

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 173	*	SHELBY	11	1
PROJECT BROS-173(144)				

\* 01-18116-00-BR

# STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

## PLANS FOR PROPOSED HIGHWAY BRIDGE PROGRAM PROJECT NO. BROS-173 (144) T.R. 173 OVER MUD CREEK SECTION 01-18116-00-BR SHELBY COUNTY JOB NO. C-97-142-06

### INDEX OF SHEETS

- 1 - TITLE SHEET
- 2 - SUMMARY OF QUANTITIES, DETAILS, & TYPICAL SECTIONS
- 3 - PLAN & PROFILE
- 4 & 5 - GENERAL PLAN & ELEVATION
- 6 - SUPERSTRUCTURE
- 7 - RAILING
- 8 - ABUTMENTS
- 9 - PIERS
- 10 & 11 - CROSS SECTIONS

### STANDARDS

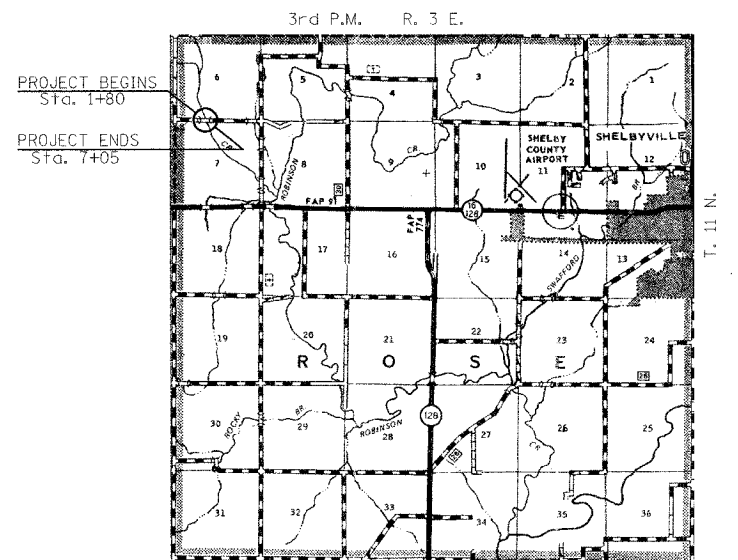
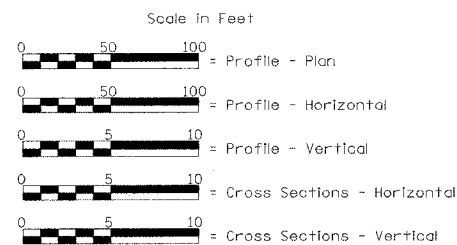
- STANDARD 000001-04
- STANDARD 280001-03
- STANDARD 515001-02
- STANDARD 635006-02
- STANDARD 702001-06
- STANDARD BLR 21-6

### DESCRIPTION

- STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- TEMPORARY EROSION CONTROL SYSTEMS
- NAME PLATE FOR BRIDGES
- REFLECTOR AND TERMINAL MARKER PLACEMENT
- TRAFFIC CONTROL DEVICES
- TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

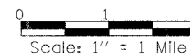
EXISTING STRUCTURE: TWO SPAN TIMBER DECK ON STEEL STRINGERS WITH CLOSED TIMBER ABUTMENTS, WINGWALLS AND PIER ON TIMBER PILES. ±63'-0" BK.-BK. ABUTMENTS, ±15'-7" CLEAR DECK WIDTH. TUBULAR STEEL RAILING. EXISTING STRUCTURE NO. 087-3133

PROPOSED STRUCTURE: THREE SPAN PRECAST PRESTRESSED CONCRETE DECK BEAMS (21") BRIDGE 108'-0" BK.-BK. ABUTMENTS, 26'-6 3/4" (SPAN 1 & 3), 49'-6 3/4" (SPAN 2), 24'-0" OUT.-OUT. DECK. OPEN CONCRETE ABUTMENTS, SOLID CONCRETE PIERS, TYPE S1 RAILING. 15° SKEW RT. FORWARD. PROPOSED STRUCTURE NO. 087-3532



LOCATION PLAN

Length of Section - 525.00 Feet = 0.099 Miles



Land Section - 6  
Land Quarter Section - S.W.  
Political Township - Rose Road District  
Functional Classification: Local Road (Non-Urban) <150 A.D.T.  
2004 ADT: 59  
2027 ADT: 75  
Design Speed: 30 M.P.H.



*Christopher P. Redman* 5/14/06  
EXPIRATION DATE: 11/30/07

APPROVED: 95-12-2002	<i>[Signature]</i> COUNTY ENGINEER
APPROVED: 05-12-2002	<i>William Reids</i> ROAD COMMISSIONER
PASSED: 114-2006	<i>Maureen Kastl</i> DISTRICT SEVEN ENGINEER OF LOCAL ROADS & STREETS
Released For: 114-2006	<i>Christopher P. Redman</i> DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	

FILE NAME: SCITTS (REV. 5/15/06)

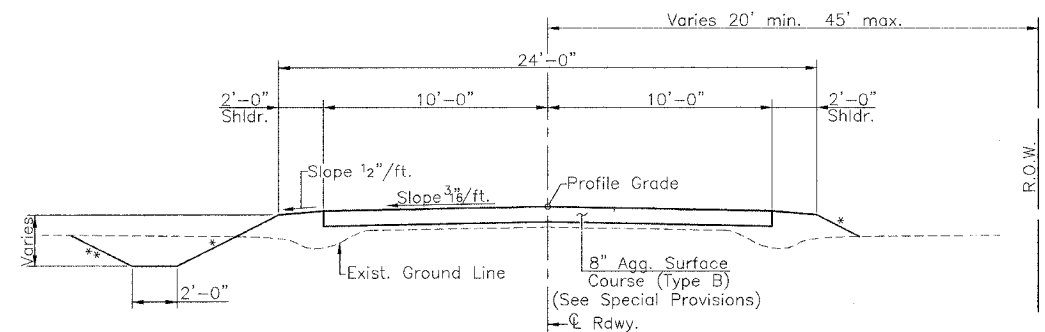
TOLL FREE  
"JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS"  
WWW.U.L.I. TELEPHONE NUMBER  
1-800-892-0123

CONTRACT NO. 95485

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 173	*	SHELBY	11	2

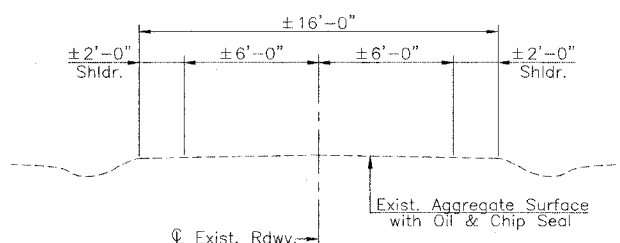
PROJECT BROS-173(144)

\* 01-18116-00-BR

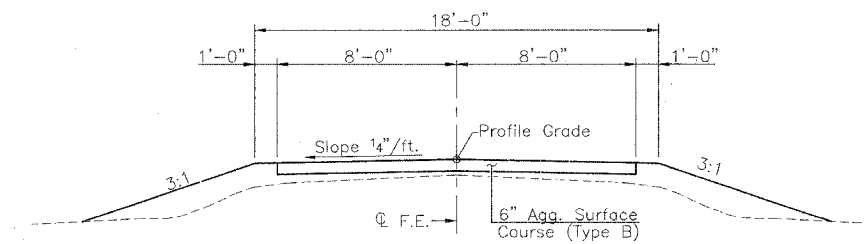


PROPOSED CROSS SECTION

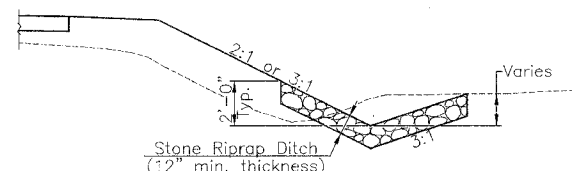
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- >6' 2:1
- \*\* Fill <math>\le 10'</math> 3:1
- >10' 2:1



