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COMMITMENTS-NONE



John A. Frauenhoffer
 JOHN A. FRAUENHOFFER
 Illinois Licensed Professional Engineer Number 36768
 License Expires 11/30/09

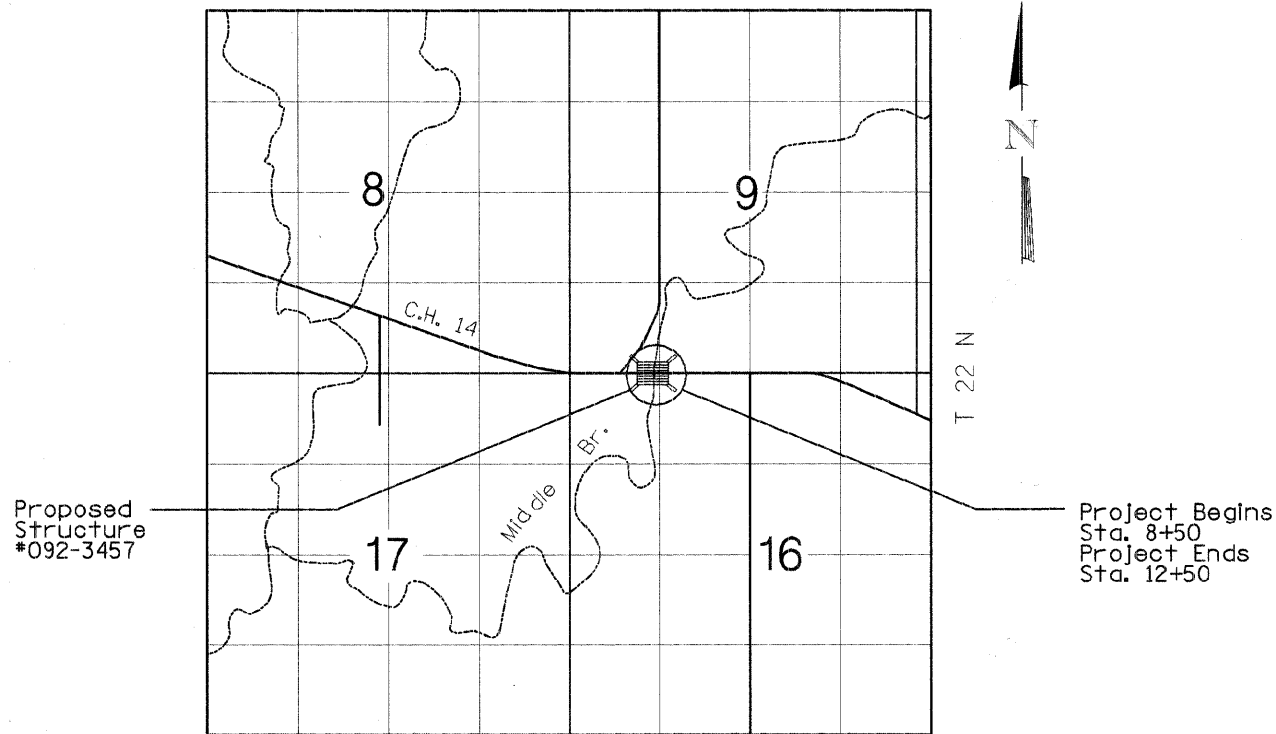
FOR JOINT UTILITY INFORMATION
 CALL TOLL FREE 1-800-892-0123
 CAT. #033488-00

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION
**PLANS FOR PROPOSED
 BRIDGE REPLACEMENT**



VERMILION COUNTY
 SECTION 97-00141-00-BR
 RS-ARA 0496(106)
 FAS 496
 COUNTY HIGHWAY 14
 AMERICAN RECOVERY
 & REINVESTMENT ACT
 C-95-333-09

R 11 W, 2nd P.M.



Proposed Structure
 #092-3457

Project Begins
 Sta. 8+50
 Project Ends
 Sta. 12+50

LOCATION MAP

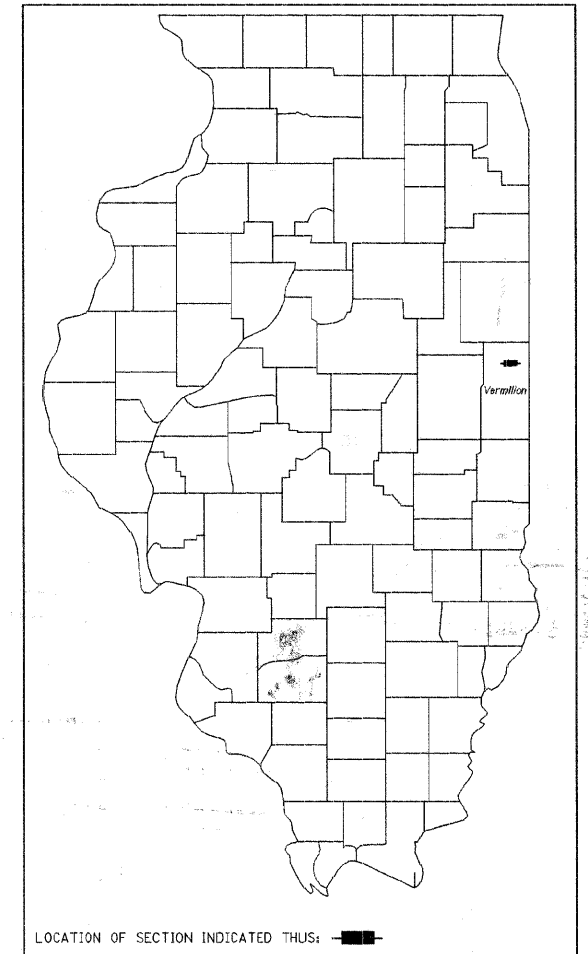
ADT = 500 (CURRENT), 500 (DESIGN)
 FUNCTIONAL CLASS = MAJOR COLLECTOR

NET LENGTH OF SECTION = 400 FEET = 0.076 MILES

Contract # 91413

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 496	*	Vermilion	184-19	1
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

*97-00141-00-BR



LOCATION OF SECTION INDICATED THIS: [Symbol]

APPROVED *August 7 2009*
Douglas R. Stuber
 DOUG STUBER, P.E. VERMILION COUNTY ENGINEER

PASSED *8/14 2009*
Jim Sol
 DISTRICT FIVE ENGINEER OF LOCAL ROADS & STREETS

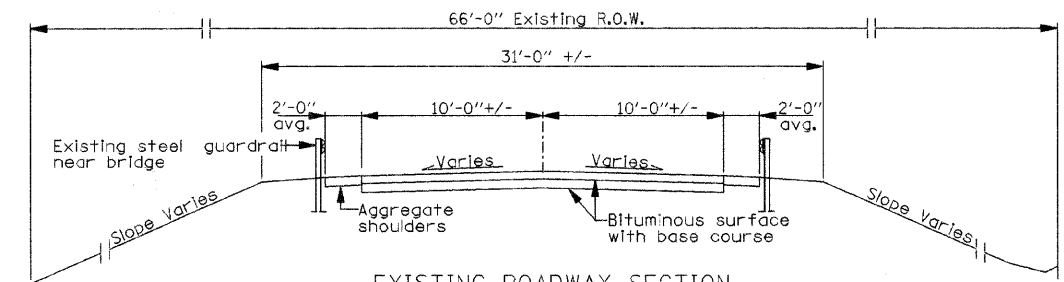
Releasing For Bid Based on Limited Review *8/14 2009*
Joseph E. Conroy
 DEPUTY DIRECTOR OF HIGHWAYS, REGION THREE ENGINEER
 STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

FRAUENHOFFER
 Frauenhoffer and Associates, P.C. Consulting Engineers
 3002 Crossing Court Champaign, IL 61822 217-351-6268

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET TOTAL
FAS 496	*	Vermilion	18	2
FED. ROAD DIST. NO. 7	ILL. HIGH.	FED. AID PROJECT		

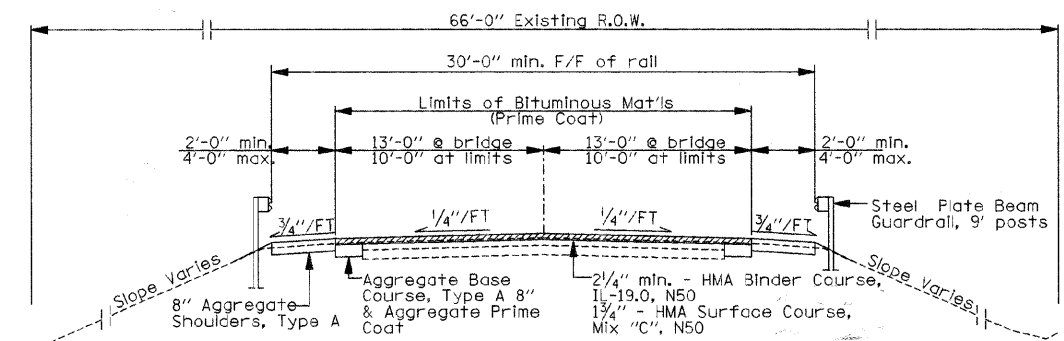
SUMMARY OF QUANTITIES - VERM. SEC 97-00141-00-BR

CODE	DESCRIPTION	UNIT	TOTAL QUANTITIES
20200100	Earth Excavation	Cu. Yd.	50
21101615	Top Soil Furnish & Place, 4"	Sq. Yd.	1150
*25000200	Seeding, Class 2	Acre	0.24
25000400	Nitrogen Fertilizer Nutrient	Pound	27
25000500	Phosphorus Fertilizer Nutrient	Pound	27
25000600	Potassium Fertilizer Nutrient	Pound	27
25100115	Mulch, Method 2	Acre	0.24
28000250	Temporary Erosion Control Seeding	Pound	24
28000300	Temporary Ditch Checks	Each	6
*28000400	Perimeter Erosion Barrier	Foot	580
35100100	Aggregate Base Course, Type A	Ton	38
*40600100	Bituminous Materials (Prime Coat)	Gal	160
40600300	Aggregate (Prime Coat)	Ton	0.23
*40603080	Hot-Mix Asphalt, Base Course IL-19.0, N50	Ton	52
*40603310	Hot-Mix Asphalt, Surface Course Mix "C", N50	Ton	36
44000153	Hot-Mix Asphalt Surface Removal, 1"	Sq. Yd.	115
44000157	Hot-Mix Asphalt Surface Removal, 2"	Sq. Yd.	87
44000161	Hot-Mix Asphalt Surface Removal, 3"	Sq. Yd.	84
48100700	Aggregate Shoulders, Type A 8"	Sq. Yd.	114
50100100	Removal of Existing Structures	Each	1
50200100	Structure Excavation	Cu. Yd.	122
50200300	Cofferdam Excavation	Cu. Yd.	140
50200500	Cofferdams	Each	2
*50300225	Concrete Structures	Cu. Yd.	122.0
*50300255	Concrete Superstructure	Cu. Yd.	80.7
50300260	Bridge Deck Grooving	Sq. Yd.	483
50300265	Seal Coat Concrete	Cu. Yd.	80
50300300	Protective Coat	Sq. Yd.	483
*50400505	Precast Prestressed Concrete Deck Beams, (27" Depth)	Sq. Ft.	4256
*50800105	Reinforcement Bars	Pound	7200
*50800205	Reinforcement Bars, Epoxy Coated	Pound	11550
Δ50901050	Steel Railing, Type SM	Foot	289
51201400	Furnishing Steel Piles HP10x42	Foot	1800
51202305	Driving Piles	Foot	1800
51203400	Test Pile Steel HP10x42	Each	4
51204650	Pile Shoes	Each	36
51500100	Name Plates	Each	1
59300100	Controlled Low-Strength Material	Cu. Yd.	52
Δ*63000003	Steel Plate Beam Guardrail, Type A, 9 ft posts	Foot	588
Δ*63100045	Traffic Barrier Terminal, Type 2	Each	2
Δ*63100075	Traffic Barrier Terminal, Type 5A	Each	4
Δ*63300725	Steel Plate Beam Guardrail (Short Radius)	Foot	13
Δ*LR631020	Traffic Barrier Terminal, Type 1	Each	2
*67100100	Mobilization	L. Sum	1
63200310	Guardrail Removal	Foot	300
*70103700	Traffic Control Complete	L. Sum	1
Δ78001110	Paint Pavement Marking - Line 4"	Foot	900
*XX004565	Grouted Riprap	Sq. Yd.	490
XX004566	Concrete Cut-Off Wall	Cu. Yd.	6.4
*Z0013798	Construction Layout	L. Sum	1



EXISTING ROADWAY SECTION

Sta. 8+50 to Sta. 9+57
Sta. 10+43 to Sta. 12+50



PROPOSED ROADWAY SECTION

Sta. 8+50 to Sta. 9+29
Sta. 10+71 to Sta. 12+50

The existing pavement shall be rehabilitated by milling the surface then applying the HMA binder and surface courses. The pavement shall be widened for the full depth outside the existing pavement limits.

MIXTURE REQUIREMENTS TABLE

MIXTURE	SURFACE	BINDER
PG	PG 64-22	PG 64-22
RAP	15%	25%
Design Voids	4.0% @ Ndes = 50	4.0% @ Ndes = 50
Mix Composition	IL 9.5	IL 19.0
Friction Aggregate	Mix C	N.A.

GENERAL NOTES

- The locations of Existing utilities as shown on the plan are for information only, and are not guaranteed. It shall be the Contractor's responsibility to ascertain their exact location from the utility companies and by field inspection.

* SEE SPECIAL PROVISIONS

Δ SPECIALTY ITEMS

DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.P. Wolf				
APVD	J.A. Fraunhoffer	NO.	DATE	REVISION	BY

FRAUENHOFFER

Fraunhoffer and Associates, P.C. Consulting Engineers
3002 Crossing Court Champaign, IL 61822 217-351-6268

SUMMARY OF QUANTITIES AND TYPICAL SECTIONS

FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK
SEC. 97-00141-00-BR
VERMILION COUNTY

SHEET 2

DWG NO. 97051500.dgn
DATE APR 2009
PROJ. NO. 97051

ROUTE NO.	DISTRICT	COUNTY	SHEET NO.	SHEET TOTAL
FAS 496 *		Vermilion	18	3
FED. ROAD DIST. NO.	S.L. NO.	FED. AID PROJ. SECT.		

