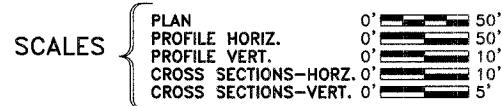


ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 12	02-00083-00-BR	MACOUPIN	15	1
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

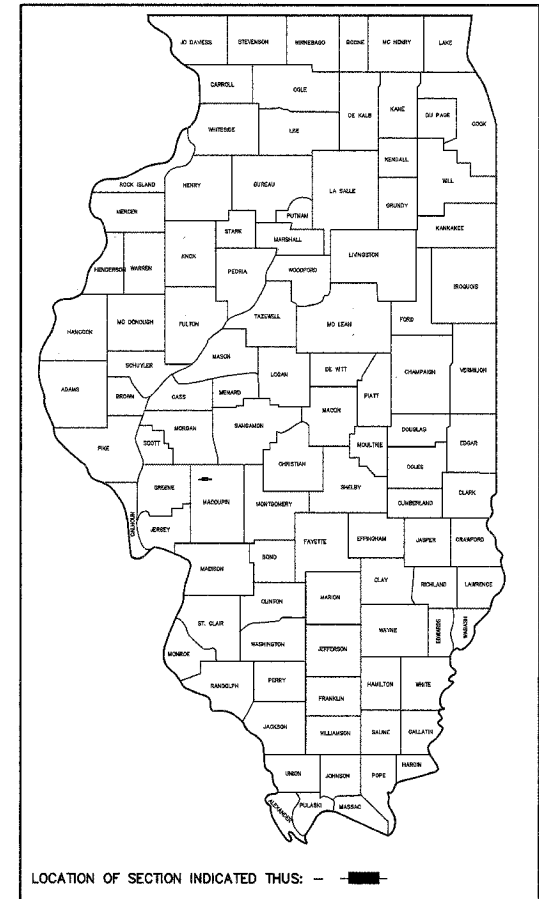
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
**PLANS FOR PROPOSED
BRIDGE REPLACEMENT AND REHABILITATION PROGRAM**

INDEX OF SHEETS

- 1. COVER SHEET
- 2. SUMMARY OF QUANTITIES & TYPICAL CROSS SECTION
- 3. PLAN AND PROFILE
- 4.-13. BRIDGE PLANS
- 14.-15. STATION CROSS SECTIONS



SECTION 02--00083--00--BR
F.A.S. ROUTE 732/C.H.12
MACOUPIN COUNTY
PROJECT BRS-732(143)
C-96-208-04

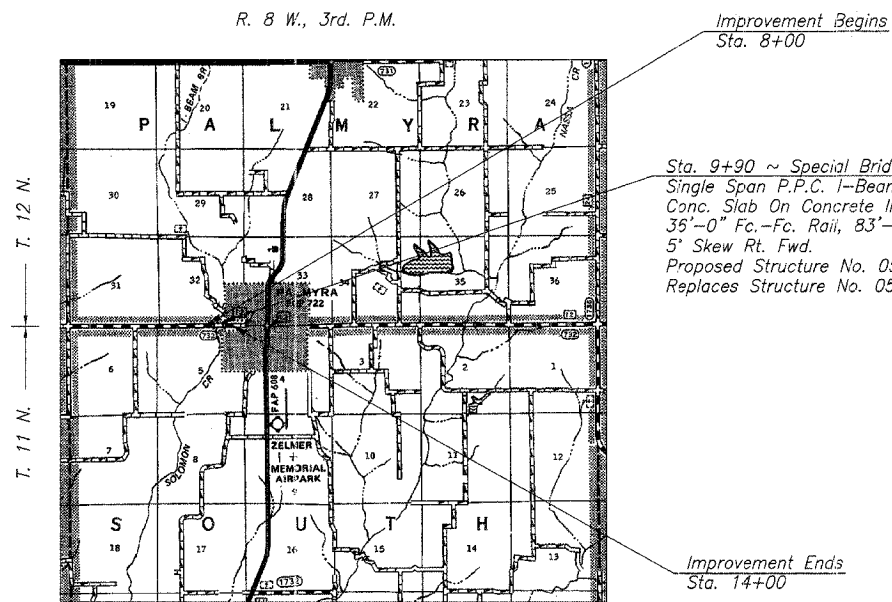


STANDARDS:

- 280001-02 TEMPORARY EROSION CONTROL SYSTEMS
- 420001-05 PAVEMENT JOINTS
- 420401-05 BRIDGE APPROACH PAVEMENT
- 515001-02 NAME PLATE FOR BRIDGES
- 630001-05 STEEL PLATE BEAM GUARDRAIL
- 630301-03 SHOULDER WIDENING FOR TYPE 1 GUARDRAIL TERMINALS
- 631032-01 TRAFFIC BARRIER TERMINAL, TYPE 6A
- 635006-02 REFLECTOR AND TERMINAL MARKER PLACEMENT
- 702001-05 TRAFFIC CONTROL DEVICES
- BLR 21-6 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

UTILITIES

VERIZON
330 WEST BEECHER
JACKSONVILLE, IL 62650



LAYOUT

APPROXIMATE SCALE = 0 1 MILE
Net Length of Section = 600.00 Feet = 0.114 Miles

DESIGN FUNCTIONAL CLASSIFICATION:
MAJOR COLLECTOR 3R GUIDELINES
DESIGN TRAFFIC: 780 (2021)
DESIGN SPEED: 50 M.P.H.

CONTRACT NO. 93371

COOMBE--BLOXDORF P.C.
Consulting Engineers • Land Surveyors • Planners
706 South Grand Avenue West Springfield, Illinois 62704 217/844-8477
Design Firm License No. 184-002703

Mark R. Denton 2/16/04
ILLINOIS PROFESSIONAL NO. 48930 Expires 11-30-05



APPROVED	<u>FEBRUARY 18</u>	20 <u>04</u>
	<i>Thomas A. Reinhart</i>	COUNTY ENGINEER
PASSED	<u>MARCH 11</u>	20 <u>04</u>
	<i>William E. Mastrom</i>	DISTRICT ENGINEER OF LOCAL ROADS & STREETS
PASSED	<u>MAR 11</u>	20 <u>04</u>
	<i>W. B. Jung</i>	DISTRICT CONSTRUCTION ENGINEER
APPROVED	<u>March 17</u>	20 <u>04</u>
	<i>Christ. M. Reed</i>	DISTRICT 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

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 12	02-00083-00-BR	MACOUPIN	15	2
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

SUMMARY OF QUANTITIES CONSTRUCTION TYPE CODE X081-2A			
CODE NO.	ITEM	UNIT	QUANTITY
20100500	TREE REMOVAL, ACRES	ACRE	0.2
20200100	EARTH EXCAVATION	CU YD	520
20300100	CHANNEL EXCAVATION	CU YD	680
20400800	* FURNISHED EXCAVATION	CU YD	590
20700220	POROUS GRANULAR EMBANKMENT	CU YD	200
25001000	* SEEDING CLASS 2 (SPECIAL)	ACRE	0.6
28000300	TEMPORARY DITCH CHECKS	EACH	8
28100107	STONE RIPRAP, CLASS A4	SQ YD	319
28102600	* STONE RIPRAP DITCH	TON	95
28200400	FILTER FABRIC	SQ YD	319
40600100	BITUMINOUS MATERIALS (PRIME COAT)	GALLON	111
42001165	BRIDGE APPROACH PAVEMENT	SQ YD	160
42001430	BRIDGE APPROACH PAVEMENT CONNECTOR (FLEXIBLE)	SQ YD	32
44004000	PAVED DITCH REMOVAL	FOOT	123
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50200100	STRUCTURE EXCAVATION	CU YD	172
50300225	CONCRETE STRUCTURES	CU YD	32.4
50300255	CONCRETE SUPERSTRUCTURE	CU YD	108.3
50300260	BRIDGE DECK GROOVING	SQ YD	333
50300300	PROTECTIVE COAT	SQ YD	493
50401005	* FURNISHING AND ERECTING PRECAST PRESTRESSED CONCRETE I-BEAMS, 48 IN.	FOOT	492
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	21,520
50901005	STEEL BRIDGE RAIL, TYPE SM	FOOT	167
51201100	FURNISHING METAL PILE SHELLS 14"	FOOT	720
51202600	DRIVING AND FILLING SHELLS	FOOT	720
51203200	TEST PILE METAL SHELLS	EACH	2
51500100	NAME PLATES	EACH	1
54200223	PIPE CULVERTS, CLASS D, TYPE 1 18" (CSCP)	FOOT	36
61139900	* STORM SEWER (SPECIAL) 6"	FOOT	30
61140000	* STORM SEWER (SPECIAL) 8"	FOOT	30
61140100	* STORM SEWER (SPECIAL) 10"	FOOT	30
61140200	* STORM SEWER (SPECIAL) 12"	FOOT	30
63000005	STEEL PLATE BEAM GUARDRAIL, TYPE B	FOOT	50
63100087	TRAFFIC BARRIER TERMINAL, TYPE 6A	EACH	4
63100167	* TRAFFIC BARRIER TERMINAL, TYPE 1 SPECIAL (TANGENT)	EACH	4
63200310	GUARDRAIL REMOVAL	FOOT	407
70101830	* TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L SUM	1
78201000	* TERMINAL MARKER-DIRECT APPLIED	EACH	4
Z0002600	BAR SPLICERS	EACH	48
X3550400	* BITUMINOUS BASE COURSE SUPERPAVE 7"	SQ YD	1,204
X4066414	* BITUMINOUS CONCRETE SURFACE COURSE, SUPERPAVE, MIX "C", N 50	TON	93
XX005347	* BITUMINOUS CONCRETE BINDER COURSE, SUPERPAVE, N 50	TON	93

* SEE SPECIAL PROVISIONS

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

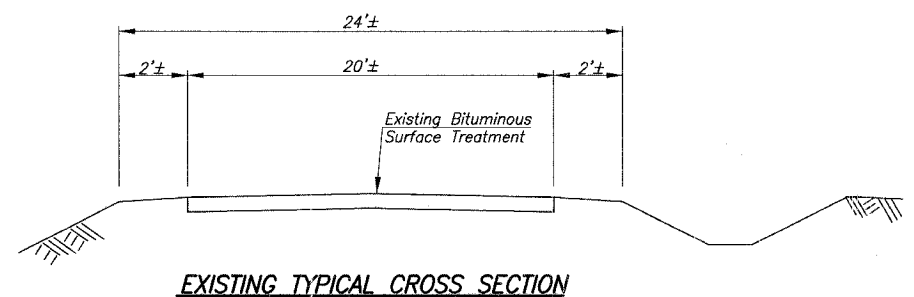
ALL TREES THAT INTERFERE WITH CONSTRUCTION WITHIN THE R.O.W. AND EASEMENTS SHALL BE REMOVED ONLY AT THE DIRECTION OF THE ENGINEER.

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.

STORM SEWERS, SPECIAL QUANTITIES FOR FIELD TILE REPLACEMENT ARE ESTIMATED QUANTITIES ONLY AND ARE LISTED FOR THE PURPOSE OF ESTABLISHING A CONTRACT UNIT PRICE.

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

PAVEMENT MARKING SHALL BE DONE BY OTHERS IN ACCORDANCE WITH STANDARD SPECIFICATIONS.



EXISTING TYPICAL CROSS SECTION

APPLICATION RATES USED IN QUANTITY CALCULATIONS

GRANULAR MATERIALS	2.05 TON/CU. YD.
BITUMINOUS MATERIALS (PRIME COAT)	0.10 GALLON/SQ. YD.
BITUMINOUS CONCRETE (BINDER AND SURFACE COURSE)	112 LBS./SQ. YD./INCH
STONE RIPRAP	1.75 TON/CU. YD.

BITUMINOUS CONCRETE MIXTURE REQUIREMENTS			
ITEM	ASPHALT GRADE	ALLOWABLE RAP	VOIDS
BINDER, SUPERPAVE, N50	PG 64-22	20%	4.0%
SURFACE, SUPERPAVE (Mix "C") N50	PG 64-22	15%	4.0%

GUARD RAIL SCHEDULE

TRAFFIC BARRIER TERMINAL, TY. 6A	TRAFFIC BARRIER TERMINAL, TY.1 SPECIAL (TANGENT)
LT. STA. 9+18.27 TO 9+46.84 = 1 EACH	LT. STA. 8+68.27 TO 9+18.27 = 1 EACH
RT. STA. 9+21.42 TO 9+49.99 = 1 EACH	RT. STA. 8+46.42 TO 8+96.42 = 1 EACH
LT. STA. 10+30.01 TO 10+58.58 = 1 EACH	LT. STA. 10+83.58 TO 11+33.58 = 1 EACH
RT. STA. 10+33.16 TO 10+61.73 = 1 EACH	RT. STA. 10+61.73 TO 11+11.73 = 1 EACH
TOTAL = 4 EACH	TOTAL = 4 EACH

STEEL PLATE BEAM GUARD RAIL, TYPE B

LT. STA. 10+58.58 TO 10+83.58 = 25 FOOT
RT. STA. 8+96.42 TO 9+21.42 = 25 FOOT
TOTAL = 50 FOOT

GUARD RAIL REMOVAL

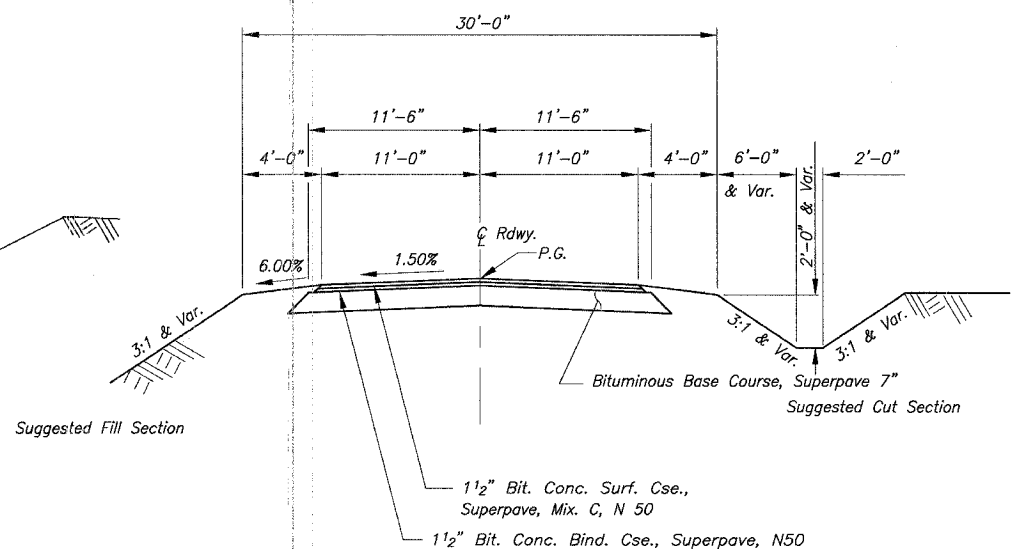
LT. STA. 8+81 TO 9+33 = 61 FOOT
LT. STA. 9+57 TO 9+83 = 40 FOOT
RT. STA. 8+81 TO 9+83 = 102 FOOT
LT. STA. 10+23 TO 11+25 = 102 FOOT
RT. STA. 10+23 TO 11+25 = 102 FOOT
TOTAL = 407 FOOT

