

## PROJECT CONCEPT STATEMENT

Scour Countermeasure at IA 63 bridge over Little Soap Creek  
Located approximately 1.9 miles north of Davis County Line  
T71N, R13,14W, Sections 25 and 30  
Wapello County

Project Number: MB-063-5(500)29- -77-90

Highway Division  
Office of Bridges and Structures

Matt Erickson  
matthew.erickson@iowadot.us  
515-233-7933  
October 15<sup>th</sup>, 2018

### Project Description

The north streambank approximately 45' downstream and 45' upstream of the Iowa Highway 63 bridge crossing of an Little Soap Creek in Wapello county has eroded. The bridge (maintenance number 9028.6S063) is located approximately 1.9 miles north of the Davis County Line.

The channel has shifted and diverted flow behind Pier No. 2 causing the far berm to erode/scour.

### Need for Project

If left unchecked the erosion will continue and extend further into the far abutment berm. If the berm continues to erode, the north abutment could become undermined.

### Concept

#### Berm Repair with Revetment (See Attachment)

Install a class B revetment wedge along Pier No. 2 as shown on attachment. A toe will be installed along the stream bank bottom at the base of the bank. A key will be installed at the downstream and upstream end of the bank lining. The keys will be approximately 30 feet in length and will have a diamond cross section. The purpose of the keys is to prevent flow from flanking the end of the bank lining. Flanking of the bank lining could result in loss of rock material and could cause erosion to occur behind the lined bank.

#### Berm Repair with Revetment and Key Cost Estimate:

Revetment, Class B	\$	60,300
Engineering Fabric	\$	5,000
Excavation	\$	3,500
Traffic Control (5%)	\$	3,500
Mobilization (10%)	\$	7,300
Contingency (15%)	\$	<u>12,000</u>
Total Cost	\$	91,600

NOTE: Easement costs are not included in the above cost estimate.

### **Recommendation**

Install revetment as described above and on attached drawing.

### **Special Considerations**

We are anticipating temporary easements may be needed during construction.

The project is located within a Zone A flood hazard area. Base flood elevations have not been established in this zone.

Since the basin is less than 100 square miles in area a DNR Floodplain Development Permit will not be required.

The creek is not a protected stream.

The Office of Location and Environment has not reviewed this project but environmental review and clearances may be required.

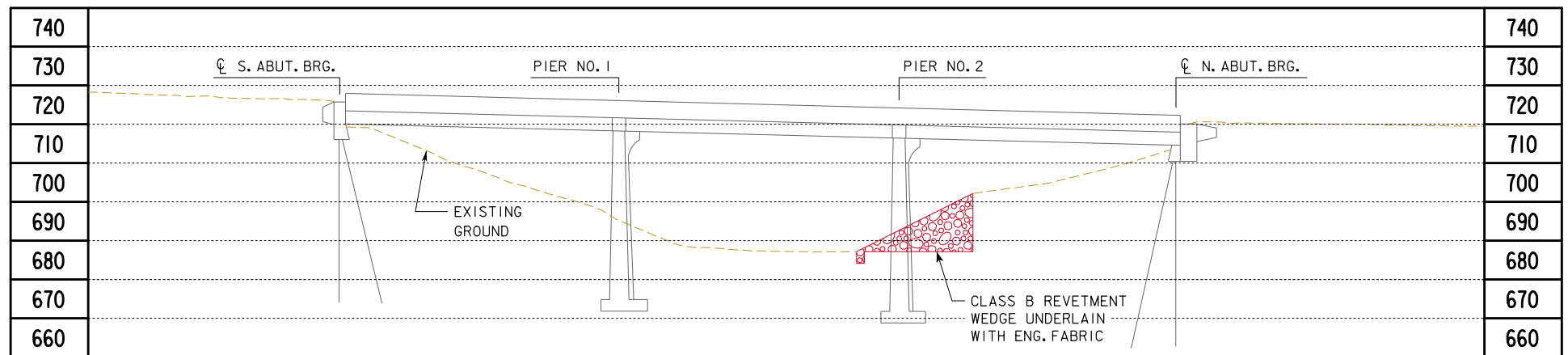
A ground survey will be required. A drawing that shows the limits of survey will be provided.

Extant of existing utilities unknown.

