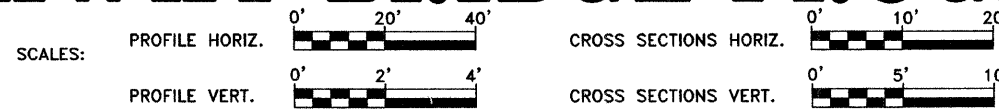


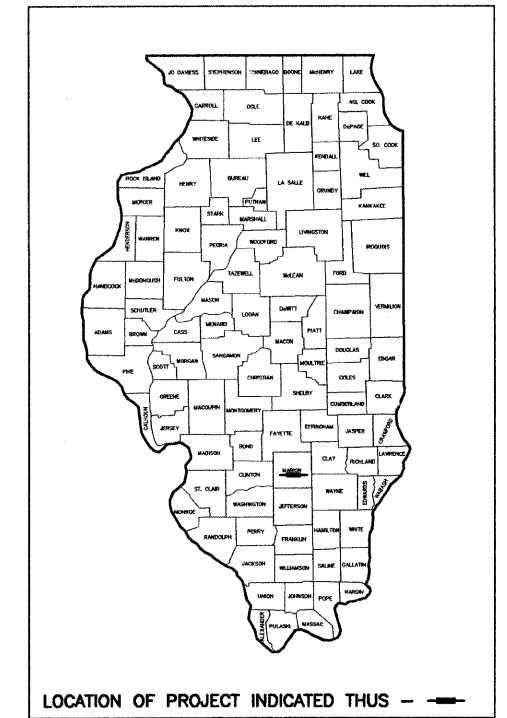
# STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PLANS FOR PROPOSED HIGHWAY BRIDGE PROGRAM



## SECTION 05-00125-00-BR PROJECT NO. BROS-121(47) MARION COUNTY JOB NO. C-98-310-08

CH 20 (BEE BRANCH ROAD)

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 20	05-00125-00-BR	MARION	13	1
FED. AID PROJECT:		ILLINOIS	PROJECT	
CONTRACT NO. 97332				



### INDEX OF SHEETS

1	COVER SHEET
2	TYPICAL CROSS SECTION, GENERAL NOTES AND SUMMARY OF QUANTITIES
3	PLAN AND PROFILE SHEET
4-11	BRIDGE PLANS
12-13	CROSS SECTIONS
STANDARD 000001-05	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
STANDARD 280001-04	TEMPORARY EROSION CONTROL SYSTEMS
STANDARD 630301-04	SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
STANDARD 635006-02	REFLECTOR AND TERMINAL MARKER PLACEMENT
STANDARD 701901	TRAFFIC CONTROL DEVICES
STANDARD B.L.R. 21-7	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS
STANDARD B.L.R. 27	TRAFFIC BARRIER TERMINAL TYPE 5A

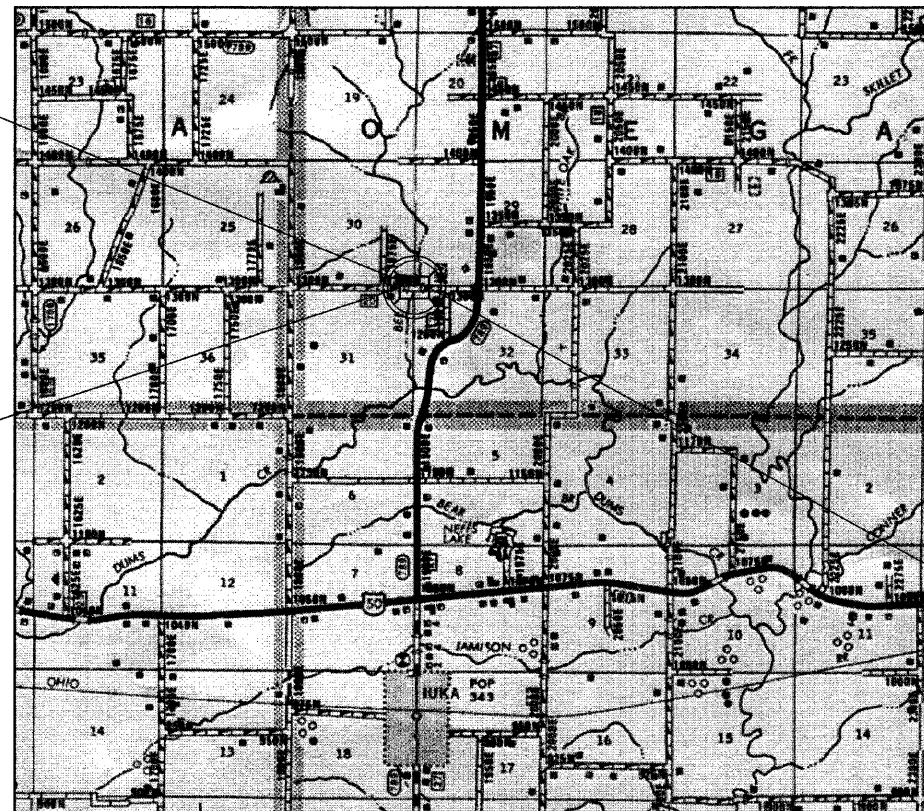
STA. 50+00 - CONSTRUCT SINGLE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE (61.54' BK. TO BK. ABUTMENTS) WITH SPILL THRU ABUTMENTS, 10' SKEW, 24' ROADWAY. EXISTING STRUCTURE NO. 061-3037 PROPOSED STRUCTURE NO. 061-3304

### LIST OF UTILITIES

NAME	ADDRESS
AT&T	210 N. LOCUST - CENTRALIA, IL. 62801
NORTHEAST MARION CO. WATER	5329 KINMUNDY ROAD - SALEM, IL. 62881
TRI-COUNTY ELECTRIC COOP.	3906 W. BROADWAY - MT. VERNON, IL. 62864

BEGIN SECTION 05-00125-00-BR  
STA. 49+64.23

END SECTION 05-00125-00-BR  
STA. 50+35.77



### LOCATION MAP

APPROXIMATE SCALE - 1" = 0.71 MILES  
NET LENGTH OF IMPROVEMENTS = 71.54 FOOT = 0.014 MILE  
GROSS LENGTH OF IMPROVEMENTS = 296.54 FOOT = 0.056 MILE

APPROVED January 29, 2008.  
*Wally E. ...*  
COUNTY ENGINEER

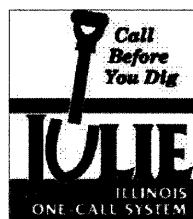
PASSED January 30, 2008.  
*Richard C. March...*  
DISTRICT EIGHT ENGINEER OF  
LOCAL ROADS & STREETS

Releasing For  
Bid Based on  
Limited Review January 30, 2008.  
*Wally C. ...*  
DEPUTY DIRECTOR OF HIGHWAYS,  
REGION FIVE ENGINEER

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



MICHAEL R. QUANDT, P.E.  
SIGN: *Michael R. Quandt 01/29/08*  
EXP. DATE: 11/30/2009



48 HOURS PRIOR TO EXCAVATION CALL J.U.I.E.: 811 OR 1-800-892-0123

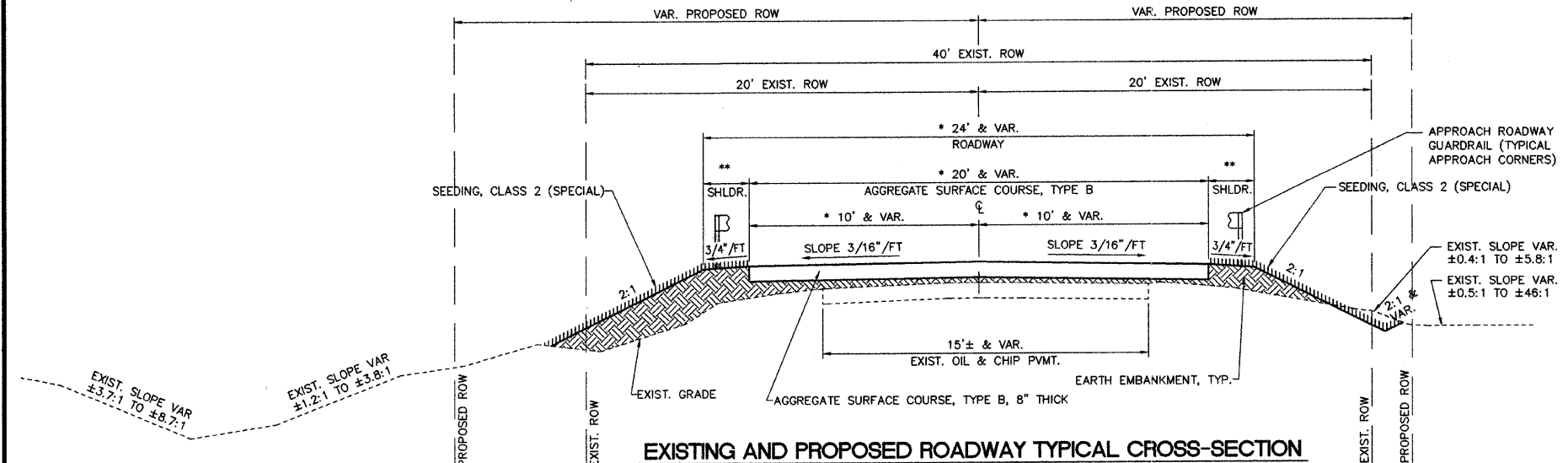
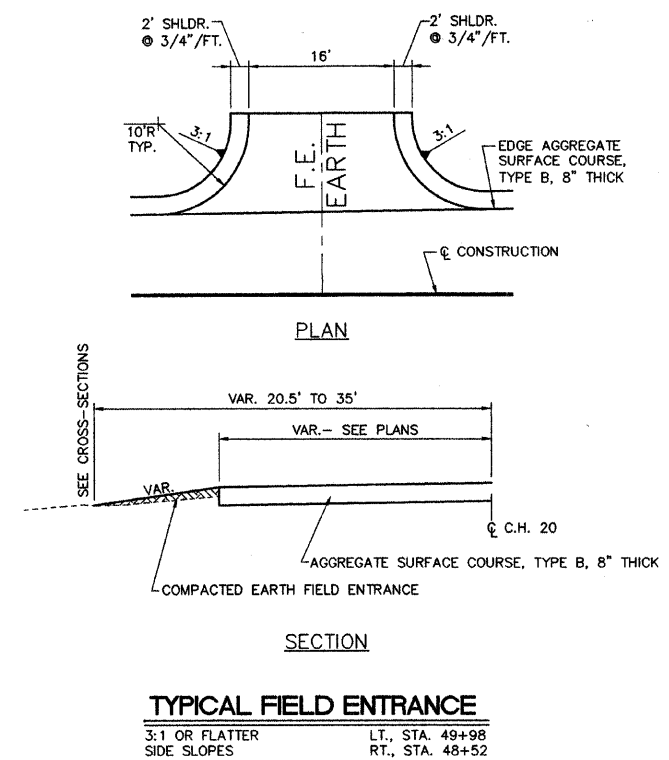
CLASS ROAD: RURAL LOCAL ROAD  
A.D.T. = 200  
30 M.P.H.  
3R POLICY



DATE: JANUARY 28, 2008  
STS JOB NO. 30482

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CH 20	05-00125-00-BR	MARION	13	2
FEDERAL AID PROJECT:		ILLINOIS	PROJECT	

CONTRACT NO. 97332



- \* TRANSITION FROM 18' EXISTING TO 20' PROPOSED PAVEMENT STA. 47+89.23 TO STA. 49+64.23
  - \* 20' PROPOSED PAVEMENT STA. 49+64.23 TO THE BRIDGE AND FROM THE BRIDGE TO STA. 50+35.77.
  - \* TRANSITION FROM 20' PROPOSED TO 14' EXISTING PAVEMENT STA. 50+35.77 TO STA. 50+85.77
  - \*\* 2' EARTH SHOULDER ON DEPARTURE CORNERS.
- VARIABLE WIDTH EARTH SHOULDER ON APPROACH CORNERS-- WIDENING FOR TRAFFIC BARRIER TERMINALS PER IDOT STANDARDS LISTED ON COVER SHEET.  
 (5'-9 1/2" ADJACENT TO TBT TY 5A; 6'-0" ADJACENT TO TBT TY 1, SPECIAL; AND 2' AT ENDS OF SHOULDER WORK)

**EXTRA BARS FOR TEST SAMPLES**

BAR NO.	SIZE	LENGTH	SHAPE
s 1	#4	9'-5"	□
u 1	#6	11'-1"	▭
p 1	#7	24'-9"	—

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.

**GENERAL NOTES**

1. THIS SECTION SHALL BE CONSTRUCTED ACCORDING TO THE PLANS, THE SPECIAL PROVISIONS AND THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" ADOPTED JANUARY 1, 2007.
2. THE SHRINKAGE FACTOR FOR EMBANKMENT IS 25%.
3. EXCEPT FOR TREE REMOVAL AS SHOWN ON PLANS, ALL CLEARING AND GRUBBING IS TO BE INCLUDED IN THE UNIT PRICE BID FOR EARTH EXCAVATION.
4. BITUMINOUS SURFACE TREATMENT (A-2) WILL BE COMPLETED BY THE OWNER.

