

**Illinois Department of Natural Resources
ADDENDUM CONSERVATION PLAN**

(Application for an Incidental Take Authorization)
Per 520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080

Addendum Conservation Plan for the Monkeyface (*Quadrula metanevra*), Purple Wartyback (*Cyclonaias tuberculata*), Rainbow (*Villosa iris*) and Wavy-rayed Lampmussel (*Lampsilis fasciola*) at the structures carrying I-74 over the Vermilion River near Danville, IL

150-day minimum required for public review, biological and legal analysis, and permitting

SUBMITTED TO:

Ms. Heather Osborn
Incidental Take Authorization Coordinator
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
DNR.ITAcordinator@illinois.gov

PROJECT APPLICANT:

Illinois Department of Transportation Region3-
District 5
Attn: Kensil A. Garnet, PE
Region 3 Engineer
13473 IL Hwy 133
P.O. Box 610
Paris, IL 61944

PROJECT NAME:

I-74 over Vermilion River (Wabash River Basin) at
the Interstate-74 (IDOT FAI 74) Bridges in
Vermilion County, Illinois
IDOT PMA Seq #20639

COUNTY:

Vermilion

AREA OF IMPACT:

0.20 acres

1. Description of the impact likely to result from the proposed taking

A. Legal description of the project area

Specific locality information for this project site has been taken from the Danville SW, Illinois (7.5' series, 1966 edition; NAD 1929 U.S. Geological Survey topographic quadrangle map (all coordinates to approximate center of bridge). UTM = Universal Transverse Mercator System.

Illinois, Vermilion County, Vermilion River, +/- 4.9 km WNW of Tilton, IL, at the FAI-74 bridge, Township 19 North, Range: 12 West, NW/4, NW/4, NW/4, Section 14, 2nd Principal Meridian. UTM: Zone 16T, 440849.82m East, 4440783.99m North. Latitude: 40.115283° North, Longitude: - 87.694137° West

All staging and work associated with the proposed improvements to the dual structures carrying I-74 over the Vermilion River will be performed within existing State Right-of-Way; see Exhibit A.

B. Biological Data

The Environmental Survey Request (ESR) process for the proposed removal of existing sheet pile and removal and replacement of existing rip rap around piers 2 and 3 on both structures carrying Interstate 74 (I-74) over the Vermilion river near Danville, IL, Vermilion County IL involved coordination with IDNR for the presence of threatened and endangered species. As a result, the attached INHS Aquatic Survey Report (Exhibit C) identified the presence of the following protected resources occurring near the project area and proposed action:

Monkeyface (*Theliderma metanevra*)

Monkeyface (*Theliderma metanevra*) are found in medium to large rivers in gravel or mixed sand and gravel (Cummings and Mayer 1992). They are increasingly isolated in Illinois, found primarily in a few larger rivers and in the Vermilion-Wabash drainage, this mussel species is at risk for further decline due to fragmentation (Douglass and Stodola 2014).

Purple Wartyback (*Cyclonaias tuberculata*)

Purple Wartyback (*Cyclonaias tuberculata*) are found in medium to large rivers in gravel or mixed sand and gravel; they generally prefer riverine conditions with stronger flow (Cummings and Mayer 1992).

Rainbow (*Villosa iris*)

Rainbow (*Villosa iris*) are found in small to medium rivers in coarse sand or gravel (Cummings and Mayer 1992). They are currently only found in the Vermilion-Wabash drainage in Illinois and in a feeder tributary to Aux Sable Creek in the Illinois drainage (Douglass and Stodola 2014; Mollusk Collections Data 2020).

Wavy-rayed Lampmussel (*Lampsilis fasciola*)

Wavy-rayed Lampmussel (*Lampsilis fasciola*) are found in medium rivers in gravel riffles (Cummings and Mayer 1992) and are now restricted to the Vermilion-Wabash drainage in Illinois (Douglass and Stodola 2014).

C. Description of project activities

The construction activities that may result in a take of the Monkeyface, Purple Wartyback, Rainbow and Wavy-rayed Lampmussel in the area of the bridges is removal and placement of riprap and sheet piling around piers 2 and 3 on both structures; rip rap is needed around these piers to prevent scour and potential failure of the existing piers; cofferdams are not required to perform this work. At this time, the project has been awarded to a contractor; however, different contractors have

different methods for performing the proposed work; therefore, based on past construction practices for similar work, the removal and replacement of riprap and or sheet piling will be performed from the bank or a causeway and will be by mechanical means such as a crane, excavator, backhoe, etc.

D. Explanation of the anticipated adverse effects on the listed species.

Listed mussels may be buried or crushed by the removal of existing sheet pile around pier 2, removal and the replacement of rip rap around piers 2 and 3 on both structures. Construction of a causeway to complete the proposed in-stream work could also result in the taking of listed mussels. Details of the causeway can be found in Exhibit D; flow within the river will be maintained 100% of the time causeways are in place; a significant reduction of flow will is not anticipated.

2. Measures the applicant will take to minimize and mitigate that impact

A. Plans to minimize the area affected by the proposed action, the number of individuals of an endangered or threatened species that will be taken, and the amount of habitat affected.

Construction activities associated with proposed improvements within the river will be limited to State Right-of-Way (ROW); State ROW is defined as that portion of the area lying 230 feet north of the centerline of I-74 and 235 feet south of the centerline of I-74 being approximately 1.38 acres. Temporary impacts may occur within the 1.38 acres with permanent impacts from construction activities being approximately 0.20 acres; see attached exhibits B and Ba; there will be no change in the construction footprint from the previous ITA. IDOT has minimized the impact footprint within the species aquatic habitat to the extent possible. The Illinois Natural History Survey (INHS) estimates suitable mussel habitat within the project footprint to be 0.05 acres; see Exhibit C. Given the presence of a minimal amount of suitable mussel habitat within the project footprint and the relocation of only one listed species of mussel from within the suitable habitat and the presence of only a minimal amount of suitable habitat within the construction limits; we estimate that one listed mussel per species could be taken by implementing the proposed improvement.

B. Plans for management of the area affected by the proposed action that will allow continued use of the area by the species.

All proposed work will be performed within existing IDOT Right of Way directly under the bridges. The INHS Aquatic Survey Report (Exhibit C) states that habitat throughout most of the salvage area was a run of shallow slow-flowing water, with pool habitat near the west side of the bridges. Substrate in the salvage area was primarily unconsolidated sand (49%), but silt (30%),

unconsolidated gravel (10%), cobble (7%), boulder (2%), clay (1%), and woody debris (1%) were also present. The western edge of the river directly adjacent to the metal bridge support was cobble and bridge rubble and formed relatively stable cobble substrate for freshwater mussels; this small area of consolidated substrates was present for approximately 10 feet of stream width along the entire length of the bridge supports on the west side. Most of the remaining wetted area of the salvage reach was a mix of unconsolidated sand and gravel, thus unsuitable as consistent mussel habitat. Efforts will be made to ensure the existing stream bed directly under the bridges will remain as was preconstruction; additionally, after construction activities are complete, the streambed directly under the bridges will be "managed" or "controlled" by natural processes; the dynamic processes operating within the Vermilion River will dictate the condition of the bed of the river post construction.

C. Description of all measures to be implemented to minimize or mitigate the effects of the proposed action on the endangered or threatened species.

- Because completely avoiding temporary impacts to the Vermilion River is not practicable due to the fundamental nature of the project, the area of disturbance within the river is the minimum needed for construction purposes
- Siltation during all phases of construction will be minimized through use of proper soil erosion and sediment control measures such as floating silt fences to prevent sediment from entering the river. The resident engineer will inspect and ensure maintenance of all silt fences, silt curtains, and other erosion control structures. If site inspections show that measures in place are not functioning or are not adequate, different or additional measures will be added. If unforeseen observations or events pertaining to listed species are identified during construction, IDNR will be contacted.
- During on-site work, the IDOT Resident Engineer will conduct daily inspections of the erosion and sediment control practices to ensure proper working order and maintenance. Additional inspections will be made immediately prior to and following events of heavy rain. If eroded soil is observed leaving the limits of construction, additional soil conserving practices will be installed, or measures taken to minimize soil erosion.
- Per the terms of the original ITA for the project, at the request of IDOT, the INHS performed a freshwater mussel relocation in the Vermilion River (Wabash River drainage) at the Interstate 74 (IDOT FAI 74) bridges (IDOT Sequence No. 20639) in Vermilion County, Illinois. The mussel salvage was completed by INHS personnel during the week of 24 August 2020. During this salvage, freshwater mussels were collected by completing 138 multiple-pass 3.28 ft-wide transects over a 450-ft-long stretch of the stream directly under and adjacent to (both upstream and downstream of) the Interstate 74 (IDOT FAI 74) bridges. Seven species of mussels were collected from the salvage area,

including 1 live Monkeyface. All live mussels collected were relocated approximately 1 mile upstream of the project area.

- Compensation for the potential take of protected species will be considered by IDOT; IDNR will take into account expenses already incurred by IDOT for mussel surveys and relocation by INHS and compensation previously paid for the fish species.

D. Plans for monitoring the effects of the measures implemented.

It is the recommendation of the IDOT that the INHS conduct mussel surveys two-and five-years following completion; "Completion" shall be defined as the date of the IDOT Final Inspection for the project. The District shall contact the Central Office Natural Resources Unit within one week of completion of the project to task follow-up surveys. The purpose of the monitoring effort is to

determine if the Monkeyface, Purple Wartyback, Rainbow and Wavy-rayed Lampmussel mussels are present. A report on the species and numbers found shall be provided to the Department within 60 days of the completion of each survey. The report shall also include a qualitative evaluation of the habitat for the Monkeyface, Purple Wartyback, Rainbow and Wavy-rayed Lampmussel and the manner in which that habitat has changed since the previous survey. Based on the results of the monitoring survey, the need for further monitoring will be assessed.

E. Adaptive management practices that will be used to deal with changed or unforeseen circumstances that affect the effectiveness of measures instituted to minimize or mitigate the effects of the proposed action on endangered or threatened species.

Due to the nature of the project, IDOT does not anticipate any changed or unforeseen circumstances; however, if high water or drought conditions occur during the work directly under the bridge, IDOT will coordinate closely with the contractor and District Environmental Coordinator to make appropriate changes necessary. The bridge work will be completed with no additional work being necessary afterwards.

F. Verification that funding to support mitigation activities will be available for the life of conservation plan.

The project is funded through the following:

- The program cost of the project is \$17,750,000; 10% State Funds and 90% Federal Funds. Any costs are associated with implementation of the erosion and sediment control practices will be borne by the Contractor and included in their bid price for the project. The Illinois Department of Transportation has contractual obligation with the Illinois Natural History Survey for post-construction surveys.

3. Alternative actions that would reduce take

Existing piers 2 and 3 at both structures has considerable scour at the upstream end of the piers and requires scour protection to protect the large piers and slab footings which are not pile supported. The following alternative action were considered:

Alternative A – “No-Action”:

The only alternative which does not result in the taking of the state listed species is to leave the existing rip rap and sheet pile in place, or the “no-action” alternative. The existing rip rap and sheet pile does not provide adequate scour protection of piers 2 and 3 on both structures; further scour of these piers will lead to the failure of the piers causing the structures to fail resulting in a shutdown of the interstate. The no-action alternative is not considered feasible for this project.

Alternative B – “Articulated block-revetment mat”:

Alternatives such as articulated block or revetment mat would require larger footprints and would not stay in place due to the high velocities around the piers and through the structure. Future, continual maintenance would be

required in the Vermilion River with any other alternative; thus, the proposed Class A7 Riprap provides the least amount of disturbance in the river.

Alternative C – “Removal of the existing Sheet pile and removal and replacement of the existing rip rap around piers 2 and 3 of both structures
The final option would be the removal of the existing sheet pile and removal and replacement of the existing rip rap around piers 2 and 3 on both structures. The area where this option occurs is the most economical alternative and will provide a minimal impact to property and the state listed species also addressing pier scour concerns.

4. Data and information to assure that the proposed taking will not reduce the likelihood of the survival of the species.

All proposed in-stream work is limited to that area around piers 2 and 3 directly under the structures; all being within existing State ROW. The INHS Aquatic Survey Report conducted on October 16, 2020 stated that the entire salvage area was wadable; while this reach of the Vermilion River has developed sequences of riffle-run-pool and a variety of aquatic habitats, habitat throughout most of the salvage area was a run of shallow slow-flowing water, with pool habitat near the west side of the bridges. The western edge of the river directly adjacent to the metal bridge support was cobble and bridge rubble and formed relatively stable cobble substrate for freshwater mussels; this small area of consolidated substrates was present for approximately 10 feet of stream width along the entire length of the bridge supports on the west side. Most of the remaining wetted area of the salvage reach was a mix of unconsolidated sand and gravel, thus unsuitable as consistent mussel habitat.

Other streams in Illinois are not affected by this project; upon completion of the proposed improvement and given the mitigation measures put in place by IDOT, the mussel species will continue to survive at the project location.

5. **An implementing agreement, which shall include, but not be limited to:**

A. Names of all participants in the execution of the conservation plan, including public bodies, corporations, organizations, and private individuals.

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Region Three Engineer
Illinois Department of Transportation
13473 IL Hwy 133, P.O. Box 610
Paris, IL 61944


Region 3 Engineer

Kensil A. Garnett, P.E.

B. The obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities in the conversation plan and a schedule for preparation of progress report to be provided to the Department.

The Illinois Department of Natural Resources is responsible for the review of this Conservation Plan and for subsequent issuance of the Incidental Take Authorization.

The Illinois Natural History Survey will have duties of surveying for threatened or endangered mussels. Post construction surveys by the INHS will examine the Vermilion River within IDOT ROW for the Monkeyface, Purple Wartyback, Rainbow and Wavy-rayed Lampmussel mussels and mussel habitat.

The Illinois Department of Transportation is responsible for all biological clearance coordination and recommendations related to the project and will address those items listed under the Incidental Take Notice.

C. Assurances that each participant in the execution of the conservation plan has the legal authority to carry out their respective obligations and responsibilities under the conservation plan.

This project is authorized by the Illinois Department of Transportation, which receives funding from Illinois General Assembly and the Federal government in carrying out its programs.

D. Assurances of compliance with all other federal, state, and local regulations pertinent to the proposed action and to execution of the conservation plans.

The Illinois Department of Transportation exclusively abides by the National Environmental Policy Act and all associated state and federal environmental laws in carrying out its mission of performing the most environmentally sensitive methods of transportation planning and engineering.

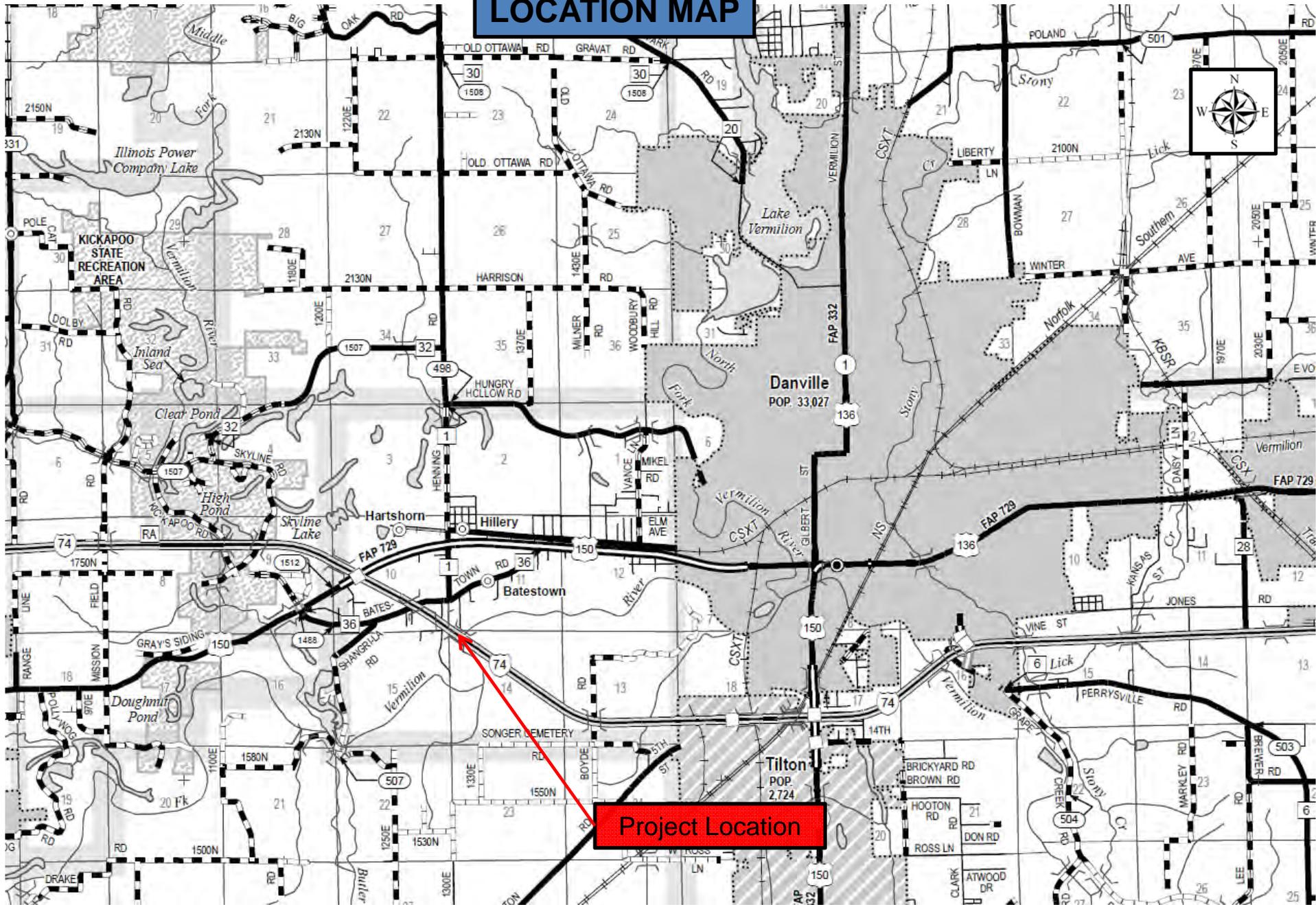
E. Copies of any federal authorizations for taking already issues to the applicant.

Not applicable since the Monkeyface (*Quadrula metanevra*), Purple Wartyback (*Cyclonaias tuberculata*), Rainbow (*Villosa iris*) and Wavy-rayed Lampmussel (*Lampsilis fasciola*) are not federally threatened or endangered.

F. For projects that will result in the taking of endangered or threatened species of plants, copies of expressed written permission of the landowner.

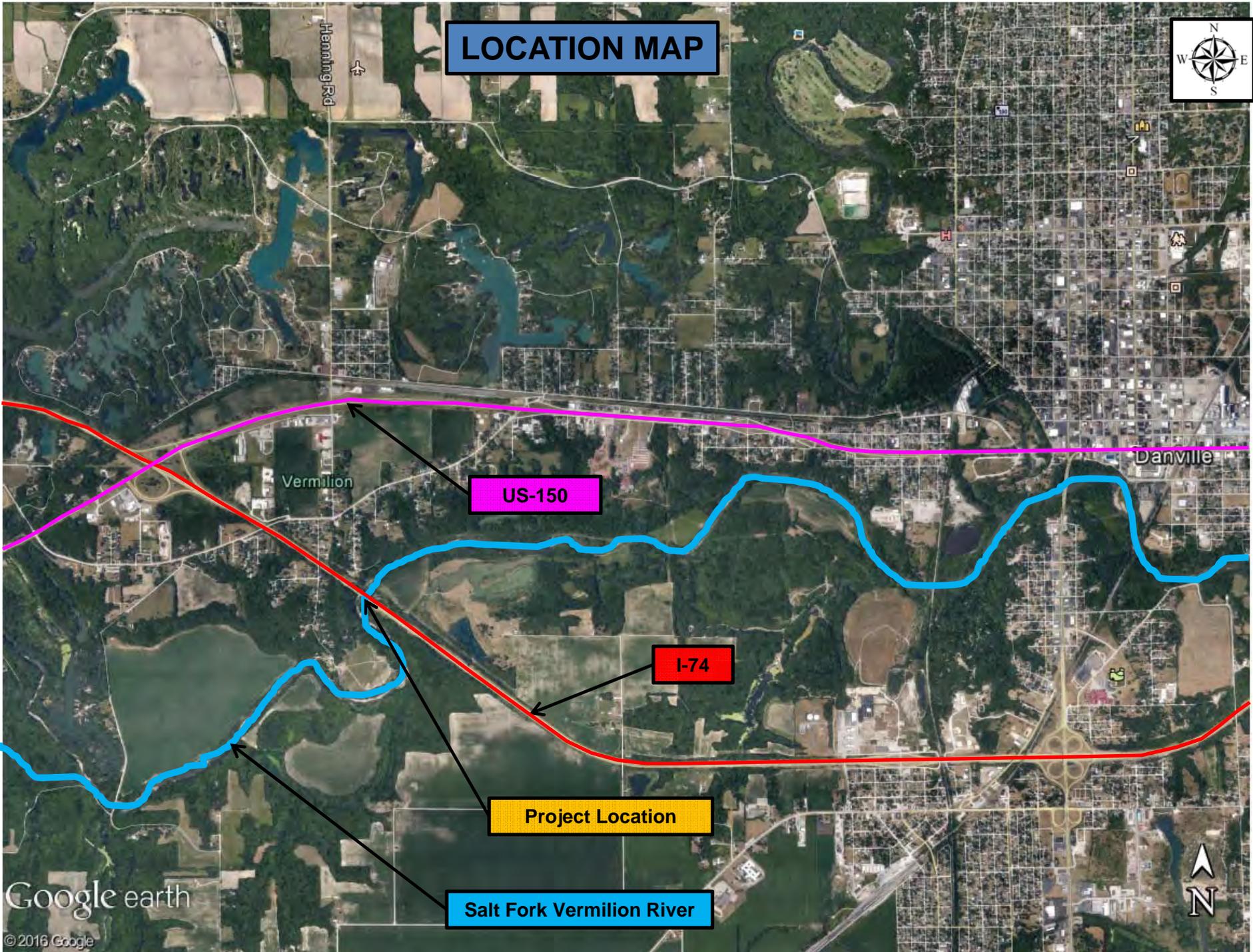
Not applicable since the Monkeyface (*Quadrula metanevra*), Purple Wartyback (*Cyclonaias tuberculata*), Rainbow (*Villosa iris*) and Wavy-rayed Lampmussel (*Lampsilis fasciola*) are considered an animal under the Illinois Endangered Species Act (ILCS 10/2).