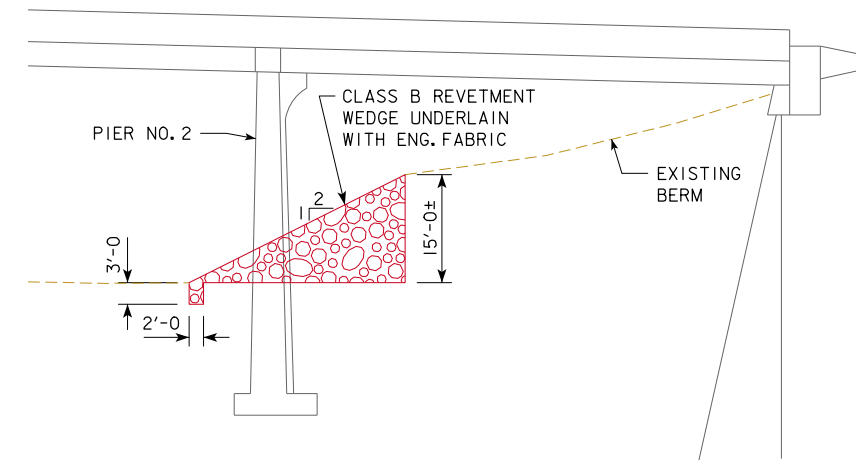
Railroads are not present in the project area and railroad expansion is not expected.

It is anticipated the work for the primary project would be awarded to one prime contractor. The Office of Bridges and Structures will coordinate the plan preparation with assistance from the Office of Design.

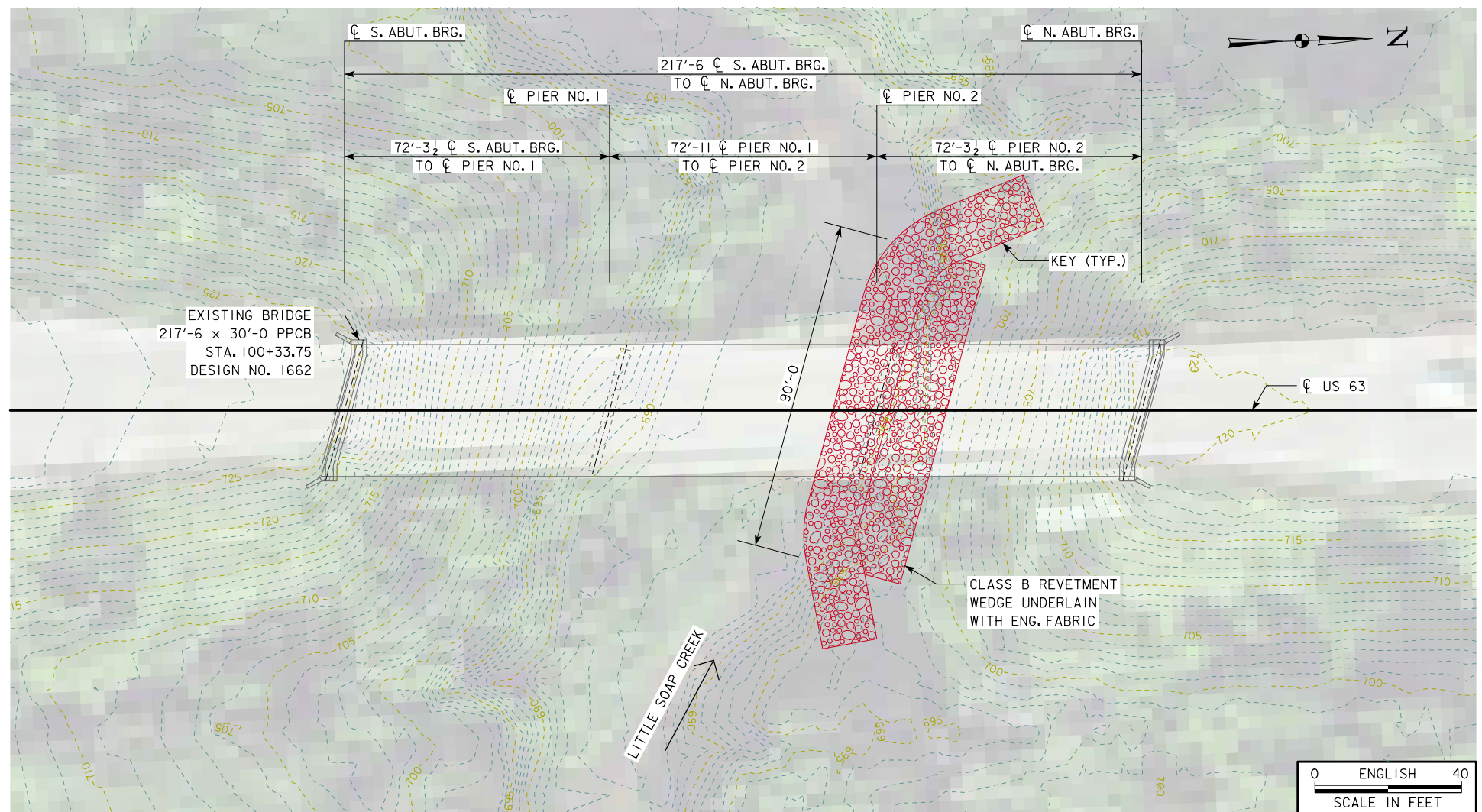
Trails are not present within the immediate project area and trail expansion is not expected in this area.



