

## Information for File # 2013-01121-JTF

**Applicant** St. Louis County Public Works Department

**Corps Contact** Josh Fitzpatrick

**Address** 1554 Highway 2, Suite 2, Two Harbors, MN 55616

**E-Mail** joshua.t.fitzpatrick@usace.army.mil

**Phone** (651) 290-5694

**Primary County** St. Louis

**Sec/Township/Range:** NE ¼, Sec. 34, T. 51N., R. 18W.

**Information Complete On** May 6, 2013

**Posting Expires On** May 15, 2013

**Authorization Type** LOP-10-FDL

This application is being reviewed in accordance with the practices for documenting Corps jurisdiction under Sections 9 & 10 of the Rivers and Harbor Act of 1899 and Section 404 of the Clean Water Act identified in Regulatory Guidance Letter 07-01. We have made a preliminary determination that the aquatic resources that would be impacted by the proposed project are regulated by the Corps of Engineers under Section 404 of the Clean Water Act. Our jurisdictional review and final jurisdictional determination could result in modifications to the scope of the project's regulated waterbody/wetland impacts and compensatory mitigation requirements identified above. An approved jurisdictional determination will be made prior to reaching a permit decision, and will be posted on the St. Paul District web page at <http://www.mvp.usace.army.mil/>.

**PROJECT PURPOSE & NEED:** The St. Louis County Public Works Department plans to replace County Bridge 148 on County State Aid Highway 31 (Paul Road) across Stoney Brook. The purpose of the project is to provide a safe, adequate road crossing of Stoney Brook. The current structure is a structurally deficient 62.2-foot long by 25.0 foot wide concrete slab span bridge and was constructed in 1935. The deck material is C-I-P concrete with a bituminous wear surface. The bridge has a sufficiency rating of 49.9 and has reached the end of its useful life.

**PROJECT DESCRIPTION:**

The replacement structure is a 3-span bridge, reinforced concrete slab with structural tube railing and concrete parapet. The bridge is sized to accommodate the bankfull width of the stream. The existing structure's low member elevation is approximately 1227.5 feet and the proposed low member elevation is 1227.6 feet (Q100 elev.), 0.10 feet higher than the existing. The proposed low member elevation of the replacement structure is 0.50 feet higher than the Q50 elevation (1227.1).

During normal hydraulic flows, there is little to no shoreline underneath the existing bridge with the stream edge flowing directly against the concrete abutment walls. This condition is partly due to flood damage that occurred in June 2012, so reconstruction of the stream bank will be necessary. The new bridge structure will be 81 feet long, providing an additional 15 feet in length, which allows for reconstruction of the banks to occur. Rip rap slopes would be placed from the new abutment walls down to the existing shoreline. Pilings will be driven into the river for two piers, with temporary sheet pile driven to allow the piers to be constructed in dry conditions. Approximately 3,484 square feet of the stream will be temporarily impacted for construction of the replacement structure. A total of 2,860 square feet of riprap will be installed of which approximately 1,950 square feet would be installed below the Ordinary High Water Line (OHWL). A total of 207 square feet of pier will also be installed below the OHWL. A temporary stream bypass is not needed to facilitate the construction of the bridge therefore there will be no temporary wetland impacts.

**NAME, AREA AND TYPES OF WATERS (INCLUDING WETLANDS) SUBJECT TO LOSS:** The project would result in permanent impacts to 485 square feet of fresh meadow (Type 1) wetlands and 373 square feet of shrub swamp (Type 6) wetlands. The project would also result in the permanent discharge of fill material on to 2,157 square feet of the bed of Stoney Brook.

**ALTERNATIVES CONSIDERED:** The no-build alternative was dismissed due to failure to act would not address the safety issues with County Bridge 148.

The second alternative of replacing the bridge with an 81-foot 3-span bridge was chosen as the selected alternative. Avoidance and minimization decreased permanent wetland impacts to 858 square feet and there would be no temporary wetland impacts from the project.

**COMPENSATORY MITIGATION:** The applicant has proposed to provide compensatory mitigation for the 858 square feet of impact to wetlands through the BWSR Local Road Replacement Program Mitigation Bank. A 1:1 wetland compensation ratio will be required when using this bank.

**DRAWINGS:** See attached.

## PART II: PUBLIC ROAD MAINTENANCE SHORT FORM NOTICE

For Minnesota Local/State Road Projects that involve the repair, rehabilitation, reconstruction, or replacement of a currently serviceable road to meet design and safety standards/requirements and that impact less than 10,000 sq feet of wetlands (note that new roads or roads expanded solely for additional traffic capacity lanes cannot use this form)

IS THIS AN ORIGINAL OR AMENDED NOTICE? (check one)

This is an original notice, dated 4/2/2013  This is an amended notice, dated \_\_\_\_\_

This is an application for a DNR PUBLIC WATERS PERMIT

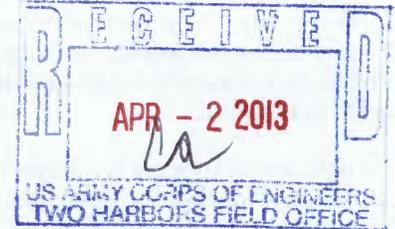
### 1. APPLICANT ROAD AUTHORITY CONTACT INFORMATION:

Road Authority applicant: St. Louis County Public Works Department

Contact person (name and title): Inga Foster, Environmental Project Manager

Complete mailing address: 4787 Midway Rd., Duluth, MN 55811

Business phone: (218) 625-3862 e-mail: fosteri@stlouiscountymn.gov



### 2. PROJECT IDENTIFICATION:

Road name and/or number, termini: Bridge 148 on County State Aid Highway 31 (Paul Road).

