

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 11	01-00081-00-BR	MACOUPIN	22	1
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

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

### INDEX OF SHEETS

1. COVER SHEET
2. SUMMARY OF QUANTITIES & TYPICAL CROSS SECTION
3. PLAN AND PROFILE
- 4.-20. BRIDGE PLANS
- 21.-22. STATION CROSS SECTIONS

SCALES

PLAN	0' = 50'
PROFILE HORIZ.	0' = 50'
PROFILE VERT.	0' = 5'
CROSS SECTIONS-HORIZ.	0' = 10'
CROSS SECTIONS-VERT.	0' = 5'

## SECTION 01-00081-00-BR F.A.S. ROUTE 1732/C.H.11 MACOUPIN COUNTY PROJECT BRS-1732(104) C-96-217-06

### STANDARDS:

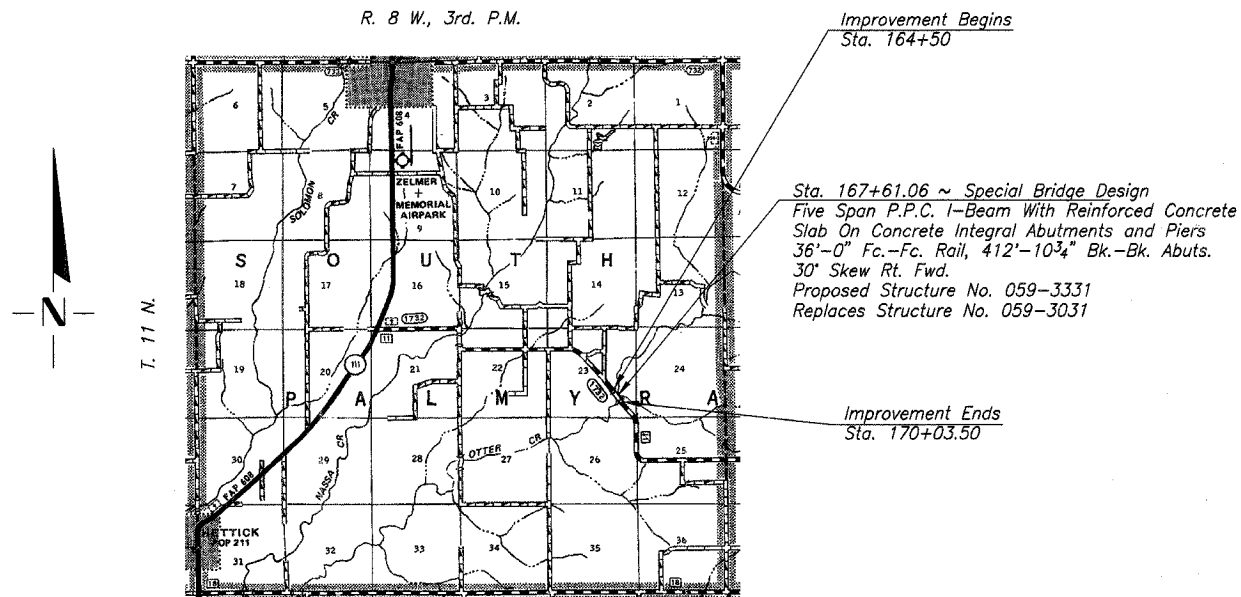
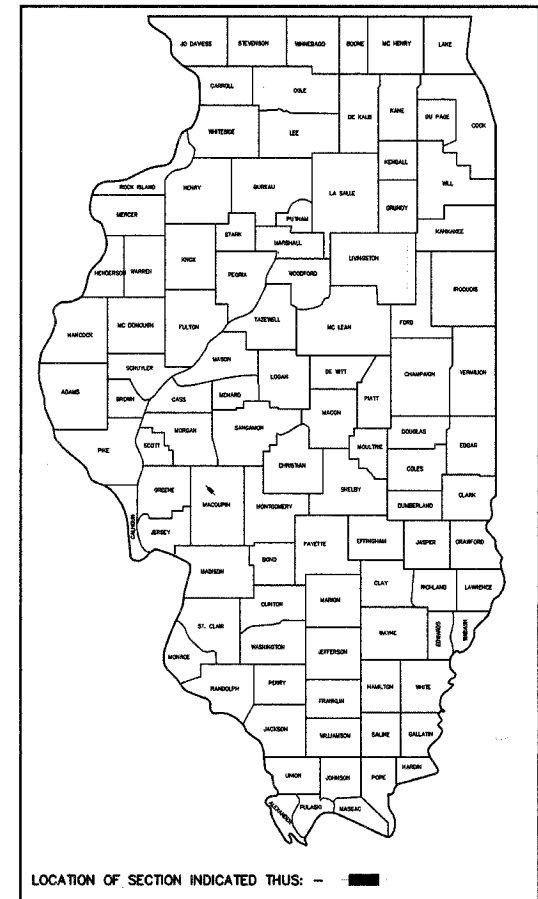
- |           |   |
|-----------|---|
| 280001-03 | TEMPORARY EROSION CONTROL SYSTEMS   |
| 420001-06 | PAVEMENT JOINTS   |
| 420401-05 | BRIDGE APPROACH PAVEMENT  |
| 515001-02 | NAME PLATE FOR BRIDGES  |
| 601101    | CONCRETE HEADWALL FOR PIPE DRAIN  |
| 630301-04 | SHOULDER WIDENING FOR TYPE 1 GUARDRAIL TERMINALS  |
| 631032-03 | TRAFFIC BARRIER TERMINAL, TYPE 6A   |
| 635006-02 | REFLECTOR AND TERMINAL MARKER PLACEMENT   |
| 701201-02 | LANE CLOSURE, 2L, 2W, DAY ONLY FOR SPEEDS ≥ 45 MPH                                      |
| 702001-06 | TRAFFIC CONTROL DEVICES   |
| BLR 21-6  | TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS |
| BLR 23-1  | TRAFFIC BARRIER TERMINAL, TYPE 1  |

### UTILITIES

MJM ELECTRIC COOPERATIVE  
330 WEST BEECHER STREET  
JACKSONVILLE, ILLINOIS 62650

FRONTIER COMMUNICATIONS  
225 NORTH BROAD STREET  
CARLINVILLE, ILLINOIS 62626

DESIGN FUNCTIONAL CLASSIFICATION:  
MAJOR COLLECTOR 0-250 ADT  
DESIGN TRAFFIC: 228 (2021)  
DESIGN SPEED: 30 M.P.H.

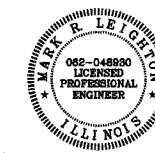


### LAYOUT

APPROXIMATE SCALE = 1 MILE  
Net Length of Section = 553.50 Feet = 0.105 Miles

**COOMBE-BLOXDORF P.C.**  
Consulting Engineers • Land Surveyors • Planners  
708 South Grand Avenue West, Springfield, Illinois 62764 217/544-8477  
Design Firm License No. 184-002703

9-20-06  
ILLINOIS PROFESSIONAL NO. 48930 Expires 11-30-07



APPROVED	September 22, 2006
	COUNTY ENGINEER
PASSED	OCTOBER 17, 2006
	DISTRICT SIX ENGINEER OF LOCAL ROADS & STREETS
PASSED	OCTOBER 17, 2006
	DISTRICT SIX ENGINEER OF CONSTRUCTION
Releasing For Bid Based on Limited Review	OCTOBER 17, 2006
	DEPUTY DIRECTOR OF HIGHWAYS REGIONAL FOUR ENGINEER STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

TOLL FREE JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS (J.U.L.I.E.)  
TELEPHONE NUMBER 1-800-892-0123

CONTRACT NO. 93429

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 11	01-00081-00-BR	MACOUPIN	22	2
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

SUMMARY OF QUANTITIES CONSTRUCTION TYPE CODE X081-2A			
CODE NO.	ITEM	UNIT	QUANTITY
20200100	EARTH EXCAVATION	CU YD	125
20300100	CHANNEL EXCAVATION	CU YD	470
20400800	FURNISHED EXCAVATION	CU YD	200
20700400	* POROUS GRANULAR EMBANKMENT, SPECIAL	CU YD	154
25001000	* SEEDING CLASS 2 (SPECIAL)	ACRE	0.6
28000300	* TEMPORARY DITCH CHECKS	EACH	4
28100107	STONE RIPRAP, CLASS A4	SQ YD	559
28200200	FILTER FABRIC	SQ YD	559
40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	91
40800050	INCIDENTAL HOT MIX ASPHALT SURFACING	TON	23
42001165	BRIDGE APPROACH PAVEMENT	SQ YD	160
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	180
50300225	CONCRETE STRUCTURES	CU YD	87.8
50300255	CONCRETE SUPERSTRUCTURE	CU YD	459.6
50300260	BRIDGE DECK GROOVING	SQ YD	1652
50300280	CONCRETE ENCASEMENT	CU YD	39.0
50300300	* PROTECTIVE COAT	SQ YD	1676
50400905	* FURNISHING AND ERECTING PRECAST PRESTRESSED CONCRETE I-BEAMS, 42 IN.	FOOT	2454
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	116,450
50800515	BAR SPLICERS	EACH	48
50901050	STEEL RAILING, TYPE SM	FOOT	826
51201500	FURNISHING STEEL PILES HP 10X57	FOOT	3406
51202305	DRIVING PILES	FOOT	3406
51203500	TEST PILE STEEL HP 10X57	EACH	2
51204650	PILE SHOES	EACH	46
51500100	NAME PLATES	EACH	1
59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	89
60109580	* PIPE UNDERDRAINS FOR STRUCTURES, 4"	FOOT	140
63100087+	TRAFFIC BARRIER TERMINAL, TYPE 6A	EACH	4
63100167+	* TRAFFIC BARRIER TERMINAL, TYPE 1 SPECIAL (TANGENT)	EACH	3
67100100	MOBILIZATION	L SUM	1
70101700	* TRAFFIC CONTROL AND PROTECTION	L SUM	1
78201000+	* TERMINAL MARKER-DIRECT APPLIED	EACH	4
LR631020+	TRAFFIC BARRIER TERMINAL, TYPE 1	EACH	1
X5020501	* UNDERWATER STRUCTURE EXCAVATION PROTECTION-LOCATION NO. 1	EACH	1
X5020502	* UNDERWATER STRUCTURE EXCAVATION PROTECTION-LOCATION NO. 2	EACH	1
X5020503	* UNDERWATER STRUCTURE EXCAVATION PROTECTION-LOCATION NO. 3	EACH	1
X5020504	* UNDERWATER STRUCTURE EXCAVATION PROTECTION-LOCATION NO. 4	EACH	1
Z0076600+	TRAINEES	HOUR	500

\* SEE SPECIAL PROVISION  
 Δ YORSO  
 † SPECIALTY ITEMS

**GENERAL NOTES**

WHERE SECTION AND SUBSECTION MONUMENTS ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKS AND MONUMENTS UNTIL THE OWNER, AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION.

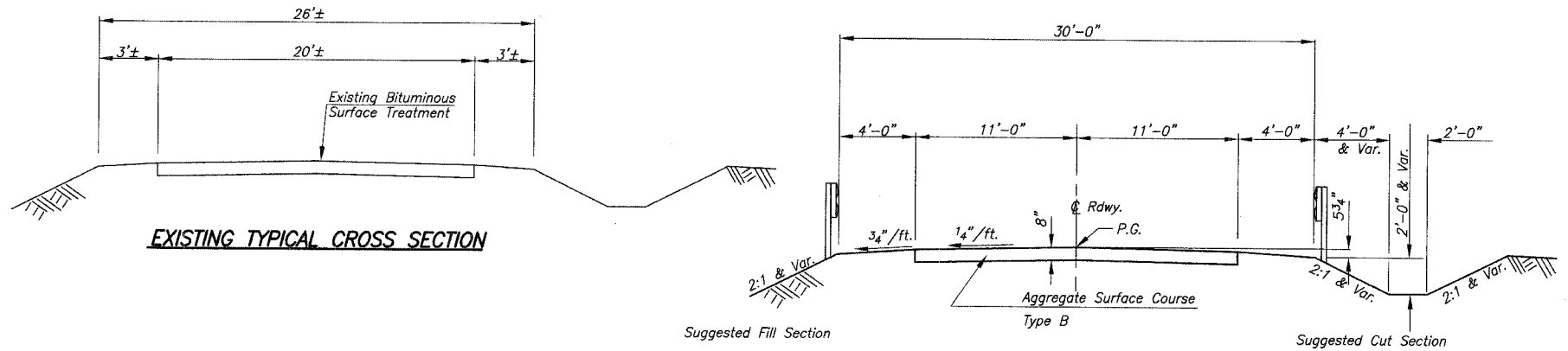
THE AREA TO BE SEEDED SHALL CONSIST OF ALL DISTURBED EARTH SURFACES WITHIN THE RIGHT OF WAY AND EASEMENTS AS DIRECTED BY THE ENGINEER.

SEEDING, CLASS 2 (SPECIAL) = 0.6 ACRES

ALL TREES THAT INTERFERE WITH CONSTRUCTION WITHIN THE R.O.W. AND EASEMENTS SHALL BE REMOVED ONLY AT THE DIRECTION OF THE ENGINEER.

THE COST OF REMOVAL OF ANY OBSTRUCTIONS OR CULVERTS NOT OTHERWISE INCLUDED IN REMOVAL OF EXISTING STRUCTURES WHICH INTERFERE WITH CONSTRUCTION WILL BE CONSIDERED INCIDENTAL TO THE COST OF EARTH EXCAVATION.

ALL PLAN ELEVATIONS REPRESENT U.S.G.S. DATUM.



**APPLICATION RATES USED IN QUANTITY CALCULATIONS**

GRANULAR MATERIALS 2.05 TON/CU. YD.

Road Classification: Local Road 0-250 ADT  
 Current ADT 200

**TYPICAL CROSS SECTION**

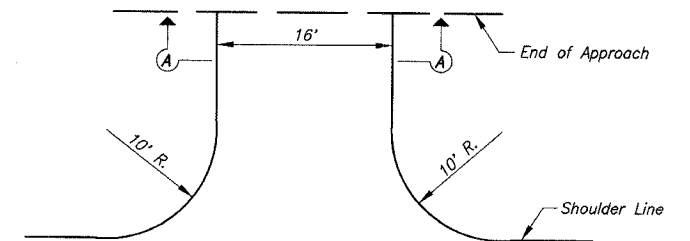
Sta. 165+00.00 to Sta. 165+18.61  
 Transition from the proposed roadway to the existing roadway to be constructed from Sta. 164+50 to 165+00

**GUARD RAIL SCHEDULE**

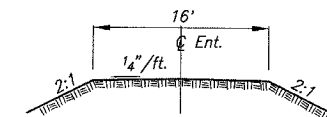
TRAFFIC BARRIER TERMINAL, TY. 6A  
 LT. STA. 165+12.78 TO 165+47.00 = 1 EACH  
 RT. STA. 165+33.56 TO 165+67.78 = 1 EACH  
 LT. STA. 169+54.34 TO 169+88.56 = 1 EACH  
 RT. STA. 169+75.12 TO 170+09.34 = 1 EACH  
 TOTAL = 4 EACH

TRAFFIC BARRIER TERMINAL, TY.1 SPECIAL (TANGENT)  
 LT. STA. 164+62.78 TO 165+12.78 = 1 EACH  
 LT. STA. 169+88.56 TO 170+38.56 = 1 EACH  
 RT. STA. 170+09.34 TO 170+59.34 = 1 EACH  
 TOTAL = 3 EACH

TRAFFIC BARRIER TERMINAL, TY.1  
 RT. STA. 165+08.56 TO 165+33.56 = 1 EACH



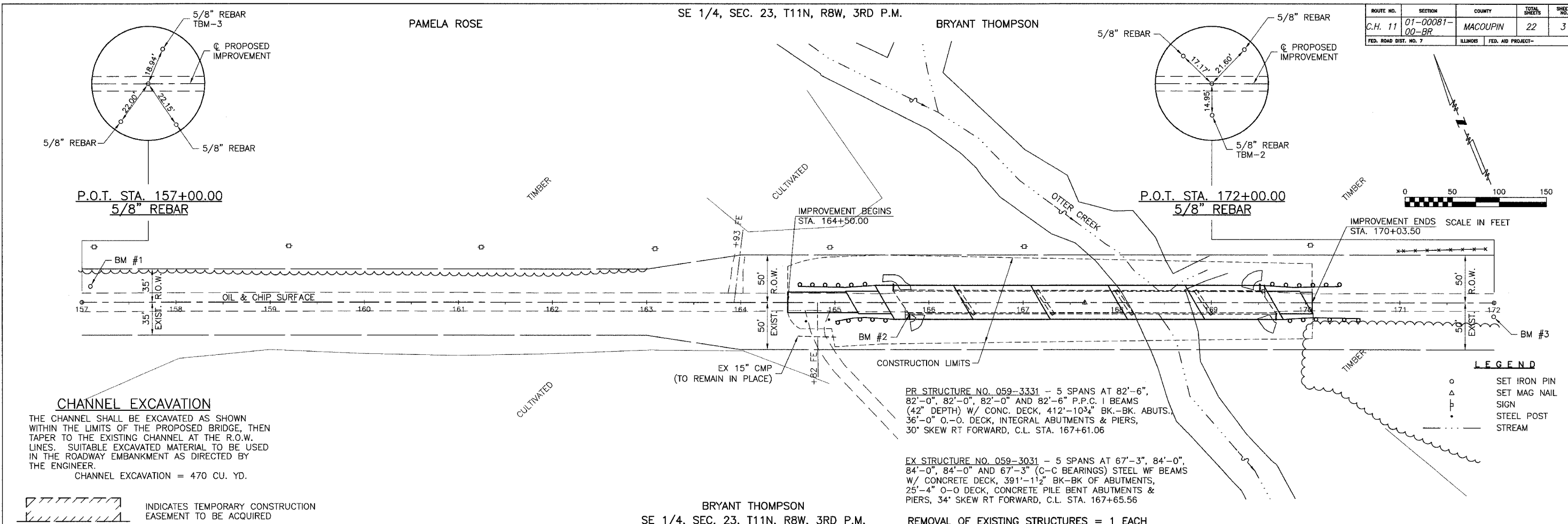
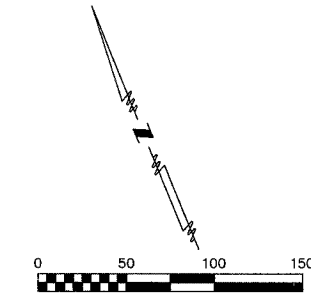
**FIELD ENTRANCE DETAIL**



**SECTION A-A**

SHEET TITLE		PROJECT NO.	
SUMMARY OF QUANTITIES & TYPICAL CROSS SECTION		04081	
PROJECT		SCALE	
SECTION 01-00081-00-BR C.H. 11/F.A.S. 1732 MACOUPIN COUNTY STATION 167+61.06		10-03-06	
DRAWN BY		CHECKED BY	
MRL		MCB	
DRAWING NO.		DATE	
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703		2	
OF 22 SHTS			

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 11	01-00081-00-BR	MACOUPIN	22	3
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	



**CHANNEL EXCAVATION**  
 THE CHANNEL SHALL BE EXCAVATED AS SHOWN WITHIN THE LIMITS OF THE PROPOSED BRIDGE, THEN TAPER TO THE EXISTING CHANNEL AT THE R.O.W. LINES. SUITABLE EXCAVATED MATERIAL TO BE USED IN THE ROADWAY EMBANKMENT AS DIRECTED BY THE ENGINEER.  
 CHANNEL EXCAVATION = 470 CU. YD.

**PR STRUCTURE NO. 059-3331** - 5 SPANS AT 82'-6", 82'-0", 82'-0", 82'-0" AND 82'-6" P.P.C. I BEAMS (42" DEPTH) W/ CONC. DECK, 412'-10 3/4" BK.-BK. ABUTS., 36'-0" O.-O. DECK, INTEGRAL ABUTMENTS & PIERS, 30' SKEW RT FORWARD, C.L. STA. 167+61.06

**EX STRUCTURE NO. 059-3031** - 5 SPANS AT 67'-3", 84'-0", 84'-0", 84'-0" AND 67'-3" (C-C BEARINGS) STEEL WF BEAMS W/ CONCRETE DECK, 391'-1 1/2" BK.-BK OF ABUTMENTS, 25'-4" O-O DECK, CONCRETE PILE BENT ABUTMENTS & PIERS, 34' SKEW RT FORWARD, C.L. STA. 167+65.56

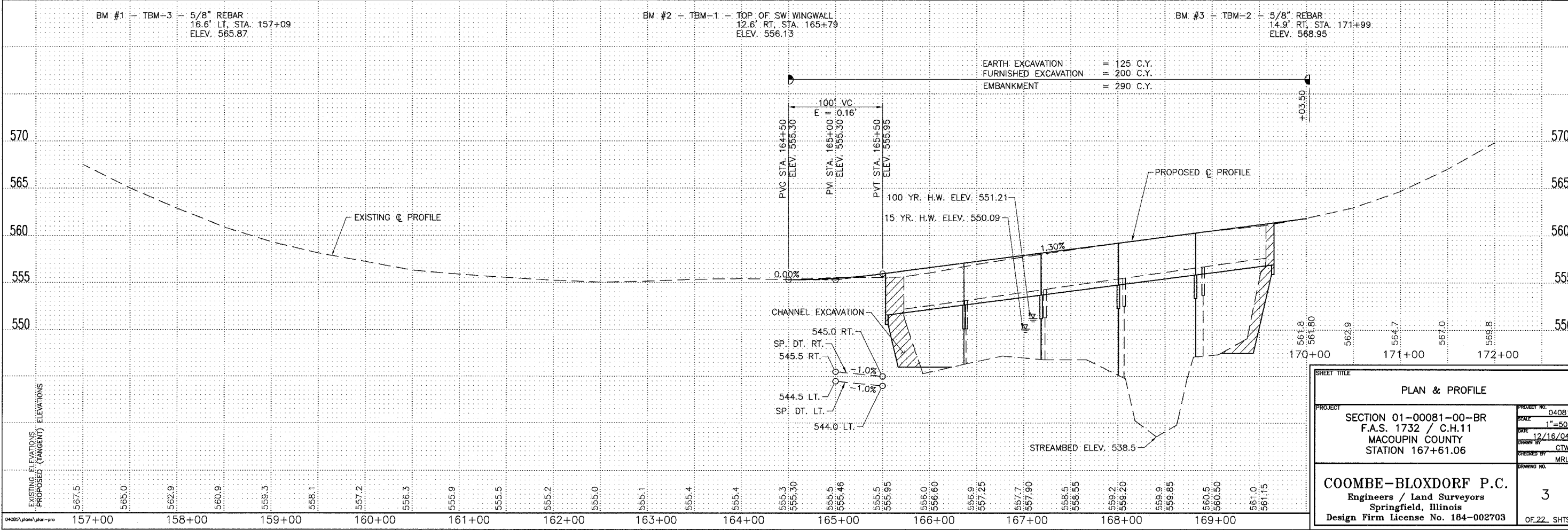
REMOVAL OF EXISTING STRUCTURES = 1 EACH

BM #1 - TBM-3 - 5/8" REBAR  
 16.6' LT. STA. 157+09  
 ELEV. 565.87

BM #2 - TBM-1 - TOP OF SW WINGWALL  
 12.6' RT. STA. 165+79  
 ELEV. 556.13

BM #3 - TBM-2 - 5/8" REBAR  
 14.9' RT. STA. 171+99  
 ELEV. 568.95

EARTH EXCAVATION = 125 C.Y.  
 FURNISHED EXCAVATION = 200 C.Y.  
 EMBANKMENT = 290 C.Y.