LOCATION MAP



Project Location

LOCATION MAP



Henning Rd

Vermilion

Danville

US-150

I-74

Project Location

Salt Fork Vermilion River

Google earth

© 2016 Google



LOCATION MAP



Salt Fork Vermilion River

Structures to be replaced



WB I-74

EB I-74



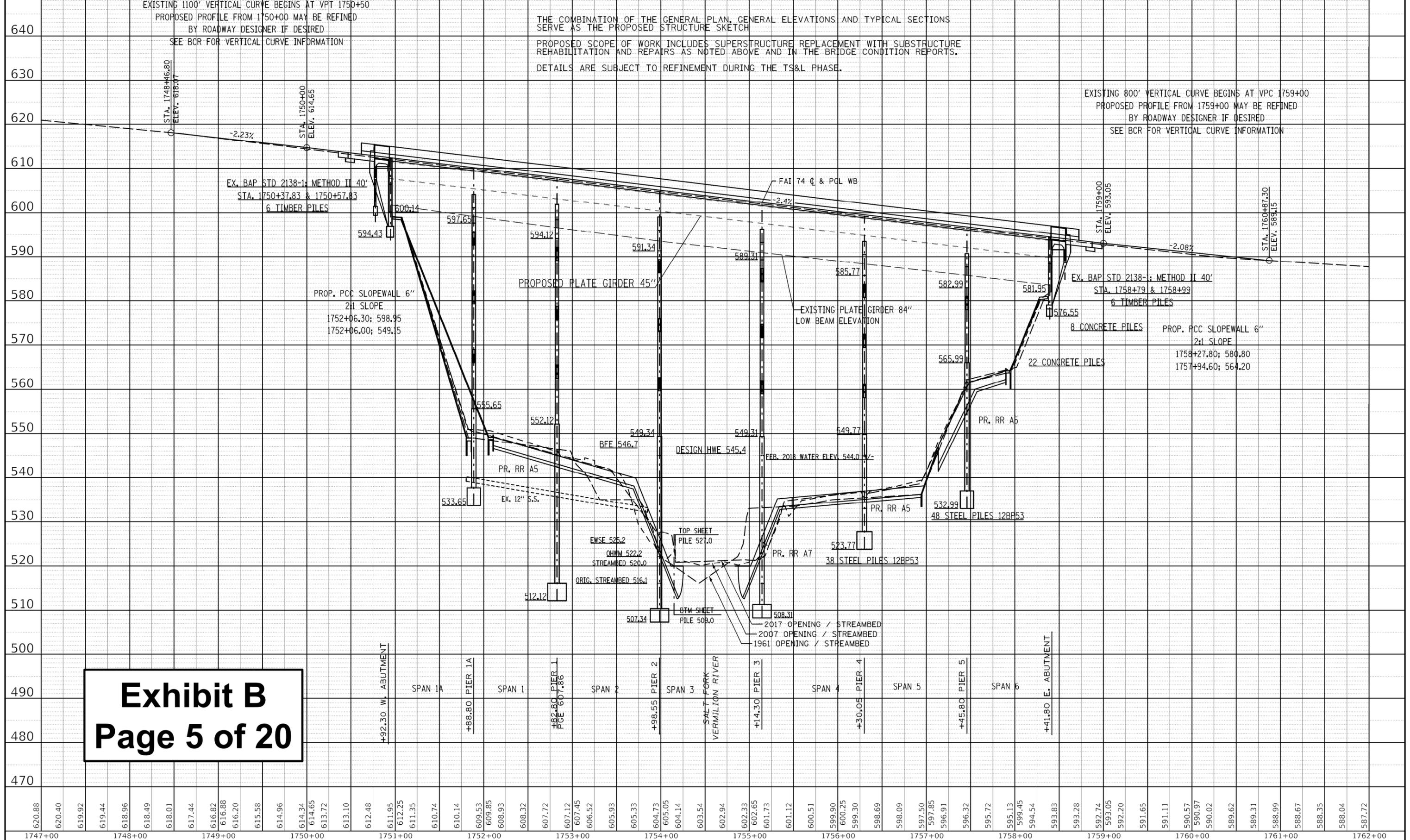


Exhibit B
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USER NAME = brandenburgtj	DESIGNED - TJB	REVISED - TJB	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL ELEVATION S.N. 092-0007 (WB)		F.A.I. RTE. 74	SECTION (92-11)BR-1	COUNTY VERMILION	TOTAL SHEETS	SHEET NO.	
PLOT SCALE = 100.0000' / in.	CHECKED -	REVISED -		SCALE:	SHEET OF SHEETS	STA. TO STA.	CONTRACT NO. 70A92				
PLOT DATE = 8/1/2019	DATE - 2/1/2019	REVISED - 7/16/2019		ILLINOIS FED. AID PROJECT							

Exhibit B

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X0321837 - REMOVE SHEET PILING - L SUM						
SFVR CROSS SECTION & PLAN INFORMATION						
Baseline Station	Est. Sheet Pile Height (ft)	Removal Height (ft)	Remaining Height (ft)	Length of Sheet Pile (ft)	Estimated Area of Sheet Pile to be Removed (sq ft)	Remove Sheet Piling L Sum
1+25	18.0	9.4	8.6			
1+44.35	18.0	13.0	5.0			
1+70.85	18.0	12.1	5.9			
1+90	18.0	11.8	6.2			
2+08.15	18.0	11.5	6.5			
2+34.65	18.0	10.9	7.1			
2+50	18.0	8.0	10.0			
Average	11.0	Totals	152.0	1666.0	1.0	

The existing sheet piling around the east face of Pier 2 shall be removed to the bottom of bedding elevation as shown on the Salt Fork Vermillion River cross sections prior to RR A7 placement per Article 501.05 of the Standard Specifications. The Contractor shall cut off the Removal Height as shown above, leaving the remainder in place. The existing sheet piling shall NOT be removed in it's entirety to ensure the spread footing foundations remain undisturbed. Any damage to Pier 2 of either structure shall be repaired at the Contractor's expense as directed by the Engineer. This work will be measured for payment on a lump sum basis and paid for at the contract lump sum price for REMOVE SHEET PILING.

APRIL 2017 PHOTOGRAPHS



VIEW NORTH FROM PIER 2; SN 092-0006 EB

VIEW SOUTH FROM PIER 2; SN 092-0007 WB

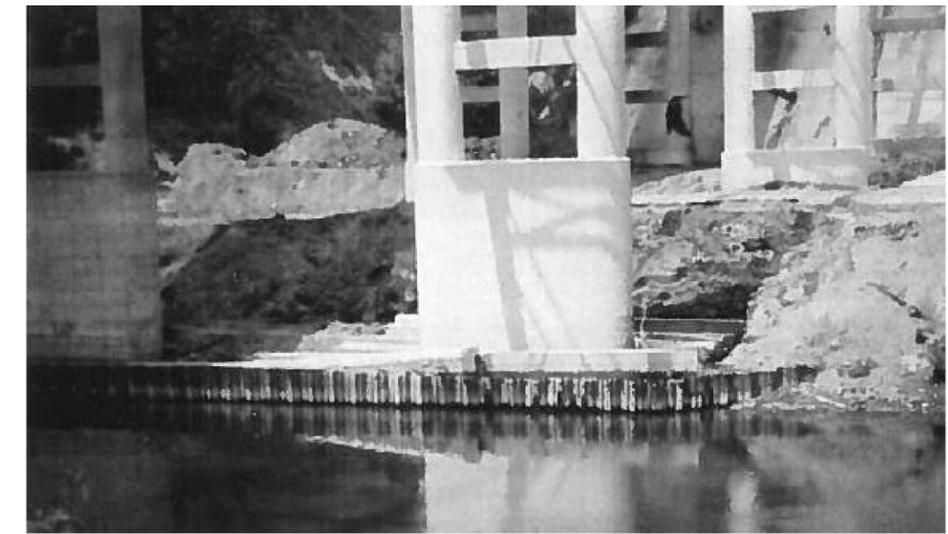


VIEW WEST AT EAST FACE OF PIER 2; SN 092-0006 EB

Z0015500 - DEBRIS REMOVAL - L SUM						
Station	ESTIMATED PARAPET/CURB FROM 1992 RECONSTRUCTION TO BE REMOVED					Debris Removal L Sum
	Length (ft)	End Area (sq ft)	Volume (cu yd)	No. Parapet/Curb Portions (each)	Est. Volume (cu yd)	
Pier 2	30.0	7.0	7.8	15	117.0	1.0
				Total		

The remaining portions of parapet/curb from the 1992 reconstruction around pier 2 shall be removed prior to RR A7 placement per Article 501.05 of the Standard Specifications. Any damage to Pier 2 of either structure shall be repaired at the Contractor's expense as directed by the Engineer. This work will be measured for payment on a lump sum basis and paid for at the contract lump sum price for DEBRIS REMOVAL.

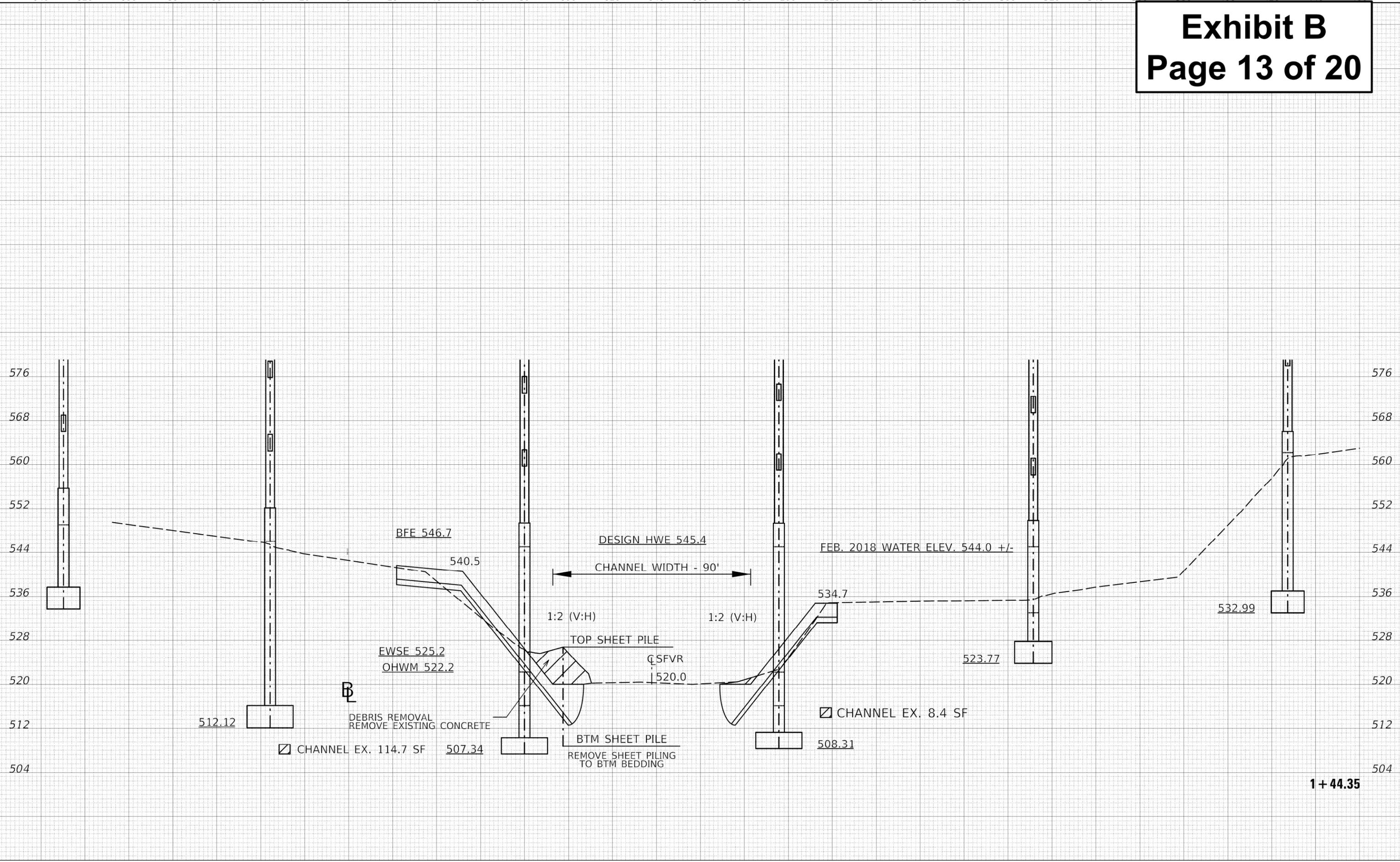
JULY 1992 RECONSTRUCTION PHOTOGRAPHS



VIEW WEST AT EAST FACE OF PIER 2; SN 092-0007 WB



VIEW AT NORTH END OF PIER 2; SN 092-0007 WB



USER NAME = brandenburgtj PLOT SCALE = 40.0000' / in. PLOT DATE = 8/1/2019	DESIGNED - TJB DRAWN - TJR CHECKED - DATE - 7/16/2019	REVISED - REVISED - REVISED - REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SALT FORK VERMILION RIVER CROSS SECTIONS	F.A.I. RTE. 74 SECTION (92-11)BR-1 COUNTY VERMILION CONTRACT NO. 70A92	TOTAL SHEETS SHEET NO.
			SCALE: SHEET 6 OF 13 SHEETS STA. 1+44.35 TO STA. 1+44.35		ILLINOIS FED. AID PROJECT	

Exhibit Ba

ILLINOIS DEPARTMENT OF TRANSPORTATION COMPUTATIONS

COMPUTED BY: TJB
DATE: 8/1/2019
CHECKED BY:
DATE:

SN 092-00006 EB & 0007 WB

FAI 74
SECTION: (92-11)BR-1
Vermilion County
CONTRACT NO.: 70A92
SHEET 1 OF 1

UNIT	ITEM								CODE NUMBER	
	STONE RIPRAP, A7 BELOW OHWM FOR ITA									
A7	RipRap	RipRap	Bedding	Bedding	Bedding	RipRap	RipRap	RipRap		
	Location	Area	Area	Thickness	Stone	Stone	Thickness	Class A7	Class A7	
		(Sq Yd)	(Sq Ft)	(inches)	(Cu Yd)	(Tons)	(inches)	(Cu Yd)	(Tons)	
	East Bank	370.0	3330.0	12.0	123.3	222.0	30.0	308.3	555.0	
	West Bank	582.0	5238.0	12.0	194.0	349.2	30.0	485.0	873.0	
	Totals =	952.0	8568.0		318.0	572.0		794.0	1428.0	
			Estimated Rates:				1.8 tons/cy		*1.8 tons/cy	
			* typically, 1.5 tons/cy is used; however to include estimated tons of riprap needed to construct toe & flank details for rivers, 1.8 tons/cy has been used; this is an estimated quantity ONLY and the pay item for riprap is still SQ YD, measured per 281.06							
		RIPRAP AREA within the STREAM:		8,568.0	(Sq Ft)					
		RIPRAP VOLUME within the STREAM:		1,112.0	(Cu Yd)	30,024.0	(Cu Ft)			
PAGE TOTAL										
GRAND TOTAL										
UNIT	ITEM								CODE NUMBER	
	STONE RIPRAP, A7 BELOW OHWM FOR ITA									

**Freshwater Mussel Relocation in the Vermilion River
(Wabash River Basin) at the Interstate-74
(IDOT FAI 74) Bridges in Vermilion County, Illinois**

IDOT Sequence Number 20639



Prepared by:
Kathleen C.S. Cook & Alison P. Stodola

INHS/IDOT Statewide Biological Survey & Assessment Program
2020:65

19 October 2020



PROJECT SUMMARY

This report is submitted in response to a request from IDOT to INHS for a freshwater mussel relocation in the Vermilion River (Wabash River drainage) at the Interstate 74 (IDOT FAI 74) bridges (IDOT Sequence No. 20639) in Vermilion County, Illinois. The mussel relocation was completed by INHS personnel during the week of 24 August 2020.

During this relocation, freshwater mussels were collected by completing 138 multiple-pass 3.28 ft-wide transects over a 450-ft-long stretch of the stream directly under and adjacent to (both upstream and downstream of) the Interstate 74 (IDOT FAI 74) bridges. Seven species of mussels were collected and relocated from Vermilion River at the Interstate 74 (IDOT FAI 74) bridges, including Monkeyface (*Theliderma metanevra*), which is listed as threatened in Illinois.



Approved By: Kevin S. Cummings, Further Studies Aquatics
Group Coordinator-Malacologist

Surveys Conducted By: Alison P. Stodola, Assistant Aquatic Field Biologist
Rachel M. Vinsel, Senior Scientific Specialist
Kathryn E. Conatser, Hourly Assistant
Thomas A. Dodson, Hourly Assistant
William E. Nixon, Hourly Assistant
Kathleen C.S. Cook, Hourly Assistant

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Table 1. Freshwater mussel collections from the Vermilion River within 2.5 miles of the Interstate 74 bridges in Vermilion County, Illinois since 1999 (INHS Mollusk Collections Data 2020).....10

Figure 1. Vermilion River project (IDOT Sequence No. 20639) at the Interstate 74 (IDOT FAI 74) project site in Vermilion County, Illinois, where a freshwater mussel relocation was conducted by INHS personnel during the week of 24 August 2020.11

Figure 2. Habitat images from the relocation area on the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges in Vermilion County during the week of 24 August 2020.12

Figure 3. Representatives of species collected from the relocation project area in the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges, Vermilion County, Illinois, by INHS personnel during the week of 24 August 2020.....13

Appendix 1 references an ArcGIS shapefile < 20639_Mussel_Survey_GIS.zip > with relocation project information for the crossing of the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges.....14

Appendix 2: Raw mussel data collected from the relocation project area in the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges, Vermilion County, Illinois, during the week of 24 August 2020 by INHS personnel.15

Appendix 3: Raw habitat data associated with transects from the relocation project area in the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges, Vermilion County, Illinois, during week of 24 August 2020 by INHS personnel.16

Cover Photo: The Vermilion River at the Interstate 74 (IDOT FAI 74) bridges, Vermilion County, Illinois (Latitude 40.11534°N, Longitude 87.69412°W). Photo was taken from the east bank, facing upstream (north), on 26 August 2020. Photo by A.P. Stodola, INHS.

INTRODUCTION

This report is submitted in response to a request on 12 May 2020 by Vincent Hamer of the Illinois Department of Transportation (IDOT) to Rachel Vinsel of the Illinois Natural History Survey (INHS) for a freshwater mussel relocation in the Vermilion River at the Interstate 74 (IDOT FAI 74; Contract No. 70A92; Job No. C-95-029-17; Section (92-11)BR-1; Structure No. 092-0007) bridges in Vermilion County, Illinois [IDOT Sequence No. 20639, INHS Project No. FS-1466]. A relocation was required by the Illinois Department of Natural Resources (IDNR) per Illinois Administrative Code Title 17, Part 860, which requires repositioning imperiled aquatic life populations for purposes of protecting those animals from injury or death due to disturbance in the aquatic environment (Illinois Administrative Code 2017). The Division of Highways proposes the removal of the existing decks and fracture critical beams, widening of the existing piers and abutments to accommodate a multibeam configuration and new decks, the construction of interstate medial crossovers off the ends of the bridges to accommodate construction of the bridges, and necessary guardrail and drainage improvements.

In this report, we summarize the results of the freshwater mussel relocation conducted in the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges by INHS personnel during the week of 24 August 2020.

PROJECT AREA

The Interstate 74 project (IDOT FAI 74; Section (92-11)BR-1, which includes two adjacent and parallel bridges (one for the east bound lanes and one for the west bound lanes), is located on the Danville SW Quadrangle USGS Topographic map and occurs approximately 2.8 miles WNW of Tilton in Vermilion County, Illinois - in Township 19N, Range 12W, Section 14 at Latitude 40.11534°N, Longitude 87.69412°W (**Figure 1**). The Vermilion River is crossed by Interstate-74 twice in Illinois: the westernmost-crossing is approximately 3.5 mi west of Danville, Illinois and the easternmost-crossing is 1.1 miles southeast of Danville (in Township 19N, Range 11W, Section 16, center, NW/4, at Latitude 40.11143°N, Longitude 87.61543°W). This report references the westernmost Interstate-74 crossing. Note that although the river crossed by Interstate 74 at Latitude 40.11534°N, Longitude 87.69412°W is referenced as the Salt Fork Vermilion River in the tasking provided by IDOT, most maps refer to the river at this present project site as the Vermilion River and this is how we reference the stream in this project report.

Appendix 1 references an Arc-GIS shapefile with sampling point information for the stream crossing discussed in this report.

HABITAT CHARACTERIZATION

During our site visits during the week of 24 August 2020, the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges was approximately 96 feet wide and averaged 1 foot deep (ranged from 0.5 to 3 ft deep), with a flow of 0.5 ft/second. The entire relocation area was wadable. While this reach of the Vermilion River has developed sequences of riffle-run-pool and a variety of aquatic habitats, habitat throughout most of the relocation area was a run of shallow slow-flowing water, with pool habitat near the west side of the bridges. Substrate in the relocation area was primarily unconsolidated sand (49%), but silt (30%), unconsolidated gravel (10%), cobble (7%), boulder (2%), clay (1%), and woody debris (1%) were also present. The western edge of the river directly adjacent to the metal bridge support (see **Figure 2**, bottom image on left side) was cobble and bridge rubble and formed relatively stable cobble substrate for freshwater mussels; this small area of consolidated substrates was present for approximately 10 feet of stream width along the entire length of the bridge supports on the west side. Most of the remaining wetted area of the relocation reach was a mix of unconsolidated sand and gravel, thus unsuitable as consistent mussel habitat.

BACKGROUND

The Vermilion River in east-central Illinois is fed by three principal tributaries: the Salt Fork, Middle Fork, and North Fork Vermilion rivers – flowing ESE through Iroquois, Ford, Champaign, and Vermilion counties before it joins the Wabash River near Cayuga, Indiana. The location of the site in this report is approximately 2.25 miles downstream (northeast) of the confluence of the Salt and Middle Fork Vermilion rivers and approximately 3.5 miles upstream (west) of the mouth of the North Fork Vermilion River. Surrounding riparian area is forested, though the Vermilion River basin has been primarily used for row-crop agriculture (Stodola et al. 2013).

Freshwater mussels have been surveyed previously in the Vermilion River at the Interstate 74 crossing as well as at several locations within a few miles of the Interstate 74 crossing (Stodola 2017; **Table 1** in this report; INHS Mollusk Collections data). Twenty-nine species have been previously recorded in this section of the Vermilion River or nearby (within 2.5 miles upstream or downstream of relocation site), including eleven species not recorded during the Interstate 74 relocation (IDOT FAI 74) and survey at the relocation area conducted during the week of 24 August 2020.

Seven species currently on the Illinois endangered species list have been recorded in this stretch of the Vermilion River since 1999 (INHS Mollusk Collections Data 2020; Illinois Endangered Species Protection Act [IESPA] 2020; **Table 1** in this report). Live records include State threatened Purple Wartback (*Cyclonaias tuberculata*) and Monkeyface (*Theliderma metanevra*), and state endangered Wavy-rayed Lampmussel (*Lampsilis fasciola*). Shell records include state endangered Spike (*Eurynia dilatata*) and Rainbow (*Villosa iris*), Federally threatened Rabbitsfoot (*Theliderma cylindrica*) and Federally endangered Clubshell

(*Pleurobema clava*) (U.S. Department of the Interior, Fish and Wildlife Service [USDI, FWS] 2020; Illinois Endangered Species Protection Act [IESPA] 2020). All other species collected from the Vermilion River are common inhabitants of central Illinois streams (Cummings and Mayer 1992; Cummings and Mayer 1997; Tiemann et al. 2007).

Monkeyface (*Theliderma metanevra*) are found in medium to large rivers in gravel or mixed sand and gravel (Cummings and Mayer 1992). They are increasingly isolated in Illinois, found primarily in a few larger rivers and in the Vermilion-Wabash drainage, and are at risk for further decline due to fragmentation (Douglass and Stodola 2014).

Purple Wartyback are found in medium to large rivers in gravel or mixed sand and gravel; they generally prefer riverine conditions with stronger flow (Cummings and Mayer 1992).

Wavy-rayed Lampmussel are found in medium rivers in gravel riffles (Cummings and Mayer 1992), and are now restricted to the Vermilion-Wabash drainage in Illinois (Douglass and Stodola 2014).

Spike are found in medium to large rivers in gravel or mixed sand and gravel; they generally prefer riverine conditions with stronger flow (Cummings and Mayer 1992). Spike are found throughout the Midwest but are becoming increasingly sporadic and isolated, particularly in Illinois (Douglass and Stodola 2014).

Clubshell are found in medium to large rivers in gravel, mixed gravel and sand, clean, coarse sand and cobble in current; often buries several inches in depth (Cummings and Mayer 1992; Watters et al. 2009). They are believed to be extirpated in the Vermilion River drainage, although translocated individuals have been released in the Middle and Salt Fork Vermilion rivers (Douglass and Stodola 2014).

Rabbitsfoot are found in medium to large rivers in sand and gravel (Cummings and Mayer 1992) and are believed to only be found in the North Fork Vermilion River within the Vermilion River drainage (Douglass and Stodola 2014).

Rainbow are found in small to medium rivers in coarse sand or gravel (Cummings and Mayer 1992). They are currently only found in the Vermilion-Wabash drainage in Illinois and in a feeder tributary to Aux Sable Creek in the Illinois drainage (Douglass and Stodola 2014; Mollusk Collections Data 2020).

METHODS

A relocation for freshwater mussels was conducted in the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges during the week of 24 August 2020 by INHS personnel A.P. Stodola, R.M. Vinsel, K.E. Conatser, W.E. Nixon, T. A. Dodson, and K.C.S. Cook.

Mussels were collected using a moving transect method per required relocation methods provided by the Illinois Department of Natural Resources (IDNR) Aquatic Biologist (B. Metzke,

details provided in tasking email on 12 May 2020). The moving transect method ensures that most animals are collected and relocated. Transects that were 3.28 feet (1 meter) wide, ran perpendicular to stream flow, and spanned the entire wetted width of the stream were established based on the limits designated in communications provided by IDOT. The entire relocation area was 450 feet long, and 138 transects were established. The area of direct impact was estimated as 180 feet downstream of the centerpoint of the bridges to 75 feet upstream of the centerpoint of the bridges; a buffer of 164 feet downstream and 33 feet upstream was also included in the relocation area (**Figure 1**). The relocation unit was outlined on the first day of the relocation, and transects were sampled from downstream-most to upstream-most transect until all 138 transects were sampled. Mussels were sampled within each transect using tactile search methods. Substrates were disturbed to a depth of approximately 1.5 inches (4 cm) to uncover buried mussels and transects were searched such that the entire width and length of the transect was thoroughly searched. Each transect was resampled until the subsequent pass no longer yielded $\geq 10\%$ of the total individuals collected in that transect. All mussels collected were processed separately for each pass within each transect and were identified to species and measured. Mussels were held in mesh bags in the stream except during processing. Any mussels collected that were on the Illinois endangered species list (IESPA 2020) were affixed with a unique numbered tag and a passive integrated transponder (PIT) tag to facilitate detection during follow-up monitoring events. The remaining mussels collected during the relocation event were affixed with either a red glitter tag or a passive integrated transponder (PIT) tag (**Appendix 2**). All live mussels collected from the project site at the Interstate 74 (FAI 74) bridges were moved to an upstream recipient site (see paragraph below) after processing each day.

