

Bench Mark: Chiseled square on top of the southwest wingwall, 17.65' Rt. at Station 288+13. Elevation = 755.435

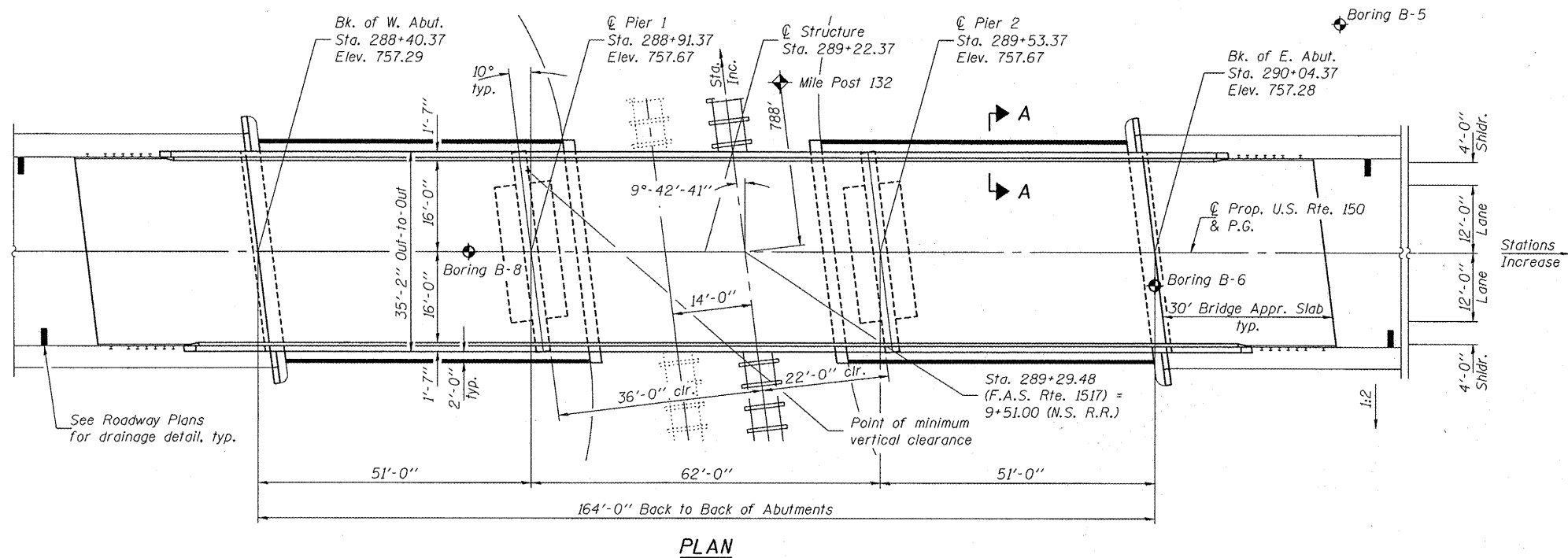
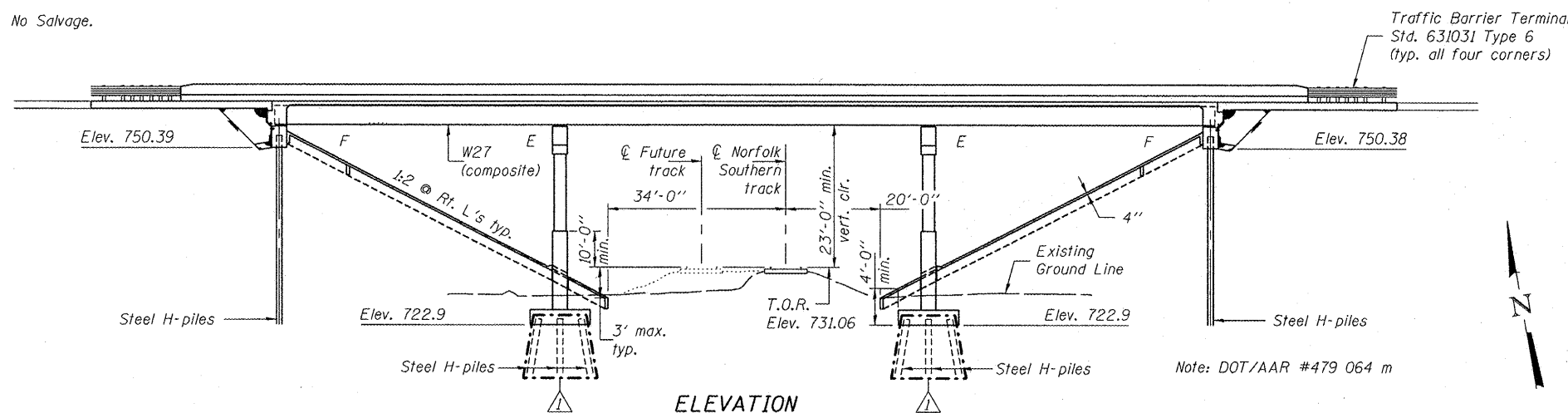
Existing Structure: S.N. 074-0009 built in 1928 as S.B.I. Route 39, Section 12V at Sta. 289+23.00. Superstructure replaced in 1975 as S.B.I. Route 39, Section 12VBR. Structure consists of five span PPC deck beams on spill-thru counter-fort abutments and multi-column piers. 218'-7 7/8" back-to-back abutments. 33'-0" out-to-out deck. SN 074-0086 to be built on new alignment approximately 49' south of existing bridge. Road closed and traffic detoured during construction.

