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

PROJECT APPLICANT: Williamson County Highway Department

J. Travis Emery, P.E.

1817 N. Court Street

Marion, IL 62959

PROJECT NAME: Canaville Road over South Fork Saline River

COUNTY: Williamson

AMOUNT OF IMPACT AREA: 4930 SF (0.11 ACRES)

The incidental taking of endangered and threatened species shall be authorized by the Illinois Department of Natural Resources (IDNR) only if an applicant submits a conservation plan to the IDNR Incidental Take Coordinator that meets the following criteria:

1. A **description of the impact likely to result** from the proposed taking of the species that would be covered by the authorization, including but not limited to -

A) Identification of the **area to be affected** by the proposed action, include a legal description and a detailed description including street address, map(s), and GIS shapefile. Include an indication of ownership or control of affected property. Attach photos of the project area.

The proposed action is for the replacement of the existing bridge superstructure carrying Canaville Road over South Fork of the Saline River, the installation of stone riprap around piers and abutments, and reconstruction of the roadway approaches. The project is located approximately 4 miles southeast of Marion, Williamson County, IL in the north half of Section 17 and south half of Section 8, Township 10 South, Range 3 East, of the 3rd P.M. (37.6560° N, 88.9012° W). The bridge is located approximately 0.4 miles from the intersection of Canaville Road and Wards Mill Road; the bridge is owned by Williamson County. See Attachment 1 for the Location Map.

B) **Biological data** on the affected species including life history needs and habitat characteristics. Attach all pre-construction biological survey reports.

The Indiana Crayfish (Faxonius Indianesis) has a limited range in the lower Wabash River Valley and Ohio River Valley, where it occurs in southeastern Illinois and southwest Indiana. It is found in shallow regions with gravel or cobble substrates in small to large creek and small rivers. It lives in rocky riffles and pools of first, second and third order streams, frequently found under rocks, in woody debris and in shallow burrows within these streams.

The Illinois Natural History Survey (INHS) found this species during an onsite survey November 8, 2021. A total of thirteen (13) state endangered Indiana Crayfish were found. All 13 Indiana Crayfish were found in woody debris which provides the structured dwelling

habitat required for the species at this location. Only one was found underneath the bridge while other 12 individuals were found from 5 to 25 yards downstream of the bridge. See Attachment 2 for the INHS Crayfish Survey.

C) **Description of project activities** that will result in taking of an endangered or threatened species, including practices and equipment to be used, a timeline of proposed activities, and any permitting reviews, such as a USFWS biological opinion or USACE wetland review. Please consider all potential impacts such as noise, vibration, light, predator/prey alterations, habitat alterations, increased traffic, etc.

The existing bridge superstructure will be removed and replaced with a new three span PPC deck beam bridge. The existing abutment and piers will remain and reused in placed. No equipment will be placed in the stream for removal of the bridge deck. Stone riprap will be placed along the abutment slopes and around the piers for scour control.

Riprap that is placed in the creek for scour control or removal of any of the woody debris from the stream would be considered habitat alteration. The area of permanent impact to the channel due to the riprap is 4930 square feet (0.11 acres).

Stone riprap (RR4, 9" median size) will be placed around the bridge abutments and piers as a permanent scour countermeasure. The bed for the riprap will be excavated so the finished surface of the riprap will conform to the existing channel. All excavated material will be removed from the channel and disposed in an upland location. The stone riprap will be placed by mechanical means to its full course thickness in one operation. Staging of materials will also be in an upland area. Temporary stockpiling of riprap or excavated material in the channel will not be allowed.

In-stream work will be conducted during low flow conditions only. Normal flow within the stream will be maintained at all times. No construction debris will be deposited into the stream channel. Construction is planned for fall 2022. The duration of construction is estimated to be four weeks. A U.S. Army Corps of Engineers (USACE) 404 permit is required for the project. Application to the USACE will be made in summer of 2022. The project is design to comply with the Nationwide Permit 14 for Linear Transportation Projects. See Attachment 3 for Plan & Profile and General Plan & Elevation.

D) Explanation of the anticipated **adverse effects on listed species**;

Primary threats to the Indiana Crayfish fall into two categories: temporary construction activities and habitat alteration and introduction of non-native species.

For the purposed of this project, potential adverse effects consist mainly of excavation and placing of riprap within the stream bed. Excavation could create minor, short term siltation in the area immediately downstream of the structure, and some crayfish could be covered or crushed during the excavation and placement of the riprap. Habitat in this area will be altered by the possibly removing woody debris from the stream and covering the soil with riprap making it unsuitable for crayfish burrows.

