

FAU RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
9177	44-1BR	ST. CLAIR	29	2
STA.		TO STA.		
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT	

**INDEX OF SHEETS**

- 1 COVER SHEET
- 2 INDEX OF SHEETS, HIGHWAY STANDARDS,  
GENERAL NOTES & COMMITMENTS
- 3 SUMMARY OF QUANTITIES
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- 6 TIE POINTS & BENCHMARKS
- 7 REMOVAL PLAN
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- 14-15 MISCELLANEOUS DETAILS
- \* 16-25 BRIDGE PLANS (SHEET 18 OMITTED)
- 28-29 CHANNEL CROSS SECTIONS

\* 26, 27 NOT USED

**HIGHWAY STANDARDS**

000001-04	631032-03	701311-02
420401-05	635006-02	702001-06
515001-02	635011-01	780001-01
630001-07	701011-01	781001-02
631011-03	701301-02	BLR 21-6

GENERAL NOTES:

1. THE STANDARDS AND REVISION NUMBERS SHALL APPLY TO THIS PROJECT.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO CONSTRUCTION AND ORDERING MATERIALS.
3. ILLINOIS STATE LAW REQUIRES A 48-HOUR NOTICE BE GIVEN TO UTILITIES WITHIN THE PROJECT AREA BEFORE DIGGING BY CALLING J.U.L.I.E. AND BY NOTIFYING NON-J.U.L.I.E. MEMBERS INDIVIDUALLY. AGENCIES KNOWN TO HAVE FACILITIES WITHIN THE PROJECT AREA ARE AS FOLLOWS:  
SCOTT AIR FORCE BASE (COMMUNICATIONS)
  - SBC (COMMUNICATIONS)
  - VERIZON NORTH, INC (COMMUNICATIONS)
  - BI-STATE DEVELOPMENT AGENCY (ELECTRIC)
  - ILLINOIS AMERICAN WATER CO.
  - AMEREN IP (GAS & ELECTRIC)
  - CITY OF BELLEVILLE (SANITARY SEWER)
 MEMBERS OF J.U.L.I.E. (800) 892-0123 ARE INDICATED BY \*. NON-MEMBERS MUST BE NOTIFIED INDIVIDUALLY.
4. ANY REFERENCE TO "BITUMINOUS CONCRETE" SHALL BE CONSTRUED TO DENOTE "HOT-MIX ASPHALT".
5. THE WIDTHS OF BITUMINOUS SURFACE REMOVAL SHOWN ON THE PLANS ARE THE NOMINAL WIDTHS. IRREGULARITIES IN THE SURFACE WIDTH MAY OCCUR THROUGHOUT THE LENGTH OF THE SECTION. BITUMINOUS SURFACE REMOVAL WILL BE PAID FOR IN SQUARE METERS BASED UPON THE NOMINAL WIDTHS INDICATED.
6. ALL SIGNS THAT INTERFERE WITH CONSTRUCTION OPERATIONS SHALL BE REMOVED, STORED AND RE-ERECTED ACCORDING TO ARTICLE 107.25 OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO SIGNS CAUSED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
7. EXISTING RIPRAP AND CONCRETE "WASH-OUT" LOCATED IN THE CHANNEL SHALL BE REMOVED DURING CHANNEL EXCAVATION. THE COST FOR THIS REMOVAL SHALL BE INCLUDED IN THE COST OF "CHANNEL EXCAVATION" AND NO OTHER COMPENSATION WILL BE PERMITTED.
8. EXISTING PLANS ARE NOT INCLUDED DUE TO THEIR POOR CLARITY. A COPY WILL REMAIN IN THE DESIGN FILE FOR REFERENCE.

EROSION CONTROL PLAN

ANY AREAS DISTURBED DUE TO CONSTRUCTION ACTIVITIES SHALL BE SEEDED (TEMPORARY AND PERMANENT) AT THE CONTRACTOR'S EXPENSE AND NO OTHER COMPENSATION WILL BE PERMITTED.

ALL EROSION CONTROL PRODUCTS FURNISHED SHALL BE SPECIFICALLY RECOMMENDED BY THE MANUFACTURER FOR THE USE SPECIFIED IN THE EROSION CONTROL PLAN. PRIOR TO THE APPROVAL AND USE OF THE PRODUCT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A NOTARIZED CERTIFICATION BY THE PRODUCER STATING THE INTENDED USE OF THE PRODUCT AND THAT THE PHYSICAL PROPERTIES REQUIRED FOR THIS APPLICATION ARE MET OR EXCEEDED. THE CONTRACTOR SHALL PROVIDE MANUFACTURER RECOMMENDED INSTALLATION PROCEDURES TO FACILITATE THE ENGINEER IN CONSTRUCTION INSPECTION.

TEMPORARY SEEDING SHALL BE COMPLETED ON A WEEKLY BASIS ON EXPOSED GROUND AND SHALL BE IN ACCORDANCE WITH SECTION 280 OF THE STANDARD SPECIFICATIONS. TEMPORARY EROSION CONTROL SEEDING SHALL BE APPLIED AT A RATE OF 100 LBS/ACRE.

EARTH STOCKPILES SHALL BE TEMPORARILY SEEDED IF THEY ARE TO REMAIN UNUSED FOR MORE THAN FOURTEEN DAYS.

FINAL SEEDING SHALL BE PERFORMED AS SOON AS POSSIBLE.

COMMITMENTS

A COMMITMENT HAS BEEN MADE TO SCOTT AIR FORCE BASE THAT ALL WORK REQUIRING LANE RESTRICTIONS WILL BE COMPLETE AND THE STRUCTURE RE-OPENED WITHOUT RESTRICTION BY JUNE 15, 2007. FURTHERMORE, THE CONTRACTOR WILL ONLY BE PERMITTED TO CONSECUTIVE CALENDAR DAYS OF CLOSURE IN ORDER TO COMPLETE THE WORK.

THE SCOTT AIR FORCE BASE BELLEVILLE GATE WILL BE RE-OPENED PRIOR TO THE SCOTT AIR FORCE BASE AIR SHOW WHICH WILL BE HELD ON JULY 6-7, 2007.

THE VETERANS OF FOREIGN WARS POST 4183 HAS AGREED TO TEMPORARY CLOSURE OF THIER NORTH ENTRANCE, LOCATED AT STA 98+98.05 (RT), IF NECESSARY. THE SOUTH ENTRANCE LOCATED AT STA 98+13.54 (RT) MUST REMAIN OPEN AT ALL TIMES.

SCOTT AIR FORCE BASE AND THE VFW HALL SHALL BE INFORMED 2 WEEKS PRIOR TO CLOSURE.

SCOTT AIR FORCE BASE CONTACT:  
MR. DOUG BRIGGS 618-256-2639  
OR

VETERANS OF FOREIGN WARS POST 4183 CONTACT:  
MR. J.C. GRANTHAM 618-746-9801

MAJOR RANDY C.A. WHITCOTTON 618-256-4823

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
**INDEX OF SHEETS, HIGHWAY  
STANDARDS, GENERAL NOTES  
AND COMMITMENTS**

FAU ROUTE 9177  
SECTION 44-1BR  
ST. CLAIR COUNTY

Rev. 1-3-07

# SUMMARY OF QUANTITIES

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
9177	44-1BR	ST. CLAIR	29	3
STA.		TO STA.		
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT	

SUMMARY OF QUANTITIES			URBAN 80% FED. 20% STATE TOTAL QUANTITIES		CONSTRUCTION TYPE CODE	
CODE NO	ITEM	UNIT	TOTAL	X080-2A	-SFTY-3N-	
XZ029997	REMOVE EXISTING ATTENUATOR BASE	SQ YD	92	92		
<del>20200500</del>	<del>EARTH EXCAVATION (WIDENING)</del>	<del>CU YD</del>	<del>90</del>	<del>90</del>		
20300100	CHANNEL EXCAVATION	CU YD	150	150		
<del>35501320</del>	<del>HOT-MIX ASPHALT BASE COURSE 9"</del>	<del>SQ YD</del>	<del>728</del>	<del>728</del>		
35800100	PREPARATION OF BASE	SQ YD	243	243		
40600200	BITUMINOUS MATERIALS (PRIME COAT)	TON	0.4	0.4		
40600300	AGGREGATE (PRIME COAT)	TON	2	2		
<del>40600890</del>	<del>TEMPORARY RAMP</del>	<del>SQ YD</del>	<del>130</del>	<del>130</del>		
40603340	HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N70	TON	85	85		
40800050	INCIDENTAL HOT-MIX ASPHALT SURFACING	TON	41	41		
42001165	BRIDGE APPROACH PAVEMENT	SQ YD	587	587		
42001430	BRIDGE APPROACH PAVEMENT CONNECTOR (FLEXIBLE)	SQ YD	118	118		
44000100	PAVEMENT REMOVAL	SQ YD	653	653		
44000157	HOT-MIX ASPHALT SURFACE REMOVAL 2"	SQ YD	757	757		
<del>44004250</del>	<del>PAVED SHOULDER REMOVAL</del>	<del>SQ YD</del>	<del>368</del>	<del>368</del>		
50101500	REMOVAL OF EXISTING SUPERSTRUCTURES	EACH	2	2		
50102400	CONCRETE REMOVAL	CU YD	8.9	8.9		
50200100	STRUCTURE EXCAVATION	CU YD	10.4	10.4		
50300225	CONCRETE STRUCTURES	CU YD	18.1	18.1		
50300260	BRIDGE DECK GROOVING	SQ YD	302	302		
50300300	PROTECTIVE COAT	SQ YD	309	309		
X5030305	CONCRETE WEARING SURFACE, 5"	SQ YD	309	309		
50400305	PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SQ FT	2776	2776		
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	7600	7600		
50800515	BAR SPLICERS	EACH	98	98		
A 50901050	STEEL RAILING, TYPE SM	FOOT	63	63		
51500100	NAME PLATES	EACH	2	2		
* 63000000	STEEL PLATE BEAM GUARD RAIL, TYPE A	FOOT	25	25		
* 63100045	TRAFFIC BARRIER TERMINAL, TYPE 2	EACH	3	3		
* 63100087	TRAFFIC BARRIER TERMINAL, TYPE 6A	EACH	4	4		
* 63100167	TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT)	EACH	1	1		
67000400	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	6	6		
67100100	MOBILIZATION	L SUM	1	1		
70101030	TRAFFIC CONTROL AND PROTECTION, STANDARD BAR 21	L SUM	1	1		
70104000	CHANGEABLE MESSAGE SIGN	CAL MO	1	1		
<del>70102672</del>	<del>TRAFFIC CONTROL AND PROTECTION, STANDARD 701602, SPECIAL</del>	<del>L SUM</del>	<del>1</del>	<del>1</del>		
<del>70300100</del>	<del>SHORT TERM PAVEMENT MARKING</del>	<del>FOOT</del>	<del>96</del>	<del>96</del>		

SUMMARY OF QUANTITIES			URBAN 80% FED. 20% STATE TOTAL QUANTITIES		CONSTRUCTION TYPE CODE	
CODE NO	ITEM	UNIT	TOTAL	X080-2A	-SFTY-3N-	
<del>70300210</del>	<del>TEMPORARY PAVEMENT MARKING - LETTERS AND SYMBOLS</del>	<del>SQ FT</del>	<del>306</del>	<del>306</del>		
<del>70300220</del>	<del>TEMPORARY PAVEMENT MARKING - LINE 4"</del>	<del>FOOT</del>	<del>4571</del>	<del>4571</del>		
<del>70300240</del>	<del>TEMPORARY PAVEMENT MARKING - LINE 6"</del>	<del>FOOT</del>	<del>530</del>	<del>530</del>		
<del>70300280</del>	<del>TEMPORARY PAVEMENT MARKING - LINE 24"</del>	<del>FOOT</del>	<del>104</del>	<del>104</del>		
<del>70301000</del>	<del>WORK ZONE PAVEMENT MARKING REMOVAL</del>	<del>SQ FT</del>	<del>2070</del>	<del>2070</del>		
<del>70400500</del>	<del>TEMPORARY CONCRETE BARRIER (STATE OWNED)</del>	<del>FOOT</del>	<del>270</del>	<del>270</del>		
<del>70400600</del>	<del>RELOCATE TEMPORARY CONCRETE BARRIER (STATE OWNED)</del>	<del>FOOT</del>	<del>260</del>	<del>260</del>		
* 78000200	THERMOPLASTIC PAVEMENT MARKING - LINE 4"	FOOT	894	894		
* 78000650	THERMOPLASTIC PAVEMENT MARKING - LINE 24"	FOOT	44	44		
* 78008200	POLYUREA PAVEMENT MARKING TYPE I - LETTERS & SYMBOLS	SQ FT	122	122		
* 78008210	POLYUREA PAVEMENT MARKING TYPE I - LINE 4"	FOOT	592	592		
* 78008270	POLYUREA PAVEMENT MARKING TYPE I - LINE 24"	FOOT	22	22		
* 78100100	RAISED REFLECTIVE PAVEMENT MARKER	EACH	3	3		
* 78100105	RAISED REFLECTIVE PAVEMENT MARKER (BRIDGE)	EACH	3	3		
<del>* 78100300</del>	<del>REPLACEMENT REFLECTOR</del>	<del>EACH</del>	<del>8</del>	<del>8</del>		
* 78200410	GUARDRAIL MARKERS, TYPE A	EACH	8	8		
* 78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	1	1		
<del>78300100</del>	<del>PAVEMENT MARKING REMOVAL</del>	<del>SQ FT</del>	<del>360</del>	<del>360</del>		
78300200	RAISED REFLECTIVE PAVEMENT MARKER REMOVAL	EACH	6	6		
X0323992	HELICAL GROUND ANCHORS	EACH	4	4		
X0325305	STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)	SQ FT	42	42		
<del>Z0030240</del>	<del>IMPACT ATTENUATORS, TEMPORARY (NON-REDIRECTIVE), TEST LEVEL 2</del>	<del>EACH</del>	<del>2</del>		<del>2</del>	
<del>Z0030255</del>	<del>IMPACT ATTENUATORS, TEMPORARY (FULLY-REDIRECTIVE, NARROW), TEST LEVEL 2</del>	<del>EACH</del>	<del>1</del>		<del>1</del>	
<del>Z0030340</del>	<del>IMPACT ATTENUATORS, RELOCATE (NON-REDIRECTIVE), TEST LEVEL 2</del>	<del>EACH</del>	<del>2</del>		<del>2</del>	
Z0048665	RAILROAD PROTECTIVE LIABILITY INSURANCE	L SUM	1	1		
Z0073700	TEMPORARY WALL BRACING SYSTEM	L SUM	1	1		