Due to the time-intensive sampling effort required to complete the moving transect method, this relocation occurred over a period of multiple days during the week of 24 August 2020. An area to receive the relocated mussels (i.e., a recipient area) was selected on the first day of the relocation effort based on the presence of similar substrate, habitat, and native mussel community as that found in the relocation area at the Interstate 74 (FAI 74) bridges, and this site was pre-approved by IDNR (email communication between Vincent Hamer of IDOT and IDNR). Though downstream areas are preferred as recipient areas to preclude mussels from moving back into an impact zone, the area downstream of the Interstate 74 crossing was logistically difficult to access and had limited sampling information available. Hence, we selected a recipient area that was approximately 1 mile upstream (southwest) of the relocation area at the Interstate 74 crossing of the Vermilion River; this site was accessible and had previous sampling data that indicated there was a diverse mussel population present. The recipient area was qualitatively surveyed for mussels for 0.5 person hours prior to moving mussels into the area, and all mussels collected in the recipient area were identified, enumerated, and immediately returned to the substrate.

Nomenclature used for freshwater mussels discussed in this report follows Williams et al. (2017). Voucher material of mollusks collected were deposited in the Illinois Natural History Mollusk Collection and cataloged as INHS 91048.

RESULTS AND DISCUSSION

During the relocation event that occurred during the week of 24 August 2020, 19 live mussels representing seven live species were collected and relocated by INHS personnel from the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges (**Table 1; Figure 2; Appendix 2**). One Monkeyface, Illinois threatened, was collected from transect number 50 in the relocation area (IESPA 2020). Transect 50 is 164 feet upstream (southwest) from the downstream edge of the established relocation area and would be located at the approximate border between the area of direct impact and the relevant buffer. Ten additional species were collected as shell material from the relocation survey area, thus a total of 17 species were collected alive or as shell. Listed species represented by shell material include relict Purple Wartyback and Rainbow and dead shell of Wavy-rayed Lampmussel. All other mussels collected alive or as shell during the present relocation common inhabitants of central Illinois streams (Cummings and Mayer 1992; Cummings and Mayer 1997; Tiemann et al. 2007).

One hundred and thirty-eight transects (each 3.28 feet wide) were sampled, and widths ranged from 66.9 to 126 feet (**Appendix 3**). The total length of transects sampled was 13,571.7 feet, which calculates to an area of 44,515.2 ft². Density of freshwater mussels was very low and was approximately 0.0004 mussels per square foot.

Six species were recorded from the recipient area during the 0.5-person hour sampling event, including 3 species not collected alive in the relocation area at the Interstate 74 (FAI 74) bridges (**Table 1**).

ACKNOWLEDGMENTS

INHS employees Rachel M. Vinsel, Kathryn E. Conatser, William E. Nixon, Thomas A. Dodson, and Kathleen C.S. Cook assisted with field work. Janet L. Jarvis (INHS) prepared the map in **Figure 1** and the associated shape file referenced in **Appendix 1**, and Mark J. Wetzel edited early drafts of the report.

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Table 1. Freshwater mussel collections from the Vermilion River within 2.5 miles of the Interstate 74 bridges in Vermilion County, Illinois since 1999 (INHS Mollusk Collections Data 2020). Mussels collected by INHS personnel during the week of 24 August 2020 at the Interstate 74 (IDOT FAI 74) bridges (IDOT Sequence No. 20639; Section (92-11)BR-1) and in the recipient area are bounded by a black border. Number = live individuals. FE= Federally Endangered, FT= Federally Threatened, SE=Illinois Endangered, ST= Illinois Threatened, X=Illinois extirpated. *is a compilation of several surveys conducted between 1999 and 2008.

		Confluence of Salt and Middle Forks			I-74 survey	I-74	Recip-ient area	RR bridge
		1999-2008*	2011	2019	2017	2020	2020	2018
<i>Actinonaias ligamentina</i>	Mucket	4	2	1	2	relict		
<i>Amblema plicata</i>	Threeridge	5	14	16	3	2	2	
<i>Cyclonaias pustulosa</i>	Pimpleback	6	17	7	3	2		2
<i>Cyclonaias tuberculata</i> - ST	Purple Wartback	7	3	8	2	relict		
<i>Eurytia dilatata</i> - SE	Spike	relict						
<i>Fusconaia flava</i>	Wabash Pigtoe	2	10	8	3	dead		
<i>Lampsilis cardium</i>	Plain Pocketbook	29	14	17	20	8	2	10
<i>Lampsilis fasciola</i> - SE	Wavy-rayed Lampmussel	20	11	7	1	dead	2	1
<i>Lampsilis siliquoidea</i>	Fatmucket	14	1	1	6	4	1	
<i>Leptodea fragilis</i>	Fragile Papershell	2						
<i>Ligumia recta</i>	Black Sandshell	relict						
<i>Obovaria subrotunda</i> -X	Round Hickorynut	relict				relict		
<i>Pleurobema clava</i> -FE	Clubshell	relict						
<i>Pleurobema sintoxia</i>	Round Pigtoe	0	4	1			1	relict
<i>Potamilus alatus</i>	Pink Heelsplitter	0			dead	1		2
<i>Potamilus ohioensis</i>	Pink Papershell	dead						
<i>Quadrula quadrula</i>	Mapleleaf	4	6	3	1	relict		
<i>Theliderma cylindrica</i> -FT	Rabbitsfoot	relict						
<i>Theliderma metanevra</i> -ST	Monkeyface	1	1	3	3	1		1
<i>Toxolasma parvum</i>	Lilliput	relict				dead		
<i>Tritogonia verrucosa</i>	Pistolgrip	2	5		2	1		
<i>Villosa iris</i> -SE	Rainbow	relict				relict		
<i>Villosa lienosa</i>	Little Spectaclecase	relict						
<i>Alasmidonta marginata</i>	Elktoe	1			relict			
<i>Anodontoides ferussacianus</i>	Cylindrical Papershell	dead						
<i>Lasmigona complanata</i>	White Heelsplitter	2						
<i>Lasmigona costata</i>	Flutedshell	dead	3	3	2	dead	1	
<i>Pyganodon grandis</i>	Giant Floater	dead						
<i>Strophitus undulatus</i>	Creeper	relict	6		dead	dead		
	Total individuals	99	97	75	48	19	9	16
	Total live species	14	12	11	11	7	6	5
	Total species	27	12	11	14	17	6	6

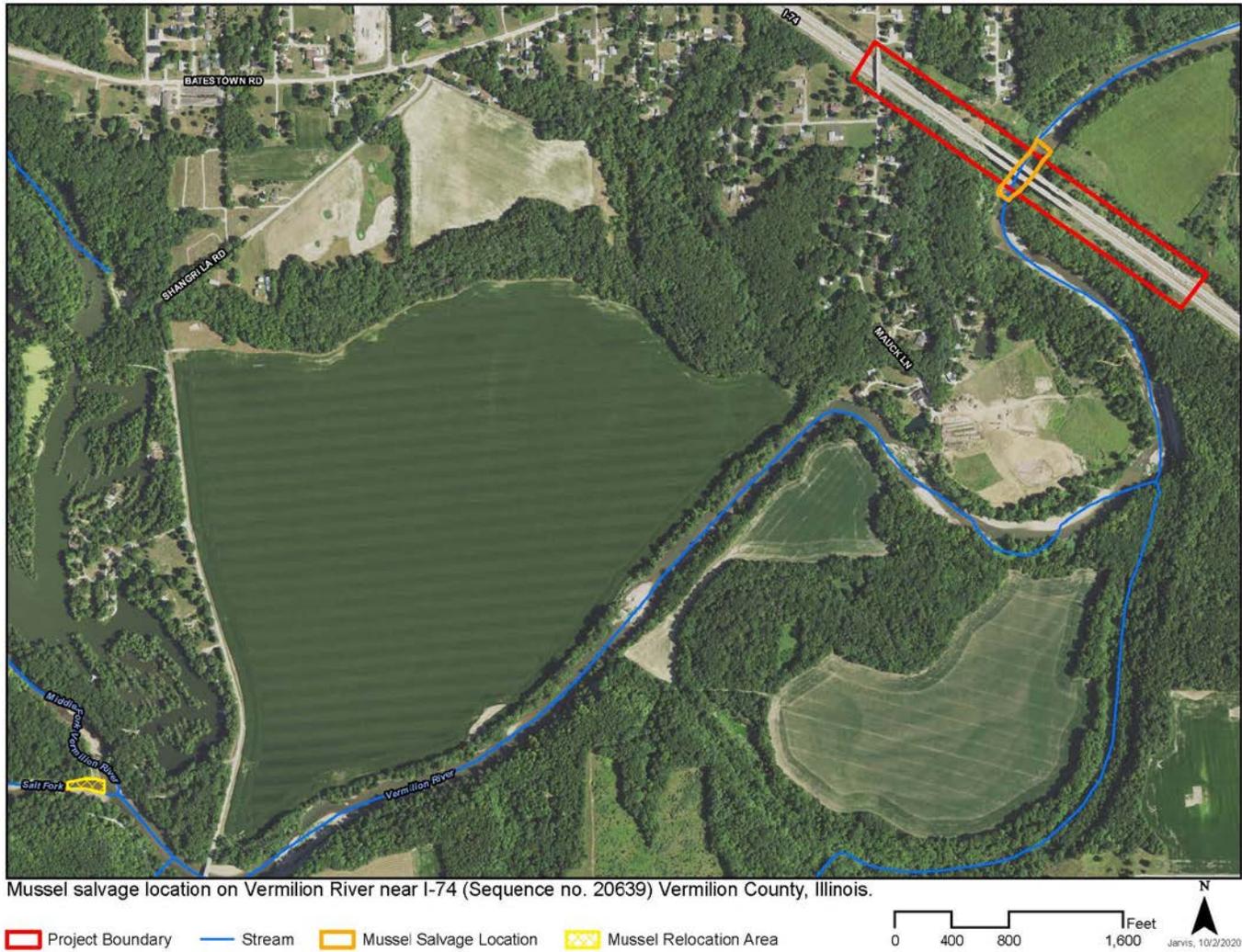


Figure 1. Vermilion River project (IDOT Sequence No. 20639) at the Interstate 74 (IDOT FAI 74) project site in Vermilion County, Illinois, where a freshwater mussel relocation was conducted by INHS personnel during the week of 24 August 2020.



Figure 2. Habitat images from the relocation area on the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges in Vermilion County during the week of 24 August 2020. The Vermilion River from (top) downstream of the Interstate 74 bridges, facing downstream (southwest) and (bottom) facing upstream (northeast). Photos by A.P. Stodola, INHS.



Figure 3. Representatives of species collected from the relocation project area in the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges, Vermilion County, Illinois, by INHS personnel during the week of 24 August 2020. From L to R, from top left: Plain Pocketbook, Monkeyface, Pimpleback, Pistolgrip, Pink Heelsplitter, Fatmucket, Threeridge. Photos by R.M. Vinsel and A.P. Stodola, INHS.

Appendix 1

Appendix 1 references an ArcGIS shapefile < 20639_Mussel_Survey_GIS.zip > with relocation project information for the crossing of the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges (IDOT Sequence No. 20639; Section (92-11)BR-1), Vermilion County, Illinois (Latitude 40.11534°N, Longitude -87.69412°W), where a freshwater mussel relocation was conducted by INHS personnel during the week of 24 August 2020.

The ArcGIS shapefile and this report were both submitted to IDOT via the IDOT Site Assessment Tracking System extranet website (Frostycap) on 19 October 2020.

Appendix 2

Appendix 2: Raw mussel data collected from the relocation project area in the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges, Vermilion County, Illinois, during the week of 24 August 2020 by INHS personnel.

Data collected during transects: Transect (see **Appendix 3** for details); Pass (specific pass mussel was found); MM=total length in mm of mussel; GRC=external growth ring count; Sex=Sex of mussel (if determinable); Ltag=tag on left valve; Rtag= tag on right valve.

Transect	Pass	Species	MM	GRC	Sex	Ltag	Rtag
10	1	Plain Pocketbook	99	11	M	Red Glitter	
16	1	Pimpleback	42	4		3DD.003B9C5096	635
22	1	Fatmucket	97	7	M	3DD.003B9C5115	636
25	1	Fatmucket	81	6	F	3DD.003B9C50C0	637
35	1	Fatmucket	105	10	M	3DD.003B9C50AA	632
35	1	Plain Pocketbook	96	10	F	3DD.003B9C50BA	631
46	1	Pimpleback	24	3		3DD.003B9CF0F9	634
50	1	Monkeyface	82	24		3DD.003B9C5129	633
50	1	Plain Pocketbook	99	10	M	3DD.003B9C50BF	630
65	1	Plain Pocketbook	112	14	M	Red Glitter	
71	1	Pink Heelsplitter	136	18		Red Glitter	
78	1	Threeridge	77	5		Red Glitter	
100	1	Threeridge	102	12		Red Glitter	
100	1	Plain Pocketbook	105	22	F	Red Glitter	
105	1	Plain Pocketbook	99	10	F	Red Glitter	
105	1	Plain Pocketbook	96	8	F	Red Glitter	
106	1	Pistolgrip	86	16		Red Glitter	
110	1	Fatmucket	51	4	M	Red Glitter	
122	1	Plain Pocketbook	105	5	M	Red Glitter	

Appendix 3

Appendix 3: Raw habitat data associated with transects from the relocation project area in the Vermilion River at the Interstate 74 (IDOT FAI 74) bridges, Vermilion County, Illinois, during week of 24 August 2020 by INHS personnel. Transects are ordered from downstream-most (0) to upstream-most (137).

Data collected during transects: substrate percentages (boulder, cobble, gravel, sand, silt, clay, and woody debris [wood]), transect width (ft), and maximum depth (ft).

Transect	Width (ft)	Max Depth (ft)	Boulder	Cobble	Gravel	Sand	Silt	Clay	Wood
0	104.4	1.5	0	5	20	70	5	0	0
1	104.4	1.5	0	5	20	70	5	0	0
2	102.9	1.5	0	5	20	70	5	0	0
3	107.1	2	0	5	10	80	0	5	0
4	107.4	1.5	0	15	30	50	2	3	0
5	108.6	1.5	0	15	30	50	2	3	0
6	111	1.5	0	15	30	50	2	3	0
7	110.7	2.2	0	5	5	85	0	5	0
8	106.8	2.2	0	5	5	85	0	5	0
9	106.5	2.2	0	5	5	85	0	5	0
10	106.5	2	0	5	10	78	2	0	5
11	108.6	2	0	5	10	78	2	0	5
12	112.2	2	0	5	10	78	2	0	5
13	115.5	1.5	0	5	5	85	0	0	5
14	111.3	1.5	0	5	5	85	0	0	5
15	114	2	0	5	5	80	0	0	10
16	116.1	2	0	10	10	78	2	0	0
17	117	2	0	10	10	78	2	0	0
18	119.4	2.5	0	10	10	78	2	0	0
19	125.1	3	0	5	20	70	5	0	0
20	124.5	3.5	0	5	20	60	5	0	10
21	124.5	3	0	10	15	70	5	0	0
22	125.1	1.5	0	5	5	85	5	0	0
23	126	2.5	0	10	5	80	5	0	0
24	124.2	2	0	10	10	70	5	0	5
25	124.5	1.5	0	5	2	88	5	0	0
26	124.2	1.5	0	5	2	88	5	0	0
27	119.7	1.5	0	5	2	88	5	0	0
28	120.3	1.5	5	0	5	75	10	0	5
29	119.7	1.5	5	0	5	75	10	0	5
30	116.4	1.5	5	0	5	75	10	0	5
31	116.4	1.5	5	10	15	70	0	0	0
32	117.9	1.5	5	10	15	70	0	0	0
33	120	2	5	5	10	80	0	0	0
34	115.2	1.5	0	10	15	70	5	0	0

35	114.6	1.5	0	5	10	75	10	0	0
36	113.4	1.5	0	5	15	70	10	0	0
37	118.5	1.5	0	5	15	70	10	0	0
38	116.7	2	0	5	5	85	5	0	0
39	119.7	2	0	5	10	80	5	0	0
40	116.7	2	0	5	10	80	5	0	0
41	116.4	2	0	10	10	75	5	0	0
42	117.6	2	0	10	10	75	5	0	0
43	116.4	2	0	5	10	80	5	0	0
44	117.9	1.5	0	10	5	75	10	0	0
45	118.5	2	5	5	5	80	5	0	0
46	115.8	2	0	5	5	80	10	0	0
47	114.6	2.5	0	10	10	80	0	0	0
48	115.2	2.5	0	10	20	70	0	0	0
49	115.8	2.5	5	10	10	70	5	0	0
50	114.9	3	0	10	10	70	10	0	0
51	115.8	2.5	0	0	5	5	75	15	0
52	109.5	2.5	0	0	5	5	80	10	0
53	110.7	2.5	0	0	10	10	70	10	0
54	114.3	2.5	0	0	10	10	70	10	0
55	112.2	3	0	0	10	10	70	10	0
56	115.8	3	0	5	10	5	75	5	0
57	102	3.2	0	0	5	10	80	5	0
58	99.9	3	0	0	5	10	80	5	0
59	98.7	3	0	5	10	5	75	5	0
60	97.5	2.5	0	0	5	5	85	5	0
61	96.3	2.5	0	0	10	5	80	5	0
62	95.7	2	0	0	5	5	85	5	0
63	96	3	0	5	10	5	80	0	0
64	94.5	3	0	5	10	5	80	0	0
65	94.8	3	0	5	10	5	80	0	0
66	94.2	3	0	5	5	5	85	0	0
67	92.4	3	0	5	5	5	85	0	0
68	91.8	3	0	5	5	5	85	0	0
69	91.2	3	0	5	0	5	90	0	0
70	94.8	3	0	10	5	5	80	0	0
71	94.2	3	0	10	5	0	85	0	0
72	95.4	3.5	0	5	5	5	85	0	0
73	95.4	3.6	0	5	5	5	85	0	0
74	94.8	3.5	0	5	5	5	85	0	0
75	94.5	3.5	0	5	5	5	85	0	0
76	94.2	3.5	0	5	5	5	85	0	0
77	92.4	3	0	5	5	10	80	0	0

78	94.5	3.5	0	5	5	15	75	0	0
79	92.4	3	0	10	0	10	80	0	0
80	91.2	3	0	10	5	5	80	0	0
81	90.6	3	0	0	5	5	70	5	15
82	90.3	3	0	0	10	5	60	5	20
83	90.6	3	0	0	10	10	60	5	15
84	91.2	3	0	10	5	5	75	5	0
85	91.2	3	0	10	5	5	75	5	0
86	92.7	3	0	5	5	10	75	5	0
87	92.1	3	0	0	5	10	80	5	0
88	91.5	3	0	0	5	10	80	5	0
89	89.1	4	0	0	5	10	80	5	0
90	88.8	4.5	0	5	10	2	83	0	0
91	88.2	5	0	5	5	5	85	0	0
92	90.6	5	0	5	5	5	85	0	0
93	96.6	4	0	10	5	5	80	0	0
94	100.2	4.5	0	5	0	15	80	0	0
95	120	3.5	0	10	0	10	80	0	0
96	103.2	2.5	0	5	5	5	80	5	0
97	102.9	2	0	5	5	5	80	5	0
98	90.6	1.5	0	5	15	15	65	0	0
99	89.4	1.5	0	5	15	20	60	0	0
100	95.1	1	0	5	10	25	55	5	0
101	87.9	1	5	10	20	60	5	0	0
102	85.8	1.5	5	5	25	65	0	0	0
103	86.1	1	0	5	20	85	0	0	0
104	73.5	1	0	10	10	80	0	0	0
105	71.7	1.25	5	30	10	50	5	0	0
106	69.3	1.25	5	30	10	50	5	0	0
107	69.6	1.25	5	25	15	50	5	0	0
108	70.5	1.25	0	5	15	80	0	0	0
109	82.8	1.25	0	5	15	80	0	0	0
110	84.9	1.25	0	5	15	80	0	0	0
111	89.1	1.25	5	15	20	60	0	0	0
112	78.9	1.25	10	10	20	60	0	0	0
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115	75.3	1.5	10	15	10	65	0	0	0
116	74.7	2	5	20	10	65	0	0	0
117	80.1	2	5	20	10	60	5	0	0
118	81.3	2	5	15	10	65	5	0	0
119	77.1	2	5	15	10	65	5	0	0
120	78.3	1.5	5	15	10	70	0	0	0

121	73.8	1.5	10	15	15	60	0	0	0
122	72.9	2	10	15	10	65	0	0	0
123	76.5	2	5	15	20	60	0	0	0
124	74.7	2	5	15	20	60	0	0	0
125	84.6	2	5	10	15	65	0	5	0
126	83.7	3	10	15	10	65	0	0	0
127	79.5	2.5	10	10	10	70	0	0	0
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131	72	3	20	10	10	60	0	0	0
132	75.3	3	15	10	10	65	0	0	0
133	74.7	3	5	15	10	65	5	0	0
134	68.7	2.5	5	10	10	70	5	0	0
135	67.8	3	5	5	10	70	10	0	0
136	66.9	3	0	5	5	85	5	0	0
137	68.1	2.5	0	5	0	85	0	5	5



WE BUILD REPUTATIONS.

39W866 Fabyan Pkwy
Elburn, Illinois 60119
www.icceo.com

(630) 232-7280 T
(630) 232-7281 F

November 12, 2020

Matt Young
13476 IL Hwy 133
Parris, IL 61944-0610

Re: Proposed Causeway
IDOT Contract 70A92
Bridge Super Structure Replacement over Salt Fork Vermilion River

Dear Mr. Young:

For our in-stream work, we propose to construct a temporary causeway as shown in the attached temporary causeway drawings. The temporary causeway will be constructed of a combination of clean aggregate materials and a temporary steel bridge. The clean aggregate material will be placed starting at the east bank of the SFVR to +/- 50 feet into the waterway. Prior to placing the aggregate material, filter fabric will be placed as a barrier between the river bottom and aggregate.

The temporary steel bridge will continue from the aggregate material and span over the waterway to the western bank, +/- 40 feet. The proposed width of the causeway is +/- 30 feet. The causeway will be constructed to elevation +/- 535.00 feet. Should the water flow become obstructed, all work will cease until all obstructions are cleared to allow normal flow.

Upon completion of our work, all materials will be removed, and the disturbed area will be restored to its existing condition. The estimated duration for in-stream work will be through November 1, 2022.

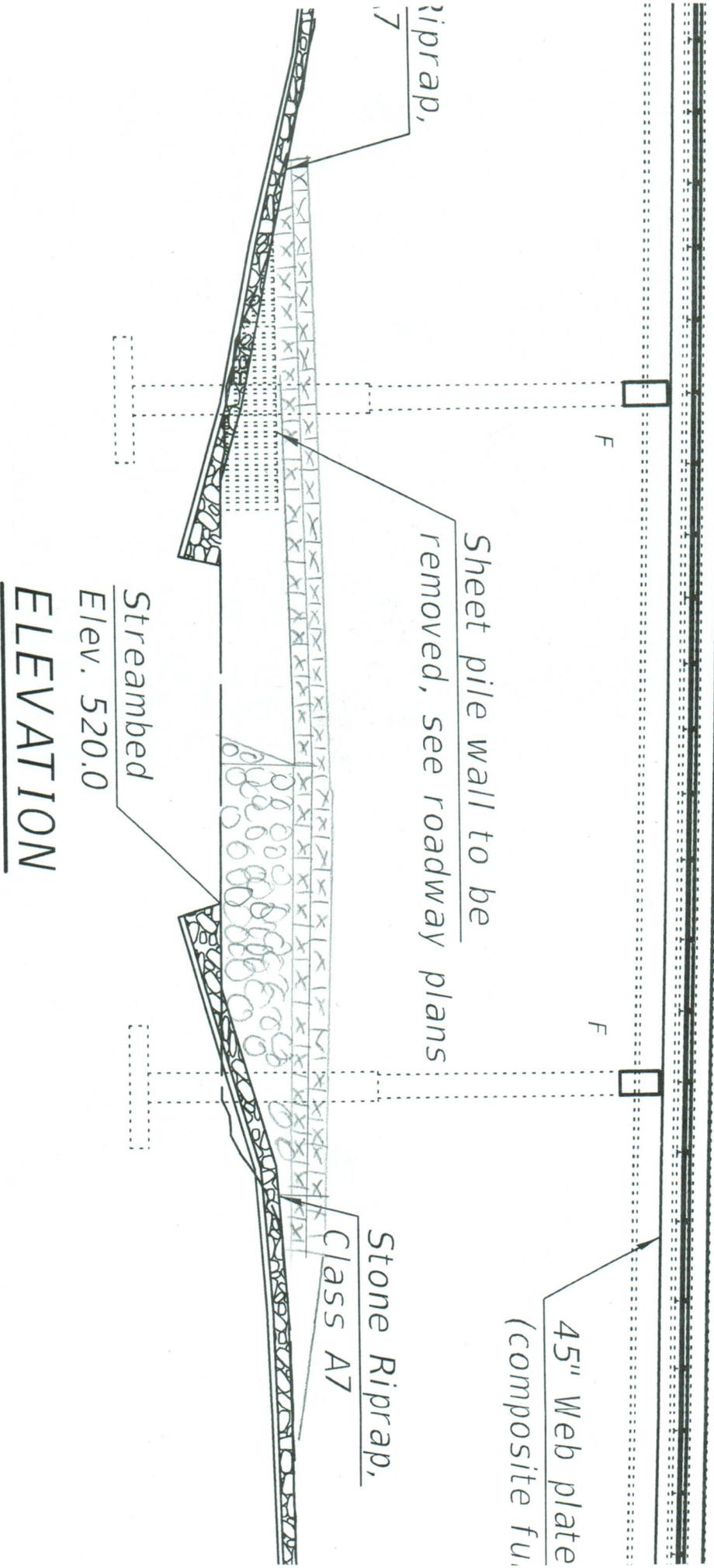
Sincerely,

A handwritten signature in black ink that reads "Chet Phillips". The signature is written in a cursive, slightly slanted style.