**SUMMARY OF QUANTITIES**

CODE NO.	ITEM	QUANTITY	UNIT
20100110	TREE REMOVAL (6-15 UNITS DIAMETER)	8	UNIT
20200100	EARTH EXCAVATION	60	CU. YD.
20300100	CHANNEL EXCAVATION	195	CU. YD.
20400800	FURNISHED EXCAVATION	171	CU. YD.
25001000	SEEDING, CLASS 2 (SPECIAL)	0.1	ACRE
28000300	TEMPORARY DITCH CHECKS	2	EACH
28100807	STONE DUMPED RIPRAP, CLASS A4	130	TON
40200800	AGGREGATE SURFACE COURSE, TYPE B	213	TON
50100100	REMOVAL OF EXISTING STRUCTURES	1	EACH
50105220	PIPE CULVERT REMOVAL	12	FOOT
50300225	CONCRETE STRUCTURES	18.2	CU. YD.
50300280	CONCRETE ENCASMENT	0.8	CU. YD.
50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	1440	SQ. FT.
50800105	REINFORCEMENT BARS	2300	POUND
50900205	STEEL RAILING, TYPE S1	120	FOOT
51201300	FURNISHING STEEL PILES HP8x36	141	FOOT
51202305	DRIVING PILES	69	FOOT
51203300	TEST PILE STEEL HP8x36	1	EACH
51500100	NAME PLATES	1	EACH
54200637	PIPE CULVERTS, TYPE 1, CORRUGATED STEEL OR ALUMINUM CULVERT PIPE 12"	32	FOOT
* 63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	2	EACH
* 63100167	TRAFFIC BARRIER TERMINAL, TYPE 1, SPECIAL (TANGENT)	2	EACH
66503400	BARBED WIRE FENCE REMOVAL	100	FOOT
67100100	MOBILIZATION	1	L. SUM
* 78201000	TERMINAL MARKER - DIRECT APPLIED	4	EACH
Z0065000	SETTING PILES IN ROCK	4	EACH

\* SPECIALTY ITEM

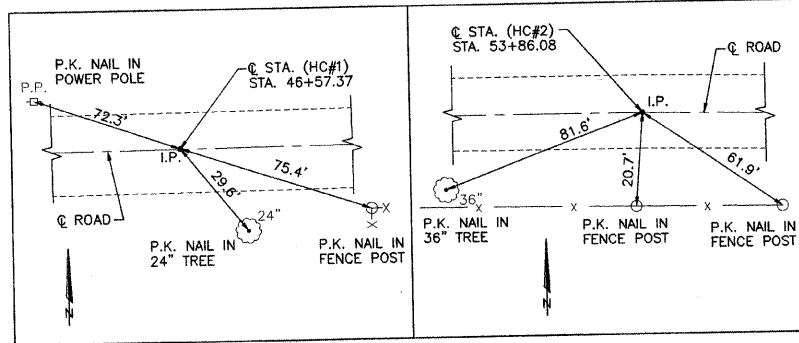
**STS CONSULTANTS**  
 2524 South Broadway, P.O. Box 850  
 Salem, Illinois 62881  
 PH(618)548-3500  
 FAX(618)548-5246  
 IL Design Firm Reg. No. 184-001518

**COUNTY HIGHWAY 20 (BEE BRANCH ROAD)**  
**SECTION 05-00125-00-BR**  
**MARION COUNTY, ILLINOIS**

**TYPICAL CROSS SECTION,**  
**GENERAL NOTES AND**  
**SUMMARY OF QUANTITIES**

SURVEY	JAS	CHECKED	DATE
DESIGN	MRQ/DJC	APPROVED	1/28/08
DRAWN	JSD, BLT		REVISED
			JOB NO. 30482

**LINE TIES**



**HORIZONTAL CONTROL COORDINATES**

POINT	LOCATION	N. COOR.	E. COOR.
HC#1(IRON PIN)	© STA. 46+57.37	5000.00	5000.00
HC#2(IRON PIN)	© STA. 53+86.08	5000.00	5728.70

CONSTRUCT SEEDING, CLASS 2 (SPECIAL)  
STA. 47+89.23 TO STA. 51+40 = 0.12 ACRE

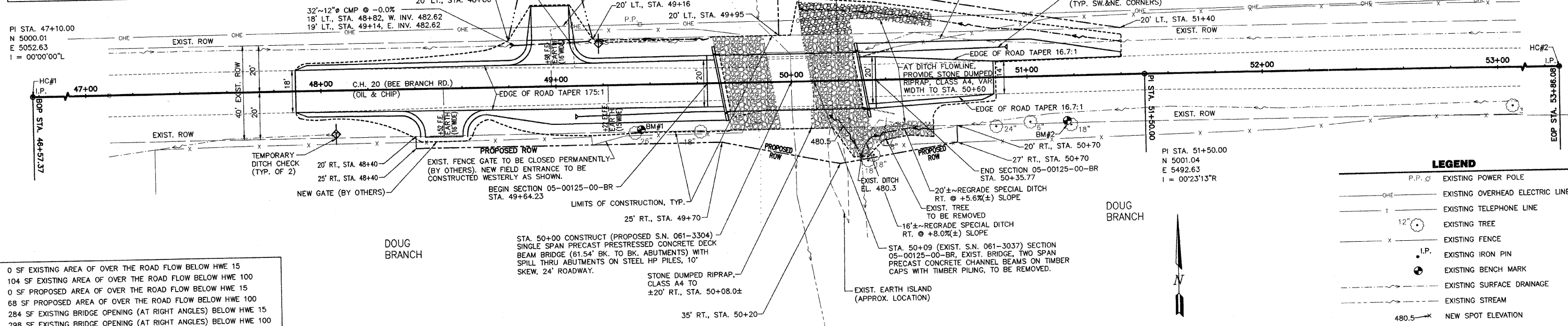
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	3

FEDERAL AID PROJECT: ILLINOIS PROJECT CONTRACT NO. 97332

**BENCH MARK COORDINATES**

POINT	LOCATION	ELEV.
BM#1(R.R. SPIKE IN 26" TREE)	19.09' RT., STA. 49+35.80	485.91
BM#2(R.R. SPIKE IN 18" TREE)	19.12' RT., STA. 51+16.79	490.52

**NOTE:**  
TRANSITION FROM TYPICAL BRIDGE SECTION (12' LEFT AND 12' RIGHT OF © CONSTRUCTION) TO EXISTING CONDITION AT 20' LEFT AND 20' RIGHT OF © CONSTRUCTION

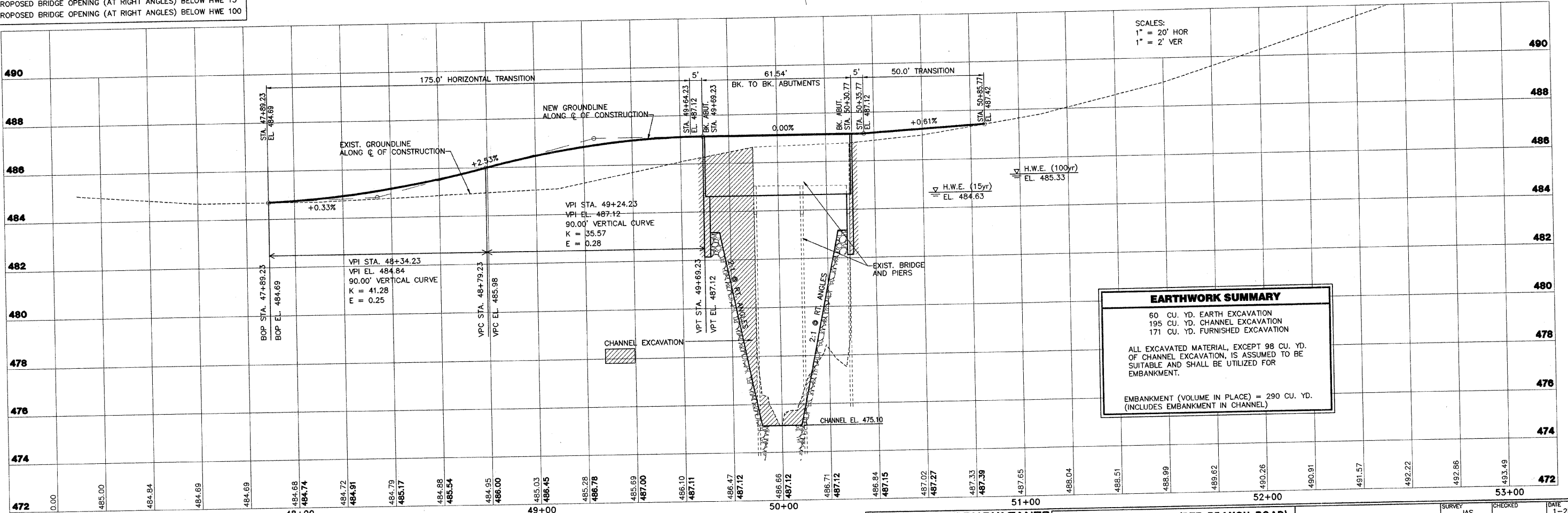


0 SF	EXISTING AREA OF OVER THE ROAD FLOW BELOW HWE 15
104 SF	EXISTING AREA OF OVER THE ROAD FLOW BELOW HWE 100
0 SF	PROPOSED AREA OF OVER THE ROAD FLOW BELOW HWE 15
68 SF	PROPOSED AREA OF OVER THE ROAD FLOW BELOW HWE 100
284 SF	EXISTING BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 15
298 SF	EXISTING BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 100
341 SF	PROPOSED BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 15
341 SF	PROPOSED BRIDGE OPENING (AT RIGHT ANGLES) BELOW HWE 100

**LEGEND**

- P.P. © EXISTING POWER POLE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- T EXISTING TELEPHONE LINE
- 12" EXISTING TREE
- X EXISTING FENCE
- I.P. EXISTING IRON PIN
- EXISTING BENCH MARK
- - - EXISTING SURFACE DRAINAGE
- - - EXISTING STREAM
- 480.5 NEW SPOT ELEVATION

SCALES:  
1" = 20' HOR  
1" = 2' VER



**EARTHWORK SUMMARY**

60 CU. YD. EARTH EXCAVATION  
195 CU. YD. CHANNEL EXCAVATION  
171 CU. YD. FURNISHED EXCAVATION

ALL EXCAVATED MATERIAL, EXCEPT 98 CU. YD. OF CHANNEL EXCAVATION, IS ASSUMED TO BE SUITABLE AND SHALL BE UTILIZED FOR EMBANKMENT.

EMBANKMENT (VOLUME IN PLACE) = 290 CU. YD. (INCLUDES EMBANKMENT IN CHANNEL)

**STS CONSULTANTS**  
2524 South Broadway, P.O. Box 850  
Salem, Illinois 62881  
Ph(618)548-3500  
Fax(618)548-5246  
IL Design Firm Reg. No. 184-001518

**COUNTY HIGHWAY 20 (BEE BRANCH ROAD)  
SECTION 05-00125-00-BR  
MARION COUNTY, ILLINOIS**

**PLAN AND PROFILE  
STA. 47+00 TO STA. 53+00**

SURVEY	CHECKED	DATE
JAS	APPROVED	1-28-08
MRQ	APPROVED	REVISED
BLT/JSD		JOB NO. 30482

B.M. - B.M. #1, R.R. Spike in 26" Tree, 19.09' RT., STA. 49+35.80, EL. 485.91  
 B.M. #2, R.R. Spike in 18" Tree, 19.12' RT., STA. 51+16.79, EL. 490.52

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	4
FEDERAL AID PROJECT:		ILLINOIS		

CONTRACT NO. 97332

Existing Structure - Two span precast concrete channel beams on timber caps with timber piling

Salvage - None

Existing Known Utilities - Overhead electric, Telephone

GENERAL NOTES

- The contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at the substructures specified or approved by the Engineer before ordering the remainder of the piles.
- See Special Provisions for boring logs.
- A Corrosion Inhibitor shall be used in the concrete for precast, prestressed concrete deck beams, according to Article 1020.05 (b) (12) of the Standard Specifications.
- The Waterproofing Membrane System and Bituminous Concrete Surface Course Shown on the Standards Shall Not be Provided.
- Reinforcement bars shall conform to the requirements of ASTM A706 Grade 60 (IL Modified). See special provisions. This not supersedes notes on Abutment and Pier Sheets.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub.		Total
			Piers	Abuts.	
Removal of Existing Structures	Each				1
Concrete Structures	Cu. Yd.			18.2	18.2
Precast Prestressed Concrete Deck Beams (27" Depth)	Sq. Ft.	1440			1440
Steel Railing, Type S1	Foot	120			120
Reinforcement Bars	Pound			2300	2300
Furnishing Steel Piles HP 8x36	Foot			141	141
Driving Piles	Foot			69	69
Test Pile Steel HP 8x36	Each			1	1
Name Plates	Each			1	1
Concrete Encasement	Cu. Yd.			0.76	0.76
Setting Piles in Rock	Each			4	4

The standard detail sheets for this structure were assembled by me or persons under my direct supervision.

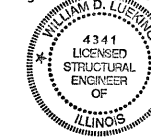


Date: 01/28/08

Date of License Expiration: 11/30/09

Signature: Michael R. Quandt

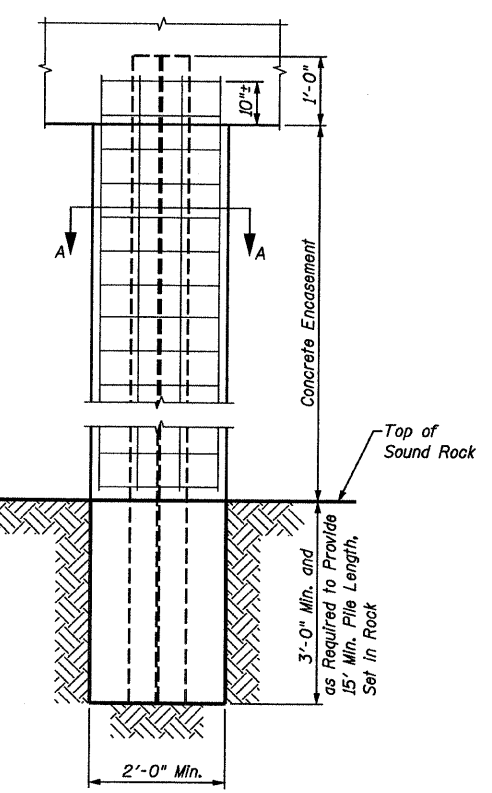
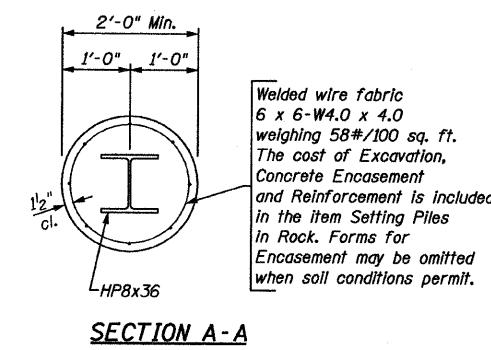
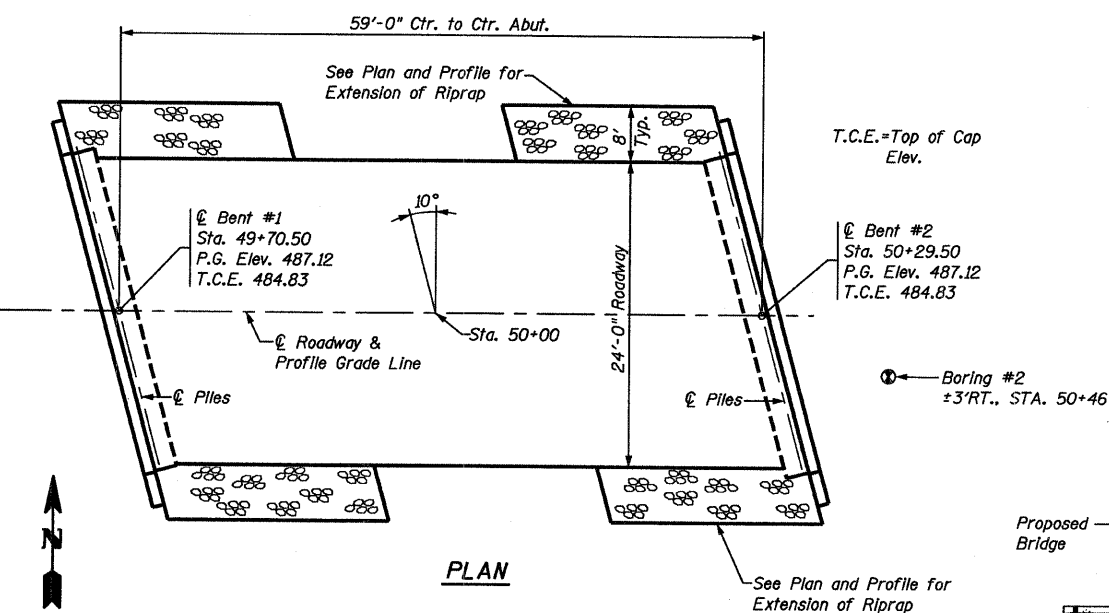
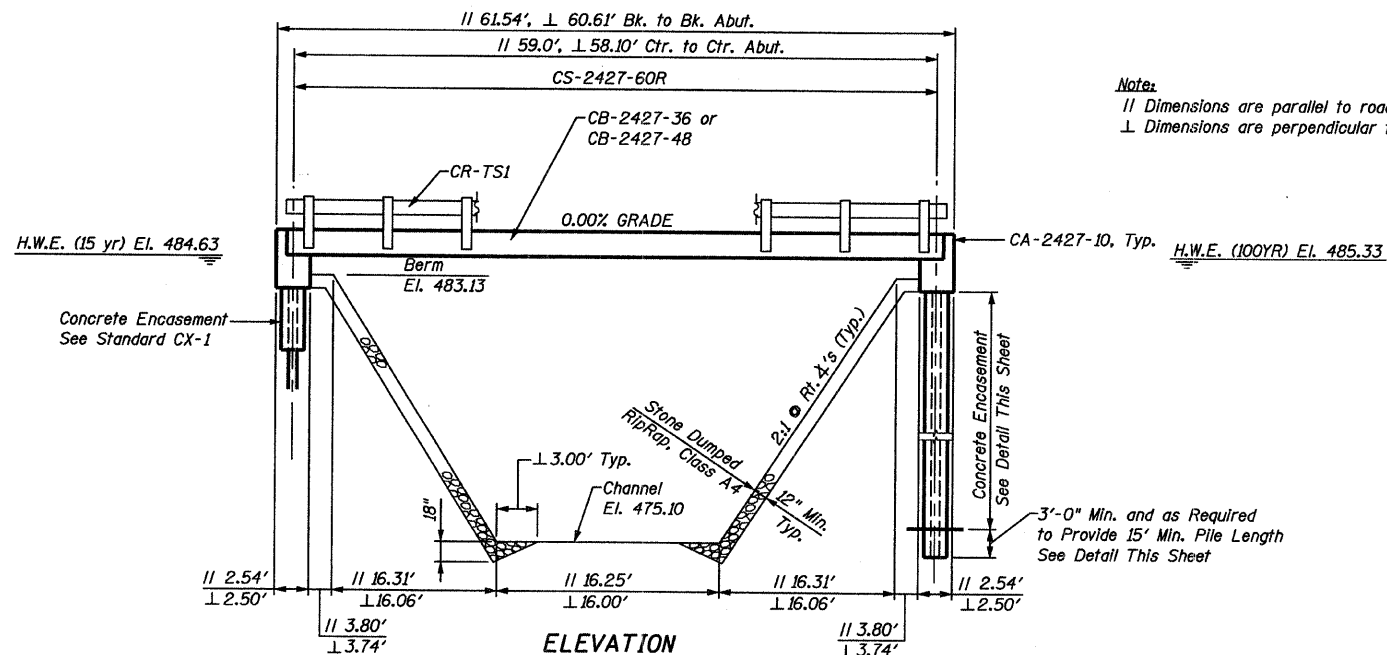
I certify these Standard Bridge Plans for foundation treatment only.



