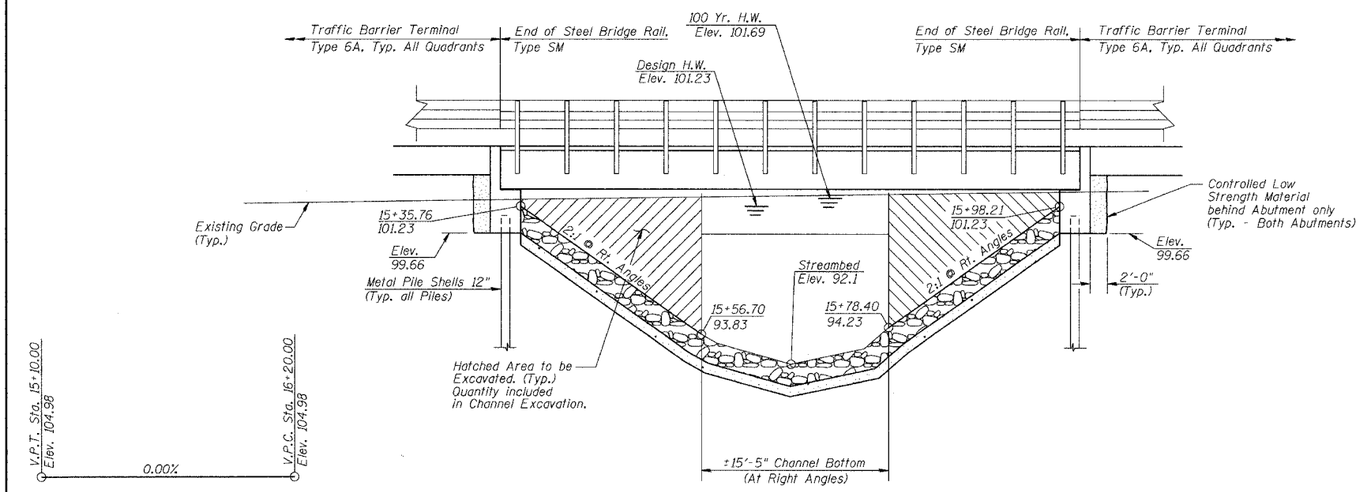
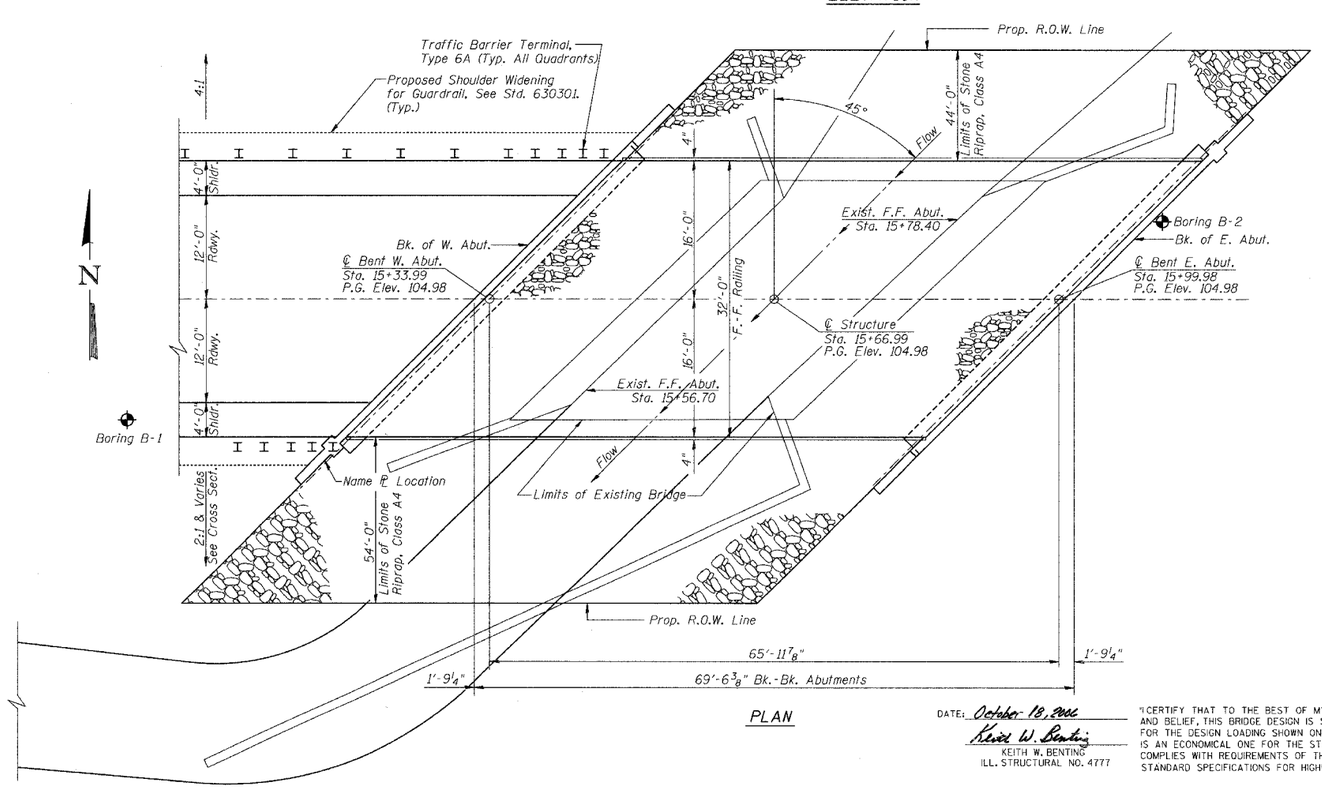
**BENCHMARK:**
R.R. Spike in power pole. Sta. 11+73.68, 31.7' Lt. Elev. 100.00