Chet Phillips
Project Manager

SN's 092-0006 & 0007; CN 70A92 Bridge Rehabilitation
FAI 74 over Salt Fork Vermillion River west of Danville; 1 mile east of US 150 Interchange
Section (92-1)BR-1
Vermillion County
P & D 95-029-17





45" Web plate
(composite fu...)

Stone Riprap,
Class A7

Sheet pile wall to be
removed, see roadway plans

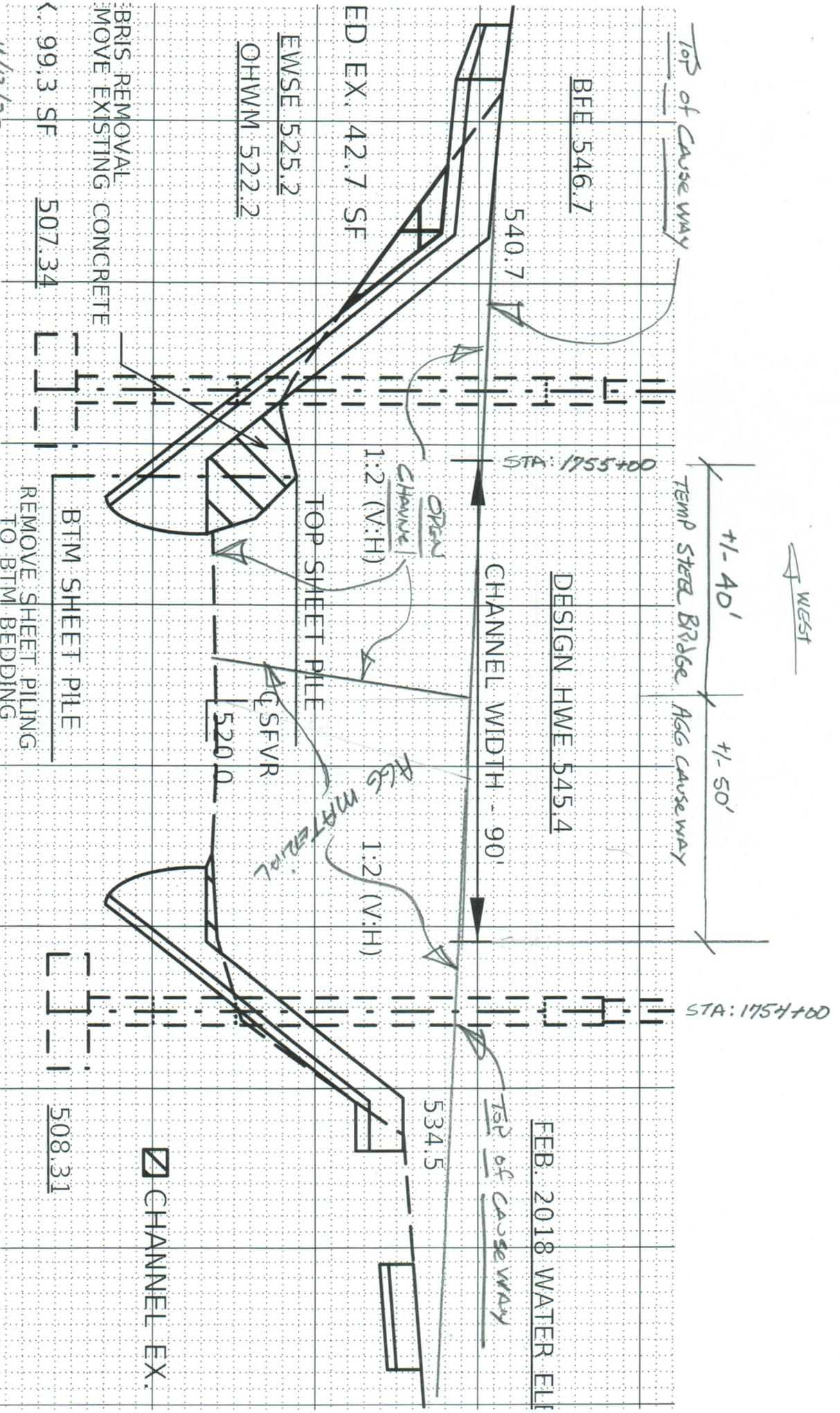
Streambed
Elev. 520.0

ELEVATION

F

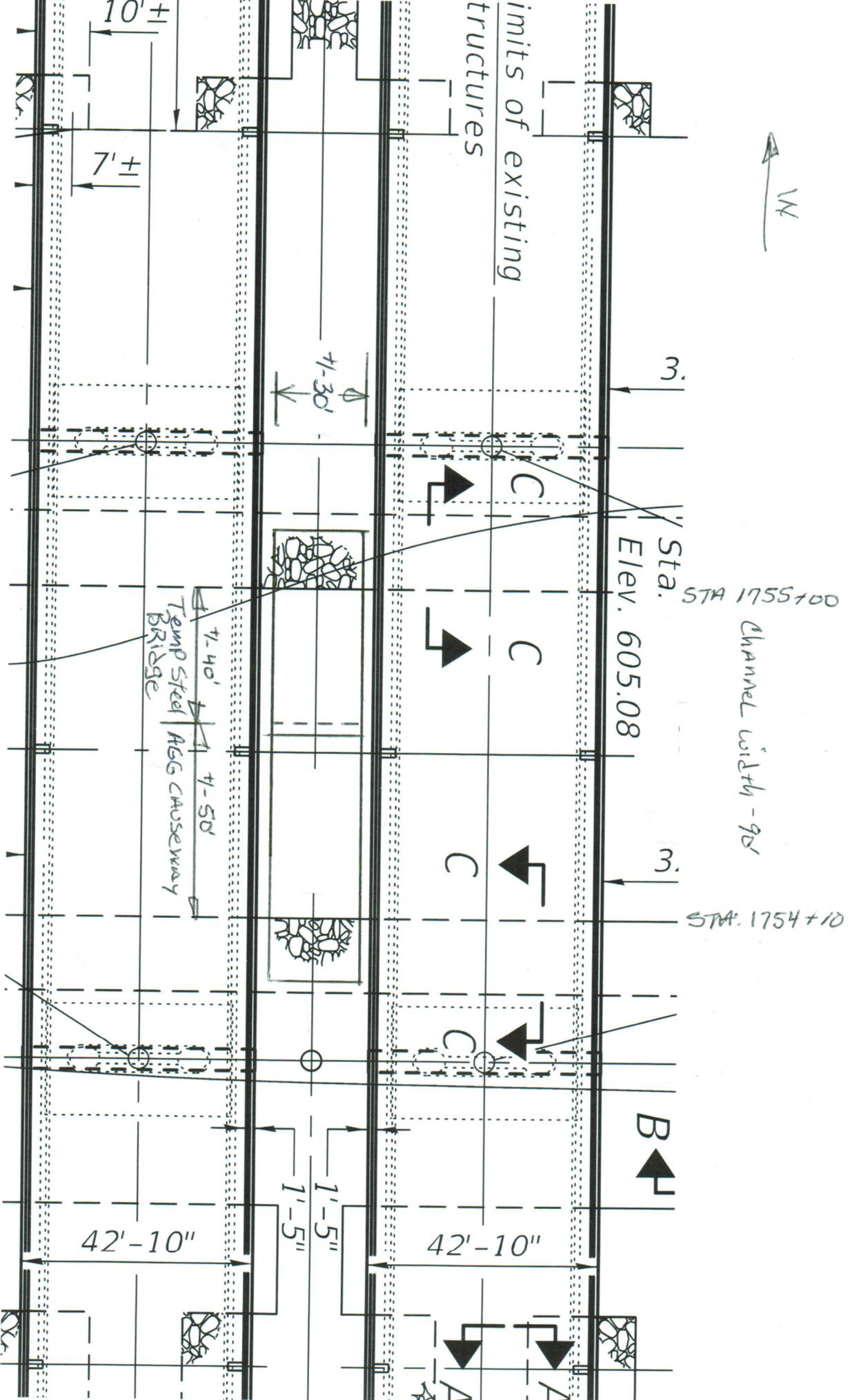
F

riprap,
7



IDOT: 70492
 I-74 BRIDGE Substructure Replacement
 Proposed TEMP Causeway

ICE Group
 CHET Phillips, Project Manager
 630-450-0951



11/12/20
IDOT: 70A92
I-74 Bridge Substructure REPAIRment
Proposed Temp Causeway

ICC GROUP
Chet Phillips
630-450-0951

**Illinois Department of Natural Resources
CONSERVATION PLAN**

(Application for an Incidental Take Authorization)
Per 520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080

**Conservation Plan for the Bluebreast Darter (*Etheostoma
camurum*) and the Bigeye Chub (*Hybopsis amblops*) at the
structures carrying I-74 over the Salt Fork Vermilion River near
Danville, IL**

150-day minimum required for public review, biological and legal analysis, and permitting

SUBMITTED TO: Ms. Jenny Skufca
Incidental Take Authorization Coordinator
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
DNR.ITAcordinator@illinois.gov

PROJECT APPLICANT: Illinois Department of Transportation Region3-
District 5
Attn: Kensil A. Garnet, PE
Region 3 Engineer
13473 IL Hwy 133
P.O. Box 610
Paris, IL 61944

PROJECT NAME: TR 345 over Sugar Creek-
Low water crossing replacement
County Section 12-04126-00-BR
IDOT PMA Seq #21116

COUNTY: Vermilion

AREA OF IMPACT: 0.20 acres

1. Description of the impact likely to result from the proposed taking

A. Legal description of the project area

Specific locality information for this project site has been taken from the Danville SW, Illinois (7.5' series, 1966 edition; NAD 1929 U.S. Geological Survey topographic quadrangle map (all coordinates to approximate center of bridge). UTM = Universal Transverse Mercator System.

Illinois, Vermilion County, Salt Fork Vermilion River, +/- 4.9 km WNW of Tilton, IL, at the FAI-74 bridge, Township 19 North, Range: 12 West, NW/4, NW/4, NW/4, Section 14, 2nd Principal Meridian. UTM: Zone 16T, 440849.82m East, 4440783.99m North. Latitude: 40.115283° North, Longitude: -87.694137° West

All staging and work associated with the proposed improvements to the dual structures carrying I-74 over the Salt Fork Vermilion River will be performed within existing State Right-of-Way; see Exhibit A.

B. Biological Data

The Environmental Survey Request (ESR) process for the proposed removal of existing sheet pile and removal and replacement of existing rip rap around piers 2 and 3 on both structures carrying Interstate 74 (I-74) over the Salt fork Vermilion river near Danville, IL, Vermilion County IL involved coordination with IDNR for the presence of threatened and endangered species. As a result, the attached INHS Fish Report (Exhibit C) identified the presence of the following protected resources occurring near the project area and proposed action:

Bluebreast Darter (*Etheostoma camurum*)

The INHS Fish Collection contains over 30 records for the state endangered Bluebreast Darter, *Etheostoma camurum*, between 1960 and 2007 in the Vermilion River drainage in Champaign and Vermilion Counties. Tiemann (2008) did a status survey of the species and found that *E. camurum* commonly occurs in the Middle Fork Vermilion River between Potomac and Kickapoo State Park (Vermilion Co.) and in the Salt Fork Vermilion River between Muncie to Kickapoo State Park (Vermilion Co.). It sporadically occurs in the Vermilion River main stream (Vermilion Co.) and has been recorded only once in the North Fork Vermilion River (Vermilion Co.) (Tiemann 2008). Besides the current sampling results; see Exhibit C, current Fish Survey, the most recent record of the Bluebreast Darter was collected in the Vermilion River at Forest Glen (Vermilion Co.) in 2014 by INHS personnel. The Bluebreast Darter normally occurs in swift, rocky riffles in small to medium rivers with high water quality.

Bigeye Chub (*Hybopsis amblops*)

The state endangered Bigeye Chub, *Hybopsis amblops*, was formerly widespread across southern and eastern Illinois. Between 1899 and 1961, Bigeye Chubs were collected from several sites throughout the Vermilion River drainage, including Stony Creek near Muncie (Vermilion Co.), the Salt Fork Vermilion River from just east of Urbana (Champaign Co.) to 2 mi E Oakwood (Vermilion Co.), the Middle Fork Vermilion River near Collison, and at Armstrong (Vermilion Co.); and the North Fork Vermilion River near Hoopeston (Vermilion Co.). The collection of the Bigeye Chub from the Salt Fork Vermilion River 2 mi E Oakwood, 21 June 1961 was, until 1992, the last known collection of the species from Illinois. In fact, the absence of the Bigeye Chub in surveys for fishes in the Salt Fork Vermilion River conducted after June 1961 prompted Smith (1979) to speculate that the species had been extirpated from the state. Since July 1997 the Bigeye Chub has been collected over 30 times in the Vermilion drainage in Vermilion and Champaign County, including seven times in the Little Vermilion River between 1997 and 2011. The species has been found from upstream portions of the drainage in northeastern Champaign County to downstream portions in southeastern Vermilion

County. The preferred habitat of the Bigeye Chub is vegetated clear pools and gravel riffles in creeks and small rivers.

The Salt Fork Vermilion River at the FAI-74 Bridge, Illinois Department of Transportation (IDOT) Structure numbers 092-0006 and 092-0007 is approximately 13.7 m. in width with depths ranging from 0.3m to 1.2m. The little Bluebreast Darter normally occurs in swift, rocky riffles in small to medium rivers with high water quality and the Bigeye Chub is typically found in vegetated clear pools and gravel riffles in creeks and small rivers.

C. Description of project activities

The construction activities that may result in a take of the Bluebreast Darter and Bigeye Chub in the area of the bridges is removal and placement of existing riprap and sheet piling around existing piers 2 and 3 on both structures; rip rap is needed around these piers to prevent scour and potential failure of the existing piers; cofferdams are not required to perform this work. At this time, the project has not been awarded to a contractor; different contractors have different methods for performing the proposed work; however, based on past construction practices for similar work, the removal and replacement of riprap and or sheet piling will be performed from the bank or a causeway by mechanical means such as a crane, excavator, backhoe, etc. Work in the Salt Fork Vermilion River will not be performed from May 1st to July 31st to avoid Bluebreast Darter and Bigeye Chub spawning periods.

D. Explanation of the anticipated adverse effects on the listed species.

If mitigation measures are not implemented, the Bluebreast Darter and Bigeye Chub would likely be buried or otherwise crushed or killed by the removal of existing sheet pile around piers 2 and removal and replacement of existing rip rap around piers 2 and 3 on both structures. Removal of the existing sheet pile and rip rap as well as placement of new rip rap will cause noise and vibration within the stream and likely cause the fish species to disperse due to harassment; harassment is a form of take under the Illinois Endangered Species Protection Act.

2. Measures the applicant will take to minimize and mitigate that impact

A. Plans to minimize the area affected by the proposed action, the number of individuals of an endangered or threatened species that will be taken, and the amount of habitat affected.

Construction activities associated with the removal of the structure will be limited to State (IDOT) Right-of-Way (ROW); IDOT ROW is defined as that portion of the area lying 230 feet north of the centerline of I-74 and 235 feet south of the centerline of I-74. The estimated amount of in-stream habitat within the IDOT ROW is approximately 58730 sq. feet or 1.348 acres; of which there will be approximately 8568 sq. ft or 0.20 acres of impact due to proposed construction activities; see attached exhibits A and B. IDOT has minimized the impact footprint within the species aquatic habitat to the extent possible. The estimated number of each species to be taken with the construction activity is < 5.

B. Plans for management of the area affected by the proposed action that will allow continued use of the area by the species.

All proposed work will be performed within IDOT Right of Way directly under the bridges. The INHS Fish Report (Exhibit C) states that suitable habitat for both fish species; riffle with larger gravel substrate and vegetation; was not found directly under the bridges or immediately upstream or downstream. Suitable habitat was found 200 yards upstream of the bridges; no work will occur outside of directly under the bridges; therefore, impacts to existing fish habitat will not occur. Efforts will be made to ensure the existing stream bed directly under the bridges will remain as is pre construction; additionally, after construction activities are complete, the streambed directly under the bridges will be "managed" or "controlled" by natural processes; the dynamic processes operating within the Salt Fork Vermilion River will dictate the condition of the bed of the river post construction.

C. Description of all measures to be implemented to minimize or mitigate the effects of the proposed action on the endangered or threatened species.

- The IDOT will not permit any in-stream work during the Bluebreast Darter and Bigeye Chub spawning period which runs from May 1st to July 31st.
- IDOT will add the Districts "Big Stick" special provision to the plans; the "Big Stick" special provision states "To further reduce potential impacts to the Bluebreast Darter and Bigeye Chub, a special effort should be made to scare any fish from the area before any in stream work is attempted. This can be accomplished by the following; prior to any work within the river, simply walk in the area of proposed work activity or use a big stick to splash water; then gradually place the stone from the bank into the stream; this will allow any fish to move away from the vicinity.
- IDOT District 5 agrees to make a one-time payment of \$20,800 to the IDNR Wildlife Preservation Fund.

D. Plans for monitoring the effects of the measures implemented.

It is the recommendation of the IDOT that the Illinois Natural History Survey (INHS) conduct fish surveys two- and five-years following completion; "Completion" shall be defined as the date of the IDOT Final Inspection for the project. The District shall contact the Central Office Natural Resources Unit within one week of completion of the project to task follow-up surveys. The purpose of the monitoring effort is to determine if the Bluebreast Darter and Bigeye Chub are present. A report on the species and numbers found shall be provided to the Department within 60 days of the completion of each survey. Each report shall also include a qualitative evaluation of the habitat for the Bluebreast Darter and Bigeye Chub and the manner in which that habitat has changed since the previous survey. Based on the results of the monitoring survey, the need for further monitoring will be assessed.

- E. Adaptive management practices that will be used to deal with changed or unforeseen circumstances that affect the effectiveness of measures instituted to minimize or mitigate the effects of the proposed action on endangered or threatened species.**

Due to the nature of the project, IDOT does not anticipate any changed or unforeseen circumstances; however, if high water or drought conditions occur during the work directly under the bridge, IDOT will coordinate closely with the contractor and District Environmental Coordinator to make appropriate changes necessary. The bridge work will be completed with no additional work being necessary afterwards.

- F. Verification that funding to support mitigation activities will be available for the life of conservation plan.**

The project is funded through the following:

- The program cost of the project is \$17,750,000; 10% State Funds and 90% Federal Funds. Any costs are associated with implementation of the "Big Stick" special provision will be borne by the Contractor and included in their bid price for the project. The Illinois Department of Transportation has contractual obligation with the Illinois Natural History Survey for post-construction surveys.

3. Alternative actions that would reduce take

Existing piers 2 and 3 at both structures has considerable scour at the upstream end of the piers and requires scour protection to protect the large piers and slab footings which are not pile supported. The following alternative action were considered:

Alternative A – "No-Action":

The only alternative which does not result in the taking of the state listed species is to leave the existing rip rap and sheet pile in place, or the "no-action" alternative. The existing rip rap and sheet pile does not provide adequate scour protection of piers 2 and 3 on both structures; further scour of these piers will lead to the failure of the piers causing the structures to fail resulting in a shutdown of the interstate. The no-action alternative is not considered feasible for this project.

Alternative B – "Articulated block-revetment mat":

Alternatives such as articulated block or revetment mat would require larger footprints and would not stay in place due to the high velocities around the piers and through the structure. Future, continual maintenance would be required in the Salt Fork Vermilion River with any other alternative; thus, the proposed Class A7 Riprap provides the least amount of disturbance in the river.

Alternative C – "Removal of the existing Sheet pile and removal and replacement of the existing rip rap around piers 2 and 3 of both structures
The final option would be the removal of the existing sheet pile and removal and replacement of the existing rip rap around piers 2 and 3 on both structures. The area where This option is the most economical alternative;

and will provide a minimal impact to property and the state listed species also addressing pier scour concerns.

4. Data and information to assure that the proposed taking will not reduce the likelihood of the survival of the species.

All proposed in-stream work is limited to that area around piers 2 and 3 directly under the structures. The INHS Fish Survey conducted on August 7, 2017 stated that suitable habitat for both listed fish species was not present directly under the bridge; suitable habitat was located 200 yards upstream. No work will occur within suitable habitat; therefore, the proposed work will not reduce the likelihood of survival or recovery of the species in the wild of Illinois.

5. An implementing agreement, which shall include, but not be limited to:

A. Names of all participants in the execution of the conservation plan, including public bodies, corporations, organizations, and private individuals.

Kensil A. Garnett, P.E.
Region Three Engineer
Illinois Department of Transportation
13473 IL Hwy 133, P.O. Box 610
Paris, IL 61944



Region 3 Engineer

Kensil A. Garnett, P.E.

B. The obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities in the conversation plan and a schedule for preparation of progress report to be provided to the Department.

The Illinois Department of Natural Resources is responsible for the review of this Conservation Plan and for subsequent issuance of the Incidental Take Authorization.

The Illinois Natural History Survey will have duties of surveying for threatened or endangered fishes. Post construction surveys by the INHS will examine the Salt Fork Vermilion River within IDOT ROW for the Bluebreast Darter and Bigeye Chub and fish habitat.

The Illinois Department of Transportation is responsible for all biological clearance coordination and recommendations related to the project and will address those items listed under the Incidental Take Notice.

C. Assurances that each participant in the execution of the conservation plan has the legal authority to carry out their respective obligations and responsibilities under the conservation plan.

This project is authorized by the Illinois Department of Transportation, which receives funding from Illinois General Assembly and the Federal government in carrying out its programs.

- D. Assurances of compliance with all other federal, state, and local regulations pertinent to the proposed action and to execution of the conservation plans.**

The Illinois Department of Transportation exclusively abides by the National Environmental Policy Act and all associated state and federal environmental laws in carrying out its mission of performing the most

environmentally sensitive methods of transportation planning and engineering.

- E. Copies of any federal authorizations for taking already issues to the applicant.**

Not applicable since the Bluebreast Darter (*Etheostoma camurum*) and the Bigeye Chub (*Hybopsis amblops*) are not federally threatened or endangered.

- F. For projects that will result in the taking of endangered or threatened species of plants, copies of expressed written permission of the landowner.**

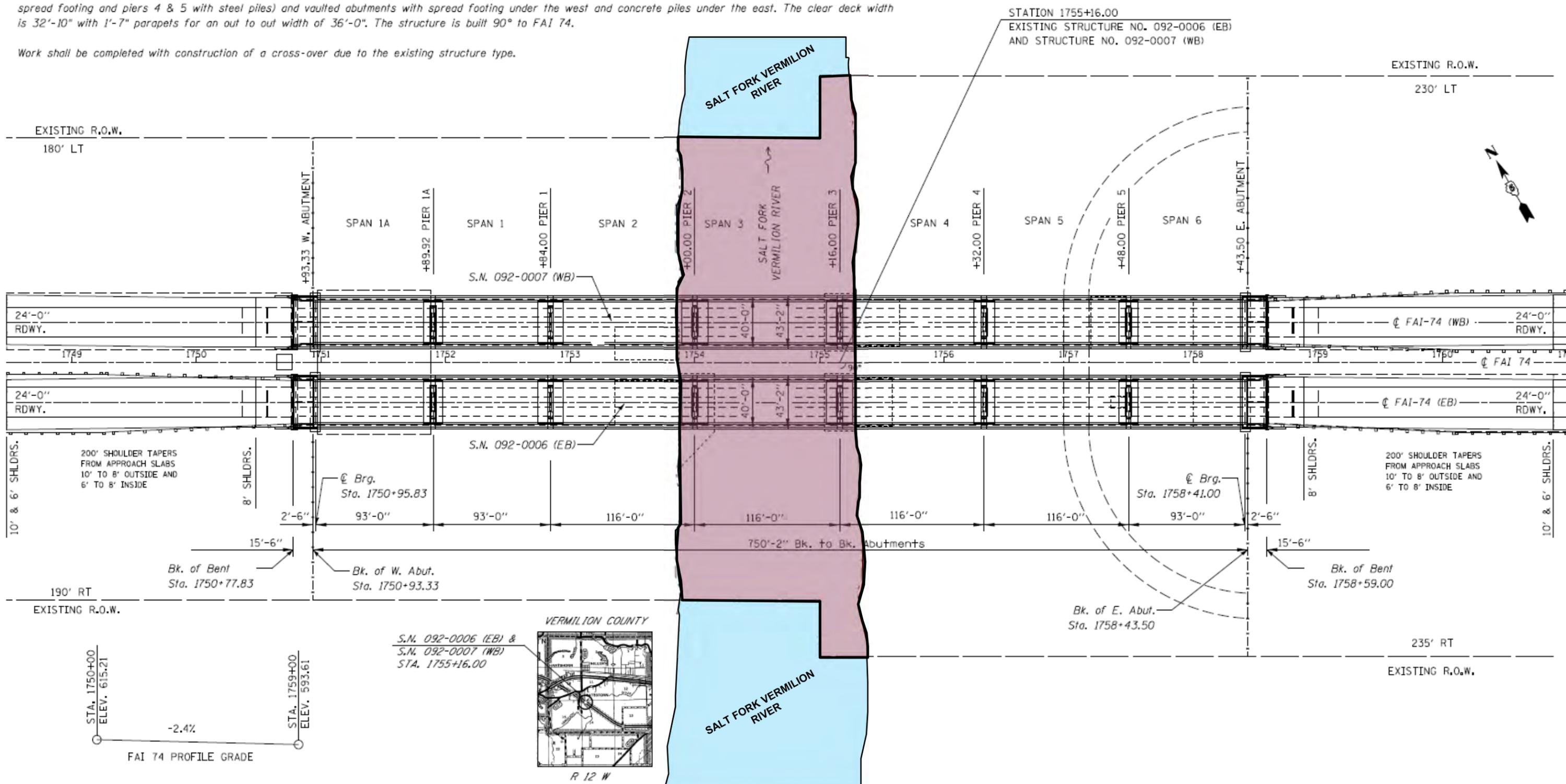
Not applicable since Bluebreast Darter (*Etheostoma camurum*) and the Bigeye Chub (*Hybopsis amblops*) are considered an animal under the Illinois Endangered Species Act (ILCS 10/2).

