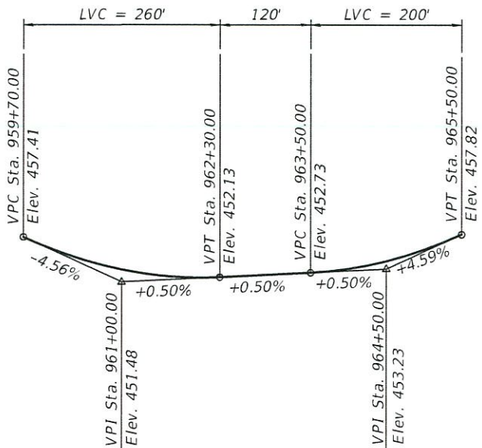
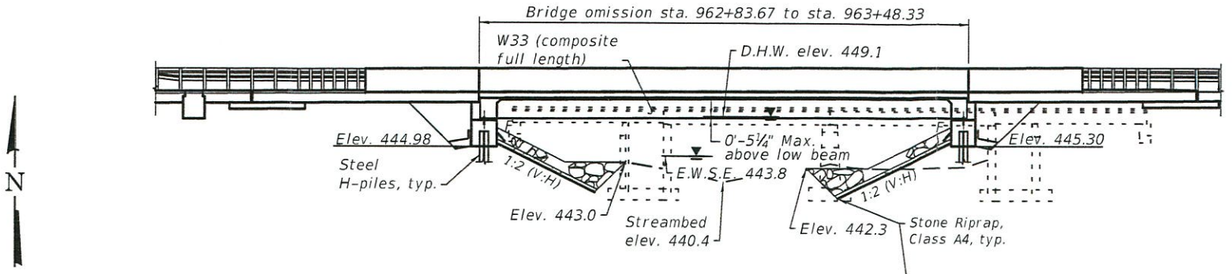
BENCHMARK: BM1510. Cut square on N. end of RCCP along IL 15, sta. 967+50 @ 22' LT., elev. 460.15 (NAVD 88)

EXISTING STRUCTURE:
SN 041-0020 was originally built in 1921 as Route 15 Section 12A & 12B. The superstructure was replaced, the abutments and pier were widened/reconstructed, and the railing/guardrail was installed in 1970. The deck was resurfaced and the keyway was repaired in 2006. Riprap with bedding and filter fabric was placed in 2009 during the scour repair. The superstructure consists of two spans of nine 21" precast concrete channel beams. The spans are supported by a hammerhead pier on untreated timber piles and abutments on spread footings. The structure is not skewed. The back-to-back distance between the abutments is 44'-0", and the clear distance between the bridge rails is 33'-4". Traffic will be maintained using stage construction.