2) Measures the applicant will take to **minimize and mitigate** that impact and the **funding** that will be available to undertake those measures, including, but not limited to -

A) Plans to **minimize the area affected** by the proposed action, the estimated **number of individuals** of each endangered or threatened species that will be taken, and the **amount of habitat** affected (please provide an estimate of area by habitat type for each species).

The area of the work zone has been limited to the minimum riprap area needed to protect the structure and channel banks. To minimize the amount of stream impacts, no equipment will be placed in the stream for removal of the bridge deck. No construction debris will be deposited into the stream channel. To minimize impacts to the Indiana Crayfish, the work will not be scheduled during the months of March, April and May. The duration of work is estimated to be four weeks. The total impacted area within the stream is approximately 4930 Square Feet. Riprap will be placed along the abutment slopes and around the piers for the full width of the right-of-way, which is 30 feet upstream and downstream of the bridge from the centerline of the roadway, for erosion and scour prevention. Impacts to area outside the existing right-of-way will be avoided. An estimated two individual crayfish will be taken during construction.

B) **Plans for management of the area** affected by the proposed action that will **enable continued use** of the area by endangered or threatened species by maintaining/re-establishing suitable habitat (for example, native species planting, invasive species control, use of other best management practices, restored hydrology, etc.).

Similar habitat is located both upstream and downstream of the structure site. The streambed and habitats will be controlled by natural processes after construction activities are completed. Crayfish should move back into the areas immediately adjacent to the bridge over time. Natural processes will move additional woody debris into the area which will replace any that may need to be removed during construction. Introduction of riprap within the channel and streambed at the bridge site may provide refuge for the crayfish in the immediate vicinity of the structure and scour prevention afforded by the new bridge will protect habitat downstream of the site by reducing sedimentation.

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

The area of riprap proposed is the minimum needed to protect the structure. Impacts to area outside the existing right-of-way will be avoided. A stormwater pollution prevention plan will be prepared that includes erosion and sediment control best management practices (BMP'S) in order to minimize siltation in the channel. Soil conserving practices including silt fence, seeding, and erosion control blanket, will be implemented in the upland areas to minimize the eroded soil entering the channel. Regular inspections will be made to ensure proper repair and maintenance of BMP's by the resident engineer, including weekly and immediately following significant rain events.

The scope and footprint of the project is extremely minimal as it includes superstructure removal and replacement with the re-use of the existing piers and abutments. The scope also includes scour repair through placement of riprap with minimal in stream work and excavation needed. A stormwater pollution prevention plan will be prepared that includes erosion and sediment control best management practices (BMP'S) in order to minimize siltation in the channel. Soil conserving practices including silt fence, seeding, and erosion control blanket, will be implemented in the upland areas to minimize the eroded soil entering the channel. The applicant has indicated that the following avoidance and minimization measures will be implemented:

1. **No equipment will be placed in the stream for removal of the bridge deck.**
2. **No construction debris will be deposited into the stream channel.**
3. **Impacts to area outside the existing right-of-way will be avoided.**

4. In stream work will be done outside the months of March, April and May, which are key months in the reproductive lifecycle of the Indiana Crayfish.

The Illinois Natural Heritage Database contains 22 records for the Indiana Crayfish, of which only 7 occur in Williamson County. Of these 7 records, only 3 occur in the South Fork Saline River. The rest of the records in Williamson County occur in Cana Creek, Sugar Creek, and Brushy Creek. The other 15 element of occurrence records for this species occur in Saline, Johnson, Gallatin, Hardin, and Pope counties. The INHS survey found 13 individuals. The estimated take for the project is 2 individuals. Per the Illinois Natural History Survey, the Indiana Crayfish is found across the majority of the South Fork Saline River the specie has repeatedly been collected in the South Fork Saline River drainage over the past 20 years and the drainage harbors the largest population of the species in Illinois.

Part 1075.2 of the Illinois Administrative Code defines adverse impact as "a direct or indirect alteration of the physical or biological features of the air, land or water that may affect the survival, reproduction or recovery of a listed species or that may diminish the viability of a natural area." Based on the above information regarding the project scope, industry standard best management practices, and the voluntary avoidance and minimization measures being implemented by the applicant, notably the in-stream work date restrictions, the available species data, and based on the provided definition of adverse impact, it was determined that the proposed action will not affect the survival, recovery or reproduction of the Indiana crayfish at this site. Furthermore, although the South Fork Saline River is listed as a Category II Illinois Natural Area Inventory Site at this location for containing specific suitable habitat for state-listed species or suitable for state-listed species relocations, there are two other documented populations of Indiana Crayfish in the South Fork Saline River and therefore, the project will not diminish the viability or qualifying features of the South Fork Saline River Illinois Natural Area Inventory Site.