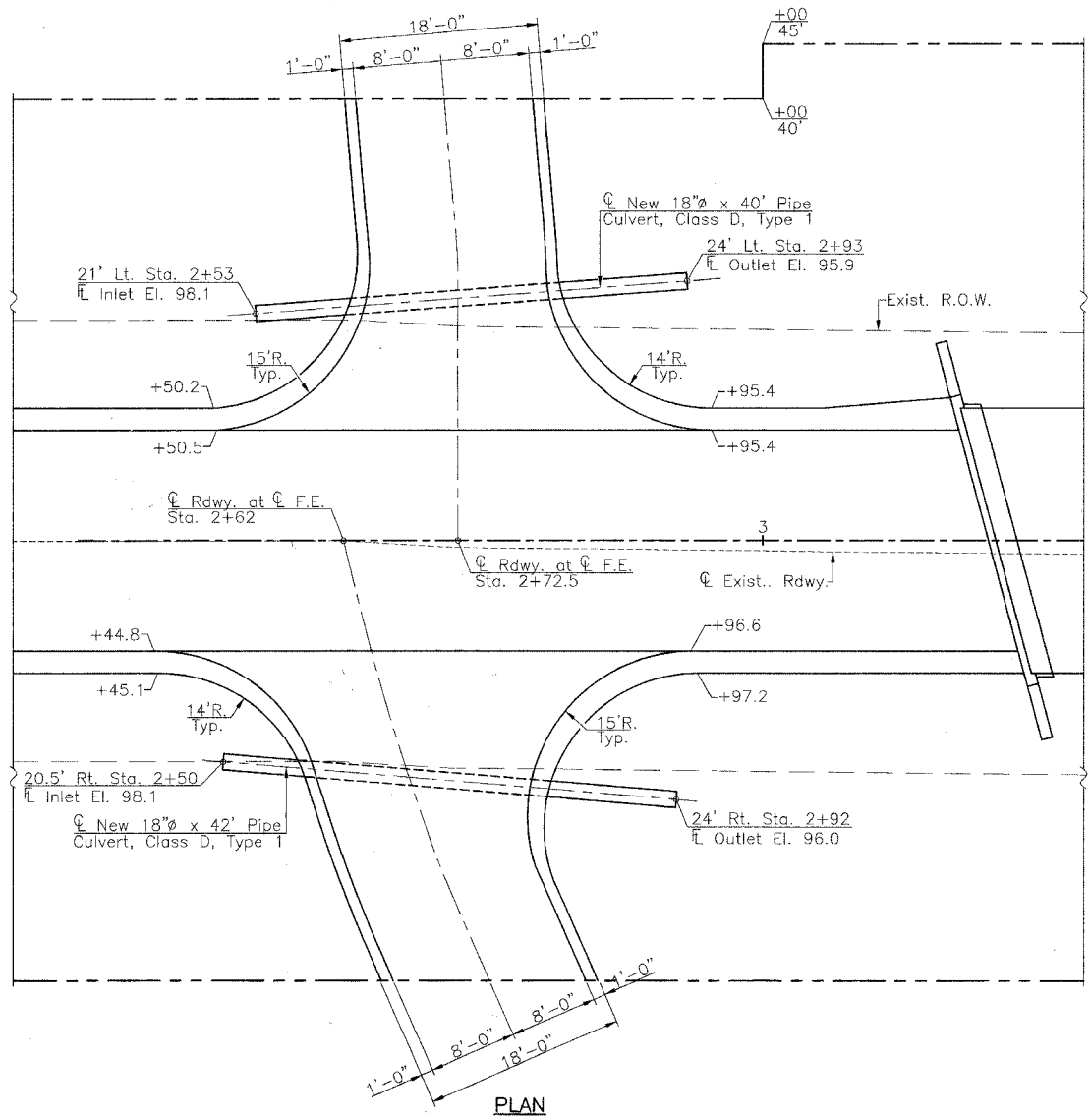
EXISTING CROSS SECTION



TYPICAL FIELD ENTRANCE  
(Sta. 2+62 Rt. & Sta. 2+72.5 Lt.)  
(Approximately 12 Ton of Agg. Surf. Cse. Type B per Entrance)



STONE RIPRAP DITCH DETAIL  
(Sta. 1+80 to Sta. 3+16 Lt. & Sta. 1+80 to Sta. 3+25 Rt.)



PLAN

**GENERAL NOTES**

Where section or subsection stones are encountered, the Engineer shall be notified before such stones are removed. The contractor shall protect and preserve all property markers and monuments until the owner, authorized surveyor, or agent has witnessed or referenced their location.

Seeding: Fertilizer Nutrients shall be applied at the rate of 90 pounds per acre for each nutrient.

Mulch shall be applied at the rate of 2 tons per acre.

Areas to be seeded shall consist of all disturbed earth surfaces within the right-of-way as directed by the Engineer.

**SUMMARY OF QUANTITIES**

Item	Unit	Quantity
20100110	Tree Removal (6 to 15 Units Diameter)	38
20100210	Tree Removal (Over 15 Units Diameter)	48
20200100	Earth Excavation	697
20300100	Channel Excavation	1229
25000200	Seeding, Class 2	0.5
25000400	Nitrogen Fertilizer Nutrient	45
25000500	Phosphorus Fertilizer Nutrient	45
25000600	Potassium Fertilizer Nutrient	45
28000250	Temporary Erosion Control Seeding	100
25100115	Mulch, Method 2	0.5
28000300	Temporary Ditch Checks	4
28000500	Inlet and Pipe Protection	2
28100807	Stone Dumped Riprap, Class A4	43
28102600	Stone Riprap Ditch	189
28200200	Filter Fabric	594
40200800	Aggregate Surface Course, Type B	412
50100100	Removal of Existing Structures	1
50200100	Structure Excavation	14
50300225	Concrete Structures	88.9
50400405	Precast Prestressed Concrete Deck Beams (21" Depth)	2555
50800105	Reinforcement Bars	7015
50900205	Steel Railing, Type S1	216
51201400	Furnishing Steel Piles HP10x42	487
51202305	Driving Piles	487
51203400	Test Pile, Steel HP10x42	4
50300280	Concrete Encasement	2.2
51500100	Name Plates	1
54200223	Pipe Culverts, Class D, Type 1 18"	82
67100100	Mobilization	L. Sum 1
78201000	Terminal Marker - Direct Applied	4
X5020501	Underwater Structure Excavation Protection - Location 1	1
X5020502	Underwater Structure Excavation Protection - Location 2	1

\* See Special Provisions

Construction Type Code: X080-2A

**EARTHWORK SCHEDULE**

Location	Earth Excavation	Earth Excavation Adjusted For Shrinkage	Embankment	Earthwork Balance Waste (+) or Shortage (-)
Sta. 1+80 to Sta. 2+00	14	10	1	+9
Sta. 2+00 to Sta. 3+00	289	217	27	+190
Sta. 3+00 to Sta. 3+20.5	90	68	2	+66
Bridge Omission - Sta. 3+20.5 to Sta. 4+28.5				
Sta. 4+28.5 to Sta. 5+00	163	122	102	+20
Sta. 5+00 to Sta. 6+00	93	70	63	+7
Sta. 6+00 to Sta. 7+00	46	35	9	+26
Sta. 7+00 to Sta. 7+05	2	1	1	0
Total	697	523	422	+318****

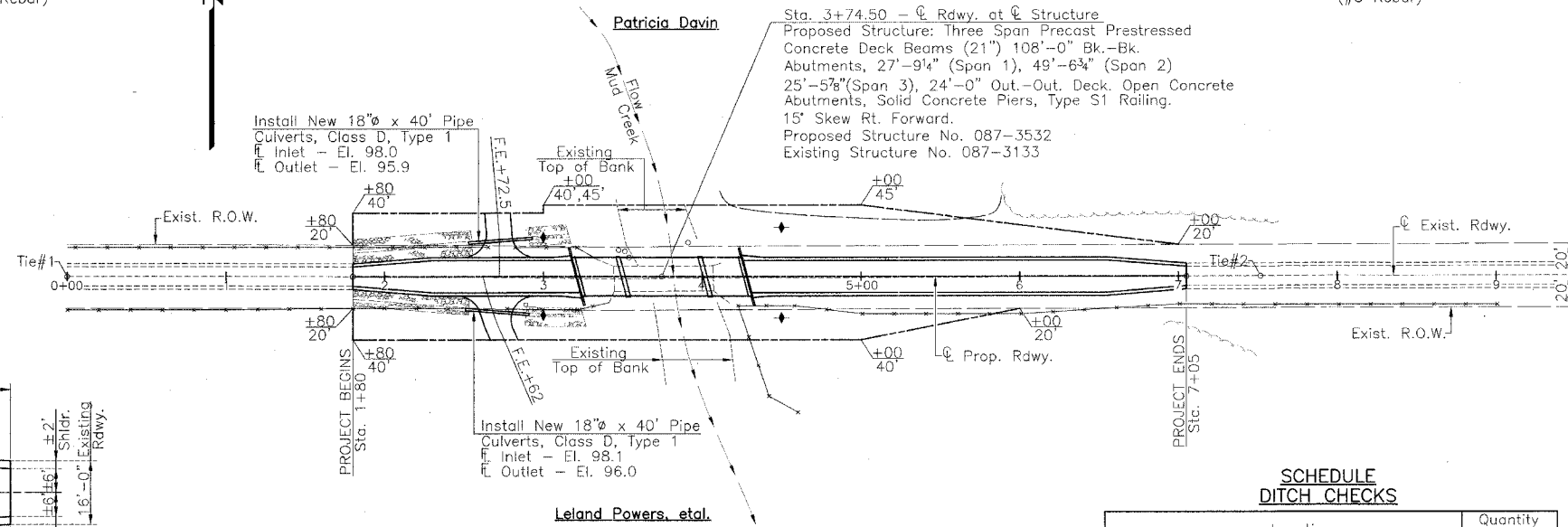
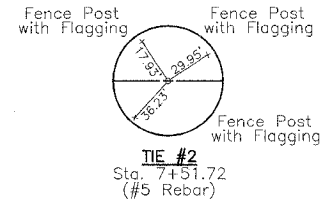
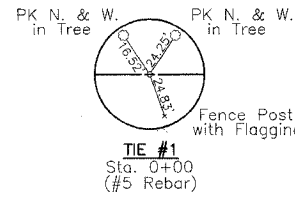
\*\*\*\* No Furnished Excavation will be required. Cost to dispose of Excess Channel, Earth or Structure Excavation shall be included in the contract unit price for Earth Excavation.

SUMMARY OF QUANTITIES  
DETAILS & TYPICAL SECTIONS  
T.R. 173 OVER MUD CREEK  
SECTION 01-18116-00-BR  
SHELBY COUNTY

FILE NAME: 50173SD (REV. 5/15/06)

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R.173	*	SHELBY	11	3
PROJECT BROS-173(144)				
* 01-18116-00-BR				

SECTION 6 T.11 N., R.3 E., 3rd P.M.



