

| ROUTE NO.       | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|-----------------|---------|------------------|--------------|-----------|
| TR 23           | *       | MACON            | 22           | 1         |
| STA. TO STA.    |         | ILLINOIS PROJECT |              |           |
| *05-04163-00-BR |         |                  |              |           |

# STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

## PLANS FOR PROPOSED HIGHWAY BRIDGE PROGRAM

### FRIENDS CREEK ROAD DISTRICT FRIENDS CREEK TOWNSHIP SECTION 05-04163-00-BR TR 23 OVER FRIENDS CREEK MACON COUNTY

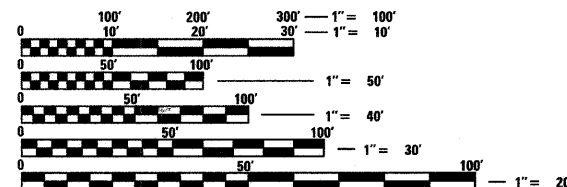
PROJECT NO. BROS-115 (64) JOB NO. C-97-057-08

**INDEX OF SHEETS**

- 1 COVER SHEET
- 2 GENERAL NOTES AND QUANTITIES
- 3 TYPICAL SECTIONS & DETAILS
- 4 GRADING PLAN
- 5 PLAN AND PROFILE
- 6-12 BRIDGE PLANS
- 13-22 CROSS SECTIONS

**STANDARDS**

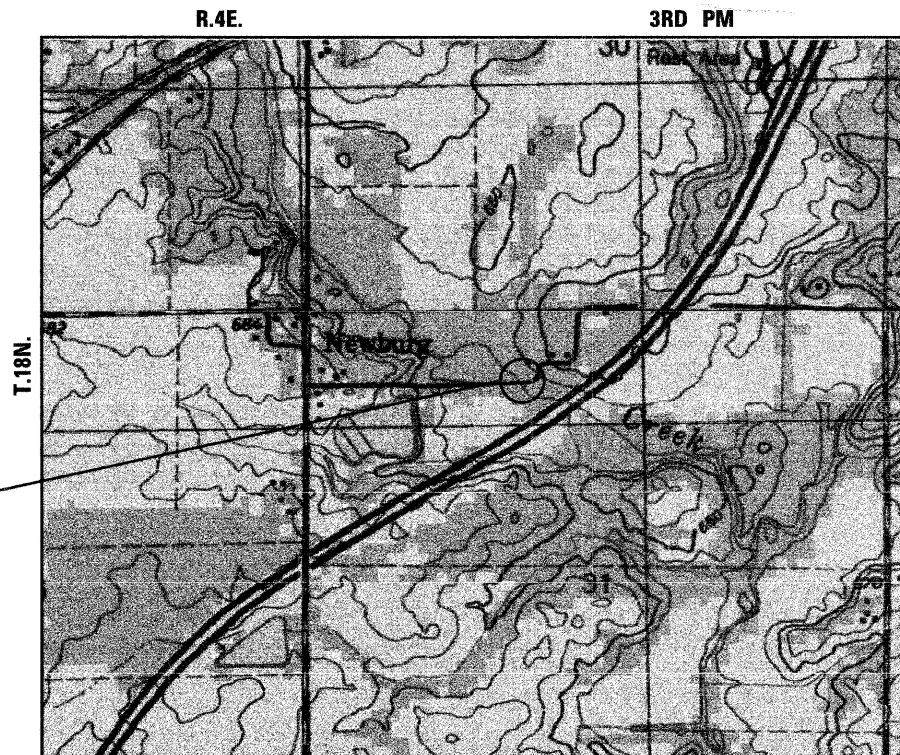
- 515001-02 NAME PLATE FOR BRIDGES
- 635006-02 REFLECTOR AND TERMINAL MARKER PLACEMENT
- 701901 TRAFFIC CONTROL DEVICES
- 720001 SIGN PANEL MOUNTING DETAILS
- 720006-01 SIGN PANEL ERECTION DETAILS
- 720011 METAL POSTS FOR SIGNS, MARKERS AND DELINEATORS
- 729001 APPLICATIONS OF TYPES A & B METAL POSTS (FOR SIGNS AND MARKERS)
- BLR 21-7 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS
- BLR-27 TRAFFIC BARRIER TERMINAL, TYPE 5A



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

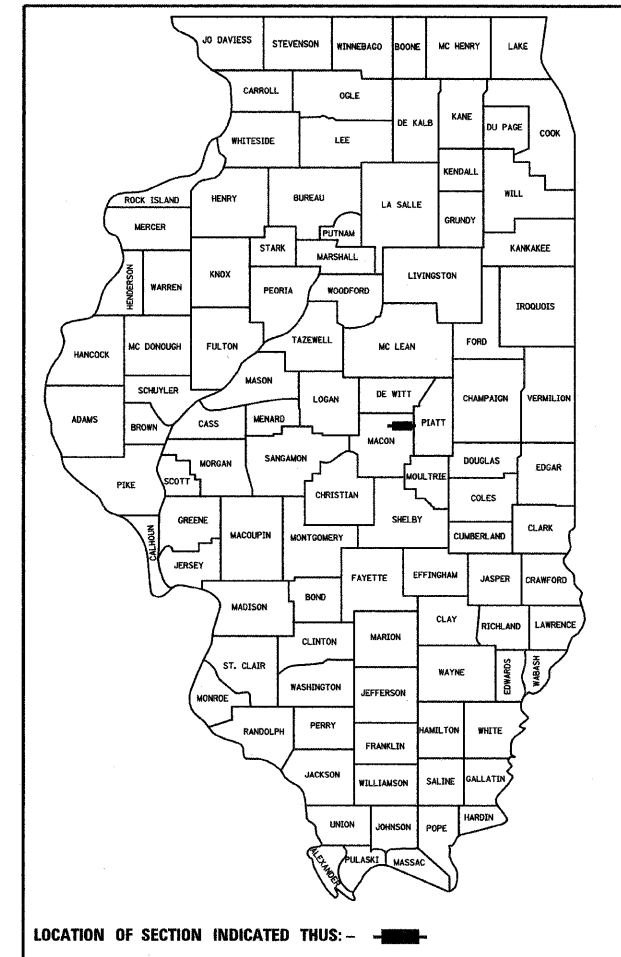
HLC PROJECT NO. 5129  
HLC FIELD BOOK-NO. 314



**LOCATION MAP**

TOTAL LENGTH 510.00 FEET = 0.10 MILES  
NET LENGTH 510.00 FEET = 0.10 MILES

THE PROPOSED IMPROVEMENT CONSISTS OF REMOVAL OF EXISTING STRUCTURE AND REPLACEMENT WITH 3 SPAN PRECAST PRESTRESSED CONCRETE DECK BEAM (21" DEPTH) BRIDGE, PILE BENT PIERS, PILE BENT ABUTMENTS, 24' CLEAR ROADWAY AND 152' BACK TO BACK ABUTMENTS, 35 DEGREE SKEW, AND OTHER MINOR COLLATERAL WORK.



LOCATION OF SECTION INDICATED THIS: - [Symbol] -

**FUNCTIONAL CLASSIFICATION - LOCAL ROAD**  
2008 ADT = 0 (BRIDGE CLOSED)  
2028 ADT = 25  
DESIGN SPEED = 30 MPH



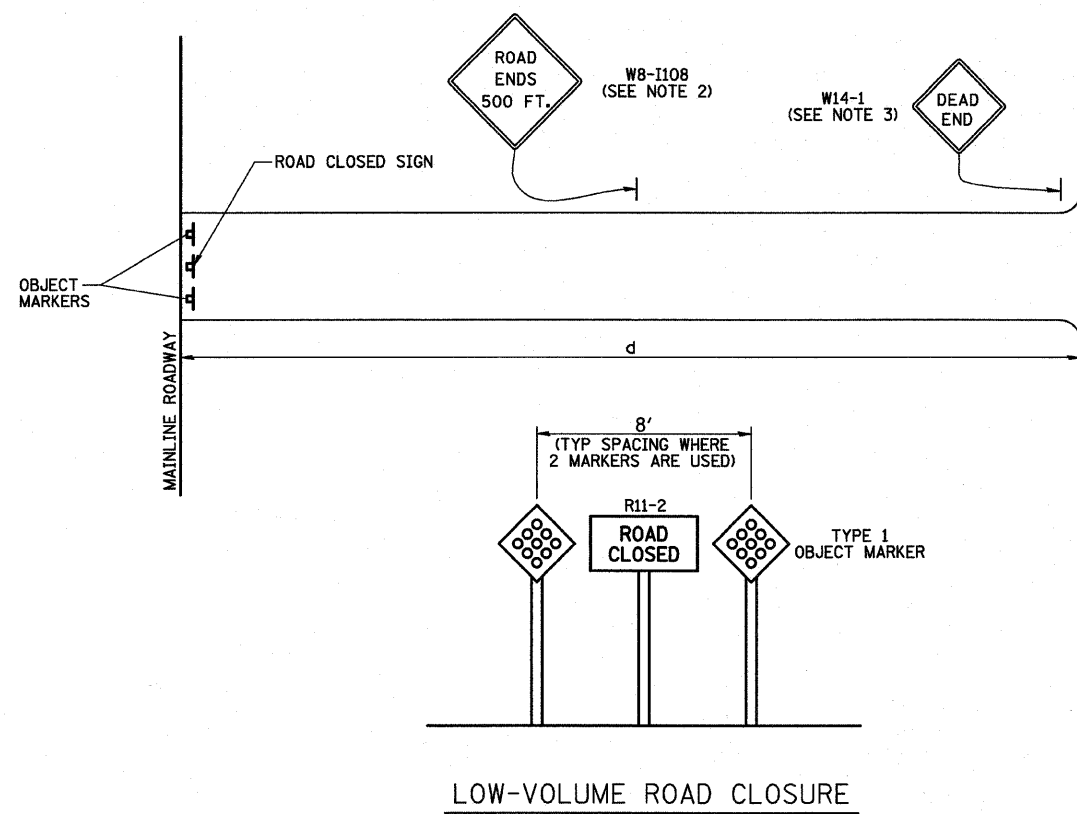
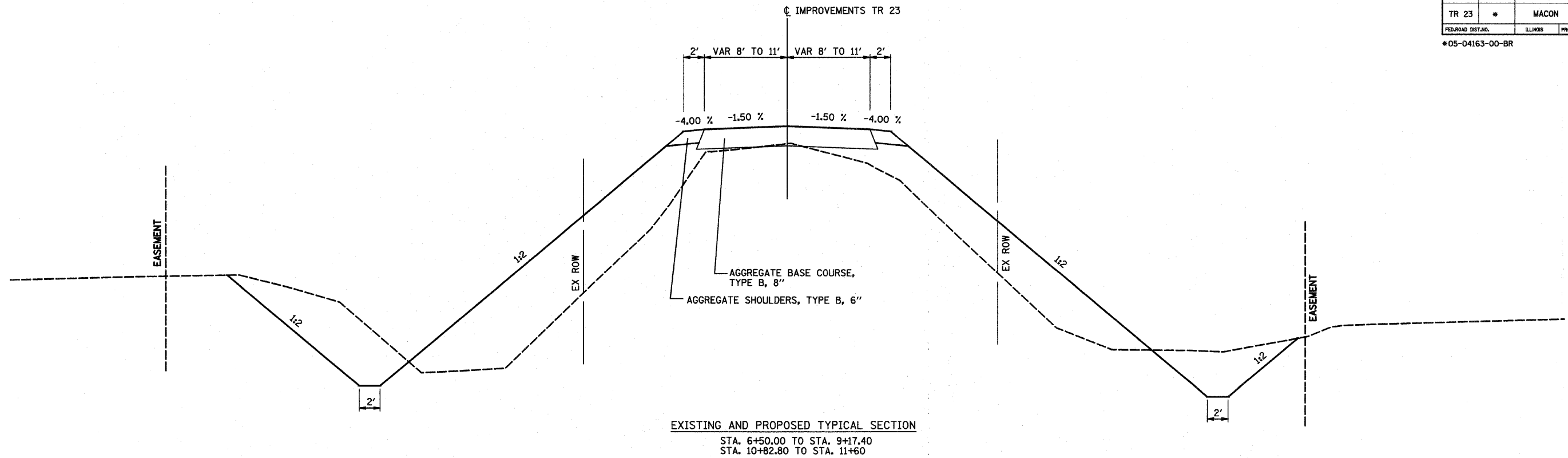
|  |  |
|--|--|
| <p>APPROVED <u>FEBRUARY 20</u> 20 <u>08</u></p> <p style="text-align: center;"><i>[Signature]</i><br/>COUNTY ENGINEER</p>  | <p>PASSED <u>2-20-08</u></p> <p style="text-align: center;"><i>[Signature]</i> 20<br/>DISTRICT SEVEN ENGINEER OF<br/>LOCAL ROADS AND STREETS</p> |
| <p>Releasing For Bid Based on Limited Review <u>2/20</u> 20 <u>08</u></p> <p style="text-align: center;"><i>[Signature]</i><br/>DEPUTY DIRECTOR OF HIGHWAYS<br/>REGION FOUR ENGINEER</p> <p style="text-align: center;">STATE OF ILLINOIS<br/>DEPARTMENT OF TRANSPORTATION</p> |  |

**HOMER L. CHASTAIN & ASSOCIATES, LLP**  
CONSULTING ENGINEERS  
DECATUR (317) 422-8544  
CHICAGO (773) 714-0050  
ROCKFORD (815) 489-0050  
184-001897



| ROUTE NO.           | SECTION | COUNTY   | TOTAL SHEETS | SHEET NO. |
|---------------------|---------|----------|--------------|-----------|
| TR 23               | *       | MACON    | 22           | 3         |
| FED. ROAD DIST. NO. |         | ILLINOIS | PROJECT      |           |

\*05-04163-00-BR



- NOTES:
1. THE MARKERS FOR THE END OF THE ROADWAY SHALL CONFORM WITH SECTION 3C-4 OF THE MUTCD. THE MARKERS AND SIGN SHOULD BE PLACED AT A MOUNTING HEIGHT OF 5 FT MIN.
  2. THE "ROAD ENDS 500 FT" SIGN (W8-1108) SHOULD BE USED WHERE "d" EXCEEDS 1500 FT OR WHERE SIGHT DISTANCE TO THE CLOSURE IS LESS THAN 500 FT.
  3. THE "DEAD END" SIGN (W14-1) SHOULD BE USED IN ALL CASES EXCEPT WHERE THE CLOSURE POINT IS VISIBLE FROM THE CROSSROAD.

