

Addendum No. 3

ISSUED BY: Great River Engineering
2826 S. Ingram Mill Rd.
Springfield, Missouri 65804
(417) 886-7171

DATE: March 22, 2024

FOR: Shelbina Lake Bridge Replacement and Spillway Improvements
GRE Project # 4514



The attached revisions hereby supersede any and all data with which they may conflict as indicated on the Drawings, Specifications and related documents issued in the original set and any previous addendums. Each trade is responsible for changes in its work caused by changes in the work of other trades. This addendum is a part of and shall be attached to the original set of plans and specifications for the work.

CHANGES:

1. Questions Received by Contractors for General Knowledge

- a. Multiple contractors questioned the requirement of stainless steel fibers for the steel fiber reinforced concrete. The requirement that the fibers are “stainless steel” will be removed from the job special provisions. The fibers shall be steel and be in accordance with ASTM A820.
- b. A contractor inquired about the location of application for the line item “CONCRETE BONDING AGENT”. The concrete bonding agent is to be applied to the entire area of the spillway receiving the 4” overlay as well as the areas being patched on the spillway after removing the delaminated concrete prior to the placement of the patch concrete.
- c. A contractor inquired about the depth of the repair on the area of the spillway receiving the 4” concrete overlay. The depth of the delaminated concrete removal will vary due to the nature of the delamination. The existing concrete will need to be removed either full depth if necessary or to a depth where there is no unsound concrete remaining.
- d. A contractor inquired about the sound testing to be performed by the engineer per the specifications and the pay item for the resultant concrete to be removed. The engineer will perform sound testing after the contractor has removed all delaminated concrete to ensure all delaminated concrete has been removed. If it is determined that there is additional concrete to be removed, this falls under the pay item for “REMOVAL OF DELAMINATED SECTIONS OF CONCRETE”.

2. Contract Documents

- a. Add the following to the Bridge Job Special Provisions:
 - “55. Vibratory Screed
Bridge deck surface may be finished with a vibratory screed.”
- b. The Spillway Repair Job Special Provisions are updated as follows:
 - i. Remove paragraphs 6 and 7 of Spillway Repair JSP 2 as follows:
~~“Two in. thick wood form boards or steel forms shall be used for forming and shall be staked or braced to hold the correct alignment. If the adjacent pavement in another lane is to be removed later, a form board will have to be placed at the centerline. This can be accomplished by removing just enough concrete in the adjacent lane to place the form.~~

~~The concrete is then placed in the hole, leveled up, vibrated, and struck off with a straight edge. On upper deck sections the concrete is to be brought up only to the top of the original concrete, cured with liquid asphalt and then finished off with asphaltic concrete."~~

ii. Replace Spillway Repair JSP 3 with the following:

3. STEEL FIBER REINFORCED CONCRETE OVERLAY

1.0 Description. This work shall consist of constructing a steel fiber reinforced concrete slab overlay with Class B concrete (as noted on the plans) and steel fiber reinforcement and in accordance with Sec 501, Sec 703.

2.0 Materials.

2.1 Steel fibers shall be made from steel and nominally be 2.0 inches (50 mm) long and meet the physical property requirements prescribed in ASTM A820. 1 inch Helix Fibers are also allowed. Steel fibers shall have a quantity of at least 2,000 fibers per pound and a fiber aspect ratio of 40 to 60. The steel fibers shall not have any hooks or 90° bends. The steel fibers shall be free from rust, oil, and other deleterious materials. Steel fibers shall be transported, stored, and applied to the concrete mixture in accordance with the manufacturer's recommendations.

2.1.1 The contractor shall provide initial on-site technical assistance from the supplier of the steel fiber reinforcement. Further technical assistance shall be available at the request of the engineer.