SCHEDULE  
STONE RIPRAP DITCH

Location	Quantity (Ton)
Sta. 1+80 to Sta. 3+16 Lt.	102
Sta. 1+80 to Sta. 3+25 Rt.	87
<b>Total</b>	<b>189</b>

SCHEDULE  
TREE REMOVAL (6 TO 15 UNITS DIAMETER)

Location	Quantity (Unit)
Sta. 3+93 31' Rt. Cluster of 4 Trees	38
<b>Total</b>	<b>38</b>

SCHEDULE  
TREE REMOVAL (OVER 15 UNITS DIAMETER)

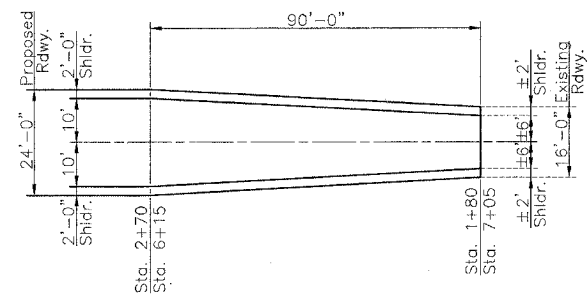
Location	Quantity (Unit)
Sta. 3+47 17' Lt.	16
Sta. 3+51 18' Lt.	16
Sta. 3+54 12' Lt.	16
<b>Total</b>	<b>48</b>

SCHEDULE  
DITCH CHECKS

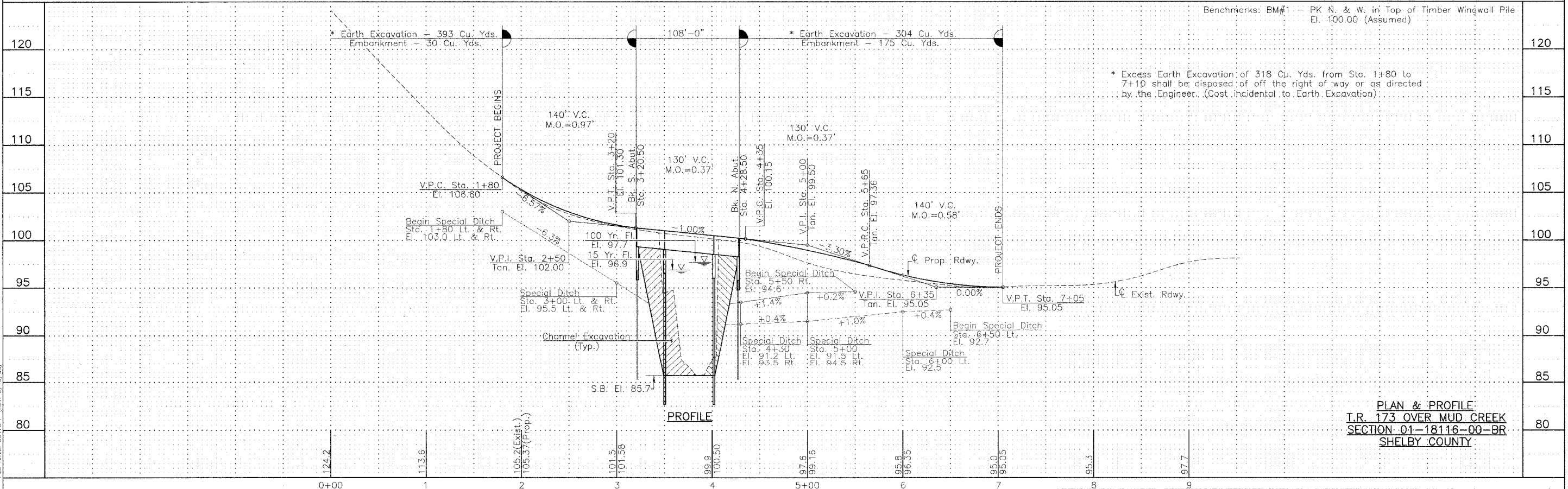
Location	Quantity (Each)
Sta. 3+00 25' Lt.	1
Sta. 3+00 25' Rt.	1
Sta. 4+50 31' Lt.	1
Sta. 4+50 26' Rt.	1
<b>Total</b>	<b>4</b>

UTILITIES

Shelby Electric Cooperative  
North Route 128  
Shelbyville, Illinois 62565  
Consolidated Communications Inc.  
121 South 17th Street  
Mattoon, Illinois 61938-3915  
217-235-3311



SECTION 7 T.11 N., R.3 E., 3rd P.M.



Benchmarks: BM#1 - PK N. & W. in Top of Timber Wingwall Pile  
El. 100.00 (Assumed)

\* Excess Earth Excavation of 318 Cu. Yds. from Sta. 1+80 to 7+10 shall be disposed of off the right of way or as directed by the Engineer. (Cost incidental to Earth Excavation).

PLAN & PROFILE  
T.R. 173 OVER MUD CREEK  
SECTION 01-18116-00-BR  
SHELBY COUNTY

FILE NAME: SCL73PP (REV. 5/15/06)

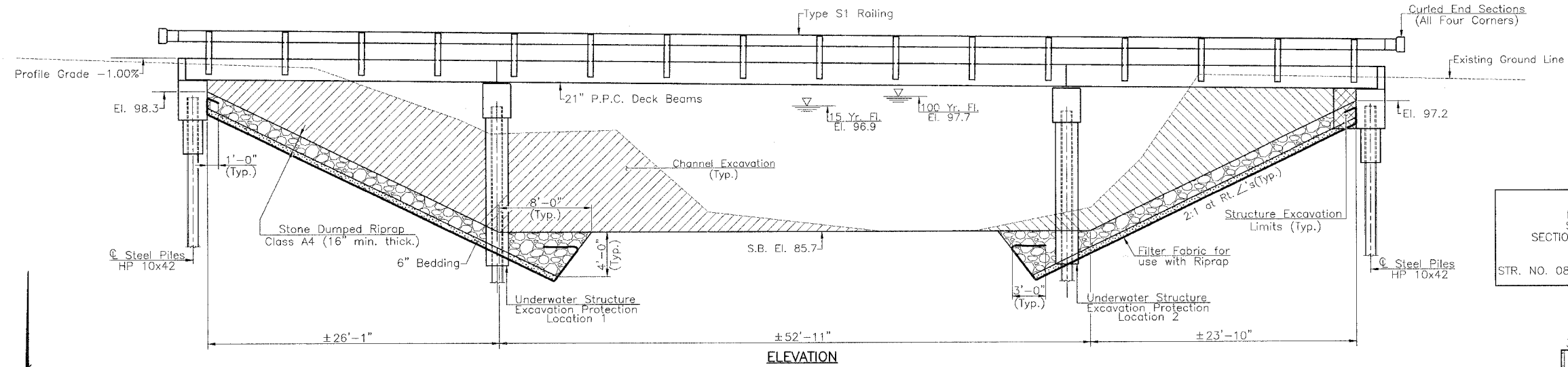
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 173	*	SHELBY	11	4

PROJECT BROS-173(144)

\* 01-18116-00-BR

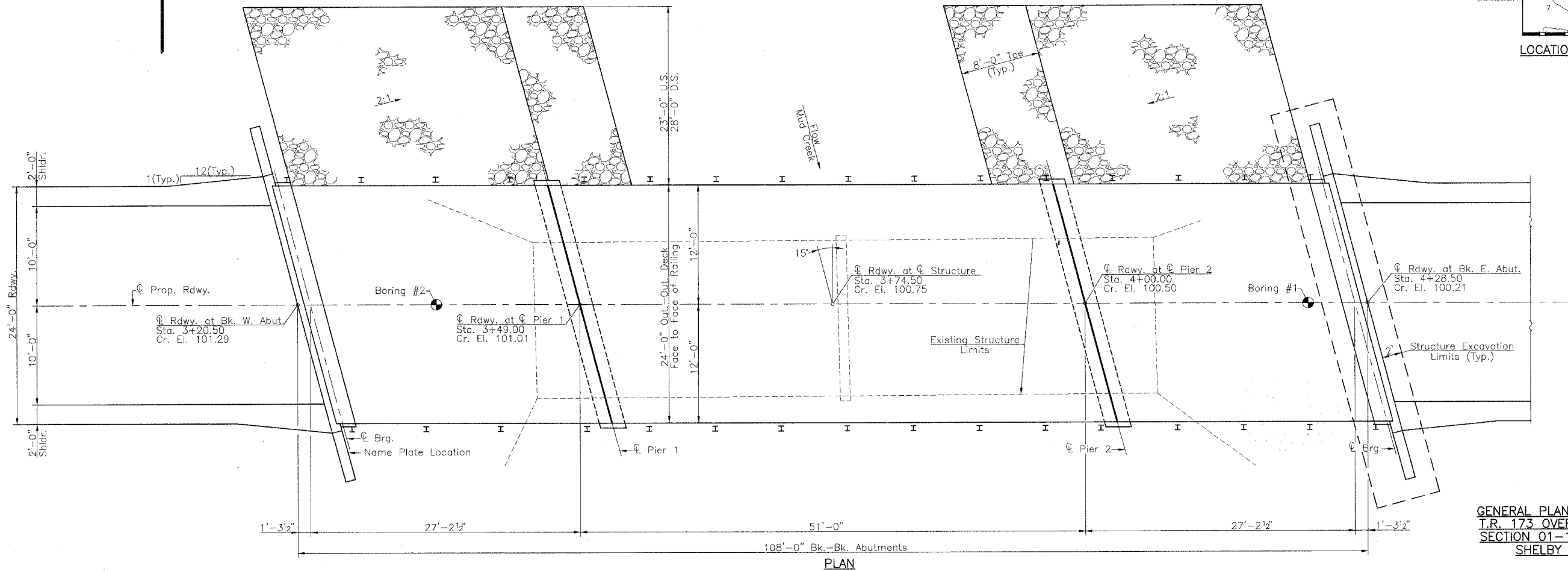
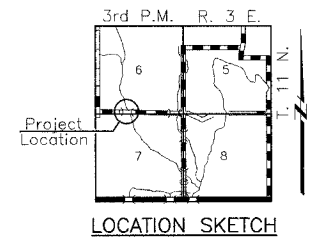
Existing Structure: Two Span Timber Deck on Steel Stringers with Closed Timber Abutments, Wingwalls and Pier on Timber Piles. ±63'-0" Bk.-Bk. Abutments, ±15'-7" Clear Deck Width. Tubular Steel Railing.