+/- 58,730 sq feet (1.348 Acres) of impact

Existing structure numbers 092-0006 (EB) and 092-0007 (WB) were built in 1962 as FAI 74, Section 92-11B, Contract 20973F at Station 1755+16 in Vermilion County. The structures carry FAI 74 over the Salt Fork Vermilion River. In 1977 the structures were repaired with improvements consisting of deck patching, expansion device reconstruction, installation of waterproofing membrane system and hma overlay. In 1991 the structure was rehabilitated with improvements consisting of deck replacement, replacement of 12 of 66 floor beams, various bolt, hanger and other structural steel repairs, neoprene expansion joints, drainage scuppers, replacement of all bearings, substructure repairs at Pier 1A and A3 riprap scour protection as Section 92-11BR, Contract 90165. In 2008 the structure received scour mitigation improvements consisting of placing A4 and A5 riprap around Piers 2 and 3, as Section D5 Scour Mitigation 2008-1, Contract 70013. Day Labor Repairs: In 2007, 092-0006 Pier 1A, had all three transverse cross brace members removed and replaced as part of DL 071505. Bridge Crew Repairs: In 2006, the neoprene expansion joints at the east abutment and pier1a were replaced with polymer concrete and silicone joints. In 2008, the east abutment vaulted abutment door was replaced. In 2017, 092-0007 Pier 1A, had the northwest gusset plate cross bracing connection and vertical tie rod replaced.

The existing structure consists of one simple 93' span and six continuous spans (1 @ 93', 4 @ 116', 1 @ 93') for a back to back abutment length of 750'-2" with a 9" reinforced concrete deck on two 84" riveted steel plate girders with 66 steel floor beams (24WF94) supported by six double column piers (piers 1a thru 3 on spread footing and piers 4 & 5 with steel piles) and vaulted abutments with spread footing under the west and concrete piles under the east. The clear deck width is 32'-10" with 1'-7" parapets for an out to out width of 36'-0". The structure is built 90° to FAI 74.

Work shall be completed with construction of a cross-over due to the existing structure type.



FILE NAME	USER NAME: brandenburg	DESIGNED: TJB	REVISED: TJB	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL PLAN S.N. 092-0006 (EB) & 0007 (WB)	F.A.I. RTE: 74	SECTION: (92-11)BR-1	COUNTY: VERMILION	TOTAL SHEETS: 20	SHEET NO.: 1		
SMODEL NAMES	PLOT SCALE: 80.0000' = 1" / 11	CHECKED: [Signature]	REVISED: [Signature]			SCALE: _____	SHEET: _____ OF _____ SHEETS	STA. _____ TO STA. _____	CONTRACT NO. 70A92			
	PLOT DATE: 6/1/2017	DATE: 5/3/2017	REVISED: 6/1/2017			ILLINOIS FED. AID PROJECT						
VERMILION COUNTY, ILLINOIS												

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The proposed superstructure consists of seven continuous spans (2 @ 94', 4 @ 115'-9", 1 @ 93'-6") for a back to back abutment length of 749'-6" with a 8" reinforced concrete deck on six 45" steel plate girders supported by six double column piers with new wider pier caps and rehabilitated vaulted abutments. The clear deck width is 40'-0" with 1'-5" parapets for an out to out width of 42'-10". The structure is built 90° to FAI 74.

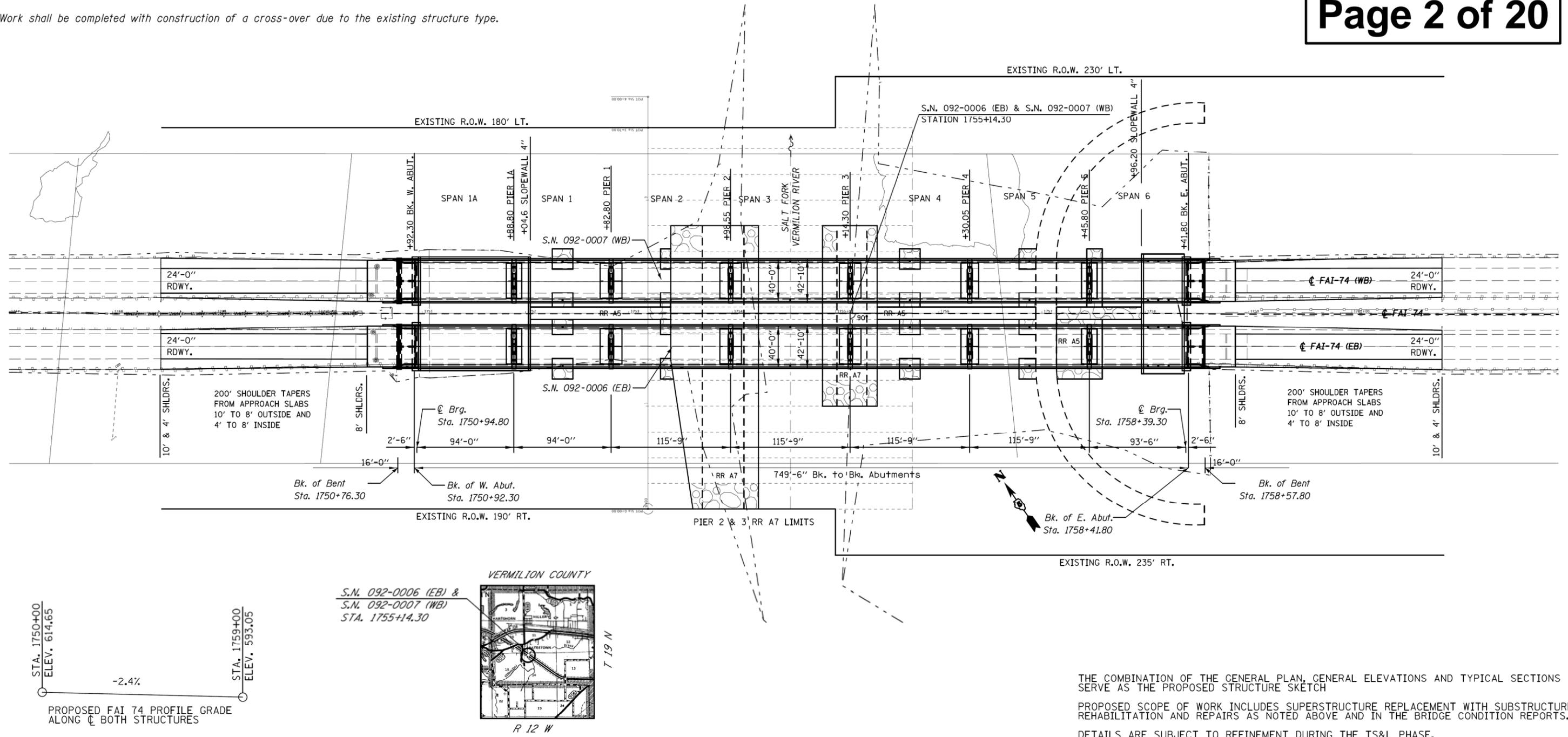
Work shall be completed with construction of a cross-over due to the existing structure type.

Benchmark: Chiseled square on the top of abutment end treatment at the NW corner of S.N. 092-0006 (EB)
Elevation 612.39

Chiseled square on the bearing seat at the south end of the west abutment of S.N. 092-0007 (WB)
Elevation 600.12

Chiseled square on the bearing seat at the south end of the east abutment of S.N. 092-0007 (WB)
Elevation 581.94

Exhibit A Page 2 of 20



THE COMBINATION OF THE GENERAL PLAN, GENERAL ELEVATIONS AND TYPICAL SECTIONS SERVE AS THE PROPOSED STRUCTURE SKETCH
 PROPOSED SCOPE OF WORK INCLUDES SUPERSTRUCTURE REPLACEMENT WITH SUBSTRUCTURE REHABILITATION AND REPAIRS AS NOTED ABOVE AND IN THE BRIDGE CONDITION REPORTS.
 DETAILS ARE SUBJECT TO REFINEMENT DURING THE TS&L PHASE.

USER NAME = brandenburgtj	DESIGNED - TJB	REVISED - TJB	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL PLAN S.N. 092-0006 (EB) & 0007 (WB)	F.A.I. RTE. 74	SECTION (92-11)BR-1	COUNTY VERMILION	TOTAL SHEETS	SHEET NO.		
PLOT SCALE = 100.0000' / in.	CHECKED -	REVISED -			SCALE:	SHEET	OF	SHEETS	STA.	TO	STA.
PLOT DATE = 8/1/2019	DATE - 2/28/2018	REVISED - 7/8/2019			CONTRACT NO. 70A92 ILLINOIS FED. AID PROJECT						

Legend

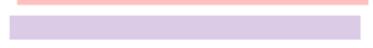
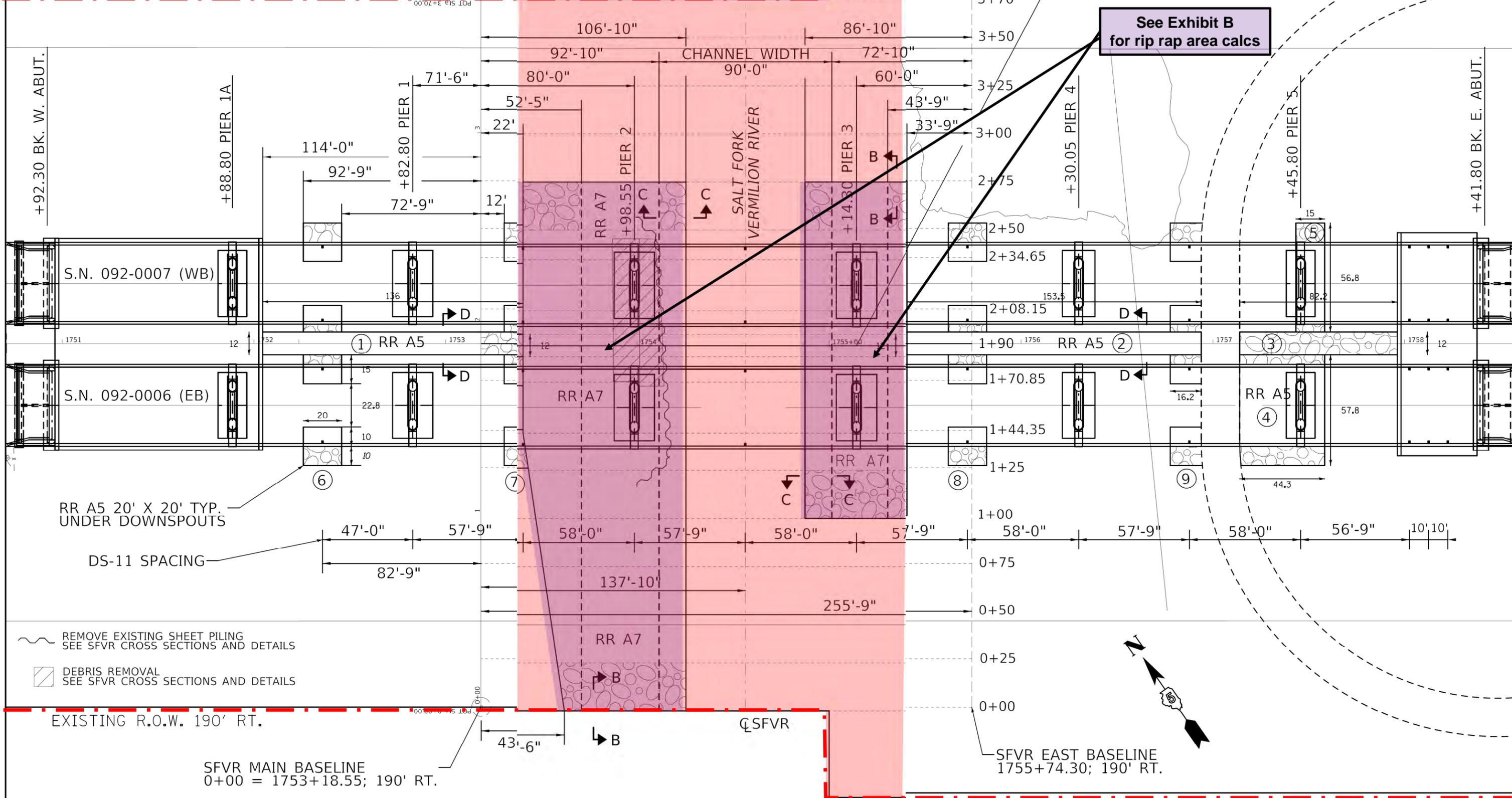
-  State ROW
-  Approx limits of River
-  Proposed Rip Rap

Exhibit A
Page 3 of 20

EXISTING R.O.W. 230' LT.

EXISTING R.O.W. 180' LT.



See Exhibit B
for rip rap area calcs

RR A5 20' X 20' TYP.
UNDER DOWNSPOUTS

DS-11 SPACING

 REMOVE EXISTING SHEET PILING
SEE SFVR CROSS SECTIONS AND DETAILS

 DEBRIS REMOVAL
SEE SFVR CROSS SECTIONS AND DETAILS

EXISTING R.O.W. 190' RT.

SFVR MAIN BASELINE
0+00 = 1753+18.55; 190' RT.

SFVR EAST BASELINE
1755+74.30; 190' RT.

EXISTING R.O.W. 235' RT.

USER NAME = brandenburgtj	DESIGNED - TJB	REVISED -
	DRAWN - TJB	REVISED -
PLOT SCALE = 100,000' / in	CHECKED -	REVISED -
PLOT DATE = 8/1/2019	DATE - 7/8/2019	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RIPRAP PLAN
S.N. 092-0006 (EB) & 0007 (WB)

F.A.I. RTE. 74	SECTION (92-11)BR-1	COUNTY VERMILION	TOTAL SHEETS	SHEET NO.
CONTRACT NO. 70A92			ILLINOIS FED. AID PROJECT	

SCALE: SHEET OF SHEETS STA. TO STA.

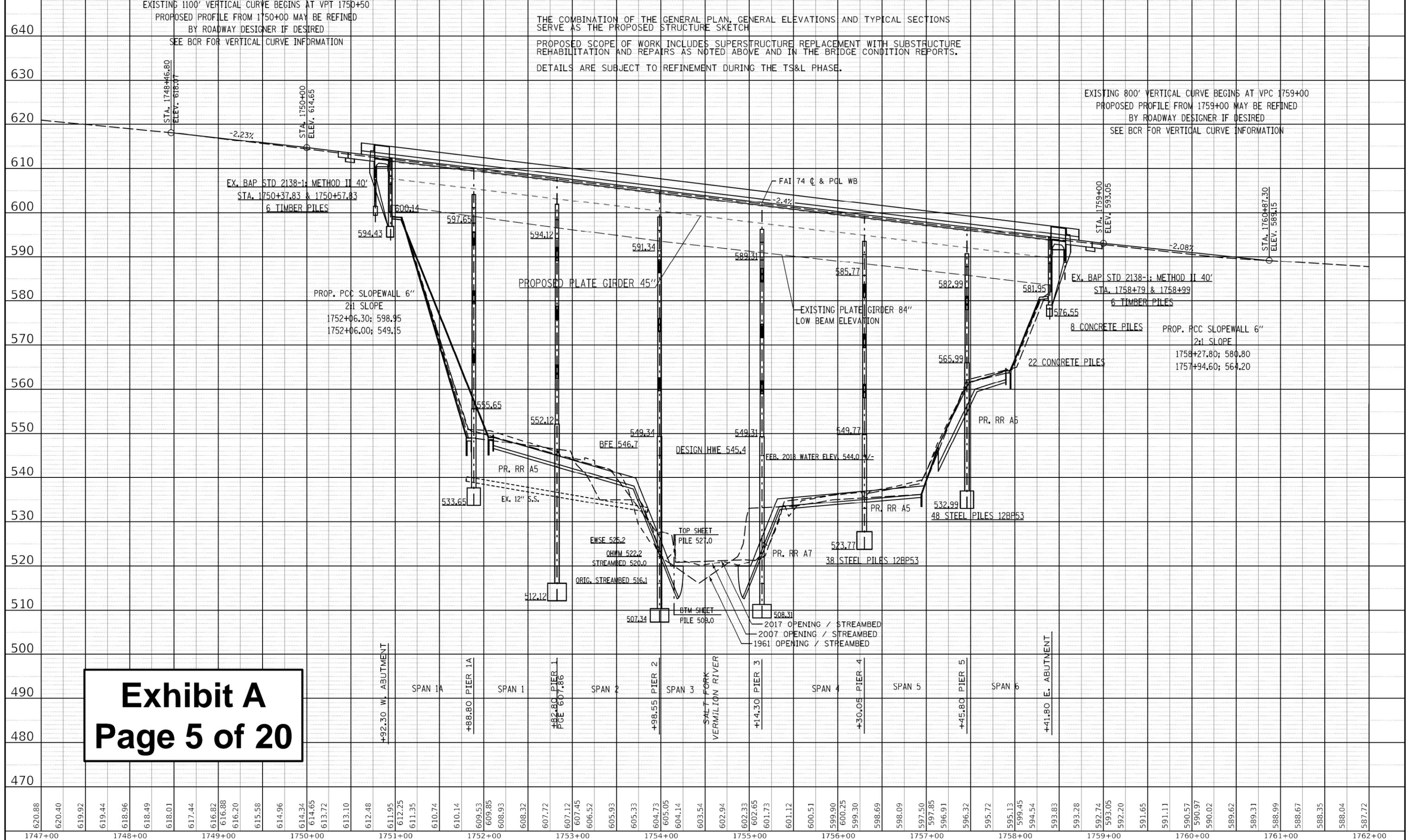
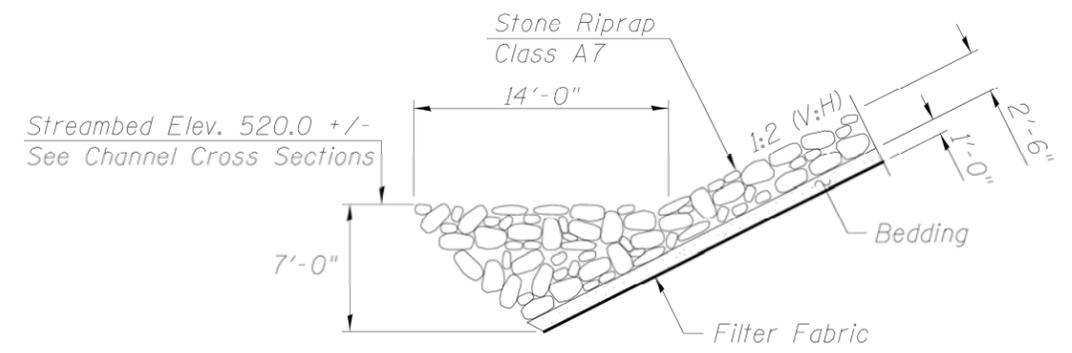


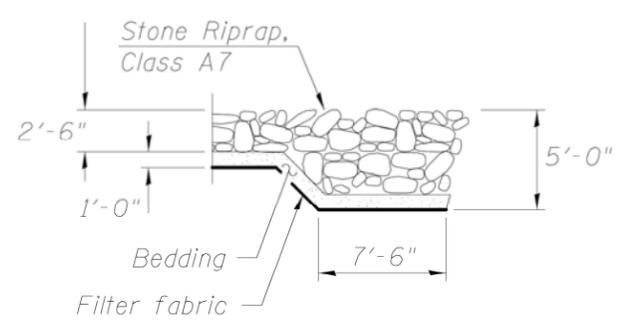
Exhibit A
Page 5 of 20

USER NAME = brandenburgtj	DESIGNED - TJB	REVISED - TJB	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL ELEVATION S.N. 092-0007 (WB)		F.A.I. RTE. 74	SECTION (92-11)BR-1	COUNTY VERMILION	TOTAL SHEETS	SHEET NO.
PLOT SCALE = 100.0000' / in.	CHECKED -	REVISED -		SCALE:	SHEET OF SHEETS	STA. TO STA.	CONTRACT NO. 70A92			
PLOT DATE = 8/1/2019	DATE - 2/1/2019	REVISED - 7/16/2019		ILLINOIS FED. AID PROJECT						



SECTION C-C

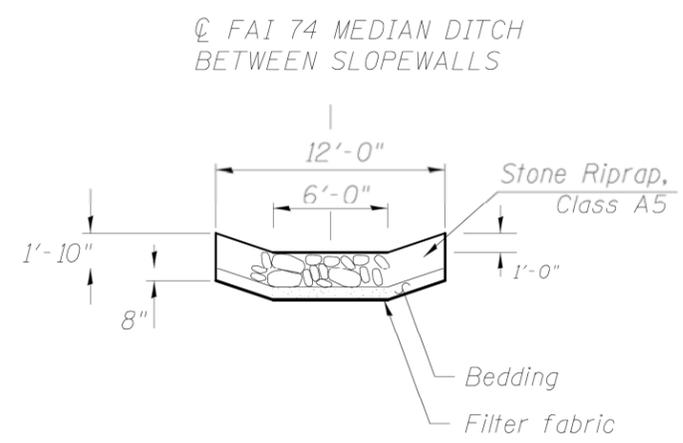
TOE TREATMENT FOR STREAM CROSSINGS



SECTION B-B

FLANK TREATMENT FOR STREAM CROSSINGS

A7	Location	RipRap Area (Sq Yd)	Filter Fabric (Sq Yd)	Bedding Thickness (inches)	Bedding Stone (Cu Yd)	Bedding Stone (Tons)	RipRap Thickness (inches)	RipRap Class A7 (Cu Yd)	RipRap Class A7 (Tons)
	East Bank	1099.0	1099.0	12.0	366.3	659.4	30.0	915.8	1648.5
	West Bank	2570.0	2570.0	12.0	856.7	1542.0	30.0	2141.7	3855.0
Totals =	3669.0	3669.0		1223.0	2202.0		3058.0	5504.0	
			Estimated Rates:			1.8 tons/cy			*1.8 tons/cy
			* typically, 1.5 tons/cy is used; however to include estimated tons of riprap needed to construct toe & flank details for rivers, 1.8 tons/cy has been used; this is an estimated quantity ONLY and the pay item for riprap is still SQ YD, measured per 281.06						



SECTION D-D

SEE CHANNEL CROSS SECTIONS

STONE RIPRAP, CLASS A5				
Location	Length (ft)	Width (ft)	Area (sq yd)	Notes
1	137.1	12.3	187.4	
2	159.4	12.3	217.8	
3	82.2	12.3	112.3	
4	44.3	57.8	284.5	
5	15.0	56.8	94.7	
6	20.0	20.0	177.8	at 4 drains
7	10.0	20.0	88.9	at 4 drains
8	20.0	20.0	177.8	at 4 drains
9	16.0	20.0	142.2	at 4 drains
Totals =			1484.0	

A5	Location	RipRap Area (Sq Yd)	Filter Fabric (Sq Yd)	Bedding Thickness (inches)	Bedding Stone (Cu Yd)	Bedding Stone (Tons)	RipRap Thickness (inches)	RipRap Class A5 (Cu Yd)	RipRap Class A5 (Tons)
	All 9 Locations	1484.0	1484.0	8.0	329.8	593.6	22.0	906.9	1360.3
	Totals =	1484.0	1484.0		330.0	594.0		907.0	1361.0
			Estimated Rates:			1.8 tons/cy			1.5 tons/cy

Exhibit A

Page 7 of 20

X0321837 - REMOVE SHEET PILING - L SUM						
SFVR CROSS SECTION & PLAN INFORMATION						
Baseline Station	Est. Sheet Pile Height (ft)	Removal Height (ft)	Remaining Height (ft)	Length of Sheet Pile (ft)	Estimated Area of Sheet Pile to be Removed (sq ft)	Remove Sheet Piling L Sum
1+25	18.0	9.4	8.6			
1+44.35	18.0	13.0	5.0			
1+70.85	18.0	12.1	5.9			
1+90	18.0	11.8	6.2			
2+08.15	18.0	11.5	6.5			
2+34.65	18.0	10.9	7.1			
2+50	18.0	8.0	10.0			
Average	11.0	Totals	152.0	1666.0	1.0	

The existing sheet piling around the east face of Pier 2 shall be removed to the bottom of bedding elevation as shown on the Salt Fork Vermillion River cross sections prior to RR A7 placement per Article 501.05 of the Standard Specifications. The Contractor shall cut off the Removal Height as shown above, leaving the remainder in place. The existing sheet piling shall NOT be removed in it's entirety to ensure the spread footing foundations remain undisturbed. Any damage to Pier 2 of either structure shall be repaired at the Contractor's expense as directed by the Engineer. This work will be measured for payment on a lump sum basis and paid for at the contract lump sum price for REMOVE SHEET PILING.

