

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED  
HBP AND STP-RURAL PROJECTS

FAS RTE 2789 (C.H. 16) BRUBAKER ROAD  
SECTION 00-00115-00-BR  
OVER CROOKED CREEK &  
SECTION 00-00115-01-BR  
OVER BRANCH TO CROOKED CREEK  
PROJECT NO. RS-BRS-2789( 106 )  
MARION COUNTY  
C-98-312-07

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-00-BR 00-00115-01-BR	MARION	14	1
		ILLINOIS	FEDERAL AID PROJECT	
CONTRACT NO. 97287				

INDEX OF SHEETS

- COVER SHEET
- SUMMARY OF QUANTITIES AND TYPICAL SECTIONS
- BRANCH TO CROOKED CREEK - SECTION 00-00115-01-BR
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- CROSS SECTIONS OF ROADWAY
- GENERAL PLAN AND ELEVATION
- PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
- STEEL RAILING, TYPE S1 DETAILS
- ABUTMENT DETAILS
- CROOKED CREEK - SECTION 00-00115-00-BR
- PLAN AND PROFILE OF ROADWAY
- CROSS SECTIONS OF ROADWAY
- GENERAL PLAN AND ELEVATION
- PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
- STEEL RAILING, TYPE S1 DETAILS
- ABUTMENT DETAILS

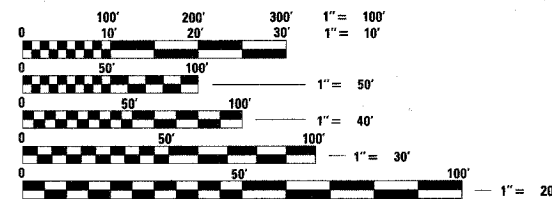
STANDARDS ARE INCLUDED IN PLANS AFTER SHEET NO. 14

000001-04	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
280001-03	TEMPORARY EROSION CONTROL SYSTEMS
515001-02	NAME PLATE FOR BRIDGES
630001-07	STEEL PLATE BEAM GUARD RAIL
631026-03	TRAFFIC BARRIER TERMINAL, TYPE 5 & 5A
635006-02	REFLECTOR AND TERMINAL MARKER PLACEMENT
702001-06	TRAFFIC CONTROL DEVICES
BLR 21-6	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

SOIL BORINGS (SEE SPECIFICATIONS)

DESIGN CLASSIFICATION: RURAL MINOR COLLECTOR

ADT<sub>2002</sub> : 350  
ADT<sub>2027</sub> : 500  
DESIGN SPEED - 40 MPH



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES, REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.  
JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS  
1-800-892-0123 Website: <http://www.illinois1call.com>

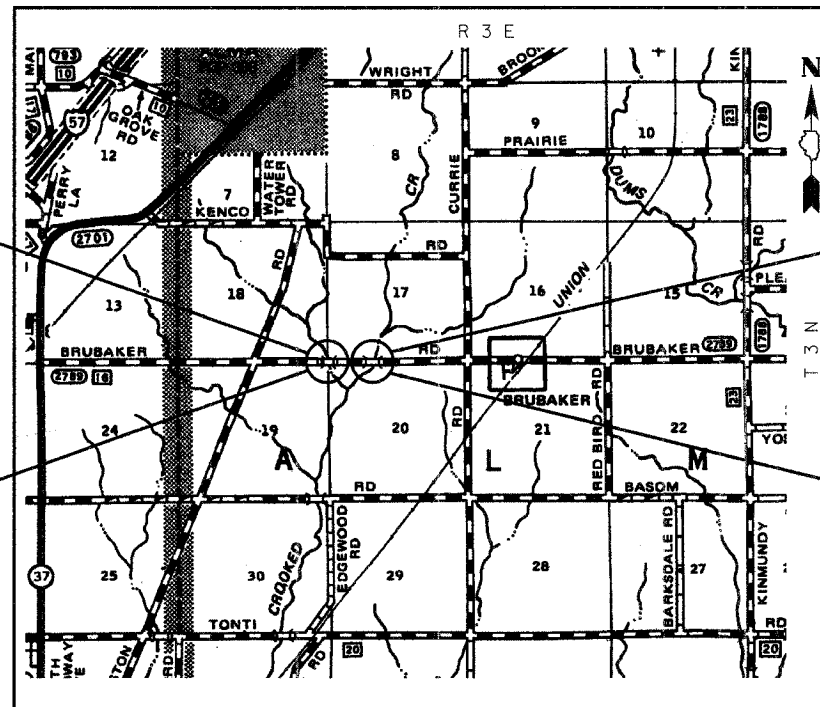
STP FUNDS

SECTION BEGINS  
STA. 9+58.17

SECTION 00-00115-01-BR

INCLUDES THE CONSTRUCTION OF A SINGLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE CARRYING CH 16 OVER BRANCH TO CROOKED CREEK, 63'-8" BK TO BK ABUTMENTS. NO SKEW. EXISTING STRUCTURE NO. 061-3017 PROPOSED STRUCTURE NO. 061-3301

SECTION ENDS  
STA. 10+41.83



HBP FUNDS

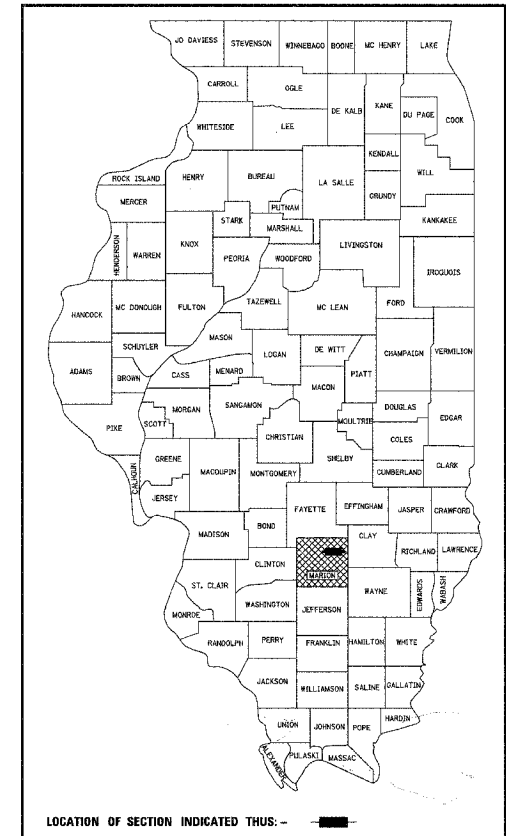
SECTION BEGINS  
STA. 24+40.65

SECTION 00-00115-00-BR

INCLUDES THE CONSTRUCTION OF A SINGLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE CARRYING CH 16 OVER CROOKED CREEK, 61'-5" BK TO BK ABUTMENTS. 20° AH. LT. SKEW. EXISTING STRUCTURE NO. 061-3018 PROPOSED STRUCTURE NO. 061-3287

SECTION ENDS  
STA. 25+29.35

LOCATION: NEAR THE NE CORNER, SECTION 19, T3N, R3E, 3RD P.M.  
NET LENGTH OF SECTION 00-00115-01-BR: 83.66 FT = 0.016 MI  
LOCATION: NEAR THE NE CORNER, NW 1/4, SECTION 20, T3N, R3E, 3RD P.M.  
NET LENGTH OF SECTION 00-00115-00-BR: 88.70 FT = 0.017 MI



LOCATION OF SECTION INDICATED THIS: -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

APPROVED October 13, 2006

*Mary C. Lewis*  
MARION COUNTY, COUNTY ENGINEER

PASSED Nov 9, 2006

*James Oberholser*  
DISTRICT EIGHT-ENGINEER OF LOCAL ROADS & STREETS

RELEASING FOR BID  
BASED ON LIMITED  
REVIEW Mary C. Lewis, 20

11-9-06  
DEPUTY DIRECTOR OF HIGHWAYS, REGION FIVE ENGINEER

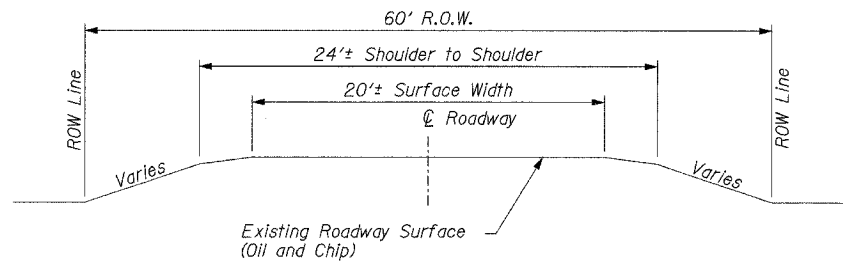


*Gary L. Hahn 10-11-06*  
GARY L. HAHN  
CENTRALIA, ILLINOIS  
ILLINOIS LICENSED PROFESSIONAL  
ENGINEER NO. 62-42606  
EXPIRES NOV. 30, 2007

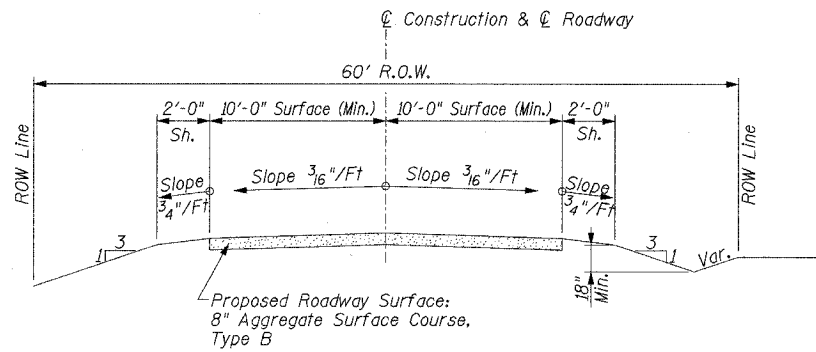
**RHUTASEL and ASSOCIATES, INC.**  
CONSULTING ENGINEERS • LAND SURVEYORS  
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS  
ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

Sheet  
1  
of 14  
Job No. 50705  
Job No. 50805

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-00-BR 00-00115-01-BR	MARION	14	2
ILLINOIS		FED. AID PROJECT		
CONTRACT NO. 97287				



TYPICAL SECTION  
EXISTING APPROACH ROADWAY



TYPICAL SECTION  
PROPOSED APPROACH ROADWAY

SUMMARY OF QUANTITIES

Code No.	Item	Unit	Quantity	STP-RURAL		HBP	
				Sec. 00-00115-01-BR		Sec. 00-00115-00-BR	
				Construct. Type Code	Type Code	Construct. Type Code	Type Code
				E000	X081-2A	E000	X081-2A
20300100	CHANNEL EXCAVATION	CU YD	680	-	380	-	300
20700110	POROUS GRANULAR EMBANKMENT	TON	66	-	32	-	34
25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.2	0.1	-	0.1	-
28100807	STONE DUMPED RIPRAP, CLASS A4	TON	310	-	131	-	179
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	86	39	-	47	-
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	2	-	1	-	1
50300225	CONCRETE STRUCTURES	CU YD	40.8	-	19.6	-	21.2
50300280	CONCRETE ENCASEMENT	CU YD	5.6	-	2.8	-	2.8
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	3430	-	1750	-	1680
50800105	REINFORCEMENT BARS	POUND	6660	-	3240	-	3420
50900205	STEEL RAILING, TYPE S1	FOOT	248	-	128	-	120
* 51201600	FURNISHING STEEL PILES HP12X53	FOOT	655	-	400	-	255
* 51202305	DRIVING PILES	FOOT	655	-	400	-	255
* 51203600	TEST PILE STEEL HP12X53	EACH	3	-	1	-	2
51204650	PILE SHOES	EACH	8	-	-	-	8
51500100	NAME PLATES	EACH	2	-	1	-	1
542A0223	PIPE CULVERTS, CLASS A, TYPE 1 18"	FOOT	30	-	-	30	-
542A0229	PIPE CULVERTS, CLASS A, TYPE 1 24"	FOOT	30	30	-	-	-
Δ 63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	4	2	-	2	-
Δ 63100167	TRAFFIC BARRIER TERMINAL, TYPE 1, SPECIAL (TANGENT)	EACH	4	2	-	2	-
67100100	MOBILIZATION	L SUM	1	-	-	-	-
Δ 78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	8	4	-	4	-

\* The Contractor shall drive three (3) Steel HP12x53 Test Piles in production pile locations as shown on the Plans and as directed by the Engineer before ordering the remainder of the piles.

Δ Specialty Items

GENERAL NOTES

This section shall be constructed in accordance with the plans, the Special Provisions, and the "Standard Specifications for Road and Bridge Construction", adopted January 1, 2007.

If Section or Subsection monuments are encountered, the Engineer shall be notified before such monuments are removed. The Contractor shall protect and carefully preserve all property markers and monuments until owner, an authorized Surveyor or agent has witnessed or otherwise referenced their location. See Special Provisions.

Centerline profiles refer to the finished surface.

All Earthwork, including necessary shoulder widening for Traffic Barrier Terminals, shall be considered incidental to Channel Excavation, and no additional compensation will be allowed.

Any reference to a Standard in these plans shall be interpreted to mean the edition as indicated by the sub-number listed in the Index of Sheets or the copy of the Standard included in these plans.

Existing utilities shown are located from surface observations or information provided by the respective utilities and must be considered approximate. There may be others, the exact location of which are unknown and not shown. The Contractor will be responsible for notifying the respective utilities before work is begun. Field marking of underground utilities may be obtained by providing a minimum of 48 hours advance notice through the J.U.L.I.E. system by calling 1-800-892-0123, or by direct contact with non-members of J.U.L.I.E.

The nominal thickness for surface course is shown on the Typical Sections, Standards, Schedules, or Special Details. The constructed thickness of the above item shall not be less than 90 percent of the nominal thickness at any location.

Factors used for quantity calculations are as follows:

- Porous Granular Embankment 2.1 tons/cu. yd.
- Stone Dumped Riprap 130 pounds/cu. ff.
- Aggregate Surface Course 2.1 tons/cu. yd.

Bar	No.	Size	Length	Shape
s	1	#4	9'-5"	□
h <sub>1</sub>	1	#5	4'-3"	—
u	1	#6	8'-0"	□
p	1	#7	28'-8"	—

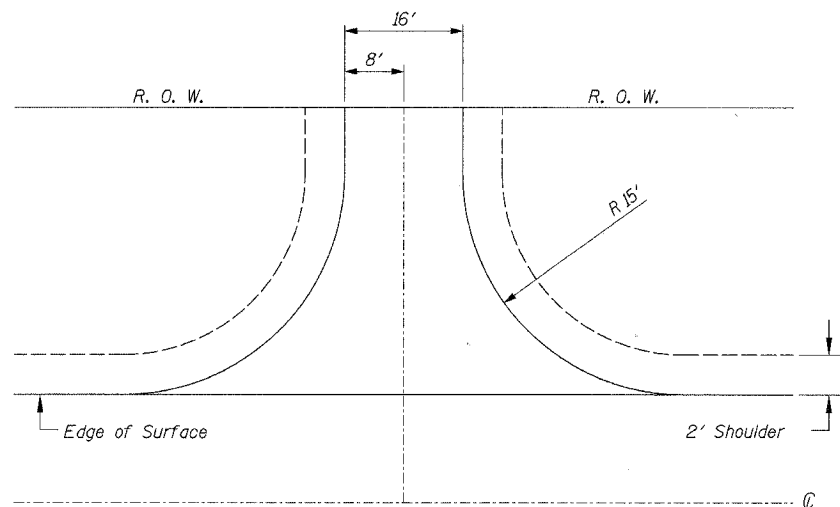
These bars shall be identical to and delivered with the bars of the same mark listed on the bridge sheets. One bar of each of these marks will be selected by the Engineer to be used as a test sample. This chart assumes that all bars of the same size on the job will have the same heat numbers. If bars of the same size on the job have different heat numbers, then the Contractor shall supply additional bars from other heat numbers for sampling by the Engineer at no additional cost.

The cost to furnish these extra bars shall be included in the contract unit price per pound for reinforcement bars and no additional compensation will be allowed.

