

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PLANS FOR
PROPOSED LOCAL AGENCY IMPROVEMENT
FEDERAL AID BRRP PROJECT
HENRY COUNTY

FAS RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1226	06-00146-00-BR	HENRY	9	1
F.A.S. REG.		ILLINOIS	PROJECT	

INDEX OF SHEETS

- Sheet No. 1 Cover Sheet
- Sheet No. 2 Plan & Profile
- Sheet No. 3 Cross Sections
- Sheet No. 4 General Plan & Elevation
- Sheet No. 5 P.P.C. Deck Beam Superstructure
- Sheet No. 6 P.P.C. Deck Beam Superstructure
- Sheet No. 7 Pile Bent Abutment
- Sheet No. 8 Type S-1 Railing
- Sheet No. 9 Boring Details

HENRY COUNTY SECTION 06-00146-00-BR
PROJECT BRS-1226(101) JOB C-92-061-08
FAS RTE 1226 CONTRACT 85439

STANDARDS

701006-02, 701301-02, 701901, 720011, 728001, 729001
BLR 21-7, BLR 22-5
280001-04
BLR 23-2, BLR 26, BLR 27

CONSTRUCTION TYPE CODE X081-2A
SCHEDULE OF QUANTITIES

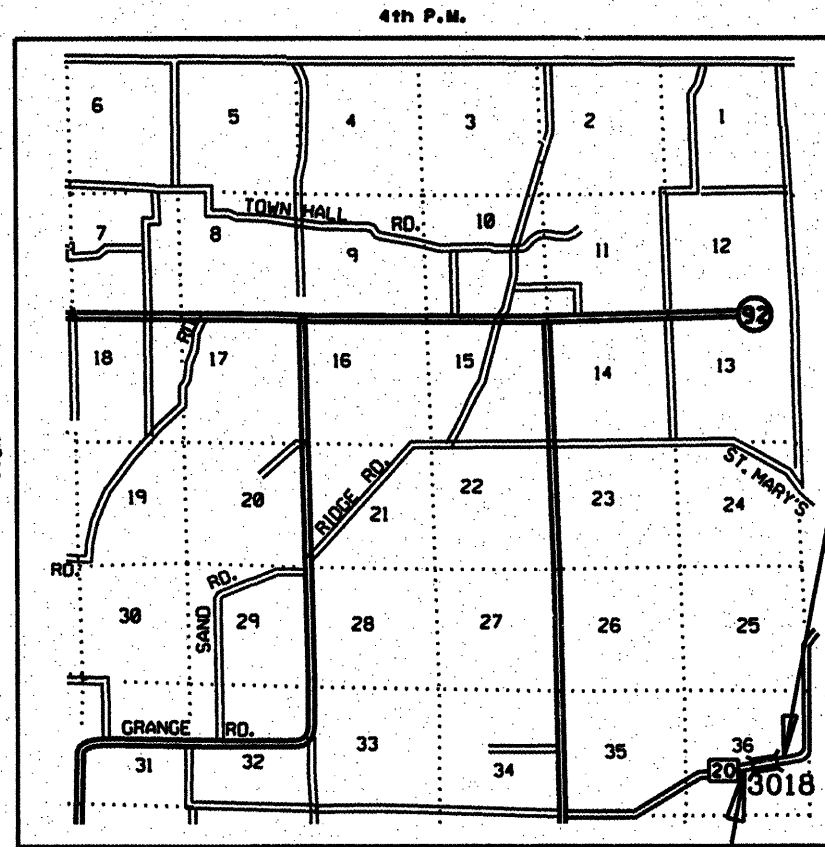
CODE QUANTITY UNIT DESCRIPTION

20200100	600	Cu.Yds.	Earth Excavation
20300100	45	Cu.Yds.	Channel Excavation
25000330	0.54	Acre	Seeding, Class 6
25000400	49	Pound	Nitrogen Fertilizer Nutrient
25000500	49	Pound	Phosphorous Fertilizer Nutrient
25000600	49	Pound	Potassium Fertilizer Nutrient
25100120	1.10	Ton	Mulch, Method 2
28000300	4	Each	Temporary Ditch Checks
28100707	293	Sq.Yds.	Stone Dumped Riprap, Class A4
35101400	710	Ton	Aggregate Base Course, Type B
50100100	1	Each	Removal of Existing Structures
50200100	116	Cu.Yds.	Structure Excavation
50300225	25.9	Cu.Yds.	Concrete Structures
50400605	2279	Sq.Ft.	P P Conc Dk Bm 33 Dp
50800105	3190	Pound	Reinforcement Bars
50900205	152	Foot	Steel Railing, Type S1
51201400	558	Foot	Fur. Stl. Pile HP 10X42
51202305	558	Foot	Driving Piles
51203400	2	Each	Test Pile Stl HP 10X42
51204650	12	Each	Pile Shoes
51500100	1	Each	Name Plate
54200223	174	Foot	P Cul CL D 1 18"
54200229	64	Foot	P Cul CL D 1 24"
58100200	254	Sq.Yds.	WaterPrf Membrane System
58300100	746	Foot	PC Mortar Fairing CSE
* 63100075	1	Each	Traffic Barrier Terminal Type 5A
67100100	1	L. Sum	Mobilization
* LR631020	1	Each	Traffic Barrier Terminal Type 1
50300280	3.8	Cu.Yds.	Concrete Encasement

* Specialty Items

Major Collector (Less Than 400)

CALL J.U.L.I.E.
BEFORE YOU DIG
800-892-0123



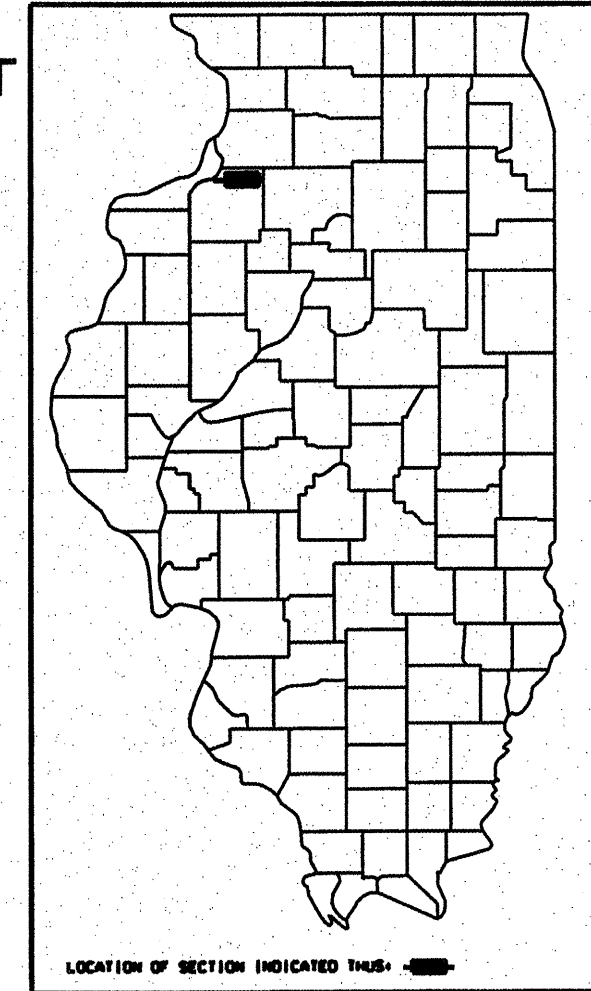
LOCATION MAP

NET LENGTH OF SECTION = 450 FEET = 0.085 MILES

Section 06-00146-00-BR Ends at Station 106+00.

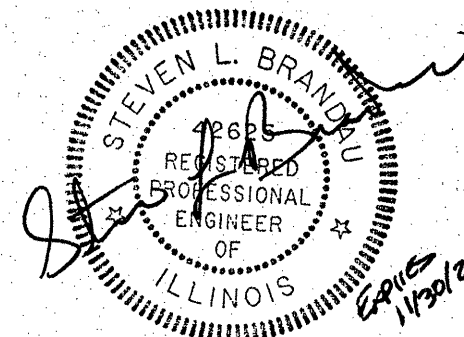
Section includes a single span bridge (75') with precast prestressed concrete deck beams (33" deep) on pile bent concrete abutments, skewed 15° right ahead. Also included are aggregate surface approach roadways.

SECTION 06-00146-00-BR Begins at Station 101+50.



THESE PLANS WERE PREPARED BY ME OR BY THE FULL TIME MEMBERS OF MY STAFF.

Steven L. Brandau
STEVEN L. BRANDAU
P.E. 42625



STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

APPROVED 4/9/2008 *Steven L. Brandau*
HENRY COUNTY ENGINEER

PASSED APR 17 2008
DISTRICT #2 ENGINEER OF LOCAL ROADS & STREETS

RELEASING FOR BID APR 17 2008
BASED ON LIMITED REVIEW
DEPUTY-DIRECTOR OF HIGHWAYS REGION #2 ENGINEER

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1226	06-00146-00-BR	HENRY	9	2
F.H.W.A. REG.		ILLINOIS PROJECT		

85439

COORDINATES	NORTHING	EASTING
POT #1	10000.00	10000.00
POT #2	10000.00	10519.23
STA. 101+50	9981.97	10046.34
STA. 106+00	9981.46	10496.34

EXISTING STRUCTURE: Is A Three Span Precast Concrete Deck Beam Bridge (20'-30'-20') On Wooden Pile Bent Abutments And Piers Skewed 0 Degrees.