\* SPECIALTY ITEMS

Rev. 1-3-06

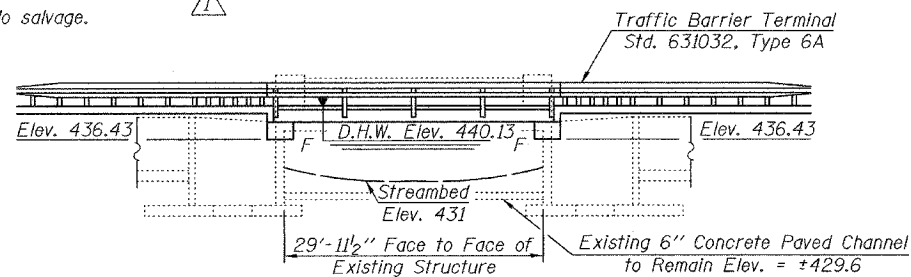
Rev.



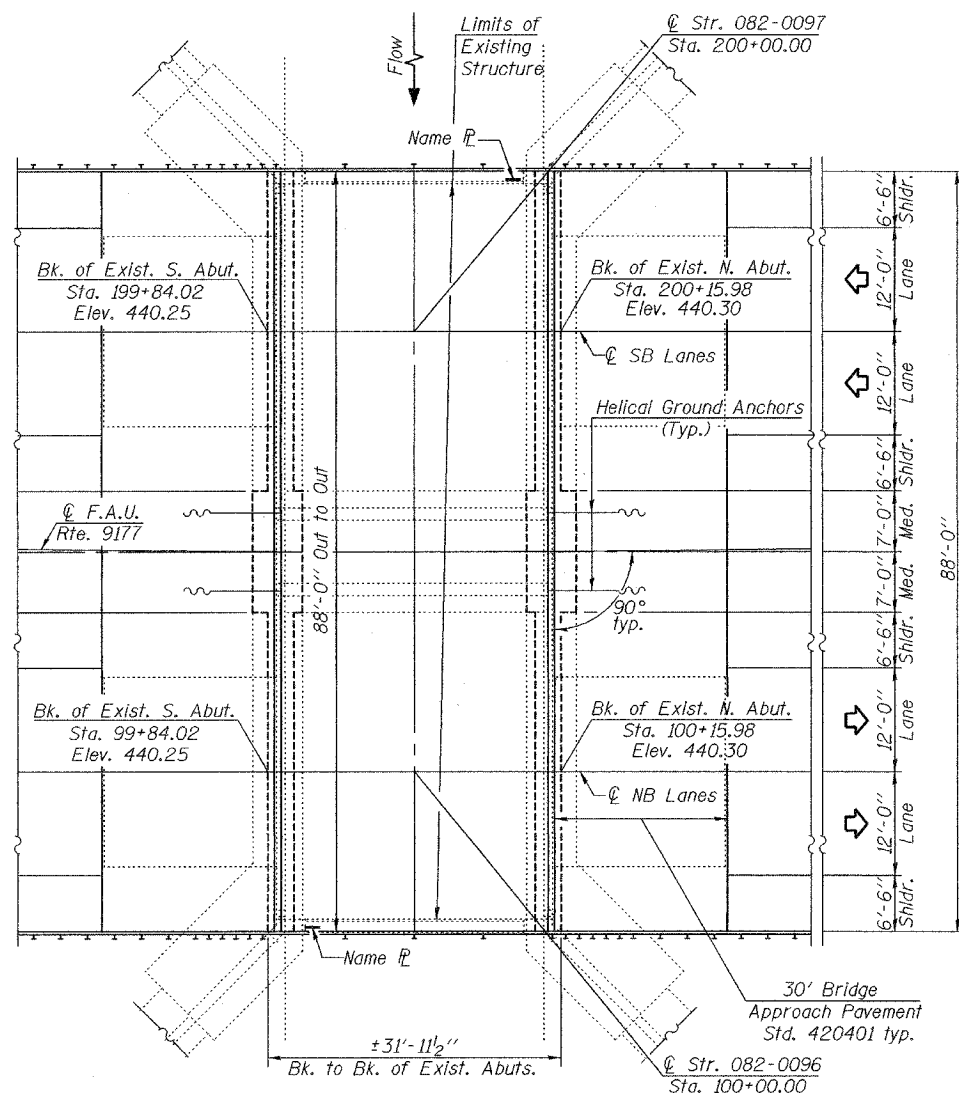
Bench Mark: Cut square on north headwall in middle of 2 bridges. Elevation 440.71.

Existing Structure: S.N. 082-0096 & 082-0097, 1-span reinforced concrete T-beams. Built in 1952 at Station 7+62.8 by Corps of Engineers, U.S. Army. Closed abutments supported on spread footings. The existing superstructure is to be removed and replaced. The structure is to be replaced using road closure.

No salvage.



ELEVATION



PLAN

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS

- 1. General Plan & Elevation
2. Temporary Wall Bracing System
3. Superstructure
4. Superstructure Details
5. Type SM Railing
6. Concrete Removal Details
7. & 8. Abutments
9. Wall Anchor System Details
10. Bar Splicer Assembly Details

GENERAL NOTES

Reinforcement bars shall conform to the requirements of ASTM A706 Gr. 60 (II Modified). See Special Provisions. Plan dimensions and details relative to existing structure have been taken from existing plans and are subject to nominal construction variations. It shall be the Contractor's responsibility to verify such dimensions and details in the field and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in the scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price for the work. The back face of closed abutment (New Concrete only) shall be waterproofed according to Article 503.18 of the Standard Specifications. Expansion bolts shall consist of approved expansion anchors, providing minimum certified proof load = 4080 lbs., and 3/4" phi x 12" hooked bolts. Reinforcement bars designated (E) shall be epoxy coated.

STATION 100+00.00 (NB) REBUILT 200 BY STATE OF ILLINOIS F.A.U. RTE. 9177 - SEC. 44-1BR LOADING HS20 STR. NO. 082-0096 (NB)

NAME PLATE See Std. 515001

STATION 200+00.00 (SB) REBUILT 200 BY STATE OF ILLINOIS F.A.U. RTE. 9177 - SEC. 44-1BR LOADING HS20 STR. NO. 082-0097 (SB)

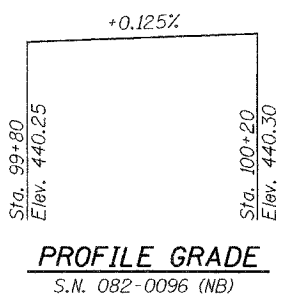
NAME PLATE See Std. 515001

EXISTING CURVE DATA (NB)

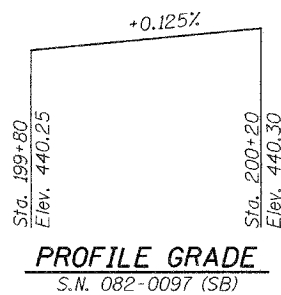
PI Sta. = 100+35.68
Delta = 4°-08'-56" (LT)
D = 2°-06'-51"
R = 2,710.00'
T = 98.16'
L = 196.24'
E = 1.78'
e = Normal Crown
P.C. Sta. = 99+37.52
P.T. Sta. = 101+33.76

EXISTING CURVE DATA (SB)

PI Sta. = 200+00.20
Delta = 5°-02'-39" (LT)
D = 1°-53'-05"
R = 3,040.00'
T = 133.90'
L = 267.63'
E = 2.95'
e = Normal Crown
P.C. Sta. = 198+66.30
P.T. Sta. = 201+33.93



PROFILE GRADE S.N. 082-0096 (NB)



PROFILE GRADE S.N. 082-0097 (SB)

Note: Proposed grade is the same as existing grade at this bridge site (per field survey).

WATERWAY INFORMATION

Table with columns: Flood, Freq. Yr., Q C.F.S., Opening Sq. Ft. (Exist., Prop.), Nat. H.W.E., Head - Ft. (Exist., Prop.), Headwater El. (Exist., Prop.). Rows include Design, Base, Overtopping, and Scour.

LOADING HS20-44

No future wearing surface allowed

DESIGN SPECIFICATIONS

2002 AASHTO Seismic Retrofitting Manual for Highway Bridges FHWA-RD-94-052 May 1995

DESIGN STRESSES

PRECAST PRESTRESSED UNITS

f'c = 5,000 psi
f'ci = 4,000 psi
f's = 270,000 psi
f's = 201,960 psi (1/2" low lax strands)

FIELD UNITS

f'c = 3,500 psi
fy = 60,000 psi (reinforcement)
fy = 36,000 psi (structural steel)

EXISTING UNITS

f'o = 1,200 psi
f's = 20,000 psi (reinforcement)

TOTAL BILL OF MATERIAL

Table with columns: ITEM, UNIT, SUPER, SUB, TOTAL. Rows include Removal of Existing Superstructures, Concrete Structures, Precast Prestressed Concrete Deck Beams, Reinforcement Bars, Epoxy Coated, Bridge Deck Grooving, Name Plates, Structure Excavation, Steel Railing, Helical Ground Anchors, Concrete Wearing Surface, Concrete Removal, Protective Coat, Temporary-Wall Bracing System, Structural Repair of Concrete, and Bar Splicers.