REFER TO STANDARDS 720011, 729001 FOR SIGNING DETAILS

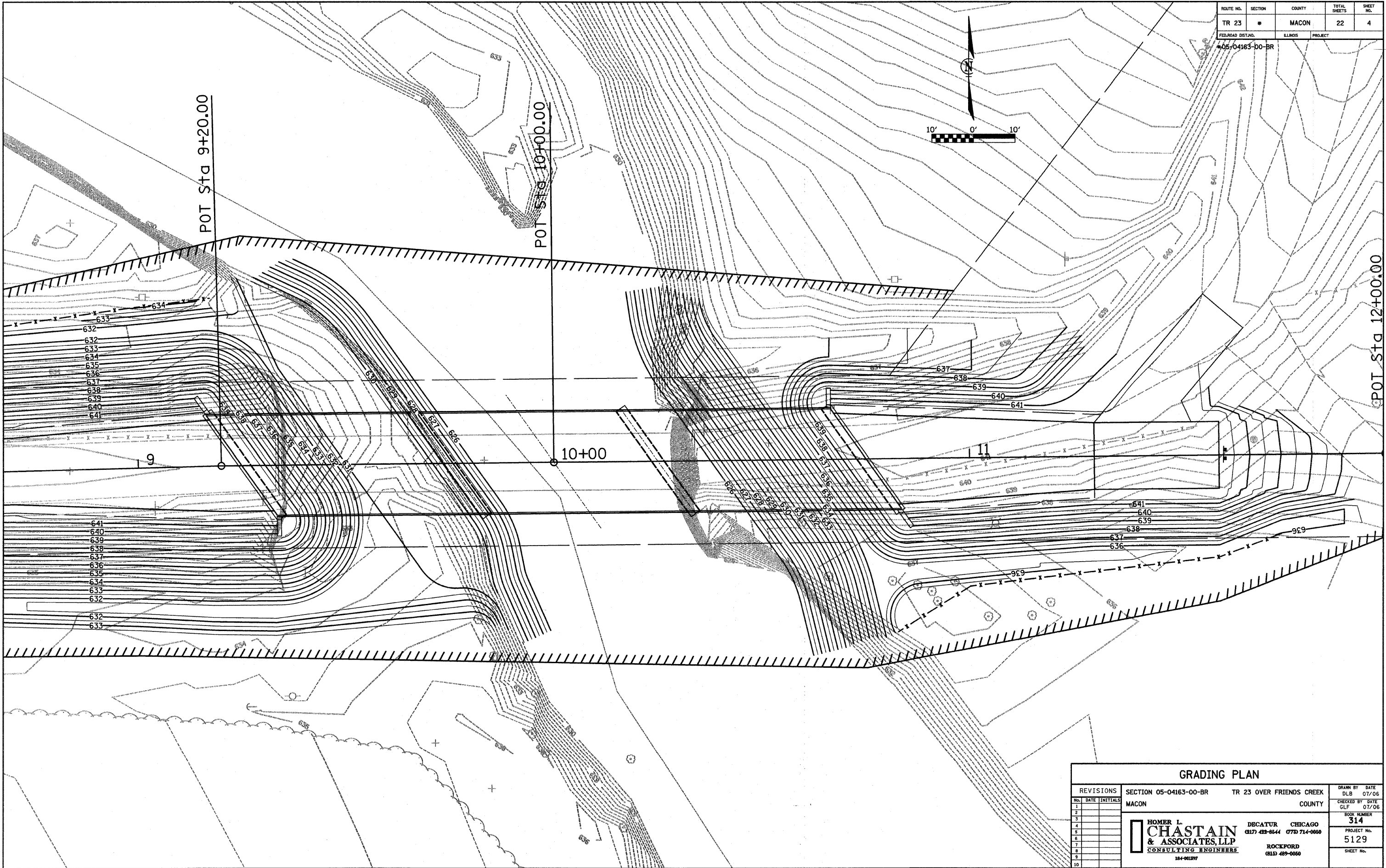
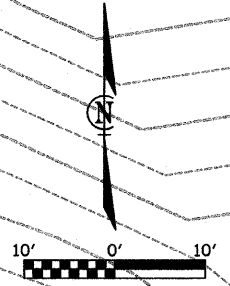
| REVISIONS |  | SECTION 05-04163-00-BR TR 23 OVER FRIENDS CREEK |        | DRAWN BY    | DATE  |
|-----------|--|---|--------|-------------|-------|
| 1         |  | MACON   | COUNTY | DLB         | 07/06 |
| 2         |  |   |        | CHECKED BY  | DATE  |
| 3         |  |   |        | GLF         | 07/06 |
| 4         |  |   |        | BOOK NUMBER | 314   |
| 5         |  |   |        | PROJECT NO. | 5129  |
| 6         |  |   |        | SHEET NO.   |       |
| 7         |  |   |        |             |       |
| 8         |  |   |        |             |       |
| 9         |  |   |        |             |       |
| 10        |  |   |        |             |       |

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 184-001297

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 (815) 489-0050

|                     |         |          |              |           |
|---------------------|---------|----------|--------------|-----------|
| ROUTE NO.           | SECTION | COUNTY   | TOTAL SHEETS | SHEET NO. |
| TR 23               | *       | MACON    | 22           | 4         |
| FED. ROAD DIST. NO. |         | ILLINOIS | PROJECT      |           |
| 05/04163-00-BR      |         |          |              |           |



| REVISIONS |      |          |  | SECTION 05-04163-00-BR |        | TR 23 OVER FRIENDS CREEK |  | DRAWN BY DATE |       |
|-----------|------|----------|--|------------------------|--------|--------------------------|--|---------------|-------|
| No.       | DATE | INITIALS |  | MACON                  | COUNTY |                          |  | DLB           | 07/06 |
| 1         |      |          |  |                        |        |                          |  |               |       |
| 2         |      |          |  |                        |        |                          |  |               |       |
| 3         |      |          |  |                        |        |                          |  |               |       |
| 4         |      |          |  |                        |        |                          |  |               |       |
| 5         |      |          |  |                        |        |                          |  |               |       |
| 6         |      |          |  |                        |        |                          |  |               |       |
| 7         |      |          |  |                        |        |                          |  |               |       |
| 8         |      |          |  |                        |        |                          |  |               |       |
| 9         |      |          |  |                        |        |                          |  |               |       |
| 10        |      |          |  |                        |        |                          |  |               |       |

|  |  |                            |
|--|--|----------------------------|
| <b>HOMER L. CHASTAIN &amp; ASSOCIATES, LLP</b><br>CONSULTING ENGINEERS<br>184-001297 | DECATUR CHICAGO<br>(317) 422-8644 (773) 714-0050 | ROCKFORD<br>(815) 489-0050 |
|  | PROJECT No. 5129                                 |                            |
|  | SHEET No.  |                            |
|  | BOOK NUMBER 314                                  |                            |



| ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|-----------|---------|--------|--------------|-----------|
| TR 23     | *       | MACON  | 22           | 5         |

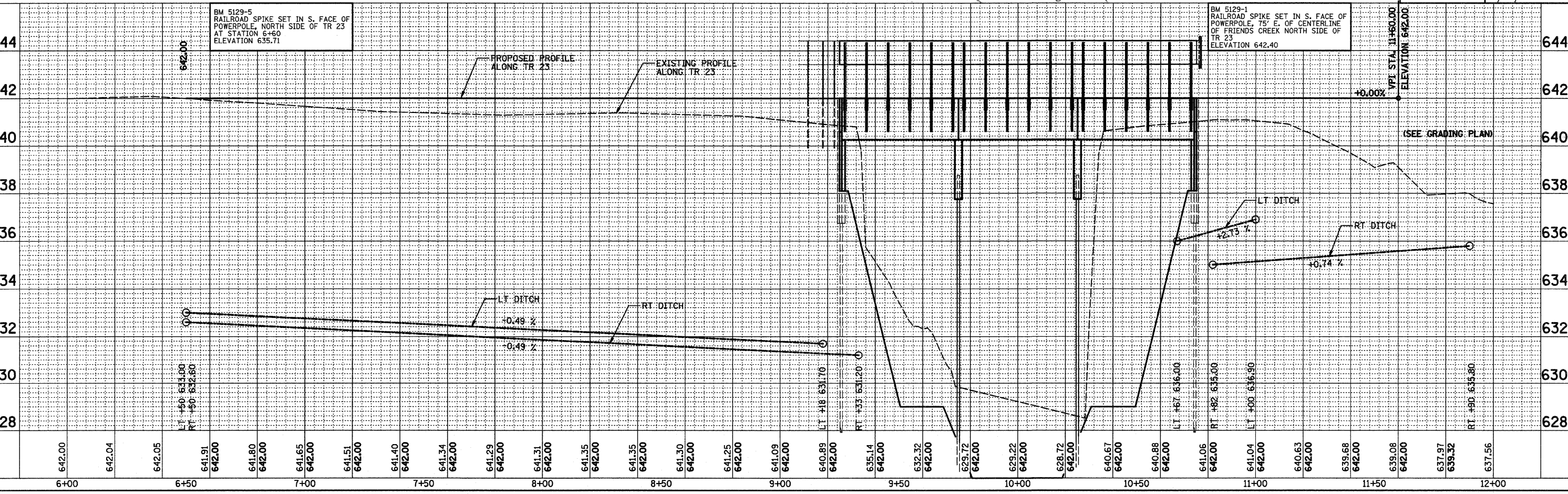
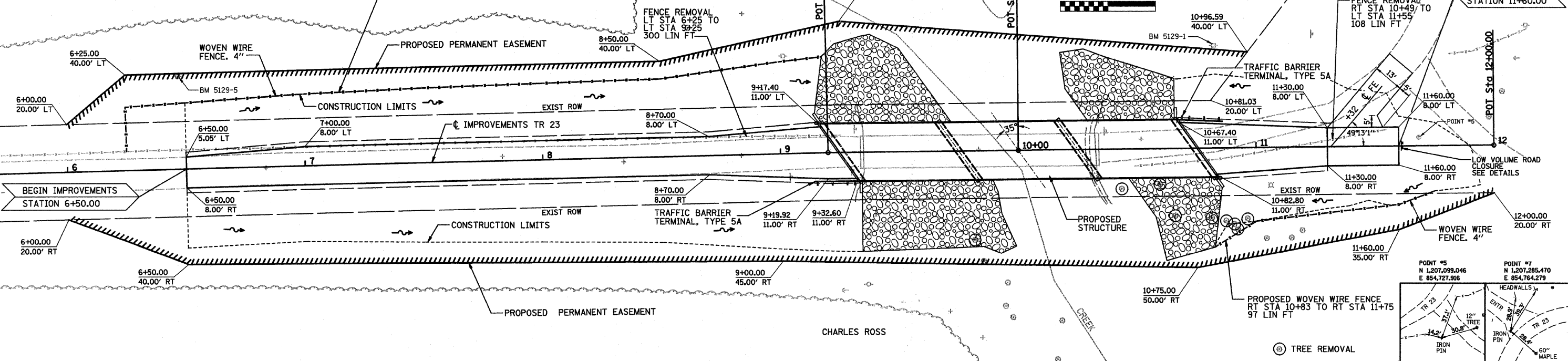
  

| STA.                 | TO STA.          |
|----------------------|------------------|
| FED. RD. DIST. NO. 7 | ILLINOIS PROJECT |

\*05-04163-00-BR

**CENTERLINE ALIGNMENT**

Point D0001 N 1,207,081.8876 E 854,059.6564 Sta 5+00.00  
 Course from D0001 to D0002 N 88° 30' 36" E Dist 420.0000  
 Point D0002 N 1,207,092.8092 E 854,479.5144 Sta 9+20.00  
 Course from D0002 to D0003 N 89° 23' 43" E Dist 80.0000  
 Point D0003 N 1,207,093.6536 E 854,559.5099 Sta 10+00.00  
 Course from D0003 to D0004 N 89° 23' 43" E Dist 200.0000  
 Point D0004 N 1,207,095.7647 E 854,759.4988 Sta 12+00.00



DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
 SURVEYED: \_\_\_\_\_ ALIGNED: \_\_\_\_\_ CHECKED: \_\_\_\_\_  
 NOTEBOOK NO. \_\_\_\_\_ RT. OF WAY CHECKED: \_\_\_\_\_

CHASTAIN & ASSOCIATES LLP  
 REGISTERED PROFESSIONAL ENGINEERS  
 1000 N. W. 10th St., Suite 1000  
 Ft. Lauderdale, FL 33304  
 (954) 561-1000

DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
 SURVEYED: \_\_\_\_\_ GRADES CHECKED: \_\_\_\_\_  
 NOTEBOOK NO. \_\_\_\_\_ STRUCTURE NOTATIONS CHD: \_\_\_\_\_

| ROUTE NO.       | SECTION  | COUNTY  | TOTAL SHEETS | SHEET NO. |
|-----------------|----------|---------|--------------|-----------|
| TR 23           |          | MACON   | 22           | 6         |
| FED. ROAD DIST. | ILLINOIS | PROJECT |              |           |

