

PLANS FOR PROPOSED FEDERAL-AID HIGHWAY BRIDGE PROGRAM AND ARRA PROJECT

F.A.S. 174 (C.H. 6) SHABBONA ROAD

STRUCTURE NO. 019-3031

SECTION 05-00213-00-BR

DEKALB COUNTY

PROJECT ARA-0174(118)

JOB NO. C93-114-09

FAS ROUTE NO.	SEC	COUNTY	TOTAL SHEETS	SHEET NO
174	*	DEKALB	17	1

ILLINOIS PROJECT ARA-0174(118)
* 05-00213-00-BR
CONTRACT NO. 87403

INDEX OF SHEETS

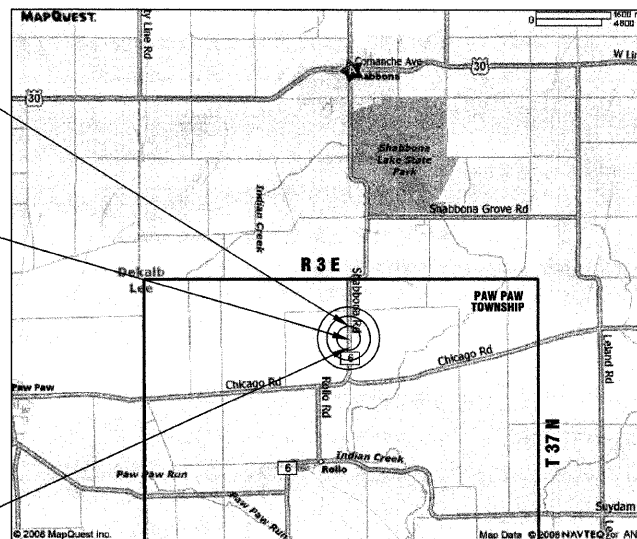
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SECTION 05-00213-00-BR
ENDS AT STA. 12+75

SECTION 05-00213-00-BR
INCLUDES THE REMOVAL OF AN EXISTING SINGLE SPAN CONCRETE SLAB BRIDGE (EXIST. SN 019-3021), AND REPLACEMENT WITH A SINGLE SPAN REINFORCED CONCRETE SLAB BRIDGE ON CLOSED PILE BENT ABUTMENTS (PROP. SN 019-3066). 49'-0" BK.-BK. ABUTS. ALSO INCLUDED IS NECESSARY ROADWAY APPROACH WORK.

SECTION 05-00213-00-BR
BEGINS AT STA. 8+25



LOCATION MAP

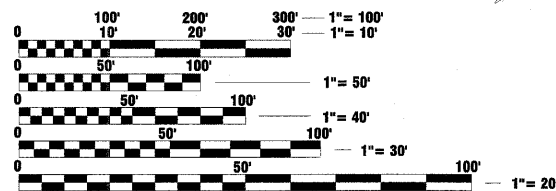
GROSS LENGTH OF SECTION = 450 FEET (0.08 MILE)
NET LENGTH OF SECTION = 450 FEET (0.08 MILE)



DESIGN CRITERIA

ROADWAY	DESIGN CLASSIFICATION	ADT 2009	ADT 2029	DESIGN SPEED
SHABBONA	RURAL COLLECTOR	610	750	55

BUILT ACCORDING TO RURAL 3R GUIDELINES



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

J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123

CONTRACT NO. 87403



RUSSELL L. RENNER
DIXON, ILLINOIS
ILLINOIS LICENSED PROFESSIONAL ENGINEER NO. 062-048813
EXPIRES 11-30-2009

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Illinois Professional Design Firm No. 184-000848

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED 04-17 20 09
William J. ... COUNTY ENGINEER

PASSED 04-17 20 09
Harold R. Long DISTRICT 3 ENGINEER OF LOCAL ROADS & STREETS

RELEASED FOR BID BASED ON LIMITED REVIEW 04-17 20 09
George F. ... DEPUTY DIRECTOR OF HIGHWAYS REGION 2 ENGINEER

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SUMMARY OF QUANTITIES
FUNDING CODE: X071-2A

FAS ROUTE NO.	SEC	COUNTY	TOTAL SHEETS	SHEET NO.
174	*	DEKALB	17	2

ILLINOIS PROJECT ARA-0174 (118)
* 05-00213-00-BR
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0
SCALE: 1"=

CODE NUMBER	ITEM	UNIT	TOTAL QUANTITY
20200100	EARTH EXCAVATION	CU YD	277
* 25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	0.14
28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	200
28000300	TEMPORARY DITCH CHECKS	EACH	4
28000400	PERIMETER EROSION BARRIER	FOOT	764
35101400	AGGREGATE BASE COURSE, TYPE B	TON	74
40600200	BITUMINOUS MATERIALS (PRIME COAT)	TON	0.2
40600982	HOT-MIX ASPHALT SURFACE COURSE REMOVAL - BUTT JOINT	SQ YD	74
40603310	HOT MIX ASPHALT SURFACE COURSE, MIX "C", N50	TON	55
48101200	AGGREGATE SHOULDERS, TYPE B	TON	84
50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1
50300225	CONCRETE STRUCTURES	CU YD	18.7
50300255	CONCRETE SUPERSTRUCTURE	CU YD	61.3
50300260	BRIDGE DECK GROOVING	SQ YD	174
50300300	PROTECTIVE COAT	SQ YD	189
50500105	FURNISHING AND ERECTING STRUCTURAL STEEL	L SUM	1
50500505	STUD SHEAR CONNECTORS	EACH	840
50700305	HARDWARE	POUND	1117
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	13,986
Δ 50901050	STEEL RAILING, TYPE SM	FOOT	98
51200957	FURNISHING METAL SHELL PILES 12" x 0.250"	FOOT	270
51202305	DRIVING PILES	FOOT	270
51203200	TEST PILE METAL SHELLS	EACH	1
51500100	NAME PLATES	EACH	1
52100010	ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	5
59300100	CONTROLLED LOW-STRENGTH MATERIAL	CU YD	256
Δ 63000002	STEEL PLATE BEAM GUARD RAIL, TYPE A, 6.75 FOOT POSTS	FOOT	225
Δ 63100075	TRAFFIC BARRIER TERMINAL, TYPE 5A	EACH	4
Δ * 63100167	TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT)	EACH	4
* 63200305	STEEL PLATE BEAM GUARD RAIL REMOVAL	FOOT	400
67100100	MOBILIZATION	L SUM	1
Δ * 78200455	BIDIRECTIONAL GUARD RAIL REFLECTORS	EACH	8
Δ * 78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	4
* X5121800	PERMANENT STEEL SHEET PILING	SQ FT	2691

QUANTITY NOTES:
Δ SPECIALTY ITEMS
* SEE SPECIAL PROVISIONS
PERIMETER EROSION BARRIER IS AN ESTIMATED QUANTITY. LOCATIONS ARE TO BE DETERMINED IN FIELD BY THE ENGINEER

SCHEDULE OF QUANTITIES

LOCATION	FOOT
RT. STA. 9+05.75 TO RT. STA. 10+18.25	112.5
LT. STA. 10+93.75 TO LT. STA. 12+06.25	112.5
TOTAL	225

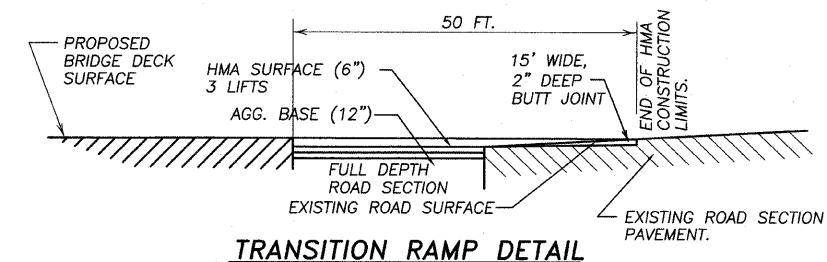
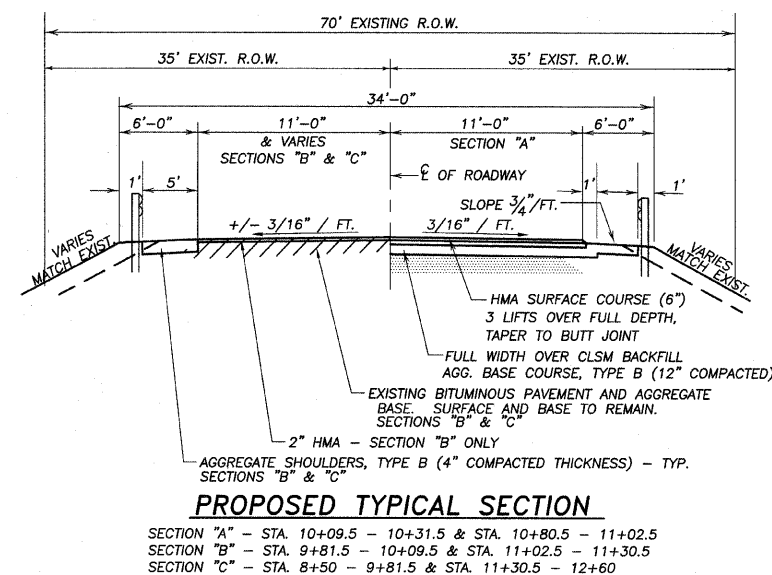
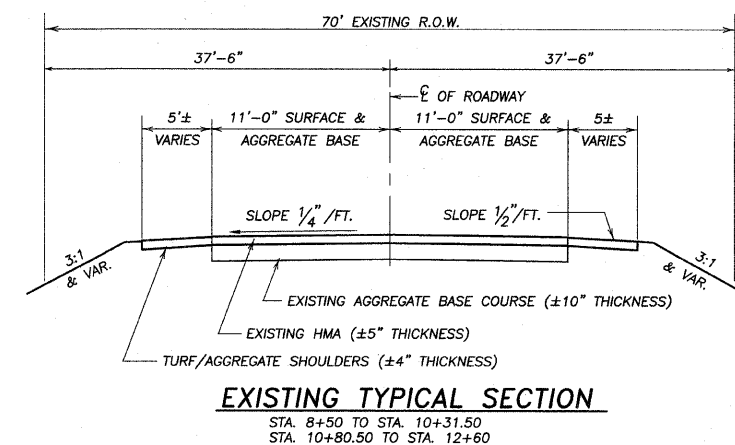
LOCATION	EACH
RT. STA. 10+18.25 TO RT. STA. 10+31.5	1
LT. STA. 10+18.25 TO LT. STA. 10+31.5	1
RT. STA. 10+80.5 TO RT. STA. 10+93.75	1
LT. STA. 10+80.5 TO LT. STA. 10+93.75	1
TOTAL	4

LOCATION	EACH
RT. STA. 8+55.75 TO RT. STA. 9+05.75	1
LT. STA. 9+68.25 TO LT. STA. 10+18.25	1
RT. STA. 10+93.75 TO RT. STA. 11+43.75	1
LT. STA. 12+06.25 TO LT. STA. 12+56.25	1
TOTAL	4

LOCATION	TON
STA. 10+09.5 - STA. 10+31.50	37
STA. 10+80.50 - STA. 11+02.5	37
TOTAL	74

LOCATION	TON
STA. 9+81.5 - STA. 10+31.50	27.5
STA. 10+80.50 - STA. 11+30.5	27.5
TOTAL	55

LOCATION	CU. YD.
STA. 8+50 - STA. 10+31.50	15
STA. 10+80.50 - STA. 12+60	7
TOTAL	22



HOT-MIX ASPHALT CHART

HMA SURFACE	
PG GRADE	PG58-22
MAX % RAP ALLOWABLE**	30%
DESIGN AIR VOIDS	4.0% @ N50
MIXTURE COMPOSITION	IL 9.5L
FRICTION AGGREGATE	MIXTURE C
DENSITY TEST METHOD	LR 1030

**IF RAP OPTION IS SELECTED, THE ASPHALT CEMENT GRADE MAY NEED TO BE ADJUSTED. THIS WILL BE DETERMINED BY THE ENGINEER.

REVISIONS	DATE

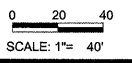
DESIGNED BY:	RLR
DRAWN BY:	RLR
CHECKED BY:	
DATE:	

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Illinois Professional Design Firm No. 784-000848

SUMMARY AND SCHEDULE OF QUANTITIES
OF
SHABBONA ROAD BRIDGE REPLACEMENT
FOR
DEKALB COUNTY HIGHWAY

SHEET TITLE
JOB NUMBER 2080381
DATE 2/27/2009
SHEET NO. 2 of 17

SUMMARY OF QUANTITIES
SECTION 05-00213-00-BR
SHABBONA ROAD
DEKALB COUNTY



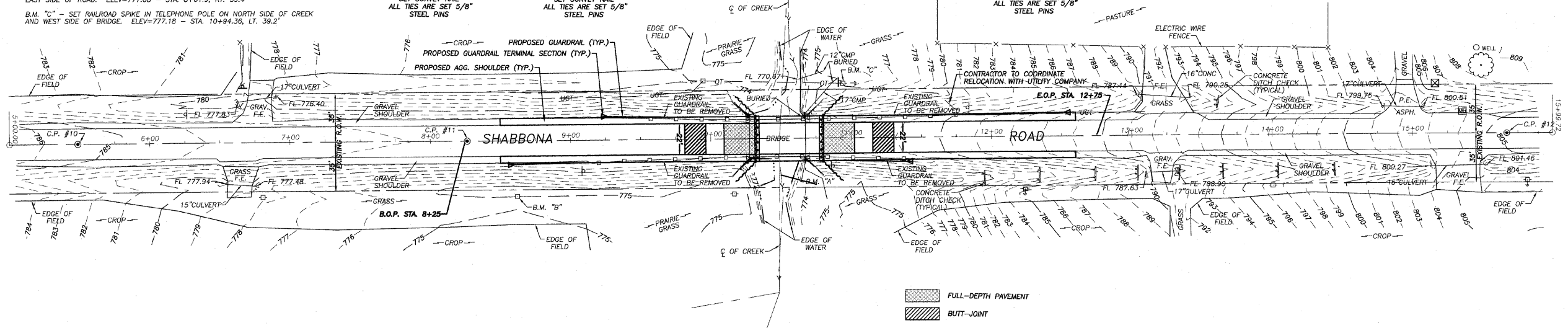
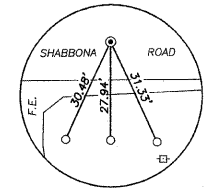
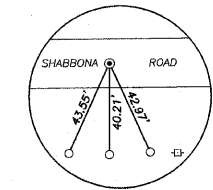
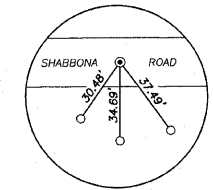
REVISION	DATE

PREPARED BY:	RJR
DRAWN BY:	BS
CHECKED BY:	
DATE:	

