6-15-07 Letting, Item 257

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	1
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL AID PROJECT		
		CONTRACT NO. 95514		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED HIGHWAY BRIDGE PROGRAM

TR 293 (REDWOOD LANE)
SECTION 96–10120–01–BR
OVER CN / IC RAILROAD
SONGER ROAD DISTRICT
PROJECT NO. BROS–025(57)
CLAY COUNTY
C–97–052–05

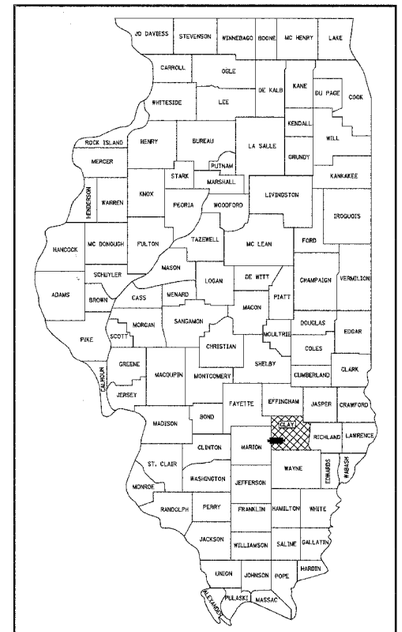
INDEX OF SHEETS

1	TITLE SHEET
2	SUMMARY OF QUANTITES, TYPICAL SECTIONS, AND GENERAL NOTES
3	PLAN & PROFILE OF ROADWAY
4	EROSION CONTROL PLAN
5-6	CROSS SECTIONS OF ROADWAY
7	CROSS SECTIONS OF RAILROAD
8	GENERAL PLAN AND ELEVATION
9-10	PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
11	STEEL RAILING, TYPE S1 (SPECIAL) DETAILS
12	ABUTMENT AND WINGWALL DETAILS
13	PIER DETAILS

STANDARDS SHOWN BELOW ARE INCLUDED IN THE PLANS AFTER SHEET NO. 13

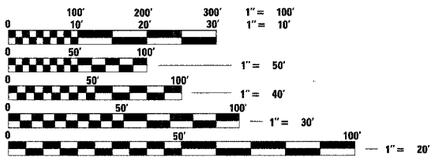
STD. NO. 000001-04 SYMBOLS AND ABBREVIATIONS
STD. NO. 280001-03 TEMPORARY EROSION CONTROL SYSTEMS
STD. NO. 515001-02 NAME PLATE FOR BRIDGES
STD. NO. 630301-04 SHOULDER WIDENING FOR TYPE 1 (SPECIAL) GUARDRAIL TERMINALS
STD. NO. 631026-03 TRAFFIC BARRIER TERMINAL TYPE 5
STD. NO. 635006-02 REFLECTOR AND TERMINAL MARKER PLACEMENT
STD. NO. 702001-06 TRAFFIC CONTROL DEVICES
STD. NO. BLR 21-6 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

SOIL BORINGS (INCLUDED IN PROJECT SPECIFICATIONS)



LOCATION OF SECTION INDICATED THUS: –■–

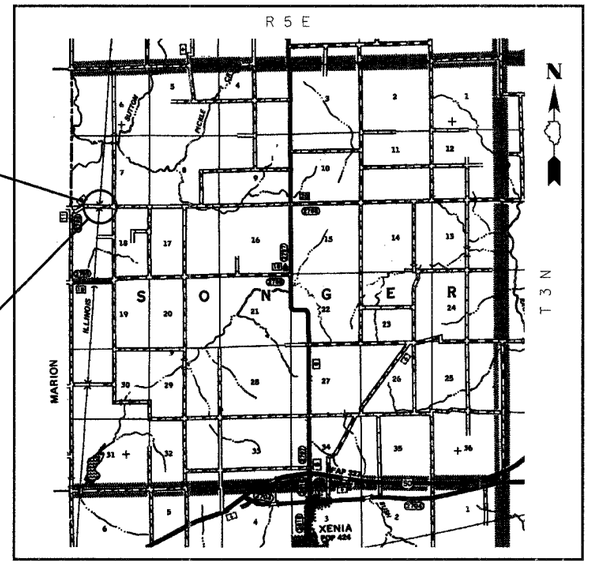
DESIGN CLASSIFICATION: RURAL LOCAL ROAD
ADT$_{2007}$: 50
ADT$_{2027}$: 75
DESIGN SPEED - 30 MPH



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

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

CONTRACT NUMBER 95514



LOCATION: NEAR THE NW CORNER, NE 1/4, NW 1/4, SECTION 18, T3N, R5E, 3RD P.M.
NET LENGTH OF SECTION 96-10120-01-BR: 1150.00 FT = 0.218 MI

APPROVED FOR CLEARANCE ONLY MARCH 2, 20 07
JOHN M. HENRIKSEN
MANAGER OF PUBLIC WORKS
CANADIAN NATIONAL RAILROAD

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

APPROVED APRIL 4, 20 07
CLAY COUNTY, COUNTY ENGINEER

PASSED 4/11, 20 07
DISTRICT SEVEN ENGINEER OF LOCAL ROADS & STREETS

RELEASING FOR BID BASED ON LIMITED REVIEW 4/11, 20 07
DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER

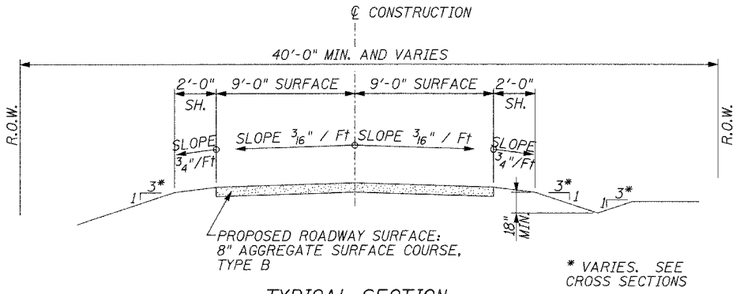
GARY L. HAHN
62-42606
LICENSED
PROFESSIONAL
ENGINEER
STATE OF ILLINOIS

Gary L. Hahn 04.03.07
GARY L. HAHN
CENTRALIA, ILLINOIS
ILLINOIS LICENSED PROFESSIONAL
ENGINEER NO. 62-42606
EXPIRES NOV. 30, 2007

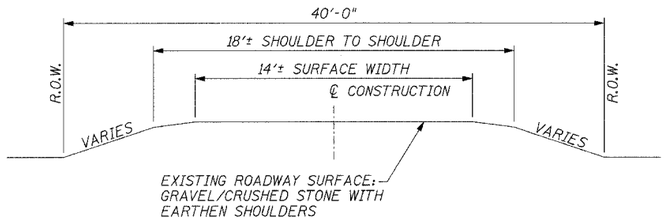
RHUTASEL and ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS
ILLINOIS DESIGN FIRM LICENSE NO. 184-000287

04/03/2007

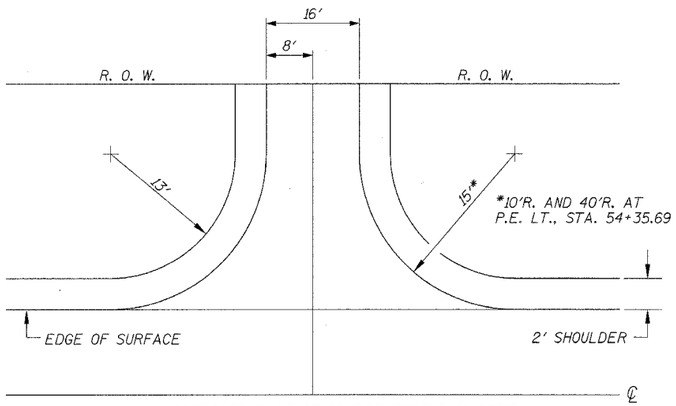
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	2
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		
		CONTRACT NO. 95514		



TYPICAL SECTION PROPOSED APPROACH ROADWAY



TYPICAL SECTION EXISTING APPROACH ROADWAY



AGGREGATE SURFACE COURSE, TYPE B 6" DEPTH
F.E. LT., STA. 45+00 - 20 TON
F.E. RT., STA. 45+00 - 36 TON
P.E. LT., STA. 54+35.69 - 83 TON
F.E. RT., STA. 55+20 - 19 TON

QUANTITIES INCLUDED IN SUMMARY OF QUANTITIES FOR AGGREGATE SURFACE COURSE, TYPE B

TYPICAL ENTRANCES

SUMMARY OF QUANTITIES

	Location				Bridge Sta. Sta. 49+24.75 to Sta. 50+75.25	Road Sta. 44+25.00 - 49+24.75 50+75.25 - 55+75.00
					Construct. Type Code	
	Code No.	Item	Unit	Quantity	X181-5B	E000
*	20100500	TREE REMOVAL, ACRES	ACRE	0.7	-	0.7
*	20200100	EARTH EXCAVATION	CU YD	461	-	461
*	20400800	FURNISHED EXCAVATION	CU YD	16177	-	16177
*	20700110	POROUS GRANULAR EMBANKMENT	TON	34	34	-
*	25001000	SEEDING, CLASS 2 (SPECIAL)	ACRE	1.9	-	1.9
	28000250	TEMPORARY EROSION CONTROL SEEDING	POUND	1220	-	1220
	28000300	TEMPORARY DITCH CHECKS	EACH	6	-	6
	28000400	PERIMETER EROSION BARRIER	FOOT	2710	-	2710
	28000500	INLET AND PIPE PROTECTION	EACH	5	-	5
*	28100807	STONE DUMPED RIPRAP, CLASS A4	TON	345	345	-
*	40200800	AGGREGATE SURFACE COURSE, TYPE B	TON	1175	-	1175
*	50100100	REMOVAL OF EXISTING STRUCTURES	EACH	1	1	-
	50200100	STRUCTURE EXCAVATION	CU YD	150	150	-
	50300225	CONCRETE STRUCTURES	CU YD	152.6	152.6	-
	50300230	CONCRETE ENCASEMENT	CU YD	2.8	2.8	-
*	50400505	PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	3576	3576	-
	50800105	REINFORCEMENT BARS	POUND	14120	14120	-
*	50901305	STEEL RAILING, TYPE S1 (SPECIAL)	FOOT	302	302	-
	51201600	FURNISHING STEEL PILES HP12X53	FOOT	361	361	-
	51201800	FURNISHING STEEL PILES HP14X73	FOOT	464	464	-
	51202305	DRIVING PILES	FOOT	825	825	-
**	51203600	TEST PILE STEEL HP12X53	EACH	1	1	-
**	51203800	TEST PILE STEEL HP14X73	EACH	2	2	-
	51500100	NAME PLATES	EACH	1	1	-
	542A0223	PIPE CULVERTS, CLASS A, TYPE 1 18"	FOOT	148	-	148
	542A0235	PIPE CULVERTS, CLASS A, TYPE 1 30"	FOOT	44	-	44
△	63100070	TRAFFIC BARRIER TERMINAL, TYPE 5	EACH	4	-	4
△	63100167	TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT)	EACH	4	-	4
	67100100	MOBILIZATION	L SUM	1	-	1
	78201000	TERMINAL MARKER - DIRECT APPLIED	EACH	4	-	4
*	Z0048665	RAILROAD PROTECTIVE LIABILITY INSURANCE	L SUM	1	1	-

* SEE SPECIAL PROVISIONS
** THE CONTRACTOR SHALL DRIVE ONE (1) STEEL HP12X53 TEST PILE IN A PRODUCTION LOCATION AT THE WEST ABUTMENT AND ONE (1) STEEL HP14X73 TEST PILE AT EACH PIER AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINDER OF THE PILES.
△ SPECIALTY ITEMS

GENERAL NOTES

CENTERLINE PROFILES REFER TO THE FINISHED ROADWAY SURFACE.