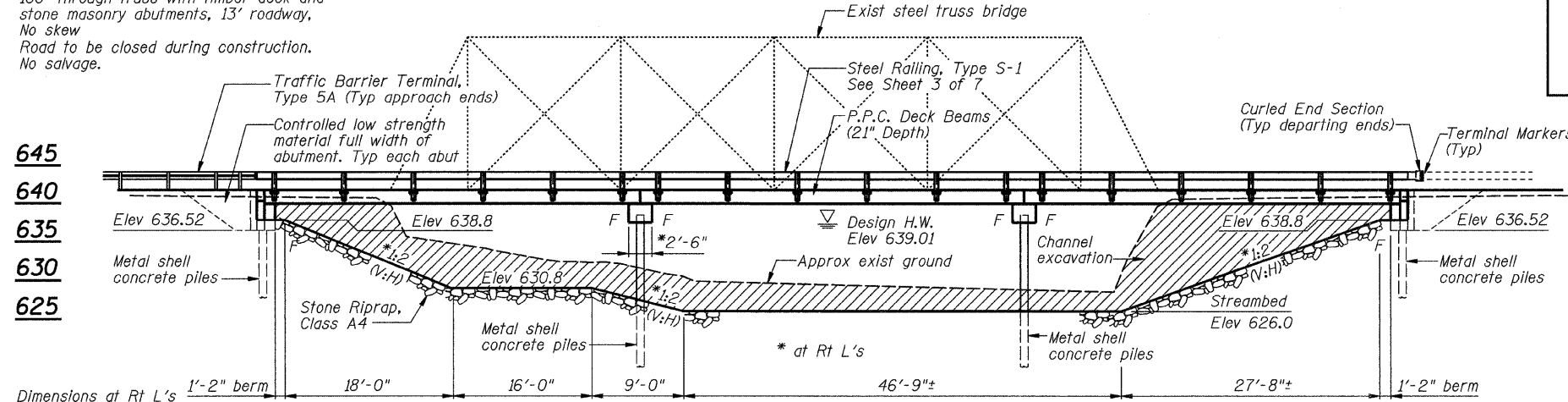
05-04163-00-BR

**Bench Mark 5129-1:**

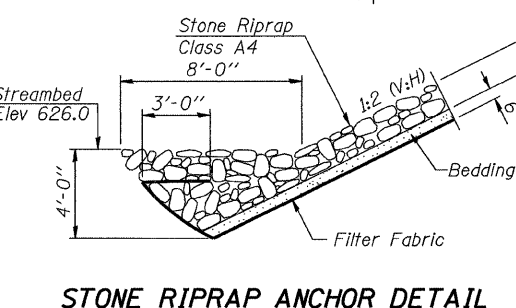
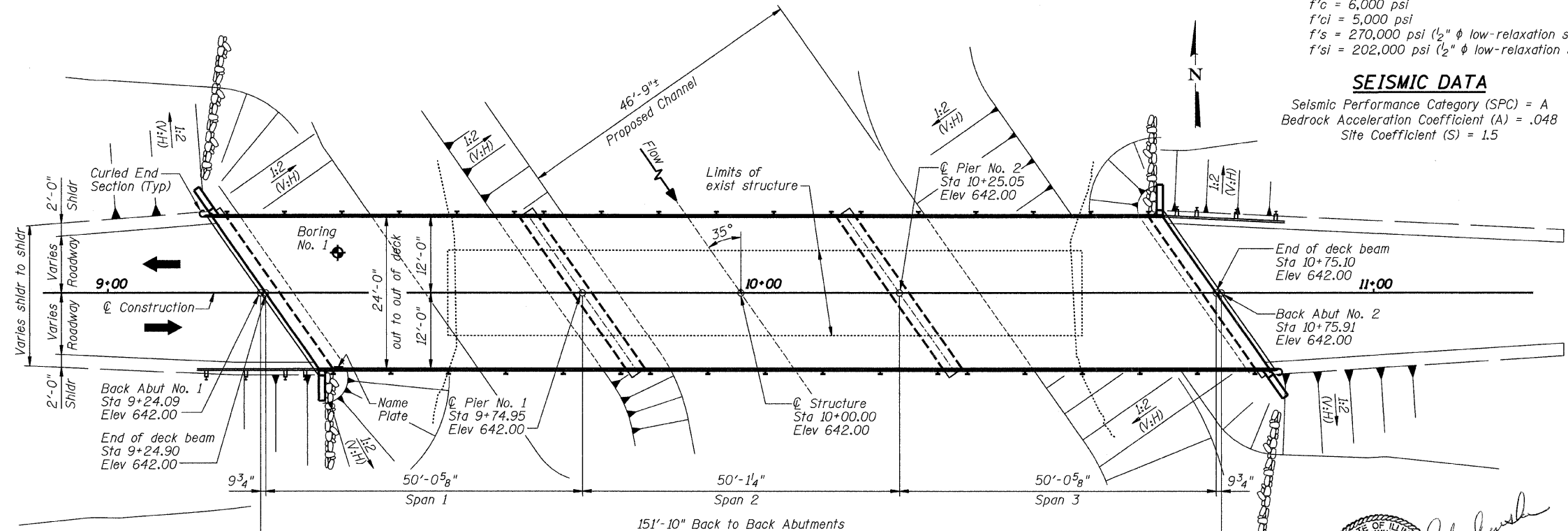
Railroad spike set in S. face of powerpole, 75' E. of centerline of Friends Creek north side of TR 23 Elev 642.40

**Existing Structure:**

100' through truss with timber deck and stone masonry abutments, 13' roadway. No skew. Road to be closed during construction. No salvage.



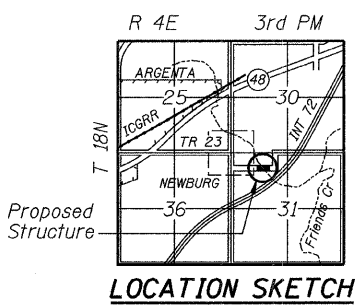
**ELEVATION**



**WATERWAY INFORMATION**

Drainage Area = 114.1 sq mi Low Grade Elev. 642.00 - Sta. 10+00

| Flood      | Freq. Yr. | Q C.F.S. | Opening Sq. Ft. |       | Nat. H.W.E. |       | Head - Ft. |        | Headwater El. |       |
|------------|-----------|----------|-----------------|-------|-------------|-------|------------|--------|---------------|-------|
|            |           |          | Exist.          | Prop. | Exist.      | Prop. | Exist.     | Prop.  | Exist.        | Prop. |
| Design     | 30        | 5730     | 945             | 1054  | 639.01      | 0.13  | 0.05       | 639.14 | 639.06        |       |
| Base       | 100       | 7699     | 990             | 1165  | 640.01      | 0.37  | 0.13       | 640.38 | 640.14        |       |
| Max. Calc. | 500       | 10083    | 990             | 1194  | 640.92      | 0.86  | 0.42       | 641.78 | 641.34        |       |



**FRIENDS CREEK  
BUILT 20 BY  
FRIENDS CREEK ROAD DISTRICT  
MACON COUNTY  
SECTION 05-04163-00-BR  
STA 10+00.00  
STR. NO. 058-3383 LOADING HS20**

**NAME PLATE**  
See Std. 515001

**LOADING HS20**  
Allow 50 lb/sq. ft. for future wearing surface.

**DESIGN SPECIFICATIONS**  
2002 AASHTO 17th Edition

**DESIGN STRESSES**

**FIELD UNITS**  
f'c = 3,500 psi  
fy = 60,000 psi (reinforcement)

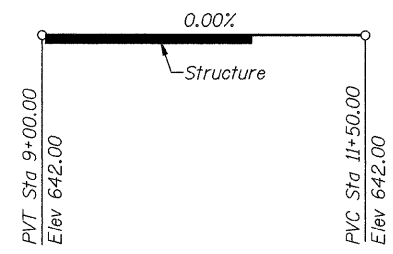
**PRECAST PRESTRESSED UNITS**  
f'c = 6,000 psi  
f'ci = 5,000 psi  
f's = 270,000 psi (1/2" φ low-relaxation strands)  
f'si = 202,000 psi (1/2" φ low-relaxation strands)

**SEISMIC DATA**

Seismic Performance Category (SPC) = A  
Bedrock Acceleration Coefficient (A) = .048  
Site Coefficient (S) = 1.5

**GENERAL NOTES:**

For Soil Boring Data see Special Provisions.  
Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See BDE Special Provisions  
Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.  
The top surface of the beams shall be finished according to Article 504.06 of the Standard Specifications except that the surface shall not be roughened by brooming. The finished surface shall be free of depressions or high spots with sharp corners, and the top edge of keys shall be rounded or chamfered a minimum of 1/4".  
The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.  
All construction joints shall be bonded.  
See Roadway Plans for channel excavation limits and quantities.  
See Roadway Plans for additional riprap limits and quantities.



**CONSTRUCTION PROFILE**

**TOTAL BILL OF MATERIAL**

| Item  | Unit  | Quantity |
|---|-------|----------|
| Removal of Existing Structures                      | Each  | 1        |
| Structure Excavation                                | Cu Yd | 70       |
| Concrete Structures                                 | Cu Yd | 39.9     |
| Precast Prestressed Concrete Deck Beams (21" Depth) | Sq Ft | 3600     |
| Reinforcement Bars, Epoxy Coated                    | Pound | 3710     |
| Steel Railing, Type S-1                             | Foot  | 300      |
| Furnishing Metal Pile Shells 14"                    | Foot  | 585      |
| Driving Piles                                       | Foot  | 585      |
| Test Pile Metal Shells                              | Each  | 2        |
| Name Plates   | Each  | 1        |
| Terminal Marker - Direct Applied                    | Each  | 4        |
| Controlled Low-Strength Material                    | Cu Yd | 48       |



DATE: 2/20/08  
EXP 11/30/08

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 ECONOMIC ONE FOR THE STYLE OF STRUCTURE AND COMPLIES WITH THE REQUIREMENTS OF THE CURRENT "AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES."

**GENERAL PLAN AND ELEVATION**

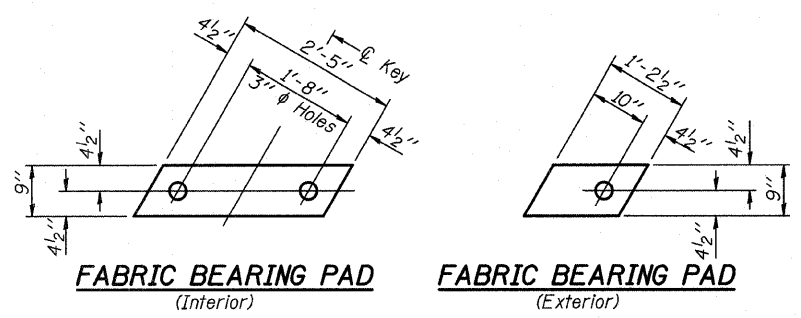
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|-------------------------------------|-----------------------------|-----------------|--------------|
| SECTION 05-04163-00-BR              | FRIENDS CREEK ROAD DISTRICT | DRAWN BY DATE   | R KING 11/07 |
| SN 058-3383                         | MACON COUNTY                | CHECKED BY DATE | JMB 11/07    |
| PROJECT NO. 5129                    |                             | BOOK NUMBER     | 314          |
| HOMER L. CHASTAIN & ASSOCIATES, LLP |                             | PROJECT NO.     | 5129         |
| CONSULTING ENGINEERS                |                             | SHEET NO.       |              |

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ROCKFORD (815) 489-0650

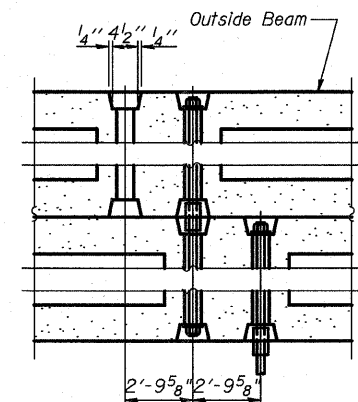
Sheet No. 2  
of 7 Sheets

| ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|-----------|---------|--------|--------------|-----------|
| TR 23     | *       | MACON  | 22           | 7         |

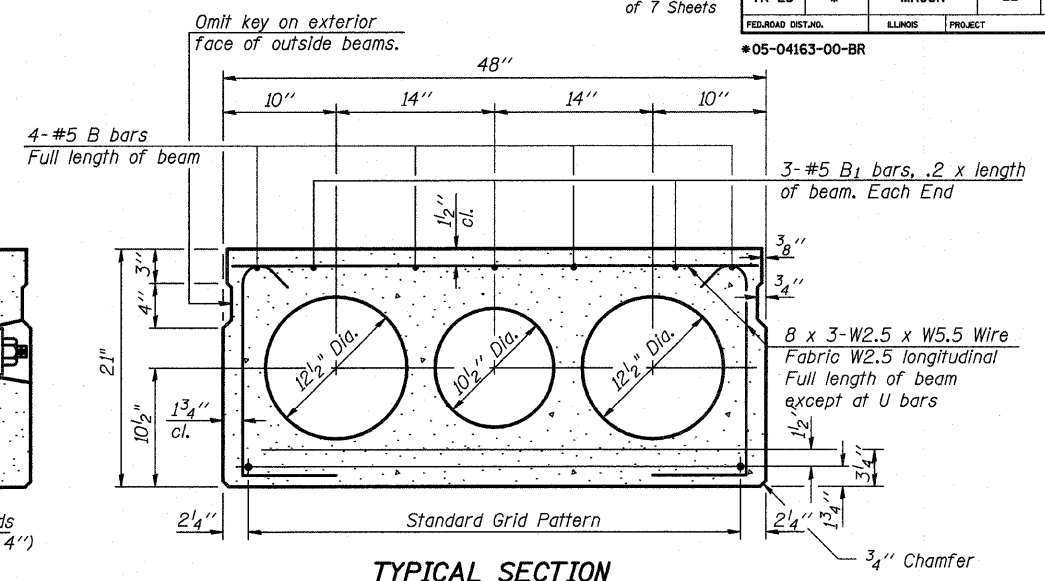
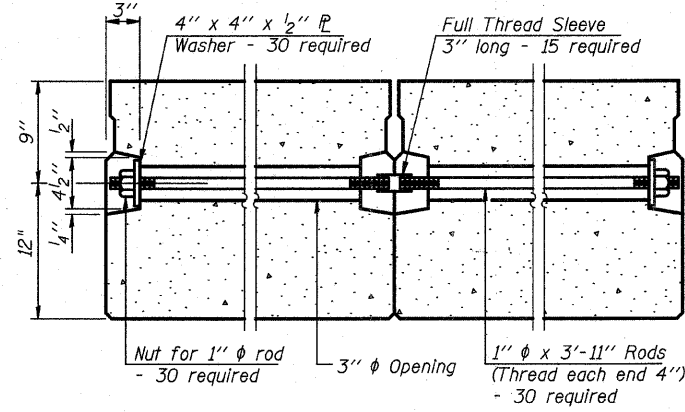
FED. ROAD DIST. NO. ILLINOIS PROJECT  
\*05-04163-00-BR