PROPOSED STRUCTURE: Is A Single Span Precast Prestressed Concrete Deck Beam Bridge (33" Deep) 75' In Length On Pile Bent Abutments Skewed 15 Degrees Right Ahead.

BM- 60P Nail in PP
Sta. 104+28 121' Lt.
Elev. 199.44 (Assumed)

52 - Ft. From Right of Way To Survey Line

SEEDING QUANTITIES

Seeding Class 6	0.54 acres	
Nitrogen Fert. Nutr.	49.00 Lbs.	Sta. 101+50 To 103+47.5 360 Tons
Phosphorous Fert. Nutr.	49.00 Lbs.	Sta. 104+22.5 To 106+00 323 Tons
Potassium Fert. Nutr.	49.00 Lbs.	REL. Sta. 104+38 27 Tons
Mulch Method 2	1.10 Tons	Total 710 Tons

AGGREGATE BASE COURSE TYPE B

Sta. 101+50 To 103+47.5	360 Tons
Sta. 104+22.5 To 106+00	323 Tons
REL. Sta. 104+38	27 Tons
Total	710 Tons

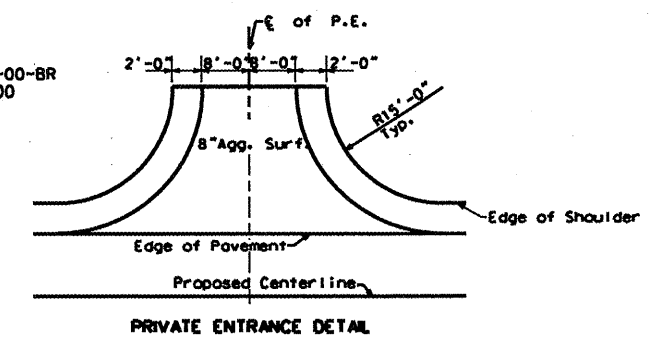
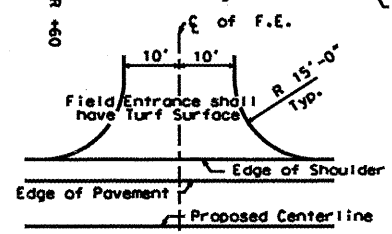
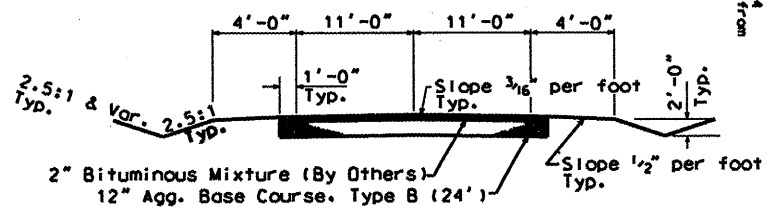
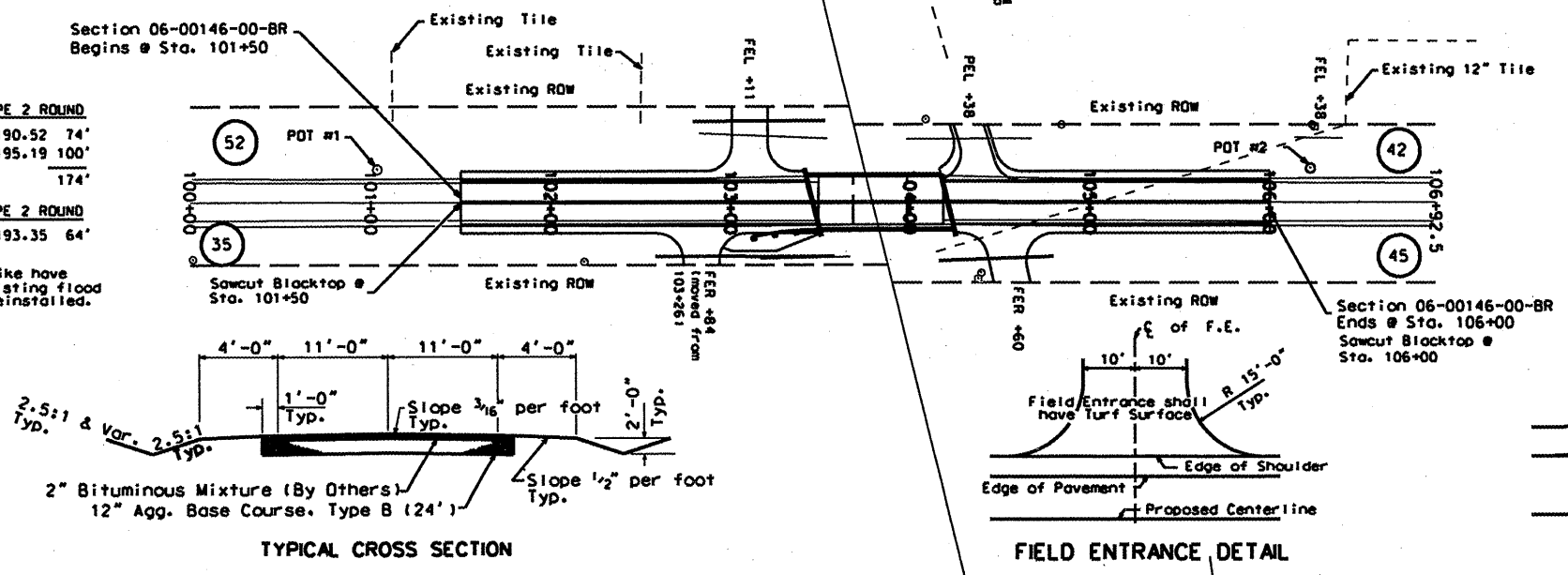
TRAFFIC BARRIER TERMINAL TYPE 1
Sta. 103+11.5 Lt. 1 Each

TRAFFIC BARRIER TERMINAL TYPE 5A
Sta. 103+49.7 Lt. 1 Each

PIPE CULVERT 18" CLASS D, TYPE 2 ROUND
FEL 103+11 f_u Up=190.87 f_d Dn=190.52 74'
FEL 102+84 f_u Up=195.69 f_d Dn=195.19 100'
174'

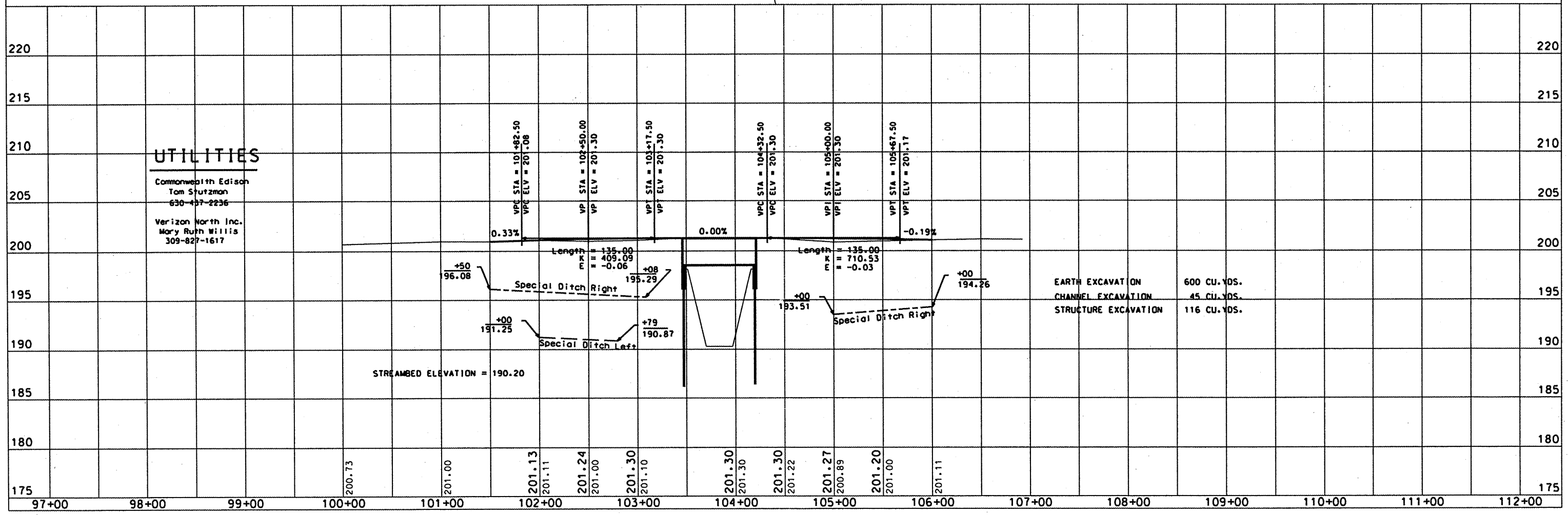
PIPE CULVERT 24" CLASS D, TYPE 2 ROUND
FER 104+60 f_u Up=192.58 f_d Dn=193.35 64'

NOTE: All culverts through dike have flood gates attached. The existing flood gates shall be removed and reinstalled.