UTILITIES

Telephone  
AT&T  
Ph. 618-533-3411

Electric  
Tri-County Electric Cooperative  
Ph. 618-244-5151



Aggregate Surface Course, Type B 6" Depth  
Lt., Sta. 11+25 - 17 Ton  
Lt., Sta. 26+21 - 17 Ton  
(Included in Summary of Quantities)

TYPICAL FIELD ENTRANCE

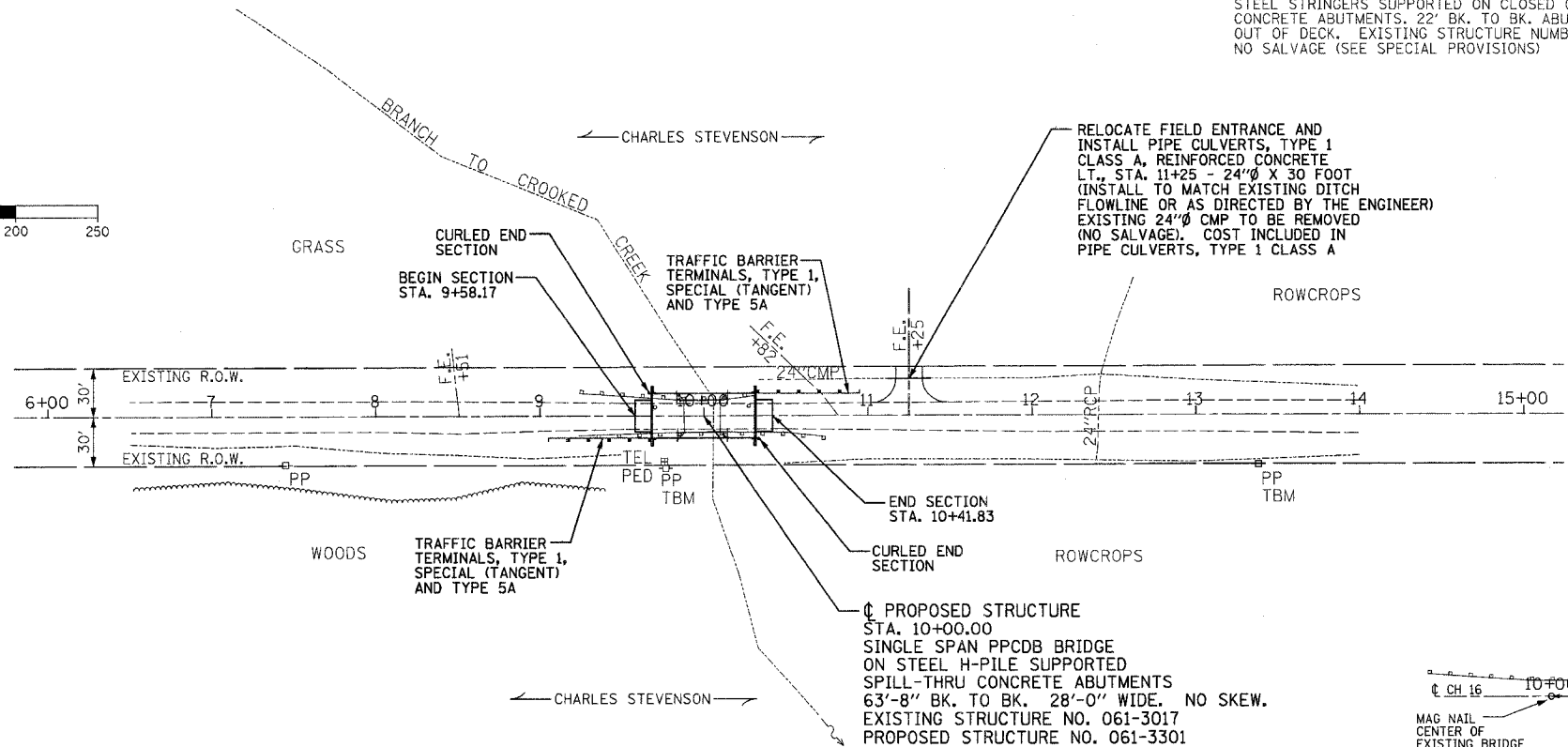
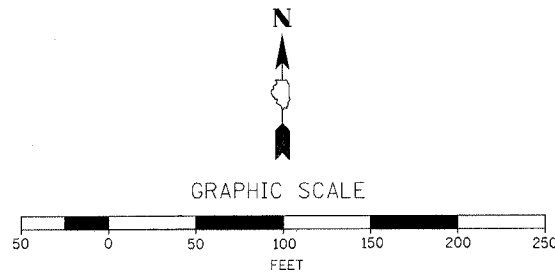
SUMMARY OF QUANTITIES  
AND TYPICAL SECTIONS  
PROPOSED BRIDGES CARRYING CH 16  
OVER CROOKED CREEK AND  
BRANCH TO CROOKED CREEK  
SECTION 00-00115-00-BR  
SECTION 00-00115-01-BR  
MARION COUNTY, ILLINOIS

Sheet  
2  
of 14  
Job No. 50705  
Job No. 50805

10/13/2006

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-01-BR	MARION	14	3
STA. 6+00.00 TO STA. 15+00.00		ILLINOIS FED. AID PROJECT		

EXISTING STRUCTURE: SINGLE SPAN BRIDGE WITH CAST-IN-PLACE CONCRETE DECK ON STEEL STRINGERS SUPPORTED ON CLOSED CAST-IN-PLACE CONCRETE ABUTMENTS. 22' BK. TO BK. ABUTMENTS, 20' OUT TO OUT OF DECK. EXISTING STRUCTURE NUMBER 061-3017. NO SALVAGE (SEE SPECIAL PROVISIONS)

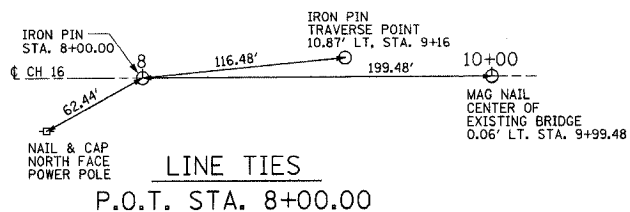


RELOCATE FIELD ENTRANCE AND INSTALL PIPE CULVERTS, TYPE 1 CLASS A, REINFORCED CONCRETE LT. STA. 11+25 - 24"Ø X 30 FOOT (INSTALL TO MATCH EXISTING DITCH FLOWLINE OR AS DIRECTED BY THE ENGINEER) EXISTING 24"Ø CMP TO BE REMOVED (NO SALVAGE). COST INCLUDED IN PIPE CULVERTS, TYPE 1 CLASS A

PROPOSED STRUCTURE STA. 10+00.00 SINGLE SPAN PPCDB BRIDGE ON STEEL H-PILE SUPPORTED SPILL-THRU CONCRETE ABUTMENTS 63'-8" BK. TO BK. 28'-0" WIDE. NO SKEW. EXISTING STRUCTURE NO. 061-3017 PROPOSED STRUCTURE NO. 061-3301

THE EXISTING RIGHT OF WAY SHOWN HEREON HAS BEEN PROTRACTED FROM EXISTING RECORDS AND IS TO BE USED FOR REFERENCE PURPOSES ONLY. FURTHERMORE, NO COMPLETE SURVEY OF SAID R.O.W. IS IMPLIED BY THIS DRAWING.

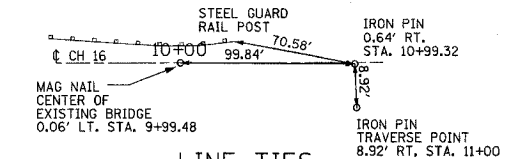
PLAN	DATE
BY	
REVISION	
PLOTTED	
NOTE BOOK	
NO.	



LINE TIES

P.O.T. STA. 8+00.00

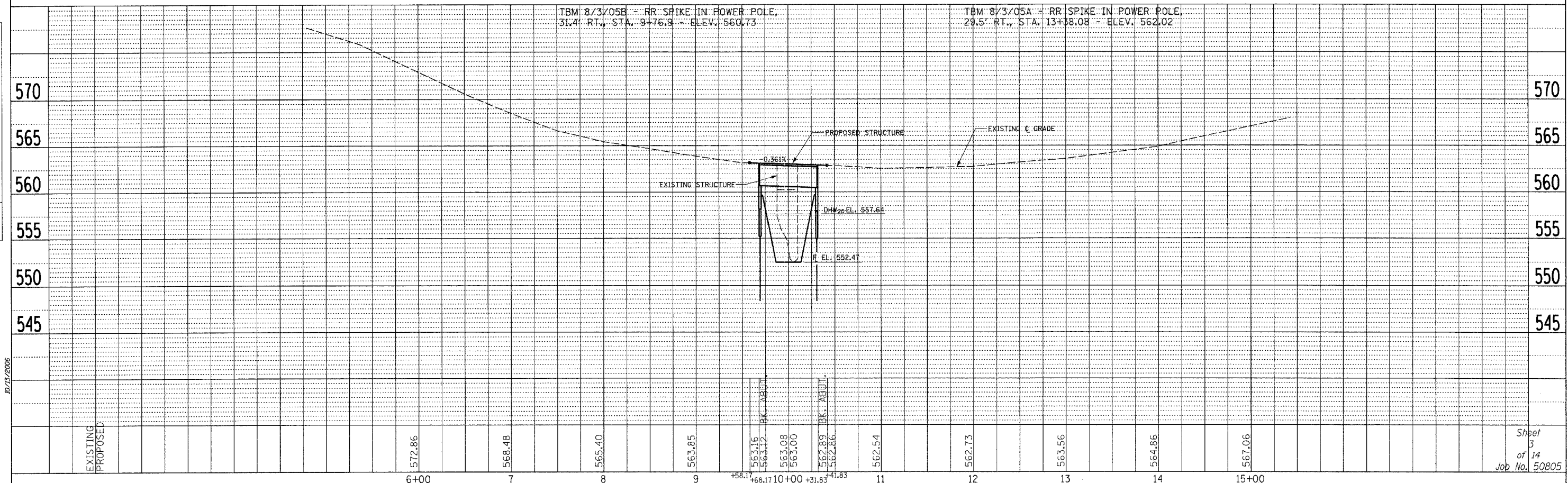
NOTE: ANY REQUIRED EXCAVATION OR EMBANKMENT, INCLUDING NECESSARY SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINALS, CLEARING, GRUBBING, AND TRIMMING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CHANNEL EXCAVATION.



LINE TIES

P.O.T. STA. 10+99.32

PROFILE	DATE
BY	
REVISION	
PLOTTED	
NOTE BOOK	
NO.	

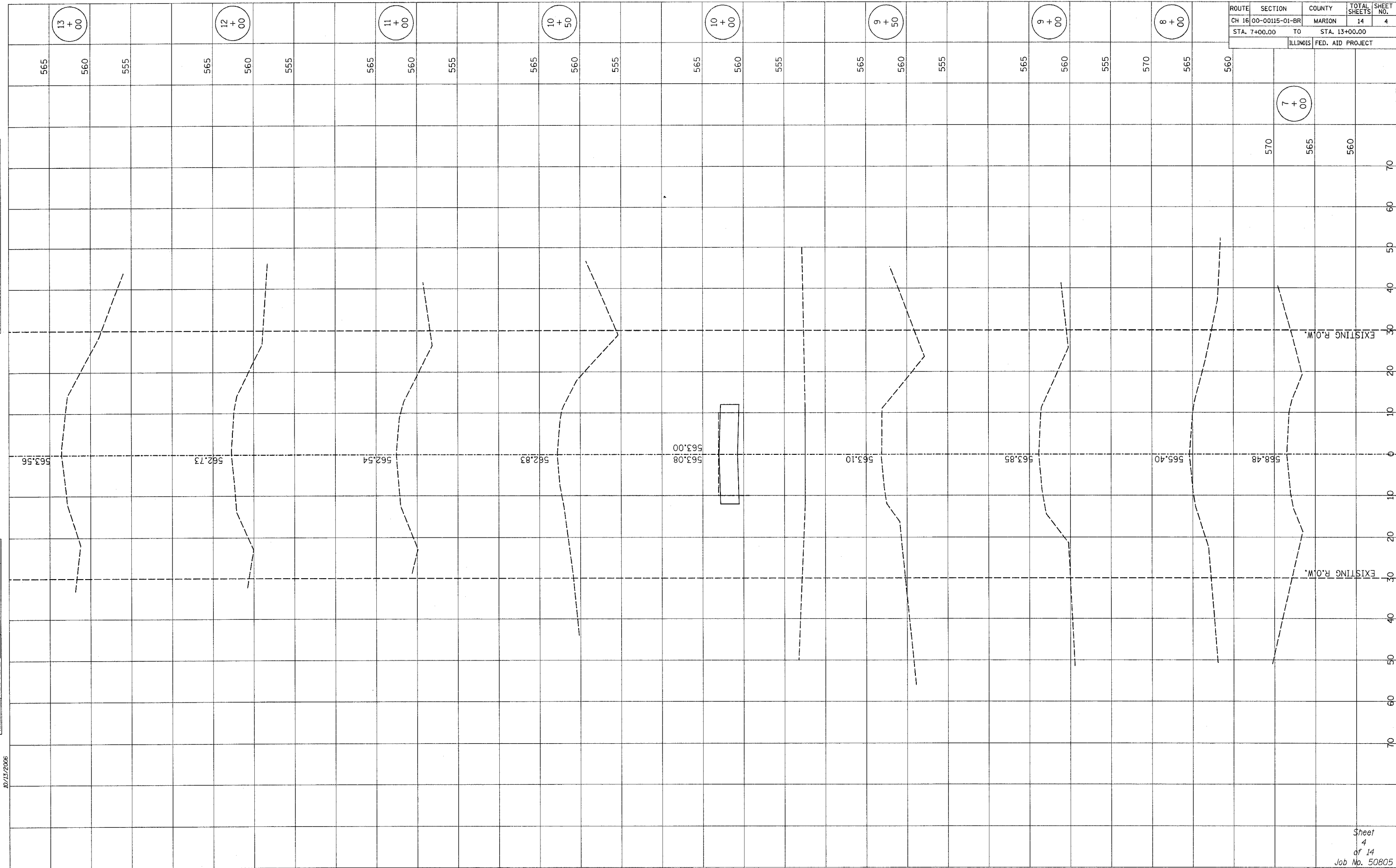


10/13/2006

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-01-BR	MARION	14	4
STA. 7+00.00		TO	STA. 13+00.00	
ILLINOIS		FED. AID PROJECT		

FINAL SURVEY SURVEYED \_\_\_\_\_ DATE \_\_\_\_\_  
 NOTE BOOK \_\_\_\_\_ PLOTTED \_\_\_\_\_  
 NO. \_\_\_\_\_ AREAS CHECKED \_\_\_\_\_

ORIGINAL SURVEY SURVEYED \_\_\_\_\_ DATE \_\_\_\_\_  
 NOTE BOOK \_\_\_\_\_ PLOTTED \_\_\_\_\_  
 NO. \_\_\_\_\_ AREAS CHECKED \_\_\_\_\_



10/13/2006

TBM 8/3/05"B" - RR Spike set in power pole  
 31.4' Rt., Sta. 9+76.9 - Elev. 560.73  
 TBM 8/3/05"A" - RR Spike set in power pole  
 29.5' Rt., Sta. 13+38.08 - Elev. 562.02

Existing Structure No. 061-3017, Single span  
 bridge with cast in place concrete deck on steel  
 stringers supported on closed concrete abutments.  
 22'L.x20'W. No salvage (See Special Provisions).

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-01-BR	MARION	14	5
		ILLINOIS	FEDERAL AID PROJECT	
CONTRACT NO. 97287				

**BILL OF MATERIALS (BRIDGE ONLY)**

ITEM	UNIT	SUB	SUPER	TOTAL
CHANNEL EXCAVATION	CU YD	380	-	380
POROUS GRANULAR EMBANKMENT	TON	32	-	32
STONE DUMPED RIPRAP, CLASS A4	TON	131	-	131
REMOVAL OF EXISTING STRUCTURES	EACH	-	1	1
CONCRETE STRUCTURES	CU YD	19.6	-	19.6
CONCRETE ENCASEMENT	CU YD	2.8	-	2.8
PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	-	1750	1750
REINFORCEMENT BARS	POUND	3240	-	3240
STEEL RAILING, TYPE S1	FOOT	-	128	128
FURNISHING STEEL PILES HP12X53	FOOT	400	-	400
DRIVING PILES	FOOT	400	-	400
TEST PILE STEEL HP12X53	EACH	1	-	1
NAME PLATES	EACH	1	-	1

**GENERAL NOTES**

See Section 502 of the Standard Specifications for Structural Excavation.

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

Channel excavation shall be excavated as shown within the limits of the proposed bridge, then tapered to the existing channel at the ROW line. If the Engineer deems the material satisfactory, it may be used to construct the roadway embankment.

See Specifications for Soil Borings.

Do not scale these drawings.

The Contractor shall drive one (1) Steel HP12x53 Test Pile in a production pile location at the West Abutment as directed by the Engineer before ordering the remainder of the piles.

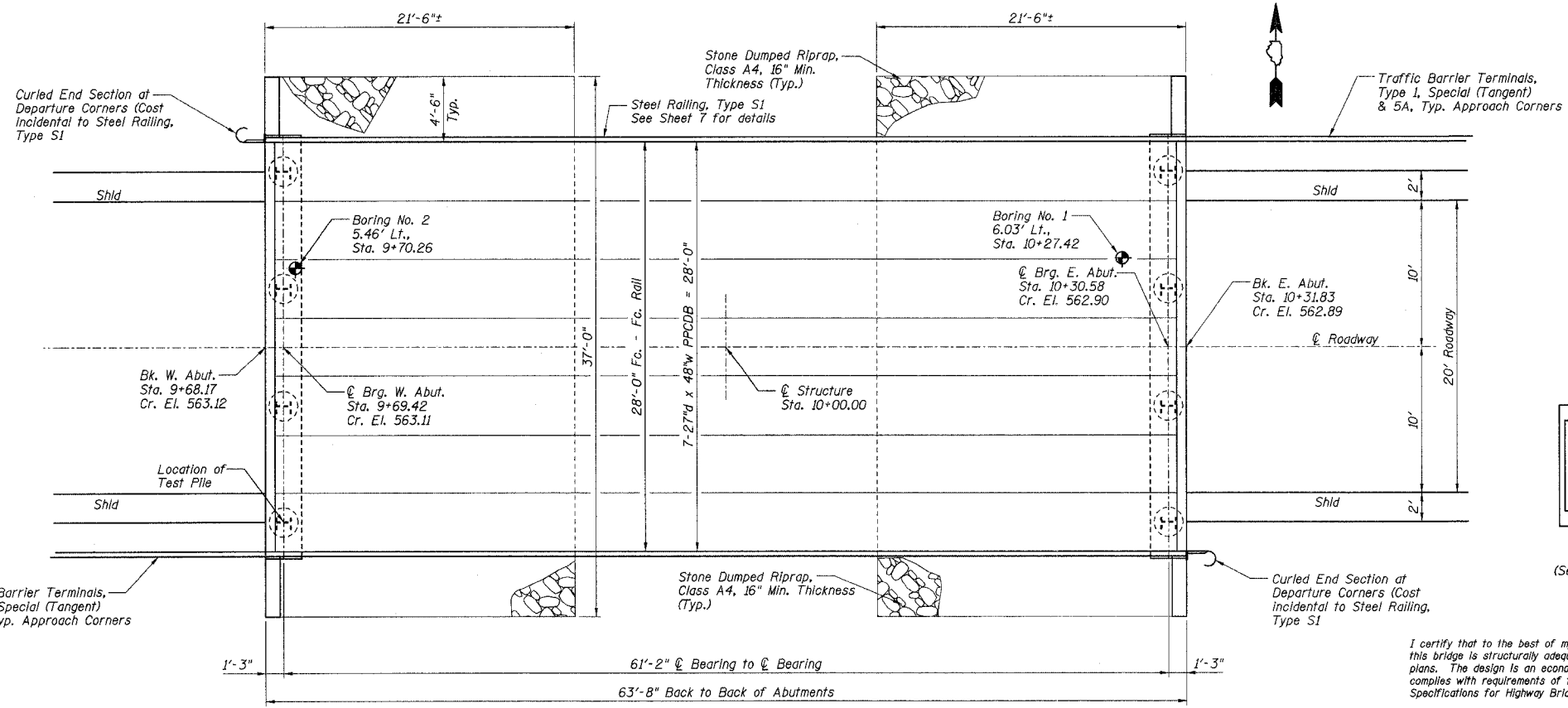
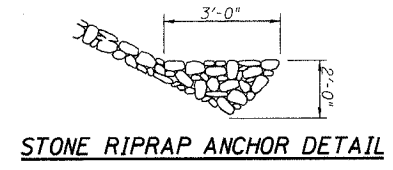
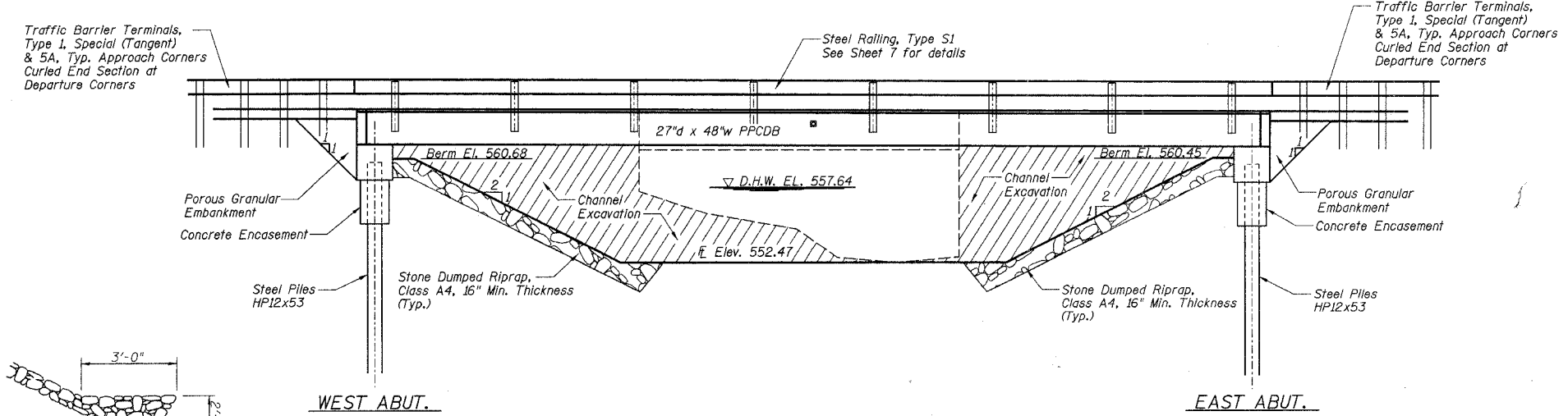
The test pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.