PAVED DITCH REMOVAL

LT. STA. 8+34 TO 9+34 = 100 FOOT
RT. STA. 9+00 TO 9+23 = 23 FOOT
TOTAL = 123 FOOT

PAVEMENT DESIGN DATA

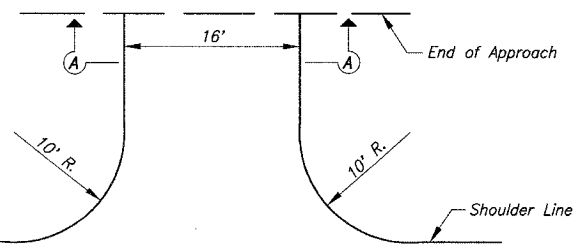
Design Period = 20 Years
 Structural Design Traffic (S.D.T.) = 730 Yr. 2013
 PV = 642 SU = 51 MU = 1137
 Class III Route
 Percent of S.D.T. in Design Lane P=50 S=50 M=50
 Traffic Factor: T.F. = 0.199
 Minimum Soil Support: IBSR=3.0
 Structural Number: D_t = 3.22
 Pavement Structure:
 Surface Course Type: 3" Bit. Conc. Superpave a₁=0.40
 Base Course Type: 7" Bit. Base Superpave, a₂=0.30
 D_t Furnished = 3.30



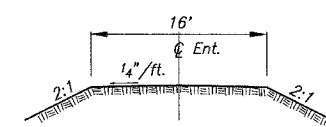
PROPOSED TYPICAL CROSS SECTION

Sta. 8+50 to Sta. 13+50

Transition from the proposed roadway to the existing roadway to be constructed from Sta. 8+00 to 8+50 and from Sta. 13+50 to 14+00. See sheet 4 for transition at the bridge.



FIELD ENTRANCE DETAIL

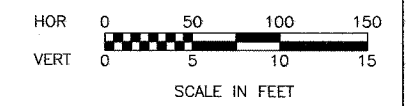
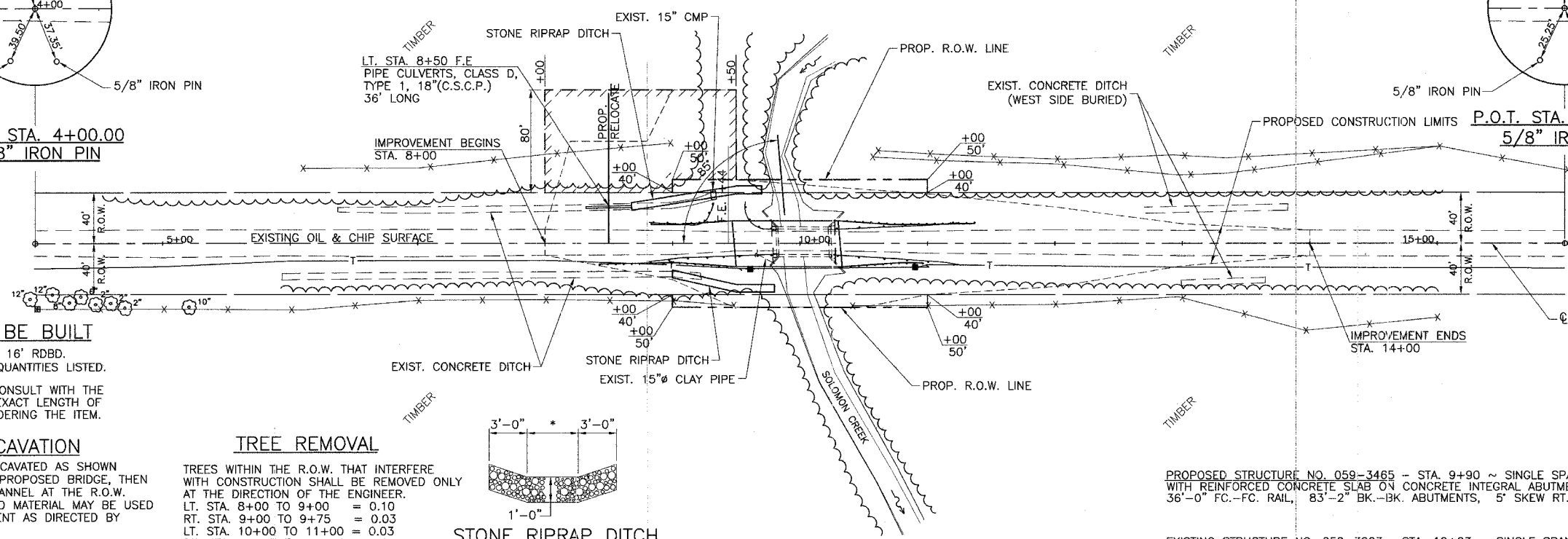
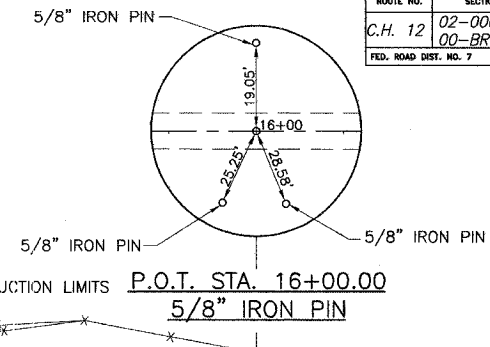
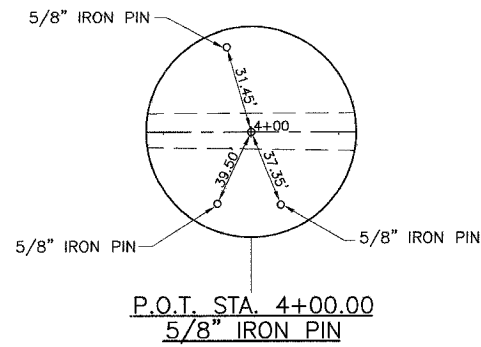


SECTION A-A

SHEET TITLE		PROJECT NO. 03016	
SUMMARY OF QUANTITIES & TYPICAL CROSS SECTION		SCALE	DATE 11-6-03
SECTION 02-00083-00-BR		DRAWN BY MRL	CHECKED BY MCB
C.H. 12/F.A.S. 732		DRAWING NO.	2
MACOUPIN COUNTY		COOMBE-BLOXDORF P.C.	
STATION 9+90		Engineers / Land Surveyors	
		Springfield, Illinois	
		Design Firm License No. 184-002703	
		OF 15 SHTS	

SE 1/4 SEC. 32, T.12.N., R.8.W., 3RD P.M.
CELIA DUGGER

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 12	02-00083-00-BR	MACOUPIN	15	3
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	



- LEGEND**
- IRON PIN SET
 - POWER POLE
 - STREAM
 - ⊞ TELEPHONE SPLICE BOX
 - ⊥ SIGN
 - ⊙ FIELD TILE MANHOLE
 - ⊗ FENCE POST

ENTRANCES TO BE BUILT

LT. STA. 8+50 F.E. -9.0% 16' RDBD.
EARTHWORK INCLUDED IN QUANTITIES LISTED.
THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER IN REGARD TO EXACT LENGTH OF PIPE CULVERT BEFORE ORDERING THE ITEM.

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 MAY BE USED IN THE ROADWAY EMBANKMENT AS DIRECTED BY THE ENGINEER.
CHANNEL EXCAVATION = 680 CU. YD.

TREE REMOVAL

TREES WITHIN THE R.O.W. THAT INTERFERE WITH CONSTRUCTION SHALL BE REMOVED ONLY AT THE DIRECTION OF THE ENGINEER.
LT. STA. 8+00 TO 9+00 = 0.10
RT. STA. 9+00 TO 9+75 = 0.03
LT. STA. 10+00 TO 11+00 = 0.03
RT. STA. 10+17 TO 11+00 = 0.04
TREE REMOVAL, ACRES = 0.20 ACRE

STONE RIPRAP DITCH

LT. STA. 8+68 TO 9+70
RT. STA. 9+00 TO 9+80
ESTIMATED QUANTITY = 95 TON
* WIDTH VARIES AS SHOWN ON STATION CROSS SECTIONS.

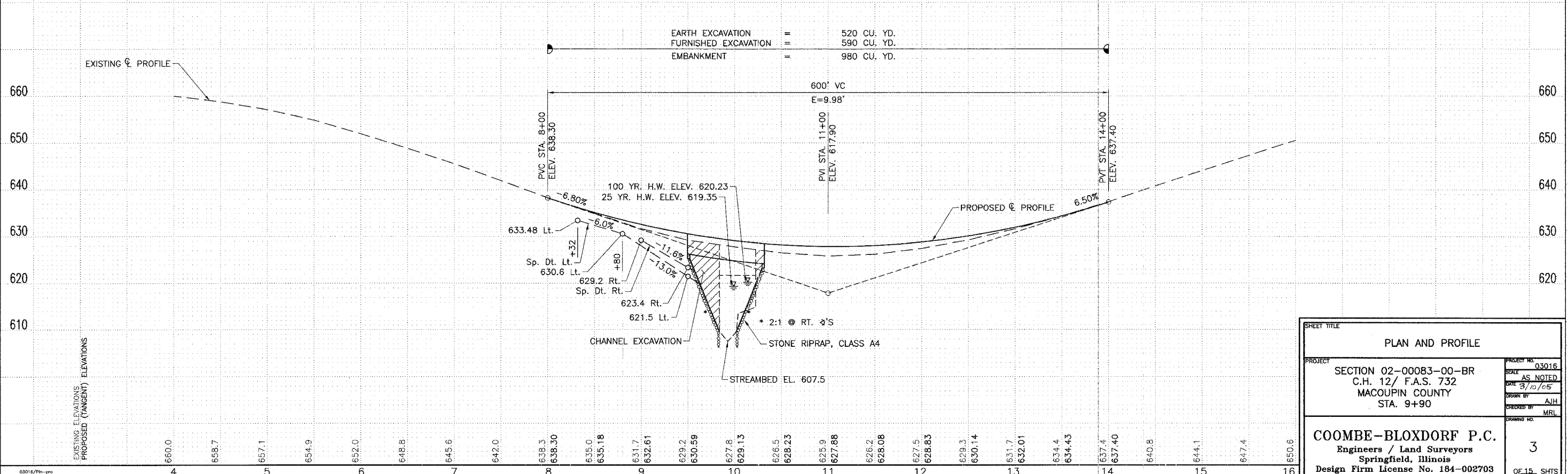
PROPOSED STRUCTURE NO. 059-3465 - STA. 9+90 ~ SINGLE SPAN P.P.C. I-BEAM WITH REINFORCED CONCRETE SLAB ON CONCRETE INTEGRAL ABUTMENTS 36'-0" FC.-FC. RAIL, 83'-2" BK.-BK. ABUTMENTS, 5' SKEW RT. FWD.

EXISTING STRUCTURE NO. 059-3003 - STA. 10+03 ~ SINGLE SPAN THRU GIRDER BRIDGE WITH CONC. PARAPETS ON CLOSED CONC. ABUTMENTS WITH CONCRETE WINGS, 38.7' F.C.-F.C. ABUTS., 20.1' F.C.-F.C. PARAPETS, 0' SKEW

REMOVAL OF EXISTING STRUCTURES = 1 EACH

WARREN PENCE
NE 1/4 SEC. 5, T.11N., R.8.W., 3RD P.M.