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BEFORE YOU DIG
1-800-892-0123

SCALES:
1" = 50' HOR
1" = 5' VER



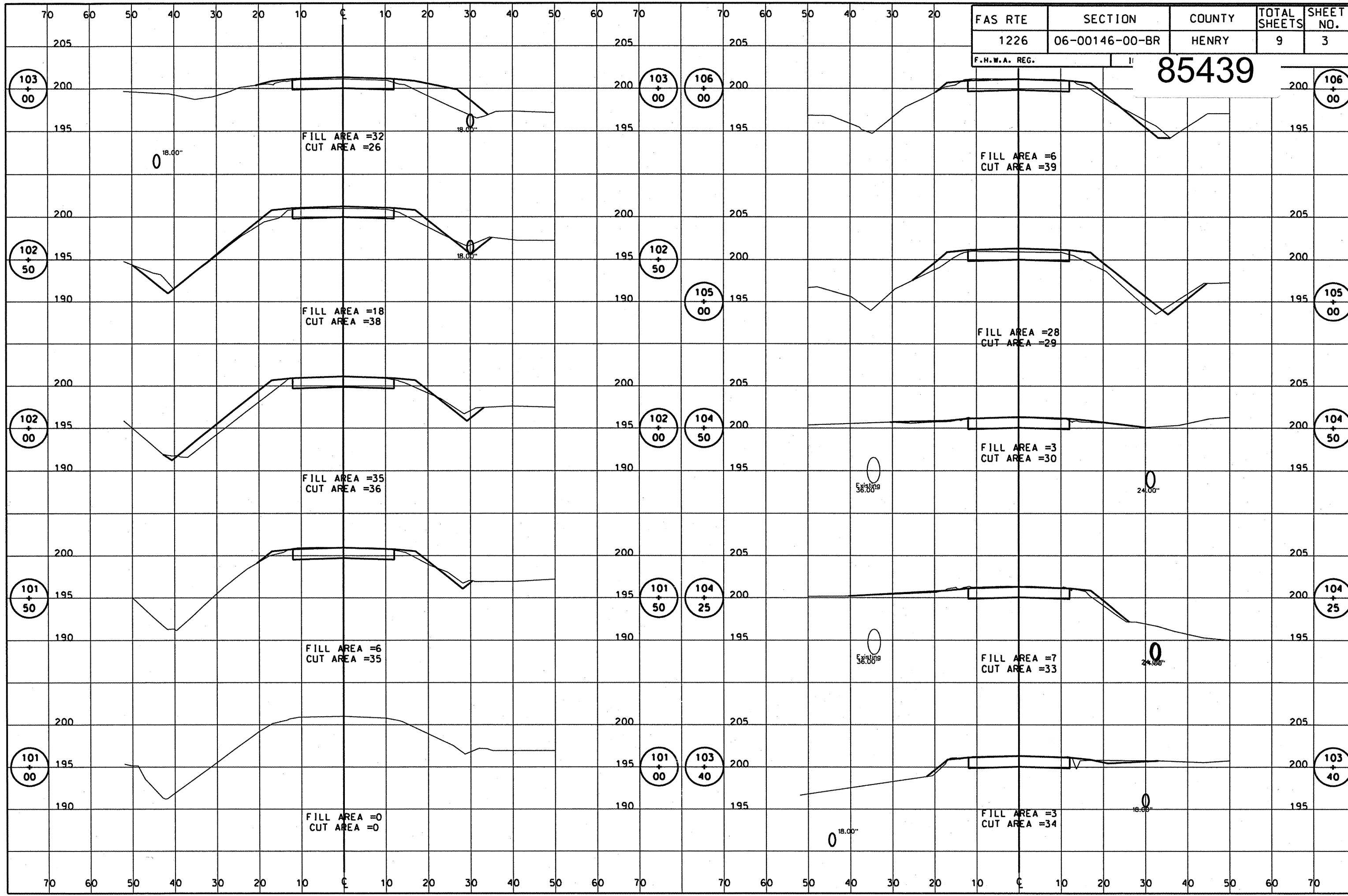
UTILITIES

Commonwealth Edison
Tom Stutzman
630-437-2236

Verizon North Inc.
Mary Ruth Willis
309-827-1617

EARTH EXCAVATION 600 CU.YDS.
CHANNEL EXCAVATION 45 CU.YDS.
STRUCTURE EXCAVATION 116 CU.YDS.

FAS RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1226	06-00146-00-BR	HENRY	9	3
F.H.W.A. REG.		85439		



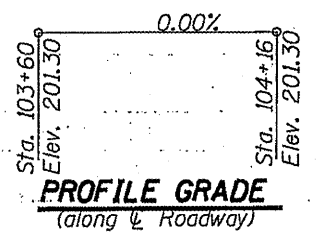
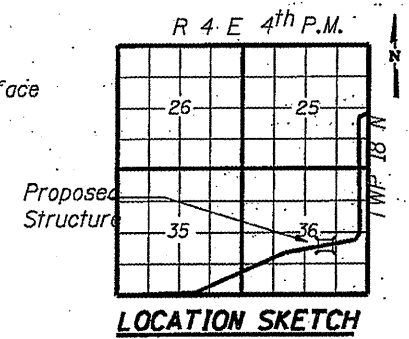
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 20	06-00146-00-BR	HENRY	9	4
STA.	TO STA.			
F.H.W.A. REG.	ILLINOIS PROJECT			

85439

DESIGN STRESSES
 $f'_c = 3,500$ psi (Concrete)
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 50,000$ psi (M270 GRADE 50W)

DESIGN SPECIFICATIONS
 2007 AASHTO LRFD & applicable Interims.

DESIGN LOADING
 HL-93 and Allowance for
 25 P.S.F. Future Wearing Surface



WATERWAY DATA

Drainage Area	23	Sq. Mi.
Existing Opening (20 Year)	210	Sq. Ft.
Required Opening (20 Year)	217	Sq. Ft.
Proposed Opening (20 Year)	217	Sq. Ft.
Design Discharge (20 Year)	706	C.F.S.
Computed Discharge (100 Year)	1016	C.F.S.

STRUCTURE NO. 037-3362
 SEC. 06-00146-00-BR BUILT 20XX
 COUNTY HIGHWAY 20
 HENRY COUNTY
 LOADING HL-93

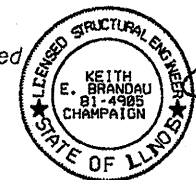
NAME PLATE
 See Std. 515001

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Structures	Each	1		1
Concrete Structures	Cu. Yd.		25.9	25.9
Reinforcement Bars	Pound		3,190	3,190
Name Plates	Each	1		1
Structure Excavation	Cu. Yd.		116	116
Portland Cement Mortar Fairing Course	Foot	746		746
Precast Prestressed Concrete Deck Beams (33" depth)	Sq. Ft.		2279	2279
Waterproofing Membrane System	Sq. Yd.	254		254
Furnishing Steel Piles, HP 10x42	Foot		558	558
Driving Steel Piles	Foot		558	558
Test Pile Steel HP 10x42	Each		2	2
Stone Dumped Riprap, Class A4	Cu. Yd.		293	293
Steel Railing Type S-1	Foot	152		152
Concrete Encasement	Cu. Yd.		3.8	3.8
Pile Shoes	Each		12	12

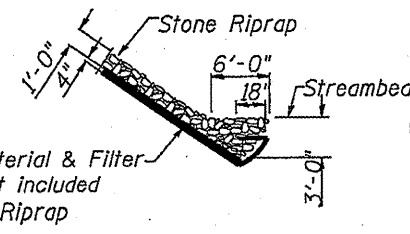
"This structure has been designed to be stable for scour conditions in accordance with the FHWA Technical Advisory - T 5140.23, "Evaluating Scour at Bridges" and Hydraulic Engineering Circular 18 - Evaluating Scour at Bridges.

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with the requirements of the current "AASHTO Standard Specifications for Highway Bridges".