DESIGNED: R. Sommer
CHECKED: R. Sommer
DRAWN: R. Sommer
CHECKED: G.H.I. NRS

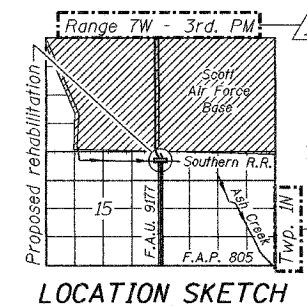
December 14, 2006
EXAMINED: Thomas J. Adams
PASSED: Ralph E. Adams



EXPIRES 11-30-2008

SEISMIC DATA

Seismic Performance Category (SPC) = B
Bedrock Acceleration Coefficient (A) = 0.11g
Site Coefficient (S) = 1.5



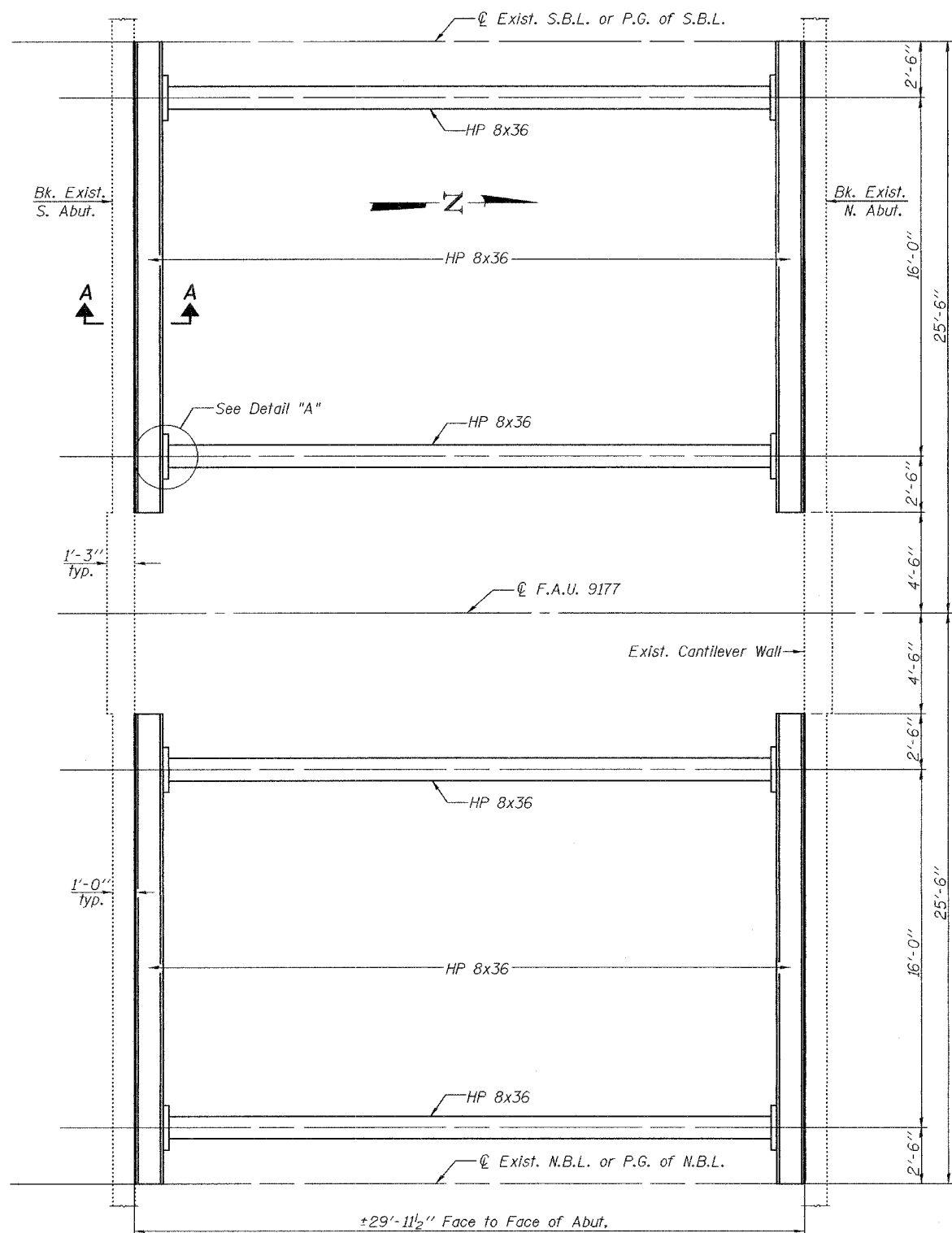
GENERAL PLAN
SCOTT ROAD OVER ASH CREEK
F.A.U. ROUTE 9177-SECTION 44-1BR
ST. CLAIR COUNTY
STATION 100+00.00 (NB)
STATION 200+00.00 (SB)
S.N. 082-0096 (NB) & 082-0097 (SB)

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.U. 9177	44-1BR	St. Clair	29	17
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

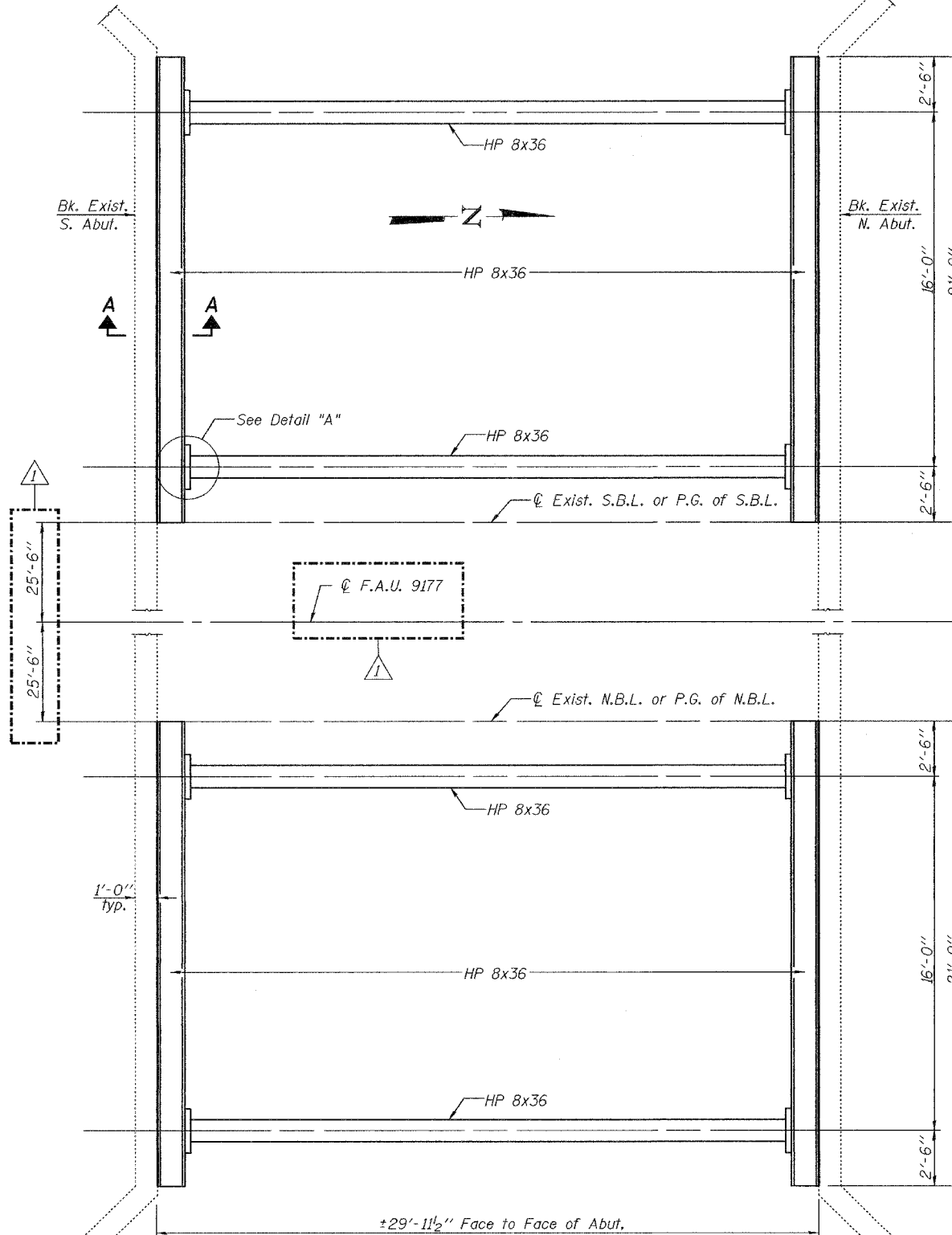
Contract #76566

SHEET NO. 2  
10 SHEETS



**TEMPORARY WALL BRACING SYSTEM PLAN**

(Near F.A.U. 9177)



**TEMPORARY WALL BRACING SYSTEM PLAN**

(at outside edges of substructure)

DESIGNED	Nicholas Barnett
CHECKED	Ray Ahanchi
DRAWN	R. Sommer
CHECKED	NRB/GRA

EXAMINED	December 7, 2006
PASSED	Thomas J. Domagalaki ENGINEER OF BRIDGE DESIGN
	Ralph E. Anderson ENGINEER OF BRIDGES AND STRUCTURES

Notes:

Temporary Wall Bracing System shall be in place as shown before removal of superstructure. The Temporary Wall Bracing System shall be removed after superstructure construction is complete. Cost of removing the system shall be included in the Cost of "Temporary Wall Bracing System".

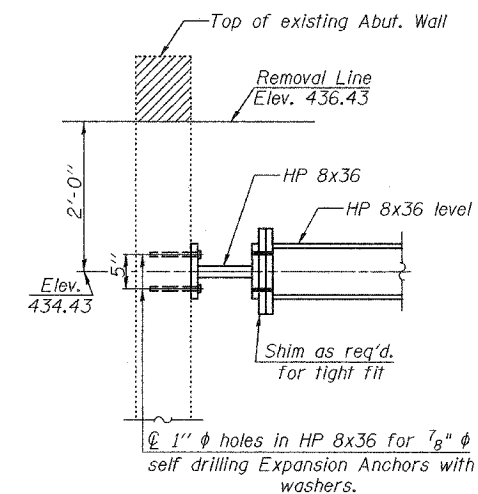
No Paint is required.

Two hardened washers shall be required over all  $\frac{15}{16}$ "  $\phi$  holes.

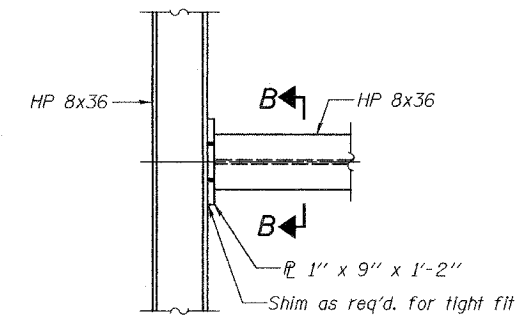
Estimated weight of Structural Steel for Temporary Wall Bracing System not including HP 8x36 Sections = 640 pounds.

Cost of  $\frac{7}{8}$ "  $\phi$  self drilling expansion anchors and shims is included in the Cost of "Temporary Wall Bracing System".

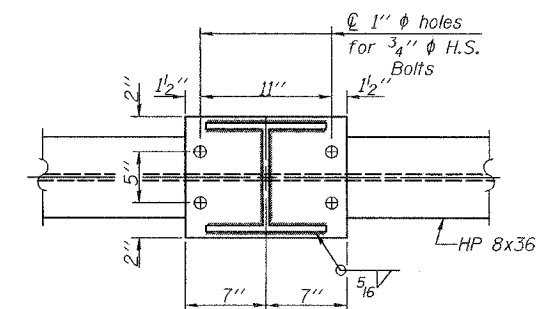
All structural steel shall be AASHTO M270 Grade 36.



**SECTION A-A**



**DETAIL "A"**



**SECTION B-B**

**TEMPORARY WALL BRACING SYSTEM DETAIL**

F.A.U. ROUTE 9177-SECTION 44-1BR

ST. CLAIR COUNTY

STATION 100+00.00 (NB)

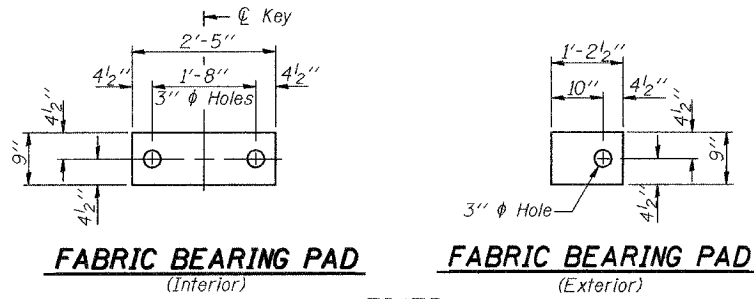
STATION 200+00.00 (SB)

S.N. 082-0096 (NB) & 082-0097 (SB)

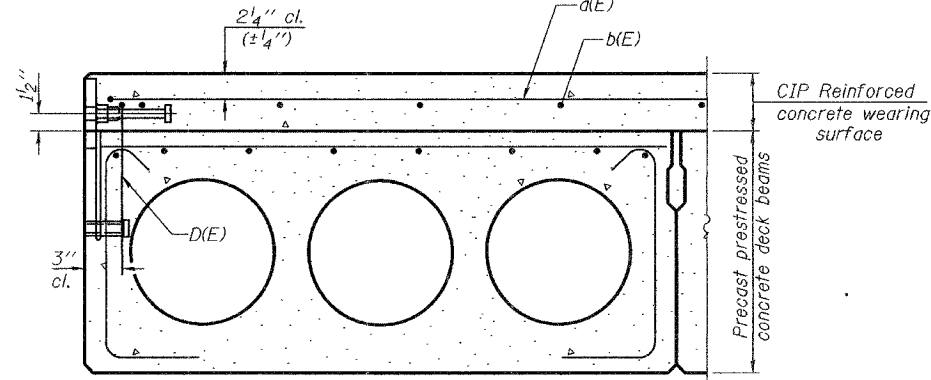
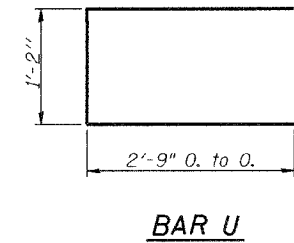
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO. F.A.U. 9177	SECTION 44-1BR	COUNTY St. Clair	DATE 29	SHEET 18	SHEET NO. 3 10 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS		FED. AID PROJECT	