SCHEDULE OF QUANTITIES - VERM. SEC 97-00141-00-BR

44000153

HOT-MIX ASPHALT SURFACE REMOVAL, 1"		
LOCATION		SQ YD
STA 10+71.98 TO STA 11+75		115
TOTAL		115

44000157

HOT-MIX ASPHALT SURFACE REMOVAL, 2"		
LOCATION		SQ YD
STA 9+00 TO STA 9+28.03		31
STA 11+75 TO STA 12+25		56
TOTAL		87

44000161

HOT-MIX ASPHALT SURFACE REMOVAL, 3"		
LOCATION		SQ YD
STA 8+50 TO STA 9+00		56
STA 12+25 TO STA 12+50		28
TOTAL		84

40600100

BITUMINOUS MATERIALS (PRIME COAT)		
LOCATION		GAL
STA 8+50.00 TO STA 9+28.03		49
STA 10+71.98 TO STA 12+50.00		111
TOTAL		160

40600300

AGGREGATE (PRIME COAT)		
LOCATION		TONS
STA 8+50.00 TO STA 9+28.03		0.07
STA 10+71.98 TO STA 12+50.00		0.16
TOTAL		0.23

40603080

HMA BC IL-19.0 N50		
LOCATION		TONS
STA 8+50.00 TO STA 9+28.03		14
STA 10+71.98 TO STA 12+50.00		38
TOTAL		52

40603310

HMA SC "C" N50		
LOCATION		TONS
STA 8+50.00 TO STA 9+28.03		10.8
STA 10+71.98 TO STA 12+50.00		25.2
TOTAL		36

35100100

AGGREGATE BASE COURSE, TYPE A		
LOCATION		TONS
STA 8+50.00 TO STA 9+28.03		14.7
STA 10+71.98 TO STA 12+50.00		23.3
TOTAL		38

48100700

AGGREGATE SHOULDERS, TYPE A 8"		
LOCATION		SQ. YDS.
STA 8+50.00 TO STA 9+28.03		34.7
STA 10+71.98 TO STA 12+50.00		79.3
TOTAL		114

63000003

STEEL PLATE BEAM GUARDRAIL, TYPE A, 9 FT POSTS		
LOCATION		FOOT
STA 9+19.96 TO STA 9+19.96 LT		100
STA 7+34.04 TO STA 9+09.04 RT		175
STA 10+90.96 TO STA 12+79.46 LT		188
STA 10+80.04 TO STA 12+05.04 RT		125
TOTAL		588

63300725

STEEL PLATE BEAM GUARDRAIL (SHORT RADIUS)		
LOCATION		FOOT
STA 8+08 TO STA 8+19.5 RT		13
TOTAL		13

63100045

TRAFFIC BARRIER TERMINAL, TYPE 2		
LOCATION		EACH
STA 8+01.3 TO STA 8+08.4 LT		1
STA 12+05.04 TO STA 12+17.54 RT		1
TOTAL		2

63100075

TRAFFIC BARRIER TERMINAL, TYPE 5A		
LOCATION		EACH
STA 9+19.96 TO STA 9+33.21 LT		1
STA 9+09.04 TO STA 9+22.29 RT		1
STA 10+77.71 TO STA 10+90.96 LT		1
STA 10+66.79 TO STA 10+80.04 RT		1
TOTAL		4

LR631020

TRAFFIC BARRIER TERMINAL, TYPE 1		
LOCATION		EACH
STA 7+09.04 TO STA 7+34.04 RT		1
STA 12+65.96 TO STA 12+90.96 LT		1
TOTAL		2

DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.P. Wolf				
APVD	J.A. Fraenhoffer	NO.	DATE	REVISION	BY

FRAUENHOFFER

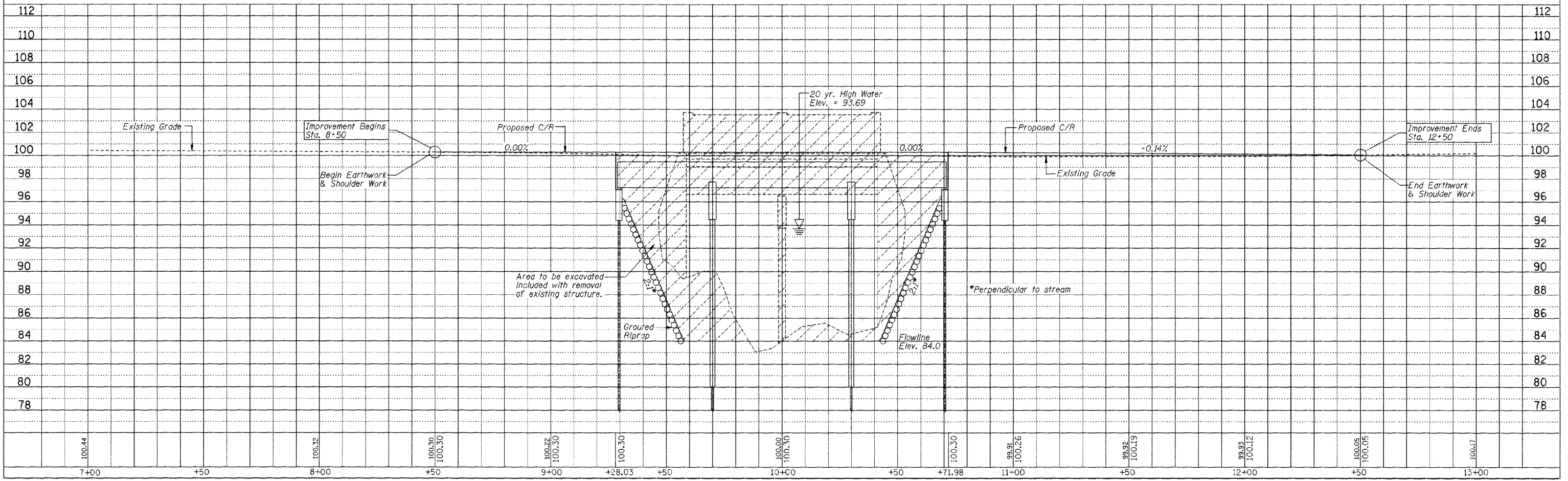
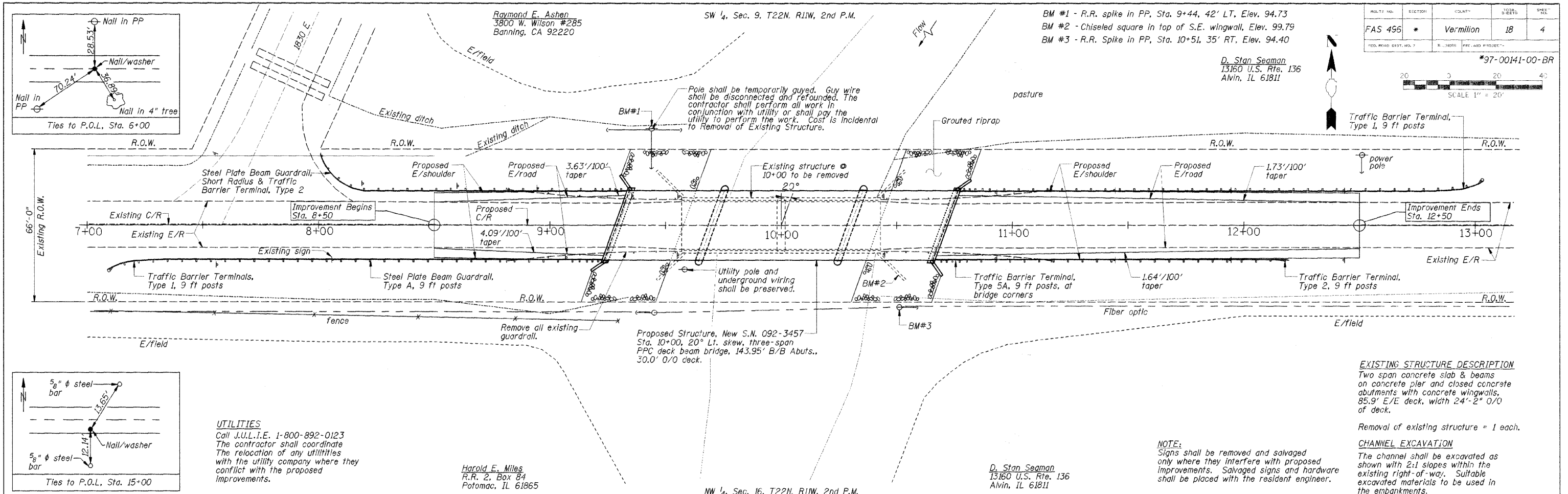
Frauenhoffer and Associates, P.C. Consulting Engineers
3002 Crossing Court Champaign, IL 61822 217-351-6268

SCHEDULE OF QUANTITIES

FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK
SEC. 97-00141-00-BR
VERMILION COUNTY

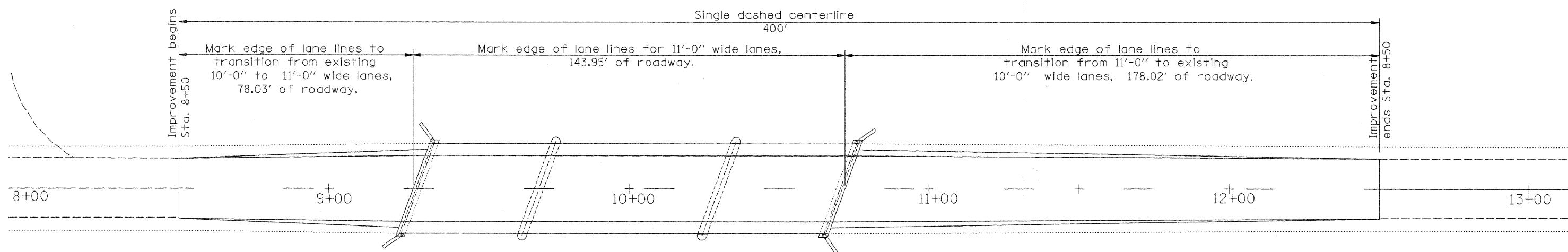
SHEET 3

DWG NO. 97051500.dgn
DATE APR 2009
PROJ NO. 97051



PLAN & PROFILE STA. 7+00 TO STA. 13+00

FAS 496	*	Vermilion	18	5
FED. ROAD DIST. CL. #		ILL. RES. PROJ. #		



BILL OF MATERIAL

ITEM	UNIT	QTY
Paint Pavement Marking - Line 4"	Foot	900

NOTE: Use in conjunction with Standard 780001-02

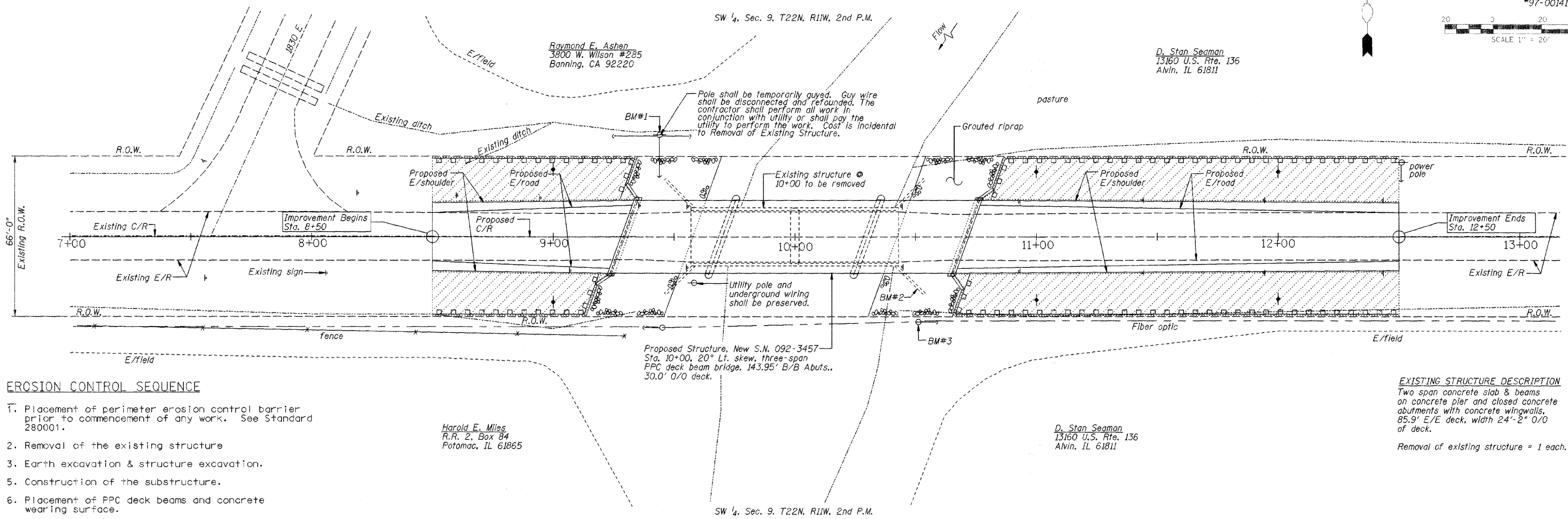
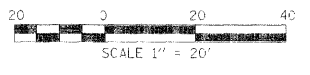
DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Frauenhoffer	NO.	DATE	REVISION	BY

FRAUENHOFFER
 Frauenhoffer and Associates, P.C. Consulting Engineers
 3002 Crossing Court Champaign, IL 61822 217-351-6268

PAVEMENT MARKING PLAN		SHEET	5
FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK		DWG NO.	LINE.dgn
SEC. 97-00141-00-BR		DATE	MAR 2009
VERMILION COUNTY		PROJ NO.	97051

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET
FAS 496	*	Vermillion	18	6
FED. ROAD DIST. NO. 7	ILLINOIS	FEE. AID PROJ. REC.		

*97-00141-00-BR



EROSION CONTROL SEQUENCE

1. Placement of perimeter erosion control barrier prior to commencement of any work. See Standard 280001.
2. Removal of the existing structure
3. Earth excavation & structure excavation.
5. Construction of the substructure.
6. Placement of PPC deck beams and concrete wearing surface.
7. Place grouted riprap.
8. Regrade for pavement widening, base coarse, and HMA placement.
9. Install guardrail and bridge rail.
10. Removal and proper clean up of the temporary erosion controls.
11. Placement of the permanent erosion controls.

EXISTING STRUCTURE DESCRIPTION

Two span concrete slab & beams on concrete pier and closed concrete abutments with concrete wingwalls, 85.9' E/E deck, width 24'-2" O/O of deck.
Removal of existing structure = 1 each.