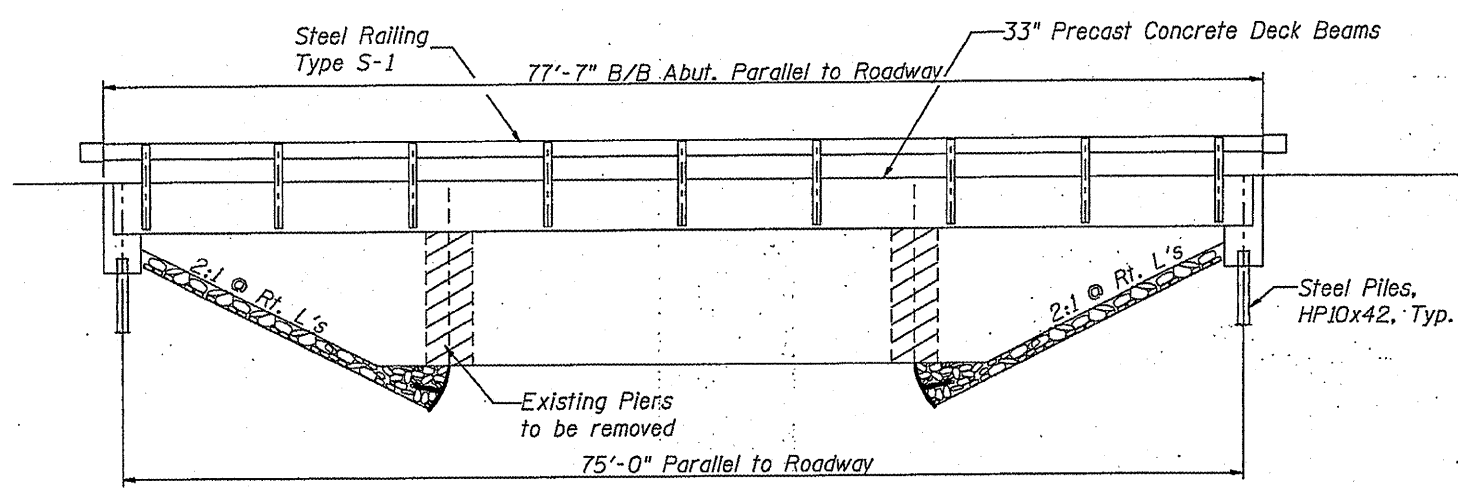
Keith E. Brandau 04/02/08
 KEITH E. BRANDAU DATE
 Illinois Licensed Structural Engineer Number 4905
 License Expires 11/30/08

T.C.E. = Top of Cap Elev.

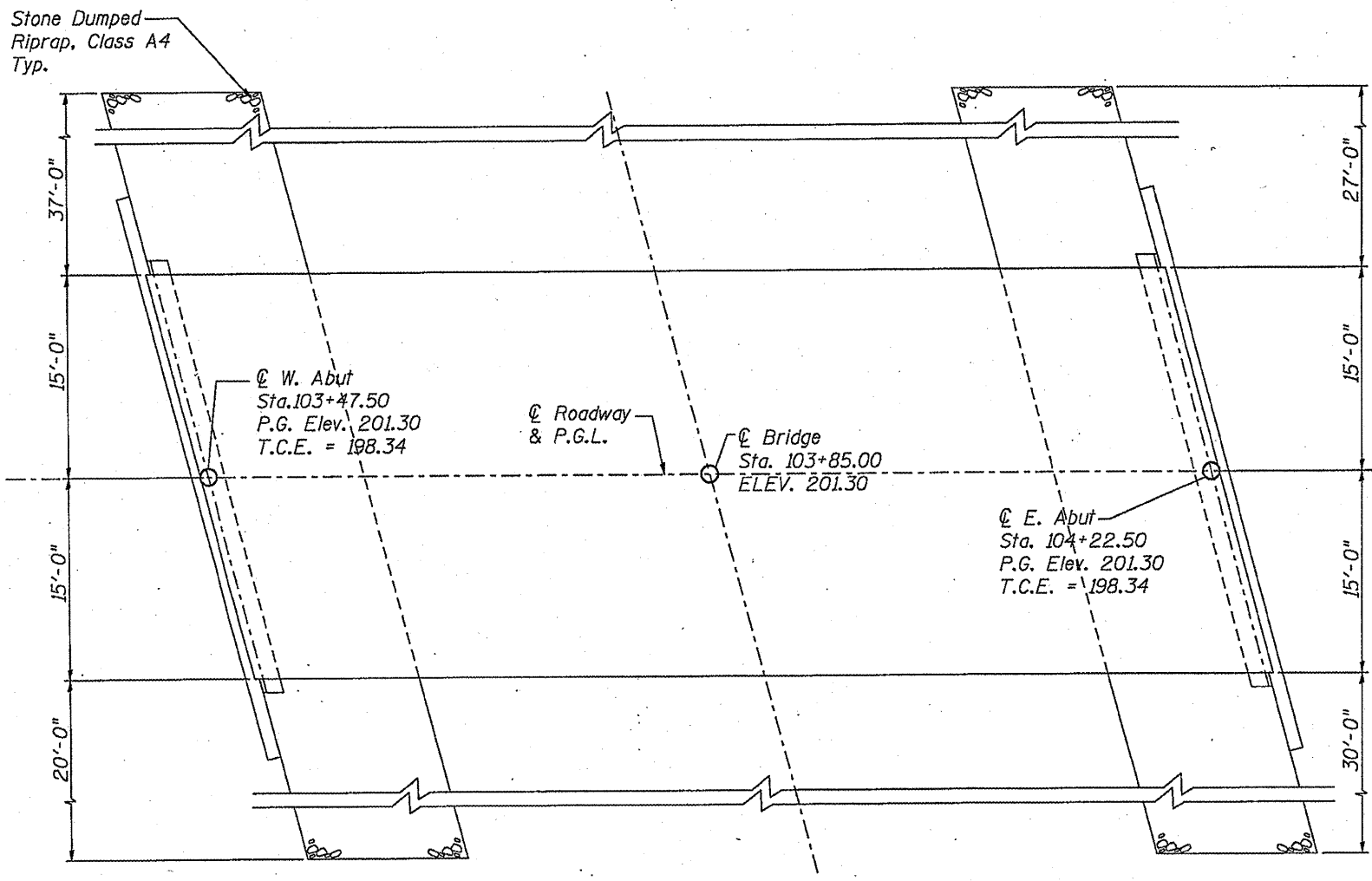


SECTION B-B THRU TOE OF RIPRAP
 R-0-W TO R-0-W

SECTION: 06-00146-00-BR
 HENRY COUNTY
 ϕ STATION 103+85



ELEVATION



PLAN

PLAN

DATE	BY	CHECKED

NOTE: BROOK ALIGNMENT CHECKED. RT. OF WAY CHECKED.

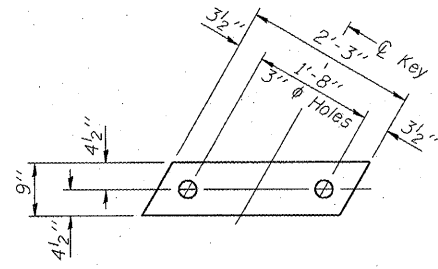
PROFILE

DATE	BY	CHECKED

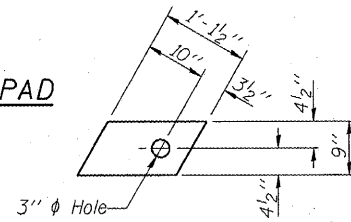
NOTE: BROOK GRADE CHECKED. STRUCTURE NOTATNS CHKD.

gp&eV8.dgn 4/2/2008 3:57:17 PM

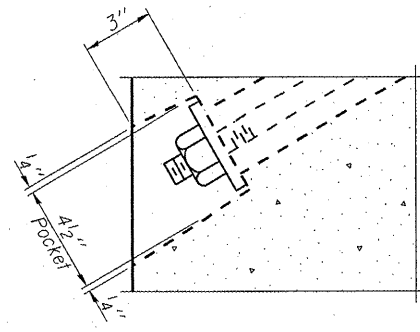
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 20	06-00146-00-BR	HENRY	9	5
STA.		TO STA.		
F.H.W.A. REG.		ILLINOIS PROJECT		



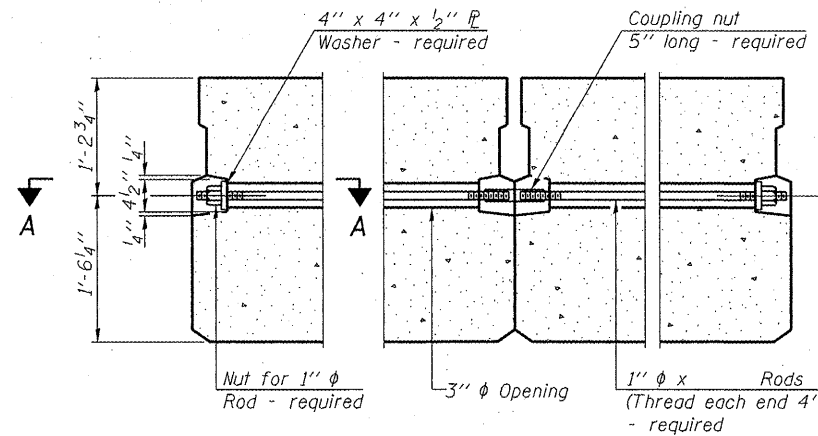
FABRIC BEARING PAD
(Interior)



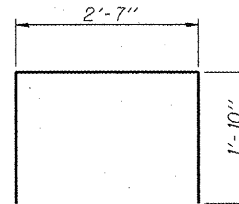
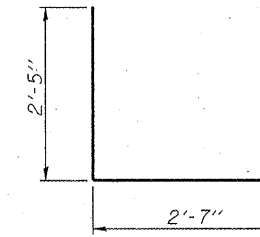
FABRIC BEARING PAD
(Exterior)