**EXISTING STRUCTURE:**
Single Span Cast-in-Place Concrete Slab with one Precast Deck Beam on Each Side on Closed Concrete Abutments.
30'-2" O.-O. of Deck. 25'-0" Bk.-Bk. Abutments




℄ PROFILE C.H. 20

ELEVATION

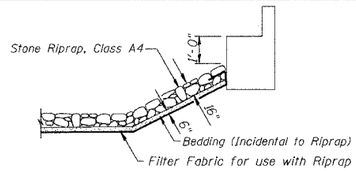



PLAN

DATE: October 18, 2008
Keith W. Benting
KEITH W. BENTING
ILL. STRUCTURAL NO. 4777

"I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THIS BRIDGE DESIGN IS STRUCTURALLY ADEQUATE FOR THE DESIGN LOADING SHOWN ON THE PLANS. THE DESIGN IS AN ECONOMICAL ONE FOR THE STYLE OF STRUCTURE AND COMPLIES WITH REQUIREMENTS OF THE CURRENT 'AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES'."

Exp 11/30/2008 — KEITH W. BENTING — STATE OF ILLINOIS — 4777 — REGISTERED STRUCTURAL ENGINEER




STONE RIPRAP DETAIL

DRAINAGE DITCH
BUILT 200_, BY
MACON COUNTY
SECTION 05-00195-00-BR
C.H. 20 STA. 15+66.99
STR. NO. 058-3377 LOADING HS-20
DRAPER BRIDGE

NAME PLATE
(See Std. 515001)

| ROUTE NO. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| C.H. 20 | 05-00195-00-BR | MACON | 18 | 13 |
| FED. ROAD DIST. NO. | | ILLINOIS PROJECT | BRS-549(101) | |

CONTRACT NO. 95492

## GENERAL NOTES

Layout of Riprap Slopes may be varied in the field to suit ground conditions as directed by the Engineer.

See Proposal for Boring Data.

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

The Contractor shall drive one Metal Shell Test Pile in a permanent location at the West Abutment as directed by the Engineer before ordering the remainder of piles.

The area between the bottom of the beams and the top of the caps shall be filled with non-shrink grout to prevent the beams from rocking.