NITROGEN FERTILIZER NUTRIENT; POTASSIUM FERTILIZER NUTRIENT; PHOSPHORUS FERTILIZER NUTRIENT			
LOCATION			POUND
STA. 8+50.00 TO	STA. 9+28.03	LT/RT	8
STA. 10+71.97 TO	STA. 12+50.00	LT/RT	19
(110 LBS/ACRE)			TOTAL
			27

PERIMETER EROSION BARRIER			
LOCATION		FOOT	
STA. 8+50.00 TO	STA. 9+28.03	LT	105
STA. 8+50.00 TO	STA. 9+28.03	RT	85
STA. 10+71.97 TO	STA. 12+50.00	LT	185
STA. 10+71.97 TO	STA. 12+50.00	RT	205
TOTAL			580

BILL OF MATERIAL - EROSION CONTROL		
ITEM	UNIT	QUANTITY
Top Soil Furnish & Place, 4"	SQ. YD.	1150
Seeding, Class 2	ACRE	0.24
Nitrogen Fertilizer Nutrient	POUND	27
Phosphorus Fertilizer Nutrient	POUND	27
Potassium Fertilizer Nutrient	POUND	27
Mulch, Method 2	ACRE	0.24
Temporary Erosion Control Seeding	POUND	24
Temporary Ditch Checks	EACH	6
Perimeter Erosion Barrier	FOOT	580

PERMANENT EROSION CONTROL

Seeding, Cl. 2 with Fertilizer and Mulch

TEMPORARY EROSION CONTROL

Temporary Ditch Check

Perimeter Erosion Barrier

Temporary Erosion Control Seeding

SEEDING CLASS 2; MULCH METHOD 2			
LOCATION			ACRE
STA. 8+50.00 TO	STA. 9+28.03	LT/RT	0.07
STA. 10+71.97 TO	STA. 12+50.00	LT/RT	0.17
TOTAL			0.24

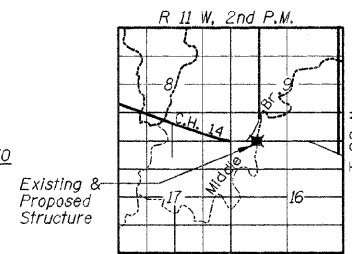
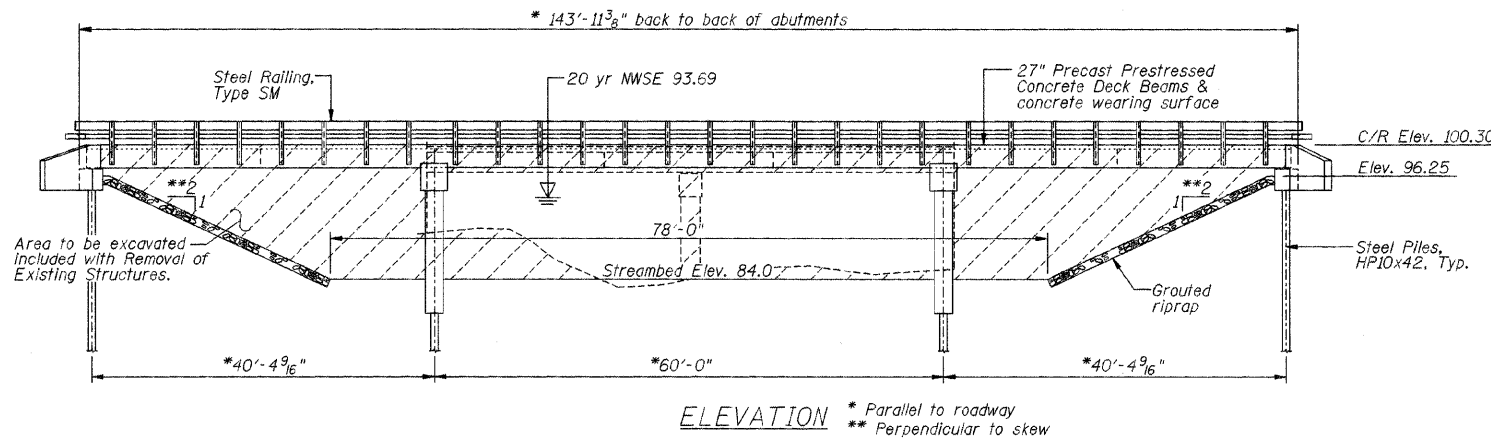
TOP SOIL FURNISH & PLACE, 4"			
LOCATION		SQ. YD.	
STA. 8+50.00 TO	STA. 9+28.03	LT/RT	345
STA. 10+71.97 TO	STA. 12+50.00	LT/RT	805
TOTAL			1150

TEMPORARY DITCH CHECKS			
LOCATION		EACH	
STA. 9+00	LT/RT	2	
STA. 11+00	LT/RT	2	
STA. 12+00	LT/RT	2	
TOTAL			6

TEMPORARY EROSION CONTROL SEEDING			
LOCATION		POUND	
STA. 8+50.00 TO	STA. 9+28.03	LT/RT	7
STA. 10+71.97 TO	STA. 12+50.00	LT/RT	17
(100 LBS/ACRE) TOTAL			24

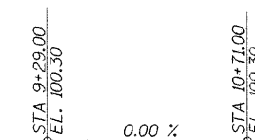
ROUTE NO.	SECTION	COUNTY	DATE	SHEET NO.
FAS 496	*	Vermilion	18	7
FED. ROAD DIST. NO. 7		ILLINOIS		FED. AID PROJECT-

*97-00141-00-BR



STRUCTURE NO. 092-3457
SEC. 97-00141-00-BR BUILT 200
COUNTY HIGHWAY 14
VERMILION COUNTY
LOADING HL 93

NAME PLATE
See Standard 515001



DESIGN SPECIFICATIONS

AASHTO LRFD (2007) and applicable Interims

DESIGN LOADING

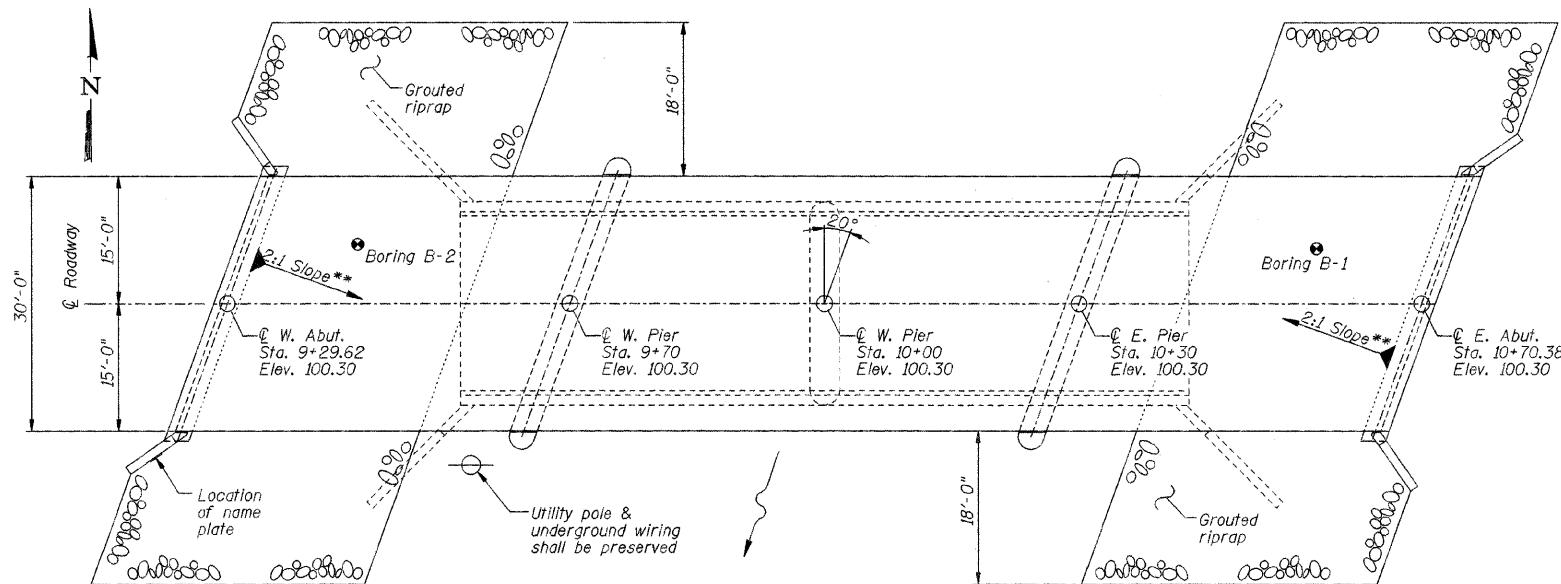
HL-93
25 P.S.F Future Wearing Surface

DESIGN STRESSES

$f'_c = 3,500$ psi (Cast In Place Concrete)
 $f'_c = 6,000$ psi (P.P.C. Units)
 $f'_{ci} = 5,000$ psi (P.P.C. Units)
 $f_y = 60,000$ psi (Reinforcement)
 $f'_s = 270,000$ psi ($\frac{1}{2}$ " ϕ Strands)
 $f'_{si} = 201,960$ psi ($\frac{1}{2}$ " ϕ Strands)

WATERWAY DATA

Drainage Area 35.03 Sq. Mi.
Existing Opening (20 Yr.) 587 Sq. Ft.
Required Opening (20 Yr.) 1136 Sq. Ft.
Proposed Opening (20 Yr.) 904 Sq. Ft.
Design Discharge (20 Yr.) 2429 C.F.S.
Computed Discharge (100 Yr.) 3425 C.F.S.
20 Yr. Head 0.13 Ft.
100 Yr. Head 0.28 Ft.



TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Structures	Each	1	-	1
Structure Excavation	Cu. Yd.	-	122	122
Cofferdam Excavation	Cu. Yd.	-	140	140
Cofferdams	Each	-	2	2
Concrete Structures	Cu. Yd.	-	122	122
Concrete Superstructure	Cu. Yd.	80.7	-	80.7
Bridge Deck Grooving	Sq. Yd.	483	-	483
Seal Coat Concrete	Cu. Yd.	-	80	80
Protective Coat	Sq. Yd.	483	-	483
Precast Prestressed Concrete Deck Beam (27" Depth)	Sq. Ft.	4256	-	4256
Reinforcement Bars	Pound	7200	-	7200
Reinforcement Bars, Epoxy Coated	Pound	11450	100	11550
Steel Railing, Type SM	Foot	289	-	289
Furnishing Steel Piles HP10x42	Foot	-	1800	1800
Driving Piles	Foot	-	1800	1800
Test Pile Steel HP10x42	Each	-	4	4
Pile Shoes	Each	-	36	36
Name Plates	Each	-	1	1
Controlled Low-Strength Material	Cu. Yd.	-	52	52
Grouted Riprap	Sq. Yd.	-	490	490
Concrete Cut-Off Wall	Cu. Yd.	-	6.4	6.4

GENERAL NOTES

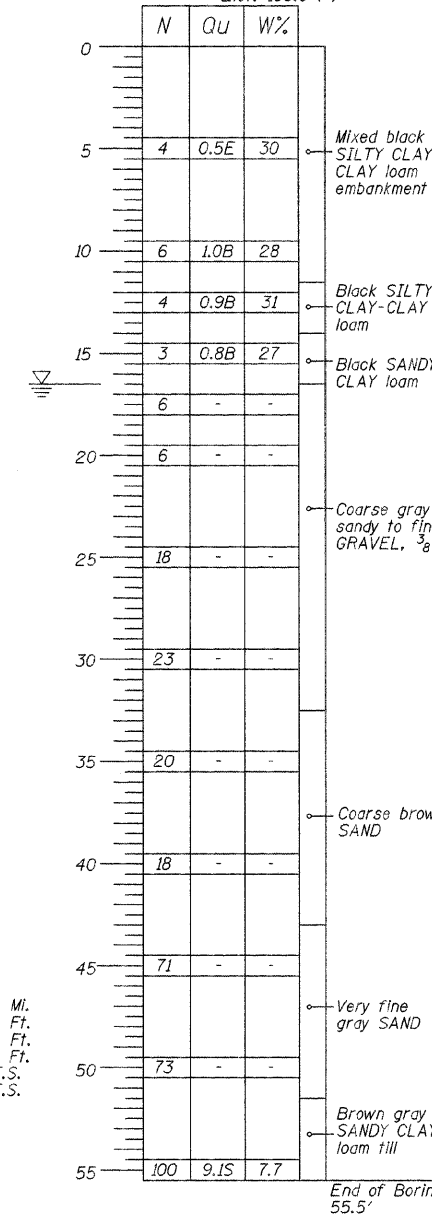
- The Contractor shall drive test piles to 110% of the Nominal Required Bearing specified in production locations at the substructures specified or approved by the Engineer before ordering the remainder of the piles.
- Boring Data is shown only as a guide to bidders in estimating soil conditions which may be encountered during construction.
- Class SI or MS Concrete shall be used in the abutments.
- Reinforcement bars shall conform to the requirements of ASTM A706, Grade 60 (IL Modified). See Special Provisions.
- Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.

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 Compressive Strength - Tons/Sq. Ft.
W - Water Content - Percentage of oven dry weight - %

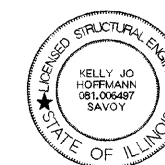
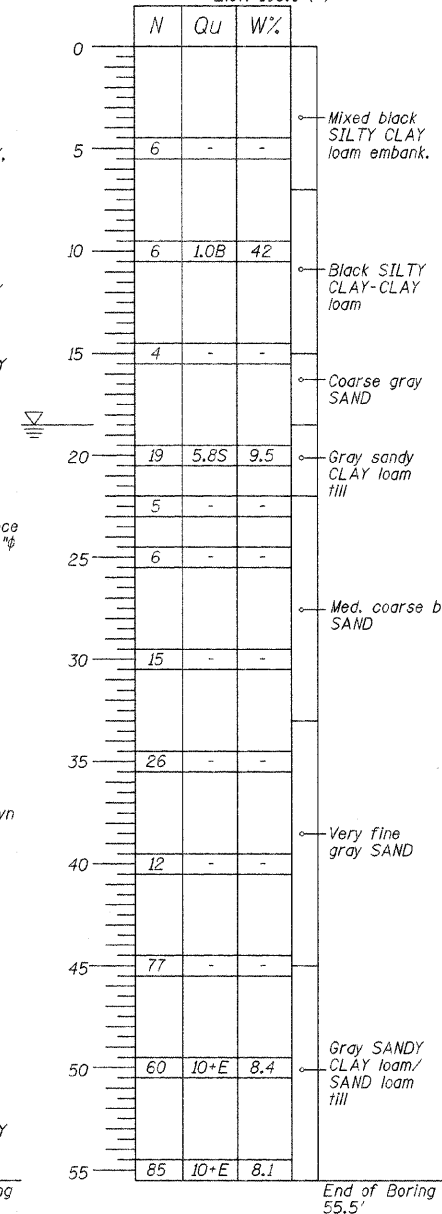
BORING B-1

Location: STA 10+58 (+), 6.5' LT
Elev. 100.0 (+)



BORING B-2

Location: STA 9+47(+), 7' LT
Elev. 100.0 (+)



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."

Kelly J. Hoffmann
KELLY J. HOFFMANN
Illinois Licensed Structural Engineer Number 6497
License Expires 11/30/10

DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Frauenhoffer	NO.	DATE	REVISION	BY

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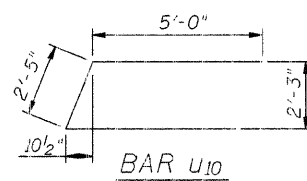
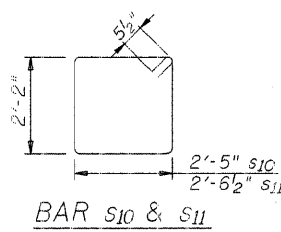
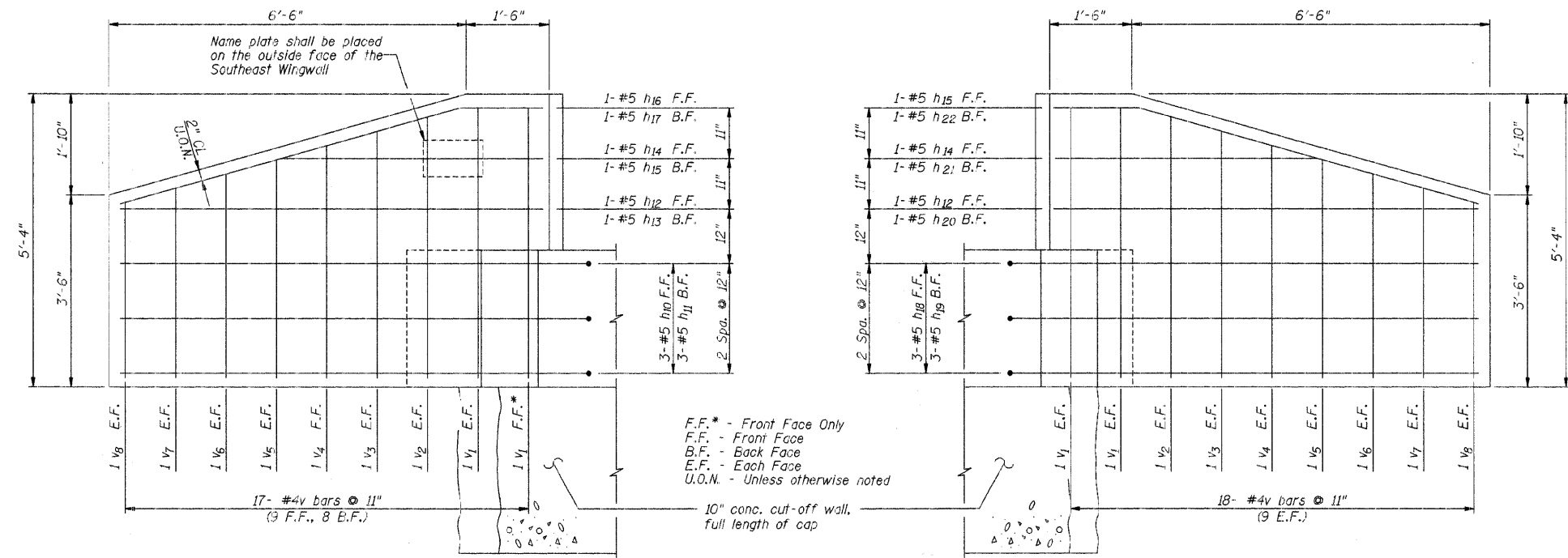
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3002 Crossing Court Champaign, IL 61822 217-351-6266