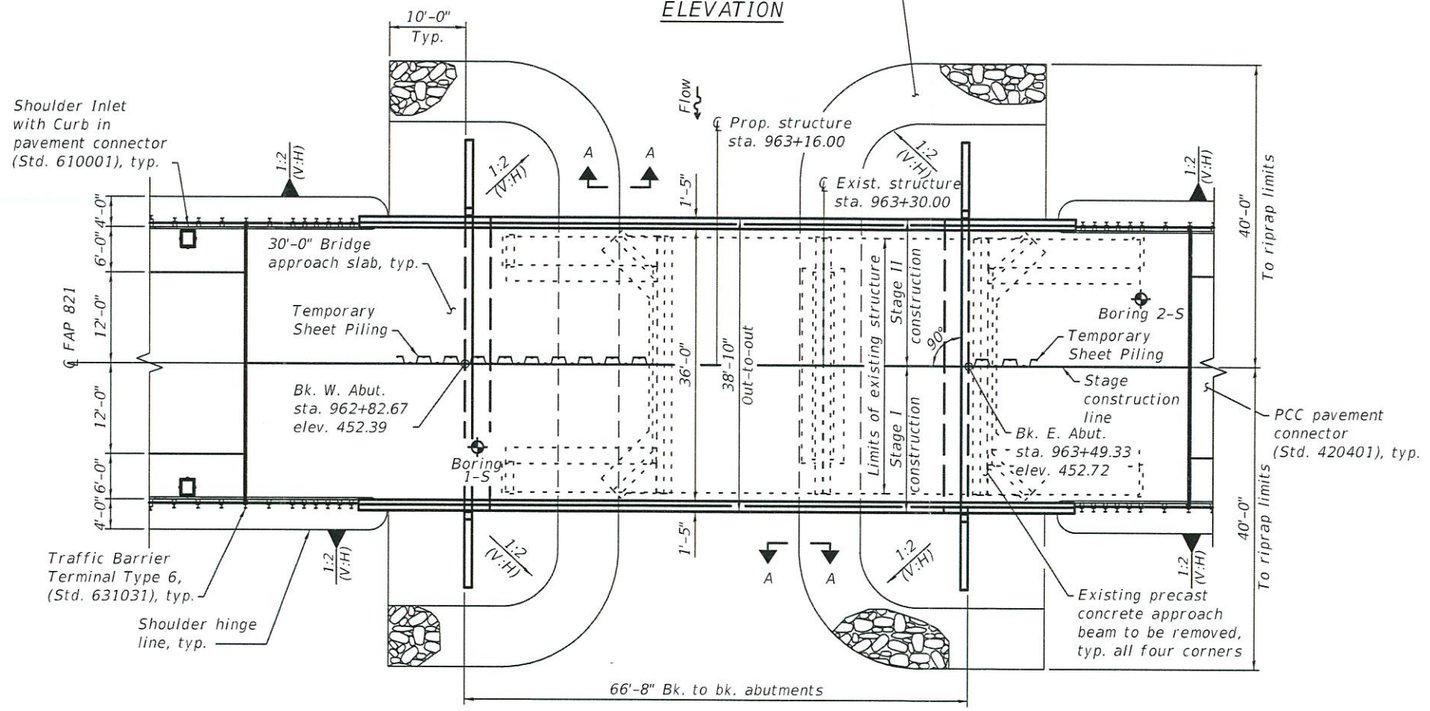
No salvage.




PROFILE GRADE
(Along ℄ roadway)




ELEVATION




PLAN

## DESIGN SCOUR ELEVATION TABLE

| Event / Limit State | Design Scour Elevations (ft.) | | |
|---|---|---|---|
| | W. Abut. | E. Abut. | Item 113 |
| 0100 | 445.0 | 445.3 | 8 |
| 0200 | 445.0 | 445.3 | |
| Design | 445.0 | 445.3 | |
| Check | 445.0 | 445.3 | |

## WATERWAY INFORMATION

Drainage Area = 1.9 Sq. Mi.
Exist. Overtopping Elev. 450.26 at Sta. 963+00
Prop. Overtopping Elev. 452.07 at Sta. 962+04

| Flood | Freq. Yr. | Discharge (C.F.S.) | Waterway Opening (sq. ft.) | | Natural H.W.E. (ft.) | Head (ft.) | | Headwater Elev. (ft.) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Exist. | Prop. | | Exist. | Prop. | Exist. | Prop. |
| | 10 | 813 | 250 | 320 | 448.4 | 1.0 | 0.9 | 449.4 | 449.3 |
| Design | 50 | 1340 | 250 | 345 | 449.1 | 1.7 | 0.9 | 450.8 | 450.0 |
| Base | 100 | 1570 | 250 | 345 | 449.4 | 1.8 | 1.0 | 451.2 | 450.4 |
| Scour Design Check | 200 | 1830 | 250 | 345 | 449.6 | 2.1 | 1.2 | 451.7 | 450.8 |
| Overtop Existing | 30 | 1196 | 250 | - | 448.9 | 1.5 | - | 450.4 | - |
| Overtop Proposed | - | - | - | - | - | - | - | - | - |
| Max. Calc. | 500 | 2190 | 250 | 345 | 449.9 | 2.1 | 1.6 | 452.0 | 451.5 |