Date: 01/28/08

Date of License Expiration: 11/30/08

Signature: William O. Juckling

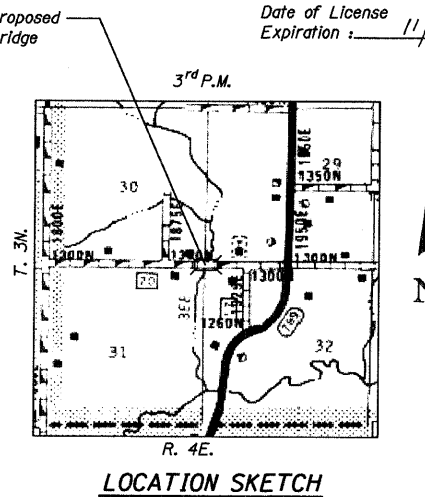


**DESIGN SPECIFICATIONS**  
 2002 AASHTO Standard Specifications - 17th ed.

**LOADING HS 20-44**  
 Allow 25# / Sq. Ft. for Future Wearing Surface.

STATION 50+00  
 BEE BRANCH  
 SEC. 05-00125-00-BR BUILT 20--  
 PROJECT NO. BROS-121 (47)  
 MARION COUNTY  
 LOADING HS20  
 STR. NO. 061-3304

**LETTERING FOR NAME PLATE**  
 Locate Name Plate at Northwest Corner of Bridge (See Std. CN)



WATERWAY INFORMATION

Drainage Area = 8.84 Sq. Mi.		Low Grade Elev. 484.68 @ Sta. 48+08.73							
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Head - Ft.		Headwater Elev. - Ft.		
			Exist.	Prop.	Exist.	Prop.	Exist.	Prop.	
Design	15	1930	284	341	484.63	N/A	0.32	N/A	484.95
Base	100	3130	298	341	485.33	N/A	0.91	N/A	486.24
Overtopping									
Max. Calc.	500								

PILE DATA (2-ABUTS.)

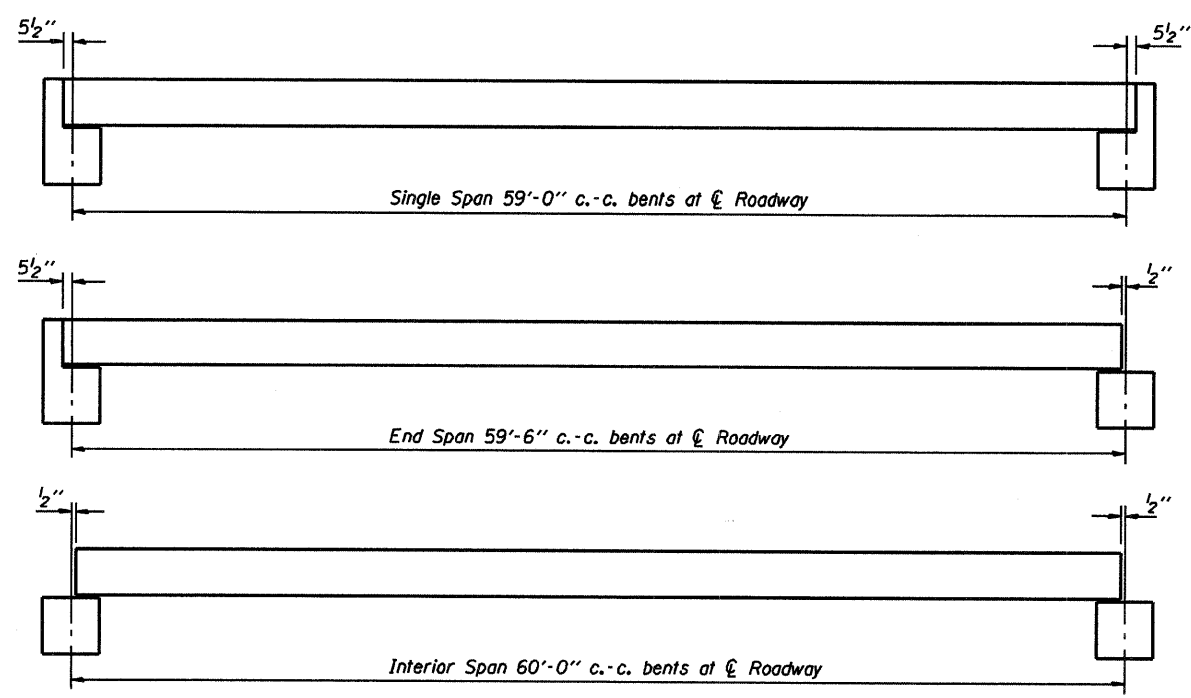
Pile Type and Size:	Steel Piles, HP8x36
Nominal Required Bearing:	258 kips Bent #1, Set in Rock Bent #2
Allowable Resistance Available:	86 kips
Estimated Pile Length:	23 Feet Bent #1, 18 Feet Bent #2
Number of Production Piles:	7
Number of Test Piles:	1 (located in Bent #1)

INDEX OF SHEETS

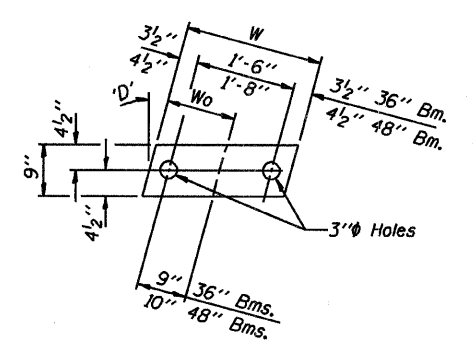
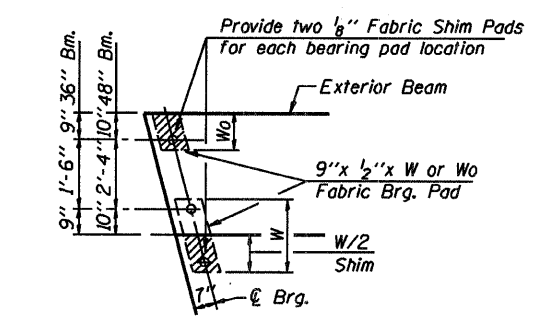
- General Plan & Elevation
- Standard CS-2427-60R
- Standard CB-2427-36
- Standard CB-2427-48
- Standard CA-2427-10
- Standard CR-TS1
- Standard CN
- Standard CX-1

GENERAL PLAN & ELEVATION  
 COUNTY HIGHWAY 20 (BEE BRANCH ROAD)  
 OVER BEE BRANCH  
 SECTION 05-00125-00-BR  
 MARION COUNTY

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	5
FED. AID PROJECT:	ILLINOIS PROJECT		CONTRACT NO. 97332	

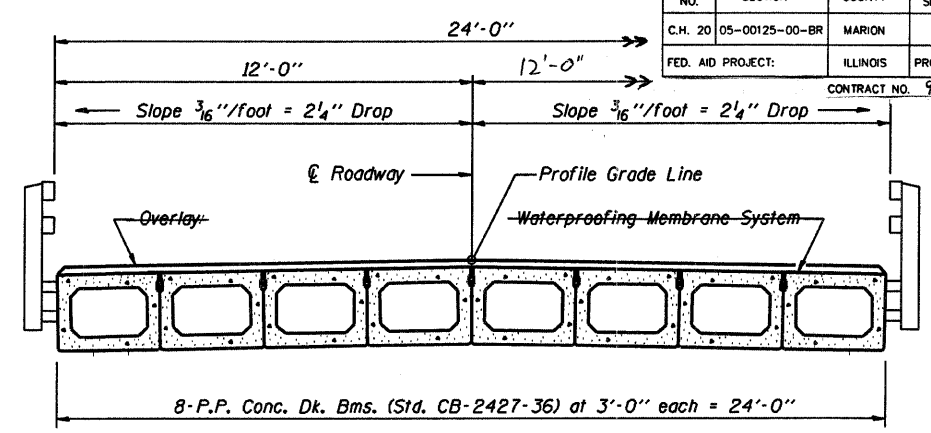


**TYPICAL ELEVATIONS**

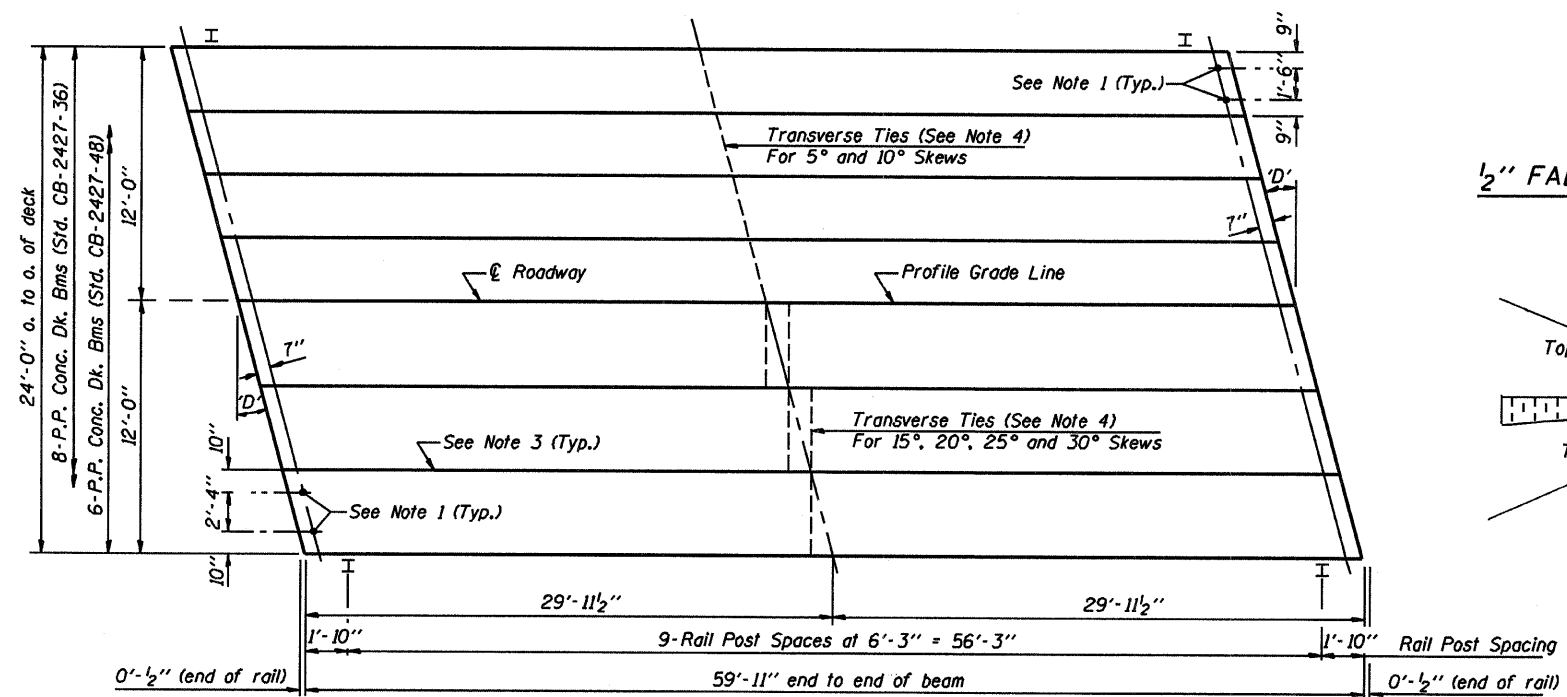
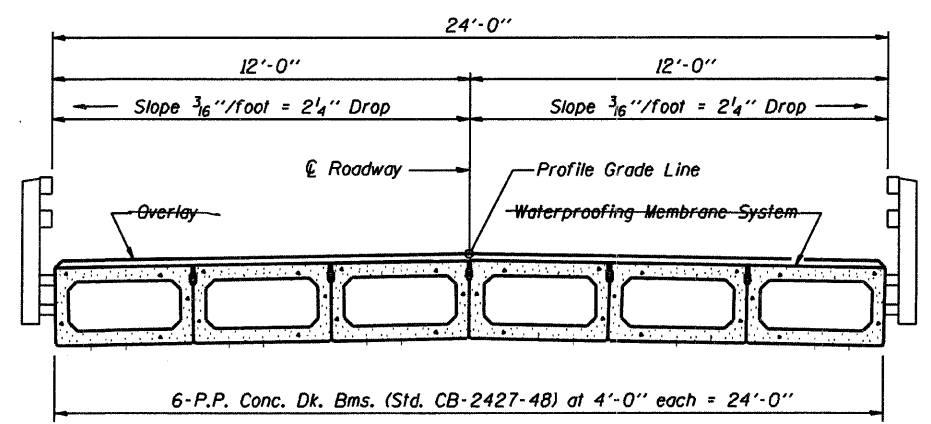


Beam	W	Wo
36"	2'-1"	1'-0 1/2"
48"	2'-5"	1'-2 1/2"