Benchmarks: BM#1 - PK N. & W. in Top of Timber Wingwall Pile  
El. 100.00 (Assumed)



MUD CREEK  
BUILT 200 BY  
SHELBY COUNTY  
SECTION 01-18116-00-BR  
STA. 3+74.50  
BROS-173(144)  
STR. NO. 087-3532 LOADING HS20-44

NAME PLATE  
(Standard 515001)



GENERAL PLAN & ELEVATION  
T.R. 173 OVER MUD CREEK  
SECTION 01-18116-00-BR  
SHELBY COUNTY

FILE NAME: SCH23GPE (REV. 5/15/05)

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 173	*	SHELBY	11	5

PROJECT BROS-173(144)

\* 01-18116-00-BR

**TOTAL BILL OF MATERIAL**

Item	Super	Sub	Total
Channel Excavation			1229
Stone Dumped Riprap, Class A4			431
Filter Fabric For Use With Riprap			594
Removal of Existing Structures			1
Structure Excavation			141
Concrete Structures		88.9	88.9
Precast Prestressed Concrete Deck Beams (21" Depth)	2555		2555
Reinforcement Bars		7015	7015
Steel Railing, Type S1	216		216
Furnishing Steel Piles HP 10x42		487	487
Driving Steel Piles		487	487
Test Pile, Steel HP 10 x 42		4	4
Concrete Encasement			2.2
Name Plates	1		1
X5020501 Underwater Structure Excavation Protection - Location 1			1
X5020502 Underwater Structure Excavation Protection - Location 2			1

**WATERWAY INFORMATION**

Flood		Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head-Ft.		Headwater El.	
Design	Base			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	15	3515		476	822	96.9	97.4	97.0	0.5	0.1
Base	100	5538		536	901	97.7	98.6	98.1	0.9	0.4
Exist. Overtop.	7.8	2890								
Prop. Overtop.	8.5	3000								
Max. Calc.	500	7172		555	960	98.3	99.2	98.8	0.9	0.5

**DESIGN STRESSES**

**FIELD UNITS**

f<sub>c</sub> = 1400 psi  
 v<sub>c</sub> = 56.2 psi  
 f<sub>s</sub> = 24000 psi  
 n = 9

**PRECAST PRESTRESSED UNITS**

f'<sub>c</sub> = 5000 psi  
 f'<sub>ci</sub> = 4000 psi  
 f'<sub>s</sub> = 270000 psi  
 f'<sub>si</sub> = 201960 psi

**GENERAL NOTES**

See Proposal for Boring Data.

The layout of the riprap sloped wall may be varied to suit conditions in the field as determined by the engineer.  
 The contractor shall drive one test pile in a permanent location at the East and West Abutment, Pier 1 and Pier 2, as directed by the Engineer in the field prior to ordering the remainder of piles.

**DESIGN SPECIFICATIONS**

2002 A.A.S.H.T.O. Specifications with 2003 & 2004 Interim Specifications.

**LOADING HS 20-44**

Allow 25 p.s.f. for future wearing surface.

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 "A.A.S.H.T.O. Standard Specifications For Highway Bridges".