**FIXED**



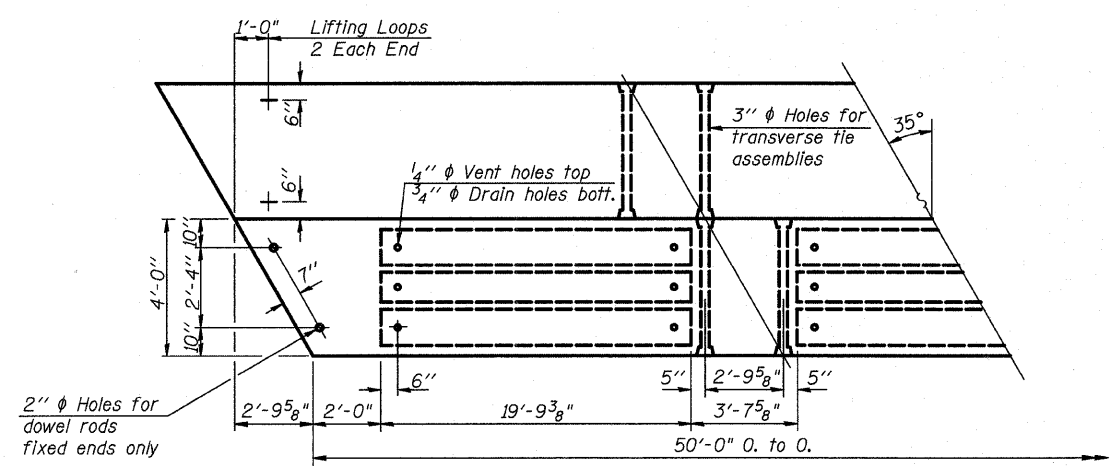
**TYPICAL TRANSVERSE TIE ASSEMBLY**



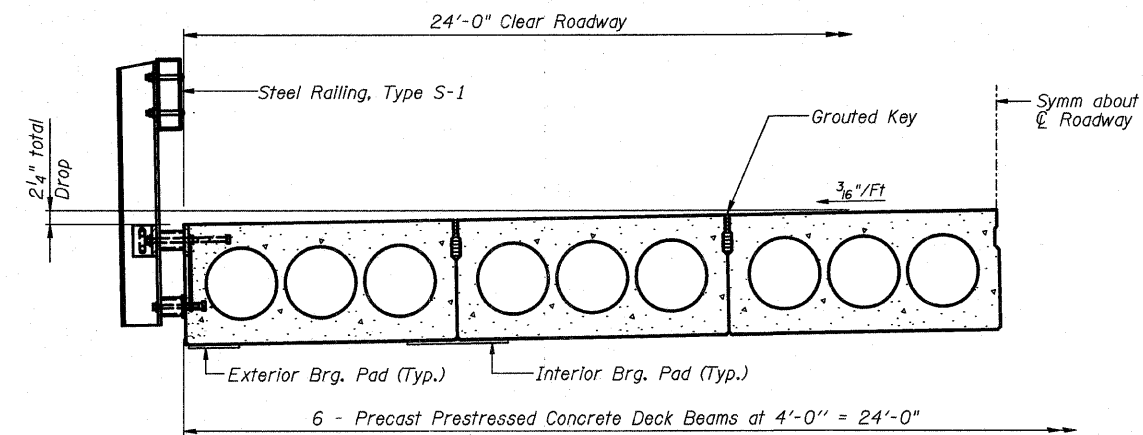
**TYPICAL SECTION**

1/2"  $\phi$  Strands, Each Strand Stressed to 30,900 Lbs.  
14-Strands 1 3/4" up, 4-Strands 3/4" up, 2-Strands 15" up

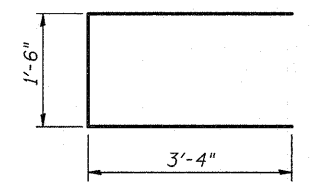
Note:  
Place strands symmetrically about  $\phi$  of beam.



**PLAN**



**HALF CROSS SECTION**



**BAR U1**

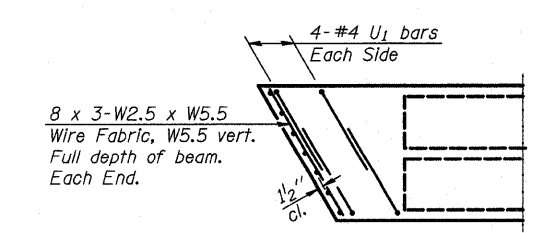
**\*BILL OF MATERIAL**

| Bar                                 | No. | Size    | Length | Shape |
|-------------------------------------|-----|---------|--------|-------|
| B                                   | 8   | #5      | 26'-0" | —     |
| B1                                  | 6   | #5      | 10'-0" | —     |
| U1                                  | 16  | #4      | 8'-2"  | ⊓     |
| Precast Prestressed Conc. Deck Bms. |     | Sq. Ft. | 3600   |       |

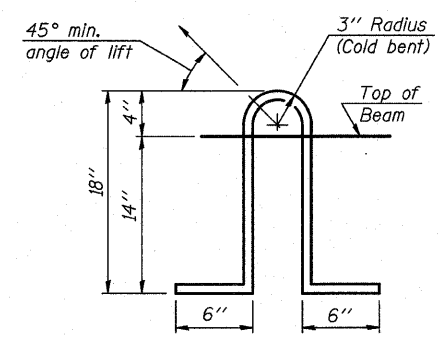
\*Note:  
Above bar list is for one (1) beam only.

**NOTES**

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"  $\phi$ -270 ksi strands, as shown. The 1"  $\phi$  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 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 beam and the bottom edge of the key. Corrosion Inhibitor, per Article 1020.05(b)(12) of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams. Required Release Strength, f'ci, shall be 5000 p.s.i.



**END PLAN**



**LIFTING LOOP DETAIL**

| REVISIONS |      | SECTION 05-04163-00-BR |       | FRIENDS CREEK ROAD DISTRICT |        | DRAWN BY DATE |       |
|-----------|------|------------------------|-------|-----------------------------|--------|---------------|-------|
| NO.       | DATE | INITIALS               | MACON | SN 058-3383                 | COUNTY | R KING        | 11/07 |
| 1         |      |                        |       |                             |        |               |       |
| 2         |      |                        |       |                             |        |               |       |
| 3         |      |                        |       |                             |        |               |       |
| 4         |      |                        |       |                             |        |               |       |
| 5         |      |                        |       |                             |        |               |       |
| 6         |      |                        |       |                             |        |               |       |
| 7         |      |                        |       |                             |        |               |       |
| 8         |      |                        |       |                             |        |               |       |
| 9         |      |                        |       |                             |        |               |       |
| 10        |      |                        |       |                             |        |               |       |

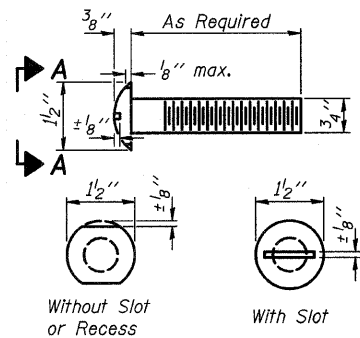
**HOMER L. CHASTAIN & ASSOCIATES, LLP**  
CONSULTING ENGINEERS  
184-001207

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ROCKFORD  
(815) 489-0050

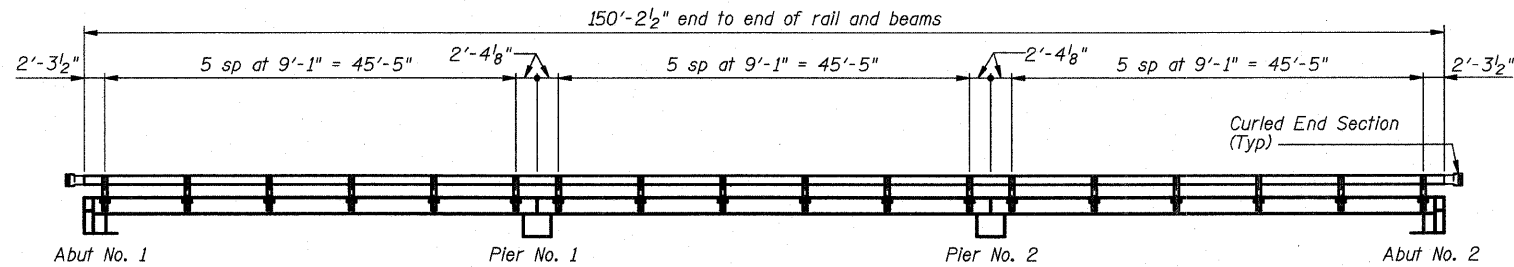
BOOK NUMBER 314  
PROJECT No. 5129  
SHEET No.

| ROUTE NO.           | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|---------------------|---------|------------------|--------------|-----------|
| TR 23               | *       | MACON            | 22           | 8         |
| FED. ROAD DIST. NO. |         | ILLINOIS PROJECT |              |           |
| *05-04163-00-BR     |         |                  |              |           |

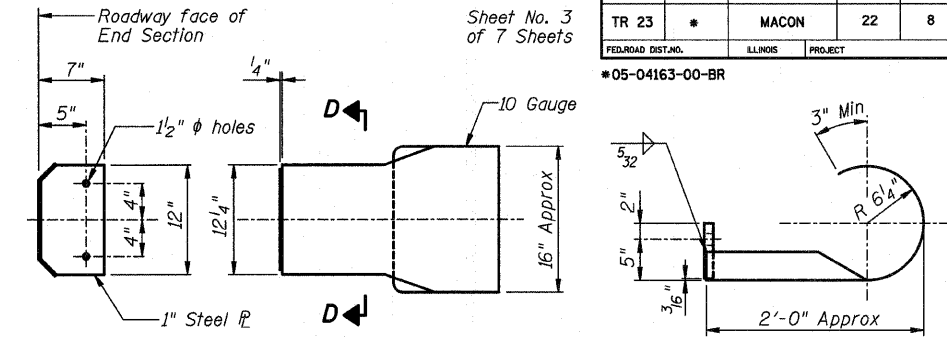


**VIEW A-A  
ROUND HEAD BOLT**

\*\* 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".

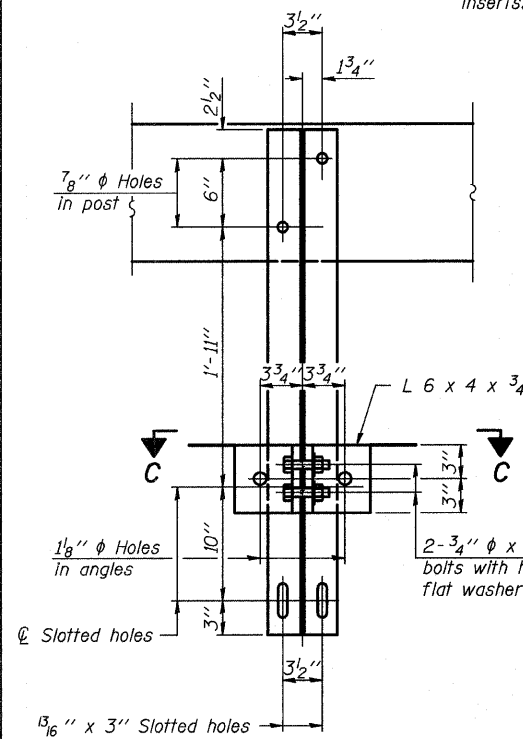


**ELEVATION**

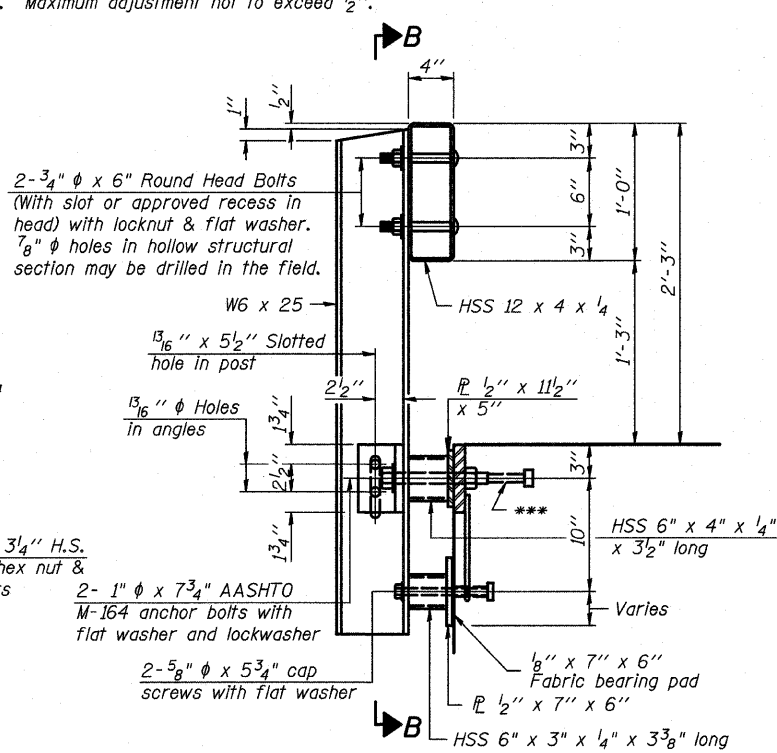


**SECTION D-D**

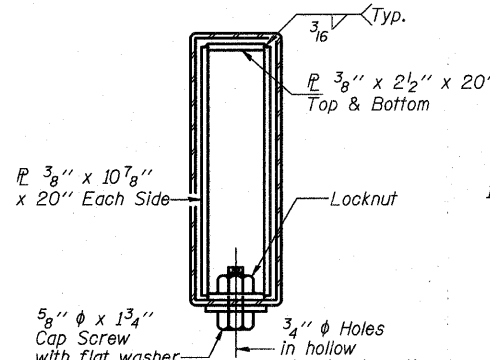
**DETAILS OF CURLED END SECTION**  
(Cost included with Steel Railing, Type S-1)