## TOTAL BILL OF MATERIAL

| ITEM | UNIT | SUPER | SUB | TOTAL |
|---|---|---|---|---|
| Channel Excavation | Cu. Yd. | | 314 | 314 |
| Stone Riprap, Class A4 | Sq. Yd. | | 1117 | 1117 |
| Filter Fabric | Sq. Yd. | | 1117 | 1117 |
| Removal of Existing Structures | Each | | | 1 |
| Concrete Structures | Cu. Yd. | | 36.5 | 36.5 |
| P.P.C. Deck Beams (27" Depth) | Sq. Ft. | 2149 | | 2149 |
| Reinforcement Bars, Epoxy Coated | Pound | | 4380 | 4380 |
| Steel Railing, Type SM | Foot | 135 | | 135 |
| Furnishing Metal Shell Piles 12" | Foot | | 351 | 351 |
| Driving Piles | Foot | | 351 | 351 |
| Test Pile Metal Shells | Each | | 1 | 1 |
| Name Plates | Each | | 1 | 1 |
| Waterproofing Membrane System | Sq. Yd. | 239 | | 239 |
| Portland Cement Mortar Fairing Course | Foot | 470 | | 470 |
| Hot-Mix Asphalt Surface Course, Mixture "C", N50 | Ton | 24.6 | | 24.6 |
| Controlled Low Strength Material | Cu. Yd. | 25.1 | | 25.1 |

## DESIGN SPECIFICATIONS

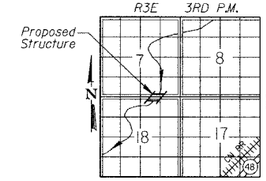
2002 AASHTO

## LOADING HS20-44

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

## DESIGN STRESSES

| FIELD UNITS | PPC UNITS |
|---|---|
| f'c = 3,500 p.s.i. | f'ci = 4,000 p.s.i. |
| fy = 60,000 p.s.i. | f'c = 5,000 p.s.i. |
| n = 9 | f's = 270,000 p.s.i. |
| | f'si = 189,000 p.s.i. |




LOCATION SKETCH

## WATERWAY INFORMATION

Drainage Area = 10.8 Sq. Mi. Existing Low Grade Elev. 100.63 @ Sta. 10+00.00
Proposed Low Grade Elev. 100.63 @ Sta. 10+00.00

| Flood | Freq. Yr. | Q C.F.S. | Opening Sq. Ft. Exist. | Opening Sq. Ft. Prop. | Nat. H.W.E. | Head-Ft. Exist. | Head-Ft. Prop. | Headwater El. Exist. | Headwater El. Prop. |
|---|---|---|---|---|---|---|---|---|---|
| Design | 30 | 876 | 104 | 243 | 101.23 | 0.47 * | 0.26 * | 101.70 | 101.48 |
| Base | 100 | 1140 | 104 | 266 | 101.69 | 0.31 * | 0.31 * | 102.00 | 102.00 |
| Overtopping | | | | | | | | | |
| Max. Calc. | 500 | 1472 | 104 | 276 | 102.18 | 0.16 * | 0.30 * | 102.34 | 102.48 |

Low Beam Elev. (Prop.) = 102.23

* Over-the-Road Flow Occurs

EXISTING
30 Yr.: 144.4 Sq. Ft. over roadway
100 Yr.: 230.6 Sq. Ft. over roadway
500 Yr.: 320.8 Sq. Ft. over roadway

PROPOSED
30 Yr.: 44.7 Sq. Ft. over roadway
100 Yr.: 90.1 Sq. Ft. over roadway
500 Yr.: 137.0 Sq. Ft. over roadway

# GENERAL PLAN AND ELEVATION

| Date | Designed MJP | C.H. 20 OVER DRAINAGE DITCH | Sheet No. |
|---|---|---|---|
| Revisions | Drawn REZ | SECTION 05-00195-00-BR | 1 of 6 |
| | Checked KWB | MACON COUNTY | |
| | Approved KWB | STA. 15+66.99 | |
| | | PROP. STR. NO. 058-3377 | |

Prepared by: URS 345 East Ash Avenue, Decatur, Il. 62526 — URS Job No. 36431466