Similar habitat is located both upstream and downstream of the project location. The streambed and habitats will be controlled by natural processes after construction activities are completed. Natural processes will move additional woody debris into the area which will replace any that may need to be removed during construction. It is noted that the addition of riprap within the channel and streambed at the bridge site may provide refuge for the crayfish in the immediate vicinity of the structure and scour prevention measures will protect habitat downstream of the site by reducing sedimentation. This will ensure the restoration of habitat. The Applicant's Guide to Incidental Take Authorization also states that "Mitigation measures are additional actions beyond those that are incorporated into construction actions that provide conservation benefit to the species. Mitigation is the opportunity to bring net benefit to a species potentially taken during a project." Creation or restoration of habitat for the species is listed as one such example of mitigation. While the habitat creation and restoration does not take place outside of construction, it is noted that the conservation benefits afforded to the Indiana Crayfish regarding additional riprap coverage for sheltering and reduced sedimentation would not occur without the proposed action which includes scour repair and countermeasures at this location. The estimate cost for riprap to be placed along the piers as a scour counter measure may also serve as habitat enhancement in excess of $6,600. This habitat enhancement is serving as mitigation for this project.

D) Plans for **monitoring** the effects of the proposed actions on endangered or threatened species, such as monitoring the species' survival rates, reproductive rates, and habitat before and after construction, include a plan for follow-up **reporting to IDNR**. Monitoring surveys should be targeted at reducing the uncertainty identified in Section 1.d.

The Williamson county Engineer will notify the BDE when the project reaches 100% completion. BDE will then task the Illinois Natural History Survey (INHS) to perform monitoring surveys.

Post construction monitoring will be performed by INHS in years 1 and 3 following completion of the project and will be consistent with the methodology utilized during the pre-construction survey.

E) **Adaptive management practices** that will be used to deal with changed or unforeseen circumstances that may affect the endangered or threatened species.

The installation and effectiveness of the soil conserving practices will be monitored daily by engineering staff with the Williamson County Division of Transportation during construction. If through daily monitoring, eroded soil is observed leaving the jobsite or limits of construction, additional soil conserving practices, including those not included in the Stormwater Pollution Prevention Plan, shall be installed or measures taken to minimize soil erosion.

F) **Verification that adequate funding exists** to support and implement all minimization and mitigation activities described in the conservation plan. This may be in the form of bonds, certificates of insurance, escrow accounts, or other financial instruments adequate to carry out all aspects of the conservation plan.

The estimate for the cost of the bridge replacement is $399,700. This estimate includes construction related costs, and $23,000 of riprap to be placed along the abutment slopes and around the piers as a permanent scour countermeasure. It also includes funding for design and implementation of erosion and sediment control measures. Additional soil stabilization measures necessary to deal with changed and unforeseen circumstances would be funded through change order and force amount practices. The project is funded by Motor Fuel Tax (MFT) funds, which have been committed by Williamson County. Williamson County will notify IDOT when the project construction has been completed and IDOT will task the Illinois Natural History Survey (INHS) to conduct the post construction surveys on behalf of Williamson County. Funding for these surveys comes from the Biological Survey Assessment Program established between IDOT and INHS.

3) A description of **alternative actions** the applicant considered that would reduce take, and the reasons that each of those alternatives was not selected. A **"no-action" alternative** shall be included in this description of alternatives. Please describe the economic, social, and ecological tradeoffs of each action.

The only alternative which does not result in the taking of the listed species is to leave the existing bridge in place. The bridge would continue in its deteriorated condition. Normal maintenance will not correct the structural deficiencies of the bridge. These deficiencies could lead to closure of the road or sudden collapse and potential injury or loss of life; both

human and to the subject fragile species. The "do nothing" approach is not considered feasible or prudent because it poses an unacceptable safety hazard and places intolerable restrictions on travel and transport.

Another alternative is to leave the existing bridge in place and build another bridge on a nearby alignment. There would be no disturbance at the existing bridge site, but there would be in-stream impacts required to construct the new bridge. There is similar habitat located upstream and downstream from the existing bridge and the in-stream work required to construct the new bridge would likely result in a take of the species at the alternate location. This alternative is not considered practical since it would result in a take of the species at the proposed bridge site.

The preferred alternative is to replace the bridge superstructure install riprap countermeasures around the existing substructure in place. This is the most practical and cost effective option for this project. This alternate meets the project goal of providing a safe stream crossing while minimizing impacts to the crayfish.

4) Data and information to indicate that the proposed taking **will not reduce the likelihood of the survival** of the endangered or threatened species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species existence in Illinois.