GENERAL PLAN AND ELEVATION

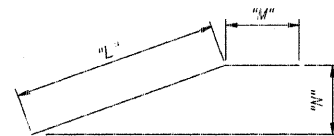
FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK
SEC. 97-00141-00-BR
VERMILION COUNTY

SHEET	7
DWG NO.	gpe.dgn
DATE	APR 2009
PROJ NO.	97051

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 496	*	Vermilion	18	9
FED. ROAD DIST. 3-3.7		FED. AID PROJECT		



Bar	"L"	"M"	"N"
h ₁₀	8'-6"	12"	8'-6"
h ₁₁	9'-3"	12"	5'-4 1/2"
h ₁₆	6'-5"	1'-6"	1'-9"
h ₁₇	6'-5"	7"	1'-9"
h ₁₈	8'-9"	12"	8'-9"
h ₁₉	9'-2"	12"	7'-6"
h ₂₂	6'-5"	1'-1"	1'-9"

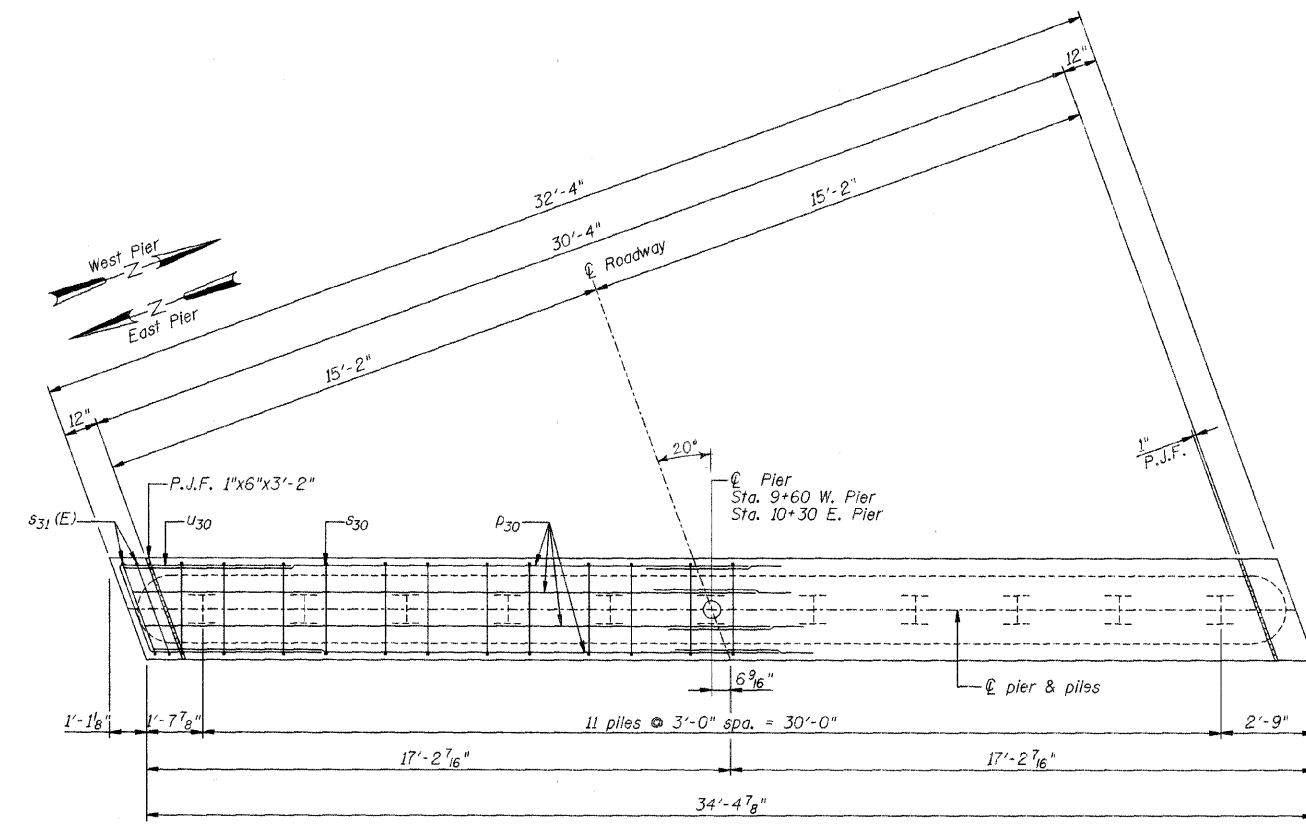


DESIGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.F. Fraenhoffer	NO.	DATE	REVISION	BY

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3002 Crossing Court Champaign, IL 61822 217-351-6268

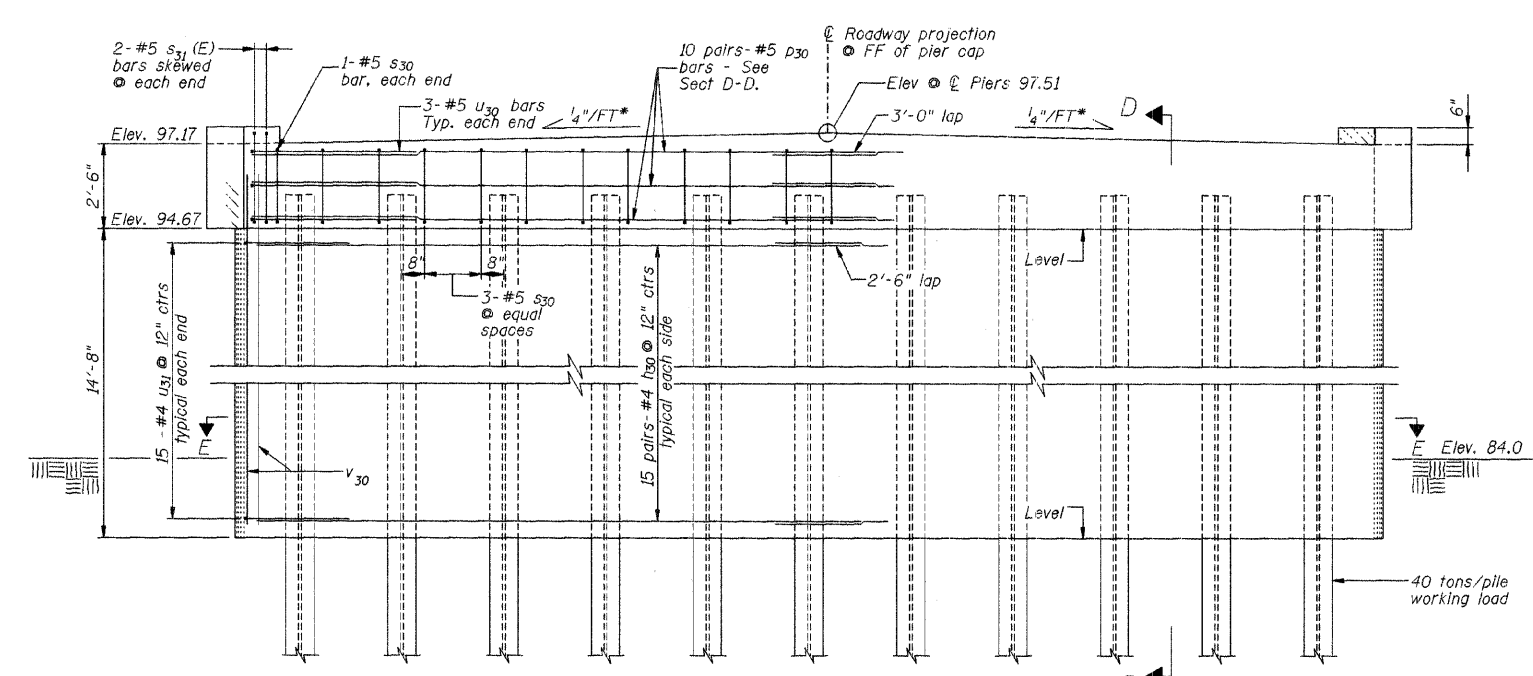
ABUTMENTS (SHEET 2 OF 2)		SHEET 9
FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK		DWG NO. 97051-at1.dgn
SEC. 97-00141-00-BR		DATE APR 2009
VERMILION COUNTY		PROJ. NO. 97051

NO. TO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 496	*	Vermilion	18	10
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

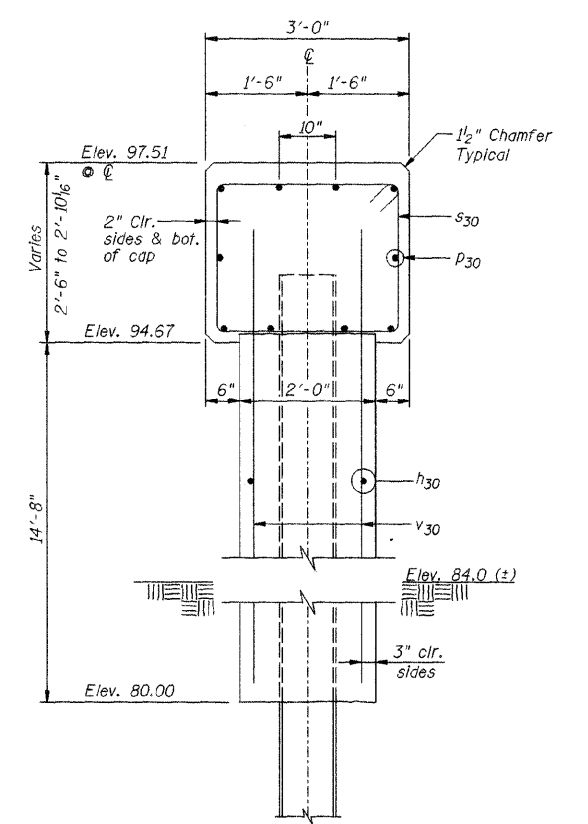


PLAN
(Symmetrical about C.L. Pier)

NOTE: All edges shall have standard $\frac{3}{4}$ " chamfer, except as noted.



ELEVATION
Front Projection
(Symmetrical about C.L. Roadway)
* Normal to Roadway



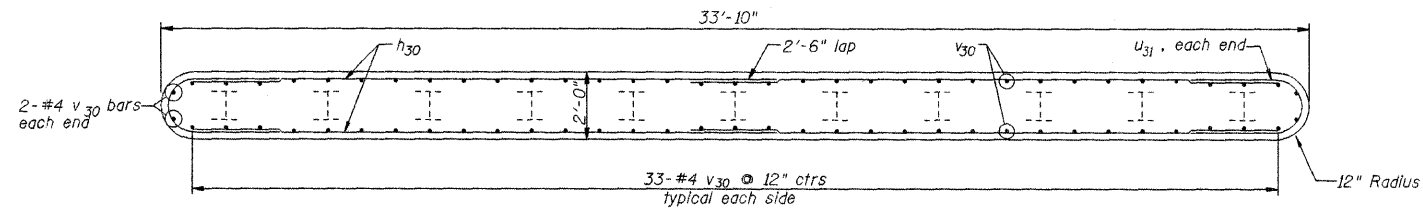
SECTION D-D
(Perpendicular to C.L. of Pier)

DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Fraenhoffer	NO.	DATE	REVISION	BY

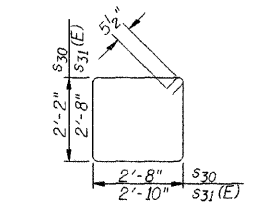
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3002 Crossing Court Champaign, IL 61822 217-351-6268

PIERS (SHEET 1 OF 2)		SHEET	10
FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK		DWG NO.	97051oler.dgn
SECTION 97-00141-00-BR		DATE	APR 2009
VERMILION COUNTY		PROJ NO.	97051

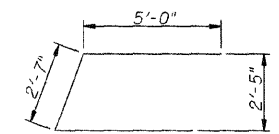
PROJECT NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 496	*	Vermilion	18	11
FED. ROAD DIST. N.S. 7		FED. AID PROJECT		



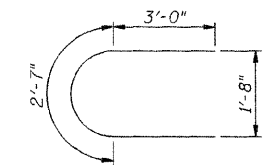
SECTION E-E



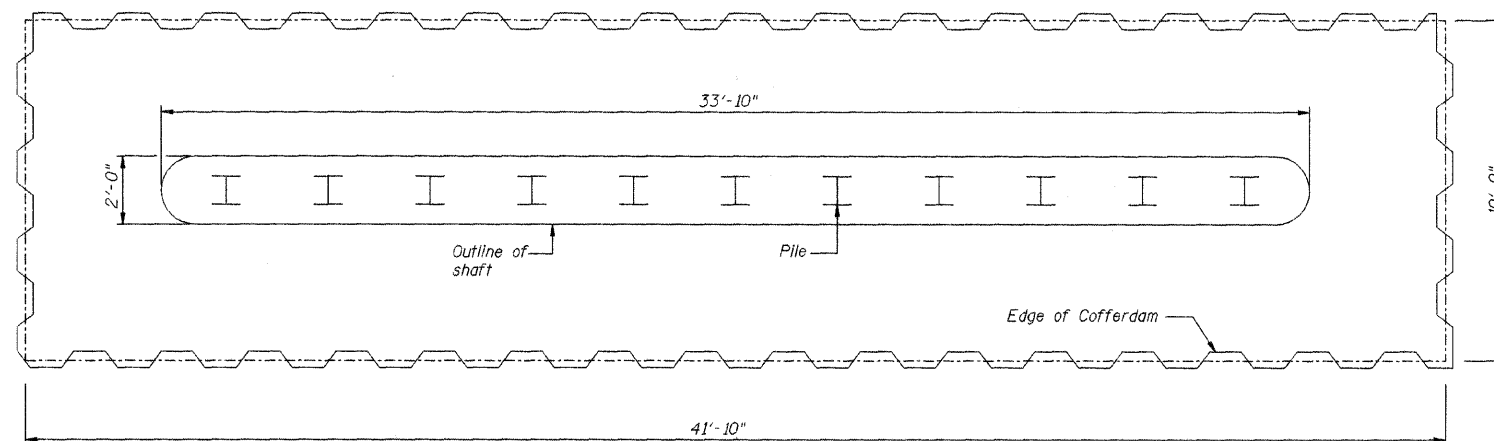
BARS s30 & s31 (E)



BAR u30



BAR u31



COFFERDAM PLAN

BILL OF MATERIAL - 2 PIERS

Bar	No.	Size	Length	Shape
h30	120	# 4	17'-3"	—
p30	40	# 5	18'-8"	—
s30	64	# 5	10'-7"	□
s31 (E)	8	# 5	11'-11"	□
u30	12	# 5	12'-7"	U
u31	60	# 4	8'-7"	U
v30	140	# 4	16'-2"	—
Concrete Structures		Cu. Yds.	98.2	
Reinforcement Bars		Lbs.	4890	
Reinforcement Bars, Epoxy Coated		Lbs.	100	
Test Pile, HP10x42		Each	2	
Furnishing Steel Piles HP10x42		Foot	1200	
Driving Piles		Foot	1200	
Pile Shears		Each	22	
Cofferdam		Each	2	
Cofferdam Excavation		Cu. Yds.	140	
Seal Coat Concrete		Cu. Yds.	80	

Reinforcement bars designated (E) shall be epoxy coated.