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

The Contractor is hereby advised that very stiff soils may be encountered prior to the location of anticipated refusal. See the Soil Borings for further information.

In addition to all other requirements of Section 512 of the Standard Specifications, splices for Steel H-piles shall develop the full capacity of the steel's cross sectional area of the pile for tension, shear and bending forces. One approved method of achieving this requirement is full penetration butt welding of the entire cross section. Other types of splices meeting the full capacity requirement may be allowed subject to the approval of the Engineer. Any proposal by the Contractor to use an alternate splice method must include adequate documentation demonstrating that the full tension, shear and bending capacities will be met. Appropriate welder qualifications will be required for the positions and processes used in splicing all piles. Nondestructive testing of completed welds will be limited to visual inspection.

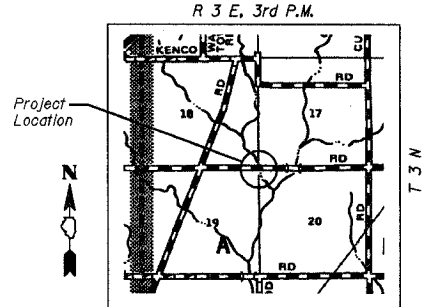
The abutment bearing seat surfaces for the precast prestressed concrete deck beams shall be adjusted by shimming to assure firm and even bearing. As required, 1/2" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.



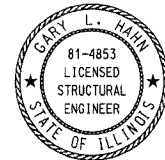
BRANCH TO CROOKED CREEK  
 BUILT 200 BY  
 MARION COUNTY  
 PROJECT NO. RS-BRS-2789(106)  
 SEC. 00-00115-01-BR  
 LOADING HS-20  
 STRUCTURE NO. 061-3301

**NAME PLATE**

(See State Standard 515001 for details)



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



GARY L. HAHN  
 81-4853  
 LICENSED  
 STRUCTURAL  
 ENGINEER  
 STATE OF ILLINOIS  
 10-11-06  
 GARY L. HAHN  
 CENTRALIA, ILLINOIS  
 ILLINOIS LICENSED STRUCTURAL  
 ENGINEER NO. 81-4853  
 EXPIRES NOV. 30, 2006

**GRADE ON STRUCTURE**

-0.361%

**DESIGN STRESSES**

FIELD UNITS  
 $f'_c = 3,500$  psi  
 $f_y = 60,000$  psi

**PRECAST PRESTRESSED UNITS**

$f'_c = 5,000$  psi  
 $f'_{ci} = 4,000$  psi  
 $f'_s = 270,000$  psi (1/2" strands)  
 $f'_{si} = 189,000$  psi (1/2" strands)

**DESIGN SPECIFICATIONS**

AASHTO - 2002 17th Edition

**LOADING HS 20-44**

Allow 25#/sq. ft. for future wearing surface.

**WATERWAY DATA**

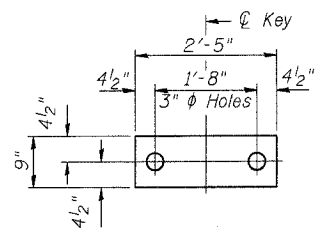
Drainage Area = 1.98 Sq. Mi. Low Grade Elev. 562.54 @ Sta. 11+00

Flood	Freq. Yr.	Q C.F.S.	Opening Exist. Prop.	Sq. Ft. H.W.E. Exist. Prop.	Natural Head - Ft. Exist. Prop.	Headwater El. Exist. Prop.
Design	20	806	73	192	557.64	1.79 0.49 559.43 558.13
Base	100	1208	80	209	557.98	3.55 0.97 561.53 558.95
Max. Calc.	500	1597	86	222	558.25	5.06 1.34 563.31 559.59

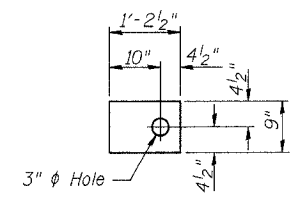
8/13/2006

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

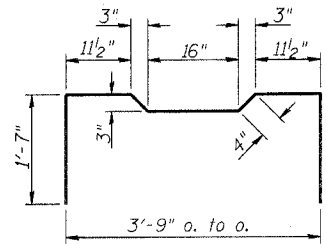
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-01-BR	MARION	14	6
		ILLINOIS	FEDERAL AID PROJECT	
CONTRACT NO. 97287				



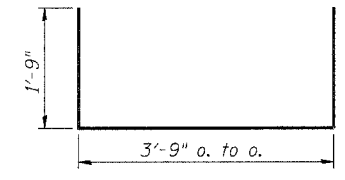
**FABRIC BEARING PAD**  
(Interior)



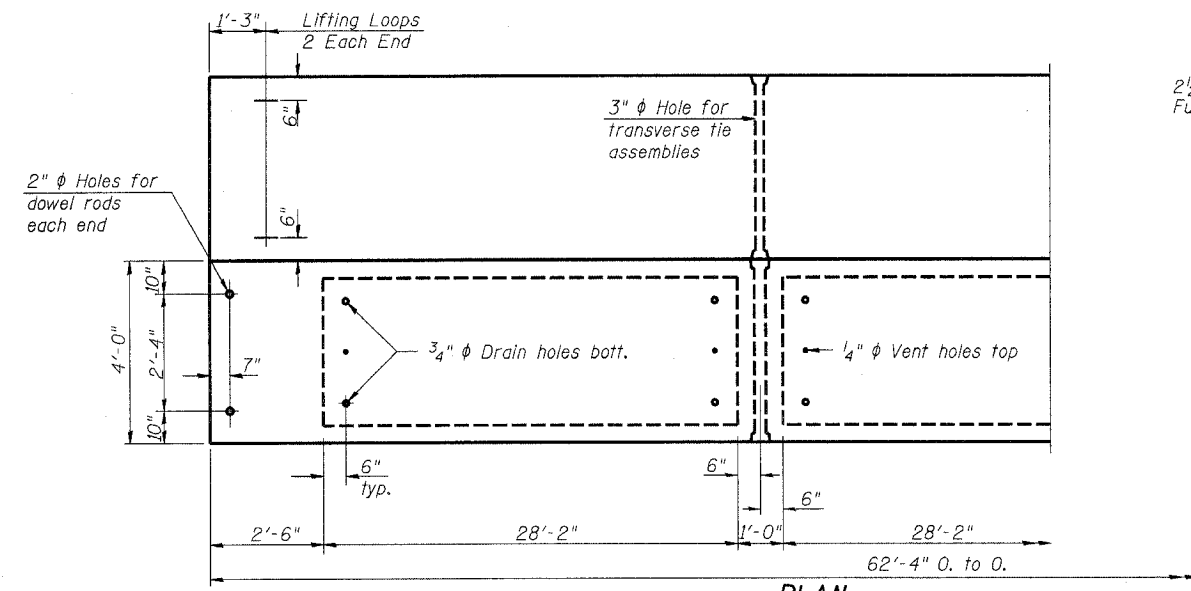
**FABRIC BEARING PAD**  
(Exterior)



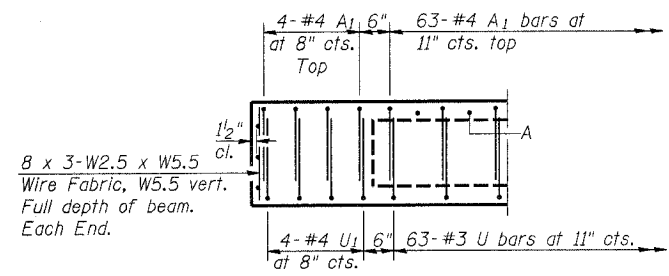
**BAR A1**



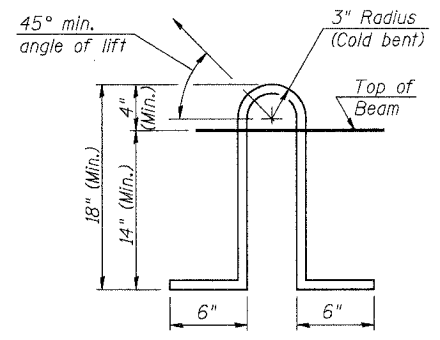
**BARS U & U1**



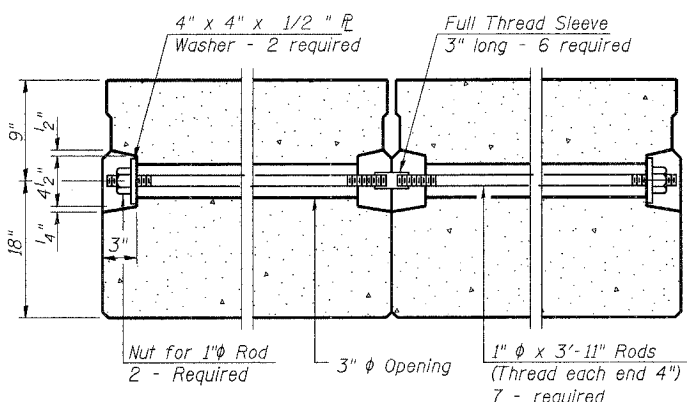
**PLAN**



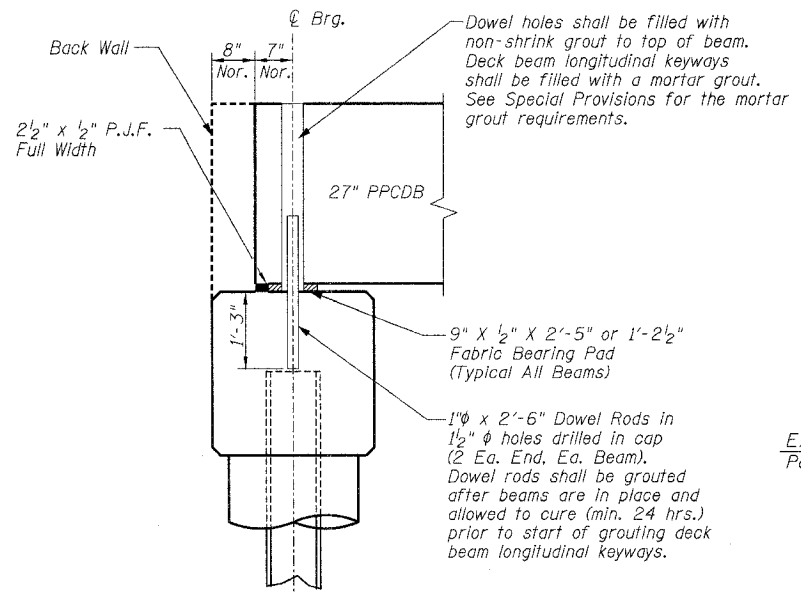
**END ELEVATION**



**LIFTING LOOP DETAIL**



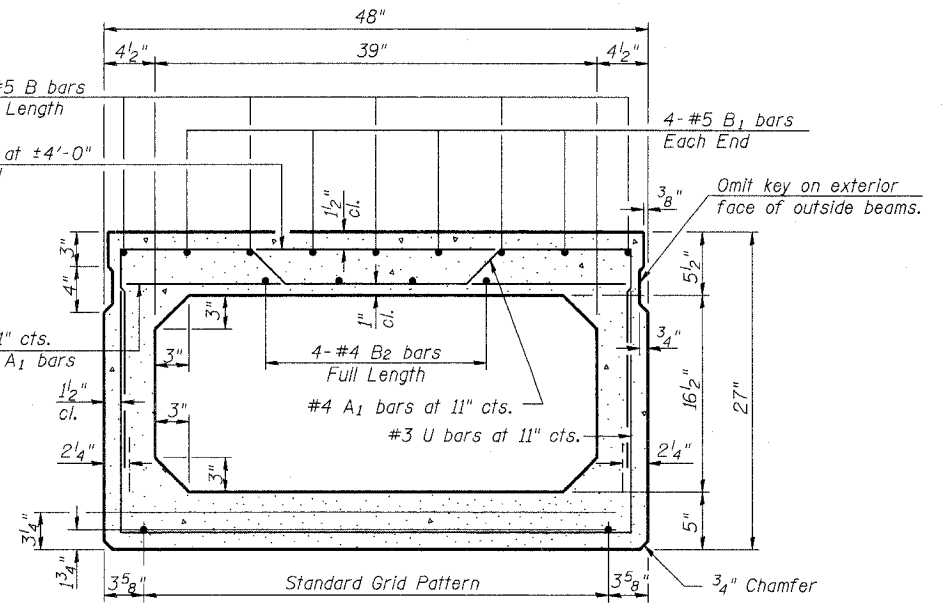
**TYPICAL TRANSVERSE TIE ASSEMBLY**



**FIXED BEARING ABUTMENT**

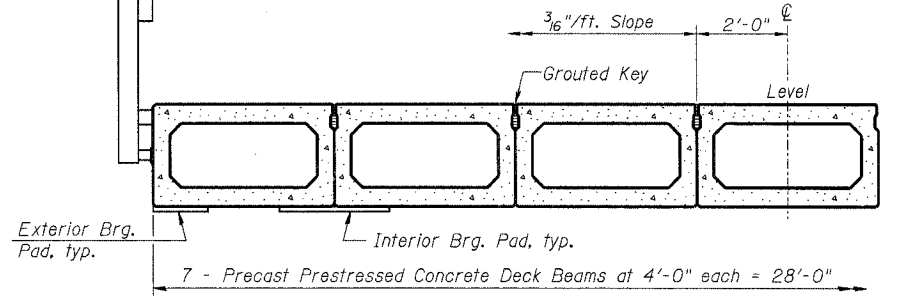
**NOTES**

- Prestressing steel shall be uncoated high strength, stress relieved 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 3 - 1/2" diameter - 270 ksi strands, as shown.
- The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar on outside shall be filled with grout after transverse tie assembly is in place.
- Non-prestressing steel shall conform to AASHTO M-31, M-42 or M-53 Grade 60.
- The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. As required, 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.
- Required Release Strength, f'ci, shall be 4000 p.s.i.
- An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted. However, all strands shall be stressed to a maximum of 28,900 pounds per strand.