SECTION A-A

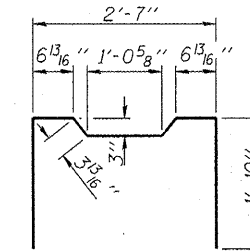


TYPICAL TRANSVERSE TIE ASSEMBLY

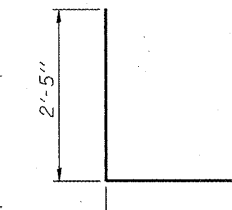


BAR S₁(E)

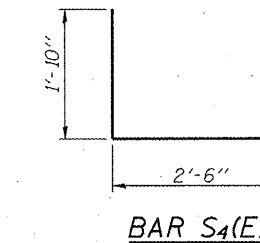
BAR S(E)



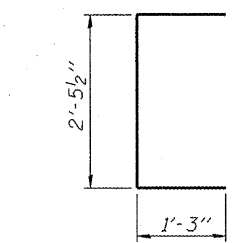
BAR S₂(E)



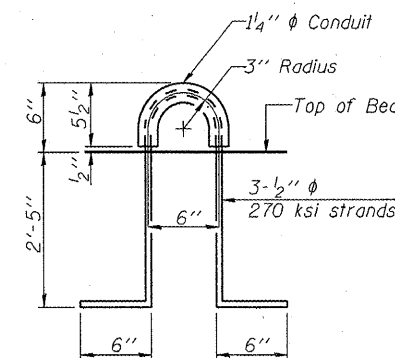
BAR S₃(E)



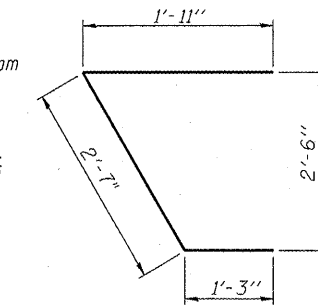
BAR S₄(E)



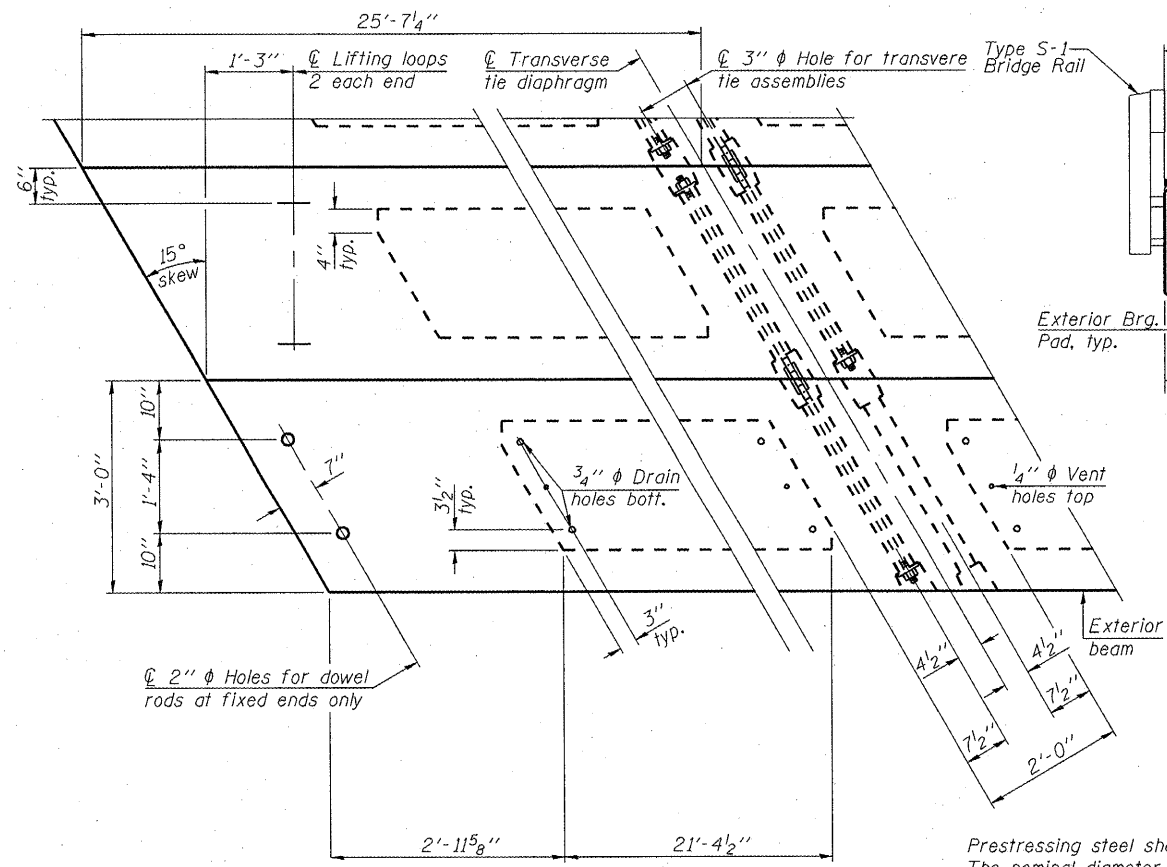
BAR U(E)



LIFTING LOOP DETAIL



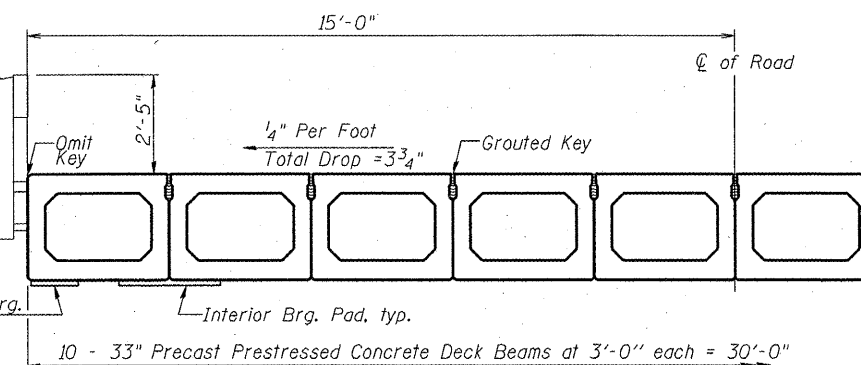
BAR U₁(E)



PLAN VIEW

Note: Connect beams in pairs with the transverse tie configuration shown.

PD-3336-RD 8-29-07



HALF CROSS SECTION

NOTES

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.

Reinforcement bars shall conform to ASTM A 706 (IL MOD), Grade 60. (See Special Provisions)

Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling.

Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

Compressive strength of prestressed concrete, f'c, shall be 6000 psi.

Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.

BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (33" depth)	Sq. Ft. 2279
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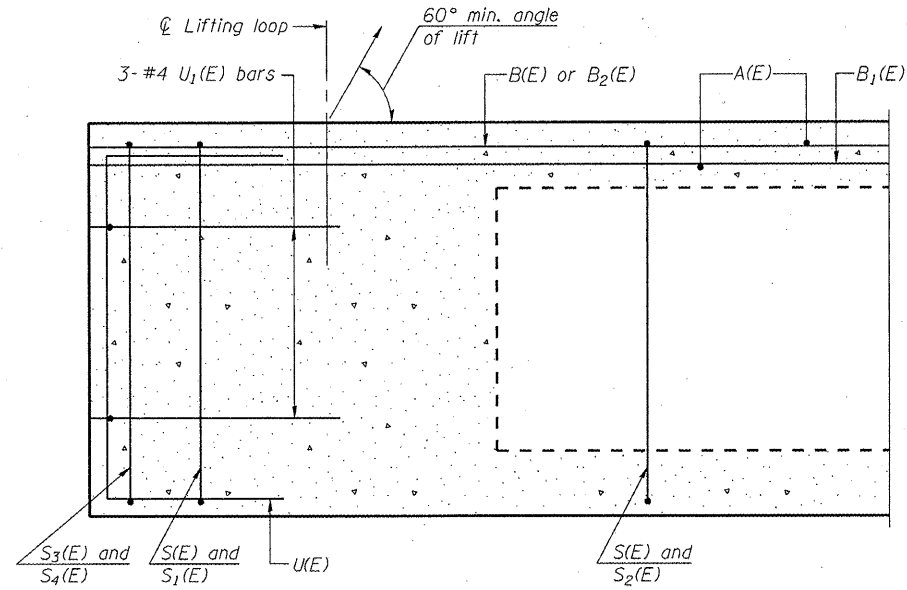
33" X 36" PPC DECK BEAM DETAILS