SHEET TITLE	
<b>PLAN &amp; PROFILE</b>	
PROJECT	SECTION 01-00081-00-BR
	F.A.S. 1732 / C.H.11
	MACOUPIN COUNTY
	STATION 167+61.06
PROJECT NO.	04081
SCALE	1"=50'
DATE	12/16/04
DRAWN BY	CTW
CHECKED BY	MRL
<b>COOMBE-BLOXDORF P.C.</b>	
Engineers / Land Surveyors	
Springfield, Illinois	
Design Firm License No. 184-002703	
3	
OF 22 SHTS	

ROUTE NO.	SECTION	COUNTY	SHEETS	SHEET NO.
FAS 1732	*	MACOUPIN	22	4
SHEET NO. 1				
17 SHEETS				

\*01-00081-00-BR

Bench Mark: BM#1-5/8" Rebar; 16.6' left at Sta. 157+09; Elev. 565.87.

Existing Structure: The existing structure, known as Hoover Bridge, was built in 1938 as part of SA Route 10, Section 10B-2. The existing 5-span structure, SN 059-3031, consists of 5-W30x116 noncomposite wide flange beams supporting a 7" slab with spill-through abutments and pile bent piers. The existing structure is 39'-1 1/2" back to back of abutments and 25'-4" out to out of deck with a 34° right forward skew. The proposed 5-span structure, SN 059-3331, consists of 6-42" Precast Prestressed Concrete I-Beams supporting a 7 1/2" slab with integral abutments and pile bent piers. The proposed structure is 412'-10 3/4" back to back of abutments and 36'-0" out to out of deck with a 30° right forward skew. The structure is to be replaced using road closure.

**LOADING HS20-44**  
Allow 50#/sq. ft. for future wearing surface.  
**DESIGN SPECIFICATIONS**  
2002 AASHTO

**DESIGN STRESSES**

**FIELD UNITS**  
f<sub>c</sub> = 3,500 psi  
f<sub>y</sub> = 60,000 psi (reinforcement)

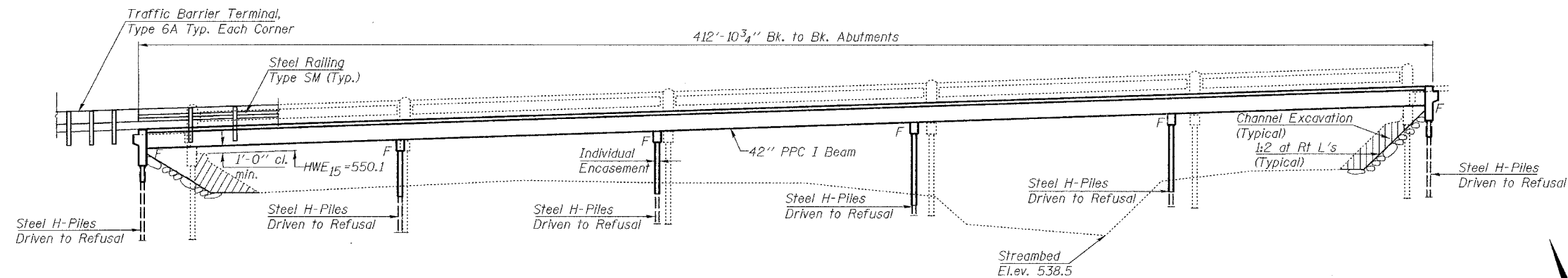
**PRECAST PRESTRESSED UNITS**  
f<sub>c</sub> = 6,000 psi  
f<sub>ti</sub> = 5,000 psi  
f<sub>st</sub> = 270,000 psi (1/2" φ low lax. strands)  
f<sub>sl</sub> = 204,960 psi (1/2" φ low lax. strands)

**SEISMIC DATA**

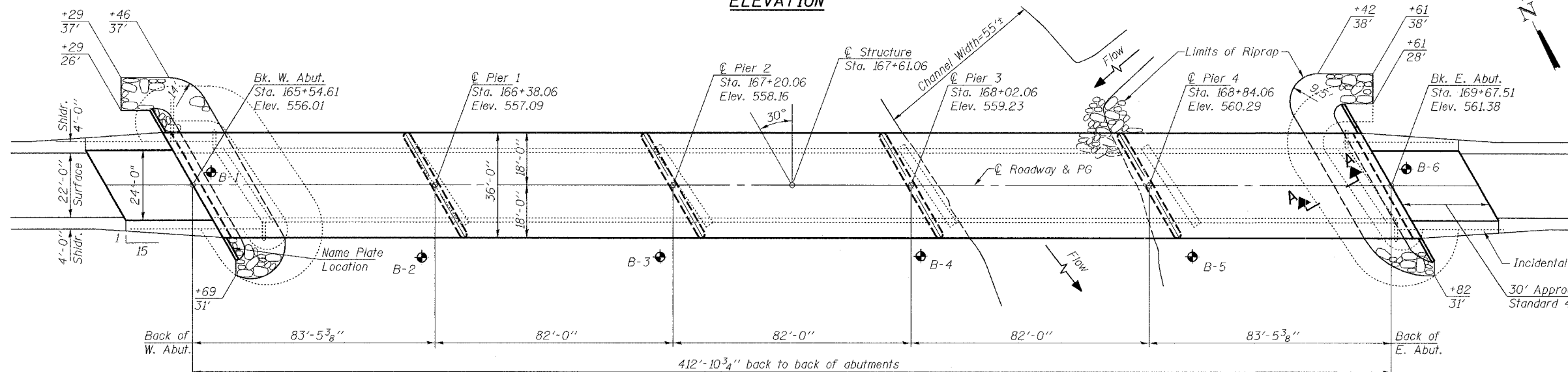
Seismic Performance Category (SPC) = A  
Bedrock Acceleration Coefficient (A) = 5.8%g  
Site Coefficient (S) = 1.0

**INDEX OF SHEETS**

- 1) General Plan & Elevation
- 2) General Notes & Total Bill of Material
- 3-5) Top of Slab Elevations
- 6) Superstructure
- 7) Framing Plan
- 8) Diaphragm Details
- 9-11) Beam Details
- 12) West Abutment
- 13) East Abutment
- 14) Piers
- 15) Steel Bridge Rail-Type SM
- 16) Bar Splicer Assembly Details
- 17) Anchor Bolt Details



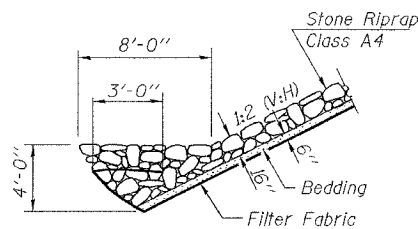
**ELEVATION**



**PLAN**

OTTER CREEK  
BUILT 20\_\_ BY  
MACOUPIN COUNTY  
SECTION 01-00081-00-BR  
FAS RTE. 1732 STA. 167+61.06  
FA PROJ. BRS-1732(104)  
S.N. 059-3331 LOADING HS 20

**NAME PLATE**  
See Std. 515001

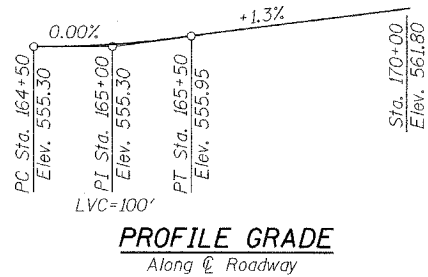


**SECTION A-A**

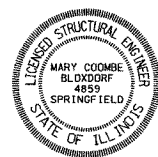
**WATERWAY INFORMATION**

Drainage Area=61.17 Sq. Mi. Low Grade Elev.=555.0 @ Sta. 162+50 Max. Rec. H.W.E.

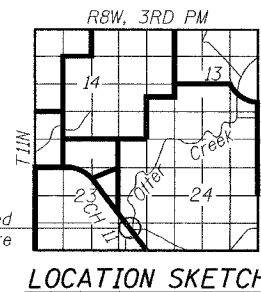
Flood Yr.	Freq.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.		Head - Ft.		Headwater El.	
			Exist.	Prop.	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Design	15	7,270	1,331	1,511	550.09	0.93	0.67	551.02	550.76	
Base	100	11,636	1,664	1,888	551.21	1.30	0.91	552.51	552.12	
Max. Calc.	500	15,225	1,886	2,119	551.96	1.67	1.28	553.63	553.24	



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



*Mary Coombe Bloxdorf*  
Proposed Structure  
ILLINOIS STRUCTURAL NO. 4859  
EXPIRES: 11/30/06  
DATE: 9-20-06



Construction Permits:  
The requirements of the IDNR - Office of Water Resources have been fulfilled in accordance with statewide permit No. 2.

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE	
GENERAL PLAN & ELEVATION	
PROJECT	PROJECT NO.
FAS ROUTE 1732 (COUNTY ROUTE 11)	04081
SECTION 01-00081-00-BR	SCALE
MACOUPIN COUNTY	DATE 07/07/06
STATION 167+61.06	DRAWN BY TFG
STRUCTURE NUMBER 059-3331	CHECKED BY GSB/ML/MCB
DRAWING NO.	
1	
OF 17 SHTS	

ROUTE NO.	SECTION	COUNTY	SHTS	SHEET	SHEET NO.
FAS 1732	#	MACOUPIN	22	5	17 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS FED. AID PROJECT			

\*01-00081-00-BR

**GENERAL NOTES**

Reinforcement bars shall conform to the requirements of AASHTO M 31 or M 322 Grade 60.

The Contractor shall drive two HP 10x57 test piles in permanent locations, one at the East Abutment and one at Pier 2, as directed by the Engineer before ordering the remainder of the piles.

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

All construction joints shall be bonded.

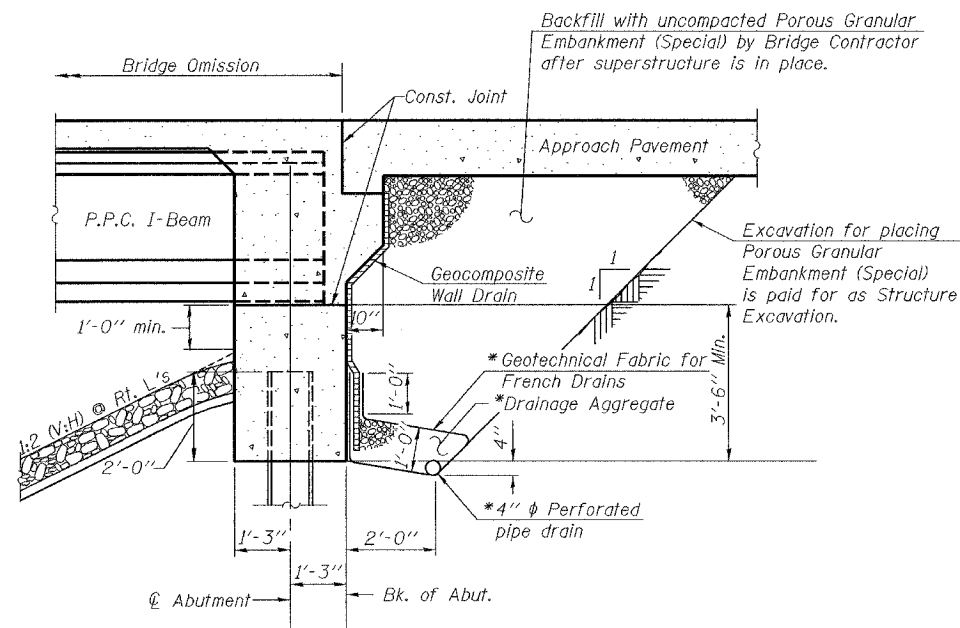
The Standard Specifications adopted by the Department of Transportation January 1, 2007 shall apply to this work.

The steel H-piles shall be according to AASHTO M 270 Grade 50.

See Special Provisions for Boring Data.

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Structures	Each			1
Structure Excavation	Cu. Yd.		180	180
Concrete Superstructure	Cu. Yd.	459.6		459.6
Protective Coat	Sq. Yd.	1676		1676
Concrete Structures	Cu. Yd.		87.8	87.8
Reinforcement Bars, Epoxy Coated	Lb.	102,620	13,830	116,450
Furnishing Steel Piles, HP 10x57	Ft.		3406	3406
Driving Piles	Ft.		3406	3406
Test Piles Steel HP 10x57	Each		2	2
Name Plates	Each		1	1
Porous Granular Embankment (Special)	Cu. Yd.			154
Furnishing and Erecting Precast Prestressed Concrete I-Beams, 42"	Ft.	2454		2454
Bridge Deck Grooving	Sq. Yd.	1652		1652
Bar Splicers	Each		48	48
Concrete Encasement	Cu. Yd.		39.0	39.0
Stone Riprap Class A4	Sq. Yd.			559
Filter Fabric	Sq. Yd.			559
Channel Excavation	Cu. Yd.			470
Steel Railing, Type SM	FT.	826		826
Pile Shoes	Each		46	46
Underwater Structure Excavation Protection - Location 1	Each		1	1
Underwater Structure Excavation Protection - Location 2	Each		1	1
Underwater Structure Excavation Protection - Location 3	Each		1	1
Underwater Structure Excavation Protection - Location 4	Each		1	1
Pipe Underdrains for Structures 4"	Foot		140	140
Geocomposite Wall Drain	Sq. Yd.		89	89



**SECTION THRU INTEGRAL ABUTMENT**  
(Horiz. dim. @ Rt. L's)

\* Included in the cost of Pipe Underdrains for Structures.

All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101).

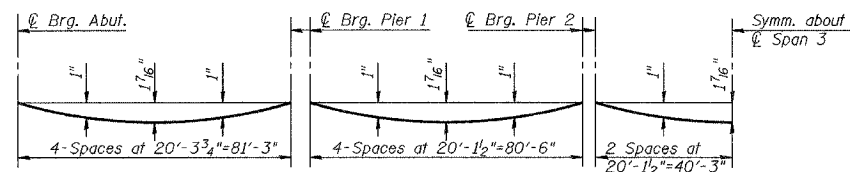
PLOT DATE = 10/06/2006  
FILE NAME = \\s\8888\059-3331-811-02.dgn  
PLOT SCALE = 0.11000 1' / IN.  
USER NAME = IFG.

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE GENERAL NOTES & TOTAL BILL OF MATERIAL	
PROJECT FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331	PROJECT NO. 04081 SCALE DATE 10/03/06 DRAWN BY TFG CHECKED BY GB/ML/MCB DRAWING NO.
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	2 OF 17 SHTS

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 1732	#	MACOUPIN	22	6
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

SHEET NO. 3  
17 SHEETS

\*01-00081-00-BR

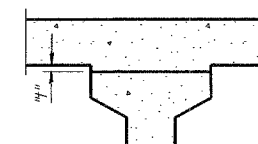


**DEAD LOAD DEFLECTION DIAGRAM**

(Includes weight of concrete, excluding beams).

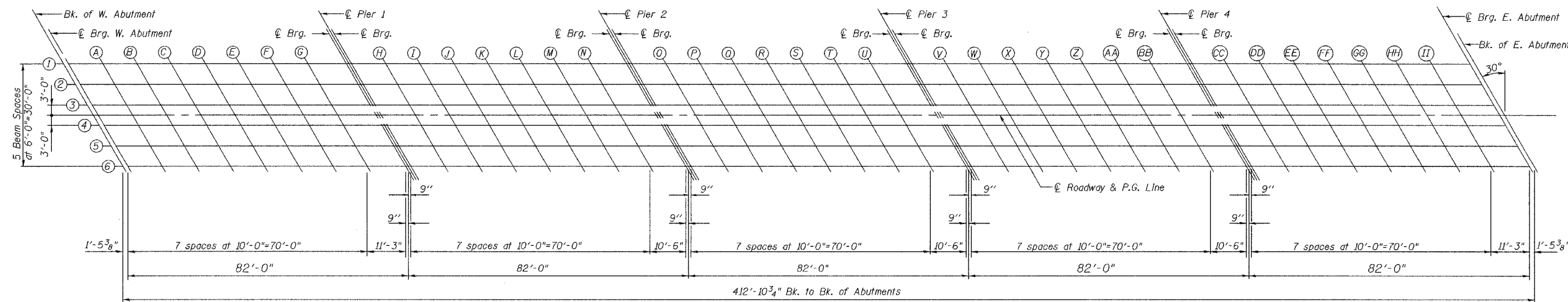
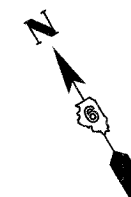
Note:

The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown on Sheets 4 and 5 of 17.



To determine "h": After all precast prestressed beams have been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflections" shown below, minus slab thickness, equals the fillet heights "h" above top flanges of beams.

**FILLET HEIGHTS**



**PLAN**

PLOT DATE = 07/07/2006  
FILE NAME = \\B01-059-3331-011-3-SL-AB-EL-1.dgn  
PLOT SCALE = 1/8" = 1'-0" / IN.  
USER NAME = TFC

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE TOP OF SLAB ELEVATIONS	
PROJECT FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331	PROJECT NO. 04081 SCALE DATE 07/07/06 DRAWN BY TFG CHECKED BY CS/ML/MCB DRAWING NO. 3
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	
OF 17 SHTS	

ROUTE NO.	SECTION	COUNTY	SHEET	SHEET NO.
FAS 1732	MACOUPIN	22	7	4

17 SHEETS

\*01-00081-00-BR

**BEAM 1**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK W ABUT	16545.950	-15.000	555.673	555.673
CL BRG W ABUT	16547.398	-15.000	555.692	555.692
A	16557.398	-15.000	555.821	555.864
B	16567.398	-15.000	555.951	556.033
C	16577.398	-15.000	556.081	556.191
D	16587.398	-15.000	556.211	556.331
E	16597.398	-15.000	556.341	556.453
F	16607.398	-15.000	556.471	556.558
G	16617.398	-15.000	556.601	556.650
CL BRG	16628.648	-15.000	556.747	556.747
CL PIER 1	16629.398	-15.000	556.757	556.757
CL BRG	16630.148	-15.000	556.767	556.767
H	16640.148	-15.000	556.897	556.940
I	16650.148	-15.000	557.027	557.110
J	16660.148	-15.000	557.157	557.267
K	16670.148	-15.000	557.287	557.407
L	16680.148	-15.000	557.417	557.528
M	16690.148	-15.000	557.547	557.632
N	16700.148	-15.000	557.677	557.723
CL BRG	16710.648	-15.000	557.813	557.813
CL PIER 2	16711.398	-15.000	557.823	557.823
CL BRG	16712.148	-15.000	557.833	557.833
O	16722.148	-15.000	557.963	558.006
P	16732.148	-15.000	558.093	558.176
Q	16742.148	-15.000	558.223	558.333
R	16752.148	-15.000	558.353	558.473
S	16762.148	-15.000	558.483	558.594
T	16772.148	-15.000	558.613	558.698
U	16782.148	-15.000	558.743	558.789
CL BRG	16792.648	-15.000	558.879	558.879
CL PIER 3	16793.398	-15.000	558.889	558.889
CL BRG	16794.148	-15.000	558.899	558.899
V	16804.148	-15.000	559.029	559.072
W	16814.148	-15.000	559.159	559.242
X	16824.148	-15.000	559.289	559.399
Y	16834.148	-15.000	559.419	559.539
Z	16844.148	-15.000	559.549	559.660
AA	16854.148	-15.000	559.679	559.764
BB	16864.148	-15.000	559.809	559.855
CL BRG	16874.648	-15.000	559.945	559.945
CL PIER 4	16875.398	-15.000	559.955	559.955
CL BRG	16876.148	-15.000	559.965	559.965
CC	16886.148	-15.000	560.095	560.138
DD	16896.148	-15.000	560.225	560.307
EE	16906.148	-15.000	560.355	560.464
FF	16916.148	-15.000	560.485	560.605
GG	16926.148	-15.000	560.615	560.727
HH	16936.148	-15.000	560.745	560.831
II	16946.148	-15.000	560.875	560.923
CL BRG E ABUT	16957.398	-15.000	561.021	561.021
BK E ABUT	16958.846	-15.000	561.040	561.040