Project number: SAP 069-631-008

3. PROJECT WILL AFFECT:  WETLANDS;  DNR PUBLIC WATERS (NAME AND ID#): Stoney Brook River

### 4. LOCATION OF PROJECT AND WETLAND (S) TO BE IMPACTED:

County: St. Louis

Watershed #: 3-St. Louis River

Bank Service Area 1 / NE ¼ NE ¼ Section 34, Township 51N, Range 18W



Fig. 1. Project Location Map

SAP NO 069-631-008  
ST LOUIS COUNTY BRIDGE 148 RECONSTRUCTION  
SECTION 34, T-51-N, R-18-W  
ST. LOUIS COUNTY, MINNESOTA

Data provided by Minnesota DNR  
Aerial Imagery 2010 NAIP

5. PROJECT TIMELINE: Approximate project start date: Spring/Summer 2013 Projected end date: Fall 2013

6. PROJECT DESCRIPTION: Describe the project purpose and need, elements of the project that impact wetlands, and identify the design and safety standards/requirements that the project will satisfy (attach additional sheets if necessary):

The St. Louis County Public Works Department plans to replace County Bridge 148 (MNDOT # 69A14) on County State Aid Highway 31 (Paul Road). The purpose of the project is to provide a safe, adequate road crossing of the Stoney Brook River. The current structure is a structurally deficient 62.2-foot long by 25.0 foot wide concrete slab span (1) and was constructed in 1935 (see photos in Appendix A). The deck material is C-I-P concrete with a bituminous wear surface. The bridge has a sufficiency rating of 49.9 and has reached the end of its useful life.

The replacement structure is a 3-span bridge, reinforced concrete slab with structural tube railing and concrete parapet. The bridge is sized to accommodate the bankfull width of the stream. The existing structure's low member elevation is approximately 1227.5 feet and the proposed low member elevation is 1227.6 feet (Q100 elev.), 0.10 feet higher than the existing. The proposed low member elevation of the replacement structure is 0.50 feet higher than the Q50 elevation (1227.1). As this structure does not meet the 3 feet of clearance above the Q50 as recommended in Special Provision 8 of GP 1996-2091, Public Works requests a waiver for the proposed design elevation. For elevation details, please refer to Appendix A of the application.

During normal hydraulic flows, there is little to no shoreline underneath the existing bridge with the stream edge flowing directly against the concrete abutment walls. This condition is partly due to flood damage that occurred in June 2012, so reconstruction of the stream bank will be necessary. The new bridge structure will be 81 feet long, providing an additional 15 feet in length, which allows for reconstruction of the banks to occur. Rip rap slopes will be placed from the new abutment walls down to the existing shoreline. Piling will be driven into the river for two piers, with temporary sheet pile driven to allow the piers to be constructed in dry conditions (see Figures 1 & 2 below). Approximately 3,484 square feet of the stream will be temporarily impacted for construction of the replacement structure. A total of 2,860 square feet (244 cubic yards) of riprap will be installed of which approximately 1,950 square feet (180 cubic yards) will be installed below the OHWL. A total of 207 square feet (76 cubic yards) of pier will also be installed below the OHWL. A temporary stream bypass is not needed to facilitate the construction of the bridge therefore there will be no temporary wetland impacts.

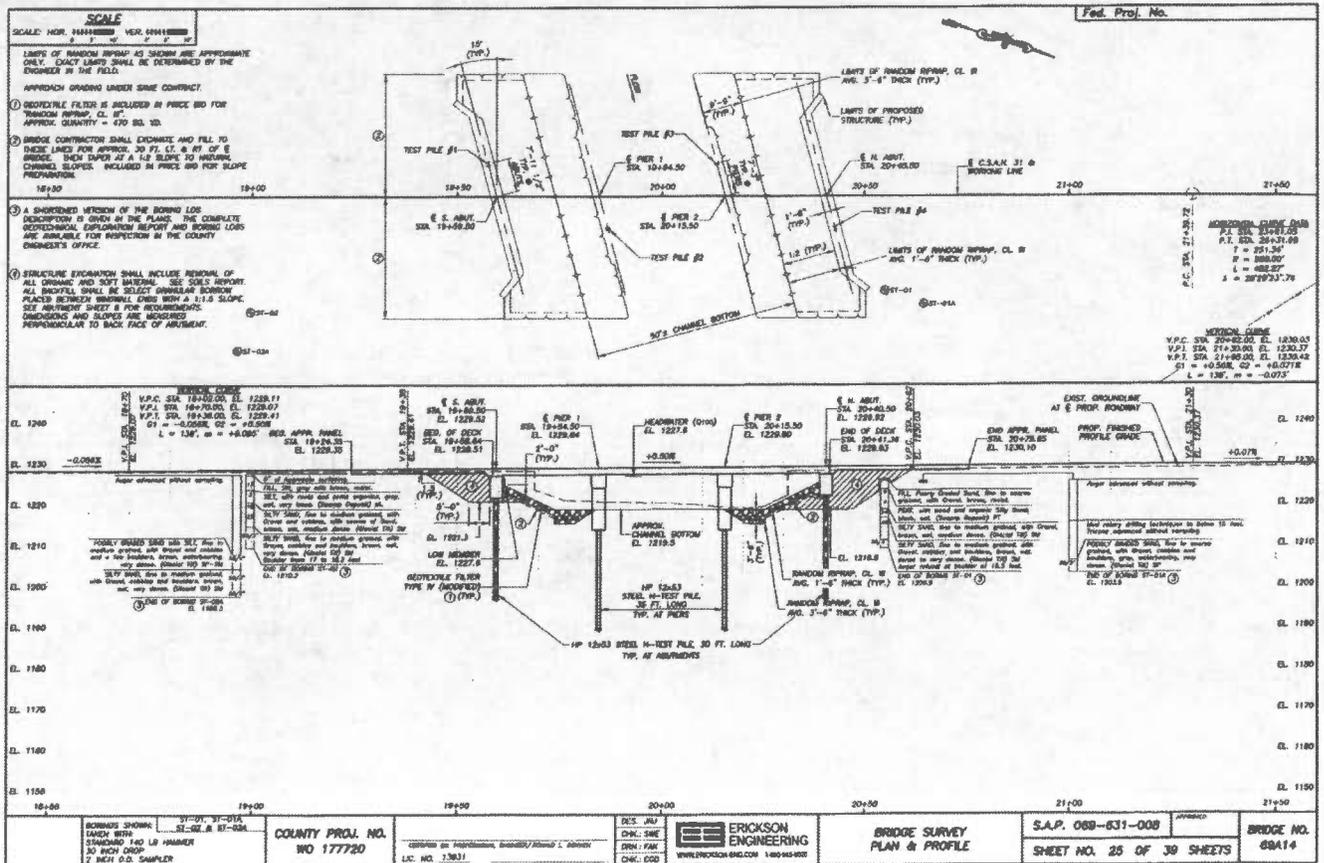
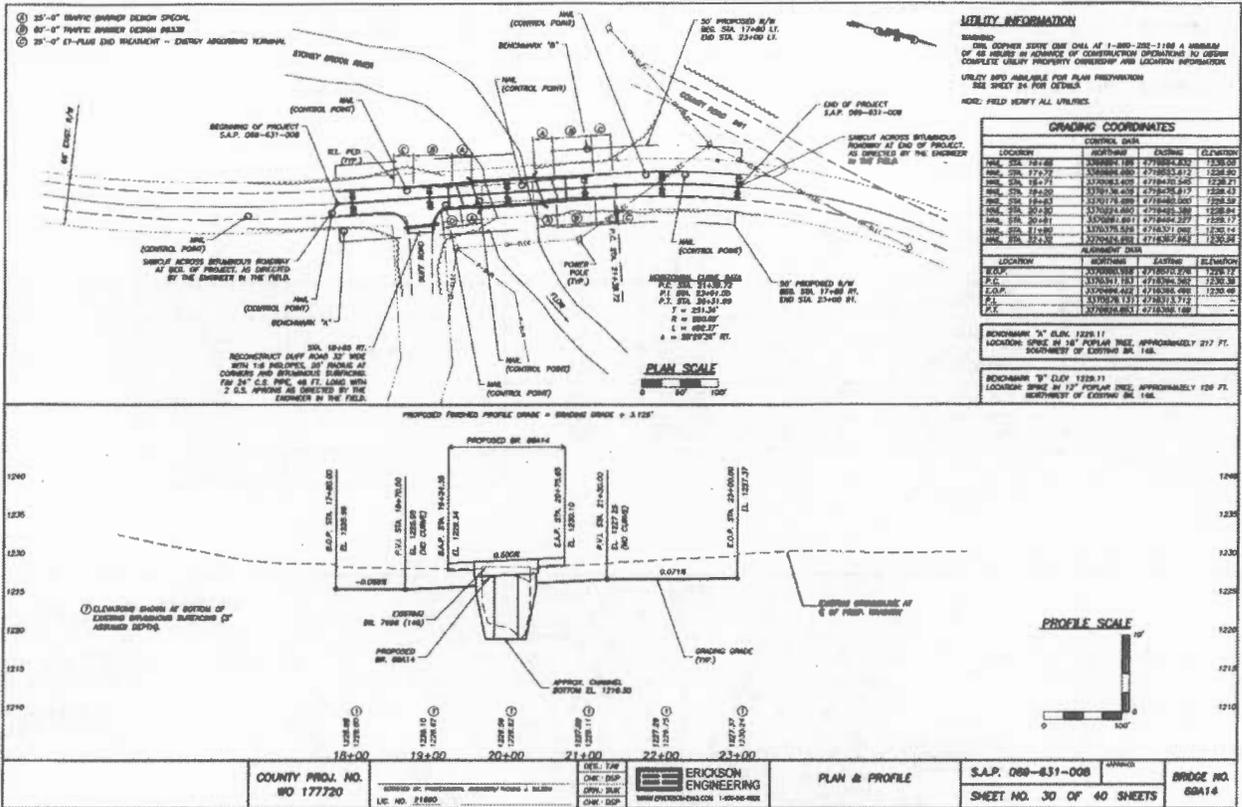