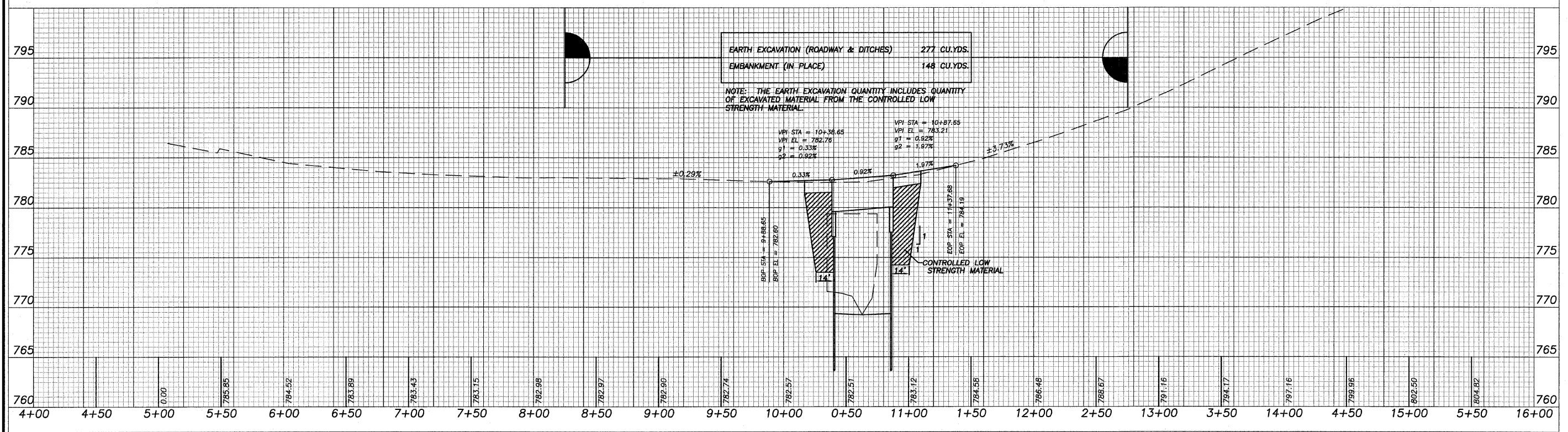
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Illinois Professional Design Firm No. 184-000848

BENCHMARK INFORMATION

B.M. "A" - SET CHISELED "□" TOP OF N.E. ABUTMENT OF EXISTING STRUCTURE. ELEV=782.67 - STA. 10+67.66, 13.9' RT.
B.M. "B" - SET RAILROAD SPIKE IN SECOND POWER POLE SOUTH OF BRIDGE, EAST SIDE OF ROAD. ELEV=777.08 - STA. 8+61.9, RT. 39.4'
B.M. "C" - SET RAILROAD SPIKE IN TELEPHONE POLE ON NORTH SIDE OF CREEK AND WEST SIDE OF BRIDGE. ELEV=777.18 - STA. 10+94.36, LT. 39.2'

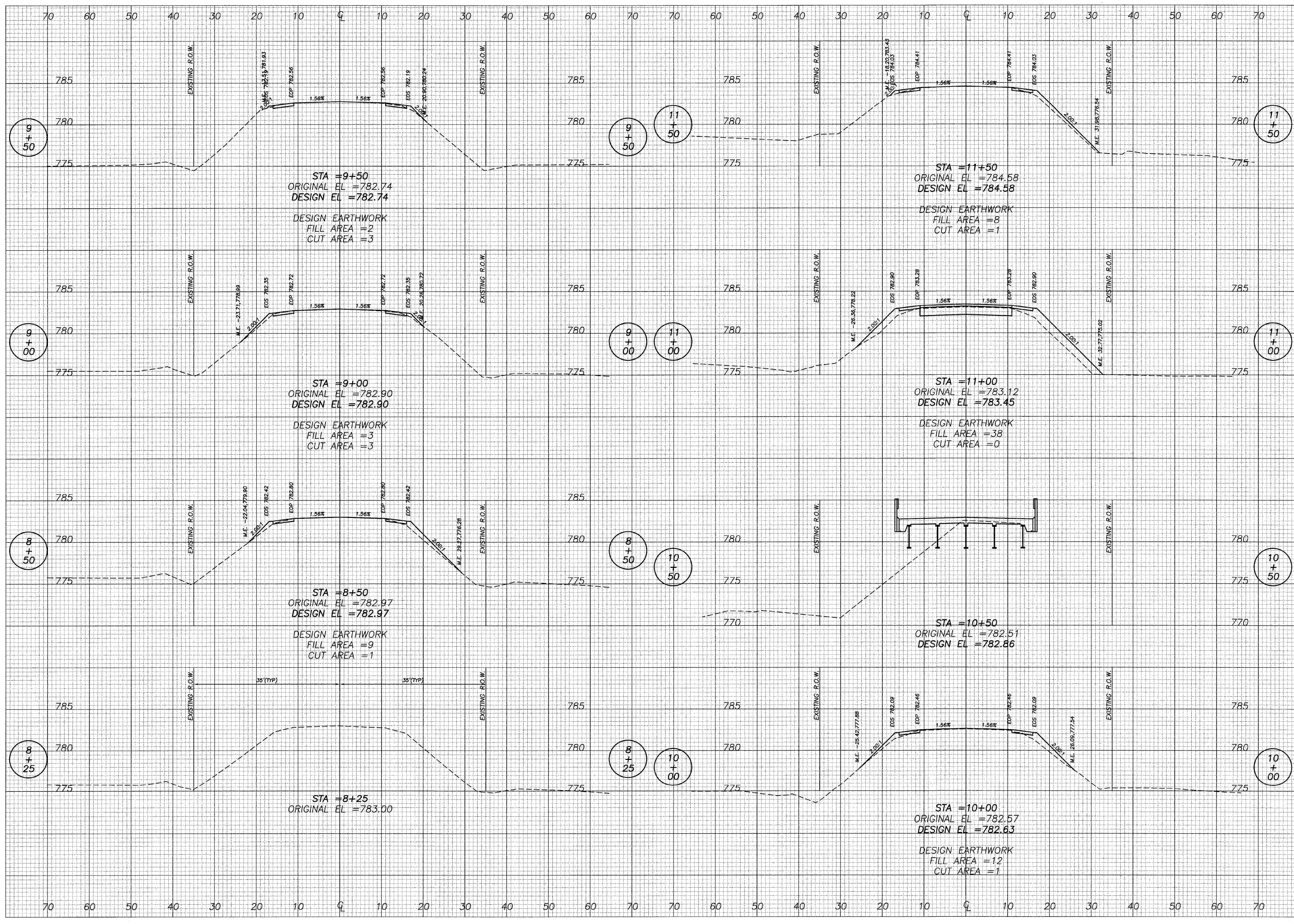


SCALES:
1" = 40' HOR
1" = 5' VER



PLAN AND PROFILE
OF
SHABBONA ROAD BRIDGE REPLACEMENT
FOR
DEKALB COUNTY HIGHWAY

SHEET TITLE	PLAN & PROFILE
JOB NUMBER	2080381
DATE	2/23/2009
SHEET NO.	3 of 17



REVISIONS

REVISION	DATE

DESIGNED BY: RLR
 DRAWN BY: BEH
 CHECKED BY: [Blank]
 SURVEYED BY: [Blank]
 BOOK NO.: [Blank]

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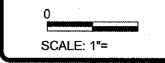
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 FOR
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SHEET TITLE
CROSS SECTIONS

JOB NUMBER
 2080381

DATE
 2/23/2009

SHEET NO.
4 of 17



REVISION	DATE

DESIGNED BY:	RJR
DRAWN BY:	BEH
CHECKED BY:	
DATE:	

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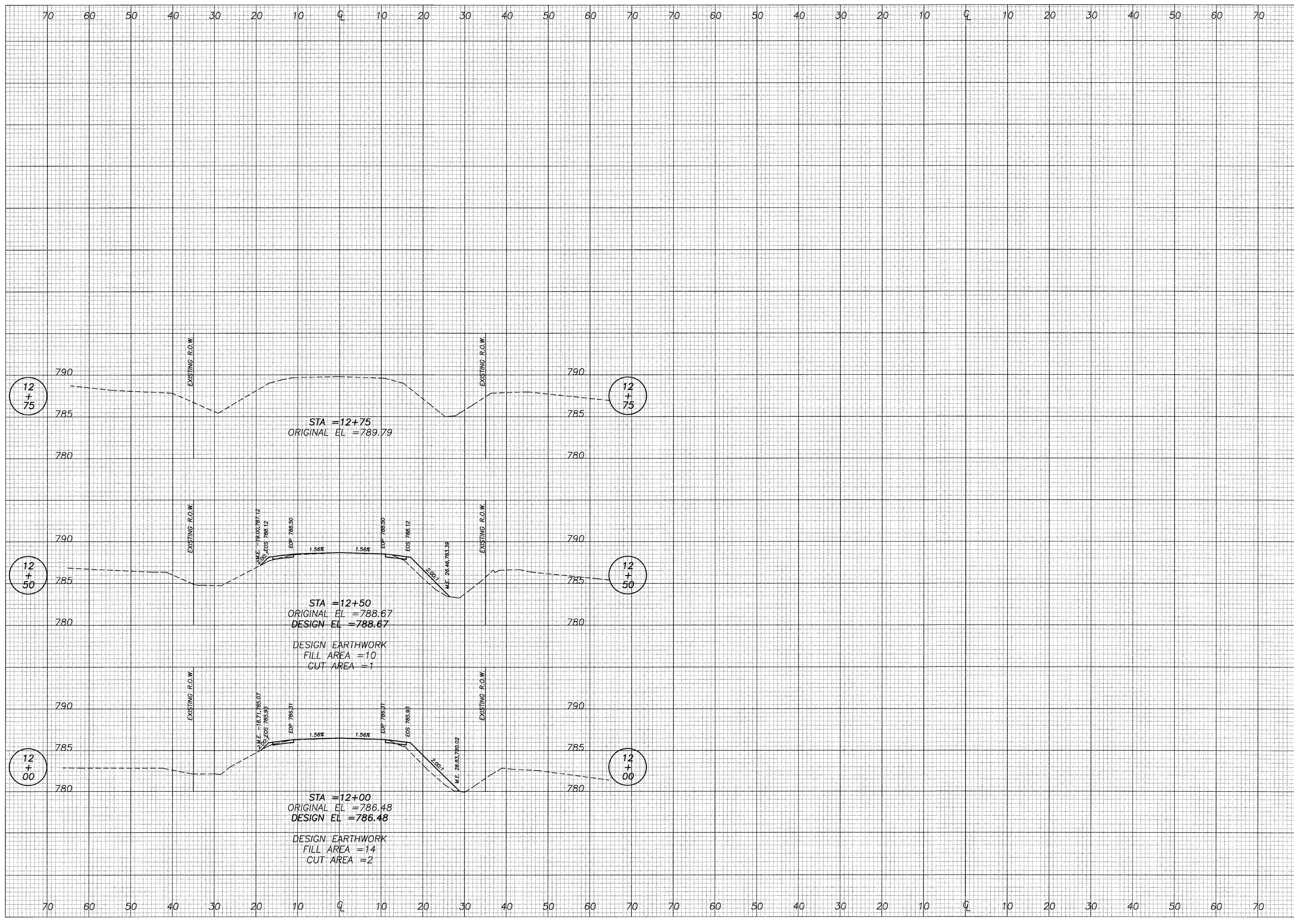
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SHEET TITLE
CROSS SECTIONS

JOB NUMBER
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SHEET NO.
5 of 17



FAS ROUTE NO.	SEC	COUNTY	TOTAL SHEETS	SHEET NO.
174	*	DEKALB	17	6

ILLINOIS PROJECT ARA-0174(118)
 * 05-00213-00-BR
 CONTRACT NO. 87403

- B.M. "A" SET CHISELED "□" TOP OF N.E. ABUTMENT OF EXISTING STRUCTURE. ELEV. 782.67
- B.M. "B" SET RAILROAD SPIKE IN SECOND POWER POLE SOUTH OF BRIDGE, EAST SIDE OF ROAD. ELEV. 777.08
- B.M. "C" SET RAILROAD SPIKE IN TELEPHONE POLE ON NORTH SIDE OF CREEK AND WEST SIDE OF BRIDGE. ELEV. 777.18

GENERAL NOTES

CALCULATED WEIGHT OF STRUCTURAL STEEL - 6216 POUNDS AASHTO M183 GRADE 36 END OF DECK PLATES, STUDS, WALERS, CHANNELS, BEAM ANCHOR BOLTS, & MISC. STEEL. 26313 POUNDS AASHTO M270 GRADE 50W BEAMS, DIAPHRAGMS, AND ROCKER PLATES OF FIXED BEARINGS.

FIELD WELDING OF CONSTRUCTION ACCESSORIES WILL NOT BE PERMITTED TO THE BOTTOM FLANGE OF BEAMS NOR TO THE TOP FLANGE FOR A DISTANCE EQUAL TO ONE-FOURTH THE SPAN LENGTH EACH WAY FROM THE CENTER OF THE BRIDGE. FIELD WELDING IN OTHER AREAS WILL BE PERMITTED ONLY WHEN APPROVED BY THE ENGINEER.

REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A706, GRADE 60.

FASTENERS SHALL BE HIGH STRENGTH BOLTS. BOLTS 3/4" DIAMETER, OPEN HOLES 13/16" DIAMETER UNLESS OTHERWISE NOTED.

TIGHTENING AND INSPECTION OF ALL HIGH STRENGTH BOLT CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST ISSUE OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 (M164) OR A490 (M253) BOLTS FOR SLIP-CRITICAL CONNECTIONS. EXCEPT TIGHTENING METHODS USING EITHER THE LOAD INDICATING WASHERS OR THE CALIBRATED WRENCH ARE NOT ALLOWED.

PROTECTIVE COAT HAS BEEN INCLUDED FOR THE TOP OF DECK AND THE EAST AND WEST EDGES OF THE DECK TO THE DRIPNOTCH.

THE 3/4" STRUCTURAL STEEL PLATES AT EACH END OF THE DECK ARE INCLUDED FOR PAYMENT PER POUND OF FURNISHING AND ERECTING STRUCTURAL STEEL. AFTER FABRICATION, ALL SURFACES OF THE STEEL PLATES SHALL BE GIVEN ONE SHOP COAT OF PAINT SPECIFIED FOR STRUCTURAL STEEL.