2.2 Mix Design. The steel fiber dosage rate shall be 80 pounds per cubic yard of concrete.

2.3 Concrete Bonding Agent. Shall conform to ASTM C-881 Types I, II, and V, Grade 2, Class C and AASHTO M-235 specifications. It shall have a minimum of 6,000 psi (14 day) Flexure strength and a minimum Tensile Strength of 6,000 psi (7 day). Additionally, it shall have a minimum Tensile Adhesion Strength of 1,400 psi (2-day moist cure). This concrete bonding agent shall be applied to manufacturers recommendations prior to placement of the steel fiber concrete overlay.

3.0 Removal of Unsound Concrete for Spillway Repairs.

3.1 Following completion of all special zone repairs and prior to placement of overlay, the engineer will visually inspect and perform a sounding test on the spillway. Any areas of the deck that are loose, partially delaminated, or otherwise unsound, will be and marked for removal. The contractor shall remove the unsound concrete per Sec 704.4.1.3.

3.2 Following removal of all unsound concrete, all debris shall be removed from the deck prior to placement of overlay, at no additional cost.

4.0 Construction Requirements.

4.1 Pumping. Pumping shall generally be in accordance with Sec 703. Unless otherwise approved by the engineer, the following practices shall be observed:

- (a) Avoid rapid reduction in line size from the pump to the lines.
- (b) Operating pressure inside the line should be kept as low as functionally possible.
- (c) Use 5-inch (minimum) diameter clean, steel lines.

4.2 Spillway Repair.

4.2.1 Spillway repair is defined as providing and placing the spillway overlay material necessary to fill all depressions in the spillway below the bottom of the planned spillway overlay thickness. This material is placed monolithic during the spillway overlay process.

4.2.2 Shallow and deep areas, including approved half soled repair areas, may be filled monolithically with the spillway overlay. Any standing water on the spillway or in the depressed areas shall be removed prior to placement of concrete overlay material. Hand vibrators shall be used in areas where concrete is being placed around reinforcement, deeper areas within the pour, and along curb lines and construction joints.

5.0 Method of Measurement.

5.1 Measurement for Removal of Unsound Concrete for Spillway Repairs will be made to the nearest square yard.

5.2 The overlay area will be measured to the nearest square yard based on measurement longitudinally from end of overlay to end of overlay and transversely from edge of overlay to edge of overlay.

5.3 Cleaning of the spillway prior to concrete overlay shall be done with a minimum 3500 psi power washer. The intent is to remove all dirt, moss, vegetation, and dust from the delaminated concrete removal. This shall be done to the engineer or his representative's satisfaction. Payment will be made to the S.Y.

iii. Remove the following from Section 502.4.7 of Spillway Repair JSP 4:

~~“Tie bars required at longitudinal construction joints shall be positioned before concrete base or pavement consolidation. Tie bars shall be placed on 30” centers for the full depth slabs, both longitudinally and horizontally.”~~

b. The attached bid form includes the following updates:

- i. “#5 TIE BARS 30” LONG ON 30” CENTERS FOR SLAB REPLACEMENT” was removed and replaced with 132 SY of “WIRE MESH REINFORCING FOR TOE SLAB”.
- ii. The quantity for “CLEANING” was updated to be 878 SY.
- iii. The quantity for “REMOVAL OF DELAMINATED SECTIONS OF CONCRETE” was updated to be 204.3 SY.
- iv. The quantity for “CONCRETE BONDING AGENT” was updated to be 99 GAL.
- v. The line item “REMOVAL OF SLAB CONCRETE” was renamed to “REMOVAL OF TOE SLAB CONCRETE” to provide clarification of where the location for removal was on the plans.
- vi. The quantity for “REMOVAL OF TOE SLAB CONCRETE” was updated to 132 SY.
- vii. The quantity for “CONCRETE SAWING OF 4” OVERLAY 8’ X 8’ SQUARES” was updated to be 1927 LF.
- viii. The line item for “CRACK FILLER ON OVERLAY AND SLAB” was renamed to “CRACK FILLER ON OVERLAY AND TOE SLAB” to provide clarification on the location for crack filler.
- ix. The quantity for “CRACK FILLER ON OVERLAY AND TOE SLAB” was updated to 2087 LF.
- x. The line item “CONCRETE SAWING OF SLAB” was renamed to be “CONCRETE SAWING OF TOE SLAB” to provide clarification of the location of the referenced slab.