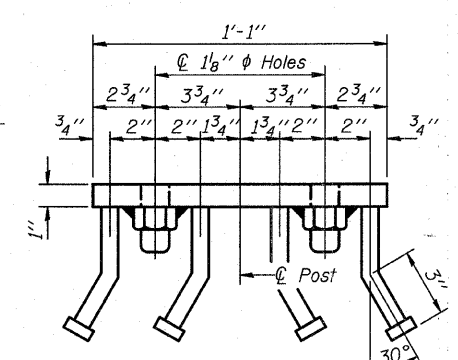
**SECTION B-B**



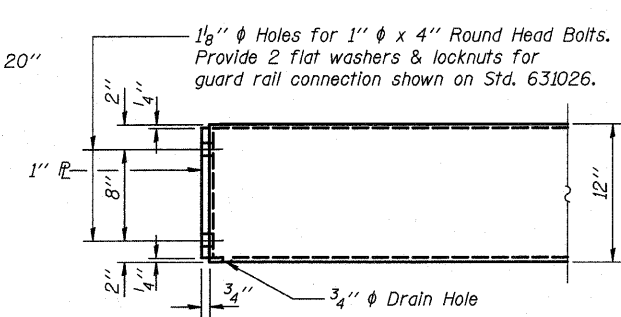
**SECTION AT RAILING POST**



**SECTIONS AT RAIL SPLICE**



**VIEW C-C**



**END OF RAIL DETAILS**

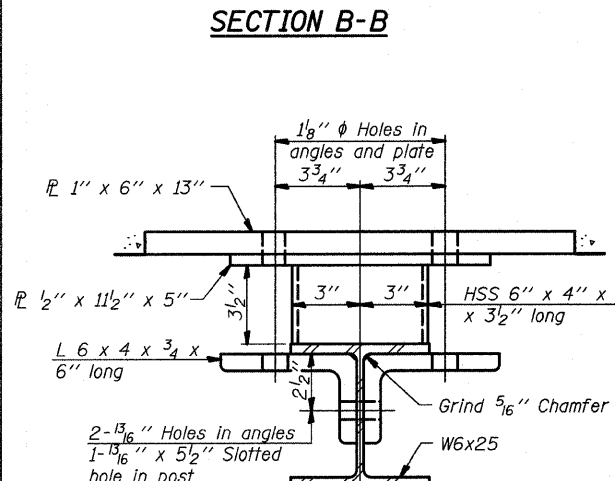
**Notes:**

All field drilled holes shall be coated with an approved zinc rich paint before erection. For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type S-1. All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.

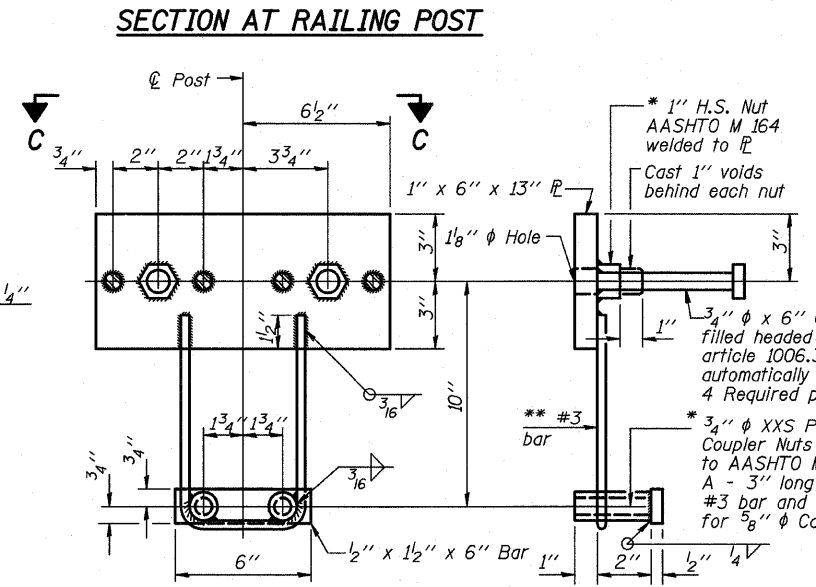
\*\*\* The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.

**BILL OF MATERIAL**

| Item                   | Unit | Quantity |
|------------------------|------|----------|
| Steel Railing Type S-1 | Foot | 300      |

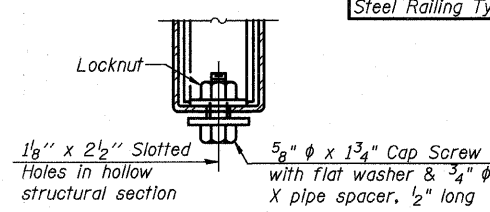


**SECTION C-C**

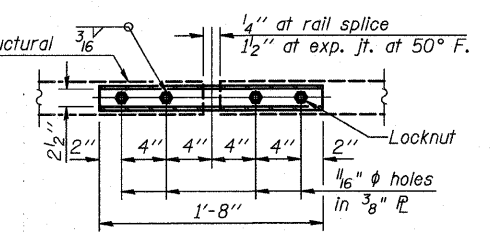


**ANCHOR DEVICE**

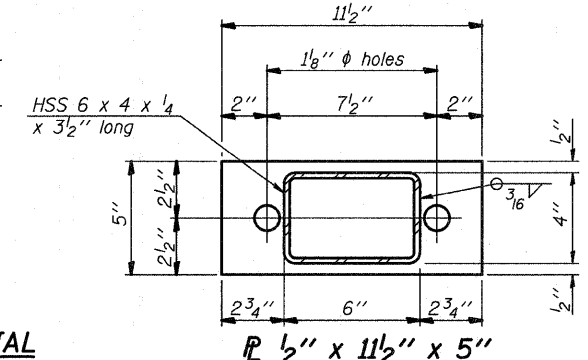
\* Threaded areas shall be plugged or blocked off during casting of beam.



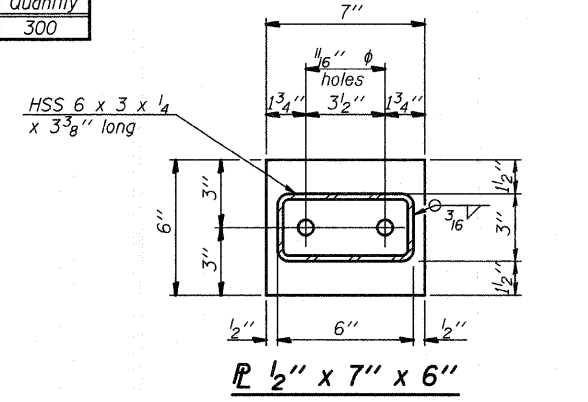
**RAIL SPLICE CONNECTION  
AT EXPANSION JT.**



**PLAN-BOTT. SPLICE PL  
TYPICAL**



**HSS 6 x 4 x 1/4  
x 3 1/2 long**



**HSS 6 x 3 x 1/4  
x 3 3/8 long**

**TYPE S-1 STEEL RAILING DETAILS**

| REVISIONS | SECTION 05-04163-00-BR | FRIENDS CREEK ROAD DISTRICT | SN 058-3383 | COUNTY | DRAWN BY DATE   |
|-----------|------------------------|-----------------------------|-------------|--------|-----------------|
| 1         | MACON                  |                             |             |        | R KING 11/07    |
| 2         |                        |                             |             |        | CHECKED BY DATE |
| 3         |                        |                             |             |        | JMB 11/07       |
| 4         |                        |                             |             |        | BOOK NUMBER     |
| 5         |                        |                             |             |        | 314             |
| 6         |                        |                             |             |        | PROJECT No.     |
| 7         |                        |                             |             |        | 5129            |
| 8         |                        |                             |             |        | SHEET No.       |
| 9         |                        |                             |             |        |                 |
| 10        |                        |                             |             |        |                 |

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184-00127

DECATUR CHICAGO  
617 423-8544 678 714-0060

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815 489-0050



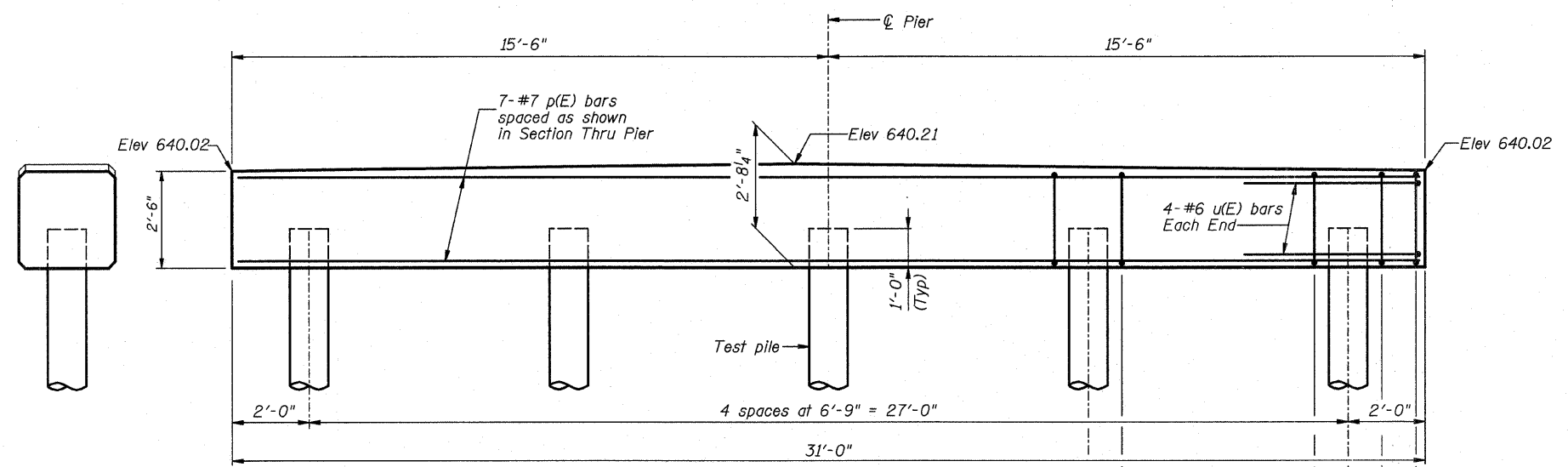
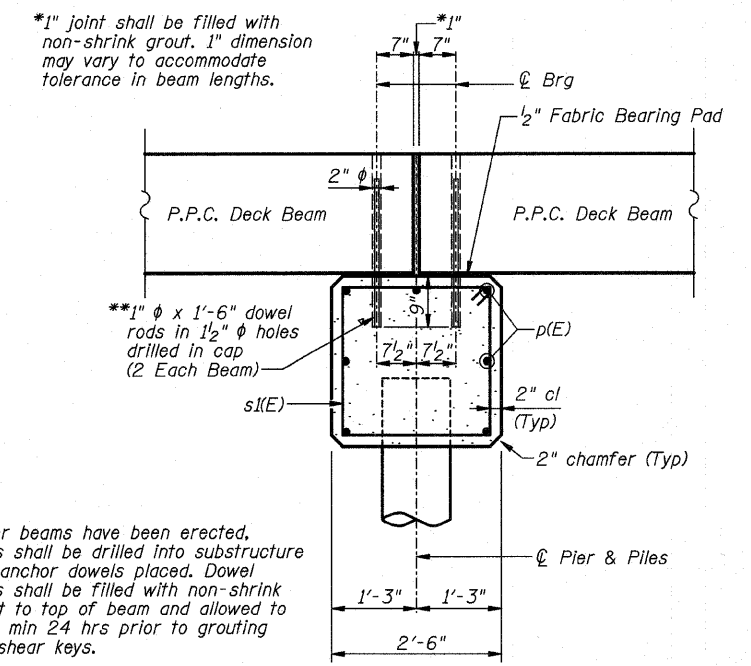
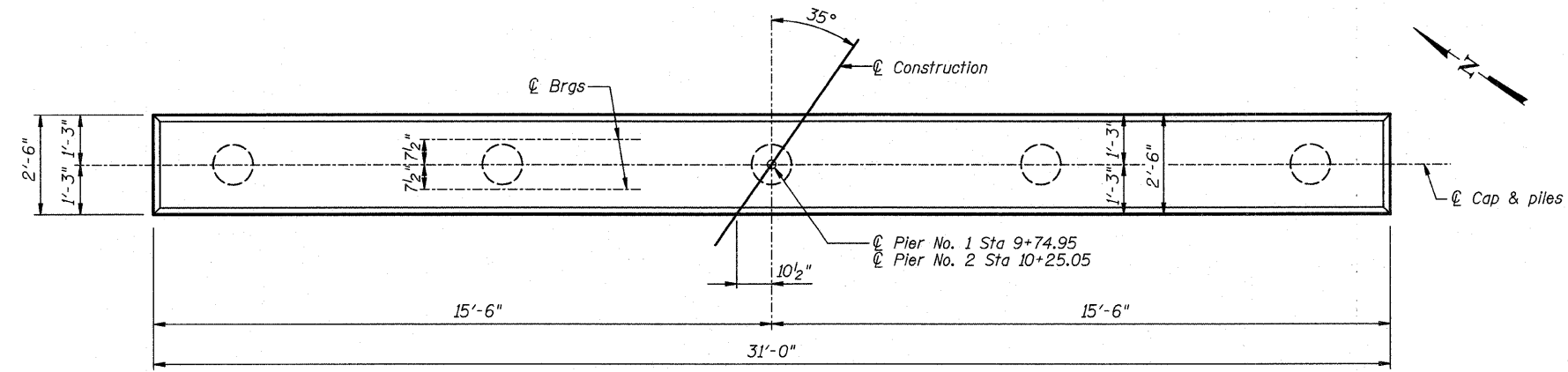






Sheet No. 6  
of 7 Sheets

| ROUTE NO.           | SECTION | COUNTY   | TOTAL SHEETS | SHEET NO. |
|---------------------|---------|----------|--------------|-----------|
| TR 23               | *       | MACON    | 22           | 11        |
| FED. ROAD DIST. NO. |         | ILLINOIS | PROJECT      |           |
| *05-04163-00-BR     |         |          |              |           |



END VIEW

**PIER NO. 1 BILL OF MATERIAL**

| Bar                               | No. | Size  | Length | Shape |
|-----------------------------------|-----|-------|--------|-------|
| p(E)                              | 7   | #7    | 30'-8" | —     |
| s(E)                              | 26  | #4    | 9'-5"  | □     |
| u(E)                              | 8   | #6    | 11'-1" | ⊏     |
| Concrete Structures               |     | Cu Yd | 7.4    |       |
| Reinforcement Bars (Epoxy Coated) |     | Pound | 740    |       |
| Furnishing Metal Pile Shells 14"  |     | Foot  | 175    |       |
| Driving Piles                     |     | Foot  | 175    |       |

Reinforcement bars designated (E) shall be epoxy coated.