CONSTRUCTION LIMITS REFER TO THE TOP OF THE BACKSLOPE OR THE TOE OF THE FILLSLOPE.

ALL EXISTING DRAINAGE STRUCTURES SHALL BE REMOVED, UNLESS OTHERWISE NOTED, BY THE CONTRACTOR AND SUCH REMOVAL SHALL BE CONSIDERED AS INCLUDED IN TO THE COST OF EARTH EXCAVATION AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. ANY EXISTING DRAINAGE STRUCTURE DEEMED USEABLE BY THE COUNTY, SHALL BE REMOVED AND STORED ALONG THE R.O.W. FOR REMOVAL BY COUNTY FORCES.

THE PROFILE GRADE OF ALL ENTRANCES SHALL EXTEND FROM THE SHOULDER BREAK TO THE R.O.W. LINE.

ANY REFERENCE TO A STANDARD IN THESE PLANS SHALL BE INTERPRETED TO MEAN THE EDITION AS INDICATED BY THE SUB-NUMBER LISTED IN THE INDEX OF SHEETS OR THE COPY OF THE STANDARD INCLUDED IN THE SPECIAL PROVISIONS.

EXISTING UTILITIES SHOWN ARE LOCATED FROM SURFACE OBSERVATIONS OR INFORMATION PROVIDED BY THE RESPECTIVE UTILITIES AND MUST BE CONSIDERED APPROXIMATE. THERE MAY BE OTHERS, THE EXACT LOCATION OF WHICH ARE UNKNOWN AND NOT SHOWN. THE CONTRACTOR WILL BE RESPONSIBLE FOR NOTIFYING THE RESPECTIVE UTILITIES BEFORE WORK IS BEGUN. FIELD MARKING OF UNDERGROUND UTILITIES MAY BE OBTAINED BY PROVIDING A MINIMUM OF 48 HOURS ADVANCE NOTICE THROUGH THE J.U.L.I.E. SYSTEM BY CALLING 1-800-892-0123, OR BY DIRECT CONTACT WITH NON-MEMBERS OF J.U.L.I.E. SEE SPECIAL PROVISIONS FOR CONTACT INFORMATION OF UTILITIES.

THE NOMINAL THICKNESS FOR AGGREGATE SURFACE COURSE IS SHOWN ON THE TYPICAL SECTIONS, STANDARDS, SCHEDULES, OR SPECIAL DETAILS. THE CONSTRUCTED THICKNESS OF THE ABOVE ITEM SHALL NOT BE LESS THAN 90 PERCENT OF THE NOMINAL THICKNESS AT ANY LOCATION.

FACTORS USED FOR QUANTITY CALCULATIONS ARE AS FOLLOWS:

STONE DUMPED RIPRAP	130 POUNDS/CU. FT.
ALL AGGREGATES	2.1 TONS/CU. YD.

UTILITIES

ELECTRIC
CLAY ELECTRIC CO-OP
PH. (618) 662-2171

TELEPHONE
WABASH TELEPHONE
PH. (618) 665-3311

OTHER
CANADIAN NATIONAL RAILROAD
MR. HARDY TAYLOR/MATTOON, IL.
PH. (217) 238-2443

SUMMARY OF QUANTITIES, TYPICAL SECTIONS, AND GENERAL NOTES
TR 293 BRIDGE OVER CN / IC RAILROAD
SECTION 96-10120-01-BR
CLAY COUNTY, ILLINOIS

Sheet 2 of 13
Job No. 51005

04/03/2007

RHUTASEL and ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS

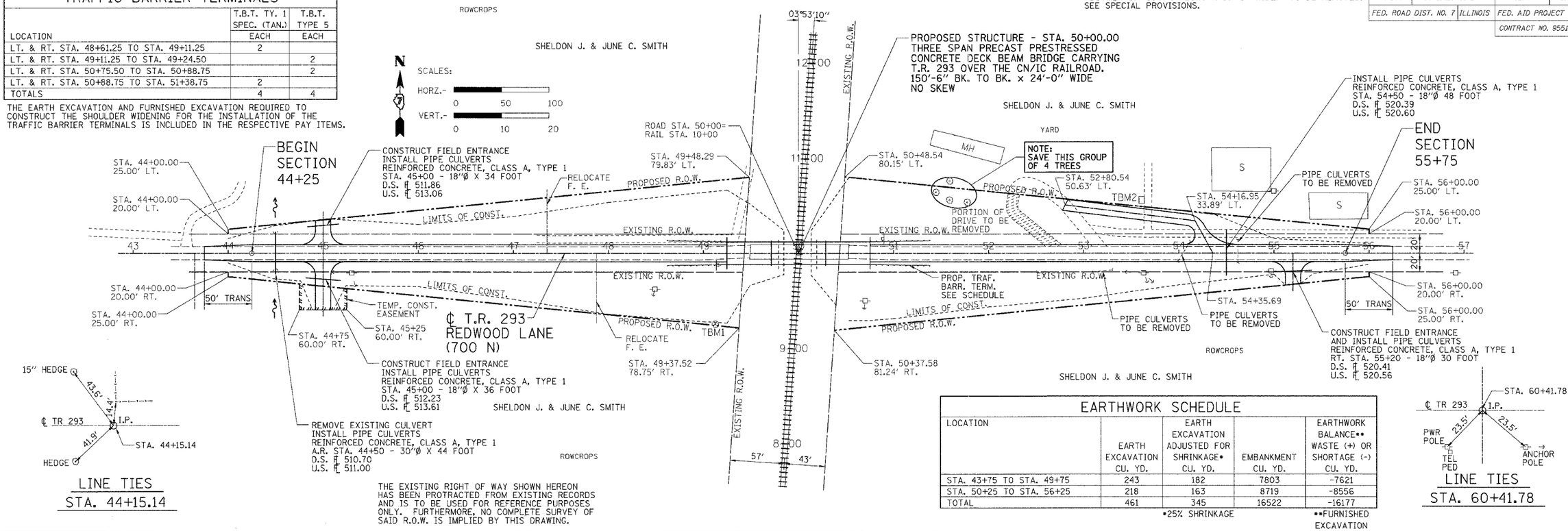
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	3
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		
		CONTRACT NO. 95514		

TRAFFIC BARRIER TERMINALS

LOCATION	T.B.T. TY. 1 SPEC. (TAN.) EACH	T.B.T. TYPE 5 EACH
LT. & RT. STA. 48+61.25 TO STA. 49+11.25	2	
LT. & RT. STA. 49+11.25 TO STA. 49+24.50		2
LT. & RT. STA. 50+75.50 TO STA. 50+88.75		2
LT. & RT. STA. 50+88.75 TO STA. 51+38.75	2	
TOTALS	4	4

THE EARTH EXCAVATION AND FURNISHED EXCAVATION REQUIRED TO CONSTRUCT THE SHOULDER WIDENING FOR THE INSTALLATION OF THE TRAFFIC BARRIER TERMINALS IS INCLUDED IN THE RESPECTIVE PAY ITEMS.

EXISTING STRUCTURE: SEVEN (7) SPAN TIMBER BRIDGE WITH TIMBER DECK ON TIMBER PILE BENT PIERS AND ABUTMENTS. 104'-0" LONG x 16'-0" WIDE. TO BE REMOVED. SEE SPECIAL PROVISIONS.



LINE TIES
STA. 44+15.14

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

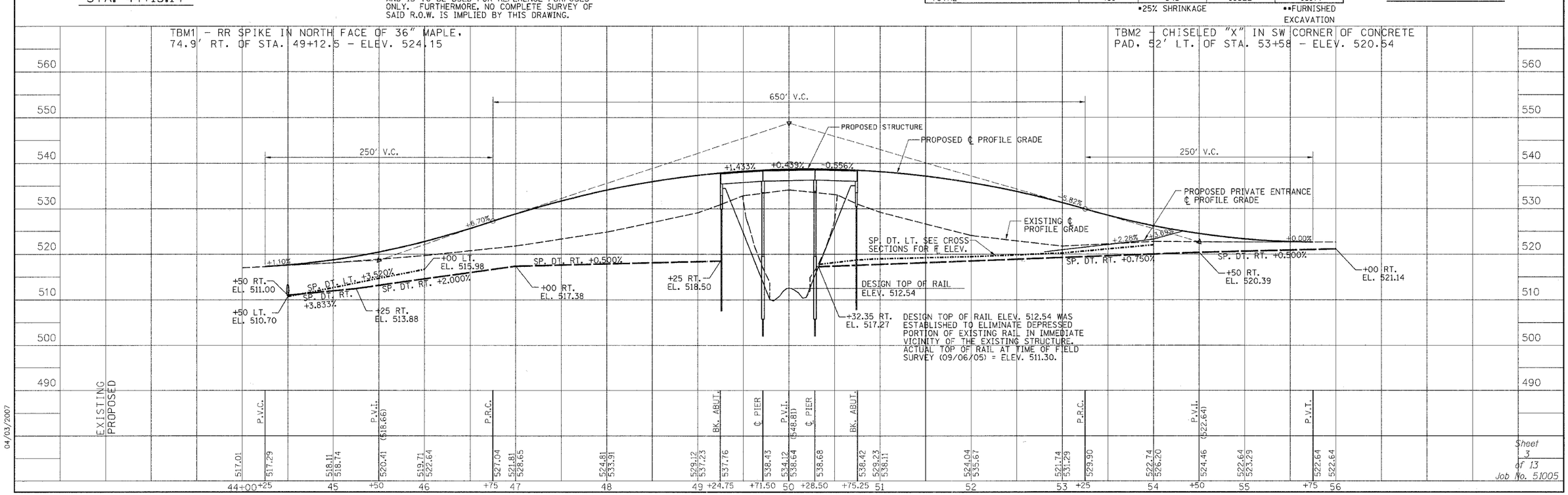
EARTHWORK SCHEDULE

LOCATION	EARTH EXCAVATION CU. YD.	EARTH EXCAVATION ADJUSTED FOR SHRINKAGE• CU. YD.	EMBANKMENT CU. YD.	EARTHWORK BALANCE•• WASTE (+) OR SHORTAGE (-) CU. YD.
STA. 43+75 TO STA. 49+75	243	182	7803	-7621
STA. 50+25 TO STA. 56+25	218	163	8719	-8556
TOTAL	461	345	16522	-16177