**TYPICAL SECTION**

19-1/2" diameter Strands, Each Strand Stressed to 28,900 Lbs.  
12-Strands 1 3/4" up, 7-Strands 3 1/4" up



**HALF CROSS SECTION**

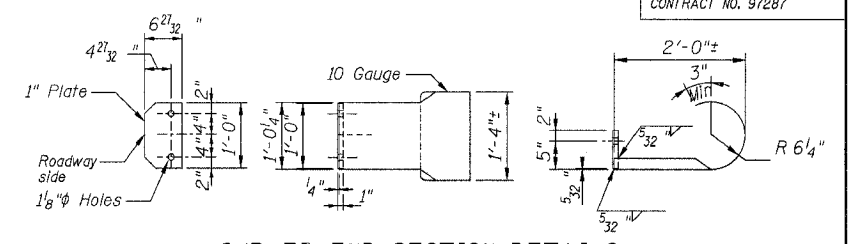
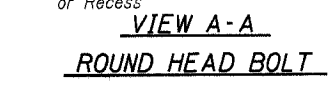
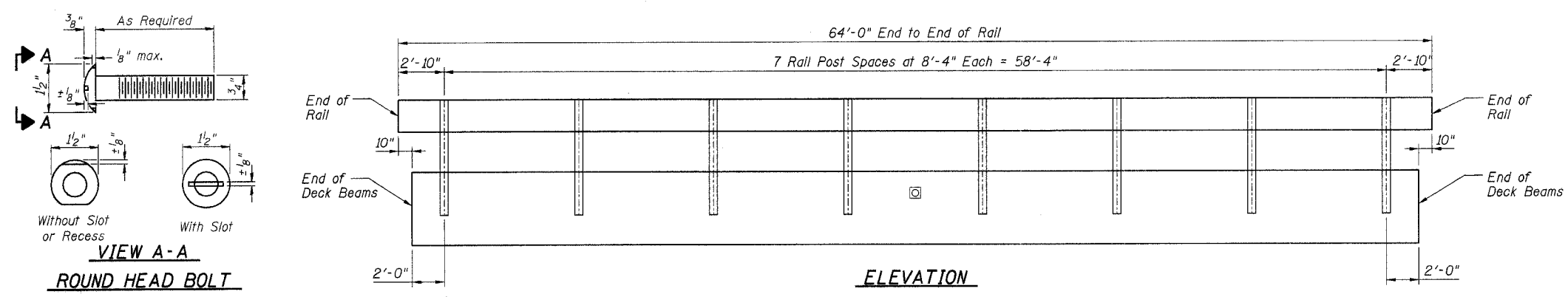
**BILL OF MATERIAL FOR ONE BEAM**

Bar	No.	Size	Length	Shape	
A	70	#3	3'-8"	—	
A1	71	#4	7'-1"	⌒	
B	10	#5	32'-6"	—	
B1	8	#5	12'-6"	—	
B2	8	#4	32'-0"	—	
U	63	#3	7'-3"	⌒	
U1	8	#4	7'-3"	⌒	
Precast Prestressed Conc. Deck Bms.				Sq. Ft.	250
Reinforcement Bars				Pound	1260
Beam Weight				Pound	47,440

**PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS**  
PROPOSED BRIDGE CARRYING CH 16 OVER BRANCH TO CROOKED CREEK  
SECTION 00-00115-01-BR  
MARION COUNTY, ILLINOIS

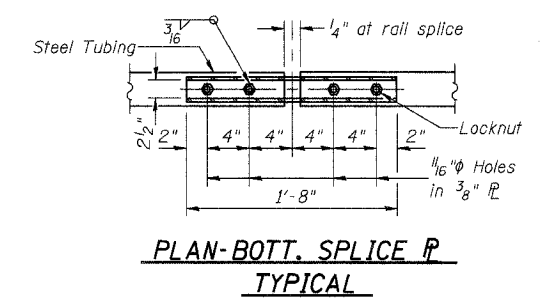
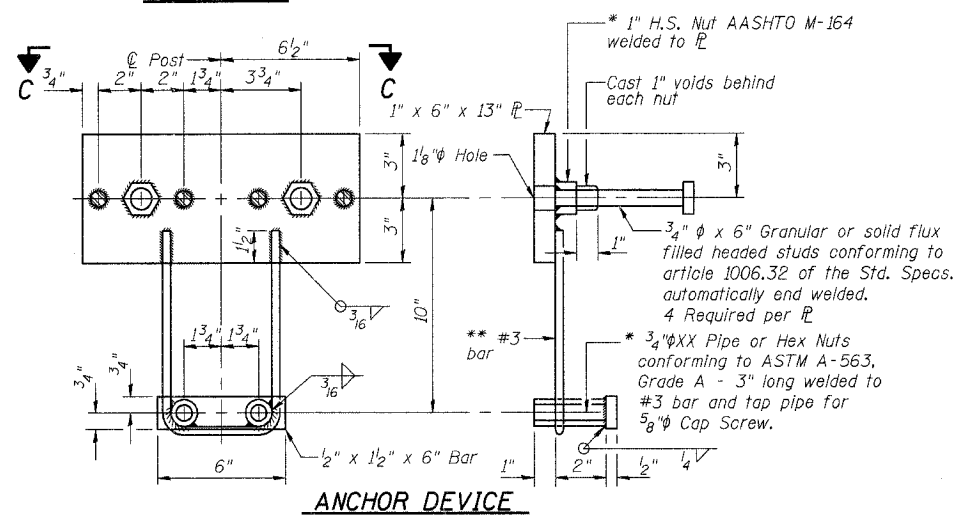
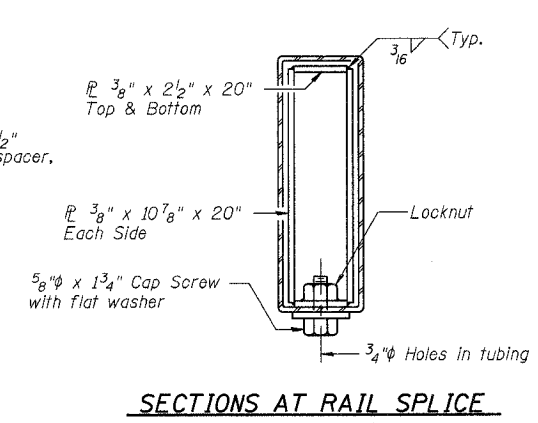
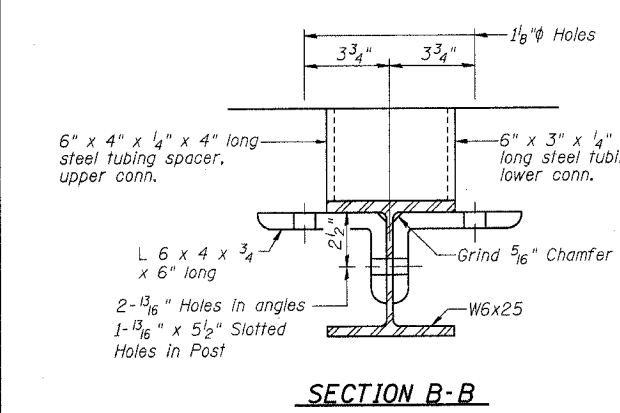
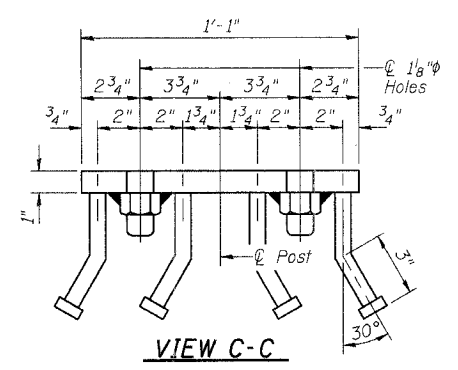
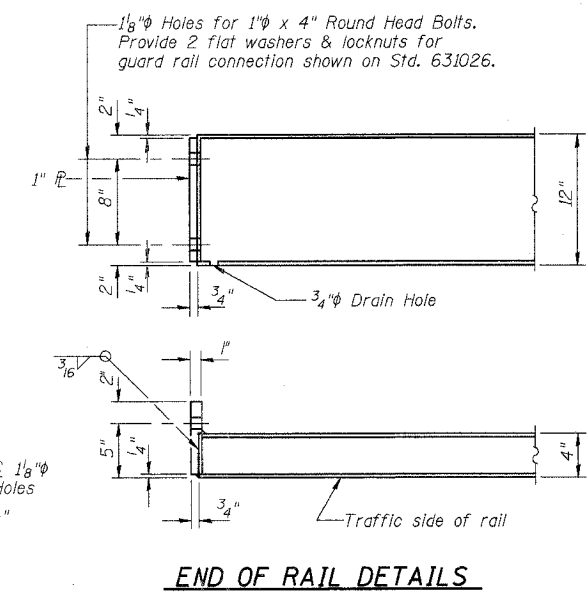
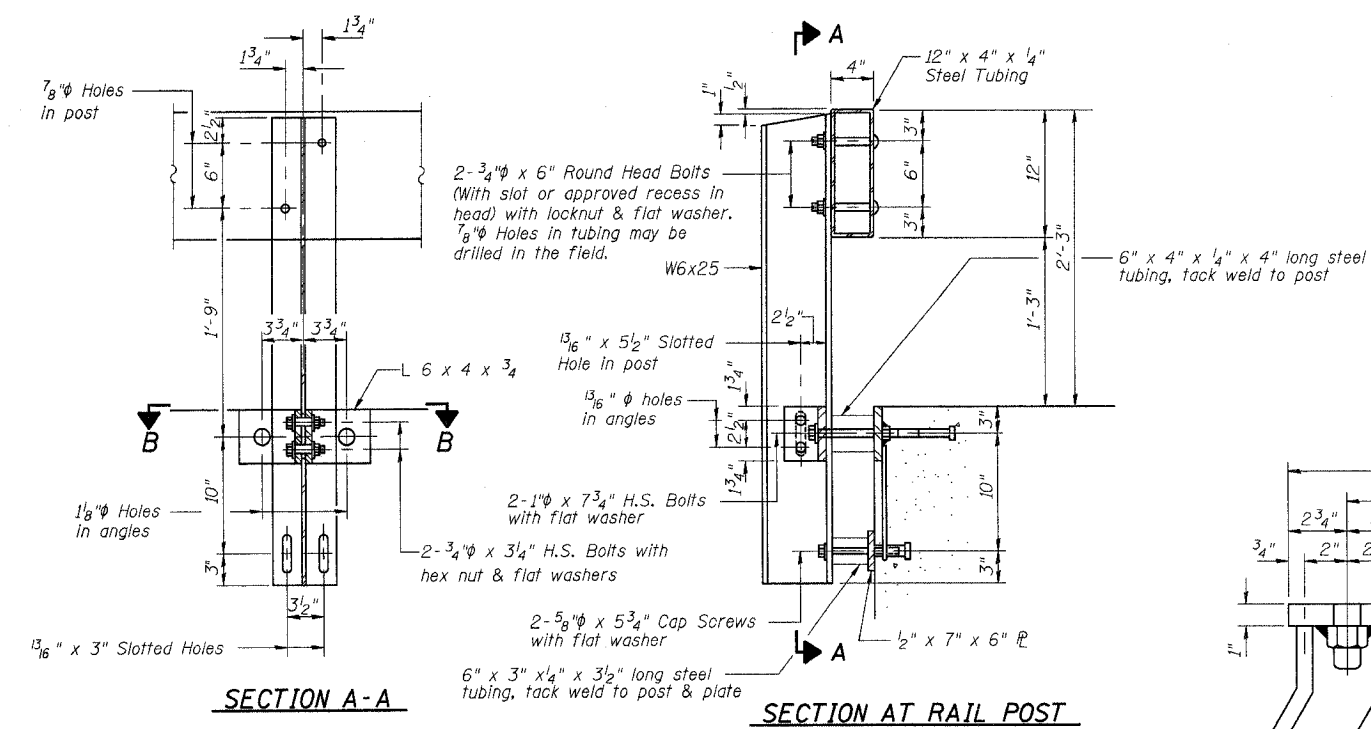
10/13/2006

ROUTE	SECTION	COUNTY	TOTAL SHEET NO.
CH 16	00-00115-01-BR	MARION	14
		ILLINOIS	FEDERAL AID PROJECT
			CONTRACT NO. 97287



The cost of the Curled End Section shall be included in the cost of the "STEEL RAILING, TYPE S1", and no additional compensation will be allowed.

Curled End Sections only installed on the two (2) departure corners of bridge.



**BILL OF MATERIAL**

Item	Unit	Quantity
Steel Railing, Type S1	Foot	128

**STEEL RAILING, TYPE S1 DETAILS**  
**PROPOSED BRIDGE CARRYING CH 16**  
**OVER BRANCH TO CROOKED CREEK**  
**SECTION 00-00115-01-BR**  
**MARION COUNTY, ILLINOIS**

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

\*\* Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2".

10/13/2006

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-01-BR	MARION	14	8
		ILLINOIS	FEDERAL AID PROJECT	
CONTRACT NO. 97287				

**PILE DATA**

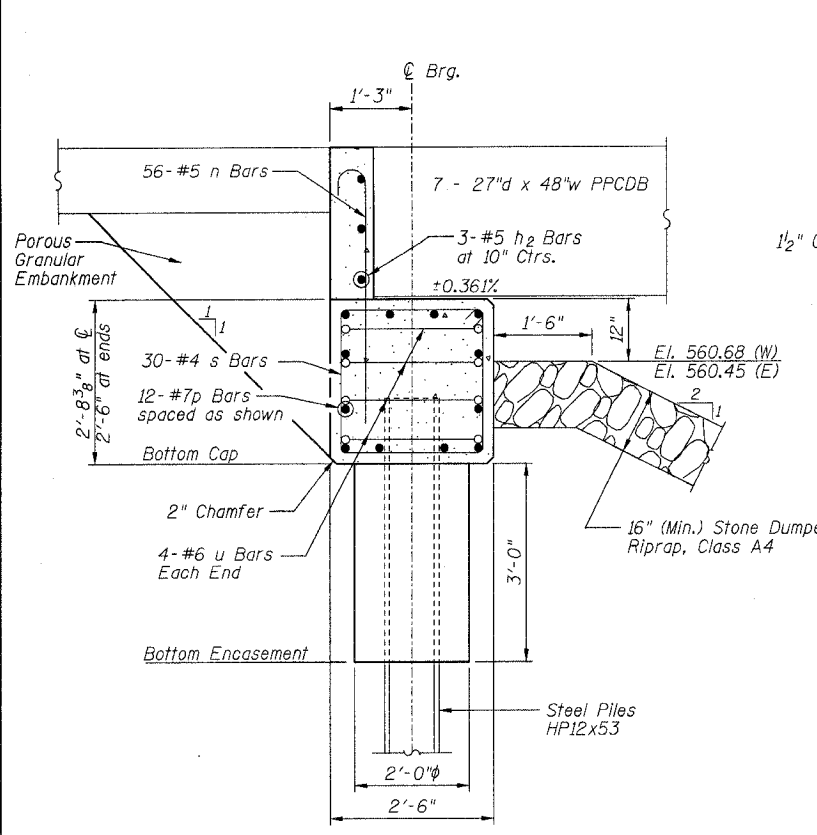
Type and Size: Steel HP12x53  
 Nominal Required Bearing: 360 kips  
 Allowable Resistance Available: 120 kips  
 Estimated Length:  
 West Abutment: 60 Foot  
 East Abutment: 55 Foot  
 Number of Production Piles:  
 West Abutment: 3 Each  
 East Abutment: 4 Each  
 Number of Test Piles:  
 West Abutment: 1 Each  
 East Abutment: None

**BILL OF MATERIALS  
ONE ABUTMENT w/ WINGWALLS**

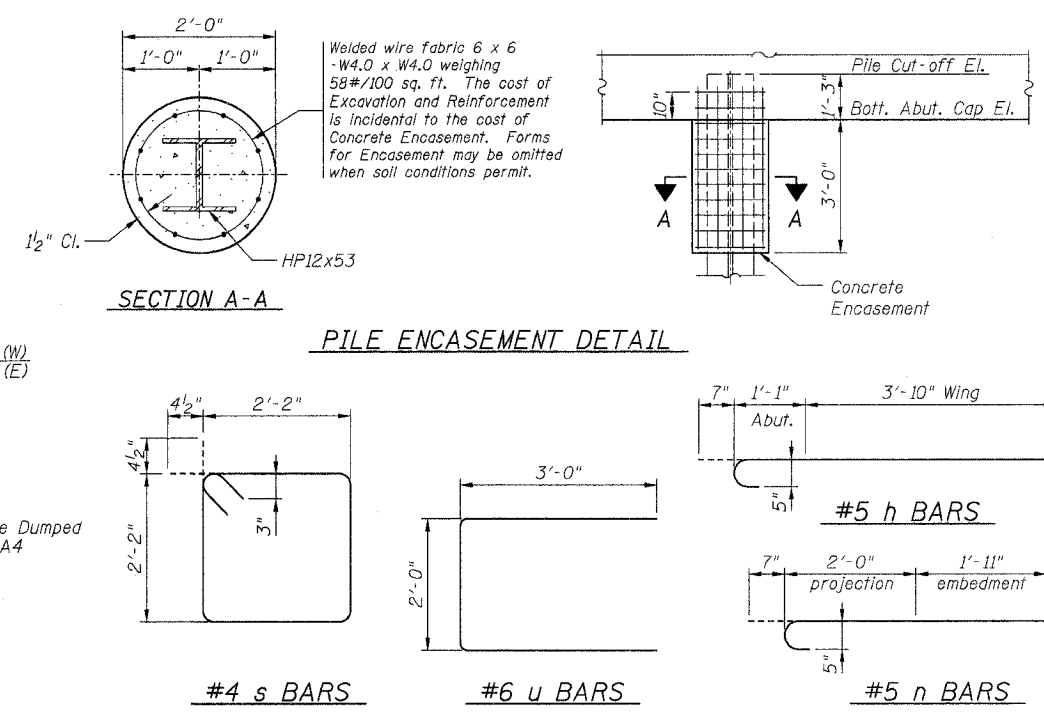
Bar	No.	Size	Length	Shape
h	20	#5	5'-6"	
h <sub>1</sub>	12	#5	4'-3"	
h <sub>2</sub>	3	#5	27'-8"	
n	56	#5	4'-6"	
p	12	#7	28'-8"	
s	30	#4	9'-5"	
u	8	#6	8'-0"	
v	24	#5	4'-9"	CUT IN FIELD
Concrete Structures			Cu Yd	9.8
Reinforcement Bars			Pound	1620
Concrete Encasement			Cu Yd	1.4

**GENERAL NOTES**

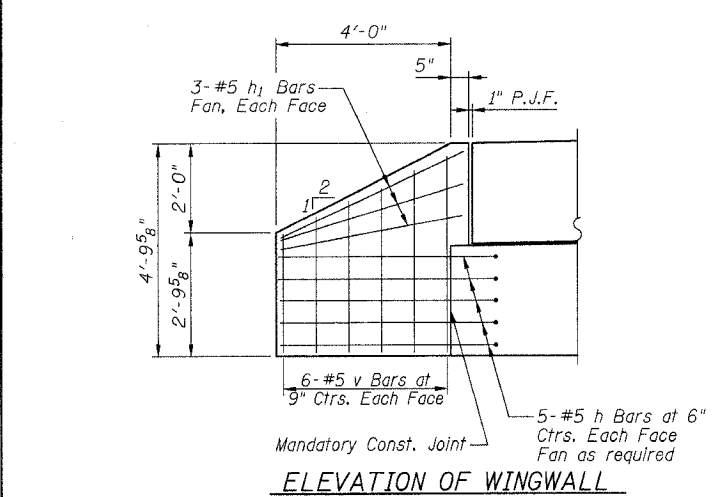
All exposed edges shall have standard 3/4" chamfer, unless otherwise noted.  
 All clearances between rebar and form surface shall be 2", unless otherwise noted.  
 Space reinforcement in cap to miss PPCDB dowel rods.  
 The Contractor shall drive one (1) Steel HP12x53 Test Pile in a production pile location at the West Abutment as directed by the Engineer before ordering the remainder of the piles.  
 The test pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.  
 The Steel H-piles shall be according to AASHTO M270 Grade 50.  
 The Contractor is hereby advised that very stiff soils may be encountered prior to the location of anticipated refusal. See the Soil Borings for further information.  
 In addition to all other requirements of Section 512 of the Standard Specifications, splices for Steel H-piles shall develop the full capacity of the steel's cross sectional area of the pile for tension, shear and bending forces. One approved method of achieving this requirement is full penetration butt welding of the entire cross section. Other types of splices meeting the full capacity requirement may be allowed subject to the approval of the Engineer. Any proposal by the Contractor to use an alternate splice method must include adequate documentation demonstrating that the full tension, shear and bending capacities will be met. Appropriate welder qualifications will be required for the positions and processes used in splicing all piles. Nondestructive testing of completed welds will be limited to visual inspection.