BM #1 (CB-1) - CHISELED SQUARE IN S.W. WINGWALL
16.9' RT. STA. 9+77
WALL. ELEV. 626.85



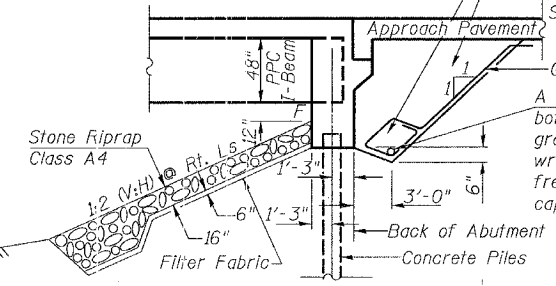
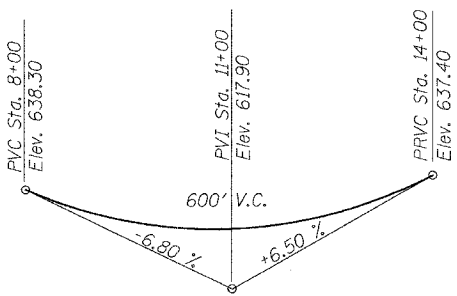
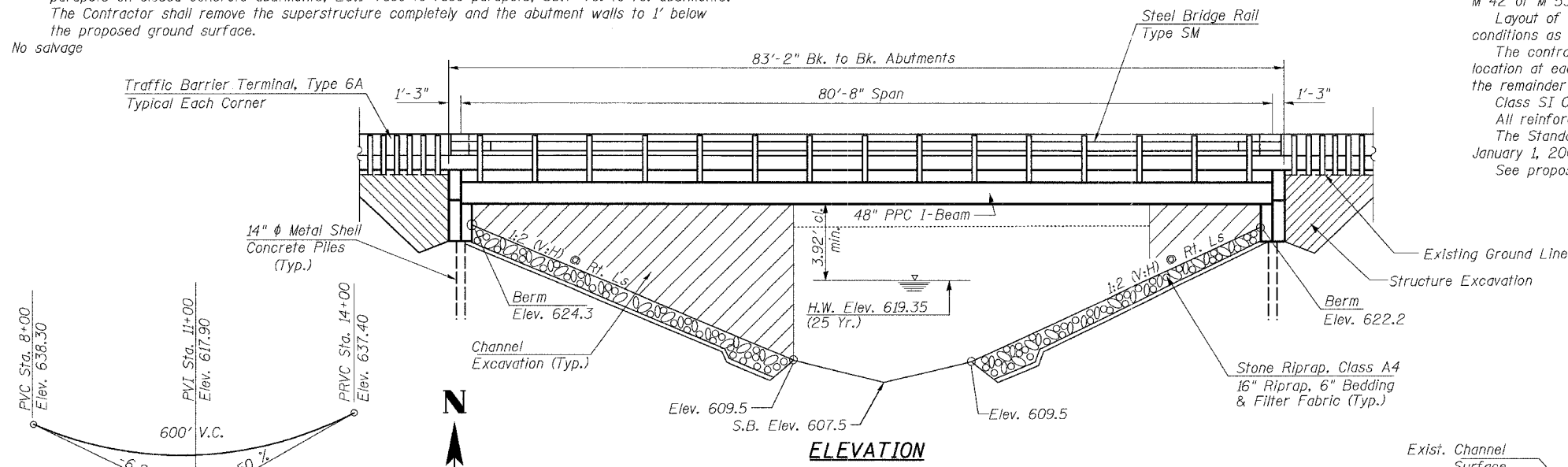
SHEET TITLE	
PLAN AND PROFILE	
PROJECT	SECTION 02-00083-00-BR C.H. 12/ F.A.S. 732 MACOUPIN COUNTY STA. 9+90
DATE	3/10/05
DRAWN BY	AJH
CHECKED BY	MRL
DRAWING NO.	3
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703	
OF 15 SHEETS	

FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732	*	MACOUPIN	15	4
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				
*02-00083-00-BR				

B.M. #1: Chiseled Square in S.W. Wingwall, 16.9' Rt. Sta. 9+77, Elev. 626.85
 Existing Structure: S.N. 059-3003 at Sta. 10+00 single span reinforced concrete slab with concrete parapets on closed concrete abutments, 20.1' face to face parapets, 38.7' fc. to fc. abutments.
 The Contractor shall remove the superstructure completely and the abutment walls to 1' below the proposed ground surface.
 No salvage

GENERAL NOTES

Reinforcement bars shall conform to the requirements of AASHTO M 31, M 42 or M 53 Grade 60.
 Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.
 The contractor shall drive one 14" ϕ metal shell test pile in a permanent location at each abutment as directed by the Engineer before ordering the remainder of the piles.
 Class SI Concrete shall be used throughout.
 All reinforcement bars shall be lapped as shown on the plans.
 The Standard Specifications adopted by the Department of Transportation January 1, 2002 shall apply to this work.
 See proposal for Borings.



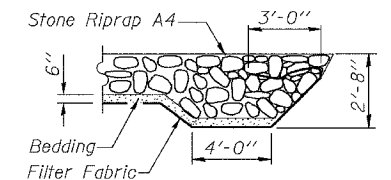
Backfill with uncompacted porous granular embankment with a gradation of CA-5 or CA-7 by Bridge Contractor after substructure is in place. Limits shall be 1'-0" from the end of each wingwall. Excavation for placing porous granular embankment is paid for as Structure Excavation.

Geotechnical fabric for french drains.*
 A 6" ϕ perforated pipe shall be situated at the bottom of an approximate 2'x2' area of porous granular embankment. The 2'x2' area shall be wrapped completely in geotechnical fabric for french drains. Extend pipe parallel with the cap until intersecting with the sideslope.*

*Included in the cost of Porous Granular Embankment.

SECTION THRU INTEGRAL ABUTMENT
 (Showing Riprap Treatment)

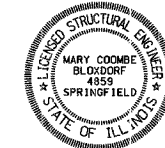
SOLOMON CREEK
 BUILT 20 BY
 MACOUPIN COUNTY
 SEC. 02-00083-00-BR
 FAS RT. 732(CH 12) Sta. 9+90.00
 FAS PROJ. BRS-732(143)
 S.N. 059-3465 LOADING HS20



NAME PLATE
 See Std. 515001

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Porous Granular Embankment	Cu. Yd.			200
Stone Riprap, Class A4	Sq. Yd.			319
Filter Fabric for use with Riprap	Sq. Yd.			319
Removal of Existing Structures	Each			1
Structure Excavation	Cu. Yd.		172	172
Concrete Structures	Cu. Yd.		32.4	32.4
Concrete Superstructure	Cu. Yd.	108.3		108.3
Bridge Deck Grooving	Sq. Yd.	333		333
Protective Coat	Sq. Yd.	333		333
Furnishing and Erecting PPC I-Beams, 48 in.	Foot	492		492
Reinforcement Bars, Epoxy Coated	Pound	17460	4060	21520
Steel Bridge Rail, Type SM	Foot	167		167
Furnishing Metal Pile Shells 14"	Foot		720	720
Driving and Filling Shells	Foot		720	720
Test Pile Metal Shells, 14"	Each		2	2
Name Plates	Each		1	1
Bar Splicers	Each	48		48



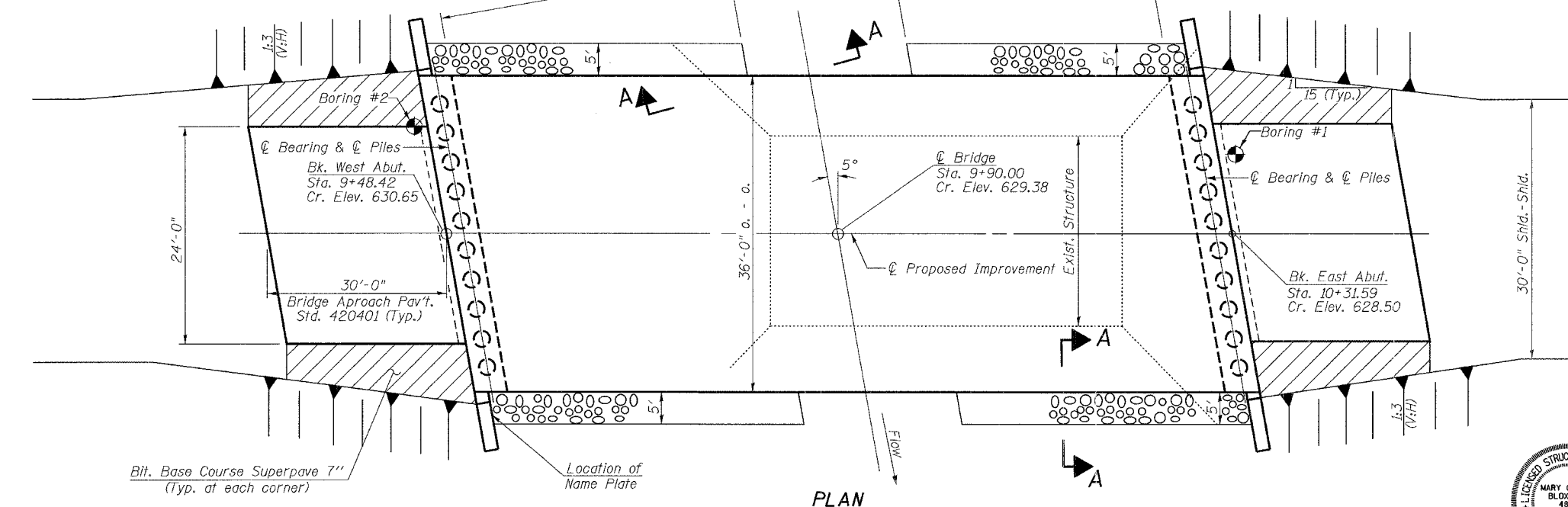
I certify, to the best of my knowledge, information and belief, this bridge design is structurally adequate for the Design Loading shown on the plans. The design is an economical one for the style of structure and complies with the requirements of the current AASHTO Standard Specifications for Highway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

Mary Coombe Bloxdorf
 Illinois Structural No. 4859
 Expires 11-30-06
 Date: 2/16/04

PROFILE GRADE
 Along ϕ Roadway

ELEVATION

PLAN



WATERWAY INFORMATION

Drainage Area = 7.58 Low Grade Elev. 627.88 @ Sta. 11+00 Max. Rec. H.W.E.									
Flood Yr.	Freq.	Q	Opening C.F.S.	Sq. Ft.	Nat. H.W.E.	Head-Ft.	Headwater El.	Headwater El.	Headwater El.
Design	25	1945	308	390	619.35	0.81	0.23	620.16	619.58
*Base	100	2635	342	442	620.23	1.52	0.64	621.75	620.87
Max. Calc.	500	3455	379	501	621.19	2.36	1.1	623.55	622.29

* = Overtopping

DESIGN STRESSES

FIELD UNITS
 $f'_c = 3,500$ psi
 $f_y = 60,000$ psi (reinforcement)
PRECAST PRESTRESSED UNITS
 $f'_c = 6,000$ psi
 $f'_{ci} = 5,000$ psi
 $f'_s = 270,000$ psi ($\frac{1}{2}$ " ϕ Low Relaxation Strands)
 $f'_{st} = 201,960$ psi ($\frac{1}{2}$ " ϕ Low Relaxation Strands)

DESIGN SPECIFICATIONS

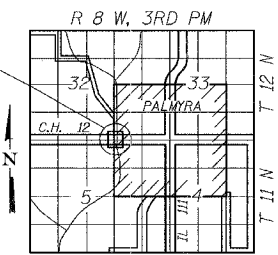
2002 AASHTO & INTERIMS

LOADING HS20

Allow 50#/sq. ft. for future wearing surface.

SEISMIC DATA

Seismic Performance Category (SPC) = A
 Bedrock Acceleration Coefficient (A) = 0.055g
 Site Coefficient (S) = 1.5

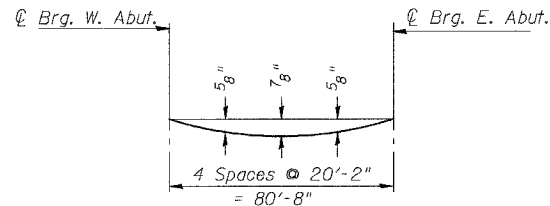


LOCATION SKETCH

SHEET TITLE	
GENERAL PLAN AND ELEVATION	
PROJECT	C.H. 12 OVER SOLOMON CREEK
PROJECT NO.	03016
FAS ROUTE	732 SEC. 02-00083-00-BR
DATE	2/16/04
COUNTY	MACOUPIN COUNTY
DRAWN BY	TFC
STATION	9+90.00
CHECKED BY	MRL/REG/MCB
STRUCTURE NUMBER	059-3465
DRAWING NO.	
COOMBE-BLOXDORF P.C.	
Engineers / Land Surveyors	
Springfield, Illinois	
Design Firm License No.	184-002703
OF 15 SHTS	4

gen-plan

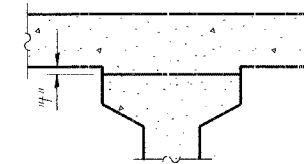
FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732	*	MACOUPIN	15	5
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT				
*02-00083-00-BR				



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 below.



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" minus slab thickness, equals the fillet heights "h" above top flanges of beams.

FILLET HEIGHTS

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	947.053	-15.625	630.463	630.463
CL Brg. W. Abut	948.303	-15.625	630.419	630.419
A	958.303	-15.625	630.078	630.107
B	968.303	-15.625	629.760	629.813
C	978.303	-15.625	629.465	629.532
D	988.303	-15.625	629.191	629.264
E	998.303	-15.625	628.939	629.008
F	1008.303	-15.625	628.710	628.764
G	1018.303	-15.625	628.503	628.533
CL Brg. E. Abut	1028.970	-15.625	628.306	628.306
Bk. E. Abut	1030.220	-15.625	628.285	628.285

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	947.600	-9.375	630.537	630.537
CL Brg. W. Abut	948.850	-9.375	630.493	630.493
A	958.850	-9.375	630.154	630.183
B	968.850	-9.375	629.837	629.890
C	978.850	-9.375	629.543	629.611
D	988.850	-9.375	629.270	629.344
E	998.850	-9.375	629.020	629.088
F	1008.850	-9.375	628.792	628.845
G	1018.850	-9.375	628.586	628.616
CL Brg. E. Abut	1029.517	-9.375	628.391	628.391
Bk. E. Abut	1030.767	-9.375	628.369	628.369

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	948.147	-3.125	630.612	630.612
CL Brg. W. Abut	949.397	-3.125	630.568	630.568
A	959.397	-3.125	630.230	630.259
B	969.397	-3.125	629.915	629.967
C	979.397	-3.125	629.621	629.689
D	989.397	-3.125	629.350	629.423
E	999.397	-3.125	629.101	629.169
F	1009.397	-3.125	628.874	628.927
G	1019.397	-3.125	628.669	628.699
CL Brg. E. Abut	1030.064	-3.125	628.475	628.475
Bk. E. Abut	1031.314	-3.125	628.454	628.454

ROADWAY

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	948.420	0.000	630.649	630.649
CL Brg. W. Abut	949.670	0.000	630.605	630.605
A	959.670	0.000	630.268	630.297
B	969.670	0.000	629.953	630.005
C	979.670	0.000	629.660	629.728
D	989.670	0.000	629.390	629.463
E	999.670	0.000	629.141	629.210
F	1009.670	0.000	628.915	628.968
G	1019.670	0.000	628.711	628.741
CL Brg. E. Abut	1030.337	0.000	628.517	628.517
Bk. E. Abut	1031.587	0.000	628.496	628.496