3. Plans

b. Sheet C6 Spillway Quantities were updated as follows:

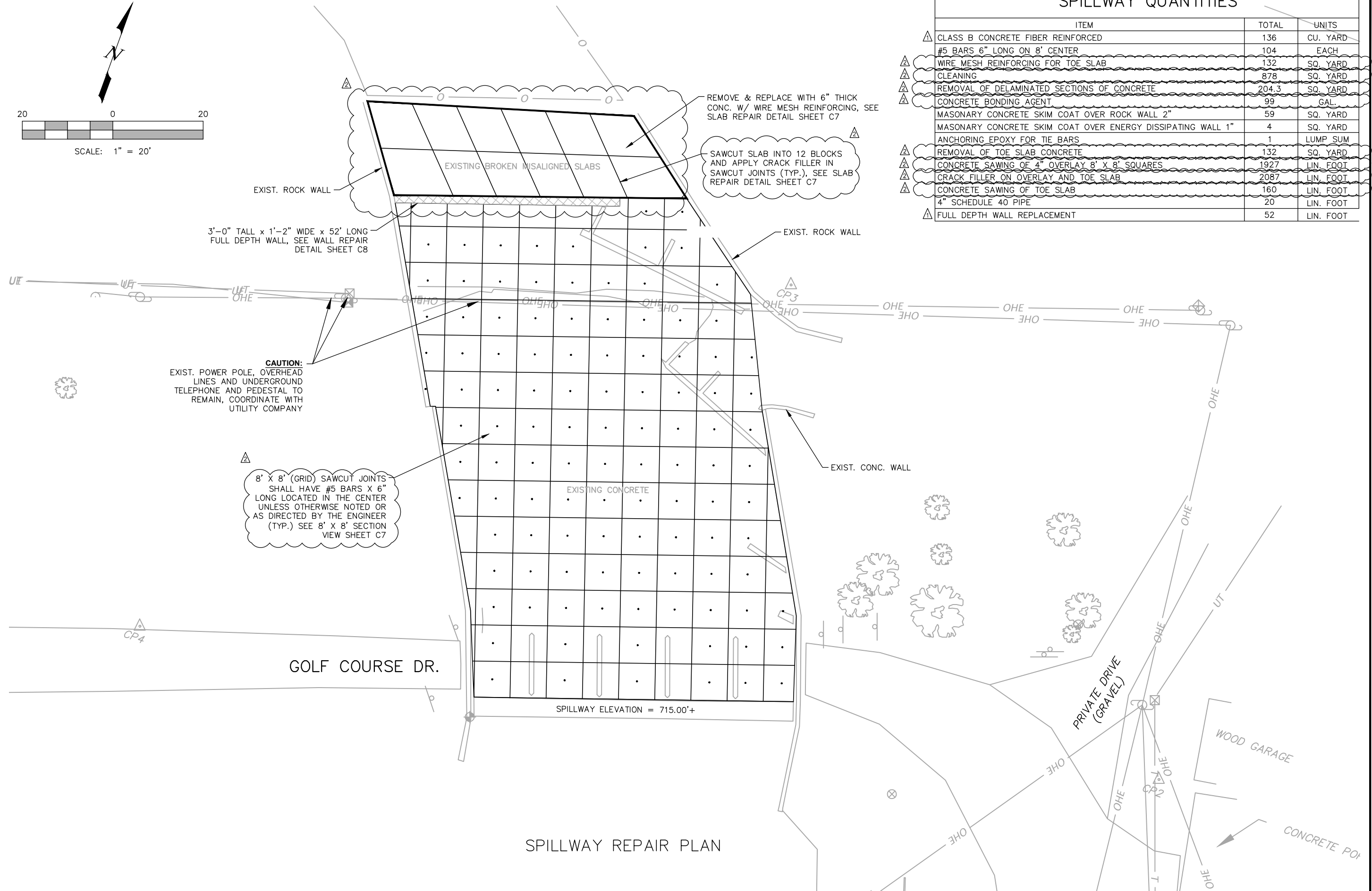
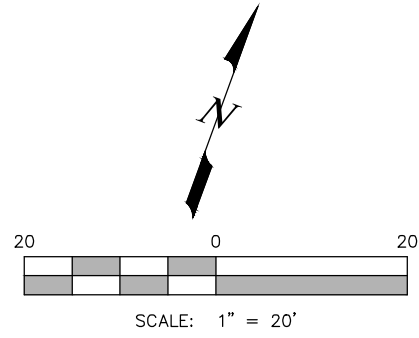
- i. “#5 TIE BARS 30” LONG ON 30” CENTERS FOR SLAB REPLACEMENT” was removed and replaced with 132 SY of “WIRE MESH REINFORCING FOR TOE SLAB”.
- ii. The quantity for “CLEANING” was updated to be 878 SY.
- iii. The quantity for “REMOVAL OF DELAMINATED SECTIONS OF CONCRETE” was updated to be 204.3 SY.
- iv. The quantity for “CONCRETE BONDING AGENT” was updated to be 99 GAL.
- v. The line item “REMOVAL OF SLAB CONCRETE” was renamed to “REMOVAL OF TOE SLAB CONCRETE” to provide clarification of where the location for removal was on the plans.
- vi. The quantity for “REMOVAL OF TOE SLAB CONCRETE” was updated to 132 SY.
- vii. The quantity for “CONCRETE SAWING OF 4” OVERLAY 8’ X 8’ SQUARES” was updated to be 1927 LF.
- viii. The line item for “CRACK FILLER ON OVERLAY AND SLAB” was renamed to “CRACK FILLER ON OVERLAY AND TOE SLAB” to provide clarification on the location for crack filler.