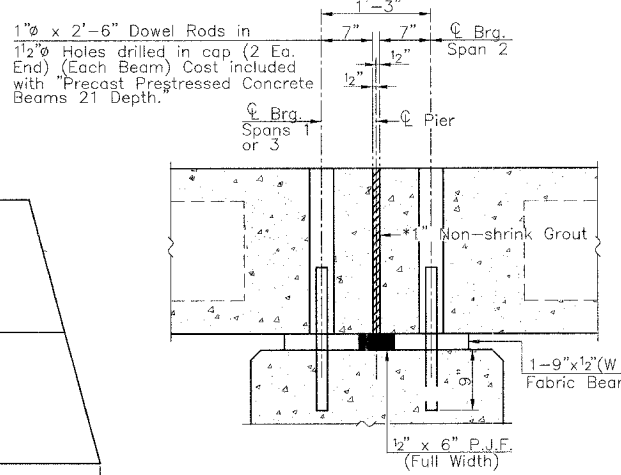
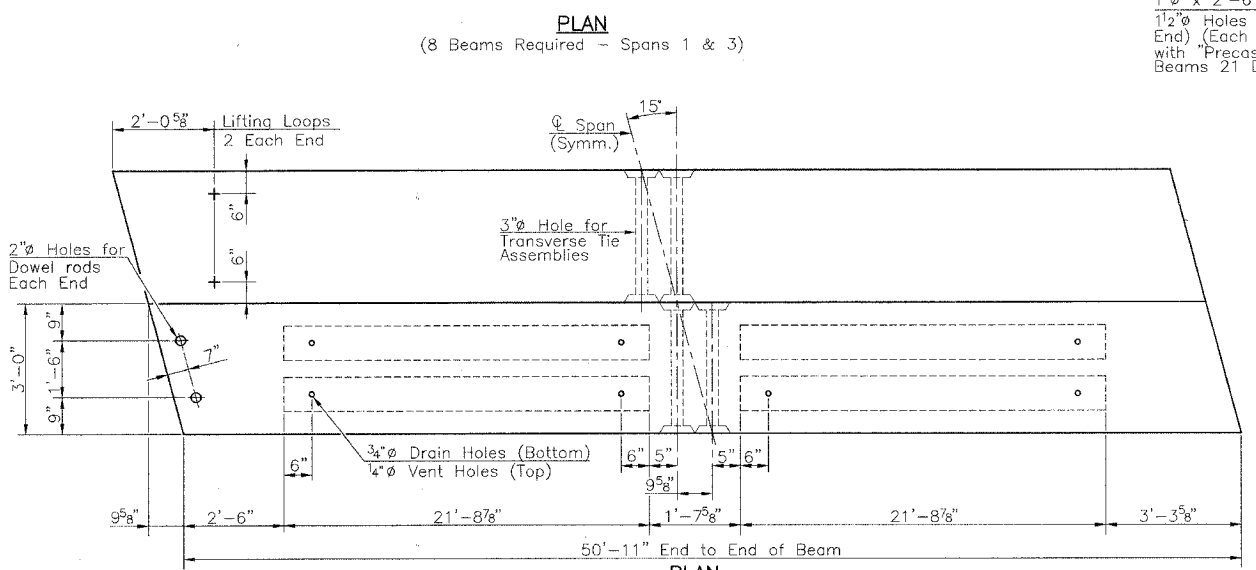
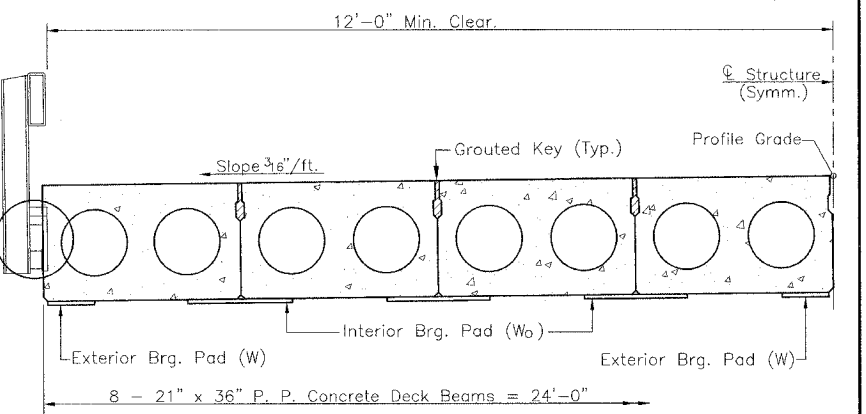
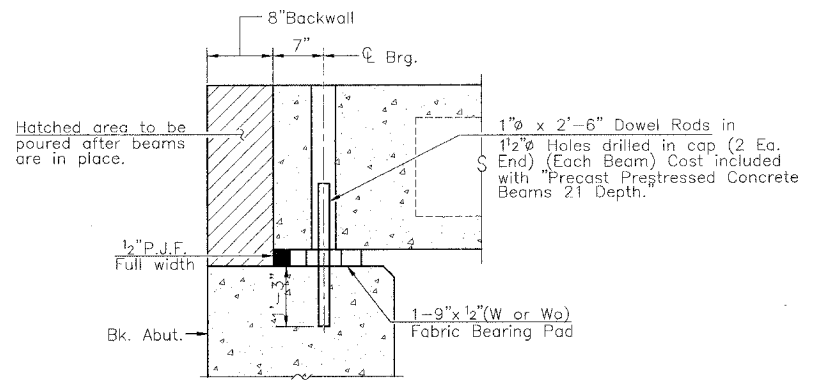
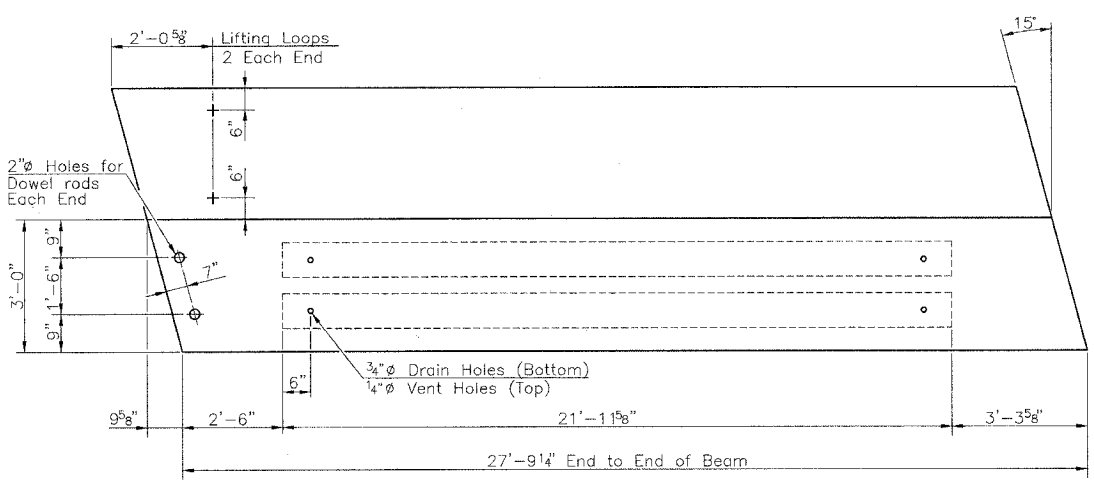
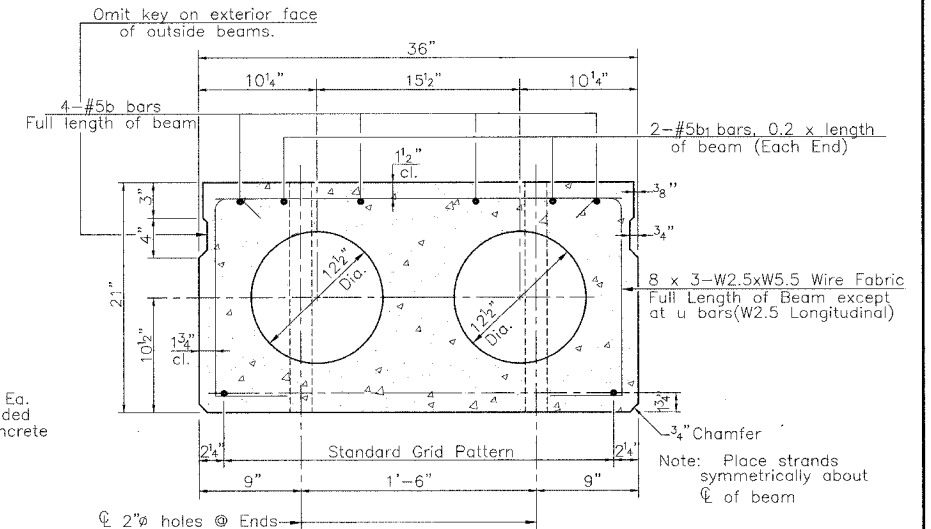
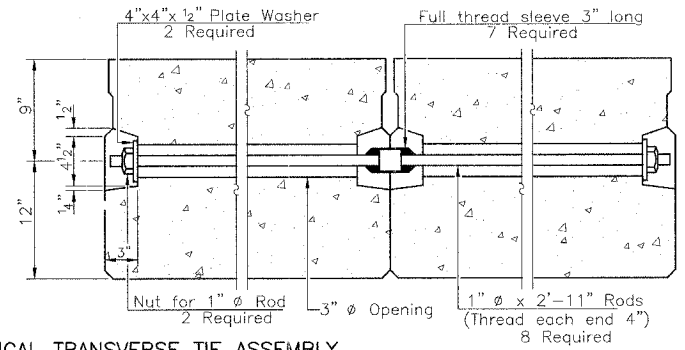
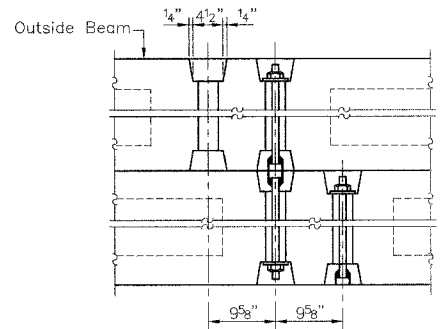
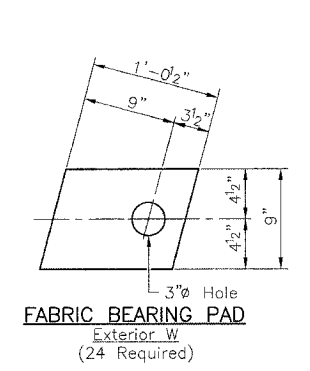
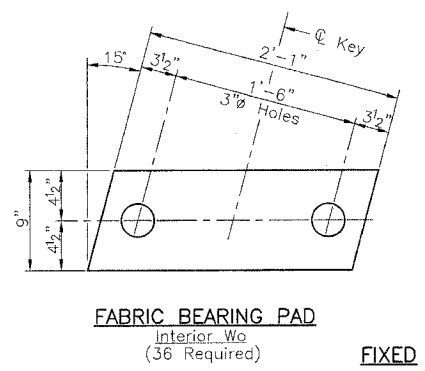


*Gerald B. Rotherman* 5/17/06  
 Expiration Date 11/30/2006

**GENERAL PLAN & ELEVATION  
 T.R. 173 OVER MUD CREEK  
 SECTION 01-18116-00-BR  
 SHELBY COUNTY**

FILE NAME: SCLT00E (REV. 5/15/08)

CONTRACT NO. 95485				
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 173	*	SHELBY	11	6
PROJECT BROS-173(144)				
* 01-18116-00-BR				



\* 1" dimension may vary to accommodate tolerance in beam lengths.

**NOTES**

After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hours prior to grouting the shear keys.

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

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

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

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

The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two 1/8" fabric adjusting shims of the dimensions of the Exterior Bearing Pad shall be provided for each bearing.

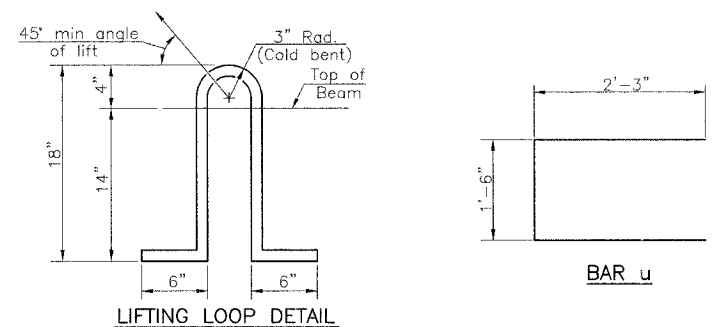
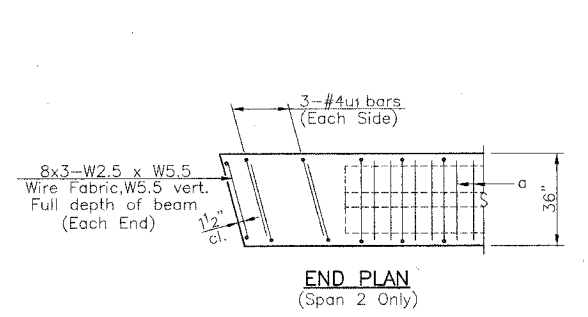
Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between top of the beams and the bottom edge of the key.

Corrosion Inhibitor, as covered in the Special Provisions, shall be used in the concrete for Precast Prestressed Concrete Deck Beams.

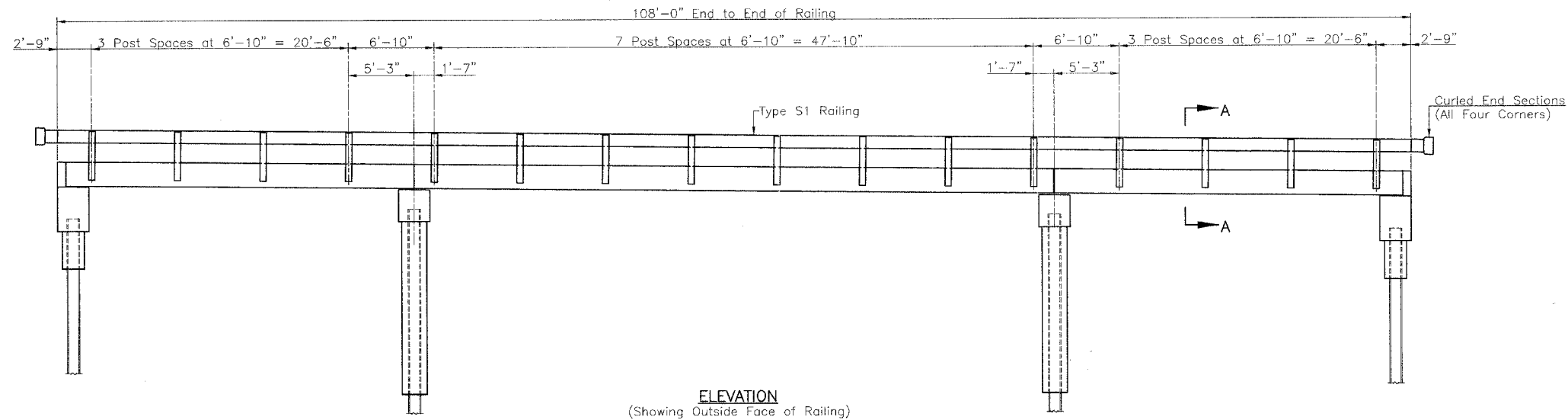
Required Release Strength, f'ci, shall be 4000 p.s.i.