•25% SHRINKAGE

••FURNISHED EXCAVATION

LINE TIES
STA. 60+41.78

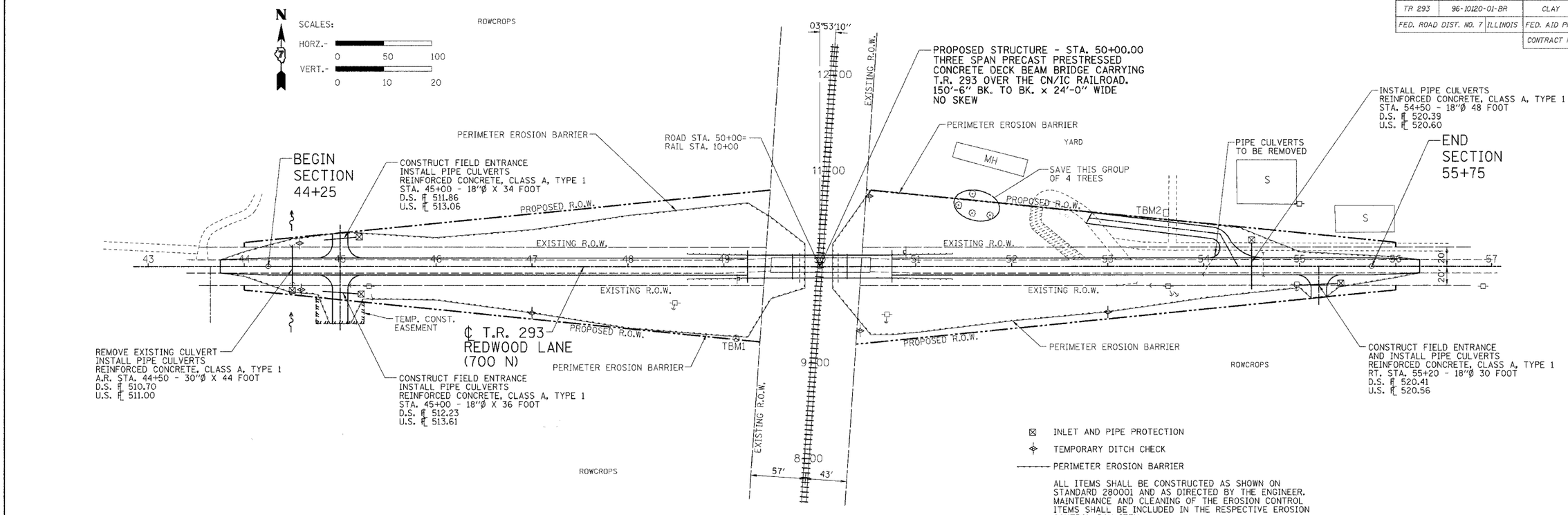


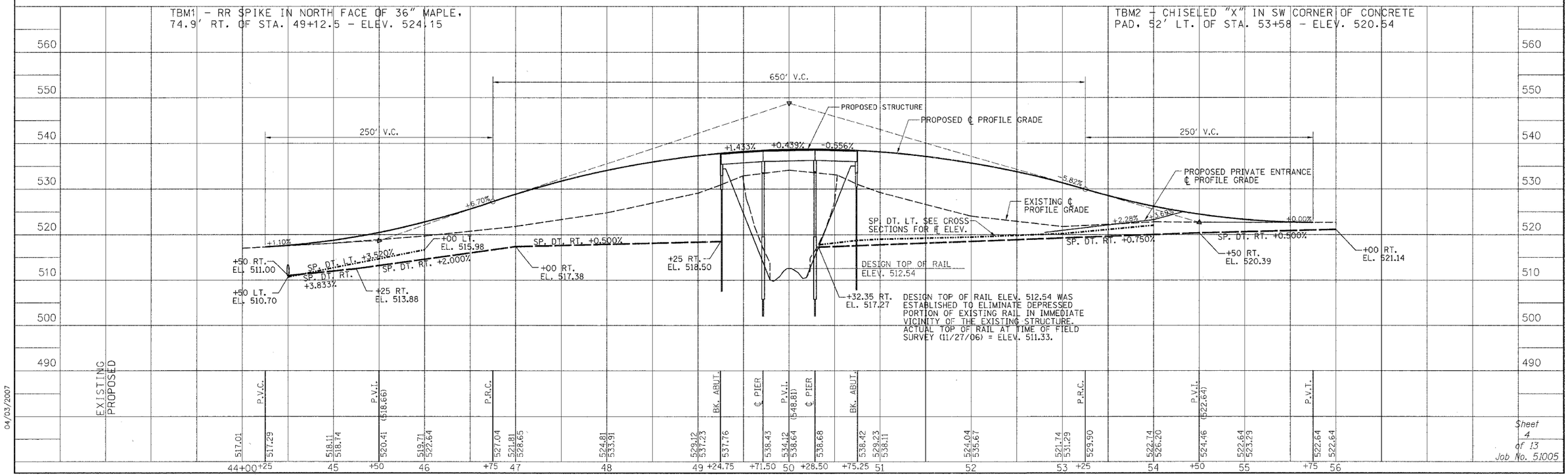
04/03/2007

Sheet 3 of 13
Job No. 5.1005

PLAN AND PROFILE OF ROADWAY PROPOSED BRIDGE OVER CN/IC RAILROAD
TR 293 SECTION 96-10120-01-BR CLAY COUNTY, ILLINOIS

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	4
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		
		CONTRACT NO. 95514		

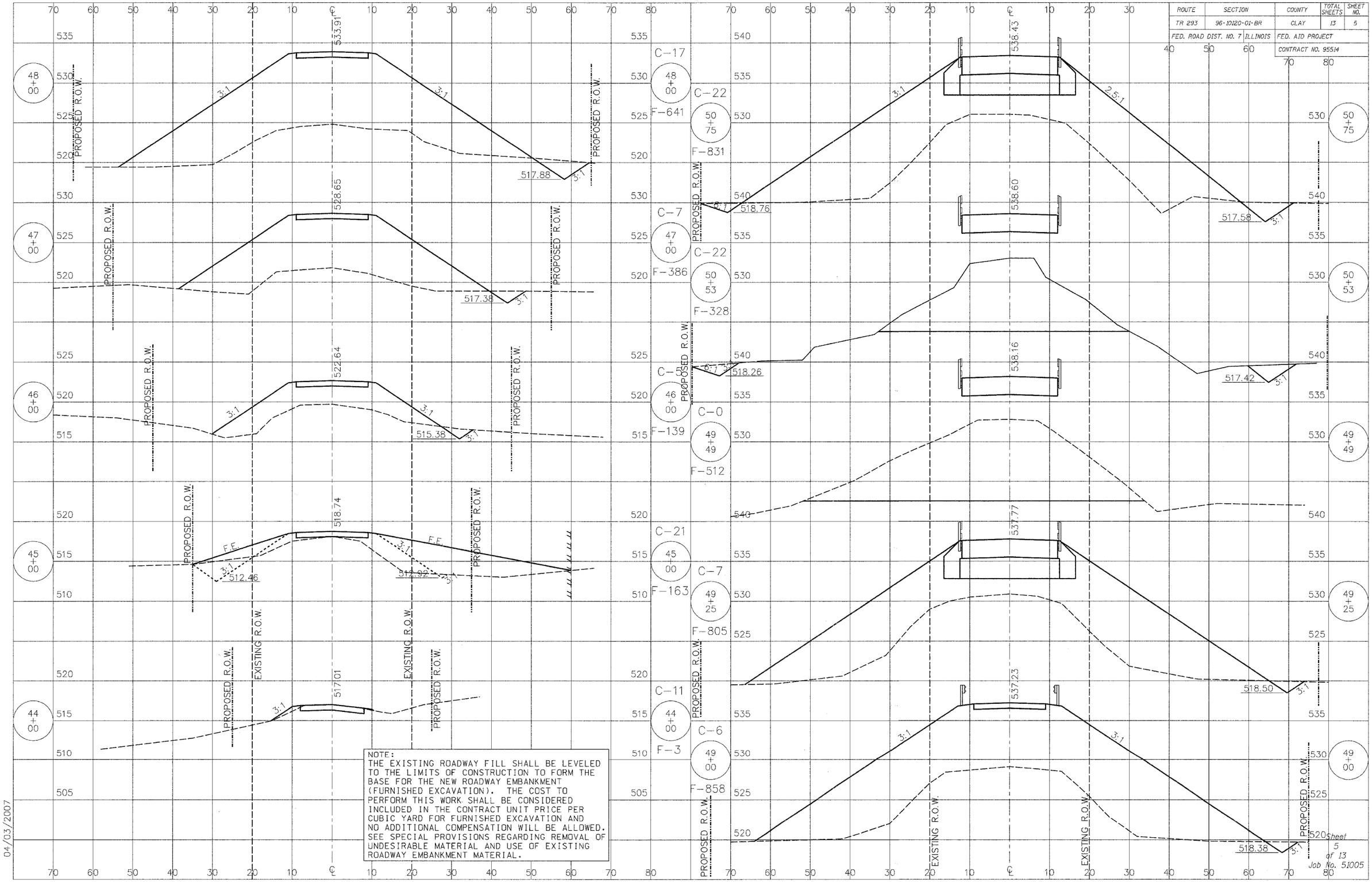




04/03/2007

EROSION CONTROL PLAN PROPOSED BRIDGE OVER CN/IC RAILROAD
TR 293 SECTION 96-10120-01-BR CLAY COUNTY, ILLINOIS

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	5
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		
		CONTRACT NO. 95514		