- ix. The quantity for “CRACK FILLER ON OVERLAY AND TOE SLAB” was updated to 2087 LF.
- x. The line item “CONCRETE SAWING OF SLAB” was renamed to be “CONCRETE SAWING OF TOE SLAB” to provide clarification of the location of the referenced slab.
- c. Sheet C6 “SPILLWAY REPAIR PLAN” was updated to include the sawcut lines for the full depth repair toe slab and a note regarding sawcuts. It was also updated to include that the placement of the #5 Bars X 6” location is to be in the center unless otherwise noted or as directed by the engineer.
- d. Sheet C7 “SLAB REPAIR DETAIL” was updated to show depth and location of sawcuts for the full depth repair toe slab.
- e. Sheet C7 “8’ X 8’ GRID – SECTION VIEW” was updated to include an extra arrow to clarify the placement of adhesive prior to placement of the 4” overlay.
- f. Sheet C7 “WALL REPAIR DETAIL” was updated to clarify that the existing ends of the PVC pipes located in the wall would be removed during destruction of the wall and need to be replaced with 4” Schedule 40 Pipe.

Attached Supplemental Documents

- Updated Bid Form
- Updated Plan Sheets C6 and C7

There are no other clarifications or changes included with this Addendum.



SPILLWAY QUANTITIES		
ITEM	TOTAL	UNITS
△ CLASS B CONCRETE FIBER REINFORCED	136	CU. YARD
△ #5 BARS 6" LONG ON 8' CENTER	104	EACH
△ WIRE MESH REINFORCING FOR TOE SLAB	132	SQ. YARD
△ CLEANING	878	SQ. YARD
△ REMOVAL OF DELAMINATED SECTIONS OF CONCRETE	204.3	SQ. YARD
△ CONCRETE BONDING AGENT	99	GAL.
△ MASONARY CONCRETE SKIM COAT OVER ROCK WALL 2"	59	SQ. YARD
△ MASONARY CONCRETE SKIM COAT OVER ENERGY DISSIPATING WALL 1"	4	SQ. YARD
△ ANCHORING EPOXY FOR TIE BARS	1	LUMP SUM
△ REMOVAL OF TOE SLAB CONCRETE	132	SQ. YARD
△ CONCRETE SAWING OF 4" OVERLAY 8' X 8' SQUARES	1927	LIN. FOOT
△ CRACK FILLER ON OVERLAY AND TOE SLAB	2087	LIN. FOOT
△ CONCRETE SAWING OF TOE SLAB	160	LIN. FOOT
△ 4" SCHEDULE 40 PIPE	20	LIN. FOOT
△ FULL DEPTH WALL REPLACEMENT	52	LIN. FOOT

