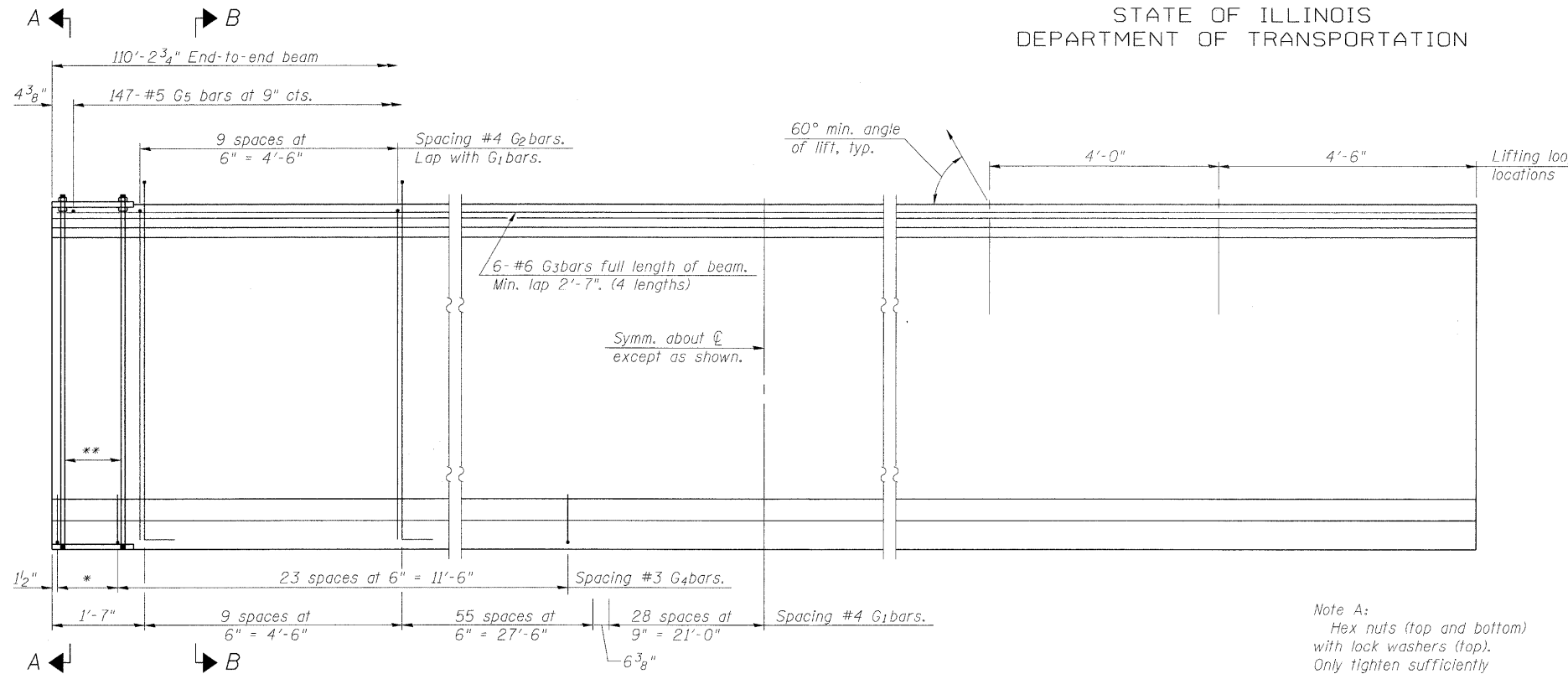
DESIGNED -	LJB
CHECKED -	CMM
DRAWN -	GJS
CHECKED -	CMM

LOCHNER
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 11 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	324
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

* FAI 80 & FAS 297 / FAU 392

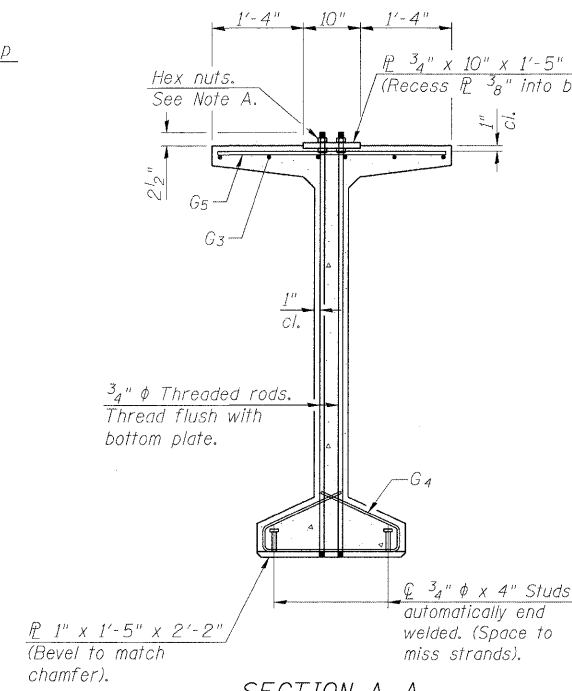
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



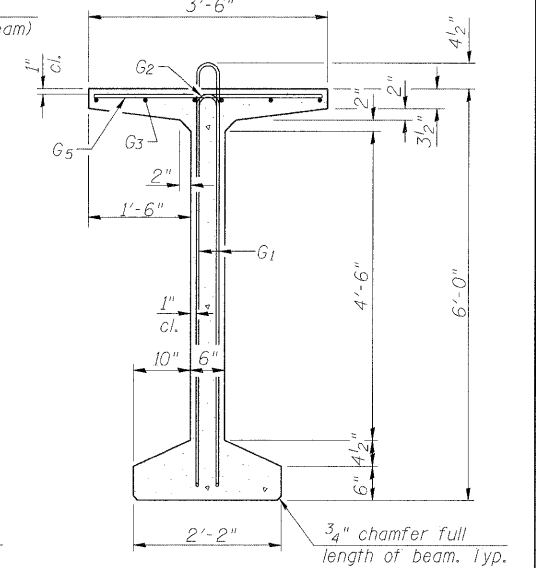
ELEVATION OF BEAM
(Showing reinforcement & dimensions)

* 4 spaces at 3¹/₄" = 1'-1".
** 5-3³/₄" ϕ threaded dowel rods at 3¹/₄" cts., each face.

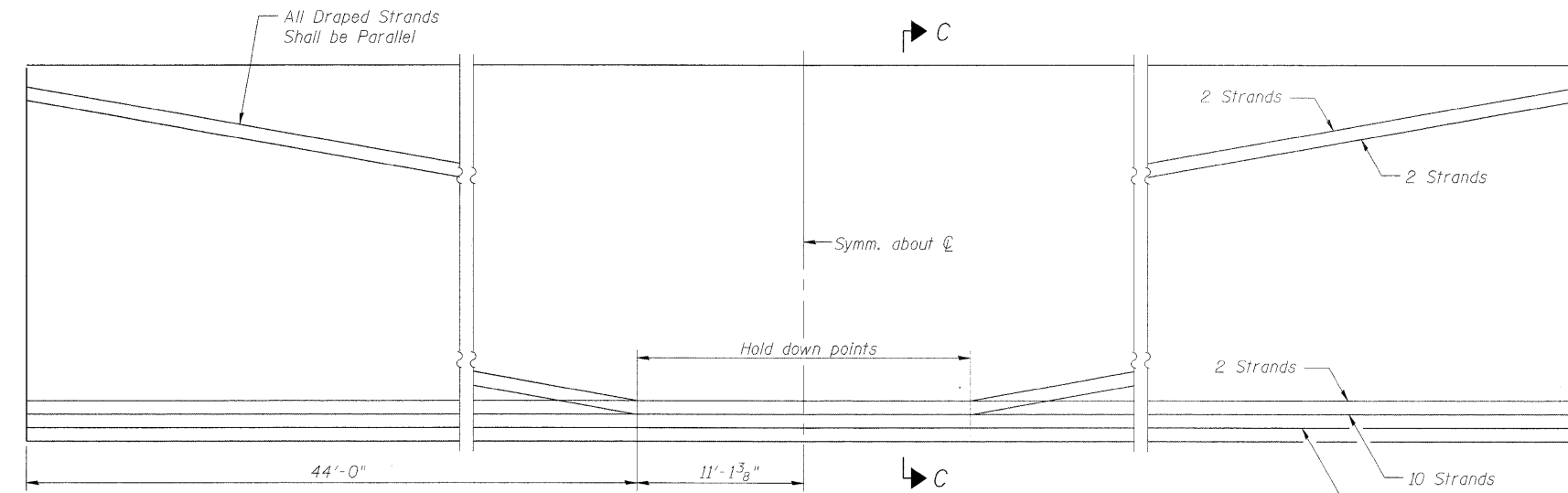
Note A:
Hex nuts (top and bottom) with lock washers (top). Only tighten sufficiently to compress lock washers.



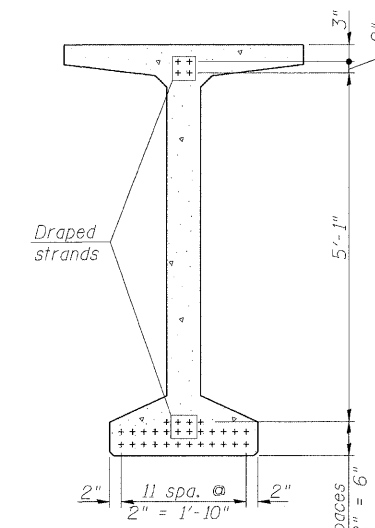
SECTION A-A



SECTION B-B



ELEVATION OF BEAM
(Showing prestressing steel)



SECTION C-C

*****BAR LIST
ONE BEAM ONLY**

Bar	No.	Size	Length	Shape
G ₁	187	#4	13'-5"	\bar{L}
G ₂	20	#4	11'-8"	\bar{L}
G ₃	24	#6	29'-6"	\bar{L}
G ₄	56	#3	4'-11"	\bar{L}
G ₅	147	#5	3'-4"	\bar{L}

***For information only

Notes:
See sheet 13 for additional details and Bill of Material.
Required release strength, f'_{ci} , shall be 5,000 psi.

**72" PPC BULB T-BEAM
STRUCTURE 032-0117**

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

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CHICAGO, IL 60606

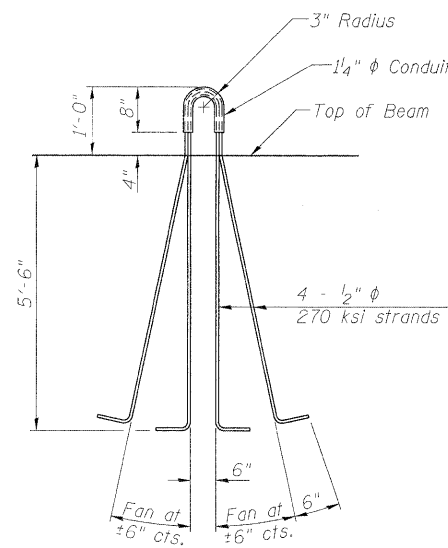
SHEET NO. 12 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	325
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

* FAI 80 & FAS 297 / FAU 392

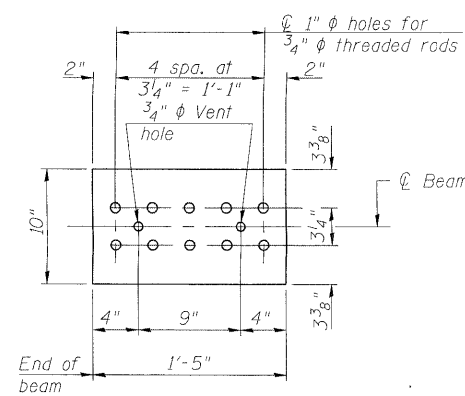
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NOTES

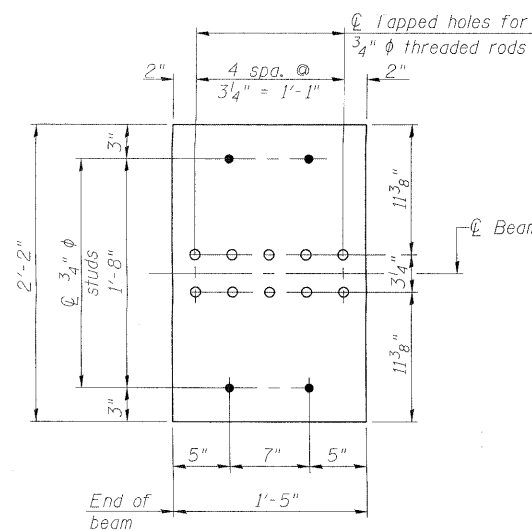
Inserts for $\frac{3}{4}$ " ϕ threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams.
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be $\frac{1}{2}$ " and the nominal cross-sectional area shall be 0.153 sq. in.
Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
A minimum $2\frac{1}{2}$ " ϕ lifting pin shall be used to engage the lifting loops during handling.
The top and bottom plates shall be AASHTO M270 Grade 50.
The bottom plates and studs shall be galvanized according to AASHTO M111.
Threaded rods shall be ASTM F 1554 Grade 55.



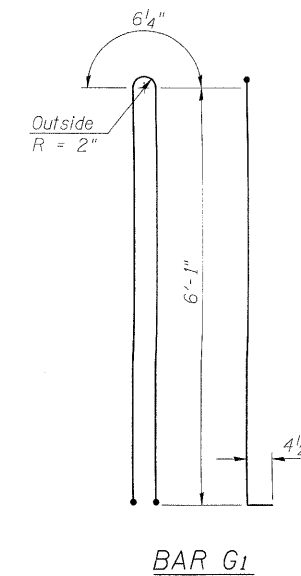
LIFTING LOOP DETAIL



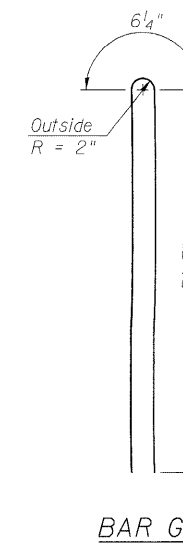
TOP PLATE



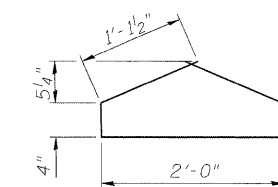
BOTTOM PLATE



BAR G1



BAR G2



BAR G4

BILL OF MATERIAL

Item	Unit	Total
Furnishing and Erecting Precast Prestressed Concrete Bulb T-Beams, 72"	Ft.	661

72" PPC BULB T-BEAM DETAILS
STRUCTURE NO. 032-0117

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

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20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

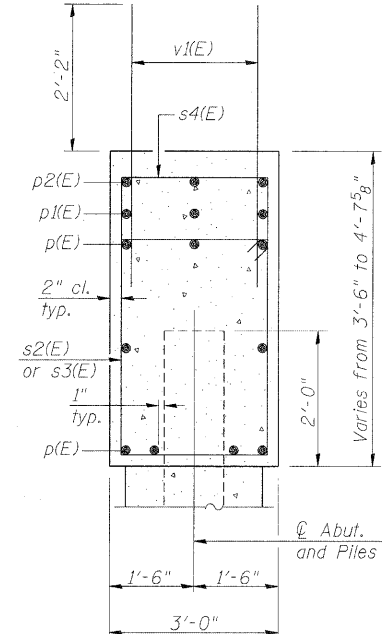
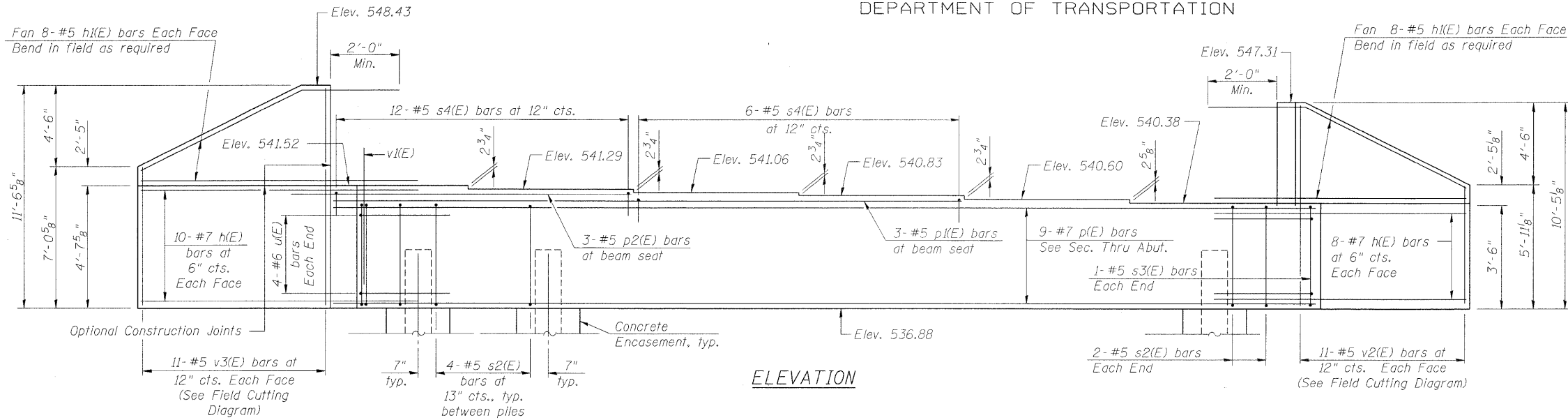
SHEET NO. 13 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	326
	CONTRACT NO. 66408				
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

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Notes:
Pour steps monolithically with cap.

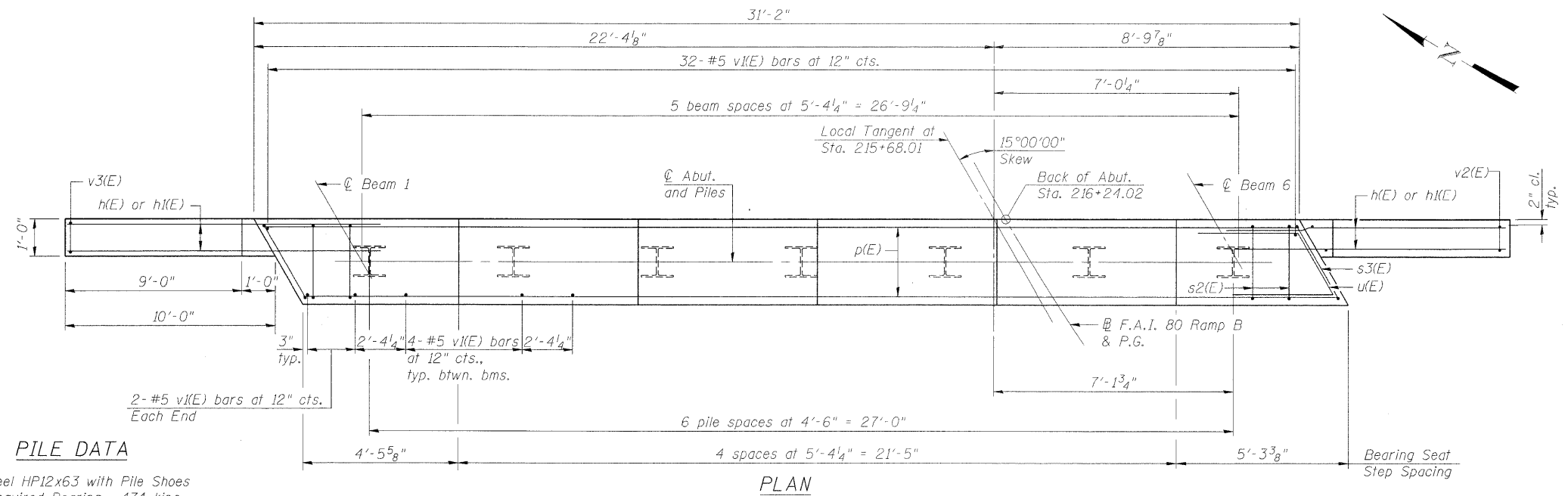
Fan 8-#5 h(E) bars Each Face
Bend in field as required



BILL OF MATERIAL

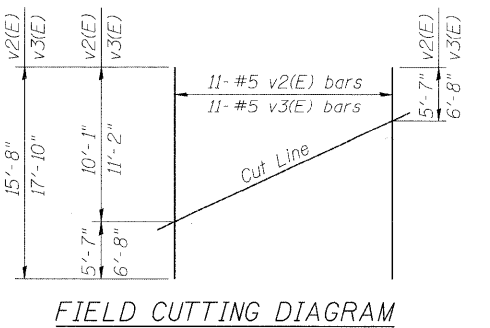
Bar	No.	Size	Length	Shape
h(E)	36	#7	11'-10"	—
h1(E)	32	#5	12'-10"	—
p(E)	9	#7	30'-8"	—
p1(E)	3	#5	20'-3"	—
p2(E)	3	#5	9'-9"	—
s2(E)	28	#5	12'-7"	□
s3(E)	2	#5	12'-9"	□
s4(E)	23	#5	8'-0"	□
u(E)	8	#6	9'-11"	∟
v1(E)	56	#5	4'-4"	—
v2(E)	11	#5	15'-8"	—
v3(E)	11	#5	17'-10"	—
Concrete Structures		Cu. Yd.	20.7	
Reinforcement Bars, Epoxy Coated		Pound	3,300	
Furnishing Steel Piles HP12x63		Foot	114	
Driving Piles		Foot	114	
Test Pile Steel HP12x63		Each	1	
Pile Shoes		Each	7	
Concrete Encasement		Cu. Yd.	2.5	

For details of piles and Concrete Encasement, see sheet 16 of 19.

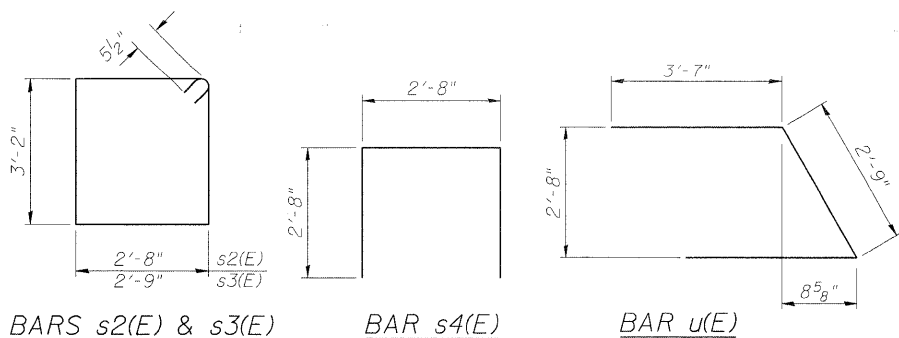


PILE DATA

Type: Steel HP12x63 with Pile Shoes
Nominal Required Bearing: 474 kips
Factored Resistance Available: 237 kips
Est. Length: 19 ft
No. Production Piles: 6
No. Test Piles: 1



Order v2(E) and v3(E) full length.
Cut as shown and use remainder of bars in opposite face.



DESIGNED - BJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

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20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

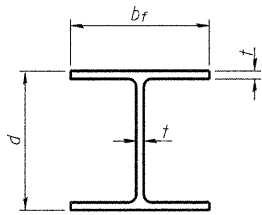
SHEET NO. 15 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	328
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT		
CONTRACT NO. 66408					

* FAI 80 & FAS 297 / FAU 392

EAST ABUTMENT PLAN & ELEVATION
STRUCTURE NO. 032-0117

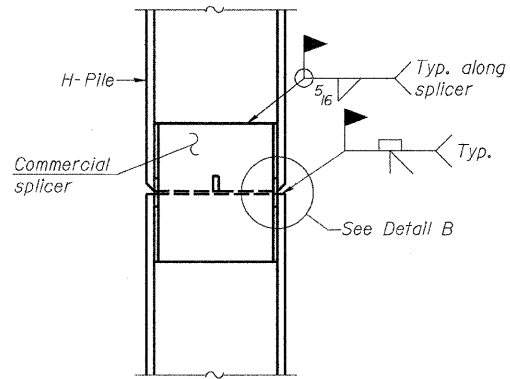
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

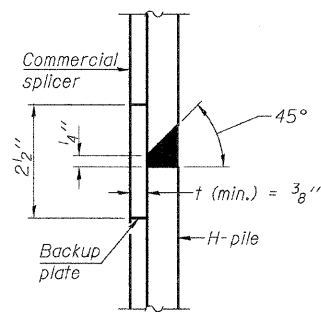


STEEL PILE TABLE

Designation	Depth d	Flange width b _f	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1 1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1 1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"

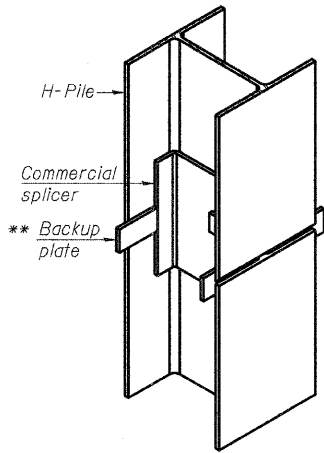


ELEVATION

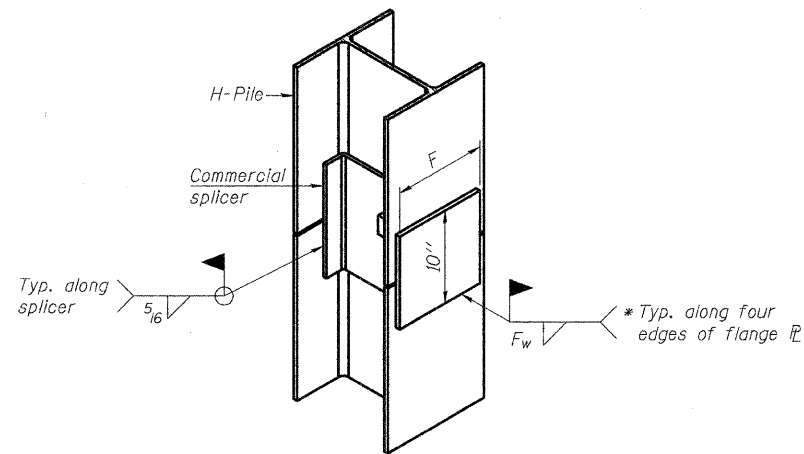


DETAIL "B"

WELDED COMMERCIAL SPLICE



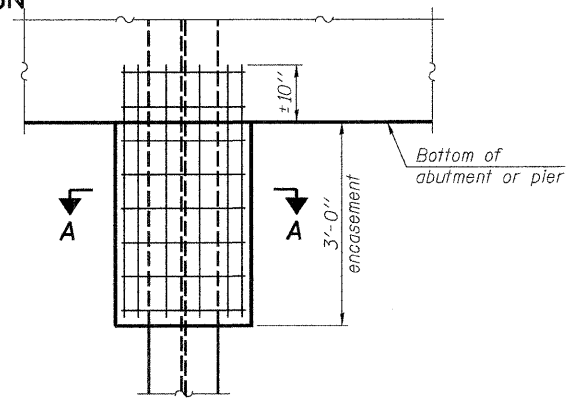
ISOMETRIC VIEW



ISOMETRIC VIEW

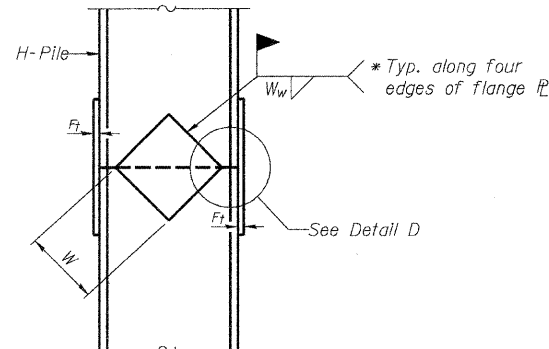
WELDED COMMERCIAL SPLICE ALTERNATE

- * Interrupt welds 1/4" from end of web and/or each flange.
- ** Remove portions of backup plates that extend outside the flanges.
- *** Weld size per pile shoe manufacturer (5/16" min.).

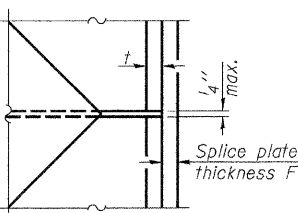


ELEVATION

PILE ENCASEMENT

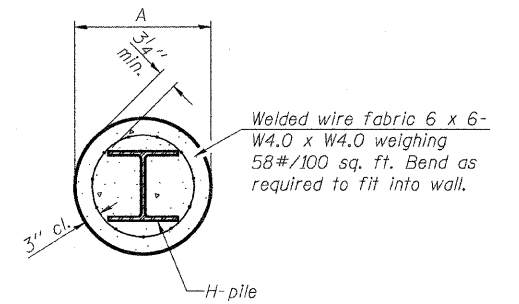


ELEVATION



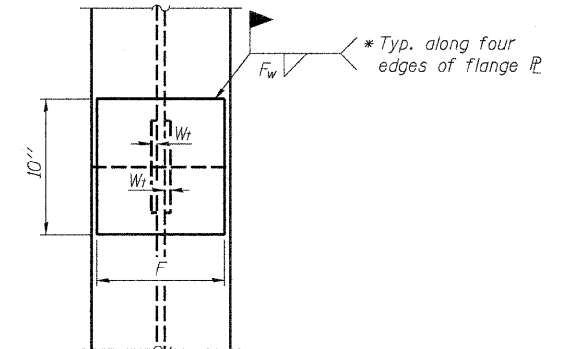
DETAIL D

WELDED PLATE FIELD SPLICE



SECTION A-A

Note:
Forms for encasement may be omitted when soil conditions permit.



END VIEW

Designation	F	F _t	F _w	W	W _t	W _w
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	1/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

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

HP PILE DETAILS
STRUCTURE NO. 032-0117

DESIGNED - BJN
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

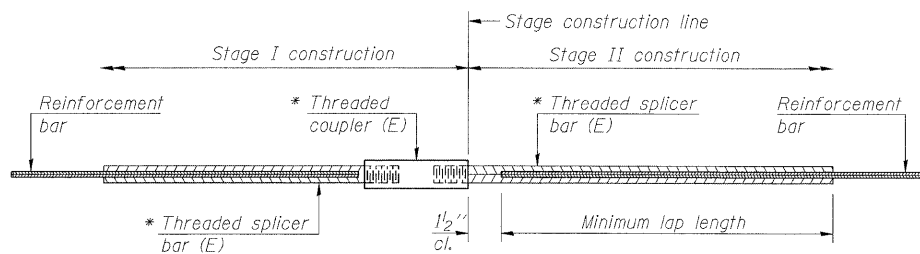
F-HP

7-1-10

SHEET NO. 16 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	329
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

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DEPARTMENT OF TRANSPORTATION



STANDARD BAR SPLICER ASSEMBLY

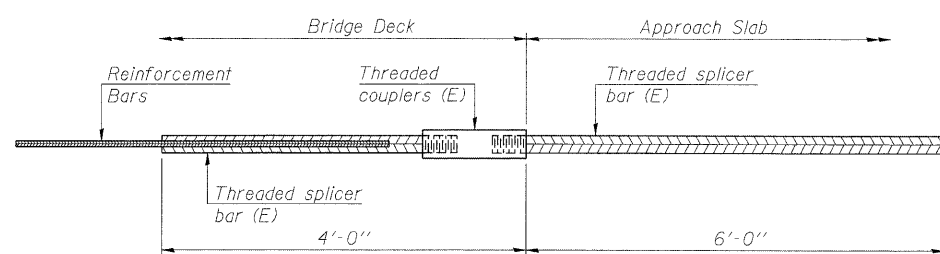
Bar size to be spliced	Minimum Lap Lengths			
	Table 1	Table 2	Table 3	Table 4
3, 4	1'-5"	1'-11"	2'-1"	2'-4"
5	1'-9"	2'-5"	2'-7"	2'-11"
6	2'-1"	2'-11"	3'-1"	3'-6"
7	2'-9"	3'-10"	4'-2"	4'-8"
8	3'-8"	5'-1"	5'-5"	6'-2"
9	4'-7"	6'-5"	6'-10"	7'-9"

Table 1: Black bar, 0.8 Class C
Table 2: Black bar, Top bar lap, 0.8 Class C
Table 3: Epoxy bar, 0.8 Class C
Table 4: Epoxy bar, Top bar lap, 0.8 Class C

Threaded splicer bar length = min. lap length + 1 1/2" + thread length

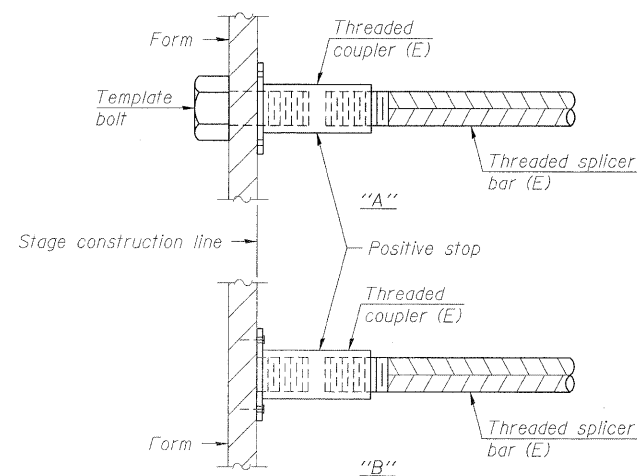
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length



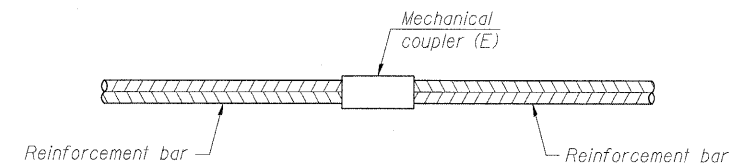
BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

No. required = 54



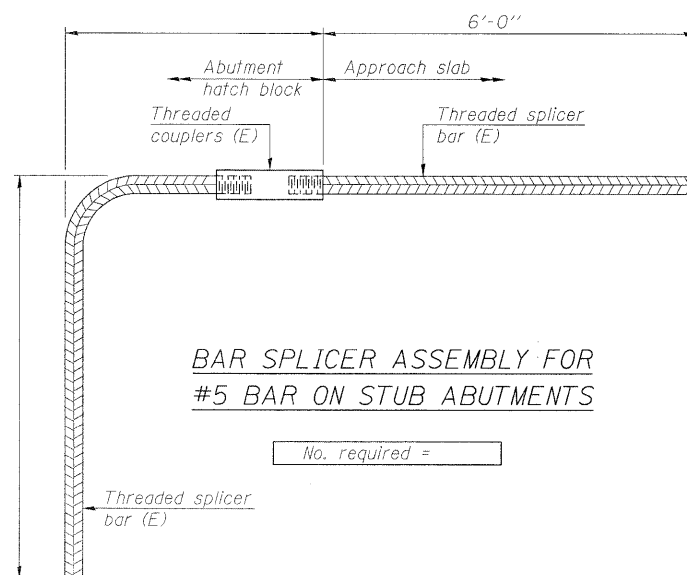
INSTALLATION AND SETTING METHODS

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



STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required =

NOTES

Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.
All reinforcement shall be lapped and tied to the splicer bars.
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.
See special provision for Mechanical Splicers.
See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BAR SPLICER ASSEMBLY DETAILS
STRUCTURE NO. 032-0117

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

11-1-09

LOCHNER

H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 17 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	330
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SOIL BORING LOG

Page 1 of 1

Date 2/16/00

ROUTE FAI 80 DESCRIPTION FAI 80 OVER COLLINS RUN LOGGED BY K.W.

SECTION (32.47-4)R, BR, BR-1, 2, 3 LOCATION NW 1/4 SW 1/4, SEC. 18, TWP. 34N, RNG. 8E, 3rd PM

COUNTY GRUNDY DRILLING METHOD HOLLOW STEM AUGER HAMMER TYPE AUTOMATIC

STRUCT. NO. Station	BORING NO.	Ground Surface Elev.	DEPTH H	BLOW W	UCS Qu	MOIST S	Surface Water Elev.		Groundwater Elev.:		DEPTH H	BLOW W	UCS Qu	MOIST S
							ft	ft	ft	ft				
032-0013 Ex 032-0104 Prop 186+778.105	3 WEST ABUT. EBL 186+753.12	546.99							530.0	532.5				
	Offset	50.80ft RT CL												
	Ground Surface Elev.	546.99												
	BITUMINOUS SHOULDER, GRAVEL BASE Over Gray SILTY CLAY TILL (FILL)	544.49												
	Mix of Gray SILTY CLAY TILL & Gray CLAY (FILL)	542.49		4										
	Mix of Very Stiff Black SILTY CLAY & Gay CLAY (FILL)	539.99		2	2.2	27								
	Mix of Stiff Gray CLAY & Gray-Brown SILTY CLAY TILL (FILL)	535.49		3	1.1	25								
	Stiff Black SILTY CLAY	531.89		2	1.2	26								
	Soft Black & Gray SILTY CLAY with Gravel Included	529.99		2	0.2	18								
	Medium to Dense Brown to Gray Subangular to Angular Coarse GRAVEL			10		17								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)



SOIL BORING LOG

Page 1 of 1

Date 2/16/00

ROUTE FAI 80 DESCRIPTION FAI 80 OVER COLLINS RUN LOGGED BY K.W.