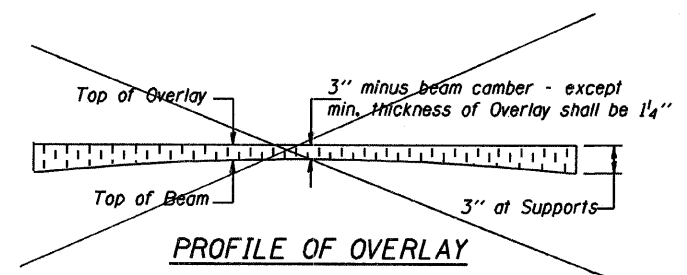
**1/2" FABRIC BRG. PAD DETAILS**



**CROSS SECTION**



**PLAN**  
(D = Designated Skew Angle)

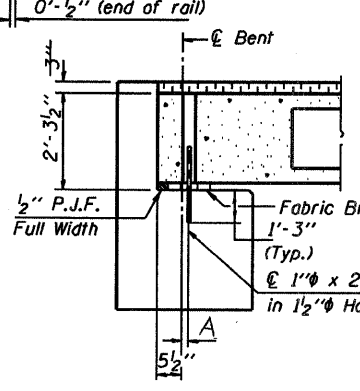


**PROFILE OF OVERLAY**

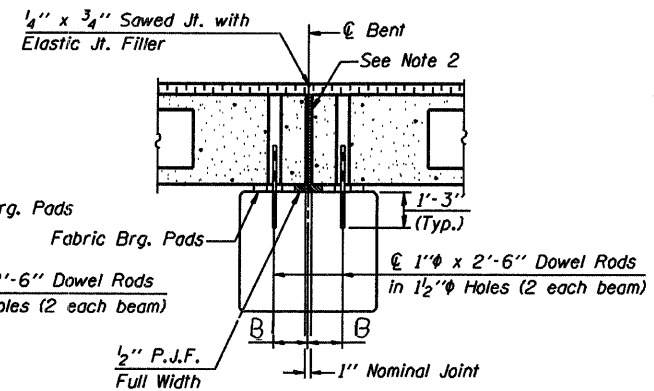
**DIMENSIONS 'A' AND 'B'**

D'	5°	10°	15°	20°	25°	30°
A	1 1/2"	1 5/8"	1 3/4"	1 7/8"	2 1/4"	2 5/8"
B	7 1/2"	7 5/8"	7 3/4"	8"	8 1/4"	8 5/8"

- NOTES**
- After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.
  - Nominal 1" joint at centerline pier shall be filled with non-shrink grout.
  - Longitudinal keys shall be grouted.
  - 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 outside shall be filled with grout after transverse tie assembly is in place.



**SECTION AT ABUTS.**  
(Along centerline Beams)



**SECTION AT PIERS**  
(Along centerline Beams)

**QUANTITIES FOR ONE SPAN**

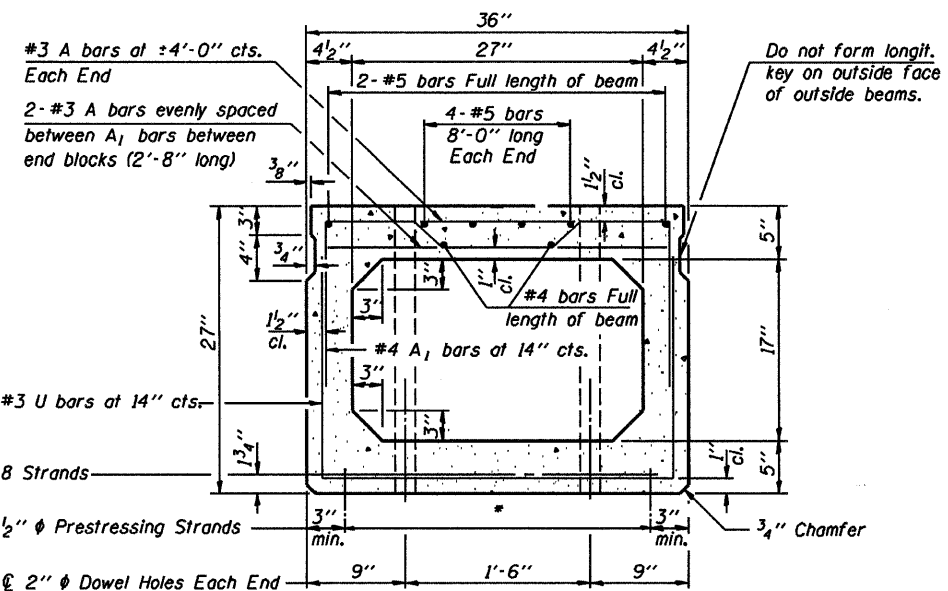
P.P. Conc. Dk. Bm. 27" Dp.	1440 Sq. Ft.
Steel Railing	120 Ft.
Waterproofing Membrane System	160.0 Sq. Yds.
Portland Cement Mortar	420 Ft. 36"
Fairing Course	300 Ft. 48"

Note: Quantity of overlay for one span = 18.0 Tons

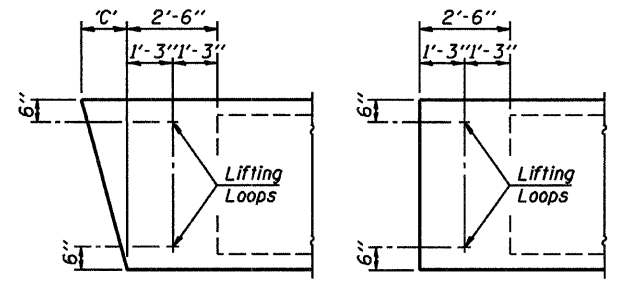
<b>P.P.C. DECK BEAM SUPERSTRUCTURE</b>			
24' RDWY.	27" BMS.	60' SPAN	RIGHT
<b>STANDARD CS-2427-60R</b>			

Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Approved by: Thomas J. ...  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Approved by: ...  
 Engineer of Bridges and Structures

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	6
FED. AID PROJECT:		ILLINOIS PROJECT	CONTRACT NO. 97333	

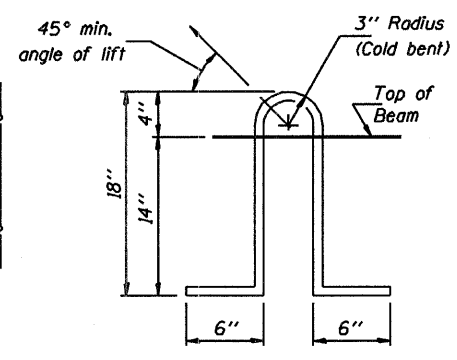


**CROSS SECTION**  
(40' SPAN)



**END BLOCK DETAILS**

Each beam shall have four Lifting Loops, two at each end of beam cast in locations shown above. Loops shall be burned off after beams have been erected.



**LIFTING LOOP DETAIL**

Lifting loops shall be 2. 1/2" diameter 270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.

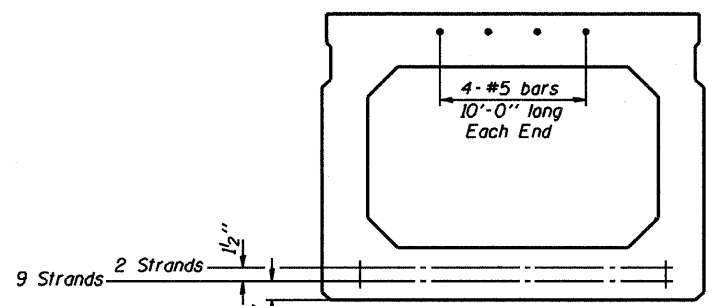
**DIMENSION 'C'**

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	3 1/8	6 3/8	9 5/8	13 1/8	16 3/4	20 3/4

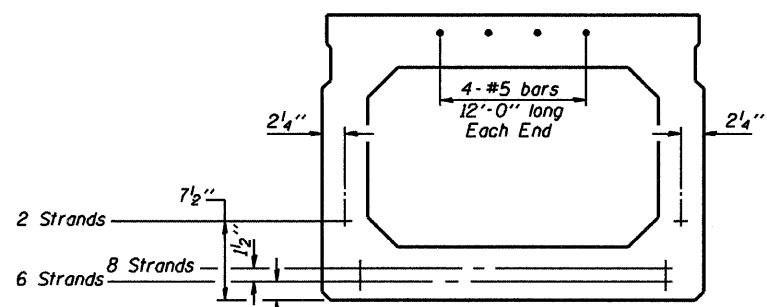
**\* TRANSVERSE STRAND PLACEMENT GUIDELINES**

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

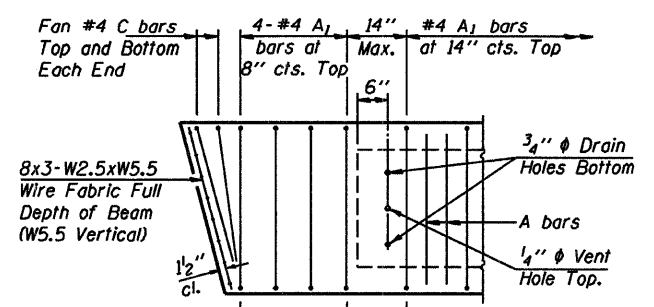
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



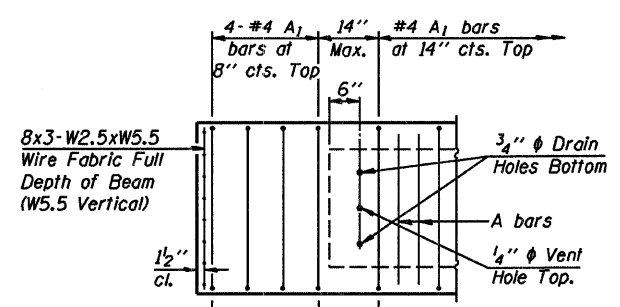
**CROSS SECTION**  
(50' SPAN)



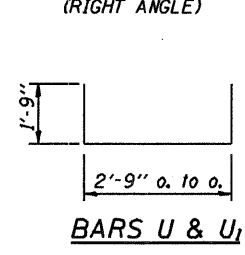
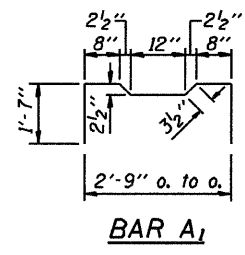
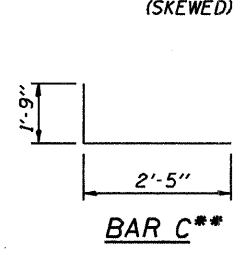
**CROSS SECTION**  
(60' SPAN)



**END REINFORCEMENT**  
(SKEWED)



**END REINFORCEMENT**  
(RIGHT ANGLE)

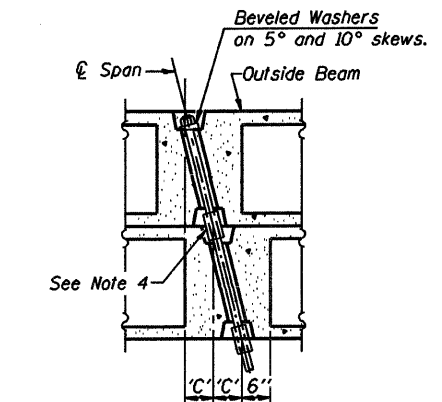


**DESIGN STRESSES**

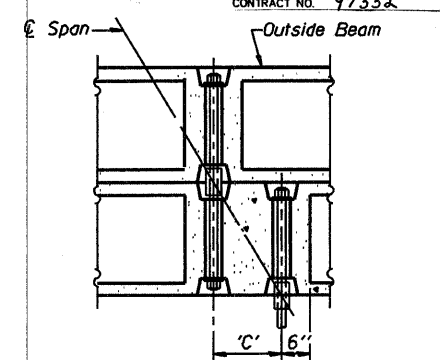
- $f'_c = 5,000$  p.s.i.
- $f'_a = 4,000$  p.s.i.
- $f'_s = 270,000$  p.s.i. (1/2" diameter Strand)
- $f_{st} = 201,960$  p.s.i. (1/2" diameter Strand)
- $f_y = 60,000$  p.s.i.

**MIN. BAR LAP**

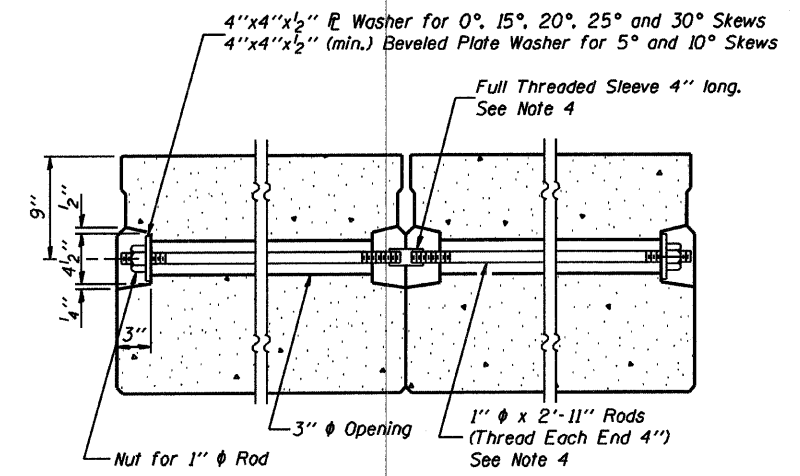
- #4 bars = 1'-4"
- #5 bars = 1'-8"



**PARTIAL PLAN TRANSVERSE TIE ASSEMBLY**  
(D=0°, 5° and 10°)



**PARTIAL PLAN TRANSVERSE TIE ASSEMBLY**  
(D=15°, 20°, 25° and 30°)



**SECTION ALONG TRANSVERSE TIE ASSEMBLY**  
(REQUIRED FOR 50' & 60' SPANS ONLY)

**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 square inches.
- Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
- On 0°, 5° and 10° skew angles, alternate approved transverse tie rods of increased segmental length are acceptable.
- Rail Post anchor devices shall be cast into outside beam as elsewhere specified.
- When a Waterproofing Membrane System is specified, the top surface of the beams shall be screeded with a straightedge and finished with a hand float. The finished surface shall be free of depressions or high spots with sharp corners and the top edge of keys shall be rounded or chamfered a minimum of 1/4".
- 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 the top of the beam and the bottom edge of the key.

Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Thomas J. Donagalli  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Ralph E. Anderson  
 Engineer of Bridges and Structures

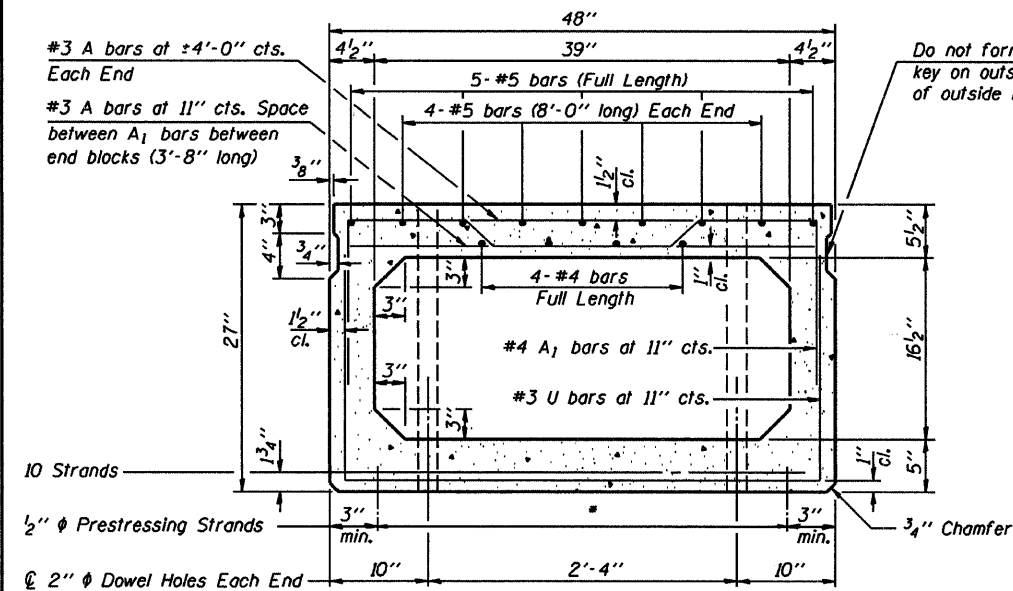
**NOTE:**  
 The std. reinf. and dimensions shown on the 40' span cross section is typical for all spans, except as shown.