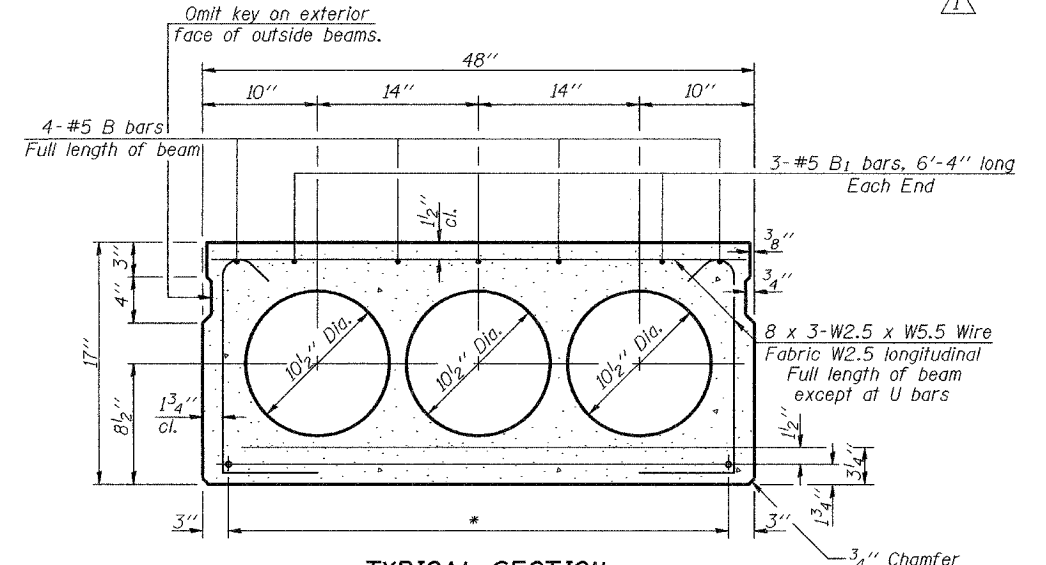
Contract #76566



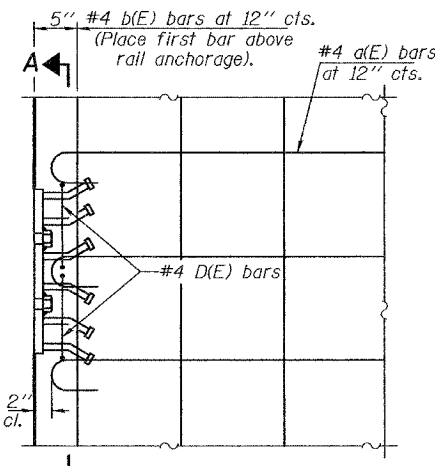
FIXED



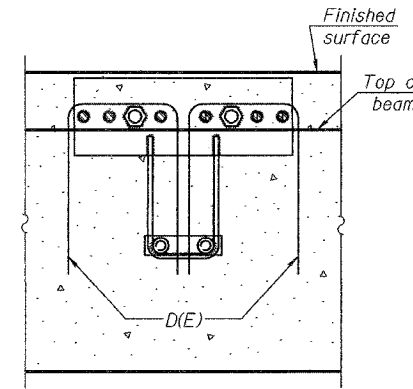
CROSS SECTION



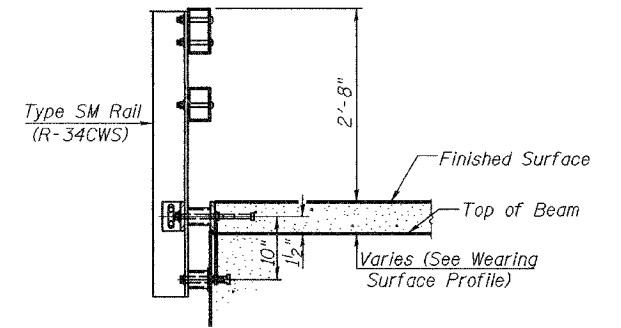
TYPICAL SECTION



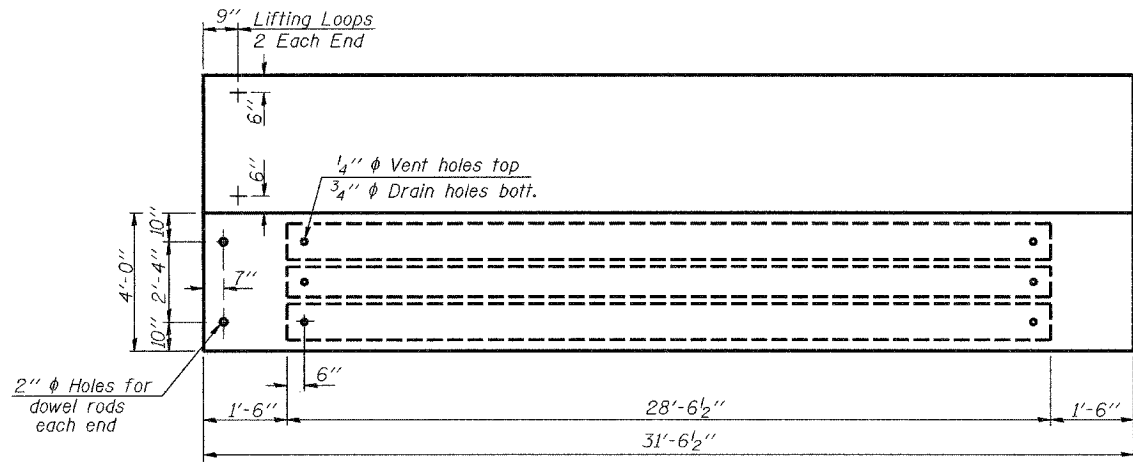
PLAN



SECTION A-A



SECTION AT RAIL POST



PLAN

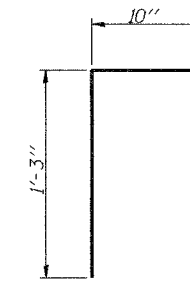
**\*TRANSVERSE STRAND PLACEMENT GUIDELINES**

1. Place strands symmetrically about centerline of beam.
2. The minimum distance from center to center of strands in all directions shall be 2".
3. The minimum clearance from strand to dowel hole shall be 1/2".
4. The minimum clearance from strand to void shall be 1 1/2".

Vertical placement of strands shall not be adjusted to satisfy the above guidelines.

**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. Lifting loops shall be 2-1/2" φ-270 ksi strands, as shown. The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two 1/8" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing. Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between top of the beam and the bottom edge of the key. Corrosion inhibitor shall be used in the Concrete for Precast Prestressed Concrete Deck Beam. See Article 1021.06 of Standard Specifications. Required Release Strength, f'cl, shall be 4000 p.s.i. The rail anchorage shall be cast with the beam and the wearing surface shall be cast in the field. Formwork necessary for the wearing surface may be secured utilizing the bottom rail anchorage inserts and/or additional inserts cast into the beam. Drilling into the beam will not be permitted. For Cross Section see sht. 6 of 12.



BAR D(E)

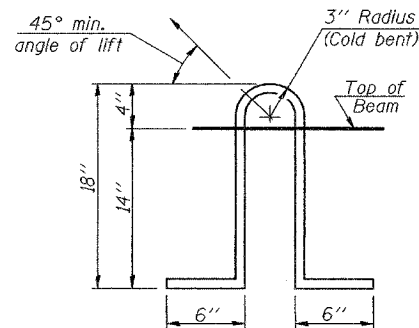
**BILL OF MATERIAL**

Item	Unit	Quantity
Precast Prestressed Conc. Deck Beams 17"	Sq. Ft.	2776

**SUPERSTRUCTURE**  
F.A.U. ROUTE 9177-SECTION 44-1BR  
ST. CLAIR COUNTY  
STATION 100+00.00 (NB)  
STATION 200+00.00 (SB)  
S.N. 082-0096 (NB) & 082-0097 (SB)

DESIGNED Nicholas Barnett
CHECKED Ray Ahanchi
DRAWN R. Sommer
CHECKED NRB/GRA

EXAMINED Thomas J. Domagalaki ENGINEER OF BRIDGE DESIGN	December 7, 2006
PASSED Ralph E. Anderson ENGINEER OF BRIDGES AND STRUCTURES	

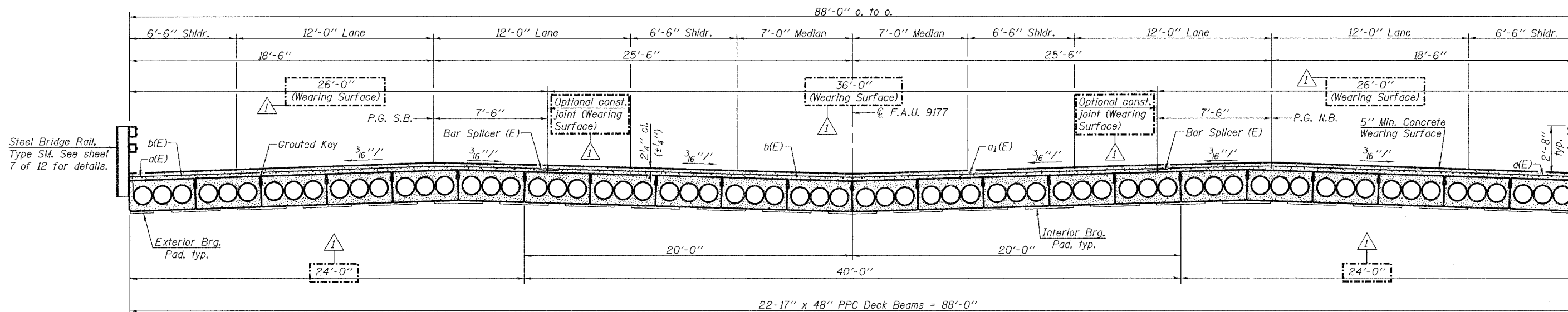


LIFTING LOOP DETAIL

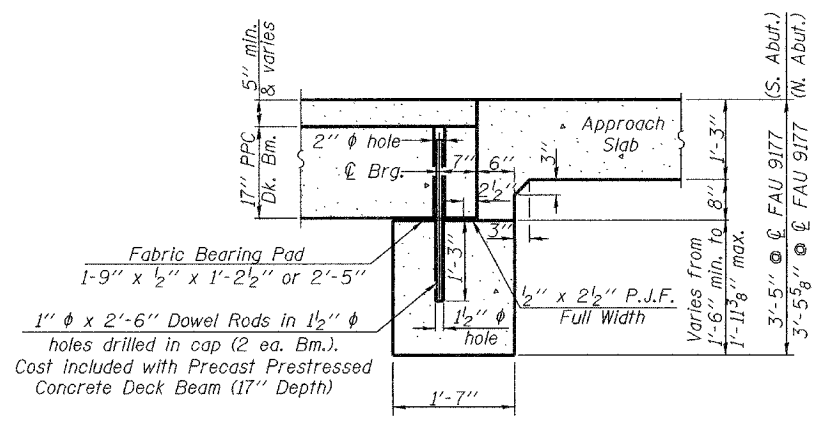
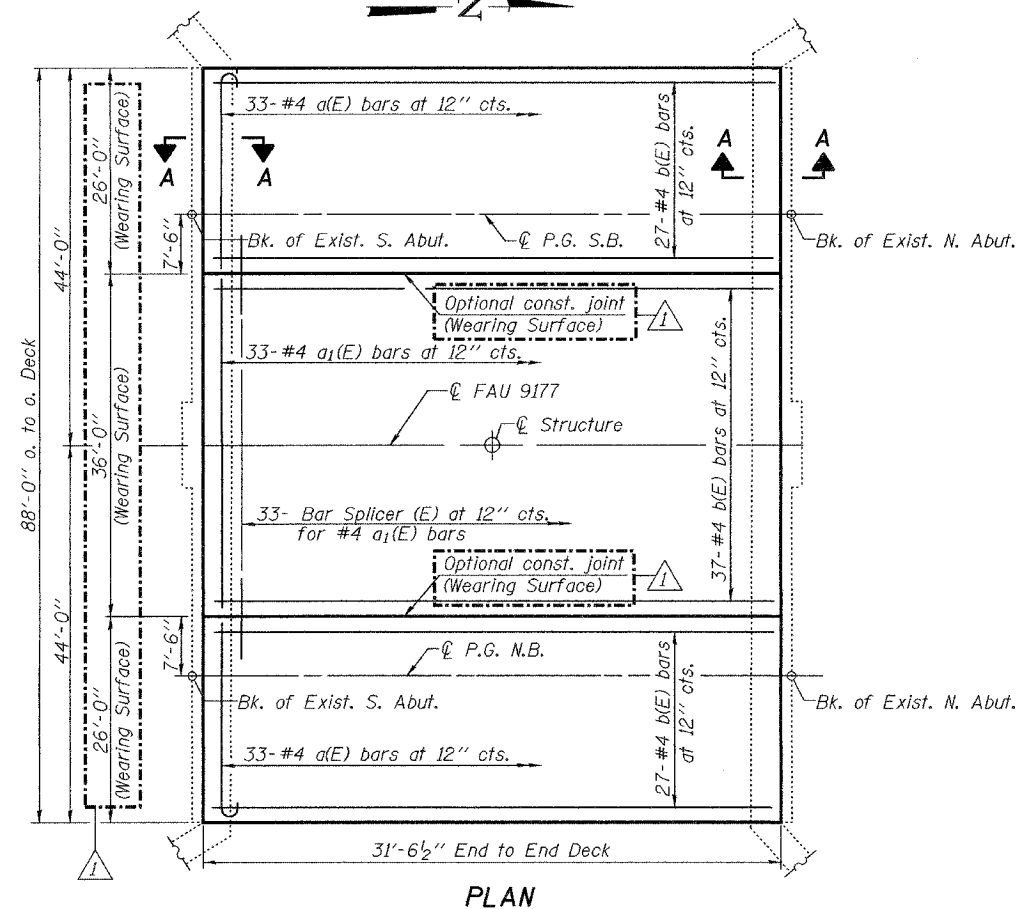
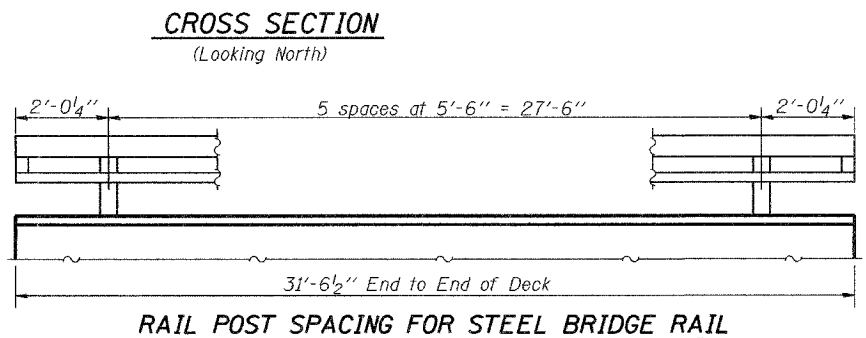
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEETS	SHEET	SHEET NO. 4
F.A.U. 9177	44-1BR	St. Clair	29	19	10 SHEETS
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-			