No Salvage.

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS

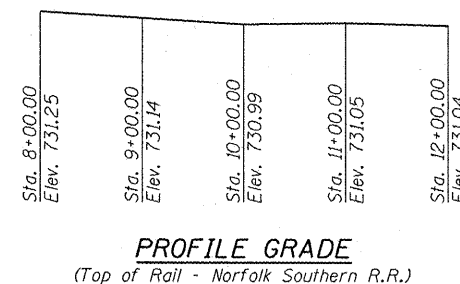
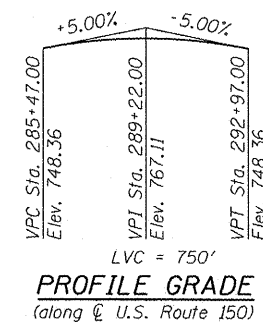
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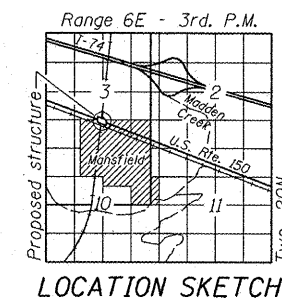
STATION 289+22.37
BUILT 20 BY
STATE OF ILLINOIS
F.A.S. RTE. 1517 SEC. 12VBR-1
LOADING HL-93
STRUCTURE NO. 074-0086

NAME PLATE

See Std. 515001



Notes: The profile grade shows the final elevations after grinding. Up to 1/4" will be ground off the bridge slab, approach pavement and connector pavement.



GENERAL PLAN & ELEVATION
U.S. ROUTE 150 OVER
NORFOLK SOUTHERN R.R.
F.A.S. RTE. 1517 - SEC. 12VBR-1
PIATT COUNTY
STATION 289+22.37
STRUCTURE NO. 074-0086

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

DESIGN SPECIFICATIONS

2007 LRFD AASHTO 4th Edition

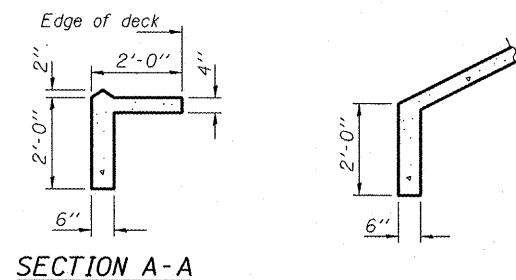
DESIGN STRESSES

FIELD UNITS

f'_c = 3,500 psi
 f_y = 60,000 psi (reinforcement)
 f_y = 50,000 psi (AASHTO M270 Grade 50W)

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec (S_{D1}) = 0.10g
Design Spectral Acceleration at 0.2 sec (S_{D5}) = 0.17g
Soil Site Class = C



SECTION A-A

DESIGNED: *Thomas P. Nardiswala*
CHECKED: *Stephan M. Ryan*
DRAWN: *h.t. duong*
CHECKED: *DPN/SMR*

EXAMINED: *Thomas P. Nardiswala*
PASSED: *Ralph E. Anderson*
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES



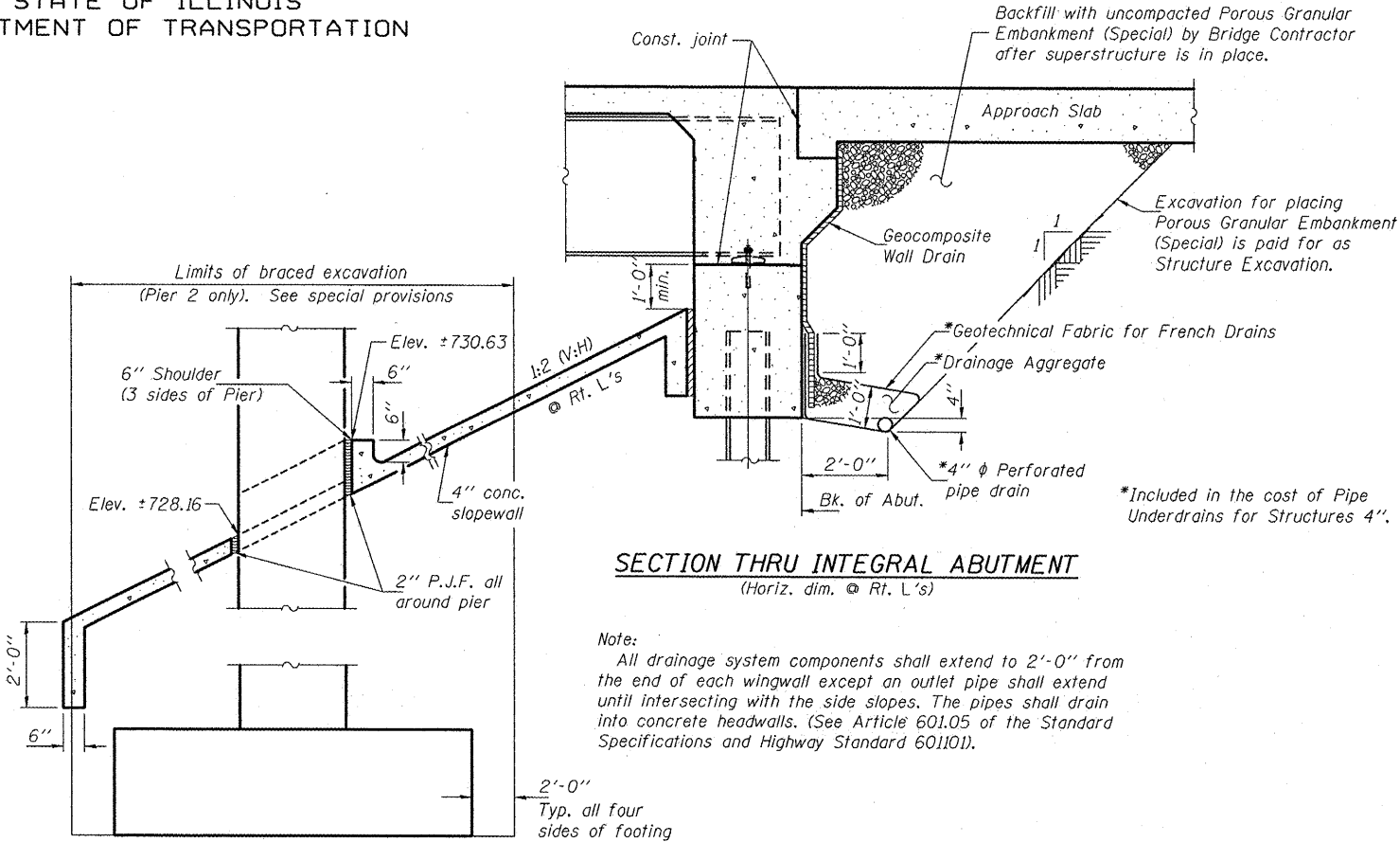
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