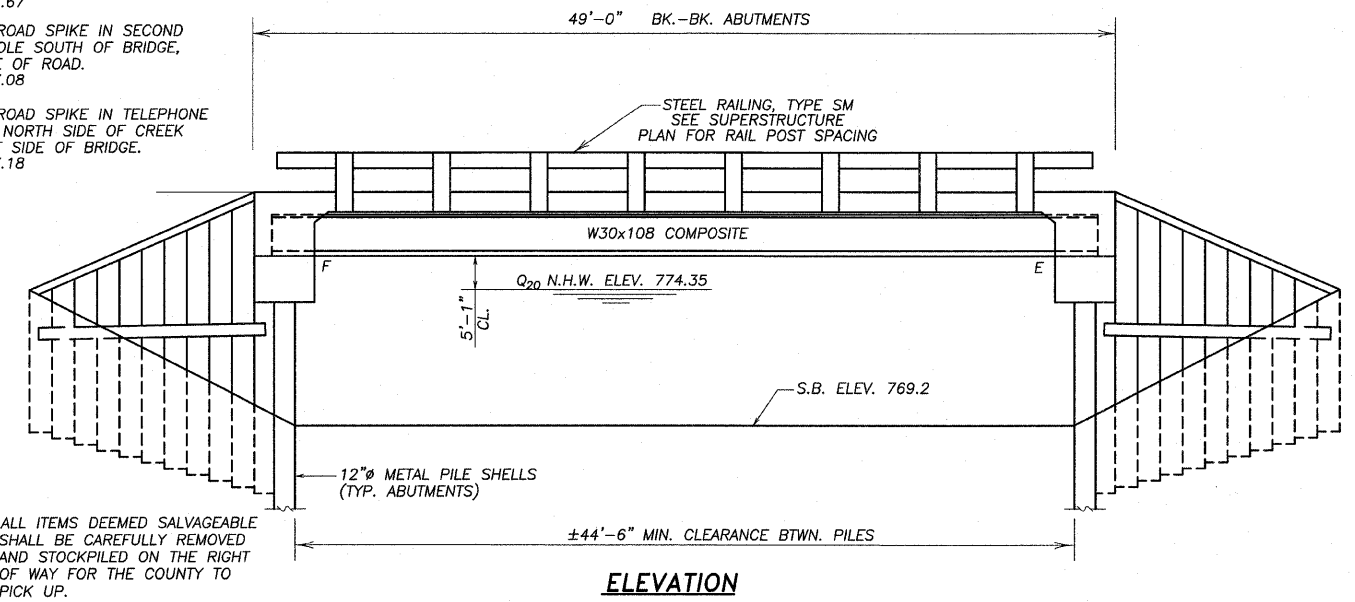
THE MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESS SHALL CONFORM TO THE SUPPLEMENTAL REQUIREMENTS FOR NOTCH TOUGHNESS ZONE 2. THESE COMPONENTS ARE THE WIDE FLANGE BEAMS.

BEARING SEAT SURFACES SHALL BE CONSTRUCTED OR ADJUSTED TO THE DESIGNATED ELEVATIONS WITHIN A TOLERANCE OF 1/8". ADJUSTMENT SHALL BE MADE EITHER BY GRINDING THE SURFACE OR BY SHIMMING. TWO 1/8" ADJUSTING SHIMS, OF THE DIMENSIONS OF THE BOTTOM BEARING PLATE, SHALL BE PROVIDED FOR EACH BEARING IN ADDITION TO ALL OTHER PLATES OR SHIMS.

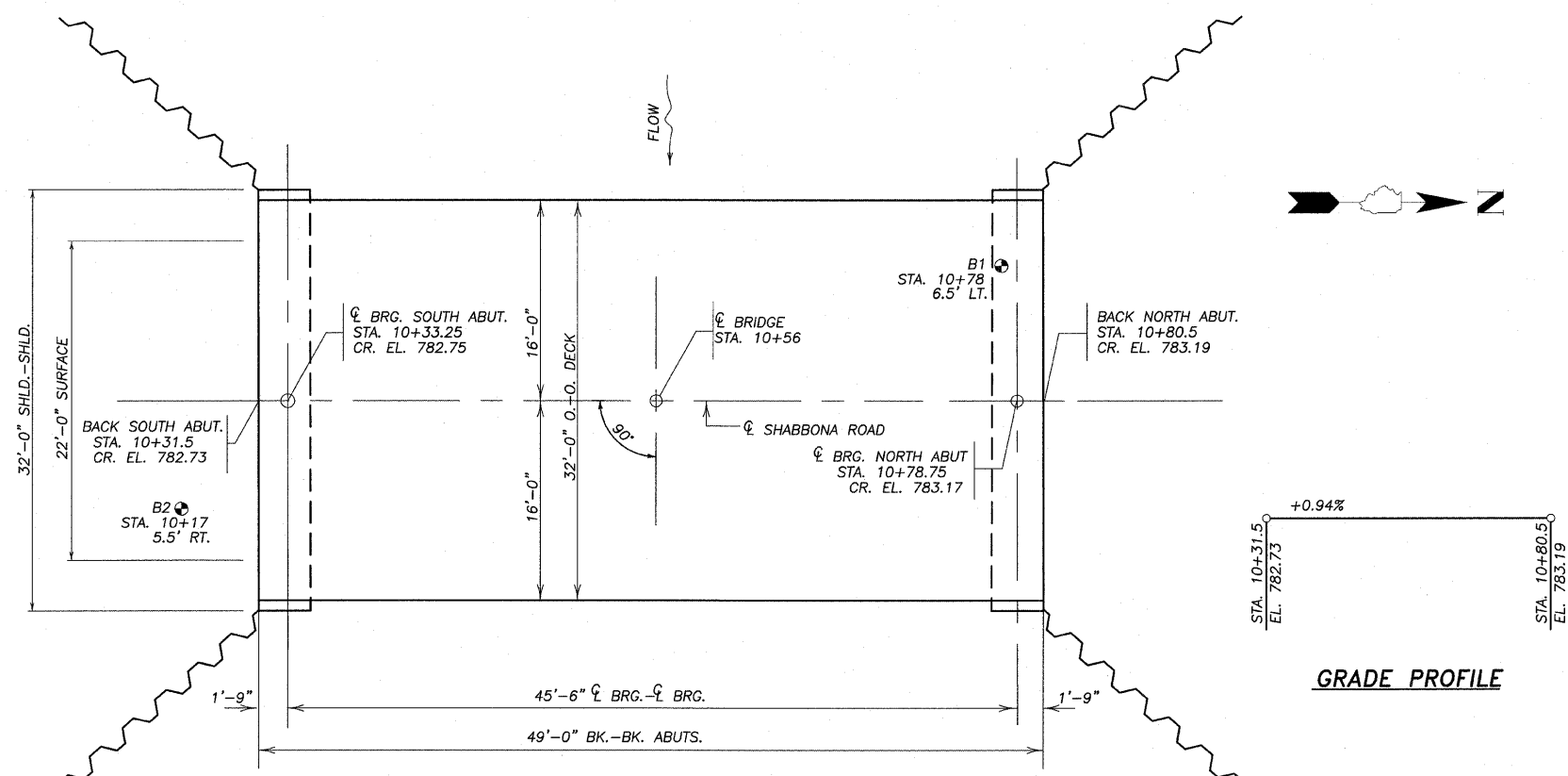
THE CONTRACTOR SHALL DRIVE ONE 12" METAL PILE SHELL TEST PILE IN A PERMANENT LOCATION AT THE NORTH ABUTMENT AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINDER OF PILES.

THE CONTRACTOR SHALL MAKE ALLOWANCE FOR THE DEFLECTION OF FORMS, SHRINKAGE AND SETTLEMENT OF FALSEWORK, IN ADDITION TO ALLOWANCE FOR DEAD LOAD DEFLECTION.

AASHTO M 270 GRADE 50W STRUCTURAL STEEL SHALL ONLY BE PAINTED, AT THE ENDS OF THE BEAMS, FOR A DISTANCE EQUAL TO THE DEPTH OF EMBEDMENT INTO THE CONCRETE CAP PLUS 3 INCHES. THOSE AREAS SHALL BE PRIMED IN THE SHOP WITH AN INORGANIC ZINC RICH PRIMER PER AASHTO M 300, TYPE I. NO FIELD PAINTING SHALL BE REQUIRED. ALL GRADE 50W STRUCTURAL STEEL SHALL BE CLEANED AS SPECIFIED IN THE SPECIAL PROVISION FOR "SURFACE PREPARATION AND PAINTING REQUIREMENTS FOR WEATHERING STEEL."



ELEVATION



PLAN

GRADE PROFILE

WATERWAY INFORMATION									
Drainage Area = 3.12 sq. miles		Low Grade Elev. = 782.5		at Roadway Sta. 10+48					
Flood	Frequency Year	Q (cfs)	Opening Sq. Ft. Existing	Proposed	Natural H.W.E.	Existing	Proposed	Existing	Proposed
Design	20	536	206	229	774.35	0.17	0.20	774.52	774.55
Base	100	788	234	260	775.04	0.34	0.38	775.38	775.42
Overtopping									
Max Calc.	500	1023			775.95	0.02	0.08	775.97	776.03

DESIGN STRESSES

- f_c = 3500 P.S.I.
- f_s = 60,000 P.S.I. (REINFORCEMENT)
- f_y = 36,000 P.S.I. (STRUCTURAL STEEL, M183, GRADE 36)
- f_y = 50,000 P.S.I. (STRUCT. STEEL, M270, GRADE 50W)

DESIGN SPECIFICATIONS 2007 AASHTO (ALLOWED FOR 50 P.S.F. FOR FUTURE WEARING SURFACE.)
LOADING HL 93

BRANCH OF INDIAN CREEK
 BUILT 2009 BY
 DEKALB COUNTY
 SECTION 05-00213-00-BR
 STATION 10+56 FAS 174/CH 6
 SN 019-3066 LOADING HL 93

LETTERING FOR NAME PLATE
 SEE STD. 515001

RUSSELL L. RENNER
 DIXON, ILLINOIS
 ILLINOIS LICENSED STRUCTURAL
 ENGINEER NO. 081-005322
 EXPIRES 11-30-2008

BILL OF MATERIAL

ITEM	UNIT	BRIDGE		TOTAL
		SUPERSTR.	SUBSTR.	
CONCRETE SUPERSTRUCTURE	CU. YD.	61.3		61.3
CONCRETE STRUCTURES	CU. YD.		18.7	18.7
FURN. AND ERECTING STRUCTURAL STEEL	LUMP SUM	1		1
STUD SHEAR CONNECTORS	EACH	840		840
REINFORCEMENT BARS, EPOXY COATED	POUND	11874	2112	13986
PROTECTIVE COAT	SQ. YD.	189		189
NAME PLATES	EACH	1		1
STEEL BRIDGE RAIL, TYPE SM	FOOT	98		98
FURNISHING METAL SHELL PILES 12" x 0.250"	FOOT		270	270
DRIVING PILES	FOOT		270	270
TEST PILE METAL SHELLS	EACH		1	1
PERMANENT STEEL SHEET PILING	SQ. FT.		2691	2691
HARDWARE	POUND		1117	1117
BRIDGE DECK GROOVING	SQ. YD.	174		174
ELASTOMERIC BEARING ASSEMBLY, TYPE 1	EACH	5		5

I CERTIFY THAT 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 REQUIREMENTS OF THE CURRENT "AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES".

**GENERAL PLAN AND ELEVATION
 SECTION 05-00213-00-BR
 SHABBONA ROAD
 DEKALB COUNTY
 SN 019-3066**

REVISIONS

NO.	DATE	DESCRIPTION

REVISIONS

NO.	DATE	DESCRIPTION

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GENERAL PLAN AND ELEVATION
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 DEKALB COUNTY HIGHWAY

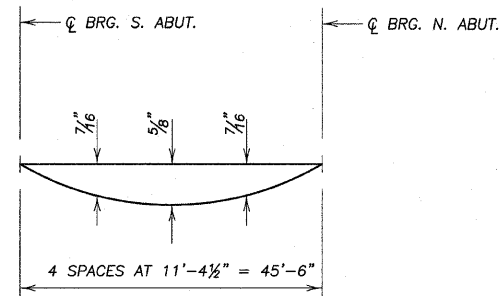
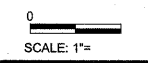
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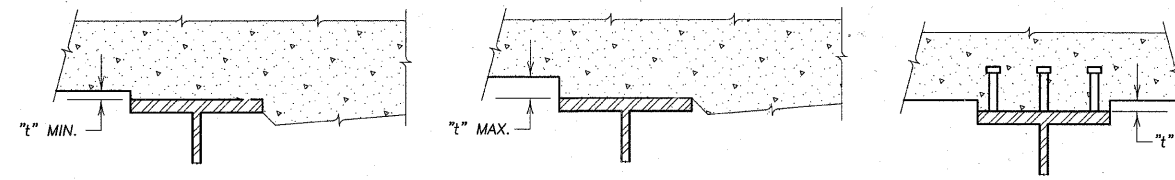
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174	*	DEKALB	17	7
ILLINOIS PROJECT AREA 0174(118)				
* 05-00213-00-BR				
CONTRACT NO. 87403				



DEAD LOAD DEFLECTION DIAGRAM
(INCLUDES WEIGHT OF CONCRETE DECK AND ALL SUPERIMPOSED DEAD LOADS EXCEPT FUTURE WEARING SURFACE.)

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 SHEET 7.



AT MINIMUM FILLET
EXTERIOR BEAM

AT MAXIMUM FILLET
EXTERIOR BEAM

COMPOSITE
INTERIOR BEAM

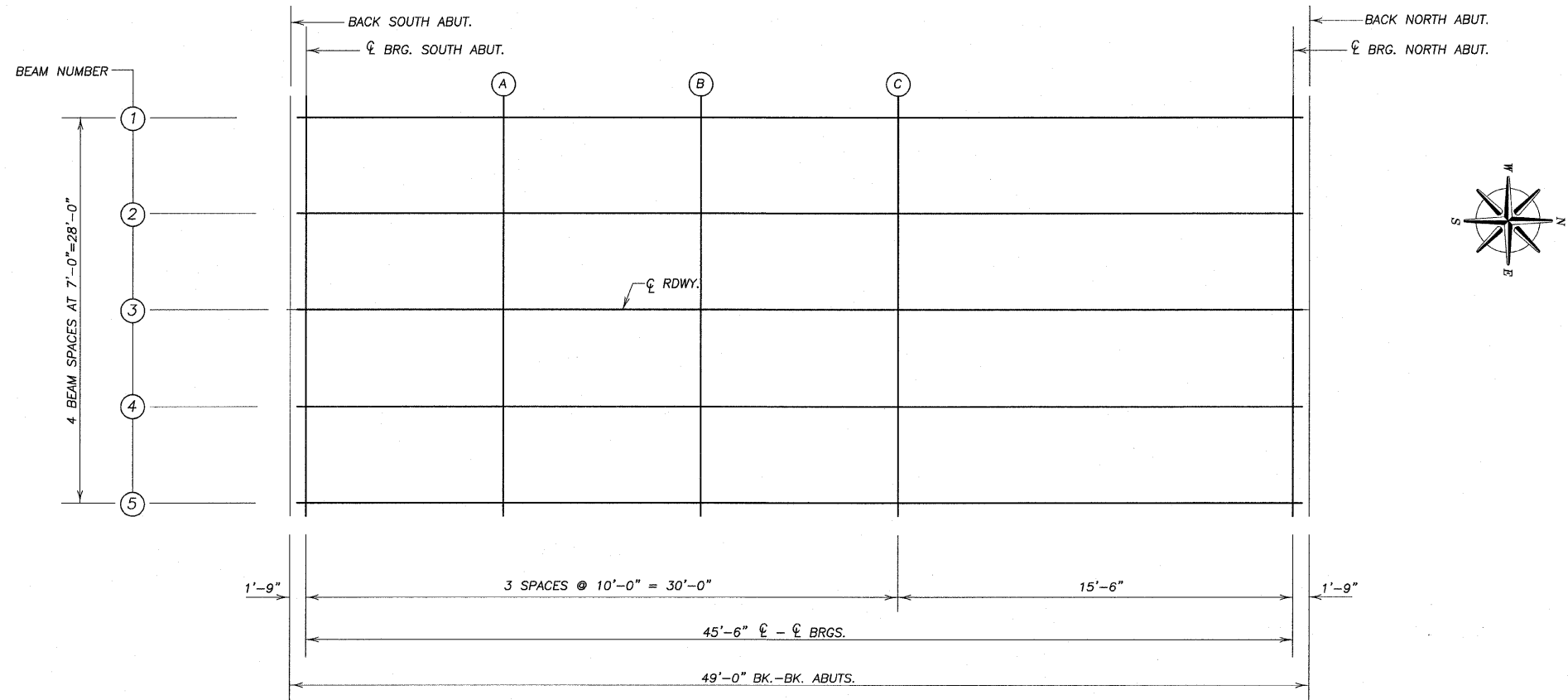
NOTE: TO DETERMINE "t" - AFTER ALL STRUCTURAL STEEL HAS BEEN ERECTED, ELEVATIONS OF TOP FLANGES OF THE BEAMS SHALL BE TAKEN AT THE STATIONS SHOWN ON BR. SHEET 3 OF 11. THESE ELEVATIONS SUBTRACTED FROM THE "THEORETICAL GRADE ELEVATIONS ADJUSTED FOR DEAD LOAD DEFLECTIONS" SHOWN ON THE SAME SHEET, MINUS FLOOR THICKNESS, EQUALS THE FILLET HEIGHTS ABOVE TOP FLANGE OF BEAMS.