PILE DATA

Location: Piers
 Pile Type and Size: Steel HP 10x42
 Nominal Required Bearing: 240 kips
 Factored Resistance Available: 120 kips
 Estimated Pile Length: 60 ft.
 No. of Production Piles: 10 @ East Pier
 10 @ West Pier
 No. of Test Piles: 1 @ East Pier
 1 @ West Pier

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

DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Fraenhoffer	NO.	DATE	REVISION	BY

FRAUENHOFFER

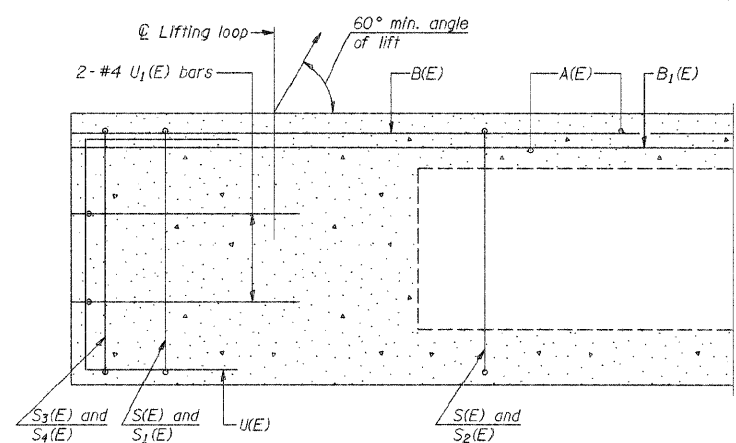
Fraenhoffer and Associates, P.C. Consulting Engineers
 3002 Crossing Court Champaign, Il. 61822 217-351-6268

PIERS (SHEET 2 OF 2)

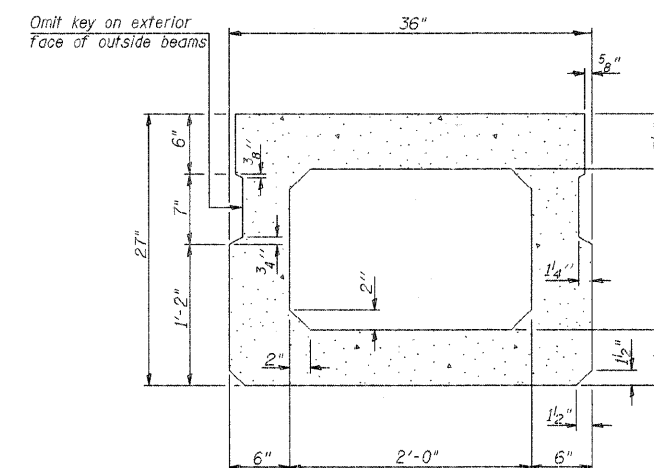
FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK
 SECTION 97-00141-00-BR
 VERMILION COUNTY

SHEET	11
DWG NO.	97051oler.dwg
DATE	APR 2009
PROJ NO.	97051

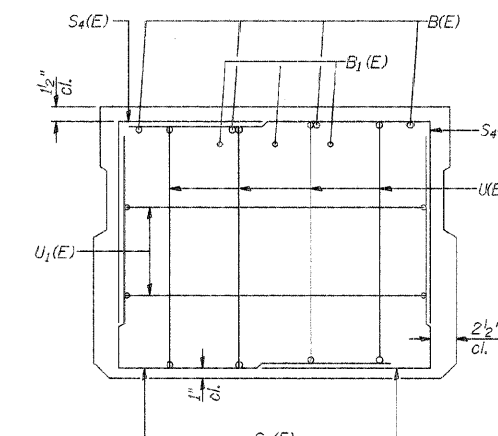
ROUTE NO.	SECTION	COUNT	SHEETS	SHEET
FAS 496	*	Vermilion	18	12
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL PROJECT		



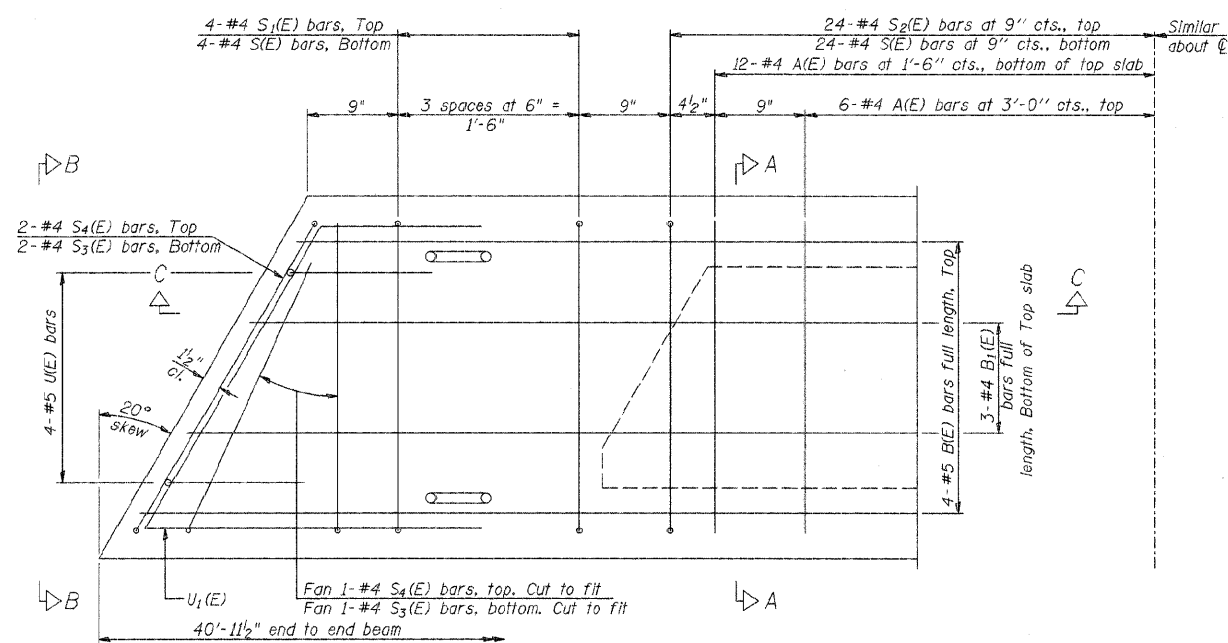
SECTION C-C



SECTION A-A
(Showing dimensions)

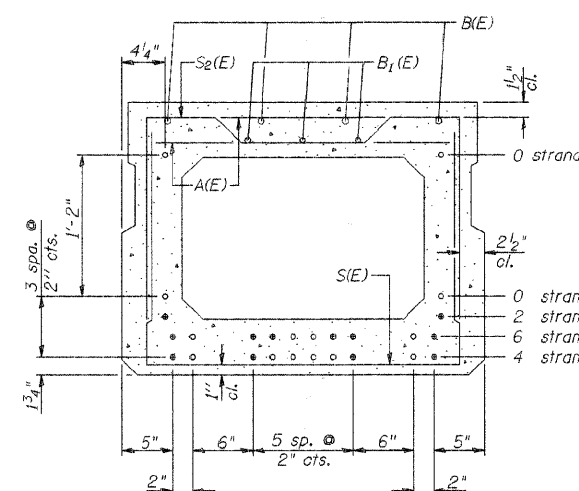


VIEW B-B



PLAN VIEW

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 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.

BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	36	#4	2'-7"	—
B(E)	12	#5	15'-6"	—
B1(E)	9	#4	15'-6"	—
S(E)	56	#4	6'-5"	┌┐
S1(E)	8	#4	5'-11"	┌┐
S2(E)	48	#4	6'-2"	┌┐
S3(E)	6	#4	4'-6"	┌┐
S4(E)	6	#4	4'-3"	┌┐
U(E)	8	#5	4'-6"	┌┐
U1(E)	4	#4	6'-1"	┌┐

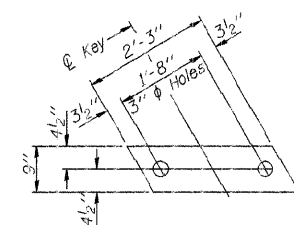
Note: See sheet 2 of 4 for additional details and Bill of Material.

27" x 36" PPC DECK BEAM
STRUCTURE NO. 092-3457
SPANS 1 AND 3

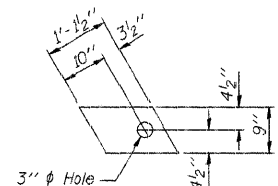
DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Fraenhoffer	NO.	DATE	REVISION	BY

ROUTE NO.	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
FAS 496	*	Vermilion	18	13
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT:	

*97-00141-00-BR



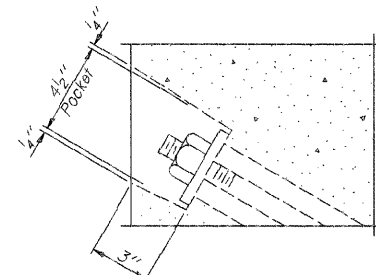
FABRIC BEARING PAD (Interior)



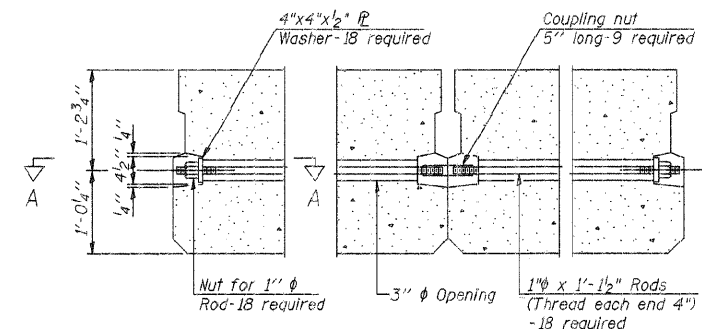
FABRIC BEARING PAD (Exterior)

FIXED

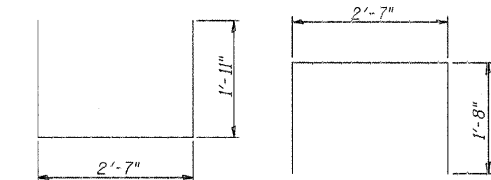
Note: Omit holes when using expansion bearings.



SECTION A-A

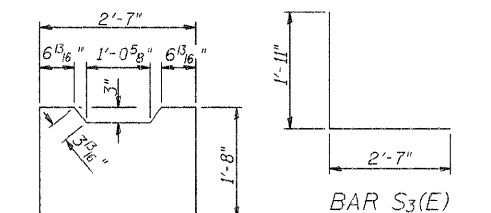


TYPICAL TRANSVERSE TIE ASSEMBLY



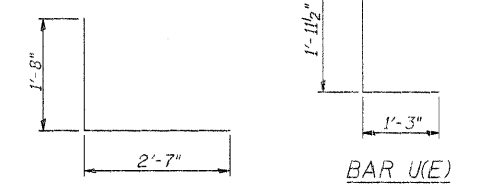
BAR S1(E)

BAR S2(E)

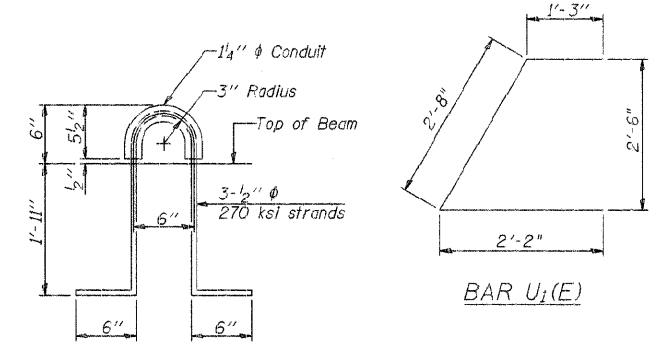


BAR S3(E)

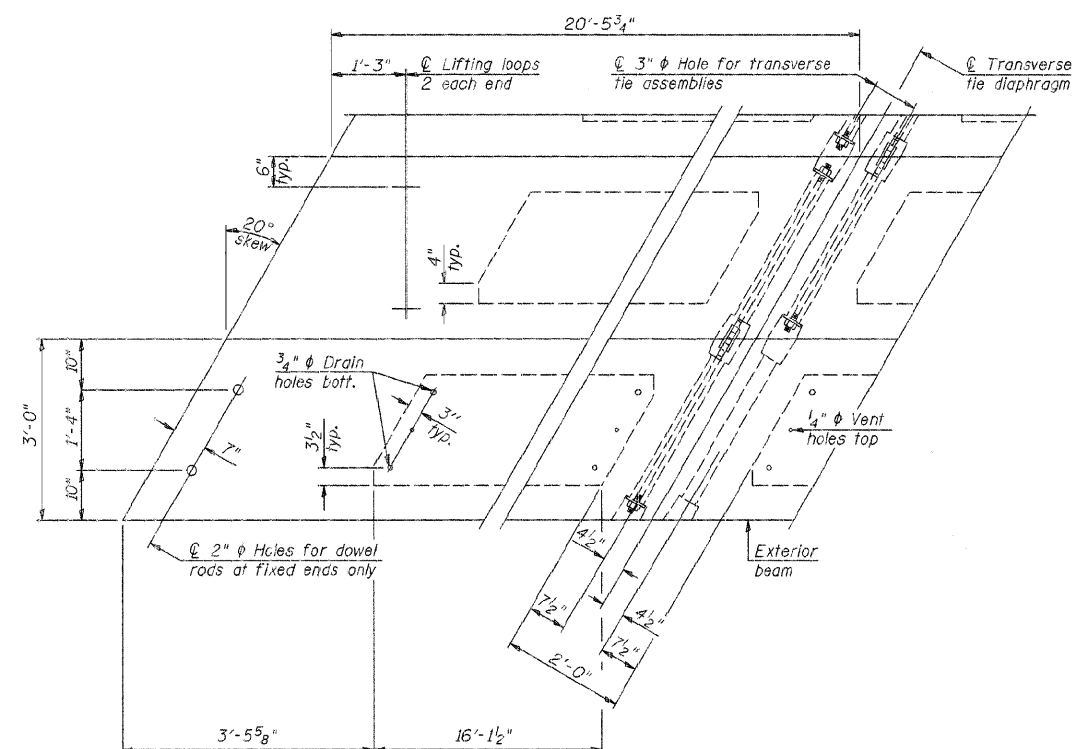
BAR S4(E)



BAR U1(E)

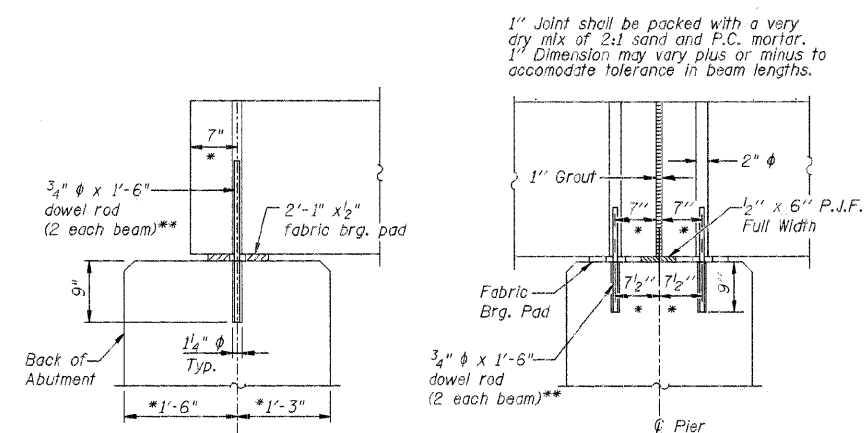


LIFTING LOOP DETAIL



PLAN VIEW

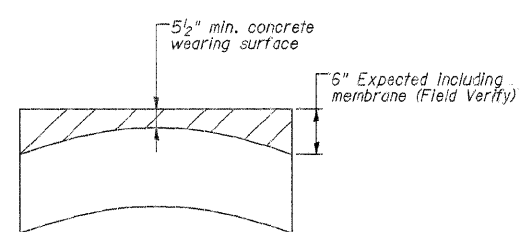
Note: Connect beams in pairs with the transverse tie configuration shown.