Fasteners shall be AASHTO M164 Type I, mechanically galvanized bolts.
Bolts $\frac{3}{4}$ " ϕ , holes $\frac{5}{16}$ " ϕ , unless otherwise noted.
Calculated weight of Structural Steel = 108170 lbs. (AASHTO M 270 Gr. 50W).
All structural steel shall be AASHTO M 270 Grade 50W.
No field welding is permitted except as specified in the contract documents.
Reinforcement bars shall conform to the requirements of ASTM A 706 Gr. 60 (1L Modified). See Special Provisions.
Reinforcement bars designated (E) shall be epoxy coated.
Bearing seat surfaces shall be constructed or adjusted to their designated elevations within a tolerance of $\frac{1}{8}$ inch (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
Structural steel shall only be painted for a distance equal to the depth of embedment into the concrete cap plus 3 inches. Those areas shall be primed in the shop with a Department approved zinc rich primer. No field painting shall be required. All structural steel shall be cleaned as specified in the Special Provision for "Surface Preparation and Painting Requirements for Weathering Steel".
Slipforming of parapets will not be allowed.
Sloped wall shall be reinforced with welded wire fabric, 6"x 6" - W4.0 x W4.0, weighing 58 lbs. per 100 sq. ft.
The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.
The Contractor shall drive two test piles, one each at West Abutment and Pier 2 to 110% of the nominal required bearing specified in respective locations before ordering the remainder of piles.
The Contractor shall submit Structural Assessment Report(s) as required for the Contractor's Means and Methods of Construction. See Special Provisions.

Current Ratings of File for Existing Structure

Inventory: HS 17.3
Operating: HS 28.9
Live Load Restrictions: No
Inventory and Operating Ratings and Live Load Restrictions are provide for information only. Inventory and Operating Ratings are based on HS loading and configuration. Live Load Restrictions are based on Illinois legal loads and configurations. The Ratings and Live Load Restrictions are not necessarily representative of capacities to support the Contractor's equipment.
The Contractor is advised that the existing structure contains members (including piers) that are in a deteriorated condition with reduced load carrying capacity. It is the Contractor's responsibility to account for the condition of the existing structure when developing construction procedures for the complete or partial removal, or replacement of the structure. An Existing Structure Information Package is available upon request as noted in the special provisions.



TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Porous Granular Embankment (Special)	Cu. Yd.	92.4		92.4
Removal of Existing Structures	Each	1		1
Structure Excavation	Cu. Yd.		250	250
Concrete Structures	Cu. Yd.		258.2	258.2
Concrete Superstructure	Cu. Yd.		319.4	319.4
Bridge Deck Grooving	Sq. Yd.	697		697
Concrete Encasement	Cu. Yd.		4.2	4.2
Protective Coat	Sq. Yd.	967		967
Furnishing and Erecting Structural Steel	L. Sum	1		1
Stud Shear Connectors	Each	3654		3654
Reinforcement Bars, Epoxy Coated	Pound	76250	33600	109850
Bar Splicers	Each	64		64
Sloped wall 4"	Sq. Yd.		482	482
Furnishing Steel Piles HPI2x53	Foot		2348	2348
Driving Piles	Foot		2348	2348
Test Pile Steel HPI2x53	Each		2	2
Name Plates	Each	1		1
Elastomeric Bearing Assembly, Type I	Each		12	12
Anchor Bolt 1" ϕ	Each		24	24
Anchor Bolt 1 1/2" ϕ	Each		24	24
Braced Excavation	Cu. Yd.		112	112
Geocomposite Wall Drain	Sq. Yd.		56.8	56.8
Pipe Underdrains for Structures 4"	Foot		137	137
** Diamond Grinding (Bridge Section)	Sq. Yd.	734		734
Reinforced Soil Slope System	Sq. Ft.		5660	5660
Asbestos Bearing Pad Removal	Each		88	88
Sloped wall Removal	Sq. Yd.		542	542