10 Year Velocity through Existing Bridge = 3.9 ft/s
10 Year Velocity through Proposed Bridge = 2.4 ft/s

## HIGHWAY CLASSIFICATION

FAP Route 821 (IL 15)
Functional Class: Minor Arterial (Non-Urban)
ADT: 2730 (2018); 3330 (2038)
DHV: 265 (2038)
ADTT: 199 (2018); 243 (2038)
Design Speed: 55 mph
Posted Speed: 55 mph
Two Way Traffic
Directional Distribution: 50:50

## DESIGN SPECIFICATIONS

2017 AASHTO LRFD
Bridge Design Specifications
8th Edition

## LOADING HL-93

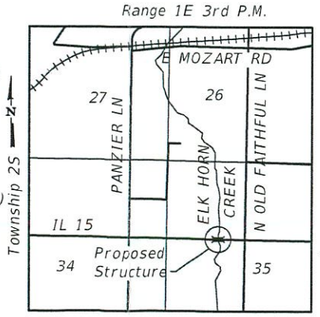
Allow 50 psf for future wearing surface

## DESIGN STRESSES FIELD UNITS

f'c = 3,500 psi (substructure)
f'c = 4,000 psi (superstructure)
fy = 60,000 psi (reinforcement)
fy = 50,000 psi (AASHTO M270 Grade 50)

## SEISMIC DATA

Seismic Performance Zone (SPZ) = 3
Design Spectral Acceleration at 1.0 sec. ($S_{D1}$) = 0.427g
Design Spectral Acceleration at 0.2 sec. ($S_{DS}$) = 0.849g
Soil Site Classification = E




LOCATION SKETCH

APPROVED
AUG 09 2018
AS A BASIS FOR PREPARATION OF DETAILED PLANS

GENERAL PLAN & ELEVATION
IL 15 OVER ELK HORN CREEK
FAP ROUTE 821 - SECTION 12B-2
JEFFERSON COUNTY
STATION 963+16.00
STRUCTURE NO. 041-0114

ESCA CONSULTANTS, INC.

| | | | |
|---|---|---|---|
| USER NAME = shl | DESIGNED - SHL 03/18 | REVISED - | |
| ESCA PROJECT NO. 1035.10 | CHECKED - RDP 03/18 | REVISED - | |
| PLOT SCALE = 0.2 ' / in. | DRAWN - SHL 03/18 | REVISED - | |
| PLOT DATE = 8/6/2018 | CHECKED - ELH 03/18 | REVISED - | |