**PIER NO. 2 BILL OF MATERIAL**

| Bar                               | No. | Size  | Length | Shape |
|-----------------------------------|-----|-------|--------|-------|
| p(E)                              | 7   | #7    | 30'-8" | —     |
| s(E)                              | 26  | #4    | 9'-5"  | □     |
| u(E)                              | 8   | #6    | 11'-1" | ⊏     |
| Concrete Structures               |     | Cu Yd | 7.4    |       |
| Reinforcement Bars (Epoxy Coated) |     | Pound | 740    |       |
| Furnishing Metal Pile Shells 14"  |     | Foot  | 140    |       |
| Driving Piles                     |     | Foot  | 140    |       |
| Test Pile Metal Shells            |     | Each  | 1      |       |

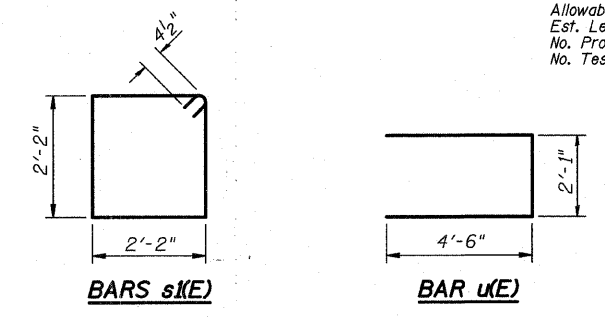
Reinforcement bars designated (E) shall be epoxy coated.

**PILE DATA:**

Type and Size: Metal Shell 14 in dia x 0.25 in walls  
Nominal Required Bearing: 300 kips  
Allowable Resistance Available: 100 kips  
Est. Length: 35'  
No. Production Piles: 5  
No. Test Piles: 0

**PILE DATA:**

Type and Size: Metal Shell 14 in dia x 0.25 in walls  
Nominal Required Bearing: 300 kips  
Allowable Resistance Available: 100 kips  
Est. Length: 35'  
No. Production Piles: 4  
No. Test Piles: 1

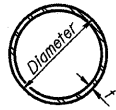


| REVISIONS |      | SECTION 05-04163-00-BR FRIENDS CREEK ROAD DISTRICT |             | DRAWN BY DATE |
|-----------|------|--|-------------|---------------|
| No.       | DATE | INITIALS   | SN 058-3383 | R KING 11/07  |
| 1         |      |  |             |               |
| 2         |      |  |             |               |
| 3         |      |  |             |               |
| 4         |      |  |             |               |
| 5         |      |  |             |               |
| 6         |      |  |             |               |
| 7         |      |  |             |               |
| 8         |      |  |             |               |
| 9         |      |  |             |               |
| 10        |      |  |             |               |

|   |                |                |             |
|---|----------------|----------------|-------------|
| MACON   | DECATUR        | CHICAGO        | BOOK NUMBER |
|   | (217) 422-8544 | (773) 714-0050 | 314         |
| <b>HOMER L. CHASTAIN &amp; ASSOCIATES, LLP</b><br>CONSULTING ENGINEERS<br>184-00197 |                |                | PROJECT No. |
| ROCKFORD<br>(815) 489-0050  |                |                | <b>5129</b> |
|   |                |                | SHEET No.   |

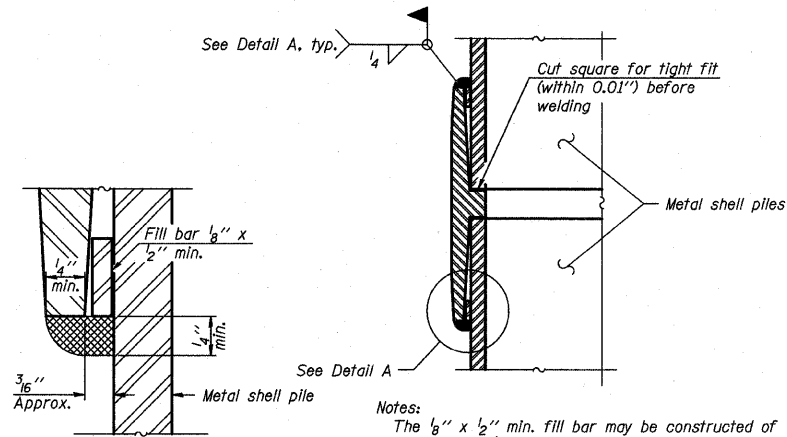
| ROUTE NO.           | SECTION | COUNTY   | TOTAL SHEETS | SHEET NO. |
|---------------------|---------|----------|--------------|-----------|
| TR 23               | *       | MACON    | 22           | 12        |
| FED. ROAD DIST. NO. |         | ILLINOIS | PROJECT      |           |

\*05-04163-00-BR



**METAL SHELL PILE TABLE**

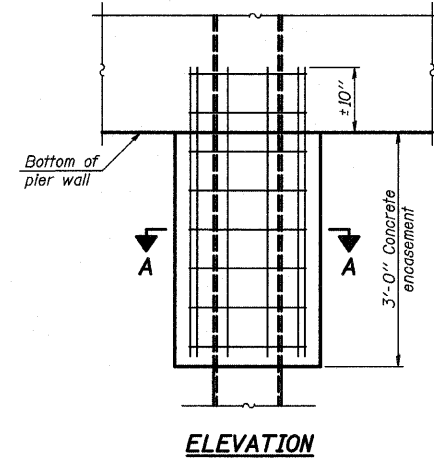
| Designation | Wall thickness t | Weight per foot (Lbs./ft.) | Inside volume (yd. <sup>3</sup> /ft.) | Encasement diameter A |
|-------------|------------------|----------------------------|---------------------------------------|-----------------------|
| PP12        | 0.179"           | 22.60                      | 0.0274                                | 30"                   |
| PP12        | 0.250"           | 31.37                      | 0.0267                                | 30"                   |
| PP14        | 0.250"           | 36.71                      | 0.0368                                | 30"                   |
| PP14        | 0.312"           | 45.61                      | 0.0361                                | 30"                   |



**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.

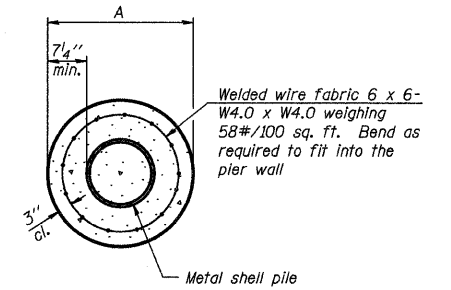
**DETAIL A**

**WELDED COMMERCIAL SPLICE**



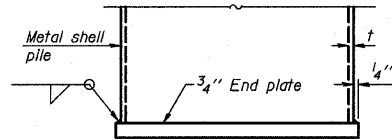
**ELEVATION**

**CONCRETE ENCASEMENT AT PIERS**

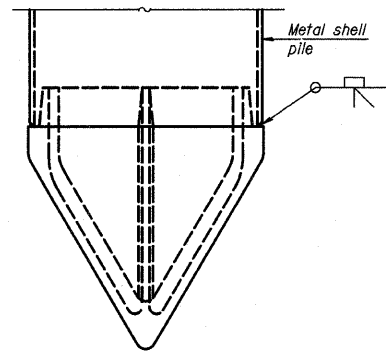


**SECTION A-A**

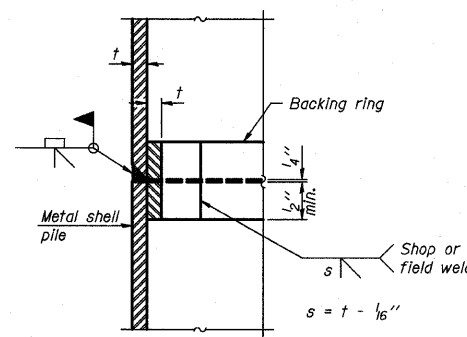
**Notes:**  
See Metal Shell Pile Table for dimension "A".  
Forms for encasement may be omitted when soil conditions permit.



**END PLATE ATTACHMENT**

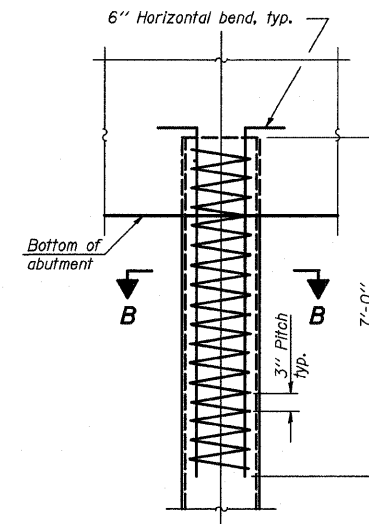


**METAL SHELL PILE SHOE ATTACHMENT**



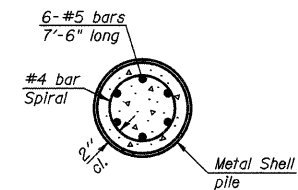
**COMPLETE PENETRATION WELD SPLICE**

Backing ring made from pile shell. Remove segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



**ELEVATION**

**METAL SHELL REINFORCEMENT AT ABUTMENTS**



**SECTION B-B**

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

**METAL SHELL PILE DETAILS**

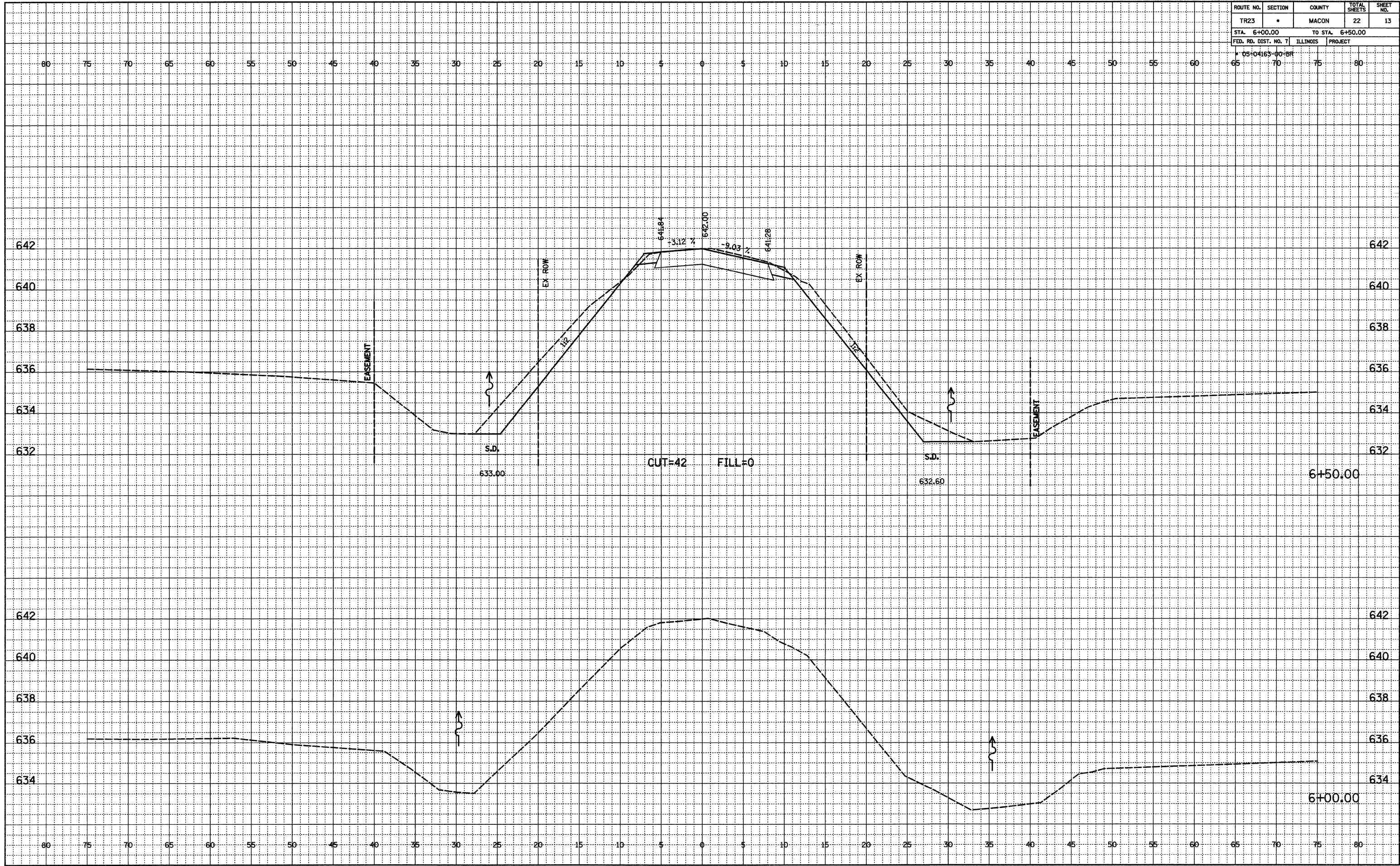
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|-----------|--|------------------------|-----------------------------|-----------------|
| REVISIONS |  | SECTION 05-04163-00-BR | FRIENDS CREEK ROAD DISTRICT | DRAWN BY DATE   |
| 1         |  | MACON                  | SN 058-3383                 | R KING 11/07    |
| 2         |  |                        |                             | CHECKED BY DATE |
| 3         |  |                        |                             | JMB 11/07       |
| 4         |  |                        |                             | BOOK NUMBER     |
| 5         |  |                        |                             | 314             |
| 6         |  |                        |                             | PROJECT No.     |
| 7         |  |                        |                             | 5129            |
| 8         |  |                        |                             | SHEET No.       |
| 9         |  |                        |                             |                 |
| 10        |  |                        |                             |                 |