Per the Illinois Natural History Survey, the Indiana Crayfish is found across the majority of the South Fork Saline River the specie has repeatedly been collected in the South Fork Saline River drainage over the past 20 years and the drainage harbors the largest population of the species in Illinois.

The Illinois Natural Heritage Database contains 22 records for the Indiana Crayfish. This species occurs in several locations in southeastern Illinois including other sites in Williamson County as well as Hardin, Gallatin, Pope, Johnson and Saline counties. Suitable habitat exists both upstream and downstream of the bridge site. Due to the small areas affected by construction of the bridge, it is expected that the proposed take will not reduce the survivability and recovery of the Indiana Crayfish in the State of Illinois.

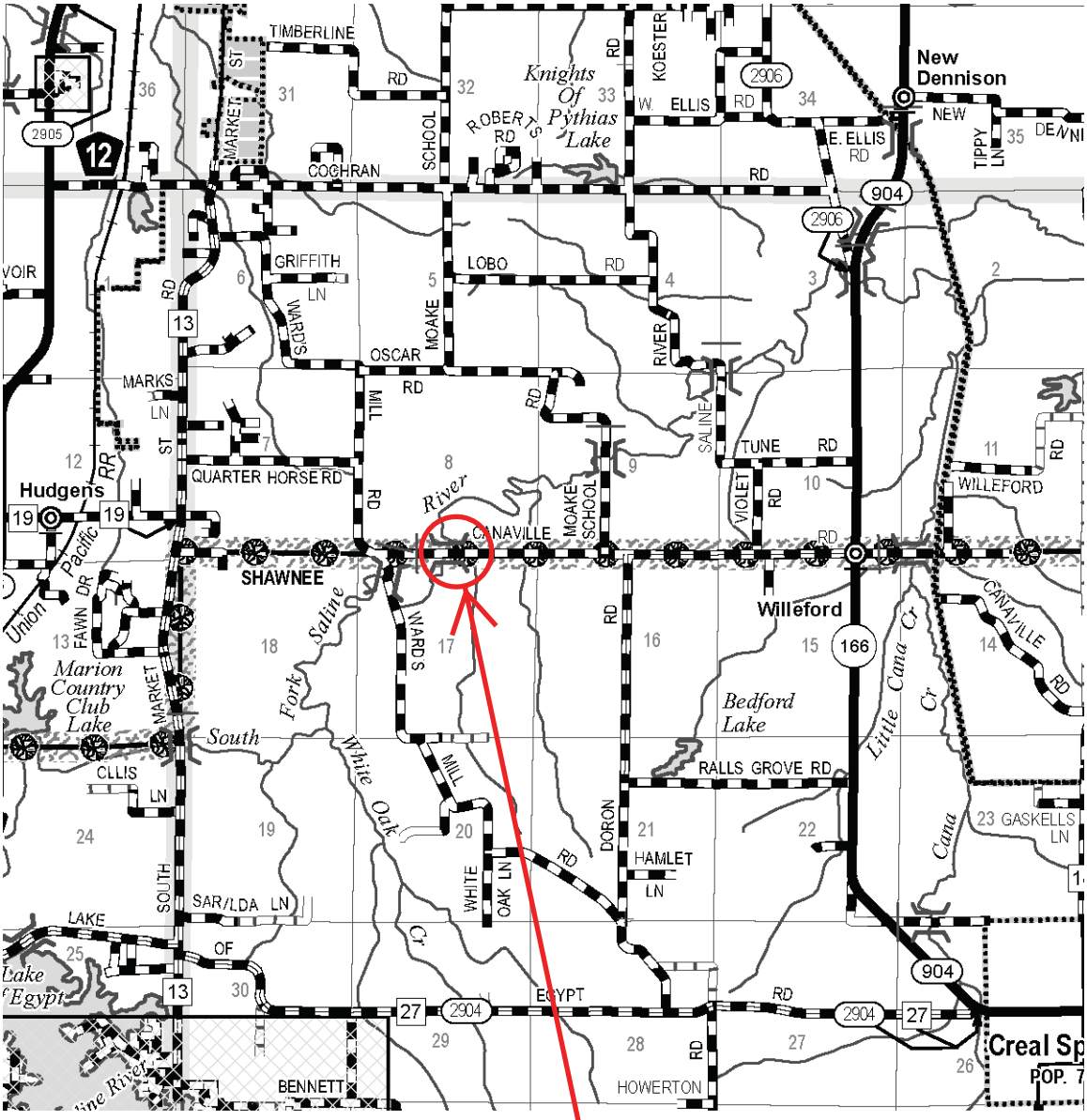
5) An **implementing agreement**, See Attachment 5 for the Implementing Agreement