Fig. 1. Bridge Replacement Plan & Profile, page 1.



**7. FOOTPRINT OF PERMANENT IMPACT:**

457 square feet of Circ. 39 Type 1 / Floodplain Wetland Plant Community Type impacted

28 square feet of Circ. 39 Type 2 / Sedge Meadow Wetland Plant Community Type impacted

373 square feet of Circ. 39 Type 6 / Shrub Swamp Wetland Plant Community Type impacted

Table 1. Wetland Impact Details.

Road	STA	STA	Length	Type	Fill
Northwest	20+24	21+62	138	6	373 sf
Northeast	20+32	20+89	57	1	41 sf
Southeast	19+49	19+85	36	1	123 sf
Southeast	17+96	18+21	25	2	28 sf
Southwest	19+46	19+71	25	1	203 sf
Southwest	17+92	18+57	65	1	90 sf
<b>TOTAL</b>					<b>858 sf</b>

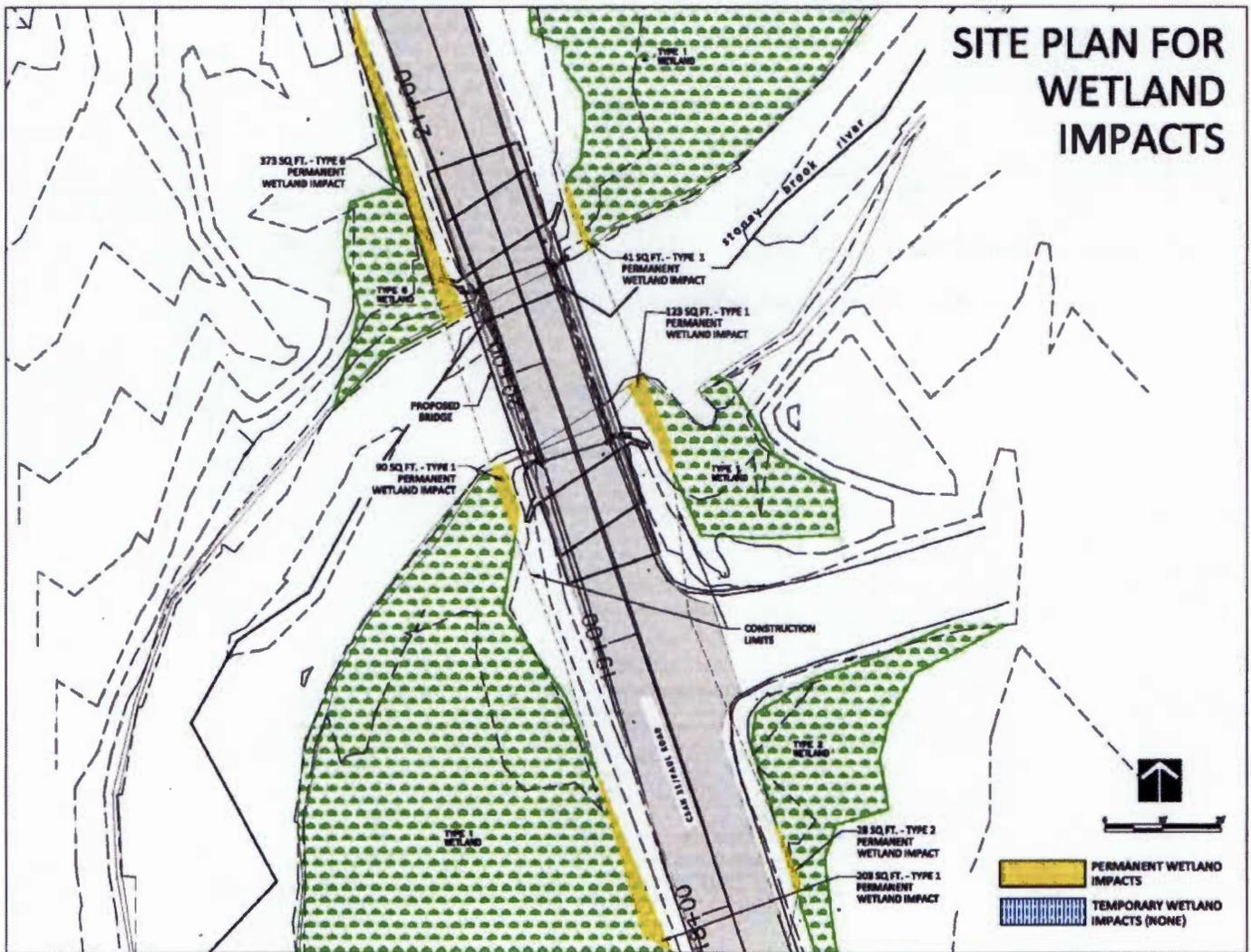
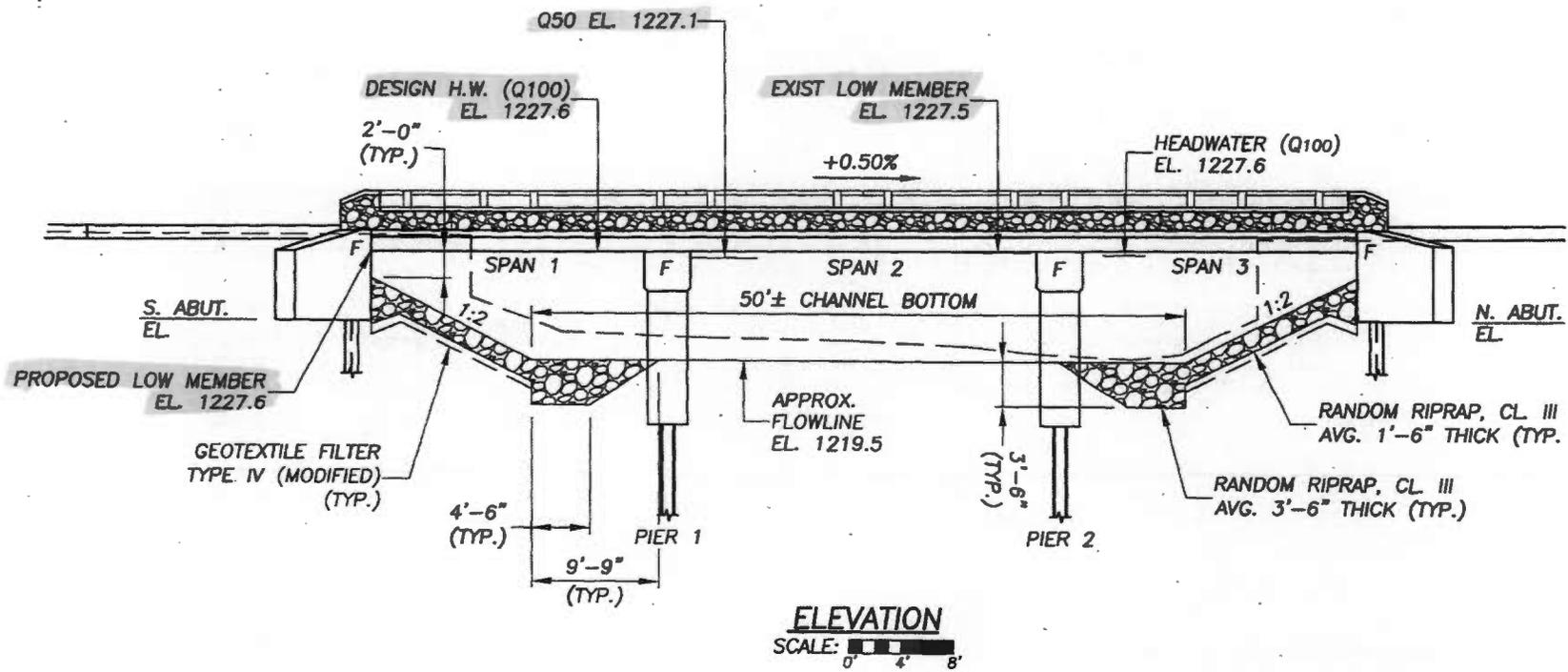
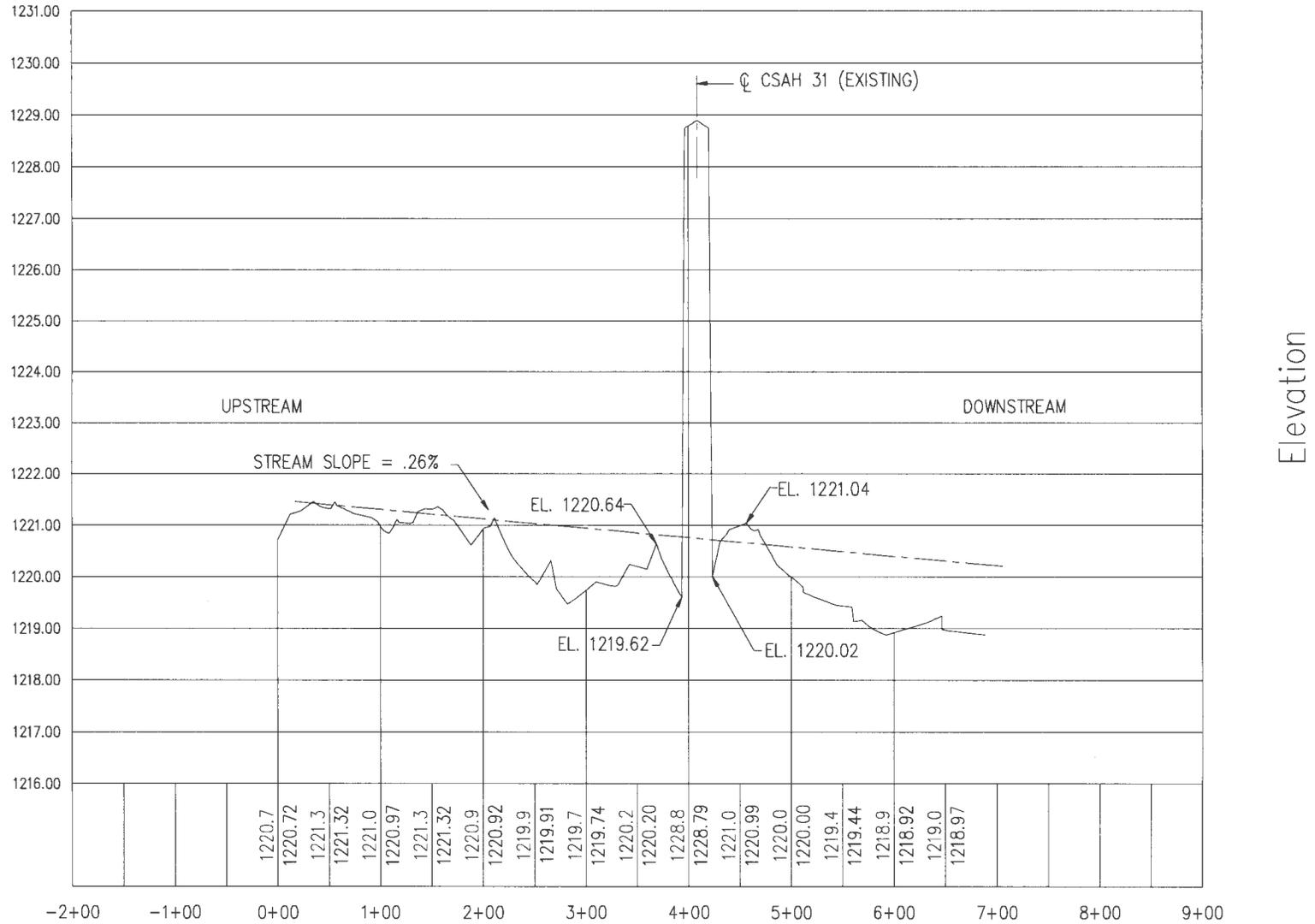