FILLET HEIGHTS

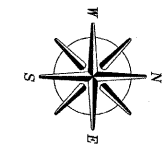
REVISIONS	DATE

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PLAN



DECK ELEVATIONS LAYOUT
OF
SHABBONA ROAD BRIDGE REPLACEMENT
FOR
DEKALB COUNTY HIGHWAY

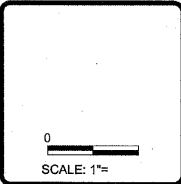
SHEET TITLE

JOB NUMBER	2080381
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DATE	2/23/2009
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SHEET NO.

DECK ELEVATIONS LAYOUT
SECTION 05-00213-00-BR
SHABBONA ROAD
DEKALB COUNTY
SN 019-3066



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DECK ELEVATIONS
 OF
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 FOR
 DEKALB COUNTY HIGHWAY

SHEET TITLE

JOB NUMBER
2080381

DATE
2/23/2009

SHEET NO.

DECK ELEVATIONS
 SECTION 05-00213-00-BR
 SHABBONA ROAD
 DEKALB COUNTY
 SN 019-3066

BEAM # 1				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	THEORETICAL GRADE ADJUSTED FOR DEAD LOAD DEFLECTION
BK. S. ABUT.	10+31.50	14.0	782.511	782.511
CL. BRG. S. ABUT.	10+33.25	14.0	782.531	782.531
A	10+43.25	14.0	782.625	782.658
B	10+53.25	14.0	782.719	782.770
C	10+63.25	14.0	782.813	782.859
CL. BRG. N. ABUT.	10+78.75	14.0	782.959	782.959
BK. N. ABUT.	10+80.50	14.0	782.975	782.975

BEAM # 4				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	THEORETICAL GRADE ADJUSTED FOR DEAD LOAD DEFLECTION
BK. S. ABUT.	10+31.50	7.0	782.621	782.621
CL. BRG. S. ABUT.	10+33.25	7.0	782.637	782.637
A	10+43.25	7.0	782.731	782.764
B	10+53.25	7.0	782.825	782.876
C	10+63.25	7.0	782.919	782.965
CL. BRG. N. ABUT.	10+78.75	7.0	783.067	783.067
BK. N. ABUT.	10+80.50	7.0	783.084	783.084

BEAM # 2				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	THEORETICAL GRADE ADJUSTED FOR DEAD LOAD DEFLECTION
BK. S. ABUT.	10+31.50	7.0	782.621	782.621
CL. BRG. S. ABUT.	10+33.25	7.0	782.637	782.637
A	10+43.25	7.0	782.731	782.764
B	10+53.25	7.0	782.825	782.876
C	10+63.25	7.0	782.919	782.965
CL. BRG. N. ABUT.	10+78.75	7.0	783.067	783.067
BK. N. ABUT.	10+80.50	7.0	783.084	783.084

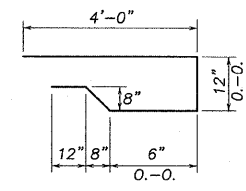
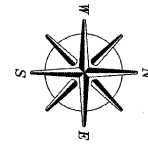
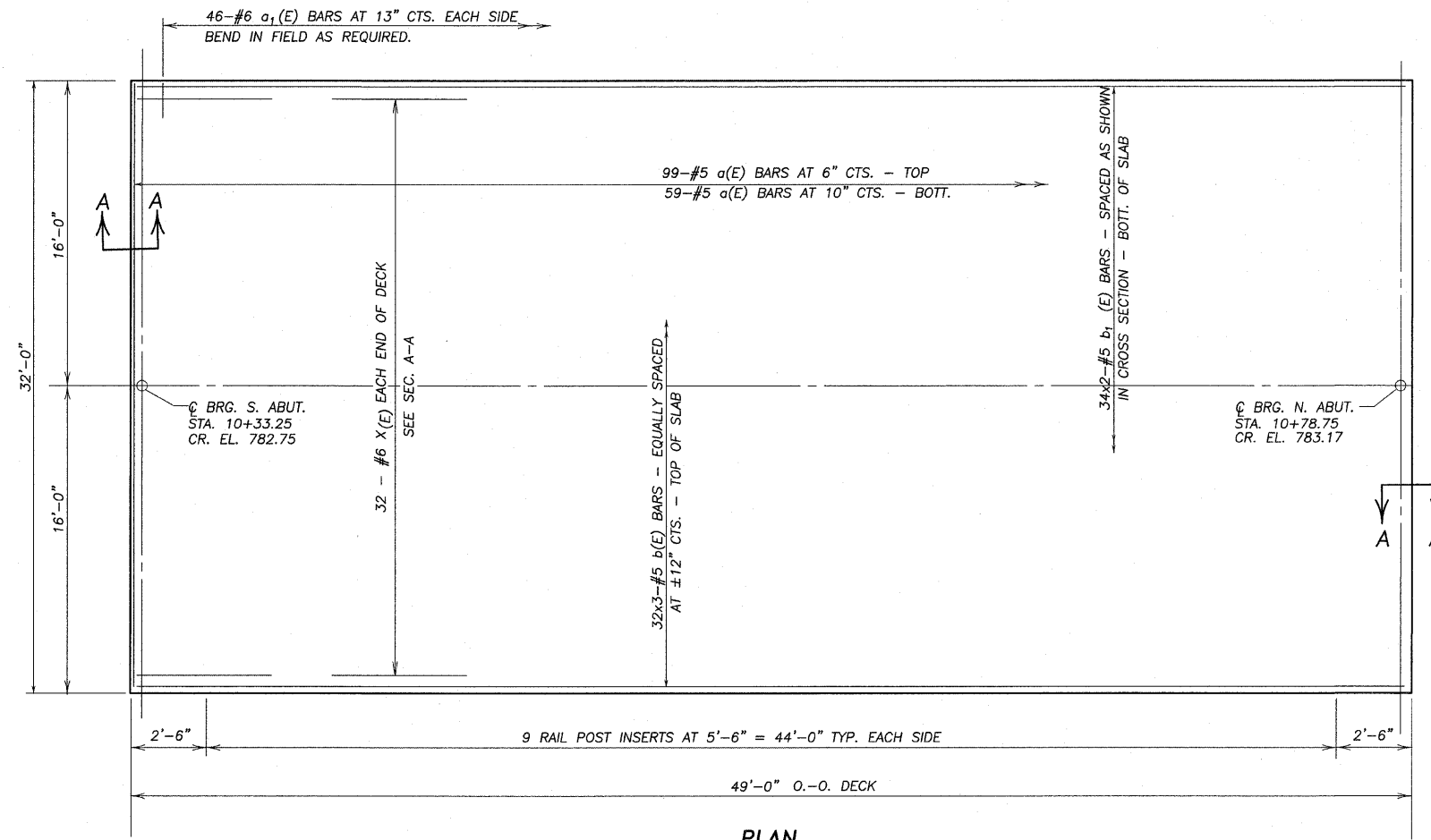
BEAM # 5				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	THEORETICAL GRADE ADJUSTED FOR DEAD LOAD DEFLECTION
BK. S. ABUT.	10+31.50	14.0	782.511	782.511
CL. BRG. S. ABUT.	10+33.25	14.0	782.531	782.531
A	10+43.25	14.0	782.625	782.658
B	10+53.25	14.0	782.719	782.770
C	10+63.25	14.0	782.813	782.859
CL. BRG. N. ABUT.	10+78.75	14.0	782.959	782.959
BK. N. ABUT.	10+80.50	14.0	782.975	782.975

BEAM # 3				
LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATION	THEORETICAL GRADE ADJUSTED FOR DEAD LOAD DEFLECTION
BK. S. ABUT.	10+31.50	0.0	782.730	782.730
CL. BRG. S. ABUT.	10+33.25	0.0	782.747	782.747
A	10+43.25	0.0	782.841	782.874
B	10+53.25	0.0	782.935	782.986
C	10+63.25	0.0	783.029	783.075
CL. BRG. N. ABUT.	10+78.75	0.0	783.175	783.175
BK. N. ABUT.	10+80.50	0.0	783.191	783.191

REVISION	DATE

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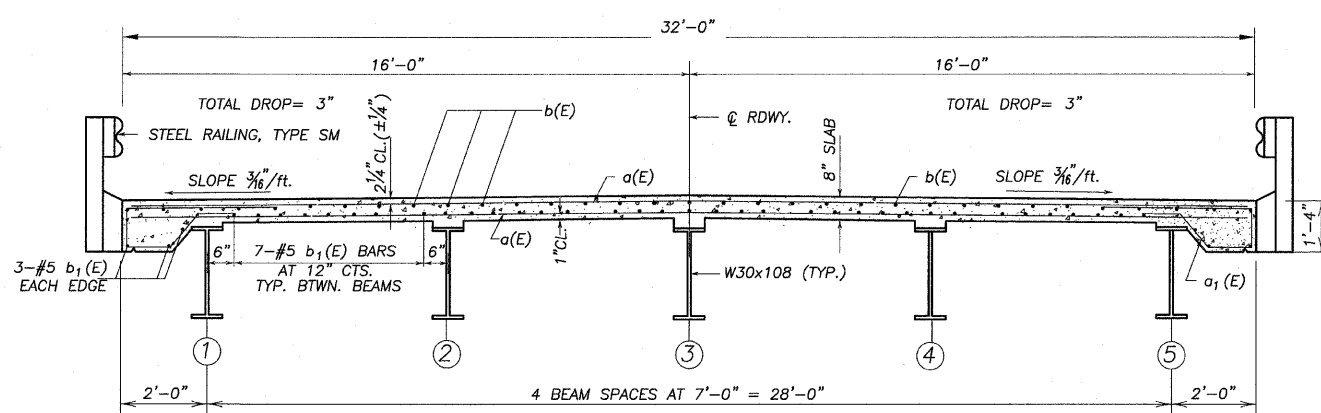
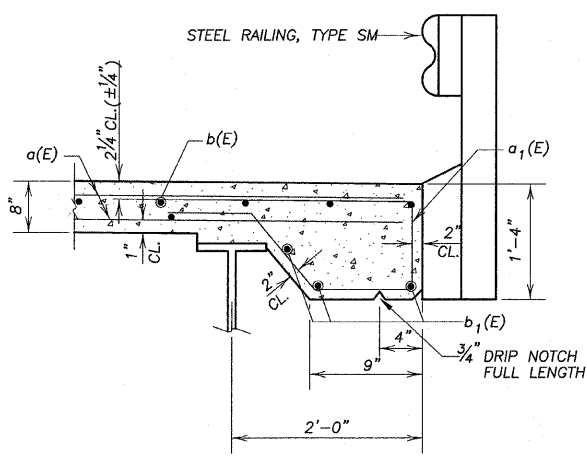
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BAR a₁(E)

MIN. LAP

#5	2'-5"
#6	2'-9"



SUPERSTRUCTURE OF SHABONA ROAD BRIDGE REPLACEMENT FOR DEKALB COUNTY HIGHWAY

SHEET TITLE

SUPERSTRUCTURE SECTION 05-00213-00-BR
 SHABONA ROAD DEKALB COUNTY
 SN 019-3066

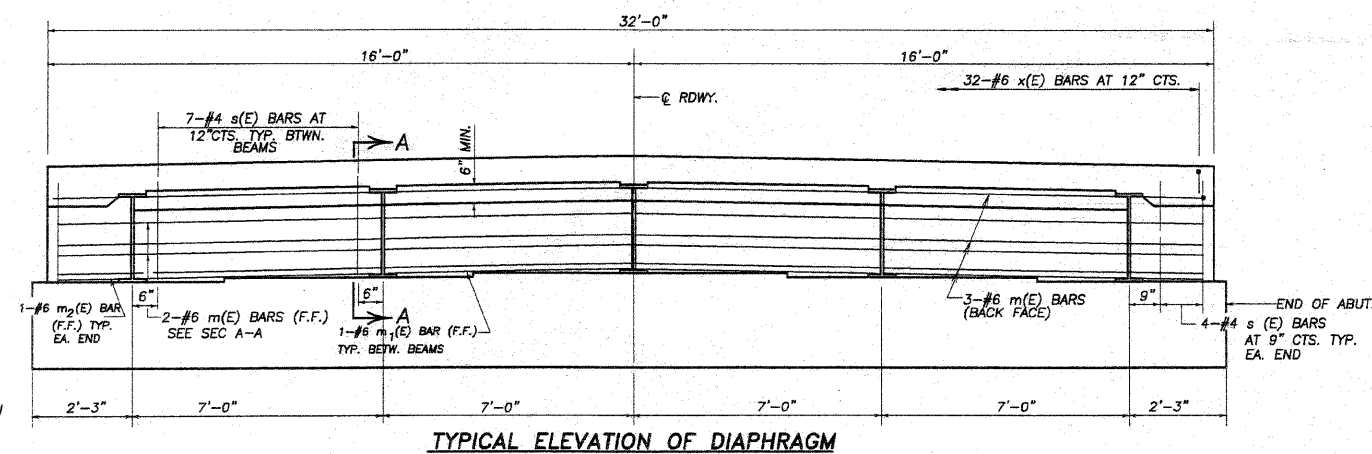
JOB NUMBER 2080381

DATE 2/27/2009

SHEET NO.