Attachments

1. **Location Map**
2. **Site Photographs**
3. **Plan and Profile / General Plan and Elevation**
4. **INHS Crayfish Survey**
5. **Implementing Agreement for Conservation Plan**

WILLIAMSON COUNTY
LOCATION MAP

R 3 E, 3RD PM



Proposed Project Location
Section 19-01243-00-BR

T 10 S

Attachment 1

Hampton, Lenzini and Renwick, Inc.
Civil Engineers • Structural Engineers • Land Surveyors • Environmental Specialists
www.hlrengineering.com

PHOTO LOG

for

WILLIAMSON COUNTY

COUNTY UNIT ROAD DISTRICT

SECTION 19-01243-00-BR

2/6/2020

380 Shepard Drive
Elgin, Illinois 60123-7010
Tel. 847.697.6700
Fax 847.697.6753

6825 Hobson Valley Drive
Unit 302
Woodridge, Illinois 60517
Tel. 847.697.6700
Fax 847.697.6753

3085 Stevenson Drive
Suite 201
Springfield, Illinois 62703
Tel. 217.546.3400
Fax 217.546.8116

323 West 3rd Street
P.O. Box 160
Mt Carmel, Illinois 62863
Tel. 618.262.8651
Fax 618.263.3327

Attachment 2

PHOTO 1 - ON BRIDGE LOOKING EAST AT EAST APPROACH

PHOTO 2 - ON BRIDGE LOOKING WEST AT WEST APPROACH

PHOTO 3 - ON BRIDGE LOOKING SOUTH AT CHANNEL(UPSTREAM)

PHOTO 4 - ON BRIDGE LOOKING NORTH AT CHANNEL(DOWNSTREAM)

PHOTO 5 - LOOKING AT SOUTH BRIDGE FASCIA

PHOTO 6 - LOOKING AT NORTH BRIDGE FASCIA

PHOTO 7 - EAST ABUTMENT AND BOTTOM OF CHANNEL BEAMS

PHOTO 8 - WEST PIER AND BOTTOM OF CHANNEL BEAMS

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PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
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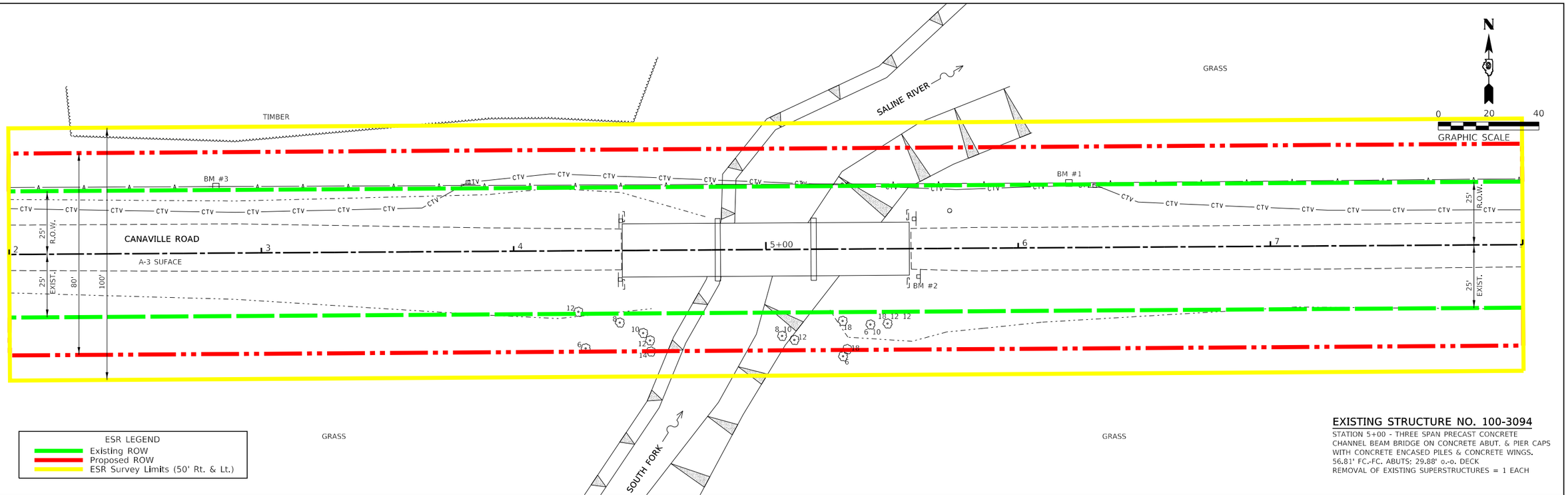
NOTE BOOK
NO.
BY
DATE