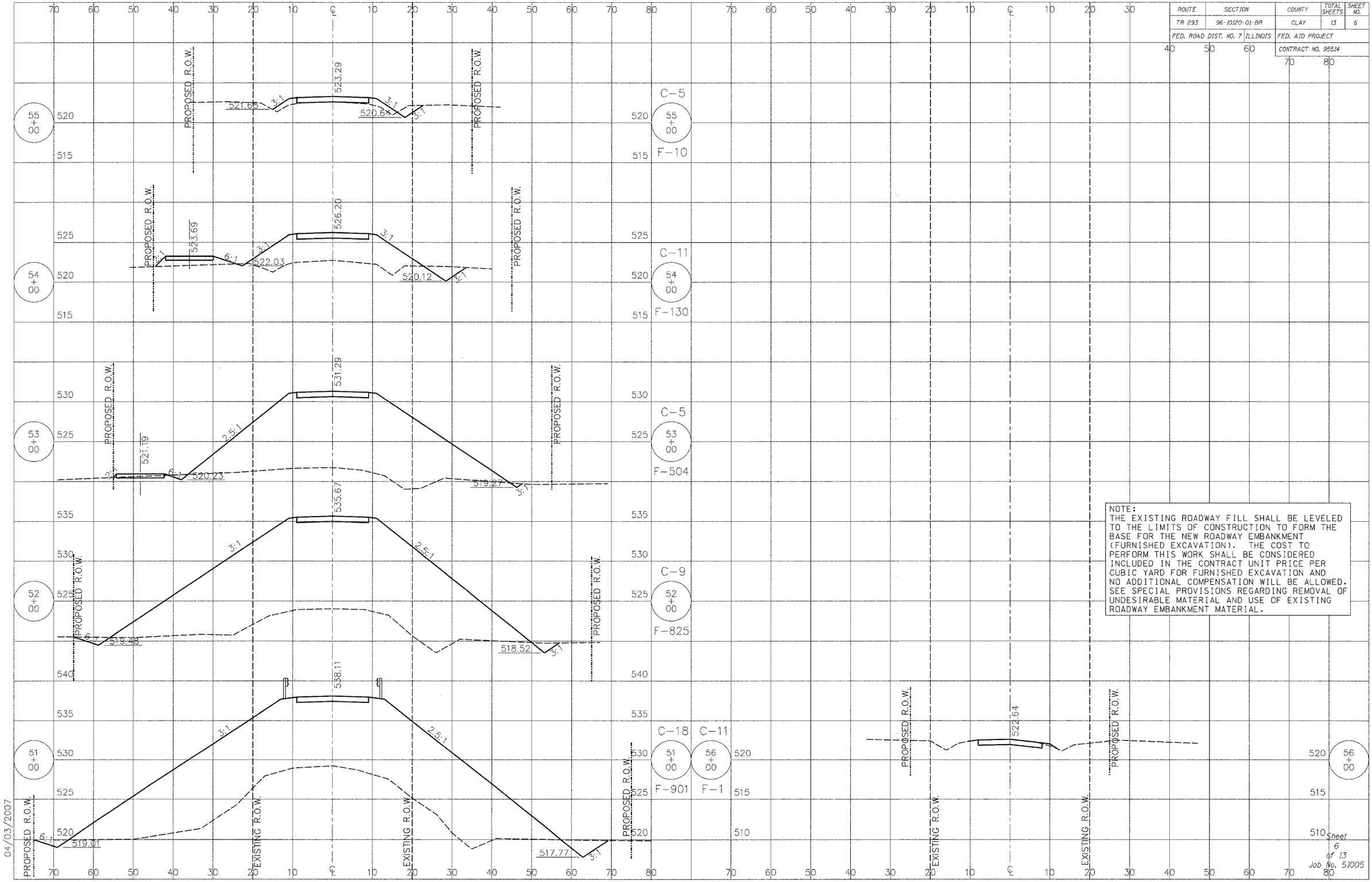


NOTE:
THE EXISTING ROADWAY FILL SHALL BE LEVELED TO THE LIMITS OF CONSTRUCTION TO FORM THE BASE FOR THE NEW ROADWAY EMBANKMENT (FURNISHED EXCAVATION). THE COST TO PERFORM THIS WORK SHALL BE CONSIDERED INCLUDED IN THE CONTRACT UNIT PRICE PER CUBIC YARD FOR FURNISHED EXCAVATION AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. SEE SPECIAL PROVISIONS REGARDING REMOVAL OF UNDESIRABLE MATERIAL AND USE OF EXISTING ROADWAY EMBANKMENT MATERIAL.

04/03/2007

CROSS SECTIONS OF ROADWAY PROPOSED BRIDGE OVER CN/IC RAILROAD
TR 293 SECTION 96-10120-01-BR CLAY COUNTY, ILLINOIS

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	6
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		
		CONTRACT NO. 95514		

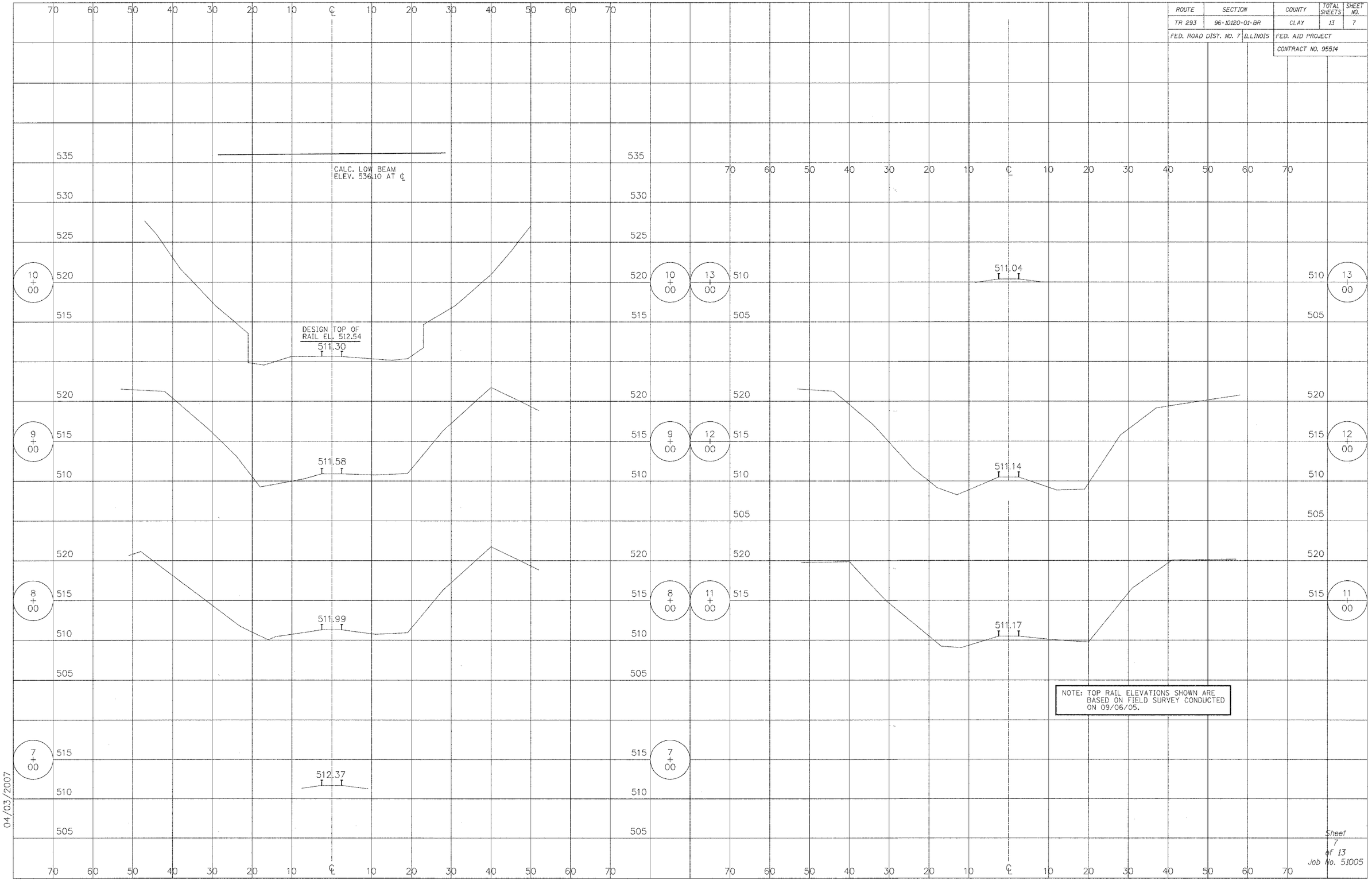


NOTE:
THE EXISTING ROADWAY FILL SHALL BE LEVELED TO THE LIMITS OF CONSTRUCTION TO FORM THE BASE FOR THE NEW ROADWAY EMBANKMENT (FURNISHED EXCAVATION). THE COST TO PERFORM THIS WORK SHALL BE CONSIDERED INCLUDED IN THE CONTRACT UNIT PRICE PER CUBIC YARD FOR FURNISHED EXCAVATION AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. SEE SPECIAL PROVISIONS REGARDING REMOVAL OF UNDESIRABLE MATERIAL AND USE OF EXISTING ROADWAY EMBANKMENT MATERIAL.

04/03/2007

CROSS SECTIONS OF ROADWAY PROPOSED BRIDGE OVER CN/IC RAILROAD
TR 293 SECTION 96-10120-01-BR CLAY COUNTY, ILLINOIS

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	7
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		
		CONTRACT NO. 95514		



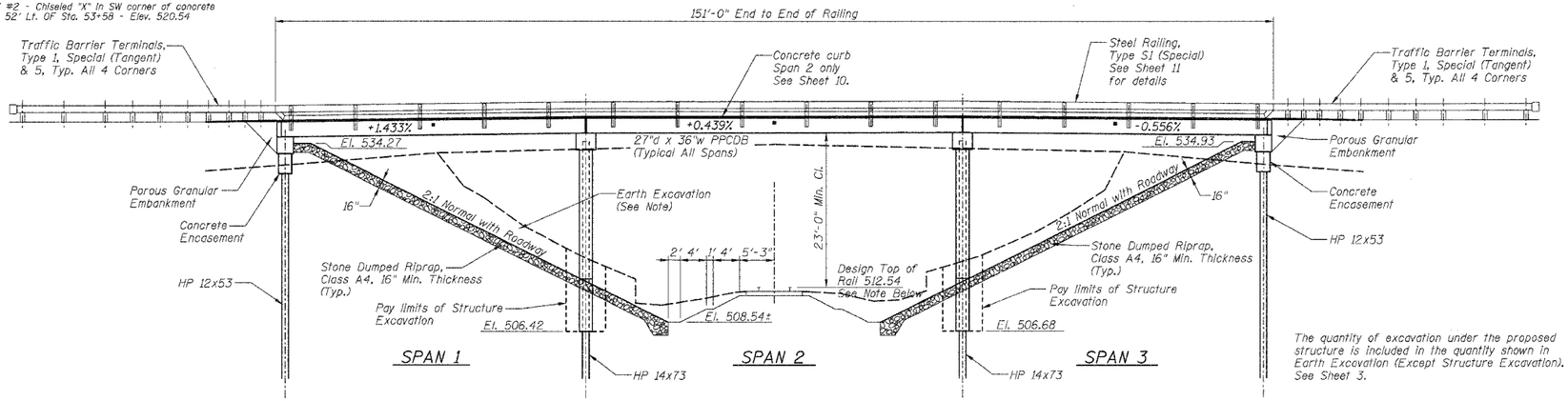
04/03/2007

Sheet 7 of 13
Job No. 51005

CROSS SECTIONS OF RAILROAD PROPOSED BRIDGE OVER CN/IC RAILROAD
TR 293 SECTION 96-10120-01-BR CLAY COUNTY, ILLINOIS

TBM #1 - RR Spike in north face of 36" Maple. 74.9' Rt. of Sta. 49+12.5 - Elev. 524.15

TBM #2 - Chiseled "X" in SW corner of concrete pad, 52' Lt. OF Sta. 53+58 - Elev. 520.54

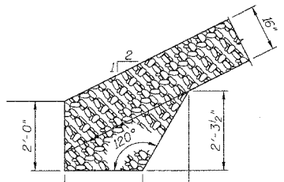


ELEVATION

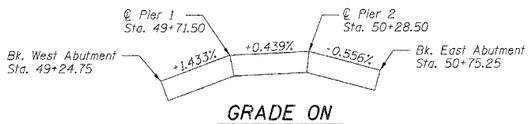
Design Top of Rail Elev. 512.54 was established to eliminate a depressed portion of the existing rail in the immediate vicinity of the existing structure. Actual top of rail at time of field survey (09/06/05) = Elev. 511.30

Final ditch grades to be established in the field by Illinois Central Railroad Engineers. Elevations shown are standard for Illinois Central Railroad road bed cross section Drawing No. 185.