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| ROUTE NO.            | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|----------------------|---------|------------------|--------------|-----------|
| TR23                 | *       | MACON            | 22           | 13        |
| STA. 6+00.00         |         | TO STA. 6+50.00  |              |           |
| FED. RD. DIST. NO. 7 |         | ILLINOIS PROJECT |              |           |
| * 03-04163-00-BR     |         |                  |              |           |

FINAL SURVEYED  
 ALIGNED  
 NOTEBOOK GRADES CHECKED  
 FT. OF WAY CHECKED  
 NO. \_\_\_\_\_

ORIGINAL SURVEYED  
 GRADES CHECKED  
 BR'S NOTED  
 STRUCTURE NOTATIONS OK'D  
 NO. \_\_\_\_\_

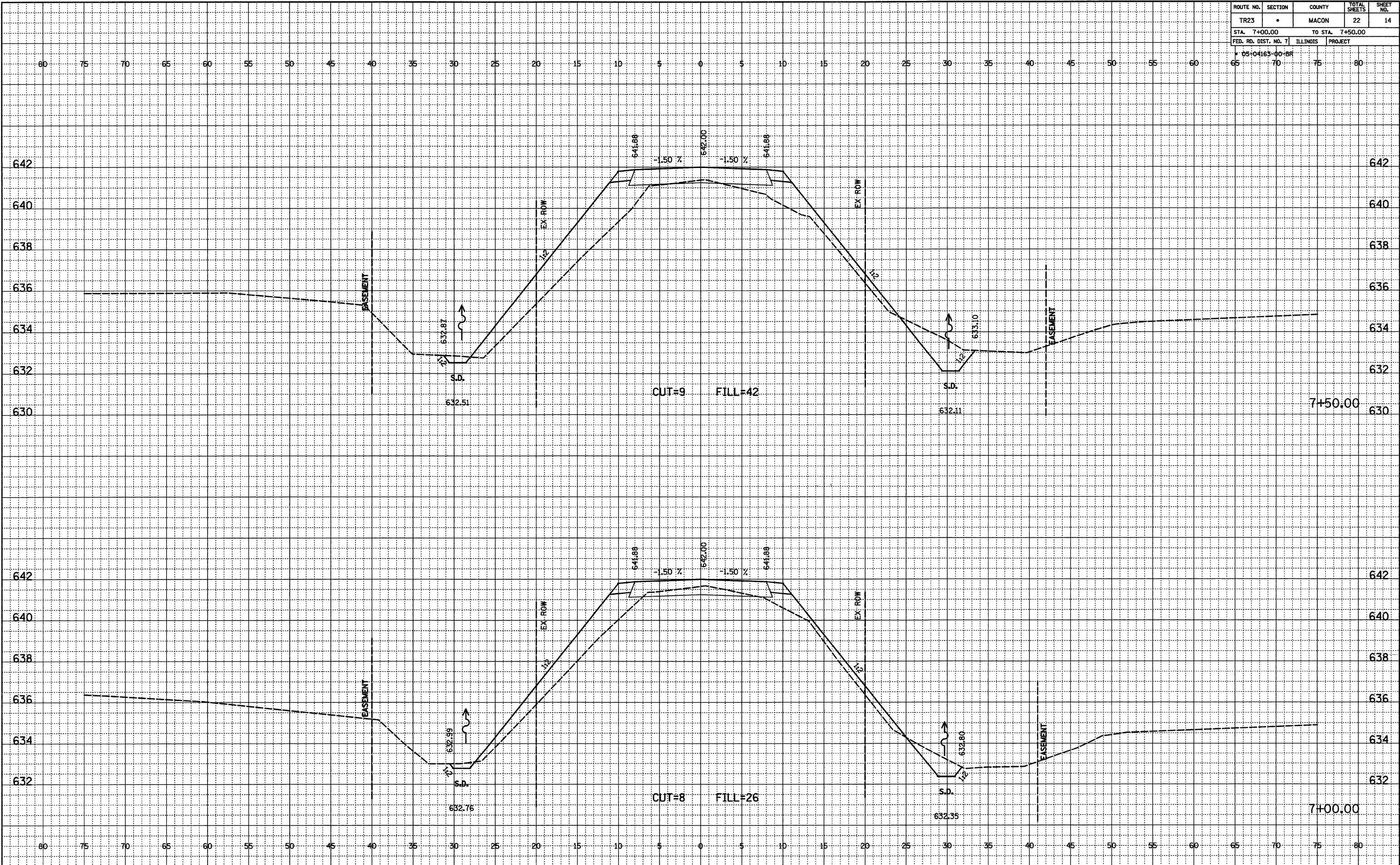




| ROUTE NO.            | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|----------------------|---------|------------------|--------------|-----------|
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| FED. RD. DIST. NO. 7 |         | ILLINOIS PROJECT |              |           |
| 05-04163-00-BF       |         |                  |              |           |

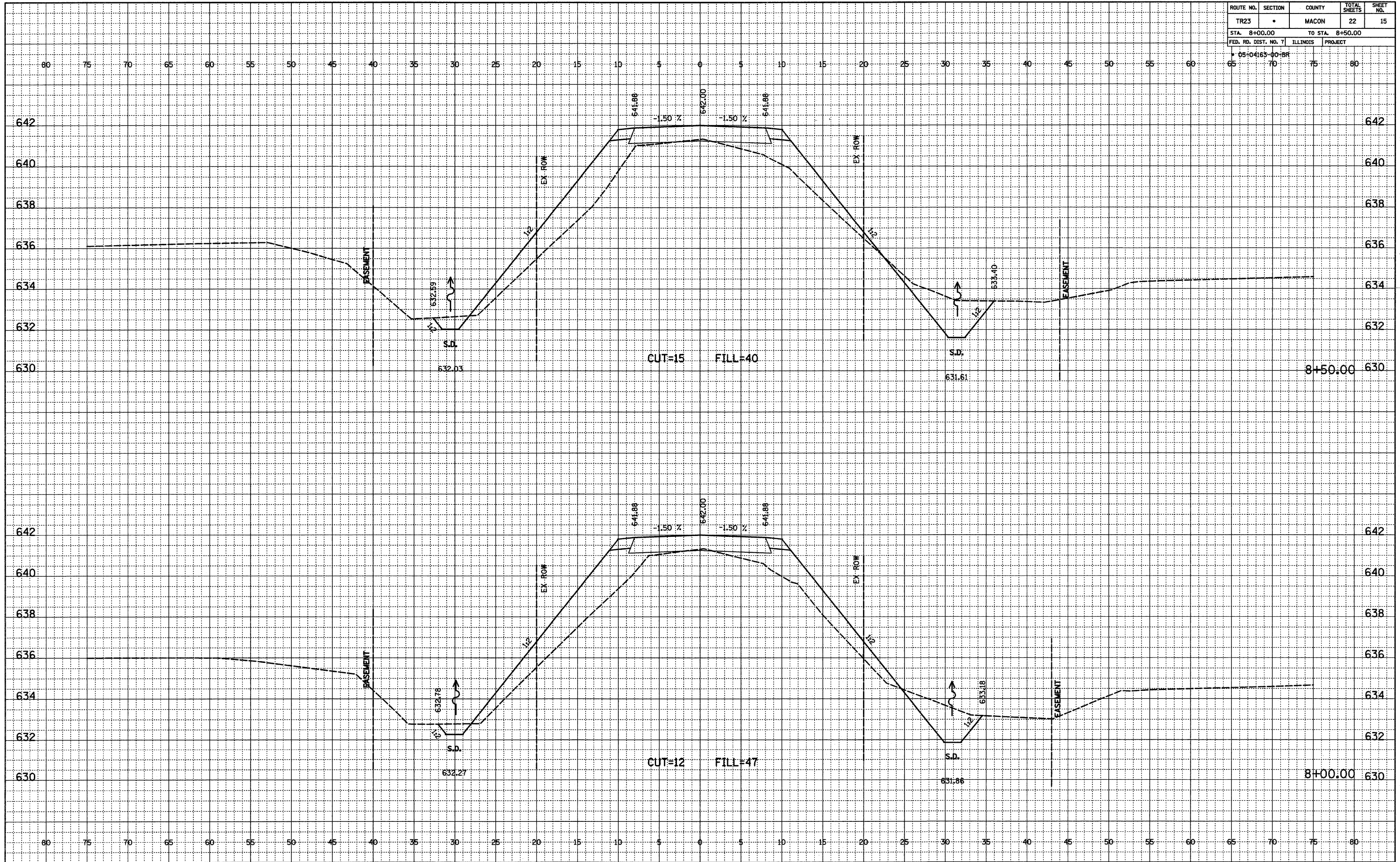
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 NO. \_\_\_\_\_

DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
 SURVEYED: \_\_\_\_\_  
 ORIGINAL: \_\_\_\_\_  
 CHECKED: \_\_\_\_\_  
 NO. \_\_\_\_\_





| ROUTE NO.            | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|----------------------|---------|------------------|--------------|-----------|
| TR23                 | *       | MACON            | 22           | 15        |
| STA. 8+00.00         |         | TO STA. 8+50.00  |              |           |
| FED. RD. DIST. NO. 7 |         | ILLINOIS PROJECT |              |           |
| * 05-04163-00-BR     |         |                  |              |           |



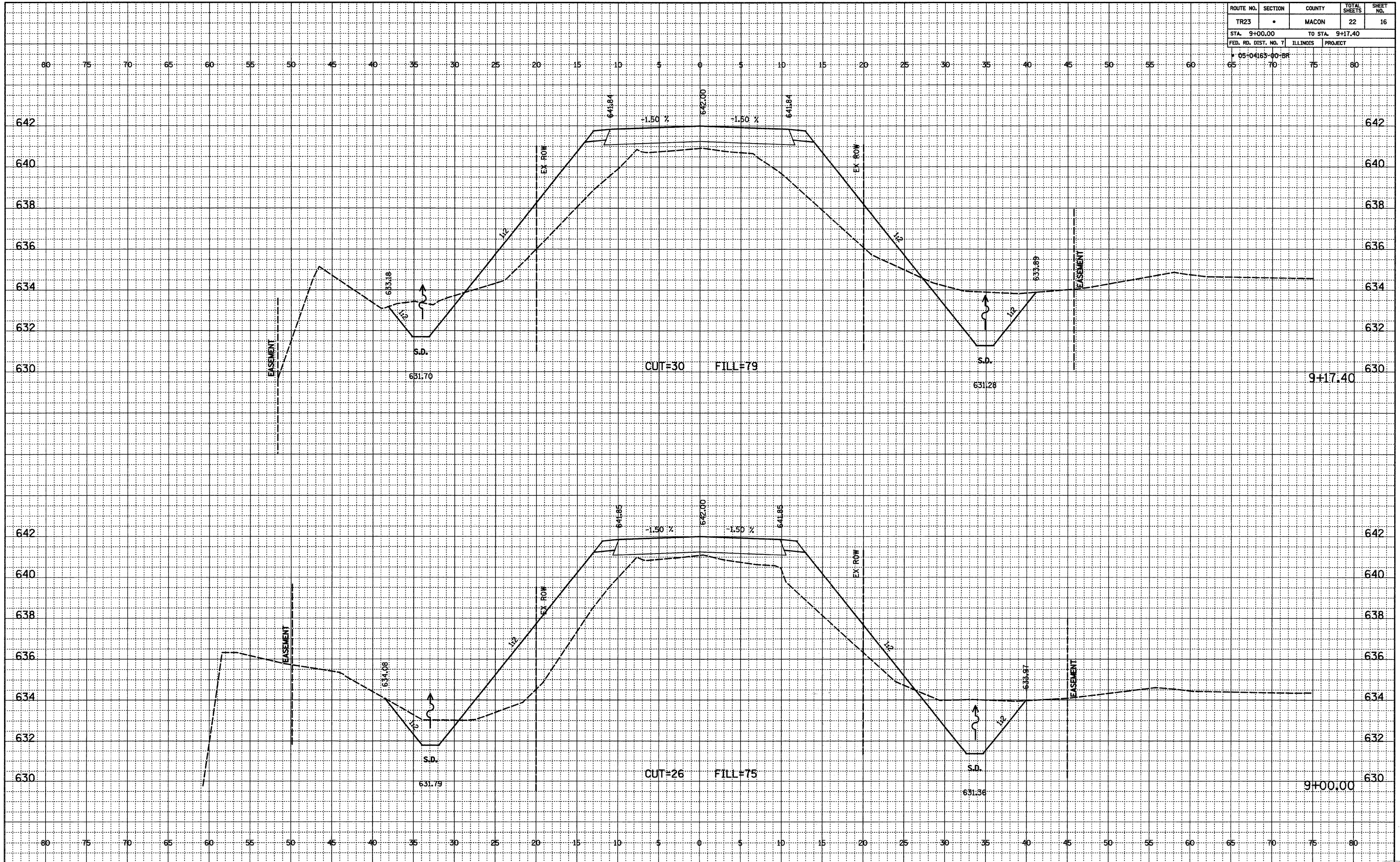
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 BY \_\_\_\_\_  
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 PLANNED \_\_\_\_\_  
 ALIGNED \_\_\_\_\_  
 CHECKED \_\_\_\_\_  
 RT. OF WAY CHECKED \_\_\_\_\_  
 NO. \_\_\_\_\_

DATE \_\_\_\_\_  
 BY \_\_\_\_\_  
 SURVEYED \_\_\_\_\_  
 GRADES CHECKED \_\_\_\_\_  
 NOTES NOTED \_\_\_\_\_  
 STRUCTURE NOTATIONS OK'D \_\_\_\_\_  
 NO. \_\_\_\_\_

| ROUTE NO.            | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|----------------------|---------|------------------|--------------|-----------|
| TR23                 | •       | MACON            | 22           | 16        |
| STA. 9+00.00         |         | TO STA. 9+17.40  |              |           |
| FED. RD. DIST. NO. 7 |         | ILLINOIS PROJECT |              |           |
| * 05-04163-00-BR     |         |                  |              |           |