EXISTING STRUCTURE NO. 100-3094

STATION 5+00 - THREE SPAN PRECAST CONCRETE CHANNEL BEAM BRIDGE ON CONCRETE ABUT. & PIER CAPS WITH CONCRETE ENCASED PILES & CONCRETE WINGS. 56.81' FC.-FC. ABUTS; 29.88' o.-o. DECK
REMOVAL OF EXISTING SUPERSTRUCTURES = 1 EACH

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SURVEYED
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CHANNEL CHECKED
B.M. NOTED
STRUCTURE NOTATNS CHKD
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NO.
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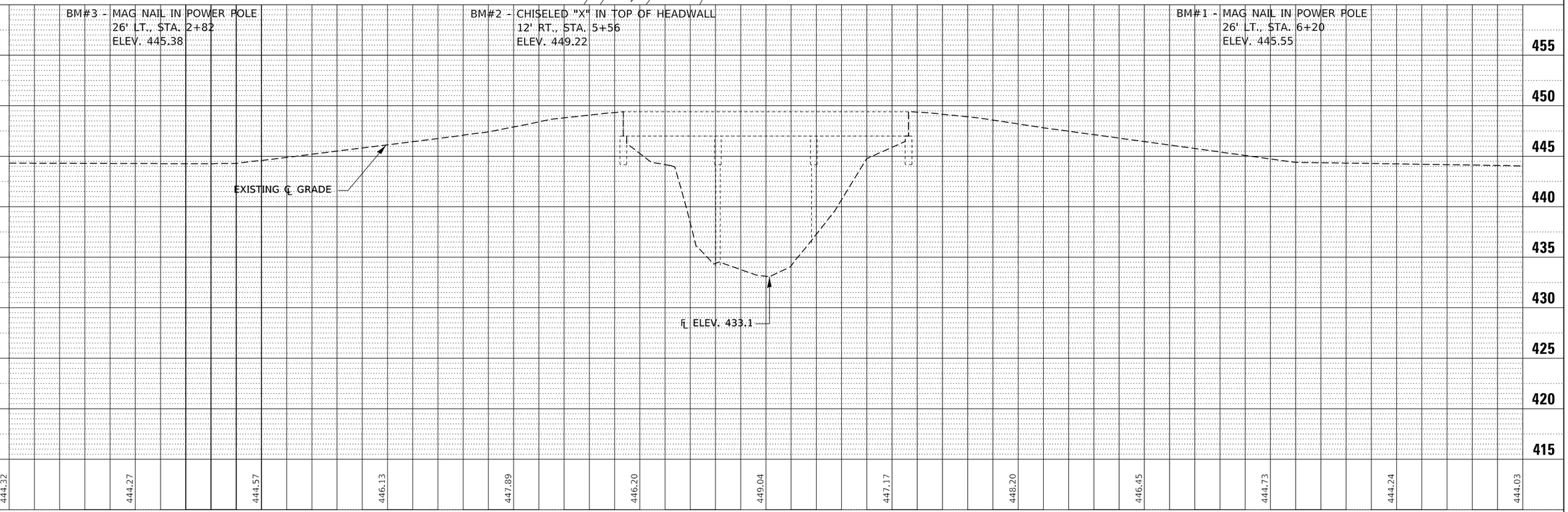

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	PLOT DATE = 8/11/2020	DATE - 08/01/19	REVISED -