**BILL OF MATERIAL**

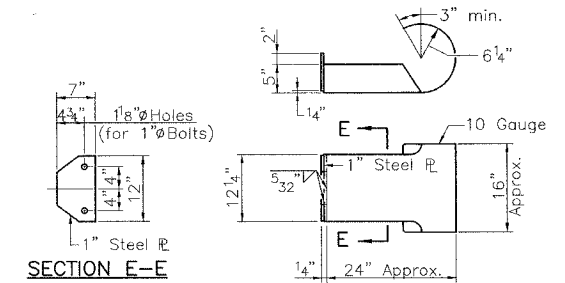
BAR	NO.	SIZE	LENGTH	SHAPE
Precast Prestressed Concrete Deck Beams (21")			Sq. Ft.	2555



RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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* 01-18116-00-BR				



ELEVATION  
(Showing Outside Face of Railing)



CURLED END SECTION DETAILS (4 Required)

NOTES

Hollow structural steel tubing shall conform to the requirements of A.S.T.M. 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 A.A.S.H.T.O. M-270 Grade 50 except posts and angles shall conform to A.A.S.H.T.O. M-270, Grade 50.

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

All posts, railing, rail splices, anchor devices, angles and tube spacers shall be galvanized after shop fabrication in accordance with A.A.S.H.T.O. M-111 and A.S.T.M. A-385. Galvanized rail shall not be painted.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized in accordance with A.A.S.H.T.O. M-232.

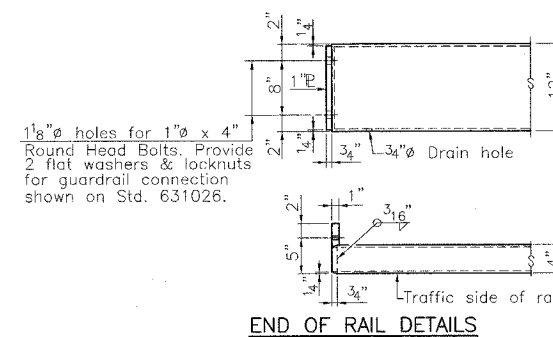
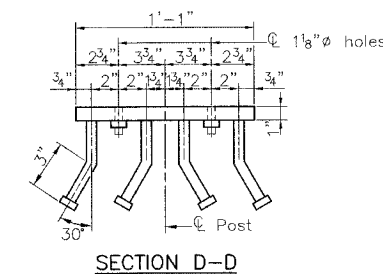
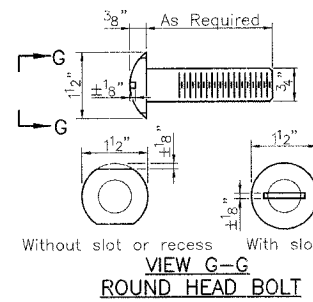
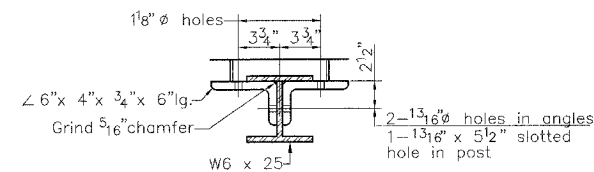
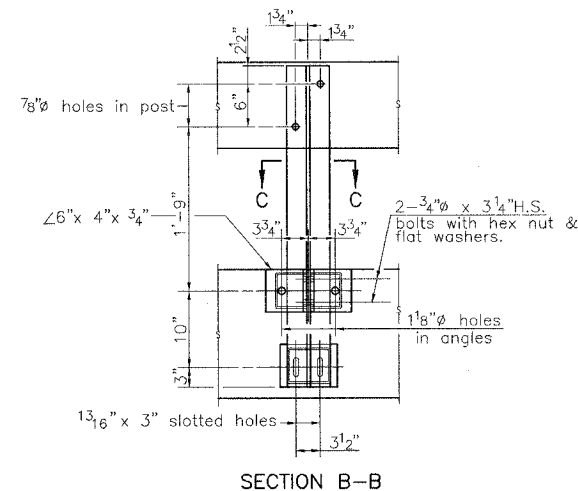
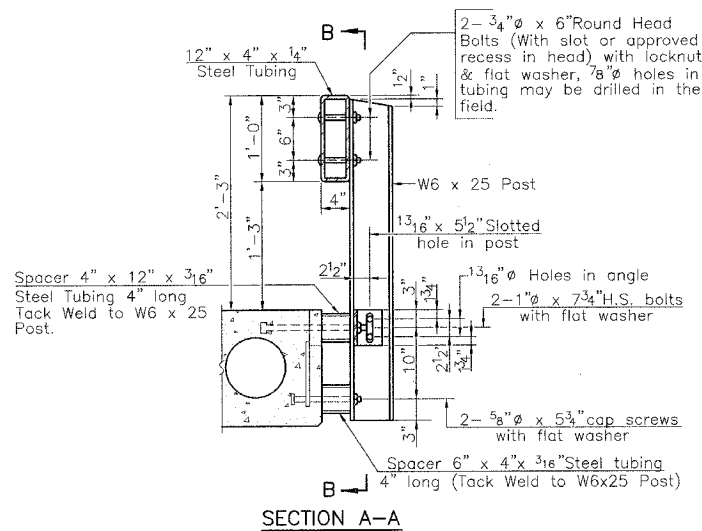
Railing shall be in accordance with Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for Steel Railing, Type S1.

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

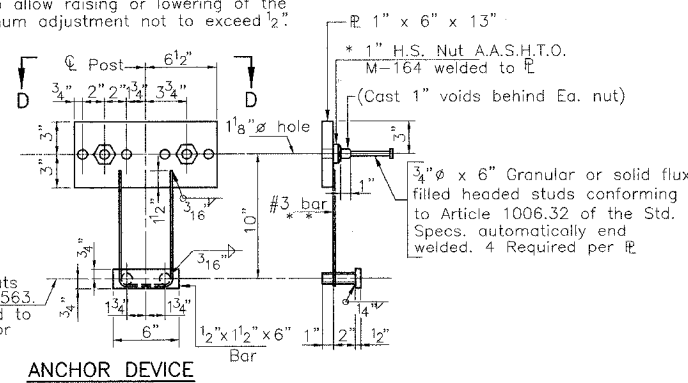
The lower portion of the post flange in contact with concrete shall receive two coats of asphalt paint conforming to Section 1060.07 Type II or place a 1/2" fabric bearing pad between the plate and concrete.

The 3/4" high strength bolts used to connect the 6 x 4 x 3/4 angles to the post shall be tightened in accordance with Article 505.04(f)(2) of the Standard Specifications. The 1" high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/8 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

The cost of curled end sections shall be incidental to the contract unit price per foot for Steel Railing, Type S1.

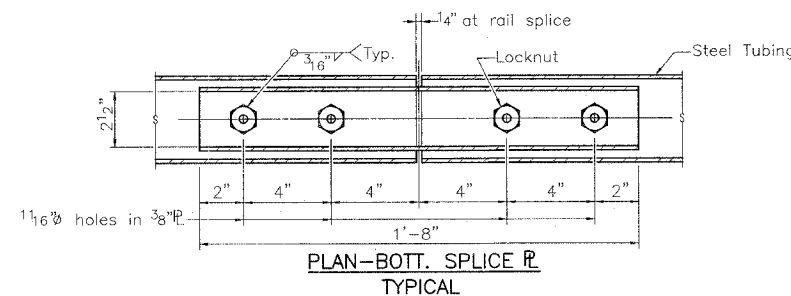
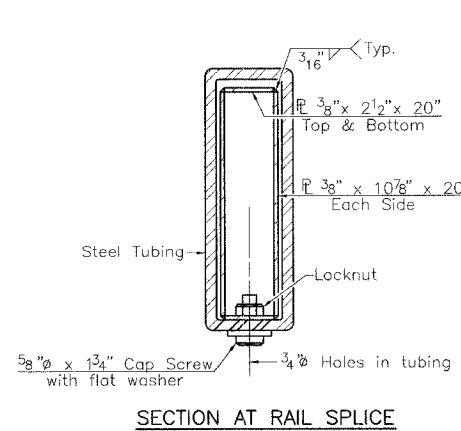


\*\* Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2".



3/4" XXS Pipe or Hex Nuts conforming to ASTM A-563. Grade A-3" long welded to #3 bar and top pipe for 5/8" Cap Screw.