BEAM 4

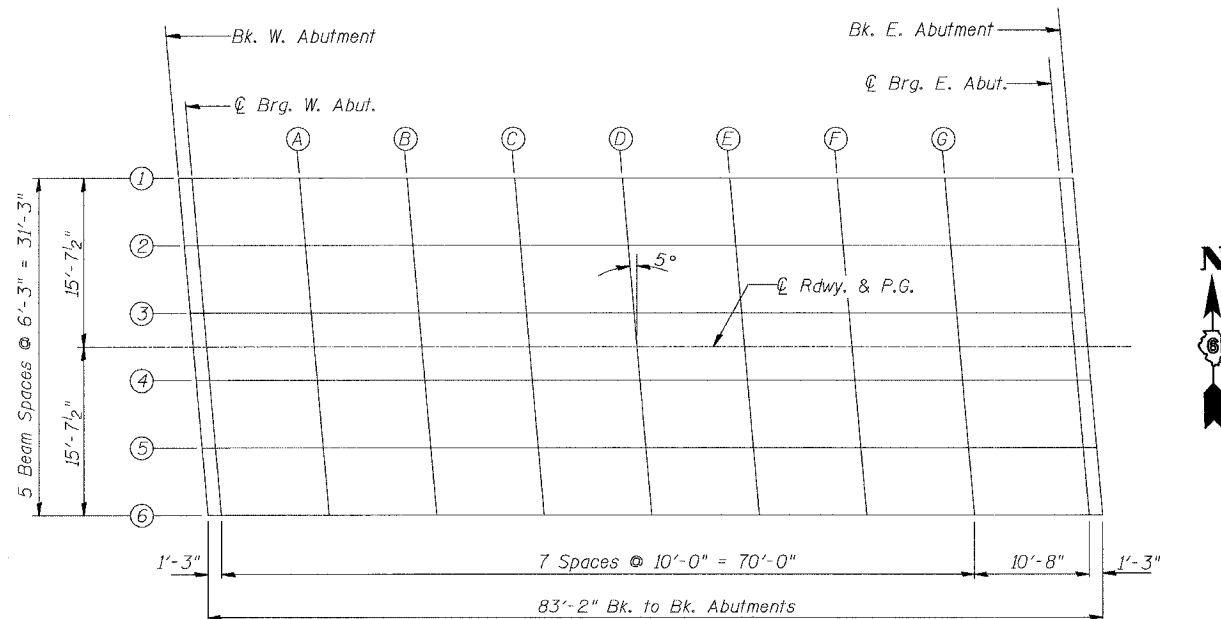
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	948.693	3.125	630.592	630.592
CL Brg. W. Abut	949.943	3.125	630.549	630.549
A	959.943	3.125	630.212	630.241
B	969.943	3.125	629.898	629.950
C	979.943	3.125	629.606	629.673
D	989.943	3.125	629.336	629.409
E	999.943	3.125	629.088	629.156
F	1009.943	3.125	628.862	628.916
G	1019.943	3.125	628.659	628.689
CL Brg. E. Abut	1030.610	3.125	628.466	628.466
Bk. E. Abut	1031.860	3.125	628.445	628.445

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	949.240	9.375	630.480	630.480
CL Brg. W. Abut	950.490	9.375	630.436	630.436
A	960.490	9.375	630.101	630.129
B	970.490	9.375	629.788	629.840
C	980.490	9.375	629.497	629.564
D	990.490	9.375	629.228	629.301
E	1000.490	9.375	628.981	629.050
F	1010.490	9.375	628.757	628.810
G	1020.490	9.375	628.554	628.585
CL Brg. E. Abut	1031.157	9.375	628.363	628.363
Bk. E. Abut	1032.407	9.375	628.342	628.342

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	949.787	15.625	630.367	630.367
CL Brg. W. Abut	951.037	15.625	630.323	630.323
A	961.037	15.625	629.989	630.018
B	971.037	15.625	629.677	629.730
C	981.037	15.625	629.388	629.455
D	991.037	15.625	629.120	629.193
E	1001.037	15.625	628.875	628.943
F	1011.037	15.625	628.651	628.705
G	1021.037	15.625	628.450	628.480
CL Brg. E. Abut	1031.704	15.625	628.260	628.260
Bk. E. Abut	1032.954	15.625	628.239	628.239

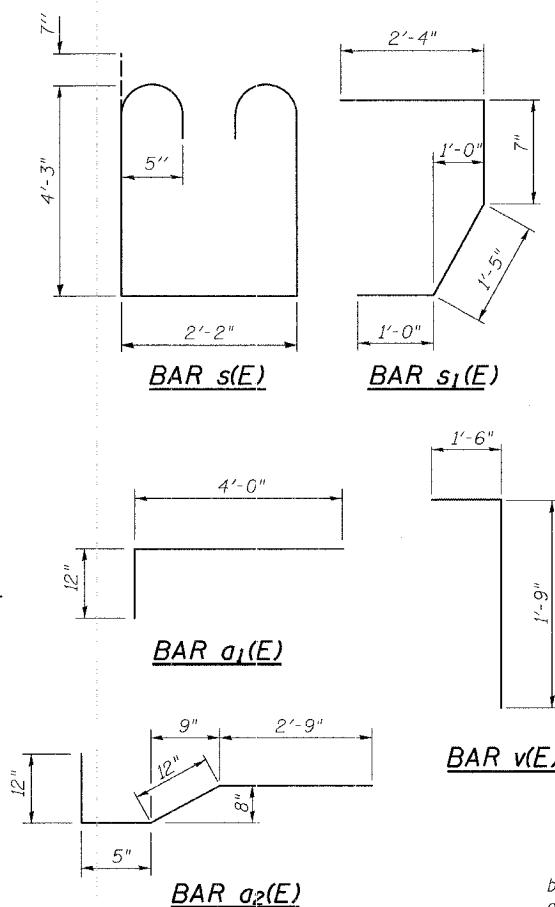
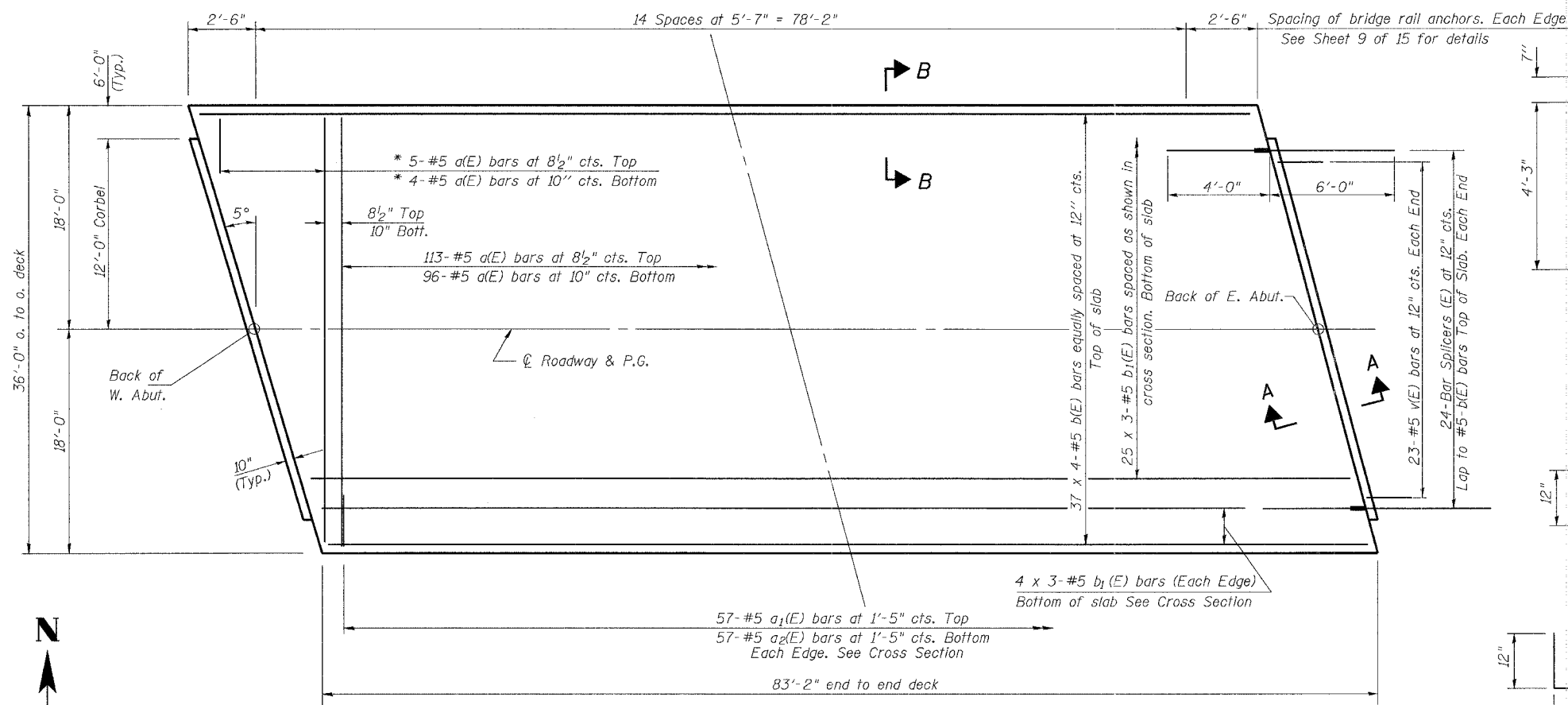


PLAN

SHEET TITLE		PROJECT NO.	
TOP OF SLAB ELEVATIONS		03016	
PROJECT		SCALE	
C.H. 12 OVER SOLOMON CREEK		2/16/04	
FAS ROUTE 732 SEC. 02-00083-00-BR		DRAWN BY	
MACOUPIN COUNTY		TFG	
STATION 9+90.00		CHECKED BY	
STRUCTURE NUMBER 059-3465		MRL/REG/MCB	
DRAWING NO.		5	
COOMBE-BLOXDORF P.C.		OF 15 SHTS	
Engineers / Land Surveyors			
Springfield, Illinois			
Design Firm License No. 184-002703			

FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732		MACOUPIN	15	6

FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT
 •02-00083-00-BR



**SUPERSTRUCTURE
BILL OF MATERIAL**

Bar	No.	Size	Length(m)	Shape
a(E)	218	#5	35'-8"	—
a1(E)	114	#5	5'-0"	—
a2(E)	114	#5	5'-2"	—
b(E)	148	#5	22'-1"	—
b1(E)	99	#5	28'-11"	—
m(E)	4	#6	23'-11"	—
m1(E)	6	#6	35'-11"	—
m2(E)	24	#6	9'-0"	—
m3(E)	10	#6	4'-1"	—
m4(E)	4	#6	1'-1"	—
s(E)	58	#4	11'-10"	—
s1(E)	48	#5	5'-4"	—
v(E)	46	#5	3'-3"	—
Reinforcement Bars, Epoxy Coated Concrete Superstructure			Pound	17460
Bar Splicers			Cu. Yd.	108.3
			Each	48

NOTES

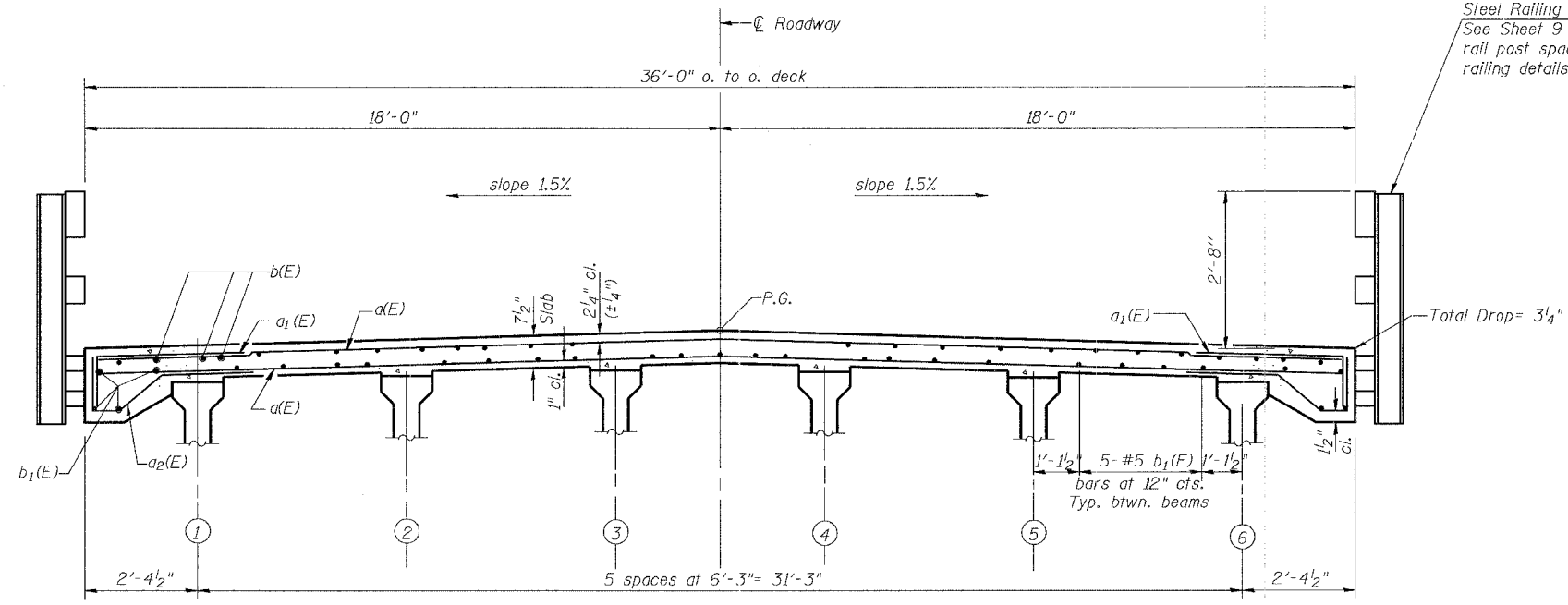
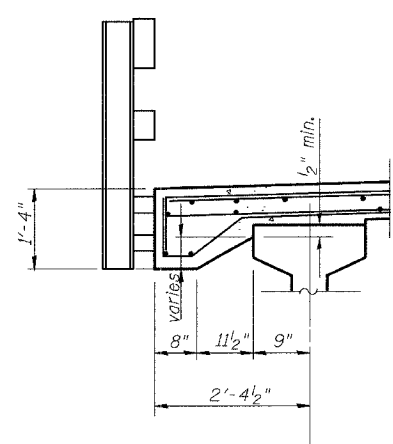
Reinforcement bars in the top of the deck shall be placed with a 1/2" minimum clearance in the area of the rail post anchor devices. The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device. See sheet #7 of 15 for superstructure details. See sheet #7 of 15 for section A-A. Reinforcement bars designated (E) shall be epoxy coated. Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.