Fig. 4. Wetland Impacts Location Map.

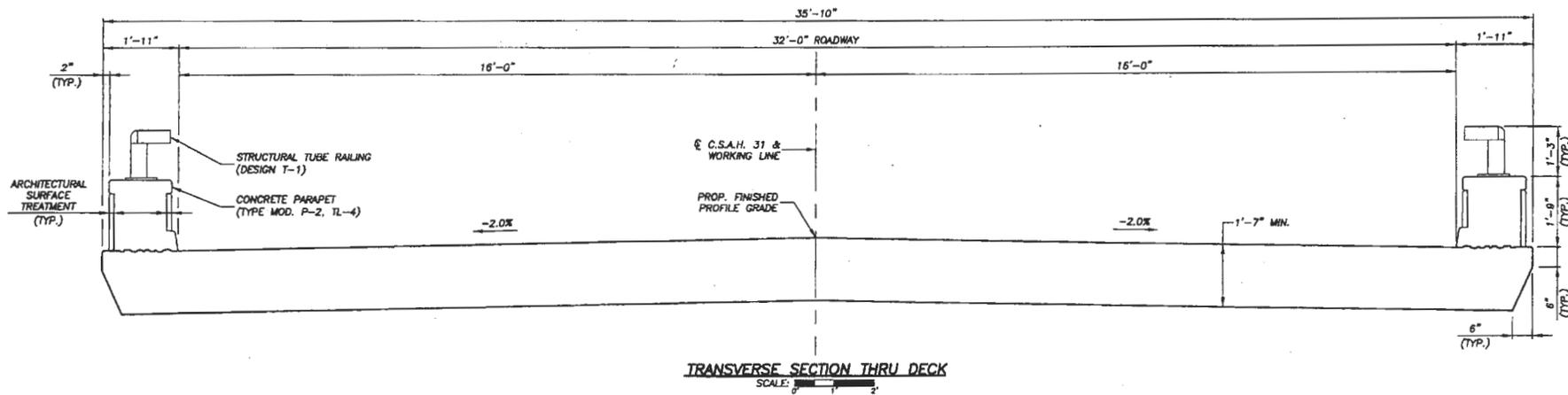


SCALE:  
 HORIZONTAL: 1" = 100'  
 VERTICAL: 1" = 2'

BRIDGE NO. 148  
 STONEY BROOK RIVER PROFILE







**SCHEDULE OF QUANTITIES FOR THE ENTIRE BRIDGE**

KEYNOTE	ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
	2021.501	MOBILIZATION	LUMP SUM	1
B	2104.501	REMOVE GUARDRAIL	LIN. FT.	
	2301.551	BRIDGE APPROACH PANEL	EACH	
	2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	(P)
	2401.512	BRIDGE SLAB CONCRETE (3Y33)	SQ. FT.	(P)
	2401.513	TYPE MOD. P-2 (TL-4) RAILING CONCRETE (3Y46)	LIN. FT.	(P)
	2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	(P)
	2401.601	SLOPE PREPARATION	LUMP SUM	1
	2401.601	STRUCTURE EXCAVATION	LUMP SUM	1
	2402.546	FLOOR DRAIN TYPE B702 MODIFIED	EACH	
	2402.584	STRUCTURAL TUBE RAILING DESIGN T-1	LIN. FT.	
E	2411.604	ARCHITECTURAL SURFACE TREATMENT	SQ. YD.	(P)
F	2411.604	ARCHITECTURAL COLOR SYSTEM	SQ. YD.	(P)
A, B	2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	1
	2452.510	STEEL H-PIILING DRIVEN 12"	LIN. FT.	
	2452.511	STEEL H-PIILING DELIVERED 12"	LIN. FT.	
	2452.520	STEEL H-TEST PILE X FT. LONG 12"	EACH	
	2452.602	PILE TIP PROTECTION 12"	EACH	
	2452.603	20" STEEL PILE SHELLS	LIN. FT.	
C	2511.501	RANDOM RIPRAP CLASS III	CU. YD.	
D	2554.501	TRAFFIC BARRIER DESIGN SPECIAL	LIN. FT.	
D	2554.501	TRAFFIC BARRIER DESIGN B8336	LIN. FT.	
D	2554.523	END TREATMENT - TANGENT TERMINAL	EACH	
	2563.601	TRAFFIC CONTROL	LUMP SUM	1