**\*\*NOTE:**  
 The following number of C bars shall be used:  
 Skew No.  
 5° and 10° — 1  
 15° and 20° — 2  
 25° and 30° — 3

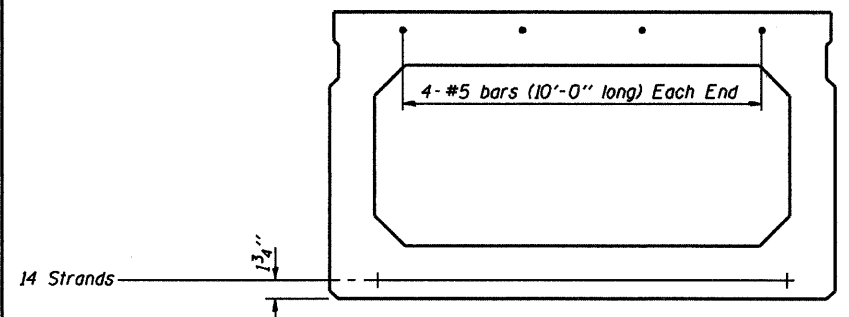
**P.P.C. DECK BEAM DETAILS**

24' ROADWAY	27" x 36" BEAMS
STANDARD CB-2427-36	

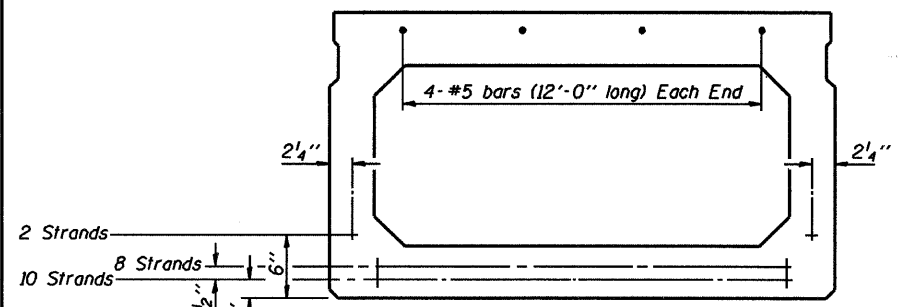
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	7
FED. AID PROJECT:	ILLINOIS PROJECT	CONTRACT NO. 97332		



**CROSS SECTION**  
(40' SPAN)



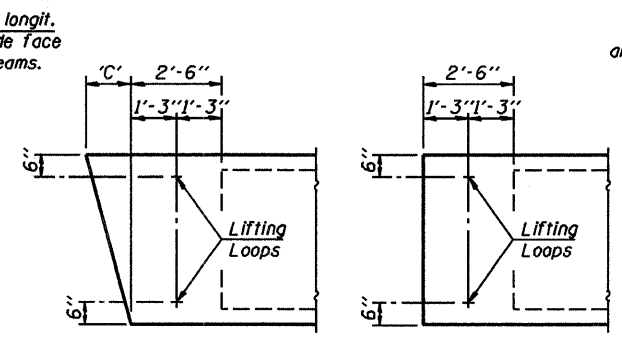
**CROSS SECTION**  
(50' SPAN)



**CROSS SECTION**  
(60' SPAN)

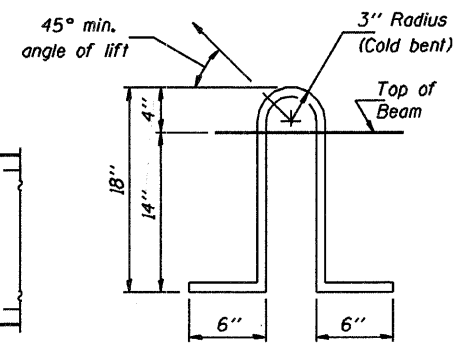
Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Thomas J. [Signature]  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Ralph E. [Signature]  
 Engineer of Bridges and Structures

**NOTE**  
 The std. reinf. and dimensions shown on the 40' span cross section is typical for all spans, except as shown.



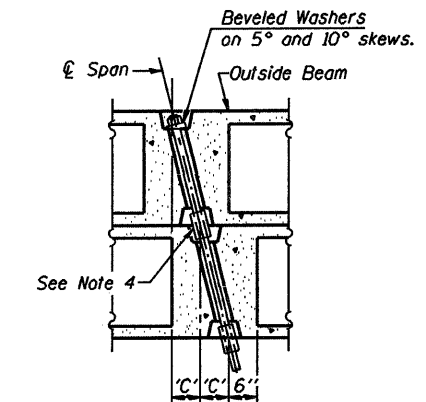
**END BLOCK DETAILS**

Each beam shall have four Lifting Loops, two at each end of beam cast in locations shown above. Loops shall be burned off after beams have been erected.

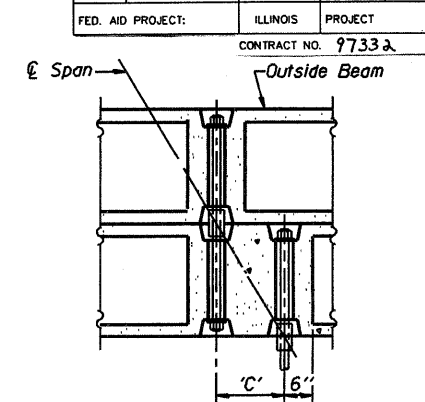


**LIFTING LOOP DETAIL**

Lifting loops shall be 3. 1/2" φ 270 ksi strands, as shown. Alternate approved lifting devices are also acceptable.



**PARTIAL PLAN TRANSVERSE TIE ASSEMBLY**  
(D=0°, 5° and 10°)



**PARTIAL PLAN TRANSVERSE TIE ASSEMBLY**  
(D=15°, 20°, 25° and 30°)

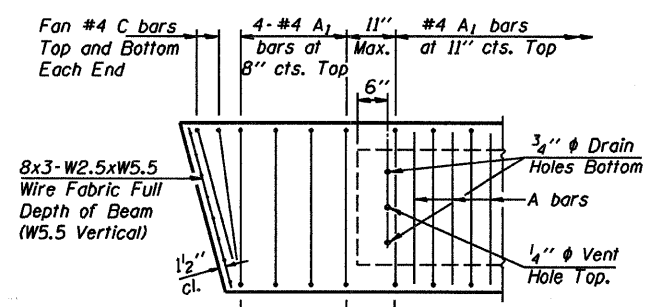
**DIMENSION 'C'**

Skew Angle 'D'	0°	5°	10°	15°	20°	25°	30°
Dimension 'C' (Inches)	0	4 1/4	8 1/2	12 7/8	17 1/2	22 3/8	27 3/4

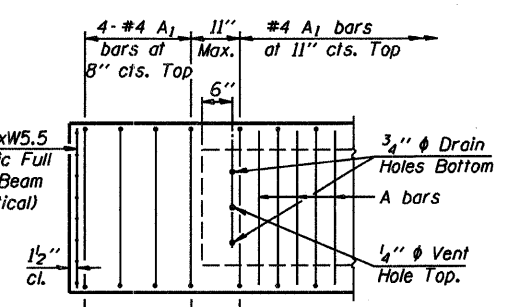
**\* TRANSVERSE STRAND PLACEMENT GUIDELINES**

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 1/2".

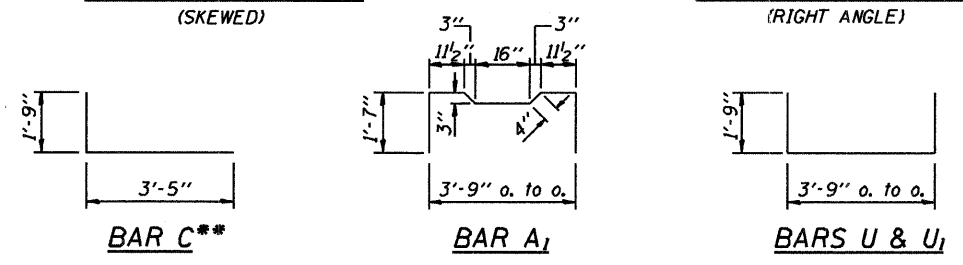
Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



**END REINFORCEMENT**  
(SKEWED)



**END REINFORCEMENT**  
(RIGHT ANGLE)

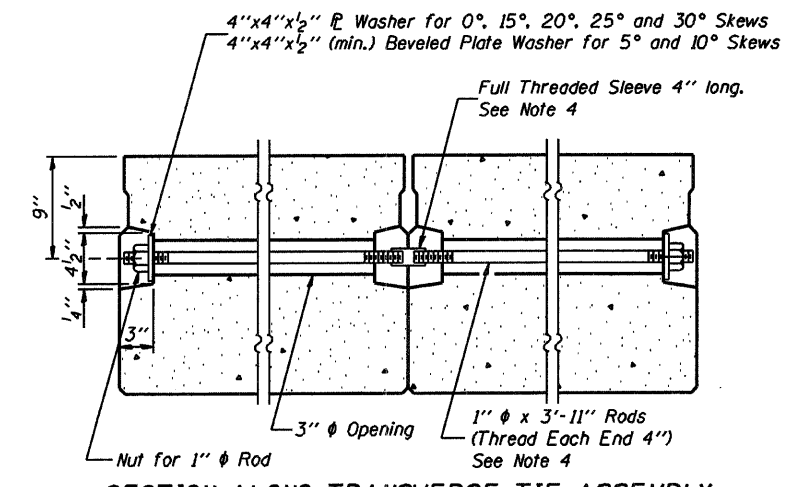


**DESIGN STRESSES**

$f_c = 5,000$  p.s.i.  
 $f_t = 4,000$  p.s.i.  
 $f_s = 270,000$  p.s.i. (1/2" φ Strand)  
 $f_{sl} = 201,960$  p.s.i. (1/2" φ Strand)  
 $f_y = 60,000$  p.s.i.

**MIN. BAR LAP**

#4 bars = 1'-4"  
 #5 bars = 1'-8"



**SECTION ALONG TRANSVERSE TIE ASSEMBLY**  
(REQUIRED FOR 50' & 60' SPANS ONLY)

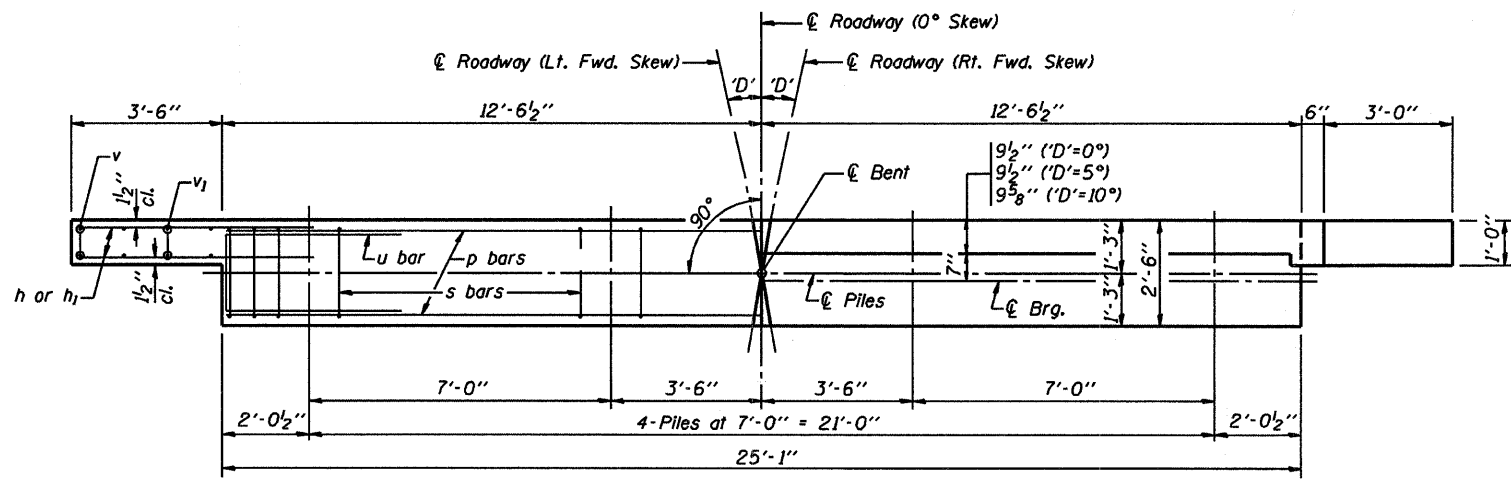
**NOTES**

1. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.
2. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 square inches.
3. Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-322, Grade 60.
4. On 0°, 5° and 10° skew angles, alternate approved transverse tie rods of increased segmental length are acceptable.
5. Rail Post anchor devices shall be cast into outside beam as elsewhere specified.
6. When a Waterproofing Membrane System is specified, the top surface of the beams shall be screeded with a straightedge and finished with a hand float. The finished surface shall be free of depressions or high spots with sharp corners and the top edge of keys shall be rounded or chamfered a minimum of 1/4".
7. 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 the top of the beam and the bottom edge of the key.