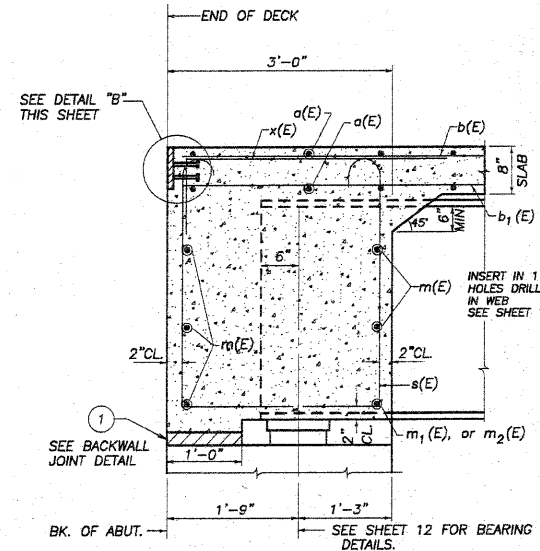
BILL OF MATERIAL - SUPERSTRUCTURE

BAR	NO.	SIZE	LENGTH	SHAPE
a(E)	158	#5	31'-8"	
a ₁ (E)	92	#6	7'-6"	
m(E)	10	#6	31'-8"	
m ₁ (E)	8	#6	6'-2"	
m ₂ (E)	4	#6	1'-9"	
b(E)	96	#5	20'-0"	
b ₁ (E)	68	#5	28'-9"	
s(E)	72	#4	9'-2"	
x(E)	64	#6	6'-0"	
CONCRETE SUPERSTRUCTURE			CU. YD.	61.3
REINFORCEMENT BARS, EPOXY COATED			LBS.	11874
PROTECTIVE COAT			SQ. YD.	189
BRIDGE DECK GROOVING			SQ. YD.	174
FURNISHING AND ERECTING STRUCTURAL STEEL			L. SUM.	1
STUD SHEAR CONNECTORS			EACH	840

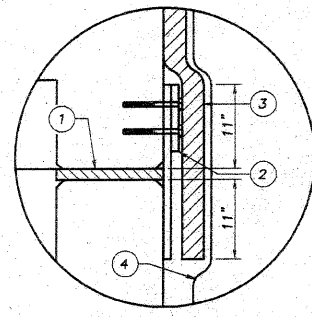


**BONDED CONSTRUCTION JOINT IN ACCORDANCE WITH ARTICLE 503.09 OF STD. SPEC'S.

TYPICAL ELEVATION OF DIAPHRAGM



SECTION A-A



BACKWALL JOINT DETAIL

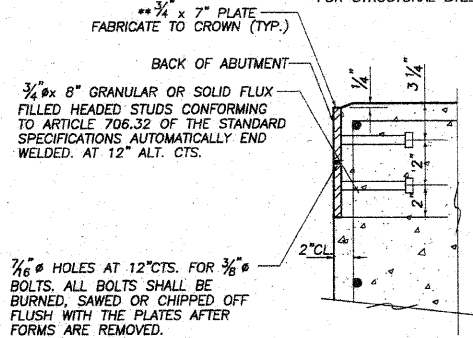
- ① - 2" PREFORMED JOINT FILLER (ARTICLE 1051) BONDED TO ABUTMENT CAP WITH APPROVED ADHESIVE (FULL WIDTH OF CAP)
 - ② - 1/8" THICK REINFORCED ELASTOMERIC NEOPRENE MAT
 - ③ - 1/2" STUDS WITH NUTS & WASHERS AT 12 INCH CENTERS (MINIMUM EMBEDMENT=4") HOT ROLLED BARS: 3/8" x 5" x 32'-0"
 - ④ - 2" PREFORMED JOINT FILLER (ARTICLE 1051) BONDED TO SUPERSTRUCTURE (FULL WIDTH OF CAP; 3'-0" WIDE)
 - ⑤ - GEOCOMPOSITE WALL DRAIN (FULL WIDTH OF CAP PLUS EXTEND 3' MINIMUM ONTO WINGWALLS; 4'-0" WIDE)
- ITEMS ①, ②, ③, & ④ SHALL BE INCLUDED IN THE COST OF CONCRETE SUPERSTRUCTURE.

BEAM MOMENT TABLE

	0.5 SPAN 1
I _s (in ⁴)	4470
I _c (in ⁴)(n)	11570
I _c (in ⁴)(3n)	8068
S _s (in ³)	299
S _c (in ³)(n)	452
S _c (in ³)(3n)	396
DC1 (k/ft.)	0.88
MDC1 (ft.-k)	229
DC2 (k/ft.)	0.02
MDC2 (ft.-k)	5.2
DW (k/ft.)	0.35
MDW (ft.-k)	91
MLL+IM (ft.-k)	585
MU (Str. I)(ft.-k)	1484
f _t M _n (ft.-k)	2777
f _s DC1 (ksi)	9.4
f _s DC2 (ksi)	0.8
f _s DW (ksi)	2.8
f _s 1.3(LL+IM)(ksi)	20.1
f _s (Service II)(ksi)	33.1
VF (k)	24.0

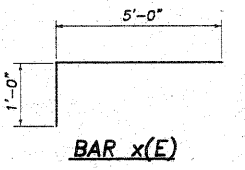
REINFORCEMENT BARS INDICATED (E) SHALL BE EPOXY COATED.

** FURNISH IN TWO LENGTHS. MAXIMUM SPACE BETWEEN INSTALLED SEGMENTS SHALL BE 3/16". SEAL SPACE WITH SILICONE SEALANT SUITABLE FOR STRUCTURAL STEEL.

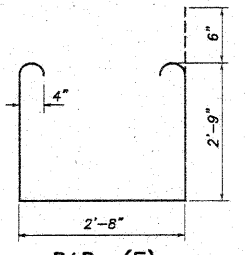


DETAIL "B"

NOTE: AFTER FABRICATION ALL SURFACES OF THE STEEL PLATES SHALL BE GIVEN ONE SHOP COAT OF PAINT SPECIFIED FOR STRUCTURAL STEEL. NO FIELD PAINTING REQUIRED.



BAR x(E)



BAR s(E)

BEAM REACTION TABLE

	ABUTMENTS
R _{DC1} (k)	20.1
R _{DC2} (k)	0.5
R _{DW} (k)	8.0
R _{LL+IM} (k)	67.0
R _{TOTAL} (k)	95.6

**SUPERSTRUCTURE DETAILS
 SECTION 05-00213-00-BR
 SHABONA ROAD
 DEKALB COUNTY
 SN 019-3066**

SCALE: 1"=

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REVISION NO. DATE

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**SUPERSTRUCTURE DETAILS
 OF
 SHABONA ROAD BRIDGE REPLACEMENT
 FOR
 DEKALB COUNTY HIGHWAY**

SHEET TITLE

JOB NUMBER
2080381

DATE
5/11/2009

SHEET NO.
10 of 17

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TYPE SM RAIL DETAILS
 OF
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 FOR
 DEKALB COUNTY HIGHWAY

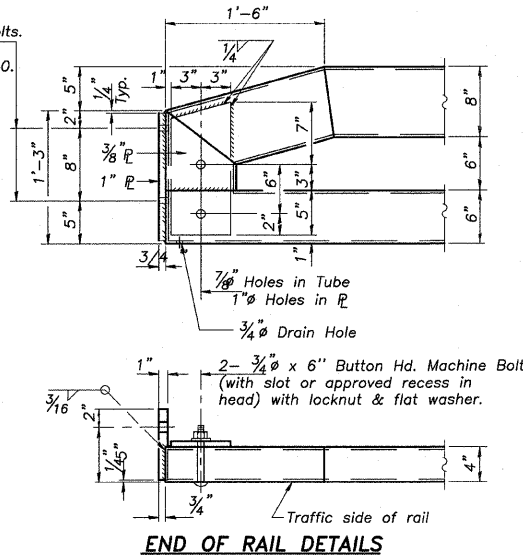
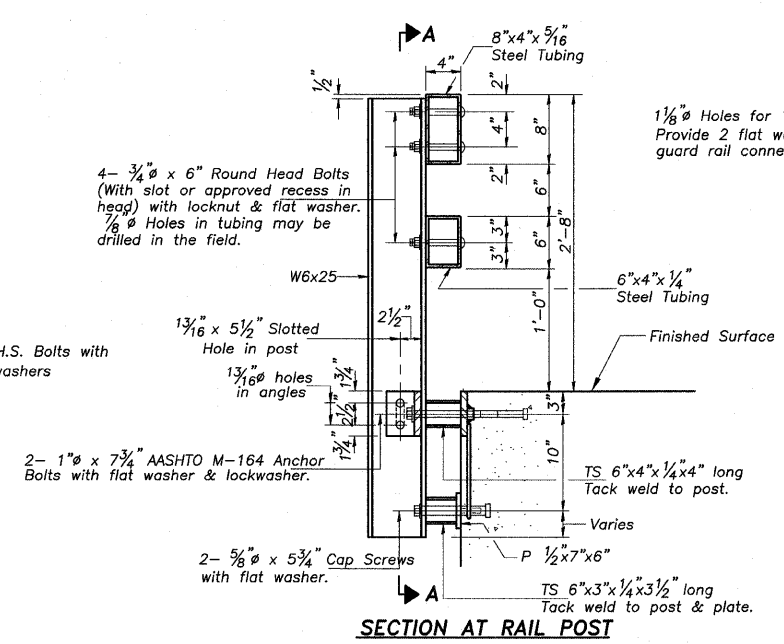
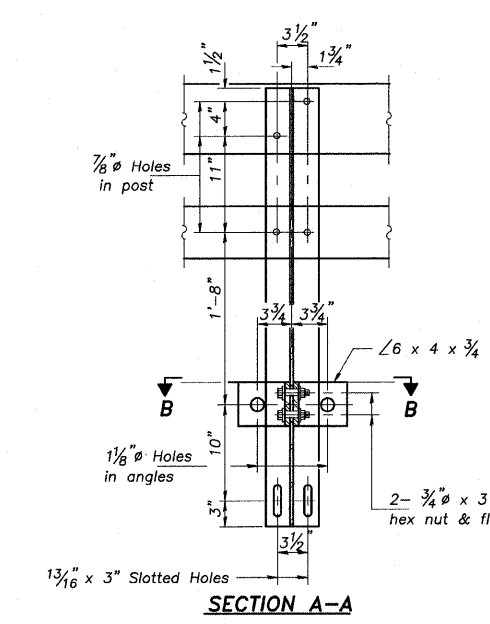
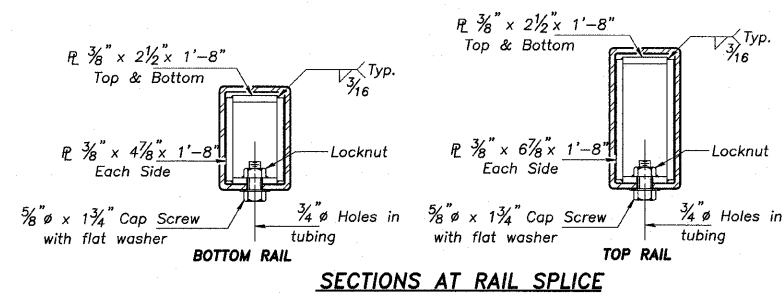
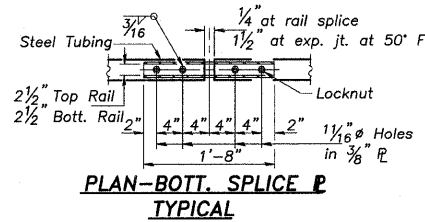
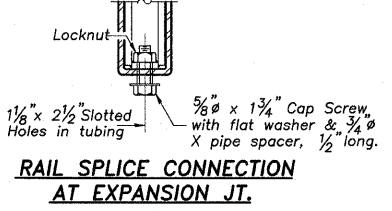
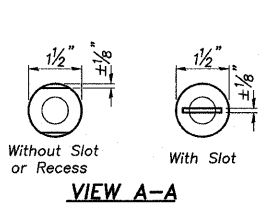
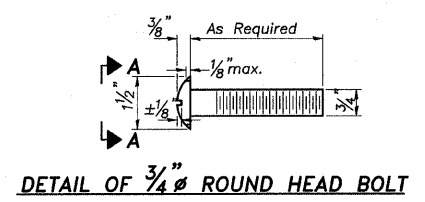
SHEET TITLE

JOB NUMBER
2080381

DATE
2/23/2009

SHEET NO.

11 of 17



GENERAL NOTES

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

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

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

All bolts, nuts, cap screws, washers and lock washers shall be galvanized in accordance with AASHTO M-232.

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

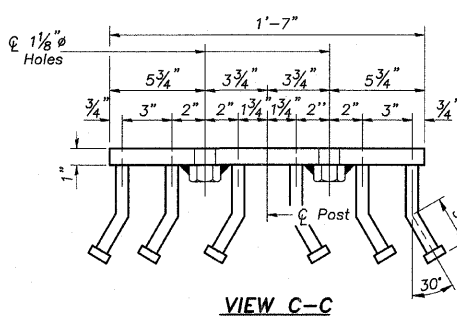
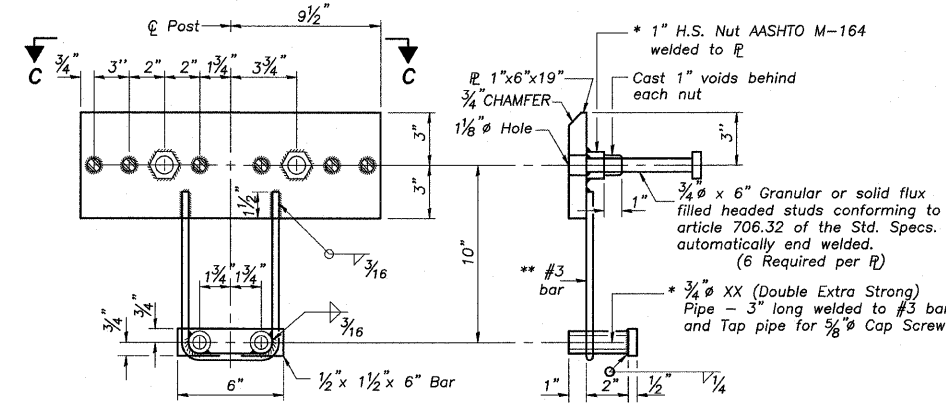
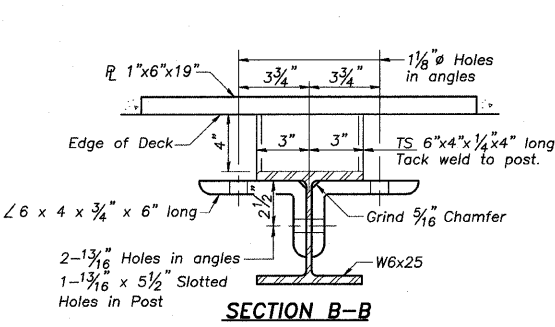
Railing shall be in accordance with Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for STEEL BRIDGE RAIL, TYPE SM.

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

For multi-span PPC Deck bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost incidental to STEEL BRIDGE RAIL, TYPE SM.

Bolts located at expansion joint shall be provided with locknuts and shall be tightened only to a point that will allow railing movement.