SECTION (32.47-4)R, BR, BR-1, 2, 3 LOCATION NW 1/4 SW 1/4, SEC. 18, TWP. 34N, RNG. 8E, 3rd PM

COUNTY GRUNDY DRILLING METHOD HOLLOW STEM AUGER HAMMER TYPE AUTOMATIC

STRUCT. NO. Station	BORING NO.	Ground Surface Elev.	DEPTH H	BLOW W	UCS Qu	MOIST S	Surface Water Elev.		Groundwater Elev.:		DEPTH H	BLOW W	UCS Qu	MOIST S
							ft	ft	ft	ft				
032-0013 Ex 032-0104 Prop 186+778.105	4 EAST ABUT. EBL 186+799.13	546.92							529.9	535.5				
	Offset	51.50ft RT CL												
	Ground Surface Elev.	546.92												
	BITUMINOUS SHOULDER, GRAVEL BASE Over Brown-Gray SILTY CLAY TILL (FILL)	544.42												
	Medium Brown SILTY CLAY TILL (FILL)	542.42		4	0.7	5								
	Medium to Dense Gray SAND & Coarse GRAVEL (continued)	525.92		12	1.5	10								
	Dense Gray LOAMY GRAVEL & Very coarse GRAVEL with Large Pieces of Gray SHALE & LIMESTONE	522.42		16										
	Dense (Hard) Gray Calcareous SHALE with LIMESTONE Stringers	519.92		35	4.2	12								
	Loose Black LOAM GRAVEL & Black SILTY CLAY with Pebbles (FILL)	519.92		100/ 2.5"										
	Mix of Very Stiff Black SILTY CLAY, Brown-Gray SILTY CLAY TILL & Gray CLAY (FILL)	537.42		3	2.0	14								
	Very Stiff Black CLAY	533.92		3	1.5	26								
	Stiff Black CLAY LOAM	532.42		2										
	Medium Dark Gray CLAY LOAM TILL	531.42		2										
	Medium Brown-Gray CLAY TILL	529.92		1	0.5	32								
	Loose (Very Soft) Gray Calcareous LOAMY GRAVEL	529.92		3										
	Medium to Dense Gray SAND & Coarse GRAVEL			7		14								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, from 137 (Rev. 8-99)

SOIL BORING LOGS I
STRUCTURE NO. 032-0117

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

SHEET NO. 18 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	331
CONTRACT NO. 66408					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

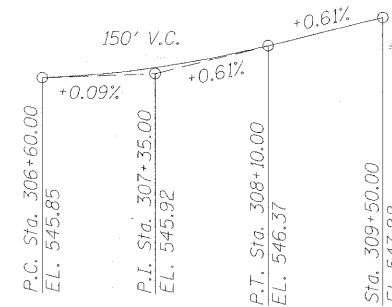
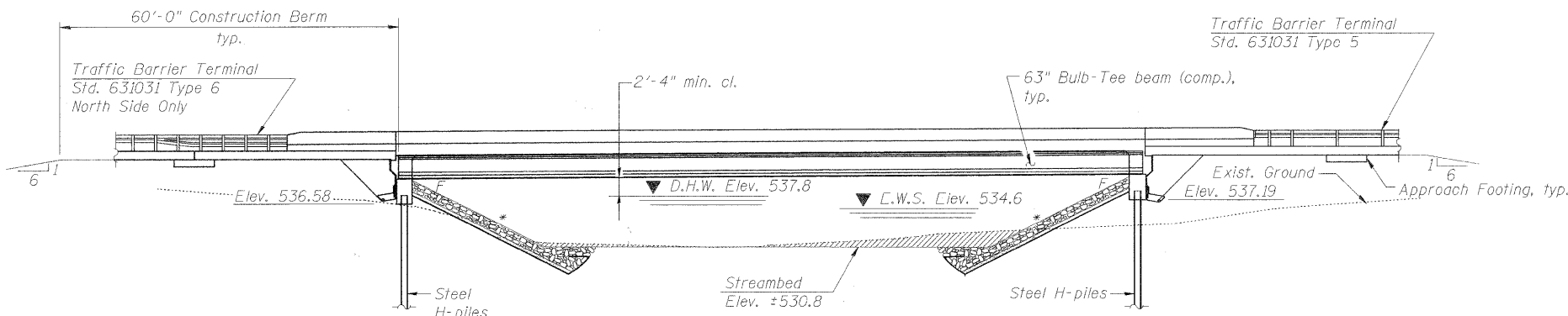
* FAI 80 & FAS 297 / FAU 392

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Bench Mark: B.M. #1409 chiseled square on S.E. wingwall of F.A.I. Route 80 bridge over Collins Run, S.N. 032-0104, Elev. 546.22.

Existing Structure: None

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PROFILE GRADE
Along @ F.A.I. 80 Ramp C

LOADING HL-93

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

DESIGN SPECIFICATIONS

AASHTO LRFD Bridge Design Specifications, 4th Edition with 2008 and 2009 Interims

DESIGN STRESSES

FIELD UNITS

$f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)

PRECAST PRESTRESSED UNITS

$f'_c = 6,000$ psi
 $f'_{ci} = 5,000$ psi
 $f'_s = 270,000$ psi (1/2" ϕ low lax. strands)
 $f_{si} = 201,960$ psi (1/2" ϕ low lax. strands)

SEISMIC DATA

Seismic Performance Category (SPZ) = .1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.070g
Design Spectral Acceleration at 0.2 sec. (SD5) = 0.128g
Soil Site Class = C

DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	E. Abut. W. Abut.
	533.58 534.19

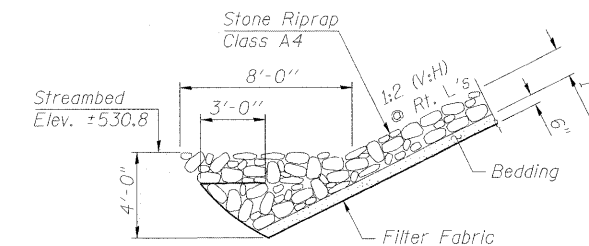
ELEVATION

* 1:2 (V:H) @ Rt. L's

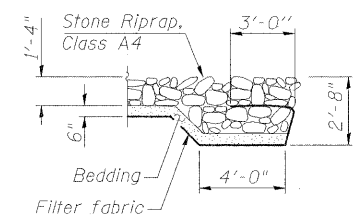
103'-6" Bk. to Bk. Abutments

STATION 308+53.69
BUILT 20 BY
STATE OF ILLINOIS
F.A.I. 80 SEC. (32,47-4) HBK-4
LOADING HL-93
STRUCTURE NO. 032-0118

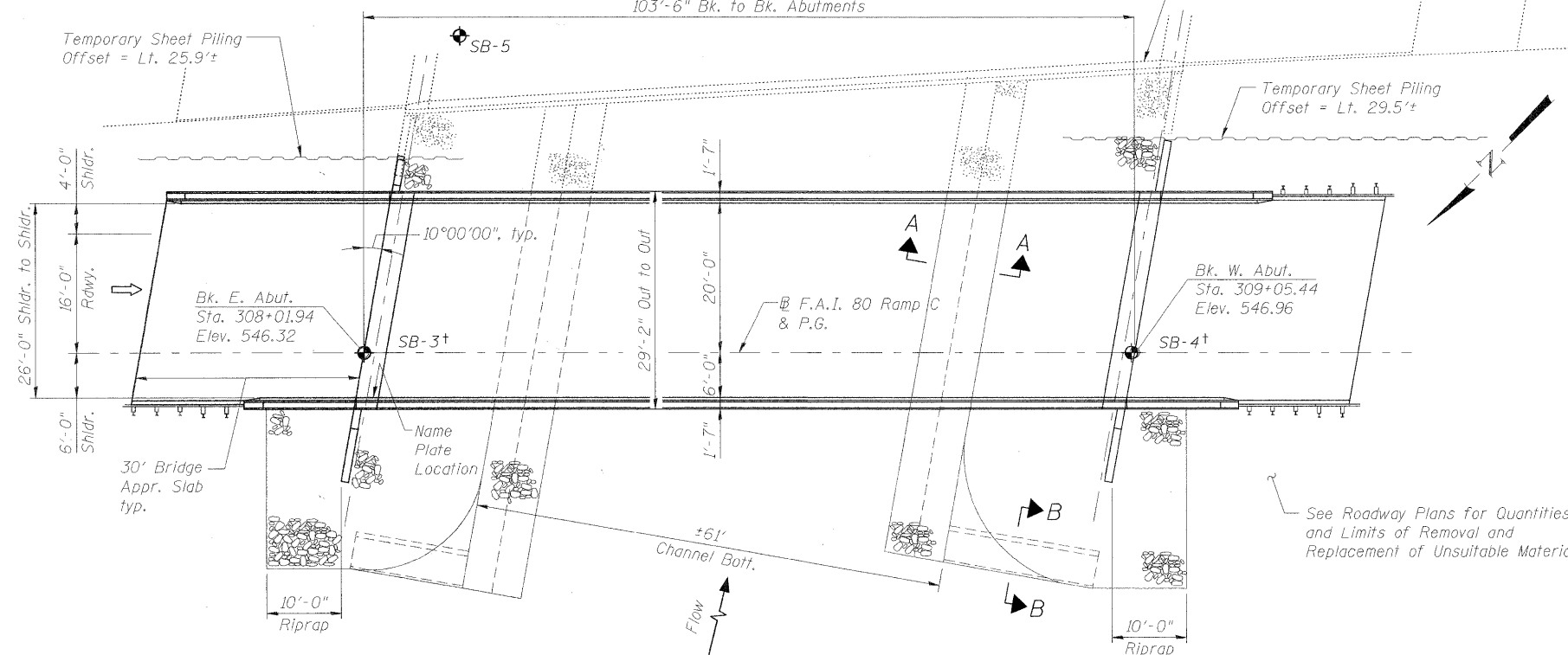
NAME PLATE
See Std. 515001



SECTION A-A



SECTION B-B



PLAN

LEGEND

- ◆ - Soil Boring
- ▨ - Channel Excavation (See Roadway Plans)
- + - Hand Auger Boring

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

WATERWAY INFORMATION

Drainage Area = 30.30 S.M. Low Grade Elev. 547.07 @ Sta. 308+82.89

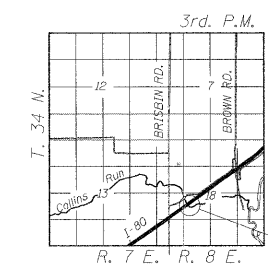
Flood Yr.	Freq. Q	C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head - Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	10	1227	-	470.4	536.9	0.33	0.33	537.2	537.2
Base	50	1801	494.1	561.9	537.8	0.39	0.23	538.2	538.1
Overtopping	100	2031	522.0	597.4	538.2	0.42	0.29	538.6	538.5
Max. Calc.	500	2560	576.9	670.6	538.8	0.42	0.36	539.3	539.2

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

Ralph E. Anderson
ENGINEER OF BRIDGES AND STRUCTURES



Catherine M. Malone



LOCATION SKETCH

GENERAL PLAN AND ELEVATION
F.A.I. 80 RAMP C OVER
COLLINS RUN, SEC. (32,47-4) HBK-4
GRUNDY COUNTY
STATION 308+53.69
STRUCTURE NO. 032-0118

LOCHNER

H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 1 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	333
FED. ROAD DIST. NO.			ILLINOIS	FED. AID PROJECT	
* FAI 80 & FAS 297 / FAU 392					

GENERAL NOTES

1. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.
2. Reinforcement bars designated (E) shall be epoxy coated.
3. Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.
4. The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.
5. The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.
6. Slip forming of the parapets is not allowed.
7. If the Contractor chooses to alter the temporary cantilevered sheet piling design requirements shown on the plans, a design submittal including plan details and calculations will be required for review and acceptance by the Engineer.

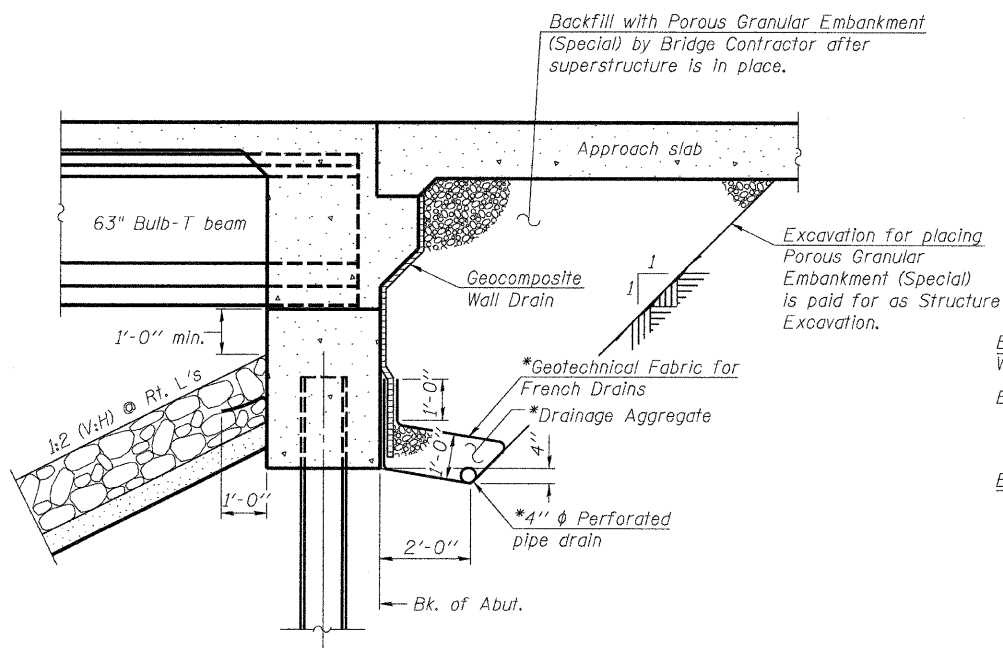
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Porous Granular Embankment, Special	Cu. Yd.		180	180
Stone Riprap, Class A4	Sq. Yd.		558	558
Filter Fabric	Sq. Yd.		689	689
Concrete Removal	Cu. Yd.		0.8	0.8
Structure Excavation	Cu. Yd.		10	10
Concrete Structures	Cu. Yd.		52.0	52.0
Concrete Superstructure	Cu. Yd.	235.2		235.2
Bridge Deck Grooving	Sq. Yd.	436		436
Concrete Encasement	Cu. Yd.		4.8	4.8
Protective Coat	Sq. Yd.	597		597
Furnishing and Erecting Precast Prestressed Concrete Bulb T-Beams, 63"	Foot	611		611
Reinforcement Bars, Epoxy Coated	Pound	43,950	8,510	52,460
Bar Splicers	Each	64		64
Furnishing Steel Piles HP12X53	Foot		220	220
Driving Piles	Foot		220	220
Test Pile Steel HP12X53	Each		1	1
Pile Shoes	Each		14	14
Temporary Sheet Piling	Sq. Ft.		1,850	1,850
Name Plates	Each	1		1
Geocomposite Wall Drain	Sq. Yd.		79	79
Pipe Underdrain for Structures 4"	Foot			116
Conduit Embedded in Structure, 2" Dia., PVC	Foot	104		

INDEX OF SHEETS

SHEET NO.	TITLE
1	GENERAL PLAN & ELEVATION
2	GENERAL NOTES, INDEX OF SHEETS & BILL OF MATERIAL
3	TOP OF SLAB ELEVATION PLAN
4	TOP OF SLAB ELEVATIONS
5	TOP OF APPROACH SLAB ELEVATIONS
6	DECK PLAN & CROSS SECTION
7	DIAPHRAGM DETAILS
8	SUPERSTRUCTURE DETAILS
9	BRIDGE APPROACH SLAB DETAILS I
10	BRIDGE APPROACH SLAB DETAILS II
11	FRAMING PLAN & DETAILS
12	63" PPC BULB T-BEAM
13	63" PPC BULB T-BEAM DETAILS
14	WEST ABUTMENT PLAN & ELEVATION
15	EAST ABUTMENT PLAN & ELEVATION
16	HP PILE DETAILS
17	BAR SPLICER ASSEMBLY DETAILS
18	SOIL BORING LOGS I
19	SOIL BORING LOGS II

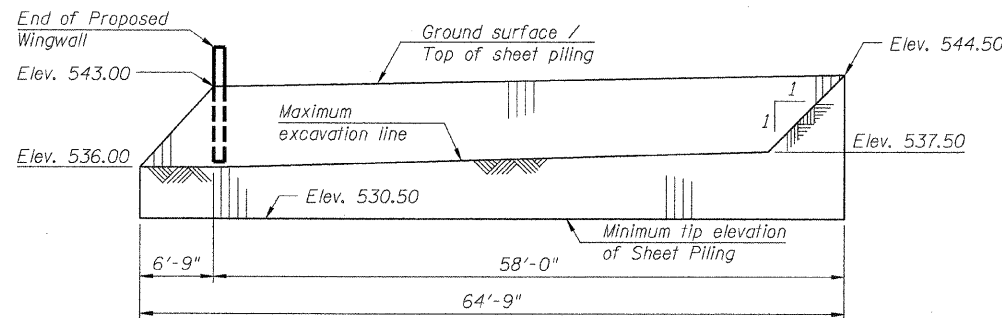


ABUTMENT DRAINAGE DETAIL

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

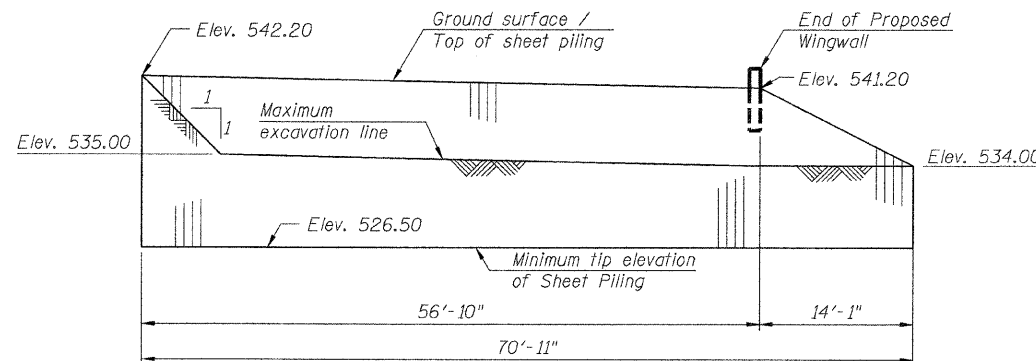
*Included in the cost of Pipe Underdrains for Structures 4".

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



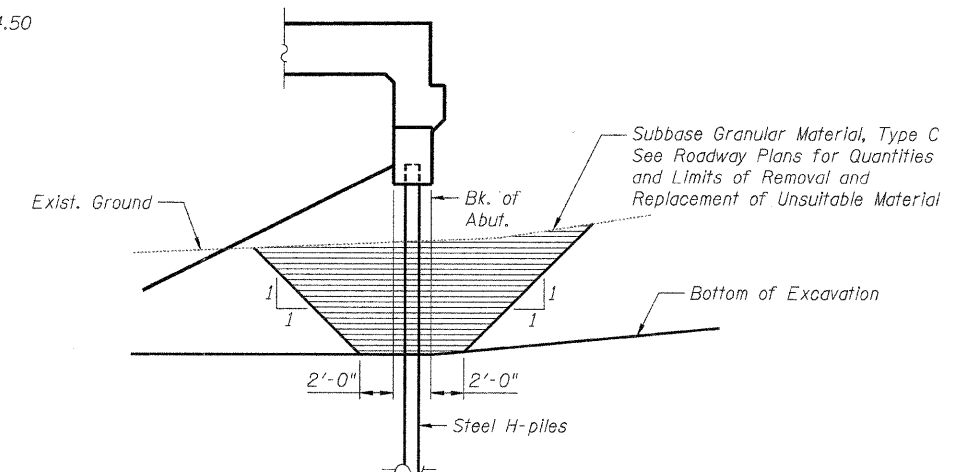
TEMPORARY SHEET PILING

East Abutment - Looking North
See Sheet 1 for plan location of sheeting.



TEMPORARY SHEET PILING

West Abutment - Looking North
See Sheet 1 for plan location of sheeting.



SECTION THRU ABUTMENT

**GENERAL NOTES, INDEX OF SHEETS & BILL OF MATERIAL
STRUCTURE NO. 032-0118**

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER

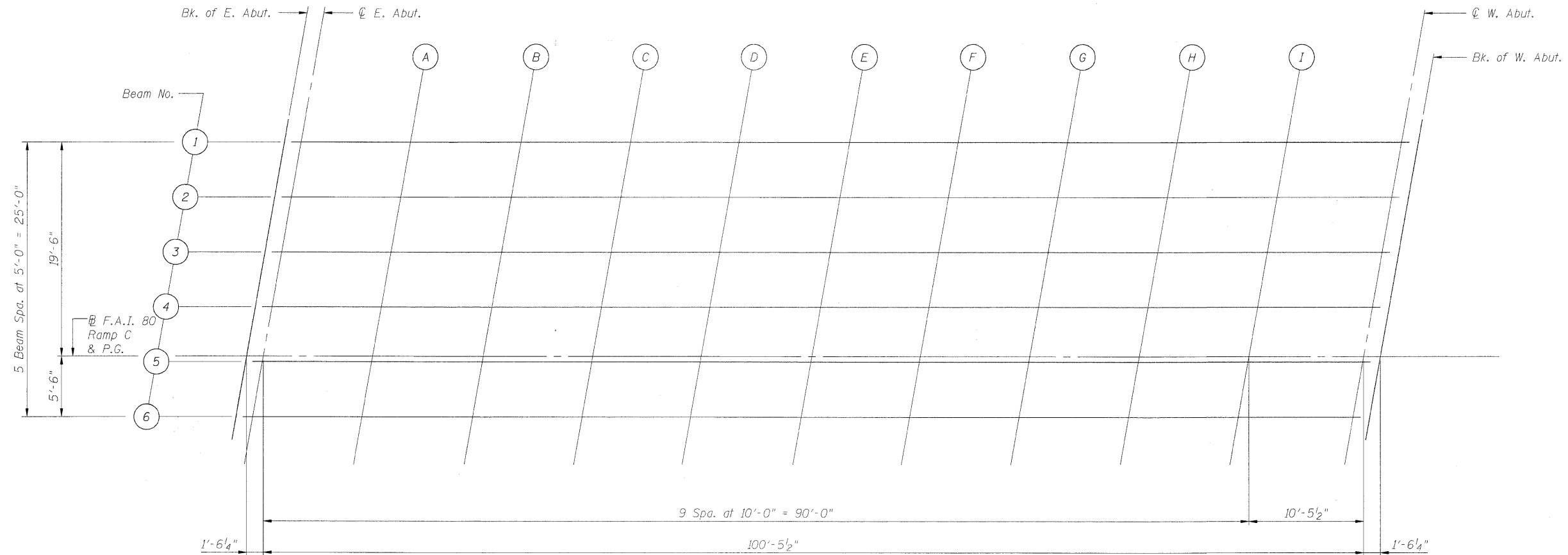
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO.	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2 OF 19 SHEETS	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	334
			CONTRACT NO. 66408		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PLAN

TOP OF SLAB ELEVATION PLAN
STRUCTURE NO. 032-0118

DESIGNED -	LJB
CHECKED -	CMM
DRAWN -	GJS
CHECKED -	CMM

LOCHNER

H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 3 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	335
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT		
CONTRACT NO. 66408					

* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. E. Abut.	308+05.38	-19.50	546.75	546.75
CL E. Abut.	308+06.90	-19.50	546.76	546.76
A	308+16.90	-19.50	546.82	546.84
B	308+26.90	-19.50	546.88	546.92
C	308+36.90	-19.50	546.94	547.00
D	308+46.90	-19.50	547.00	547.07
E	308+56.90	-19.50	547.06	547.13
F	308+66.90	-19.50	547.12	547.19
G	308+76.90	-19.50	547.18	547.24
H	308+86.90	-19.50	547.25	547.29
I	308+96.90	-19.50	547.31	547.33
CL W. Abut.	309+07.36	-19.50	547.37	547.37
Bk. W. Abut.	309+08.88	-19.50	547.38	547.38

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. E. Abut.	308+04.50	-14.50	546.64	546.64
CL E. Abut.	308+06.02	-14.50	546.65	546.65
A	308+16.02	-14.50	546.71	546.73
B	308+26.02	-14.50	546.77	546.81
C	308+36.02	-14.50	546.83	546.89
D	308+46.02	-14.50	546.89	546.96
E	308+56.02	-14.50	546.95	547.02
F	308+66.02	-14.50	547.01	547.08
G	308+76.02	-14.50	547.07	547.13
H	308+86.02	-14.50	547.14	547.18
I	308+96.02	-14.50	547.20	547.22
CL W. Abut.	309+06.47	-14.50	547.26	547.26
Bk. W. Abut.	309+08.00	-14.50	547.27	547.27

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. E. Abut.	308+03.62	-9.50	546.53	546.53
CL E. Abut.	308+05.14	-9.50	546.54	546.54
A	308+15.14	-9.50	546.60	546.62
B	308+25.14	-9.50	546.66	546.70
C	308+35.14	-9.50	546.72	546.78
D	308+45.14	-9.50	546.78	546.85
E	308+55.14	-9.50	546.84	546.91
F	308+65.14	-9.50	546.90	546.97
G	308+75.14	-9.50	546.97	547.02
H	308+85.14	-9.50	547.03	547.07
I	308+95.14	-9.50	547.09	547.11
CL W. Abut.	309+05.59	-9.50	547.15	547.15
Bk. W. Abut.	309+07.12	-9.50	547.16	547.16

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. E. Abut.	308+02.73	-4.50	546.43	546.43
CL E. Abut.	308+04.26	-4.50	546.43	546.43
A	308+14.26	-4.50	546.49	546.51
B	308+24.26	-4.50	546.55	546.59
C	308+34.26	-4.50	546.61	546.67
D	308+44.26	-4.50	546.67	546.74
E	308+54.26	-4.50	546.73	546.80
F	308+64.26	-4.50	546.79	546.86
G	308+74.26	-4.50	546.86	546.91
H	308+84.26	-4.50	546.92	546.96
I	308+94.26	-4.50	546.98	547.00
CL W. Abut.	309+04.71	-4.50	547.04	547.04
Bk. W. Abut.	309+06.23	-4.50	547.05	547.05

F.A.I. 80 RAMP C & P.G.

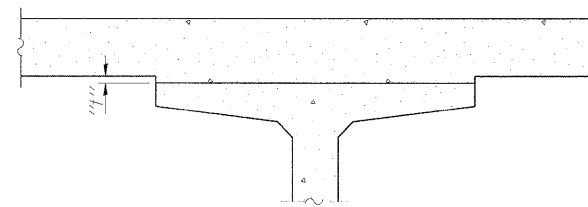
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. E. Abut.	308+01.94	0.00	546.33	546.33
CL E. Abut.	308+03.46	0.00	546.34	546.34
A	308+13.46	0.00	546.39	546.41
B	308+23.46	0.00	546.45	546.49
C	308+33.46	0.00	546.51	546.57
D	308+43.46	0.00	546.57	546.64
F	308+53.46	0.00	546.64	546.70
F	308+63.46	0.00	546.70	546.76
G	308+73.46	0.00	546.76	546.81
H	308+83.46	0.00	546.82	546.86
I	308+93.46	0.00	546.88	546.90
CL W. Abut.	309+03.92	0.00	546.94	546.94
Bk. W. Abut.	309+05.44	0.00	546.95	546.95

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. E. Abut.	308+01.85	0.50	546.32	546.32
CL E. Abut.	308+03.37	0.50	546.32	546.32
A	308+13.37	0.50	546.38	546.40
B	308+23.37	0.50	546.44	546.48
C	308+33.37	0.50	546.50	546.56
D	308+43.37	0.50	546.56	546.63
E	308+53.37	0.50	546.62	546.69
F	308+63.37	0.50	546.69	546.75
G	308+73.37	0.50	546.75	546.80
H	308+83.37	0.50	546.81	546.85
I	308+93.37	0.50	546.87	546.89
CL W. Abut.	309+03.83	0.50	546.93	546.93
Bk. W. Abut.	309+05.35	0.50	546.94	546.94

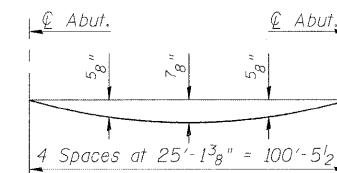
BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. E. Abut.	308+00.97	5.50	546.21	546.21
CL E. Abut.	308+02.49	5.50	546.22	546.22
A	308+12.49	5.50	546.27	546.29
B	308+22.49	5.50	546.33	546.37
C	308+32.49	5.50	546.39	546.45
D	308+42.49	5.50	546.45	546.52
E	308+52.49	5.50	546.51	546.58
F	308+62.49	5.50	546.58	546.64
G	308+72.49	5.50	546.64	546.69
H	308+82.49	5.50	546.70	546.74
I	308+92.49	5.50	546.76	546.78
CL W. Abut.	309+02.95	5.50	546.82	546.82
Bk. W. Abut.	309+04.47	5.50	546.83	546.83



To determine "t": After all precast prestressed beams have 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 Deflections" show below, minus slab thickness, equals the fillet heights "t" above top flanges of beams.

FILLET HEIGHTS



DEAD LOAD DEFLECTION DIAGRAM
(Includes weight of concrete, excluding beams).

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.

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER

H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 4 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	336
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT		
CONTRACT NO. 66408					

TOP OF SLAB ELEVATIONS
STRUCTURE NO. 032-0118

* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOUTH EDGE OF SHOULDER

Location	Station	Offset	Theoretical Grade Elevations
End E. Appr. Pavement	307+75.47	-20.000	546.60
A	307+85.47	-20.000	546.65
B	307+95.47	-20.000	546.70
Bk. E. Abut.	308+05.47	-20.000	546.76
Bk. W. Abut.	309+08.97	-20.000	547.39
C	309+18.97	-20.000	547.45
D	309+28.97	-20.000	547.51
End W. Appr. Pavement	309+38.97	-20.000	547.57

NORTH EDGE OF PAVEMENT, @ F.A.I. 80 RAMP C & P.G.

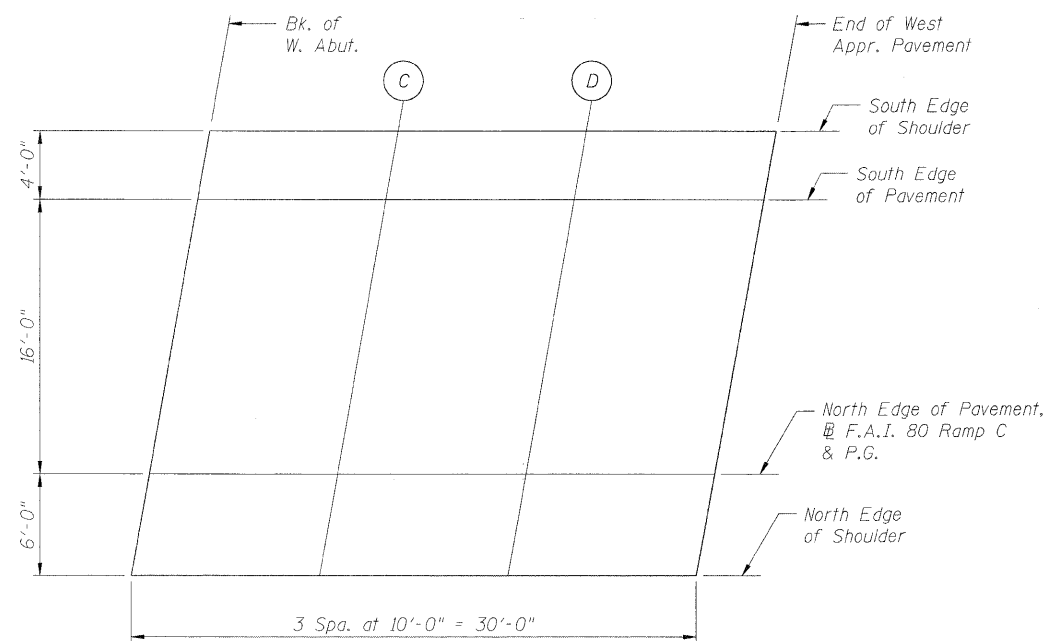
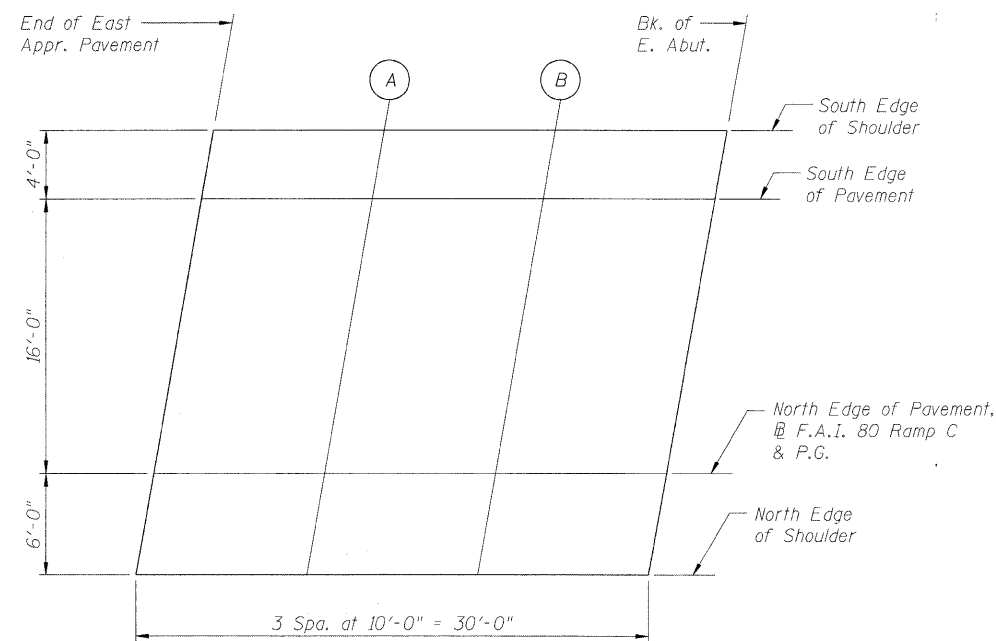
Location	Station	Offset	Theoretical Grade Elevations
End E. Appr. Pavement	307+71.94	0.000	546.17
A	307+81.94	0.000	546.22
B	307+91.94	0.000	546.26
Bk. E. Abut.	308+01.94	0.000	546.32
Bk. W. Abut.	309+05.44	0.000	546.95
C	309+15.44	0.000	547.01
D	309+25.44	0.000	547.07
End W. Appr. Pavement	309+35.44	0.000	547.14

SOUTH EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevations
End E. Appr. Pavement	307+74.76	-16.000	546.51
A	307+84.76	-16.000	546.57
B	307+94.76	-16.000	546.61
Bk. E. Abut.	308+04.76	-16.000	546.67
Bk. W. Abut.	309+08.26	-16.000	547.30
C	309+18.26	-16.000	547.36
D	309+28.26	-16.000	547.42
End W. Appr. Pavement	309+38.26	-16.000	547.49

NORTH EDGE OF SHOULDER

Location	Station	Offset	Theoretical Grade Elevations
End E. Appr. Pavement	307+70.88	6.000	546.04
A	307+80.88	6.000	546.09
B	307+90.88	6.000	546.13
Bk. E. Abut.	308+00.88	6.000	546.19
Bk. W. Abut.	309+04.38	6.000	546.82
C	309+14.38	6.000	546.88
D	309+24.38	6.000	546.94
End W. Appr. Pavement	309+34.38	6.000	547.00



PLAN

TOP OF APPROACH SLAB ELEVATIONS
STRUCTURE NO. 032-0118

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER

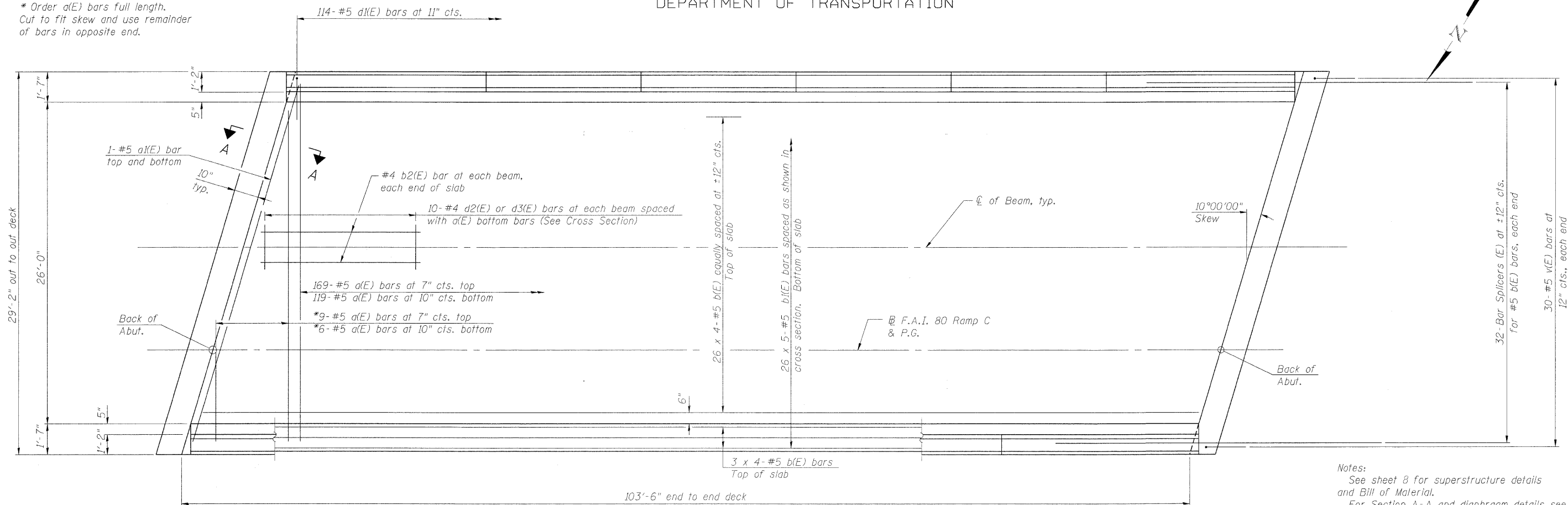
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 5 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	337
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

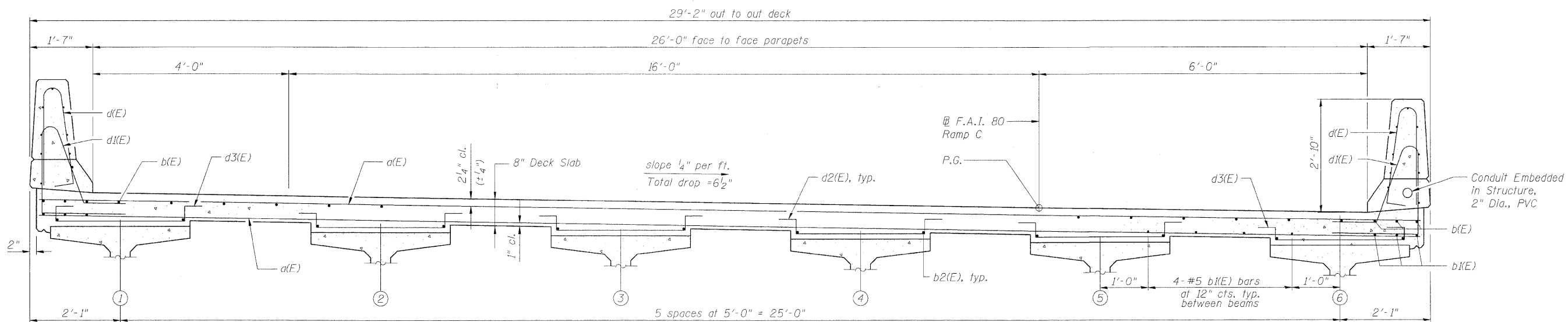
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

* Order a(E) bars full length.
Cut to fit skew and use remainder
of bars in opposite end.