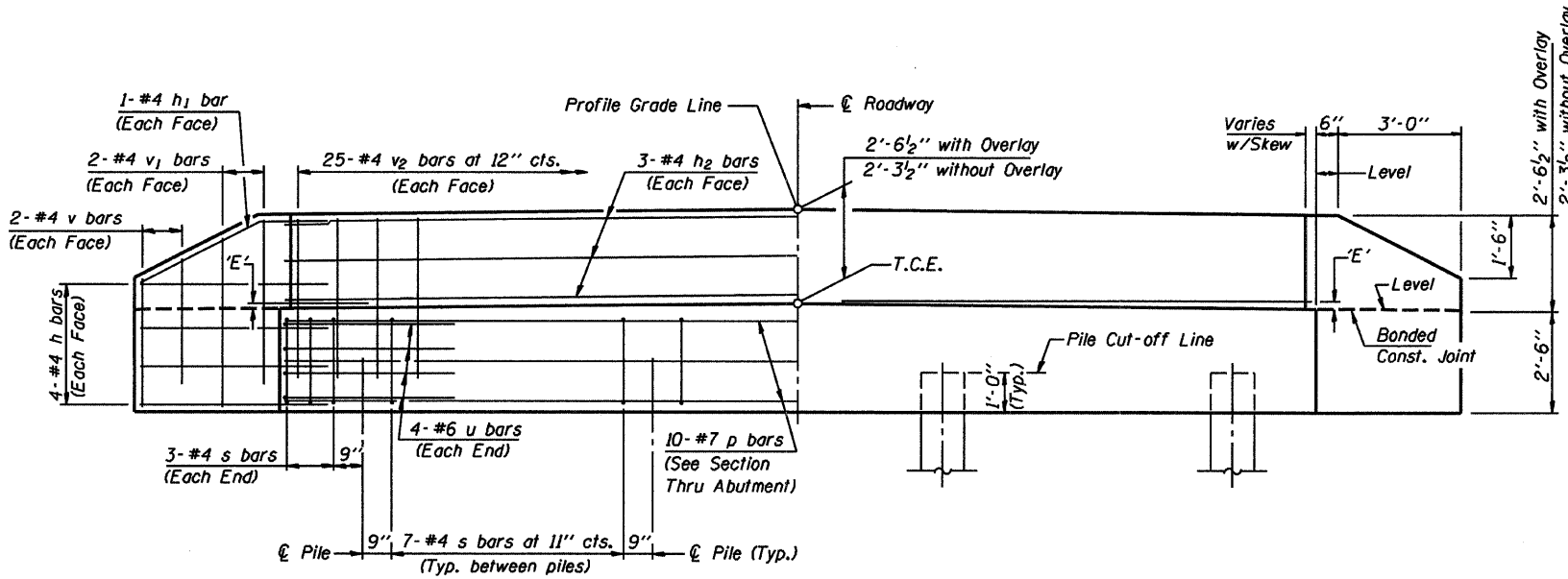
**P.P.C. DECK BEAM DETAILS**

24' ROADWAY      27" x 48" BEAMS  
 STANDARD CB-2427-48

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	8
FED. AID PROJECT:	ILLINOIS	PROJECT	CONTRACT NO. 9733A	



**PLAN**  
(D'=Designated Skew Angle)



**ELEVATION**

**DIMENSION 'E'**

GRADE	D'=0°		D'=5°		D'=10°	
	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END	UPGRADE END	DOWNGRADE END
0%	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"
Over 0% to 1%	2 3/8"	2 3/8"	2 1/4"	2 3/8"	2 1/8"	2 1/2"
Over 1% to 2%	2 3/8"	2 3/8"	2 1/8"	2 1/2"	1 7/8"	2 3/4"
Over 2% to 3%	2 3/8"	2 3/8"	2"	2 5/8"	1 5/8"	3"
Over 3% to 4%	2 3/8"	2 3/8"	1 7/8"	2 3/4"	1 3/8"	3 1/4"

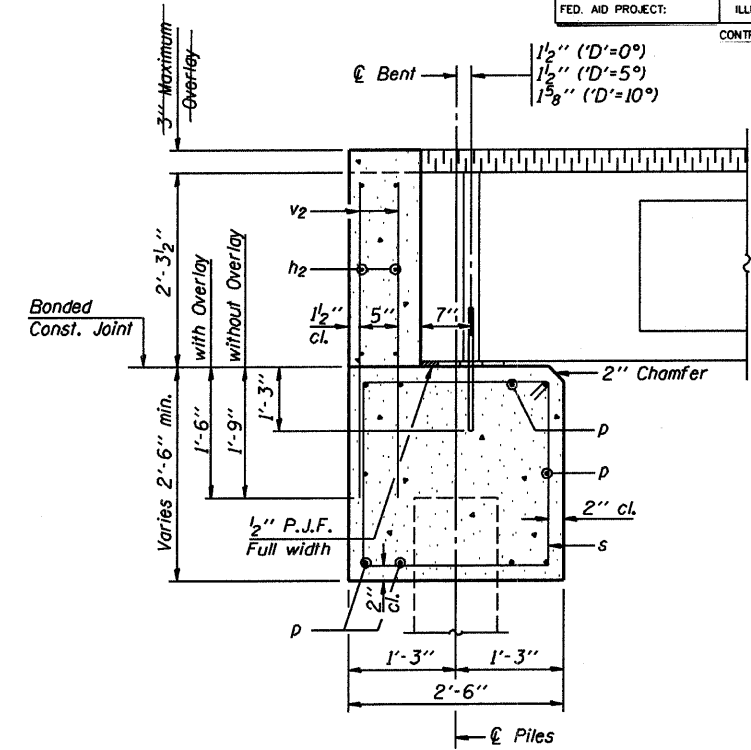
- NOTES**
- The Backwall and the portion of the Wingwalls above the bonded construction joint shall be cast against the in-place beam.
  - Reinforcement bars shall conform to the requirements of A.A.S.H.T.O. M-31 or M-322, Grade 60.
  - Space reinforcement in cap to miss anchor bolts.

**MAXIMUM PILE LOADS**

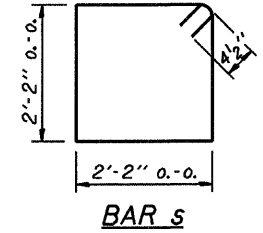
SPAN	TONS
40'	34
50'	38
60'	43

**DESIGN STRESSES**

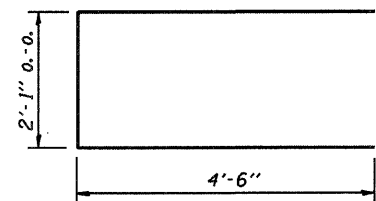
f'c = 3,500 psi  
fy = 60,000 psi



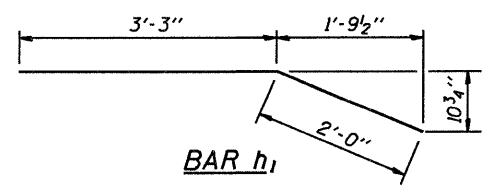
**SECTION THRU ABUTMENT**  
(At Right Angles)



**BAR s**



**BAR u**



**BAR h1**

**BILL OF MATERIAL FOR ONE ABUTMENT**

Bar	No.	Size	Length	Shape
h	16	#4	5'-0"	—
h1	4	#4	5'-3"	—
h2	6	#4	24'-9"	—
p	10	#7	24'-9"	—
s	27	#4	9'-5"	□
u	8	#6	11'-1"	□
v	8	#4	3'-2"	—
v1	8	#4	4'-2"	—
v2	50	#4	3'-11"	—
Concrete Structures			9.1 Cu. Yds.	
Reinforcement Bars			1150 Lb.	

P.P.C. DECK BEAMS PILE BENT ABUTMENT		
24' RDWY.	27" BMS.	D'=0°, 5° OR 10°
STANDARD CA-2427-10		

Illinois Department of Transportation

PASSED APRIL 4, 2005

Thomaz J. Domagalala  
Engineer of Bridge Design

APPROVED APRIL 4, 2005

Ralph E. Anderson  
Engineer of Bridges and Structures



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	9
FED. AID PROJECT:		ILLINOIS	PROJECT	

**NOTES**

Hollow structural steel tubing shall conform to the requirements of ASTM designation A500 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 A307 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 S-1.

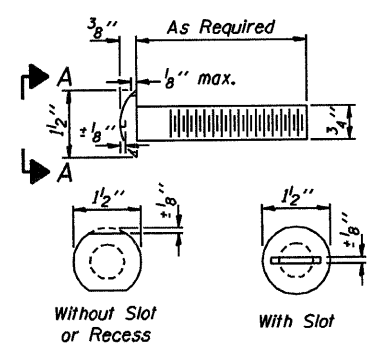
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with STEEL RAILING, TYPE S-1.

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

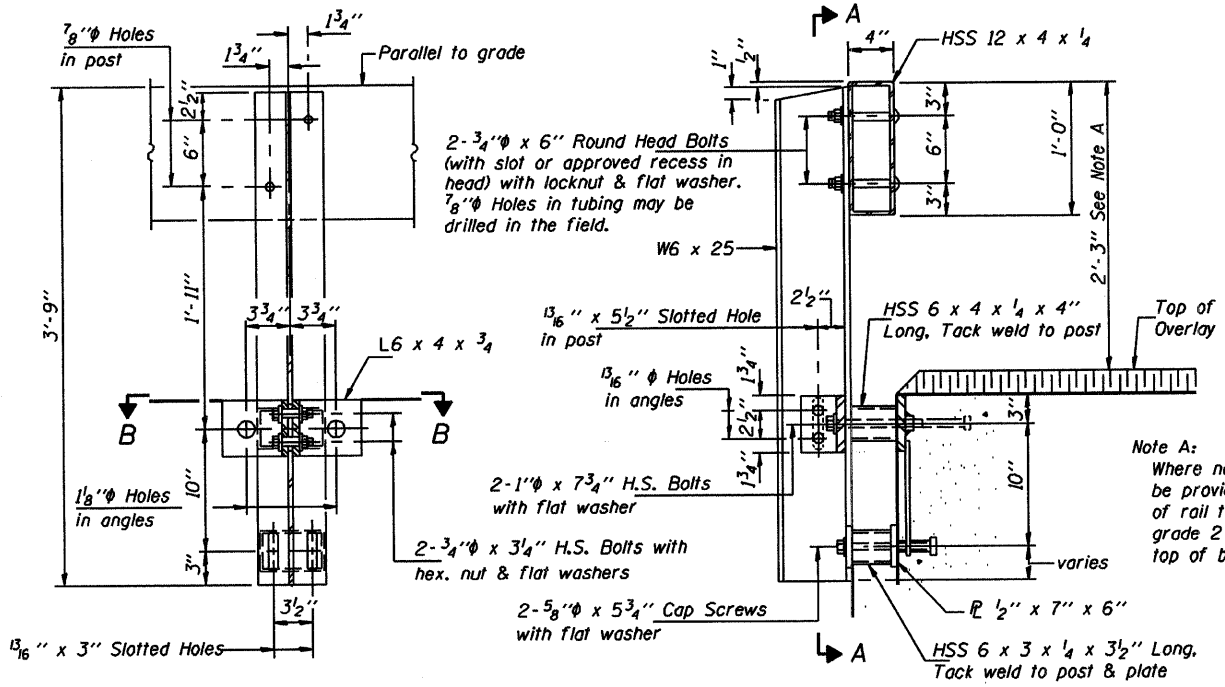
The 1/2" x 7" x 6" plates that come in contact with concrete shall either receive two coats of asphalt paint conforming to Section 1060.07 Type II, or 1/8" fabric bearing pads shall be placed between the plates and concrete.

The 3/4" 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 (FX2) of the Standard Specifications. The 1" high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/2 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

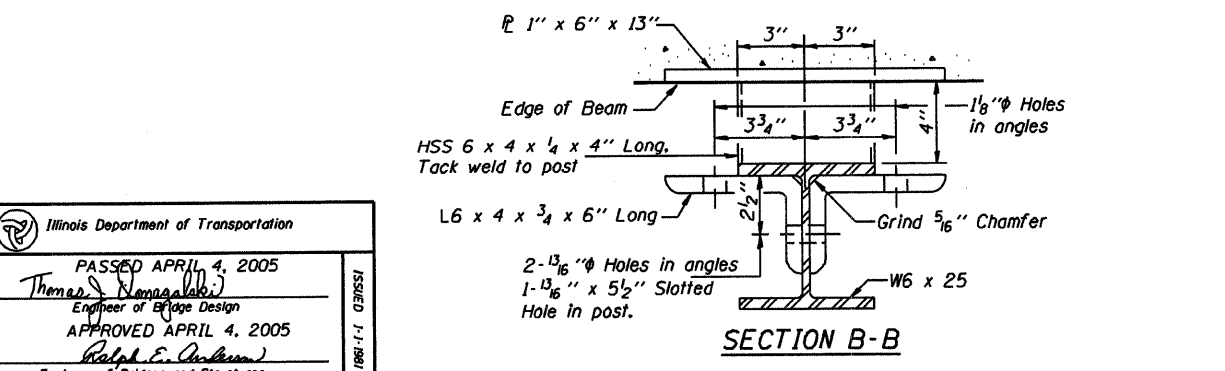
The maximum allowable rail post spacing shall be 10'-6". The rail post spacing shown elsewhere in the plans is based on the allowable spacing for another type of rail. When this type of rail is used, the number of posts may be decreased and the post spacing increased to provide equal post spaces of 10'-6" or less.