The 3/4" high strength bolts used to connect the 6 x 4 x 3/4" angles to the post shall be tightened in accordance with Article 505.04(f)(3) 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	98

TYPE SM
 STEEL BRIDGE RAIL SIDE MOUNTED
 SECTION 05-00213-00-BR
 SHABONA ROAD
 DEKALB COUNTY
 SN 019-3066

ANCHOR DEVICE

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

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

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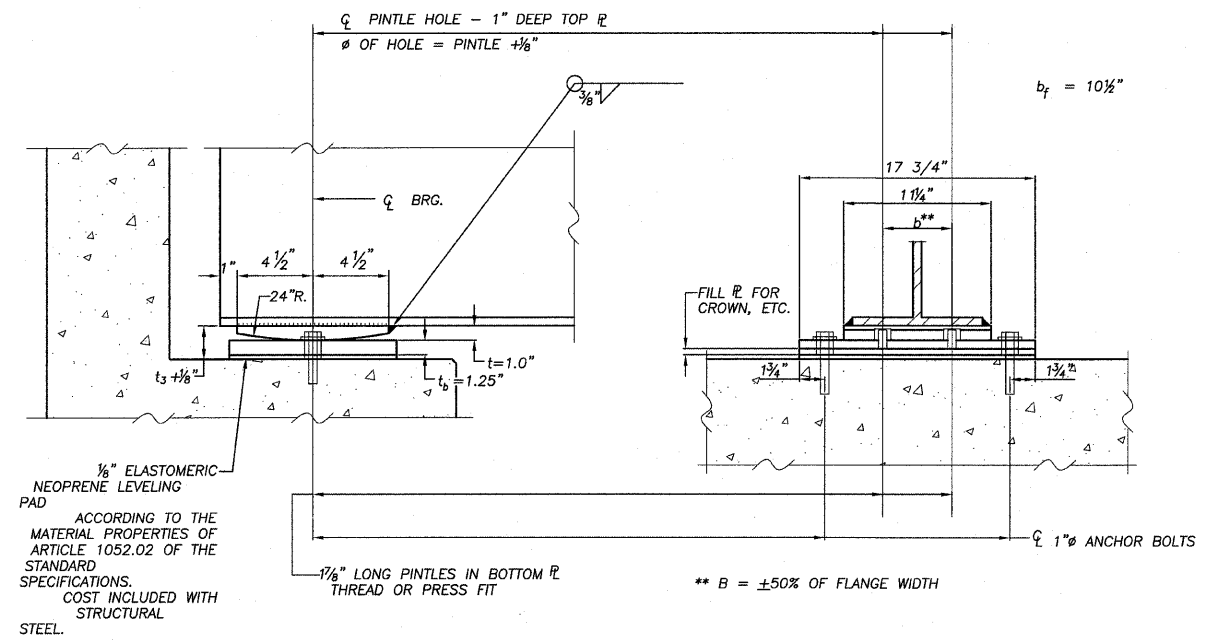
BEARING DETAILS OF SHABBONA ROAD BRIDGE REPLACEMENT FOR DEKALB COUNTY HIGHWAY

SHEET TITLE

JOB NUMBER
2080381

DATE
2/27/2009

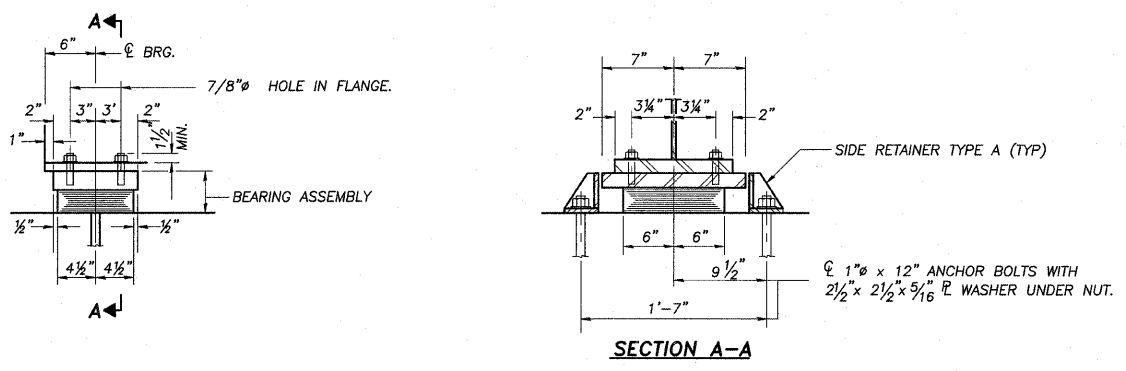
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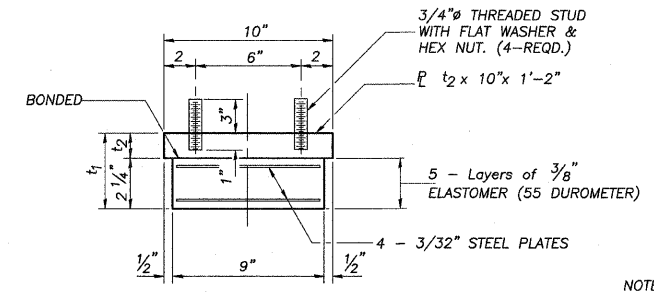
FIXED BEARING ASSEMBLY
 (QUANTITY INCLUDED IN WEIGHTS OF STRUCTURAL STEEL)

BEAM LINE	t_1^*	t_2	t_3^*
① WEST	4"	1 3/4"	2 1/4"
②	4"	1 3/4"	2 1/4"
③	4"	1 3/4"	2 1/4"
④	4"	1 3/4"	2 1/4"
⑤ EAST	4"	1 3/4"	2 1/4"

* THICKNESS MAY BE MADE UP OF 2" MINIMUM PLATES FULL PERIMETER SHOP WELD ON ALL PLATES



ELEVATION

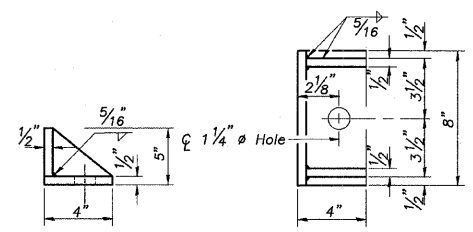


BEARING ASSEMBLY

Note: Shim plates shall not be placed under Bearing Assembly.

NOTE: THE STRUCTURAL STEEL BEARING PLATES OF THE ELASTOMERIC BEARING ASSEMBLY SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 GRADE 50.

TYPE I ELASTOMERIC EXPANSION BRG. - NORTH ABUTS
 (5 REQUIRED)



SIDE RETAINER - TYPE A

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.
 (10 REQUIRED)

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Elastomeric Bearing Assembly Type 1	EACH	5

BEARING DETAILS
 SECTION 05-00213-00-BR
 SHABBONA ROAD
 DEKALB COUNTY
 SN 019-3066

REVISION	DATE

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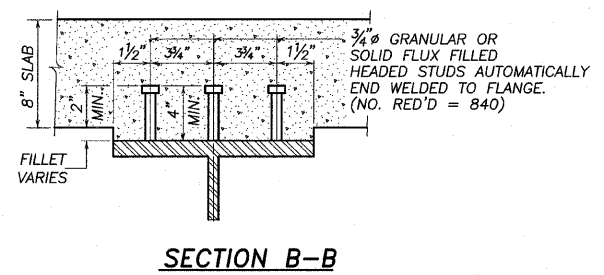
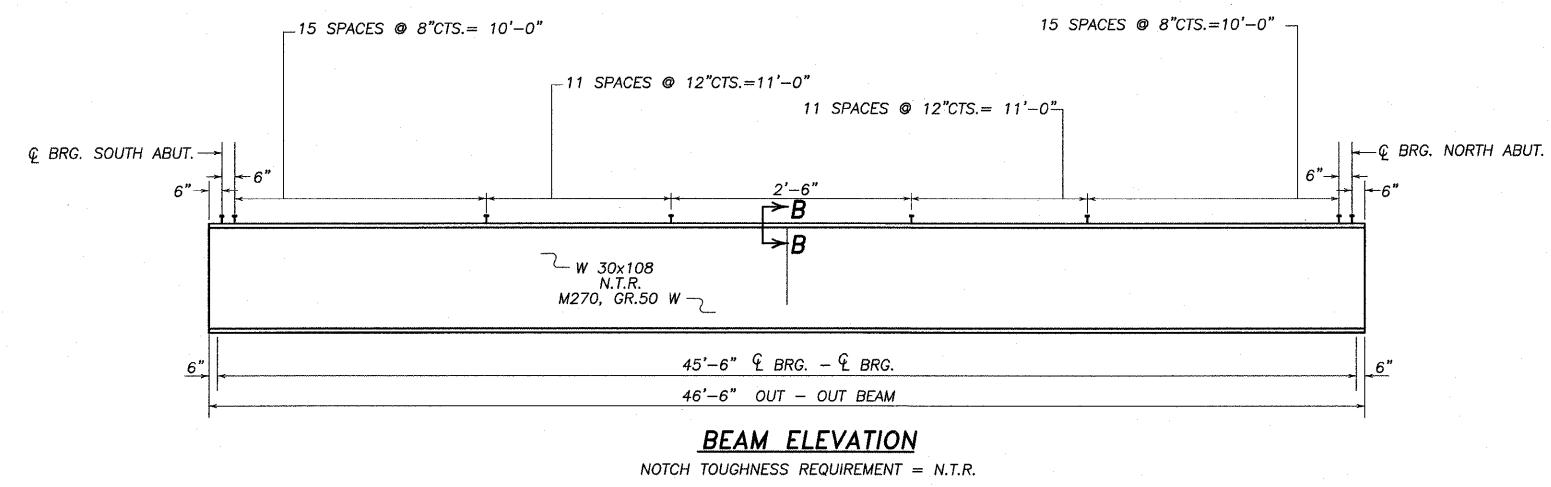
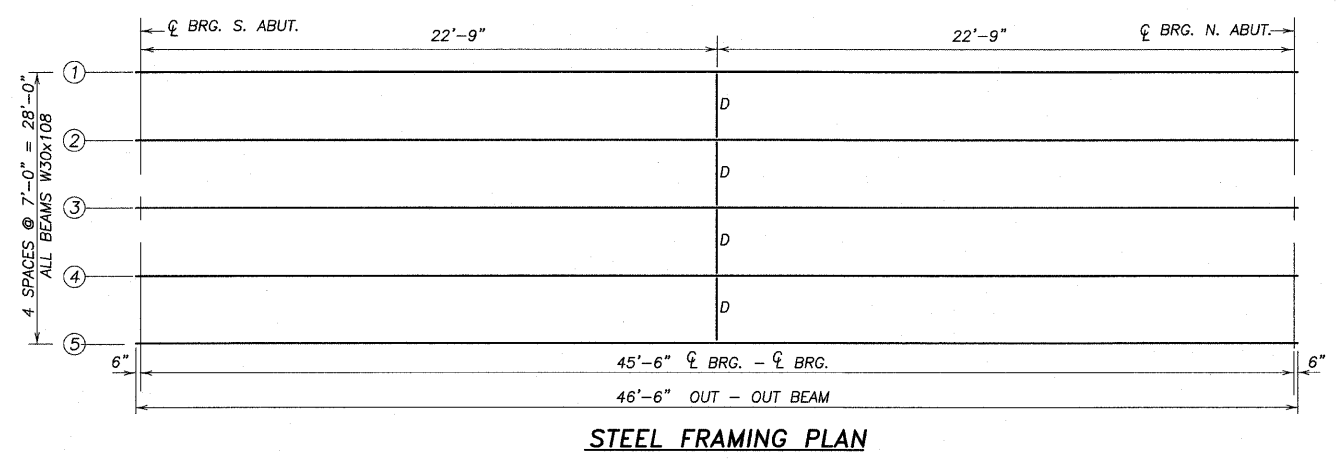
STRUCTURAL STEEL DETAILS
 OF
 SHABBONA ROAD BRIDGE REPLACEMENT
 FOR
 DEKALB COUNTY HIGHWAY

SHEET TITLE
STEEL DETAILS

JOB NUMBER
2080381

DATE
2/23/2009

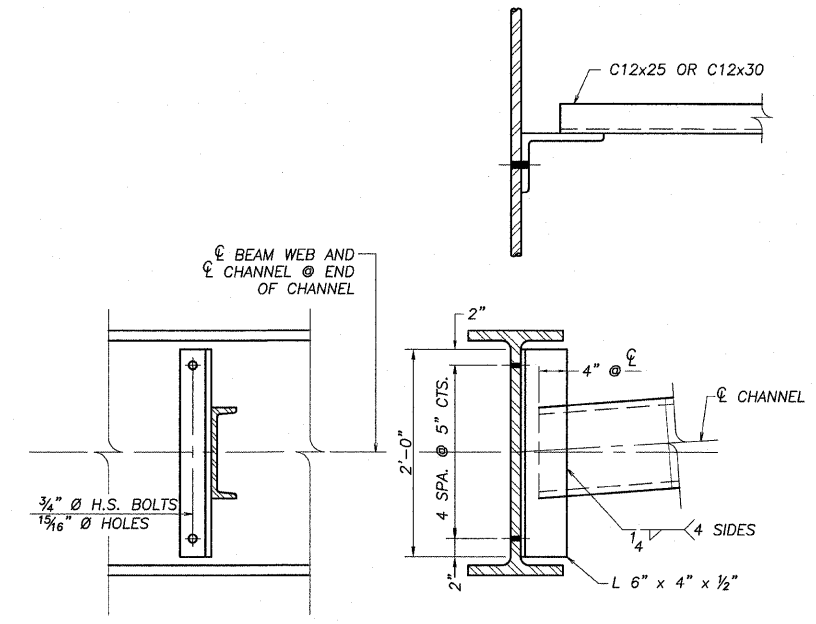
SHEET NO.
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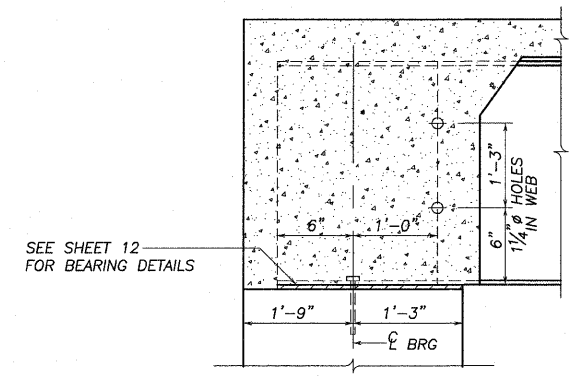
PROPOSED TOP OF BEAM ELEVATIONS *

LOCATION	BEAM No.	1	2	3	4	5
CL BRG. N. ABUT.	782.167	782.275	782.383	782.275	782.167	
CL BRG. S. ABUT.	781.739	781.845	781.955	781.845	781.739	

* ALLOW FOR 1/2" POSITIVE FILLET



NOTE: TWO HARDENED WASHERS REQUIRED FOR EACH SET OF OVERIZED HOLES.