SUPER STRUCTURE
SECTION: 06-00146-00-BR
HENRY COUNTY
Q. STATION 103+85

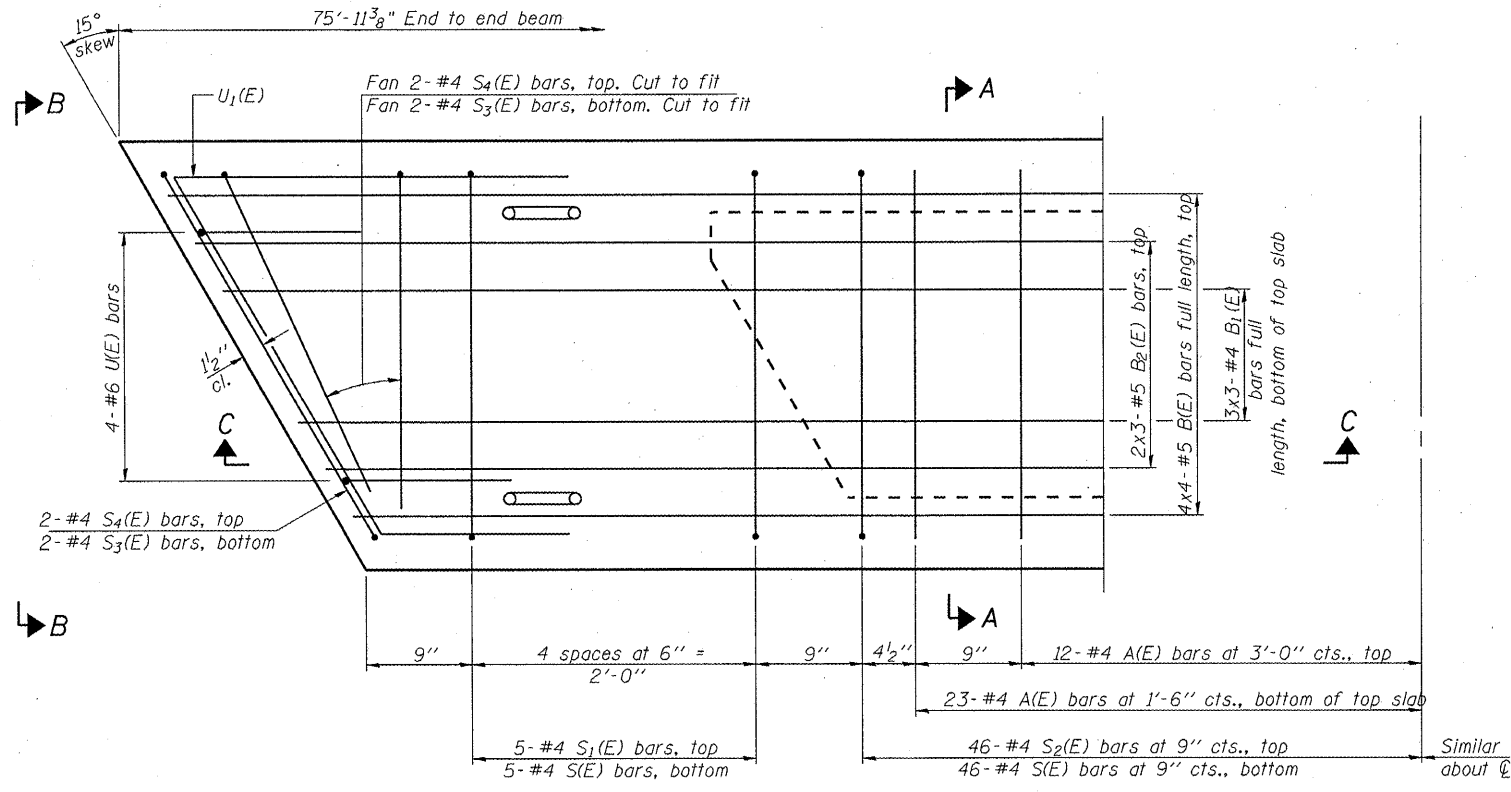
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 20	06-00146-00-BR	HENRY	9	6
STA.		TO STA.		
F.H.W.A. REG.		ILLINOIS PROJECT		

PLAN	DESIGNED	DATE
	BY	
	CHECKED	
	DATE	
NOTE: BOOK ALIGNMENT CHECKED		
RT. OF WAY CHECKED		
NO.		

PROFILE	SURVEYED	DATE
	BY	
	CHECKED	
	DATE	
NOTE: BOOK GRADES CHECKED		
B.M.S. NOTED		
STRUCTURE NOTATIONS CHKD		
NO.		



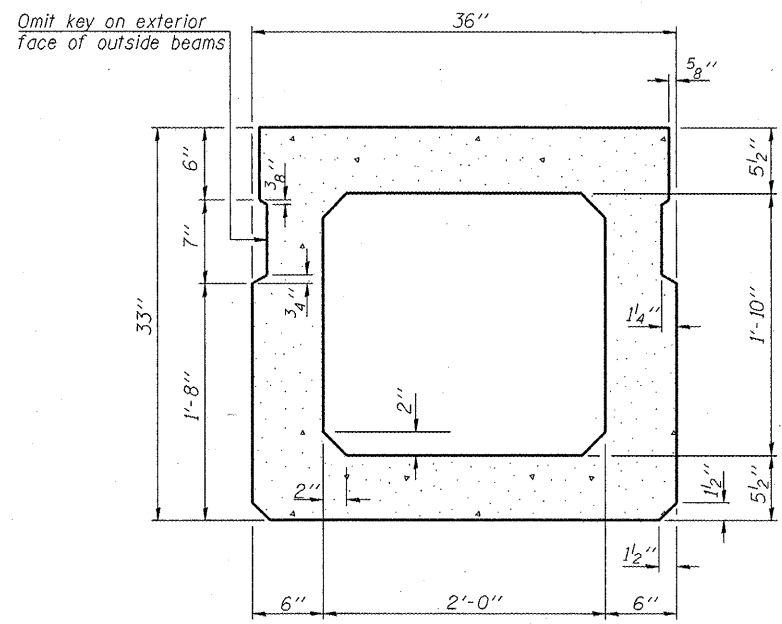
SECTION C-C



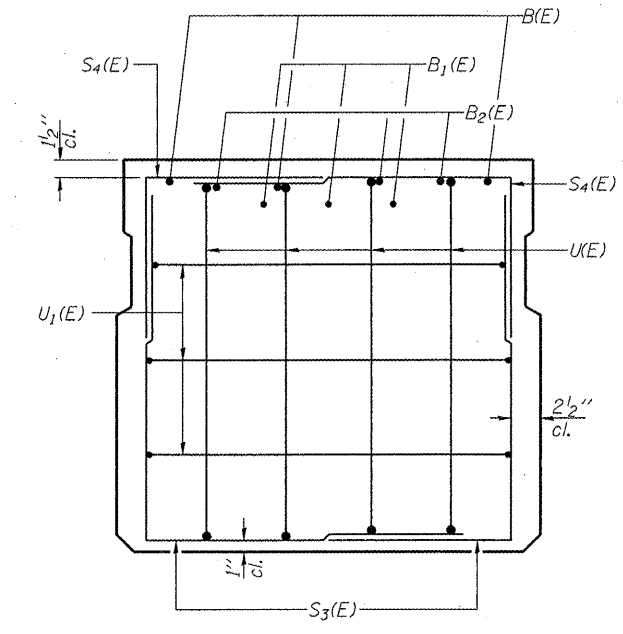
PLAN VIEW

PD-3336-R 8-29-07

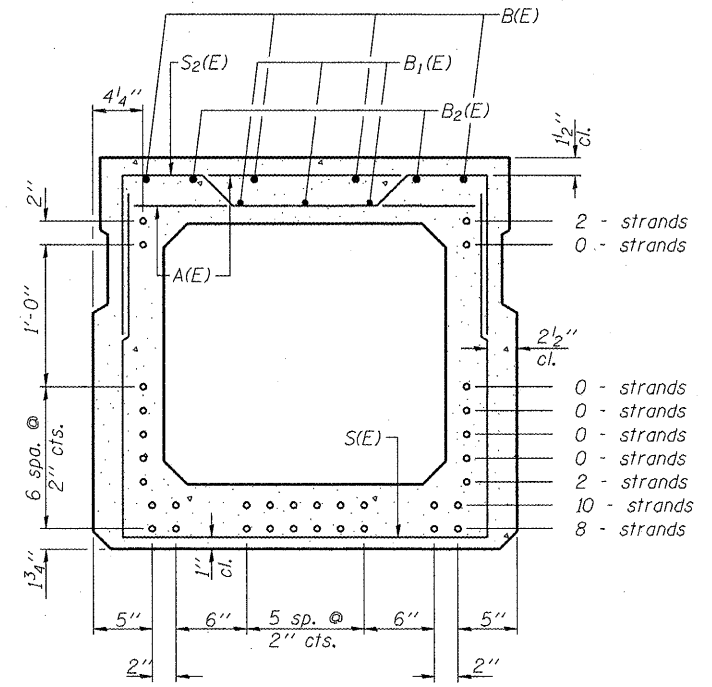
Note: Spacing of S(E) and S2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.