MIN. BAR LAPS

#5 = 1'-8"
 #6 = 2'-9"



* Order a(E) bars full length. Cut to fit skew and use remainder of bars in opposite end.



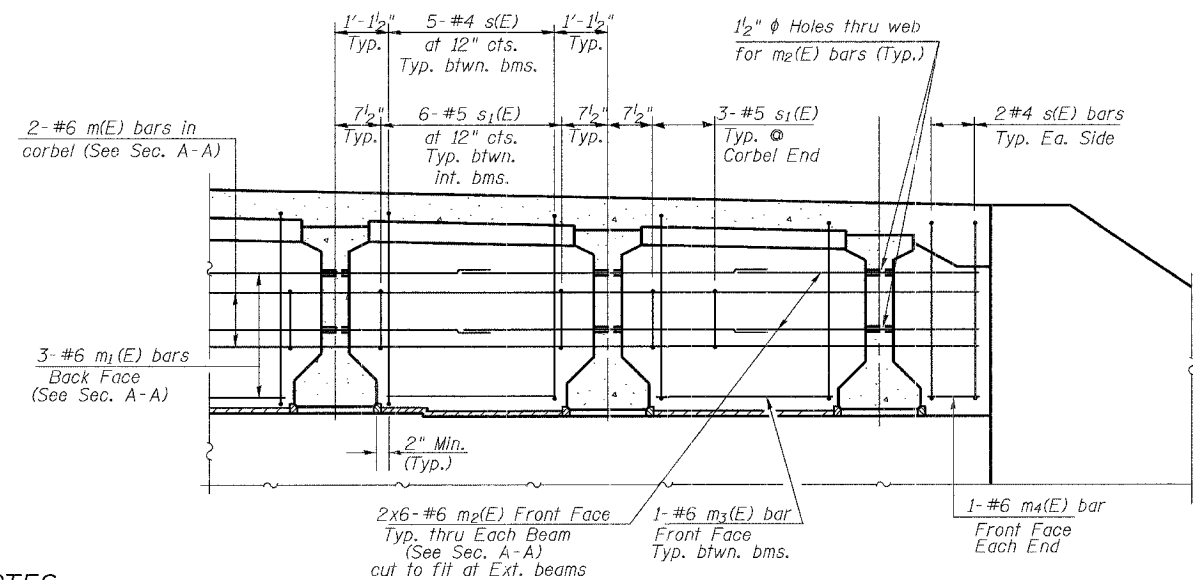
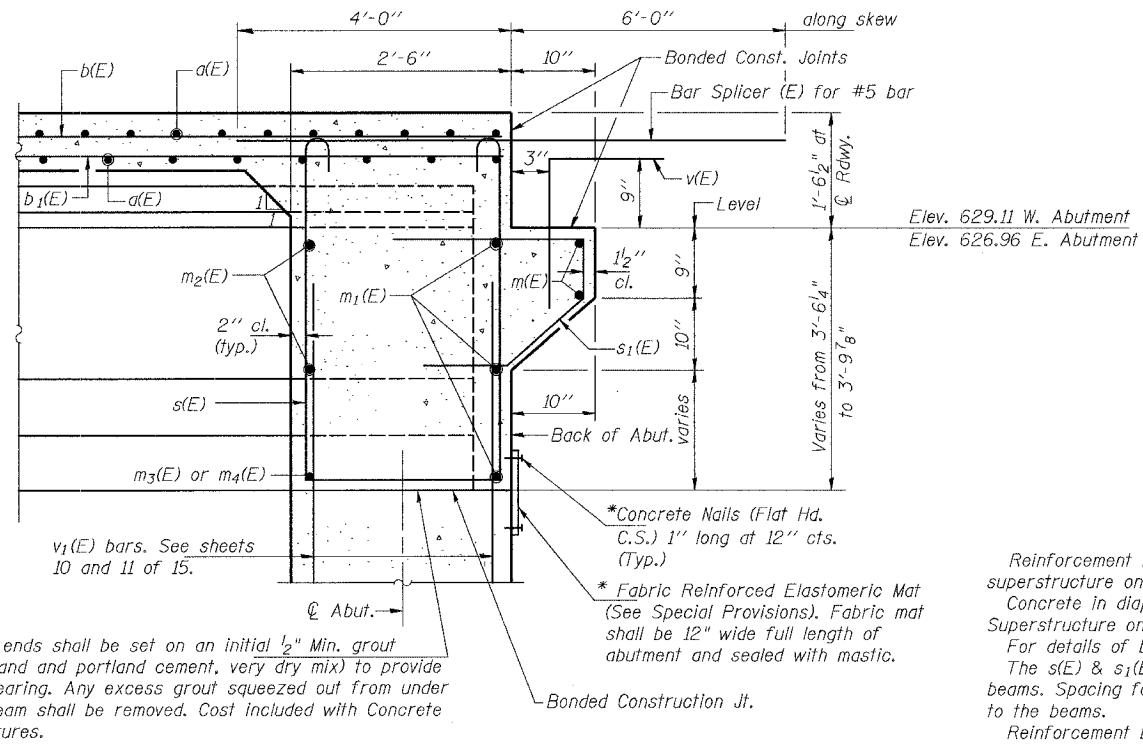
Steel Railing Type SM See Sheet 9 of 15 for rail post spacing and railing details

PI-1-R(15°) 3-1-94

SHEET TITLE		SUPERSTRUCTURE	
PROJECT	C.H. 12 OVER SOLOMON CREEK FAS ROUTE 732 SEC. 02-00083-00-BR MACOUPIN COUNTY STATION 9+90.00 STRUCTURE NUMBER 059-3465	PROJECT NO.	03016
SCALE		DATE	2/16/04
DRAWN BY		CHECKED BY	TFG
		MRL/REG/MCB	
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703		DRAWING NO.	6
		OF 15	SHTS

FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732	*	MACOUPIN	15	7

FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT
 *02-00083-00-BR



NOTES

Reinforcement bars in diaphragm are billed with superstructure on sheet 6 of 15.
 Concrete in diaphragm is included with Concrete Superstructure on sheet 6 of 15.
 For details of bars s(E) & s1(E) see sheet 6 of 15.
 The s(E) & s1(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.

MIN. BAR LAP
 #6 bar = 2'-9"

INTERIOR BEAM MOMENT TABLE

0.5 Pt.

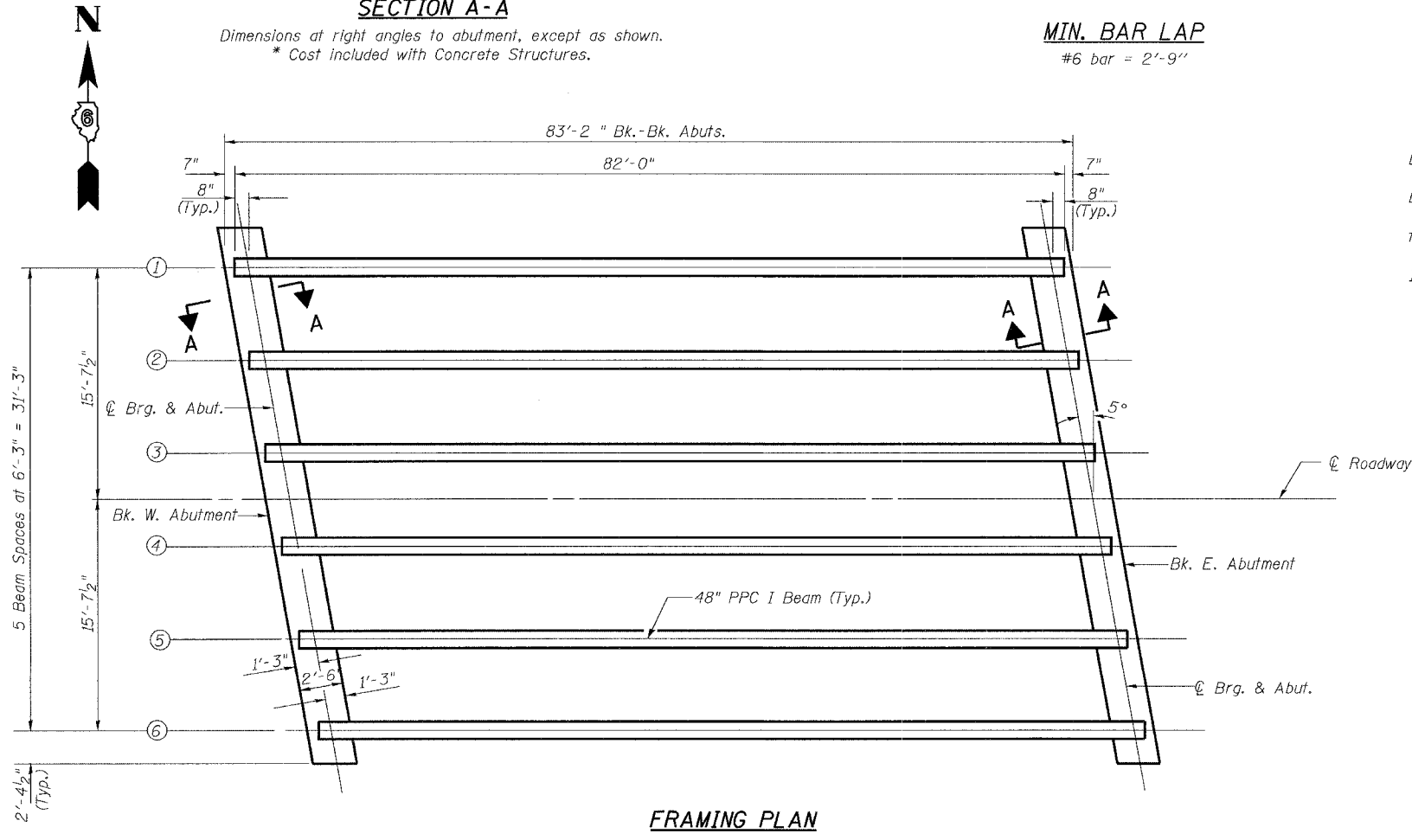
I	(in ⁴)	144,117
I'	(in ⁴)	375,274
S _b	(in ³)	6,834
S _b '	(in ³)	10,963
S _t	(in ³)	5,355
S _t '	(in ³)	27,253
D	(k/')	1,201
M _D	('k)	977
s _D	(k/')	0.333
M _{sD}	('k)	271
M _L	('k)	669
M (Imp)	('k)	162

I and I' are the moment of inertia and composite moment of inertia of the beam section.
 S_b and S_b' are the non-composite and composite section modulus for the bottom fiber of the prestressed beam.
 S_t and S_t' are the non-composite and composite section modulus for the top fiber of the prestressed beam.
 M_D is the moment due to dead loads on the non-composite prestressed beam. It is conservatively calculated at 0.5 of the span.
 M_{sD} is the Moment due to dead loads on composite section.
 M_L is the Moment due to live load on composite section.
 M (Imp) is the Moment due to live load impact on composite section.

INTERIOR BEAM REACTION TABLE

Abut.

R _D	(k)	49.1
R _{sD}	(k)	12.9
R _L	(k)	36.2
Imp.	(k)	8.8
R (Total)	(k)	107.0



SHEET TITLE

FRAMING PLAN & DIAPHRAGM DETAILS

PROJECT	C.H. 12 OVER SOLOMON CREEK FAS ROUTE 732 SEC. 02-00083-00-BR MACOUPIN COUNTY STATION 9+90.00 STRUCTURE NUMBER 059-3465	PROJECT NO.	03016
SCALE		DATE	2/16/04
DRAWN BY	TFC	CHECKED BY	MRL/REG/MCB
DRAWING NO.			