DATE \_\_\_\_\_  
 BY \_\_\_\_\_  
 SURVEYED \_\_\_\_\_  
 ALIGNED \_\_\_\_\_  
 CHECKED \_\_\_\_\_  
 RT. OF WAY CHECKED \_\_\_\_\_  
 NO. \_\_\_\_\_

DATE \_\_\_\_\_  
 BY \_\_\_\_\_  
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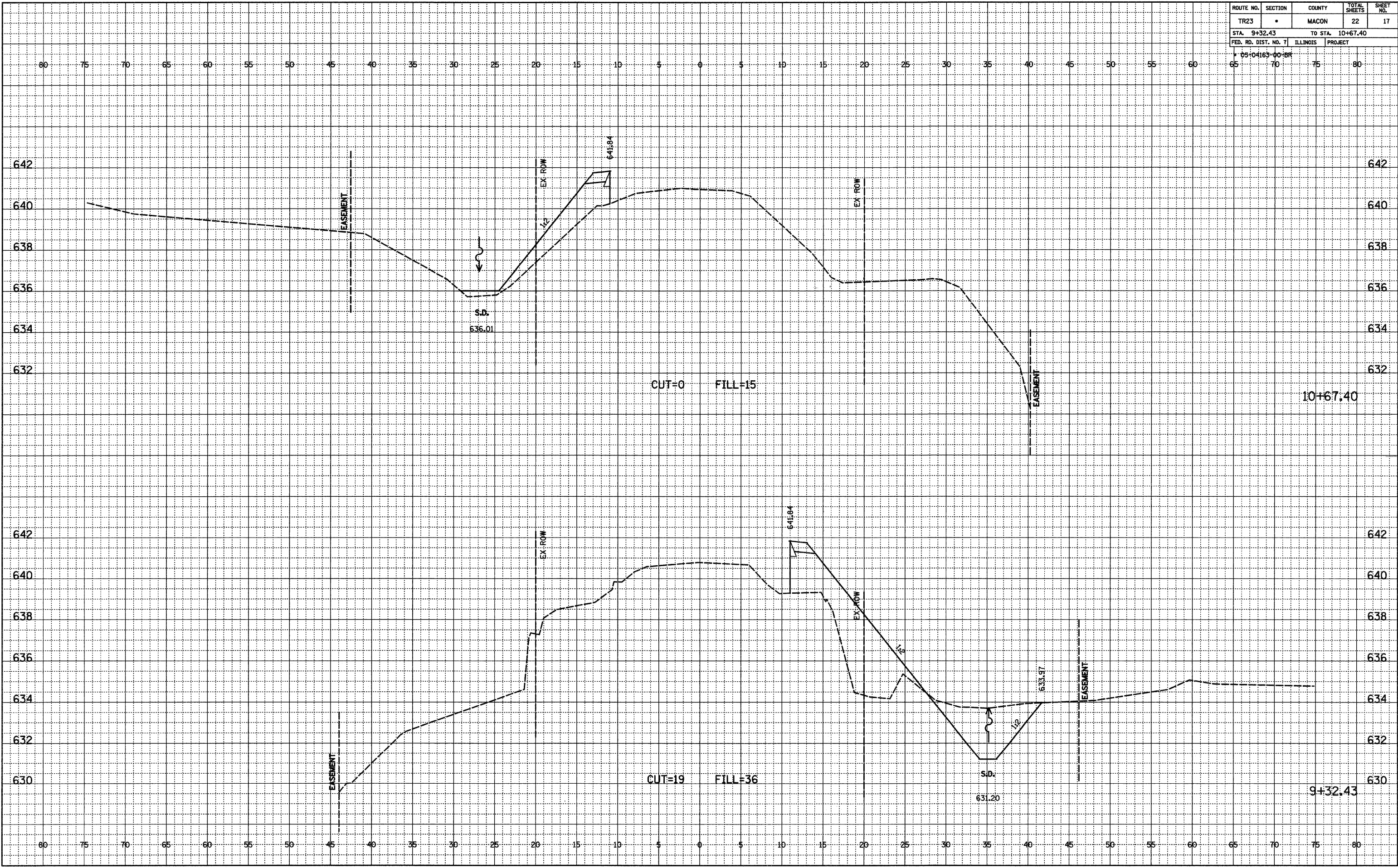




| ROUTE NO.            | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|----------------------|---------|------------------|--------------|-----------|
| TR23                 | •       | MACON            | 22           | 17        |
| STA. 9+32.43         |         | TO STA. 10+67.40 |              |           |
| FED. RD. DIST. NO. 7 |         | ILLINOIS PROJECT |              |           |
| 05-04163-00-BF       |         |                  |              |           |

DATE \_\_\_\_\_  
 BY \_\_\_\_\_  
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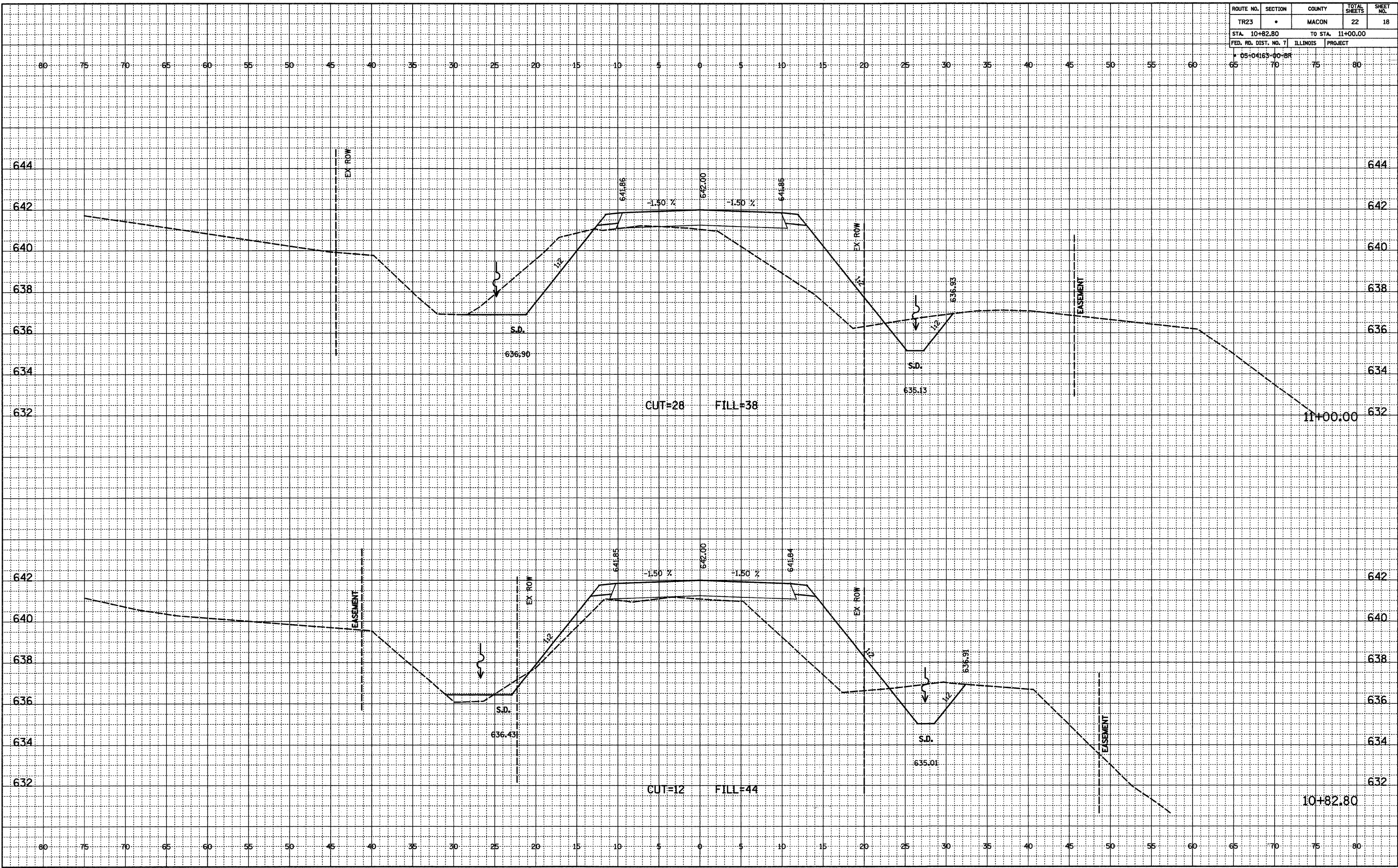
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 NO. \_\_\_\_\_



| ROUTE NO.            | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|----------------------|---------|------------------|--------------|-----------|
| TR23                 | *       | MACON            | 22           | 18        |
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| FED. RD. DIST. NO. 7 |         | ILLINOIS PROJECT |              |           |
| * 05-04163-00-BR     |         |                  |              |           |

FINAL SURVEYED  
 ALIGNED  
 CHECKED  
 NO. OF WAY CHECKED  
 NO.

ORIGINAL SURVEYED  
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 STRUCTURE NOTATIONS OK'D  
 NO.



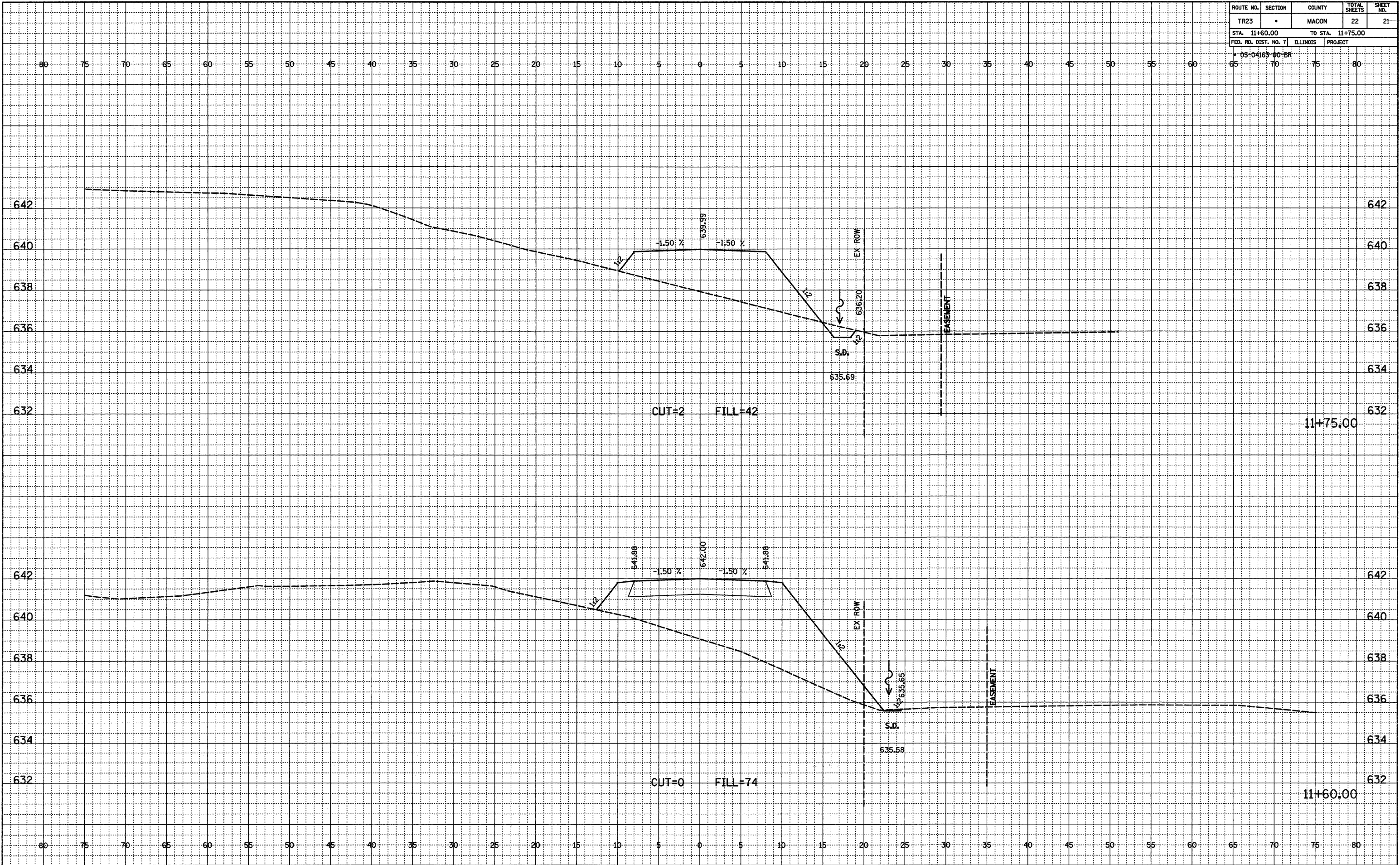








| ROUTE NO.            | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|----------------------|---------|------------------|--------------|-----------|
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| FED. RD. DIST. NO. 7 |         | ILLINOIS PROJECT |              |           |
| * 05-04165-00-BR     |         |                  |              |           |



FINAL SURVEYED, PLOTTED, CHECKED, NOTED, RT. OF WAY CHECKED, NO. \_\_\_\_\_

ORIGINAL SURVEYED, GRADES CHECKED, B.M.'S NOTED, STRUCTURE NOTATIONS OK'D, NO. \_\_\_\_\_



| ROUTE NO.            | SECTION | COUNTY           | TOTAL SHEETS | SHEET NO. |
|----------------------|---------|------------------|--------------|-----------|
| TR23                 | *       | MACON            | 22           | 22        |
| STA. 11+90.00        |         | TO STA. 11+90.00 |              |           |
| FED. RD. DIST. NO. 7 |         | ILLINOIS PROJECT |              |           |
| 05+04163-00-BF       |         |                  |              |           |

FINAL SURVEYED BY DATE  
 NOTEBOOK NO. ADJUSTMENT CHECKED RT. OF WAY CHECKED

ORIGINAL SURVEYED BY DATE  
 NOTEBOOK NO. GRADES CHECKED B.M.'S NOTED STRUCTURE NOTATIONS CR'D