SECTION A-A
(Showing dimensions)



VIEW B-B



SECTION A-A
(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

Strand Pattern 22SS (8@1 3/4", 10@3 3/4", 2@5 3/4", 2@27 3/4")

BAR LIST
ONE BEAM ONLY
(For information only)

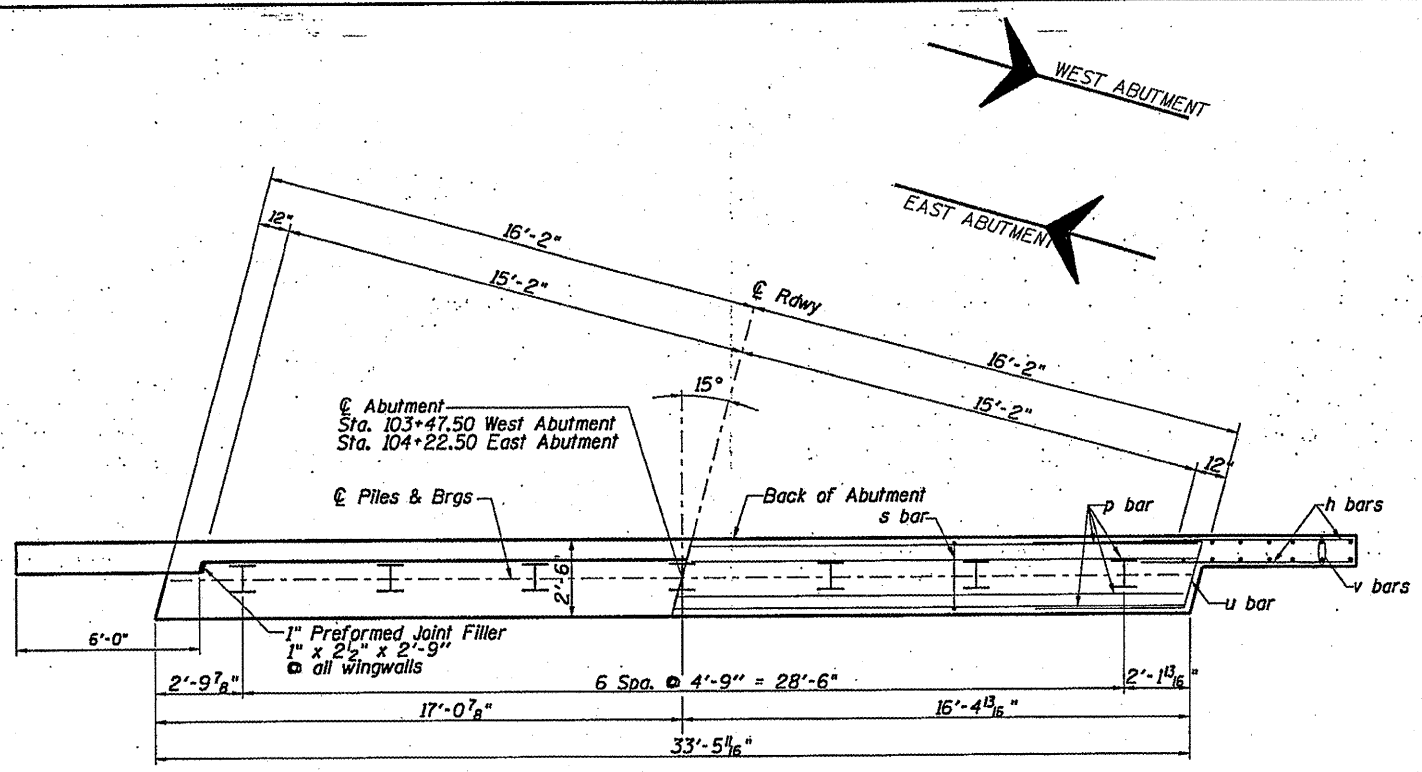
Bar	No.	Size	Length	Shape
A(E)	70	#4	2'-7"	—
B(E)	16	#5	20'-5"	—
B1(E)	9	#4	26'-6"	—
B2(E)	6	#5	26'-9"	—
S(E)	102	#4	7'-5"	┌
S1(E)	10	#4	6'-3"	┌
S2(E)	92	#4	6'-6"	┌
S3(E)	8	#4	4'-11"	┌
S4(E)	8	#4	4'-4"	┌
U(E)	8	#6	5'-0"	┌
U1(E)	6	#4	5'-9"	┌

33" x 36" PPC DECK BEAM

SUPER STRUCTURE
SECTION: 06-00146-00-BR
HENRY COUNTY
STATION 103+85

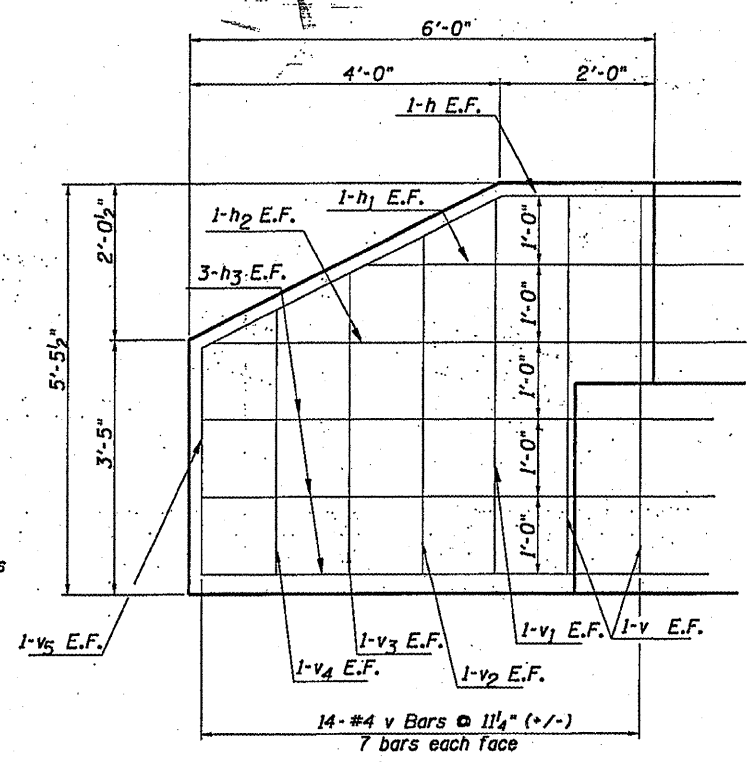
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 20	06-00146-00-BR	HENRY	9	7
STA.	TO STA.			
F.H.W.A. REG.	ILLINOIS PROJECT			

85439



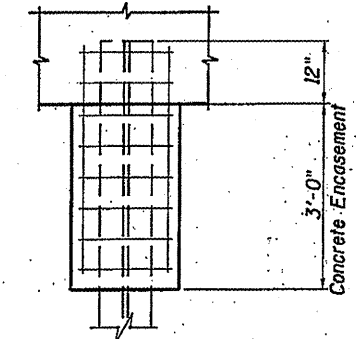
TOP PLAN

NOTE: All edges shall have Standard 3/4" Chamfer, except as noted.



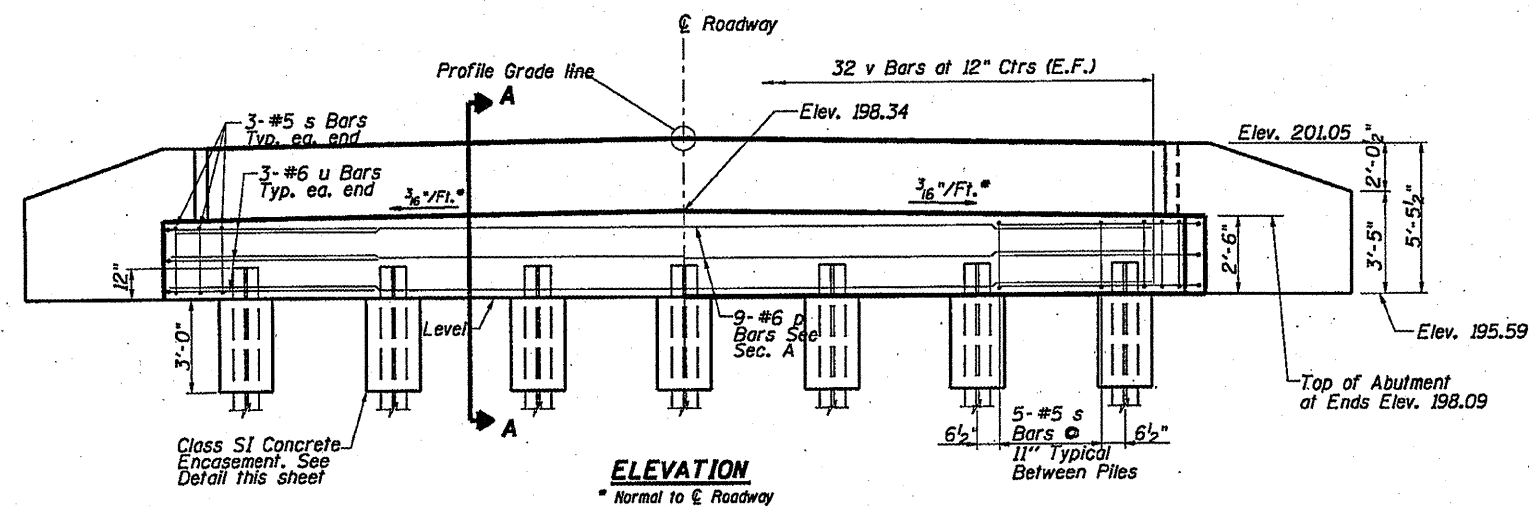
WINGWALL ELEVATION

Southeast wingwall shown, Northwest wingwall similar. Southwest and Northeast wingwall will have the Back Face and Front Face designations reversed. Wingwalls shall be poured after beams are in place.