**Includes bridge approach slab and connector pavement.

DESIGNED	D.P. Narielwala
CHECKED	S.M. Ryan
DRAWN	h.f. duong
CHECKED	DPN/SMR

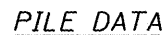
November 25, 2009
EXAMINED <i>Thomas J. Domagala</i>
PASSED <i>Ralph E. Anderson</i>
ENGINEER OF BRIDGES AND STRUCTURES

GENERAL DATA
STRUCTURE NO. 074-0086

SHEET NO. 2	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
25 SHEETS	1517	12VBR-1	PIATT	168	87
CONTRACT NO. 70388					
FED. ROAD DIST. NO. - ILLINOIS FED. AID PROJECT					

A diagram showing a circular cross-section of a tube. Inside the circle, there is a smaller circle representing a hole. The hole is labeled $v_3(E)$. The tube is represented by a thick outer boundary.

Plan view of partial cap showing hook orientation of $v_3(E)$ bars.



$\frac{n(E) \text{ or } v_3(E)}{n_1(E)} \frac{11^3_4''}{5''}$

BARS $n(E)$,
 $n_1(E)$ & $v_3(E)$

DESIGNED	<i>D.P. Narielwala</i>
CHECKED	<i>S.M. Ryan</i>
DRAWN	<i>h.t. duong</i>
CHECKED	<i>DPN/SMR</i>

November 25, 2009

EXAMINED *Thomas J. Donagale*
ENGINEER OF BRIDGE DESIGN

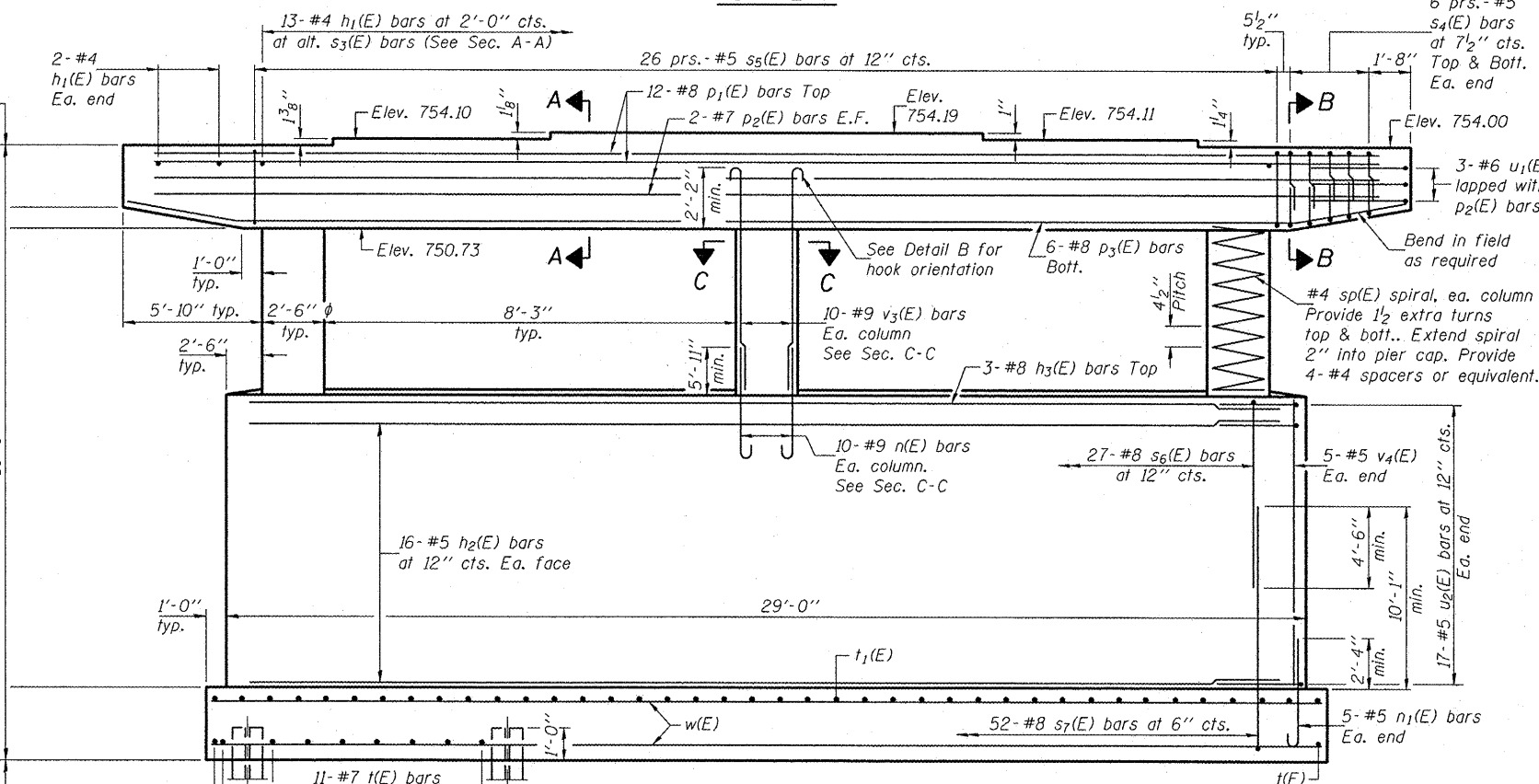
PASSED *Ralph E. Anderson*
ENGINEER OF BRIDGES AND STRUCTURES