Contract #76566

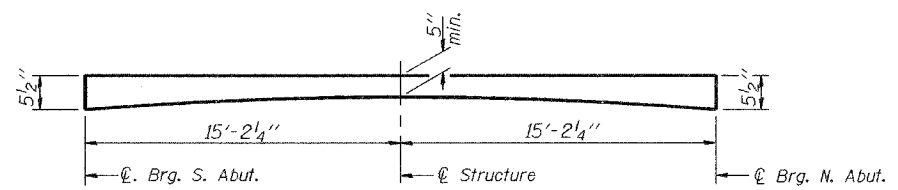


Note: Bend a(E) or a<sub>1</sub>(E) bars in field to maintain 2 1/4" (± 1/4") clearance to Top Surface of Concrete Wearing Surface. Also tilt hook of a(E) and a<sub>1</sub>(E) bars for 2 1/4" (± 1/4") Clearance.



CONCRETE WEARING SURFACE  
BILL OF MATERIAL

Bar	No.	Size	Length	Shape	
a(E)	66	#4	26'-2"	U	
a <sub>1</sub> (E)	33	#4	35'-8"	—	
b(E)	91	#4	31'-3"	—	
Reinforcement Bars, Epoxy Coated				Pound	3840
Concrete Wearing Surface				Sq. Yd.	309



REINFORCED CONCRETE WEARING SURFACE PROFILE  
Vary thickness of reinforced concrete wearing surface to compensate for expected camber.

SUPERSTRUCTURE DETAILS  
F.A.U. ROUTE 9177-SECTION 44-1BR  
ST. CLAIR COUNTY  
STATION 100+00.00 (NB)  
STATION 200+00.00 (SB)  
S.N. 082-0096 (NB) & 082-0097 (SB)

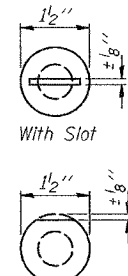
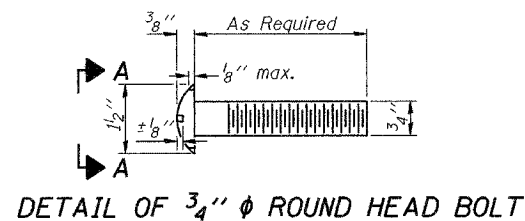
DESIGNED Nicholas Barnett  
CHECKED Ray Ahanchi  
DRAWN R. Sommer  
CHECKED NRB/GRA

December 7, 2006  
EXAMINED Thomas J. Demasalaki  
PASSED Ralph E. Anderson

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

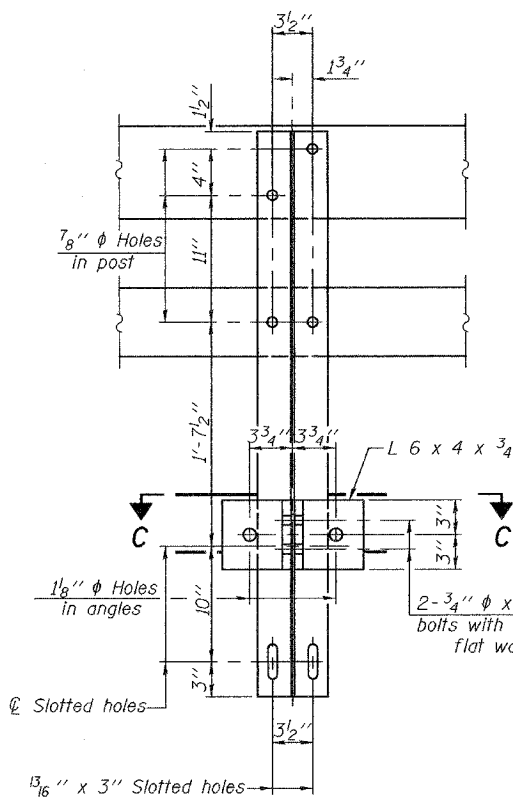
ROUTE NO.	SECTION	COUNTY	SHEETS	SHEET NO.
F.A.U. 9177	44-IBR	St. Clair	29	20
SHEET NO. 5				
10 SHEETS				

Contract #76566

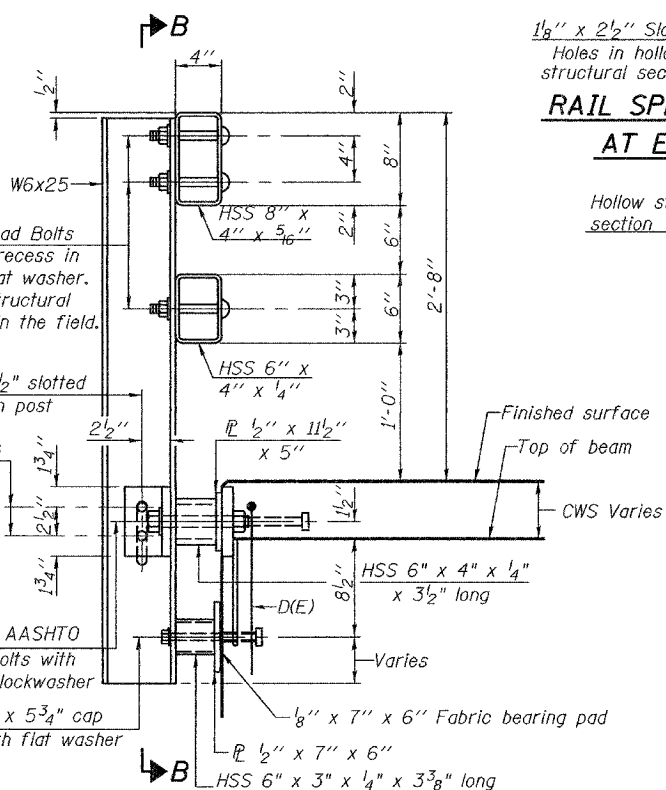


VIEW A-A  
Without Slot or Recess

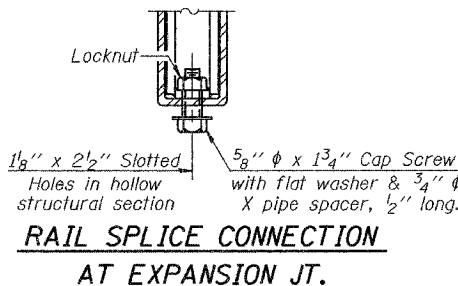
4-3/4"  $\phi$  x 6" Round Head Bolts (With slot or approved recess in head) with locknut & flat washer. 7/8"  $\phi$  holes in hollow structural section may be drilled in the field.



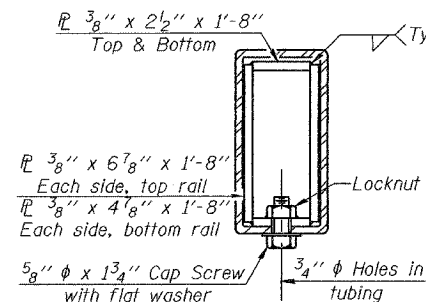
SECTION B-B



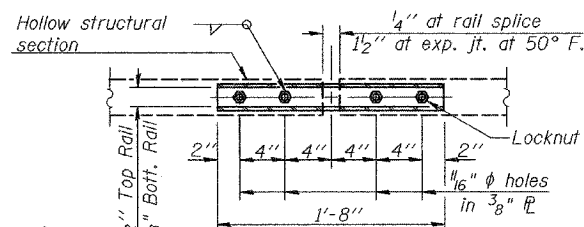
SECTION AT RAIL POST



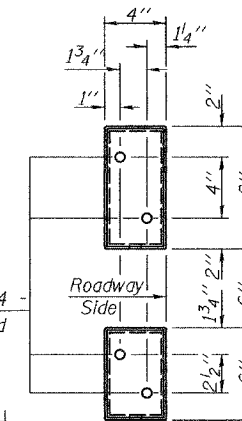
RAIL SPLICE CONNECTION AT EXPANSION JT.



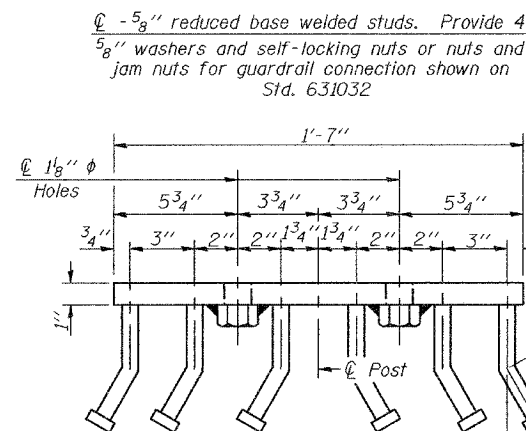
SECTION AT RAIL SPLICE



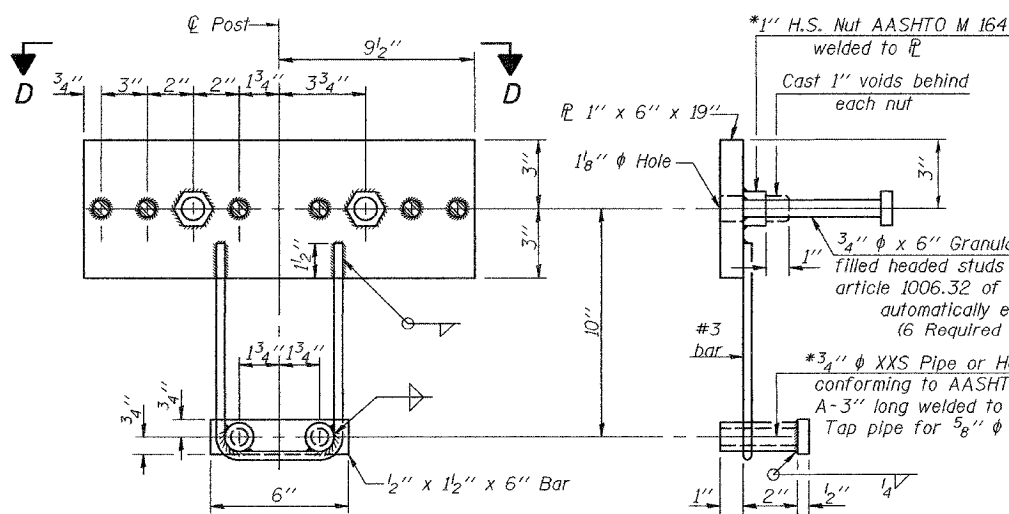
PLAN-BOTT. SPLICE P TYPICAL



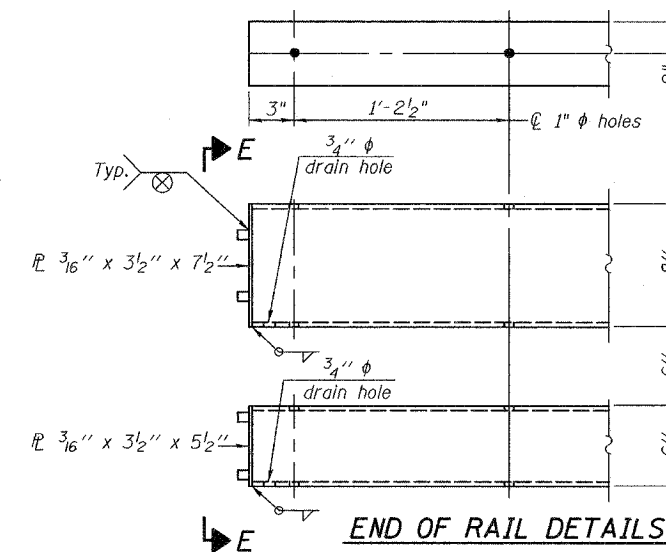
VIEW E-E



VIEW D-D



ANCHOR DEVICE



END OF RAIL DETAILS

NOTES

Hollow structural sections 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 requirements 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 according to AASHTO M 232.