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



BILL OF MATERIAL

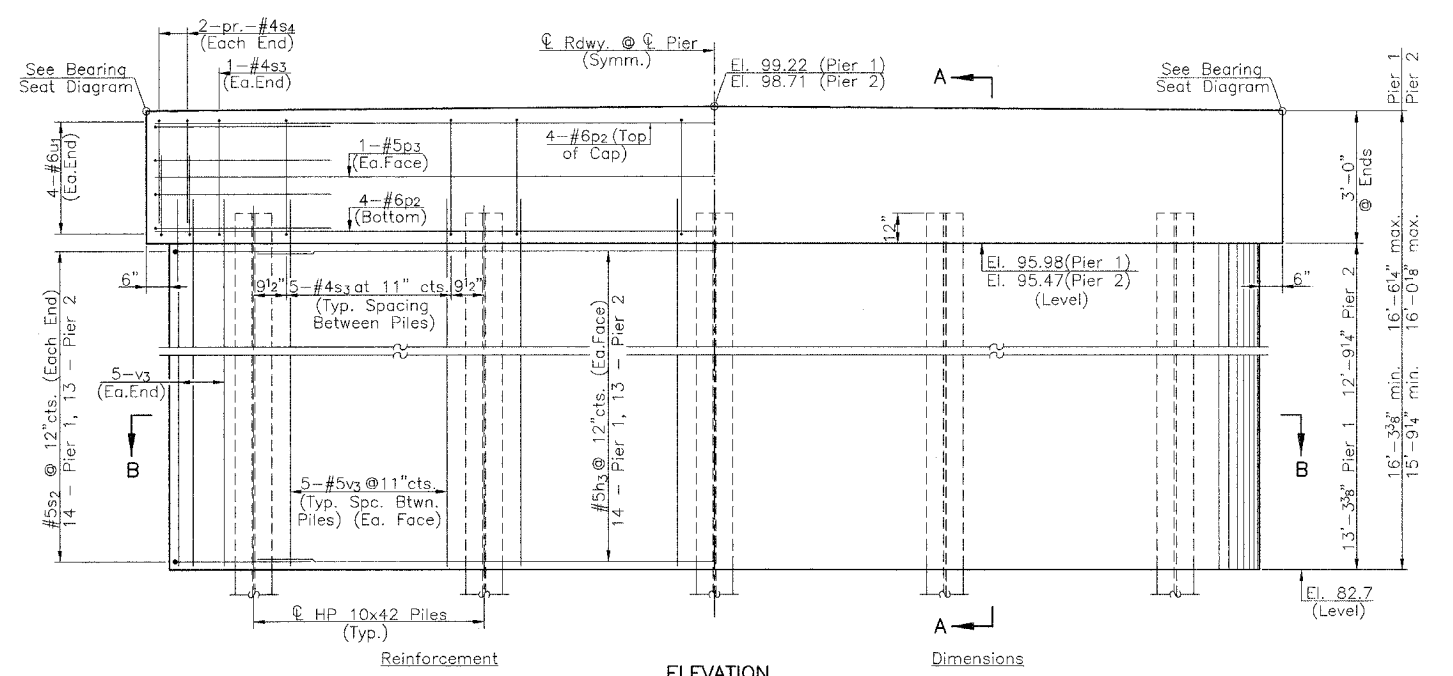
Item	Total
Steel Railing, Type S1	Foot 216

RAILING  
I.R. 173 OVER MUD CREEK  
SECTION 01-18116-00-BR  
SHELBY COUNTY

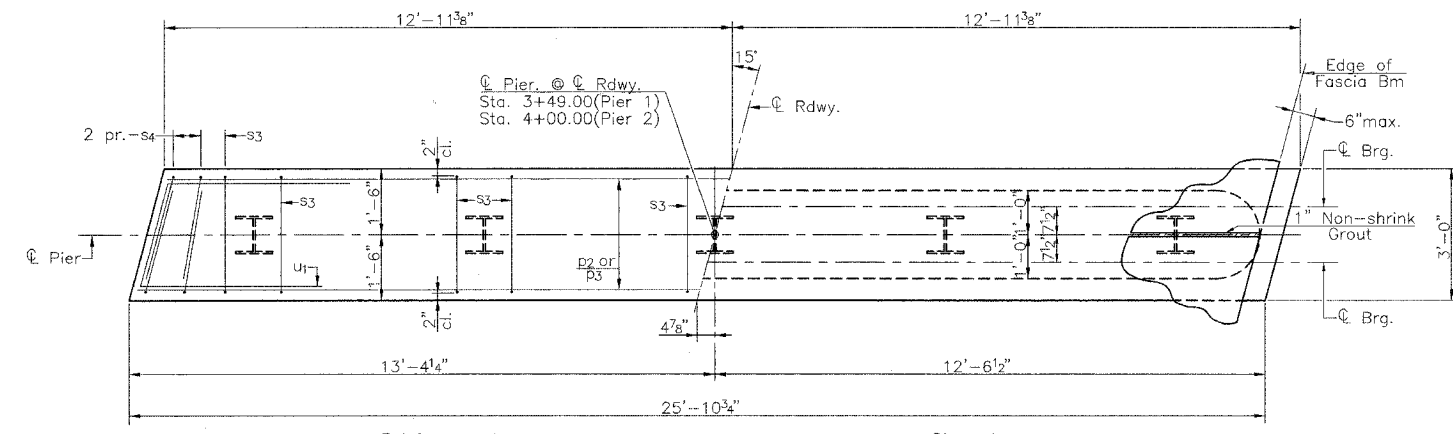




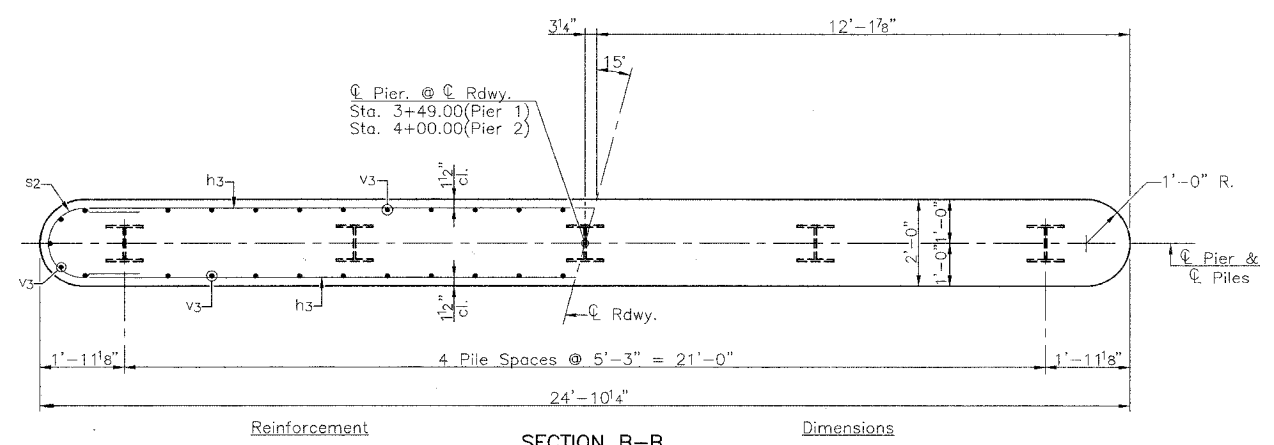
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R.173	*	SHELBY	11	9
PROJECT BROS-173(144)				
* 01-18116-00-BR				



ELEVATION



PLAN (Typical Pier Cap)



SECTION B-B

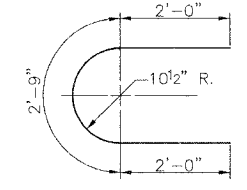
**PILE DATA**

	Pier 1	Pier 2
Pile Type & Size:	Steel HP 10x42	Steel HP 10x42
Nominal Required Bearing:	335 kips	335 kips
Allowable Resistance Available: Driven to Refusal	Driven to Refusal	Driven to Refusal
Estimated Pile Length:	27'	43'
Number of Production:	4	4
Number of Test Piles:	1	1

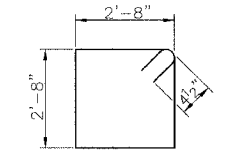
**NOTES**

All exposed concrete edges shall have standard 3/4" chamfer except as noted.

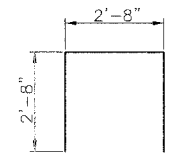
Space reinforcement in pier caps to miss beam anchor dowels.