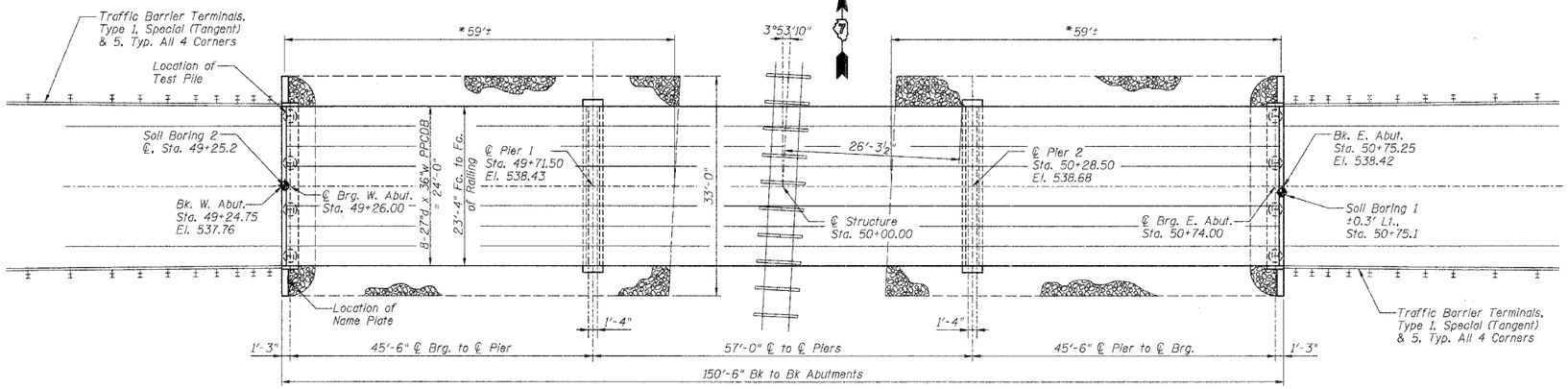
The quantity of excavation under the proposed structure is included in the quantity shown in Earth Excavation (Except Structure Excavation). See Sheet 3.



RIPRAP ANCHOR DETAIL



GRADE ON STRUCTURE



PLAN

SEISMIC DATA

Seismic Performance Category (SPC) = A
Bedrock Acceleration Coefficient (A) = 0.09g
Site Coefficient (S) = 1.0

DESIGN SPECIFICATIONS

AASHTO - 2002 17th Edition

LOADING HS 20-44

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

DESIGN STRESSES

FIELD UNITS

f'_c = 3,500 psi
f_y = 60,000 psi

PRECAST PRESTRESSED UNITS

f'_c = 5,000 psi
f'_{ci} = 4,000 psi
f'_s = 270,000 psi (½"ϕ strands)
f'_{si} = 189,000 psi (½"ϕ strands)

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

GARY L. HAHN 81-4853 LICENSED STRUCTURAL ENGINEER STATE OF ILLINOIS

Gary L. Hahn 04.03.2007

GARY L. HAHN
CENTRALIA, ILLINOIS
ILLINOIS LICENSED STRUCTURAL ENGINEER NO. 81-4853
EXPIRES NOV. 30, 2008

04/03/2007

RHUTASEL and ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS

Existing Structure: Seven (7) span bridge with timber deck on timber pile bent piers and abutments. 104' long x 16' wide. To be removed. See Special Provisions.

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	8
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL AID PROJECT		
		CONTRACT NO. 95514		

BILL OF MATERIALS (BRIDGE ONLY)

ITEM	UNIT	SUB	SUPER	TOTAL
POROUS GRANULAR EMBANKMENT	TON	34	-	34
STONE DUMPED RIPRAP, CLASS A4	TON	345	-	345
REMOVAL OF EXISTING STRUCTURES	EACH	-	1	1
STRUCTURE EXCAVATION	CU YD	150	-	150
CONCRETE STRUCTURES	CU YD	152.6	-	152.6
CONCRETE ENCASEMENT	CU YD	2.8	-	2.8
PRECAST PRESTRESSED CONCRETE DECK BEAMS (27" DEPTH)	SQ FT	-	3576	3576
REINFORCEMENT BARS	POUND	14120	-	14120
STEEL RAILING, TYPE S1 (SPECIAL)	FOOT	-	302	302
FURNISHING STEEL PILES HP12X53	FOOT	361	-	361
FURNISHING STEEL PILES HP14X73	FOOT	464	-	464
DRIVING PILES	FOOT	825	-	825
TEST PILE STEEL HP12X53	EACH	1	-	1
TEST PILE STEEL HP14X73	EACH	2	-	2
NAME PLATES	EACH	1	-	1
RAILROAD PROTECTIVE LIABILITY INSURANCE	L SUM	-	1	1

GENERAL NOTES

See Specifications for Soil Borings.

See Section 502 of the Standard Specifications for Structural Excavation.

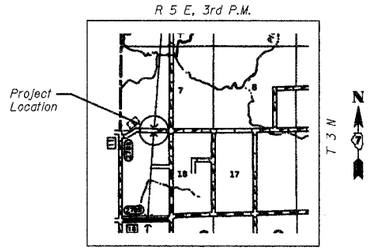
The Contractor shall drive one (1) Steel HP12X53 Test Pile in a production location at the West Abutment and one (1) Steel HP14X73 Test Pile in a production location at each Pier as directed by the Engineer before ordering the remainder of the piles.

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

Reinforcement Bars shall conform to AASHTO M-31 or M-322, Grade 60.

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

Do not scale these drawings.



LOCATION SKETCH

CN / IC RAILROAD
BUILT 200_ BY
CLAY COUNTY
SEC. 96-10120-01-BR
LOADING HS-20
STRUCTURE NO. 013-9918

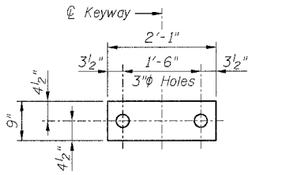
NAME PLATE

(See State Standard 515001 for details)

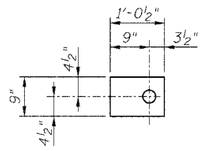
GENERAL PLAN AND ELEVATION
TR 293 BRIDGE OVER CN / IC RAILROAD
SECTION 96-10120-01-BR
CLAY COUNTY, ILLINOIS

Sheet 8 of 13
Job No. 51005

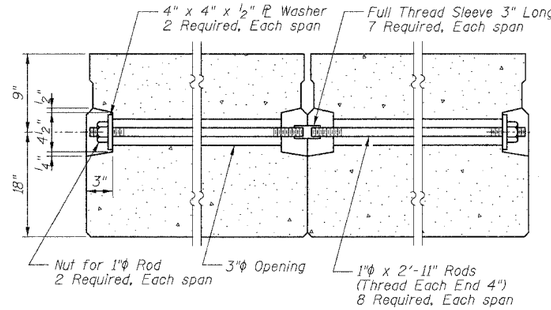
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	9
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL AID PROJECT		
		CONTRACT NO. 95514		



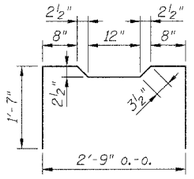
FABRIC BEARING PAD
(Interior)



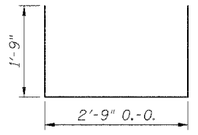
FABRIC BEARING PAD
(Exterior)



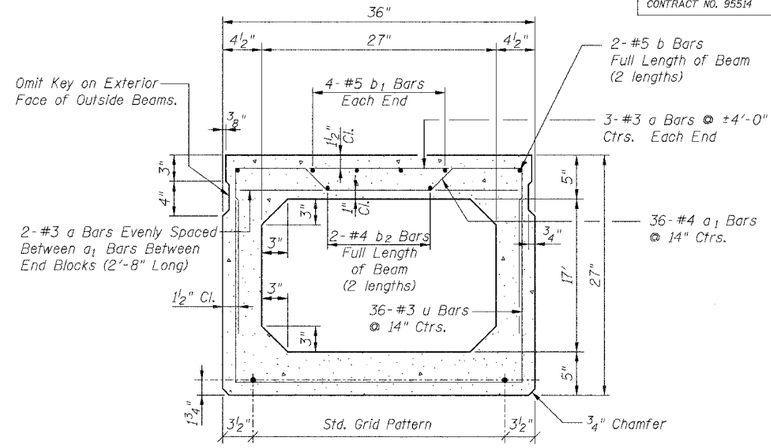
TYPICAL TRANSVERSE TIE ASSEMBLY



BAR a_1



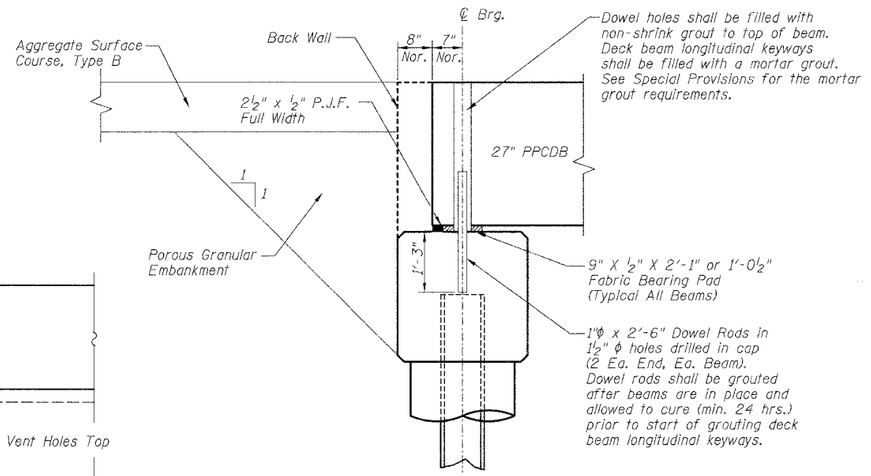
BARS u & u_1



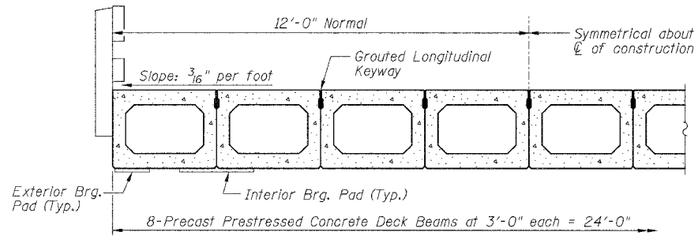
TYPICAL SECTION

10-½"φ Strands Each Strand Stressed to 28,900 Lbs.
8 - Strands 1¾" up.
2 - Strands 3¼" up

Note: Place Strands Symmetrically about ℄ of Beam.

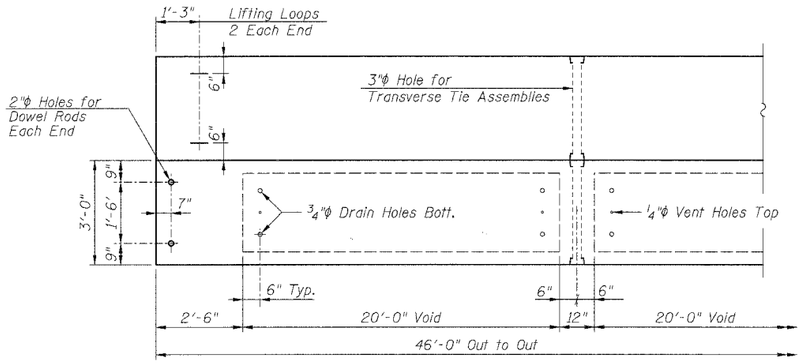


FIXED BEARING
ABUTMENT

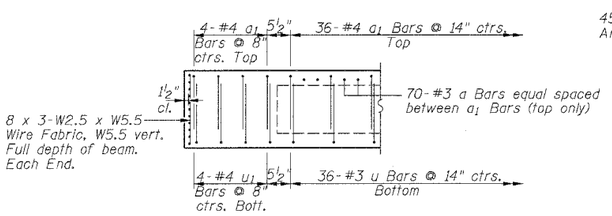


HALF CROSS SECTION

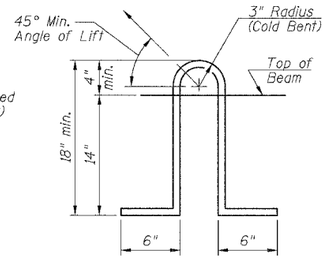
See Sheet 11 for the details showing the spacing and mounting of posts and rails to the PPCDB.