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

Railing shall be according to 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.

The 3/4"  $\phi$  high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened according to Article 505.04(f)(2) of the Standard Specifications. The 1"  $\phi$  high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The 5/8"  $\phi$  cap screws in bottom of posts shall be tightened to a snug fit only.

BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing	Foot	63
Type SM		

TYPE SM

STEEL BRIDGE RAIL SIDE MOUNTED WITH CONCRETE WEARING SURFACE  
F.A.U. ROUTE 9177-SECTION 44-IBR  
ST. CLAIR COUNTY  
STATION 100+00.00 (NB)  
STATION 200+00.00 (SB)  
S.N. 082-0096 (NB) & 082-0097 (SB)

DESIGNED	Nicholas Barnett
CHECKED	Ray Ahanchi
DRAWN	R. Sommer
CHECKED	NRB/GRA

EXAMINED	Thomas J. Demagala
PASSED	Ralph E. Carlson

December 7, 2006

(6'-3" Maximum Post Spacing) (5" minimum to 7/8" maximum CWS thickness)

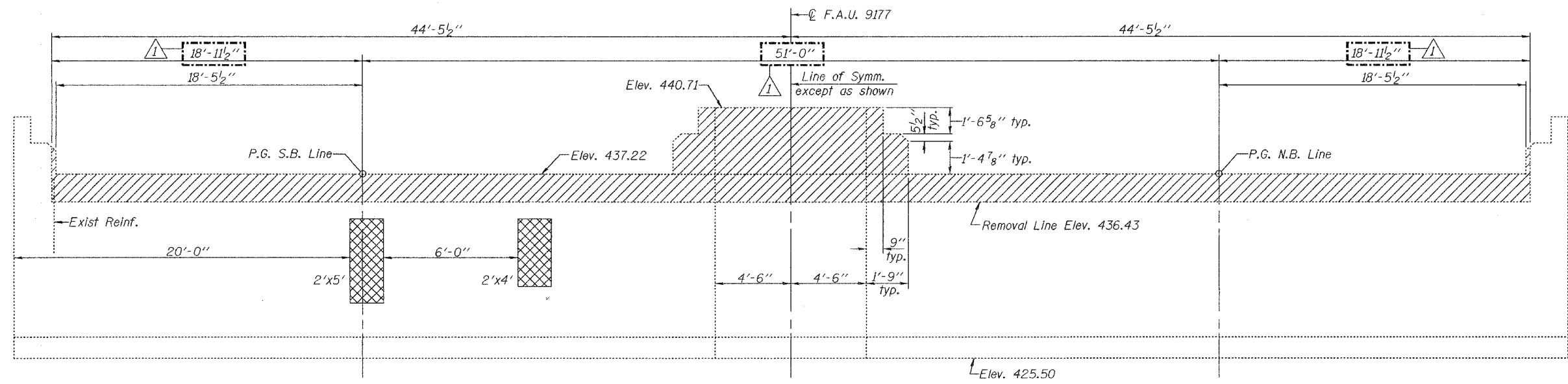
\*Threaded areas shall be plugged or blocked off during casting of beam. Galvanized after fabrication.



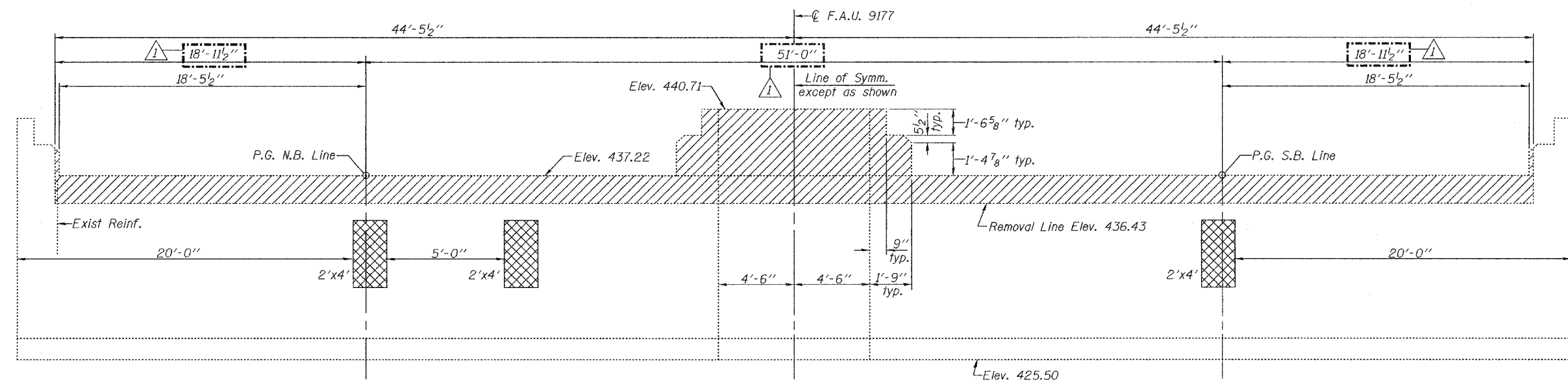
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET	SHEET NO. 6
F.A.U. 9177	44-1BR	St. Clair	29	21	10 SHEETS
FED. ROAD DIST. NO. 7	BLINDERS	FED. AID PROJECT-			


Contract #76566




**ELEVATION**  
(North Abutment, Looking North)



**ELEVATION**  
(South Abutment, Looking South)

 Hatched areas indicate Concrete Removal.

 Crosshatched areas indicate Structural Repair of Concrete (Depth equal or less than 5").

Note: Existing vertical reinforcement bars extending into the New Construction shall be cleaned, straightened and incorporated into the New Construction. Cost included with Concrete Removal.

DESIGNED	Nicholas Barnett
CHECKED	Ray Ahanchi
DRAWN	R. Sommer
CHECKED	NRB/GRA

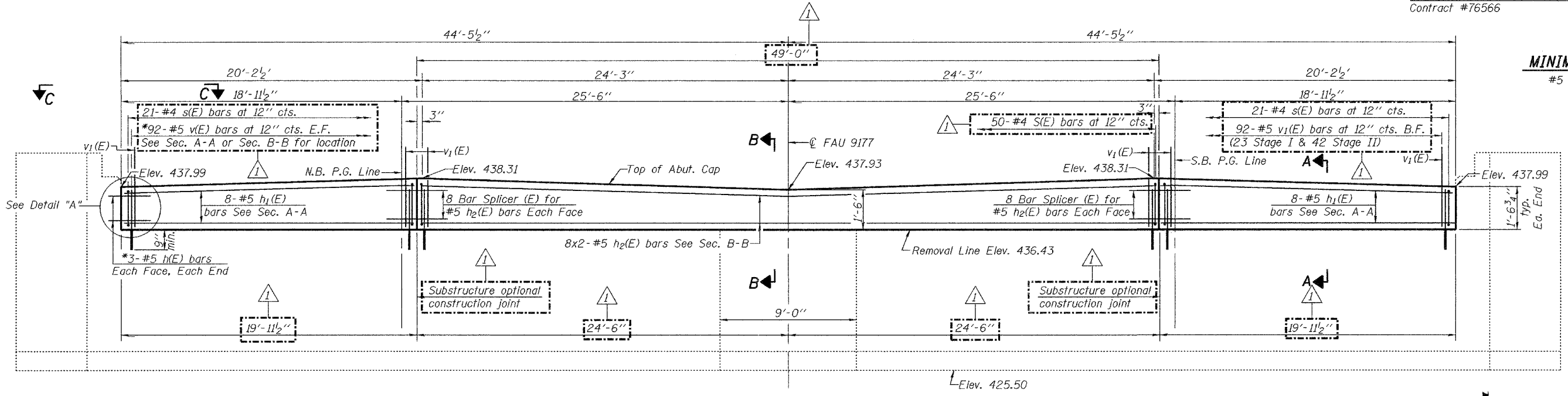
EXAMINED	December 7, 2006	<i>Thomas J. Demagali</i>
PASSED		<i>Ralph E. Anderson</i>

**CONCRETE REMOVAL & REPAIR DETAILS**  
**F.A.U. ROUTE 9177-SECTION 44-1BR**  
**ST. CLAIR COUNTY**  
**STATION 100+00.00 (NB)**  
**STATION 200+00.00 (SB)**  
**S.N. 082-0096 (NB) & 082-0097 (SB)**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET	SHEET NO. 7
F.A.U. 9177	44-IBR	St. Clair	29	22	10 SHEETS
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJ. SECT.			

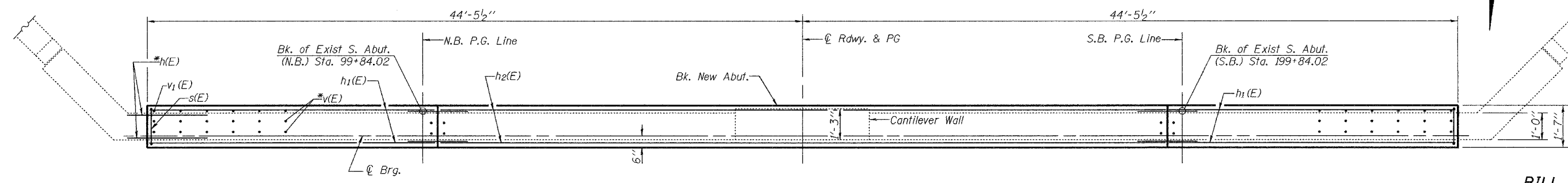
Contract #76566



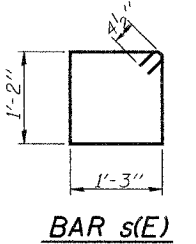
**MINIMUM BAR LAP**  
#5 bar - 1'-8"

\*Epoxy grout h(E) and v(E) bars in 9" min. drilled holes according to Section 584 of the Standard Specifications.