CAUTION:
EXIST. POWER POLE, OVERHEAD LINES AND UNDERGROUND TELEPHONE AND PEDESTAL TO REMAIN, COORDINATE WITH UTILITY COMPANY

8' X 8' (GRID) SAWCUT JOINTS SHALL HAVE #5 BARS X 6" LONG LOCATED IN THE CENTER UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER (TYP.) SEE 8' X 8' SECTION VIEW SHEET C7

SPILLWAY REPAIR PLAN



Date	3/15/2024	3/21/2024
Revision/Issue	ADDENDUM NO. 1	ADDENDUM NO. 3
No.	△	△

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

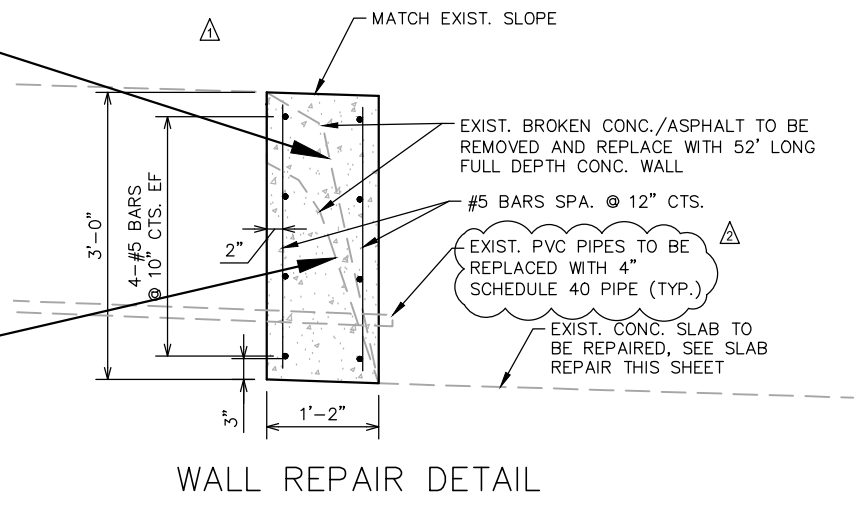
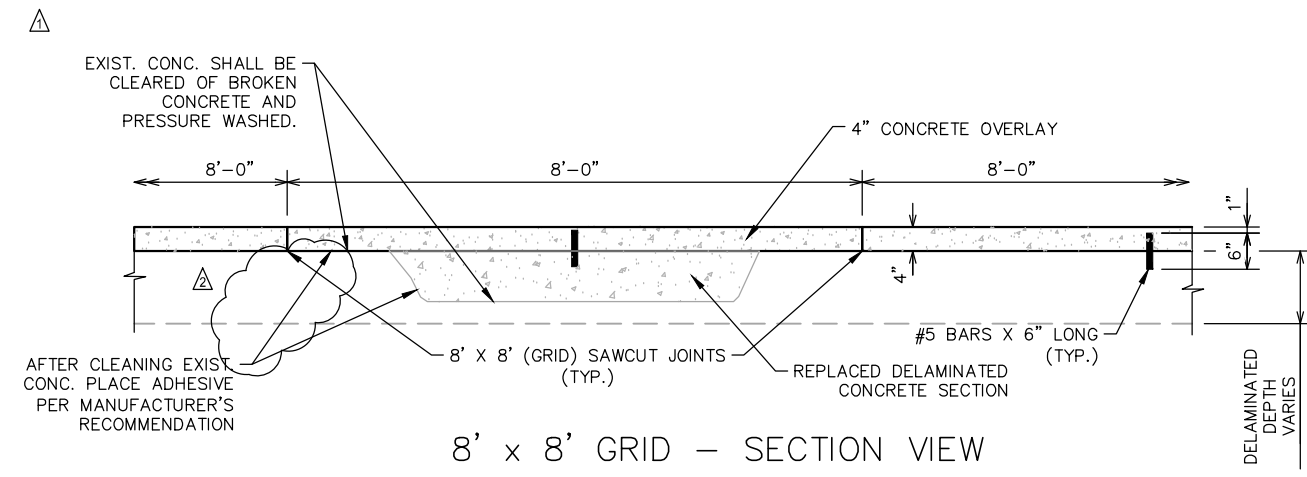
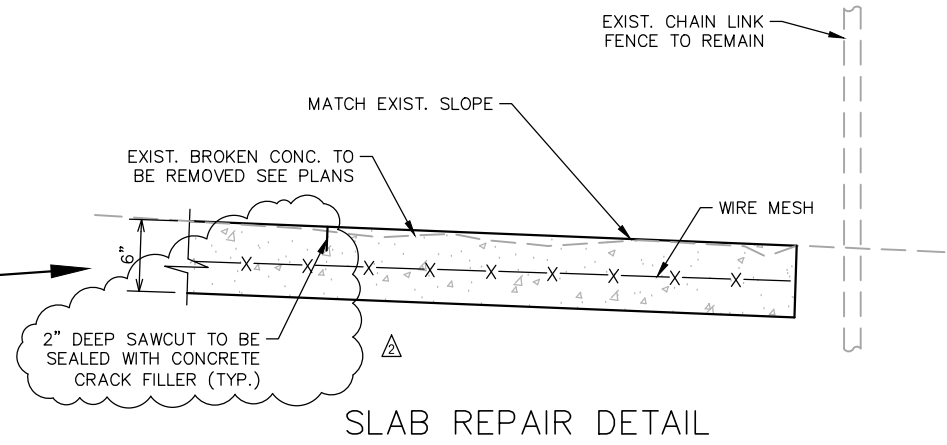