**SCHEDULE OF QUANTITIES KEYNOTES:**

- A. BR. 148 - STA. 20+00
- B. NON-PARTICIPATING
- C. GEOTEXTILE FILTER TYPE IV (MODIFIED) SHALL BE INCIDENTAL TO "RANDOM RIPRAP CLASS III"
- D. TYPICAL EACH CORNER OF BRIDGE
- E. ARCHITECTURAL SURFACE TREATMENT SHALL BE "TRIVER ROCK" PATTEREN NO. 1204 OR AN EQUAL AS APPROVED BY THE COUNTY ENGINEER.
- F. ARCHITECTURAL COLOR SYSTEM SHALL BE "MULTI-COLOR" OR AN EQUAL AS APPROVED BY THE COUNTY ENGINEER.

COUNTY PROJ. NO.  
WO 17720

CERTIFIED BY: PROFESSIONAL ENGINEER/ RONALD L. DORREN  
LIC. NO. 13931

DES.: T/W  
CHK.: CGD  
DRN.: NBB  
CHK.: CGD

**ERICKSON ENGINEERING**  
WWW.ERICKSON-ENG.COM 1-800-545-8020

TYPICAL SECTION  
& QUANTITIES

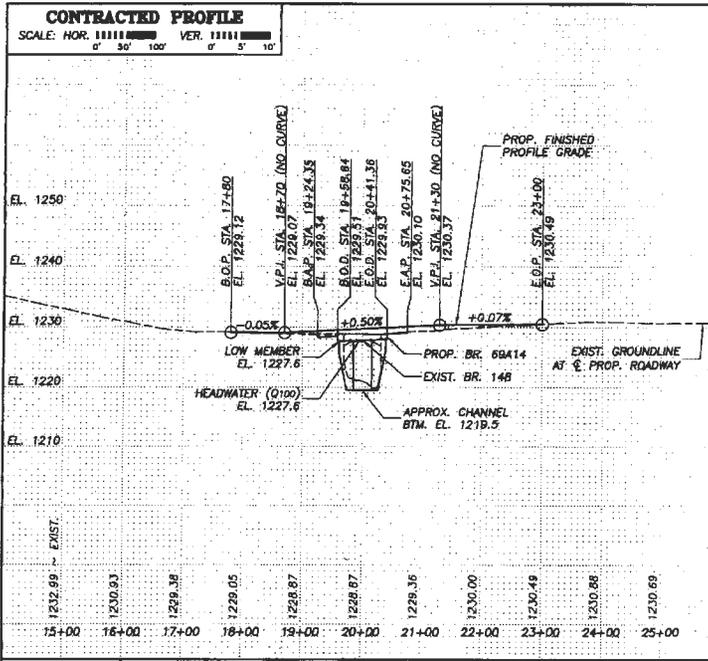
S.A.P. 069-631-008

APPROVED:

SHEET NO. 2 OF 5 SHEETS

BRIDGE NO.  
69A14





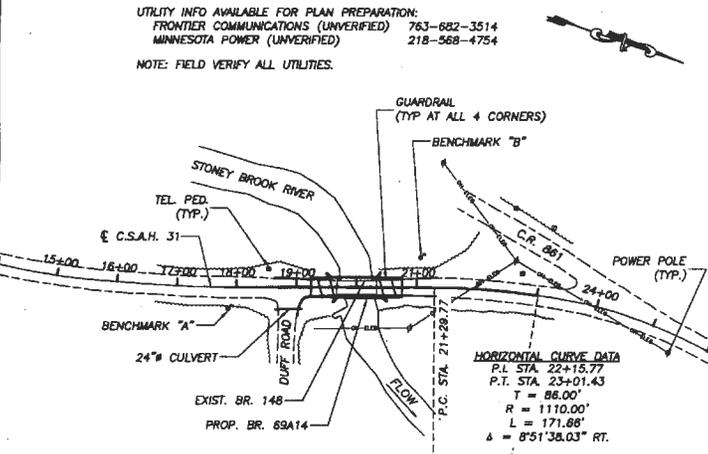
### FLAT

SCALE: 1"=100'

**UTILITY INFORMATION**  
 WARNING: DIAL GOPHER STATE ONE CALL AT 1-800-252-1166 A MINIMUM OF 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS TO OBTAIN COMPLETE UTILITY PROPERTY OWNERSHIP AND LOCATION INFORMATION.

UTILITY INFO AVAILABLE FOR PLAN PREPARATION:  
 FRONTIER COMMUNICATIONS (UNVERIFIED) 763-682-3514  
 MINNESOTA POWER (UNVERIFIED) 218-568-4754

NOTE: FIELD VERIFY ALL UTILITIES.