APRIL 2017 PHOTOGRAPHS



VIEW NORTH FROM PIER 2; SN 092-0006 EB

VIEW SOUTH FROM PIER 2; SN 092-0007 WB

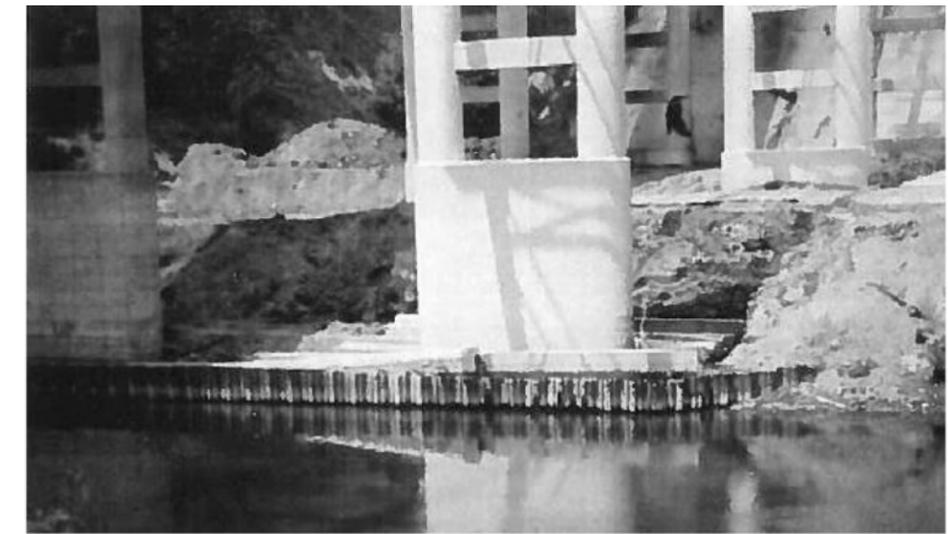


VIEW WEST AT EAST FACE OF PIER 2; SN 092-0006 EB

Z0015500 - DEBRIS REMOVAL - L SUM						
Station	ESTIMATED PARAPET/CURB FROM 1992 RECONSTRUCTION TO BE REMOVED					Debris Removal L Sum
	Length (ft)	End Area (sq ft)	Volume (cu yd)	No. Parapet/Curb Portions (each)	Est. Volume (cu yd)	
					Total	
Pier 2	30.0	7.0	7.8	15	117.0	1.0

The remaining portions of parapet/curb from the 1992 reconstruction around pier 2 shall be removed prior to RR A7 placement per Article 501.05 of the Standard Specifications. Any damage to Pier 2 of either structure shall be repaired at the Contractor's expense as directed by the Engineer. This work will be measured for payment on a lump sum basis and paid for at the contract lump sum price for DEBRIS REMOVAL.

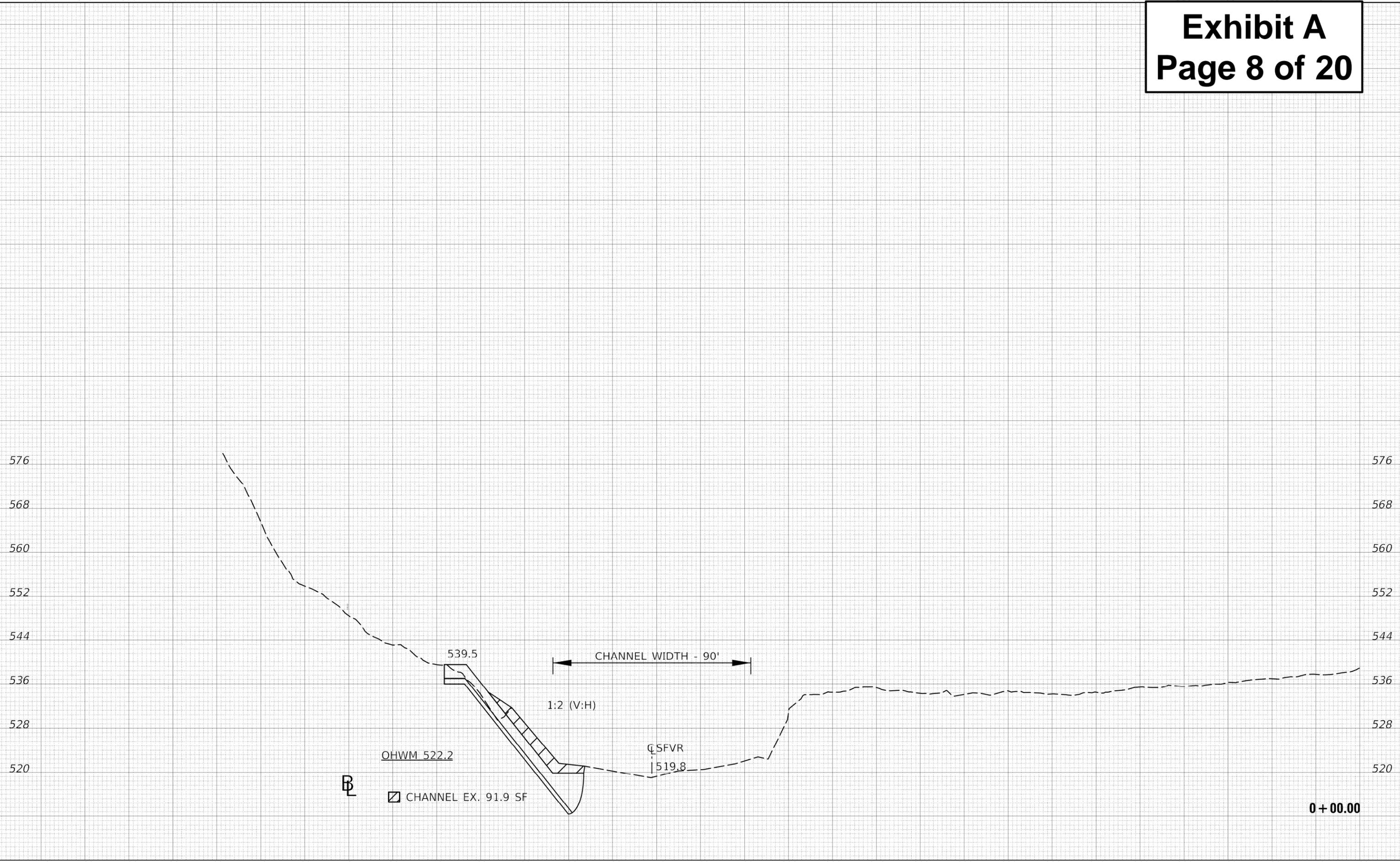
JULY 1992 RECONSTRUCTION PHOTOGRAPHS



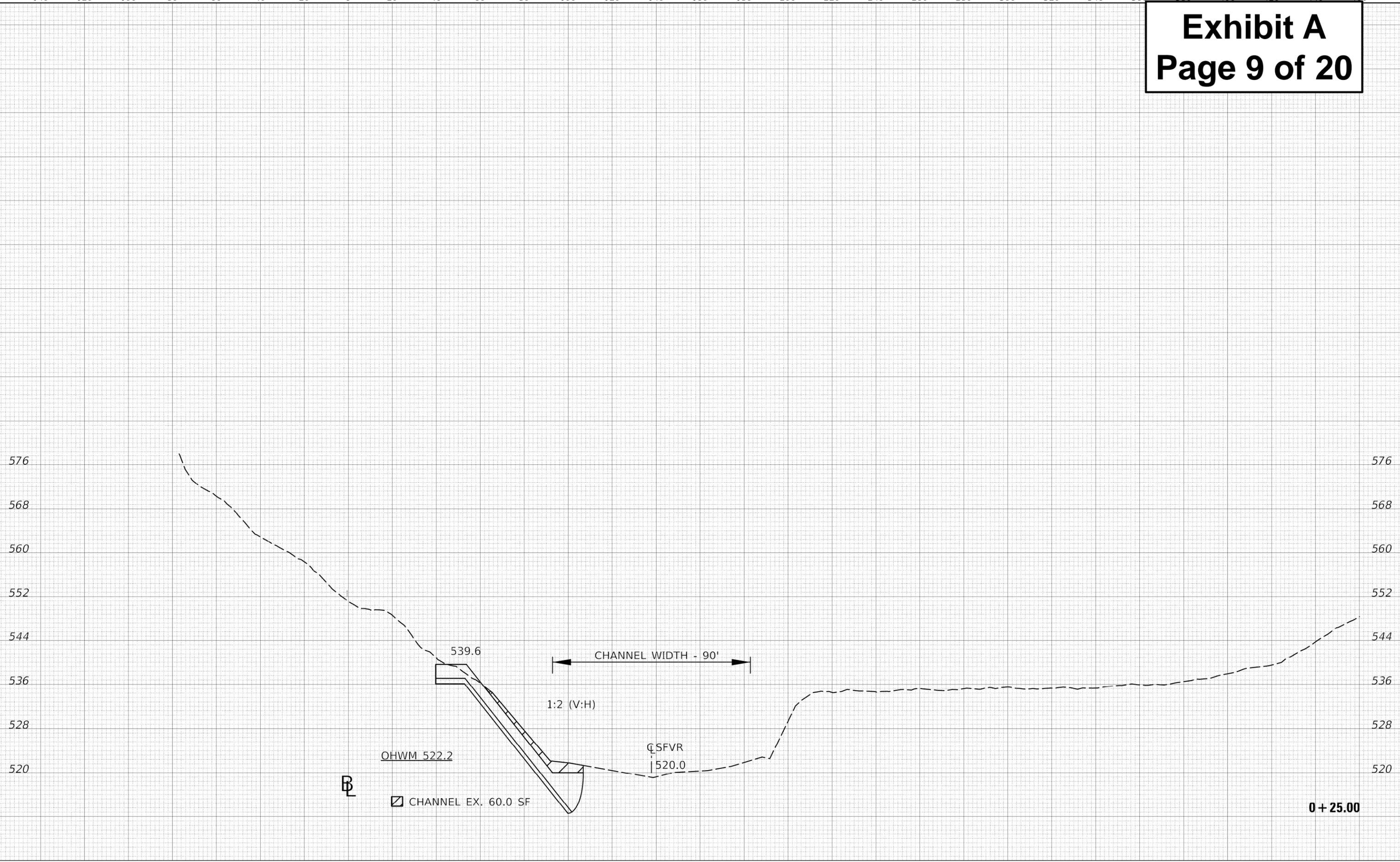
VIEW WEST AT EAST FACE OF PIER 2; SN 092-0007 WB



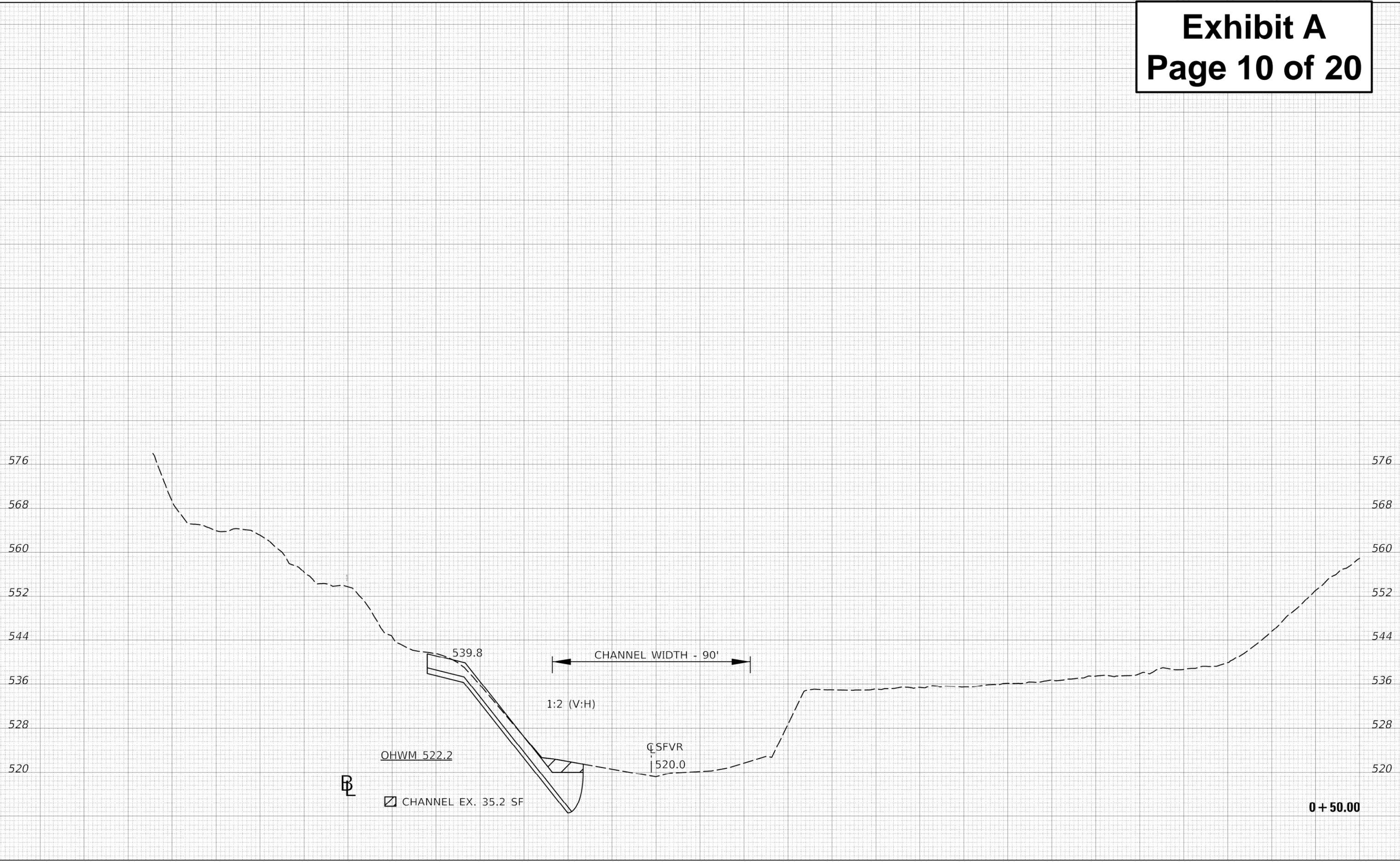
VIEW AT NORTH END OF PIER 2; SN 092-0007 WB



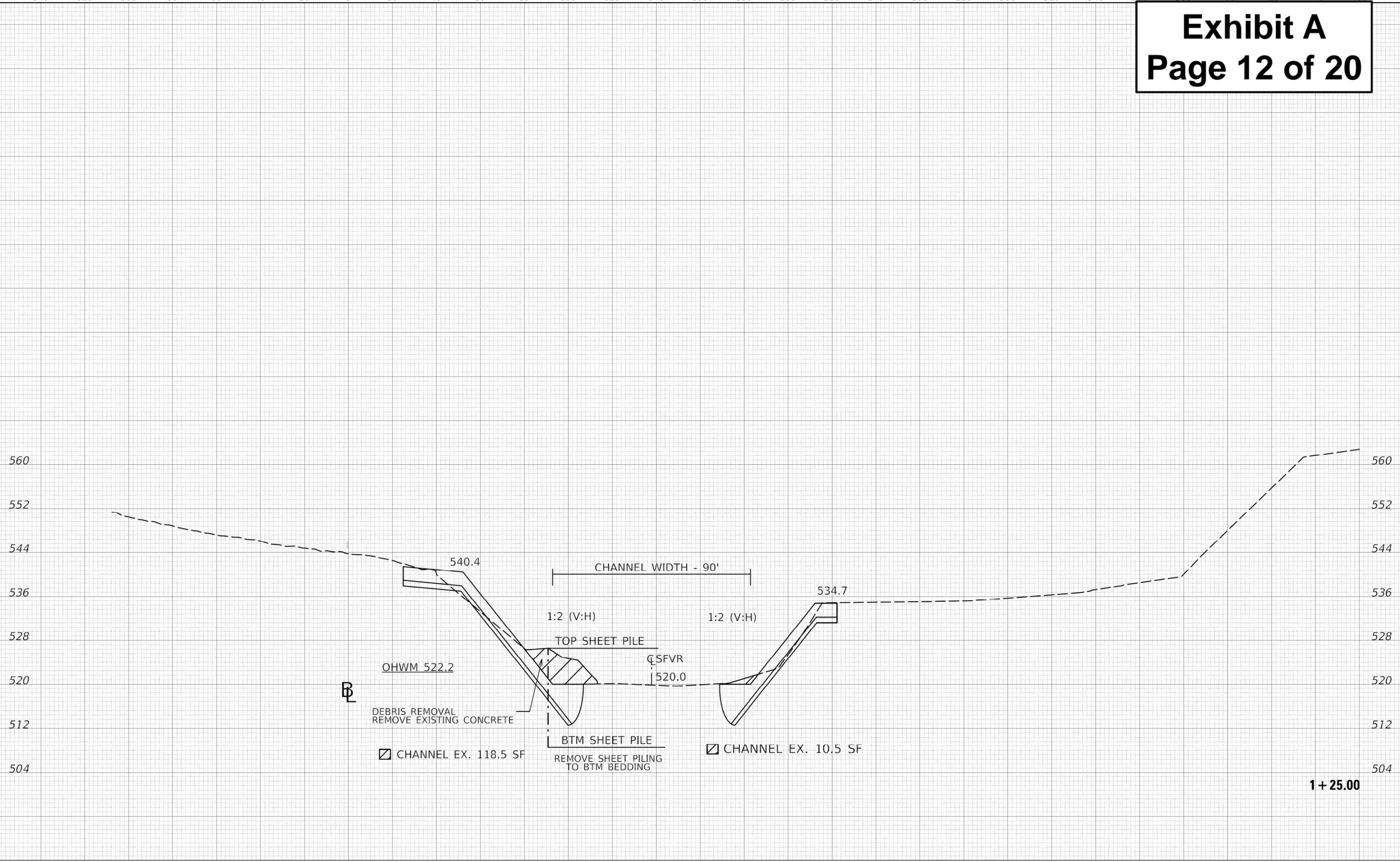
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140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460	SCALE: SHEET 1 OF 13 SHEETS STA. +00.00 TO STA. +00.00		0 + 00.00				



USER NAME = brandenburgtj PLOT SCALE = 40.0000' / in. PLOT DATE = 8/1/2019	DESIGNED - TJB DRAWN - TJB CHECKED - DATE - 7/16/2019	REVISED - REVISED - REVISED - REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SALT FORK VERMILION RIVER CROSS SECTIONS	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="font-size: small;">F.A.I. RTE.</th> <th style="font-size: small;">SECTION</th> <th style="font-size: small;">COUNTY</th> <th style="font-size: small;">TOTAL SHEETS</th> <th style="font-size: small;">SHEET NO.</th> </tr> <tr> <td style="text-align: center;">74</td> <td style="text-align: center;">(92-11)BR-1</td> <td style="text-align: center;">VERMILION</td> <td style="text-align: center;">7</td> <td style="text-align: center;">7</td> </tr> <tr> <td colspan="5" style="text-align: center; font-size: x-small;">ILLINOIS FED. AID PROJECT</td> </tr> </table>	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	74	(92-11)BR-1	VERMILION	7	7	ILLINOIS FED. AID PROJECT				
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.																
74	(92-11)BR-1	VERMILION	7	7																
ILLINOIS FED. AID PROJECT																				
			SCALE:	SHEET 2 OF 13 SHEETS	STA. +25.00 TO STA. +25.00															

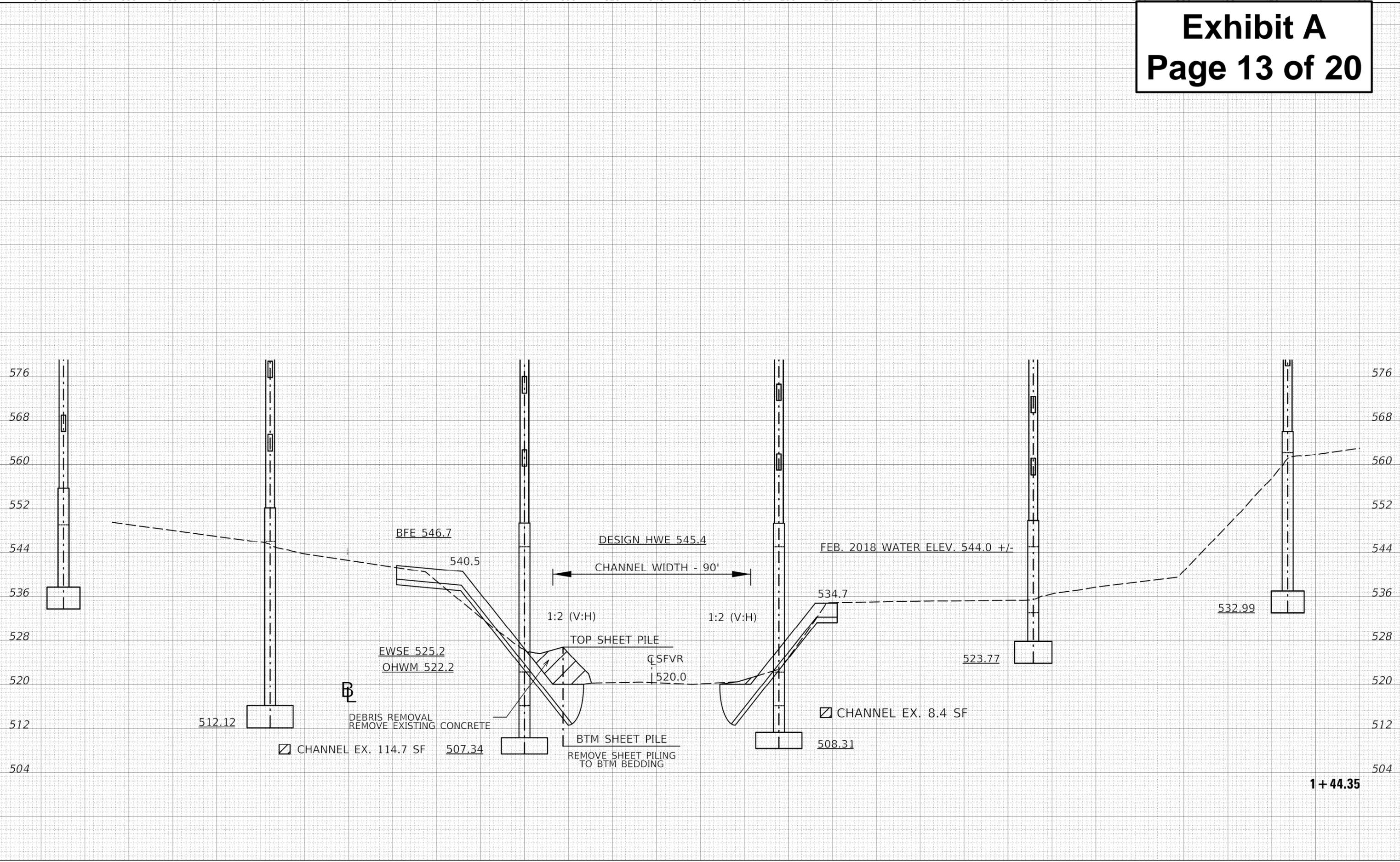


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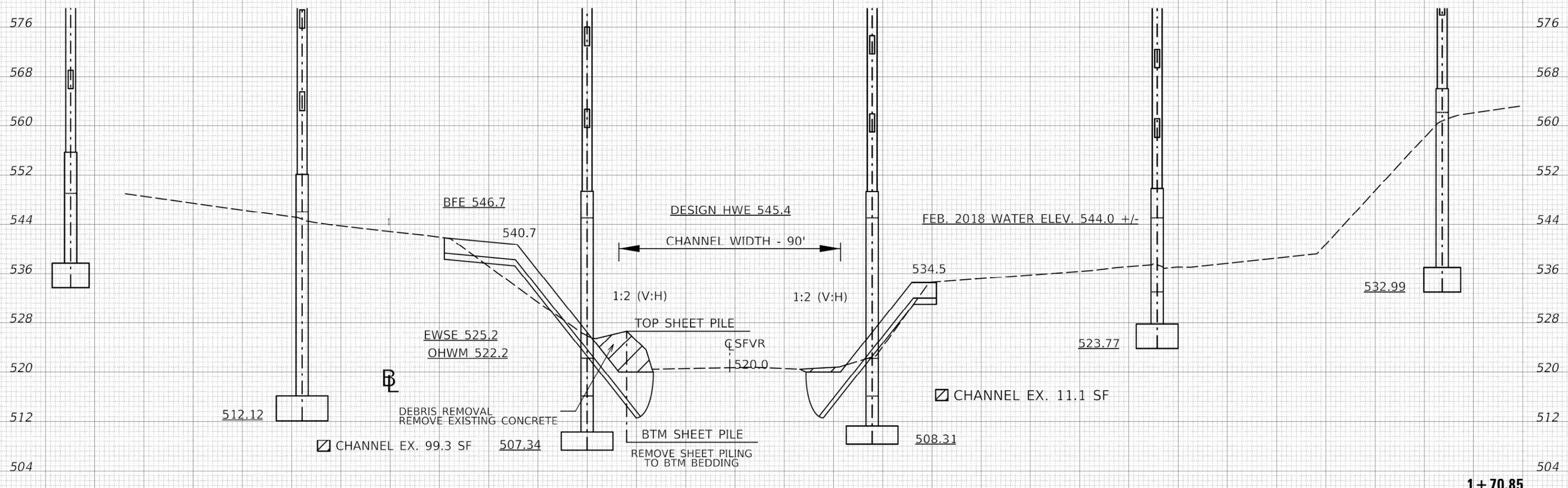