SECTION AT ABUTMENT

SECTION AT PIER

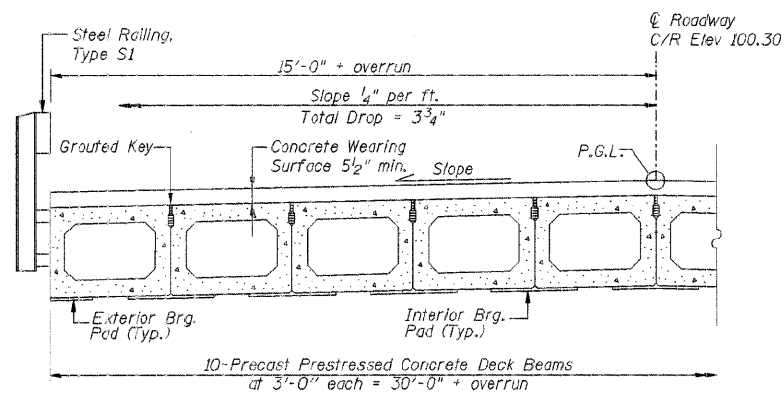
* Perpendicular to centerline of abutment or pier
 ** Dowel rods to be grouted after beams are in place and prior to grouting the shear keys



CAMBER DIAGRAM Along Center of Beam

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" diameter 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, Grade 60. (See Special Provisions).
 Two 5/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
 A minimum 2 1/2" diameter 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.



HALF CROSS SECTION

BILL OF MATERIAL SPANS 1 AND 3

Precast Prestressed Conc. Deck Bms. (27" depth)	Sq. Ft.	2458
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27" x 36" PPC DECK BEAM
 STRUCTURE NO. 092-3457
 SPANS 1 AND 3

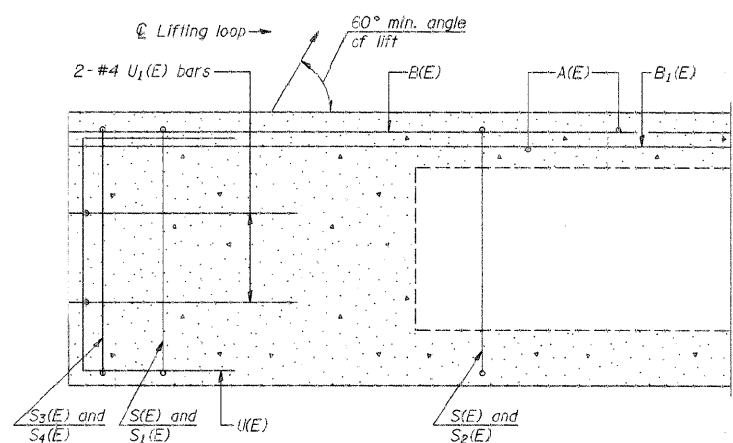
DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Fraenhoffer	NO.	DATE	REVISION	EY

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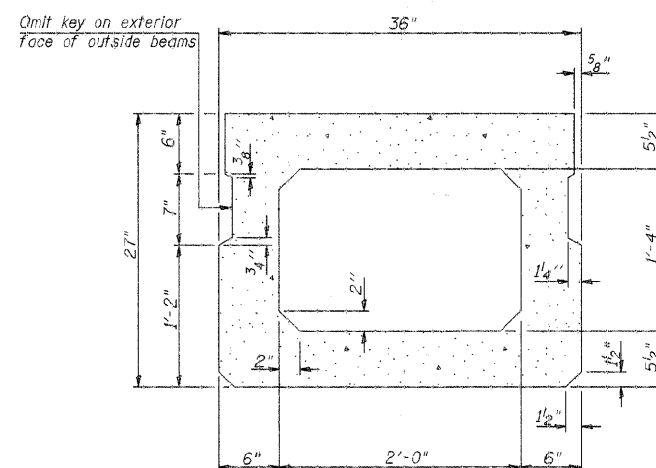
SUPERSTRUCTURE DETAILS (SHEET 2 OF 4)
 FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK
 SECTION 97-00141-00-BR
 VERMILION COUNTY

SHEET	13
DWG NO.	97051sup.dgn
DATE	APR 2009
PROJ NO.	97051

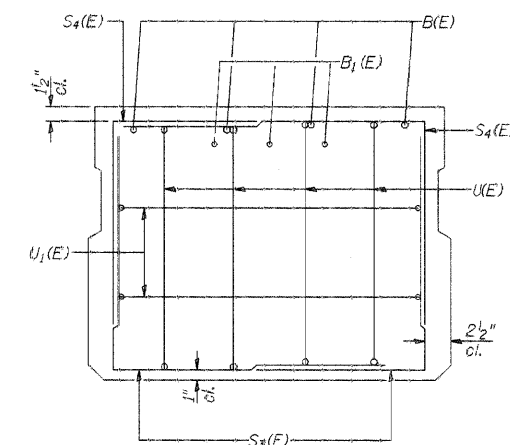
MULTI NO.	SECTION	COUNTY	SHEETS	NO.
FAS 496	*	Vermilion	18	14
REV. PROJ. DIST. NO.	ALL NO.	PER. AND PROJECT		



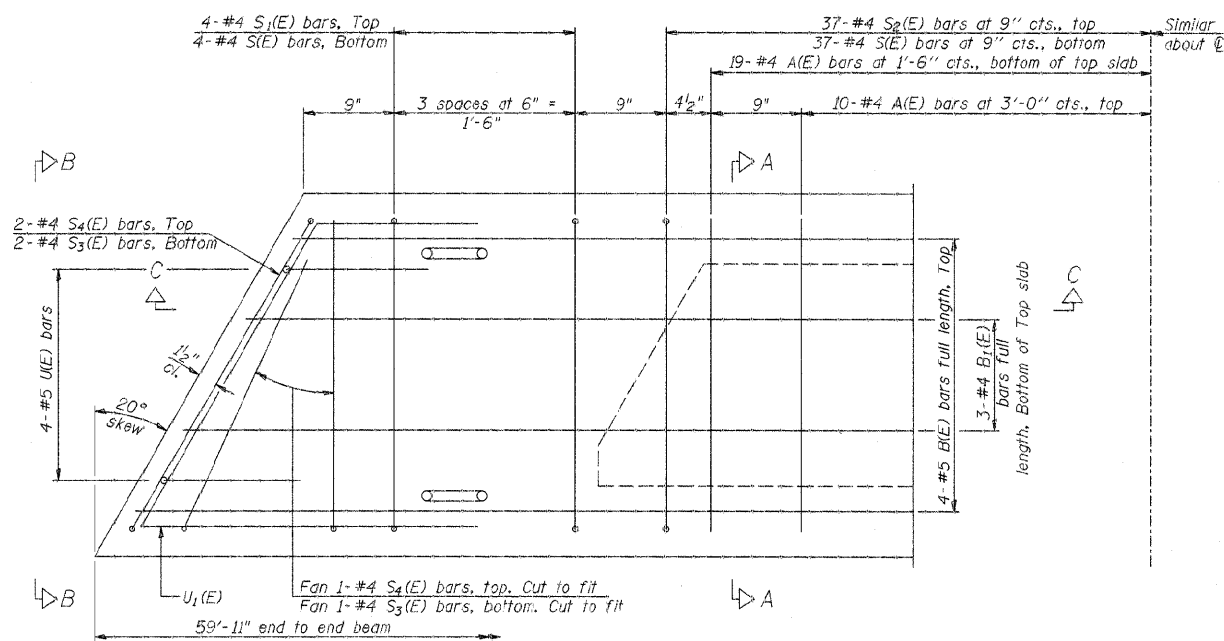
SECTION C-C



SECTION A-A
(Showing dimensions)

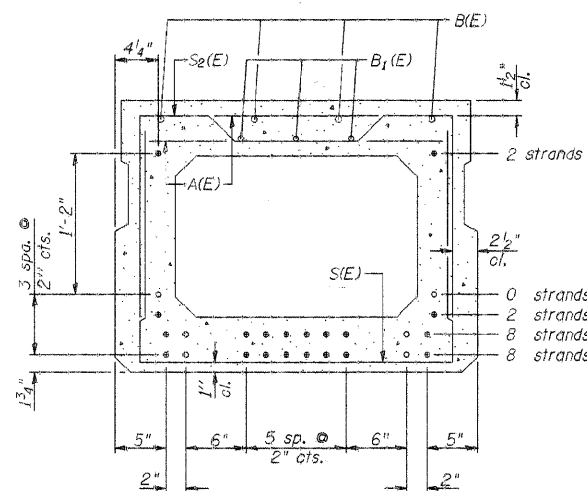


VIEW B-B



PLAN VIEW

Note: Spacing of S1(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 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.

BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	58	#4	2'-7"	—
B(E)	16	#5	17'-0"	—
B1(E)	12	#4	17'-0"	—
S(E)	82	#4	6'-5"	U
S1(E)	8	#4	5'-11"	U
S2(E)	74	#4	6'-2"	U
S3(E)	6	#4	4'-6"	U
S4(E)	6	#4	4'-3"	U
U(E)	8	#5	4'-6"	U
U1(E)	4	#4	6'-1"	U

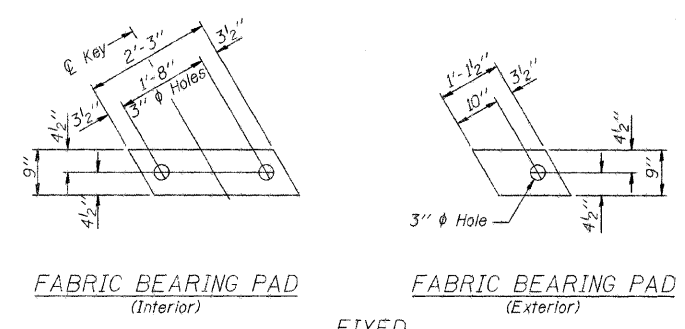
Note: See sheet 4 of 4 for additional details and Bill of Material.

27" x 36" PPC DECK BEAM
STRUCTURE NO. 092-3457
SPAN 2

DSGN	K.J. Hoffmann				
DRI	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Fraenhoffer	NO.	DATE	REVISION	BY

NOTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 496	*	Vermilion	18	15
DES. BY: DR. J. WOLF				
ILL. BY: J.A. FRAUENHÖFFER				

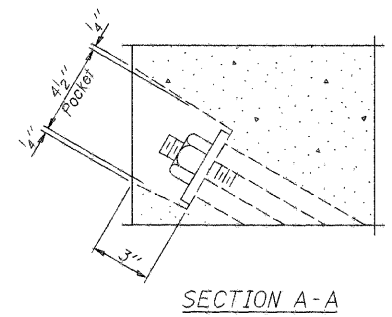
*97-00141-00-BR



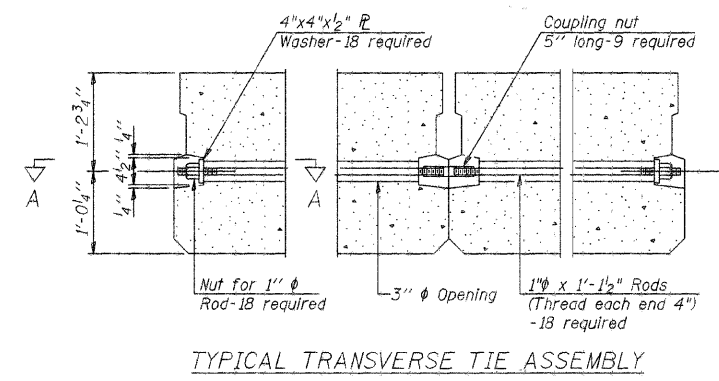
FABRIC BEARING PAD (Interior) FABRIC BEARING PAD (Exterior)

FIXED

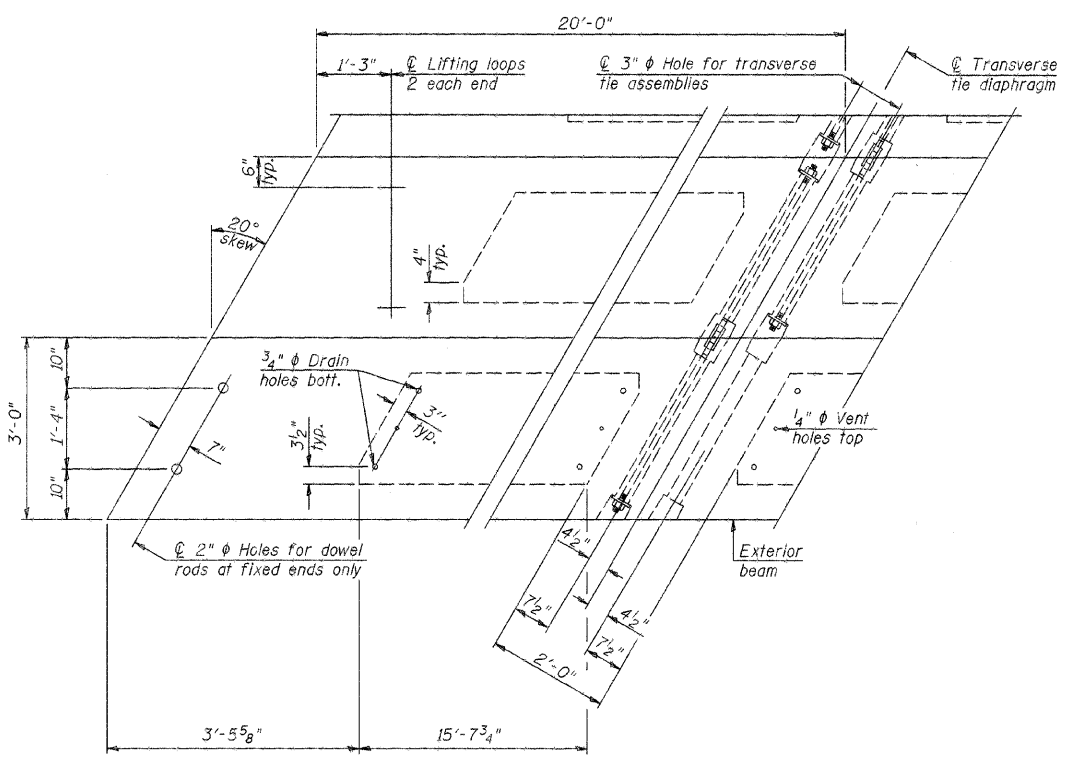
Note: Omit holes when using expansion bearings.