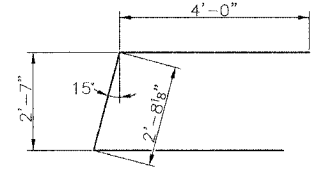
BAR s2



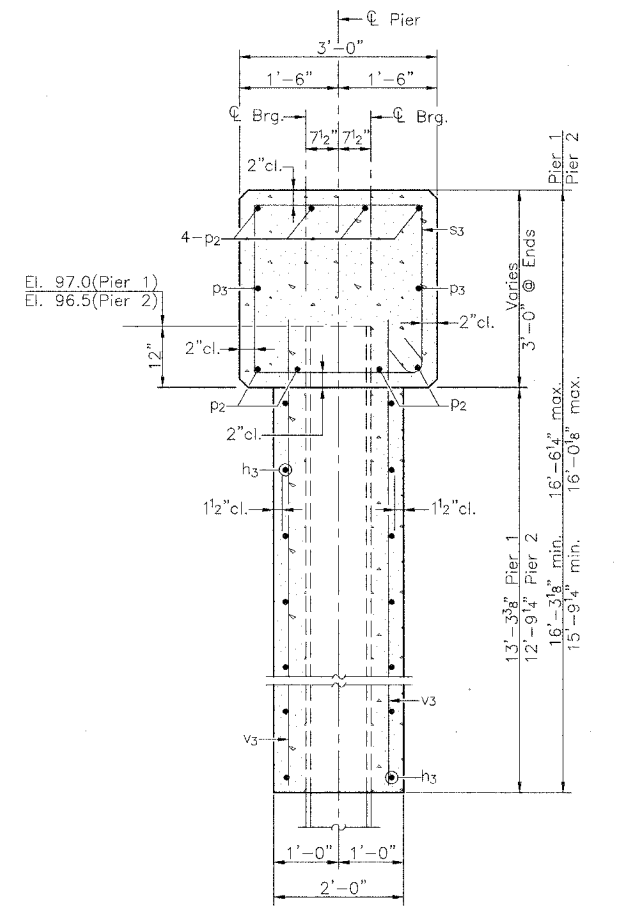
BAR s3



BAR s4



BAR u1

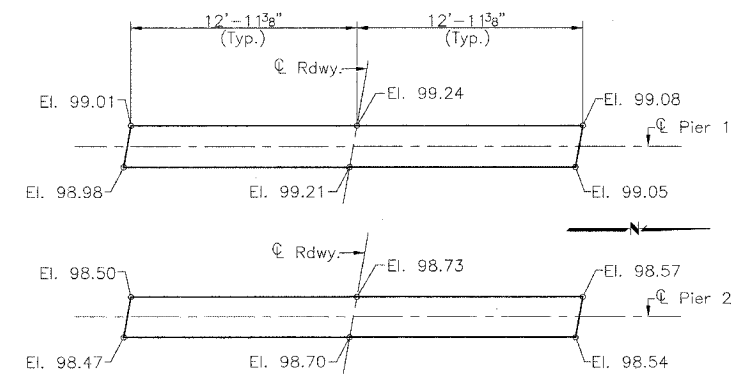


SECTION A-A

**TWO PIERS BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE
h3	54	#5	23'-0"	—
p2	16	#6	25'-6"	—
p3	4	#5	25'-6"	—
s2	54	#5	6'-9"	U
s3	44	#4	11'-5"	□
s4	16	#4	8'-0"	□
u1	16	#6	10'-8"	□
v3	100	#5	14'-6"	—

Concrete Structures	Cu. Yd.	65.0
Reinforcement Bars	Pound	4585
Furnishing Steel Piles HP 10x42	Foot	280
Driving Piles	Foot	280
Test Pile Steel HP 10x42	Each	2
Underwater Structure Excavation Protection- Location 1 (Pier 1)	Each	1
Underwater Structure Excavation Protection- Location 2 (Pier 2)	Each	1
Structure Excavation	Cu. Yd.	39

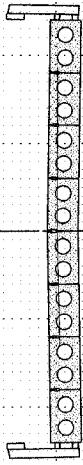


BEARING SEAT DIAGRAM

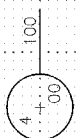
**PIERS**  
 T.R. 173 OVER MUD CREEK  
 SECTION 01-18116-00-BR  
 SHELBY COUNTY

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 173	*	SHELBY	11	10
PROJECT BROS-173(144)				
* 01-18116-00-BR				

Bk. N. Abut. - Sta. 4+28.50



100.50

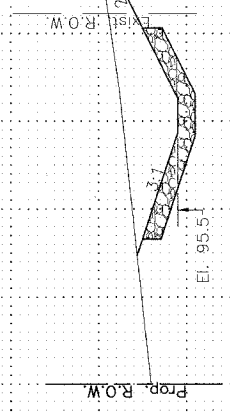


95

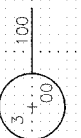
Bk. S. Abut. - Sta. 3+20.50

End Stone Riprap Ditch - Sta. 3+16 Lt.

End Stone Riprap Ditch - Sta. 3+25 Rt.

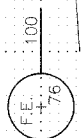


101.58



95

102.25



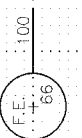
95

±1.2%

☉

☉ New 18" x 40' Pipe.  
 ☉ Culverts: Class D, Type 1  
 ☉ Inlet - El. 98.0  
 ☉ Outlet - El. 95.9  
 Embankment = 10 cu. yds.

102.56

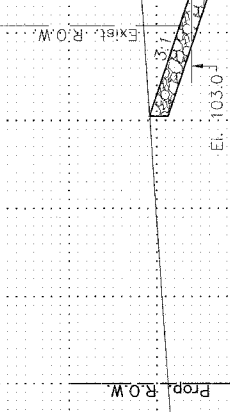


95

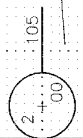
±1.2%

☉

☉ New 18" x 42' Pipe.  
 ☉ Culverts: Class D, Type 1  
 ☉ Inlet - El. 98.1  
 ☉ Outlet - El. 96.0  
 Embankment = 10 cu. yds.



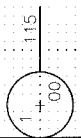
105.37



100

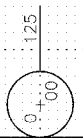
Begin Stone Riprap Ditch - Sta. 1+80 Lt. & Rt.

PROJECT BEGINS - Sta. 1+80



115

110



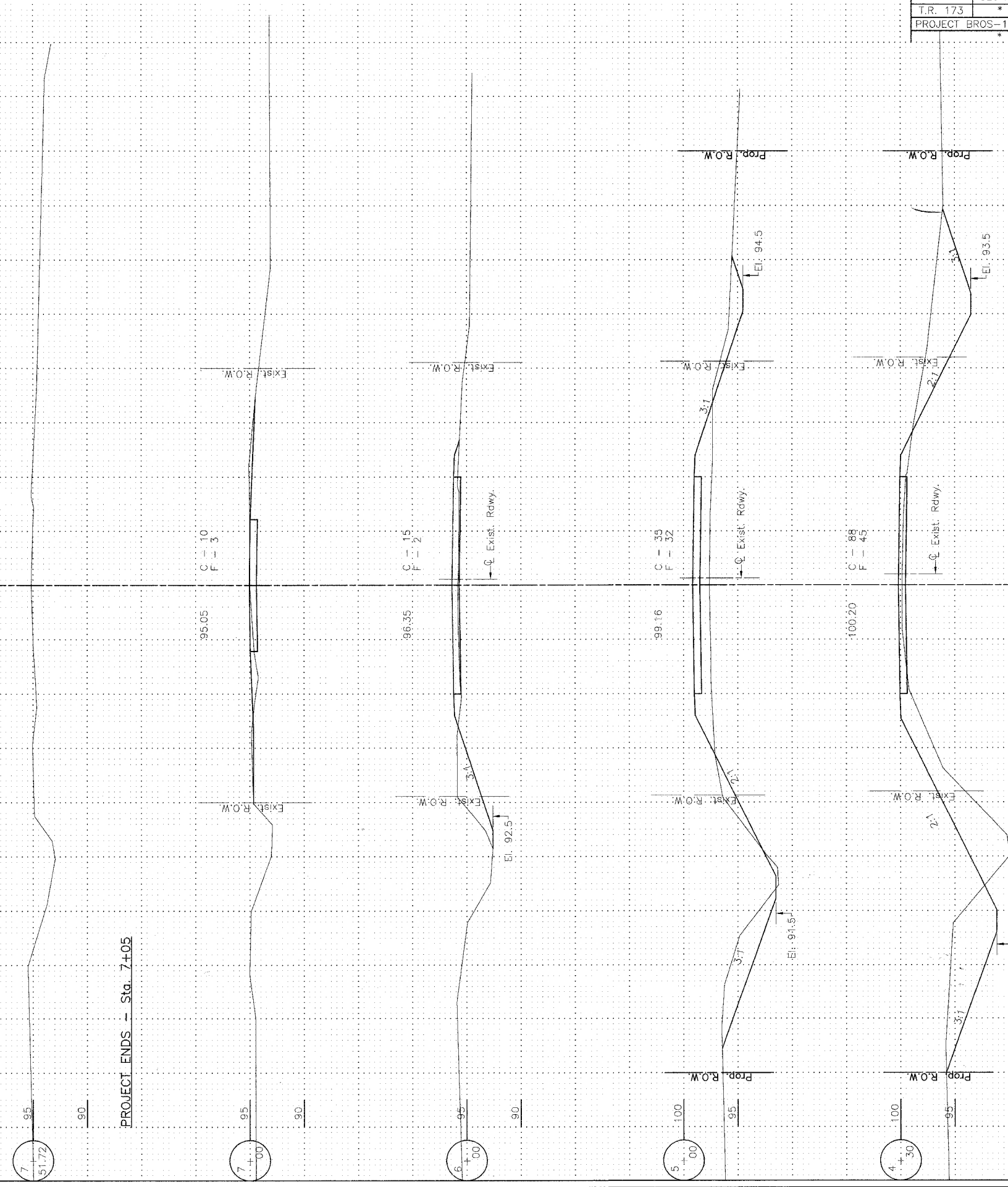
125

120

CROSS SECTIONS  
 T.R. 173 OVER MUD CREEK  
 ROSE ROAD DISTRICT  
 SECTION 01-18116-00-BR  
 SHELBY COUNTY

50 40 30 20 10 0 10 20 30 40 50

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 173	*	SHELBY	11	11
PROJECT BROS-173(144)				
* 01-18116-00-BR				



PROJECT ENDS -- Sta. 7+05

CROSS SECTIONS  
 T.R. 173 OVER MUD CREEK  
 ROSE ROAD DISTRICT  
 SECTION 01-18116-00-BR  
 SHELBY COUNTY