1 + 25.00

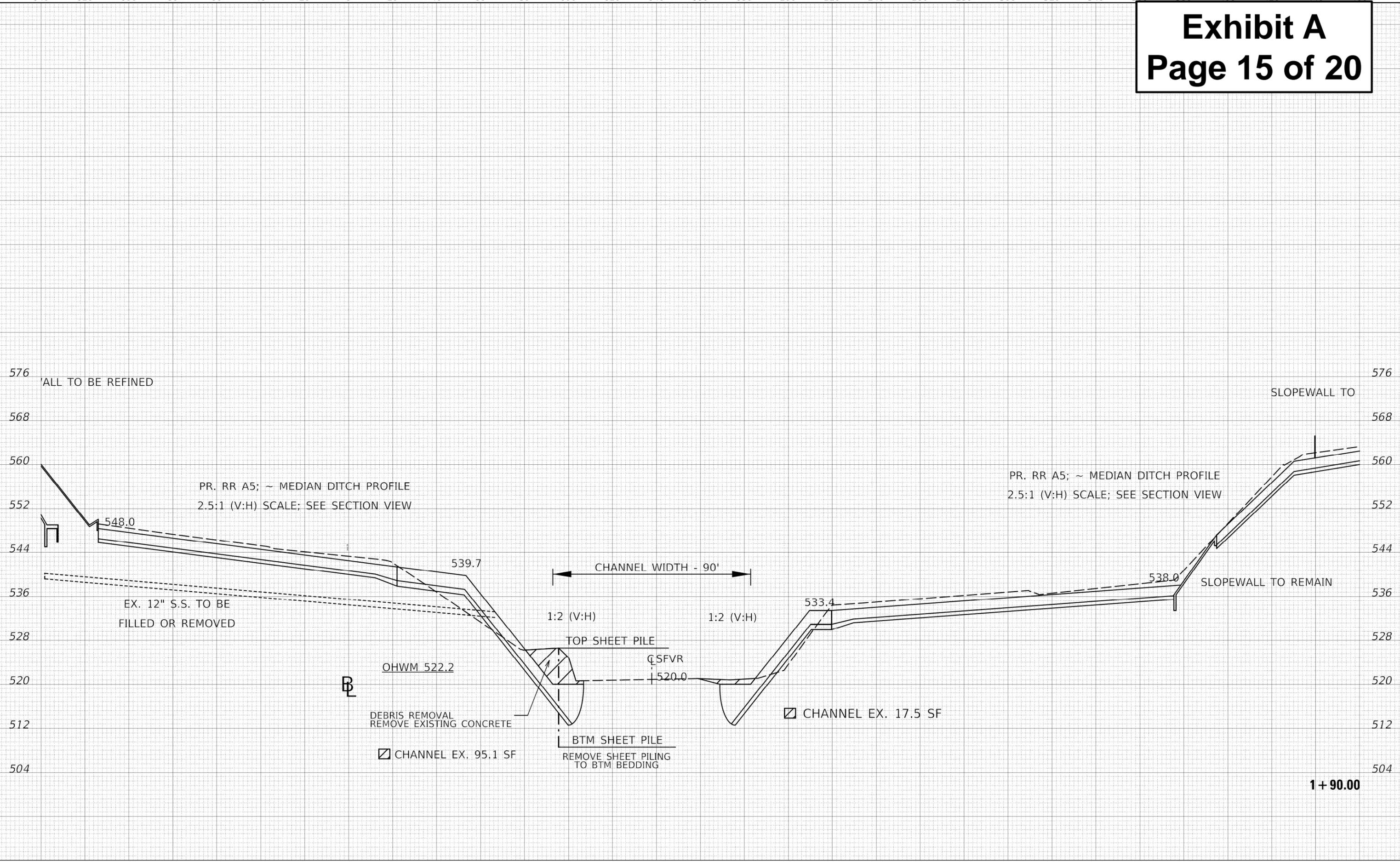
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.																					
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CONTRACT NO. 70A92																									
ILLINOIS FED. AID PROJECT																									
SCALE: SHEET 5 OF 13 SHEETS STA. 1+25.00 TO STA. 1+25.00																									



USER NAME = brandenburgtj PLOT SCALE = 40.0000' / in. PLOT DATE = 8/1/2019	DESIGNED - TJB DRAWN - TJR CHECKED - DATE - 7/16/2019	REVISED - REVISED - REVISED - REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SALT FORK VERMILION RIVER CROSS SECTIONS	F.A.I. RTE. 74 SECTION (92-11)BR-1 COUNTY VERMILION CONTRACT NO. 70A92	TOTAL SHEETS 13 SHEET NO. 6 SCALE: SHEET 6 OF 13 SHEETS STA. 1+44.35 TO STA. 1+44.35
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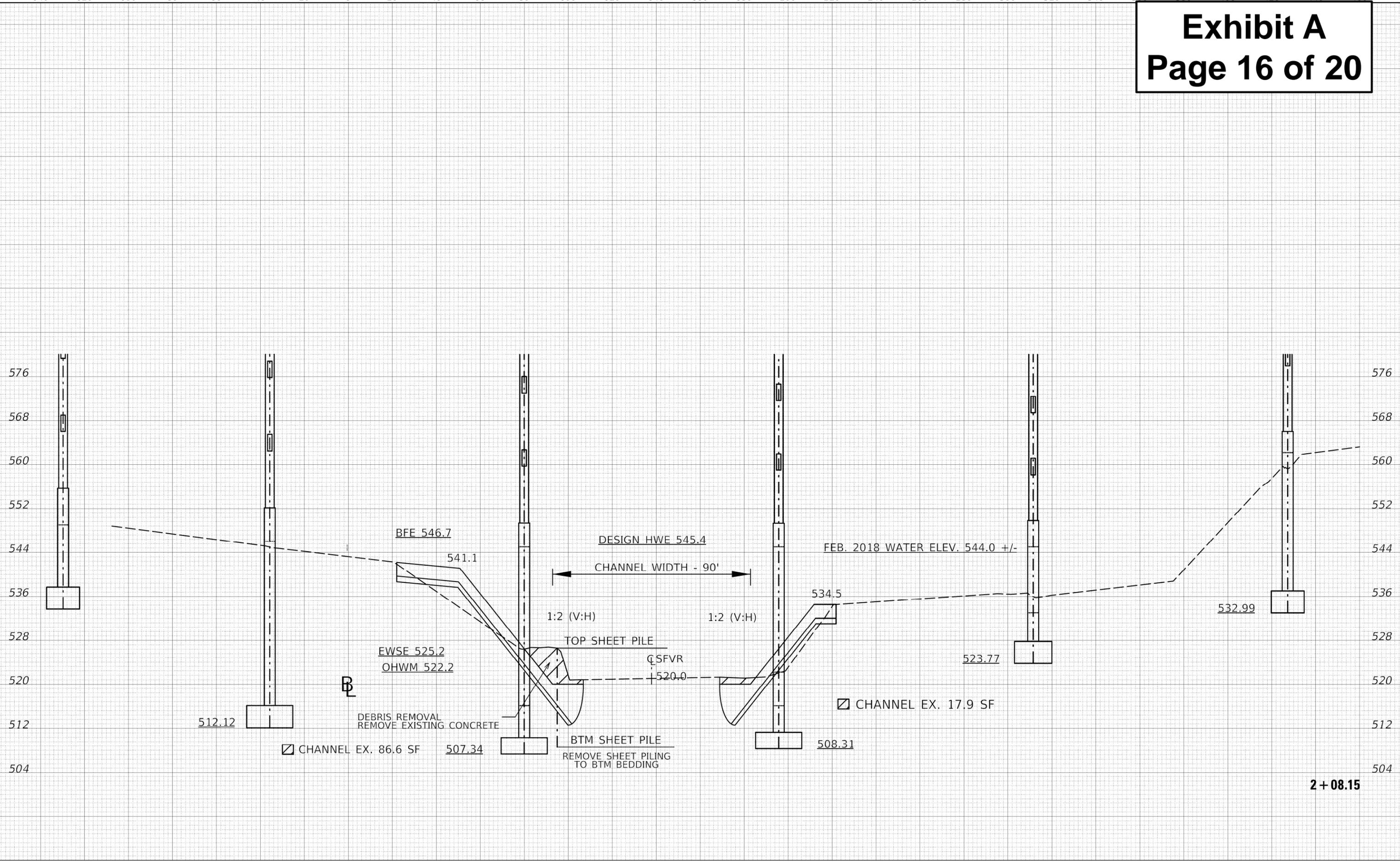


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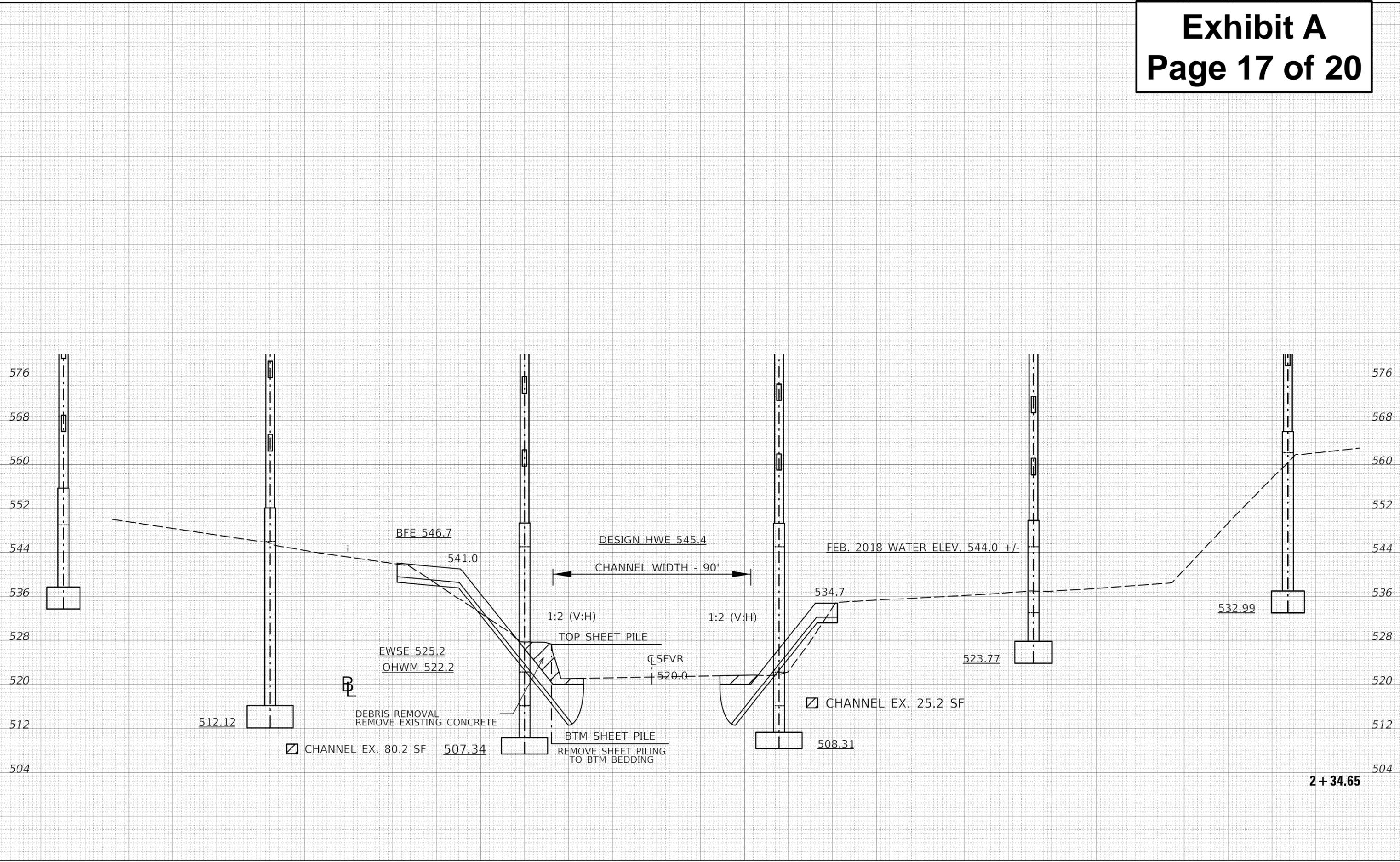
1 + 90.00

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	PLOT DATE = 8/1/2019	DATE - 7/16/2019	REVISED -										
													CONTRACT NO. 70A92

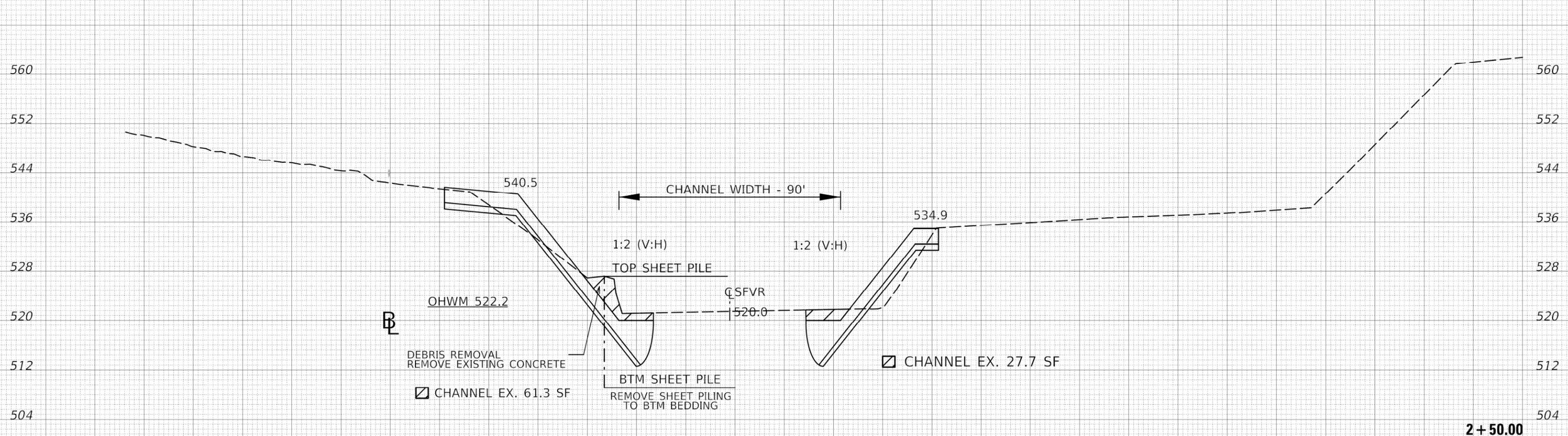
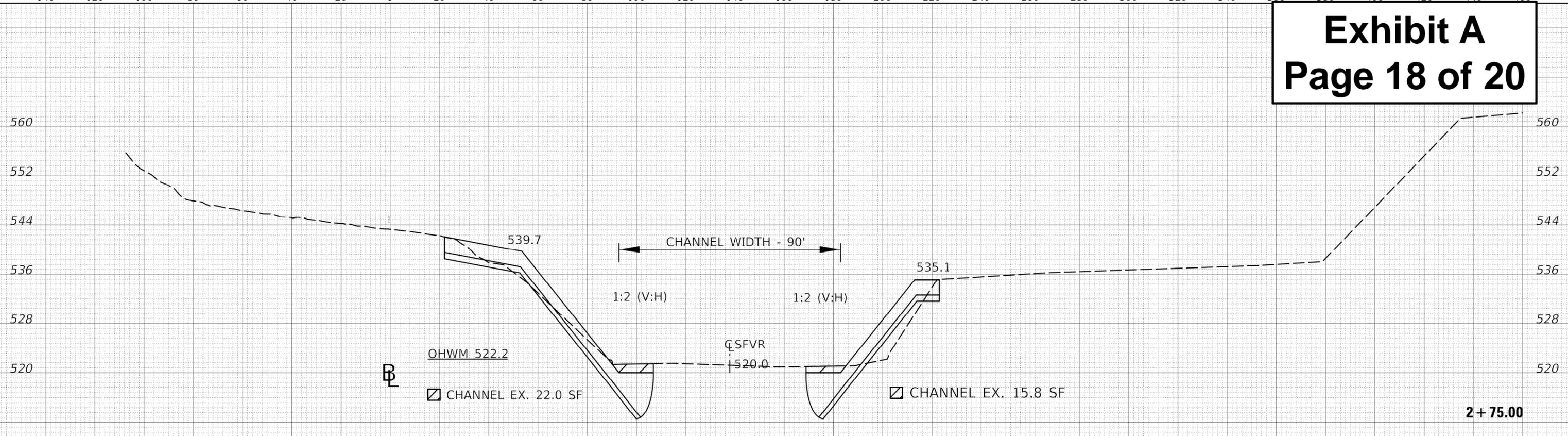


2 + 08.15

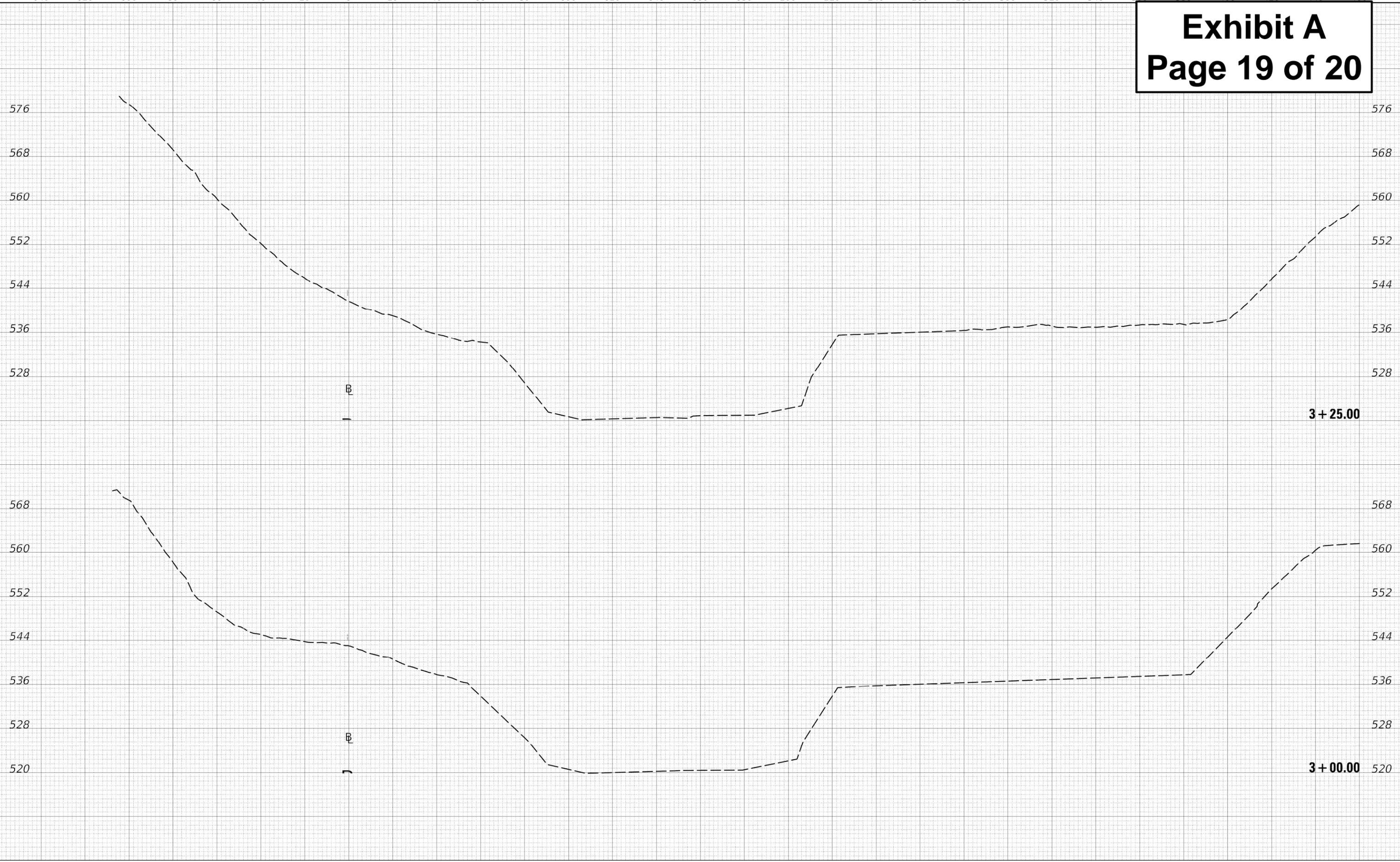
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SCALE: SHEET 9 OF 13 SHEETS STA. 2+08.15 TO STA. 2+08.15			ILLINOIS FED. AID PROJECT		



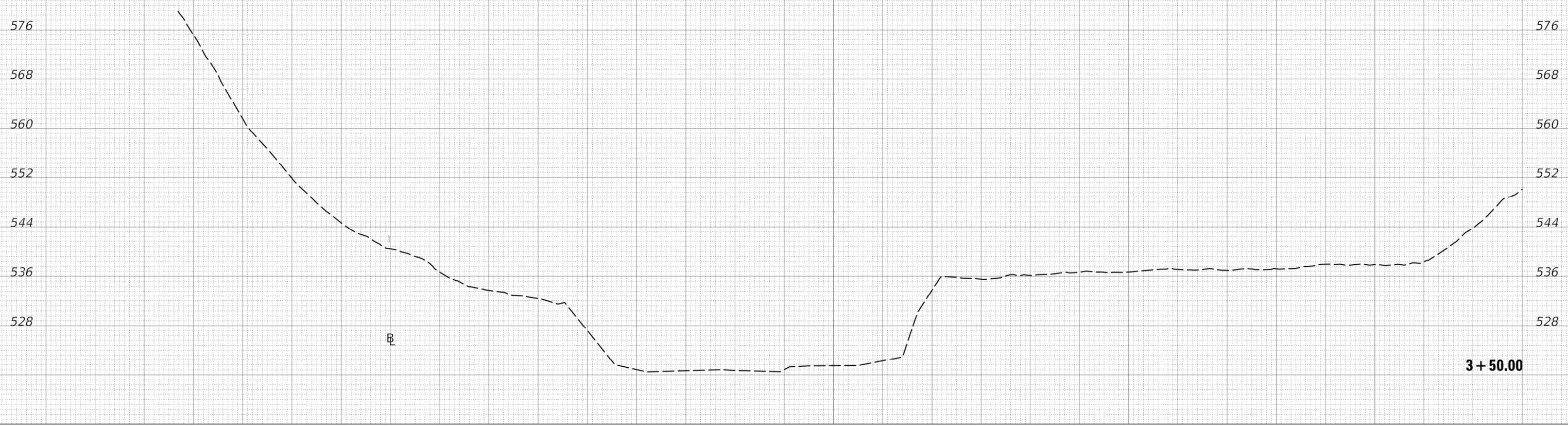
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USER NAME = brandenburgtj PLOT SCALE = 40,0000' / in. PLOT DATE = 8/1/2019	DESIGNED - TJB DRAWN - TJB CHECKED - DATE - 7/16/2019	REVISED - REVISED - REVISED - REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SALT FORK VERMILION RIVER CROSS SECTIONS	F.A.I. RTE. 74 SECTION (92-11)BR-1 COUNTY VERMILION CONTRACT NO. 70A92	TOTAL SHEETS SHEET NO.
SCALE:				SHEET 11 OF 13 SHEETS	STA. 2+50.00 TO STA. 2+75.00	
ILLINOIS FED. AID PROJECT						