LONGITUDINAL SECTION ALONG ☐ BRIDGE



REVETMENT WEDGE DETAIL  
NOT TO SCALE



SITUATION PLAN

**HYDRAULIC DATA**

DRAINAGE AREA = 28.9 SQ. MI.  
STREAM SLOPE = ??? FT./MI.

Q<sub>50</sub> = 6,670 CFS  
STAGE = ???  
AVG. BRIDGE VELOCITY = ?? FPS

Q<sub>100</sub> = 7,930 CFS  
STAGE = ???  
AVG. BRIDGE VELOCITY = ?? FPS

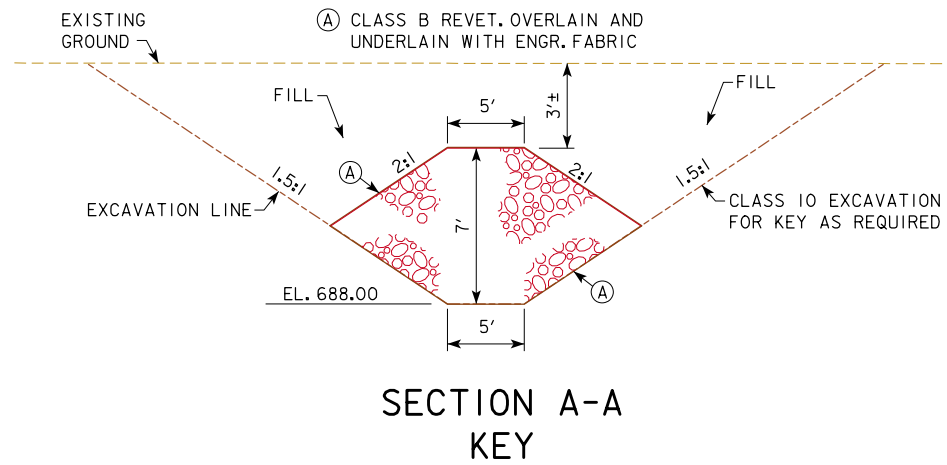
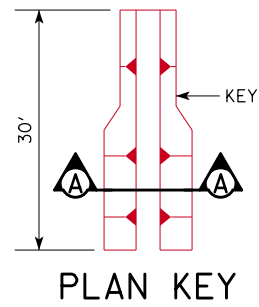
**UTILITIES LEGEND:**