**BEAM 2**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK W ABUT	16549.414	-9.000	555.807	555.807
CL BRG W ABUT	16550.862	-9.000	555.826	555.826
A	16560.862	-9.000	555.956	555.999
B	16570.862	-9.000	556.086	556.168
C	16580.862	-9.000	556.216	556.326
D	16590.862	-9.000	556.346	556.466
E	16600.862	-9.000	556.476	556.588
F	16610.862	-9.000	556.606	556.693
G	16620.862	-9.000	556.736	556.785
CL BRG	16632.112	-9.000	556.882	556.882
CL PIER 1	16632.862	-9.000	556.892	556.892
CL BRG	16633.612	-9.000	556.902	556.902
H	16643.612	-9.000	557.032	557.076
I	16653.612	-9.000	557.162	557.245
J	16663.612	-9.000	557.292	557.402
K	16673.612	-9.000	557.422	557.542
L	16683.612	-9.000	557.552	557.663
M	16693.612	-9.000	557.682	557.767
N	16703.612	-9.000	557.812	557.858
CL BRG	16714.112	-9.000	557.948	557.948
CL PIER 2	16714.862	-9.000	557.958	557.958
CL BRG	16715.612	-9.000	557.968	557.968
O	16725.612	-9.000	558.098	558.142
P	16735.612	-9.000	558.228	558.311
Q	16745.612	-9.000	558.358	558.468
R	16755.612	-9.000	558.488	558.608
S	16765.612	-9.000	558.618	558.729
T	16775.612	-9.000	558.748	558.833
U	16785.612	-9.000	558.878	558.924
CL BRG	16796.112	-9.000	559.014	559.014
CL PIER 3	16796.862	-9.000	559.024	559.024
CL BRG	16797.612	-9.000	559.034	559.034
V	16807.612	-9.000	559.164	559.208
W	16817.612	-9.000	559.294	559.377
X	16827.612	-9.000	559.424	559.534
Y	16837.612	-9.000	559.554	559.674
Z	16847.612	-9.000	559.684	559.795
AA	16857.612	-9.000	559.814	559.899
BB	16867.612	-9.000	559.944	559.990
CL BRG	16878.112	-9.000	560.080	560.080
CL PIER 4	16878.862	-9.000	560.090	560.090
CL BRG	16879.612	-9.000	560.100	560.100
CC	16889.612	-9.000	560.230	560.273
DD	16899.612	-9.000	560.360	560.442
EE	16909.612	-9.000	560.490	560.599
FF	16919.612	-9.000	560.620	560.740
GG	16929.612	-9.000	560.750	560.862
HH	16939.612	-9.000	560.880	560.966
II	16949.612	-9.000	561.010	561.058
CL BRG E ABUT	16960.862	-9.000	561.156	561.156
BK E ABUT	16962.310	-9.000	561.175	561.175

**BEAM 3**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK W ABUT	16552.878	-3.000	555.942	555.942
CL BRG W ABUT	16554.326	-3.000	555.961	555.961
A	16564.326	-3.000	556.091	556.134
B	16574.326	-3.000	556.221	556.304
C	16584.326	-3.000	556.351	556.461
D	16594.326	-3.000	556.481	556.601
E	16604.326	-3.000	556.611	556.723
F	16614.326	-3.000	556.741	556.828
G	16624.326	-3.000	556.871	556.920
CL BRG	16635.576	-3.000	557.017	557.017
CL PIER 1	16636.326	-3.000	557.027	557.027
CL BRG	16637.076	-3.000	557.037	557.037
H	16647.076	-3.000	557.167	557.211
I	16657.076	-3.000	557.297	557.380
J	16667.076	-3.000	557.427	557.537
K	16677.076	-3.000	557.557	557.677
L	16687.076	-3.000	557.687	557.798
M	16697.076	-3.000	557.817	557.902
N	16707.076	-3.000	557.947	557.993
CL BRG	16717.576	-3.000	558.083	558.083
CL PIER 2	16718.326	-3.000	558.093	558.093
CL BRG	16719.076	-3.000	558.103	558.103
O	16729.076	-3.000	558.233	558.277
P	16739.076	-3.000	558.363	558.446
Q	16749.076	-3.000	558.493	558.603
R	16759.076	-3.000	558.623	558.743
S	16769.076	-3.000	558.753	558.864
T	16779.076	-3.000	558.883	558.968
U	16789.076	-3.000	559.013	559.059
CL BRG	16799.576	-3.000	559.149	559.149
CL PIER 3	16800.326	-3.000	559.159	559.159
CL BRG	16801.076	-3.000	559.169	559.169
V	16811.076	-3.000	559.299	559.343
W	16821.076	-3.000	559.429	559.512
X	16831.076	-3.000	559.559	559.669
Y	16841.076	-3.000	559.689	559.809
Z	16851.076	-3.000	559.819	559.930
AA	16861.076	-3.000	559.949	560.034
BB	16871.076	-3.000	560.079	560.125
CL BRG	16881.576	-3.000	560.215	560.215
CL PIER 4	16882.326	-3.000	560.225	560.225
CL BRG	16883.076	-3.000	560.235	560.235
CC	16893.076	-3.000	560.365	560.408
DD	16903.076	-3.000	560.495	560.577
EE	16913.076	-3.000	560.625	560.734
FF	16923.076	-3.000	560.755	560.875
GG	16933.076	-3.000	560.885	560.997
HH	16943.076	-3.000	561.015	561.101
II	16953.076	-3.000	561.145	561.193
CL BRG E ABUT	16964.326	-3.000	561.291	561.291
BK E ABUT	16965.774	-3.000	561.310	561.310

**ROADWAY**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK W ABUT	16554.610	0.000	556.010	556.010
CL BRG W ABUT	16556.058	0.000	556.029	556.029
A	16566.058	0.000	556.159	556.202
B	16576.058	0.000	556.289	556.371
C	16586.058	0.000	556.419	556.528
D	16596.058	0.000	556.549	556.669
E	16606.058	0.000	556.679	556.790
F	16616.058	0.000	556.809	556.895
G	16626.058	0.000	556.939	556.987
CL BRG	16637.308	0.000	557.085	557.085
CL PIER 1	16638.058	0.000	557.095	557.095
CL BRG	16638.808	0.000	557.105	557.105
H	16648.808	0.000	557.235	557.278
I	16658.808	0.000	557.365	557.447
J	16668.808	0.000	557.495	557.604
K	16678.808	0.000	557.625	557.744
L	16688.808	0.000	557.755	557.865
M	16698.808	0.000	557.885	557.969
N	16708.808	0.000	558.015	558.060
CL BRG	16719.308	0.000	558.151	558.151
CL PIER 2	16720.058	0.000	558.161	558.161
CL BRG	16720.808	0.000	558.171	558.171
O	16730.808	0.000	558.301	558.344
P	16740.808	0.000	558.431	558.513
Q	16750.808	0.000	558.561	558.670
R	16760.808	0.000	558.691	558.810
S	16770.808	0.000	558.821	558.931
T	16780.808	0.000	558.951	559.035
U	16790.808	0.000	559.081	559.126
CL BRG	16801.308	0.000	559.217	559.217
CL PIER 3	16802.058	0.000	559.227	559.227
CL BRG	16802.808	0.000	559.237	559.237
V	16812.808	0.000	559.367	559.410
W	16822.808	0.000	559.497	559.579
X	16832.808	0.000	559.627	559.736
Y	16842.808	0.000	559.757	559.876
Z	16852.808	0.000	559.887	559.997
AA	16862.808	0.000	560.017	560.101
BB	16872.808	0.000	560.147	560.192
CL BRG	16883.308	0.000	560.283	560.283

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 1732	*	MACOUPIN	22	8
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

\*01-00081-00-BR

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK W ABUT	16556.342	3.000	555.987	555.987
CL BRG W ABUT	16557.790	3.000	556.006	556.006
A	16567.790	3.000	556.136	556.179
B	16577.790	3.000	556.266	556.349
C	16587.790	3.000	556.396	556.506
D	16597.790	3.000	556.526	556.646
E	16607.790	3.000	556.656	556.768
F	16617.790	3.000	556.786	556.873
G	16627.790	3.000	556.916	556.965
CL BRG	16639.040	3.000	557.063	557.063
CL PIER 1	16639.790	3.000	557.072	557.072
CL BRG	16640.540	3.000	557.082	557.082
H	16650.540	3.000	557.212	557.256
I	16660.540	3.000	557.342	557.425
J	16670.540	3.000	557.472	557.582
K	16680.540	3.000	557.602	557.722
L	16690.540	3.000	557.732	557.843
M	16700.540	3.000	557.862	557.947
N	16710.540	3.000	557.992	558.038
CL BRG	16721.040	3.000	558.129	558.129
CL PIER 2	16721.790	3.000	558.138	558.138
CL BRG	16722.540	3.000	558.148	558.148
O	16732.540	3.000	558.278	558.322
P	16742.540	3.000	558.408	558.491
Q	16752.540	3.000	558.538	558.648
R	16762.540	3.000	558.668	558.788
S	16772.540	3.000	558.798	558.909
T	16782.540	3.000	558.928	559.013
U	16792.540	3.000	559.058	559.104
CL BRG	16803.040	3.000	559.195	559.195
CL PIER 3	16803.790	3.000	559.204	559.204
CL BRG	16804.540	3.000	559.214	559.214
V	16814.540	3.000	559.344	559.388
W	16824.540	3.000	559.474	559.557
X	16834.540	3.000	559.604	559.714
Y	16844.540	3.000	559.734	559.854
Z	16854.540	3.000	559.864	559.975
AA	16864.540	3.000	559.994	560.079
BB	16874.540	3.000	560.124	560.170
CL BRG	16885.040	3.000	560.261	560.261
CL PIER 4	16885.790	3.000	560.270	560.270
CL BRG	16886.540	3.000	560.280	560.280
CC	16896.540	3.000	560.410	560.453
DD	16906.540	3.000	560.540	560.622
EE	16916.540	3.000	560.670	560.779
FF	16926.540	3.000	560.800	560.920
GG	16936.540	3.000	560.930	561.042
HH	16946.540	3.000	561.060	561.146
II	16956.540	3.000	561.190	561.238
CL BRG E ABUT	16967.790	3.000	561.336	561.336
BK E ABUT	16969.238	3.000	561.355	561.355

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK W ABUT	16559.806	9.000	555.942	555.942
CL BRG W ABUT	16561.254	9.000	555.961	555.961
A	16571.254	9.000	556.091	556.134
B	16581.254	9.000	556.221	556.304
C	16591.254	9.000	556.351	556.461
D	16601.254	9.000	556.481	556.601
E	16611.254	9.000	556.611	556.723
F	16621.254	9.000	556.741	556.828
G	16631.254	9.000	556.871	556.920
CL BRG	16642.504	9.000	557.018	557.018
CL PIER 1	16643.254	9.000	557.027	557.027
CL BRG	16644.004	9.000	557.037	557.037
H	16654.004	9.000	557.167	557.211
I	16664.004	9.000	557.297	557.380
J	16674.004	9.000	557.427	557.537
K	16684.004	9.000	557.557	557.677
L	16694.004	9.000	557.687	557.798
M	16704.004	9.000	557.817	557.902
N	16714.004	9.000	557.947	557.993
CL BRG	16724.504	9.000	558.084	558.084
CL PIER 2	16725.254	9.000	558.093	558.093
CL BRG	16726.004	9.000	558.103	558.103
O	16736.004	9.000	558.233	558.277
P	16746.004	9.000	558.363	558.446
Q	16756.004	9.000	558.493	558.603
R	16766.004	9.000	558.623	558.743
S	16776.004	9.000	558.753	558.864
T	16786.004	9.000	558.883	558.968
U	16796.004	9.000	559.013	559.059
CL BRG	16806.504	9.000	559.150	559.150
CL PIER 3	16807.254	9.000	559.159	559.159
CL BRG	16808.004	9.000	559.169	559.169
V	16818.004	9.000	559.299	559.343
W	16828.004	9.000	559.429	559.512
X	16838.004	9.000	559.559	559.669
Y	16848.004	9.000	559.689	559.809
Z	16858.004	9.000	559.819	559.930
AA	16868.004	9.000	559.949	560.034
BB	16878.004	9.000	560.079	560.125
CL BRG	16888.504	9.000	560.216	560.216
CL PIER 4	16889.254	9.000	560.225	560.225
CL BRG	16890.004	9.000	560.235	560.235
CC	16900.004	9.000	560.365	560.408
DD	16910.004	9.000	560.495	560.577
EE	16920.004	9.000	560.625	560.734
FF	16930.004	9.000	560.755	560.875
GG	16940.004	9.000	560.885	560.997
HH	16950.004	9.000	561.015	561.101
II	16960.004	9.000	561.145	561.194
CL BRG E ABUT	16971.254	9.000	561.291	561.291
BK E ABUT	16972.702	9.000	561.310	561.310

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK W ABUT	16563.270	15.000	555.898	555.898
CL BRG W ABUT	16564.718	15.000	555.916	555.916
A	16574.718	15.000	556.046	556.090
B	16584.718	15.000	556.176	556.259
C	16594.718	15.000	556.306	556.416
D	16604.718	15.000	556.436	556.556
E	16614.718	15.000	556.566	556.678
F	16624.718	15.000	556.696	556.783
G	16634.718	15.000	556.826	556.875
CL BRG	16645.968	15.000	556.973	556.973
CL PIER 1	16646.718	15.000	556.982	556.982
CL BRG	16647.468	15.000	556.992	556.992
H	16657.468	15.000	557.122	557.166
I	16667.468	15.000	557.252	557.335
J	16677.468	15.000	557.382	557.492
K	16687.468	15.000	557.512	557.632
L	16697.468	15.000	557.642	557.753
M	16707.468	15.000	557.772	557.857
N	16717.468	15.000	557.902	557.948
CL BRG	16727.968	15.000	558.039	558.039
CL PIER 2	16728.718	15.000	558.048	558.048
CL BRG	16729.468	15.000	558.058	558.058
O	16739.468	15.000	558.188	558.232
P	16749.468	15.000	558.318	558.401
Q	16759.468	15.000	558.448	558.558
R	16769.468	15.000	558.578	558.698
S	16779.468	15.000	558.708	558.819
T	16789.468	15.000	558.838	558.923
U	16799.468	15.000	558.968	559.014
CL BRG	16809.968	15.000	559.105	559.105
CL PIER 3	16810.718	15.000	559.114	559.114
CL BRG	16811.468	15.000	559.124	559.124
V	16821.468	15.000	559.254	559.298
W	16831.468	15.000	559.384	559.467
X	16841.468	15.000	559.514	559.624
Y	16851.468	15.000	559.644	559.764
Z	16861.468	15.000	559.774	559.885
AA	16871.468	15.000	559.904	559.989
BB	16881.468	15.000	560.034	560.080
CL BRG	16891.968	15.000	560.171	560.171
CL PIER 4	16892.718	15.000	560.180	560.180
CL BRG	16893.468	15.000	560.190	560.190
CC	16903.468	15.000	560.320	560.363
DD	16913.468	15.000	560.450	560.532
EE	16923.468	15.000	560.580	560.690
FF	16933.468	15.000	560.710	560.830
GG	16943.468	15.000	560.840	560.952
HH	16953.468	15.000	560.970	561.057
II	16963.468	15.000	561.100	561.149
CL BRG E ABUT	16974.718	15.000	561.246	561.246
BK E ABUT	16976.166	15.000	561.265	561.265

PLT DATE = 07/07/2006  
 PLOT SCALE = 1/4" = 100'-0"  
 USER NAME = TFC

PI-E

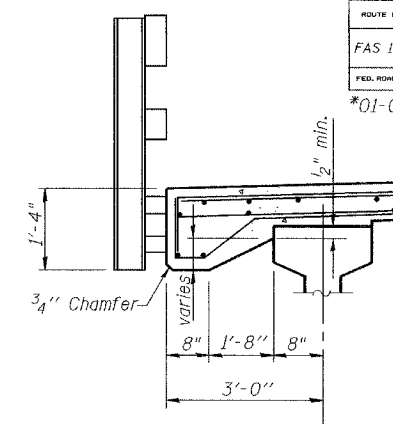
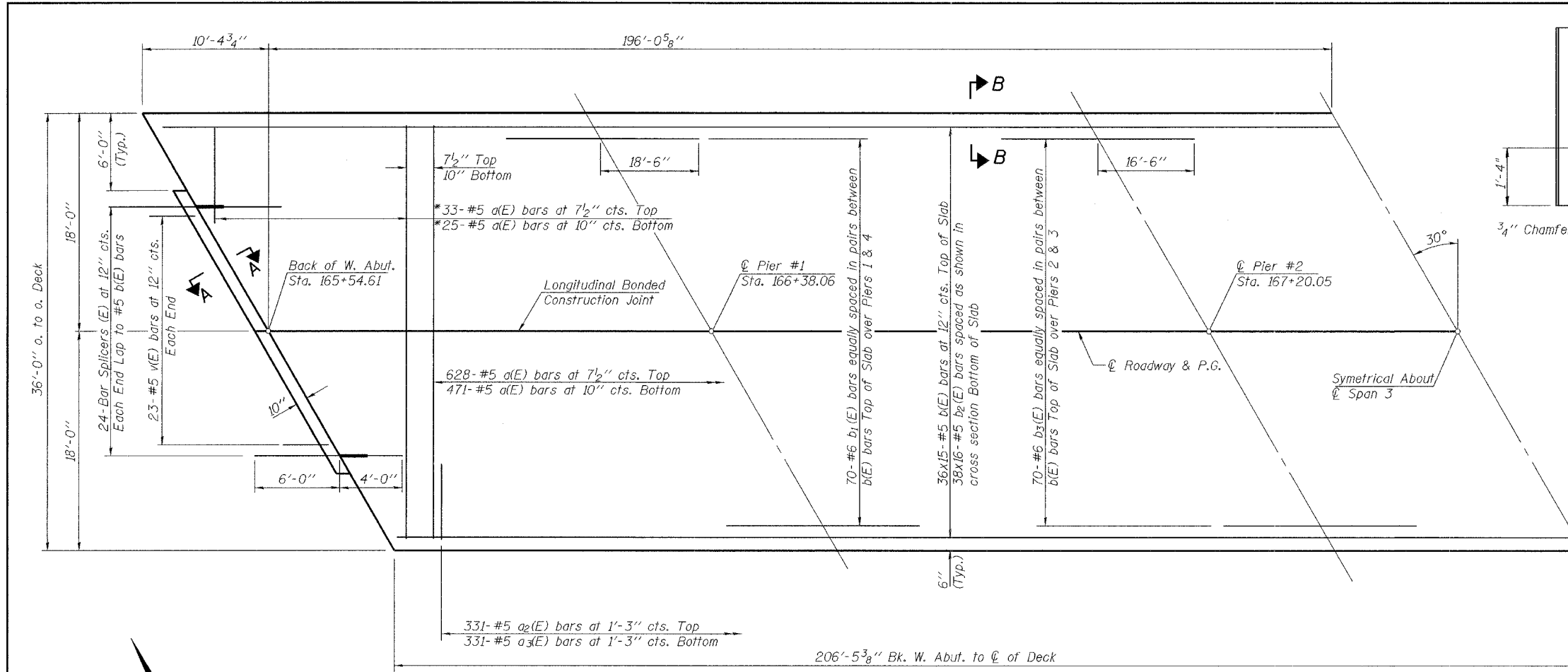
10-22-04

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE	
TOP OF SLAB ELEVATIONS	
PROJECT	PROJECT NO.
FAS ROUTE 1732 (COUNTY ROUTE 11)	04081
SECTION 01-00081-00BR	SCALE
MACOUPIN COUNTY	DATE
STATION 167+61.06	07/07/06
STRUCTURE NUMBER 059-3331	DRAWN BY
	CFC
	CHECKED BY
	MRL/MCB
DRAWING NO.	
COOMBE-BLOXDORF P.C.	
Engineers / Land Surveyors	
Springfield, Illinois	
Design Firm License No. 184-002703	
	5
	OF 17 SHTS



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 6 17 SHEETS
FAS 1732	*	MACOUPIN	22	9	
FED. ROAD DIST. NO. 7		ILLINOIS	FED. ROAD PROJECT		

\*01-00081-00-BR

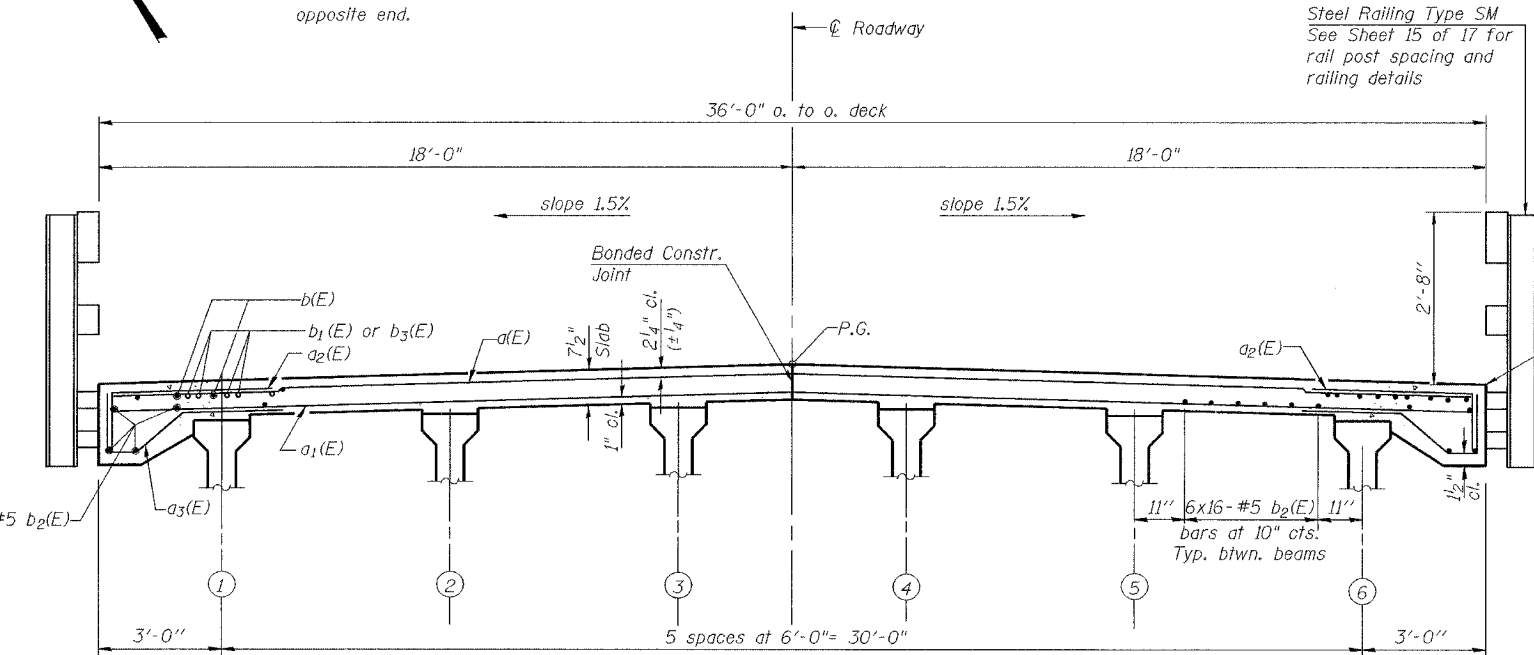


**SUPERSTRUCTURE  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	1157	#5	35'-8"	—
a <sub>2</sub> (E)	662	#5	5'-0"	—
a <sub>3</sub> (E)	662	#5	5'-10"	—
b(E)	540	#5	29'-2"	—
b <sub>1</sub> (E)	140	#6	37'-0"	—
b <sub>2</sub> (E)	608	#5	27'-6"	—
b <sub>3</sub> (E)	140	#6	33'-0"	—
m(E)	4	#6	27'-2"	—
m <sub>1</sub> (E)	12	#6	22'-0"	—
m <sub>2</sub> (E)	24	#6	9'-8"	—
m <sub>3</sub> (E)	50	#6	4'-5"	—
m <sub>4</sub> (E)	4	#6	2'-1"	—
m <sub>5</sub> (E)	80	#4	6'-0"	—
m <sub>6</sub> (E)	24	#8	6'-2"	—
s(E)	58	#4	11'-2"	—
s <sub>1</sub> (E)	42	#5	5'-8"	—
s <sub>2</sub> (E)	100	#4	10'-7"	—
v(E)	46	#5	3'-3"	—
Reinforcement Bars, Epoxy Coated		Pound	102,620	
Concrete Superstructure		Cu. Yd.	459.6	
Bar Splicers(E)		Each	48	

**HALF-PLAN**

\*a(E) bars shall be ordered full length and cut to fit skew. Use remainder of bar in opposite end.