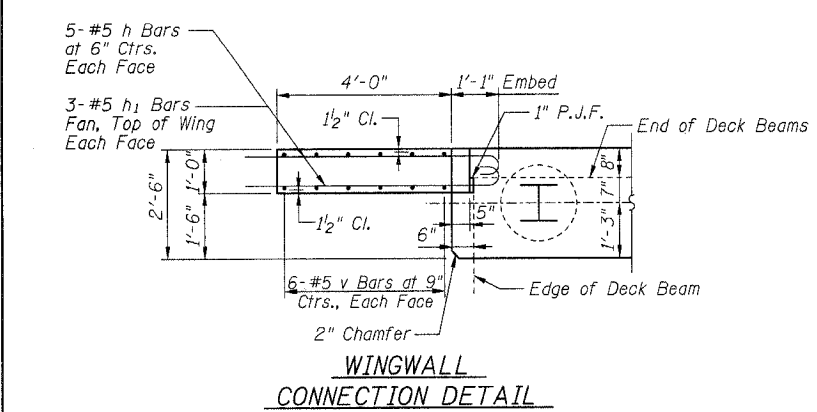
**SECTION THRU ABUTMENT**



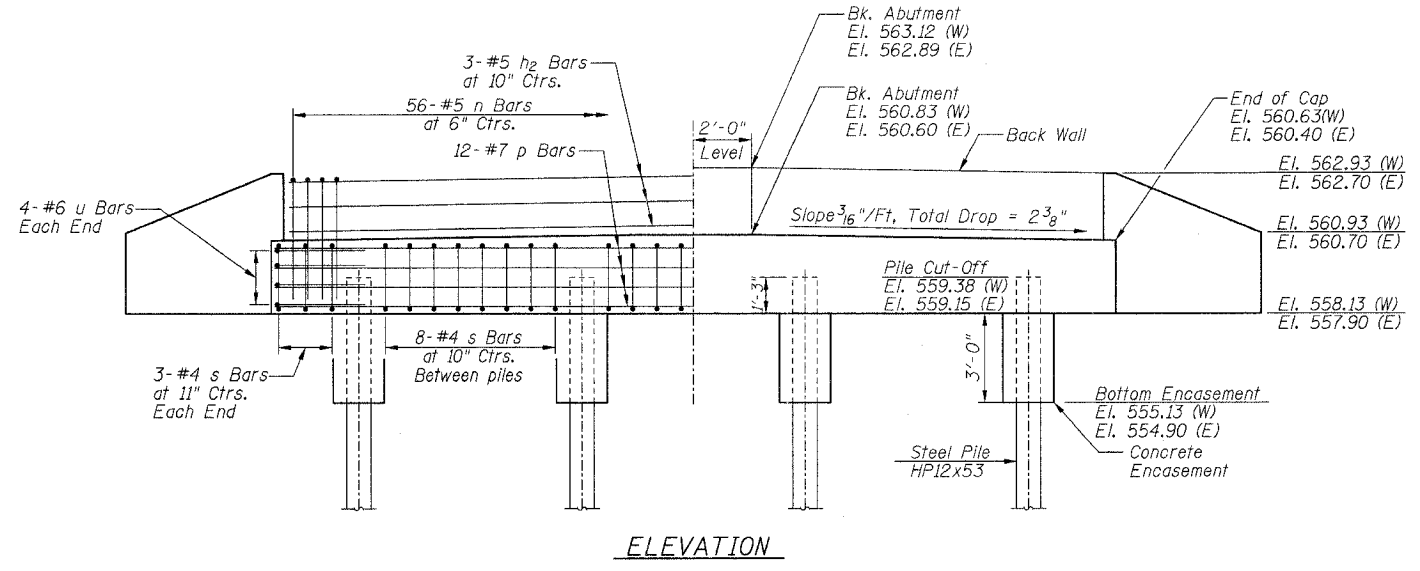
**PILE ENCASEMENT DETAIL**



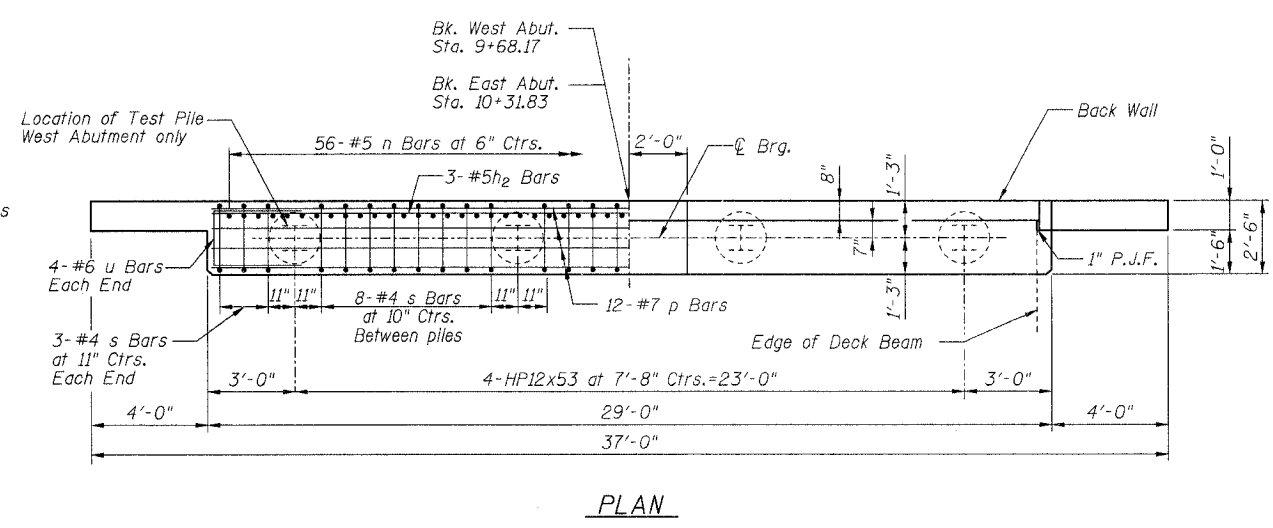
**ELEVATION OF WINGWALL**



**WINGWALL CONNECTION DETAIL**



**ELEVATION**



**PLAN**

**ABUTMENT DETAILS  
PROPOSED BRIDGE CARRYING CH 16  
OVER BRANCH TO CROOKED CREEK  
SECTION 00-00115-01-BR  
MARION COUNTY, ILLINOIS**

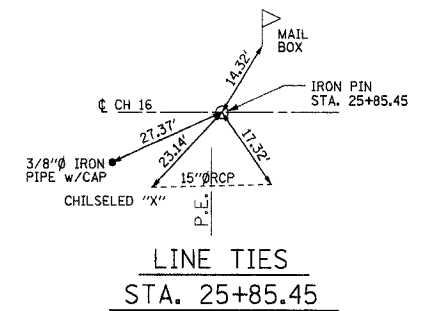
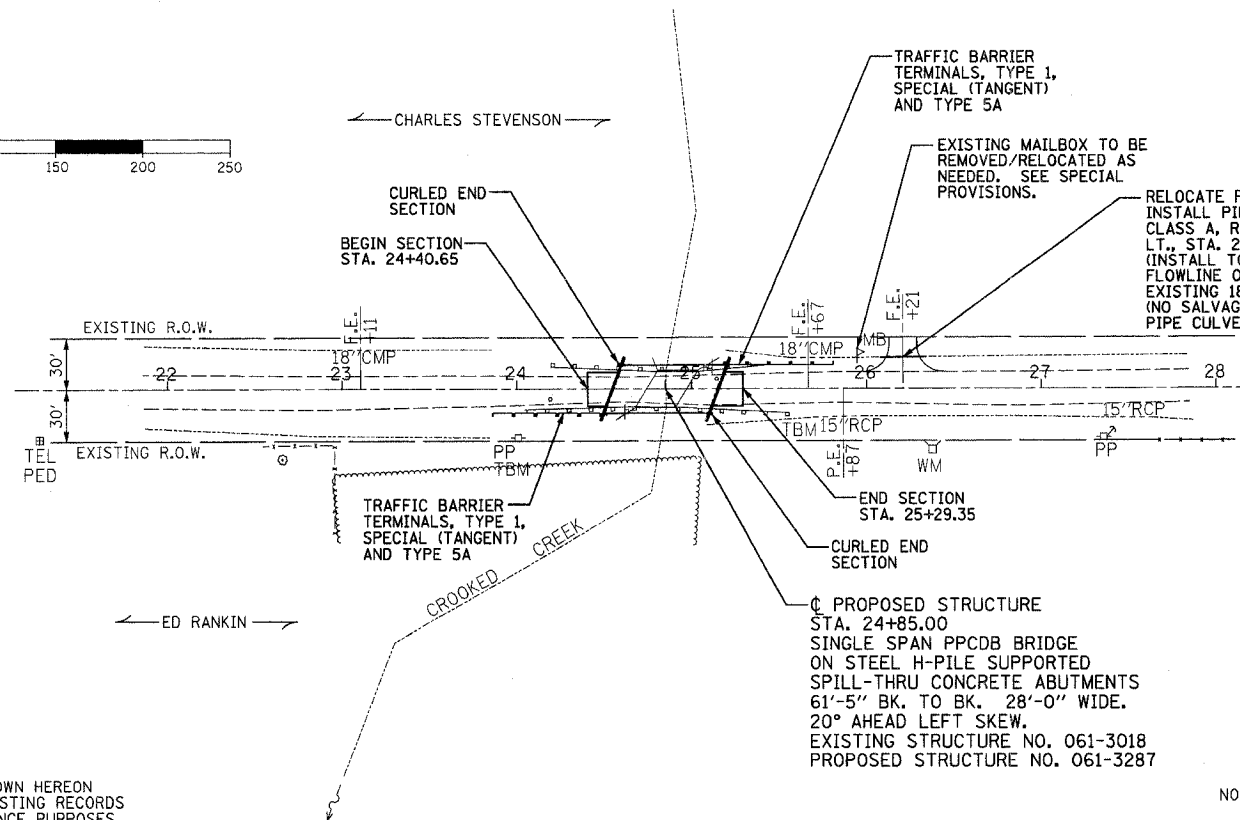
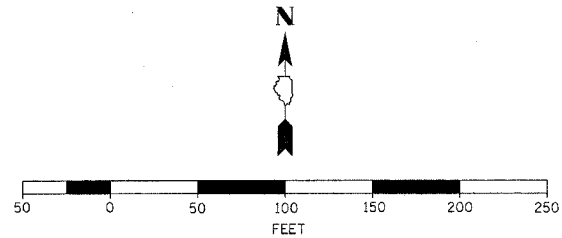
Sheet 8 of 14  
Job No. 50805

10/13/2006



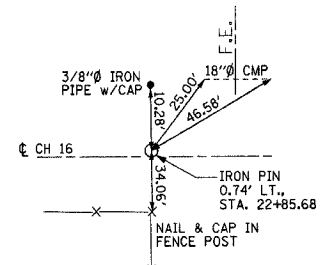
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-00-BR	MARION	14	9
STA. 22+00.00 TO STA. 28+00.00			ILLINOIS FED. AID PROJECT	

EXISTING STRUCTURE: SINGLE SPAN BRIDGE WITH CAST-IN-PLACE CONCRETE DECK ON CLOSED CAST-IN-PLACE CONCRETE ABUTMENTS, 23' BK. TO BK. ABUTMENTS, 22' OUT TO OUT OF DECK. EXISTING STRUCTURE NUMBER 061-3018. NO SALVAGE (SEE SPECIAL PROVISIONS).



DATE: \_\_\_\_\_ BY: \_\_\_\_\_

PLAN SURVEYED \_\_\_\_\_ CHECKED \_\_\_\_\_  
 PLOTTED \_\_\_\_\_ BY \_\_\_\_\_  
 NOTE BOOK NO. \_\_\_\_\_ PAID FILE NAME \_\_\_\_\_



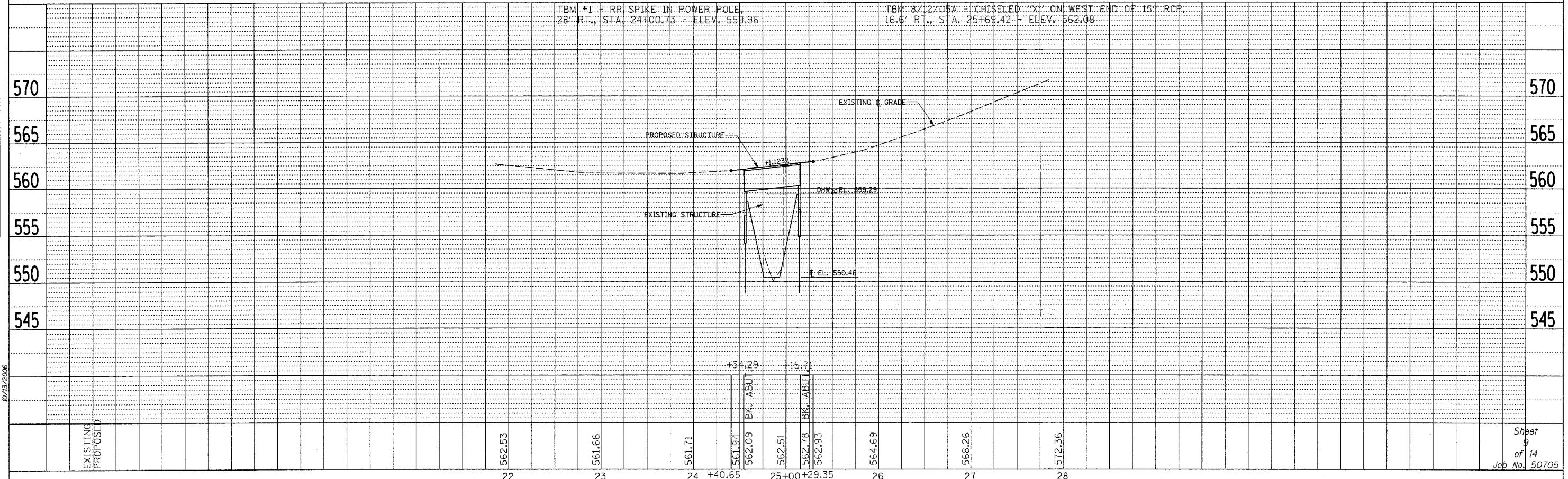
THE EXISTING RIGHT OF WAY SHOWN HEREON HAS BEEN PROTRACTED FROM EXISTING RECORDS AND IS TO BE USED FOR REFERENCE PURPOSES ONLY. FURTHERMORE, NO COMPLETE SURVEY OF SAID R.O.W. IS IMPLIED BY THIS DRAWING.

NOTE: ANY REQUIRED EXCAVATION OR EMBANKMENT, INCLUDING NECESSARY SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINALS, CLEARING, GRUBBING, AND TRIMMING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CHANNEL EXCAVATION.