PLAN

Notes:
See sheet 8 for superstructure details and Bill of Material.
For Section A-A and diaphragm details see sheet 7.
Bars indicated thus 20 x 3- #5 etc. indicates 20 lines of bars with 3 lengths per line.
See sheet 8 for parapet reinforcement.



CROSS SECTION
(Looking West)

DECK PLAN AND CROSS SECTION
STRUCTURE NO. 032-0118

DESIGNED -	LJB
CHECKED -	CMM
DRAWN -	GJS
CHECKED -	CMM

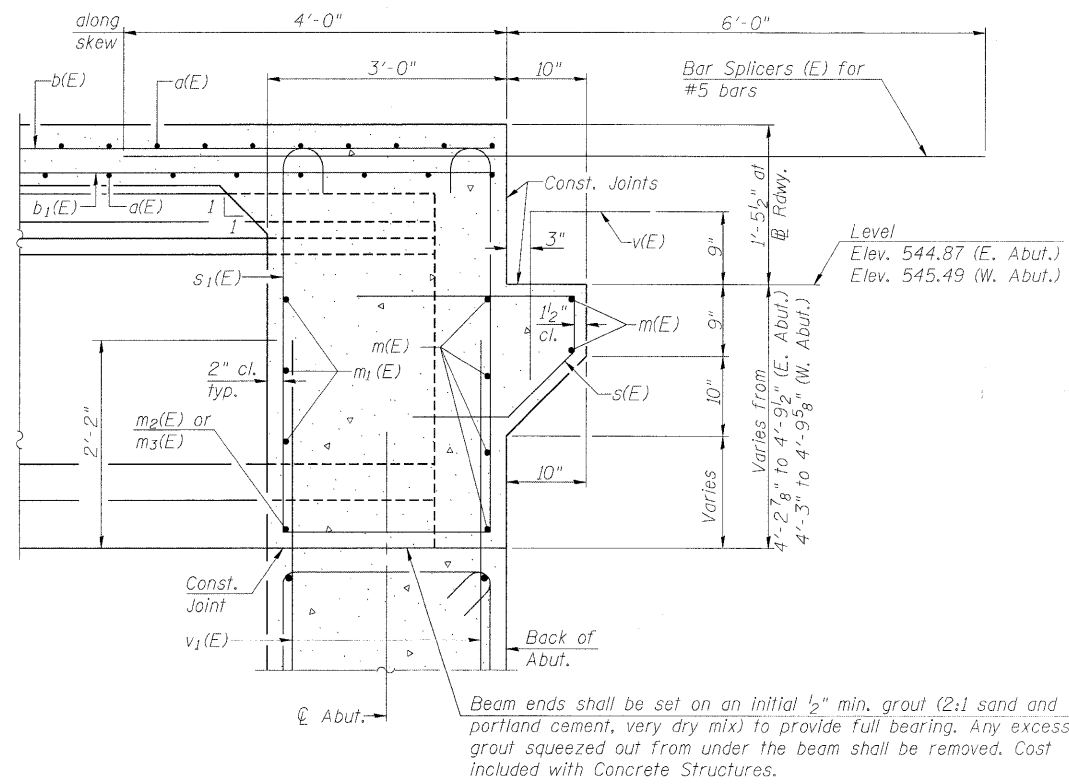
MINIMUM BAR LAPS
#5 bar = 3'-3"

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CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 6 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	338
CONTRACT NO. 66408					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

* FAI 80 & FAS 297 / FAU 392

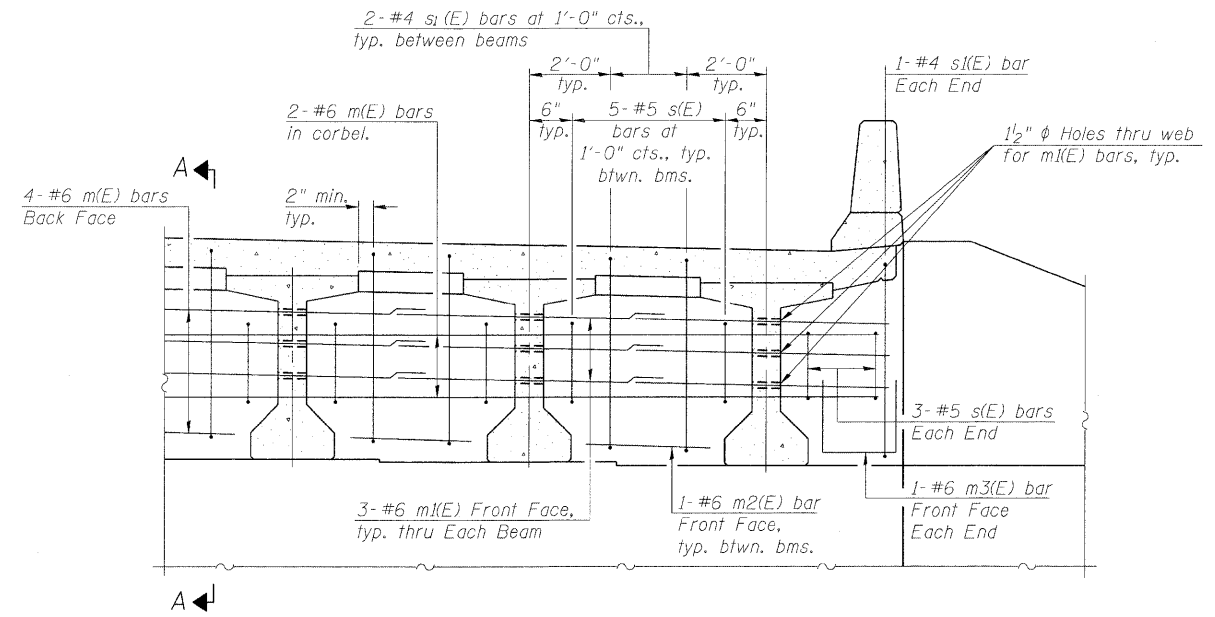
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SECTION A-A

Dimensions at right angles to abutment, except as shown.

- Notes:
- Reinforcement bars in diaphragm are billed with superstructure on sheet 8.
 - Concrete in diaphragm is included with Concrete Superstructure on sheet 8.
 - For details of bars s(E) and s1(E) see sheet 8.
 - The s(E) and s1(E) bars shall be placed parallel to the beams.
 - Spacing for these bars shall be at right angles to the beams.



DIAPHRAGM ELEVATION AT ABUTMENT

MIN. BAR LAP

#6 bar = 2'-9"

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER

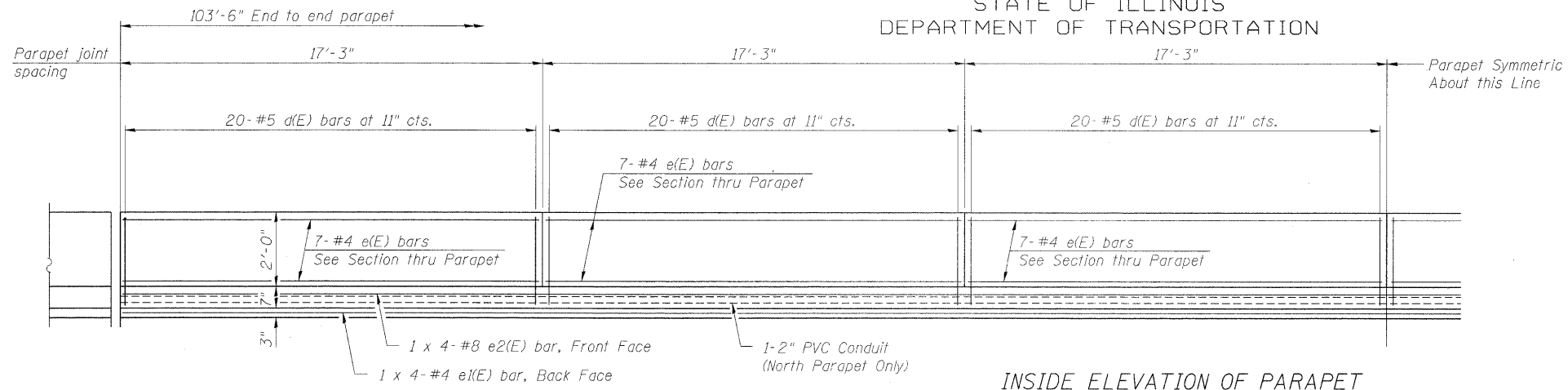
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 7 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	339
	CONTRACT NO. 66408				
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

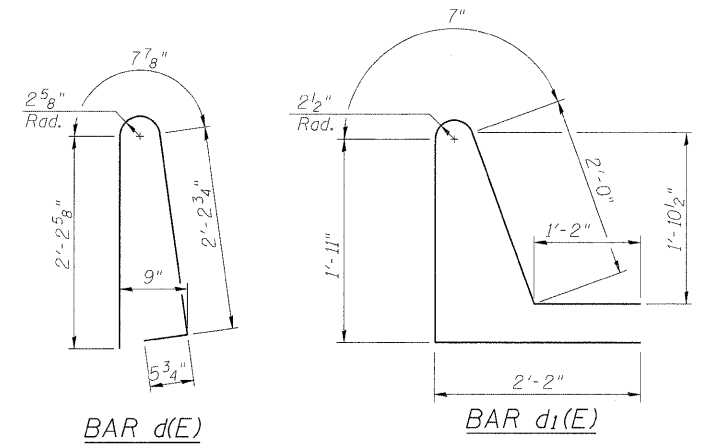
* FAI 80 & FAS 297 / FAU 392

DIAPHRAGM DETAILS
STRUCTURE NO. 032-0118

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

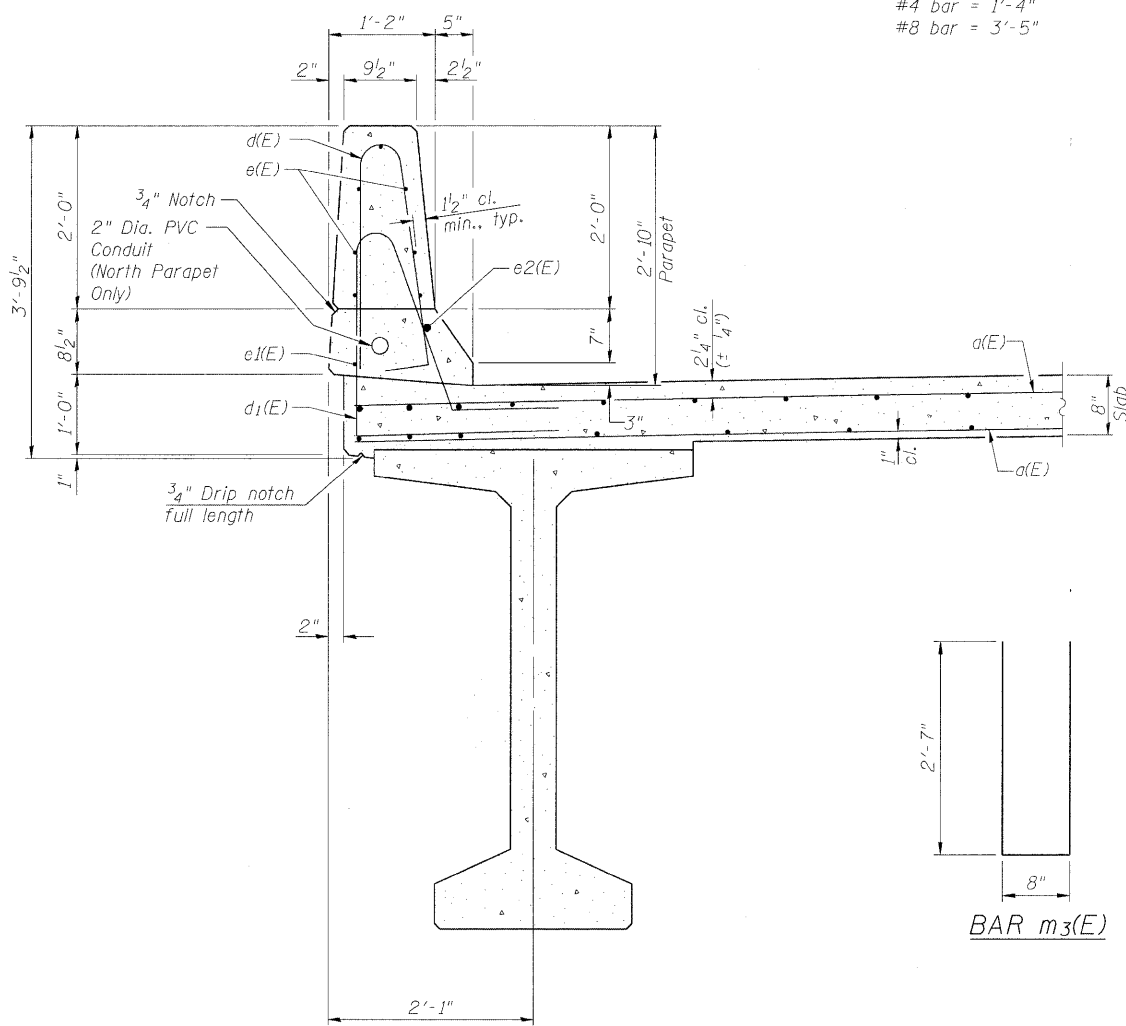


INSIDE ELEVATION OF PARAPET

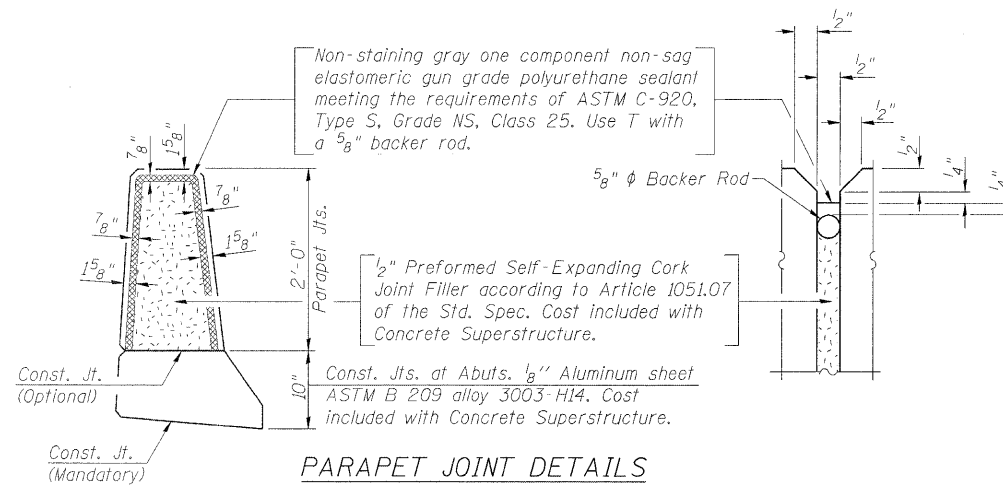


MINIMUM BAR LAP

(Parapet)
#4 bar = 1'-4"
#8 bar = 3'-5"



SECTION THRU PARAPET

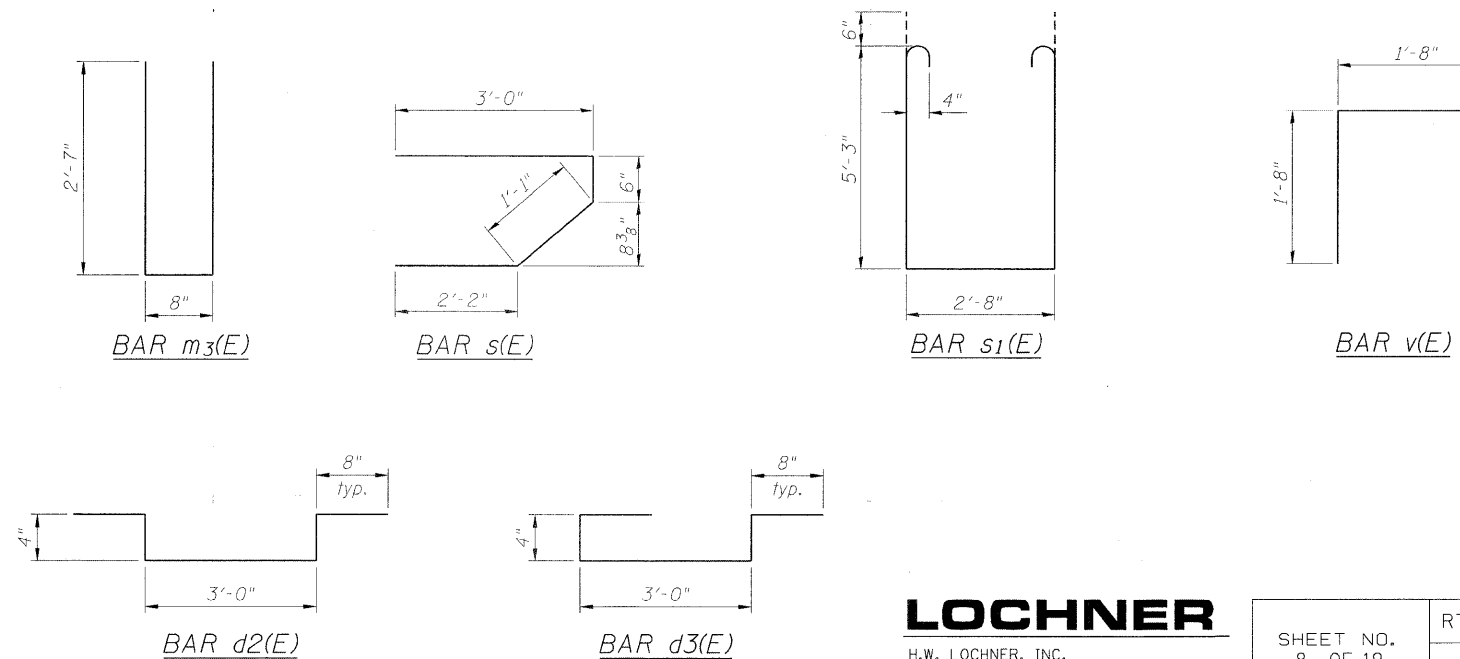


PARAPET JOINT DETAILS

SUPERSTRUCTURE
BILL OF MATERIAL

Bar	No.	Size	Length	Shape	
a(E)	303	#5	28'-6"	—	
a1(E)	4	#5	28'-11"	—	
b(E)	128	#5	28'-3"	—	
b1(E)	130	#5	23'-3"	—	
b2(E)	24	#4	8'-0"	—	
d(E)	240	#5	5'-7"	⌈	
d1(E)	228	#5	7'-10"	⌈	
d2(E)	80	#4	5'-0"	⌈	
d3(E)	40	#4	5'-0"	⌈	
e(E)	84	#4	16'-11"	—	
e1(E)	8	#4	26'-10"	—	
e2(E)	8	#8	28'-5"	—	
m(E)	12	#6	29'-3"	—	
m1(E)	36	#6	7'-10"	—	
m2(E)	10	#6	2'-6"	—	
m3(E)	4	#6	5'-10"	⌈	
s(E)	62	#5	6'-9"	⌈	
s1(E)	24	#4	14'-2"	⌈	
v(E)	60	#5	3'-4"	⌈	
Reinforcement Bars, Epoxy Coated				Pound	23,440
Concrete Superstructure				Cu. Yds.	142.9

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



SUPERSTRUCTURE DETAILS
STRUCTURE NO. 032-0118

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER

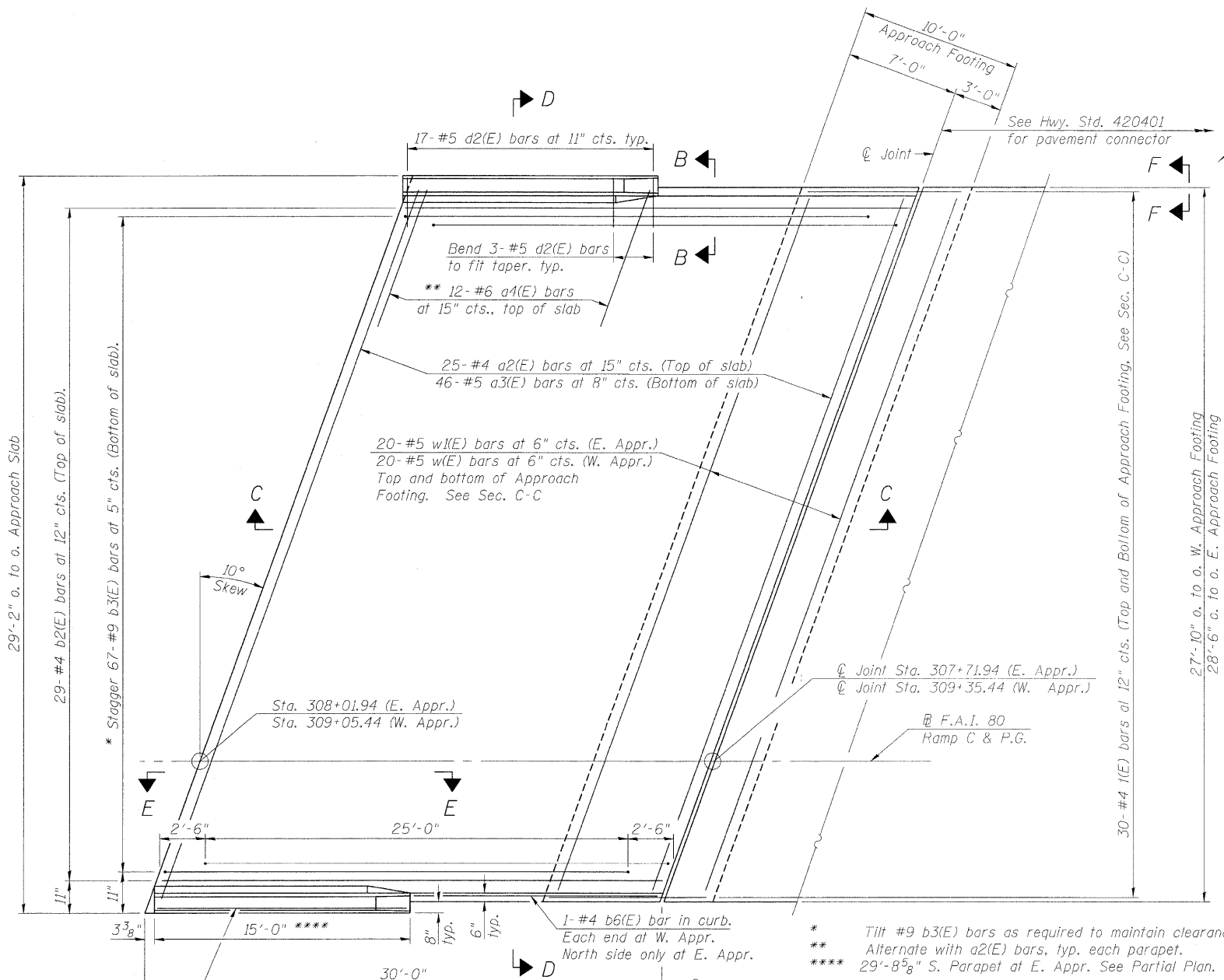
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 8 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & C(N)	GRUNDY	351	340
	CONTRACT NO. 66408				
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

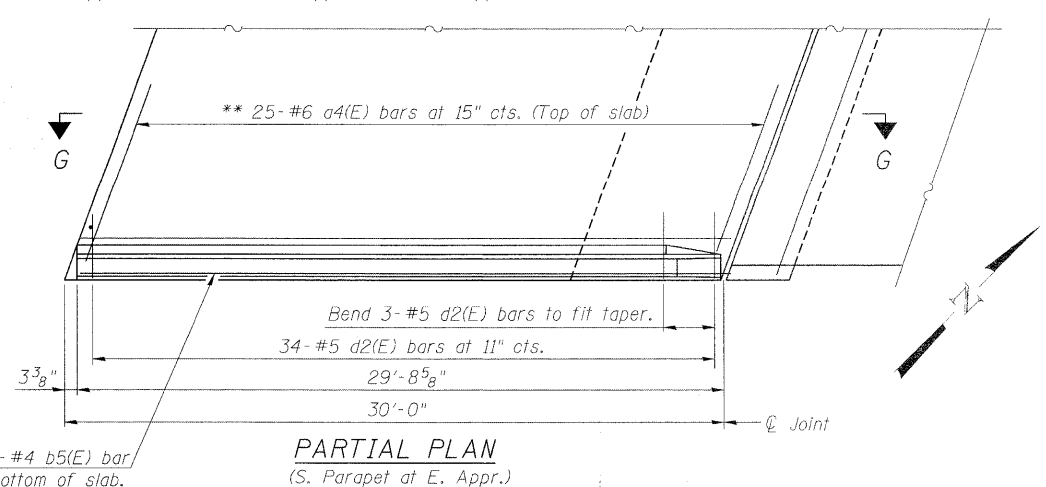
* FAI 80 & FAS 297 / FAU 392

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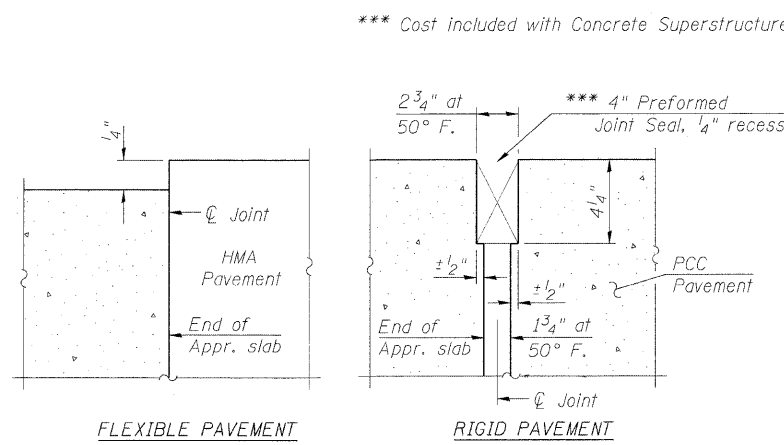
Notes:
See sheet 10 for Sections C-C & D-D and Views E-E and G-G.
a(E), a1(E), and w(E) bar spacings measured perpendicular to ϕ Rdwy.



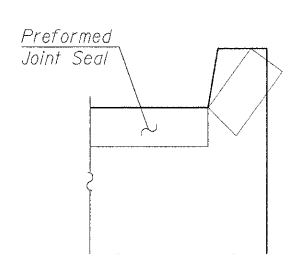
PLAN
(West Approach shown - East Approach similar, opposite hand).



PARTIAL PLAN
(S. Parapet at E. Appr.)

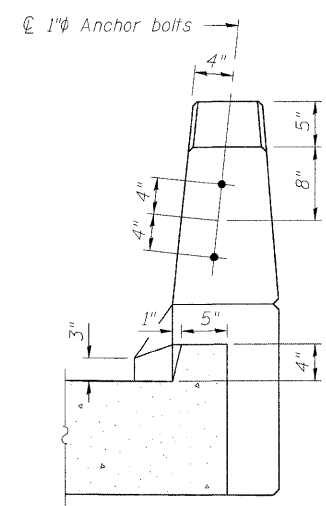


DETAIL A



VIEW F-F

Angle Preformed Joint Seal at 45° at curbs when req'd for drainage.



VIEW B-B

(Exit ends only)

DESIGNED - BJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

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20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 9 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	341
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

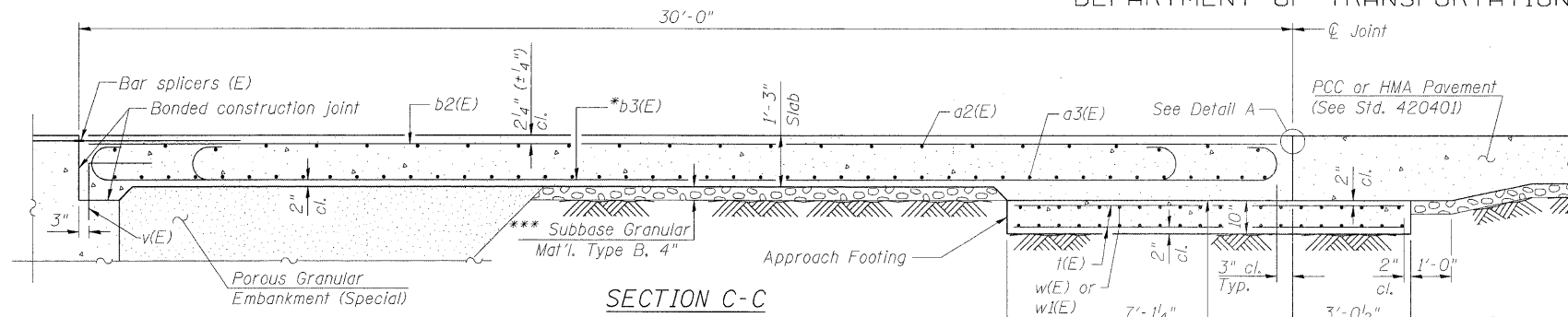
BRIDGE APPROACH SLAB DETAILS I
STRUCTURE NO. 032-0118

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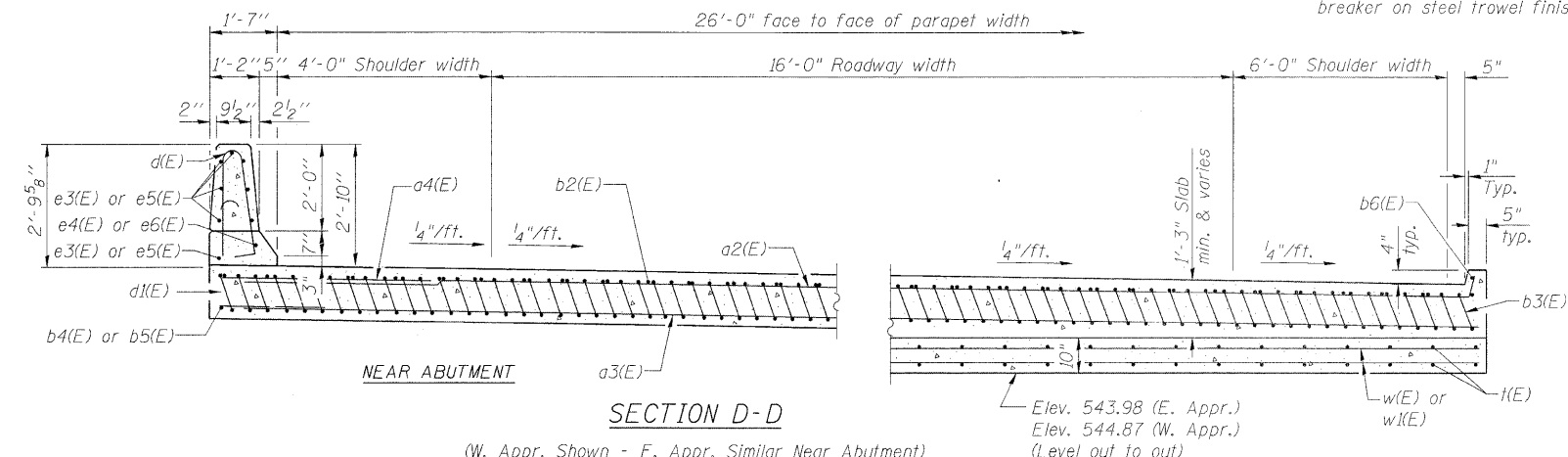
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Notes:

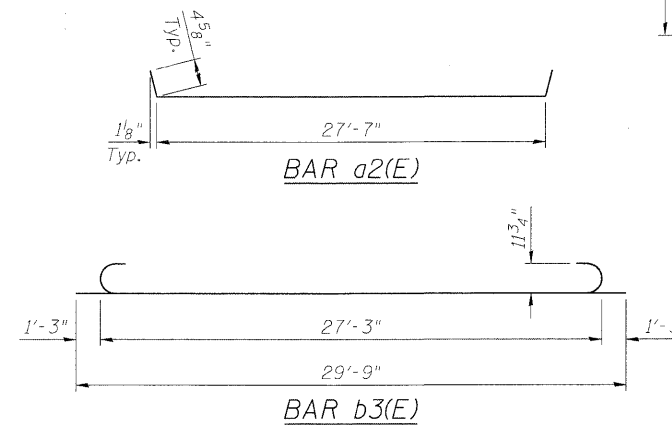
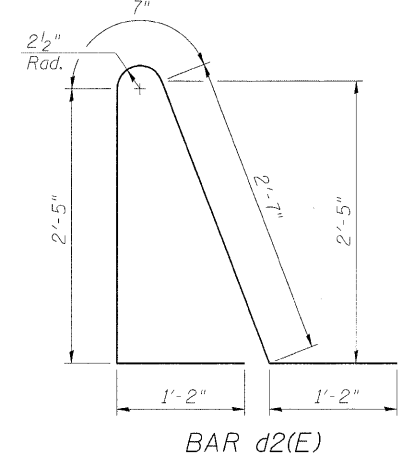
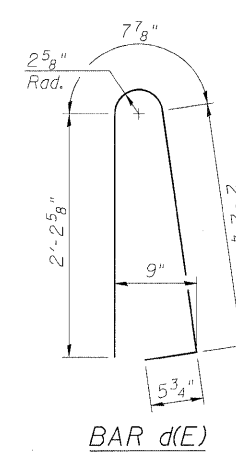
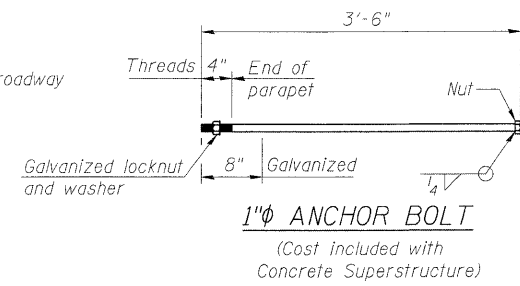
See sheet 9 for Detail A and View B-B.
Approach slab and parapet concrete shall be paid for as Concrete Superstructure.
Approach footing concrete shall be paid for as Concrete Structures.
Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
For v(E) bar details, see sheet 8.
The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.
For bar splicer details, see sheet 17.
Cost of excavation for approach footing included with Concrete Structures.
For Porous Granular Embankment (Special) and drainage treatment details, see sheet 2.