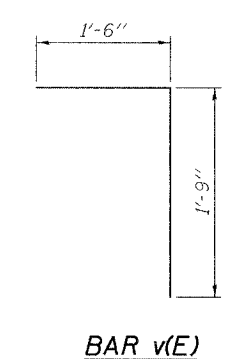
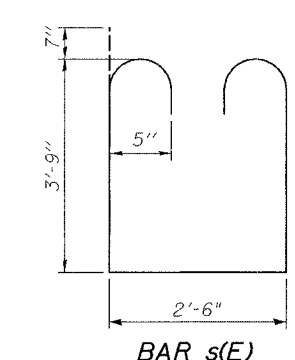
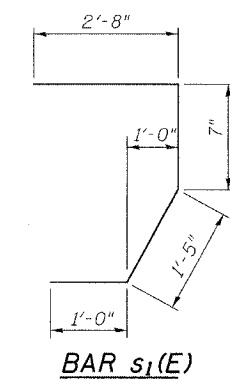
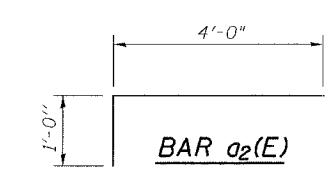
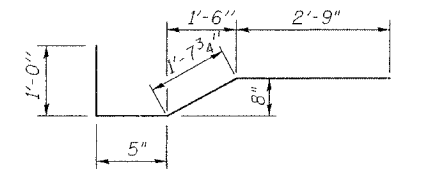


**CROSS SECTION**

(Looking East)  
(Dimensions are at right Ls to the © roadway)

**MIN. BAR LAP**

#5 bars = 1'-8"



**NOTES**

Reinforcement bars in the top of the deck shall be placed with a 1/2" minimum clearance in the area of the rail post anchor devices. The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device. See sheet #8 of 17 for superstructure details. See sheet #8 of 17 for section A-A & Section B-B. Reinforcement bars designated (E) shall be epoxy coated. Bars indicated thus 6 x 15- #5 etc. indicates 6 lines of bars with 15 lengths per line.

**ILLINOIS DEPARTMENT OF TRANSPORTATION**

SHEET TITLE		SUPERSTRUCTURE	
PROJECT	FAS ROUTE 1732 (COUNTY ROUTE 11)	PROJECT NO.	04081
SECTION	01-00081-00-BR	SCALE	
COUNTY	MACOUPIN COUNTY	DATE	07/07/06
STATION	167+61.06	DRAWN BY	TFG
STRUCTURE NUMBER	059-3331	CHECKED BY	CB/ML/MCB
COOMBE-BLOXDORF P.C.		6	
Engineers / Land Surveyors Springfield, Illinois		Design Firm License No. 184-002703	
		OF 17 SHTS	

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 7
FAS 1732	*	MACOUPIN	22	10	17 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		

\*01-00081-00-BR

	0.4 Sp. #1	0.6 Sp. #2	Pier
I	(in <sup>4</sup> )	90,956	
I'	(in <sup>4</sup> )	264,902	
S <sub>b</sub>	(in <sup>3</sup> )	5,153	
S <sub>b</sub> '	(in <sup>3</sup> )	8,592	
S <sub>t</sub>	(in <sup>3</sup> )	3,736	
S <sub>t</sub> '	(in <sup>3</sup> )	23,716	
D	(k/')	1.079	1.079
M <sub>D</sub>	(k)	904.4	0
s <sub>D</sub>	(k/')	0.32	0.32
M <sub>sD</sub>	(k)	154.4	220.7
M <sub>L</sub>	(k)	506.9	424.1
M (Imp)	(k)	122.2	102.2

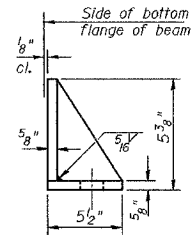
	Abut.	Pier
R <sub>D</sub>	(k)	44.1
R <sub>sD</sub>	(k)	10.2
R <sub>L</sub>	(k)	33.7
Imp.	(k)	8.1
R (Total)	(k)	96.1

I and I' are the moment of inertia and composite moment of inertia of the beam section.  
 S<sub>b</sub> and S<sub>b</sub>' are the non-composite and composite section modulus for the bottom fiber of the prestressed beam.  
 S<sub>t</sub> and S<sub>t</sub>' are the non-composite and composite section modulus for the top fiber of the prestressed beam.  
 M<sub>D</sub> is the moment due to dead loads on the non-composite prestressed beam. It is conservatively calculated at 0.5 of the span.  
 M<sub>sD</sub> is the moment due to dead loads on composite section.  
 M<sub>L</sub> is the moment due to live load on composite section.  
 M (Imp) is the moment due to live load impact on the composite section.

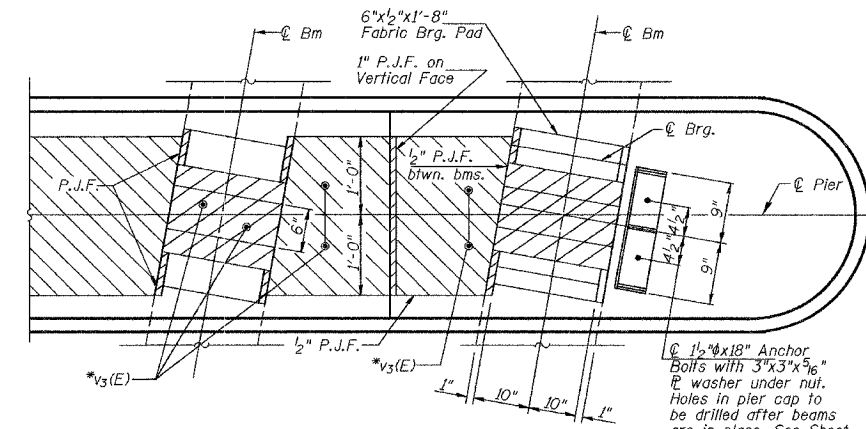
**NOTES**

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.  
 The side retainer shall be galvanized after shop fabrication according to AASHTO M11 and ASTM A 385.  
 Cost of side retainer and anchor bolts shall be included in Concrete Structures.  
 The cost of P.J.F. and Fabric Bearing Pads is included in "Concrete Structures".

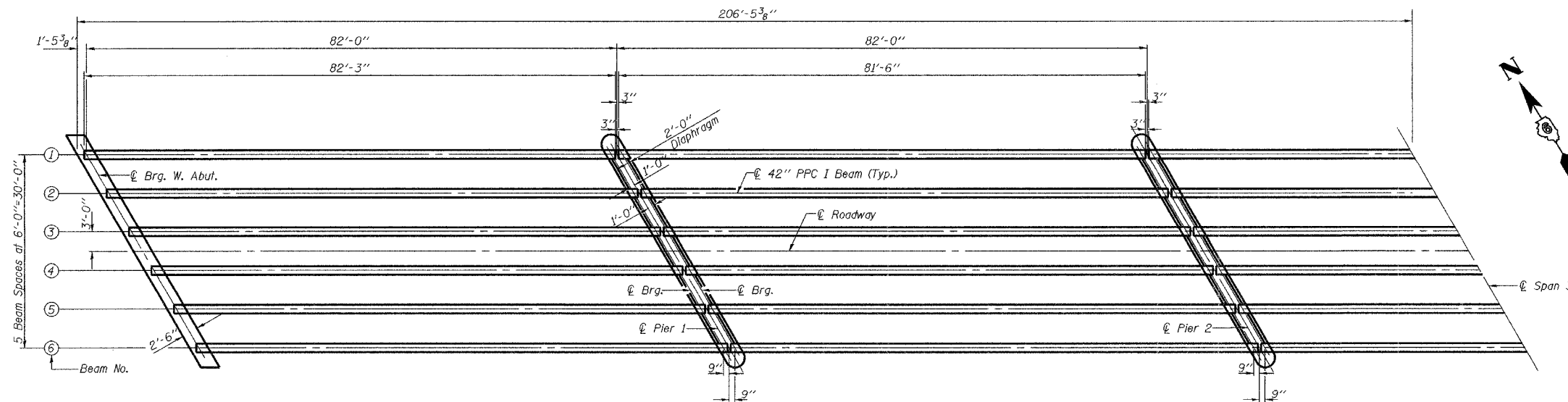
\*v<sub>3</sub> (E) bars installed with pier See Sheet 14 of 17 for locations.



**SIDE RETAINER**



1 1/2" x 18" Anchor Bolts with 3"x3"x5/16" E washer under nut. Holes in pier cap to be drilled after beams are in place. See Sheet 14 of 17 for locations.



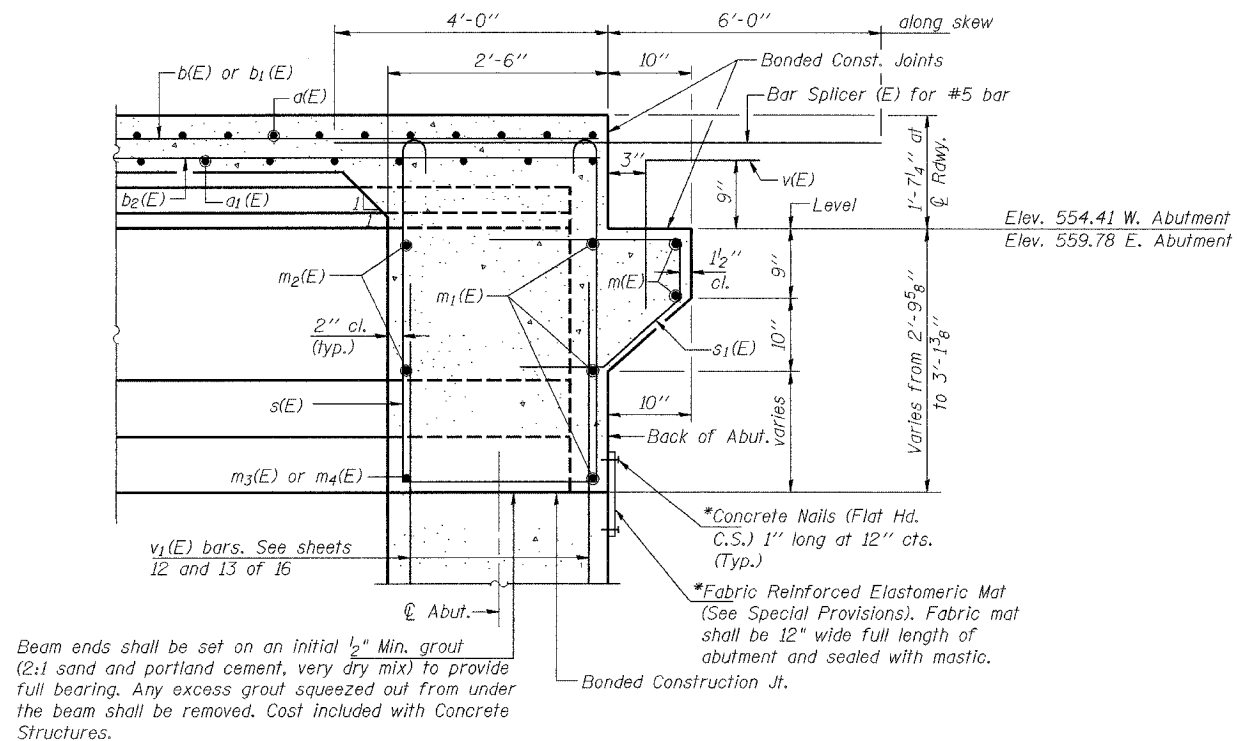
PLOT DATE = 07/07/2006  
 PLOT SCALE = 1/8" = 1'-0"  
 USER NAME = TFC

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE	
FRAMING PLAN	
PROJECT	PROJECT NO.
FAS ROUTE 1732 (COUNTY ROUTE 11)	04081
SECTION 01-00081-00-BR	SCALE
MACOUPIN COUNTY	DATE
STATION 167+61.06	07/07/06
STRUCTURE NUMBER 059-3331	DRAWN BY
	TEFG
	CHECKED BY
	ML/MCB
DRAWING NO.	
7	
OF 17 SHTS	

**COOMBE-BLOXDORF P.C.**  
 Engineers / Land Surveyors  
 Springfield, Illinois  
 Design Firm License No. 184-002703

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 8 17 SHEETS
FAS 1732	*	MACOUPIN	22	11	
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		

\*01-00081-00-BR

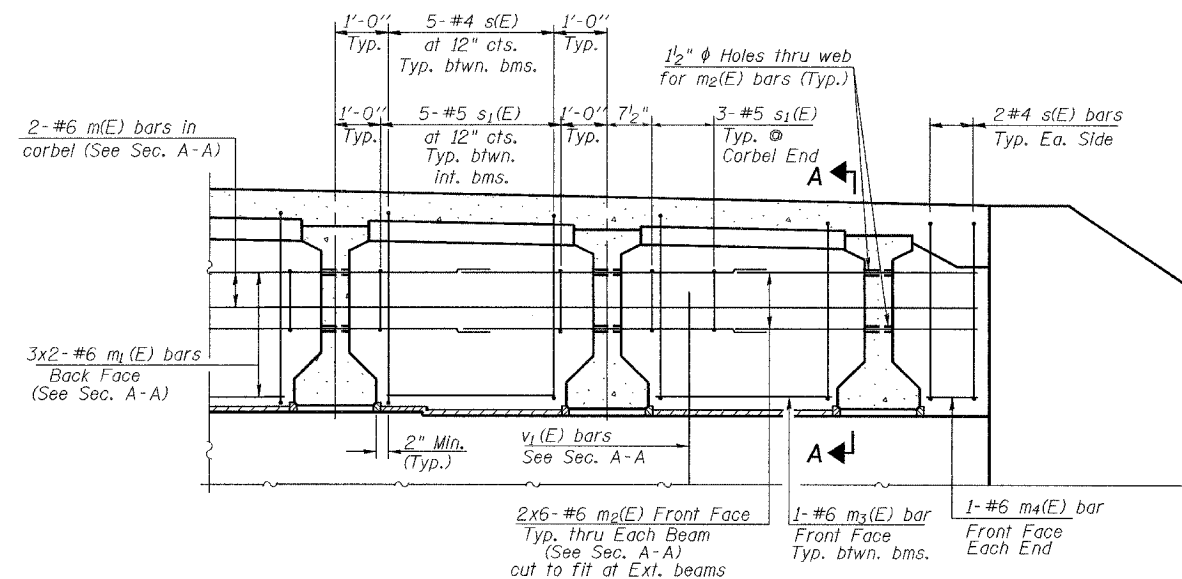


**SECTION A-A**

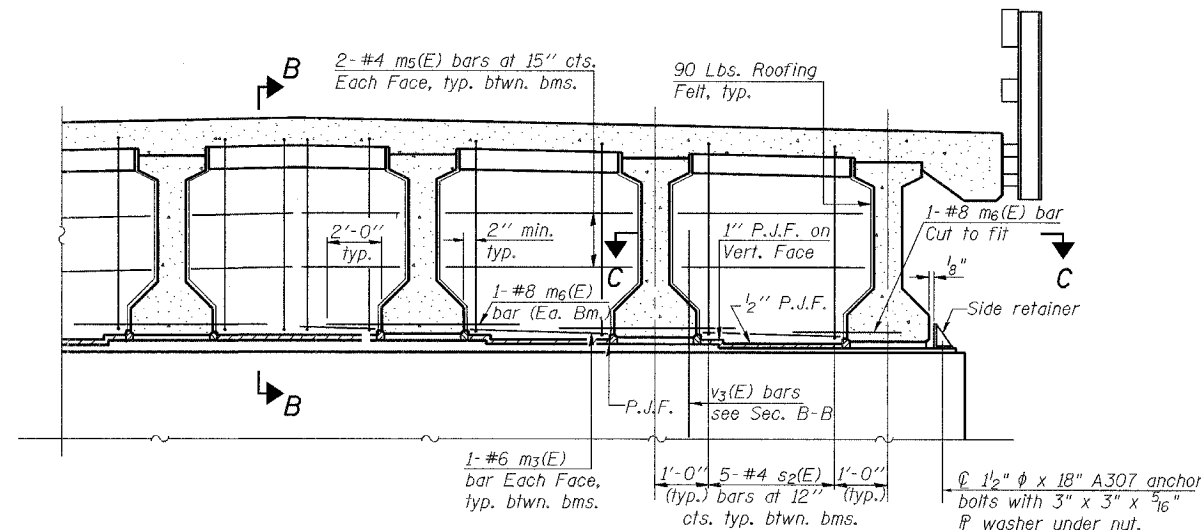
Dimensions at right angles to abutment, except as shown.  
\*Cost included with Concrete Structures.

Beam ends shall be set on an initial 1/2" Min. grout (2:1 sand and portland cement, very dry mix) to provide full bearing. Any excess grout squeezed out from under the beam shall be removed. Cost included with Concrete Structures.

\*Concrete Nails (Flat Hd. C.S.) 1" long at 12" cts. (Typ.)  
\*Fabric Reinforced Elastomeric Mat (See Special Provisions). Fabric mat shall be 12" wide full length of abutment and sealed with mastic.



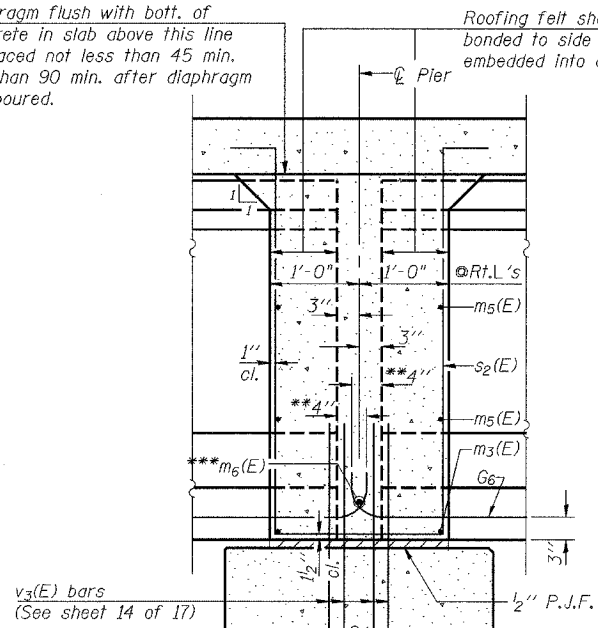
**DIAPHRAGM ELEVATION AT ABUTMENT**



**DIAPHRAGM AT FIXED PIER**

(Looking East)

Pour diaphragm flush with bott. of slab. Concrete in slab above this line shall be placed not less than 45 min. nor more than 90 min. after diaphragm has been poured.  
Roofing felt shall be bonded to side of beam embedded into diaphragm.



**SECTION B-B  
AT PIER  
(Fixed)**

**MIN. BAR LAP**

#6 bar = 2'-9"

\*\*To inside face of bar.  
\*\*\*Tie #8 bars with #9 wire tightly fastened to prevent any movement between bars.