	USER NAME = brandenburgtj	DESIGNED - TJB	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SALT FORK VERMILION RIVER CROSS SECTIONS			F.A.I. RTE. 74	SECTION (92-11)BR-1	COUNTY VERMILION	TOTAL SHEETS	SHEET NO.	
	PLOT SCALE = 40.0000' / in.	DRAWN - TJR	REVISED -										
	PLOT DATE = 8/1/2019	CHECKED -	REVISED -			SCALE:	SHEET 12	OF 13	SHEETS	STA. 3+00.00	TO STA. 3+25.00		
		DATE - 7/16/2019	REVISED -			ILLINOIS FED. AID PROJECT							



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	PLOT SCALE = 40.0000' / in.	DRAWN - TJR	REVISED -										
	PLOT DATE = 8/1/2019	CHECKED -	REVISED -										
		DATE - 7/16/2019	REVISED -										
					SCALE:	SHEET 13	OF 13	SHEETS	STA. 3+50.00	TO STA. 3+70.00	ILLINOIS FED. AID PROJECT		

Exhibit B

ILLINOIS DEPARTMENT OF TRANSPORTATION COMPUTATIONS

COMPUTED BY: TJB
DATE: 8/1/2019
CHECKED BY:
DATE:

SN 092-00006 EB & 0007 WB

FAI 74
SECTION: (92-11)BR-1
Vermilion County
CONTRACT NO.: 70A92
SHEET 1 OF 1

UNIT	ITEM								CODE NUMBER	
	STONE RIPRAP, A7 BELOW OHWM FOR ITA									
A7		RipRap	RipRap	Bedding	Bedding	Bedding	RipRap	RipRap	RipRap	
	Location	Area	Area	Thickness	Stone	Stone	Thickness	Class A7	Class A7	
		(Sq Yd)	(Sq Ft)	(inches)	(Cu Yd)	(Tons)	(inches)	(Cu Yd)	(Tons)	
	East Bank	370.0	3330.0	12.0	123.3	222.0	30.0	308.3	555.0	
	West Bank	582.0	5238.0	12.0	194.0	349.2	30.0	485.0	873.0	
	Totals =	952.0	8568.0		318.0	572.0		794.0	1428.0	
			Estimated Rates:			1.8 tons/cy			*1.8 tons/cy	
			* typically, 1.5 tons/cy is used; however to include estimated tons of riprap needed to construct toe & flank details for rivers, 1.8 tons/cy has been used; this is an estimated quantity ONLY and the pay item for riprap is still SQ YD, measured per 281.06							
RIPRAP AREA within the STREAM:		8,568.0	(Sq Ft)							
RIPRAP VOLUME within the STREAM:		1,112.0	(Cu Yd)	30,024.0	(Cu Ft)					
PAGE TOTAL										
GRAND TOTAL										
UNIT	ITEM								CODE NUMBER	
	STONE RIPRAP, A7 BELOW OHWM FOR ITA									



Fish Survey in the Vermilion River at Interstate 74, Vermilion County, Illinois

IDOT Sequence Number: 20639



Prepared by:
Christopher A. Taylor

INHS/IDOT Statewide Biological Survey & Assessment Program
Program Report 2017 (83)
7 August 2017



PROJECT SUMMARY

This report is submitted in response to a request from IDOT for INHS personnel to conduct a fish survey in the Vermilion River in the vicinity of the Interstate 74 bridges near Danville, Vermilion County, Illinois. The fish survey was conducted on 14 June 2017 using a barge-mounted 200-volt electroshocker for one hour and a minnow seine. Seventeen species of fish were collected during the survey. Individuals of the state-endangered Bluebreast Darter and Bigeye Chub were collected approximately 200 yards upstream of the Interstate 74 bridges.



Approved By: Kevin Cummings, Further Studies Aquatics
Group Coordinator-Malacologist

Surveys Conducted By: Christopher A. Taylor, Ichthyologist
Alison Price-Stodola, Field Biologist
Christopher J. Rice, Field Assistant

GIS Layers: Janet Jarvis, Remote Sensing Specialist

University of Illinois
Prairie Research Institute
Illinois Natural History Survey
Statewide Biological Survey and Assessment Program
1816 South Oak Street
Champaign, Illinois 61820

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Introduction..... 3
Project location 3
Habitat characterization 3
Background..... 3
Methods 5
Results and discussion 6
Acknowledgements 7
Literature Cited 7

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Figure 1 – Aerial image of the Interstate 74 bridges over the Vermilion River where a fish survey was conducted on 14 June 2017 8

Tables

Table 1 – Fishes collected by INHS personnel 14 June 20167 from the Vermilion River at the Interstate 74 bridges, Vermilion County, Illinois..... 9

Appendix

This Project Location section references <20639_Fish_Survey_GIS.zip> – containing an ArcGIS shapefile with sampling point information for the Vermilion River site discussed in this report where a fish survey was conducted by INHS personnel on 14 June 2017.

Cover photo: The Vermilion River at the Interstate 74 bridges, Vermilion County, Illinois. Photograph is facing north (downstream) and was taken by A.P. Stodola on 14 June 2017.

INTRODUCTION

This report is submitted in response to a request made by Vince Hamer of the Illinois Department of Transportation (IDOT) in an email dated 16 March 2017 to Wendy Schelsky of the Illinois Natural History Survey (INHS), for a fish survey in the area of the Interstate 74 bridges (Seq. No.: 20639) over the Vermilion River near Danville, Vermilion County, Illinois. The purpose of this survey was to assess the river for the presence of any state or federally protected fish species or suitable habitat for such species.

PROJECT LOCATION

Sampling for fishes was conducted in the Vermilion River from 250 yards upstream to 40 yards downstream of the Interstate 74 bridges, Vermilion County, Illinois (**Cover photo; Figure 1**). A point centered between both bridges is used for the following locality information as a reference point for the project: latitude 40.154°N, longitude 87.6941°W. **Appendix 1** references a shapefile with sampling point information for the Vermilion River project site, as discussed in this report.

HABITAT CHARACTERIZATION

The Vermilion River in the immediate vicinity of the Interstate 74 bridges was fairly uniform in width, averaging ~45 yards wide. The River narrowed to approximately 25 yards wide 50 yards upstream of the bridges. Water depths were variable through the sampling reach with deeper (2-4') pools occurring at and immediately upstream of the I-74 bridges and shallower (4"-1') runs and riffles occurring in the upper portions of the reach. The substrate throughout the sampling reach was predominately sand and fine gravel. The both stream banks at the bridges were open, while both were wooded upstream of the bridges. Surrounding land type was predominately forest upstream and forest and open pasture downstream (**Figure 1**).

BACKGROUND

Fishes known historically from the Vermilion River basin (Wabash River drainage) total nearly 100 species in 17 families (INHS Fish Collection, Champaign). Four state endangered and five state threatened species (IESPB 2011) are known from the basin. Habitat information presented below was taken from Page and Burr (2011) and Smith (1979). Records for fishes are taken from the Illinois Natural History Survey Fish Collection (Champaign, Illinois).

The state endangered Bigeye Chub, *Hybopsis amblops*, was formerly widespread across southern and eastern Illinois. Between 1899 and 1961, Bigeye Chubs were collected from several sites throughout the Vermilion River drainage, including Stony Creek near Muncie (Vermilion Co.), the Salt Fork Vermilion River from just east of Urbana (Champaign Co.) to 2 mi E Oakwood (Vermilion Co.), the Middle Fork Vermilion River near Collison, and at Armstrong (Vermilion Co.); and the North Fork Vermilion River near Hoopeston (Vermilion Co.). The collection of the Bigeye Chub from the Salt Fork Vermilion River 2 mi E Oakwood, 21 June 1961 was, until 1992, the last known collection of the species from Illinois. In fact, the absence of the Bigeye Chub in surveys for fishes in the Salt Fork Vermilion River conducted after June 1961

prompted Smith (1979) to speculate that the species had been extirpated from the state. Since July 1997 the Bigeye Chub has been collected over 30 times in the Vermilion drainage in Vermilion and Champaign County, including seven times in the Little Vermilion River between 1997 and 2011. The species has been found from upstream portions of the drainage in northeastern Champaign County to downstream portions in southeastern Vermilion County. The preferred habitat of the Bigeye Chub is vegetated clear pools and gravel riffles in creeks and small rivers.

The state endangered Bigeye Shiner, *Notropis boops*, has been recorded sporadically in the state of Illinois. Smith (1979) reported that it is likely the species was only ever abundant in the Vermilion and Little Vermilion River systems in the state. Since 1990, the Bigeye Shiner has been collected from the Vermilion River drainage on 11 occasions in Vermilion County and Champaign County. Eight of those collections were made in the Little Vermilion River in Vermilion County. It was also collected from the East Branch North Fork Vermilion River near Rossville (Vermilion Co.; 2002), from the Middle Branch North Fork Vermilion near Alvin (Vermilion Co.; 2001), and from Jordan Creek near Sidell (Vermilion Co.; 2006). The Bigeye Shiner normally occurs in clear pools with clean gravel and vegetation.

The River Redhorse, *Moxostoma carinatum*, listed as threatened in Illinois, has been collected on six occasions in the Vermilion River basin in Vermilion and Champaign Counties. It was recorded in the mainstem Vermilion River at Danville, (Vermilion Co.) in 2006, and twice from the Middle Fork Vermilion River in Vermilion Co.: 4 mi SE Collison on 25 November 1968, and 2.8 mi NNW Catlin in July 1997. This species has also been collected on three occasions from the Salt Fork Vermilion River in Vermilion Co.: twice at the IDOT TR 106 bridge, 3 mi N Fairmont (August 1957 and 1 April 1958), and once from 4 mi NE Homer, on 7 May 1961. The River Redhorse usually occurs in small to medium rivers with moderate flow over rock and cobble substrates. Butler and Wahl (2012) reported that radio-tracked River Redhorse were usually encountered in deep (>1.6 yard) runs with moderate flows ranging from 0.3 to 0.6 meters per second) during fall months.

The state endangered Northern Madtom, *Noturus stigmosus*, is known from the Vermilion River basin by a single record. Five specimens were collected from the Vermilion River, 4 mi E Westville (Vermilion Co.), in August 1962. The Northern Madtom prefers sand and rock riffles and runs in swift rivers.

The state threatened Eastern Sand Darter, *Ammocrypta pellucida*, is found only in the upper Wabash River drainage in the state of Illinois. Within the Wabash drainage the species is only commonly found in the Embarras and Middle Fork of the Vermilion River systems (INHS Fish database, Smith 1979). The Eastern Sand Darter has been recorded 18 times in the Vermilion River system in Vermilion and Champaign Counties since 1958. It was collected on at least five occasions in the Middle Fork Vermilion River, five occasions from the North Fork Vermilion River basin in Vermilion Co., and five occasions from the Vermilion River in Vermilion County, most recently in 2011. The species has never been reported from the Salt Fork Vermilion River. The Eastern Sand Darter normally occurs in deep sandy runs in rivers with high water quality.

Historically, the state threatened Iowa Darter, *Etheostoma exile*, was widely distributed in the northern fourth of Illinois. Now it is restricted to a few streams in extreme northern Illinois and Jordan Creek, and a quarry draining into Jordan Creek, in the Vermilion River drainage (Smith 1979). The species has been collected from four locations in Vermilion County, all near Fairmont, between 1952 and 2004. The preferred habitat of the Iowa Darter is clear lakes with vegetation and mud or clay bottomed pools in small streams.

The INHS Fish Collection contains over 30 records for the state endangered Bluebreast Darter, *Etheostoma camurum*, between 1960 and 2007 in the Vermilion River drainage in Champaign and Vermilion Counties. Tiemann (2008) did a status survey of the species and found that *E. camurum* commonly occurs in the Middle Fork Vermilion River between Potomac and Kickapoo State Park (Vermilion Co.) and in the Salt Fork Vermilion River between Muncie to Kickapoo State Park (Vermilion Co.). It sporadically occurs in the Vermilion River mainstem (Vermilion Co.) and has been recorded only once in the North Fork Vermilion River (Vermilion Co.) (Tiemann 2008). Besides the current sampling results, the most recent record of the Bluebreast Darter was collected in the Vermilion River at Forest Glen (Vermilion Co.) in 2014 by INHS personnel. The Bluebreast Darter normally occurs in swift, rocky riffles in small to medium rivers with high water quality.

The state threatened Gravel Chub, *Erimystax x-puntatus*, is declining over most of its historic range (Smith 1979). The Gravel Chub has been recorded in the Vermilion River twice in Vermilion County. The collections were made 4 mi E of Westville in 1962 and 1997. The Gravel Chub normally occurs in gravel runs and riffles in medium sized creeks to large rivers. Siltation has been cited as the major cause of its decimation (Smith 1979).

The state threatened American Eel, *Anguilla rostrata*, occurs sporadically across Illinois. Within the Vermilion River drainage the species has been collected twice. It was collected in Jordan Creek in 1976 and again in a pond adjacent to the Middle Fork Vermilion River in Kickapoo State Park in 2016. Habitat for American Eels is highly variable. In Illinois, the species has been collected from deeper pools in large rivers to medium sized creeks and in ponds located in the floodplains of rivers. Spawning in American Eels occurs in the Sargasso Sea region of the middle Atlantic Ocean after mature individuals migrate to that region from freshwater rivers and stream across eastern North America. Adult American Eels are known to establish home ranges generally less than 6 stream miles during summer feeding months and may migrate to overwintering regions with deeper water (Haro 2014).

METHODS

A ~300 yard stretch of the Vermilion River in at and upstream of the Interstate 74 bridges (**Figure 1**) was sampled for fishes by INHS personnel A.P. Stodola, C.J. Rice, and C.A. Taylor on 14 June 2017 using a barge-mounted DC electro-fisher generating approximately 200 volts and a 10' minnow seine for a period of one hour. Sampling was conducted with the barge shocker by moving parallel to both banks for the entire reach. Eight supplemental seine kick-sets were taken in shallow riffle habitat from approximately 100 to 200 yds upstream of the bridges. All

fishes were identified, counted, and released, with the exception of a few specimens of each species encountered that were vouchered and deposited into the INHS Fish Collection (**Table 1**).

Nomenclature used for fishes discussed in this report follows Page and Burr (2011) except that subspecies are not recognized. The current status of threatened and endangered species of fishes discussed in this report is taken from Illinois Endangered Species Protection Board [IESPB] (2011) and website (https://www.dnr.illinois.gov/ESPB/Documents/2015_ChecklistFINAL_for_webpage_051915.pdf), and Mankowski (2010, 2012).

RESULTS AND DISCUSSION

Seventy individuals from 17 species of fishes in seven families (**Table 1**) were collected from the project location (**Cover Photo, Figure 1**). With two exceptions, all fishes collected during the survey are common inhabitants of streams of the Vermilion River drainage containing clean, firm substrates and flow. We collected six state endangered Bluebreast Darters and 2 state endangered Bigeye Chub from a riffle area approximately 200 yards upstream of the Interstate 74 bridges. While far from common, both species are frequently being encountered in appropriate habitats in the Vermilion River drainage of Illinois over the past 10 years.

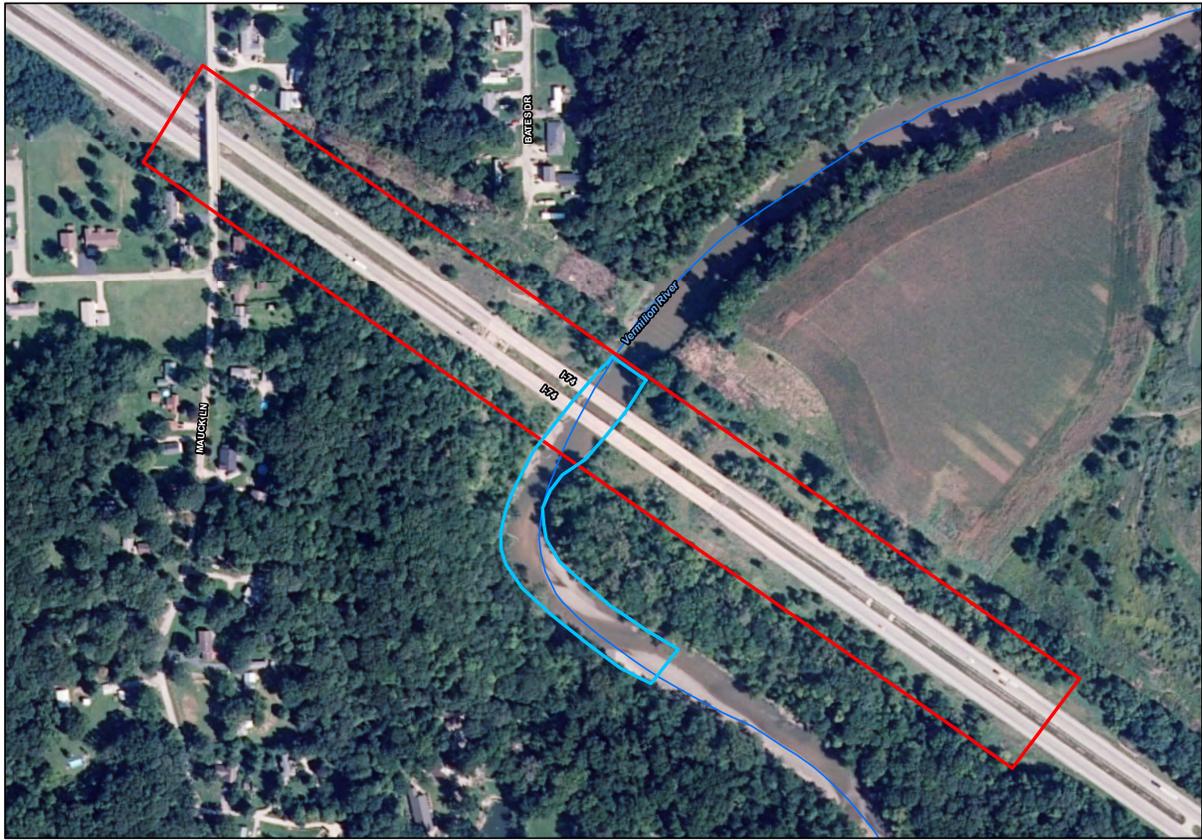
Our sampling results, habitat present, and historical records indicate that of the species of special concern discussed in BACKGROUND, three species occur or are likely to occur in the proposed Interstate 74 project corridor. The Bigeye Chub and Bluebreast Darter were found 200 yards upstream of the Interstate 74 bridges in a riffle with larger gravel substrate and vegetation. This type of habitat was not found directly under the bridges or immediately up or downstream of it. With these factors in mind, we believe that populations of both species occur near the proposed project site and that transient individuals of both could occasionally be found direct under the bridges. Bluebreast Darters likely spawn in Illinois from late-May to mid-July (Tiemann 2008). The spawning behavior of Bigeye Chubs is not well known, but data from specimens collected in neighboring states suggest that the species spawns from late spring to early summer. The Eastern Sand Darter was not observed by us during our sampling, however, the species is known to historically occur up and downstream of the project site and was collected from the Vermilion River approximately 3.5 miles downstream of the Interstate 74 bridges in 2011. Suitable habitat for the species (sandy runs of medium sized rivers) was observed from 20 to 200 yards upstream of the bridges. In central Illinois, eastern sand darters probably spawn in June and July at water temperatures ranging from 20 - 23° C (Johnston 1989).

ACKNOWLEDGMENTS

J.L. Jarvis (INHS) assisted in preparing the map in **Figure 1** and the associated shape file referenced in **Appendix 1**. D. Morrill assisted with field work.

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Fish survey location on the Vermilion River at the I-74 bridge (Seq no. 20639) Vermilion County, Illinois.

Project Boundary Stream Fish Survey Location

0 100 200 400 600 Feet

N
Jarvis, 8/7/2017

Figure 1. The Interstate 74 bridges over the Vermilion River where a fish survey was conducted by INHS personnel C.J. Rice, A.P. Stodola, and C.A. Taylor on 14 June 2017. Area in blue indicates the stretch of the Vermilion River in which the fish survey was conducted. Map created by J.L. Jarvis (INHS).

Table 1. Fishes collected by INHS personnel C.J. Rice, A.P. Stodola, and C.A. Taylor on 14 June 2017 from the Vermilion River at the I-74 bridges, Vermillion County, Illinois. # = number of individuals collected. ^{SE}= State Endangered

Family	Scientific name	Common name	#
Cyprinidae	<i>Hybopsis amblops</i> ^{SE}	Bigeye Chub	2
	<i>Nocomis biguttatus</i>	Hornyhead Chub	1
	<i>Notropis percobromis</i>	Carmine Shiner	8
	<i>Notropis ludibundus</i>	Sand Shiner	1
	<i>Pimephales notatus</i>	Bluntnose Minnow	1
Catostomidae	<i>Moxostoma duquesnei</i>	Black Redhorse	1
Ictaluridae	<i>Noturus miurus</i>	Brindled Madtom	3
Fundulidae	<i>Fundulus notatus</i>	Blackstripe Topminnow	1
Poeciliidae	<i>Gambusia affinis</i>	Mosquitofish	2
Centrarchidae	<i>Ambloplites rupestris</i>	Rock Bass	2
	<i>Lepomis cyanellus</i>	Green Sunfish	5
	<i>Lepomis macrochirus</i>	Bluegill	14
	<i>Lepomis megalotis</i>	Longear Sunfish	15
Percidae	<i>Micropterus dolomieu</i>	Smallmouth Bass	2
	<i>Etheostoma camurum</i> ^{SE}	Bluebreast Darter	6
	<i>Etheostoma spectabile</i>	Orangethroat Darter	1
	<i>Percina sciera</i>	Dusky Darter	5

APPENDIX 1

This Project Location section references <20639_Fish_Survey_GIS.zip > – containing an ArcGIS shapefile with sampling point information for the Vermilion River site discussed in this report where a fish survey was conducted by INHS personnel on 14 June 2017.

The ArcGIS shapefile and this report were both submitted to IDOT via the IDOT Site Assessment Tracking System extranet website (Frostycap) on 7 August 2017.

PUBLIC NOTICE

The Region 3/District 5 office of the Illinois Department of Transportation has applied for an incidental take authorization regarding Illinois State-endangered fish species, Bluebreast Darter (*Etheostoma camurum*) and the Bigeye Chub (*Hybopsis amblops*). The application is based upon potential impacts resulting from in-stream work associated with proposed improvements to the structures carrying Interstate 74 over the Salt Fork Vermilion River near Danville, IL, Vermilion County Illinois.

- The mailing address of the Region 3/District 5 office of the Illinois Department of Transportation 13473 IL Hwy 133, P.O. Box 610, Paris, IL 61944.
- The project construction area is located on Interstate 74 over the Salt Fork Vermilion River near Danville, IL; more specifically located on Interstate 74 approximately 1.0 miles east of the Interstate 74/US-150 interchange in Danville, Vermilion County Illinois; Township 19 North, Range 12 West, NW/4, NW/4, NW/4, Section 14, 2nd Principal Meridian.
- Authorization is being requested for incidental take of the following fish species due to removal of existing sheet pile and existing rip rap around piers 2 and 3 of the structures carrying Interstate 74 over the Salt Fork Vermilion River: Bluebreast Darter and Bigeye Chub. The removal of the existing sheet pile and removal and replacement of existing rip rap will happen where fish may occur.
- Measures to be taken to minimize impacts to the fish include:
 - The IDOT will not permit any in-stream work during the Bluebreast Darter and Bigeye Chub spawning period which runs from May 1st to July 31st.
 - IDOT will add the Districts “Big Stick” special provision to the plans; the “Big Stick” special provision states “To further reduce potential impacts to the Bluebreast Darter and Bigeye Chub, a special effort should be made to scare any fish from the area before any in stream work is attempted. This can be accomplished by the following: prior to any work in the river, simply walk in the area of proposed work activity or use a big stick to splash the water in the proposed work area, then gradually place a stone from the bank into the river; this will allow any fish present to move away from the work area.
- A copy of the Conservation Plan is available for review at the Paris Carnegie Public Library, 207 South Main Street, Paris, Illinois 61944. A copy of the Conservation Plan is also available online at:

<http://www.dnr.illinois.gov/conservation/NaturalHeritage/Pages/Incidental-Take-Authorizations.aspx>

- Comments should be directed to:

Illinois Department of Natural Resources
Office of Resource Conservation
Incidental Take Authorization Coordinator
One Natural Resources Way
Springfield, IL 62702
DNR.ITAcordinator@illinois.gov

- The comment period closes 30 days after the final publication of this notice that first appears in the Prairie Press on **July 27, 2016**. The final publication is scheduled for **August 10, 2016**. This notice will also be published in the Breeze Courier; therefore, the comment period closes on **August 24, 2016**.