PLAN



END ELEVATION



LIFTING LOOP DETAIL

NOTES

Prestressing steel shall be uncoated high strength, stress-relieved 7-wire strand, Grade 270.

The nominal diameter shall be ½" and the nominal cross-sectional area shall be 0.153 sq. in.

Lifting loops shall be 3 - ½"φ-270 ksi strands, as shown.

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

Non prestressing steel shall conform to ASTM A 706 (IL MOD), Grade 60.

The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two ⅛" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.

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

Required Release Strength, f'ci, shall be 4,000 p.s.i.

An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted. However, the initial prestressing force applied to each strand shall be the same as for the stress relieved strands (28,900 lbs.)

BILL OF MATERIAL FOR ONE BEAM

Bar	No.	Size	Length	Shape
a	76	#3	2'-8"	——
a_1	44	#4	6'-1"	⌐¬
b	4	#5	24'-3"	——
b_1	8	#5	9'-3"	——
b_2	4	#4	24'-3"	——
u	36	#3	6'-3"	⌐_¬
u_1	8	#4	6'-3"	⌐_¬
Precast Prestressed Concrete Deck Beams			Sq. Ft.	138
Reinforcement Bars			Pound	620
Total Weight Ea. Beam			Pound	28200

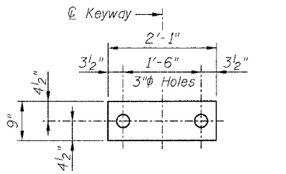
SPANS 1 AND 3
PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
TR 293 BRIDGE OVER CN / IC RAILROAD
SECTION 96-10120-01-BR
CLAY COUNTY, ILLINOIS

Sheet 9 of 13
Job No. 51005

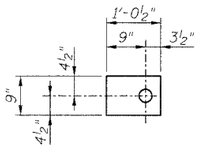
04/03/2007

RHUTASEL and ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS

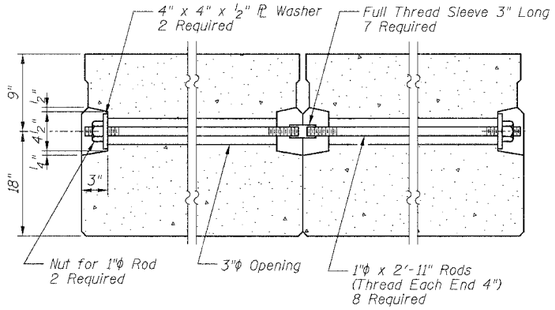
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	10
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL AID PROJECT		
		CONTRACT NO. 95514		



FABRIC BEARING PAD
(Interior)

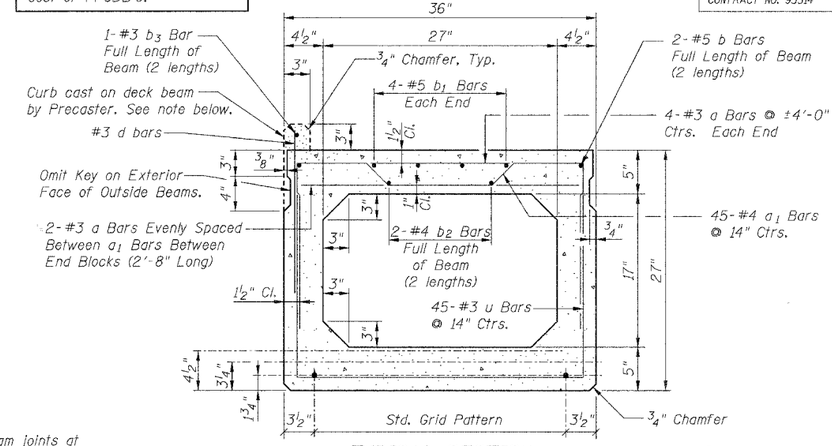


FABRIC BEARING PAD
(Exterior)



TYPICAL TRANSVERSE TIE ASSEMBLY

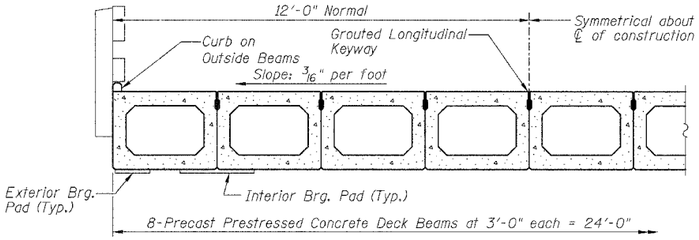
Note:
Cast curb on outside beams of Span 2 only. Cost included in cost of PPCDB's.



TYPICAL SECTION

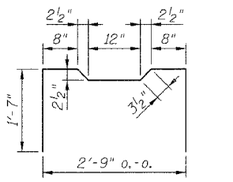
15 - ½"ϕ Strands Each Strand Stressed to 28,900 Lbs.
6 - Strands 1¾" up, 7 - Strands 3¼" up,
2 - Strands 4½" up

Note: Place Strands Symmetrically about ℄ of Beam.

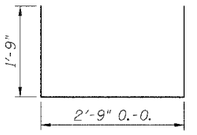


HALF CROSS SECTION

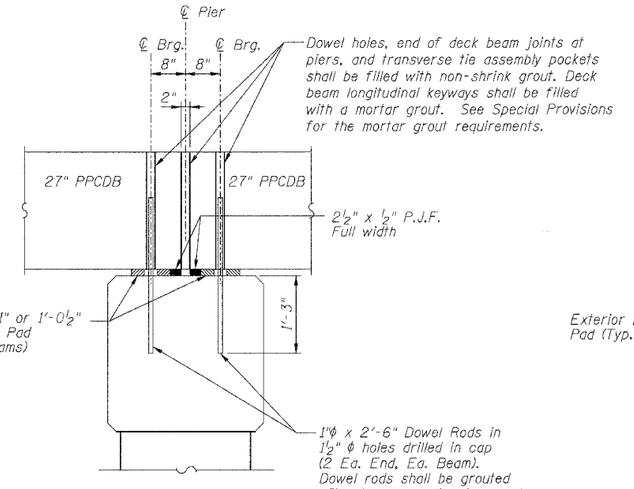
See Sheet 11 for the details showing the spacing and mounting of posts and rails to the PPCDB.



BAR a_1

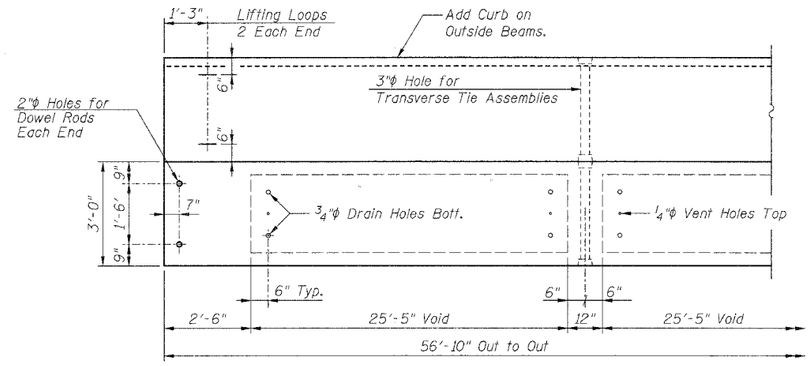


BARS u & u_1

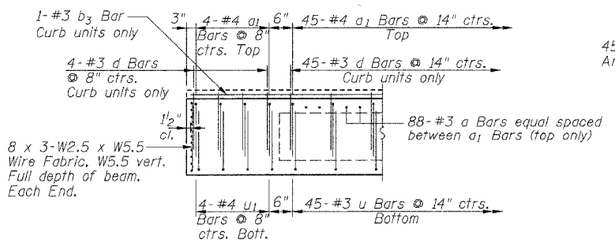


Dowel holes, end of deck beam joints at piers, and transverse tie assembly pockets shall be filled with non-shrink grout. Deck beam longitudinal keyways shall be filled with a mortar grout. See Special Provisions for the mortar grout requirements.

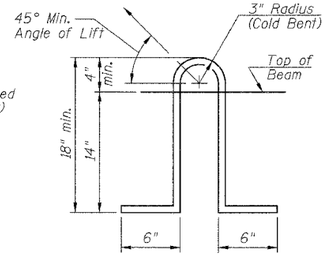
FIXED BEARING
PIER



PLAN



END ELEVATION



LIFTING LOOP DETAIL

NOTES

Prestressing steel shall be uncoated high strength, stress-relieved 7-wire strand, Grade 270.

The nominal diameter shall be ½" and the nominal cross-sectional area shall be 0.153 sq. in.

Lifting loops shall be 3 - ½"ϕ-270 ksi strands, as shown.

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

Non prestressing steel shall conform to ASTM A 706 (IL MOD), Grade 60.

The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two ⅛" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.

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

Required Release Strength, f'ci, shall be 4,000 p.s.i.

An equal substitution of the low-relaxation strands for the stress-relieved strands will be permitted. However, the initial prestressing force applied to each strand shall be the same as for the stress relieved strands (28,900 lbs.)

BILL OF MATERIAL
FOR ONE BEAM

	Bar	No.	Size	Length	Shape
	a	96	#3	2'-8"	——
	a_1	53	#4	6'-1"	
	b	4	#5	29'-9"	——
	b_1	8	#5	11'-6"	——
	b_2	4	#4	29'-9"	——
*	b_3	2	#3	29'-9"	——
*	d	53	#3	1'-3"	——
	u	45	#3	6'-3"	
	u_1	8	#4	6'-3"	
	Precast Prestressed Concrete Deck Beams		Sq. Ft.	171	
	Reinforcement Bars		Pound	750	
	Total Weight Ea. Beam		Pound	34210	
*	Reinforcement Bars		Pound	800	
*	Total Weight Ea. Beam		Pound	34720	

* Curb units

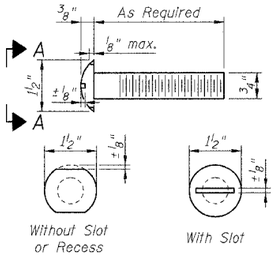
SPAN 2
PRECAST PRESTRESSED CONCRETE DECK BEAM DETAILS
TR 293 BRIDGE OVER CN / IC RAILROAD
SECTION 96-10120-01-BR
CLAY COUNTY, ILLINOIS