* Tilt #9 b3(E) bars as required to maintain clearance.
*** Cost included with Concrete Superstructure.

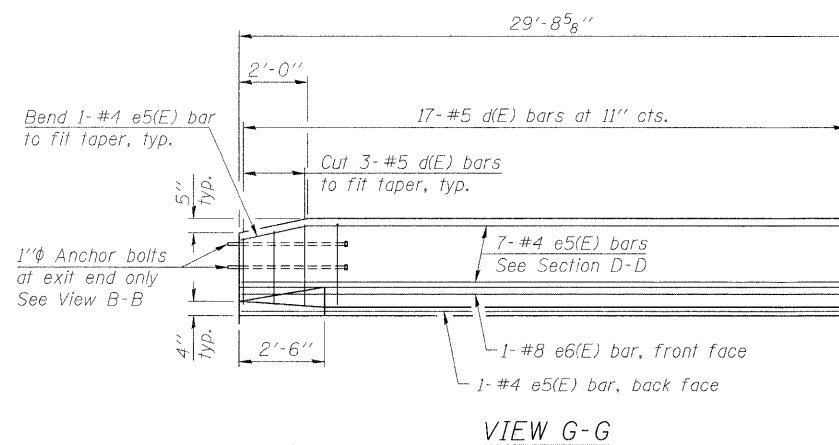
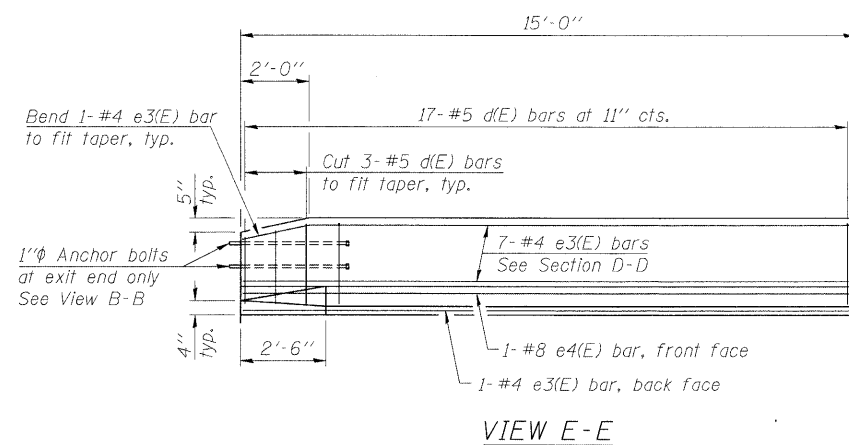


(W. Appr. Shown - E. Appr. Similar Near Abutment)
(See Plan for dimensions not shown)



TWO APPROACHES
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a2(E)	50	#4	28'-5"	—
a3(E)	92	#5	27'-11"	—
a4(E)	61	#6	6'-0"	—
b2(E)	58	#4	29'-8"	—
b3(E)	134	#9	29'-9"	—
b4(E)	3	#4	14'-8"	—
b5(E)	1	#4	29'-8"	—
b6(E)	3	#4	14'-3"	—
d(E)	85	#5	5'-7"	U
d2(E)	85	#5	7'-11"	U
e3(E)	24	#4	14'-8"	—
e4(E)	3	#8	14'-8"	—
e5(E)	8	#4	29'-4"	—
e6(E)	1	#8	29'-4"	—
l(E)	60	#4	9'-9"	—
w(E)	40	#5	27'-11"	—
w1(E)	40	#5	28'-7"	—
Concrete Superstructure		Cu. Yd.	92.3	
Concrete Structures		Cu. Yd.	17.6	
Reinforcement Bars, Epoxy Coated		Pound	23,260	



BRIDGE APPROACH SLAB DETAILS II
STRUCTURE NO. 032-0118

DESIGNED - BJN
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

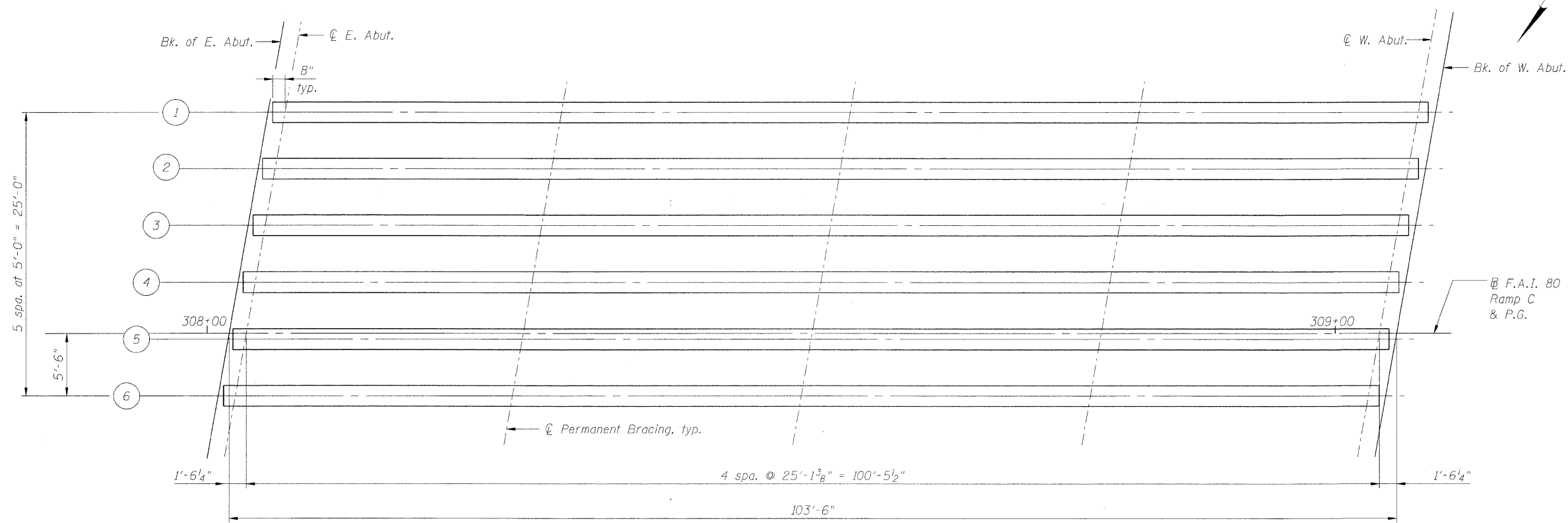
LOCHNER

H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 10 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	342
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

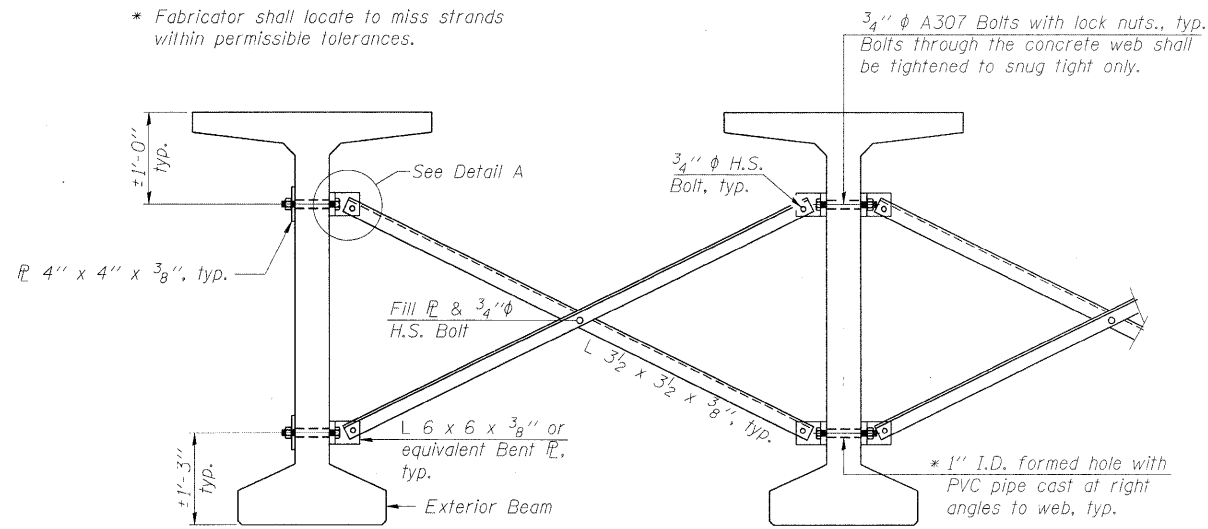
* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



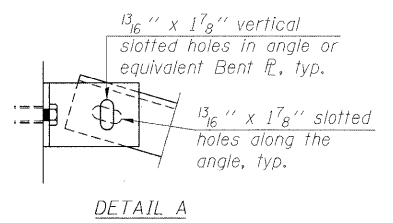
FRAMING PLAN

* Fabricator shall locate to miss strands within permissible tolerances.



Notes:
All material for bracing shall be hot dip galvanized according to AASHTO M111 unless otherwise noted.
Two hardened washers are required for each set of oversized holes.
All holes shall be 15/16" ϕ unless otherwise noted.
5/16" x 3" x 3" plate washers are required over all slotted holes.
All bolts shall be galvanized according to AASHTO M232.
Bracing shall be installed as beams are erected and tightened as soon as possible during erection.
Permanent bracing shall not be paid for separately, but shall be included in the cost of Furnishing and Erecting Precast Prestressed Concrete Bulb T-Beams.

PERMANENT BRACING DETAILS
FOR BULB-T BEAMS



INTERIOR BEAM MOMENT TABLE	
0.5 Span	
I	(in ⁴) 392,638
I'	(in ⁴) 740,825
S _b	(in ³) 12,224
S _b '	(in ³) 16,260
S _t	(in ³) 12,715
S _t '	(in ³) 42,478
DC1	(k/ft) 1.32
M _{DC1}	(k) 1668.4
DC2	(k/ft) 0.15
M _{DC2}	(k) 189.4
DW	(k/ft) 0.22
M _{DW}	(k) 273.5
M _{4 + 1M}	(k) 1429.3

INTERIOR BEAM REACTION TABLE	
R _{DC1}	(k) 66.4
R _{DC2}	(k) 7.5
R _{DW}	(k) 10.9
R _{4 + 1M}	(k) 119.0
R _{Total}	(k) 203.8

I: Non-composite moment of inertia of beam section (in.⁴).
I': Composite moment of inertia of beam section (in.⁴).
S_b: Non-composite section modulus for the bottom fiber of the prestressed beam (in.³).
S_b': Composite section modulus for the bottom fiber of the prestressed beam (in.³).
S_t: Non-composite section modulus for the top fiber of the prestressed beam (in.³).
S_t': Composite section modulus for the top fiber of the prestressed beam (in.³).
DC1: Un-factored non-composite dead load (kips/ft.).
M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).
DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
M_{4 + 1M}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

DESIGNED -	LJB
CHECKED -	CMM
DRAWN -	GJS
CHECKED -	CMM

FRAMING PLAN & DETAILS
STRUCTURE NO. 032-0118

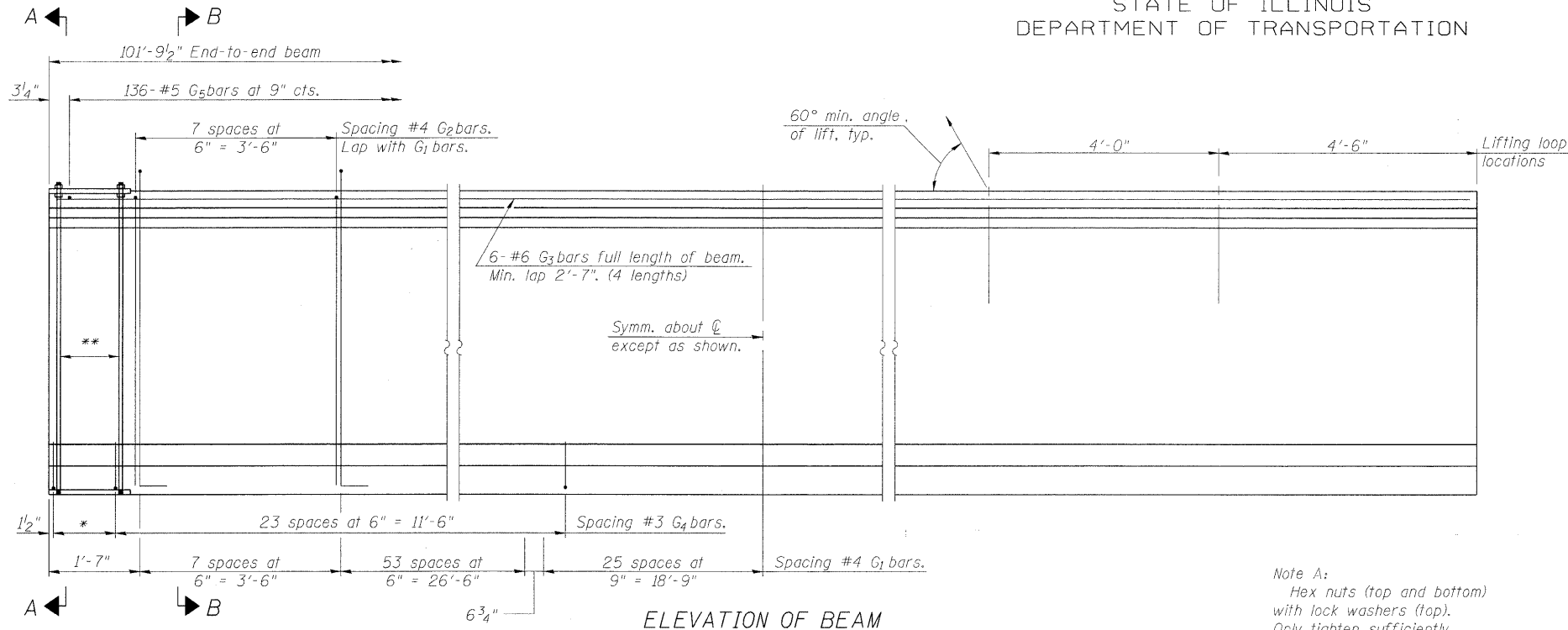
LOCHNER
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 11 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	343
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

* FAI 80 & FAS 297 / FAU 392

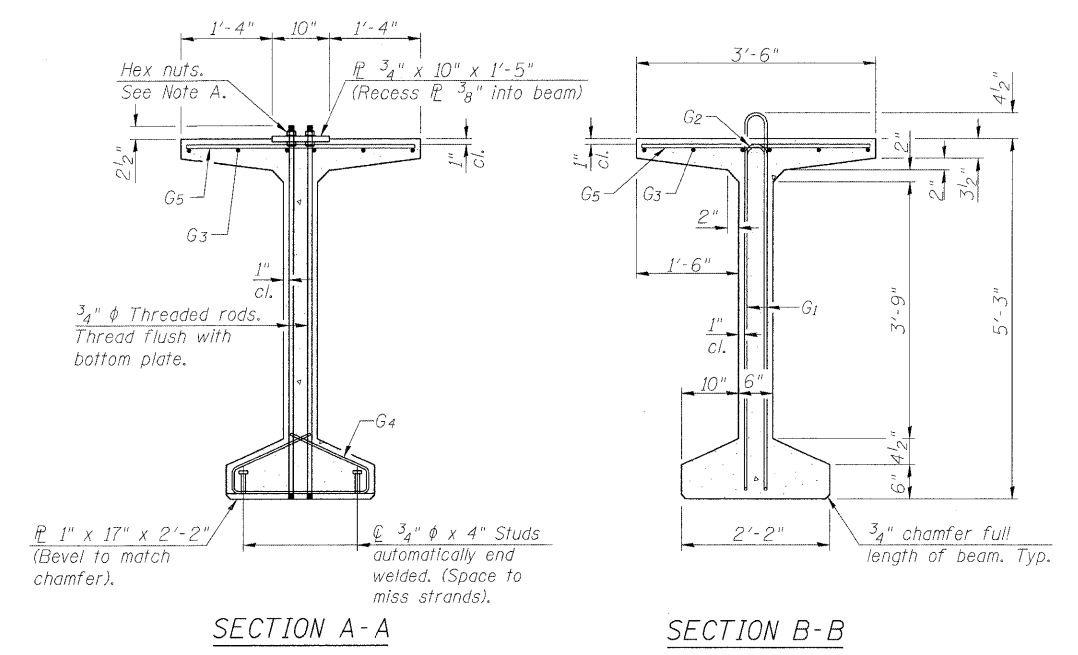
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ELEVATION OF BEAM
(Showing reinforcement & dimensions)

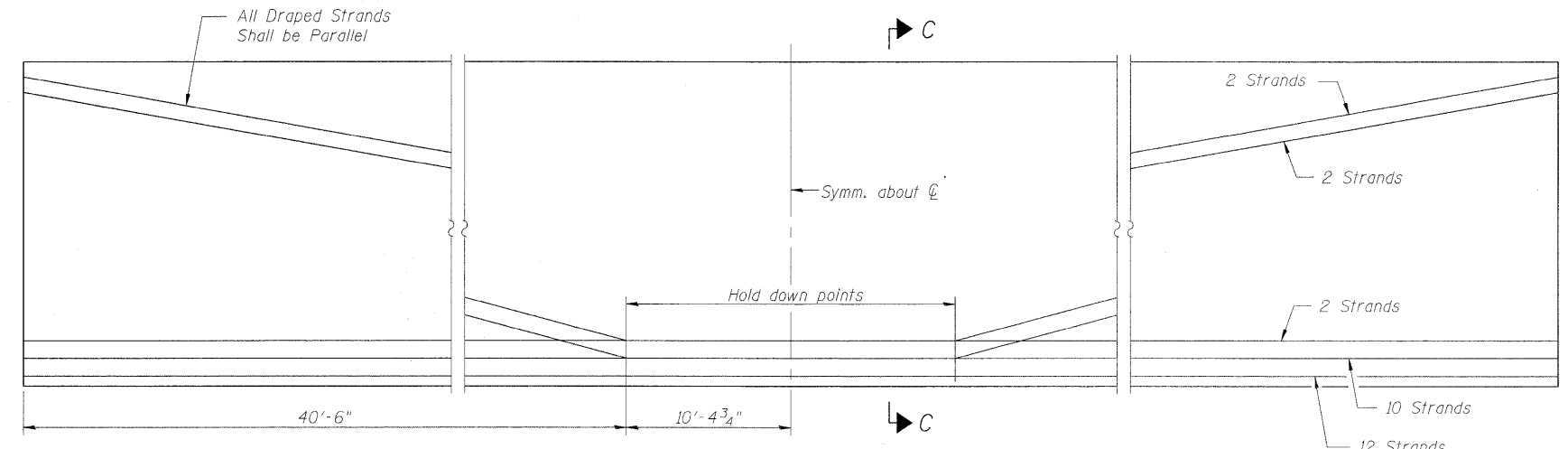
Note A:
Hex nuts (top and bottom) with lock washers (top). Only tighten sufficiently to compress lock washers.



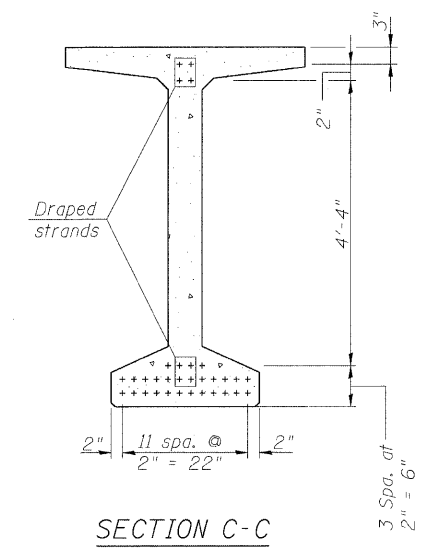
SECTION A-A

SECTION B-B

* 4 spaces at 3/4" = 1'-1".
** 5-3/4" φ threaded dowel rods at 3/4" cts., each face.



ELEVATION OF BEAM
(Showing prestressing steel)



SECTION C-C

*****BAR LIST
ONE BEAM ONLY**

Bar	No.	Size	Length	Shape
G ₁	173	#4	11'-11"	∩ L
G ₂	16	#4	10'-2"	∩
G ₃	24	#6	27'-4"	—
G ₄	56	#3	4'-11"	∩
G ₅	136	#5	3'-4"	—

***For information only

Notes:
See sheet 13 for additional details and Bill of Material.
Required release strength, f'cl, shall be 5,000 psi.

**63" PPC BULB T-BEAM
STRUCTURE NO. 032-0118**

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 12 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	344
CONTRACT NO. 66408					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

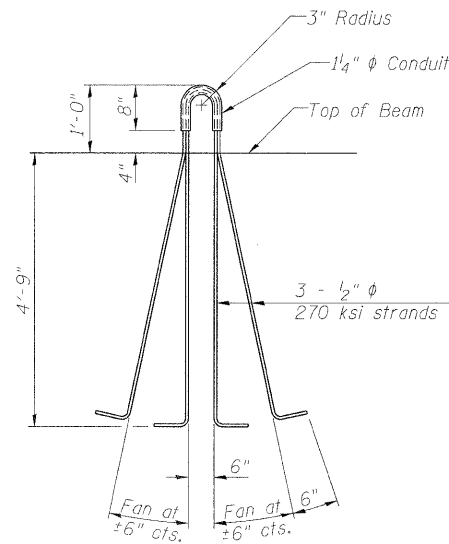
* FAI 80 & FAS 297 / FAU 392

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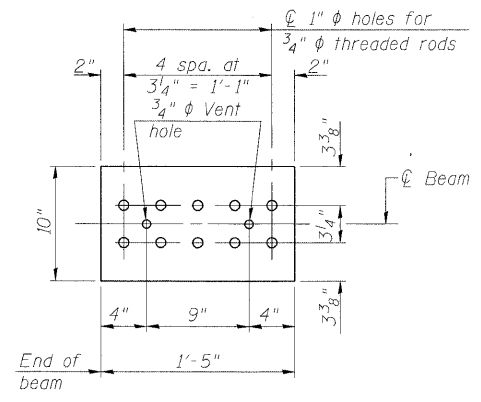
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NOTES

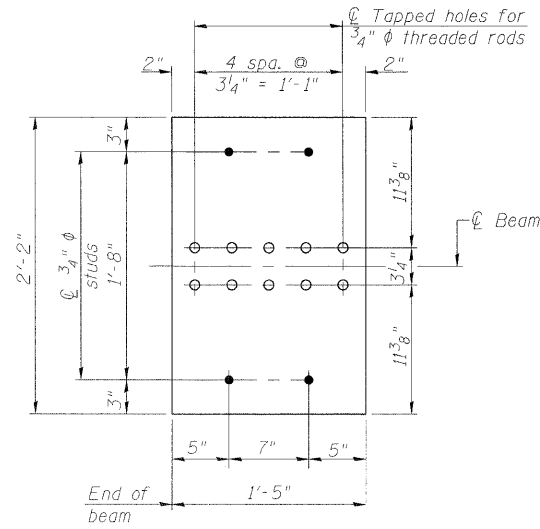
Inserts for $\frac{3}{4}$ " ϕ threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams.
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be $\frac{1}{2}$ " and the nominal cross-sectional area shall be 0.153 sq. in.
Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
A minimum $2\frac{1}{2}$ " ϕ lifting pin shall be used to engage the lifting loops during handling.
The top and bottom plates shall be AASHTO M270 Grade 50.
The bottom plates and studs shall be galvanized according to AASHTO M111.
Threaded rods shall be ASTM F 1554 Grade 55.



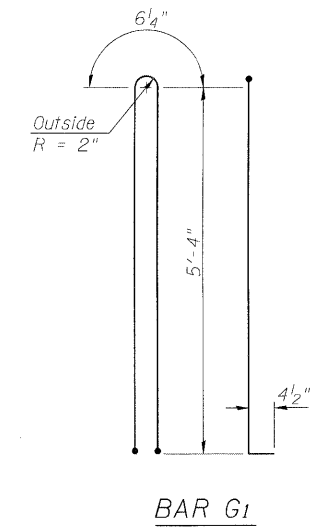
LIFTING LOOP DETAIL



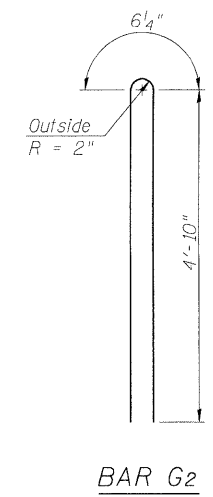
TOP PLATE



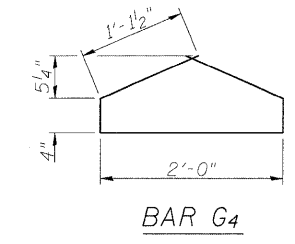
BOTTOM PLATE



BAR G1



BAR G2



BAR G4

BILL OF MATERIAL

Item	Unit	Total
Furnishing and Erecting Precast Prestressed Concrete Bulb T-Beams, 63"	Ft.	611

63" PPC BULB T-BEAM DETAILS
STRUCTURE NO. 032-0118

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

LOCHNER
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CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 13 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	345
	CONTRACT NO. 66408				
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

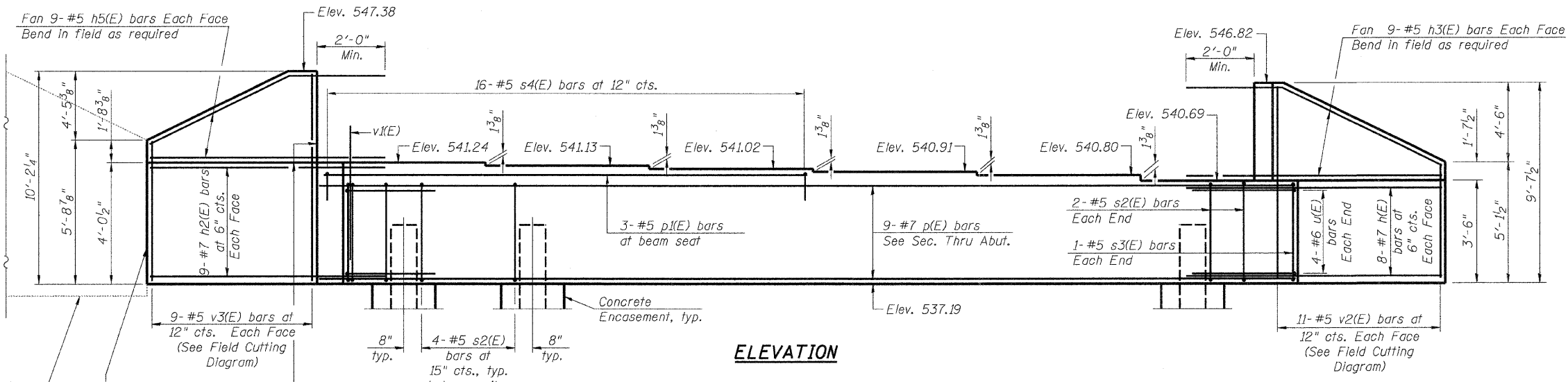
* FAI 80 & FAS 297 / FAU 392

t:\1812\struct\dgn\032018-66408-013-PC02.dgn

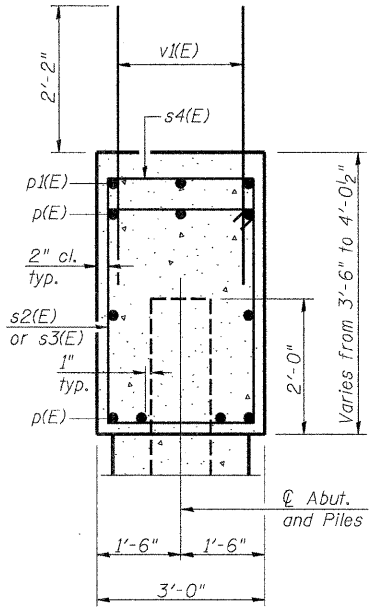
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Notes:
Pour steps monolithically with cap.

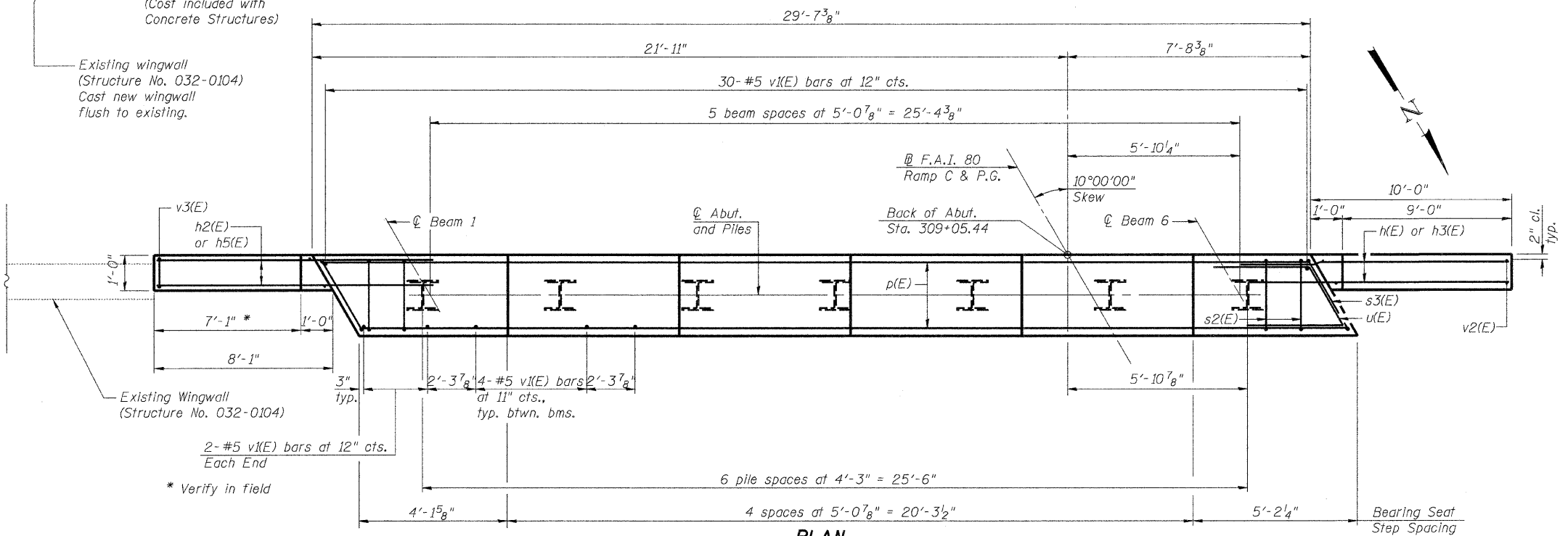
Fan 9-#5 h5(E) bars Each Face
Bend in field as required



ELEVATION



SEC. THRU ABUT.



PLAN

BILL OF MATERIAL

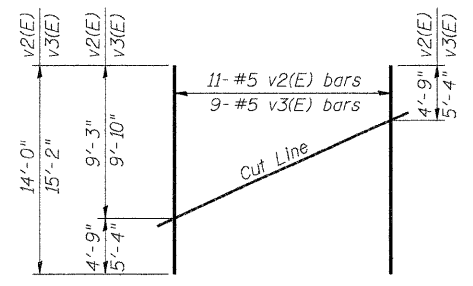
Bar	No.	Size	Length	Shape
h(E)	16	#7	12'-0"	—
h2(E)	18	#7	10'-1"	—
h3(E)	18	#5	13'-1"	—
h5(E)	18	#5	11'-4"	—
p(E)	9	#7	29'-3"	—
p1(E)	3	#5	14'-2"	—
s2(E)	28	#5	12'-7"	□
s3(E)	2	#5	12'-9"	□
s4(E)	16	#5	8'-0"	□
u(E)	8	#6	9'-11"	└
v1(E)	54	#5	4'-4"	—
v2(E)	11	#5	14'-0"	—
v3(E)	9	#5	15'-2"	—
Structure Excavation			Cu. Yd.	2
Concrete Structures			Cu. Yd.	17.6
Reinforcement Bars, Epoxy Coated			Pound	3,000
Furnishing Steel Piles HP12x53			Foot	108
Driving Piles			Foot	108
Test Pile Steel HP12x53			Each	1
Pile Shoes			Each	7
Concrete Encasement			Cu. Yd.	2.4

For details of Bar Splicers, see sheet 17 of 19.
For details of piles and Concrete Encasement, see sheet 16 of 19.

PILE DATA

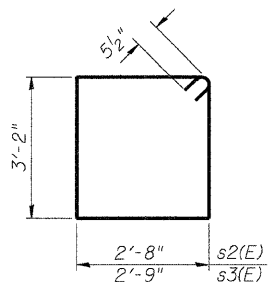
Type: Steel HP12x53 with Pile Shoes
Nominal Required Bearing: 419 kips
Factored Resistance Available: 210 kips
Est. Length: 18 ft
No. Production Piles: 6
No. Test Piles: 1

DESIGNED - B J N
CHECKED - C M M
DRAWN - G J S
CHECKED - C M M

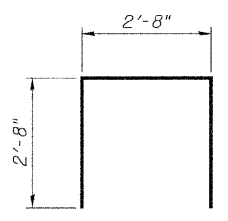


FIELD CUTTING DIAGRAM

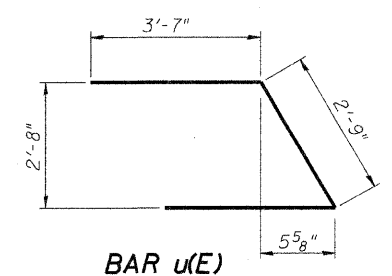
Order v2(E) and v3(E) full length. Cut as shown and use remainder of bars in opposite face.



BARS s2(E) & s3(E)



BAR s4(E)



BAR u(E)

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20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 14 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	346
			CONTRACT NO. 66408		
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

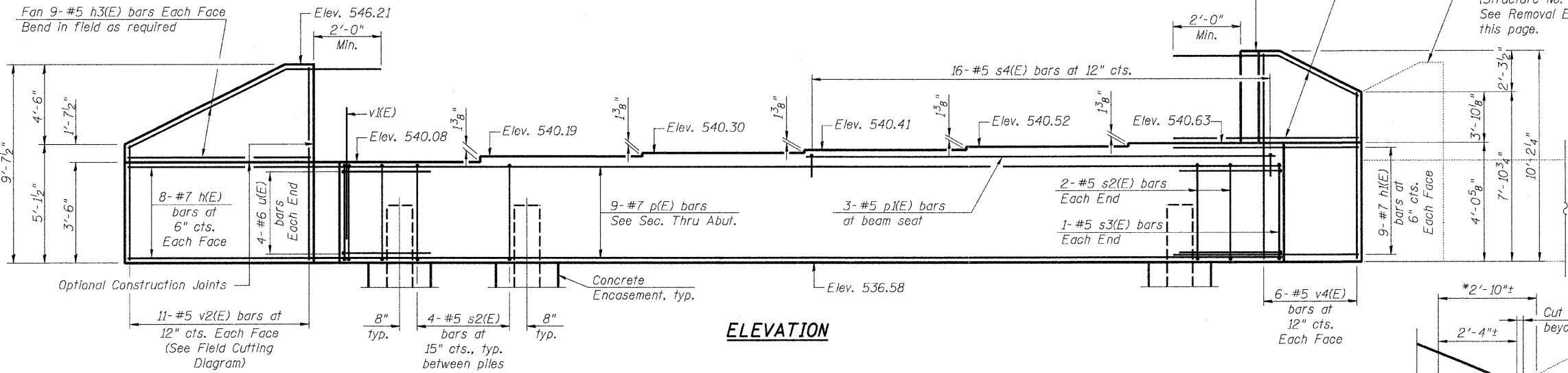
WEST ABUTMENT PLAN & ELEVATION
STRUCTURE NO. 032-0118

T:\812\STRUCT\dgn\032018-66408-014-WA01.dgn

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Notes:
Pour steps monolithically with cap.