EXIST. BR. 148  
 CONCRETE SLAB SPAN  
 LENGTH: 82.2'  
 ROAD WIDTH: 23.0'  
 YEAR BUILT: 1935

COUNTY PROJ. NO.  
 WO 177720

DESIGNED BY: PROFESSIONAL ENGINEER/ RONALD L. DOKREN  
 LIC. NO. 13931

DES.: T/JW  
 CHK.: CGD  
 DRN.: NBB  
 CHK.: CGD

**ERICKSON ENGINEERING**  
 WWW.ERICKSON-ENG.COM 1-800-545-8020

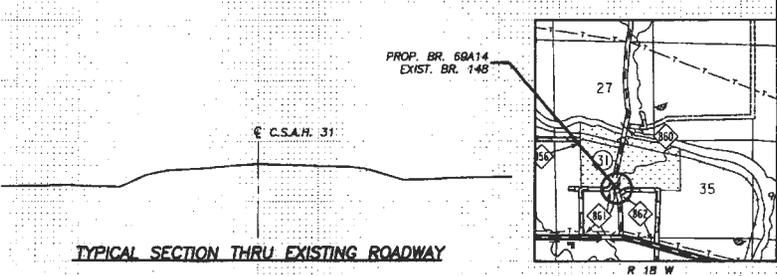
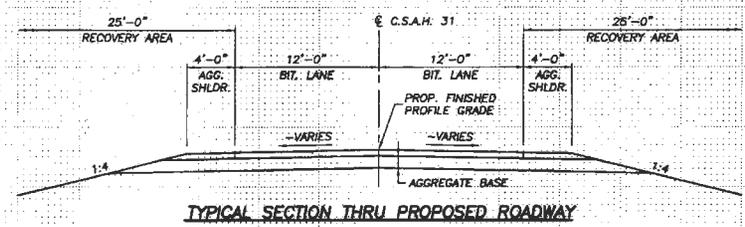
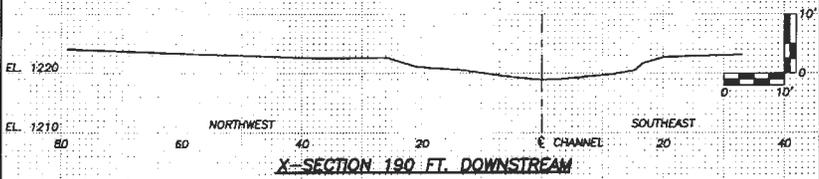
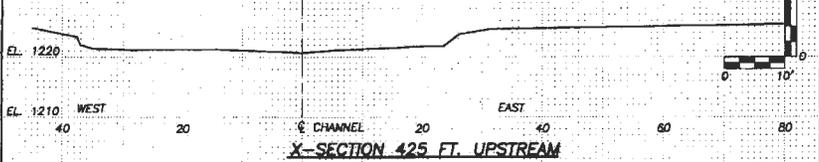
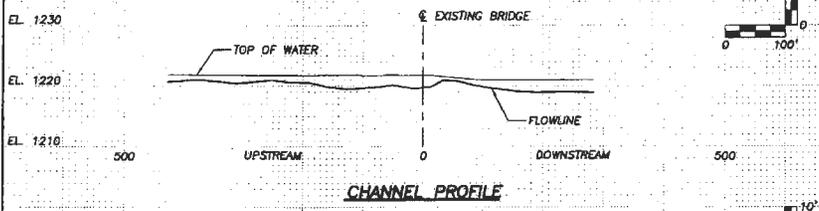
BRIDGE SURVEY

S.A.P. 069-631-008  
 SHFFT NO. 4 OF 5 SHEETS

APPROVED: \_\_\_\_\_  
 BRIDGE NO. 69A14

### TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



**Fed. Proj. No.**

LOCATION ENGINEER'S OBSERVATION AT BRIDGE SITE  
 DATE \_\_\_\_\_

- Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, etc.
- Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway): Given location, type, length, height above high water, cross-sectional area, etc.
- Apparent Highest Elevation 1228.5 Feet  
 Obtained From \_\_\_\_\_
- Other Data: Approx. velocity of water at time of survey \_\_\_\_\_

**HYDRAULIC ENGINEER'S RECOMMENDATION**  
 DATE 11/20/2012

Stream or Ditch Designation STONEY BROOK RIVER

Drainage Area 100 SQ. MI.

Max. Flood on Record UNKN C.F.S.

Max. Observed Highest Elev. 1228.5 Feet

Design Flood (100 yr. freq.) 1790 C.F.S.

Headwater Elevation 1227.6 Feet

Design Mean Velocity Through Structure 3.5 F.P.S.

Total Slope Increase <0.1 Feet

Low Member At or Above Direction 1227.6 Feet

Waterway area req'd below elev. 1227.6 = 509 SQ. FT.  
 (at right angles to channel)

Basic Flood (100 yr. freq.) 1790 C.F.S.

Headwater Elevation 1227.6 Feet

Total Slope Increase <0.1 Feet

Mean Velocity Through Structure 3.5 F.P.S.

Flowline Elevation 1219.5 Slope Angle 15

Estimated Preliminary Total Score At Pier Elevation 1219.5 Feet  
 (500 yr. freq.)

**SCOUR CONFIRMATION RECOMMENDATION**  
 DATE 1/8/2013

Total Scour At Pier Elevation 1215.3 Feet (500 yr. freq.)

Scour Code 1

**ENGINEER'S RECOMMENDATION**  
 DATE 11/20/2012

25'-31'-25' CONTINUOUS CONCRETE SLAB SPANS  
 32' ROADWAY - 15' SKEW

Bridge Survey Sheets made from: SURVEY NOTES FROM ST. LOUIS COUNTY HIGHWAY DEPARTMENT (SUMMER 2012)

Benchmark "A" Elevation 1227.85  
 Location: SPIKE IN 18" POPLAR TREE, APPROX. 220 FT. SOUTHEAST OF EXIST. BR. 148

Benchmark "B" Elevation 1229.11  
 Location: SPIKE IN 12" POPLAR TREE, APPROX. 120 FT. NORTHWEST OF EXIST. BR. 148