MICHAEL E. TEEL
PE #029470

GOLF COURSE DR. BRIDGE #39650021
CITY OF SHELBYNA, MISSOURI
SPILLWAY REPAIR PLAN

CHECKED BY:	MET
DRAWN BY:	KFB
JOB NUMBER:	4514
FILE NAME:	4514_Civil
SCALE:	NOTED
ISSUE DATE:	2024-03-21
SHEET NUMBER:	C6

C6



Date	3/15/2024
Revised/Issue	3/21/2024
ADDENDUM NO. 1	
ADDENDUM NO. 3	
No.	

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

STATE OF MISSOURI
 REGISTERED PROFESSIONAL ENGINEER
 MICHAEL E. TEEL
 NUMBER E-29470

MICHAEL E. TEEL
 PE #029470

GOLF COURSE DR. BRIDGE #39650021
 CITY OF SHELBYNA, MISSOURI
 SPILLWAY CONSTRUCTION DETAILS

Copyright © 2023 by Great River Engineering

CHECKED BY: MET
 DRAWN BY: KFB
 JOB NUMBER: 4514
 FILE NAME: 4514_Civil
 SCALE: NOTED
 ISSUE DATE: 2024-03-21
 SHEET NUMBER: C7



City of Shelbina
 Golf Course Rd
 Bridge No. 3965002

CONTRACTOR NAME: _____
 ADDRESS LINE 1: _____
 ADDRESS LINE 2: _____
 PHONE NUMBER: _____
 EMAIL: _____
 DATE: _____

ITEMIZED BID FORM

LINE	ITEM	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS						
1	201	CLEARING AND GRUBBING	ACRE	0.2	_____	_____
2	203	UNCLASSIFIED EXCAVATION (ROADWAY)	C.Y.	21	_____	_____
3	203	EMBANKMENT IN PLACE W/COMPACTION	C.Y.	8	_____	_____
4	502	8 IN. PORTLAND CEMENT CONCRETE PAVEMENT	S.Y.	252	_____	_____
5	304	4 IN. ROLLED AGGREGATE BASE (TYPE 1 OR 5)	S.Y.	252	_____	_____
6	304	5 IN. ROLLED AGGREGATE (GRAVEL DRIVEWAY)	S.Y.	18	_____	_____
7	606	TRANSITION SECTION, 6.5 FT. POSTS	EACH	2	_____	_____
8	606	GUARDRAIL TYPE A	L.F.	37.5	_____	_____
9	606	END ANCHOR	EACH	4	_____	_____
10	616	CONSTRUCTION SIGNS	S.F.	63	_____	_____
11	616	TYPE III MOVEABLE BARRICADE	EACH	8	_____	_____
12	618	MOBILIZATION	L.S.	1	_____	_____
13	805	SEEDING	ACRE	0.2	_____	_____
14	806	SILT FENCE	L.F.	189	_____	_____
					<i>ROADWAY ITEMS SUBTOTAL</i>	_____
SPILLWAY REPAIR ITEMS						