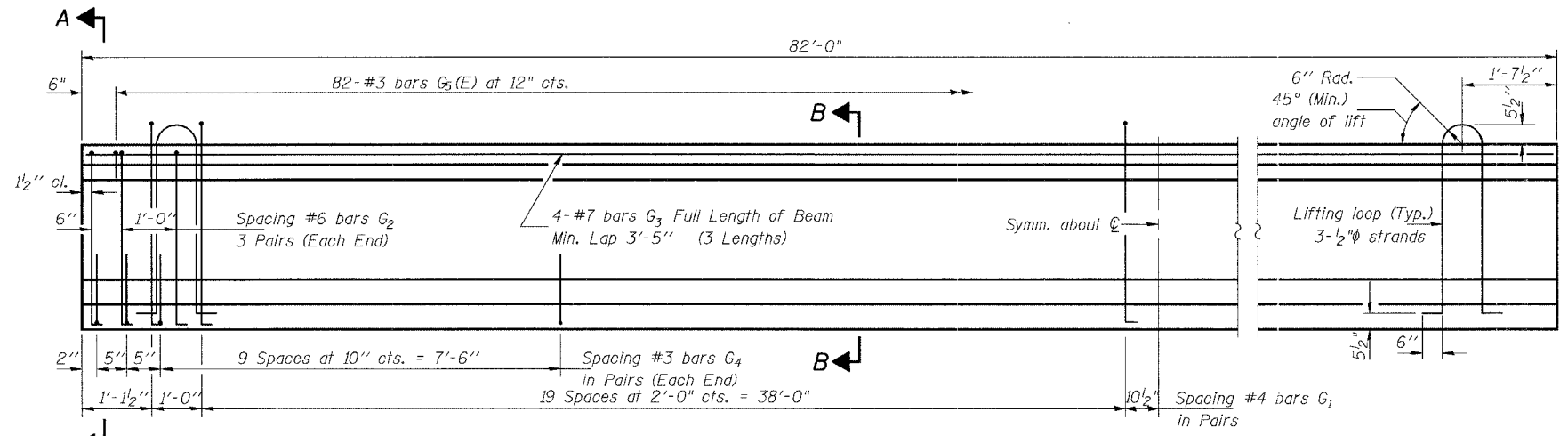
COOMBE-BLOXDORF P.C.
 Engineers / Land Surveyors
 Springfield, Illinois
 Design Firm License No. 184-002703

7
 OF 15 SHTS

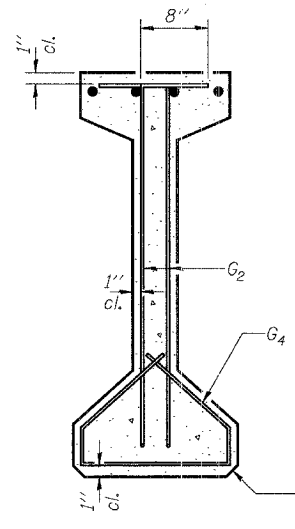
FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732		MACOUPIN	15	8

FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT

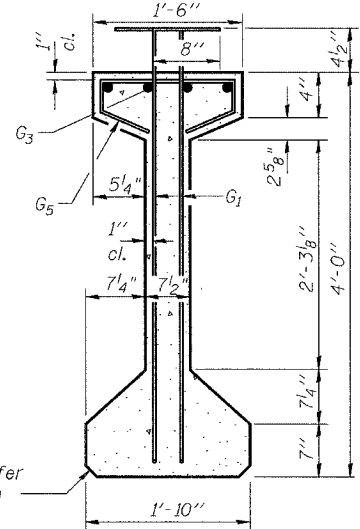
•02-00083-00-BR



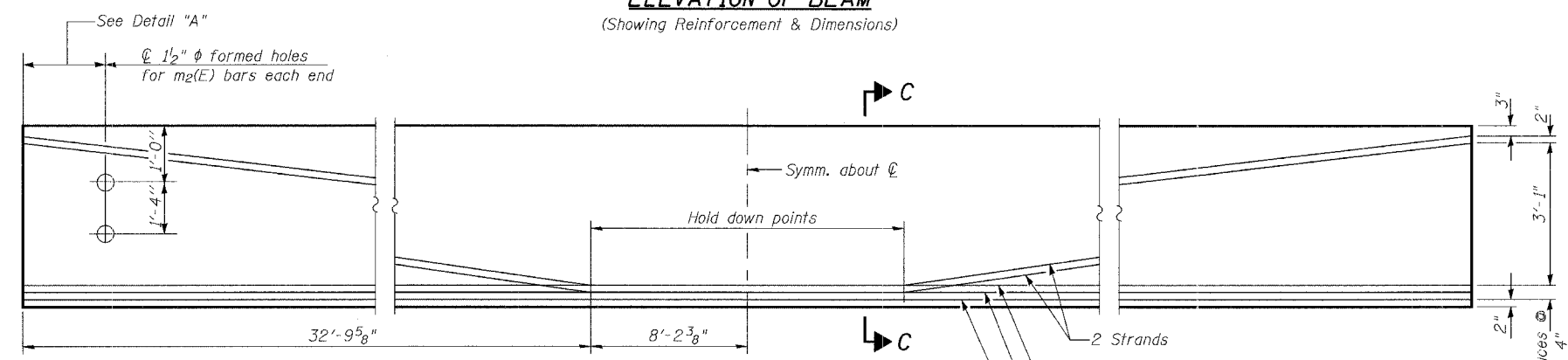
ELEVATION OF BEAM
(Showing Reinforcement & Dimensions)



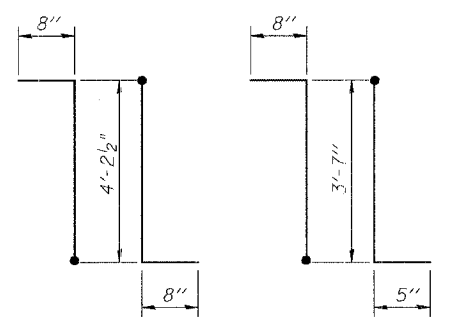
SECTION A-A



SECTION B-B

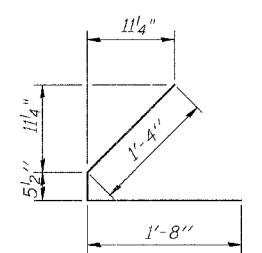


ELEVATION OF BEAM
(Showing Prestressing Steel)

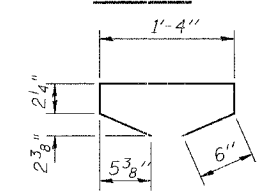


BAR G1

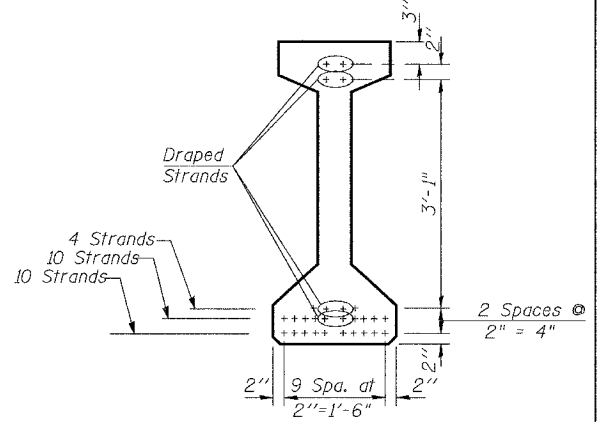
BAR G2



BAR G4



BAR G5



SECTION C-C

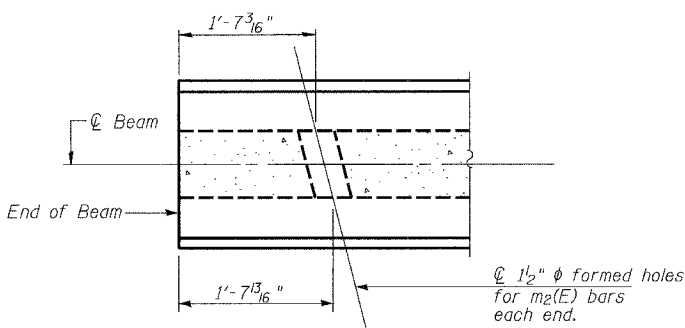
BILL OF MATERIAL

Item	Unit	Total
Furnishing and Erecting Precast Prestressed Concrete I-Beams, 48"	Ft.	492

*** BAR LIST**

Bar	No.	Size	Length	Shape
G1	84	#4	5'-6 1/2"	TL
G2	12	#6	4'-8"	TL
G3	12	#7	29'-7"	—
G4	48	#3	3'-5 1/2"	L
G5	82	#3	2'-8 1/2"	U

* For one beam only.



DETAIL "A"

NOTES

All reinforcing and Prestressing Steel and other items which are cast into the Precast Concrete I-Beams shall be included in the contract unit price per foot of "Furnishing and Erecting Precast Prestressed Concrete I-Beams, 48 in."

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, M 42 or M 53 Grade 60.

Lifting loops shall be 3-1/2" phi - 270 ksi strands, as shown.

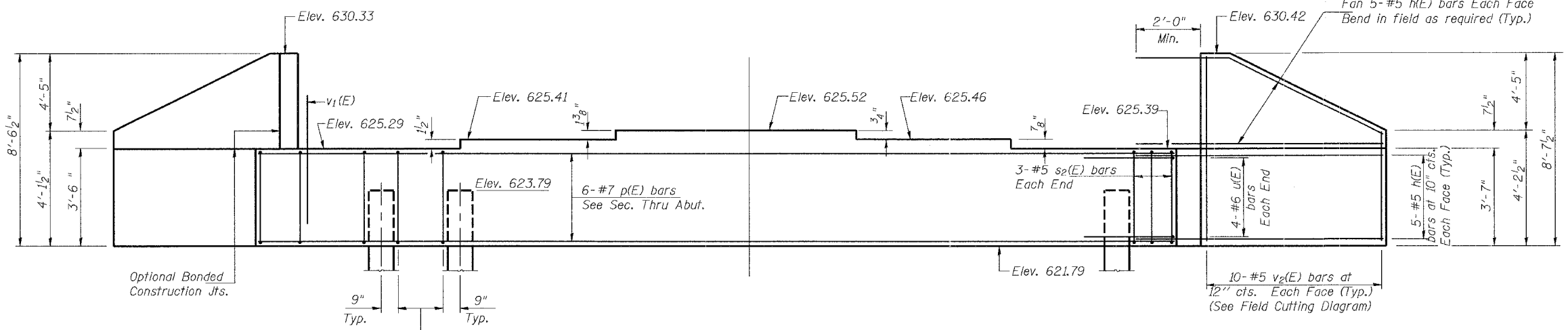
Required release strength, f'ci, shall be 5000 psi.

Reinforcement bars designated (E) shall be epoxy coated.

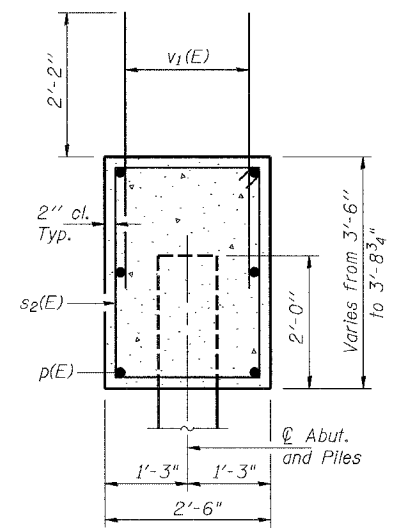
SHEET TITLE		PROJECT NO.
BEAM DETAILS		03016
PROJECT C.H. 12 OVER SOLOMON CREEK FAS ROUTE 732 SEC. 02-00083-00-BR MACOUPIN COUNTY STATION 9+90.00 STRUCTURE NUMBER 059-3465		DATE 2/16/04
DRAWN BY MRL/REG/MCB		CHECKED BY TFG
DRAWING NO.		8
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703		OF 15 SHTS

FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732	*	MACOUPIN	15	10
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				
•02-00083-00-BR				

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



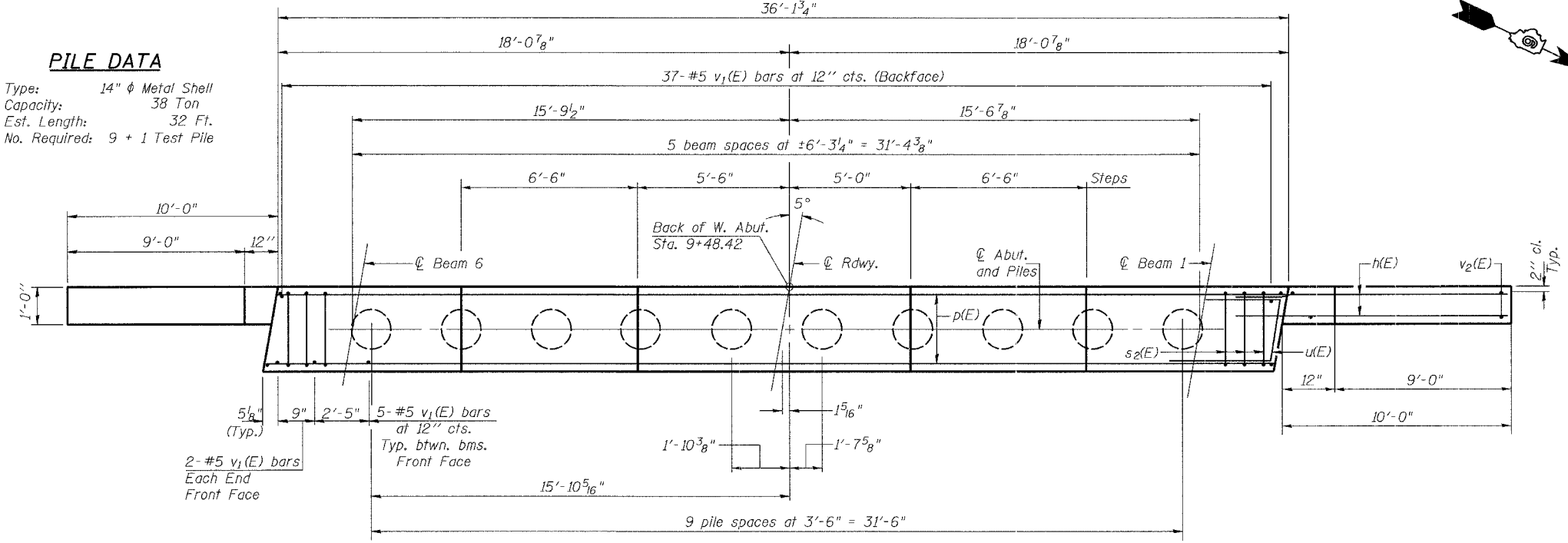
ELEVATION
(Looking West)



SEC. THRU ABUT.