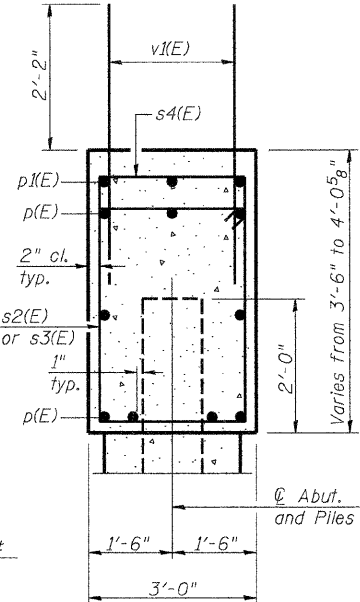
Fan 9-#5 h3(E) bars Each Face
Bend in field as required



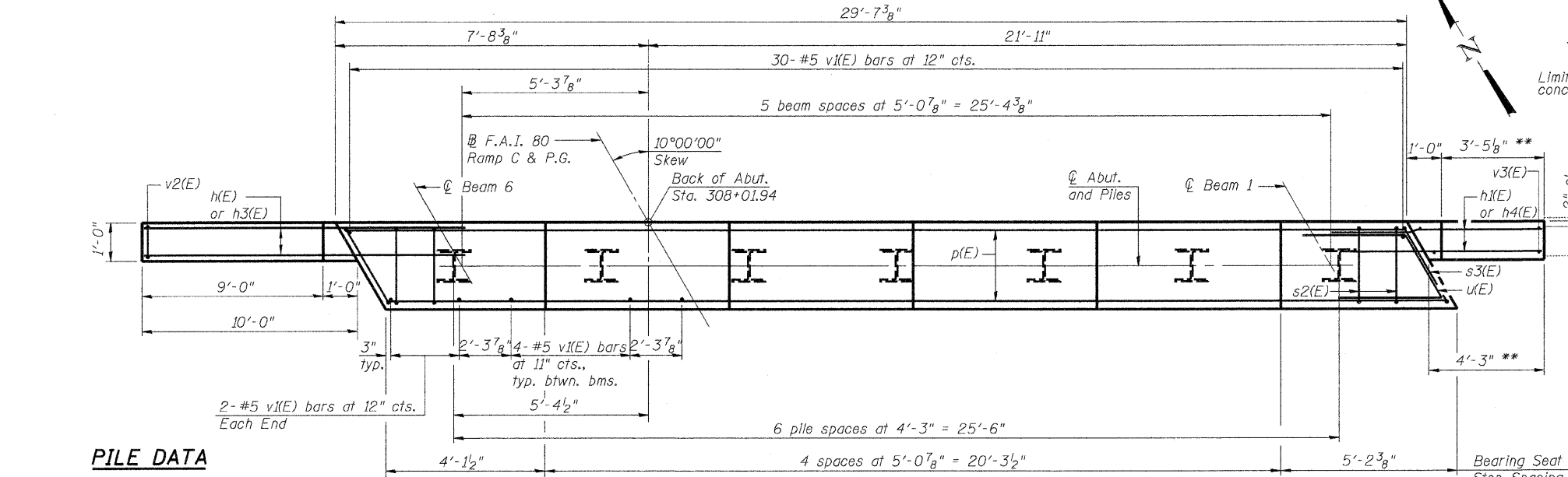
ELEVATION

Fan 9-#5 h4(E) bars Each Face
Bend in field as required

Existing wingwall
(Structure No. 032-0104)
See Removal Elevation
this page.



SEC. THRU ABUT.



PLAN

REMOVAL ELEVATION

Existing wingwall
(Structure No. 032-0104)

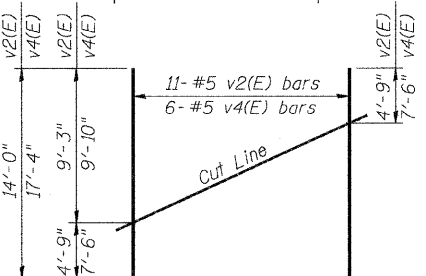
* Remove existing concrete 6"± beyond end of proposed wingwall. Roughen surface, blast clean and replace with Concrete Structures.
** Verify in field.

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	16	#7	12'-0"	—
h1(E)	18	#7	6'-3"	—
h3(E)	18	#5	13'-1"	—
h4(E)	18	#5	7'-8"	—
p(E)	9	#7	29'-3"	—
p2(E)	3	#5	14'-8"	—
s2(E)	28	#5	12'-7"	□
s3(E)	2	#5	12'-9"	□
s4(E)	16	#5	8'-0"	□
u(E)	8	#6	9'-11"	∩
v1(E)	54	#5	4'-4"	—
v2(E)	11	#5	14'-0"	—
v4(E)	6	#5	17'-4"	—
Structure Excavation			Cu. Yd.	8
Concrete Structures			Cu. Yd.	16.8
Reinforcement Bars, Epoxy Coated			Pound	2,760
Furnishing Steel Piles HP12x53			Foot	112
Driving Piles			Foot	112
Pile Shoes			Each	7
Concrete Encasement			Cu. Yd.	2.4
Concrete Removal			Cu. Yd.	0.8

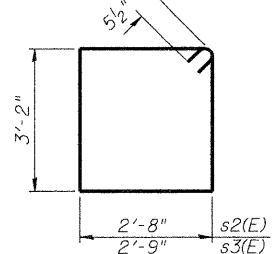
For details of Bar Splicers, see sheet 17 of 19.
For details of piles and Concrete Encasement, see sheet 16 of 19.

PILE DATA
Type: Steel HP12x53 with Pile Shoes
Nominal Required Bearing: 419 kips
Factored Resistance Available: 210 kips
Est. Length: 16 ft
No. Production Piles: 7
No. Test Piles: 0

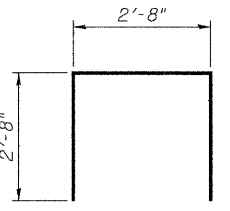


FIELD CUTTING DIAGRAM

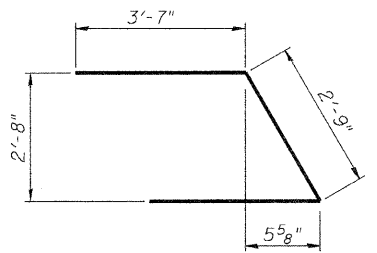
Order v2(E) and v4(E) full length. Cut as shown and use remainder of bars in opposite face.



BARS s2(E) & s3(E)



BAR s4(E)



BAR u(E)

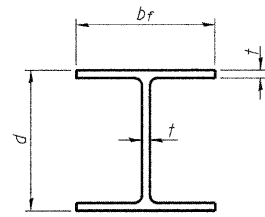
LOCHNER
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

EAST ABUTMENT PLAN & ELEVATION
STRUCTURE NO. 032-0118

SHEET NO. 15 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	347
FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT	CONTRACT NO. 66408	

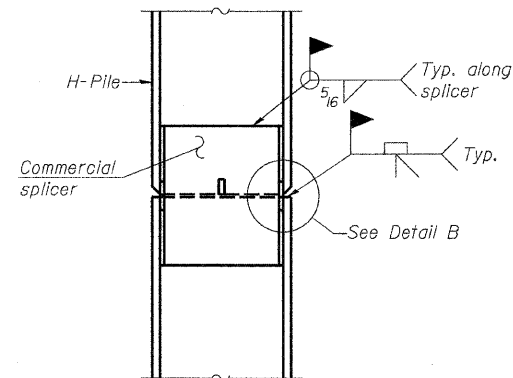
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

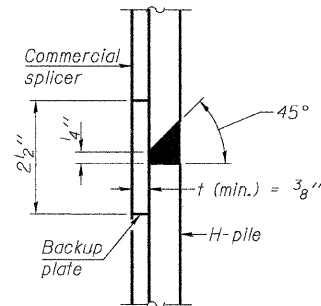


STEEL PILE TABLE

Designation	Depth <i>d</i>	Flange width <i>b_f</i>	Web and Flange thickness <i>t</i>	Encasement diameter <i>A</i>
HP 14x117	14 1/4"	14 7/8"	13/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"

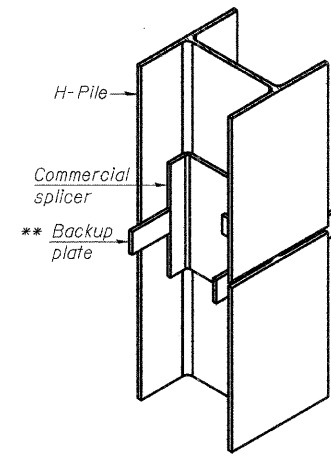


ELEVATION

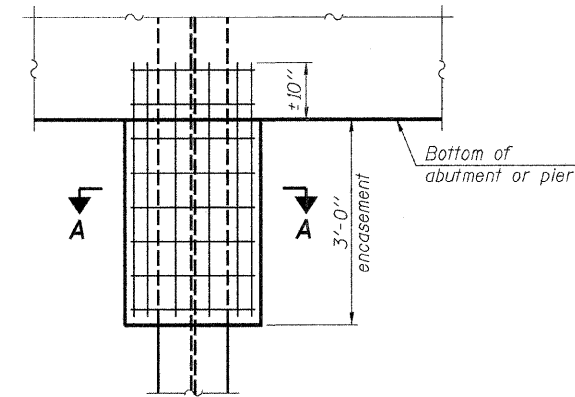


DETAIL "B"

WELDED COMMERCIAL SPLICE

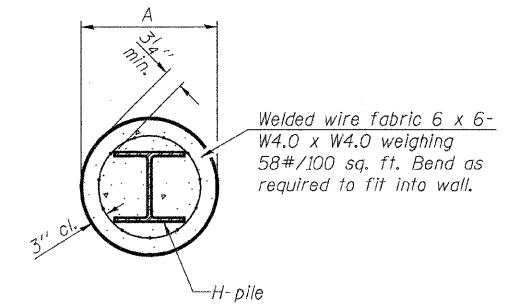


ISOMETRIC VIEW



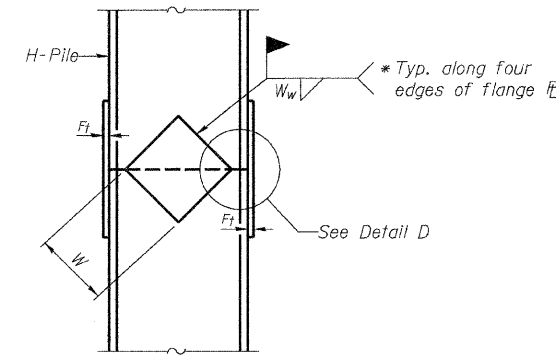
ELEVATION

PILE ENCASEMENT

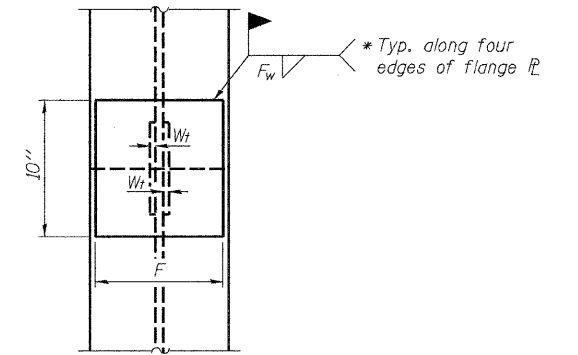


SECTION A-A

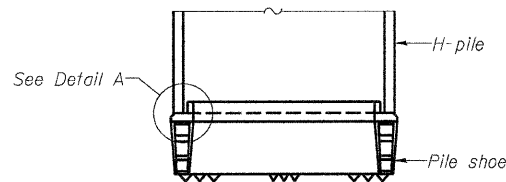
Note:
Forms for encasement may be omitted
when soil conditions permit.



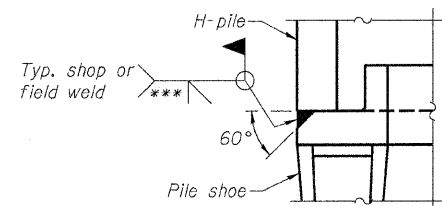
ELEVATION



END VIEW

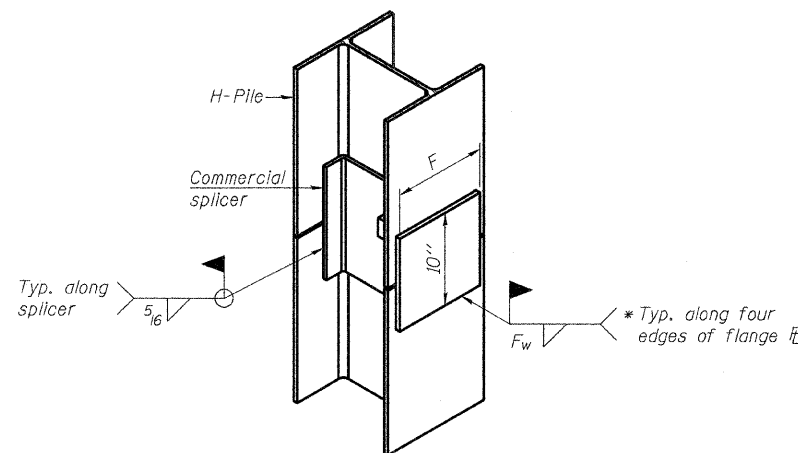


ELEVATION



DETAIL A

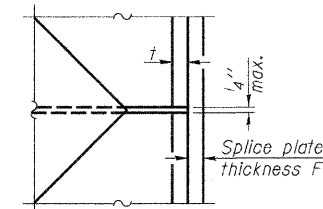
H-PILE SHOE ATTACHMENT



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

- * Interrupt welds 1/4" from end of web and/or each flange.
- ** Remove portions of backup plates that extend outside the flanges.
- *** Weld size per pile shoe manufacturer (5/16" min.).



DETAIL D

WELDED PLATE FIELD SPLICE

Designation	<i>F</i>	<i>F_t</i>	<i>F_w</i>	<i>W</i>	<i>W_t</i>	<i>W_w</i>
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5 8/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5 8/8"	1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5 8/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5 8/8"	1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5 8/8"	1/2"
x74	10"	7/8"	1/16"	6 1/2"	5 8/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

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

HP PILE DETAILS
STRUCTURE NO. 032-0118

DESIGNED - MWM
CHECKED - JSD
DRAWN - MWM
CHECKED - JSD

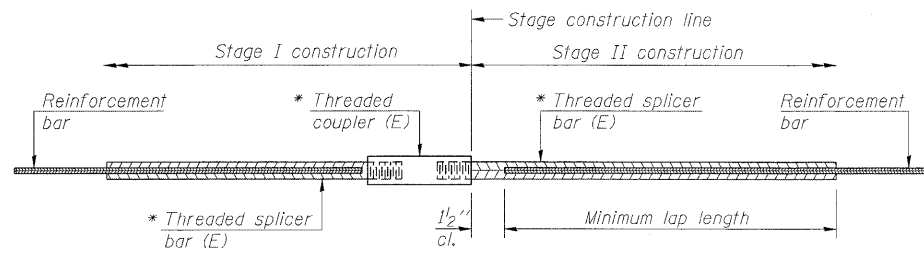
F-HP 7-1-10

LOCHNER
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20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 16 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32, 47-4) HKB-4 & (G)N	GRUNDY	351	348
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



STANDARD BAR SPLICER ASSEMBLY

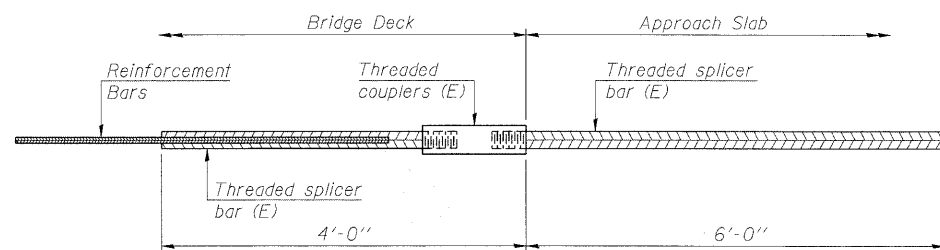
Bar size to be spliced	Minimum Lap Lengths			
	Table 1	Table 2	Table 3	Table 4
3, 4	1'-5"	1'-11"	2'-1"	2'-4"
5	1'-9"	2'-5"	2'-7"	2'-11"
6	2'-1"	2'-11"	3'-1"	3'-6"
7	2'-9"	3'-10"	4'-2"	4'-8"
8	3'-8"	5'-1"	5'-5"	6'-2"
9	4'-7"	6'-5"	6'-10"	7'-9"

- Table 1: Black bar, 0.8 Class C
- Table 2: Black bar, Top bar lap, 0.8 Class C
- Table 3: Epoxy bar, 0.8 Class C
- Table 4: Epoxy bar, Top bar lap, 0.8 Class C

Threaded splicer bar length = min. lap length + 1/2" + thread length

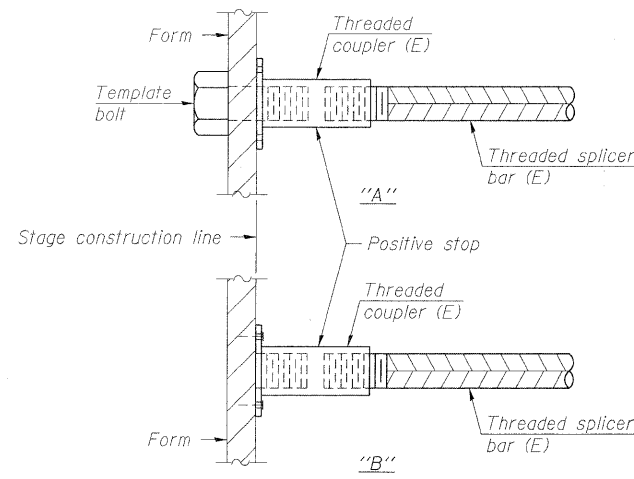
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length



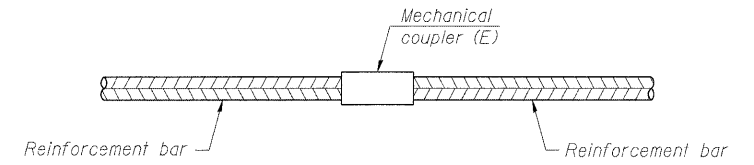
BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

No. required = 64



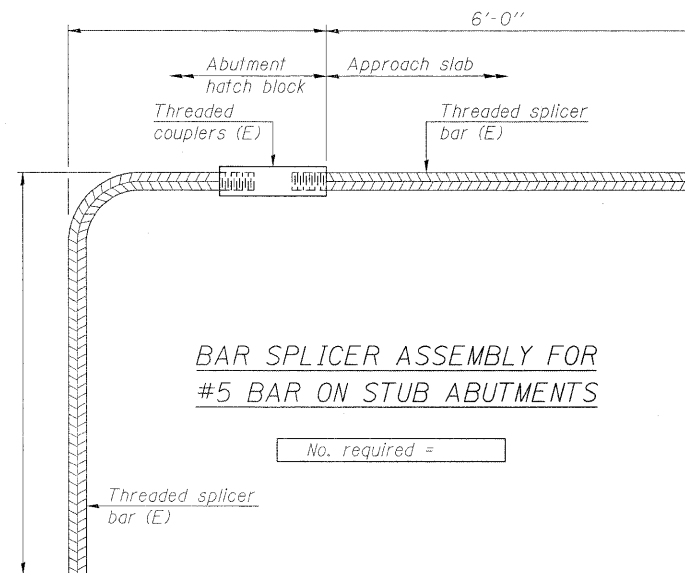
INSTALLATION AND SETTING METHODS

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



STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required =

NOTES

- Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.
- All reinforcement shall be lapped and tied to the splicer bars.
- Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.
- See special provision for Mechanical Splicers.
- See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BAR SPLICER ASSEMBLY DETAILS
STRUCTURE NO. 032-0118

DESIGNED - LJB
CHECKED - CMM
DRAWN - GJS
CHECKED - CMM

11-1-09

LOCHNER

H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 17 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	349
CONTRACT NO. 66408					
FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			

* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SOIL BORING LOG

Page 1 of 1

Date 2/17/00

ROUTE FAI 80 DESCRIPTION FAI 80 OVER COLLINS RUN LOGGED BY K.W.

SECTION (32,47-4)R, BR, BR-1,2,3 LOCATION NW 1/4 SW 1/4, SEC. 18, TWP. 34N, RNG. 8E, 3rd PM

COUNTY GRUNDY DRILLING METHOD HOLLOW STEM AUGER HAMMER TYPE AUTOMATIC

STRUCT. NO. Station	BORING NO.	Description	Depth (ft)	Bulge (ft)	Shear (tsf)	Penetrometer (blows)	Moisture (%)	Groundwater Elev.	
								First Encounter	Upon Completion
032-0014 Ex 032-0104 Prop 186+778.105	5 EAST ABUT. WBL 186+800.91	BITUMINOUS SHOULDER, GRAVEL BASE Over Gray SILTY CLAY LOAM TILL						Surface Water Elev. _____ ft	Stream Bed Elev. _____ ft
		544.33 Very Stiff Gray SILTY CLAY LOAM TILL (FILL)	3	4	1.5	14		Groundwater Elev.: First Encounter _____ ft	Upon Completion 528.8 ft
		542.33 Mix of STIFF Brown-Gray-Black CLAY with GRAVEL Pebbles	2	2	1.5	24		After _____ Hrs.	
		539.83 Mix of Stiff Black SILTY CLAY, Brown SILTY CLAY LOAM TILL & Gray CLAY (FILL)	4	7	1.5	20			
		537.83 Very Stiff Dark Gray & Black SILTY CLAY	4	6	2.3	26			
		534.83 Stiff Black CLAY LOAM	4	6	1.0	26			
		531.33 Very Soft Gray CLAY LOAM with Pebbles and Thin (2mm) SAND Layers	2	2	0.2	25			
		528.83 Hard Gray SILTY LOAM TILL	1	23	5.4	8			
		527.83 Dense thin-bedded LIMESTONE	200'	22		15			
		526.83	2'						

End of Boring
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, from 137 (Rev. 8-99)



SOIL BORING LOG

Page 1 of 1

Date 2/17/00

ROUTE FAI 80 DESCRIPTION FAI 80 OVER COLLINS RUN LOGGED BY K.W.

SECTION (32,47-4)R, BR, BR-1,2,3 LOCATION NW 1/4 SW 1/4, SEC. 18, TWP. 34N, RNG. 8E, 3rd PM

COUNTY GRUNDY DRILLING METHOD HOLLOW STEM AUGER HAMMER TYPE AUTOMATIC

STRUCT. NO. Station	BORING NO.	Description	Depth (ft)	Bulge (ft)	Shear (tsf)	Penetrometer (blows)	Moisture (%)	Groundwater Elev.	
								First Encounter	Upon Completion
032-0014 Ex 032-0104 Prop 186+778.105	6 WEST ABUT. WBL 186+762.41	BITUMINOUS SHOULDER, GRAVEL BASE over Brown SILTY CLAY LOAM TILL (AUGER SAMPLE)						Surface Water Elev. _____ ft	Stream Bed Elev. _____ ft
		526.70 Dense Coarse-grained Pyritic LIMESTONE (REFUSAL)	170'					Groundwater Elev.: First Encounter 526.7 ft	Upon Completion 532.5 ft
		526.50 End of Boring	4.5'					After _____ Hrs.	
		542.00 Stiff Brown CLAY LOAM & SILTY CLAY LOAM TILL (FILL)	2	2	1.2	15			
		540.00 Mix of Stiff Black SILTY CLAY, Brown CLAY LOAM TILL & Gray CLAY (FILL)	1	2	1.9	25			
		536.50 Medium Black CLAY LOAM with STEMS & ROOTS	2	3	0.7	29			
		535.00 Very Stiff Black CLAY LOAM	3	4	2.0	25			
		531.50 Mix of Soft Black CLAY LOAM, Gray CLAY & GRAVEL Pebbles and Pieces of LIMESTONE	2	7	0.4	27			
		530.00 Dense Gray Fine SAND & Rounded to Subangular Coarse GRAVEL	1	7		17			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, from 137 (Rev. 8-99)

t:\812\struct\dgn\0320118-66408-018-SB01.dgn

DESIGNED -
CHECKED -
DRAWN -
CHECKED -

SOIL BORING LOGS I
STRUCTURE NO. 032-0118

LOCHNER
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 18 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	350
CONTRACT NO. 66408					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

* FAI 80 & FAS 297 / FAU 392

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



SOIL BORING LOG

Page 1 of 1

Date 4/8/09

ROUTE I-80 DESCRIPTION Ramp C of Proposed SN 032-0118 North of SN 032-0104 LOGGED BY TLM
SECTION (32,47-4)HBR LOCATION 60' N of NE corner of E Abut. of WBL, NW 1/4, SW 1/4, SEC. 18, TWP. 34N, RM
COUNTY Grundy DRILLING METHOD Hand Auger HAMMER TYPE None

STRUCT. NO.	STATION	DEPTH (ft)	BULGE (ft)	UCS (tsf)	M-O-I-S-T (%)	DESCRIPTION	Surface Water Elev. (ft)	Stream Bed Elev. (ft)	Groundwater Elev. (ft)	First Encounter (ft)	Upon Completion (ft)	After (ft)
032-0118												
	308+02	0.00ft				Black Organic Silty Loam (Alluvium)						
		534.30										
		533.30			32.3	Dark Grey Silty Clay Loam (VS = 0.3 tsf @ 2.0')						
					30.2	Dark Grey Organic Sandy Clay Loam with Sand Stone pieces @ 3' (VS = 0.4 tsf @ 3.5')						
					25.6							
		529.30										
		528.60				Yellow/Brown Clay Loam Till with Sand & Gravel mixed with Sand Stone Pieces (VS = 0.3 tsf @ 6.0')						
					16.1	Auger Refusal at 6.7'						
						End of Boring						

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, from 137 (Rev. 8-99)



SOIL BORING LOG

Page 1 of 1

Date 4/8/09

ROUTE I-80 DESCRIPTION Ramp C of Proposed SN 032-0118 North of SN 032-0104 LOGGED BY TLM
SECTION (32,47-4)HBR LOCATION 52' N of NW corner of W Abut. of WBL, NW 1/4, SW 1/4, SEC. 18, TWP. 34N, R
COUNTY Grundy DRILLING METHOD Hand Auger HAMMER TYPE None

STRUCT. NO.	STATION	DEPTH (ft)	BULGE (ft)	UCS (tsf)	M-O-I-S-T (%)	DESCRIPTION	Surface Water Elev. (ft)	Stream Bed Elev. (ft)	Groundwater Elev. (ft)	First Encounter (ft)	Upon Completion (ft)	After (ft)
032-0118												
	309+05	0.00ft				Black Organic Silty Loam						
		536.70										
						Dark Grey Sandy Loam to Loamy Sand (VS = 0.4 tsf @ 2.0')						
		535.20			31.5							
						Dark Grey/Brown Loamy Sand Organic						
		533.70										
		533.20			37.8	Red/Brown/Grey Silty Clay Loam Till (VS = 0.5 tsf @ 4.0')						
		532.70			18.6							
						Brown Sand & Gravel with Cobbles, Rounded Gravel with Angular Sand						
						Auger Refusal @ 4.5'						
						End of Boring						

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, from 137 (Rev. 8-99)

t:\1812\struct\dgn\0320118-66408-019-SB02.dgn

DESIGNED	-
CHECKED	-
DRAWN	-
CHECKED	-

SOIL BORING LOGS II
STRUCTURE NO. 032-0118

LOCHNER
H.W. LOCHNER, INC.
CONSULTING ENGINEERS & PLANNERS
20 NORTH WACKER DRIVE SUITE 1200
CHICAGO, IL 60606

SHEET NO. 19 OF 19 SHEETS	RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	(32,47-4) HBK-4 & G(N)	GRUNDY	351	351
CONTRACT NO. 66408					
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

* FAI 80 & FAS 297 / FAU 392

REINFORCEMENT BAR LISTS

SHEET 10 OF 11

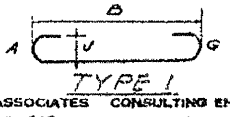
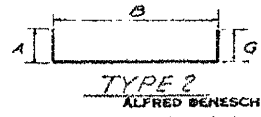
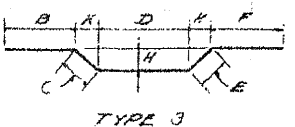
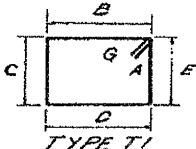
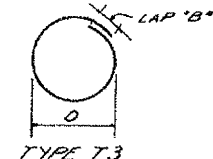
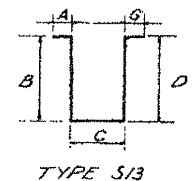
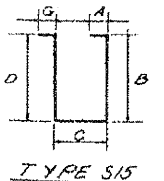
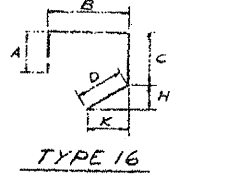
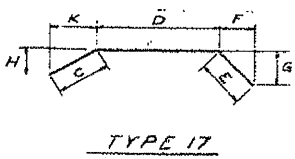
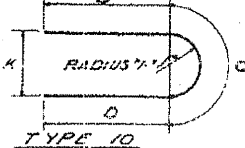
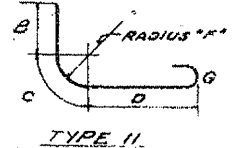
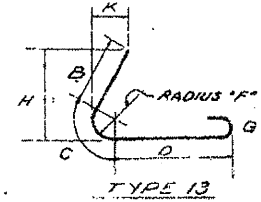
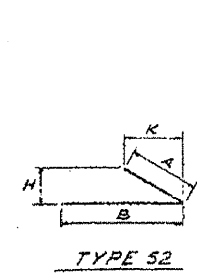
FAD 60 (32, 41)-4	GRUNDY-KENDALL	262	151
STA.	TO STA.		

SUPERSTRUCTURE															
NO. REQUIRED	SPAN	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	K	J
STRAIGHT BARS															
20	20	#6	4-6	a3											
9		#8	7-9	a13											
9		#8	4-3	a2											
BENT BARS															
151	168	#5	29-0	a1											
40		#5	26-0	b1											
60	60	#5	24-0	b4											
12	12	#4	17-0	a3											
8	60	#8	4-6	a6											
4	20	#4	3-6	a7											
8		#4	7-2	a9											
4		#4	6-0	a10											
8		#8	4-3	a11											
8		#8	7-3	a12											
84		#4	26-0	b2											
123	123	#4	24-0	b3											
BENT BARS															
51	55	#5	32-0	a2	2	1-2	29-4								1-2
60		#5	5-0	x1	1	7	4-5								5
60	120	#5	4-5	x2	1	7	3-10								5
102	110	#4	3-7	a3	16		2-7	1-0							1/2 1-0
24	20	#4	5-8	s3	515	4	2-1	10	2-1						4
20	40	#4	7-6	s4	513	4	3-2	6	3-2						4

PIERS																	
NO. REQUIRED	1	2	3	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	K	J
STRAIGHT BARS																	
6	6	6	#10	30-0	h23												
36			#10	10-3	v13												
	36	36	#10	11-3	v14												
	36		#10	13-3	v15												
	36		#10	14-0	v16												
4	4	4	#6	30-6	h20												
4	4	4	#6	25-6	h22												
16	18	18	#5	25-6	h21												
2	2	2	#1	33-8	h24												
40			#1	7-9	v9												
	40	40	#1	8-7	v10												
6			#1	7-10	v11												
	6	6	#1	8-7	v12												
6	6	6	#1	1-9	v17												
3	3	3	#5	30-6	w1												
BENT BARS																	
36	36	36	#10	5-5	g2	1	1-5	4-0									1/2
2	2	2	#10	36-6	h25	1	1-5	33-8									1-5
2	2	2	#10	39-1	h26	1	1-5	36-3									1-5
2	2	2	#10	39-8	h27	1	1-5	36-10									1-5
8	8	8	#6	3-3	h28	3	1-6	1-9									5 1-8
31	31	31	#6	9-0	e1	1	8	7-8									8
8	8	8	#6	9-2	u6	10	1-6	6-2	1-6								1-11 3-11
40	40	40	#5	11-10	s6	7	6	2-8	2-9	2-8	2-9						6
20	20	20	#1	3-3	3-10												3-3
20	20	20	#1	7-4	u4	2	1-9	3-10									1-9
18	20	20	#1	8-6	u5	10	1-3	6-0	1-3								1-11 3-10
32	32	32	#5	6-8	u7	2	2-0	2-8									2-0
51	51	51	#4	12-0	s5	73	1-3	3-5									

ABUTMENTS																	
NO. REQUIRED	NO. ABUT	ABUT	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	K	J	
STRAIGHT BARS																	
8	8	#7	36-8	h1													
6	6	#6	14-0	h18													
6	6	#6	10-0	h19													
4	4	#4	4-0	d1													
8	8	#15	6	h5													
4	4	#7	0	h11													
8	8	#12	0	h12													
4	4	#10	6	h16													
60	60	#6	0	v1													
8	8	#8	6-9	v3													
24	24	#7	9	v4													
24	24	#6	8	v5													
22	22	#2	4	v6													
22	22	#4	3	v7													
BENT BARS																	
8	8	#6	13-0	u1	2	4-6	4-0										4-6
12	12	#4	19-3	h4	1	6	18-9										4
4	4	#18	6	h5	3												4 6
4	4	#4	0	h7	52	6	3-6										5 3 2
4	4	#4	3	h8	17												7 9
10	10	#18	h13	2	1-0	10-8											
5	5	#11	2	h14	1	6	10-8										4
5	5	#11	3	h15	2	7	10-8										
4	4	#10	11	h17	3												10 10
32	32	#13	10	h1	7	5	4-1	2-5	4-1	2-5							5
15	15	#5	2	h18	5	8	1-6	8	1-6								5
22	22	#5	2	u2	2	1-6	12-9										1-6
34	34	#10	16	v2	16	1-0	1-6	1-4	1-0								8 2 8 2
2	2	#2	6	v8	3												10 10
2	2	#4	3	v9	3												10 10

DRAINAGE TROUGH															
NO. REQUIRED	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	K	J	
STRAIGHT BARS															
48	#4	25-0	z1												
BENT BARS															
50	#4	2-9	z2	16				1-8	11						8 2 7



11. ALL DIMENSIONS OUT TO OUT UNLESS OTHERWISE SPECIFIED ARE ZERO

ALFRED BENESCH & ASSOCIATES CONSULTING ENGINEERS
18 SOUTH WABASH AVENUE 602 CHICAGO, ILLINOIS

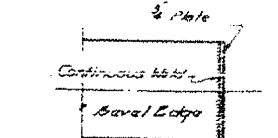
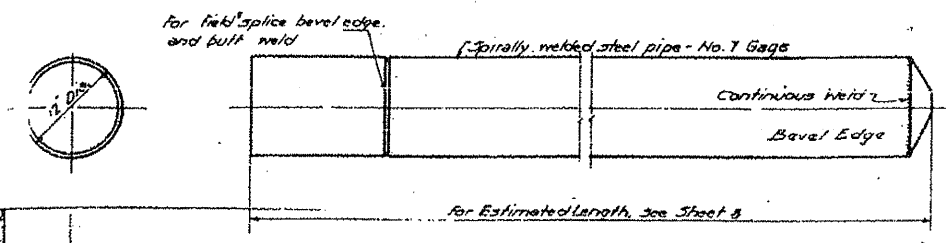
REINFORCEMENT BAR LISTS
GRADE SEPARATION
CROSS ROAD
OVER I-55 ROUTE 80
I-55 PROJECT
I-55 ROUTE 80 SECTION (32,41)-4
GRUNDY-KENDALL COUNTY
STATION 1397+24.83

ABUTMENT PILES

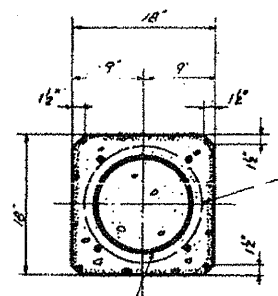
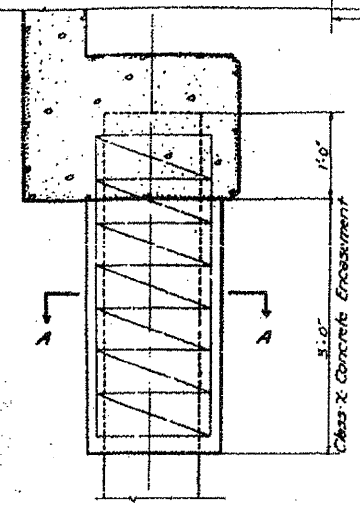
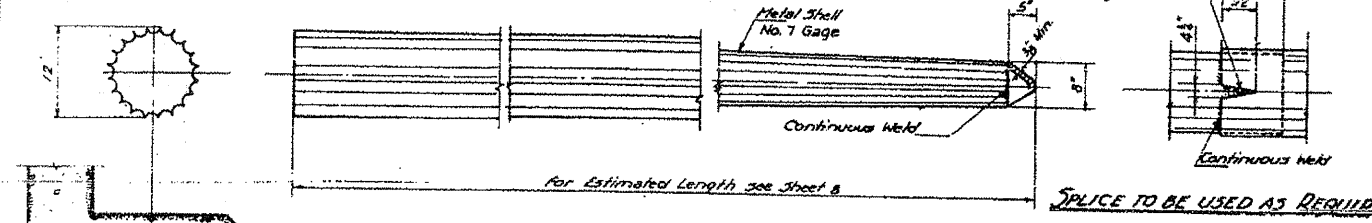
PILING TO BE USED AT THE ABUTMENTS SHALL BE ANY OF THE VARIOUS KINDS SHOWN BELOW

SOURCE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
E.L.I. 80	(32.47)-4	GRUNDY-KENDALL	262	152
STA.	TO STA.			
220. ROAD DIST. NO. 71	FARMER I.P.A.	PROJECT		

SHEET 11 OF 11



OPTIONAL FLAT END

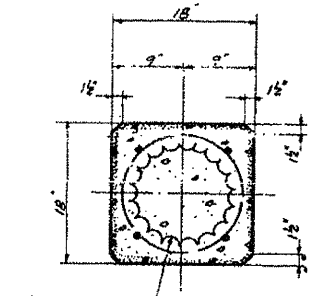
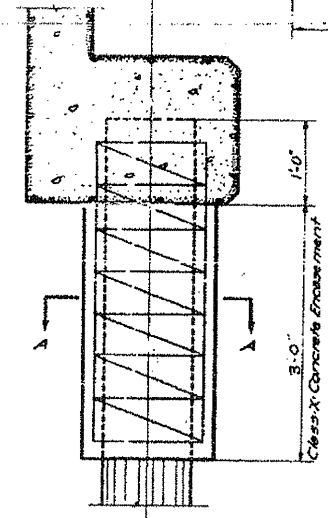


SECTION A-A

15 Dia. Spiral #2 wire 6" Pitch. 2 extra turns top and bottom. #4 Tie Bars. The cost of Class 'C' concrete Encasement and Reinforcement is incidental to the cost of furnishing Piles.