UTILITY SURVEY NOT CONDUCTED

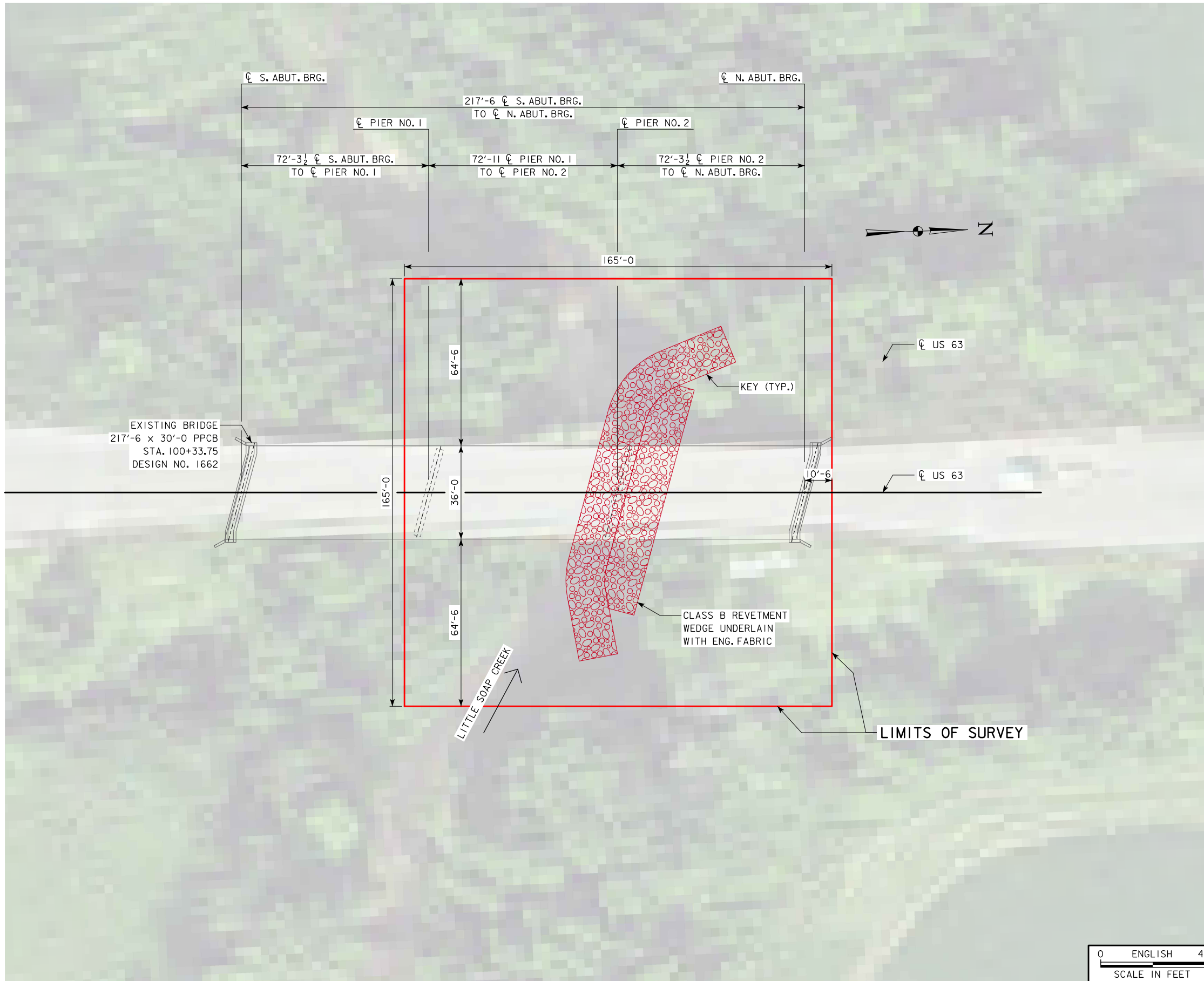
**LOCATION**

ON US 63 OVER LITTLE SOAP CREEK  
T-71N R-13,14W  
SECTIONS 25 AND 30  
GREEN AND KEOKUK TOWNSHIP  
WAPELLO COUNTY  
FHWA NO. 050600  
BRIDGE MAINT. NO. 9028.6S063

PRELIMINARY - CONCEPT  
DESIGN FOR REPAIRS TO A 15° SKEW R.A.  
**217'-6 x 30'-0 PRETENSIONED  
PRESTRESSED CONCRETE BEAM BRIDGE**  
72'-3 1/2 END SPANS (C-BEAMS) 72'-11 INTERIOR SPAN  
**SITUATION PLAN**  
STA. 100+33.75 (☐ US 63) OCTOBER 2018  
**WAPELLO COUNTY**  
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
DESIGN SHEET NO. 1 OF 2 FILE NO. ? DESIGN NO. ?



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**TYPICAL KEY DETAILS**  
 STA. 100+33.75 (± US 63) OCTOBER 2018  
**WAPELLO COUNTY**  
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. 2 OF 2 FILE NO. ? DESIGN NO. ?



**SURVEY LIMITS**



**LOCATION**

ON US 63 OVER LITTLE SOAP CREEK  
 T-71N R-13,14W  
 SECTIONS 25 AND 30  
 GREEN AND KEOKUK TOWNSHIP  
 WAPELLO COUNTY  
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**SURVEY LIMITS**  
 STA. 100+33.75 (CL US 63)      OCTOBER 2018  
**WAPELLO COUNTY**  
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. 1 OF 2      FILE NO. 31661      DESIGN NO. 0120