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET 1 OF 2 SHEETS

| F.A.P. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 821 | 12B-2 | JEFFERSON | 1 | 2 |
| | | CONTRACT NO. 78458 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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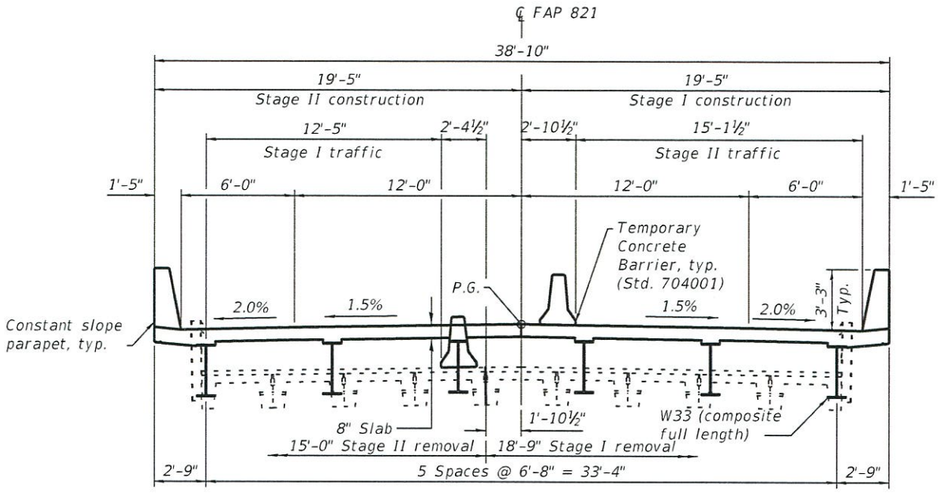
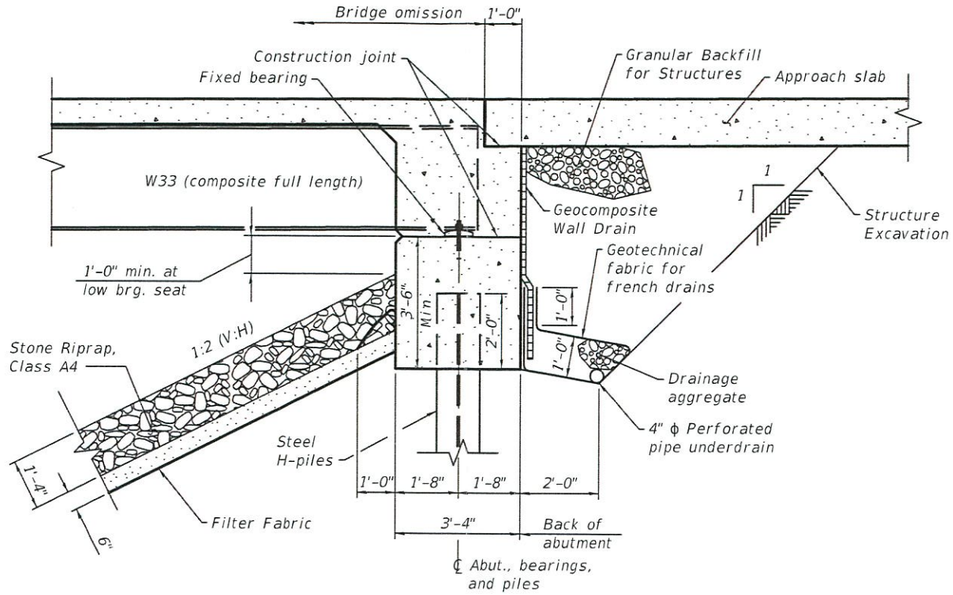
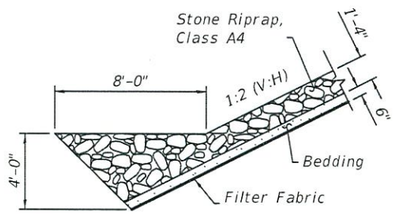



CROSS SECTION
(Looking East)




SECTION THROUGH INTEGRAL ABUTMENT




SECTION A-A

APPROVED

AUG 0 9 2018

AS A BASIS FOR
PREPARATION OF DETAILED PLANS

DETAILS
IL 15 OVER ELK HORN CREEK
FAP ROUTE 821 - SECTION 12B-2
JEFFERSON COUNTY
STATION 963+16.00
STRUCTURE NO. 041-0114

ESCA CONSULTANTS, INC.

| | | | | |
|---|---|---|---|---|
| USER NAME = shl | DESIGNED - SHL | 03/18 | REVISED - | |
| ESCA PROJECT NO. 1035.10 | CHECKED - RDP | 03/18 | REVISED - | |
| PLOT SCALE = 0:2 " / in. | DRAWN - SHL | 03/18 | REVISED - | |
| PLOT DATE = 8/6/2018 | CHECKED - ELH | 03/18 | REVISED - | |

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET 2 OF 2 SHEETS

| F.A.P. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 821 | 12B-2 | JEFFERSON | 2 | 2 |
| | | CONTRACT NO. 78458 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: PLOT
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