15		CLASS B CONCRETE FIBER REINFORCED	C.Y.	136	_____	_____
16		#5 BARS 6" LONG ON 8' CENTERS	EACH	104	_____	_____
17		WIRE MESH REINFORCING FOR TOE SLAB	S.Y.	132	_____	_____
18		CLEANING	S.Y.	878	_____	_____
19		REMOVAL OF DELAMINATED SECTIONS OF CONCRETE	S.Y.	204.3	_____	_____
20		CONCRETE BONDING AGENT	GAL.	99	_____	_____
21		MASONRY CONCRETE SKIM COAT OVER ROCK WALL 2"	S.Y.	59	_____	_____
22		MASONRY CONCRETE SKIM COAT OVER ENERGY DISSIPATING WALL 1"	S.Y.	4	_____	_____
23		ANCHORING EPOXY FOR TIE BARS	L.S.	1	_____	_____
24		REMOVAL OF TOE SLAB CONCRETE	S.Y.	132	_____	_____
25		CONCRETE SAWING OF 4" OVERLAY 8' X 8' SQUARES	L.F.	1927	_____	_____
26		CRACK FILLER ON OVERLAY AND SLABS	L.F.	2087	_____	_____
27		CONCRETE SAWING OF TOE SLAB	L.F.	160	_____	_____
28		4" SCHEDULE 40 PIPE	L.F.	20	_____	_____
29		FULL DEPTH WALL REPLACEMENT	L.F.	52	_____	_____
					<i>SPILLWAY REPAIR ITEMS SUBTOTAL</i>	_____



City of Shelbina
 Golf Course Rd
 Bridge No. 3965002

CONTRACTOR NAME: _____
 ADDRESS LINE 1: _____
 ADDRESS LINE 2: _____
 PHONE NUMBER: _____
 EMAIL: _____
 DATE: _____

ITEMIZED BID FORM

LINE	ITEM	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	AMOUNT
BRIDGE ITEMS						
30	216	PARTIAL REMOVAL OF BRIDGES	L.S.	1	_____	_____
31	703/706	REBUILD END BENT BACK WALLS	L.S.	1	_____	_____
32	703	SLAB ON STEEL	S.Y.	135	_____	_____
33	712	FABRICATED STRUCTURAL LOW ALLOY STEEL (I-BEAM) A709, GRADE 50W OR GRADE 50 (GALVANIZED) PLEASE INDICATE WHICH OF THE FOLLOWING I-BEAMS ARE BEING BID: [] GRADE 50W [] GRADE 50 (GALVANIZED)	L.F.	13160	_____	_____
34	713	BRIDGE GUARD RAIL (THRIE BEAM)	L.F.	180	_____	_____
35	716	PLAIN NEOPRENE BEARING PAD ASSEMBLY	EACH	24	_____	_____

BRIDGE ITEMS SUBTOTAL _____

TOTAL CONTRACT _____

Addenda
 Signature

1 _____
 2 _____
 3 _____