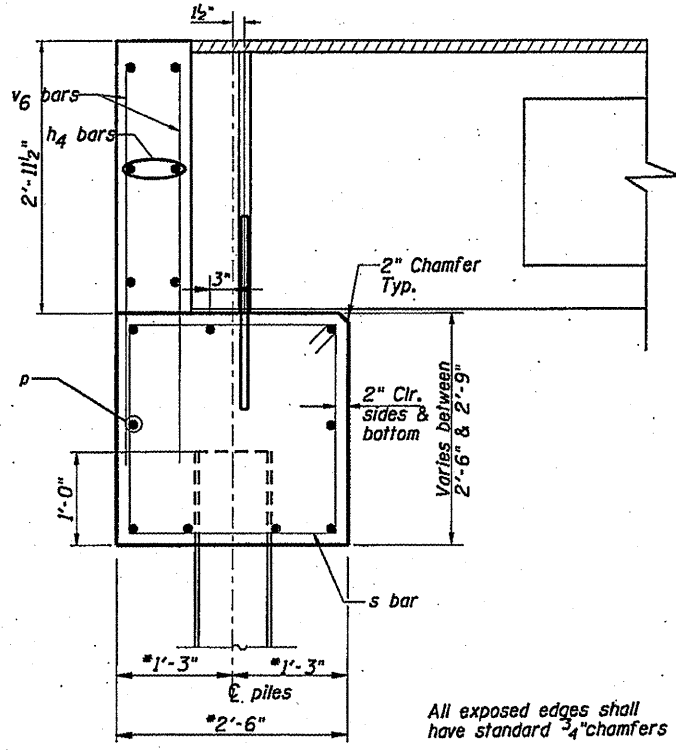


CONCRETE ENCASEMENT DETAIL

Welded wire fabric 6x6-W4.0xW4.0 weighing 58#/100 sq. ft. The cost of Excavation, Concrete Encasement and Reinforcement is included with Concrete Encasement. Forms for Encasement may be omitted when soil conditions permit.



ELEVATION



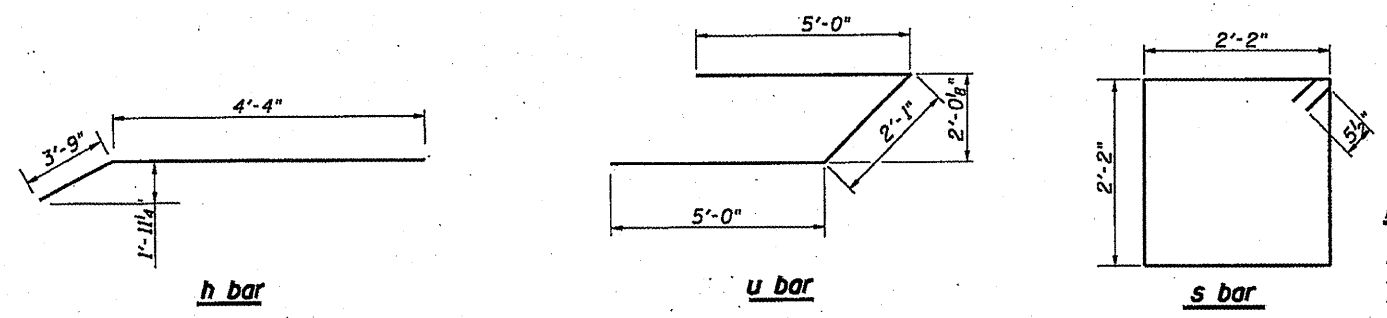
SECTION A-A

All exposed edges shall have standard 3/4" chamfers

B.F. = Back Face

F.F. = Front Face

E.F. = Each Face



PILE DATA

Type: Steel HP10x42
 Nominal Required Bearing: 148 kips
 Allowable Resistance Available: 74 kips
 Estimated Length: 53' West Abutment
 40' East Abutment
 Number of Production Piles: 12
 Number of Test Piles: 2

BILL OF MATERIAL - 2 ABUTS.

Bar	No.	Size	Length	Shape
h	8	#5	8'-1"	—
h ₁	8	#5	6'-0"	—
h ₂	8	#5	7'-10"	—
h ₃	24	#5	8'-0"	—
h ₄	12	#5	31'-0"	—
p	18	#6	33'-0"	—
s	72	#5	9'-7"	□
u	12	#6	12'-1"	—
v	16	#4	5'-0"	—
v ₁	8	#4	4'-11"	—
v ₂	8	#4	4'-6"	—
v ₃	8	#4	4'-0"	—
v ₄	8	#4	3'-7"	—
v ₅	8	#4	3'-1"	—
v ₆	128	#4	5'-0"	—
Concrete Structures	Cu. Yds.	25.9		
Reinforcement Bars	Lbs.	3190		
Test Pile, Steel HP10x42	Each	2		
Furn. Steel Piles, HP10x42	Foot	558		
Driving Piles	Foot	558		
Pile Shoes	Each	12		
Name Plate	Each	1		
Concrete Encasement	Cu. Yds.	3.8		
Structure Excavation	Cu. Yds.	116		

ABUTMENT
 SECTION: 06-00146-00-BR
 HENRY COUNTY
 C STATION 103+85

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 20	06-00146-00-BR	HENRY	9	9
STA.		TO STA.		
F.H.W.A. REG.		ILLINOIS PROJECT		

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GENERAL NOTES

Boring Data is shown only as a guide to bidders in estimating soil conditions which may be encountered during construction.

Masonry material salvaged from the existing structure shall not be reused and shall be disposed of off site by the Contractor.

Riprap required to meet the limits shown on the plan shall be paid for as Riprap. See Special Provisions.

Reinforcement bars shall conform to the requirements of AASHTO M-31, M-41, or M-53, Grade 60.

Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.

All construction joints shall be bonded.

Class SI concrete to be used throughout.

All exposed edges shall be chamfered 3/4"

Reinforcement bars shall conform to the requirements of AASHTO M-31, M-42, or M-53, Grade 60.

Bars indicated thus 12 x 4 - #5 etc. indicates 12 lines of bars with 4 lengths per line, bar size #5.

BORING DATA

N - Standard Penetration Test - Blows per foot to drive 2" O.D.

Split Spoon Sampler 12" with 140 lb. hammer falling 30"

Qu - Unconfined Compression Strength - Tons/Sq.Ft.

Mc - Water Content - Percentage of oven dry weight - %

D - Depth

P - Penetrometer

B - Bulge Failure

S - Shear Failure

E - Estimated Value

BORING NO. B-1
11' W. of W. abut.
15' South of centerline

D	N	Qu	Mc	
				199.9 Aggregate Shoulder
	8	1.5	32.1	
				Tough dark Brown SILTY CLAY LOAM, very moist
5	7	1.5	40.1	
				194.6
	4	0.5	31.7	Soft brown-gray SILTY CLAY LOAM, very moist
				192.1
10	3	0.25	40.3	
				Very soft to soft gray SILTY CLAY, very moist
	3	0.3	48.8	
				185.6
15	3	0.5	25.8	
				Firm gray fine SAND, saturated
	14	--	--	
	14	--	--	
20				24" Blow in at 21'
	12	--	--	
	11	--	--	
25				
	24	--	--	
	29	--	--	
30				
	10	--	--	
35				
	23	--	--	12" Blow-in at 38.5'
40				
				157.6
	8	1.4	29.3	Tough gray CLAY, very moist
45				24" Blow-in at 43.5'
	9	1.1	32.4	
50				

BORING NO. B-2
6' E. of E. Abut.
12' N. of centerline

D	N	Qu	Mc	
				200.7 Bituminous Pavement
				199.5 Agg. Base Course
	4	1.5	38.3	
				Tough dark Brown SILTY CLAY LOAM, very moist
5	4	1.25	26.8	
				195
	3	0.3	63.3	
				soft to very soft brown-gray SILTY CLAY, very moist
10	3	0.35	32.5	
	3	0.25	51.5	
				186
15	4	0.25	27.9	
				Firm to dense gray fine SAND, saturated
	16	--	--	
	17	--	--	
20				24" Blow in at 21'
	16	--	--	
				24" Blow in at 23.5'
	16	--	--	
25				
	33	--	--	
	46	--	--	
30				
	17	--	--	18" Blow-in at 33.5'
35				
	17	--	--	
40				
	11	1.27	30.9	Tough to stiff gray CLAY, very moist
45				
	10	1.33	32.5	
50				

D	N	Qu	Mc	
				Tough to stiff gray CLAY, very moist
5	14	1.5	57.2	
				141
60	14	0.7	30.7	Firm gray fine SAND, saturated
				36" Blow-in at 63.5'
	15	--	--	
65				
				24" Blow-in at 68.5'
	14	--	--	END OF BORING
70				