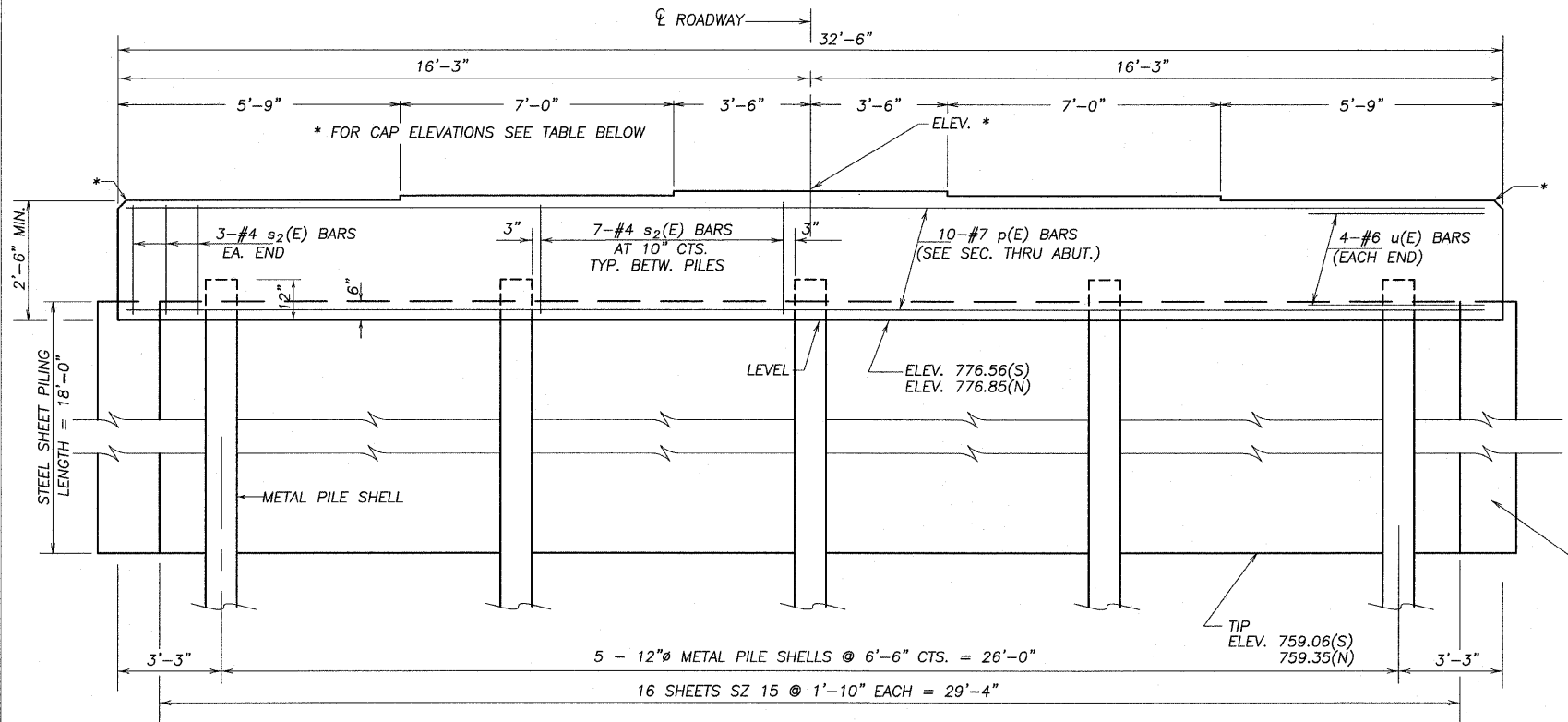
SEE SHEET 12 FOR BEARING DETAILS

STRUCTURAL STEEL DETAILS
 SECTION 05-00213-00-BR
 SHABBONA ROAD
 DEKALB COUNTY
 SN 019-3066

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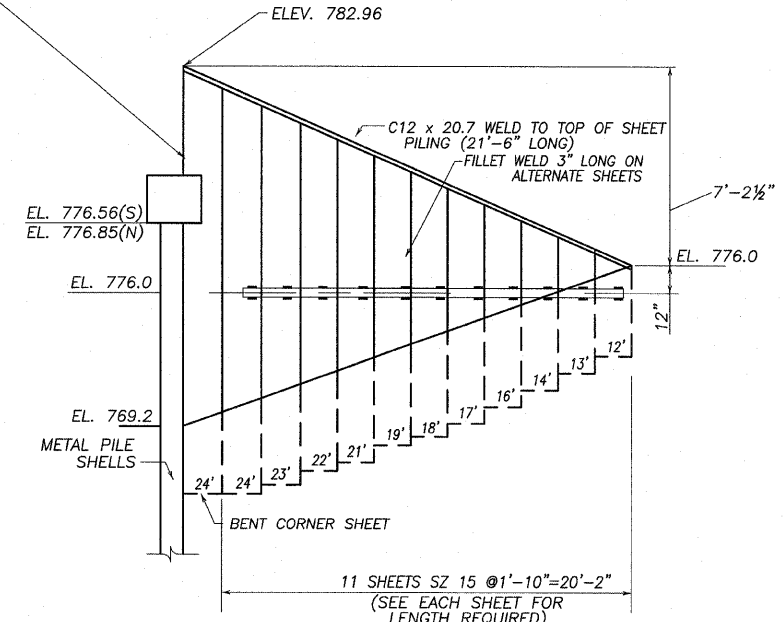
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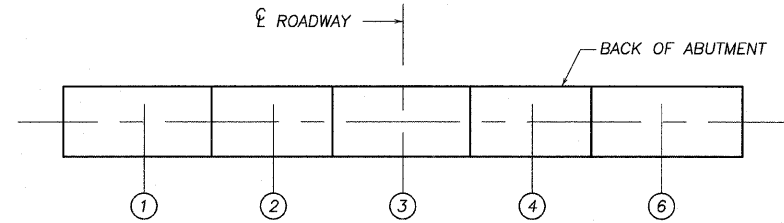


ELEVATION
 ALL HORIZONTAL DIMENSIONS ARE ALONG CENTERLINE OF CAP
 *FOR CAP ELEVATIONS, SEE TABLE BELOW

AFTER THE DECK HAS BEEN POURED, THE CONTRACTOR SHALL WELD A PIECE OF STEEL SHEETING TO THE CORNER SHEET, ABOVE THE ABUTMENT, TO PROVIDE A SOIL STOP BETWEEN THE CORNER SHEET AND THE EDGE OF THE OUTSIDE OF THE DECK. COST INCIDENTAL TO STEEL SHEET PILING.

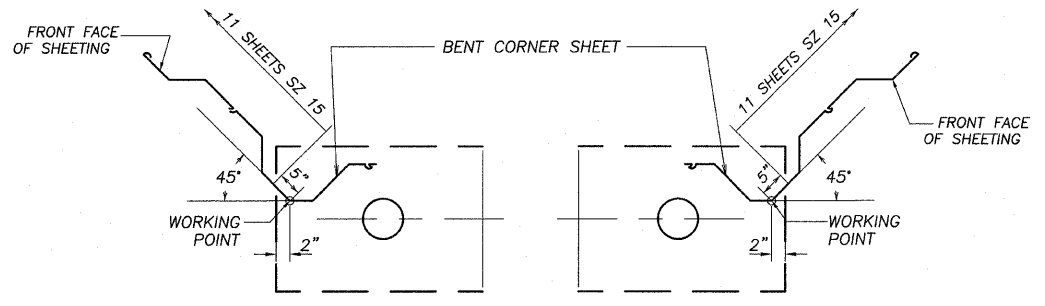


WINGWALL ELEVATION



LOCATION	ELEV.	1	2	3	4	5
NORTH ABUT.		779.35	779.46	779.57	779.46	779.35
SOUTH ABUT.		779.06	779.17	779.28	779.17	779.06

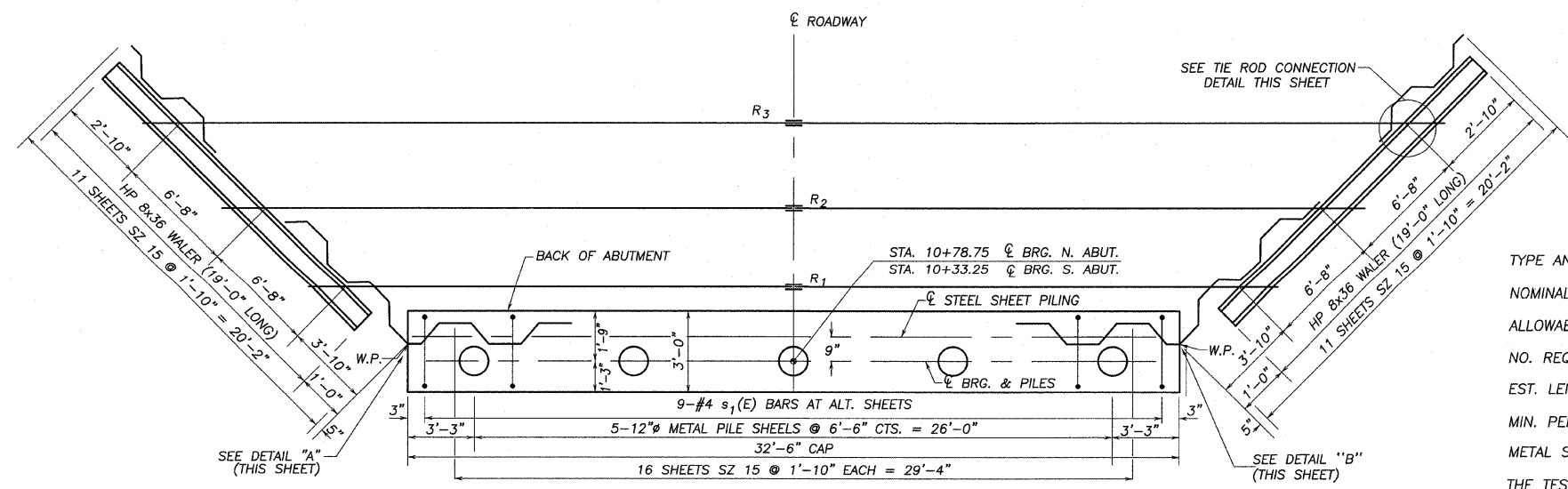
ELEVATION TOP OF ABUTMENT CAP



DETAIL "A" DETAIL "B"

BILL OF MATERIAL - ABUTMENTS

BAR	NO.	SIZE	LENGTH	SHAPE
p(E)	20	#7	32'-0"	—
s ₁ (E)	18	#4	6'-10"	□
s ₂ (E)	68	#4	9'-9"	□
u(E)	16	#6	11'-7"	—
CONCRETE STRUCTURES			CU. YD.	18.7
REINFORCEMENT BARS, EPOXY COATED			POUND	2112
FURNISHING METAL PILE SHELLS 12"x0.250"			FOOT	270
DRIVING PILES			FOOT	270
TEST PILE METAL SHELLS			EACH	1
PERMANENT STEEL SHEET PILING			SQ. FT.	2691
HARDWARE			POUND	1117



PLAN

PILE DATA INFORMATION

TYPE AND SIZE: METAL SHELL 12" DIA. x 0.25 IN. WALLS
 NOMINAL REQUIRED BEARING: 264 KIPS
 ALLOWABLE RESISTANCE AVAILABLE: 88 KIPS
 NO. REQUIRED : 9+1 TEST PILE
 EST. LENGTH: 30'
 MIN. PENETRATION 10' BELOW STREAMBED
 METAL SHELL PILES SHALL BE ACCORDING TO ASTM A252 GRADE 3.
 THE TEST PILES SHALL BE DRIVEN TO 110 PERCENT OF THE NOMINAL REQUIRED BEARING INDICATED IN THE PILE DATA INFORMATION.

REINFORCEMENT BARS INDICATED (E) SHALL BE EPOXY COATED.
 * INCLUDES WALKERS & CHANNELS

**SUBSTRUCTURE - ABUTMENTS
 OF
 SHABONA ROAD BRIDGE REPLACEMENT
 FOR
 DEKALB COUNTY HIGHWAY**

**SHEET TITLE
 ABUTMENT
 DETAILS**

JOB NUMBER
2080381

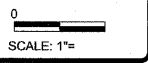
DATE
2/27/2009

SHEET NO.
14 of 17

**SUBSTRUCTURE - ABUTMENTS
 SECTION 05-00213-00-BR
 SHABONA ROAD
 DEKALB COUNTY
 S.N. 019-3066**

FAS ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
174	*	DEKALB	17	15

ILLINOIS PROJECT ARA-017 (118)
 * 05-00213-00-BR
 CONTRACT NO. 87403



REVISIONS	DATE

DESIGNED BY:	CHK'D BY:	DATE:
DRAWN BY:		

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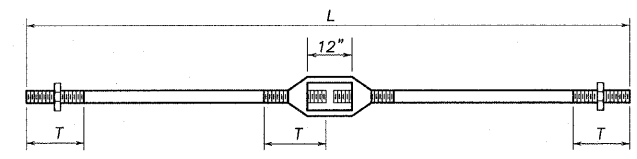
ABUTMENT DETAILS
 OF
 SHABBONA ROAD BRIDGE REPLACEMENT
 FOR
 DEKALB COUNTY HIGHWAY

SHEET TITLE

JOB NUMBER
2080381

DATE
2/23/2009

SHEET NO.
15 of 17



ROD DETAILS

ROD DETAILS & DIMENSIONS

RODS	SIZE	NO.	L	T	TURN-BUCKLE	EACH ROD		NUT
						BEVELED WASHERS SIZE	NO.	
R ₁	1 1/4" Ø	2	40'-6"	12"	1 1/4" Ø	4"x4" x *	2	2
R ₂	1 1/8" Ø	2	50'-0"	12"	1 1/8" Ø	4"x4" x *	2	2
R ₃	7/8" Ø	2	59'-6"	12"	7/8" Ø	4"x4" x *	2	2

*SEE DETAIL THIS SHEET

BILL OF HARDWARE

ITEM	NO.	SIZE
ROD R ₁	2	1 1/4" x 40'-6"
ROD R ₂	2	1 1/8" x 50'-0"
ROD R ₃	2	7/8" x 59'-6"
BEVELED WASHERS	12	4"x4" x *
NUTS FOR RODS	4	1 1/4", 1 1/8", 7/8"
TURNBUCKLES	2	1 1/4", 1 1/8", 7/8"

*SEE DETAIL THIS SHEET

SUBSTRUCTURE NOTES

AFTER THE ABUTMENT PILES ARE IN PLACE, THE CONTRACTOR SHALL START STEEL SHEET PILE DRIVING OPERATIONS WITH A BENT CORNER SHEET AT THE LOCATION SHOWN, OR BY MAKING AN ACCURATE LAYOUT OF THE WALL BEFORE STARTING, SO THAT ALL SHEETS, WALERS AND RODS WILL FIT AS PLANNED.

AFTER THE DECK HAS BEEN POURED, THE CONTRACTOR SHALL WELD A PIECE OF STEEL SHEETING TO THE CORNER SHEET, ABOVE THE ABUTMENT, TO PROVIDE A SOIL STOP BETWEEN THE CORNER SHEET AND THE EDGE OF THE OUTSIDE DECK. COST SHALL BE INCIDENTAL TO STEEL SHEET PILING.

HARDWARE ITEMS SHALL BE HOT-DIPPED GALVANIZED AND ARE INCLUDED FOR PAYMENT PER POUND OF HARDWARE. ALL OTHER MATERIAL AND LABOR REQUIRED FOR THE INSTALLATION OF HARDWARE SHALL BE INCIDENTAL TO THE CONTRACT.