MIN. BAR LAPS

#5 bar = 2'-2"
#8 bar (lapped with #6 bar) = 6'-4"

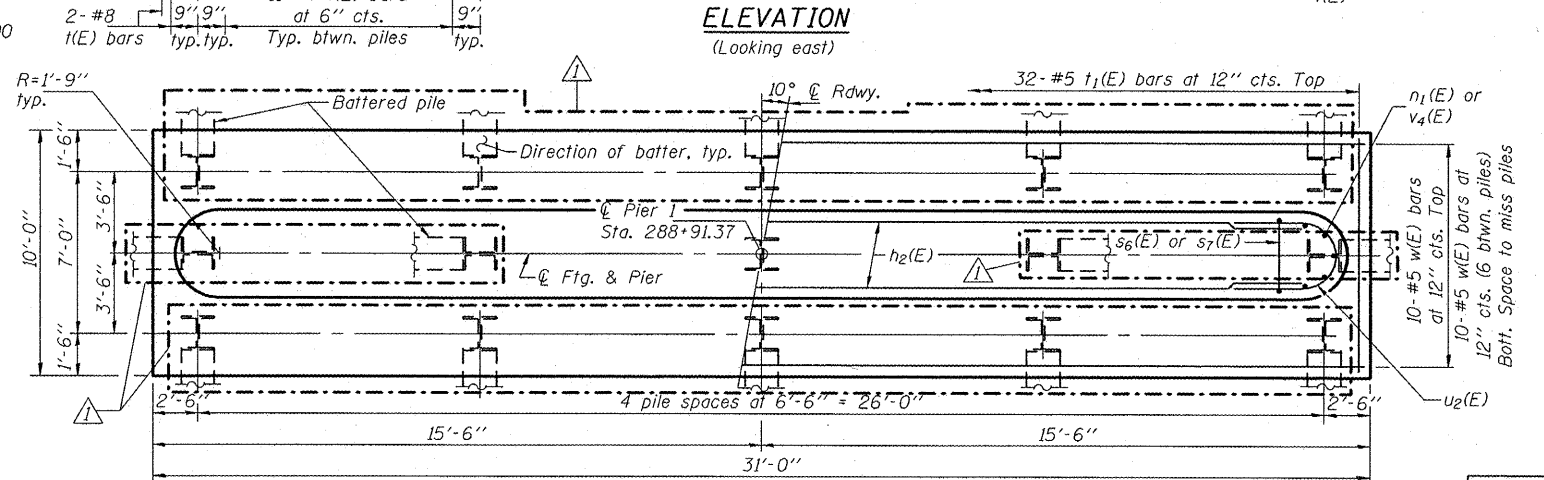
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TOP PLAN

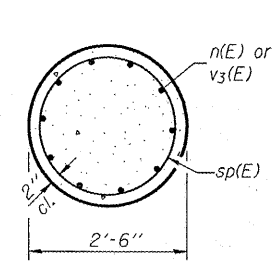


ELEVATION

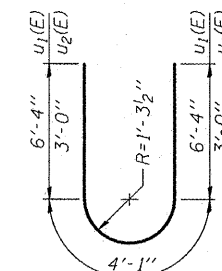
(Looking east)



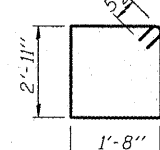
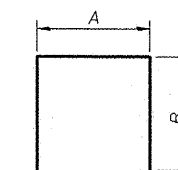
FOOTING PLAN



SEC. C-C



BARS $u_1(E)$
& $u_2(E)$

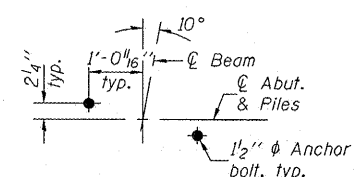

$$BAR \ s_5(E)$$


BARS $s_4(E)$,
 $s_6(E)$ & $s_7(E)$

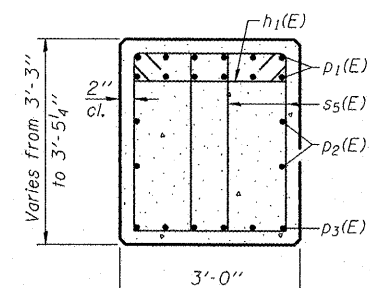
A & B DIMENSIONS

Bar	A	B
s ₄ (E)	1'-8"	2'-7"
s ₆ (E)	3'-2"	10'-5"
s ₇ (E)	3'-2"	11'-11"