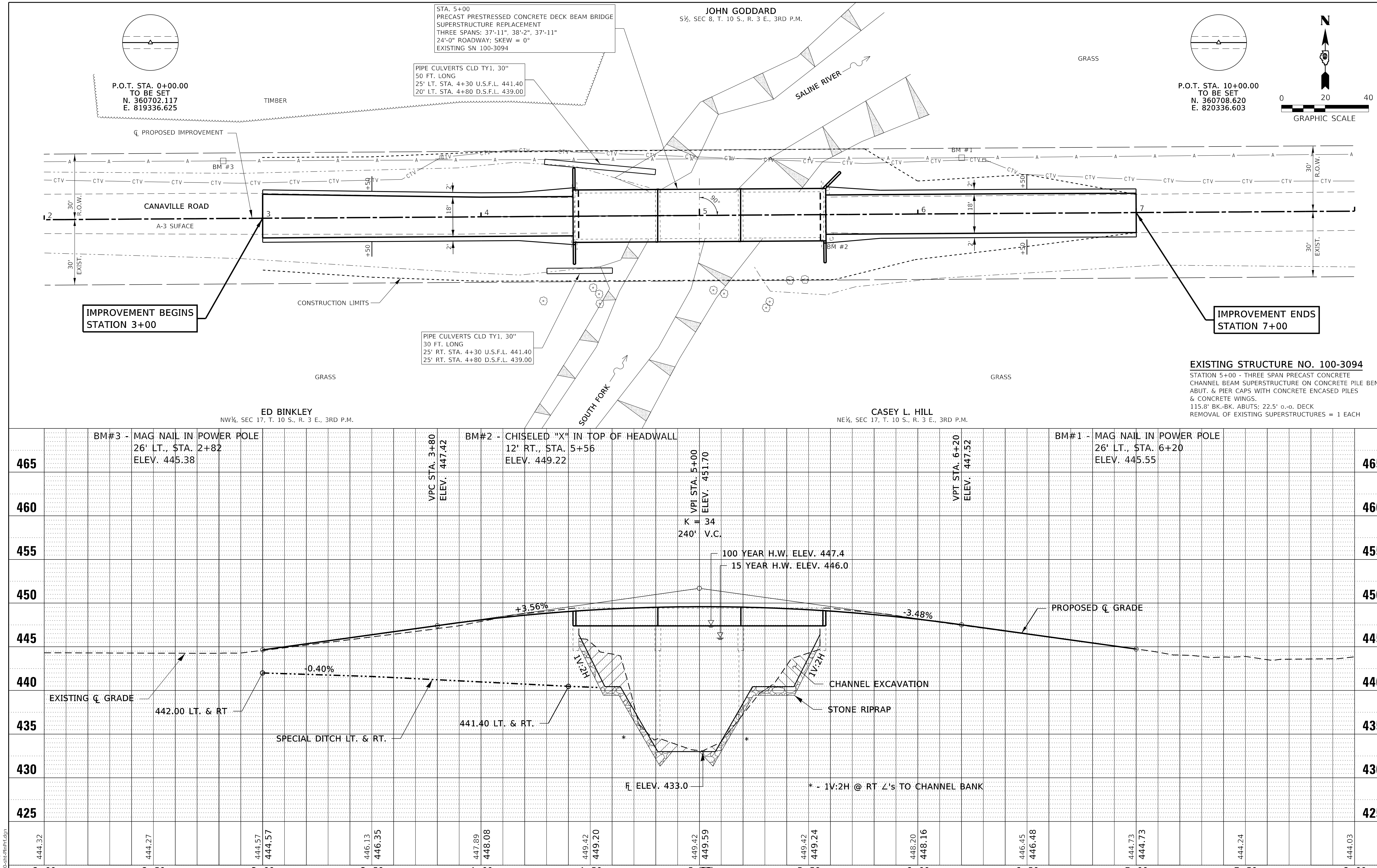
HAMPTON, LENZINI AND RENWICK, INC.
3085 STEVENSON DRIVE, SUITE 201
SPRINGFIELD, ILLINOIS 62703
ILLINOIS PROFESSIONAL DESIGN FIRM
L.S. / P.E. / S.E. CORP. 184.000959

STATE OF ILLINOIS
WILLIAMSON COUNTY HIGHWAY DEPARTMENT

PLAN AND PROFILE

SCALE: 20H:5V | SHEET 1 OF 1 SHEETS | STA. 2+00 TO STA. 8+00

T.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
573	19-01243-00-BR	WILLIAMSON		
COUNTY UNIT ROAD DISTRICT		CONTRACT NO.		
ILLINOIS	FED. AID PROJECT			