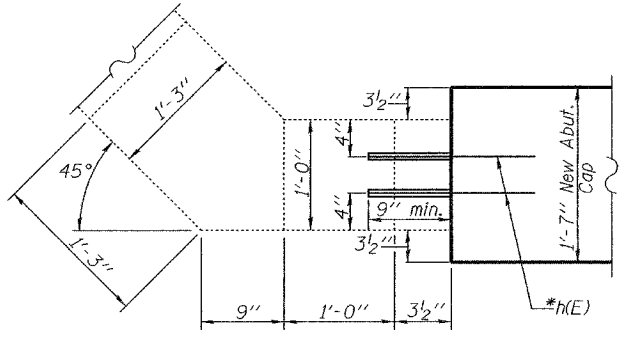
**ELEVATION**  
(Looking South)



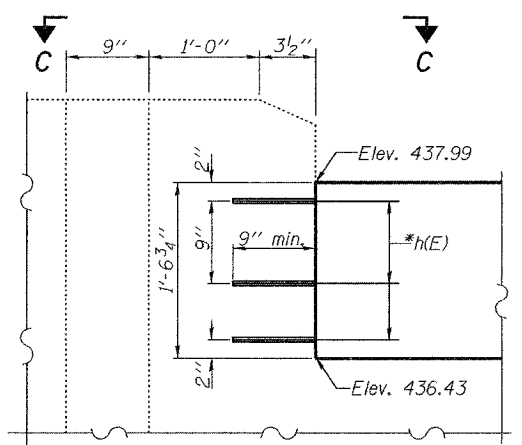
**PLAN**



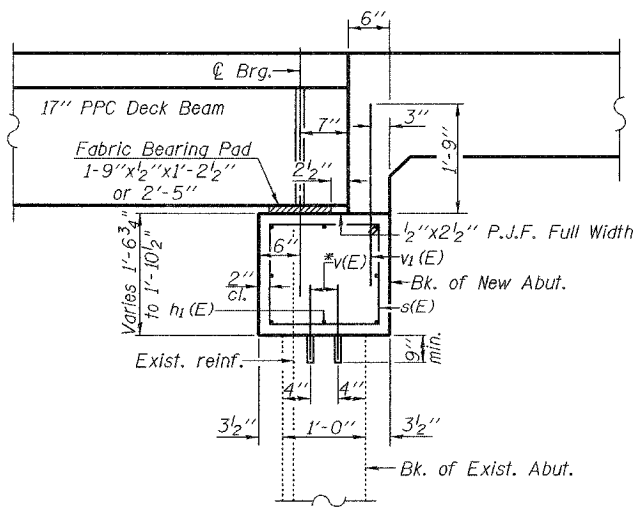
**BAR s(E)**



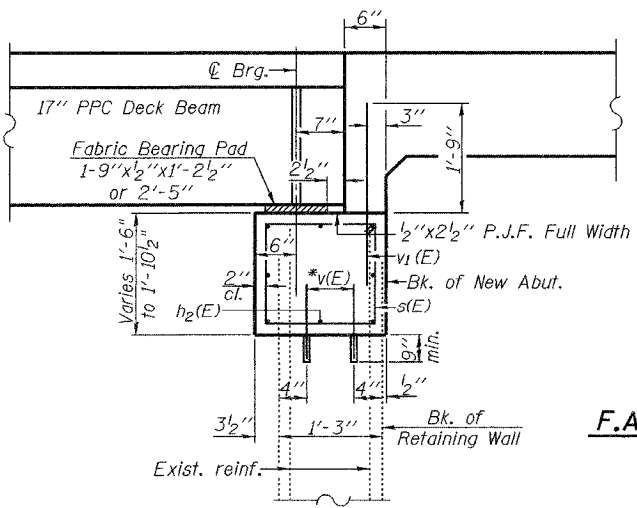
**VIEW C-C**



**DETAIL "A"**



**SECTION A-A**



**SECTION B-B**

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h(E)	12	#5	2'-1"	—
h1(E)	16	#5	19'-8"	—
h2(E)	16	#5	25'-4"	—
s(E)	92	#4	5'-7"	□
v(E)	184	#5	2'-5"	—
v1(E)	92	#5	3'-1"	—
Concrete Structures			Cu. Yd.	8.9
Reinforcement Bars, Epoxy Coated			Pound	1880

Bars indicated thus 8 x 2-#5 etc. indicates 8 lines of bars with 2 lengths per line.

**SOUTH ABUTMENT**  
F.A.U. ROUTE 9177-SECTION 44-IBR  
ST. CLAIR COUNTY  
STATION 100+00.00 (NB)  
STATION 200+00.00 (SB)  
S.N. 082-0096 (NB) & 082-0097 (SB)

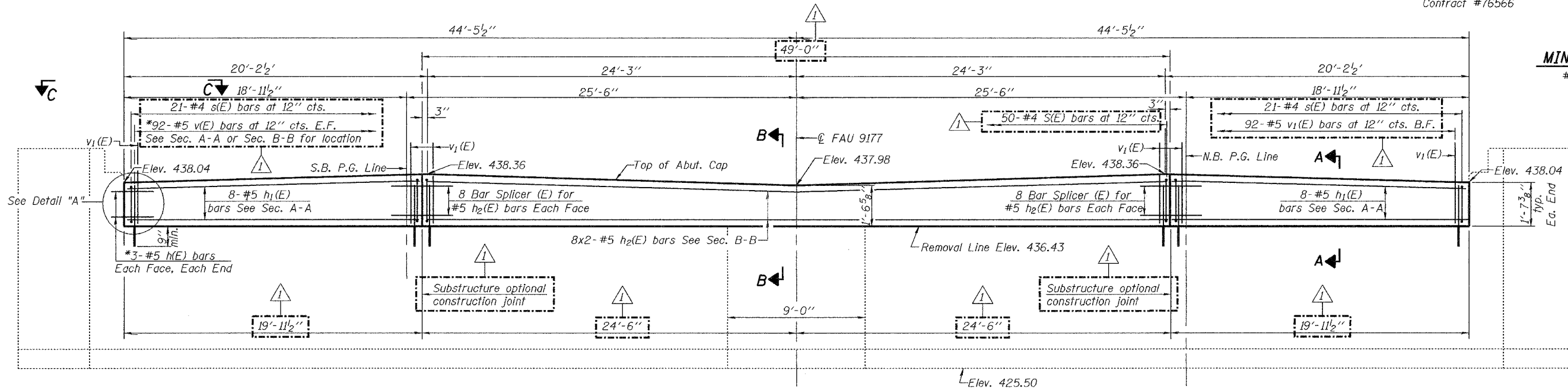
DESIGNED Nicholas Barnett  
CHECKED Ray Ahanchi  
DRAWN R. Sommer  
CHECKED NRB/GRA

December 7, 2006  
EXAMINED Thomas J. Domagala  
PASSED Ralph E. Anderson

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 8
F.A.U. 9177	44-1BR	St. Clair	29	23	10 SHEETS
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-			

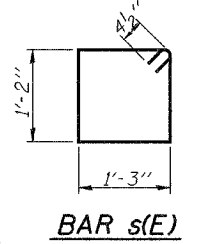
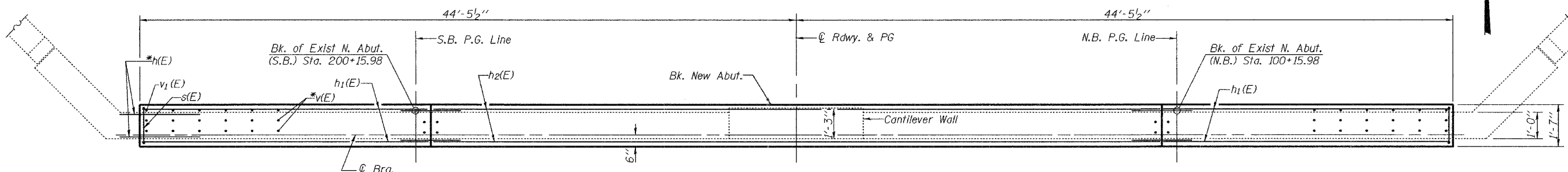
Contract #76566



**MINIMUM BAR LAP**  
#5 bar - 1'-8"

\*Epoxy grout h(E) and v(E) bars in 9" min. drilled holes according to Section 584 of the Standard Specifications.

**ELEVATION**  
(Looking North)

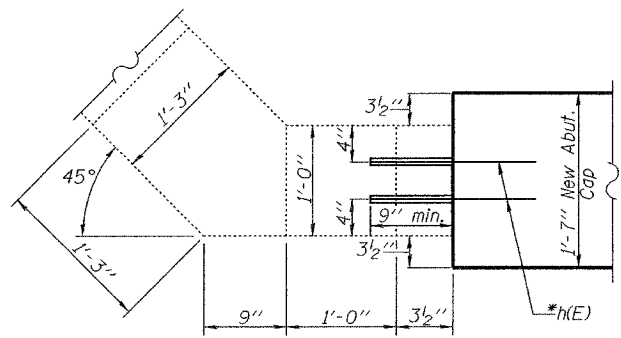


**PLAN**

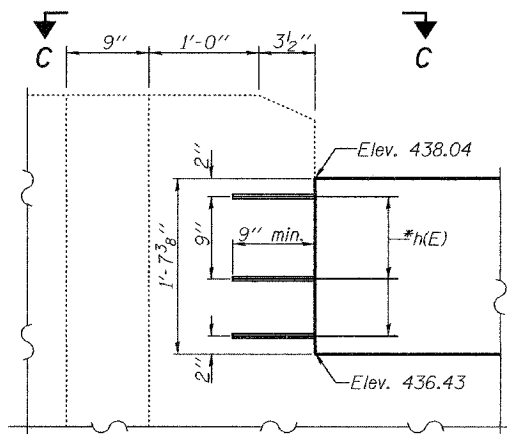
**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h(E)	12	#5	2'-1"	
h1(E)	16	#5	19'-8"	
h2(E)	16	#5	25'-4"	
s(E)	92	#4	5'-7"	□
v(E)	184	#5	2'-5"	
v1(E)	92	#5	3'-1"	
Concrete Structures			Cu. Yd.	9.2
Reinforcement Bars, Epoxy Coated			Pound	1880

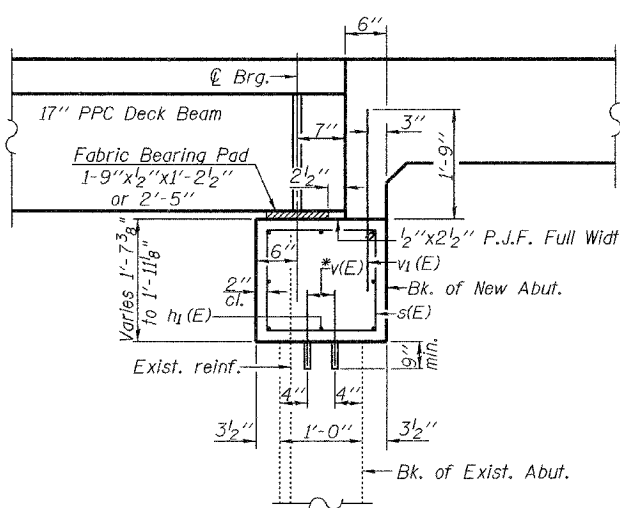
Bars indicated thus 8 x 2-#5 etc. indicates 8 lines of bars with 2 lengths per line.



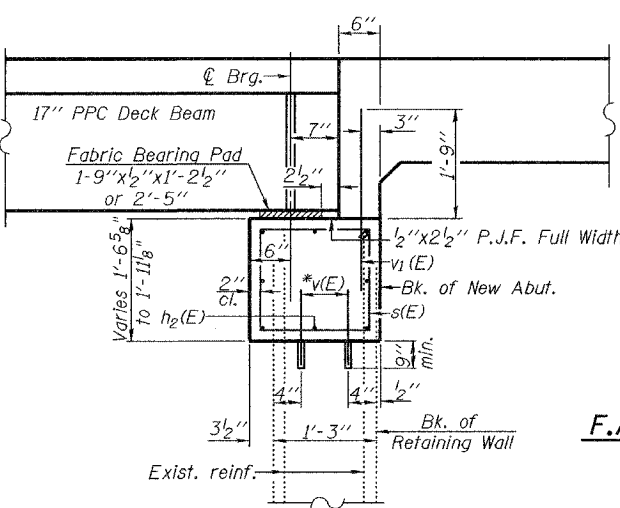
**VIEW C-C**



**DETAIL "A"**



**SECTION A-A**



**SECTION B-B**

DESIGNED Nicholas Barnett  
CHECKED Ray Ahanchi  
DRAWN R. Sommer  
CHECKED NRB/GRA

December 7, 2006  
EXAMINED Thomas Demagalaki  
PASSED Ralph E. Anderson

**NORTH ABUTMENT**  
F.A.U. ROUTE 9177-SECTION 44-1BR  
ST. CLAIR COUNTY  
STATION 100+00.00 (NB)  
STATION 200+00.00 (SB)  
S.N. 082-0096 (NB) & 082-0097 (SB)