TBM #1 - RR SPIKE IN POWER POLE, 28' RT., STA. 24+00.73 ELEV. 559.96  
 TBM #7/12/05A - CHISELED "X" ON WEST END OF 15" RCP, 16.6' RT., STA. 25+69.42 ELEV. 562.08

DATE: \_\_\_\_\_ BY: \_\_\_\_\_

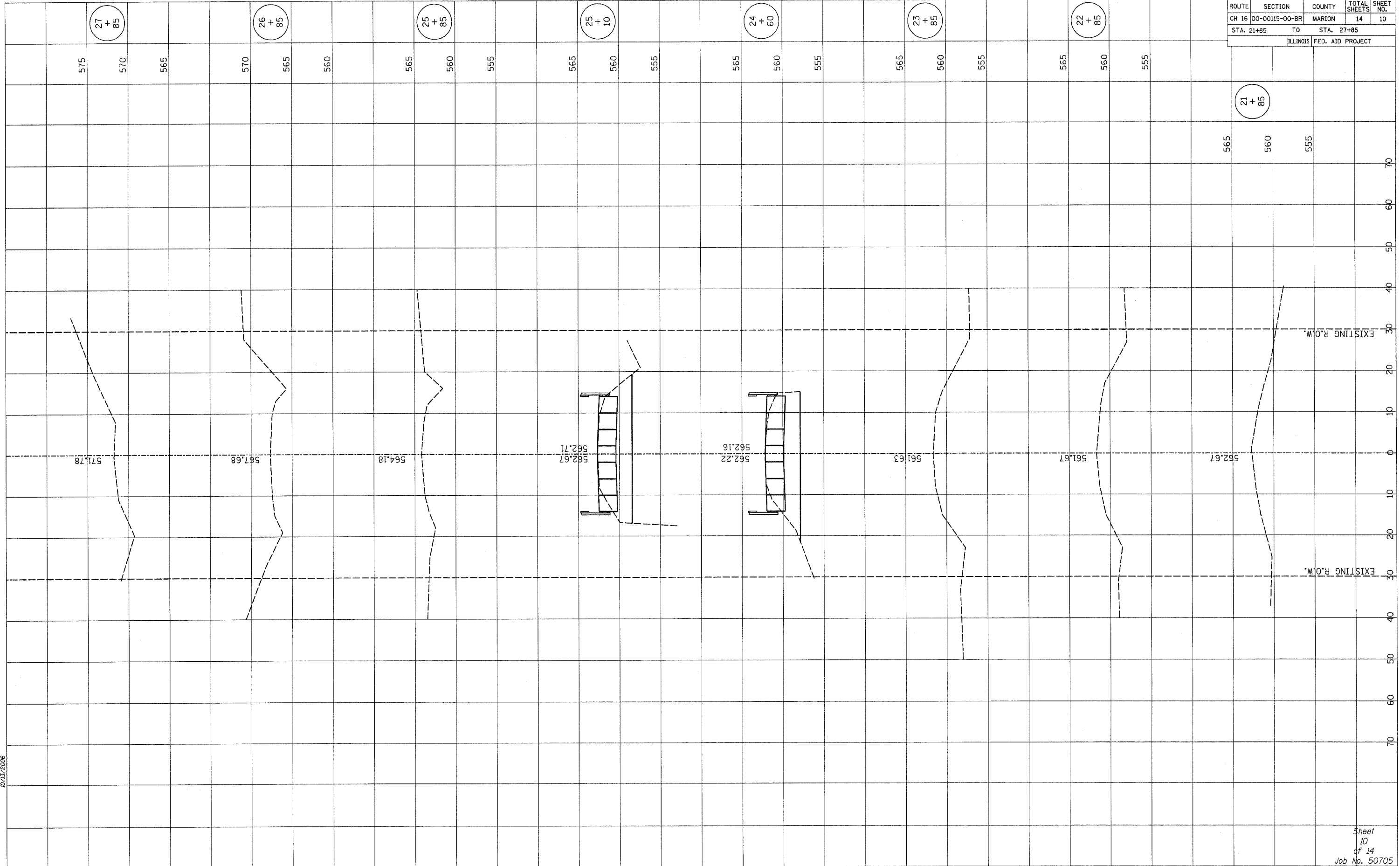
PROFILE SURVEYED \_\_\_\_\_ CHECKED \_\_\_\_\_  
 PLOTTED \_\_\_\_\_ BY \_\_\_\_\_  
 NOTE BOOK NO. \_\_\_\_\_ STRUCTURE NOTATIONS CHNO \_\_\_\_\_



CONTRACT NO. 97287				
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-00-BR	MARION	14	10
STA. 21+85		TO	STA. 27+85	
ILLINOIS FED. AID PROJECT				

FINAL SURVEY NOTE BOOK NO.	DATE
BY	
CHECKED	
PLOTTED	
TEMPLATE	
AREAS CHECKED	

ORIGINAL SURVEY NOTE BOOK NO.	DATE
BY	
CHECKED	
PLOTTED	
TEMPLATE	
AREAS CHECKED	



10/13/2006

Sheet  
10  
of 14  
Job No. 50705

TBM 1 - RR Spike set in power pole  
 28" Rt., Sta. 24+00.73 - Elev. 559.96  
 TBM 8/2/05"A" - Chiseled "X" on west end of RCP  
 16.6" Rt., Sta. 25+69.42 - Elev. 562.08

Existing Structure No. 061-3018; Single span bridge with cast in place concrete deck on closed concrete abutments. 23'L x 22'W. No salvage (See Special Provisions).

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-00-BR	MARION	14	11
		ILLINOIS	FEDERAL AID PROJECT	
CONTRACT NO. 97287				

**BILL OF MATERIALS (BRIDGE ONLY)**

ITEM	UNIT	SUB	SUPER	TOTAL
CHANNEL EXCAVATION	CU YD	300	-	300
POROUS GRANULAR EMBANKMENT	TON	34	-	34
STONE DUMPED RIPRAP, CLASS A4	TON	179	-	179
REMOVAL OF EXISTING STRUCTURES	EACH	-	1	1
CONCRETE STRUCTURES	CU YD	21.2	-	21.2
CONCRETE ENCASEMENT	CU YD	2.8	-	2.8
PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	-	1680	1680
REINFORCEMENT BARS	POUND	3420	-	3420
STEEL RAILING, TYPE S1	FOOT	-	120	120
FURNISHING STEEL PILES HP12X53	FOOT	255	-	255
DRIVING PILES	FOOT	255	-	255
TEST PILE STEEL HP12X53	EACH	2	-	2
PILE SHOES	EACH	8	-	8
NAME PLATES	EACH	1	-	1

**GENERAL NOTES**

See Section 502 of the Standard Specifications for Structural Excavation.

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

Channel excavation shall be excavated as shown within the limits of the proposed bridge, then tapered to the existing channel at the ROW line. If the Engineer deems the material satisfactory, it may be used to construct the roadway embankment.

See Specifications for Soil Borings.

Do not scale these drawings.

The Contractor shall drive one (1) Steel HP12x53 Test Pile in a production pile location at each Abutment as shown on the plans and as directed by the Engineer before ordering the remainder of the piles.

The test pile shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.

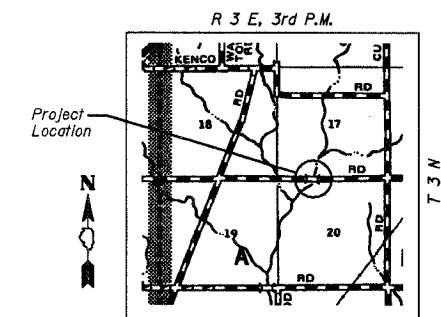
The Steel H-piles shall be according to AASHTO M270 Grade 50.

In addition to all other requirements of Section 512 of the Standard Specifications, splices for Steel H-piles shall develop the full capacity of the steel's cross sectional area of the pile for tension, shear and bending forces. One approved method of achieving this requirement is full penetration butt welding of the entire cross section. Other types of splices meeting the full capacity requirement may be allowed subject to the approval of the Engineer. Any proposal by the Contractor to use an alternate splice method must include adequate documentation demonstrating that the full tension, shear and bending capacities will be met. Appropriate welder qualifications will be required for the positions and processes used in splicing all piles. Nondestructive testing of completed welds will be limited to visual inspection.

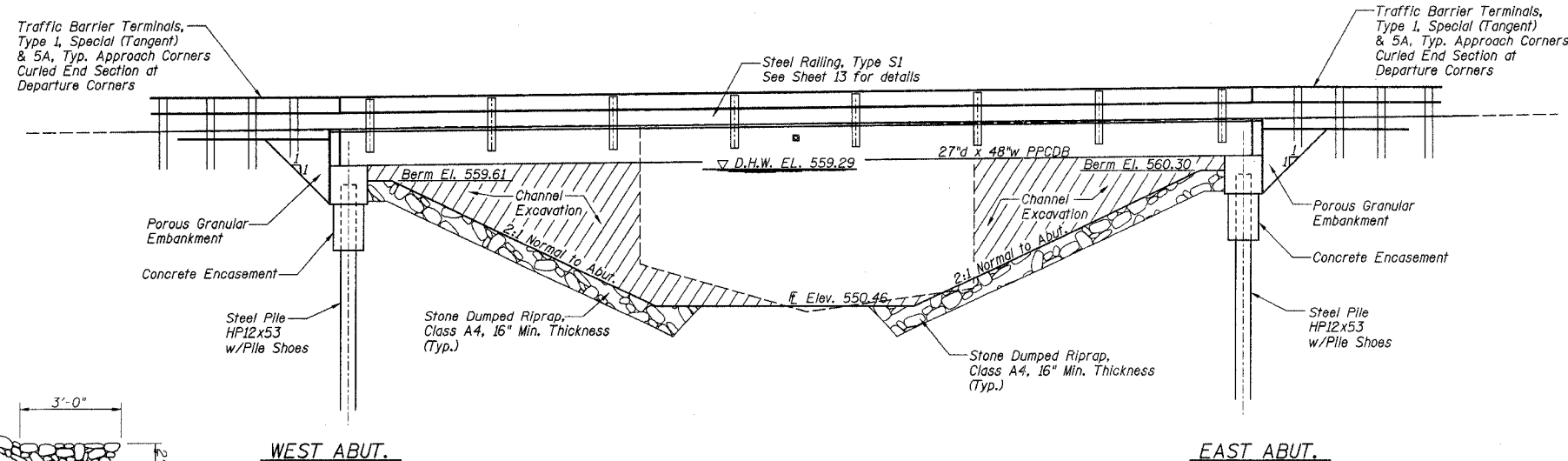
The abutment bearing seat surfaces for the precast prestressed concrete deck beams shall be adjusted by shimming to assure firm and even bearing. As required, 1/2" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.

**CROOKED CREEK  
 BUILT 200, BY  
 MARION COUNTY  
 PROJECT NO. RS-BRS-2789(10C)  
 SEC. 00-00115-00-BR  
 LOADING HS-20  
 STRUCTURE NO. 061-3287**

**NAME PLATE**  
 (See State Standard 515001 for details)

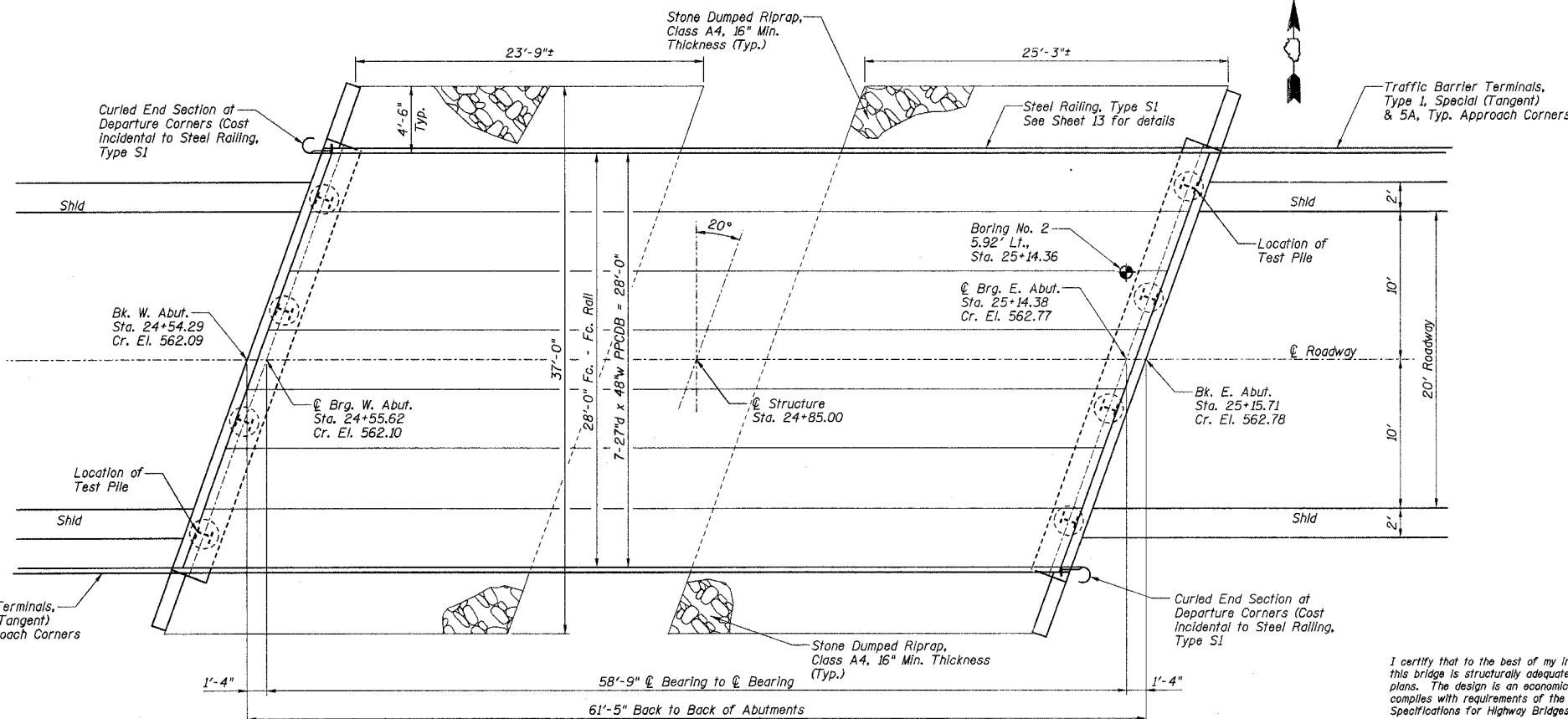
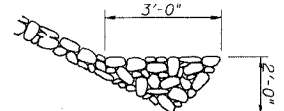


**LOCATION SKETCH**



**ELEVATION**

**STONE RIPRAP ANCHOR DETAIL**



**PLAN**

**\* WATERWAY DATA**

Drainage Area = 3.4 Sq. Mi.		Low Grade Elev. 561.63 @ Sta. 12+00							
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Prop.	Natural H.W.E. Exist.	Head - Ft. Exist.	Prop.	Headwater El. Exist.	Prop.
Design	20	1113	200	380	559.29	0.00	0.00	559.29	559.29
Base	100	1667	200	380	560.43	0.00	0.00	560.43	560.43
Max. Calc.									

\* Waterway Information furnished by others. Approved June 6, 2001  
 Station 12+00 = Station 23+85±

**DESIGN STRESSES**

FIELD UNITS  
 $f'_c = 3,500$  psi  
 $f_y = 60,000$  psi

**PRECAST PRESTRESSED UNITS**

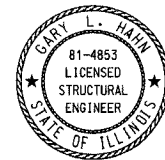
$f'_c = 5,000$  psi  
 $f'_{ci} = 4,000$  psi  
 $f'_s = 270,000$  psi (1/2% strands)  
 $f'_{si} = 189,000$  psi (1/2% strands)

**DESIGN SPECIFICATIONS**  
 AASHTO - 2002 17th Edition

**LOADING HS 20-44**

Allow 25#/sq. ft. for future wearing surface.

**GRADE ON STRUCTURE**



GARY L. HAHN  
 81-4853  
 LICENSED STRUCTURAL ENGINEER  
 CENTRALIA, ILLINOIS  
 ILLINOIS LICENSED STRUCTURAL ENGINEER NO. 81-4853  
 EXPIRES NOV. 30, 2006

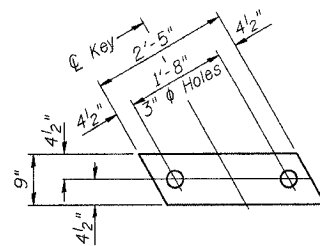
**GENERAL PLAN AND ELEVATION  
 PROPOSED BRIDGE CARRYING CH 16  
 OVER CROOKED CREEK  
 SECTION 00-00115-00-BR  
 MARION COUNTY, ILLINOIS**

Sheet 11 of 14  
 Job No. 50705

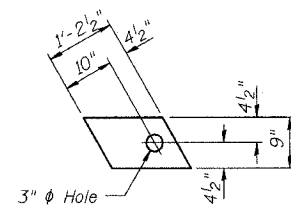
10/15/2006

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

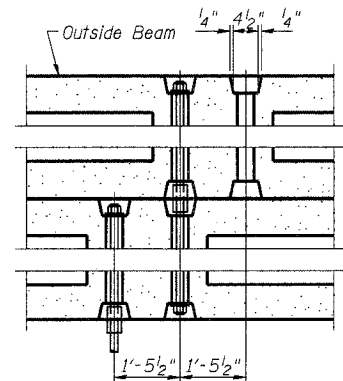
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-00-BR	MARION	14	12
		ILLINOIS	FEDERAL AID PROJECT	
CONTRACT NO. 97287				



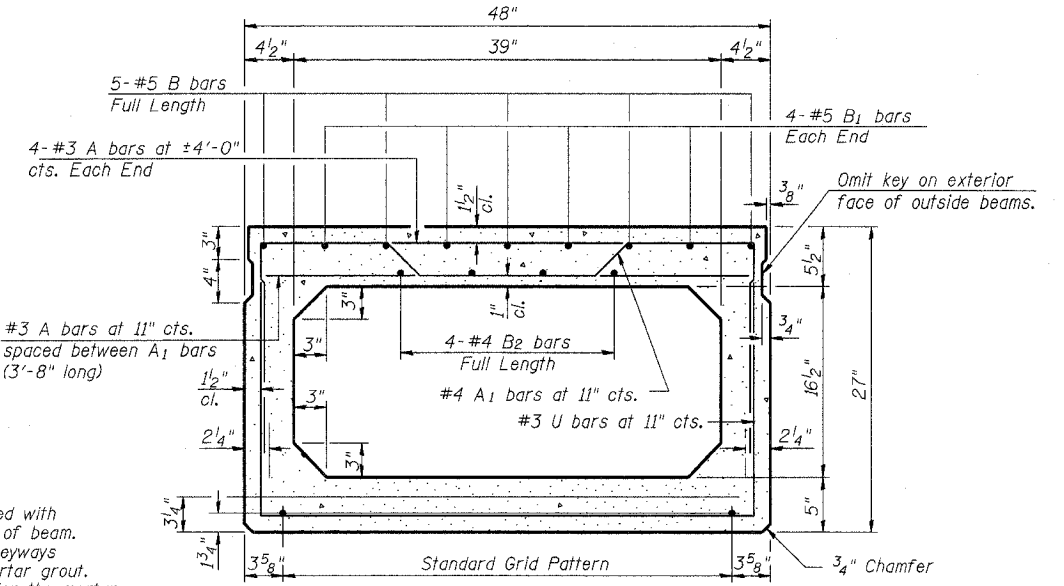
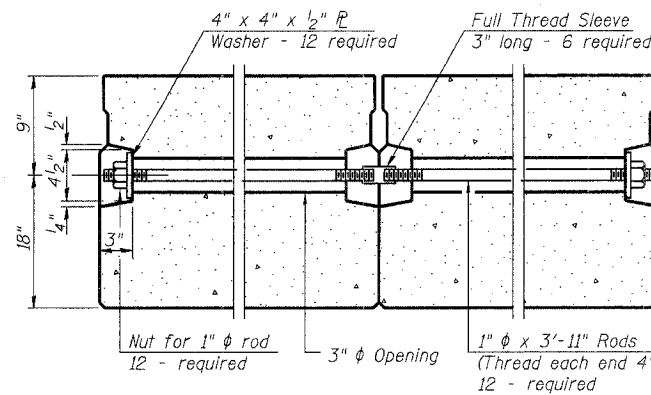
**FABRIC BEARING PAD**  
(Interior)



**FABRIC BEARING PAD**  
(Exterior)



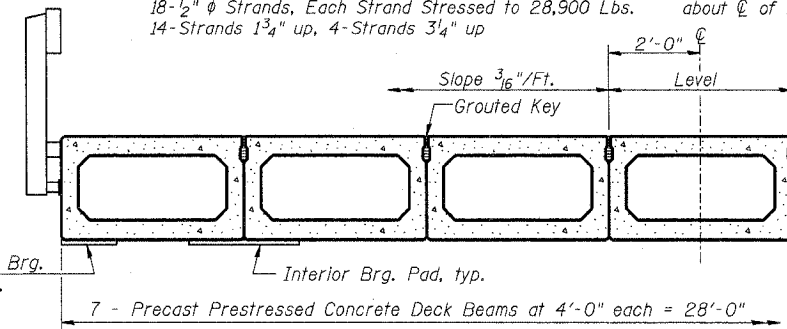
**TYPICAL TRANSVERSE TIE ASSEMBLY**



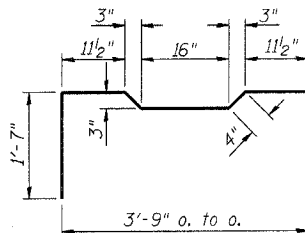
**TYPICAL SECTION**

18-1/2" phi Strands, Each Strand Stressed to 28,900 Lbs.  
14-Strands 1 3/4" up, 4-Strands 3/4" up

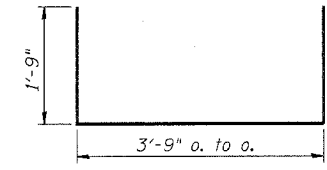
Note:  
Place strands symmetrically about C of beam.