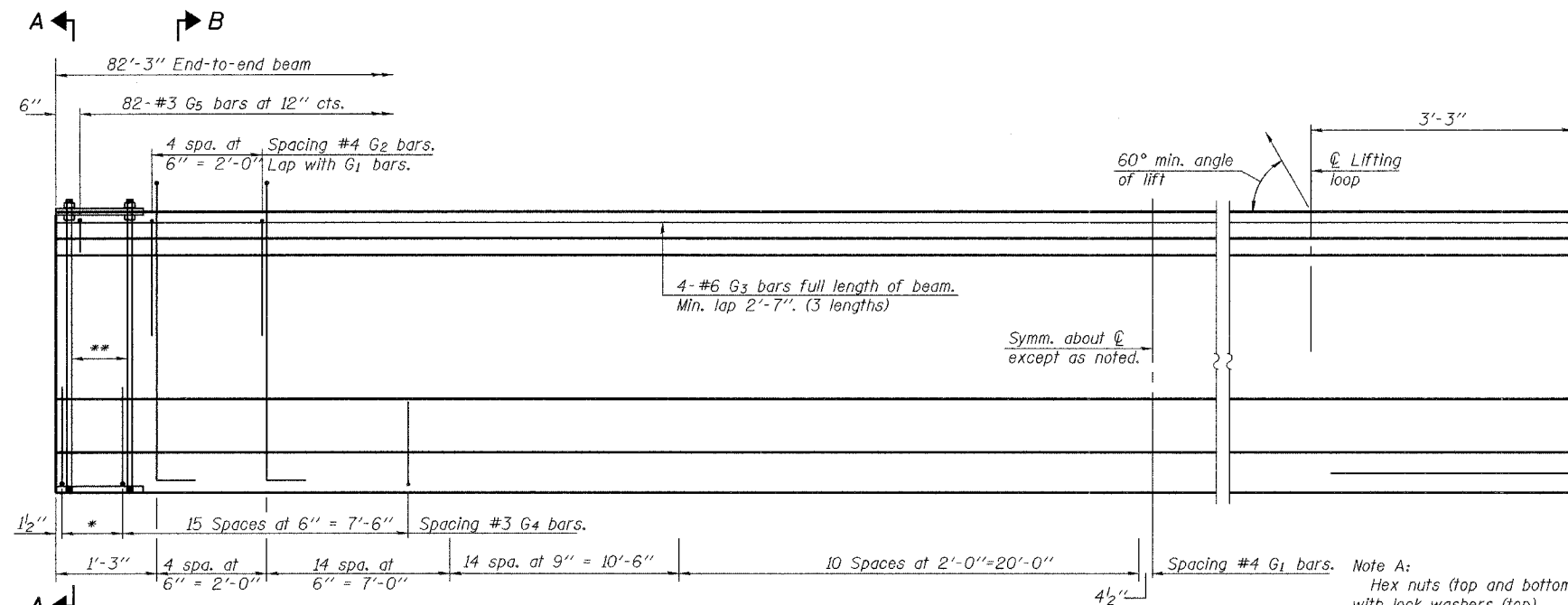
**NOTES**

Reinforcement bars in diaphragm are billed with superstructure on sheet 6 of 17.  
Concrete in diaphragm is included with Concrete superstructure on sheet 6 of 17.  
For details of bars s(E), s1(E) & s2(E) see sheet 6 of 17.  
The s(E), s1(E) & s2(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams.  
Reinforcement bars designated (E) shall be epoxy coated.  
For Section C-C and side retainer details see sheet 7 of 17.

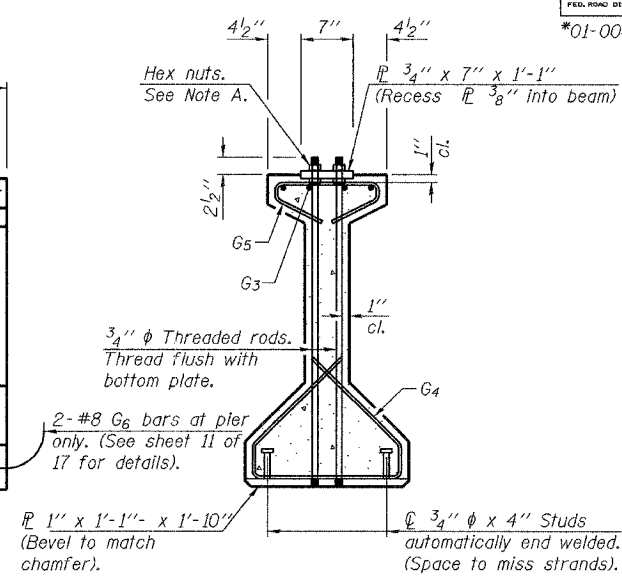
ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE DIAPHRAGM DETAILS	
PROJECT FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331	PROJECT NO. 04081 SCALE DATE 07/07/06 DRAWN BY TFG CHECKED BY GB/ML/MCB DRAWING NO.
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	8 OF 17 SHTS

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO.
FAS 1732	*	MACOUPIN	22	12	17 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		

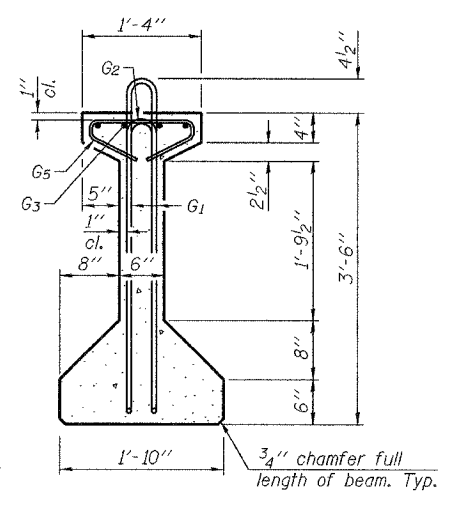
\*01-00081-00-BR



**ELEVATION OF BEAM**  
(Showing reinforcement & dimensions)



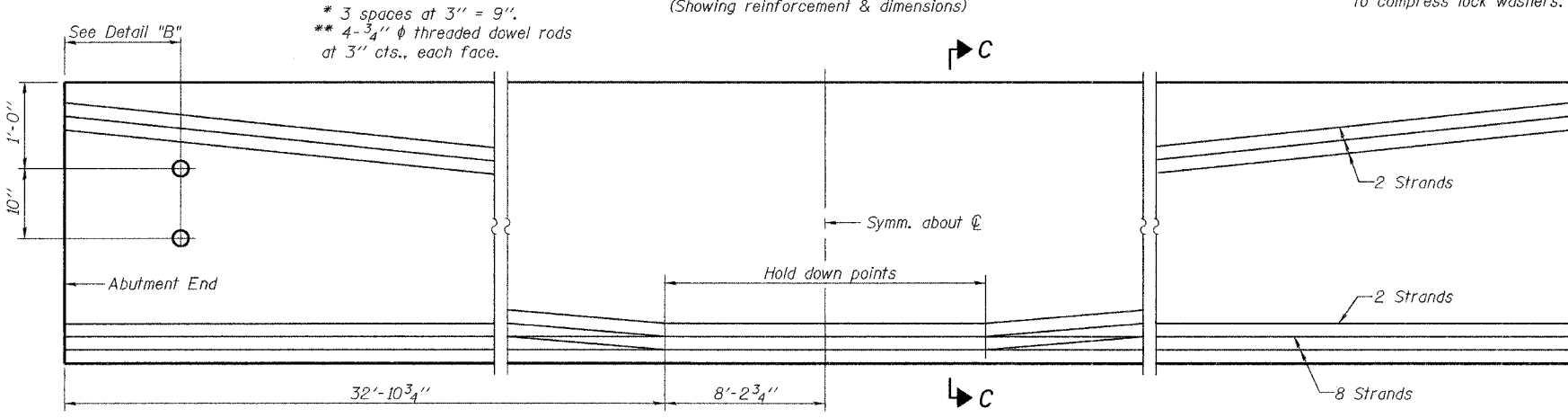
**SECTION A-A**



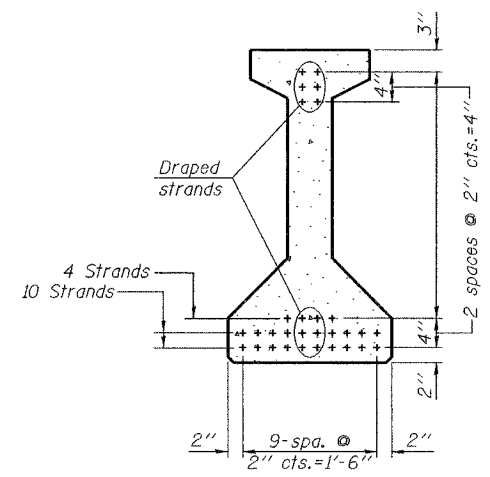
**SECTION B-B**

**BAR LIST ONE BEAM ONLY**

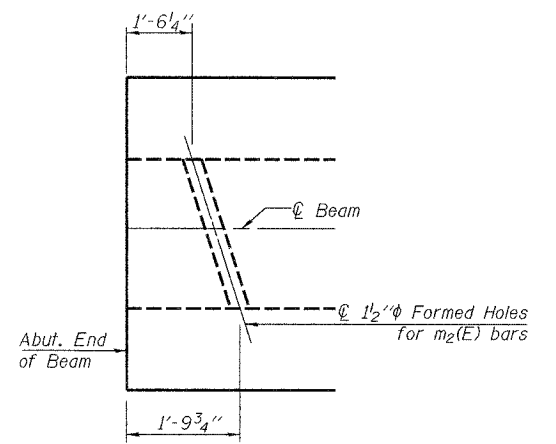
Bar	No.	Size	Length	Shape
G1	86	#4	8'-5"	∩L
G2	10	#4	4'-4"	∩
G3	12	#6	29'-2"	—
G4	38	#3	4'-11"	∩
G5	82	#3	2'-6"	∩
G6	2	#8	3'-9"	U



**ELEVATION OF BEAM**  
(Showing prestressing steel)  
Expected Camber=1 1/2"



**SECTION C-C**



**DETAIL B**  
(Plan View)

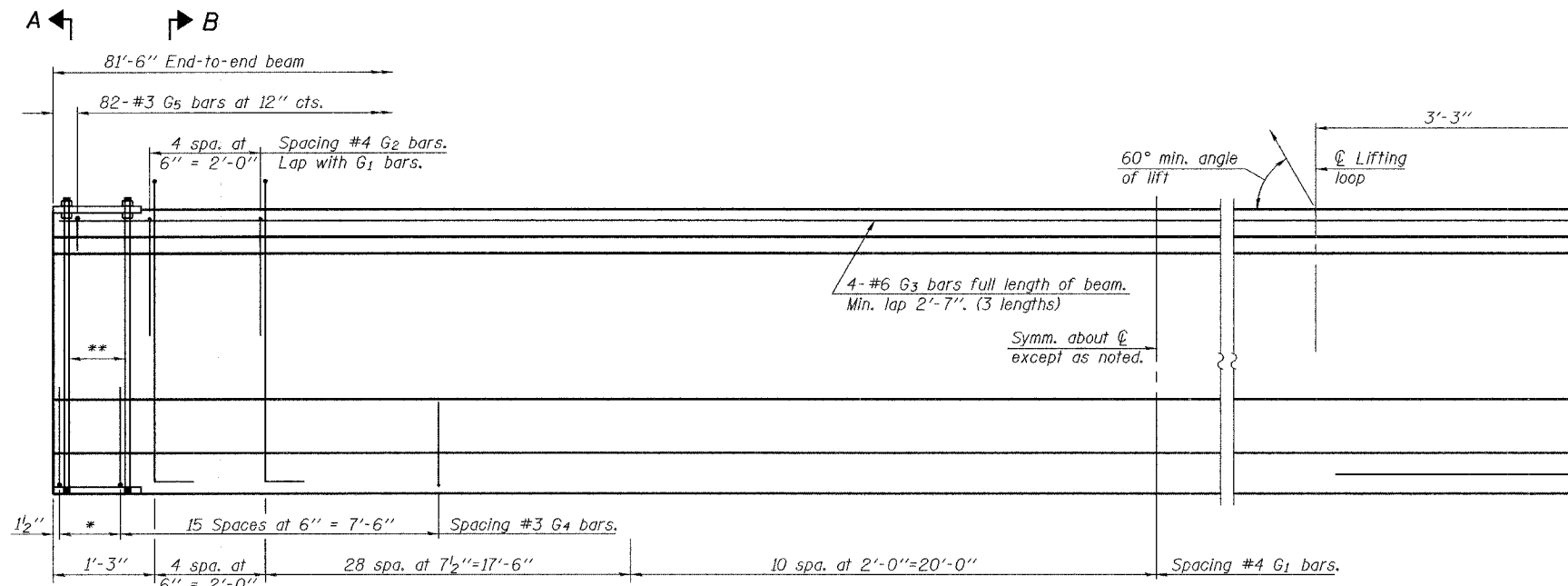
Notes:  
See sheet 11 of 17 for additional details and Bill of Material.  
Required release strength, f'ci, shall be 5000 psi.

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE BEAM DETAILS-SPANS 1 & 5	
PROJECT FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331	PROJECT NO. 04081 SCALE DATE 07/07/06 DRAWN BY TFG CHECKED BY ML/GB/MCB DRAWING NO.
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	9 OF 17 SHTS

PLOT DATE = 07/07/2006  
PLOT SCALE = 1/8" = 1'-0"  
USER NAME = TFG

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 10
FAS 1732	*	MACOUPIN	22	13	17 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		

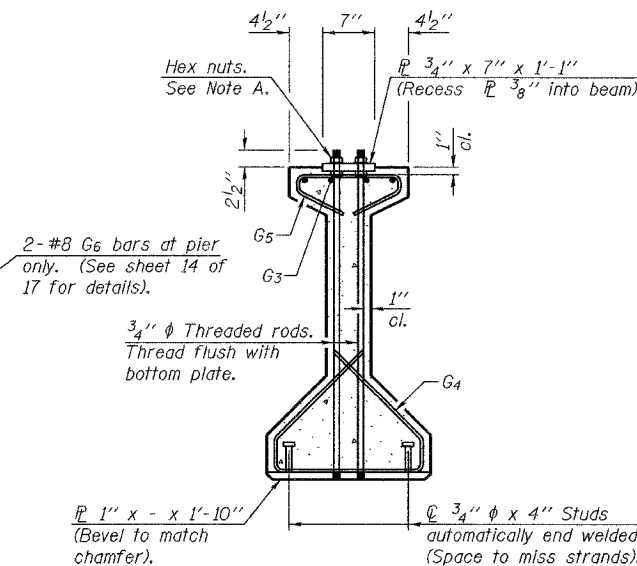
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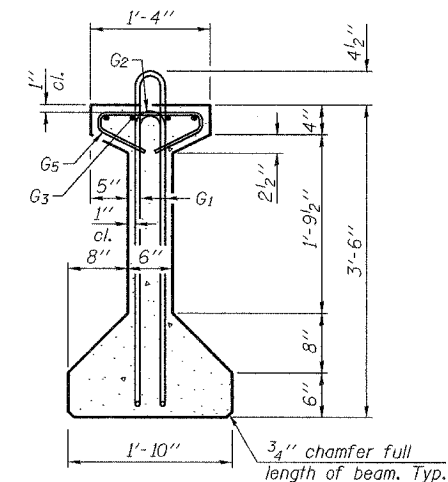
**ELEVATION OF BEAM**  
(Showing reinforcement & dimensions)

\* 3 spaces at 3" = 9".  
\*\* 4-3/4" φ threaded dowel rods at 3" cts., each face.

Note A:  
Hex nuts (top and bottom) with lock washers (top). Only tighten sufficiently to compress lock washers.



**SECTION A-A**

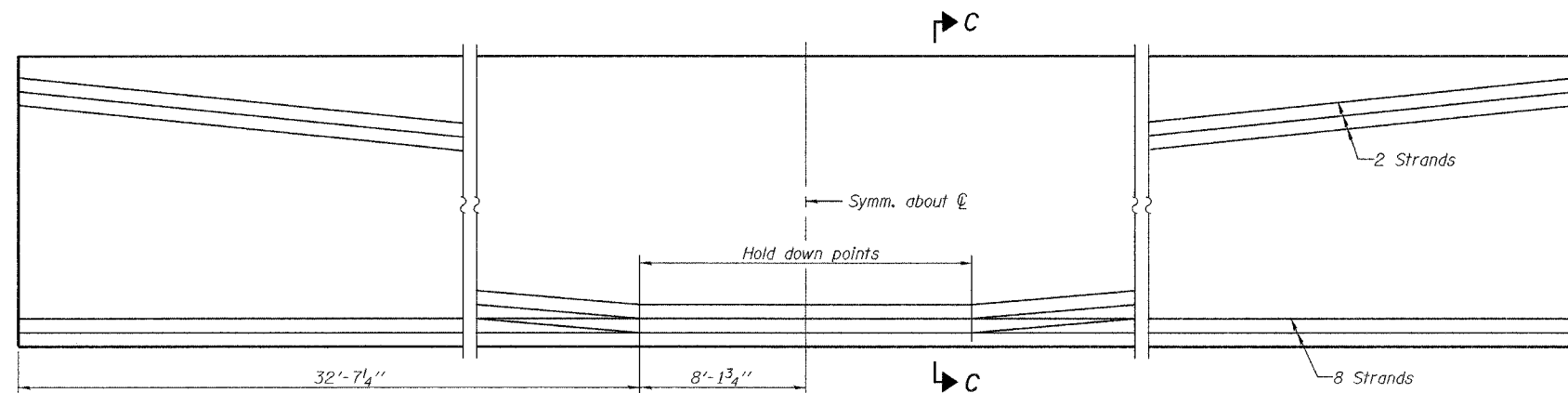


**SECTION B-B**

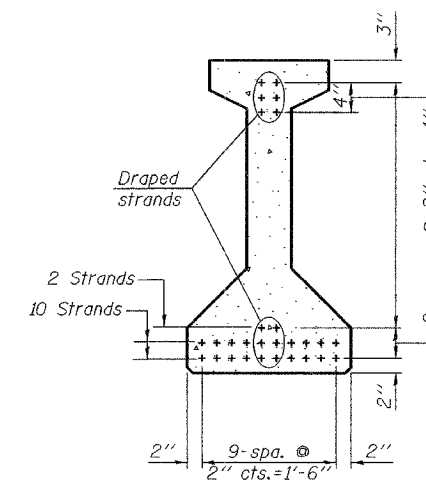
**BAR LIST-ONE BEAM ONLY**

Bar	No.	Size	Length	Shape
G <sub>1</sub>	85	#4	8'-5"	∩
G <sub>2</sub>	10	#4	4'-4"	∩
G <sub>3</sub>	12	#6	28'-10"	—
G <sub>4</sub>	38	#3	4'-11"	∩
G <sub>5</sub>	82	#3	2'-6"	∩
G <sub>6</sub>	4	#8	3'-9"	∩

Notes:  
See sheet 14 of 17 for additional details and Bill of Material.  
Required release strength, f<sub>ci</sub>, shall be 5000 psi.



**ELEVATION OF BEAM**  
(Showing prestressing steel)  
Expected Camber=1"



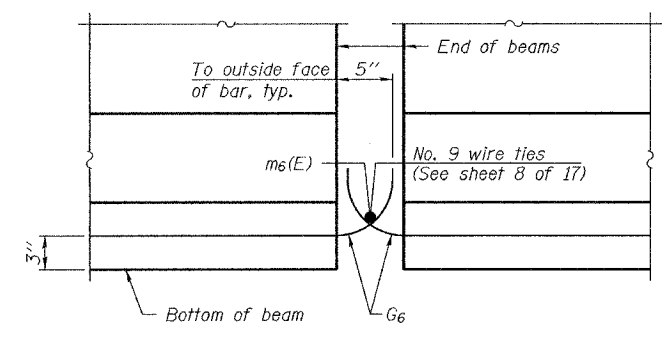
**SECTION C-C**

PLOT DATE = 07/07/2006  
 PLOT SCALE = 0.01000 1" = 1'-0"  
 USER NAME = TFC

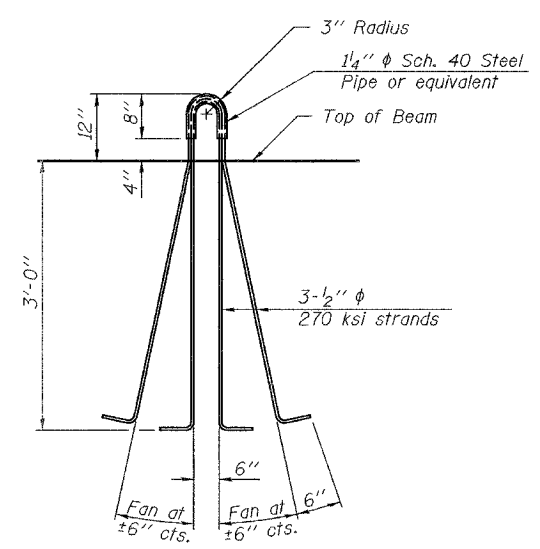
ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE BEAM DETAILS-SPANS 2, 3 & 4	
PROJECT FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331	PROJECT NO. 04081 SCALE DATE 07/07/06 DRAWN BY TFG CHECKED BY ML/MCB DRAWING NO.
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	
10 OF 17 SHTS	

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 11
FAS 1732	*	MACOUPIN	22	14	17 SHEETS
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-			

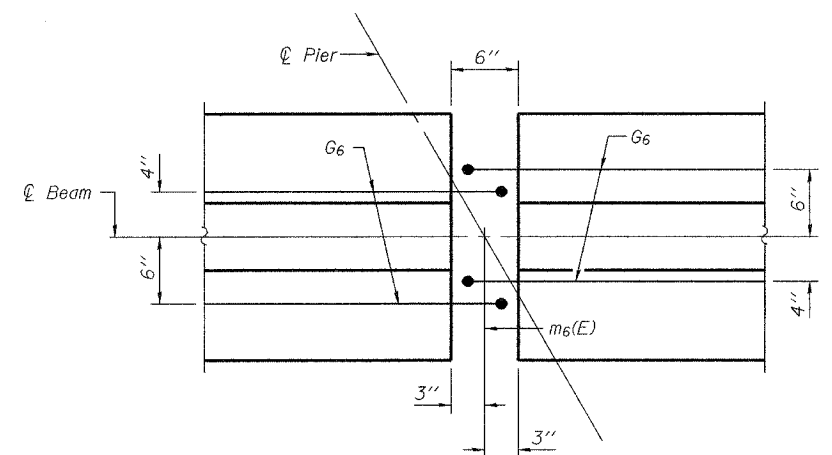
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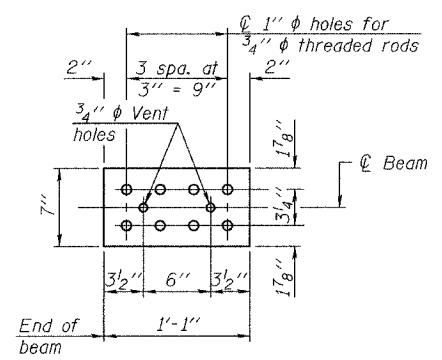
**ELEVATION OF BEAM AT PIER**



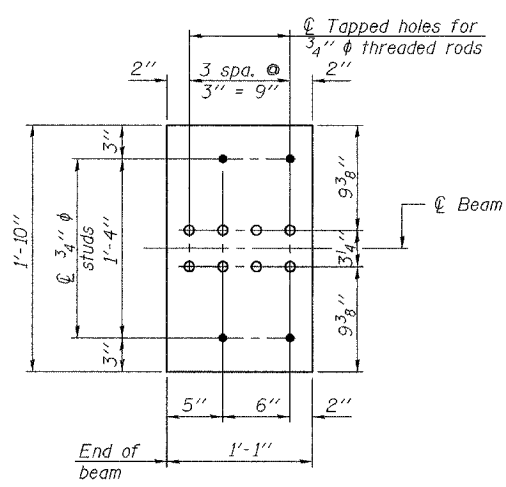
**LIFTING LOOP DETAIL**



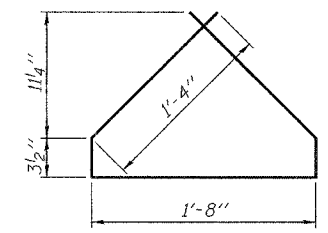
**PLAN OF BEAM AT PIER**



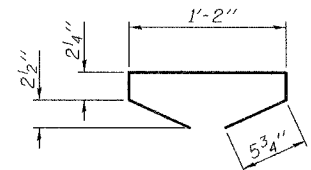
**TOP PLATE**



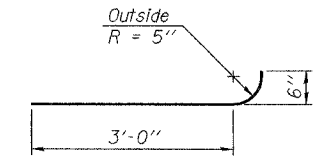
**BOTTOM PLATE**  
See bearing details for pintle hole locations when required.