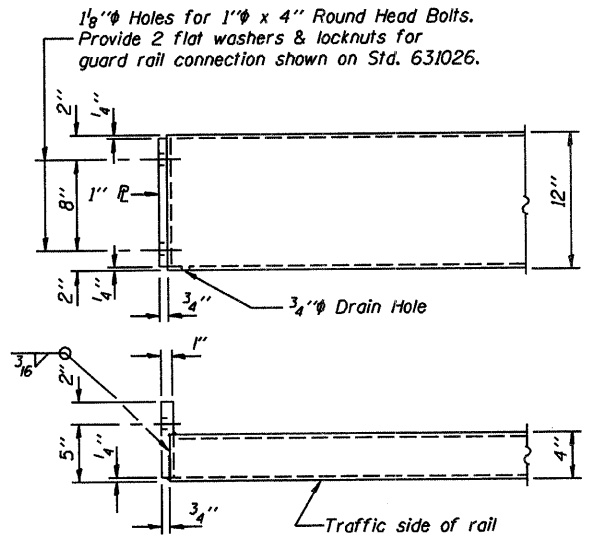
**VIEW A-A  
ROUND HEAD BOLT**



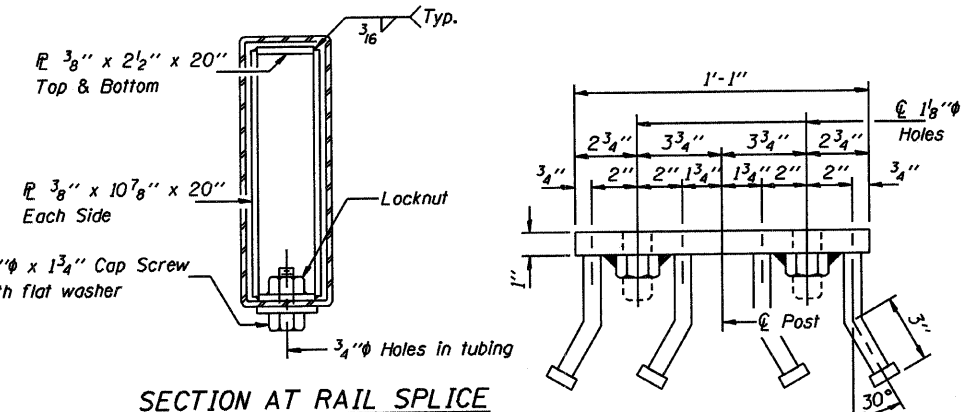
**SECTION A-A**



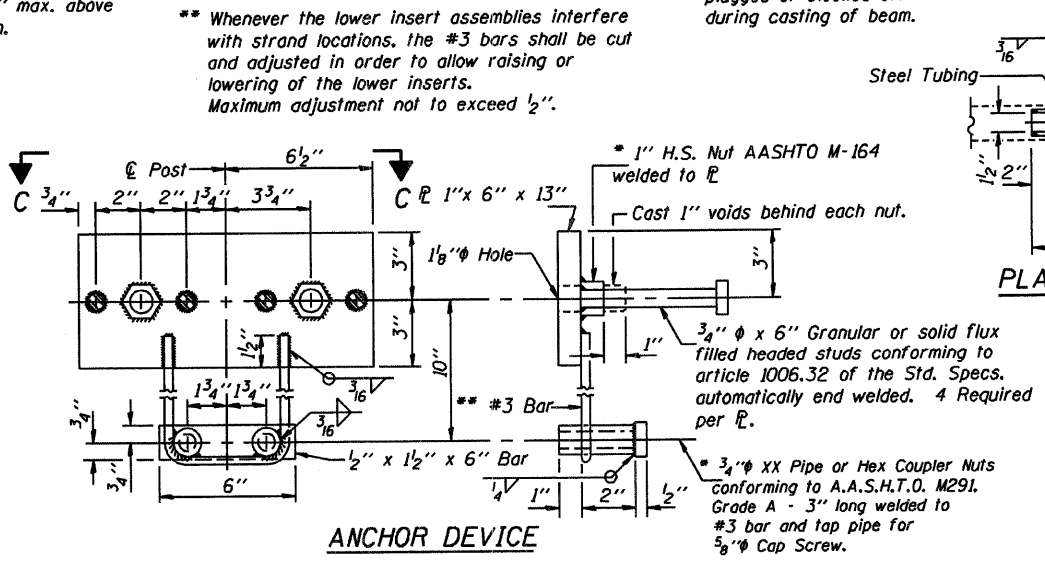
**SECTION B-B**



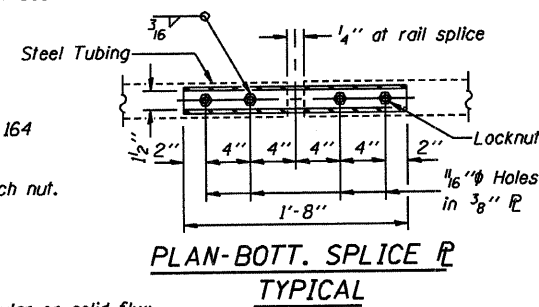
**END OF RAIL DETAILS**



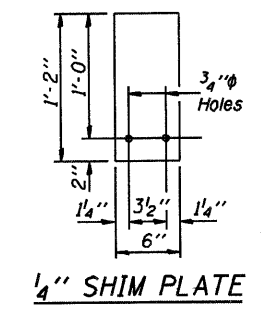
**SECTION AT RAIL SPLICE**



**ANCHOR DEVICE**



**PLAN-BOTT. SPLICE R  
TYPICAL**

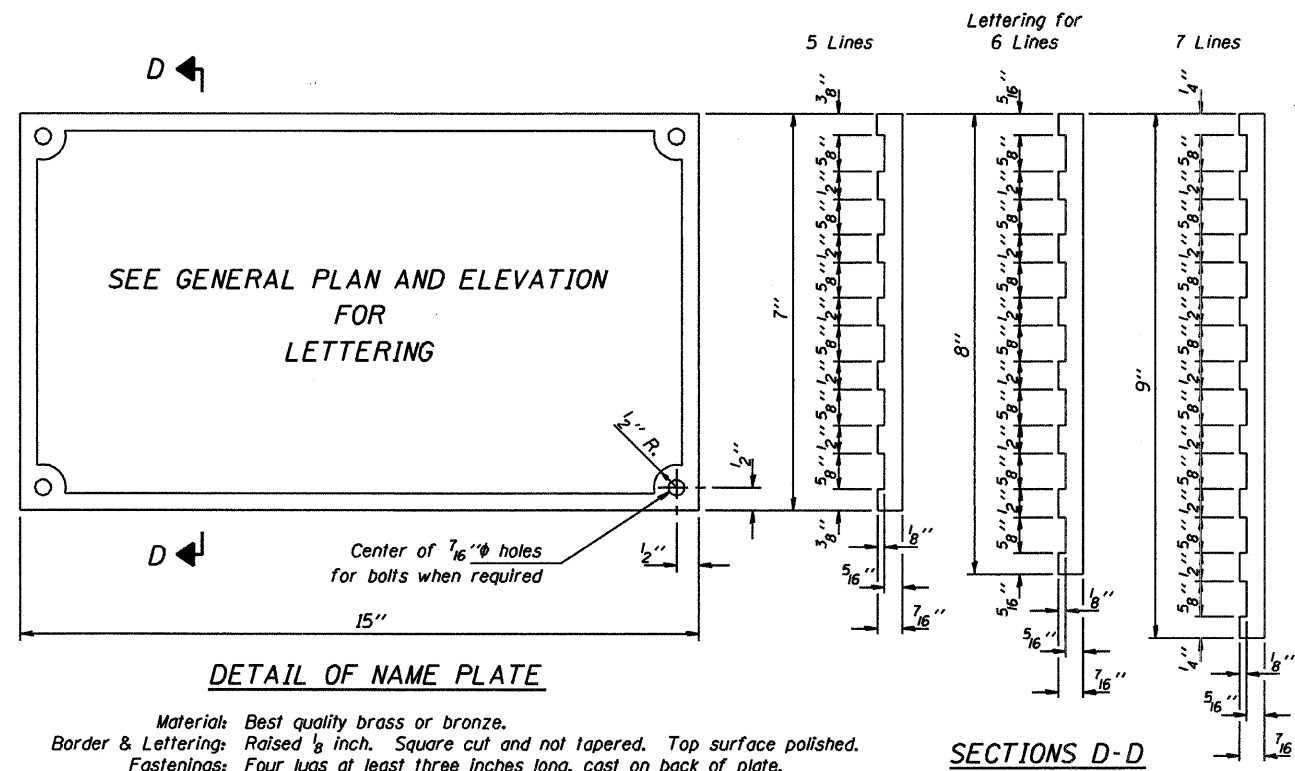


**1/4" SHIM PLATE**

Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
 Thomas J. Vonnahme  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
 Robert E. Anderson  
 Engineer of Bridges and Structures

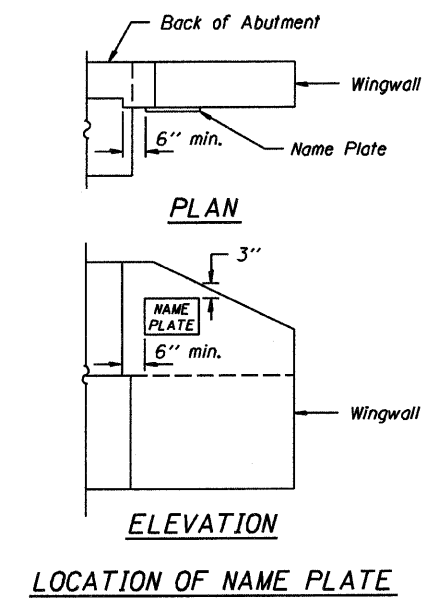
**STEEL RAILING, TYPE S-1  
STANDARD CR-TS1**

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	10
FED. AID PROJECT:	ILLINOIS	PROJECT		
CONTRACT NO. 9733a				



**DETAIL OF NAME PLATE**

Material: Best quality brass or bronze.  
 Border & Lettering: Raised 1/8 inch. Square cut and not tapered. Top surface polished.  
 Fastenings: Four lugs at least three inches long, cast on back of plate.

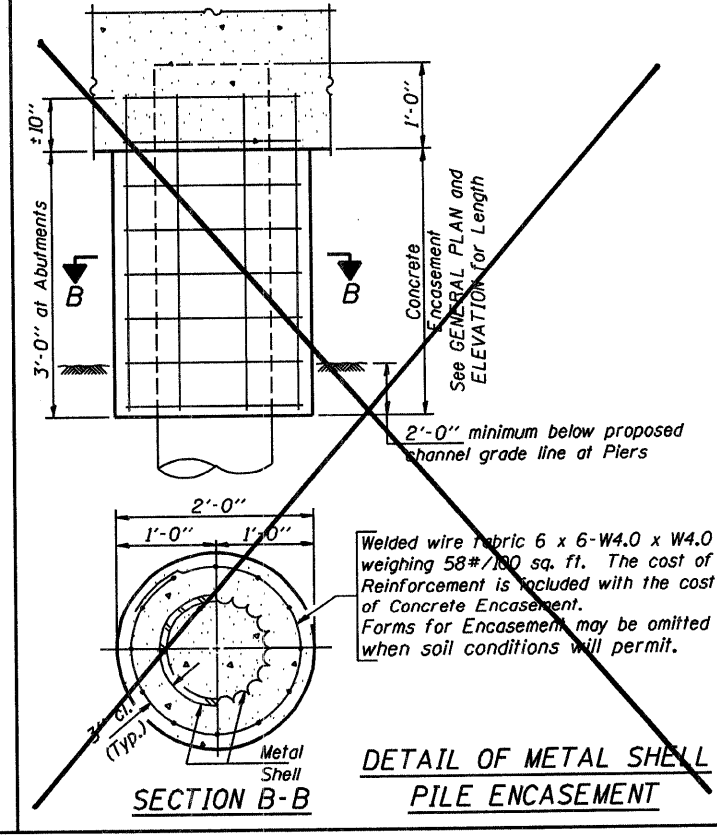
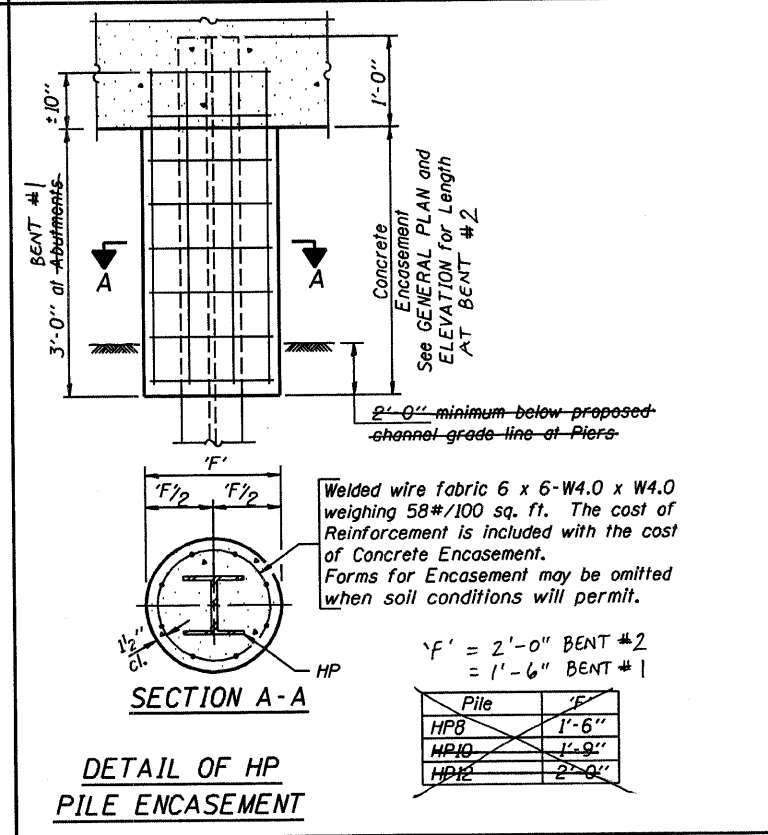
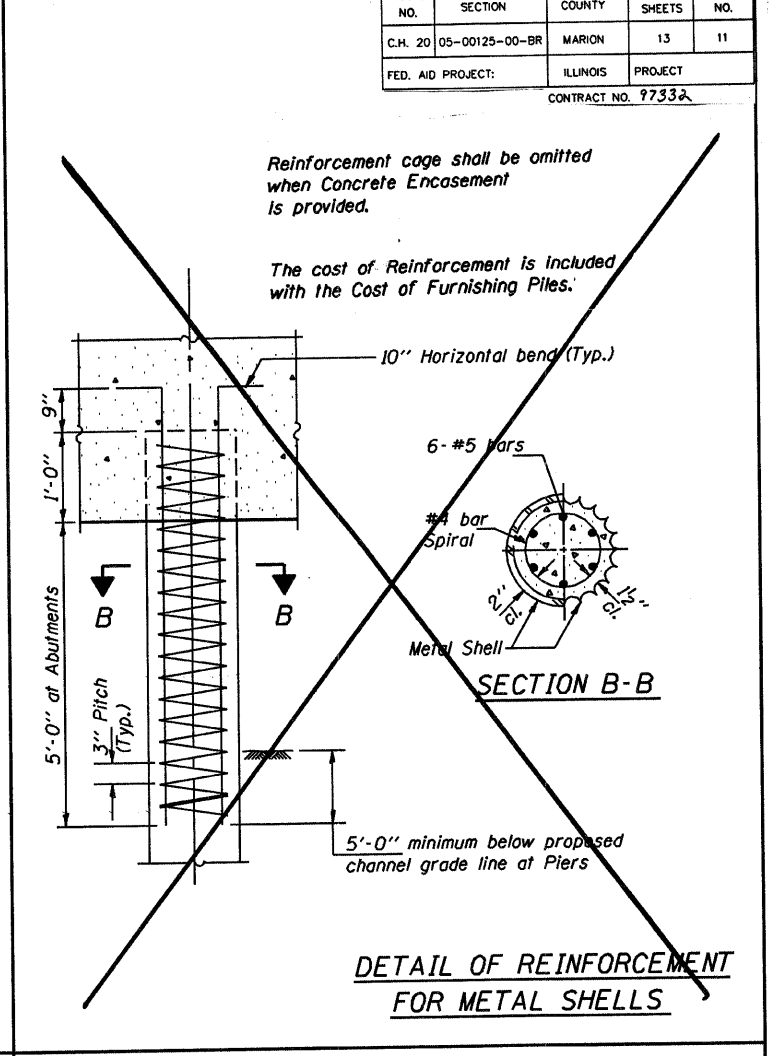
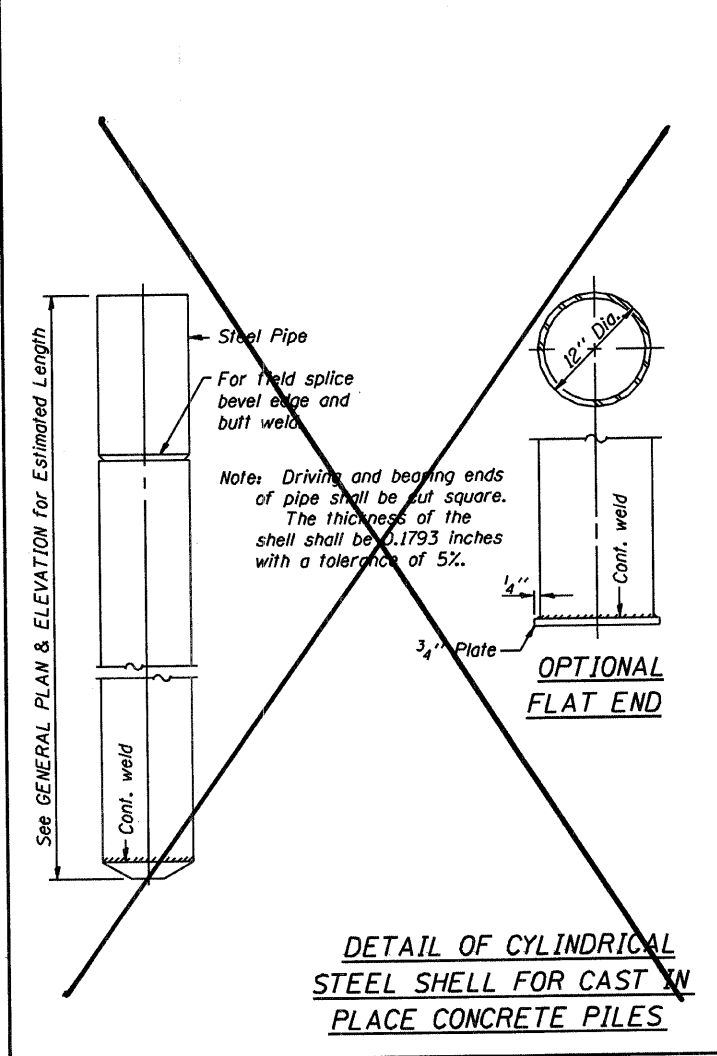
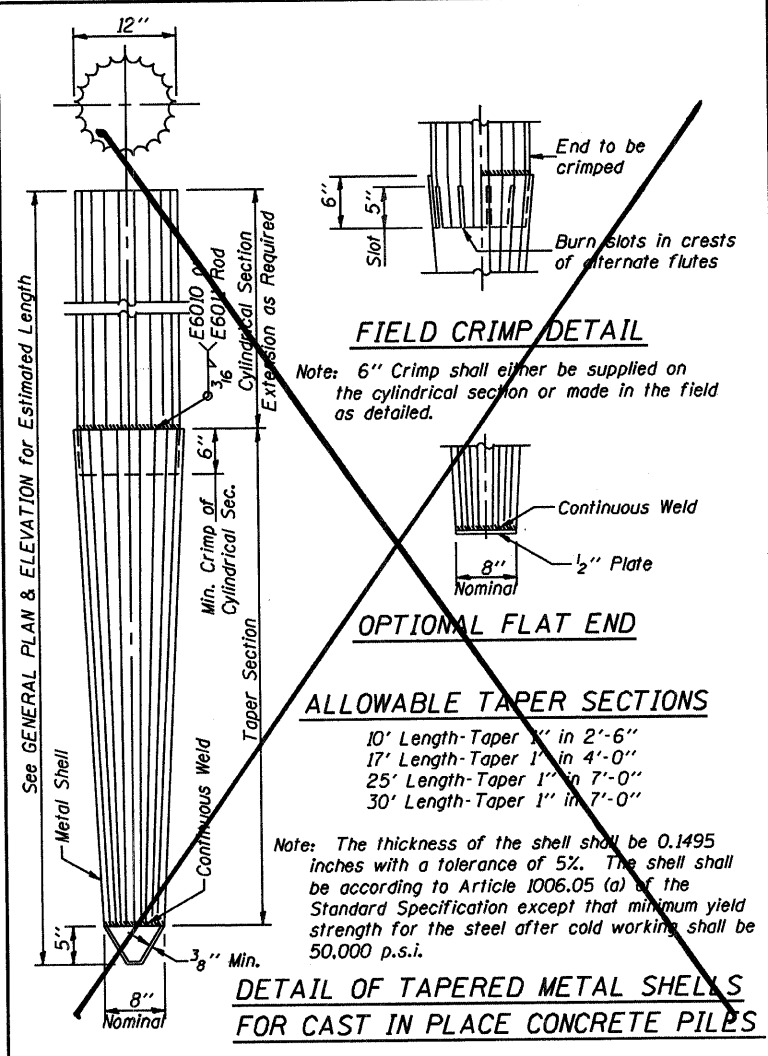
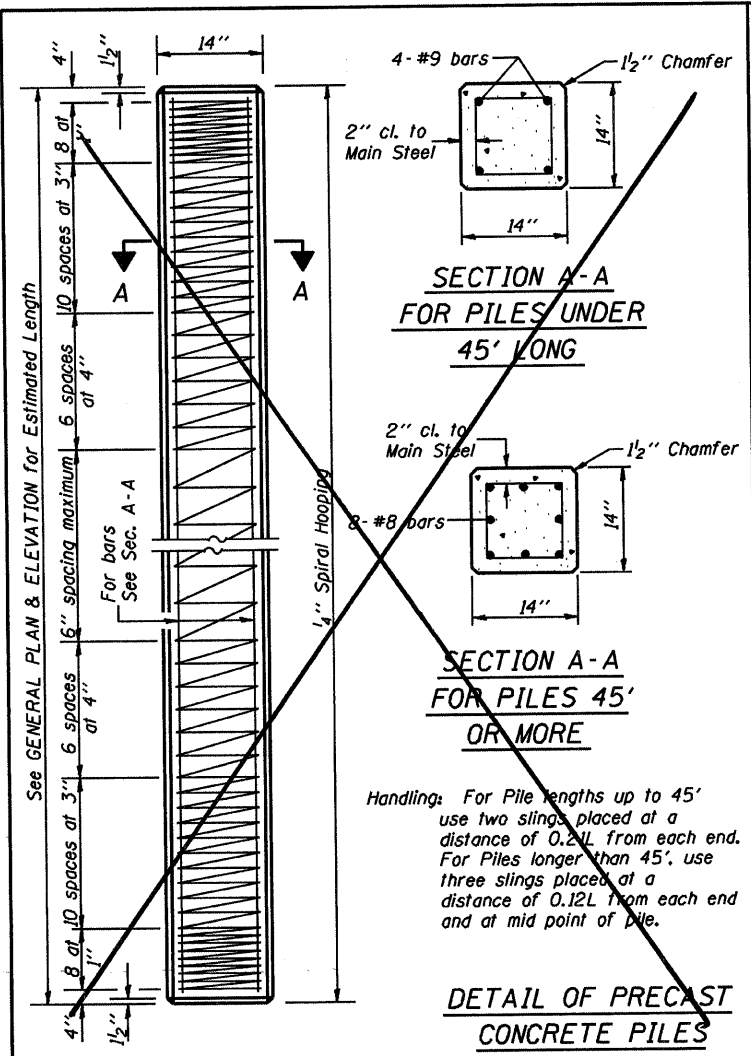