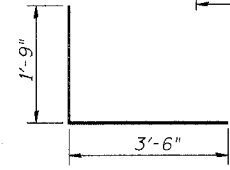
**HALF CROSS SECTION**



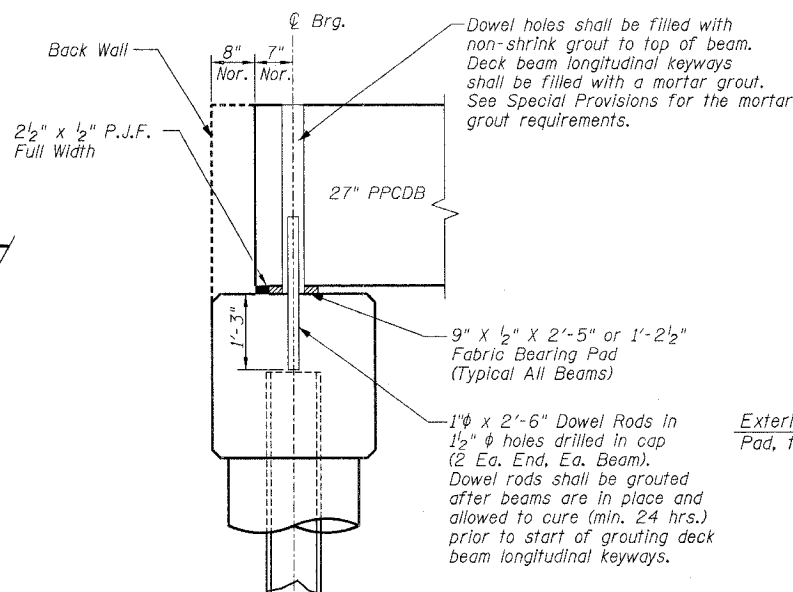
**BAR A1**



**BARS U & U1**



**BAR D**



**FIXED BEARING ABUTMENT**

**NOTES**

Prestressing steel shall be uncoated high strength, stress relieved 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 3 - 1/2" phi - 270 ksi strands, as shown.

The 1" phi rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar on outside shall be filled with grout after transverse tie assembly is in place.

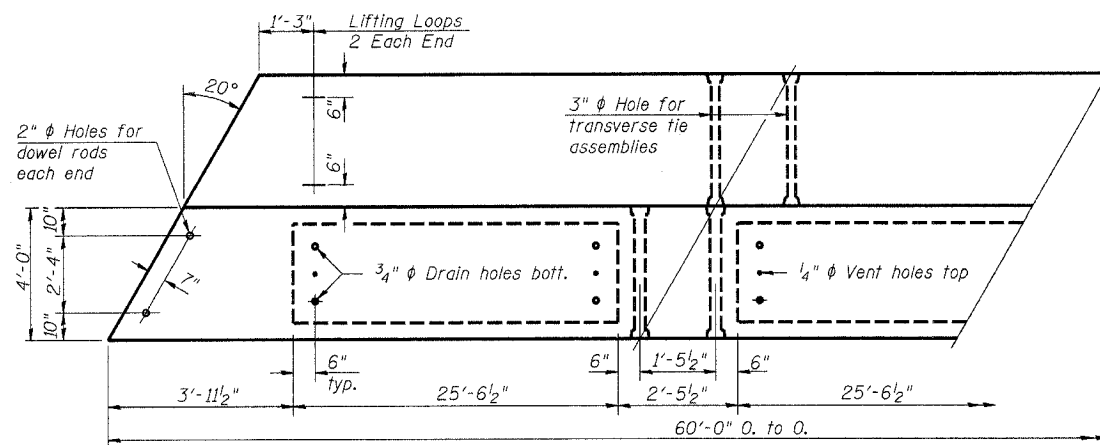
Non-prestressing steel shall conform to AASHTO M-31, M-42 or M-53 Grade 60.

The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. As required, 1/8" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.

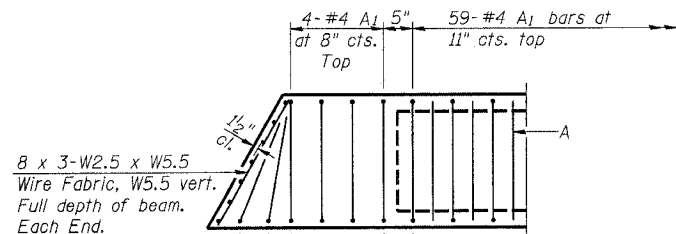
Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between top of the beam and the bottom edge of the key.

Required Release Strength, f'ci, shall be 4000 p.s.i.

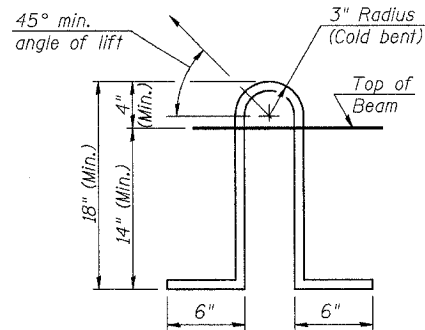
An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted. However, all strands shall be stressed to a maximum of 28,900 pounds per strand.



**PLAN**



**END PLAN**



**LIFTING LOOP DETAIL**

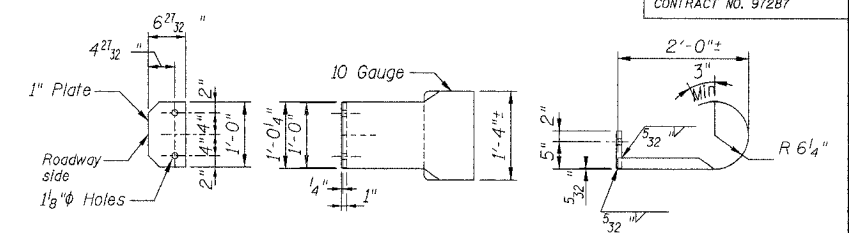
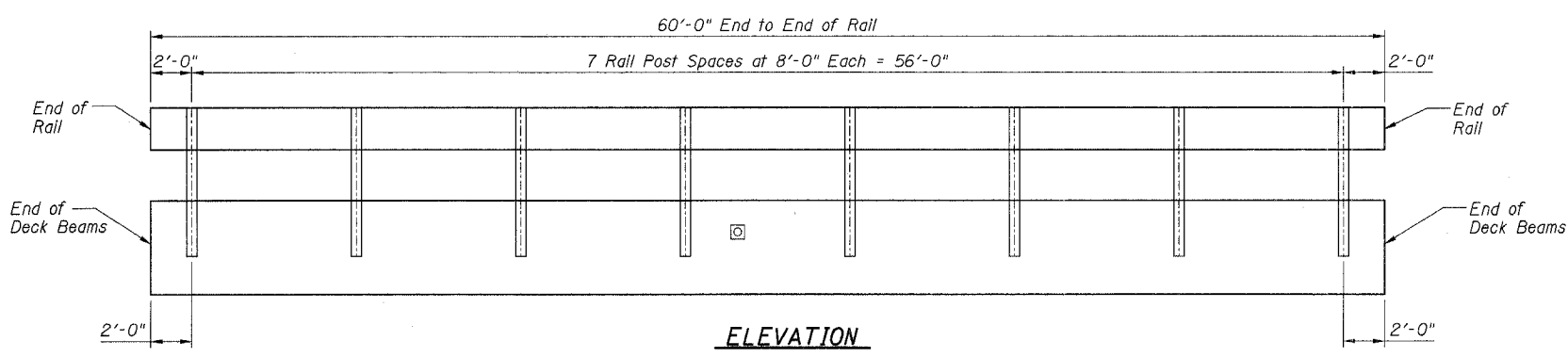
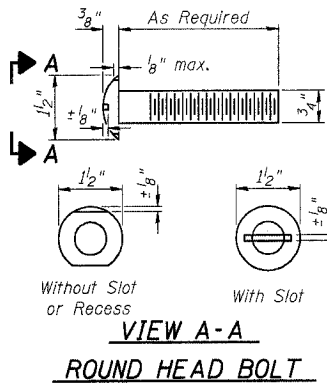
**BILL OF MATERIAL FOR ONE BEAM**

Bar	No.	Size	Length	Shape
A	66	#3	3'-8"	—
A1	67	#4	7'-1"	U
B	10	#5	31'-6"	—
B1	8	#5	12'-0"	—
B2	8	#4	31'-0"	—
D	8	#4	5'-3"	L
U	59	#3	7'-3"	U
U1	8	#4	7'-3"	U
Precast Prestressed Conc. Deck Bms.		Sq. Ft.	240	
Reinforcement Bars		Pound	1230	
Beam Weight		Pound	47,750	

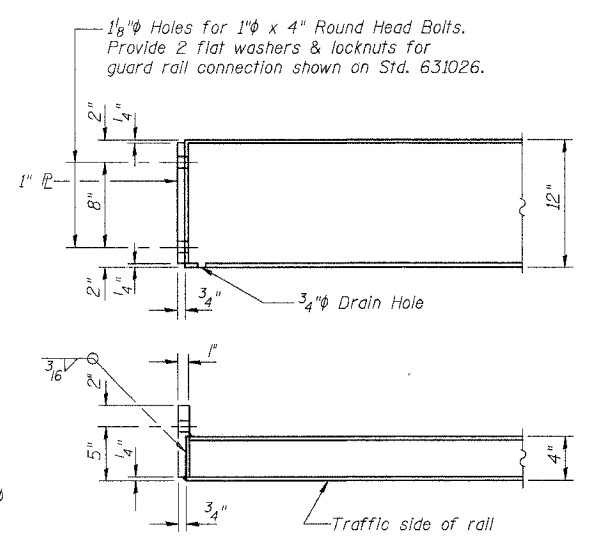
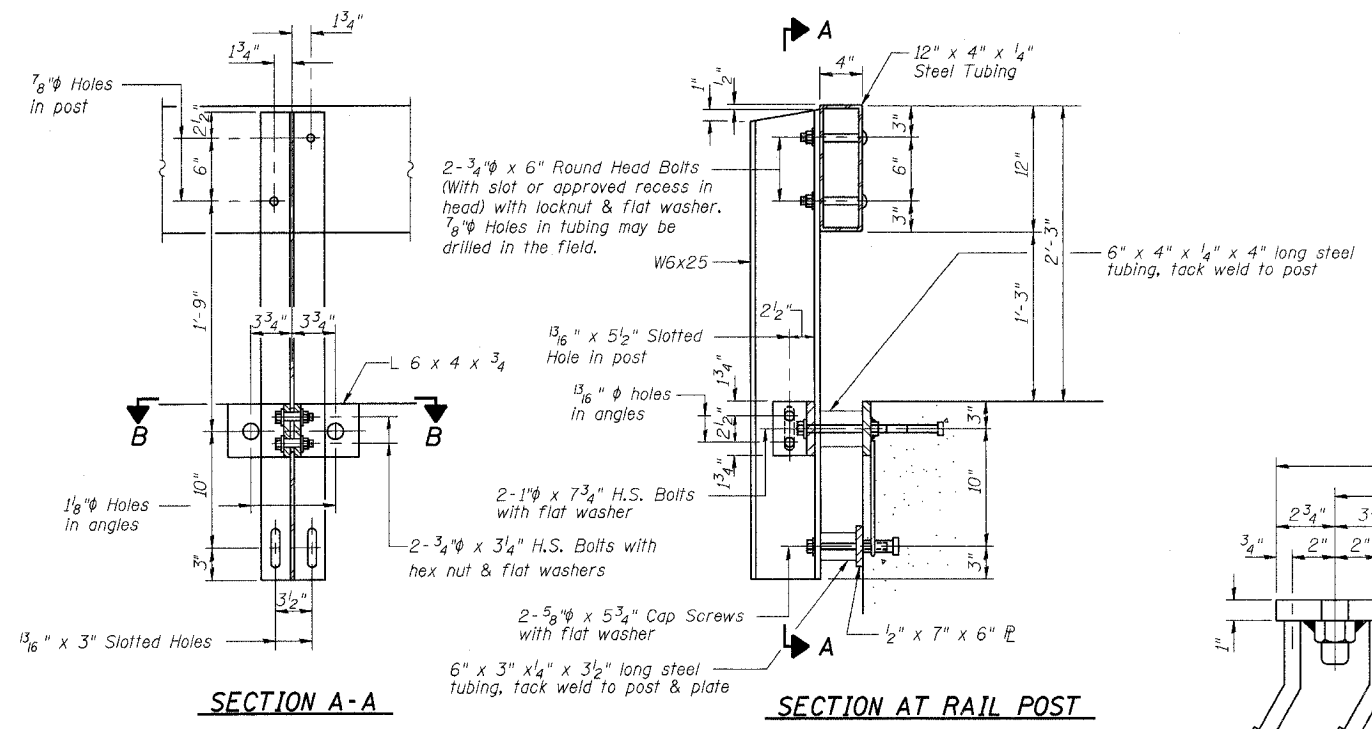
**PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS**  
**PROPOSED BRIDGE CARRYING CH 16 OVER CROOKED CREEK**  
**SECTION 00-00115-00-BR**  
**MARION COUNTY, ILLINOIS**

Sheet 12 of 14  
Job No. 50705

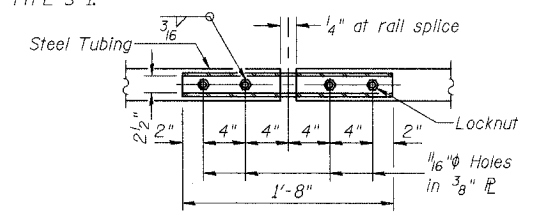
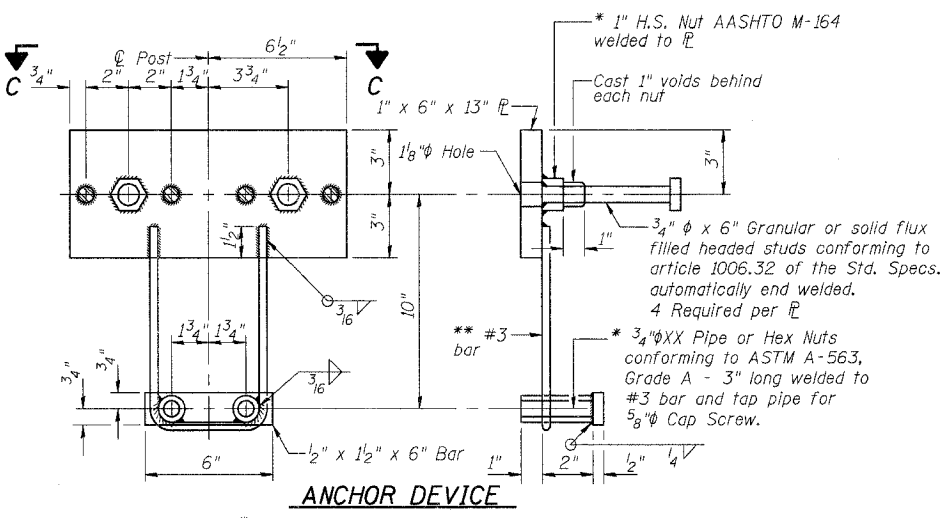
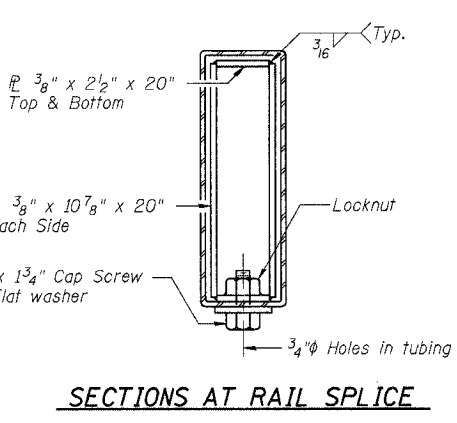
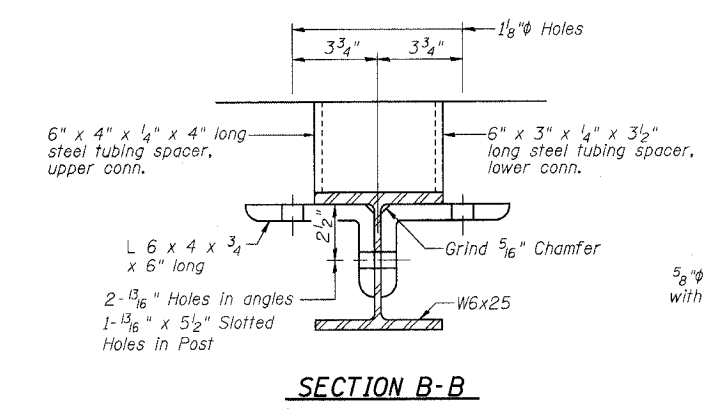
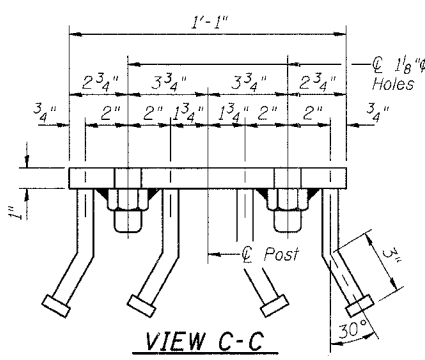
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-00-BR	MARION	14	13
		ILLINOIS	FEDERAL AID PROJECT	
CONTRACT NO. 97287				



**CURLLED END SECTION DETAILS**  
 The cost of the Curled End Section shall be included in the cost of the "STEEL RAILING, TYPE S1", and no additional compensation will be allowed.  
 Curled End Sections only installed on the two (2) departure corners of bridge.