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION

ON C.S.A.H. 31

PROPOSED BRIDGE LOCATED 0.1 MILES SOUTH OF  
JCT. C.R. 861 OVER STONEY BROOK RIVER

SEC. 34 TWP. 51 N R. 18 W

CITY BROOKSTON COUNTY ST. LOUIS

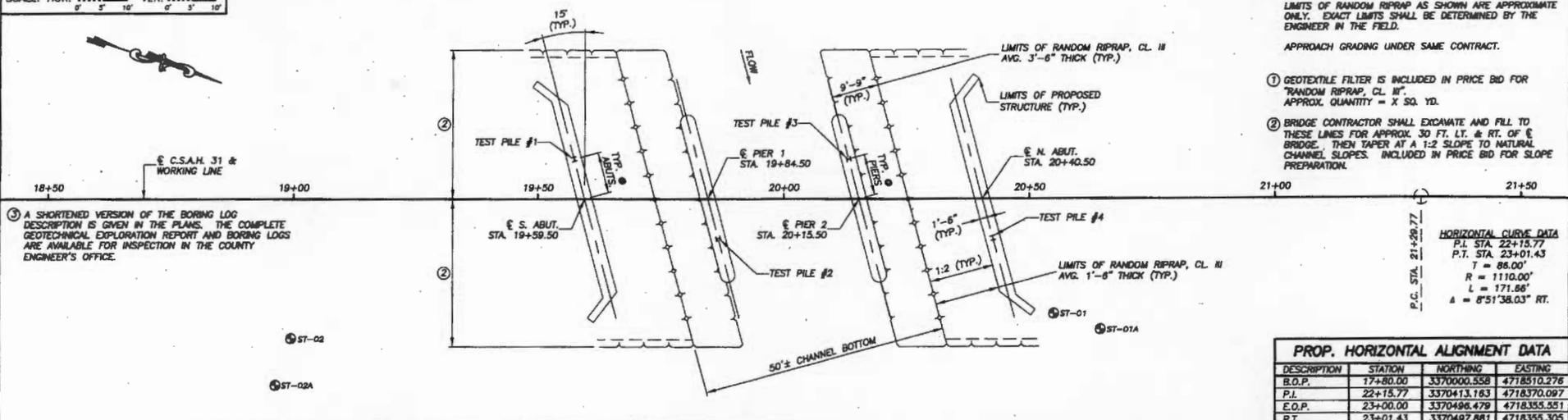
EXIST. BRIDGE NO. 148 (7698)

**SCALE**  
 SCALE: HOR. 1" = 20' VER. 1" = 5'

**Fed. Proj. No.**

LIMITS OF RANDOM RIPRAP AS SHOWN ARE APPROXIMATE ONLY. EXACT LIMITS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.  
 APPROACH GRADING UNDER SAME CONTRACT.

- ① GEOTEXTILE FILTER IS INCLUDED IN PRICE BID FOR RANDOM RIPRAP, CL. III. APPROX. QUANTITY = X SQ. YD.
- ② BRIDGE CONTRACTOR SHALL EXCAVATE AND FILL TO THESE LINES FOR APPROX. 30 FT. LT. & RT. OF BRIDGE. THEN TAPER AT A 1:2 SLOPE TO NATURAL CHANNEL SLOPES. INCLUDED IN PRICE BID FOR SLOPE PREPARATION.

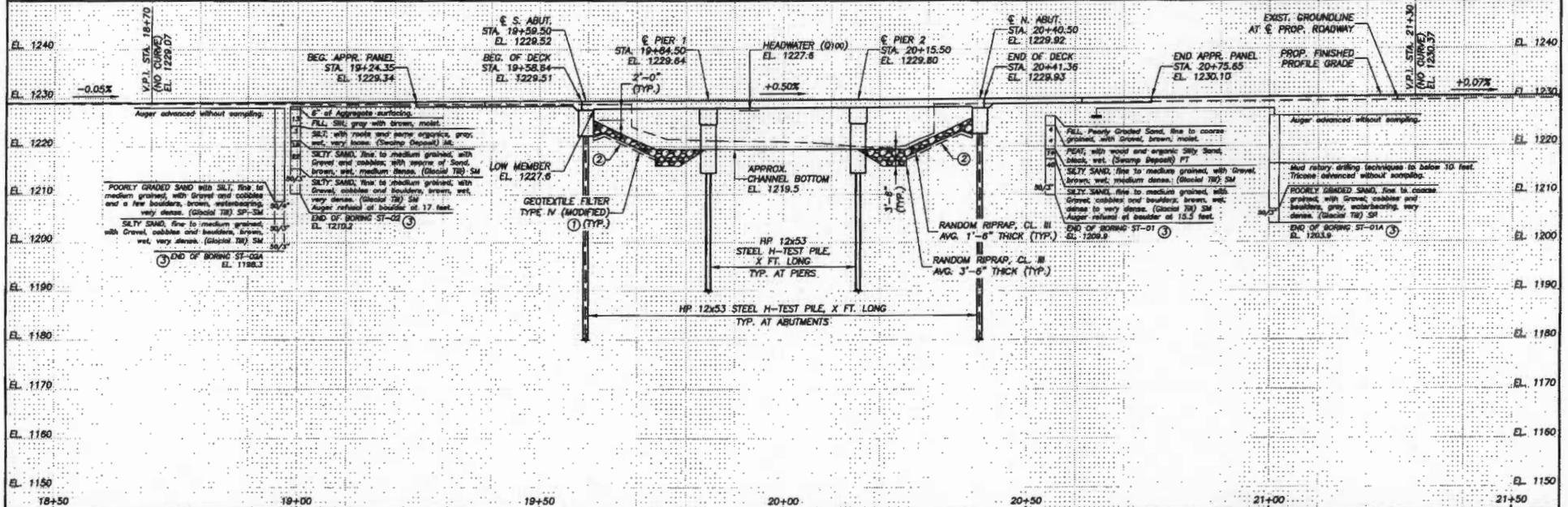


**HORIZONTAL CURVE DATA**

P.I. STA.	22+15.77
P.T. STA.	23+01.43
T	86.00'
R	1110.00'
L	171.66'
Δ	8°51'38.03" RT.

**PROP. HORIZONTAL ALIGNMENT DATA**

DESCRIPTION	STATION	NORTHING	EASTING
B.O.P.	17+80.00	3370000.558	4718510.276
P.I.	22+15.77	3370413.183	4718370.097
E.O.P.	23+00.00	3370496.479	4718355.551
P.T.	23+01.43	3370497.881	4718355.305



BORINGS SHOWN:  
 TAKEN WITH:  
 STANDARD 140 LB HAMMER  
 30 INCH DROP  
 2 INCH O.D. SAMPLER

COUNTY PROJ. NO.  
 WO 177720

CERTIFIED BY PROFESSIONAL ENGINEER/RONALD L. DORRICH  
 LIC. NO. 13931

DES.: TJW  
 CHK.: CGD  
 DRN.: NBB  
 CHK.: CGD

**ERICKSON ENGINEERING**  
 WWW.ERICKSON-ENG.COM 1-800-545-8020

**BRIDGE SURVEY  
 PLAN & PROFILE**

S.A.P. 069-631-008 APPROVED

BRIDGE NO.  
 60A14