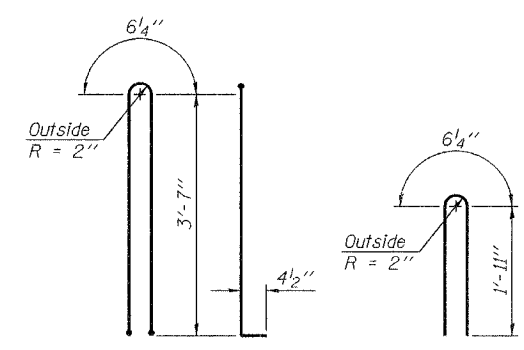
**BAR G4**



**BAR G5**



**BAR G6**



**BAR G1**

**BAR G2**

**BILL OF MATERIAL**

Item	Unit	Total
Furnishing and Erecting Precast Prestressed Concrete I-Beams, 42"	Ft.	2454

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE 42" PPC I-BEAM DETAILS	
PROJECT FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331	PROJECT NO. 04081 DATE 07/07/06 DRAWN BY TEG CHECKED BY GB/ML/MCB DRAWING NO.
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	11 OF 17 SHTS

**NOTES**

Inserts for 3/4"  $\phi$  threaded dowel rods, when specified, are to be two strut, coil type for interior beams and single coil, flared loop type for exterior beams.

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270.

The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.

Non-prestressing steel shall conform to AASHTO designation M-31 or M 322, Grade 60.

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

Reinforcement bars designated (E) shall be epoxy coated.

Cut G6 bars when necessary to maintain 1 1/2" clearance.

The bottom plates and studs shall be galvanized according to AASHTO Mill and ASTM A385.

Threaded rods shall be ASTM F 1554 Grade 55.

The cut strands at each beam end shall be given two coats of zinc dust spray or paint meeting the requirements of ASTM A 780. The zinc dust spray or paint shall be applied before corrosion appears and allowed to dry according to the manufacturer's specifications prior to another coat of zinc. A concrete sealer meeting the requirements of Section 587 of the Standard Specifications shall be applied to all portions of the I-beam or Bulb-T beam, except the top surface of the top flange and the bottom surface of the bottom flange, starting at each beam end and extending out a distance of 42 inches. The sealer shall be applied after visible crack growth has subsided. This work shall be performed by the producer and included with the cost of the beam.

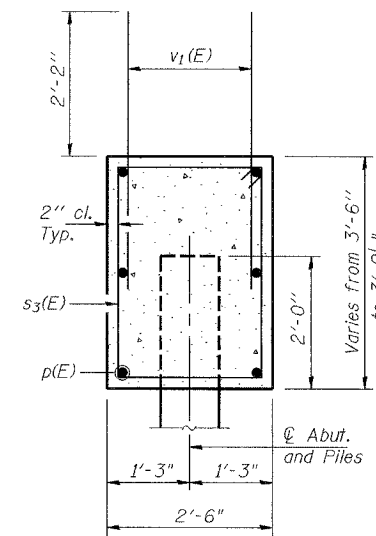
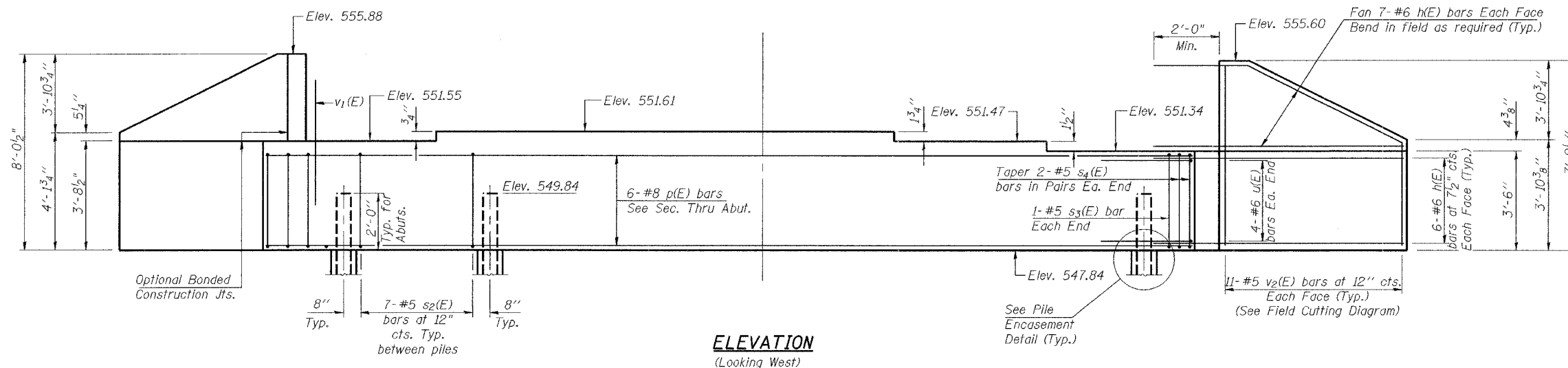
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USER NAME = TEG

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 1732	*	MACOUPIN	22	15
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

SHEET NO. 12  
17 SHEETS

\*01-00081-00-BR

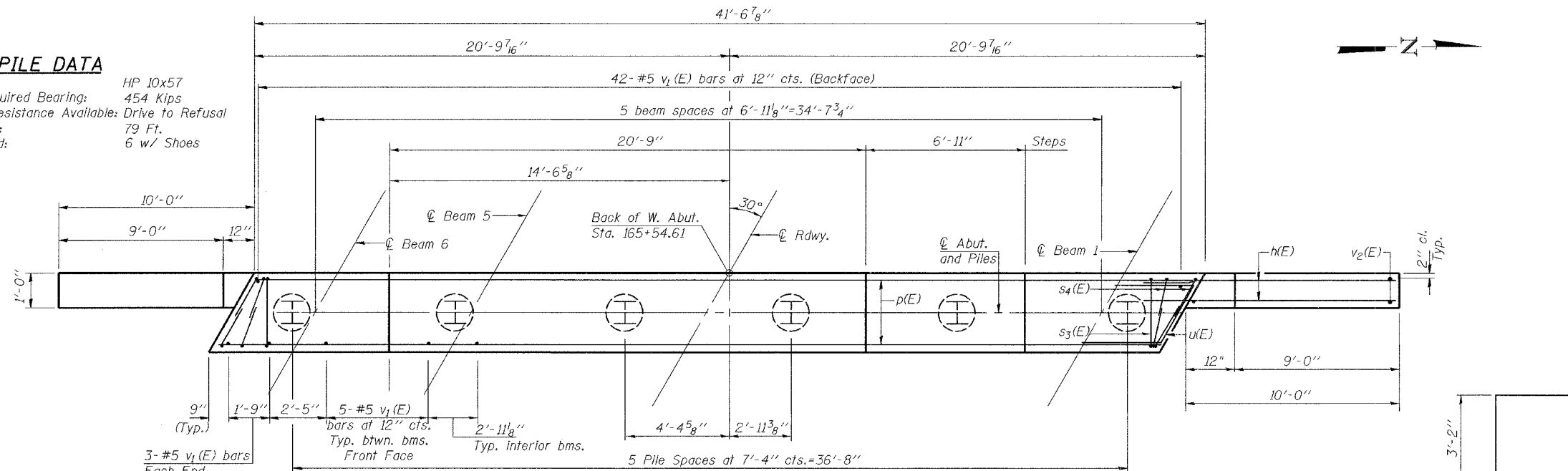
Notes: Four steps monolithically with cap.  
Reinforcement bars designated (E)  
shall be epoxy coated.



SEC. THRU ABUT.

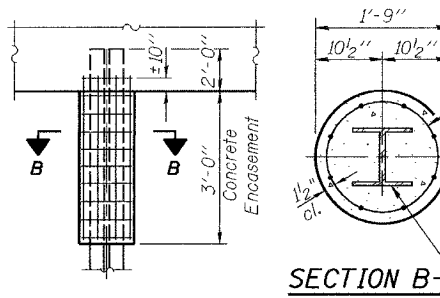
**PILE DATA**

Type: HP 10x57  
Nominal Required Bearing: 454 Kips  
Allowable Resistance Available: Drive to Refusal  
Est. Length: 79 Ft.  
No. Required: 6 w/ Shoes

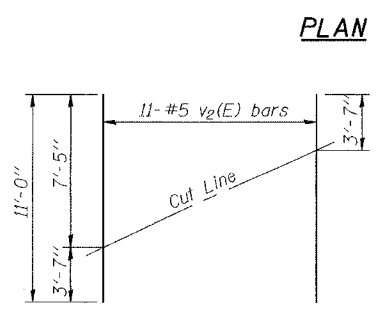


**BILL OF MATERIAL**  
**W. ABUTMENT**

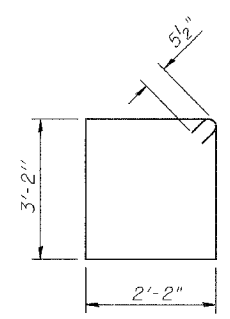
Bar	No.	Size	Length	Shape
h(E)	52	#6	12'-0"	—
p(E)	6	#8	41'-3"	—
s3(E)	37	#5	11'-7"	□
s4(E)	8	#5	8'-0"	□
u(E)	8	#6	12'-4"	▤
v1(E)	73	#5	4'-4"	—
v2(E)	22	#5	11'-0"	—
Concrete Structures			Cu. Yd.	18.5
Reinforcement Bars			Pound	2850
Epoxy Coated				
Structure Excavation			Cu. Yd.	90
Furnishing Steel Piles, HP 10x57			Foot	474
Driving Piles			Foot	474
Pile Shoes			Each	6
Concrete Encasement			Cu. Yd.	1.6



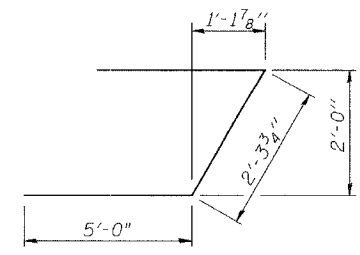
SECTION B-B



FIELD CUTTING DIAGRAM



BARS s3(E)



BAR u(E)

BARS s4(E)

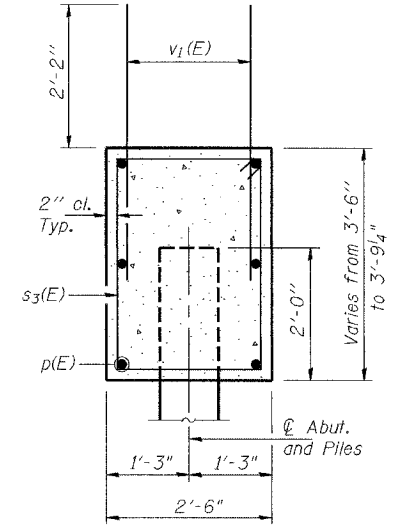
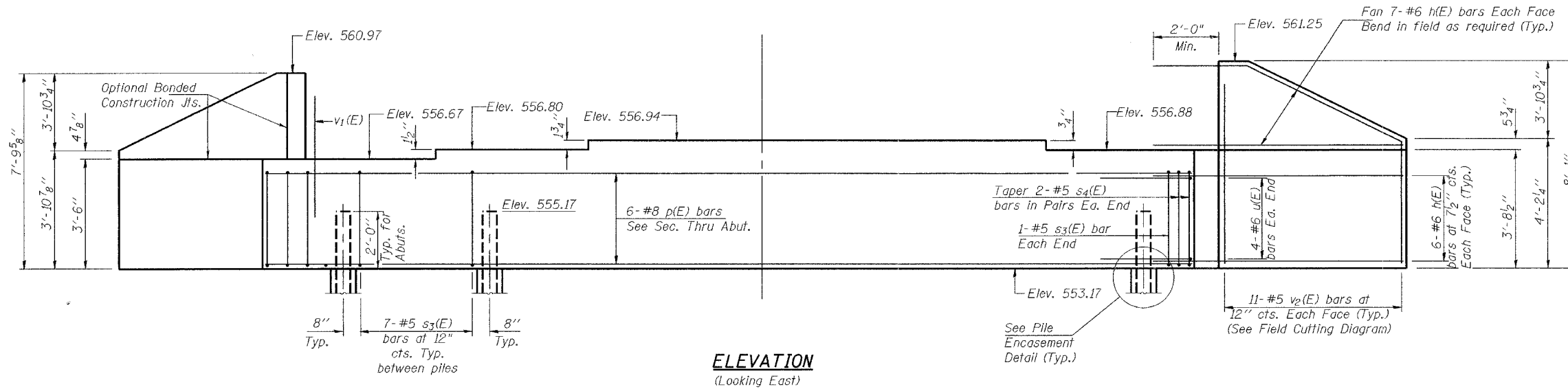
PLOT DATE = 10/03/2006  
 PLOT SCALE = 0.00000 1" = 10'-0"  
 USER NAME = TFG

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE <b>WEST ABUTMENT</b>	
PROJECT FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331	PROJECT NO. 04081 SCALE 10/03/06 DRAWN BY TFG CHECKED BY GB/ML/MCB DRAWING NO.
<b>COOMBE-BLOXDORF P.C.</b> Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	12 OF 17 SHTS

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 13
FAS 1732	#	MACOUPIN	22	16	17 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		

\*01-00081-00-BR

Notes: Four steps monolithically with cap.  
Reinforcement bars designated (E)  
shall be epoxy coated.

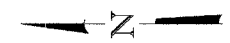
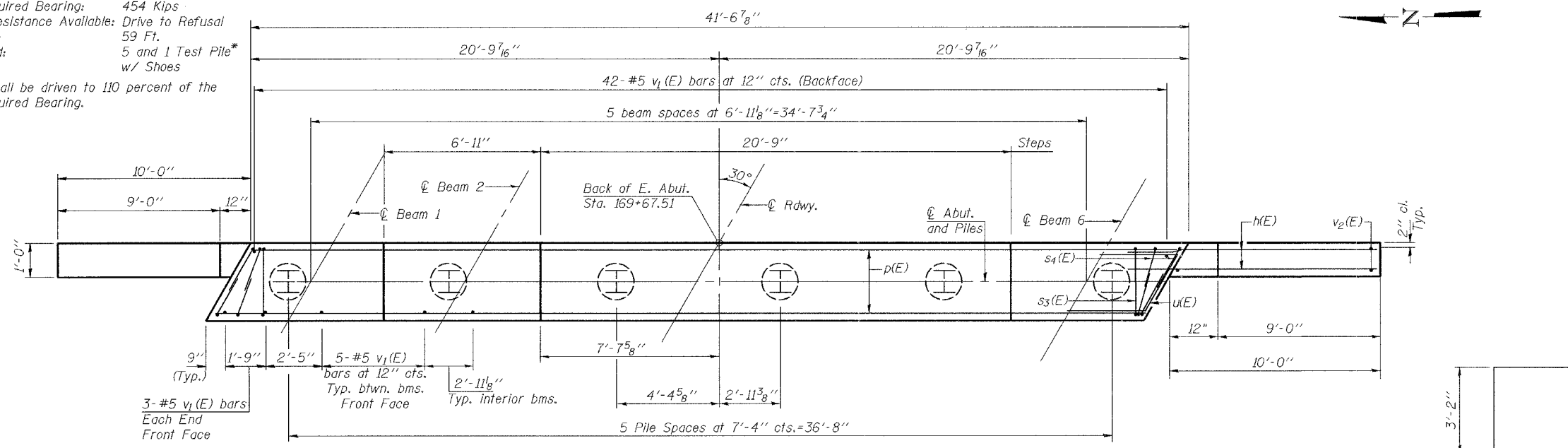


SEC. THRU ABUT.

**PILE DATA**

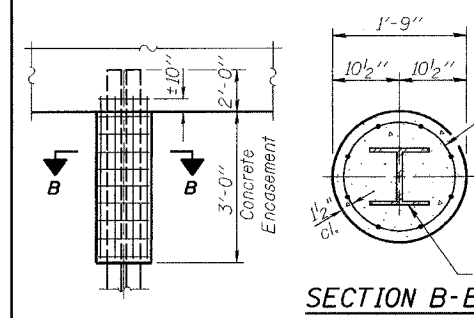
Type: HP 10x57  
Nominal Required Bearing: 454 Kips  
Allowable Resistance Available: Drive to Refusal  
Est. Length: 59 Ft.  
No. Required: 5 and 1 Test Pile\*  
w/ Shoes

\*Test pile shall be driven to 110 percent of the Nominal Required Bearing.

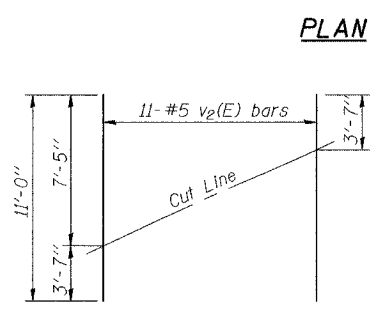


**BILL OF MATERIAL**  
**E. ABUTMENT**

Bar	No.	Size	Length	Shape
h(E)	52	#6	12'-0"	
p(E)	6	#8	41'-3"	
s3(E)	37	#5	11'-7"	□
s4(E)	8	#5	8'-0"	□
u(E)	8	#6	12'-4"	▤
v1(E)	73	#5	4'-4"	
v2(E)	22	#5	11'-0"	
Concrete Structures			Cu. Yd.	18.5
Reinforcement Bars			Pound	2850
Epoxy Coated				
Structure Excavation			Cu. Yd.	90
Furnishing Steel Piles, HP 10x57			Foot	295
Driving Piles			Foot	295
Test Pile Steel HP 10x57			Each	1
Pile Shoes			Each	6
Concrete Encasement			Cu. Yd.	1.6



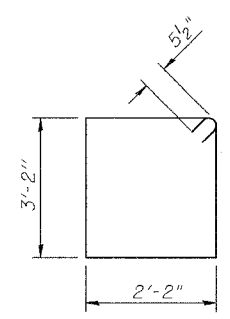
SECTION B-B



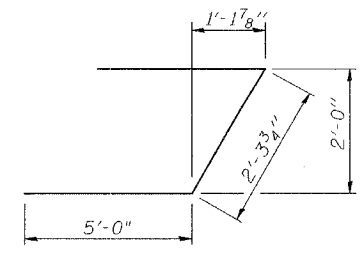
FIELD CUTTING DIAGRAM

Order v2(E) full length. Cut as shown and use remainder of bars in opposite face.

**MIN. BAR LAP**  
#5 bar=2'-2"



BARS s3(E)



BAR u(E)

BARS s4(E)

PLOT DATE = 10/03/2006  
 PLOT SCALE = 0.010000 1" = 10'  
 USER NAME = TFG

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE	
EAST ABUTMENT	
PROJECT	PROJECT NO.
FAS ROUTE 1732 (COUNTY ROUTE 11)	04081
SECTION 01-00081-00-BR	SCALE
MACOUPIN COUNTY	DATE 10/03/06
STATION 167+61.06	DRAWN BY TFG
STRUCTURE NUMBER 059-3331	CHECKED BY GB/ML/MCB
DRAWING NO.	
COOMBE-BLOXDORF P.C.	
Engineers / Land Surveyors	
Springfield, Illinois	
Design Firm License No. 184-002703	13
	OF 17 SHTS



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET	SHEET NO.
FAS 1732	*	MACOUPIN	22	17	17 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-		

\*01-00081-00-BR

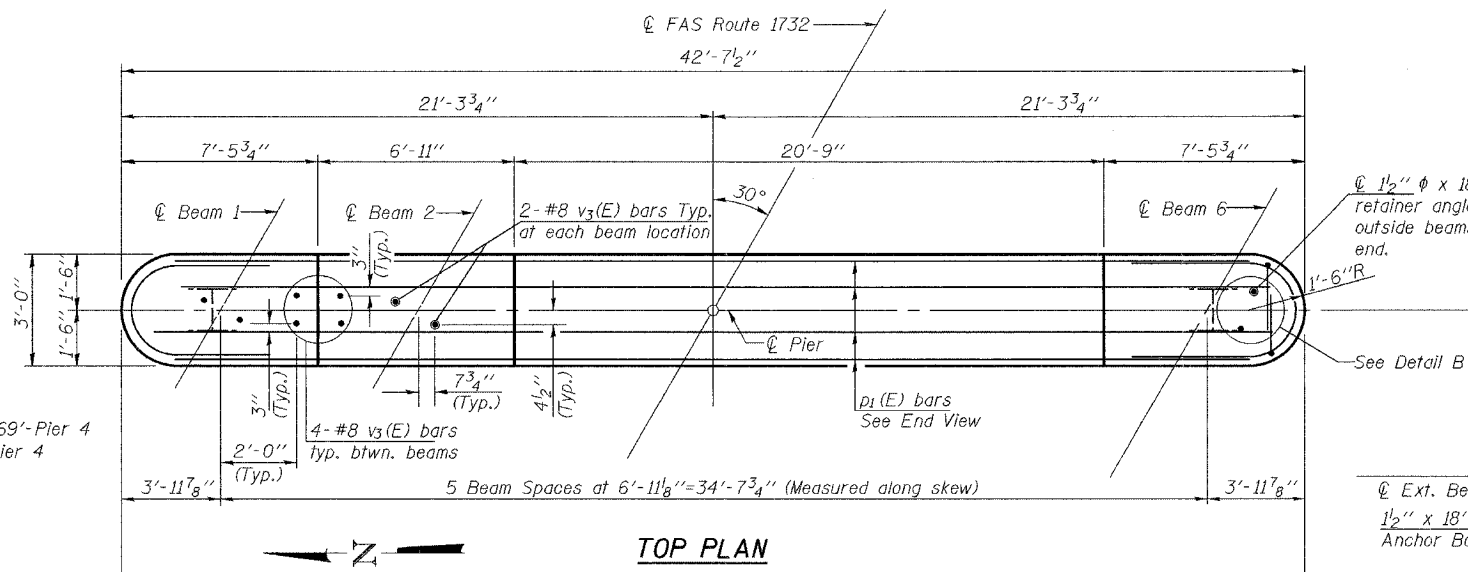
**NOTES**

Space reinforcement in cap to miss anchor bolts.  
 Pour steps monolithically with cap.  
 All edges shall have 3/4" chamfers except as noted.