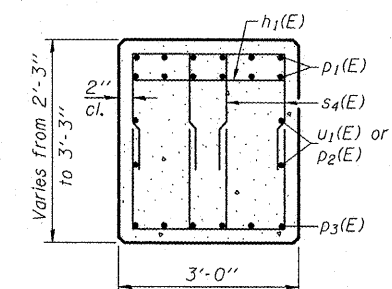
A & B DIMENSIONS



DETAIL A



SEC. A-A



SEC. B-B

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
$h_1(E)$	17	#4	2'-8"	—
$h_2(E)$	32	#5	25'-6"	—
$h_3(E)$	3	#8	25'-6"	—
$n(E)$	30	#9	9'-6"	⌋
$n_1(E)$	10	#5	4'-2"	⌋
$p_1(E)$	12	#8	32'-2"	—
$p_2(E)$	4	#7	32'-2"	—
$p_3(E)$	6	#8	35'-2"	—
$s_4(E)$	48	#5	6'-10"	⌌
$s_5(E)$	52	#5	10'-1"	⌌
$s_6(E)$	27	#8	24'-0"	⌌
$s_7(E)$	52	#8	27'-0"	⌌
**				
$sp(E)$	3	#4	10'-0"	⌌⌌⌌
$I(E)$	48	#7	9'-6"	—
$I_1(E)$	32	#7	9'-6"	—
$u_1(E)$	6	#6	16'-9"	⌋
$u_2(E)$	34	#5	10'-1"	⌋
$v_3(E)$	30	#9	12'-11"	⌋
$v_4(E)$	10	#5	13'-8"	—
$w(E)$	20	#5	30'-6"	—
Structure Excavation			Cu. Yd.	112
Concrete Structures			Cu. Yd.	103.7
* Reinforcement Bars, Epoxy Coated			Pound	14880
Furnishing Steel Piles HP12x53			Foot	795
Driving Piles			Foot	795
Anchor Bolts 1/2"			Each	12

*Weight includes spacers for spirals.
**Length is height of spiral.

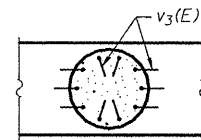
PIER 1

STRUCTURE NO. 074-0086

SHEET NO. 18 25 SHEETS	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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	CONTRACT NO. 70388				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

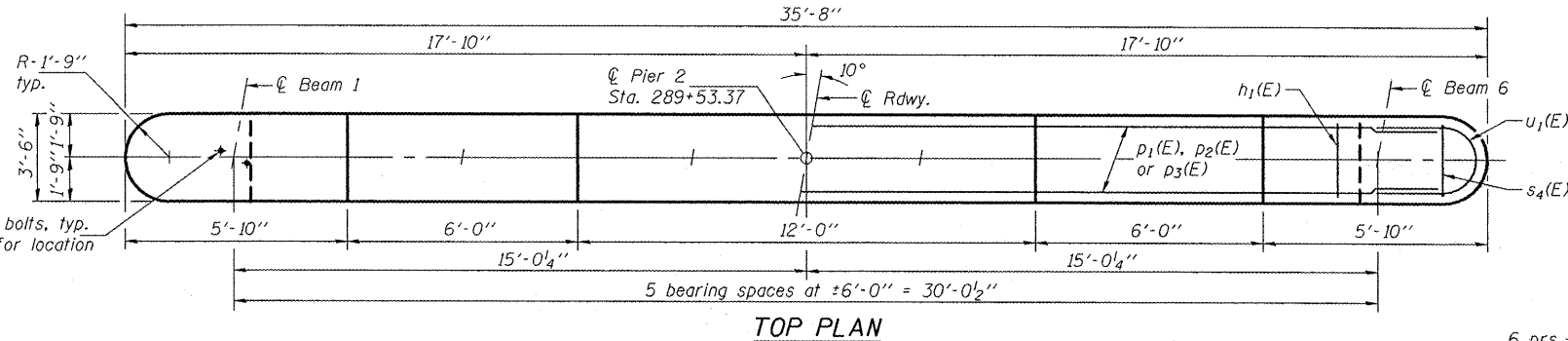
Revised 12/17/2009, DPN

Notes: Space reinforcement in cap to miss anchor bolts.
 Four steps monolithically with cap.
 When splicing of spiral reinforcement is necessary, the spiral shall be provided with 1 1/2 extra turns at the ends to be spliced. These additional turns shall either be welded together according to AWS D1.4 or shall both terminate with a 135° standard hook.
 For limits of braced excavation, see sheet 2 of 25.

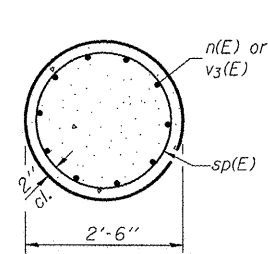


DETAIL B
 Plan view of partial cap showing hook orientation of v3(E) bars.

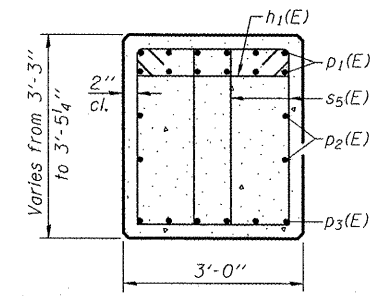
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION



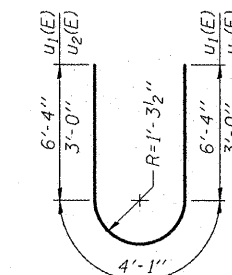
TOP PLAN



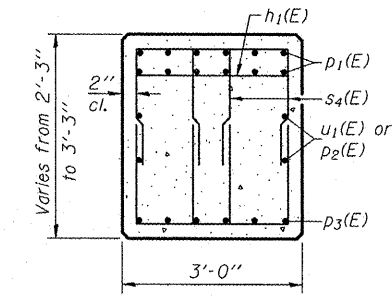
SEC. C-C



SEC. A-A



BARS u1(E) & u2(E)