Note: Drilling and bearing ends of pipe shall be cut square.

DETAIL OF SPIRALLY WELDED STEEL SHELL FOR CAST IN PLACE CONCRETE PILES

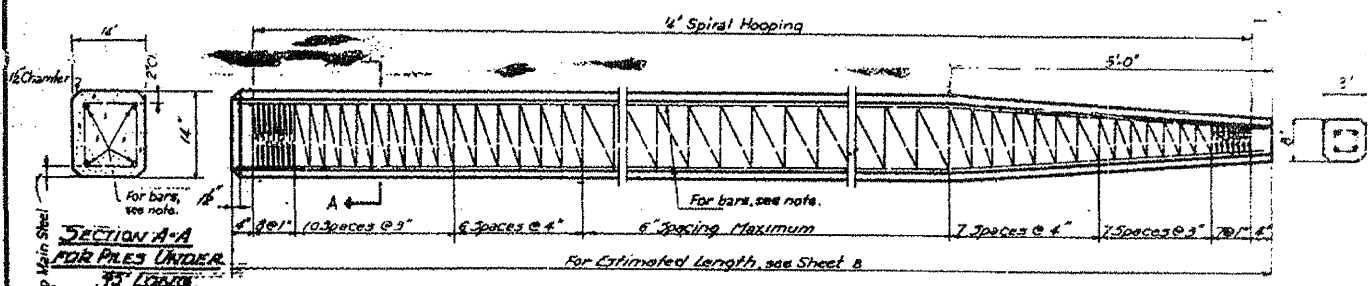


SECTION A-A

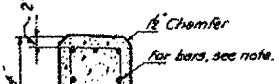
- ALLOWABLE TAPERS**
1. Taper 1/4" for 10 + 12 Cylindrical Section Extension
 2. Taper 1/4" for 17 + 12 Cylindrical Section Extension

15 Dia. Spiral #2 wire 6" Pitch. 2 extra turns top and bottom. #4 Tie Bars. The cost of Class 'C' concrete Encasement and Reinforcement is incidental to the cost of furnishing Piles.

DETAIL OF METAL SHELL FOR CAST IN PLACE CONCRETE PILES



SECTION A-A FOR PILES UNDER 45' LONG



SECTION A-A FOR PILES 45 OR MORE

Note: For 14" Piles 45' long or more use #8 bars - 4 for the full length and 4 to the point of bevel. For 14" Piles under 45' long use #4 bars the full length.

Handling: For pile lengths up to 45 ft, use two slings placed at a distance of 0.2L from each end. For piles longer than 45 ft, use three slings placed at a distance of 0.12L from each end and at mid-point of pile.

xL Overall length of pile to be handled

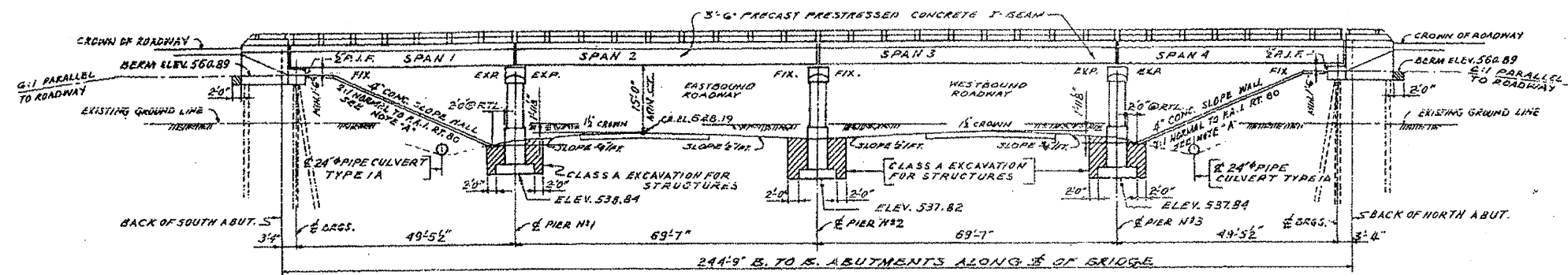
DETAIL OF PRECAST CONCRETE PILES

ABUTMENT PILES
GRADE SEPARATION
CROSS ROAD
OVER F.A.I. ROUTE 80
F.A. PROJECT
F.A.I. ROUTE 80 SECTION (32.47)-4
GRUNDY-KENDALL COUNTY
STATION 1397 + 24.83

B.M. 1 - ELEV. 548.23
 R.R. SPIKE IN TEL. POLE 330 FT.
 RT. OF STA. 1393+45
 B.M. 2 - ELEV. 539.20
 R.R. SPIKE IN POWER POLE 215 FT.
 LT. OF STA. 1413+50

INDEX OF BRIDGE SHEETS - STATION 1397+24.83

SHEET NO.	TITLE
1	GENERAL PLAN AND ELEVATION
2	BORINGS, NAME PLATES, GENERAL NOTES, QUANTITIES EXCAVATION AND DRAINAGE DETAILS.
3	DECK REINFORCEMENT PLAN
4	CROSS SECTIONS AND DIAPHRAGM DETAILS
5	DETAILS OF PRECAST/PRESTRESSED CONCRETE I-BEAMS
6	FRAMING PLAN, BEARING DETAILS AND EXPANSION DEVICE
7	HANDRAIL DETAILS
8	NORTH AND SOUTH ABUTMENT AND WINGWALL DETAILS
9	PIERS 1, 2 AND 3
10	REINFORCEMENT BAR LIST
11	ABUTMENT PILES



NOTE "A"
 REINFORCED WITH WELDED WIRE FABRIC, 6" X 6" MESH, NO. 8 WIRE, SPACING APPROX. 58" PER 100 SQ. FT.

NOTE "B"
 DRAINAGE TROUGH TO HAVE MIN. 1/8" PER FT. SLOPE EACH DIRECTION FROM EDGE OF SLOPE WALL AND TERMINATE IN ROADWAY DITCH.

ELEVATION
 SCALE 1" = 15'-0"

- ABUTMENT PILE NOTES:
1. DRIVE A CONCRETE TEST PILE AT EACH ABUTMENT.
 2. CONSTRUCT EMBANKMENT AS SHOWN.
 3. DRILL OVERSIZE HOLES THROUGH THE EMBANKMENT TO THE EXISTING GROUND FOR THE ABUTMENTS AND WING WALLS.
 4. DRIVE THE REMAINDER OF THE CONCRETE PILES FOR THE ABUTMENTS THROUGH THE DRILLED OVERSIZE HOLES TO THE CAPACITY SHOWN ON THE PLANS AND TO A PENETRATION BEYOND EXISTING GROUND NOT LESS THAN DETERMINED FROM THE TEST PILES.
 5. DRIVE THE TIMBER PILES FOR THE ABUTMENT WINGS THROUGH THE OVERSIZED HOLES TO THE CAPACITY SHOWN ON THE PLANS AND TO A MINIMUM PENETRATION OF 10 FEET INTO THE EXISTING GROUND.
 6. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

ROAD CLASSIFICATION = E-1
 DESIGN SPEED = 45 M.P.H.

DESIGN LOADS
 LL = 1.50 KIPS
 FUTURE D.L. = 15' x 12' WEARING SURFACE

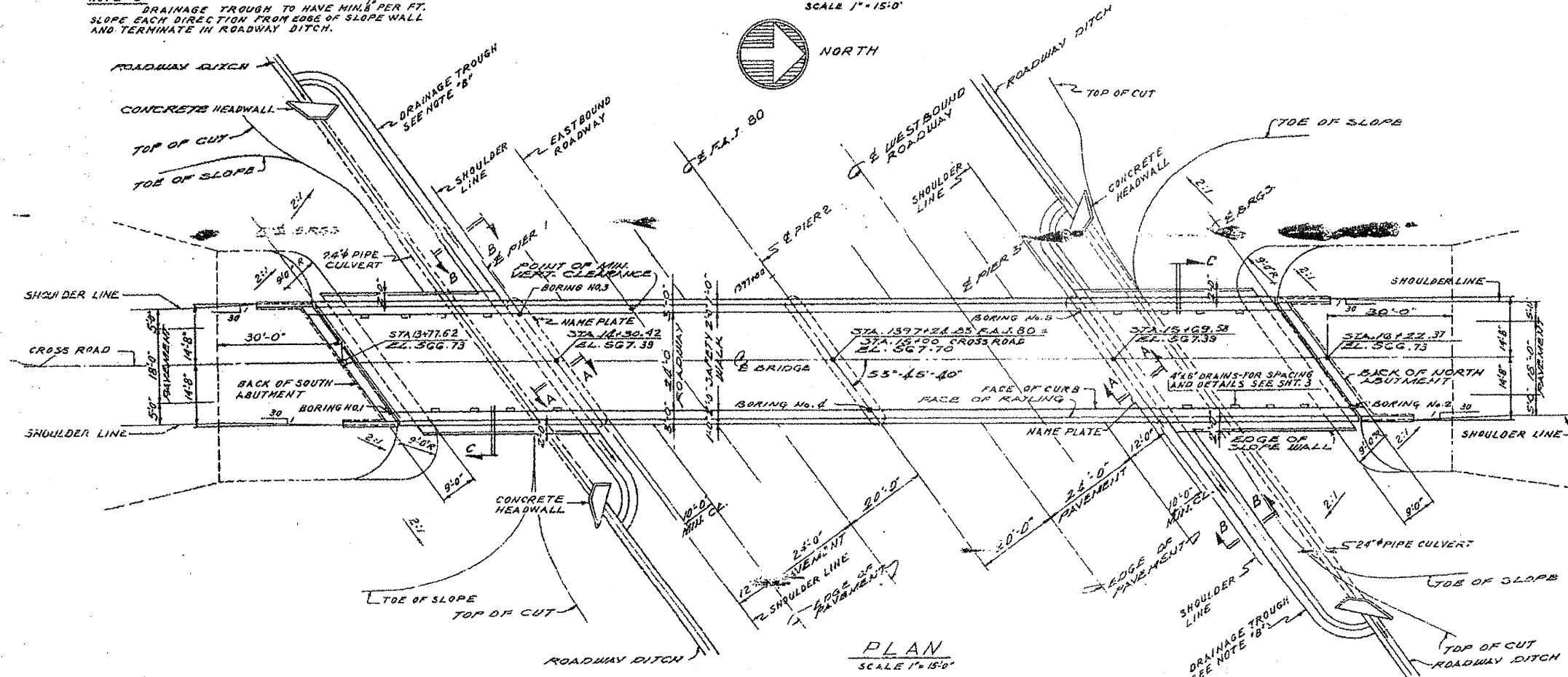
DESIGN STRESSES
 CONCRETE (CAST-IN-PLACE)
 f_c = 3,500 LBS. PER SQ. IN.
 f_c = 1,400 LBS. PER SQ. IN.
 f_c = (WITH EARTH PRESSURE) 1,000 LBS. PER SQ. IN.
 f_t = (PIER FOOTING) 75 LBS. PER SQ. IN.
 n = 10

PRESTRESSED CONCRETE
 f_c = 5,000 LBS. PER SQ. IN.
 f_{cl} = 6,000 LBS. PER SQ. IN.
 f_c = 2,000 LBS. PER SQ. IN.

REINFORCING STEEL
 f_s = 20,000 LBS. PER SQ. IN.

PRETENSIONING STEEL
 f_{pu} = 240,000 LBS. PER SQ. IN.
 f_{si} = 173,000 LBS. PER SQ. IN.

PILE LOADS
 ABUTMENTS = 55 TONS (CONCRETE PILES)
 WING WALLS = 10 TONS (TIMBER PILES)
 SOIL PRESSURE
 PIERS 5,000 LBS. PER SQ. FT.



PLAN
 SCALE 1" = 15'-0"

NOTE:
 QUANTITIES OF EARTH EXCAVATION AND CONCRETE HEADWALLS FOR F.A.I. RTE 80 AND EMBANKMENT FOR CROSS ROAD ARE INCLUDED IN QUANTITIES ON ROAD PLANS.

6 TO 1 BACKSLOPE MAY BE OMITTED IF EMBANKMENT IS CONSTRUCTED FULL LENGTH.
 FOR SECTIONS L-1, B-B & C-C SEE SHEET 2.
 FOR LISTS OF CLASS A EXCAVATION STRUCTURES AND WINGWALLS SEE SHEET 2.
 FOR NAME PLATE LOCATION SEE SHEET 9.

ALFRED BENESECH & ASSOCIATES CONSULTING ENGINEERS
 10 SOUTH WABASH AVENUE 662 CHICAGO, ILL. 60604

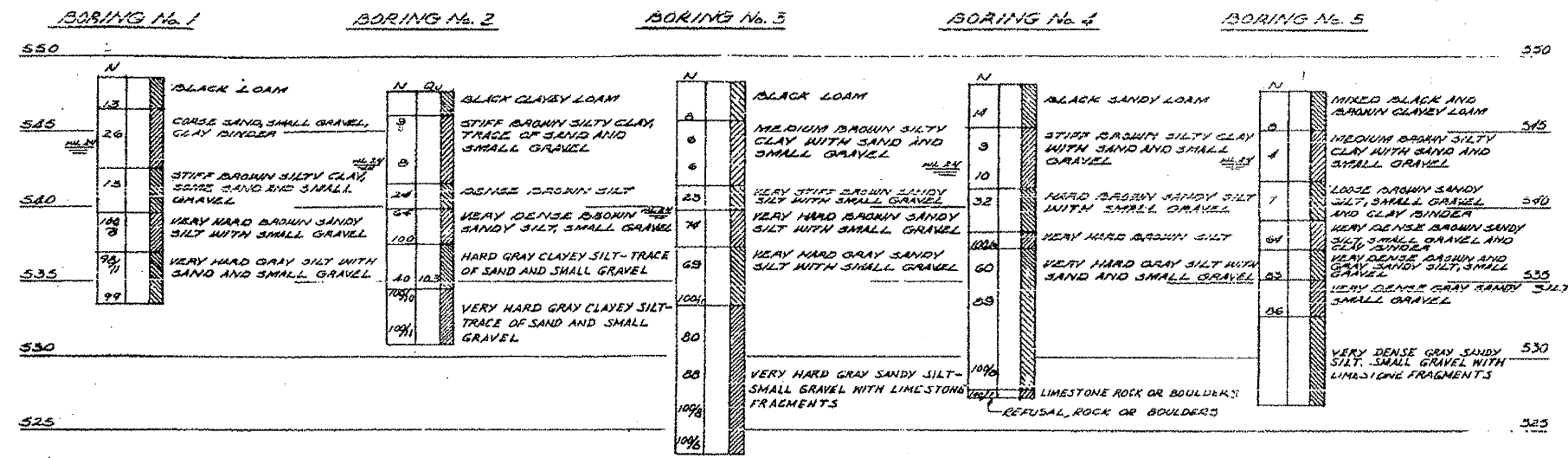
APRIL 20 1959
 M. J. McNamee
 Chief Engineer

GENERAL PLAN AND ELEVATION
 GRADE SEPARATION
 CROSS ROAD
 OVER F.A.I. ROUTE 80
 F.A. PROJECT 1-80-4(2)116
 F.A.I. ROUTE 80 SECTION (32.47)-4
 BRUNDY-KENDALL COUNTY
 STATION 1397+24.83

SOIL TEST BORINGS

PROJECT NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
F.A. 180-3247-4	GRUNDY-KENDALL	262	143	
STA.	TO STA.			
1397+24.83	1397+24.83		F.A. PROJECT	

SHEET 2 OF 11



BILL OF MATERIAL - STATION 1397+24.83

ITEM	UNIT	QUANTITY	
		SUPER.	TOTAL
CLASS X CONCRETE, STRUCTURES	CU YDS	230.9	333.1
HANDRAIL CONCRETE	CU YDS	—	2.0
REINFORCEMENT BARS	LBS.	44,500	35,460
FURNISHING AND ERECTING STRUCTURAL STEEL	LBS.	11,900	11,900
FURNISHING AND ERECTING METAL HANDRAIL	LIN. FT.	518	518
HAIR PLATES	EACH	—	2
FURNISHING AND ERECTING PRECAST PRESTRESSED CONCRETE I-BEAMS, 12IN.	LIN. FT.	1,334	1,334
TEST PILES (CONCRETE)	EACH	—	2
CLASS A EXCAVATION FOR STRUCTURES	CU YDS	—	467
SLOPE WALL, 4IN.	SQ. YDS.	—	372
DRIVING CONCRETE PILES	LIN. FT.	—	220
FURNISHING CONCRETE PILES	LIN. FT.	—	220
DRIVING TIMBER PILES	LIN. FT.	—	84
FURNISHING CREOSOTED PILES, 20.1' TO 38'	LIN. FT.	—	84

NOTE:

WATER LEVEL (W.L.) FIGURE INDICATES TIME OF READING (HOURS) AFTER COMPLETION OF BORING. WATER LEVELS INDICATED ARE THOSE OBSERVED WHEN BORINGS WERE MADE, OR AS NOTED. POROSITY OF THE SOIL STRATA, VARIATIONS OF RAINFALL, SITE TOPOGRAPHY, ETC., MAY CAUSE CHANGES IN THESE LEVELS.

FIGURES IN COLUMN MARKED "N" INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE SAMPLING PIPE ONE FOOT USING 140 LB WEIGHT FALLING 30 INCHES.

FIGURES IN COLUMN MARKED "QU" INDICATE UNCONFINED COMPRESSIVE STRENGTH IN TONS PER SQ. FT.

ESTIMATING SOIL CONDITIONS WHICH MAY BE ENCOUNTERED IN THE WORK, FOR LOCATION OF BORINGS, SEE SHEET 1.

NOTE:

THESE ITEMS MARKED THUS * INCLUDE 10.6 CUYDS. CLASS X CONCRETE AND 890 LBS. REINFORCEMENT BARS FOR DRAINAGE TROUGH.

GENERAL NOTES

CLASS X CONCRETE SHALL BE USED THROUGHOUT EXCEPT FOR CONCRETE IN HANDRAILS AND PRECAST I-BEAMS.

HANDRAIL CONCRETE SHALL BE USED IN HANDRAIL PORTION OF SLOPE WALLS AS SHOWN. FOR CONCRETE IN PRECAST I-BEAMS SEE SPECIAL SPECIFICATIONS.

ALL CONCRETE SHALL BE CAST IN PLACE EXCEPT FOR THE PRECAST I-BEAMS.

THE CONCRETE FLOOR SLAB FOR EACH SPAN SHALL BE PLACED IN ONE CONTINUOUS OPERATION BETWEEN CONSTRUCTION JOINTS SHOWN AND SHALL BE FINISHED IN ACCORDANCE WITH ARTICLE 5117 OF THE STANDARD SPECIFICATIONS.

ALL STEEL SHALL BE STRUCTURAL STEEL EXCEPT AS OTHERWISE NOTED.

BRONZE EXPANSION PLATES SHALL CONFORM TO A.S.T.M. SPECIFICATION B100, ALLOY 1, AND SHALL HAVE GRAPHITE INSERTS INSTALLED IN THE SLIDING SURFACE AS MANUFACTURED BY MERRIMAN BROS. INC., BOSTON, MASS., OR EQUAL.

ALL STEEL BEARING PLATES, GRAPHITE BRONZE EXPANSION PLATES, LEAD PLATES AND ANCHOR BOLTS SHALL BE FABRICATED AND SET IN ACCORDANCE WITH ARTICLE 5115 OF THE STANDARD SPECIFICATION AND ARE INCLUDED IN QUANTITY OF STRUCTURAL STEEL. ESTIMATED WEIGHT = 5,630 LBS.

STEEL EXPANSION DEVICES AT THE PIER AND ABUTMENTS SHALL BE FABRICATED AND SET IN ACCORDANCE WITH ARTICLE 5115 (G) OF THE STANDARD SPECIFICATIONS AND ARE INCLUDED IN QUANTITY OF STRUCTURAL STEEL. ESTIMATED WEIGHT = 6,270 LBS.

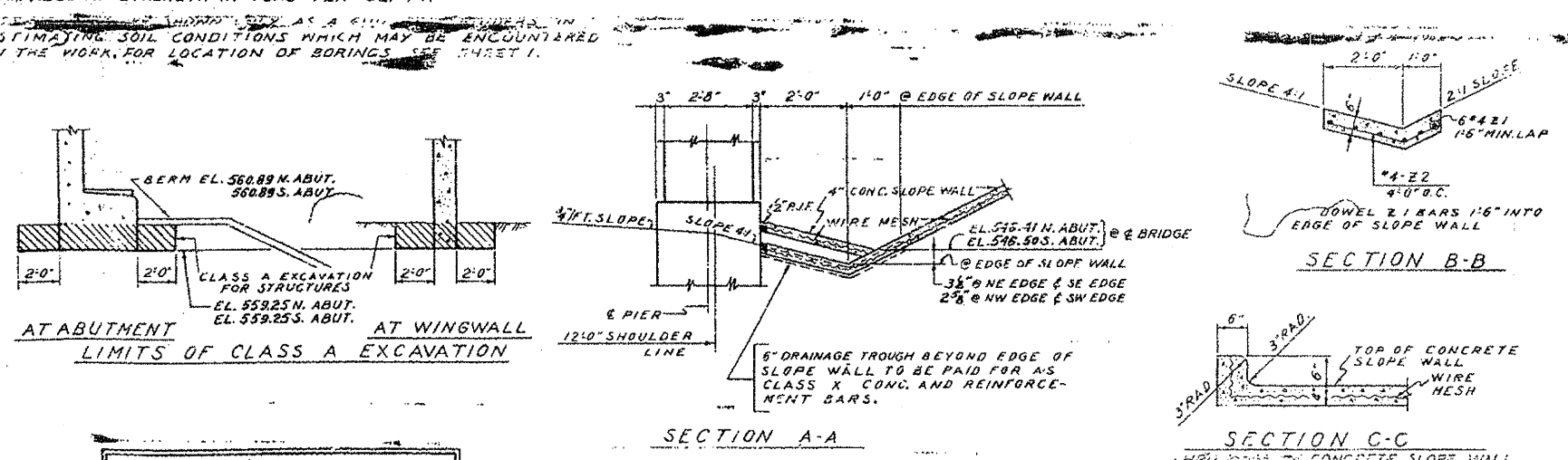
STRUCTURAL STEEL SHALL BE PAINTED ONE SHOP COAT OF RED LEAD PAINT AND TWO FIELD COATS OF ALUMINUM PAINT IN ACCORDANCE WITH SECTION 56 OF THE STANDARD SPECIFICATIONS EXCEPT AS OTHERWISE SPECIFIED ON THE PLANS. ALL PAINT SHALL BE FURNISHED AND APPLIED BY THE CONTRACTOR.

THE CONTRACTOR SHALL DRIVE ONE CONCRETE TEST PILE IN A PERMANENT LOCATION AT EACH ABUTMENT AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINDER OF THE CONCRETE PILES.

PIER FOOTING TO BE FOUNDED ON THE VERY HARD OR DENSE BROWN SILT STRATA OR UPON A MATERIAL HAVING A SAFE BEARING CAPACITY OF 5,000 LBS. PER SQ. FT.

JOINTS IN DECK SLAB NOTED ON PLANS TO BE FILLED WITH "PARA-PLASTIC OR EQUAL" SHALL BE FILLED WITH JOINT SEALER CONFORMING TO "FEDERAL SPECIFICATION FOR SEALER, HOT POURED TYPE, FOR JOINTS IN CONCRETE" S.S.-158.

SHOP INSPECTION OF STRUCTURAL STEEL AND PRECAST PRESTRESSED I-BEAMS BY ILLINOIS DIVISION OF HIGHWAYS.



STATION 1397+24.83
 BUILT 195 BY
 STATE OF ILLINOIS
 F.A.I.R.T. 80 SEC. (32,47)-4
 F.A. PROJ. 1-80-4(2)
 LOADING H15-S12

SEE STATE OF ILLINOIS STD-2113,
 NAME PLATES EACH 2
 LETTERING FOR NAME PLATES

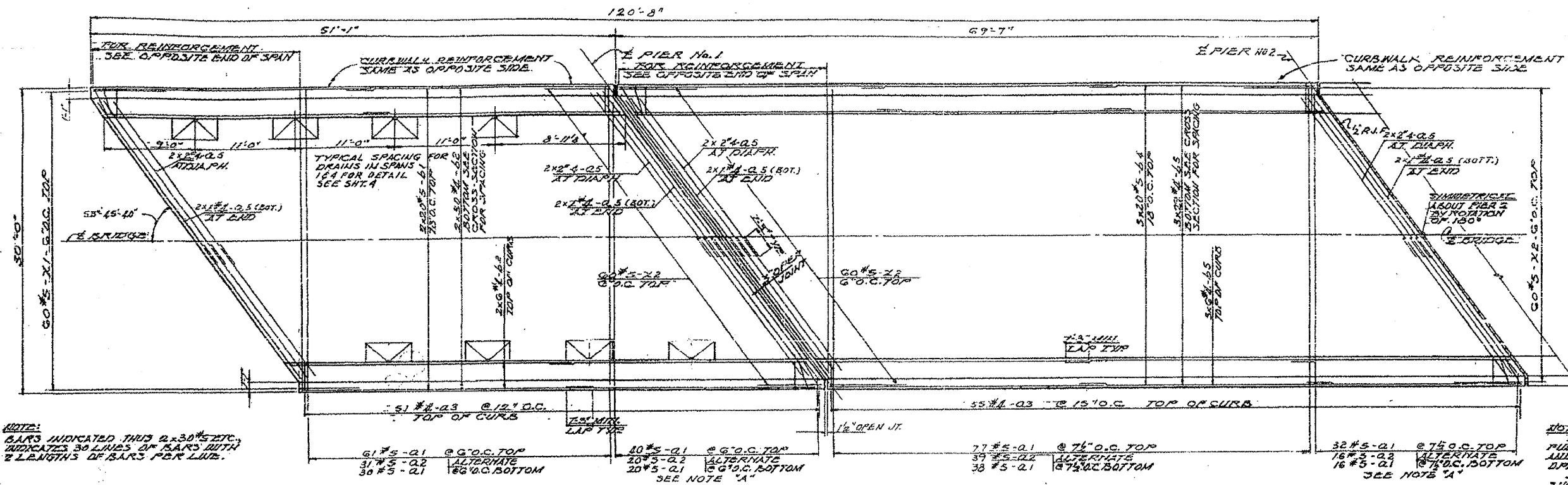
BILL OF MATERIAL - DRAINAGE TROUGHS

ITEM	UNIT	TOTAL
CLASS X CONCRETE	CU YDS	10.6
REINFORCEMENT BARS	LBS.	890

BORINGS, NAME PLATES, GENERAL NOTES,
 QUANTITIES AND EXCAVATION
 GRADE SEPARATION
 CROSS ROAD
 OVER F.A.I. ROUTE 80
 F.A. PROJECT
 F.A.I. ROUTE 80 SECTION (32,47)-4
 GRUNDY-KENDALL COUNTY
 STATION 1397+24.83

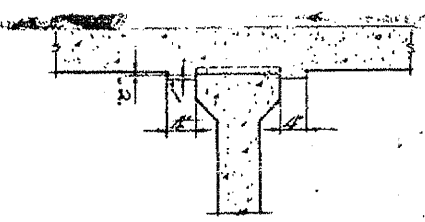
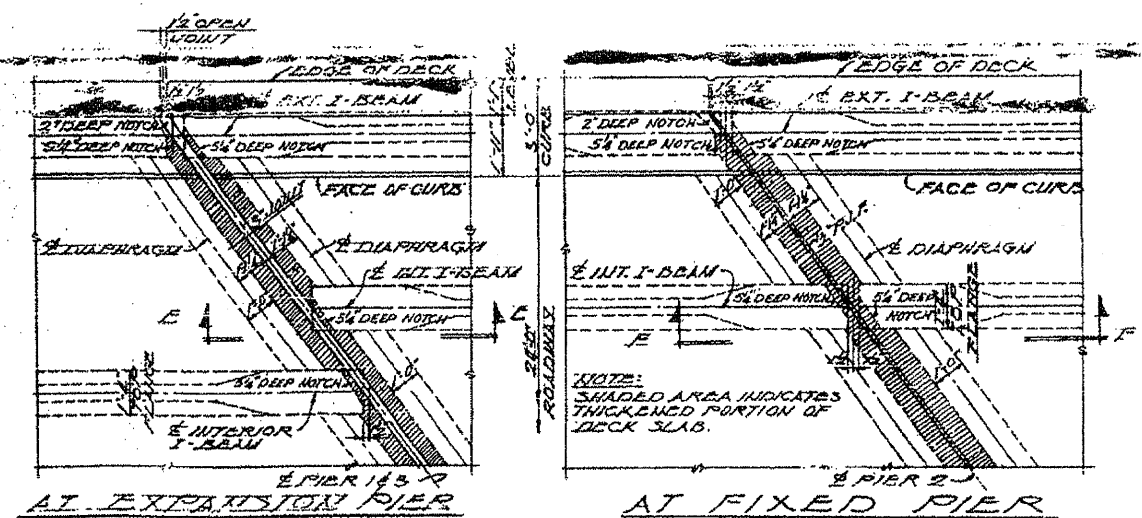
PROJECT NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI 80	3247-4	GRUNDY-KENDALL	262	144
STA.	TO STA.			
FOR BOARDING NO. 71 (RUMBLE F.A. PROJECT)				

SHEET 3 OF 11



HALF PLAN OF DECK REINFORCEMENT

SCALE 3/8" = 1'-0"



STANDARD FILLET DETAIL

AFTER ALL PRECAST PRESTRESSED SLABS HAVE BEEN ERECTED, ELEVATE 1/2" UP THE TOP FLANGES OF THE BEAMS SMALL OR TOLERANCE INTERFERE VALS NOT TO EXCEED 0.07". FROM THESE ELEVATIONS SUBTRACT THE INCREMENT OF DEFLECTIONS FOR THESE BEAMS DETERMINED FROM THE DL DEFLECTION DIAGRAM. THE ELEVATIONS SO OBTAINED SUBTRACTED ALGEBRAICALLY FROM THE THEORETICAL GRADE ELEVATIONS MINUS THE THICKNESS OF THE SLAB EQUAL THE DIMENSION "A". A POSITIVE VALUE OF "A" EQUALS THE FILLET HEIGHT ABOVE THE TOP OF THE BEAM. A NEGATIVE VALUE OF "A" EQUALS THE EMBEDMENT OF THE BEAM ABOVE THE THEORETICAL BOTTOM OF SLAB ELEVATION.