PILE DATA

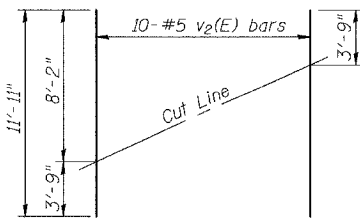
Type: 14" ϕ Metal Shell
Capacity: 38 Ton
Est. Length: 32 Ft.
No. Required: 9 + 1 Test Pile



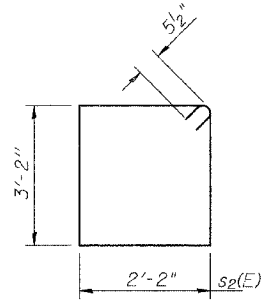
PLAN

BILL OF MATERIAL
W. ABUTMENT

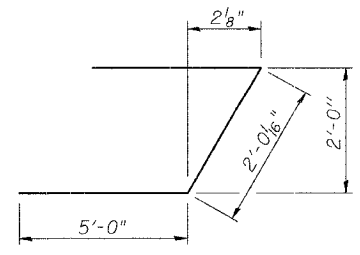
Bar	No.	Size	Length	Shape
h(E)	40	#5	12'-0"	—
p(E)	6	#7	35'-9"	—
s2(E)	33	#5	11'-7"	□
u(E)	8	#6	12'-0"	└
v1(E)	66	#5	4'-4"	—
v2(E)	20	#5	11'-11"	—
Concrete Structures		Cu. Yd.	16.2	
Reinforcement Bars		Pound	2030	
Epoxy Coated				
Structure Excavation		Cu. Yd.	52	
Furnishing Metal		Foot	288	
Pile Shells 14"				
Driving & Filling		Foot	288	
Shells				
Test Pile Metal Shells		Each	1	



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



BARS s2(E)



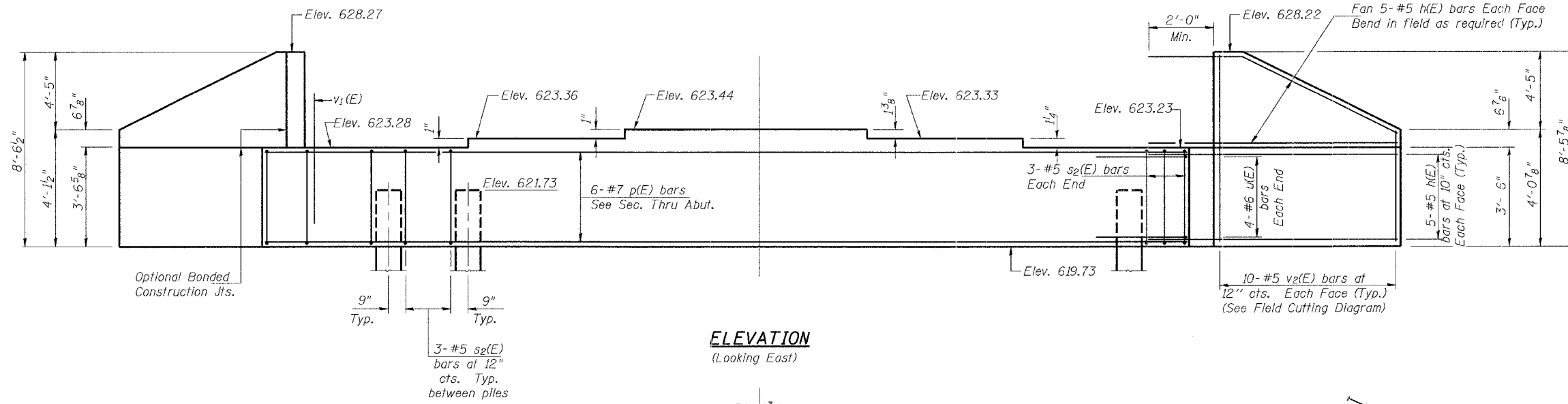
BAR u(E)

w-abutment

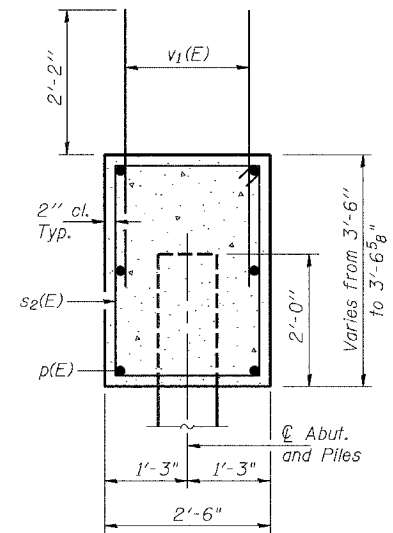
SHEET TITLE	
WEST ABUTMENT	
PROJECT	PROJECT NO.
C.H. 12 OVER SOLOMON CREEK	03016
FAS ROUTE 732 SEC. 02-00083-00-BR	SCALE
MACOUPIN COUNTY	2/16/04
STATION 9+90.00	DRAWN BY
STRUCTURE NUMBER 059-3465	TFC
	CHECKED BY
	MRL/REG/MCB
	DRAWING NO.
COOMBE-BLOXDORF P.C.	10
Engineers / Land Surveyors	
Springfield, Illinois	
Design Firm License No. 184-002703	OF 15 SHTS

FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732	*	MACOUPIN	15	11
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				
•02-00083-00-BR				

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



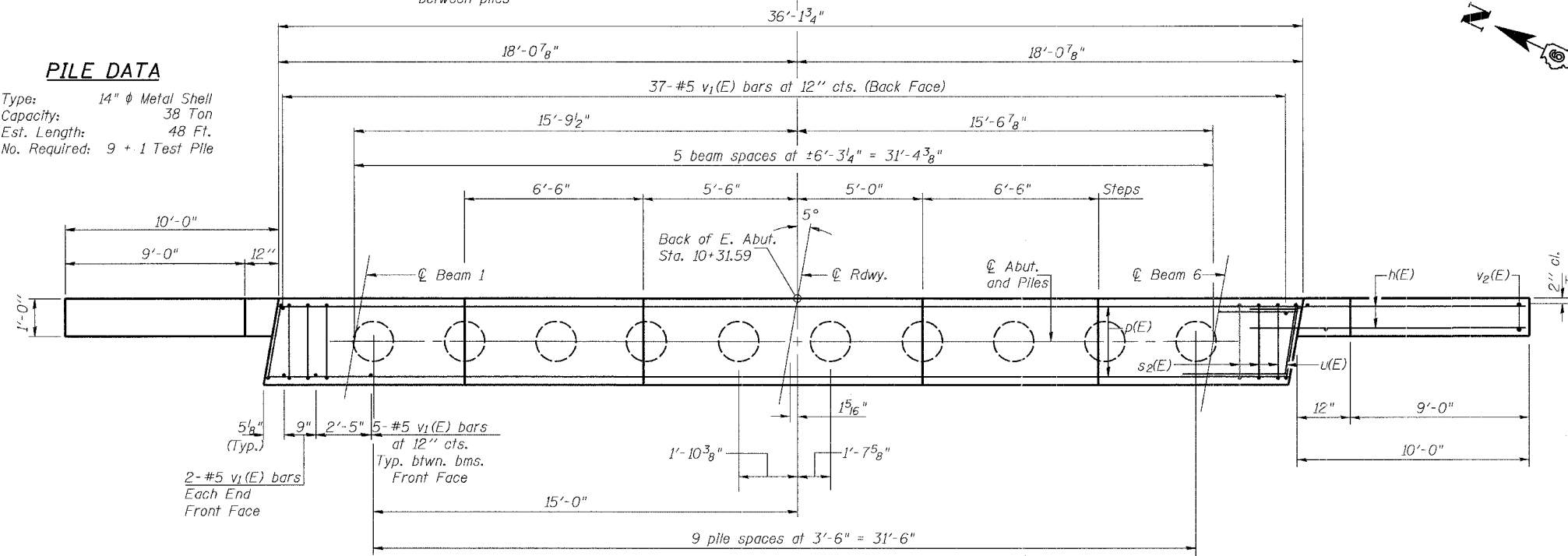
ELEVATION
(Looking East)



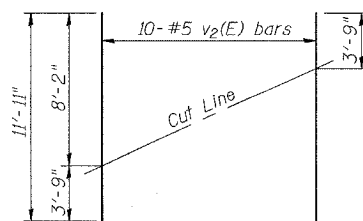
SEC. THRU ABUT.

PILE DATA

Type: 14" ϕ Metal Shell
Capacity: 38 Ton
Est. Length: 48 Ft.
No. Required: 9 + 1 Test Pile

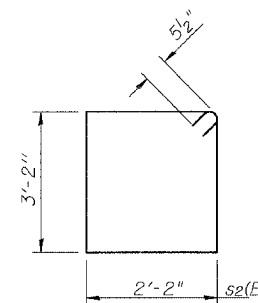


PLAN

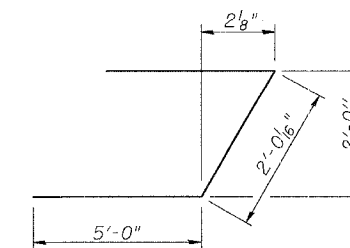


FIELD CUTTING DIAGRAM

Order $v_2(E)$ full length. Cut as shown and use remainder of bars in opposite face.



BARS $s_2(E)$



BAR $u(E)$

BILL OF MATERIAL
E. ABUTMENT

Bar	No.	Size	Length	Shape
$h(E)$	40	#5	12'-0"	—
$p(E)$	6	#7	35'-9"	—
$s_2(E)$	33	#5	11'-7"	□
$u(E)$	8	#6	12'-0"	└
$v_1(E)$	66	#5	4'-4"	—
$v_2(E)$	20	#5	11'-11"	—
Concrete Structures		Cu. Yd.	16.2	
Reinforcement Bars		Pound	2030	
Epoxy Coated				
Structure Excavation		Cu. Yd.	50	
Furnishing Metal		Foot	432	
Pile Shells 14"				
Driving & Filling		Foot	432	
Shells				
Test Pile, Metal Shell		Each	1	

SHEET TITLE		EAST ABUTMENT	
PROJECT	C.H. 12 OVER SOLOMON CREEK	PROJECT NO.	03016
FAS ROUTE	732 SEC. 02-00083-00-BR	SCALE	
COUNTY	MACOUPIN COUNTY	DATE	2/16/04
STATION	9+90.00	DRAWN BY	TFG
STRUCTURE NUMBER	059-3465	CHECKED BY	MRL/REG/MCB
COOMBE-BLOXDORF P.C.		11	
Engineers / Land Surveyors		OF 15 SHTS	
Springfield, Illinois			
Design Firm License No. 184-002703			

e-abutment

FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732	*	MACOUPIN	15	12
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				
*02-0083-00-BR				

NOTES

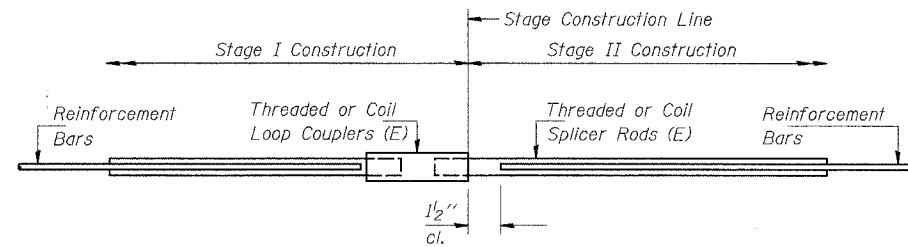
Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.
 Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.
 All reinforcement bars shall be lapped and tied to the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

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

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

BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#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

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."



SPLICER DETAIL

Bar Size	No. Assemblies Required	Location

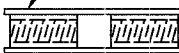
The diameter of this part is the same as the diameter of the bar spliced.

ROLLED THREAD DOWEL BAR



** ONE PIECE

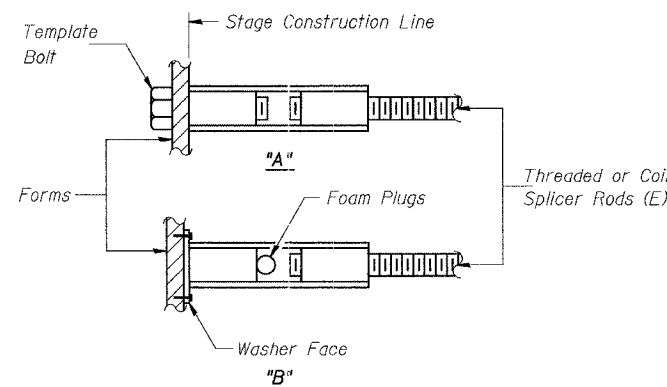
Wire Connector



WELDED SECTIONS

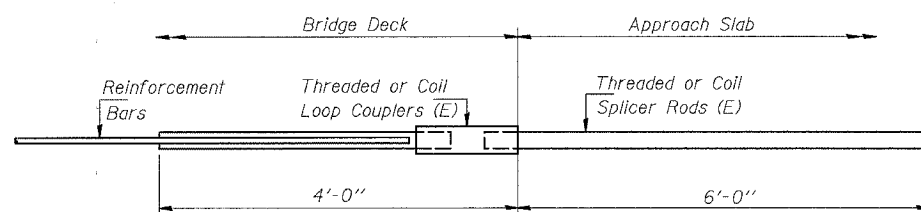
BAR SPLICER ASSEMBLY ALTERNATIVES

** 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.



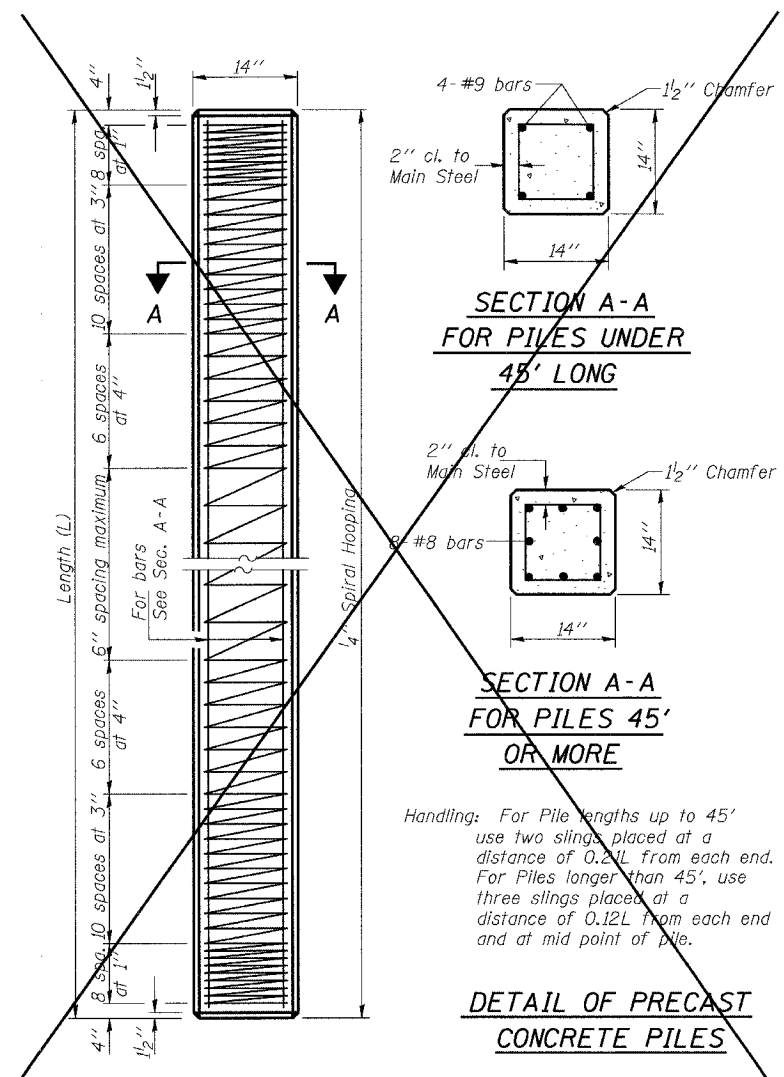
**INTEGRAL ABUTMENT
 BAR SPLICER ASSEMBLY DETAIL
 FOR #5 BAR**

Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required = 48

SHEET TITLE	
BAR SPLICER ASSEMBLY DETAILS	
PROJECT	PROJECT NO.
C.H. 12 OVER SOLOMON CREEK	03016
FAS ROUTE 732 SEC. 02-0083-00-BR	SCALE
MACOUPIN COUNTY	DATE 2/16/04
STATION 9+90.00	DRAWN BY TFG
STRUCTURE NUMBER 059-3465	CHECKED BY MRL/REG/MCB
DRAWING NO.	
COOMBE-BLOXDORF P.C.	
Engineers / Land Surveyors	
Springfield, Illinois	
Design Firm License No. 184-002703	12
	OF 15 SHTS

FAS RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
732	.	MACOUPIN	15	13

FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT
 •02-00083-00-BR



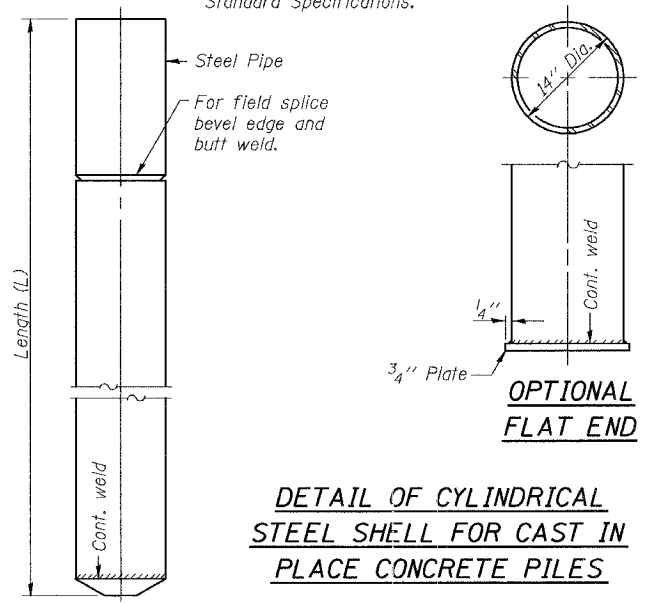
**SECTION A-A
FOR PILES UNDER
45' LONG**

**SECTION A-A
FOR PILES 45'
OR MORE**

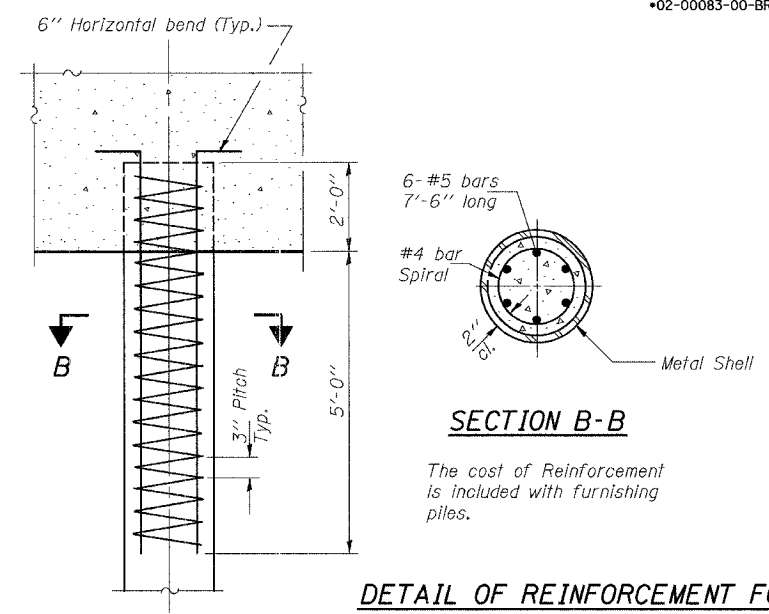
**DETAIL OF PRECAST
CONCRETE PILES**

Handling: For Pile lengths up to 45' use two slings placed at a distance of 0.2L from each end. For Piles longer than 45', use three slings placed at a distance of 0.12L from each end and at mid point of pile.

Notes: Driving and bearing ends of pipe shall be cut square. The thickness of the shell shall be 0.250 inches with a tolerance of 5%. The shell shall be according to Article 1006.05(a) of the Standard Specifications.



**DETAIL OF CYLINDRICAL
STEEL SHELL FOR CAST IN
PLACE CONCRETE PILES**



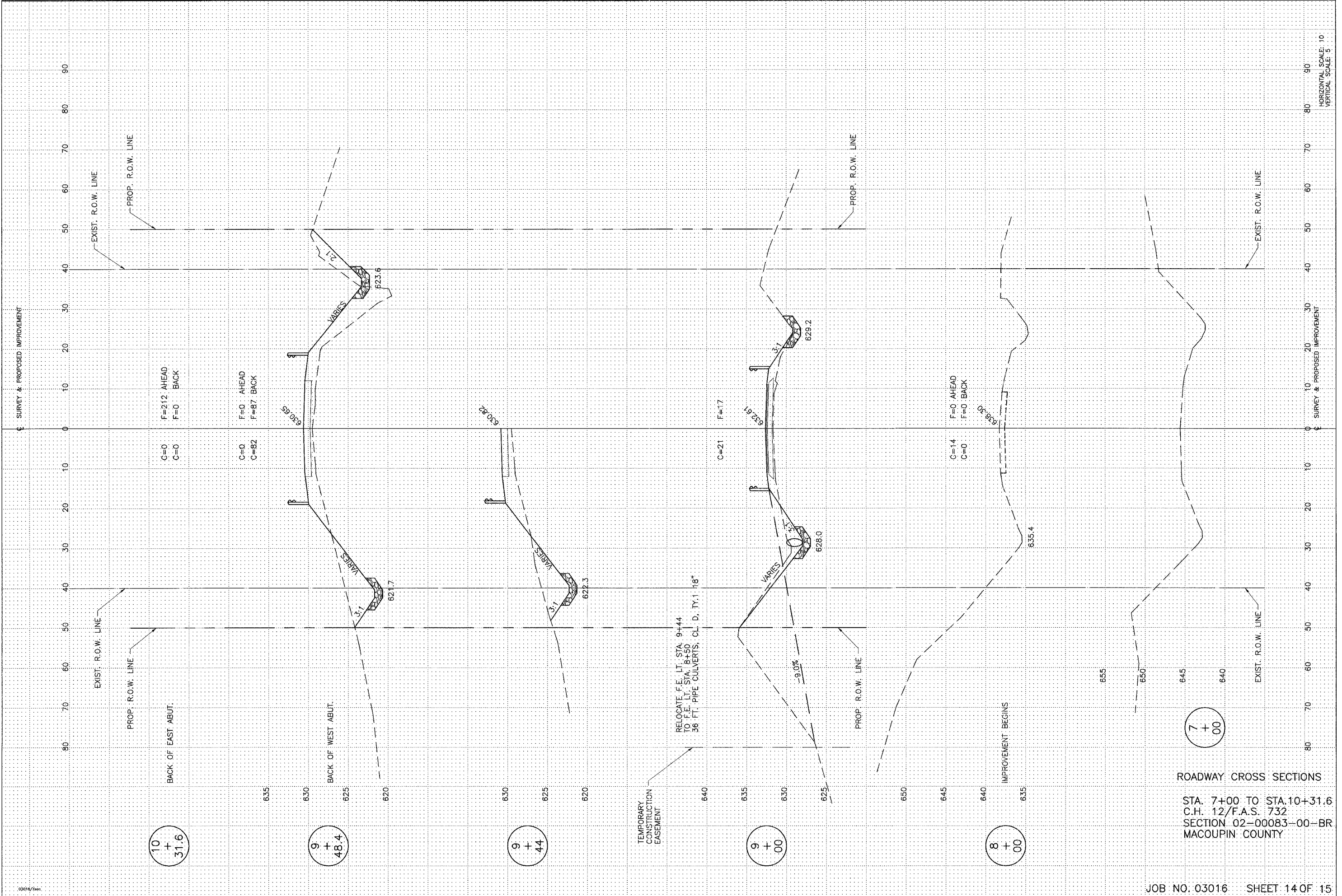
SECTION B-B

The cost of Reinforcement is included with furnishing piles.

**DETAIL OF REINFORCEMENT FOR
METAL SHELLS AT ABUTMENTS**

X-PB 4-30-97

SHEET TITLE		CONCRETE PILE DETAILS	
PROJECT	C.H. 12 OVER SOLOMON CREEK FAS ROUTE 732 SEC. 02-00083-00-BR MACOUPIN COUNTY STATION 9+90.00 STRUCTURE NUMBER 059-3465	PROJECT NO.	03016
SCALE		DATE	2/16/04
		DRAWN BY	TFG
		CHECKED BY	MRL/REG/MCB
		DRAWING NO.	
COOMBE-BLOXDORF P.C. Engineers / Land Surveyors Springfield, Illinois Design Firm License No. 184-002703			13 OF 15 SHTS



C=0
C=0
F=212 AHEAD
F=0 BACK

C=0
C=82
F=0 AHEAD
F=87 BACK

C=21
F=17

C=14
C=0
F=0 AHEAD
F=0 BACK

10 + 31.6

9 + 48.4

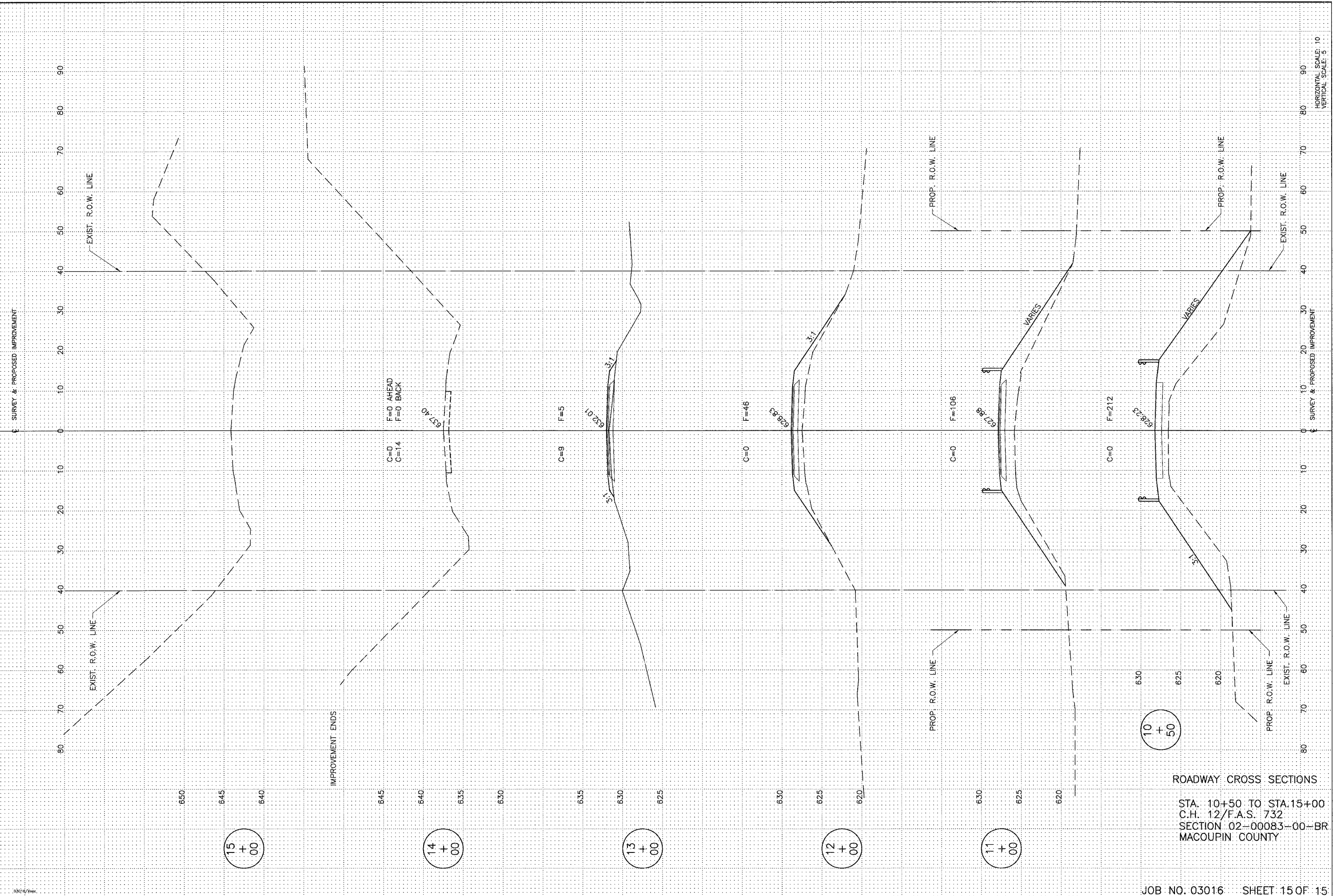
9 + 44

9 + 00

8 + 00

7 + 00

ROADWAY CROSS SECTIONS
 STA. 7+00 TO STA.10+31.6
 C.H. 12/F.A.S. 732
 SECTION 02-00083-00-BR
 MACOUPIN COUNTY



ROADWAY CROSS SECTIONS

STA. 10+50 TO STA.15+00
C.H. 12/F.A.S. 732
SECTION 02-00083-00-BR
MACOUPIN COUNTY

15
+
00

14
+
00

13
+
00

12
+
00

11
+
00

10
+
50