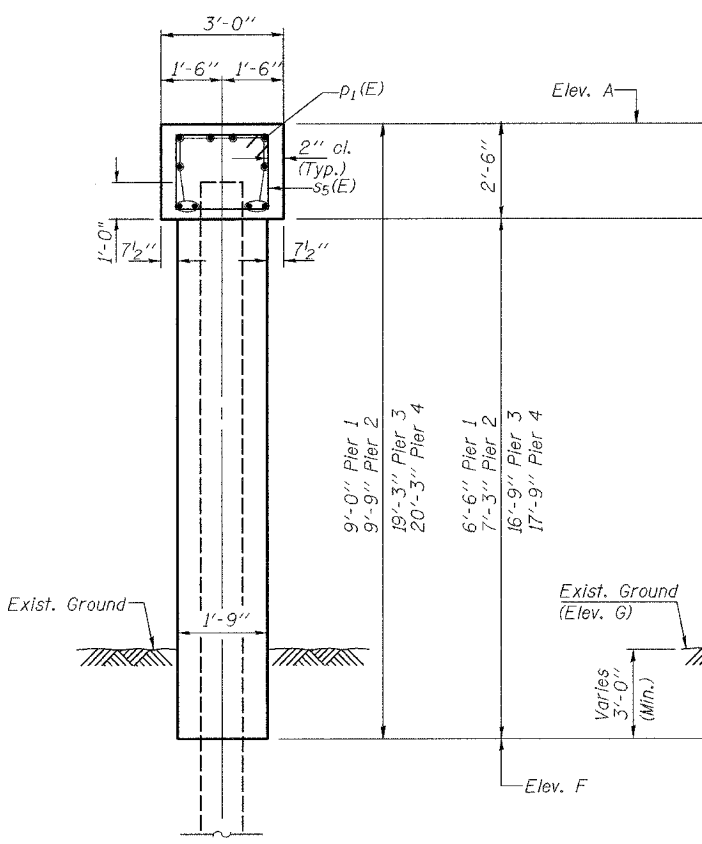
**PILE DATA**

Type: HP 10x57 w/ Shoes  
 Nominal Required Bearing: 454 Kips  
 Allowable Resistance Available: Drive to Refusal  
 Est. Length: 81'-Pier 1, 85'-Pier 2, 85'-Pier 3, 69'-Pier 4  
 No. Required: 10-Pier 1, \*8-Pier 2, 8-Pier 3, 8-Pier 4

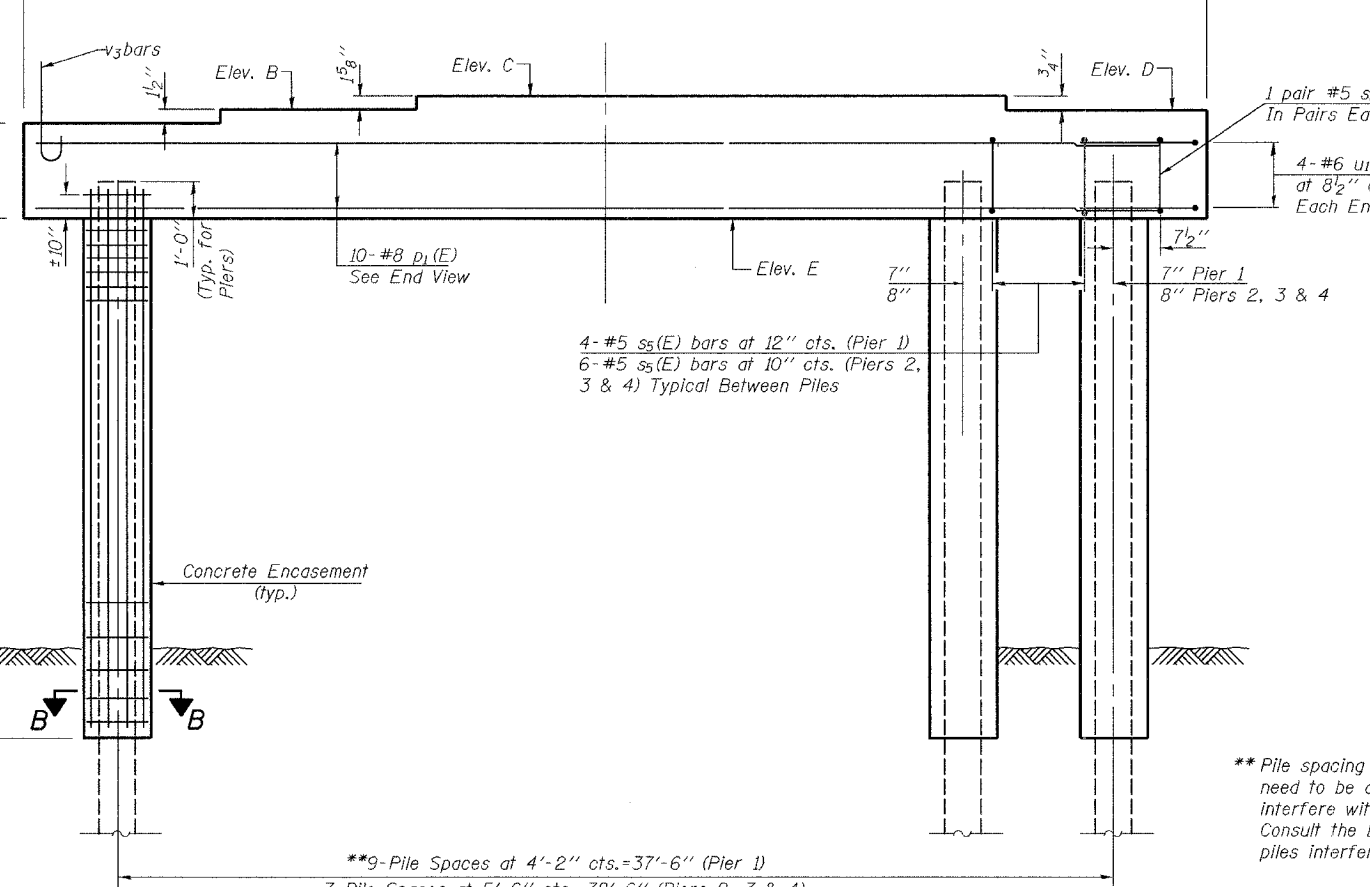
\*Includes a test pile in pier 2. Test pile shall be driven to 110 percent of the Nominal Required Bearing.



**TOP PLAN**



**NORTH END VIEW**



**ELEVATION**  
(Looking East)

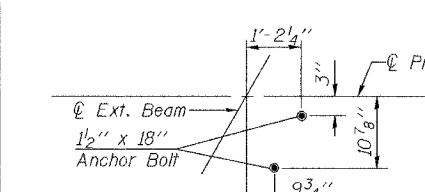
**ELEV. TABLE**

	PIER 1	PIER 2	PIER 3	PIER 4
A	552.40	553.47	554.54	555.60
B	552.53	553.60	554.67	555.73
C	552.67	553.74	554.81	555.87
D	552.61	553.68	554.75	555.81
E	549.90	550.97	552.04	553.10
F	+543.4	+543.7	+535.3	+535.3
G	+546.4	+546.8	+545.0	+547.1

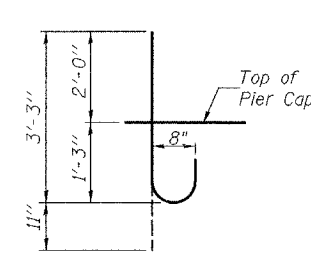
\*\*Pile spacing at pier 1 may need to be altered if piles interfere with existing piles. Consult the Engineer if piles interfere.

1/2" x 18" Anchor Bolts for side retainer angles to be drilled after outside beams are in place, Each end.

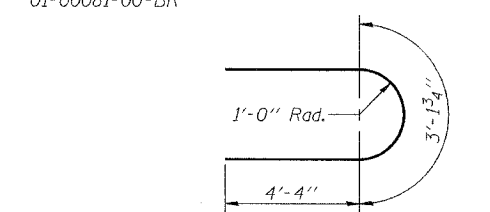
See Detail B



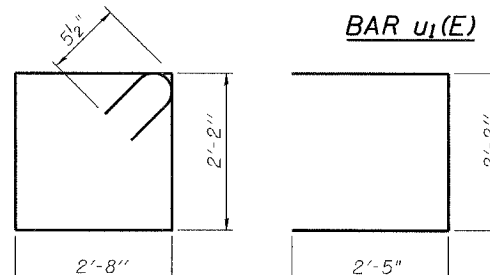
**DETAIL B**



**BAR v3(E)**



**BAR u1(E)**



**BAR s5(E)**

**BAR s6(E)**

**BILL OF MATERIAL-4 PIERS**

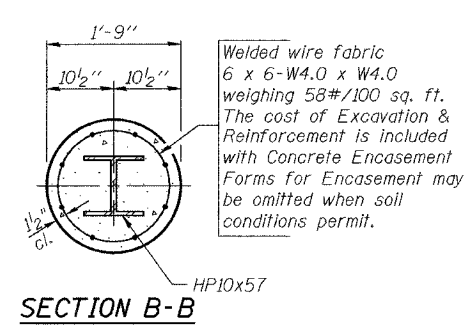
Bar	No.	Size	Length	Shape
p1(E)	40	#8	39'-7"	—
s5(E)	162	#5	10'-7"	□
s6(E)	16	#5	7'-0"	□
u1(E)	32	#6	11'-10"	U
v3(E)	128	#8	4'-2"	J
Concrete Structures			Cu. Yd.	50.8
Reinforcement Bars, Epoxy Coated			Pound	8130
Furnishing Steel Piles HP 10x57			Foot	2637
Driving Piles			Foot	2637
Test Pile Steel HP 10x57			Each	1
Pile Shoes			Each	34
Concrete Encasement			Cu. Yd.	35.8
Underwater Structure Excavation Protection Location 1 (Pier 1)			Each	1
Underwater Structure Excavation Protection Location 2 (Pier 2)			Each	1
Underwater Structure Excavation Protection Location 3 (Pier 3)			Each	1
Underwater Structure Excavation Protection Location 4 (Pier 4)			Each	1

Reinforcement Bars designated (E) shall be epoxy coated.

ILLINOIS DEPARTMENT OF TRANSPORTATION

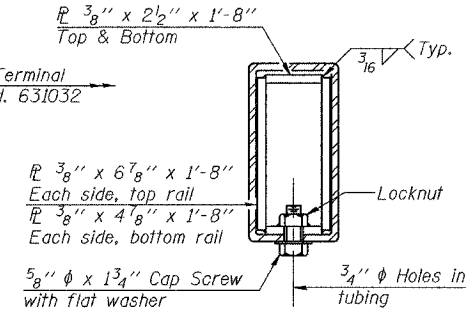
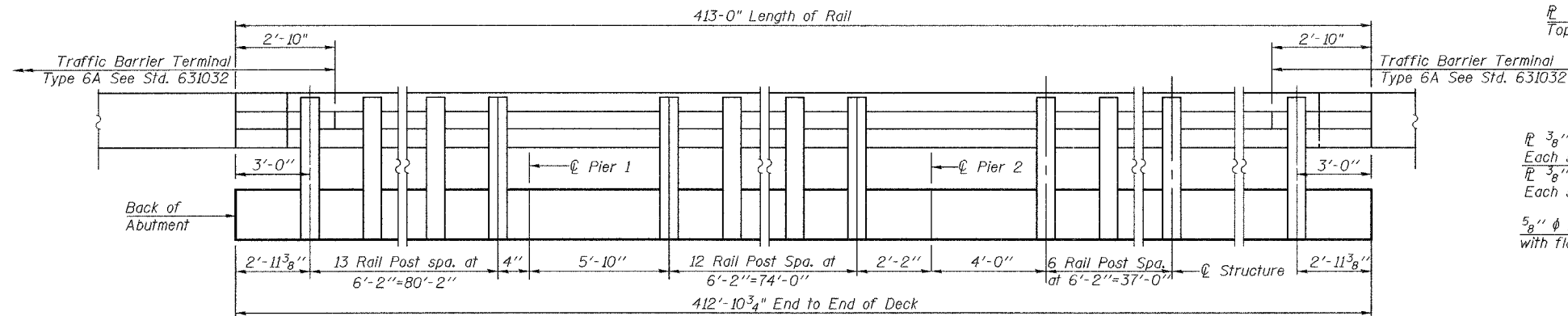
SHEET TITLE		PIERS	
PROJECT	FAS ROUTE 1732 (COUNTY ROUTE 11)	PROJECT NO.	04081
SECTION	01-00081-00-BR	SCALE	
COUNTY	MACOUPIN COUNTY	DATE	10/03/06
STATION	167+61.06	DRAWN BY	TFC
STRUCTURE NUMBER	059-3331	CHECKED BY	CB/ML/MCB
COOMBE-BLOXDORF P.C.		14	
Engineers / Land Surveyors		OF 17 SHTS	
Springfield, Illinois			
Design Firm License No. 184-002703			

PLOT DATE = 10/02/2006  
 PLOT SCALE = 0.00000 1" = 10'  
 USER NAME = TFC

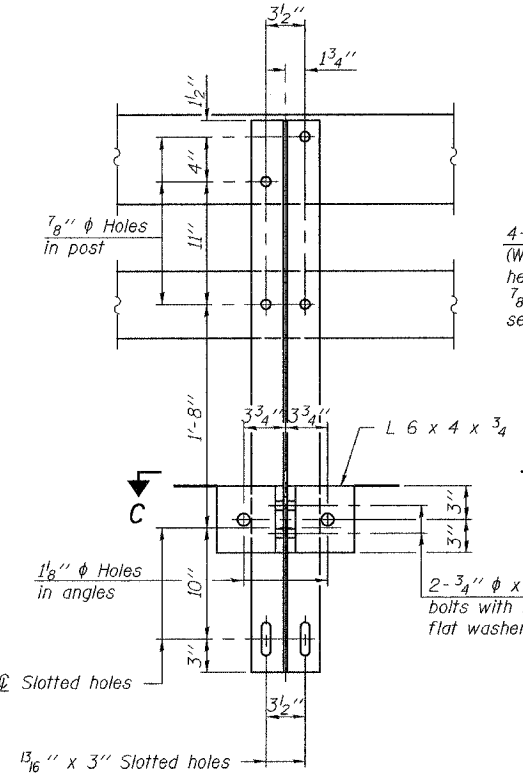


**SECTION B-B**

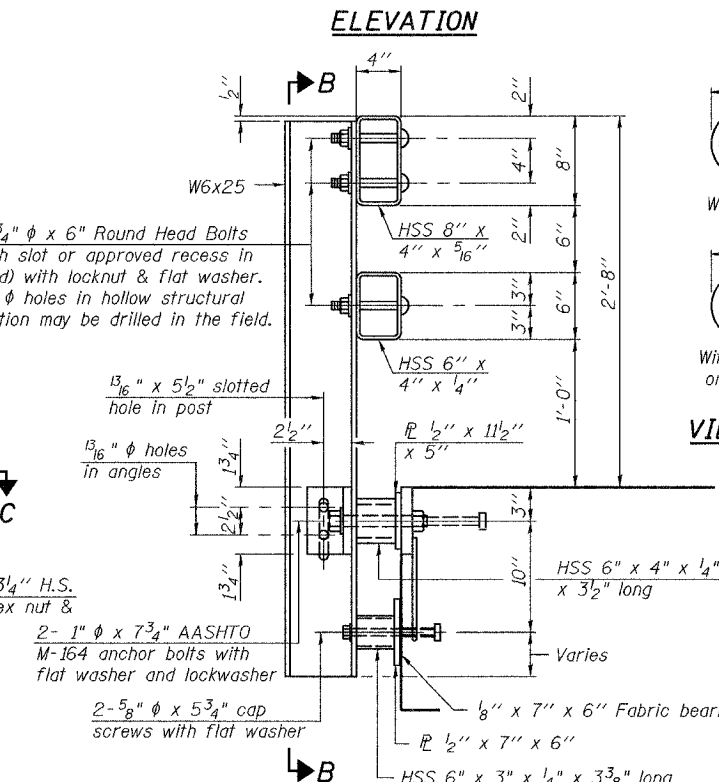
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO.
FAS 1732	*	MACOUPIN	22	18	17 SHEETS
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		
*01-00081-00-BR					



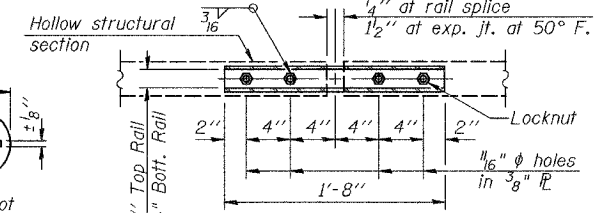
SECTION AT RAIL SPLICE



SECTION B-B

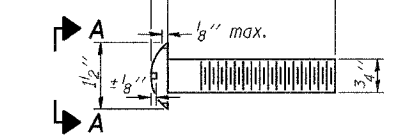


SECTION AT RAIL POST

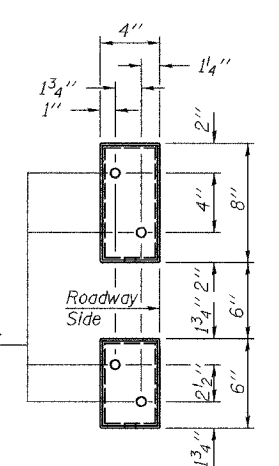


PLAN-BOTT. SPLICE P TYPICAL

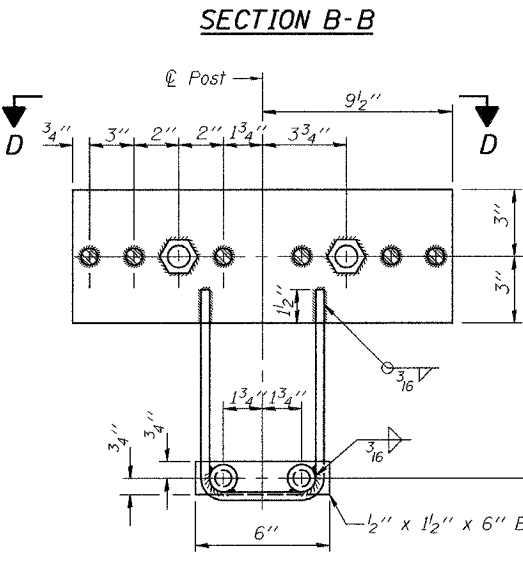
VIEW A-A



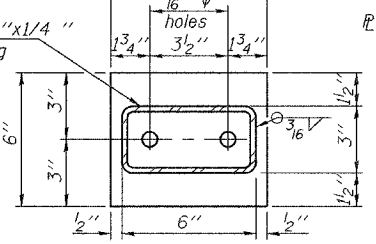
DETAIL OF 3/4" ROUND HEAD BOLT



VIEW E-E

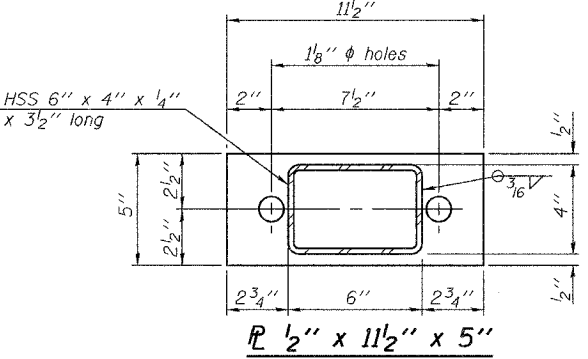


ANCHOR DEVICE

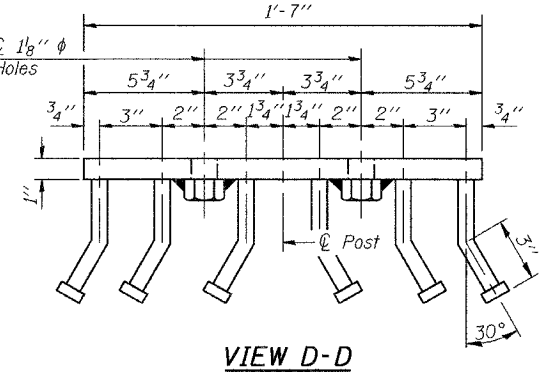


SECTION C-C

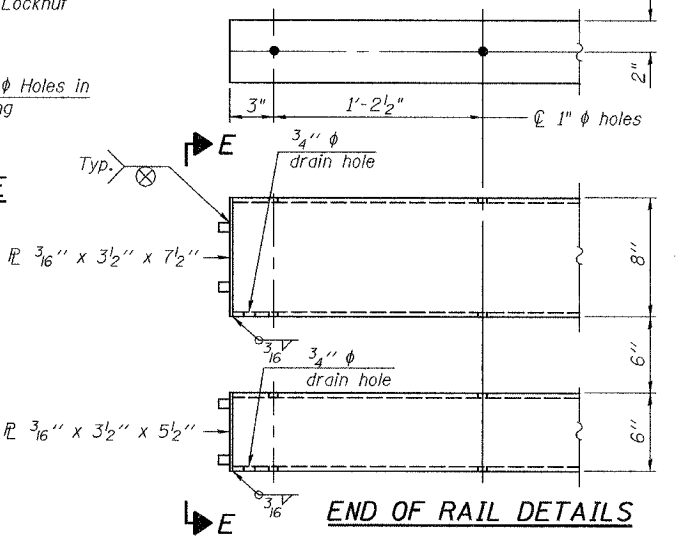
1 1/2" x 7" x 6"



1 1/2" x 11 1/2" x 5"



VIEW D-D



END OF RAIL DETAILS

NOTES

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

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

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

All bolts, nuts, cap screws, washers and lock washers shall be galvanized according to AASHTO M 232.