**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 S1.  
 All field drilled holes shall be coated with an approved zinc rich paint before erection.  
 The lower portion of the post flange in contact with concrete shall receive two coats of asphalt paint conforming to Section 1060.07 Type II or place 1/8 inch fabric bearing pad between the post and concrete.  
 The 3/4 inch high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened in accordance with Article 505.04(f)(2) of the Standard Specifications. The 1 inch 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 inch cap screws in bottom of posts shall be tightened to a snug fit only.  
 Sufficient 1/4 inch x 6 inch x 1'-2 inch galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.



**BILL OF MATERIAL**

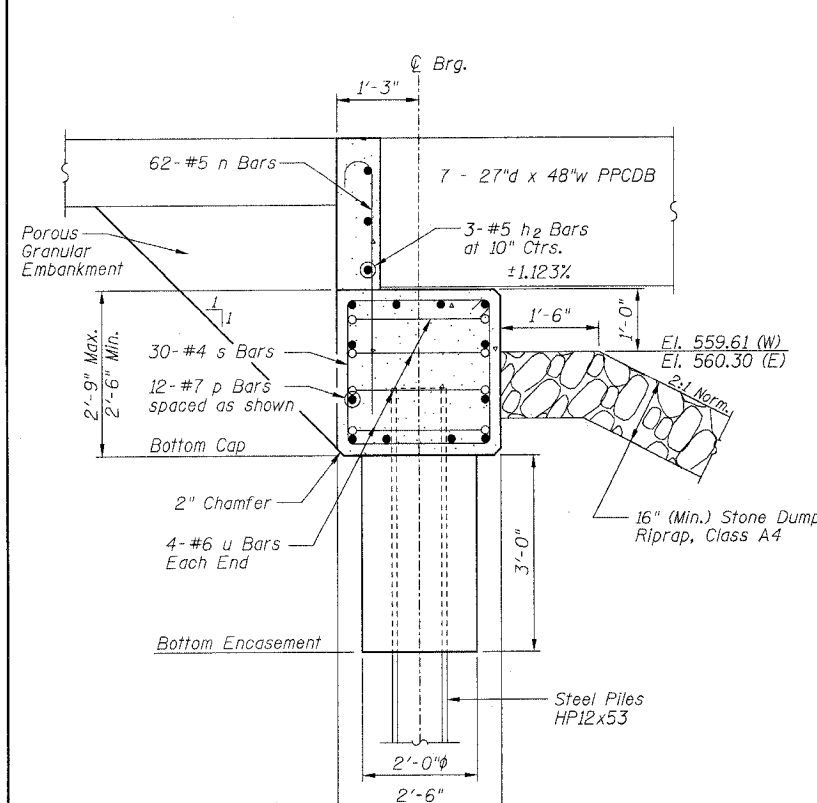
Item	Unit	Quantity
Steel Railing, Type S1	Foot	120

**STEEL RAILING, TYPE S1 DETAILS**  
**PROPOSED BRIDGE CARRYING CH 16**  
**OVER CROOKED CREEK**  
**SECTION 00-00115-00-BR**  
**MARION COUNTY, ILLINOIS**

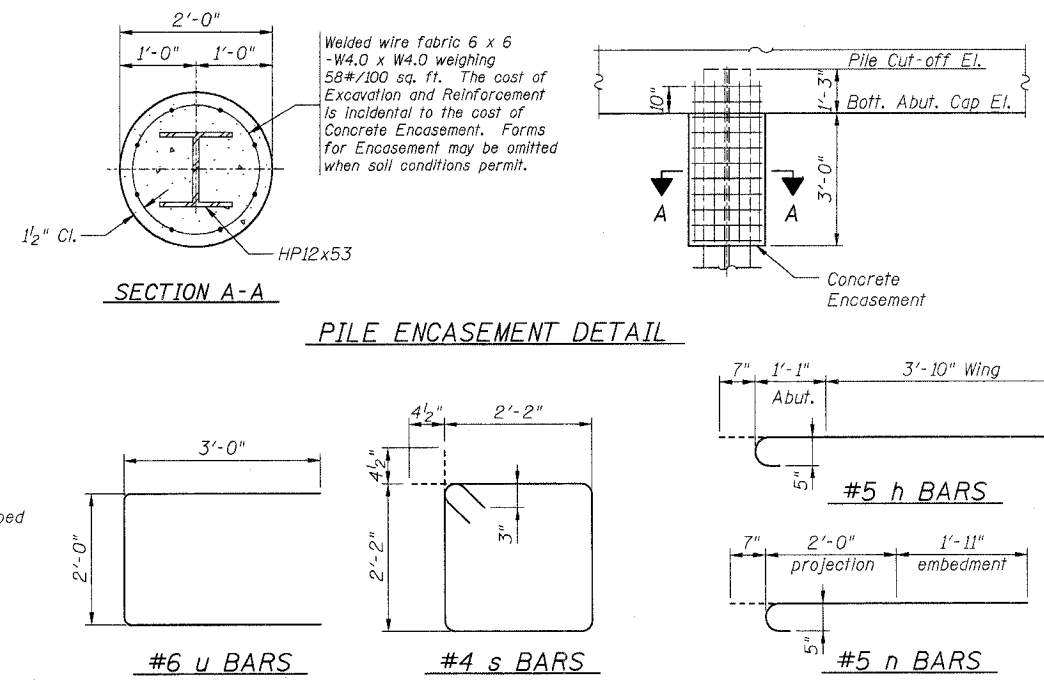
\* Threaded areas shall be plugged or blocked off during casting of beam.  
 \*\* Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2 inch.

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ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 16	00-00115-00-BR	MARION	14	14
		ILLINOIS	FEDERAL AID PROJECT	
CONTRACT NO. 97287				



SECTION THRU ABUTMENT



PILE ENCASEMENT DETAIL

**PILE DATA**

Type and Size: Steel HP12x53

Nominal Required Bearing: 420 kips

Allowable Resistance Available: 140 kips

Estimated Length:  
West Abutment: 55 Foot  
East Abutment: 30 Foot

Number of Production Piles:  
West Abutment: 3 Each  
East Abutment: 3 Each

Number of Test Piles:  
West Abutment: 1 Each  
East Abutment: 1 Each

**BILL OF MATERIALS**  
**ONE ABUTMENT w/ WINGWALLS**

Bar	No.	Size	Length	Shape
h	20	#5	5'-6"	
h1	12	#5	4'-3"	
h2	3	#5	29'-3"	
n	62	#5	4'-6"	
p	12	#7	30'-8"	
s	30	#4	9'-5"	
u	8	#6	8'-0"	
v	24	#5	4'-9"	CUT IN FIELD
Concrete Structures			Cu Yd	10.6
Reinforcement Bars			Pound	1710
Concrete Encasement			Cu Yd	1.4
Pile Shoes			Each	4

**GENERAL NOTES**

All exposed edges shall have standard  $\frac{3}{4}$ " chamfer, unless otherwise noted.

All clearances between rebar and form surface shall be 2", unless otherwise noted.

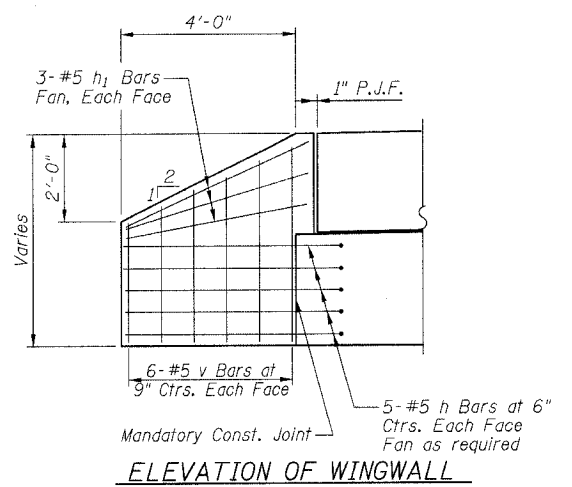
Space reinforcement in cap to miss PPCDB dowel rods.

The Contractor shall drive one (1) Steel HP12x53 Test Pile in a production pile location at each Abutment as shown on the Plans and as directed by the Engineer before ordering the remainder of the piles.

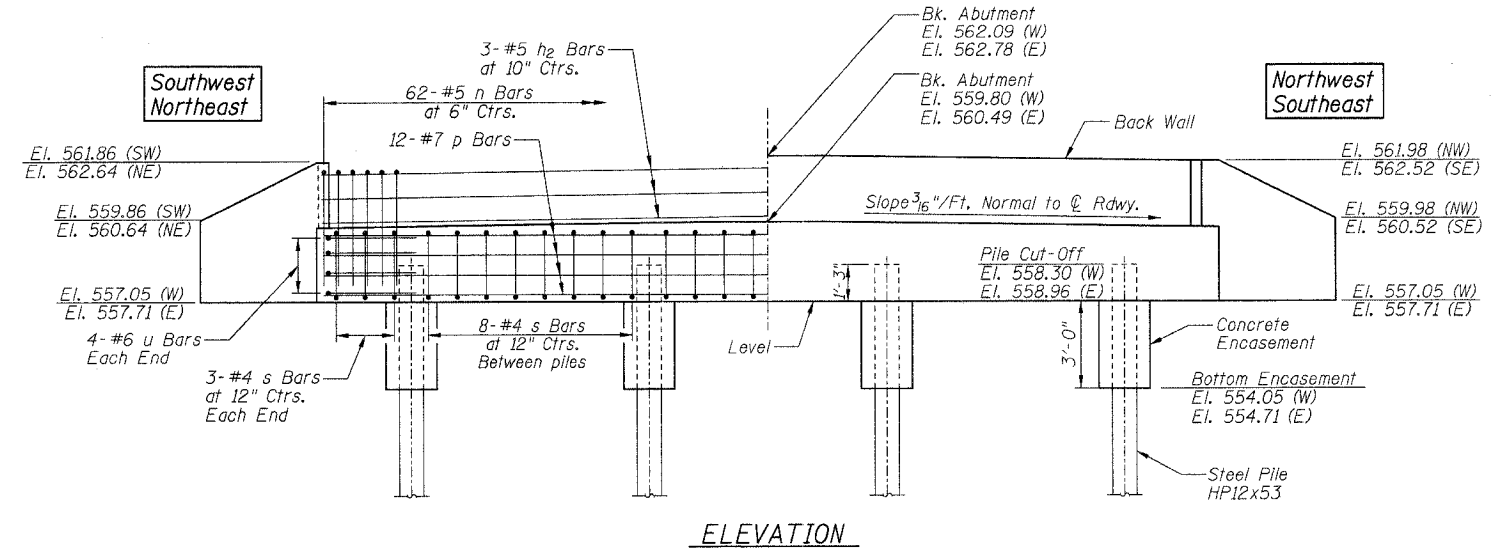
The test piles shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information.

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

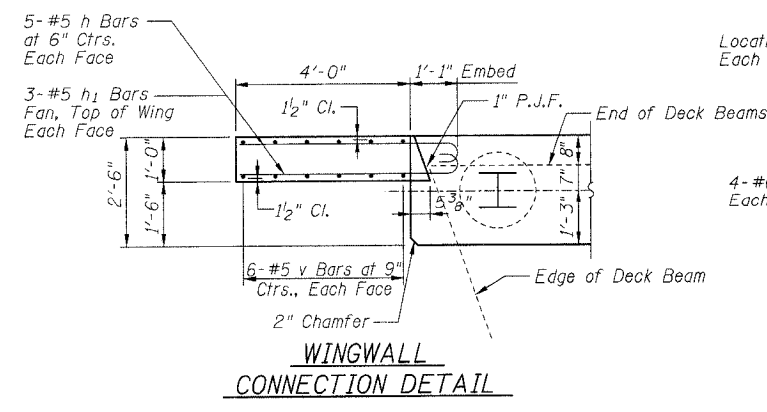
In addition to all other requirements of Section 512 of the Standard Specifications, splices for Steel H-piles shall develop the full capacity of the steel's cross sectional area of the pile for tension, shear and bending forces. One approved method of achieving this requirement is full penetration butt welding of the entire cross section. Other types of splices meeting the full capacity requirement may be allowed subject to the approval of the Engineer. Any proposal by the Contractor to use an alternate splice method must include adequate documentation demonstrating that the full tension, shear and bending capacities will be met. Appropriate welder qualifications will be required for the positions and processes used in splicing all piles. Nondestructive testing of completed welds will be limited to visual inspection.



ELEVATION OF WINGWALL

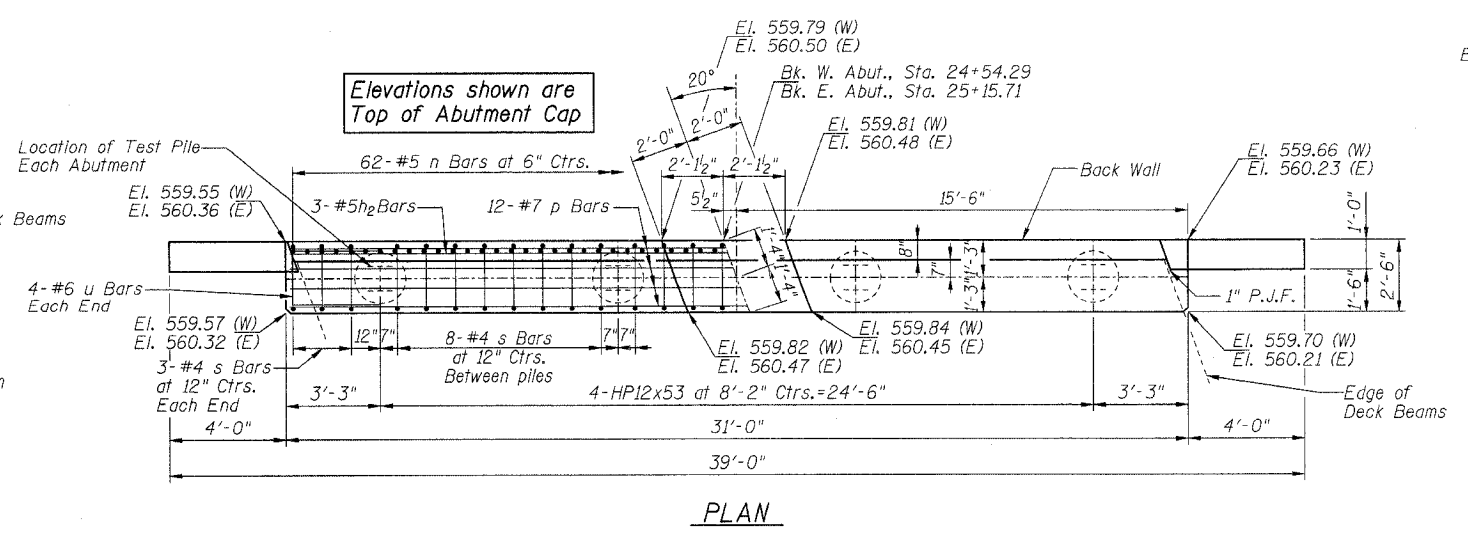


ELEVATION

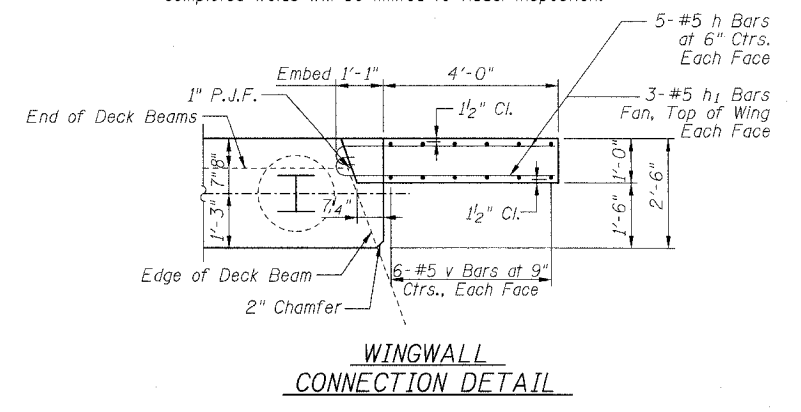


WINGWALL CONNECTION DETAIL

Elevations shown are Top of Abutment Cap



PLAN



WINGWALL CONNECTION DETAIL

**ABUTMENT DETAILS**  
**PROPOSED BRIDGE CARRYING CH 16**  
**OVER CROOKED CREEK**  
**SECTION 00-00115-00-BR**  
**MARION COUNTY, ILLINOIS**

10/13/2006