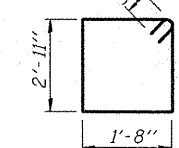


SEC. B-B

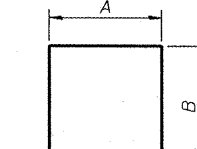
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h1(E)	17	#4	2'-8"	—
h2(E)	32	#5	25'-6"	—
h3(E)	3	#8	25'-6"	—
n(E)	30	#9	9'-6"	—
n1(E)	10	#5	4'-2"	—
p1(E)	12	#8	32'-2"	—
p2(E)	4	#7	32'-2"	—
p3(E)	6	#8	35'-2"	—
s4(E)	48	#5	6'-10"	U
s5(E)	52	#5	10'-1"	U
s6(E)	27	#8	24'-0"	U
s7(E)	52	#8	27'-0"	U
sp(E)	3	#4	10'-0"	W
t(E)	48	#7	9'-6"	—
t1(E)	32	#7	9'-6"	—
u1(E)	6	#6	16'-9"	—
u2(E)	34	#5	10'-1"	—
v3(E)	30	#9	12'-11"	—
v4(E)	10	#5	13'-8"	—
w(E)	20	#5	30'-6"	—
Braced Excavation	Cu. Yd.	112		
Concrete Structures	Cu. Yd.	103.7		
Reinforcement Bars, Epoxy Coated	Pound	14880		
Furnishing Steel Piles HP12x53	Foot	742		
Driving Piles	Foot	742		
Test Pile Steel HP12x53	Each	1		
Anchor Bolts 1 1/2"	Each	12		

*Weight includes spacers for spirals.
 **Length is height of spiral.



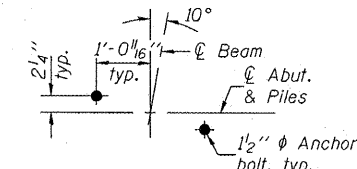
BAR s5(E)



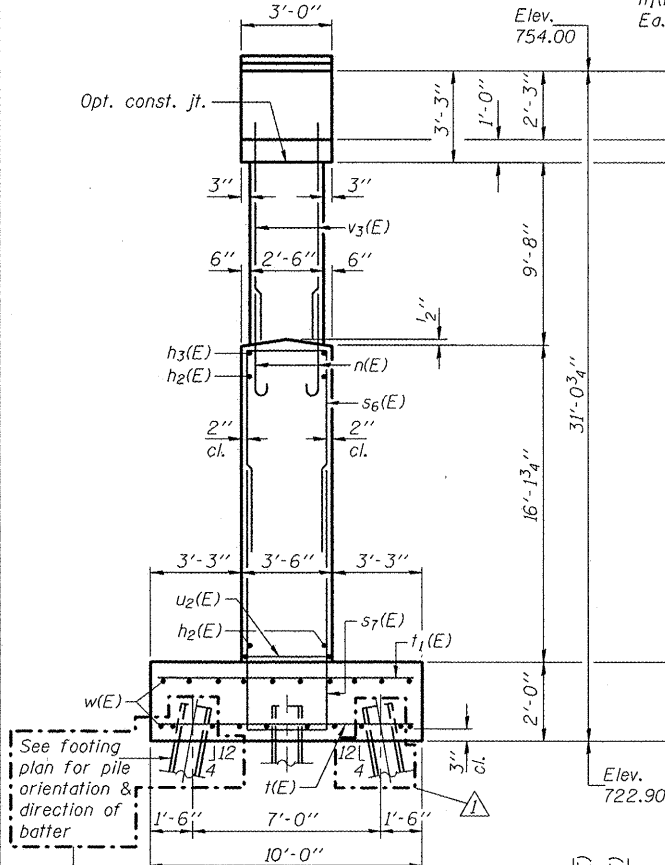
BARS s4(E), s6(E) & s7(E)

A & B DIMENSIONS

Bar	A	B
s4(E)	1'-8"	2'-7"
s6(E)	3'-2"	10'-5"
s7(E)	3'-2"	11'-11"