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

Railing shall be according to Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for Steel Bridge Rail, Type SM.

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

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

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(f)(2) 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 1/8 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

BILL OF MATERIAL

Item	Unit	Quantity
Steel Bridge Rail Type SM	Foot	826

ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE	
TYPE SM STEEL BRIDGE RAIL SIDE MOUNTED	
PROJECT	PROJECT NO.
FAS ROUTE 1732 (COUNTY ROUTE 11)	04081
SECTION 01-00081-00-BR	SCALE
MACOUPIN COUNTY	DATE
STATION 167+61.06	07/01/06
STRUCTURE NUMBER 059-3331	DRAWN BY
	TFG
	CHECKED BY
	ML/MCB
COOMBE-BLOXDORF P.C.	DRAWING NO.
Engineers / Land Surveyors	15
Springfield, Illinois	
Design Firm License No. 184-002703	OF 17 SHTS

PLOT DATE = 07/07/2006  
 PLOT SCALE = 1/8" = 1'-0"  
 USER NAME = TFC

ROUTE NO.	SECTION	COUNTY	SHEET	SHEET	SHEET NO. 16
FAS 1732	*	MACOUPIN	22	19	17 SHEETS
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT			

**NOTES**

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
 Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
 All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
 Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
 Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

- ① Minimum Capacity (Tension in kips) =  $1.25 \times f_y \times A_t$
- ② Minimum \*Pull-out Strength (Tension in kips) =  $1.25 \times f_{s,allow} \times A_t$

Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $f_{s,allow}$  = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load)  
 $A_t$  = Tensile stress area of lapped reinforcement bars.  
 \* = 28 day concrete

Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	5.9
#5	2'-0"	23.0	9.2
#6	2'-7"	33.1	13.3
#7	3'-5"	45.1	18.0
#8	4'-6"	58.9	23.6
#9	5'-9"	75.0	30.0
#10	7'-3"	95.0	38.0
#11	9'-0"	117.4	46.8

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

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

**ROLLED THREAD DOWEL BAR**



\*\* ONE PIECE

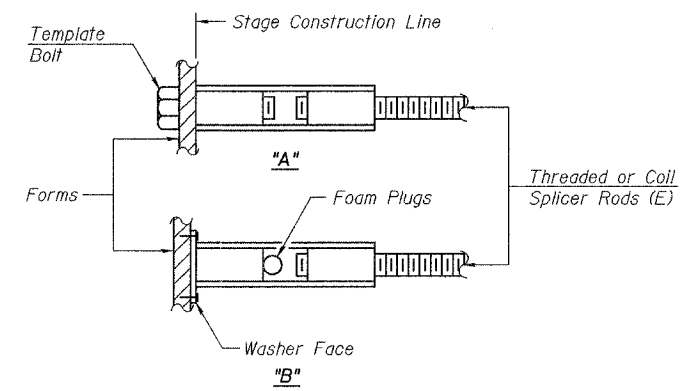
Wire Connector



**WELDED SECTIONS**

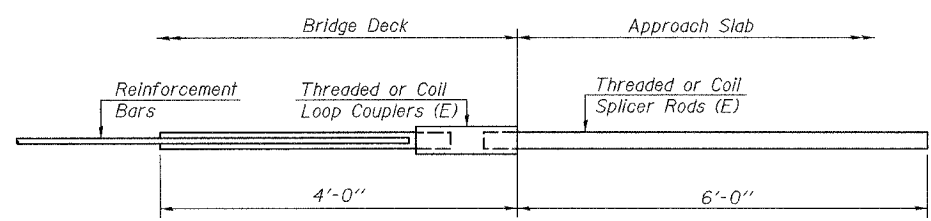
**BAR SPLICER ASSEMBLY ALTERNATIVES**

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



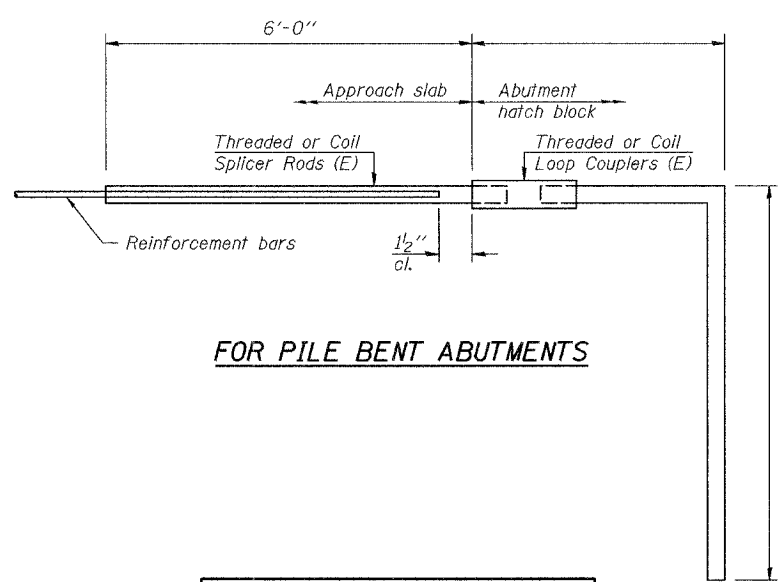
**INSTALLATION AND SETTING METHODS**

"A" : Set bar splicer assembly by means of a template bolt.  
 "B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
 (E) : Indicates epoxy coating.



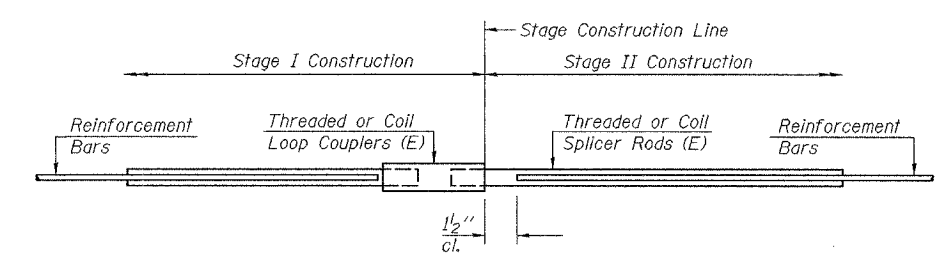
**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar
Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required = 48



**FOR PILE BENT ABUTMENTS**

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



**STANDARD**

Bar Size	No. Assemblies Required	Location
#5	0	Deck
#5	0	Diaphragms
#5	0	W. Abut.
#5	0	E. Abut.
#5	0	Pier

ILLINOIS DEPARTMENT OF TRANSPORTATION

SHEET TITLE: BAR SPLICER ASSEMBLY DETAILS

PROJECT: FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331

SCALE: 04081

DATE: 07/07/06

DRAWN BY: TFG

CHECKED BY: MCB

DESIGNER: COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703

16 OF 17 SHTS

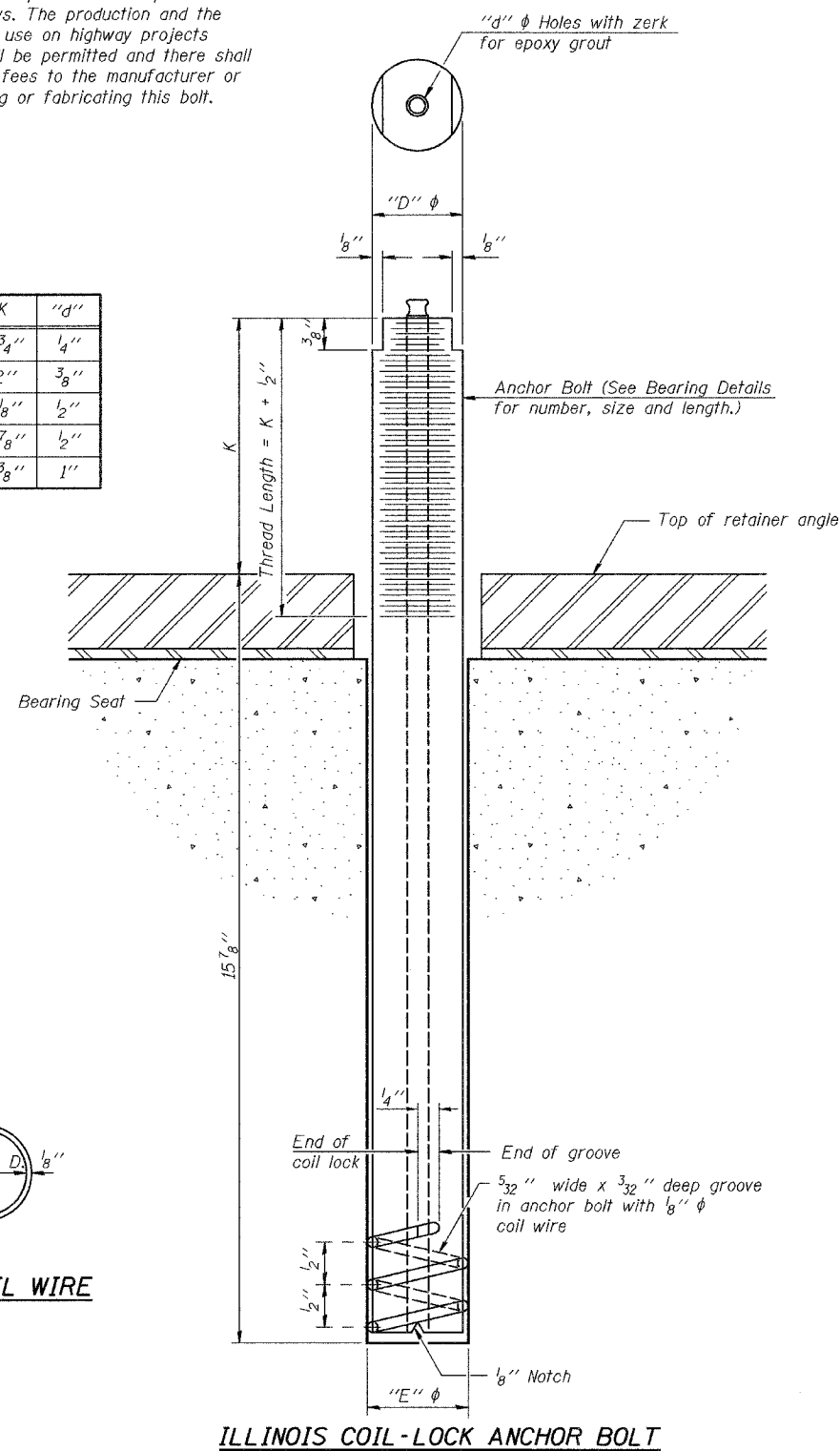
PLOT DATE = 07/07/2006  
 PLOT SCALE = 01/0000 1" = 10'-0"  
 USER NAME = TFC

ROUTE NO.	SECTION	COUNTY	STATION	SHEET NO.	SHEET NO. 17 17 SHEETS
FAS 1732	*	MACOUPIN	22	20	
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT		

\*01-00081-00-BR

The Illinois Coil-Lock Anchor Bolt is a proprietary item which is the property of the Illinois Department of Transportation. Use, reproduction or disclosure without express written permission is prohibited and protected under Federal copyright laws. The production and the fabrication of this bolt for use on highway projects in the State of Illinois shall be permitted and there shall be no incurred charges or fees to the manufacturer or the fabricator for producing or fabricating this bolt.

D	E	H	K	"d"
1"	1 1/8"	1 5/16"	1 3/4"	1/4"
1 1/4"	1 3/8"	1 1/2"	2"	3/8"
1 1/2"	1 5/8"	1 5/8"	2 1/8"	1/2"
2"	2 1/8"	1 13/16"	2 7/8"	1/2"
2 1/2"	2 5/8"	2 5/16"	3 3/8"	1"



PLAN-COIL WIRE

ILLINOIS COIL-LOCK ANCHOR BOLT

### MATERIALS FOR ILLINOIS COIL-LOCK ANCHOR BOLT

The anchor bolt shall be fabricated from cold drawn or hot finished seamless carbon steel mechanical tubing conforming to ASTM A 519, Grade 1026, CW and supplied with hexagonal nuts and cut washers.

The coil wire shall be made of any suitable soft steel wire.

The finished anchor bolt shall be cleaned of rust and other foreign materials and wrapped or packaged to prevent contamination until they are installed.

The epoxy grout shall be a two-component, epoxy resin bonding system conforming to ASTM C 881, Type I, Grade 1 and of a Class suitable for the temperature at installation.

### INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT

1. With the coil wire in place, the bolt shall be inserted into the hole and turned clockwise to a snug fit in the hole. Nut and washer shall be placed on the bolt. The nut shall be tensioned until the steel base plates are held securely to the concrete bearing seat.
2. Epoxy grout shall be pumped through the zerk fitting with a pressure gun. Pumping shall continue until the epoxy overflows the hole around the bolt shank. After pumping is discontinued, excess epoxy shall be immediately wiped off.

### ALTERNATE ANCHOR BOLTS

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes according to the manufacturer's recommendations and procedures.

The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:

1. A threaded rod stud with nut and washer of the type specified.
2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

Location	Type
Piers	A307

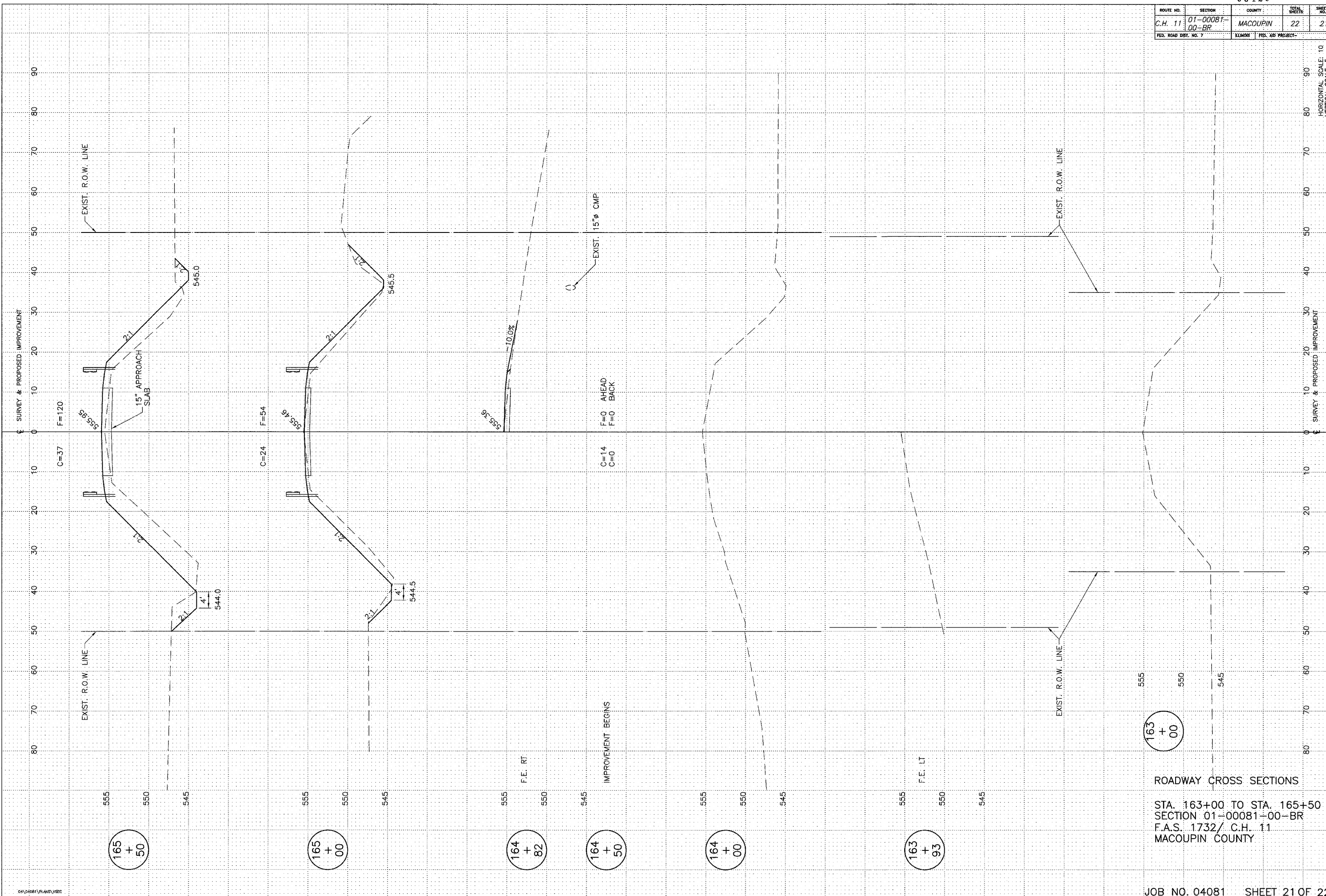
ASTM F 1554 Grade 105, ASTM A 449 and AASHTO M 314 Grade 105 anchor bolts may be substituted for the anchor bolts shown above.

PLOT DATE = 07/07/2006  
 PLOT SCALE = 1/8" = 1'-0"  
 USER NAME = TFG

ABB-1 10-22-04

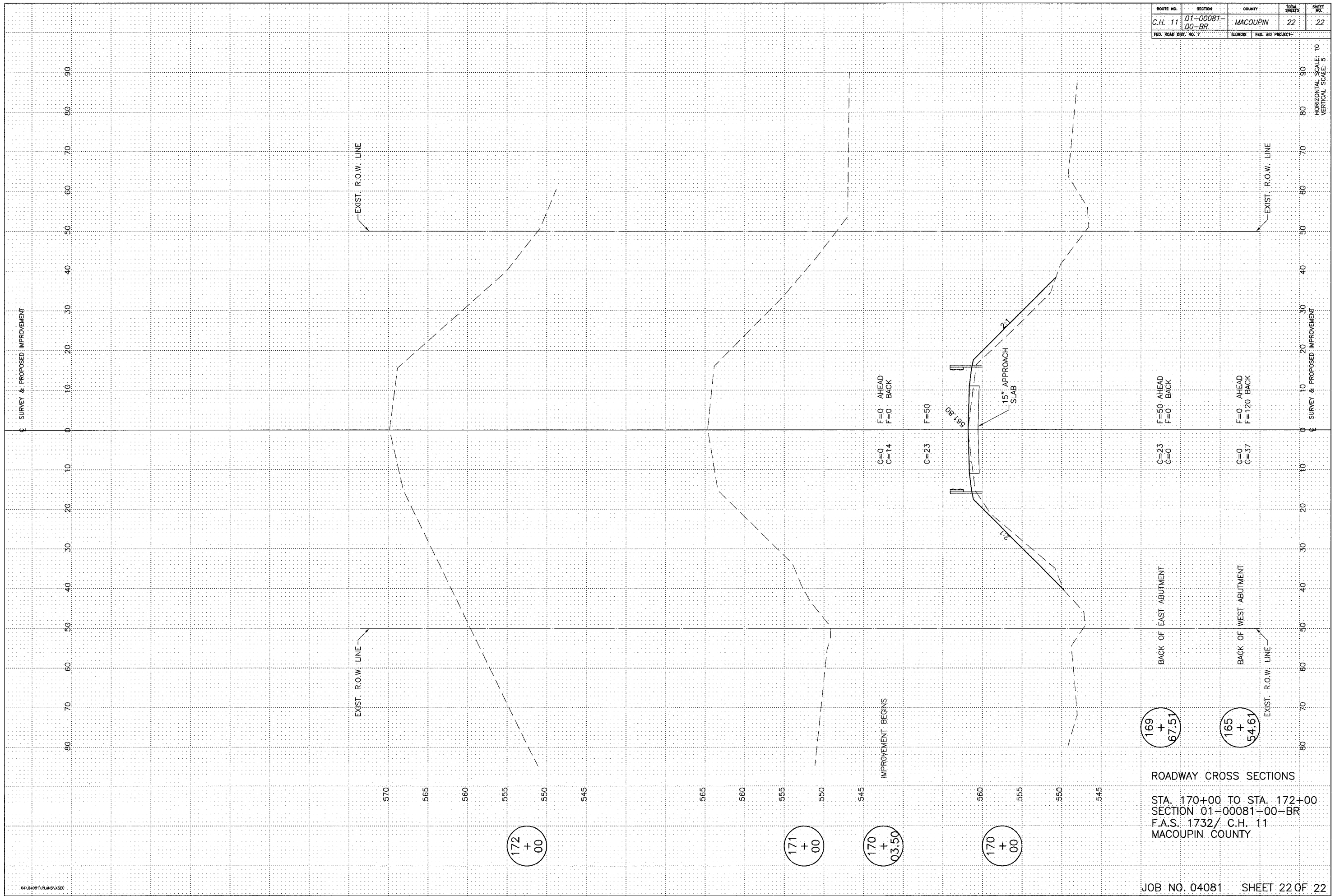
ILLINOIS DEPARTMENT OF TRANSPORTATION	
SHEET TITLE ANCHOR BOLT DETAILS FOR BEARINGS	
PROJECT FAS ROUTE 1732 (COUNTY ROUTE 11) SECTION 01-00081-00-BR MACOUPIN COUNTY STATION 167+61.06 STRUCTURE NUMBER 059-3331	PROJECT NO. 04081 SCALE DATE 07/07/06 DRAWN BY TFG CHECKED BY ML/MCB DRAWING NO.
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	
17 OF 17 SHTS	

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 11	01-00081-00-BR	MACOUPIN	22	21
FED. ROAD DIST. NO. 7		ILLINOIS FED. AID PROJECT		



ROADWAY CROSS SECTIONS  
 STA. 163+00 TO STA. 165+50  
 SECTION 01-00081-00-BR  
 F.A.S. 1732/ C.H. 11  
 MACOUPIN COUNTY

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 11	01-00081-00-BR	MACOUPIN	22	22
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	



169 + 67.51  
165 + 54.61

ROADWAY CROSS SECTIONS  
 STA. 170+00 TO STA. 172+00  
 SECTION 01-00081-00-BR  
 F.A.S. 1732/ C.H. 11  
 MACOUPIN COUNTY