Sheet 10 of 13
Job No. 51005

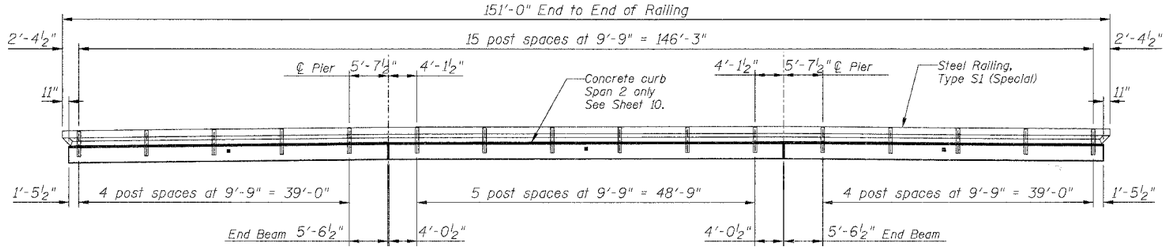
04/03/2007

RHUTASEL and ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS

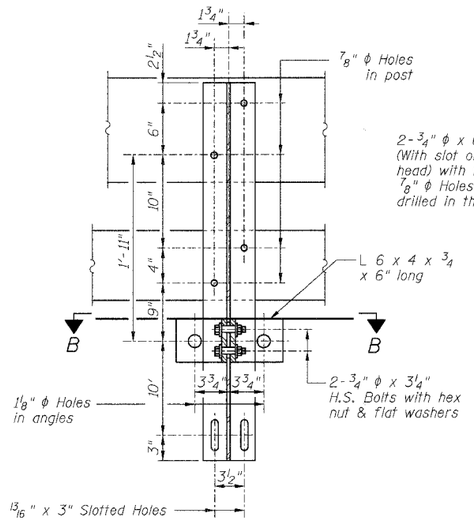
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	11
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL AID PROJECT		
		CONTRACT NO. 95514		



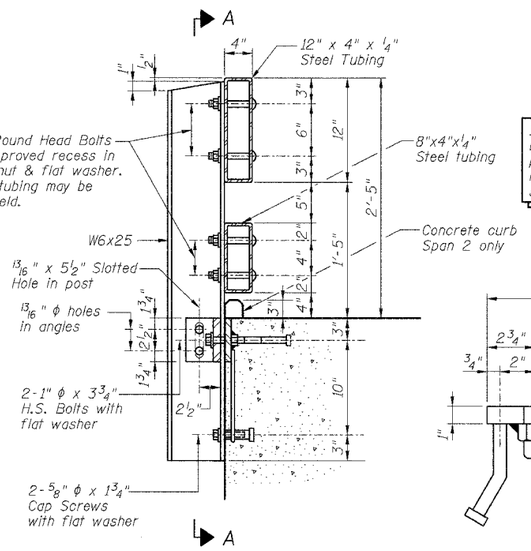
VIEW A-A
ROUND HEAD BOLT



RAIL POST SPACING

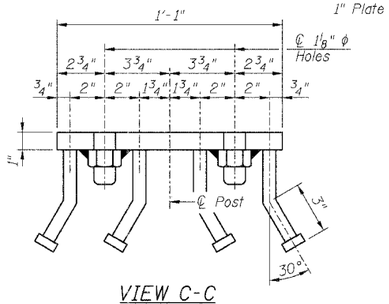


SECTION A-A

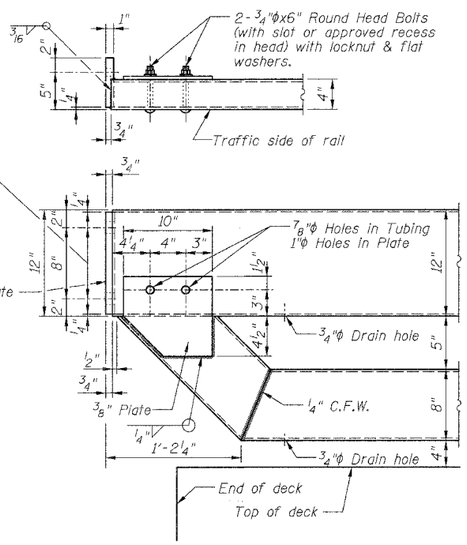


SECTION AT RAIL POST

1 1/8" ϕ Holes for 1" ϕ x 4" Machine bolts. Supplier of steel railing to provide 2 bolts, flat washers and locknuts for guard rail connection shown on Std. No. 631026.



VIEW C-C



END OF RAIL DETAILS

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

Railing shall be in accordance with Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for STEEL RAILING, TYPE S1 (SPECIAL).

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

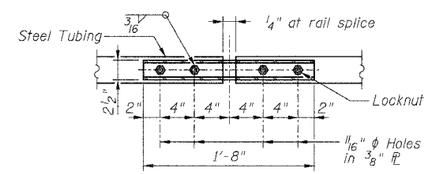
Any steel shape in contact with concrete shall receive two coats of asphalt paint conforming to Section 1060.07 Type II or place 1/8" fabric bearing pad between the steel and concrete.

The 3/4" ϕ high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened in accordance with Article 505.04(f)(2) of the Standard Specifications. The 1" ϕ 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" ϕ cap screws in bottom of the posts shall be tightened to a snug fit only.

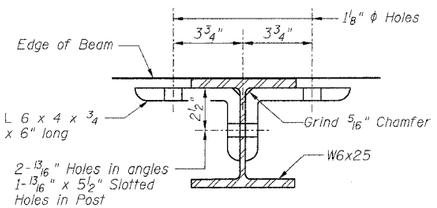
For Multi-span bridges, sufficient 1/4"x6"x1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included in the cost of STEEL RAILING, TYPE S1 (SPECIAL).

BILL OF MATERIAL

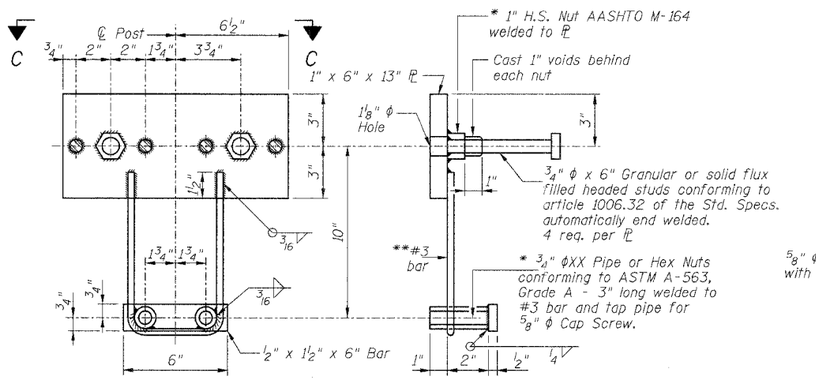
Item	Unit	Quantity
Steel Railing, Type S1 (Special)	Foot	302



PLAN-BOTT. SPLICE ℙ
TYPICAL

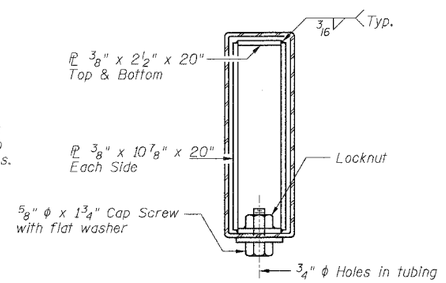


SECTION B-B



ANCHOR DEVICE

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



SECTIONS AT RAIL SPLICE

** 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".

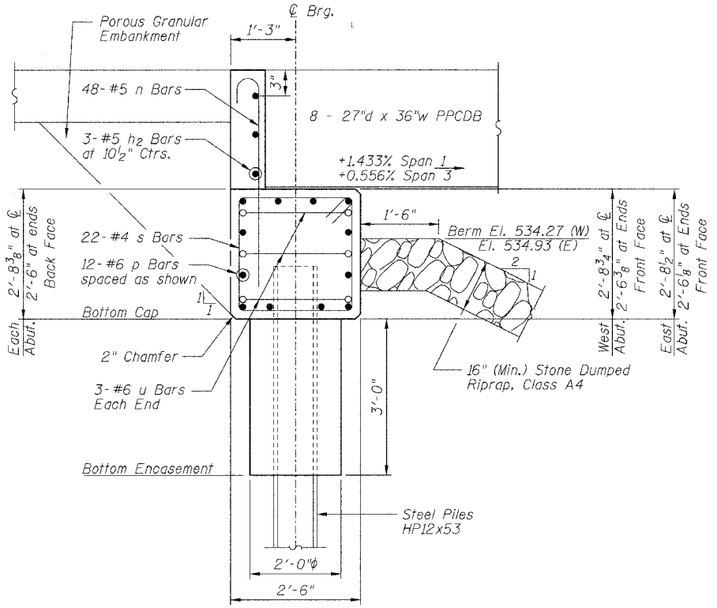
STEEL RAILING, TYPE S1 (SPECIAL) DETAILS
TR 293 BRIDGE OVER CN / IC RAILROAD
SECTION 96-10120-01-BR
CLAY COUNTY, ILLINOIS

Sheet 11 of 13
Job No. 51005

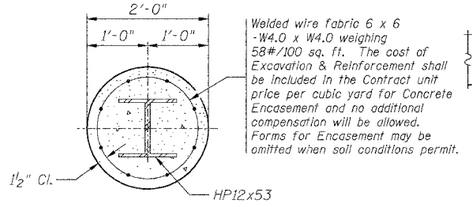
04/03/2007

RHUTASEL and ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS

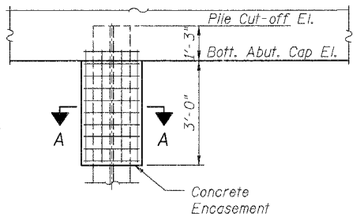
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR	CLAY	13	12
FED. ROAD DIST. NO. 7	ILLINOIS	FEDERAL AID PROJECT		
		CONTRACT NO. 95514		



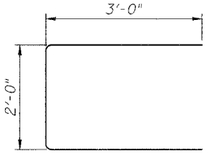
SECTION THRU ABUTMENT



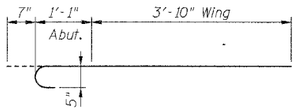
SECTION A-A



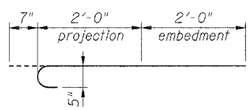
PILE ENCASEMENT DETAIL



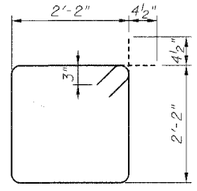
#6 u BARS



#5 h BARS



#5 n BARS



#4 s BARS

BILL OF MATERIALS
ONE ABUTMENT w/ WINGWALLS

Bar	No.	Size	Length	Shape
h	20	#5	5'-6"	
h_1	12	#5	4'-6"	
h_2	3	#5	23'-8"	
n	48	#5	4'-7"	
p	12	#6	24'-8"	
s	22	#4	9'-5"	
u	6	#6	8'-0"	
v	24	#5	4'-6"	CUT IN FIELD
Concrete Structures			Cu. Yd.	8.8
Concrete Encasement			Cu. Yd.	1.4
Reinforcement Bars			Pound	1240

PILE DATA

Type and Size: Steel HP12x53

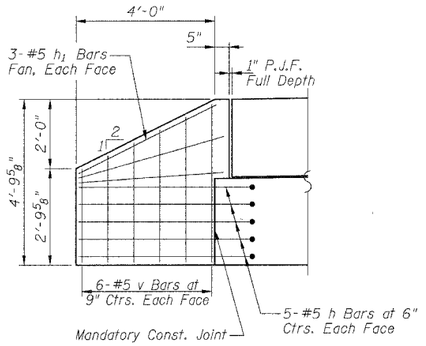
Nominal Required Bearing: 280 kips

Allowable Resistance Available: 93 kips

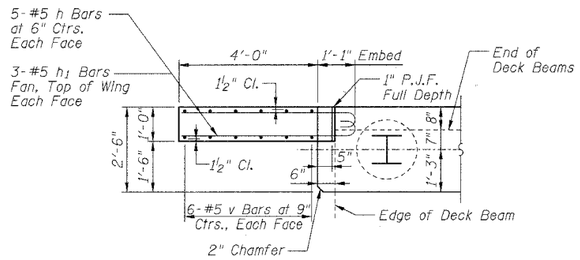
Estimated Length:
- West Abutment: 59 Foot
- East Abutment: 46 Foot