SECTION A-A

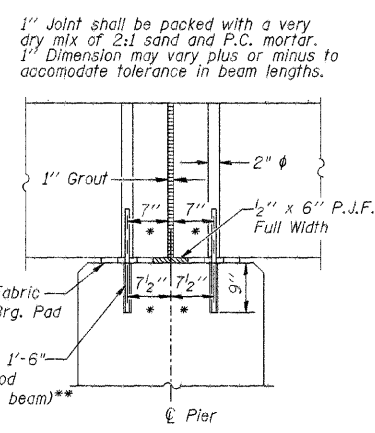


TYPICAL TRANSVERSE TIE ASSEMBLY



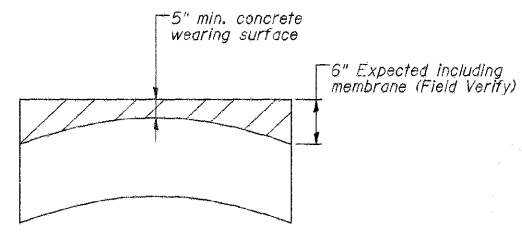
PLAN VIEW

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

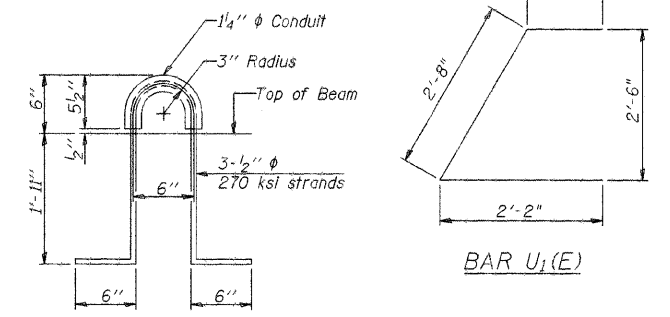
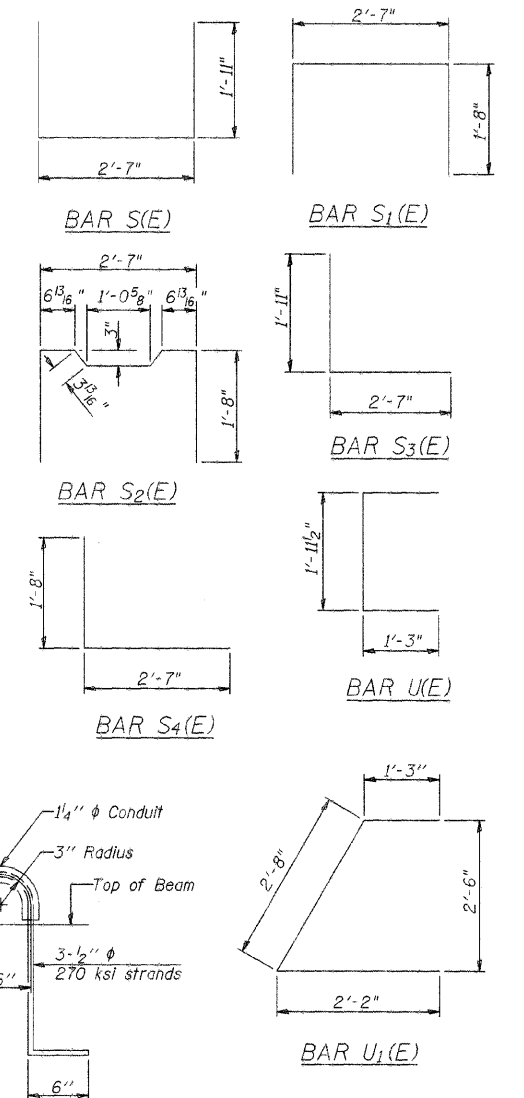


SECTION AT PIER

* Perpendicular to centerline of pier
** Dowel rods to be grouted after beams are in place and prior to grouting the shear keys



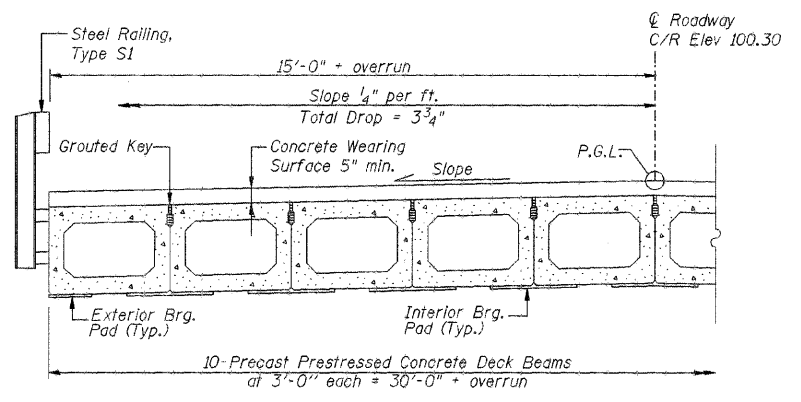
CAMBER DIAGRAM Along Center of Beam



LIFTING LOOP DETAIL

NOTES

1. 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.
2. Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions).
3. Two 5/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.
4. A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling.
5. 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.
6. Compressive strength of prestressed concrete, f'c, shall be 6000 psi.
7. Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



HALF CROSS SECTION

BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (27" depth)	Sq. Ft.	1798
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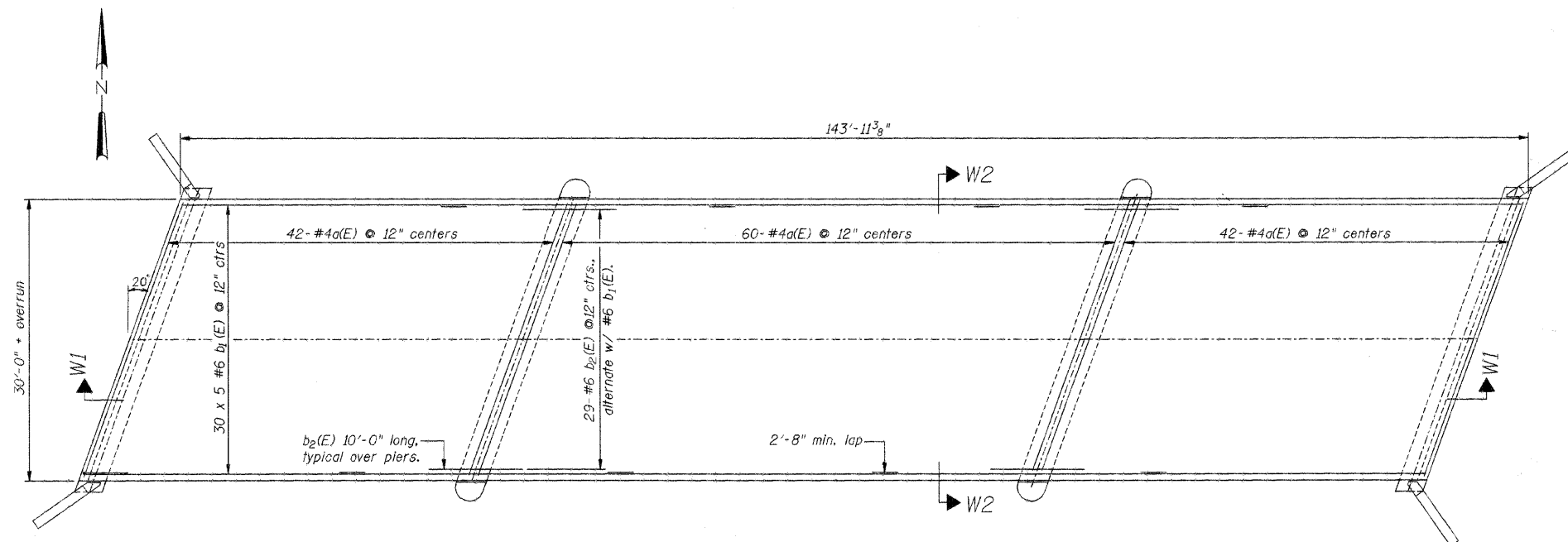
27" x 36" PPC DECK BEAM
STRUCTURE NO. 092-3457
SPAN 2

DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Fraenhoffer	NO.	DATE	REVISION	BY

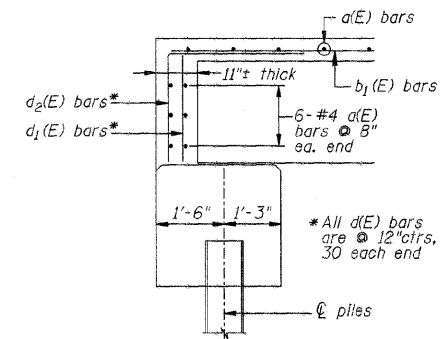
FRAUENHÖFFER
Frauenhoffer and Associates, P.C. Consulting Engineers
3002 Crossing Court Champaign, IL 61822 217-351-6268

SUPERSTRUCTURE DETAILS (SHEET 4 OF 4)		SHEET 15
FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK SECTION 97-00141-00-BR VERMILION COUNTY		DWG NO. 9705tsup.dgn
		DATE APR 2009
		PROJ NO. 97051

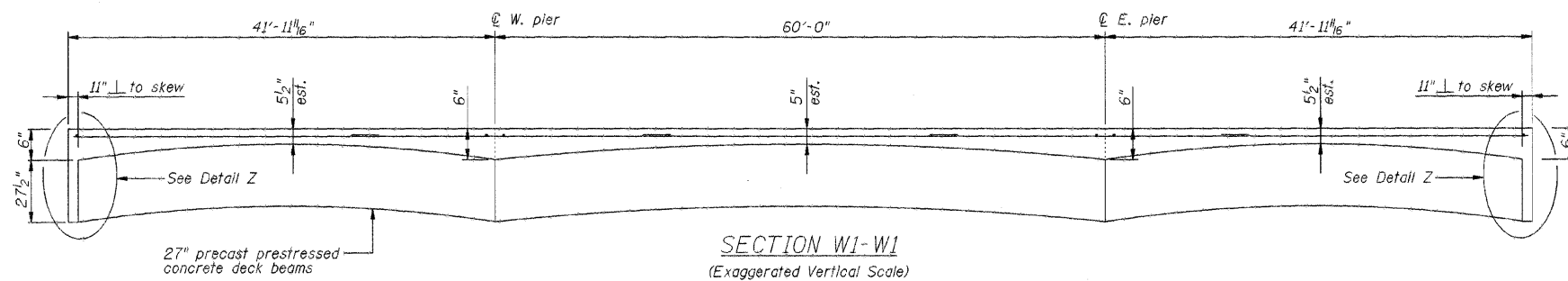
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 496	*	Vermilion	18	16
FED. ROAD DIST. P.S. 7		LOCAL NO.	FED. AID PROJECT NO.	



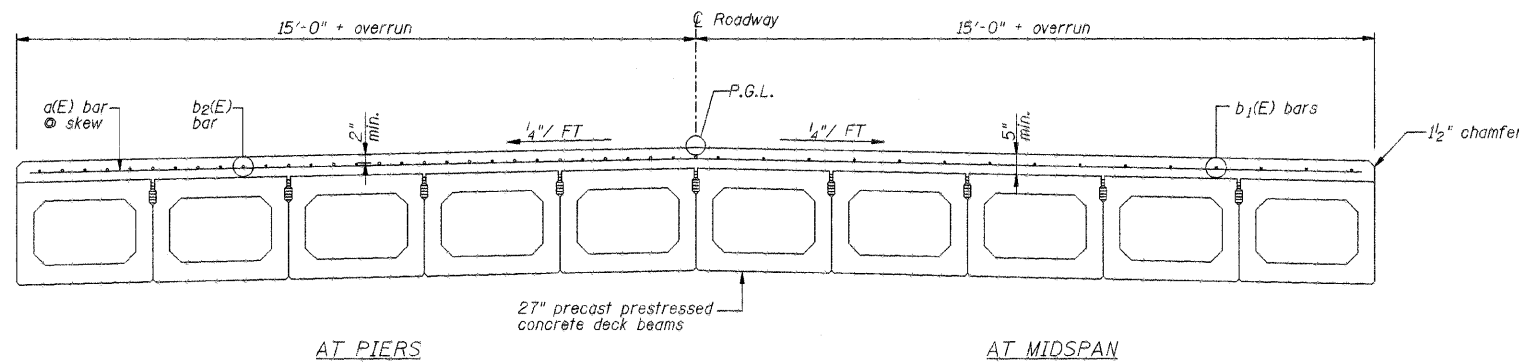
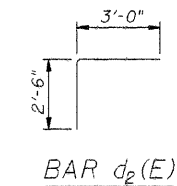
PLAN VIEW



DETAIL Z
Cut perpendicular to skew.



SECTION W1-W1
(Exaggerated Vertical Scale)



SECTION W2-W2
Section through beams and wearing surface.

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a (E)	156	# 4	31'-5"	—
b ₁ (E)	150	# 6	31'-0"	—
b ₂ (E)	58	# 6	10'-0"	—
d ₁ (E)	60	# 4	2'-6"	—
d ₂ (E)	60	# 4	5'-6"	┌
Concrete Superstructure		Cu. Yds.	80.7	
Bridge Deck Grooving		Sq. Yds.	483	
Protective Coat		Sq. Yds.	483	
Reinforcement Bars Epoxy Coated		Lbs.	11,450	

Notes : Reinforcement bars designated (E) shall be epoxy coated.

Bars indicated thus "30 x 5 - #6 b etc..." indicates 30 lines of bars with 5 lengths per line.

Concrete shall be Class BS.

Prior to the placement of the concrete, the top surface of the beams shall be clean and free of foreign material.

DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Fraunhoffer	NO.	DATE	REVISION	BY

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3002 Crossing Court Champaign, Il. 61822 217-351-6268

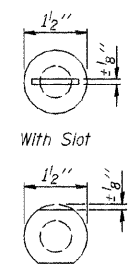
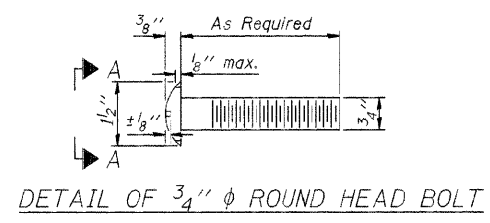
CONCRETE WEARING SURFACE

FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK
SEC. 97-00141-00-BR
VERMILION COUNTY

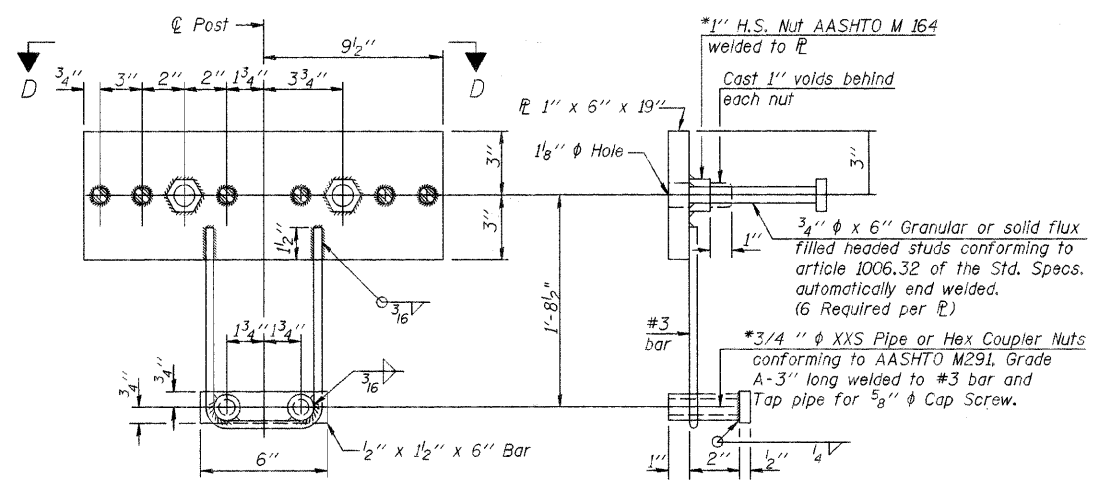
SHEET	16
DWG NO.	97051-wrg.dgn
DATE	APR 2009
PROJ NO.	97051

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 496	*	Vermillion	18	17a
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

*97-00141-00-BR

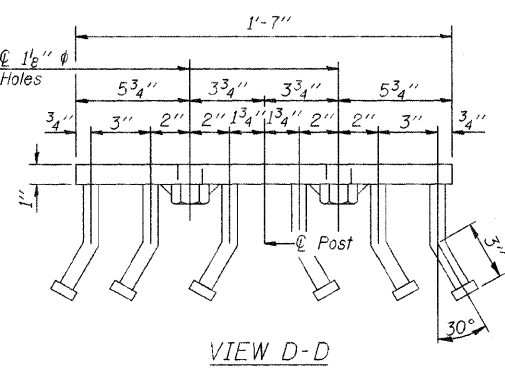


VIEW A-A

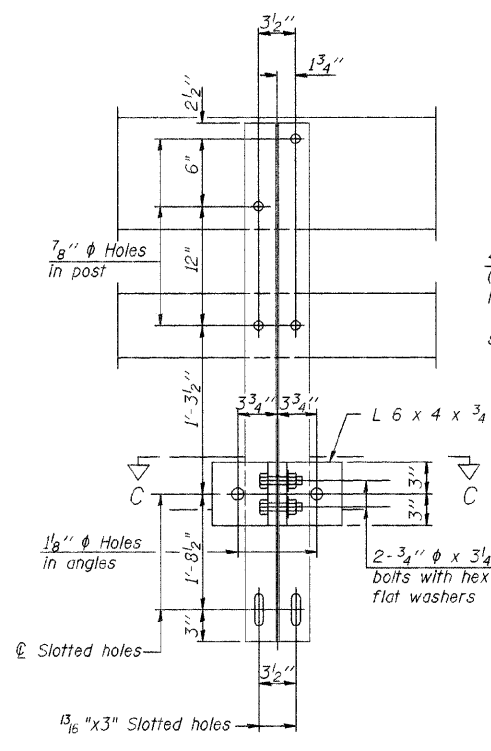


ANCHOR DEVICE

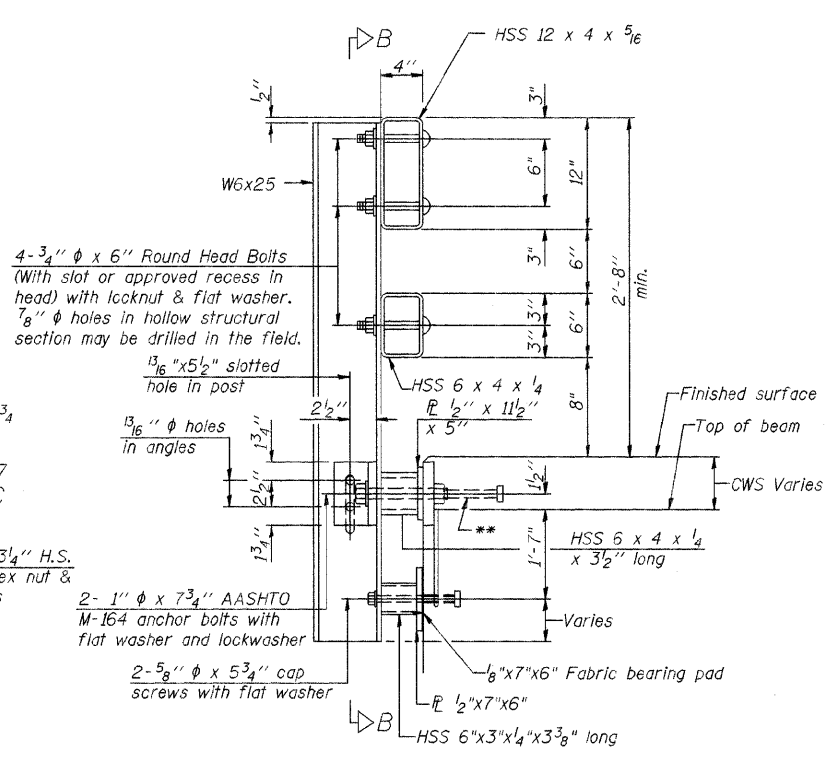
*Threaded areas shall be plugged or blocked off during casting of beam. Galvanized after fabrication.



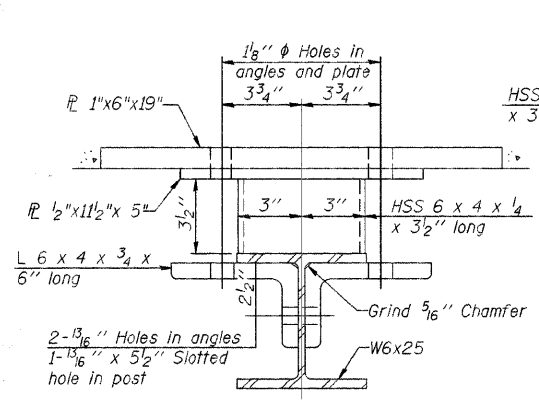
VIEW D-D



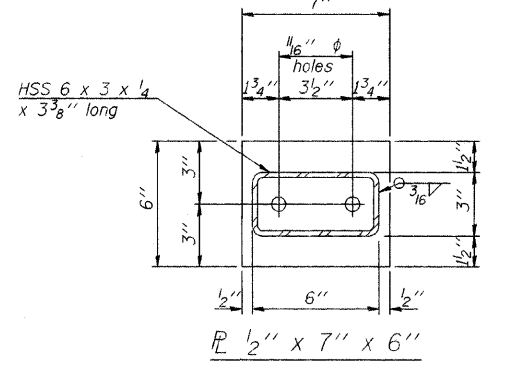
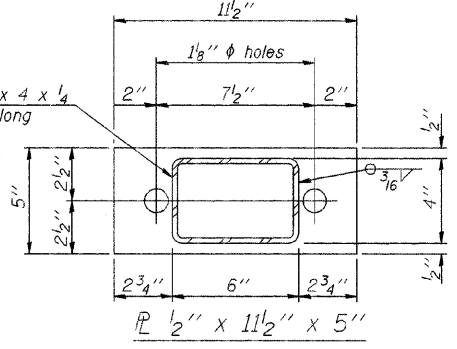
SECTION B-B



SECTION AT RAIL POST



SECTION C-C

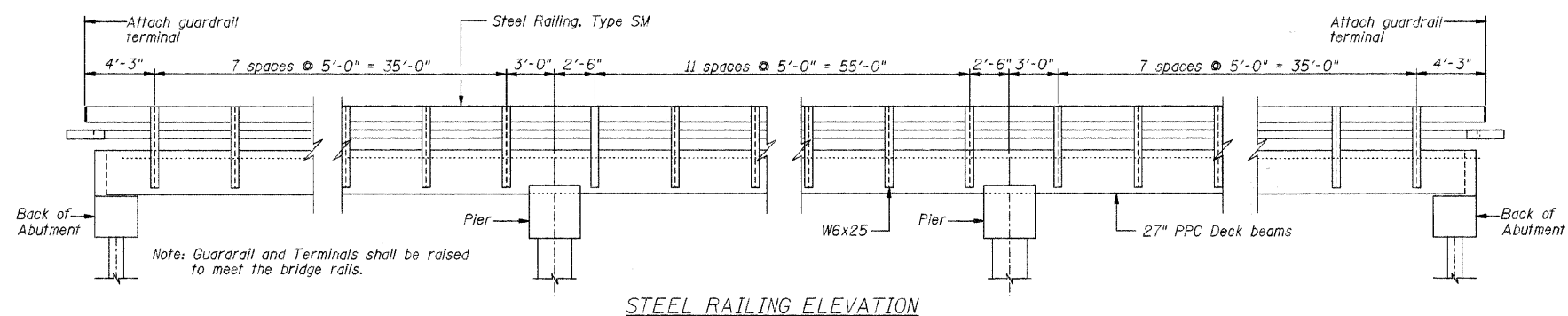


NO.	DATE	REVISION	BY	APVD

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DSGN	DR	CHK	APVD
K.J. Hoffmann	K.J. Hoffmann	J.R. Wolf	J.A. Frauenthoffer

STEE RAILING, TYPE SM (SHEET 1 OF 2)	SHEET
FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK SEC. 97-00141-00-BR VERMILION COUNTY	17a



STEEL RAILING ELEVATION

BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type SM	Foot	289

NOTES

Hollow structural steel tubing shall conform to the requirements of ASTM designation A-500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 ft-lbs at 0° F.

All other steel shapes and plates shall conform to the requirements of AASHTO M-270 Grade 36 except posts and angles shall conform to AASHTO M-270, Grade 50.

Bolts, cap screws, and nuts shall conform to the requirement of ASTM designation A-307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M-164.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized in accordance with AASHTO M-232.

All posts, railing, rail splices, anchor devices and angles shall be galvanized after shop fabrication in accordance with AASHTO M-111 and ASTM A-385. Galvanized rail shall not be painted.

Railing shall be in accordance with Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for Steel Railing, Type SM.

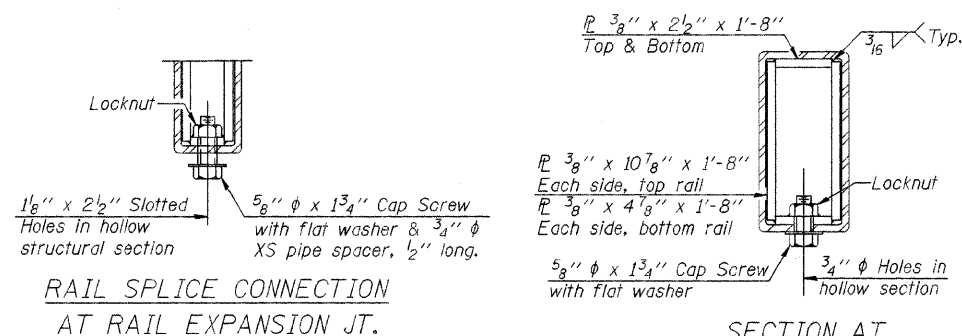
All field drilled holes shall be coated with an approved zinc rich paint before erection.

For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type SM.

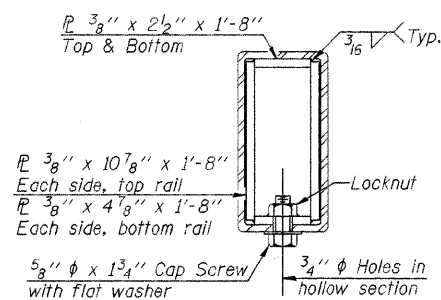
Steel rail elements shall be galvanized according to Article 1006.34 of the Standard Specifications.

Bolts located at expansion joint shall be provided with locknuts and shall be tightened only to a point that will allow railing movement.

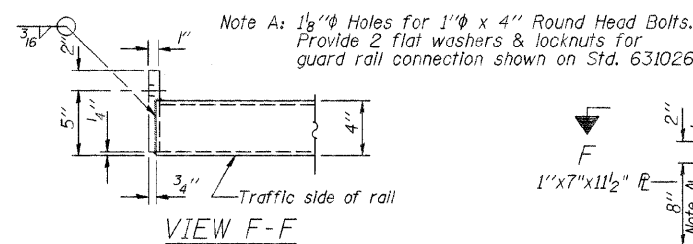
** The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.



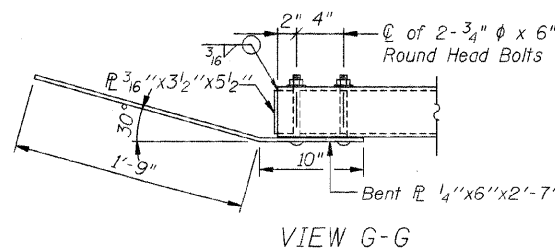
RAIL SPLICE CONNECTION AT RAIL EXPANSION JT.



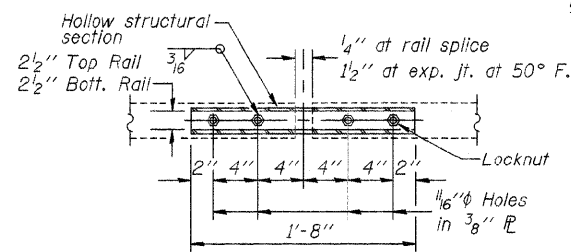
SECTION AT RAIL SPLICE



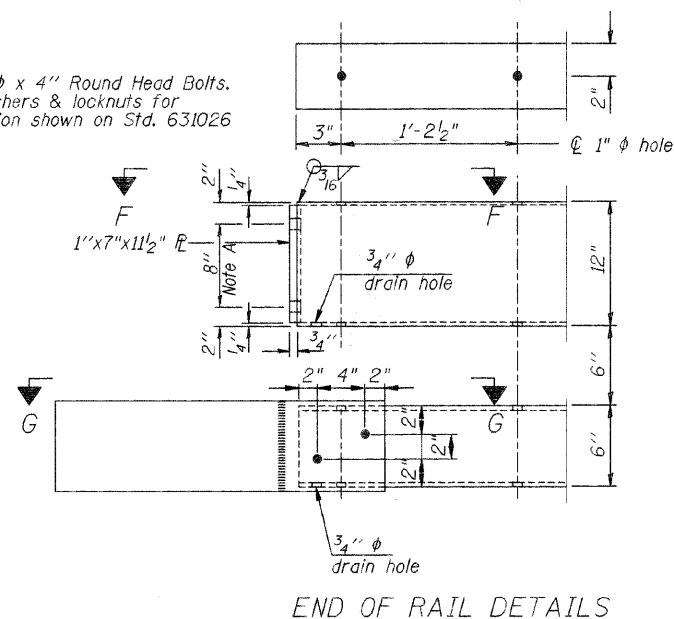
VIEW F-F



VIEW G-G



PLAN-BOTT. SPLICE TYPICAL



END OF RAIL DETAILS

DSGN	K.J. Hoffmann				
DR	K.J. Hoffmann				
CHK	J.R. Wolf				
APVD	J.A. Fraunhoffer	NO.	DATE	REVISION	BY

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STEEL RAILING, TYPE SM (SHEET 2 OF 2)

FAS 496 (C.H. 14) OVER MIDDLE BRANCH OF N. FORK
SEC. 97-00141-00-BR
VERMILION COUNTY

SHEET	17b
DWG NO.	97051S1.dgn
DATE	SEP 2009
PROJ NO.	97051

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 496	*	Vermilion	18	18
PROJECT: ROAD DIST. NO. 7		SHEET: 125		FEEL. #13 PROJECT

*Verm. 97-00141-00-BR