AFTER THE WING SHEET PILING IS IN PLACE, HOLES SHALL BE DRILLED (NOT BURNT) IN THE WING SHEETING AND WALERS FOR PASSAGE OF TIER RODS.

WALERS & CHANNEL SECTIONS ARE ALL INCLUDED FOR PAYMENT PER POUND OF FURNISHING AND ERECTING STRUCTURAL STEEL. WALERS SHALL HAVE 3/8 INCH DRAINAGE HOLES AT 24 INCH CTS. ALONG CENTERLINE OF WEB.

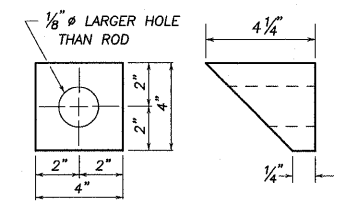
ALL RODS, NUTS, WASHERS, AND WALERS SHALL BE IN PLACE AND PROPERLY SECURED BEFORE BACKFILLING SHALL BEGIN.

BACKFILL SHALL BE PLACED BEHIND THE ABUTMENT AFTER THE SUPERSTRUCTURE HAS BEEN POURED AND THE FALSEWORK REMOVED. SEE ARTICLE 502.10 OF THE STANDARD SPECIFICATIONS.

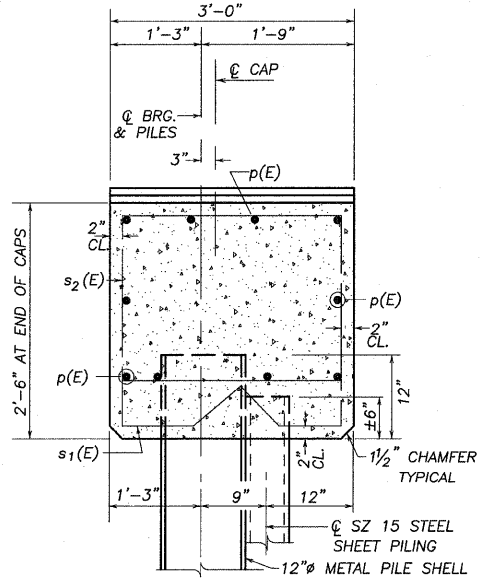
ALL EXPOSED WALERS, CHANNELS, STEEL PILING, STEEL SHEET PILING, AND HARDWARE SHALL BE PAINTED ACCORDING TO THE SPECIAL PROVISIONS FOR CLEANING AND PAINTING NEW METAL STRUCTURES. THE INTERMEDIATE COAT MAY BE APPLIED IN THE SHOP.

THE COLOR OF THE FINAL FINISH COAT SHALL BE REDDISH BROWN, MUNSSELL NO. 25 TR 3/4 OR AS APPROVED BY THE ENGINEER.

STEEL SHEET PILING SHALL BE NEW SZ 15 OR APPROVED EQUAL PILING WITH AN EFFECTIVE SECTION MODULUS EQUAL TO OR GREATER THAN 10.9 IN³/FT. SEE SPECIAL PROVISION FOR "PERMANENT STEEL SHEET PILING."

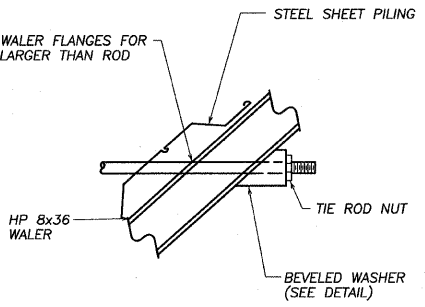


BEVELED WASHER DETAIL
(12 REQUIRED)

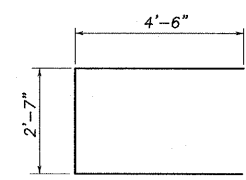


SEC. THRU ABUT.
(AT RIGHT ANGLES)

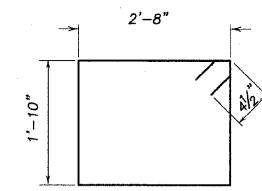
DRILL HOLES THROUGH WALER FLANGES FOR TIE RODS 1/8" LARGER THAN ROD BELOW WEB.



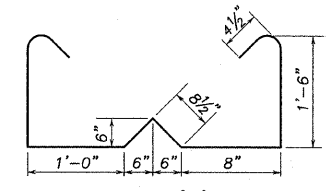
TYPICAL TIE ROD CONNECTION DETAIL



BAR u(E)

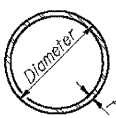


BAR s2(E)



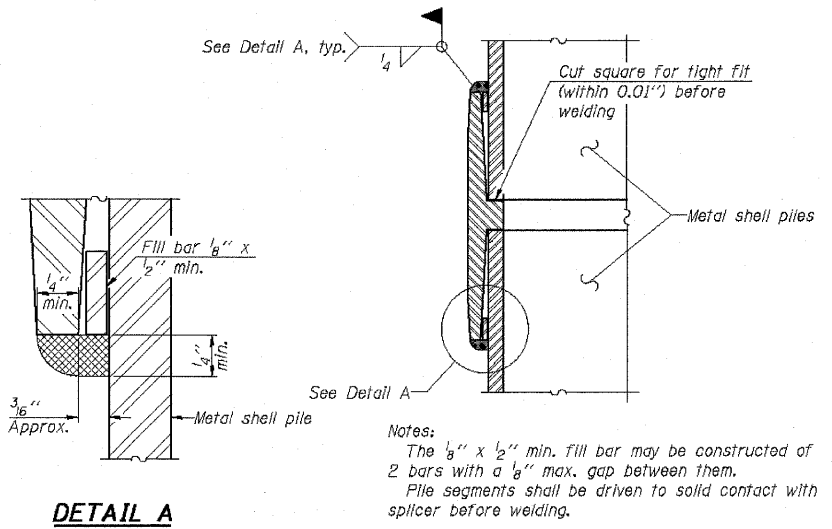
BAR s1(E)

ABUTMENT DETAILS
 SECTION 05-00213-00-BR
 SHABBONA ROAD
 DEKALB COUNTY
 SN 019-3066



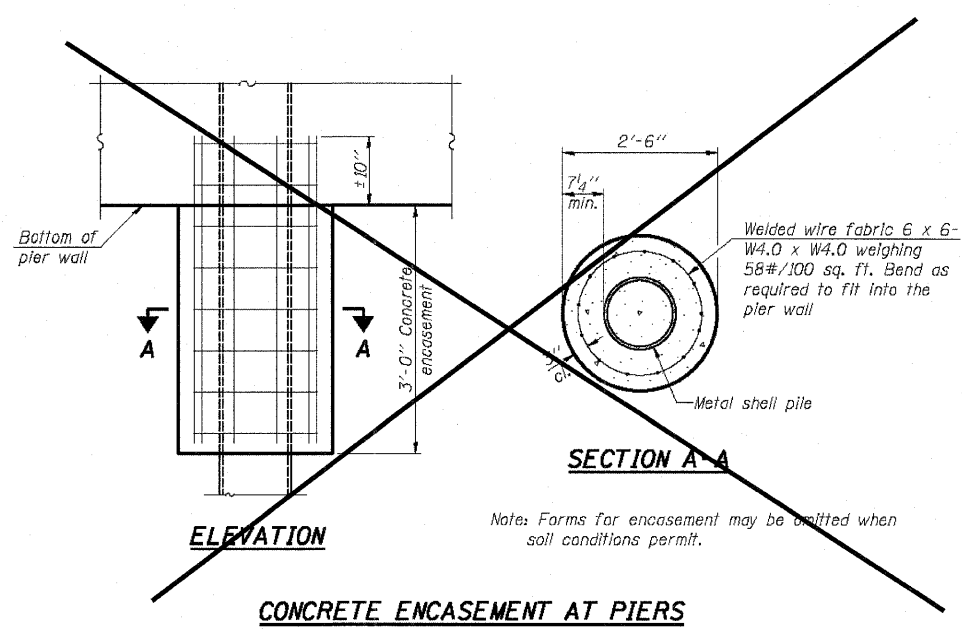
METAL SHELL PILE TABLE

Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. ³ /ft.)
PP12	0.179"	22.60	0.0274
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361

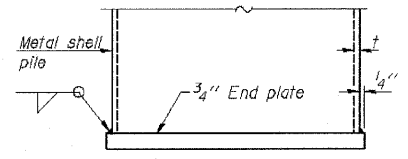


WELDED COMMERCIAL SPLICE

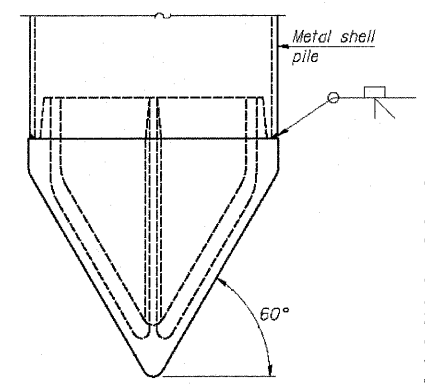
Notes:
 The 1/8" x 1/2" min. fill bar may be constructed of 2 bars with a 1/8" max. gap between them.
 Pile segments shall be driven to solid contact with splicer before welding.



CONCRETE ENCASEMENT AT PIERS



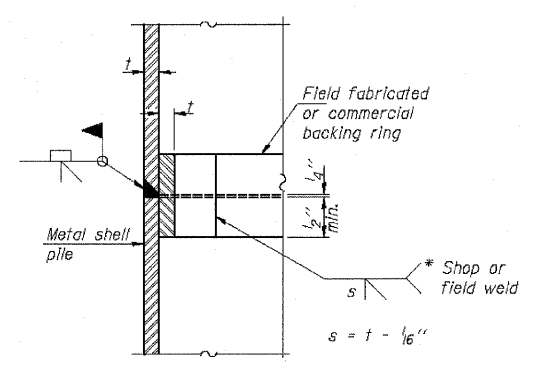
END PLATE ATTACHMENT



METAL SHELL PILE SHOE ATTACHMENT

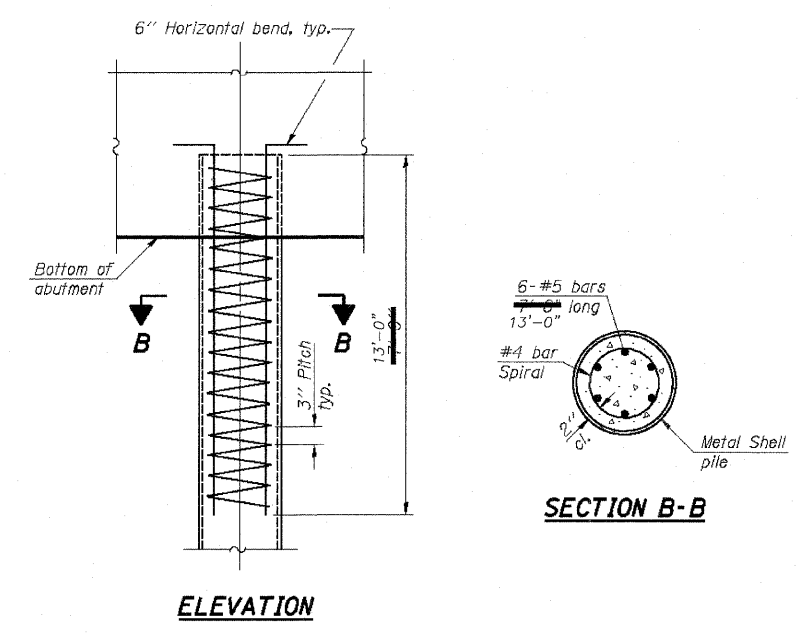
(See Note A)

Note A:
 When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 90-60 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld.



COMPLETE PENETRATION WELD SPLICE

* Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



METAL SHELL REINFORCEMENT AT ABUTMENTS

Note: The metal shell piles shall be according to ASTM A 252 Grade 3.

PILING DETAILS
 SECTION 05-00213-00-BR
 SHABBONA ROAD
 DEKALB COUNTY
 SN 019-3066

REVISIONS

REVISION	DATE

DESIGNED BY: RLR
 DRAWN BY: RLR
 CHECKED BY: RLR
 SUPERVISED BY: RLR
 BOOK NO.:

wendler
 GROUND-BREAKING SOLUTIONS
 engineers - surveyors - scientists
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PILE DETAILS OF SHABBONA ROAD BRIDGE REPLACEMENT FOR DEKALB COUNTY HIGHWAY

SHEET TITLE
PILE DETAILS

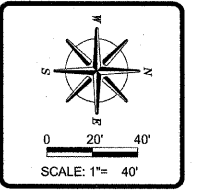
JOB NUMBER
 2080381

DATE
 2/23/2009

SHEET NO.
16 of 17

FAS ROUTE NO	SEC	COUNTY	TOTAL SHEETS	SHEET NO
174	*	DEKALB	17	17

ILLINOIS PROJECT ARA-017(118)
 * 05-00213-00-BR
 CONTRACT NO. 87403

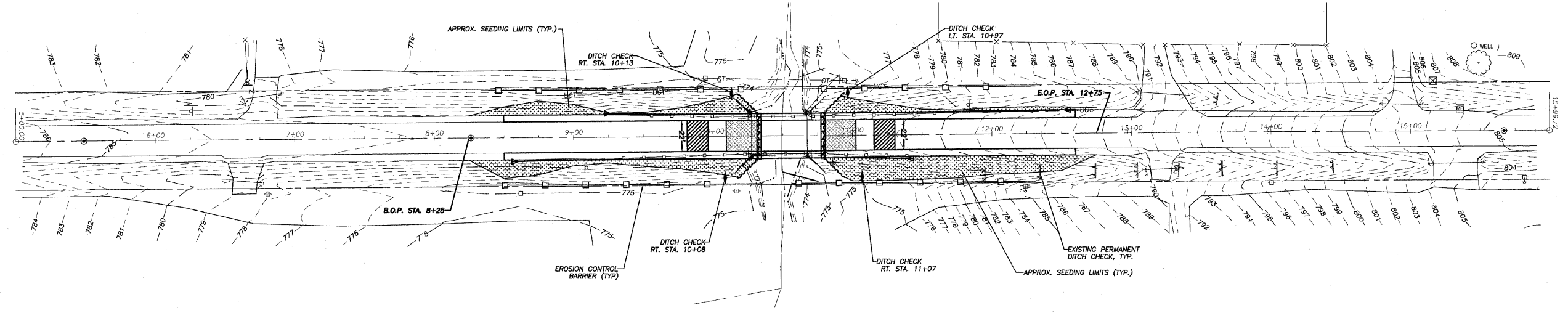


REVISION	DATE

DESIGNED BY:	RLR
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CHECKED BY:	RLR
SURVEYED BY:	
BOOK NO.:	

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NOTE:
 SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING EROSION CONTROL.



EROSION & SEDIMENT CONTROL PLAN

EROSION & SEDIMENT CONTROL PLAN
 OF
SHABBONA ROAD BRIDGE REPLACEMENT
 FOR
DEKALB COUNTY HIGHWAY

SHEET TITLE

JOB NUMBER
2080381

DATE
2/23/2006

SHEET NO.
17 of 17