TABLE OF DIMENSIONS

BEAMS	EXTERIOR			1ST INTERIOR			OTHER INTERIOR		
	Y.25	Y.50	Y.75	Y.25	Y.50	Y.75	Y.25	Y.50	Y.75
SPANS 1 & 2	4'	5'	4'	7'	6'	7'	8'	3'	8'
SPANS 3 & 4	7'	16'	7'	2'	11'	2'	2'	16'	2'

DL DEFLECTION DIAGRAMS
WEIGHT OF PRESTRESSED I-BEAM NOT INCLUDED

SPANS 1 & 2	12'-1 1/2"	12'-1 1/2"	12'-1 1/2"	12'-1 1/2"
SPANS 3 & 4	16'-11"	16'-11"	16'-11"	16'-11"

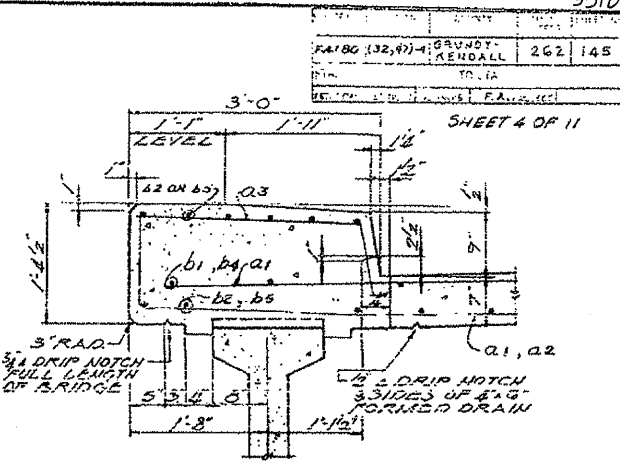
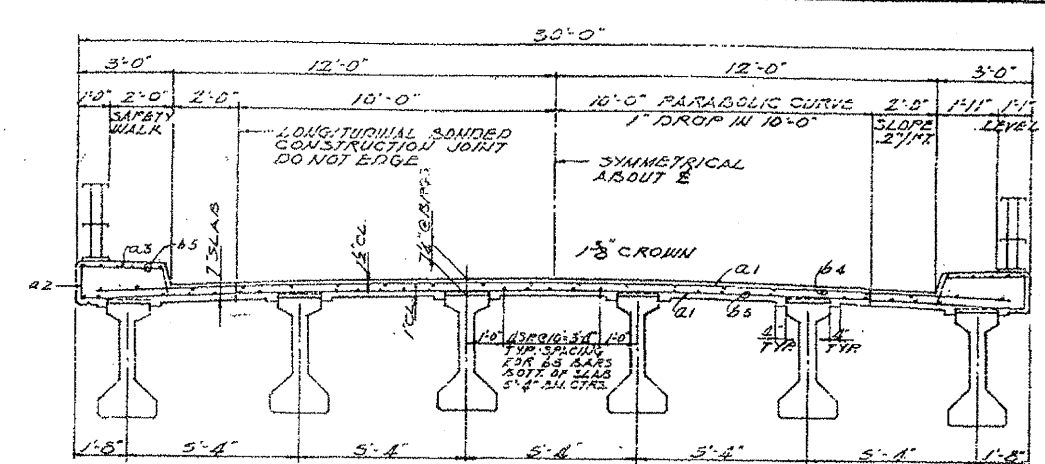
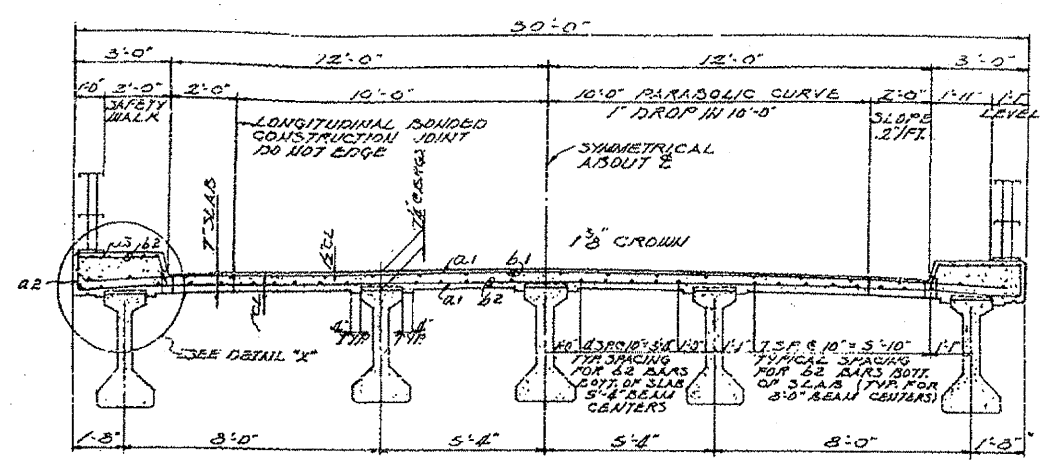
BILL OF MATERIALS - SUPERSTRUCTURE

ITEM	UNIT	TOTALS
CLASS X CONCRETE	CU. YDS.	230.8
REINFORCEMENT BARS	LBS.	46,500
METAL HANDRAIL	LIH. FT.	318
STRUCTURAL STEEL	LBS.	11,900
FURNISHING AND ERECTING PRECAST PRESTRESSED CONCRETE I-BEAMS	LIH. FT.	6,334

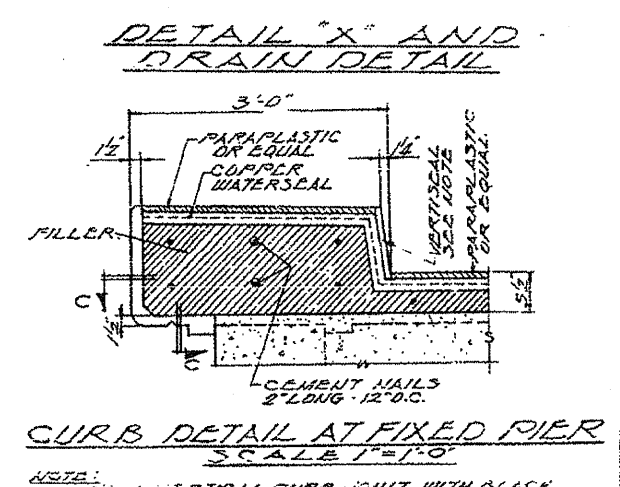
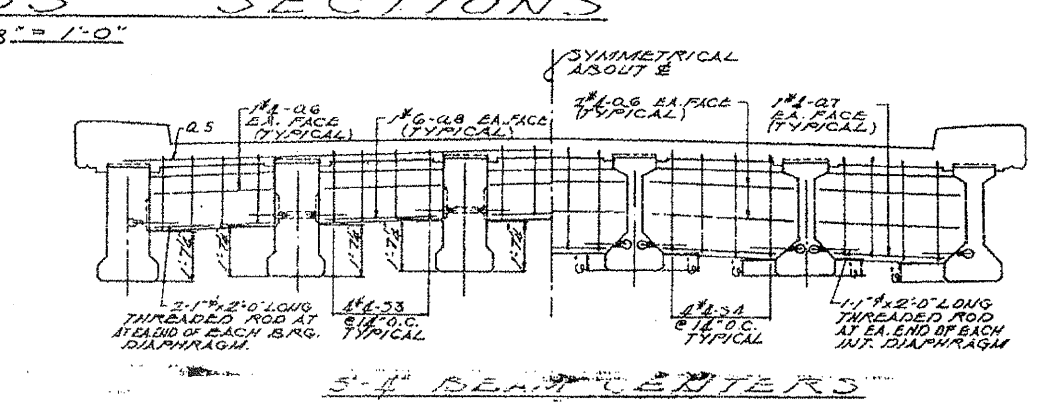
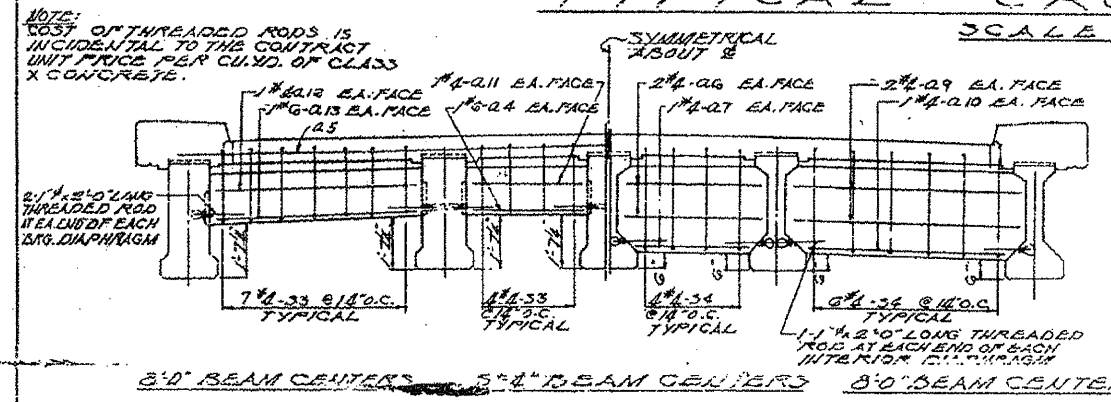
DECK REINFORCEMENT PLAN
GRADE SEPARATION
CROSS ROAD
OVER FAI ROUTE 80
F.A. PROJECT
FAI ROUTE 80 SECTION (3247)-4
GRUNDY-KENDALL COUNTY
STATION 1397+24.83

SECTION "E-E"

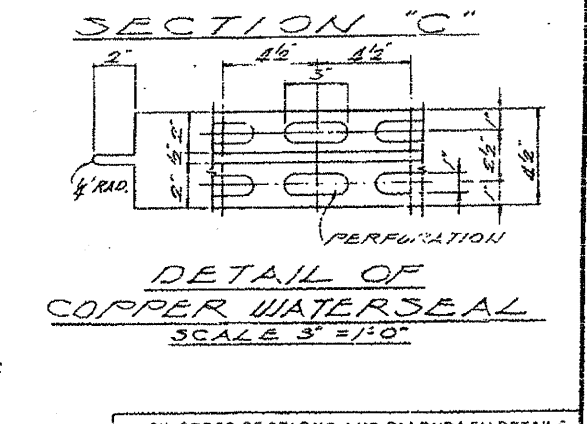
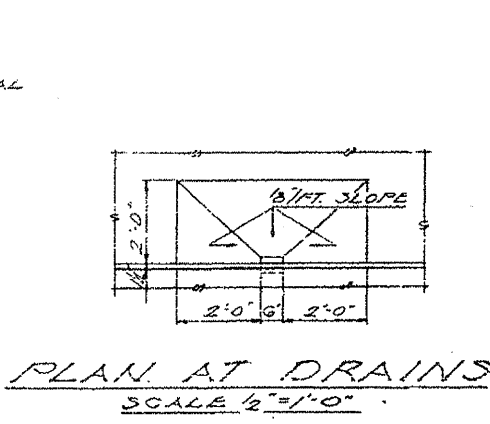
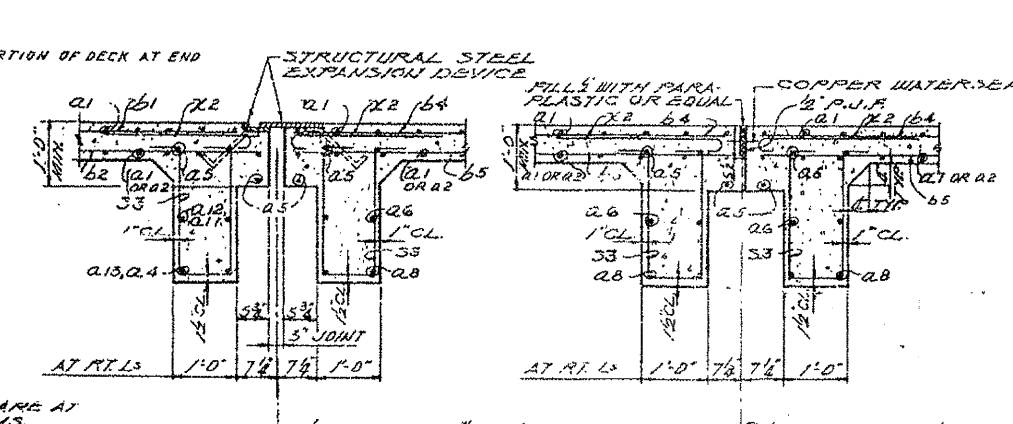
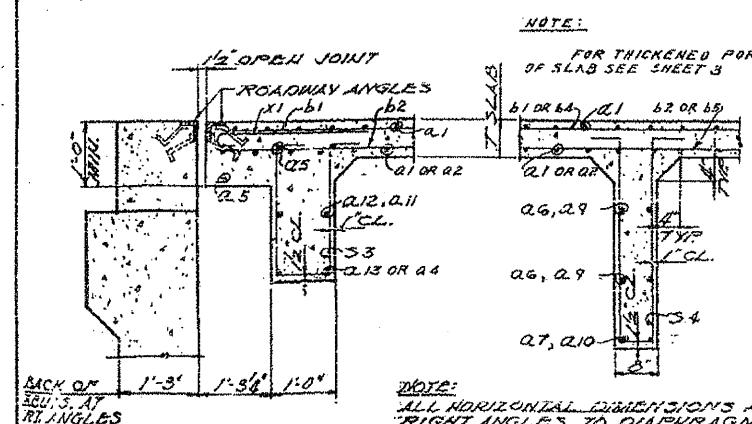
SECTION "F-F"



SPANS 1 & 4 TYPICAL CROSS SECTIONS SPANS 2 & 3



AT BEARINGS AT INTERIOR AT BEARINGS AT INTERIOR TYPICAL DIAPHRAGM DETAILS SPANS 1 & 4 SPANS 2 & 3

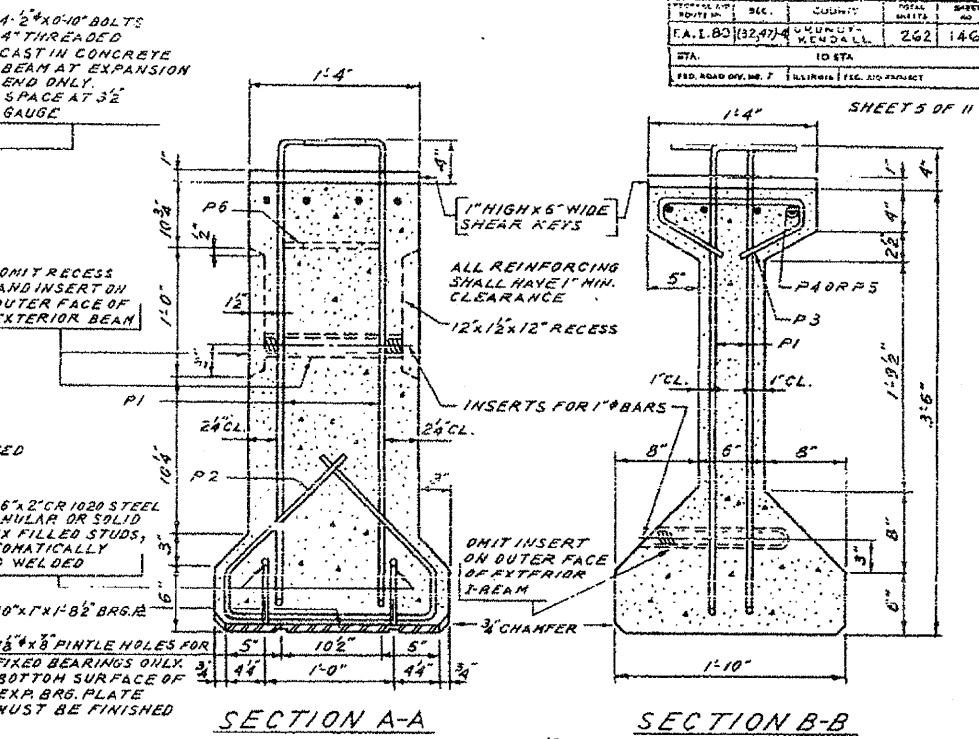
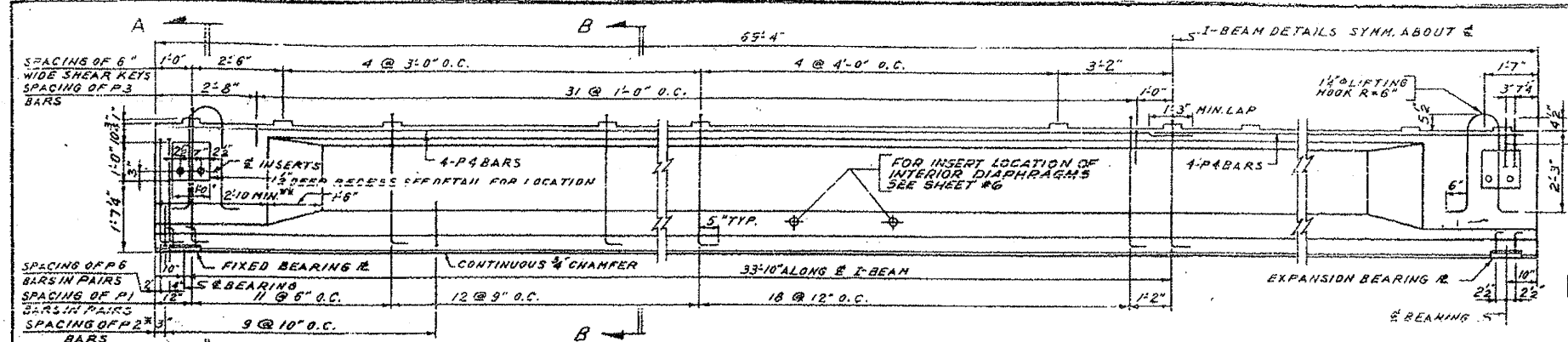


AT ABUTMENTS AT INTERIORS AT EXPANSION PIERS AT FIXED PIER TYPICAL DIAPHRAGM SECTIONS

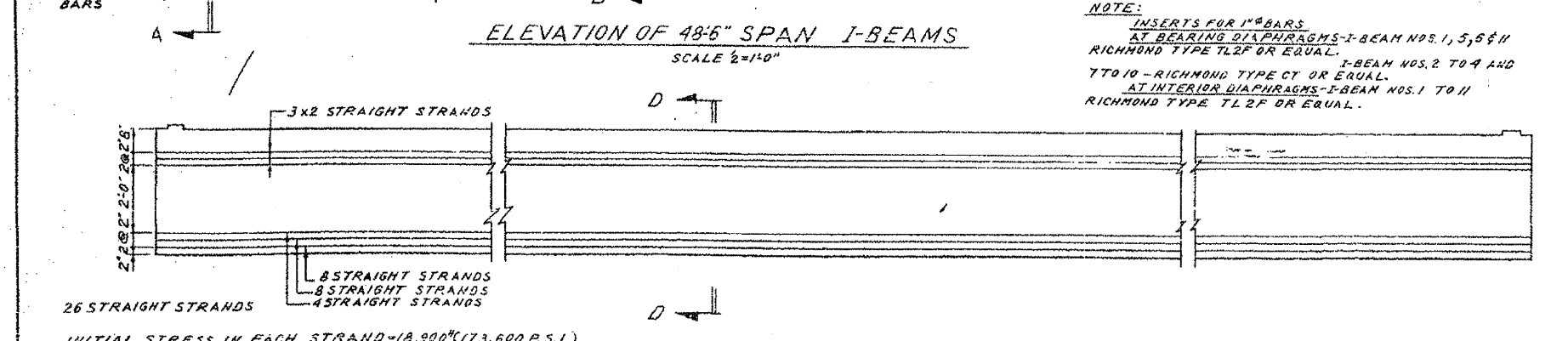
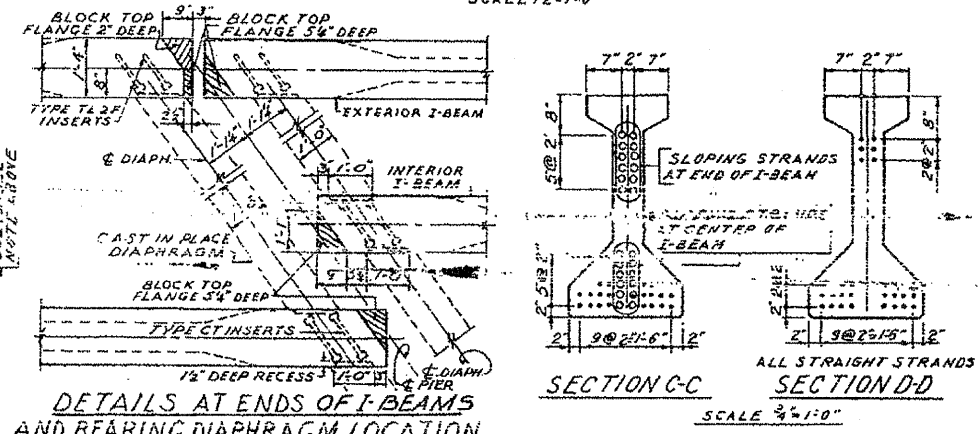
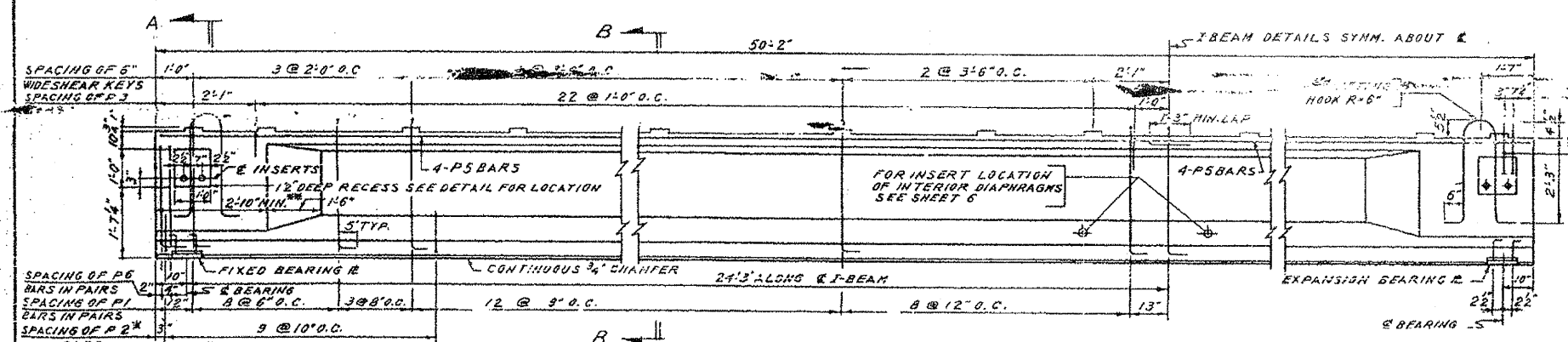
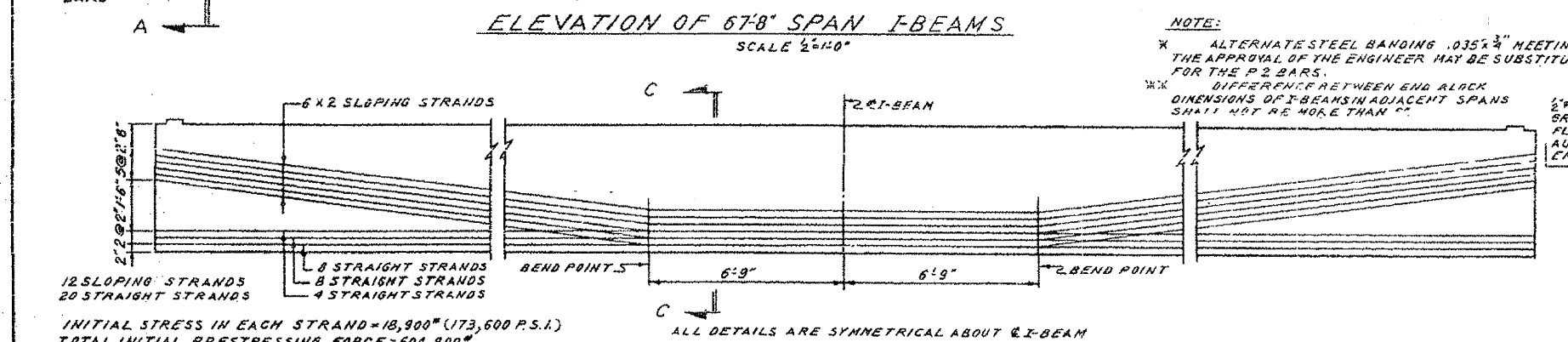
DECK CROSS SECTIONS AND DIAPHRAGM DETAILS
 GRADE SEPARATION
 CROSS ROAD
 OVER FAI ROUTE 80
 P.A. PROJECT
 FAI ROUTE 80 SECTION (32,47)-4
 GRUNDY-KENDALL COUNTY
 STATION 1397+24.83

ALFRED BENESCH & ASSOCIATES CONSULTING ENGINEERS
 10 SOUTH WABASH AVENUE 602 CHICAGO, ILLINOIS

PROJECT NO.	3247-4	SHEET NO.	262	TOTAL SHEETS	146
DATE	10/27/54	DESIGNED BY	W. MENDALL	CHECKED BY	
F.A.I. ROUTE 80 SECTION (3247-4) GRUNDY-KENDALL COUNTY ILLINOIS					



NOTE:
 * ALTERNATE STEEL BANDING .035" MEETING THE APPROVAL OF THE ENGINEER MAY BE SUBSTITUTED FOR THE P.2 BARS.
 ** DIFFERENCE BETWEEN END BLOCK DIMENSIONS OF I-BEAMS IN ADJACENT SPANS SHALL NOT BE MORE THAN 1/4"



NOTES:
 PRECAST PRESTRESSED CONCRETE I-BEAMS ARE DESIGNED IN ACCORDANCE WITH THE A.A.S.H.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1953, AND THE CRITERIA FOR PRESTRESSED CONCRETE BRIDGES, 1954, OF THE BUREAU OF PUBLIC ROADS. PRESTRESSING STRANDS SHALL CONSIST OF SPLICED SEVEN-WIRE STRANDS WHICH HAVE A NOMINAL DIAMETER OF 7/8" AND A CROSS-SECTIONAL AREA OF 0.089 SQUARE INCHES. ALL REINFORCING STEEL, PRESTRESSING STRANDS, LIFTING HOOKS, INSERTS, BEARING PLATES AND OTHER ITEMS WHICH ARE CAST INTO THE PRECAST CONCRETE BEAMS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER LINEAL FOOT FOR TRANSPORTING AND ERECTING PRECAST PRESTRESSED CONCRETE I-BEAMS. PRESTRESSED CONCRETE I-BEAMS SHALL BE LIFTED ONLY BY THE LIFTING HOOKS PROVIDED IN THE TOP FLANGES AT THE ENDS OF THE BEAMS. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING MATERIALS, PRESTRESSING EQUIPMENT AND OPERATIONS, CONSTRUCTION AND HANDLING METHODS, AND OTHER REQUIREMENTS FOR THE PRECAST PRESTRESSED CONCRETE I-BEAMS. STEEL FOR LIFTING HOOKS SHALL BE NON-DEFORMED BARS OF STRUCTURAL OR INTERMEDIATE GRADE BILLET STEEL. ALTERNATE LIFTING HOOKS MEETING THE APPROVAL OF THE ENGINEER MAY BE SUBSTITUTED FOR THE 1 1/4" LIFTING HOOK SHOWN.

BAR SCHEDULE

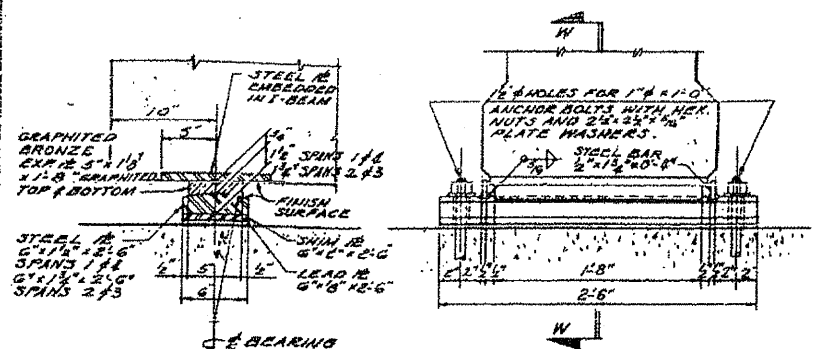
MARK	SIZE	TYPE	LENGTH	B	C	D	E	F	H	K
P1	#5	B	4'-9"	05	3/8	05				
P2	#3	A	4'-8"	05	3/8	05	05	1/3	10 1/2	10 1/2
P3	#3	C	2'-7"	05	3/8	05	05	1/3	10 1/2	10 1/2
P4	#6	STRT	35'-3"							
P5	#5	STRT	25'-9"							
P6	#5	B	3'-11"	05	3/8	05				

ALL DIMENSIONS GIVEN ARE OUT TO OUT OF BARS

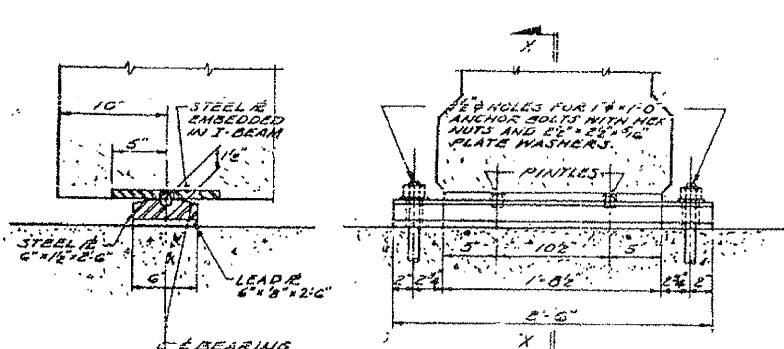
DETAILS OF PRECAST PRESTRESSED CONCRETE I-BEAMS GRADE SEPARATION CROSS ROAD OVER F.A.T. ROUTE 80
 F.A. PROJECT
 F.A.I. ROUTE 80 SECTION (3247-4)
 GRUNDY-KENDALL COUNTY
 STATION 1307+24.83

PROJECT NO.	SECTION	TOWN	SHEETS	SHEET NO.
F.A. 130132, 47-4	GRUNDY-KENDALL	262	147	
STA.	TO STA.			
FOR ROADWAY 15.71 SPANS 1 & 2				

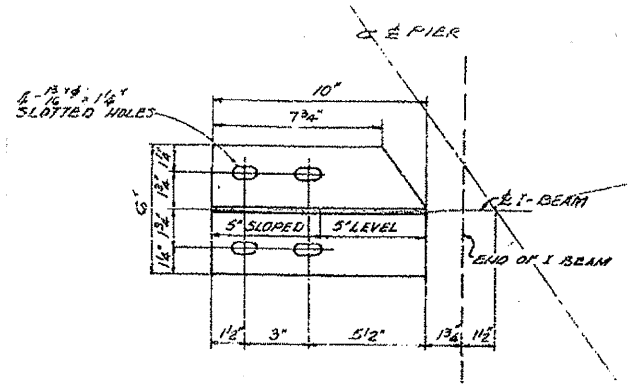
SHEET 6 OF 11



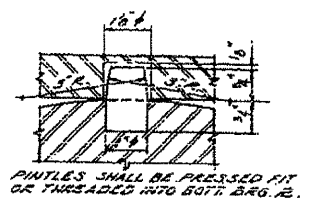
SECTION "W-W" EXPANSION BEARING "B1" SCALE 1/2" = 1'-0"



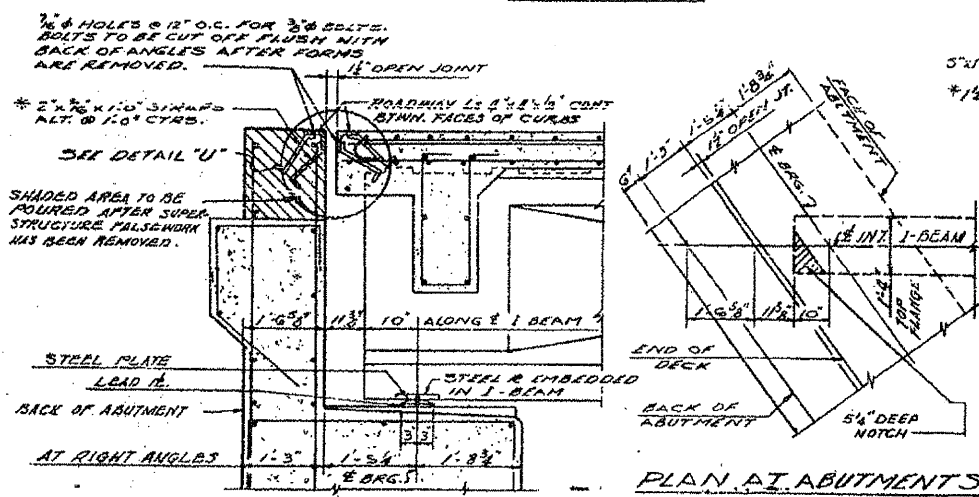
SECTION "X-X" FIXED BEARING "B2" SCALE 1/2" = 1'-0"



DETAIL OF ST 3x10 SCALE 3/4" = 1'-0"



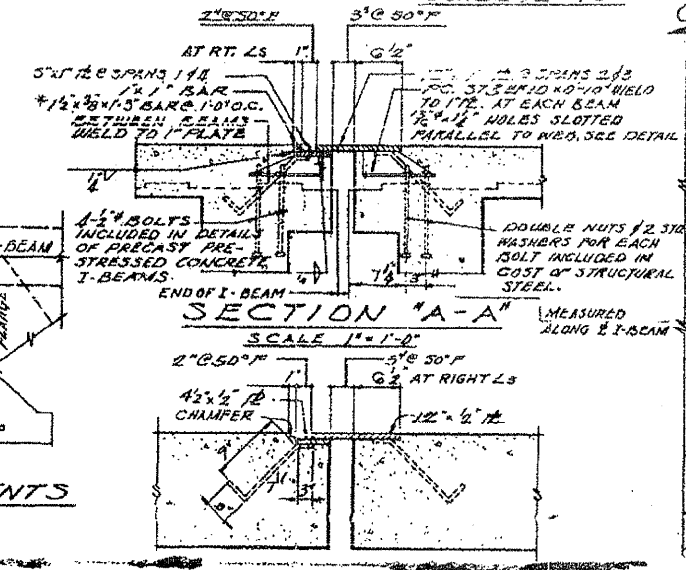
PINTLE DETAIL



SECTION AT ABUTMENTS SCALE 3/8" = 1'-0"

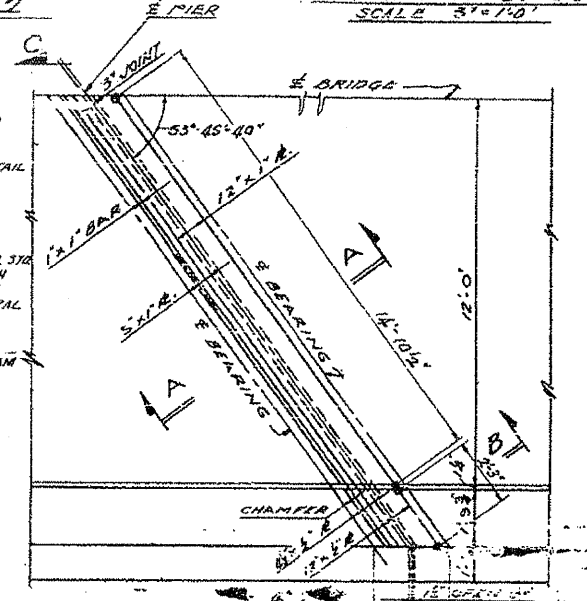
"L" DIMENSIONS - SHIM PLATES

BEAM NO.	1	2	3	4	5	6	7	8	9	10	11
PIER NO. 1											
PIER NO. 3											

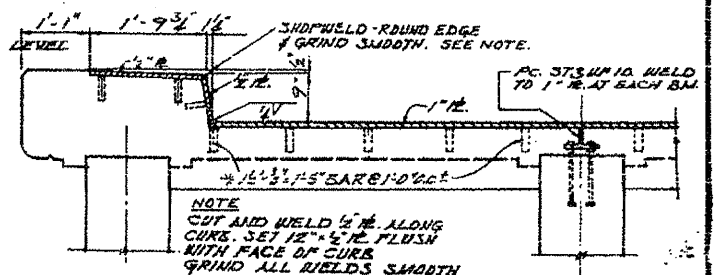


SECTION "A-A" SCALE 1" = 1'-0"

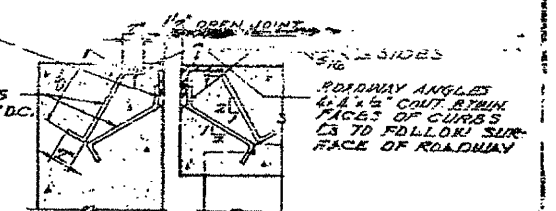
SECTION "B-B" SCALE 1" = 1'-0"



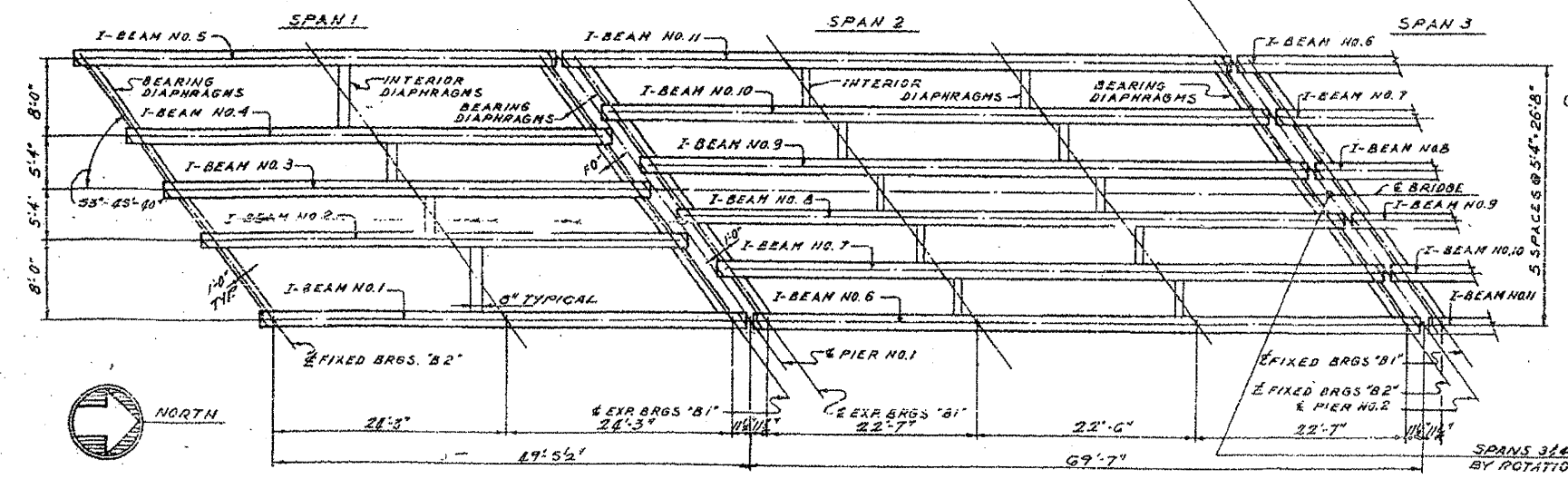
HALF PLAN OF EXPANSION JOINT DETAIL SCALE 3/8" = 1'-0"



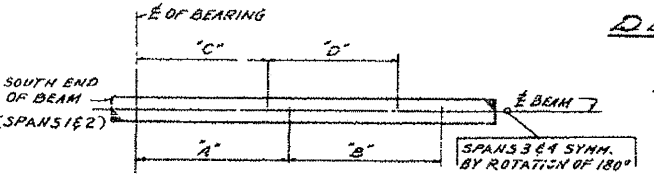
SECTION "C-C" SCALE 3/4" = 1'-0"



DETAIL "U"



FRAMING PLAN-SPANS 1 AND 2 SHOWN SCALE 6" = 1'-0"



INSERT LOCATION FOR INTERIOR DIAPHRAGMS

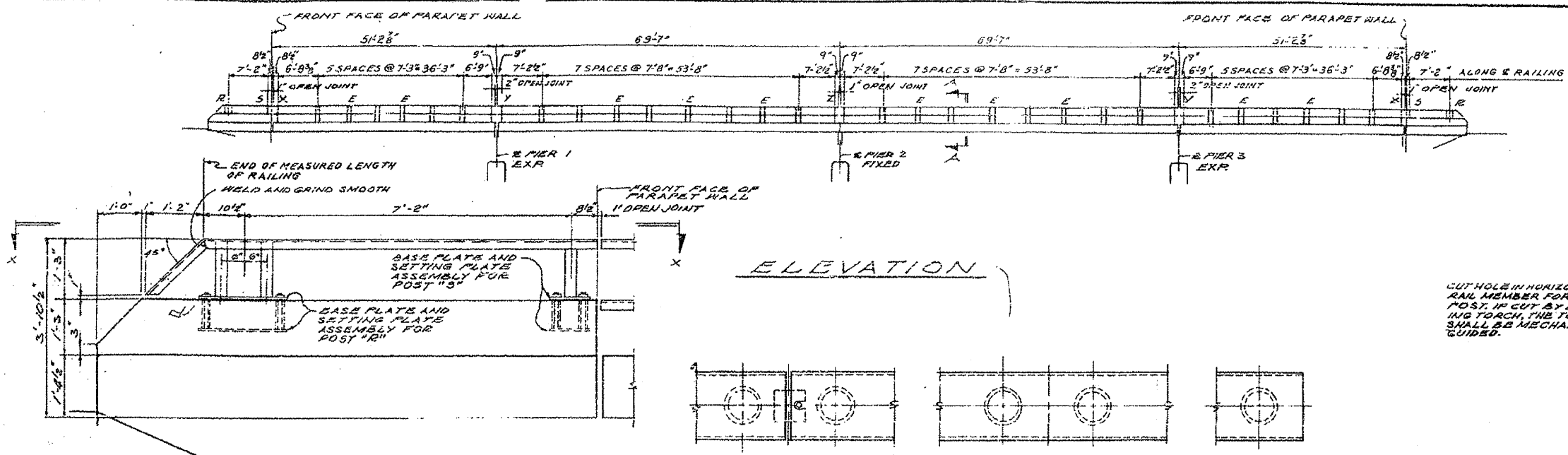
I-BEAM NO.	"A"	"B"	"C"	"D"
1			21'-3 3/8"	
2	27'-2 3/8"		22'-5 1/2"	
3	26'-2 1/2"		22'-3 1/2"	
4	26'-2 1/2"		21'-3 3/8"	
5	27'-2 3/8"			
6			20'-7 1/4"	22'-6"
7, 8, 9, 10	24'-6 1/2"	22'-6"	20'-7 1/4"	22'-6"
11	22'-6 1/2"	22'-6"		

NOTE:
 * 3/4" x 3/8" x 2" CR1020 STEEL GRANULAR OR SOLID FLUX FILLED STUDS AUTOMATICALLY END WELDED MAY BE SUBSTITUTED FOR STRAP ANCHORS.
 ALL MATERIAL FOR EXPANSION DEVICE SHALL BE STRUCTURAL STEEL.
 DIMENSIONS NOTED AT 50°F. SHALL BE INCREASED 0.01 INCH FOR EACH 10° DROP IN TEMPERATURE FROM 50°F. AND DECREASED 0.01 INCH FOR EACH 10° INCREASE IN TEMPERATURE FROM 50°F.
 ROADWAY EXPANSION DEVICES SHALL BE FABRICATED AND ERECTED TO CONFORM TO ROADWAY CROWN.
 ASSEMBLY IN SHOP FOR INSPECTION. ALL SURFACES INACCESSIBLE AFTER ERECTION SHALL RECEIVE TWO SHARP COATS OF RED LEAD PAINT EXCEPT PORTIONS EMBEDDED IN CONCRETE.