Number of Production Piles:
- West Abutment: 3 Each
- East Abutment: 4 Each

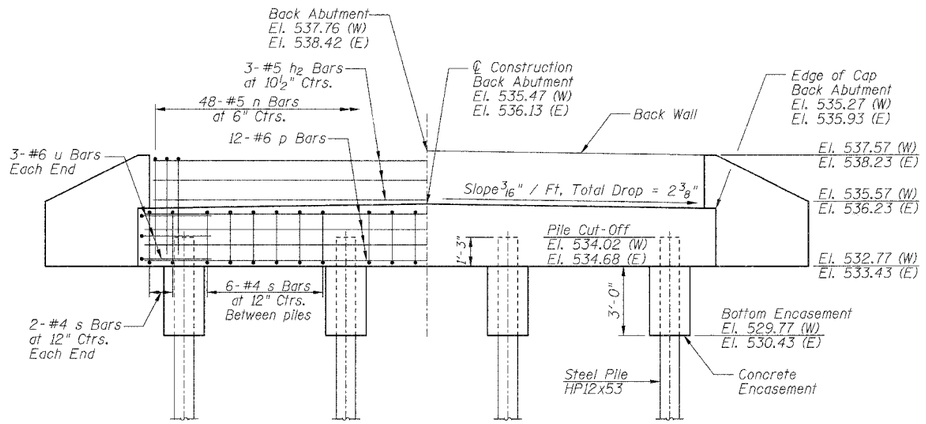
Number of Test Piles:
- West Abutment: 1 Each
- East Abutment: None



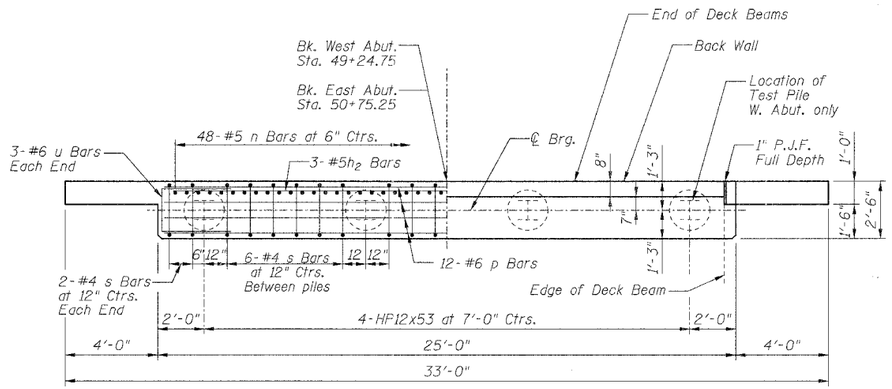
ELEVATION OF WINGWALL



WINGWALL CONNECTION DETAIL



ELEVATION



PLAN

GENERAL NOTES

All exposed edges shall have standard ¾" chamfer, unless otherwise noted.

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

Space reinforcement in cap to miss PPCDB dowel rods.

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

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

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

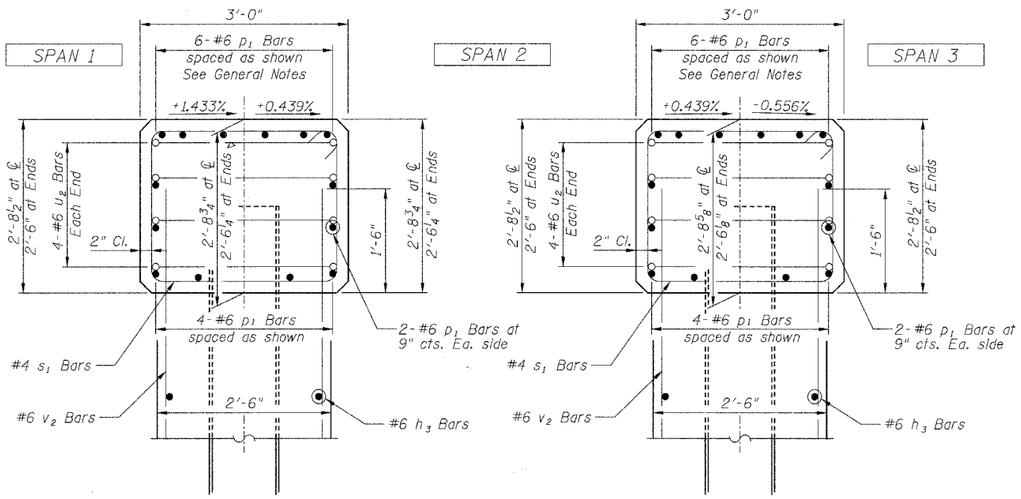
ABUTMENT AND WINGWALL DETAILS
TR 293 BRIDGE OVER CN / IC RAILROAD
SECTION 96-10120-01-BR
CLAY COUNTY, ILLINOIS

Sheet 12 of 13
Job No. 51005

04/03/2007

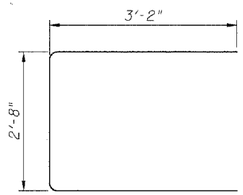
RHUTASEL and ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS
CENTRALIA, ILLINOIS FREEBURG, ILLINOIS

ROUTE	SECTION		COUNTY	TOTAL SHEETS	SHEET NO.
TR 293	96-10120-01-BR		CLAY	13	13
FED. ROAD DIST. NO. 7	ILLINOIS		FEDERAL AID PROJECT		
			CONTRACT NO. 95514		

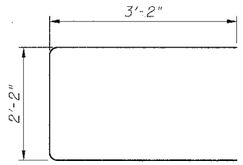


SECTION THRU PIER 1 CAP

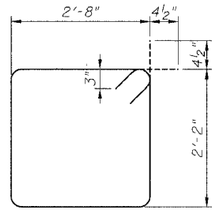
SECTION THRU PIER 2 CAP



#6 u_2 BARS

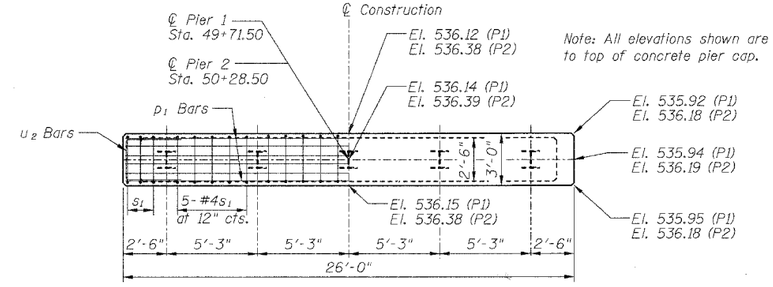


#6 u_1 BARS



#4 s_1 BARS

SPAN 1 or 3

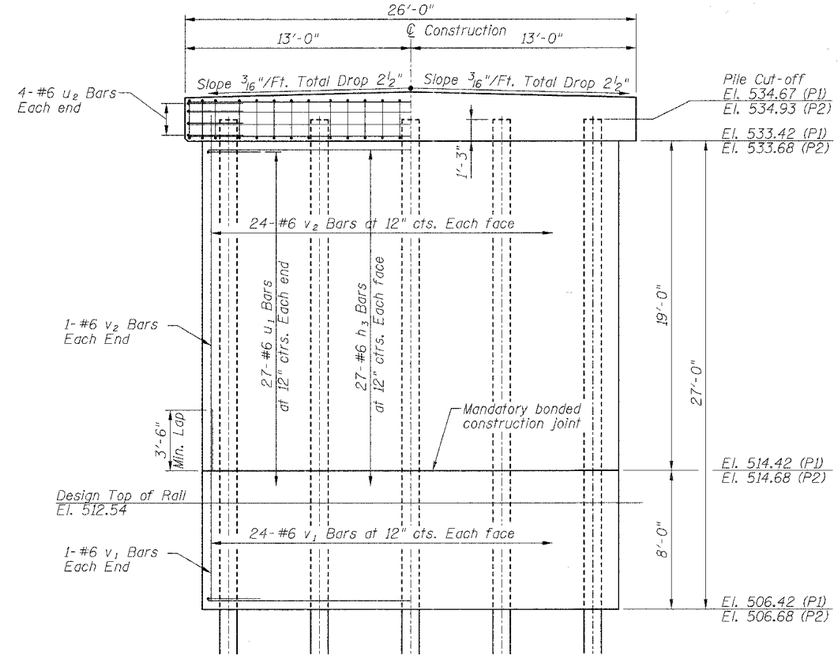


Note: All elevations shown are to top of concrete pier cap.

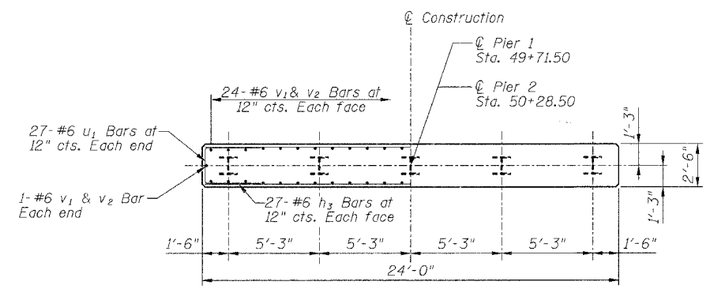
Note: See Section Thru Pier Cap for rebar details and dimensions.

SPAN 2

PLAN OF PIER CAP



ELEVATION



PLAN OF PROTECTION WALL

PILE DATA

Type and Size: Steel HP14x73

Nominal Required Bearing: 420 kips

Allowable Resistance Available: 140 kips

Estimated Length:
- Pier 1: 70 Foot
- Pier 2: 46 Foot

Number of Production Piles:
- Pier 1: 4 Each
- Pier 2: 4 Each

Number of Test Piles:
- Pier 1: 1 Each
- Pier 2: 1 Each

BILL OF MATERIALS
ONE PIER

BAR	NO.	SIZE	LENGTH	SHAPE
h_3	54	#6	23'-8"	
p_1	14	#6	25'-8"	
s_1	26	#4	10'-5"	
u_1	54	#6	8'-6"	
u_2	8	#6	9'-0"	
v_1	50	#6	11'-3"	
v_2	50	#6	20'-6"	
Concrete Structures			Cu Yd	67.5
Reinforcement Bars			Pound	5820

GENERAL NOTES

All exposed edges shall have standard ¾" chamfer, unless otherwise noted.

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

Space reinforcement in cap to miss PPCDB dowel rods.

The Contractor shall drive one (1) Steel HP14x73 Test Pile in a production pile location at each pier as directed by the Engineer before ordering the remainder of the piles.

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

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

PIER DETAILS
TR 293 BRIDGE OVER CN / IC RAILROAD
SECTION 96-10120-01-BR
CLAY COUNTY, ILLINOIS

Sheet 13 of 13
Job No. 51005

04/03/2007

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