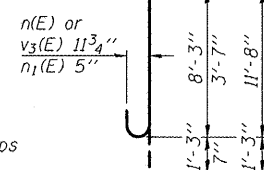
DETAIL A



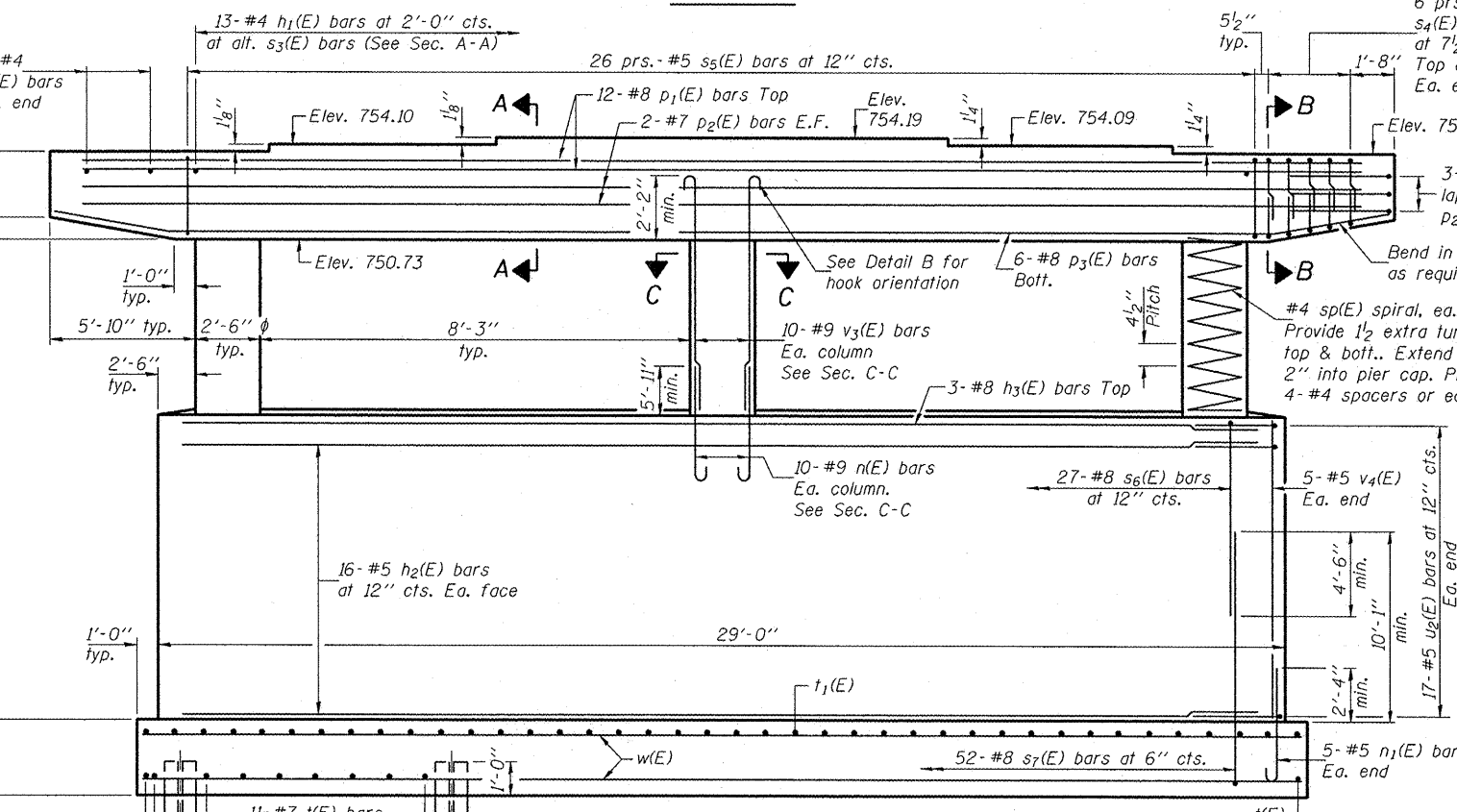
END VIEW

PILE DATA

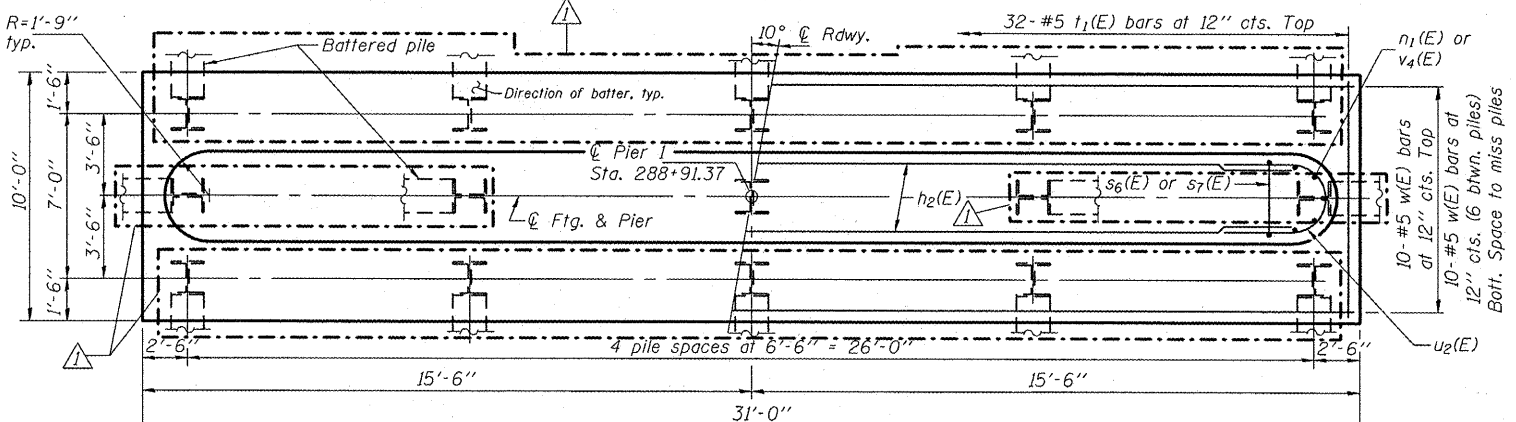
Type: Steel HP12x53
 Nominal Required Bearing: 360 Kips
 Factored Resistance Available: 180 Kips
 Est. Length: 53'
 No. Production Piles: 14
 No. Test Piles: 1



BARS n(E), n1(E) & v3(E)



ELEVATION
 (Looking east)



FOOTING PLAN

MIN. BAR LAPS

#5 bar = 2'-2"
 #8 bar (lapped with #6 bar) = 6'-4"

DESIGNED	D.P. Narielwala
CHECKED	S.M. Ryan
DRAWN	h.t. duong
CHECKED	DPN/SMR

November 25, 2009
 EXAMINED *Thomas J. Domagala*
 PASSED *Ralph E. Anderson*
 ENGINEER OF BRIDGES AND STRUCTURES

**PIER 2
 STRUCTURE NO. 074-0086**

SHEET NO. 19 25 SHEETS	F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	1517	12VBR-1	PIATT	168	104
	SN 074-0086		CONTRACT NO. 70388		
	FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT				

Revised 12/17/2009, DPN