**LOCATION OF NAME PLATE**

Illinois Department of Transportation  
 PASSED APRIL 4, 2005  
*Thomas J. Romagosa*  
 Engineer of Bridge Design  
 APPROVED APRIL 4, 2005  
*Ralph E. Anderson*  
 Engineer of Bridges and Structures  
 ISSUED 7-1-1995

NAME PLATE  
 STANDARD CN

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	11
FED. AID PROJECT:		ILLINOIS	PROJECT	
CONTRACT NO. 97332				



**QUANTITIES/FT. OF ENCASEMENT (STEEL PILES)**

Pile Size	Item	Quantity
HPB	Concrete Encasement	0.063 C.Y.
HP10	Concrete Encasement	0.080 C.Y.
HP12	Concrete Encasement	0.112 C.Y.

(BENT #1 ONLY)

**(METAL SHELL PILES)**

Pile Size	Item	Quantity
12" Dia.	Concrete Encasement	0.087 C.Y.

**PILE DETAILS**

**STANDARD CX-1**

Illinois Department of Transportation

PASSED FEBRUARY 1, 2000

Thomas J. Romaszkowski  
Engineer of Bridge Design

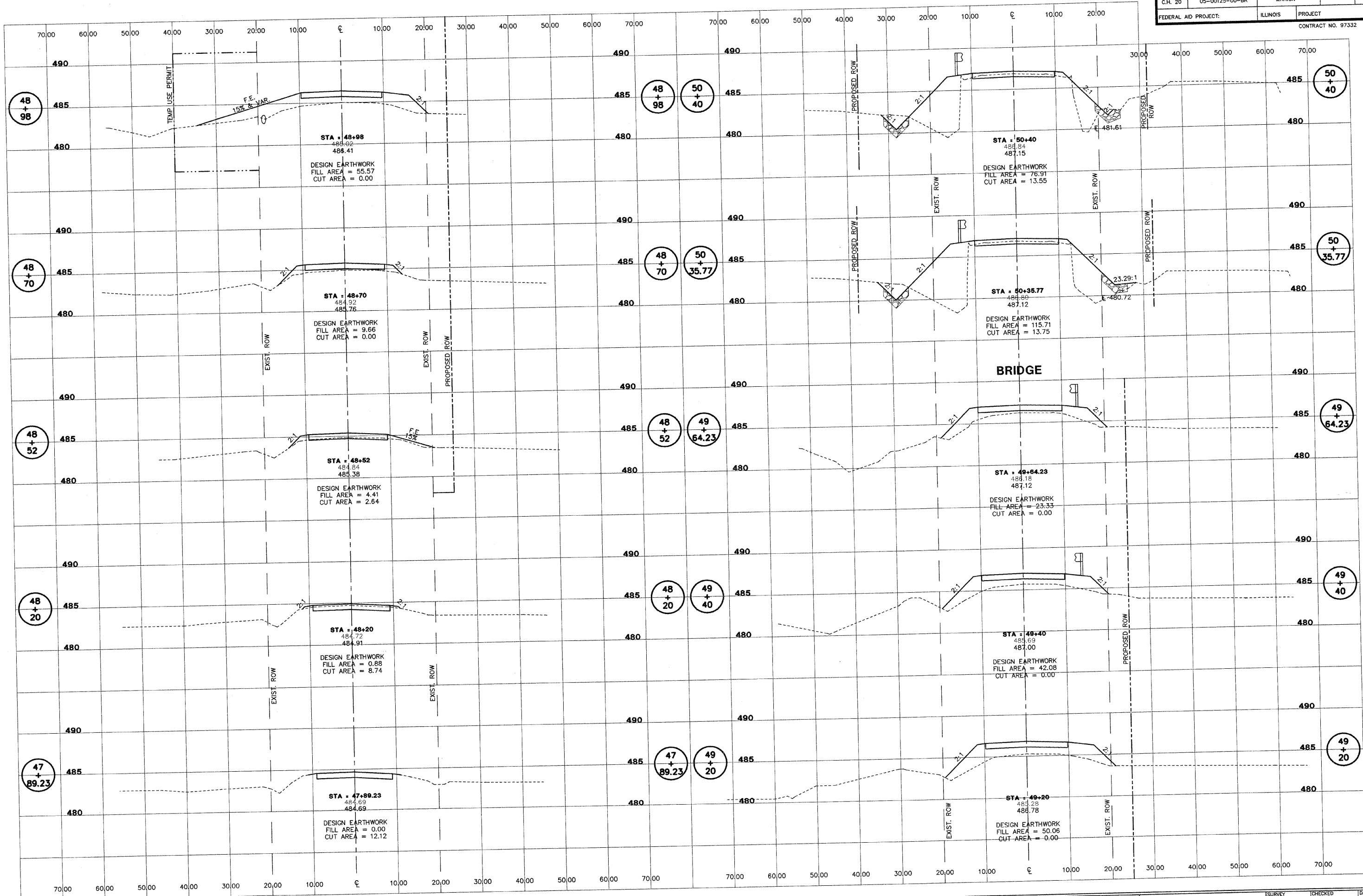
APPROVED FEBRUARY 1, 2000

Ralph E. Anderson  
Engineer of Bridges and Structures

186-H-031551

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	12
FEDERAL AID PROJECT:		ILLINOIS	PROJECT	

CONTRACT NO. 97332



**STS CONSULTANTS**  
 2524 South Broadway  
 Salem, Illinois 62881  
 Ph (618) 548-3500  
 Fax (618) 548-5246  
 IL Design Firm Reg. No. 184-001518

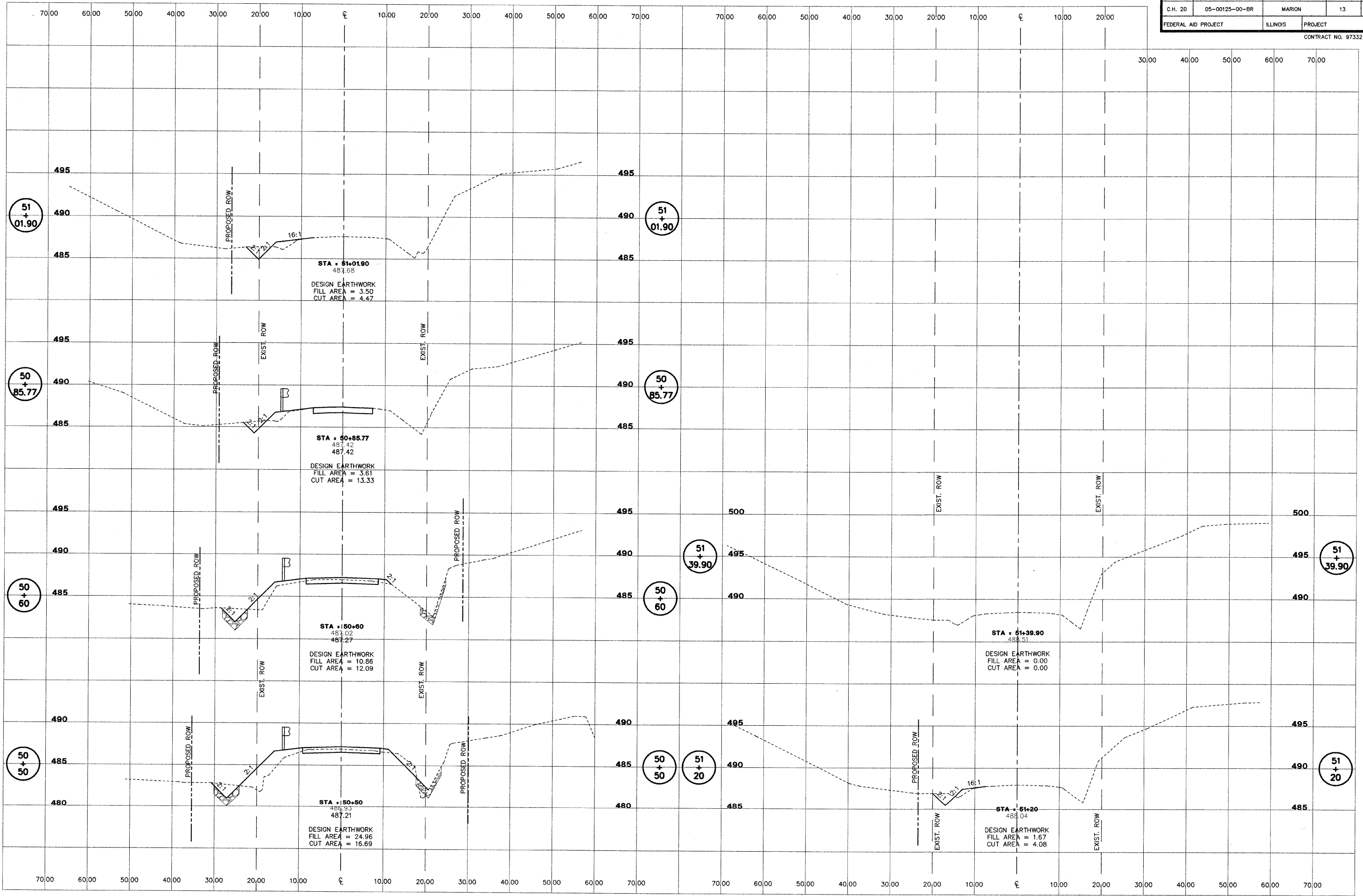
**CROSS SECTIONS**  
 STA. 47+89.23 TO STA. 50+40

SURVEY	JAS	CHECKED	DATE
DESIGN	MRO/DJC	APPROVED	1/28/08
DRAWN	BLT/JMW		

JOB NO. 30482

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 20	05-00125-00-BR	MARION	13	13
FEDERAL AID PROJECT		ILLINOIS	PROJECT	

CONTRACT NO. 97332



COUNTY HIGHWAY 20 (BEE BRANCH ROAD)  
SECTION 05-00125-00-BR  
MARION COUNTY, ILLINOIS

CROSS SECTIONS		DATE
STA. 50+50 TO STA. 51+39.9		1/28/08
SURVEY	CHECKED	DESIGN
JAS	JAS	MRO/DJC
APPROVED	APPROVED	REVIS
BLT/JMW	BLT/JMW	JOB NO.
		30482

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