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

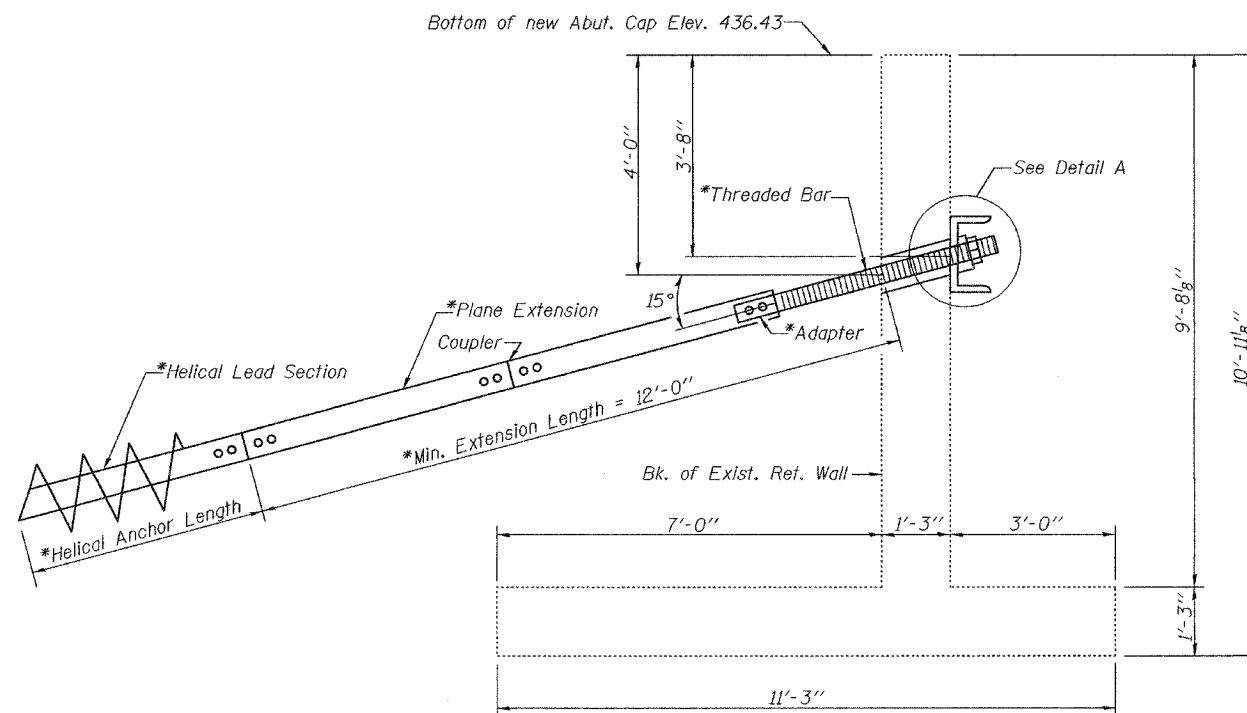
ROUTE NO.	SECTION	COUNTY	POST MILES	SHEET NO.	SHEET NO. 9 10 SHEETS
F.A.U. 9177	44-1BR	St. Clair	29	24	
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		

Contract #76566

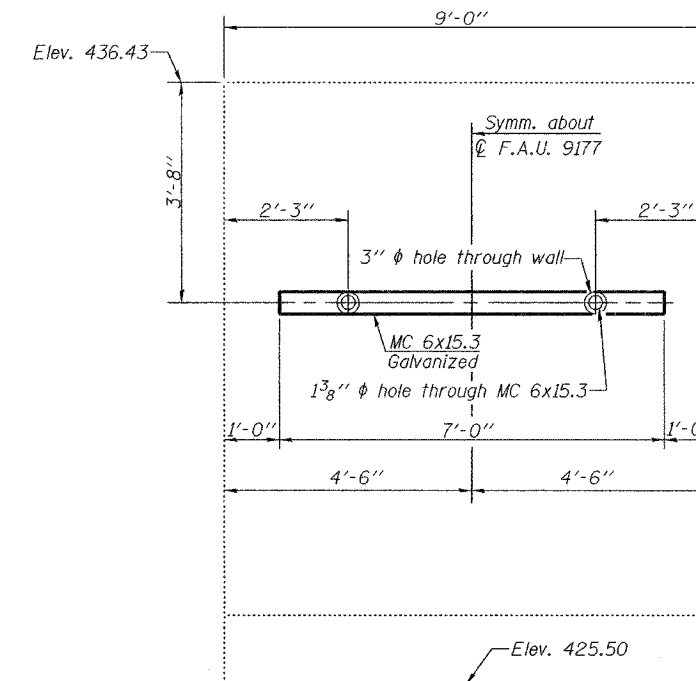
\*See Helical Anchor supplier shop drawing for design and details of Anchor

**NOTES**

- Helical Anchor shall be designed by manufacturer. (See Special Provisions).
- The Contractor shall submit design calculations and shop drawing for the proposed Helical Ground Anchor to the Engineer for review and approval.
- Helical Anchor design load = 5 K/Anchor.
- Cost of channel MC 6x15.3, washers and nuts included in the cost of Helical Ground Anchors.
- Installation of the Helical Ground Anchors shall be done prior to construction.



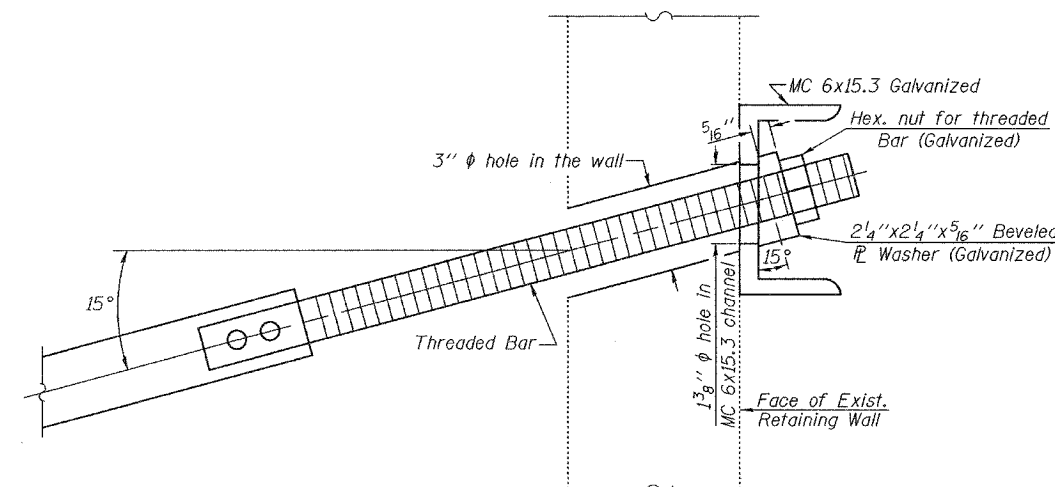
**CROSS SECTION**



**ELEVATION**  
(South Abutment Looking South)

**CONSTRUCTION SEQUENCE**

- Drill holes in existing retaining wall at the location shown in the plans.
- Excavate behind the retaining wall to approximate elevation of the holes. The excavation shall be limited to only that which is necessary for installation of the helical ground anchor. Cost included with Helical Anchors.
- Install the first plane extension thru holes and connect to helical lead section placed behind the wall.
- Rotate the plane extension to install helical lead section until the first extension approaches to the front face of the wall.
- Attach second plane extension and repeat step #4 until the the number of plane extensions reach beyond the min. extension length of 12'-0" as shown on the plans.
- Place thread bar adapter, thread bar and connect to plane extension. Connect channel, washers and nut.
- Backfill and compact soil behind the wall to the ground surface. Cost included with Helical Anchors.
- Test the anchors. (See Special Provisions).



**DETAIL A**

**HELICAL GROUND ANCHOR DETAILS**  
**F.A.U. ROUTE 9177-SECTION 44-1BR**  
**ST. CLAIR COUNTY**  
**STATION 100+00.00 (NB)**  
**STATION 200+00.00 (SB)**  
**S.N. 082-0096 (NB) & 082-0097 (SB)**

DESIGNED	Nicholas Barnett
CHECKED	Roy Ahanchi
DRAWN	R. Sommer
CHECKED	NRB/GRA

EXAMINED	December 7, 2006
PASSED	Thomas J. Domagala ENGINEER OF BRIDGE DESIGN
	Ralph E. Anderson ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET	SHEET	SHEET NO. 10 10 SHEETS
F.A.U. 9177	44-1BR	St. Clair	29	25	
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		

Contract #76566

**NOTES**

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.  
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed 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 =  $1.25 \times f_{s_{allow}} \times A_T$   
(Tension in kips)

Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $f_{s_{allow}}$  = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load)  
 $A_T$  = 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	5.9
#5	2'-0"	23.0	9.2
#6	2'-7"	33.1	13.3
#7	3'-5"	45.1	18.0
#8	4'-6"	58.9	23.6
#9	5'-9"	75.0	30.0
#10	7'-3"	95.0	38.0
#11	9'-0"	117.4	46.8

Bar splicer assemblies shall be according to Section 508 of the Standard Specifications, except as noted. The furnishing and installation of bar splicer assemblies will be measured and paid for at the contract unit price each for "BAR SPLICERS."

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

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

**ROLLED THREAD DOWEL BAR**



**\*\*ONE PIECE**

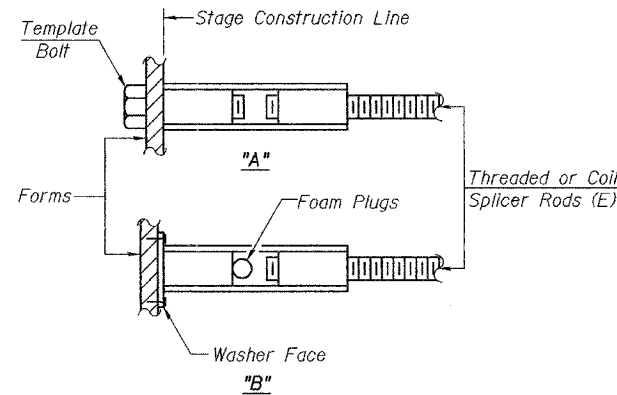
Wire Connector



**WELDED SECTIONS**

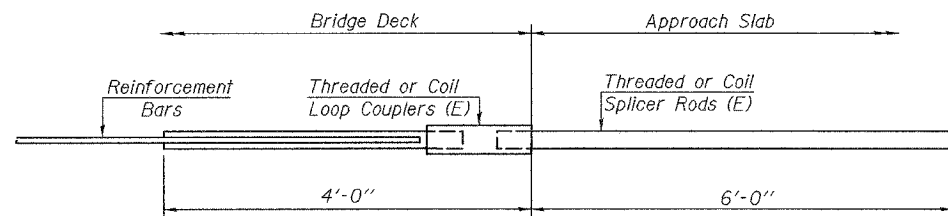
**BAR SPLICER ASSEMBLY ALTERNATIVES**

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



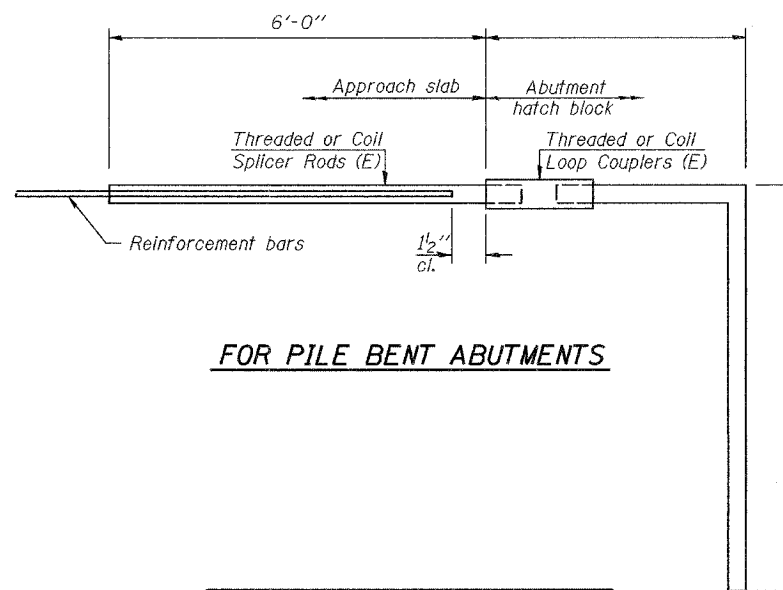
**INSTALLATION AND SETTING METHODS**

"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.



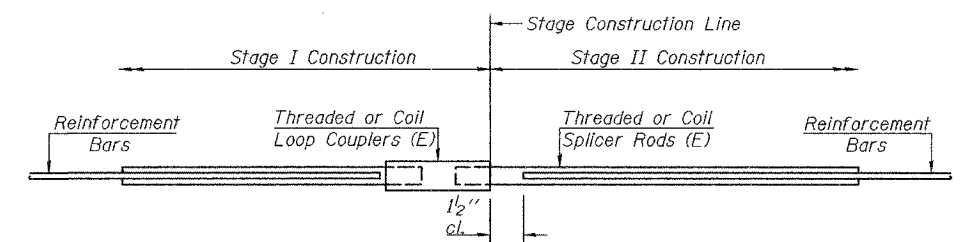
**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required =



**FOR PILE BENT ABUTMENTS**

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required =



**STANDARD**

Bar Size	No. Assemblies Required	Location
#4	66	Superstructure
#5	16	S. Abut.
#5	16	N. Abut.

**BAR SPLICER ASSEMBLY DETAILS**  
F.A.U. ROUTE 9177-SECTION 44-1BR  
ST. CLAIR COUNTY  
STATION 100+00.00 (NB)  
STATION 200+00.00 (SB)  
S.N. 082-0096 (NB) & 082-0097 (SB)

DESIGNED	Nicholas Barnett
CHECKED	Ray Ahanchi
DRAWN	R. Sommer
CHECKED	NRB/GRA

EXAMINED	December 7, 2006	Thomas J. Demagala
PASSED		Ralph E. Anderson

BSD-1 10-22-04