FRAMING PLAN BEARING DETAILS AND EXPANSION DEVICE GRADE SEPARATION CROSS ROAD OVER FAI. ROUTE 80 F.A. PROJECT FAI. ROUTE 80 SECTION (32,47)-4 GRUNDY-KENDALL COUNTY STATION 1397 + 24.83

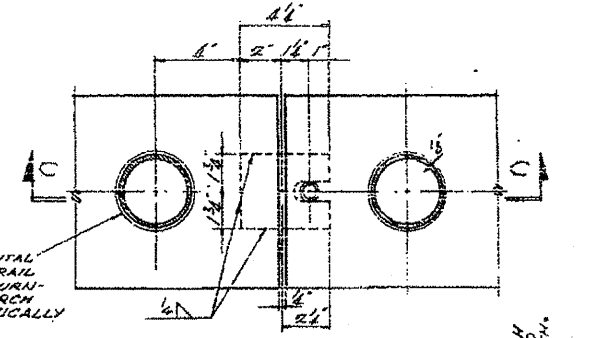
SECTION	COUNTY	SHEET NO.
FA. 1.80 (32,47)-4	GRUNDY	148
STA.	TO STA.	
RD. ROAD DIST. NO. 7	SHOULDERS	P.A. PROJECT

SHEET 7 OF 11



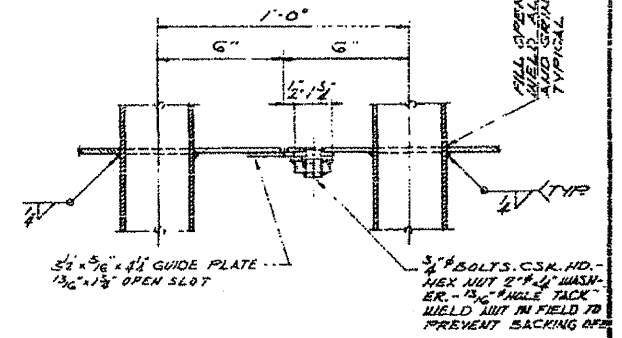
ELEVATION

TOP VIEW OF RAIL



SECTION "B-B"

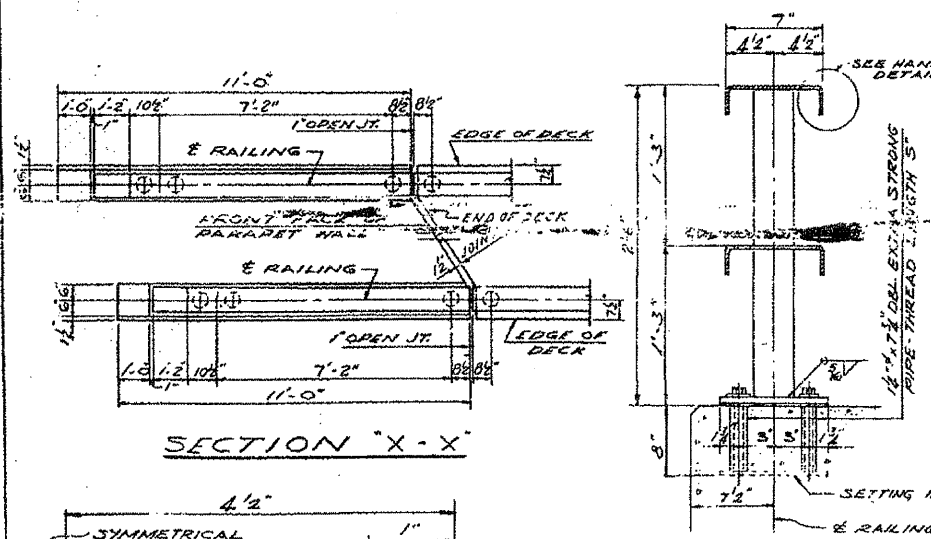
CUT HOLE IN HORIZONTAL RAIL MEMBER FOR RAIL POST, IF CUT BY BURNING TORCH, THE TORCH SHALL BE MECHANICALLY GUIDED.



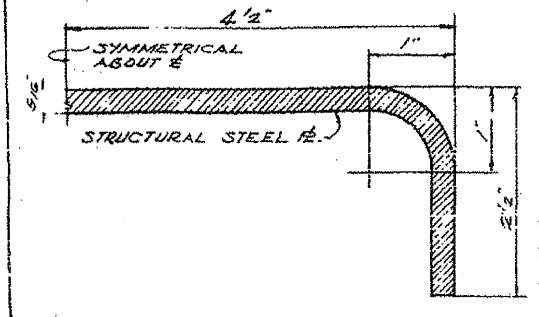
SECTION "C-C"

FILL OPENING WITH WELD ALL AROUND AND GRIND SMOOTH. TYPICAL

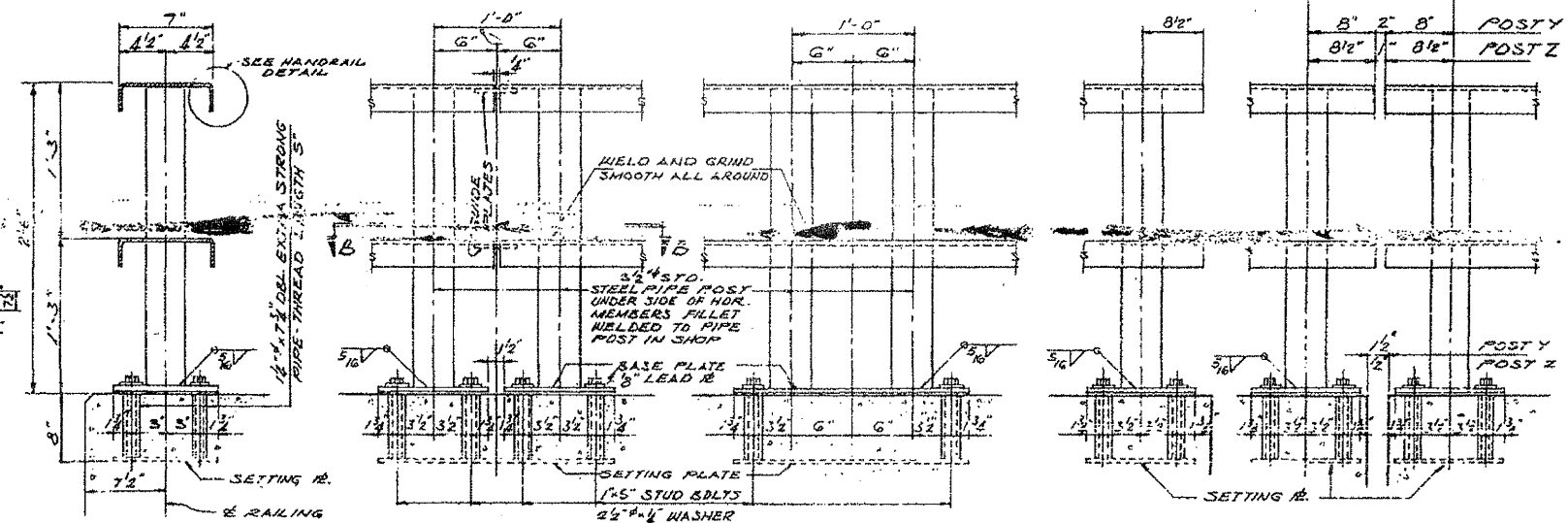
WINGWALL HANDRAIL ELEVATION



SECTION "X-X"



HANDRAIL DETAIL



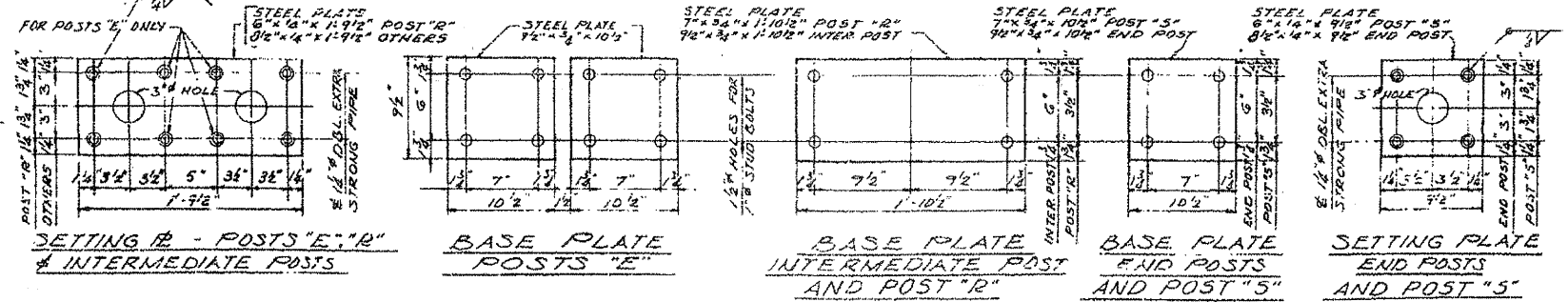
SECTION "A-A"

POSTS "E"

INTERMEDIATE POSTS

END POST "X"

END POST "Y" END POST "Z" SIMILAR



SETTING PLATE - POSTS "E", "R" & INTERMEDIATE POSTS

BASE PLATE POSTS "E"

BASE PLATE INTERMEDIATE POST AND POST "R"

BASE PLATE END POSTS AND POST "S"

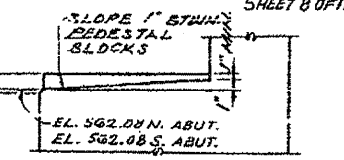
SETTING PLATE END POSTS AND POST "S"

NOTES
 RAIL SHALL BE FABRICATED AND ERECTED TO CONFORM TO PROFILE OF ROADWAY.
 RAIL POSTS SHALL BE TRULY VERTICAL.
 WELDING OF RAIL POST TO HORIZONTAL MEMBERS AND BASE PLATES SHALL BE CONTINUOUS WELDS ALL AROUND.
 RAIL POSTS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WELDED AND SEAMLESS STEEL PIPE ASTM A53 WITH MINIMUM YIELD POINT OF 50,000 P.S.I.
 HANDRAIL SHALL BE GIVEN ONE SHOP COAT OF RED LEAD AND 2 FIELD COATS OF ALUMINUM PAINT. SEE SPECIFICATIONS.
 SHIM PLATES FOR RAIL POSTS: FURNISH SHIMS CONSISTING OF ONE 1/4" SHIM AND TWO 1/8" SHIMS AT 50% OF RAIL POSTS ON SUPERSTRUCTURE AND ALL POSTS ON WINGWALLS FOR VERTICAL ADJUSTMENT OF POSTS.
 SIZE OF SHIM PLATES, LEAD PLATES AND SPACING OF HOLES SHALL BE SAME AS FOR BASE PLATES OF POSTS.

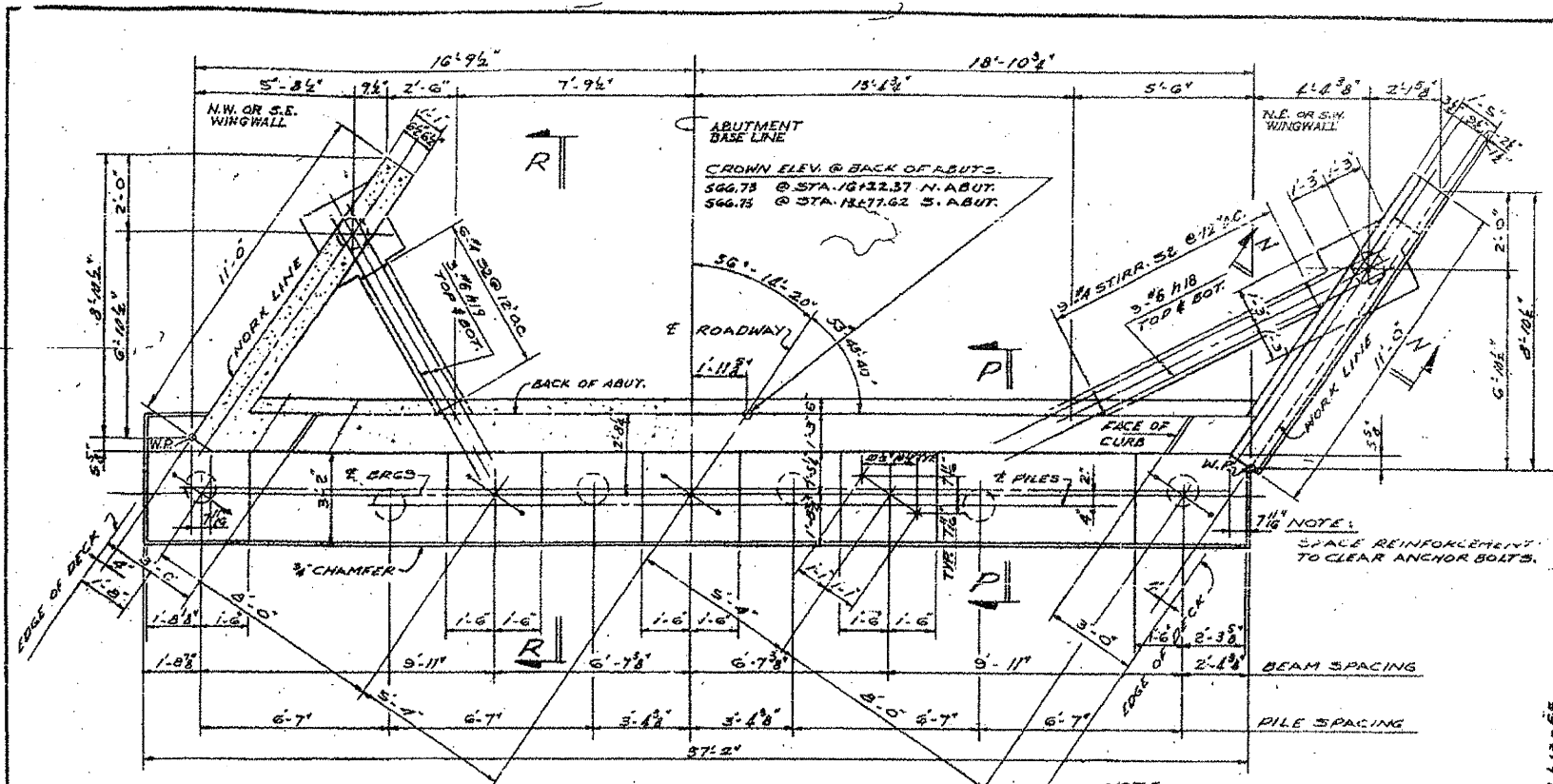
HANDRAIL DETAILS
 GRADE SEPARATION
 CROSS ROAD
 OVER FA. ROUTE 80
 FA. PROJECT
 FA. ROUTE 80 SECTION (32,47)-4
 GRUNDY-KENDALL COUNTY
 STATION 1397 + 24.83

PROJECT NO.	32-47-4	TOTAL SHEETS	262	SHEET NO.	149
DATE	12-21-44	BY	ALFRED BENECH & ASSOCIATES		
PROJECT TITLE	F.A. ROUTE 80 OVER F.A. ROUTE 80				
LOCATION	KENDALL COUNTY, ILLINOIS				

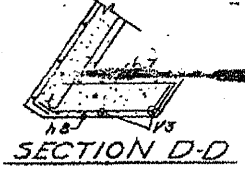
BLOCK HEIGHTS
SEE FRONT ELEVATION



SECTION "P-P"
SCALE 3/4" = 1'-0"



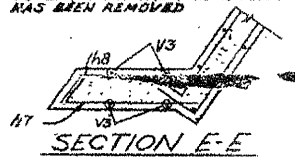
HALF SECTION "A"
SCALE 3/4" = 1'-0"



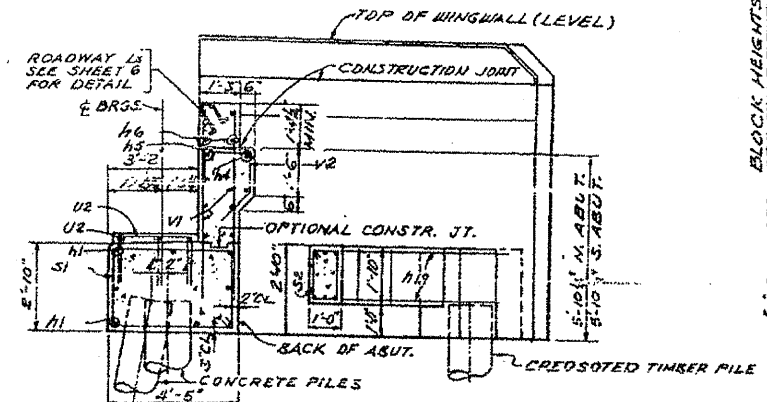
SECTION D-D

HALF PLAN
SCALE 3/8" = 1'-0"

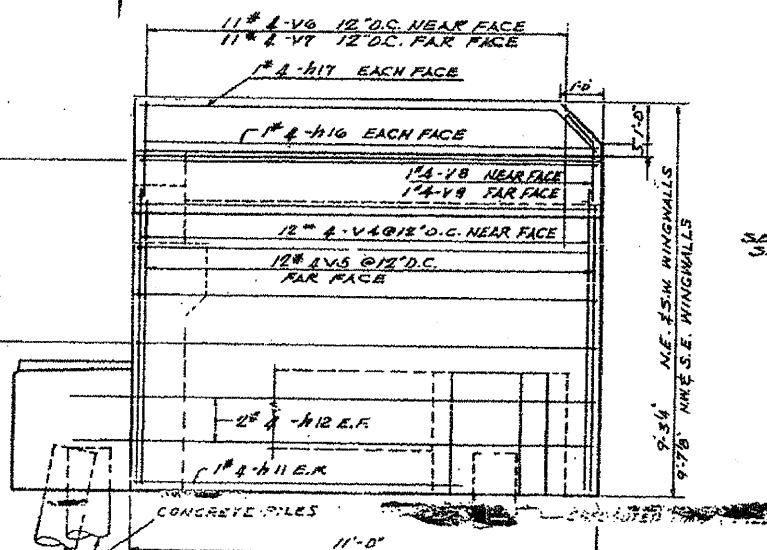
NOTE:
SLOPE TOP OF CAP BEAM BETWEEN PEDESTAL BLOCKS 1 IN. PEDESTAL BLOCKS TO BE POURED MONOLITHICALLY WITH CONCRETE BEAM. WALL ABOVE CONSTRUCTION JOINT TO BE POURED AFTER SUPERSTRUCTURE FALSEWORK HAS BEEN REMOVED.



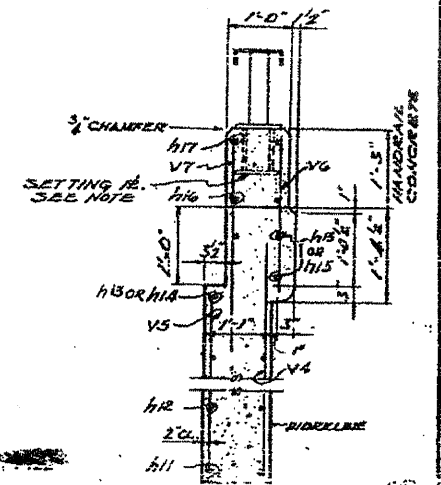
SECTION E-E



SECTION "R-R"
SCALE 3/8" = 1'-0"

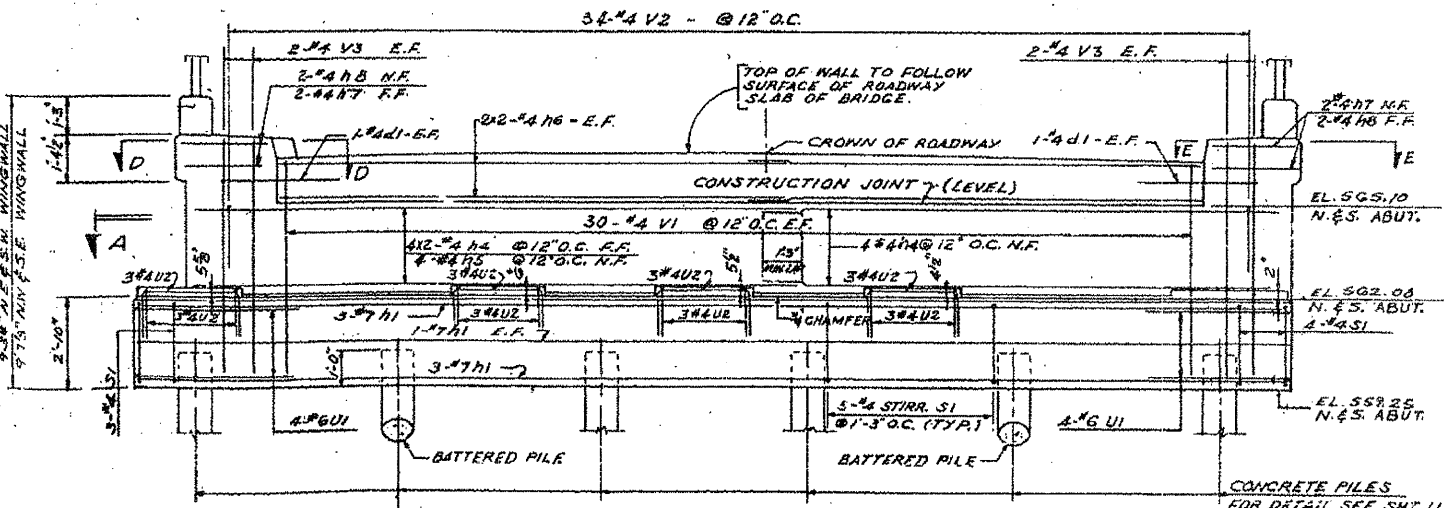


WING WALL ELEVATION
SCALE 1/2" = 1'-0"



SECTION "N-N"
SCALE 3/4" = 1'-0"

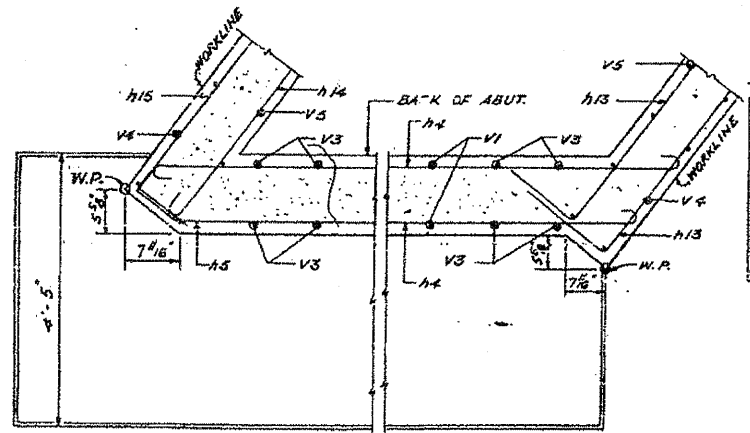
NOTE: SETTING PLATE TO BE CAST IN PLACE WITH HANDRAIL CONCRETE



FRONT ELEVATION
SCALE 3/8" = 1'-0"
(2 STRUCTURES THUS)

PILE SCHEDULE FOR EACH ABUTMENT

PILES	CONCRETE	CREOSOTED
CAPACITY	35 TONS	10 TONS
NO. REQUIRED	6 (INC. 1 TEST PILE)	2
EST. LENGTH	22'	21'



TYPICAL CORNER DETAIL
SCALE 3/4" = 1'-0"

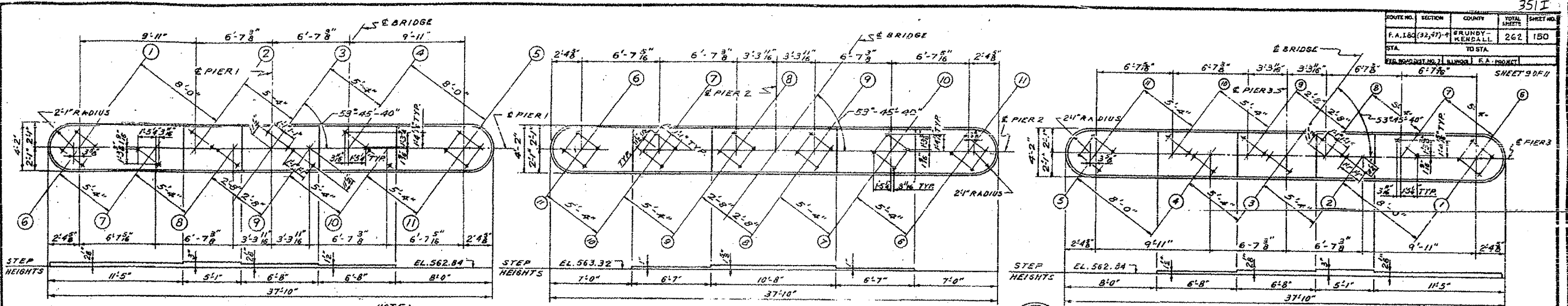
BILL OF MATERIALS - N#5 ABUTMENT & WINGWALLS

ITEM	UNIT	QUANTITY
CLASS X CONCRETE	CU. YDS.	35.7
REINFORCEMENT BARS	LBS.	2,740
HANDRAIL CONCRETE	CU. YDS.	1.0
CLASS A EXCAVATION FOR STRUCTURES	CU. YDS.	2.3
CONCRETE PILES	LINEAL FT.	110
TEST PILES (CONCRETE)	EACH	1
CREOSOTED TIMBER PILES	LINEAL FT.	42

NORTH & SOUTH ABUTMENT & WINGWALL DETAILS

GRADE SEPARATION
CROSS ROAD
OVER F.A. ROUTE 80
F.A. PROJECT
F.A. ROUTE 80 SECTION (32,47)-4
GRUNDY - KENDALL COUNTY
STATION 1397+24.83

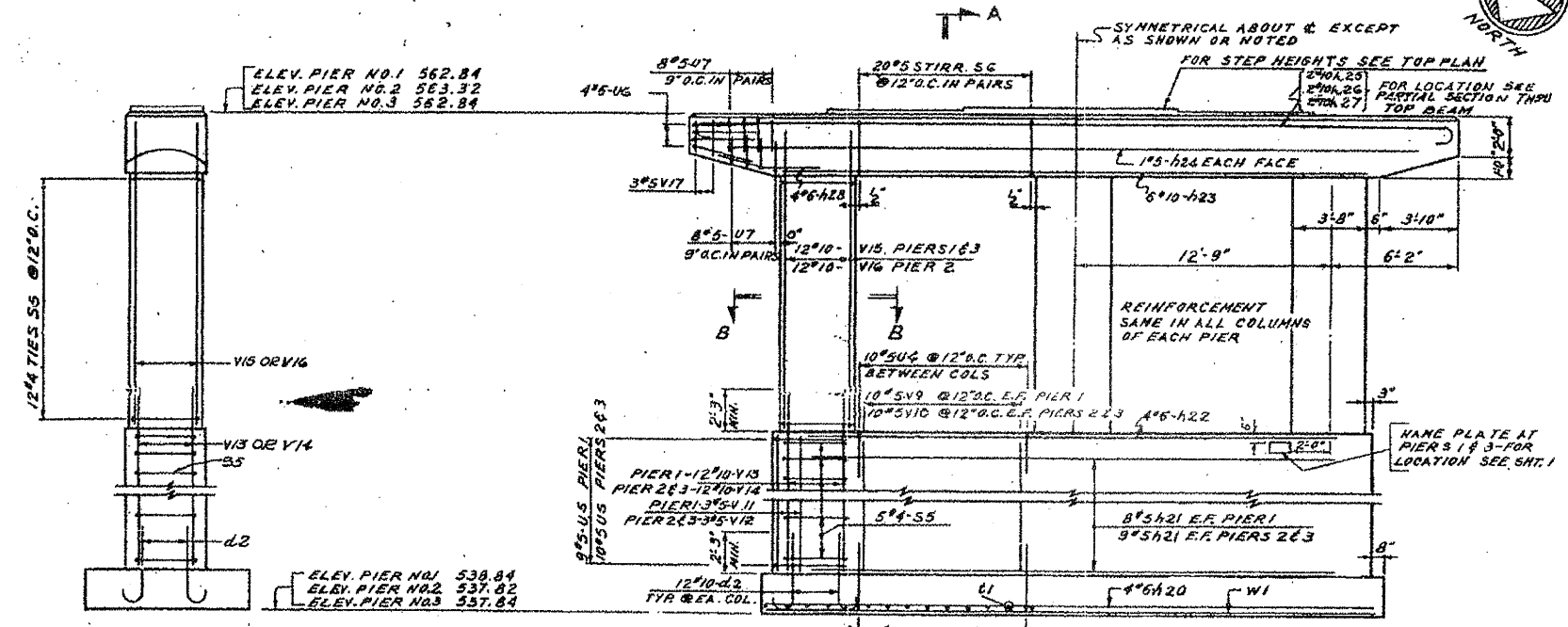
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A. 182	(32,47)-4	GRUNDY-KENDALL	262	150
STA.	TO STA.			
PIER NO.	RUNOFF	F.A. PROJECT		
			SHEET 90F-11	



TOP PLAN OF PIER NO. 1

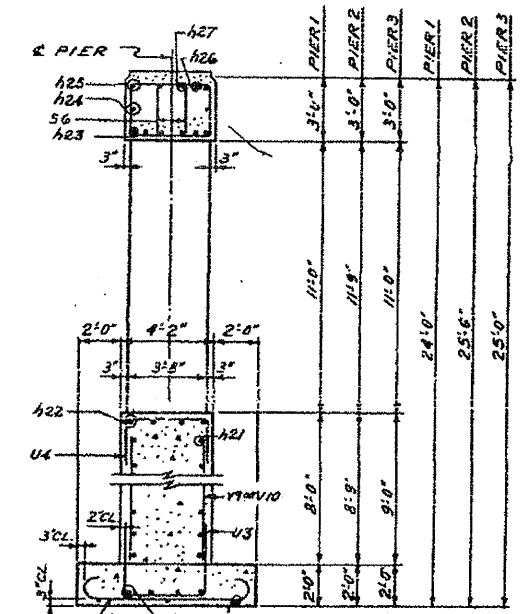
TOP PLAN OF PIER NO. 2

TOP PLAN OF PIER NO. 3

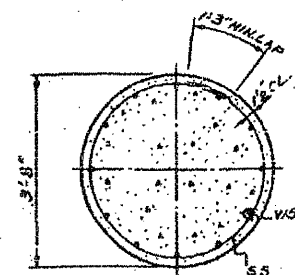


END VIEW

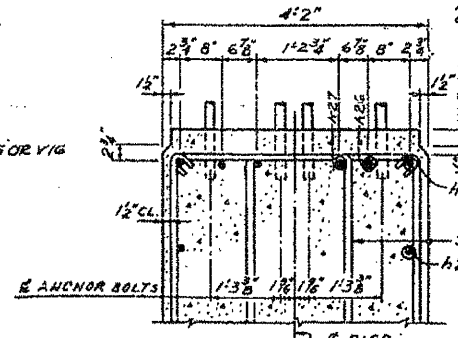
ELEVATION



SECTION A-A

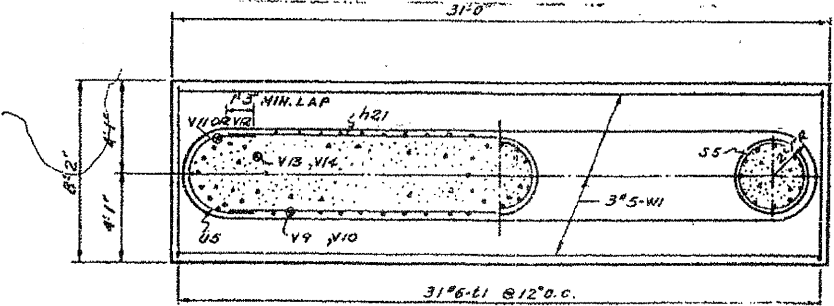


SECTION B-B



PARTIAL SECTION THRU TOP BEAM

NOTE: SPACE REINFORCEMENT TO AVOID INTERFERENCE WITH DRILLING OF HOLES FOR ANCHOR BOLTS



HALF SECTION FOOTING PLAN

BILL OF MATERIALS

ITEM	UNIT	QUANTITY		
		PIER 1	PIER 2	PIER 3
CLASS X CONCRETE	CU. YDS.	87.5	88.3	88.9
REINFORCEMENT BARS	LBS.	9,780	10,120	10,040
CLASS A EXCAVATION FOR STRUCTURES	CU. YDS.	131	146	146

PIERS 1, 2 AND 3
GRADE SEPARATION
CROSS ROAD
OVER F.A.I. ROUTE 80
F.A. PROJECT
F.A.I. ROUTE 80 SECTION (32,47)-4
GRUNDY-KENDALL COUNTY
STATION 1397+24.83