STA. 5+00
PRECAST PRESTRESSED CONCRETE DECK BEAM BRIDGE
SUPERSTRUCTURE REPLACEMENT
THREE SPANS: 37'-11", 38'-2", 37'-11"
24'-0" ROADWAY; SKEW = 0°
EXISTING SN 100-3094
JOHN GODDARD
S½, SEC 8, T. 10 S., R. 3 E., 3RD P.M.
PIPE CULVERTS CLD TY1, 30"
50 FT. LONG
25' LT. STA. 4+30 U.S.F.L. 441.40
20' LT. STA. 4+80 D.S.F.L. 439.00
P.O.T. STA. 0+00.00
TO BE SET
N. 360702.117
E. 819336.625
TIMBER
SALINE RIVER
GRASS
P.O.T. STA. 10+00.00
TO BE SET
N. 360708.620
E. 820336.603
0 20 40
GRAPHIC SCALE
N
℄ PROPOSED IMPROVEMENT
BM #3
BM #1
CANAVILLE ROAD
A-3 SUFACE
30' R.O.W.
30' EXIST.
BM #2
IMPROVEMENT BEGINS
STATION 3+00
CONSTRUCTION LIMITS
IMPROVEMENT ENDS
STATION 7+00
PIPE CULVERTS CLD TY1, 30"
30 FT. LONG
25' RT. STA. 4+30 U.S.F.L. 441.40
25' RT. STA. 4+80 D.S.F.L. 439.00
SOUTH FORK
GRASS
EXISTING STRUCTURE NO. 100-3094
STATION 5+00 - THREE SPAN PRECAST CONCRETE
CHANNEL BEAM SUPERSTRUCTURE ON CONCRETE PILE BENT
ABUT. & PIER CAPS WITH CONCRETE ENCASED PILES
& CONCRETE WINGS.
115.8' BK.-BK. ABUTS; 22.5' o.-o. DECK
REMOVAL OF EXISTING SUPERSTRUCTURES = 1 EACH
ED BINKLEY
NW¼, SEC 17, T. 10 S., R. 3 E., 3RD P.M.
CASEY L. HILL
NE¼, SEC 17, T. 10 S., R. 3 E., 3RD P.M.
BM#3 - MAG NAIL IN POWER POLE
26' LT., STA. 2+82
ELEV. 445.38
VPC STA. 3+80
ELEV. 447.42
BM#2 - CHISELED "X" IN TOP OF HEADWALL
12' RT., STA. 5+56
ELEV. 449.22
VPI STA. 5+00
ELEV. 451.70
K = 34
240' V.C.
VPT STA. 6+20
ELEV. 447.52
BM#1 - MAG NAIL IN POWER POLE
26' LT., STA. 6+20
ELEV. 445.55
100 YEAR H.W. ELEV. 447.4
15 YEAR H.W. ELEV. 446.0
+3.56%
-3.48%
PROPOSED ℄ GRADE
-0.40%
1V:2H
CHANNEL EXCAVATION
STONE RIPRAP
EXISTING ℄ GRADE
442.00 LT. & RT
441.40 LT. & RT.
SPECIAL DITCH LT. & RT.
℄ ELEV. 433.0
* - 1V:2H @ RT ∠'s TO CHANNEL BANK
465 460 455 450 445 440 435 430 425
444.32 444.27 444.57 444.57 446.13 446.35 447.89 448.08 449.42 449.20 449.42 449.59 449.42 449.24 448.20 448.16 446.45 446.48 444.73 444.73 444.24 444.03
2+00 2+50 3+00 3+50 4+00 4+50 5+00 5+50 6+00 6+50 7+00 7+50 8+00

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HAMPTON, LENZINI AND RENWICK, INC. 3085 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORP. 184.000959	PLOT SCALE = $SCALE$	DRAWN - T.W.K.	REVISED -	
	PLOT DATE = 3/17/2022	CHECKED - S.W.M.	REVISED -	
		DATE - 08/01/19	REVISED -	

PLAN AND PROFILE

SCALE: 20H:5V | SHEET 1 OF 1 SHEETS | STA. 2+00.00 TO STA. 8+00.00

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
573	19-01243-00-BR	WILLIAMSON	xx	$PP1$
CANAVILLE ROAD		CONTRACT NO.		
	ILLINOIS	FED. AID PROJECT		

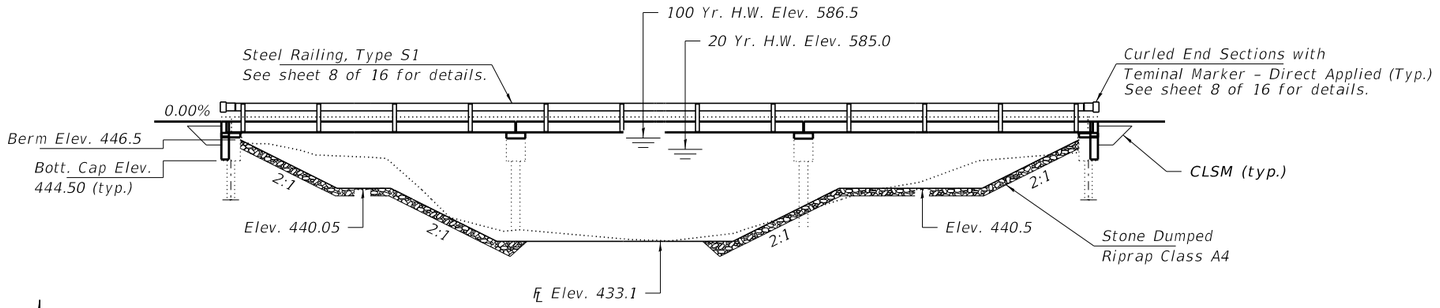
Attachment 3

BENCHMARK: Chiseled "□" on S.W. Wingwall Sta. 5+56, 11.9' Rt., Elev. 449.22

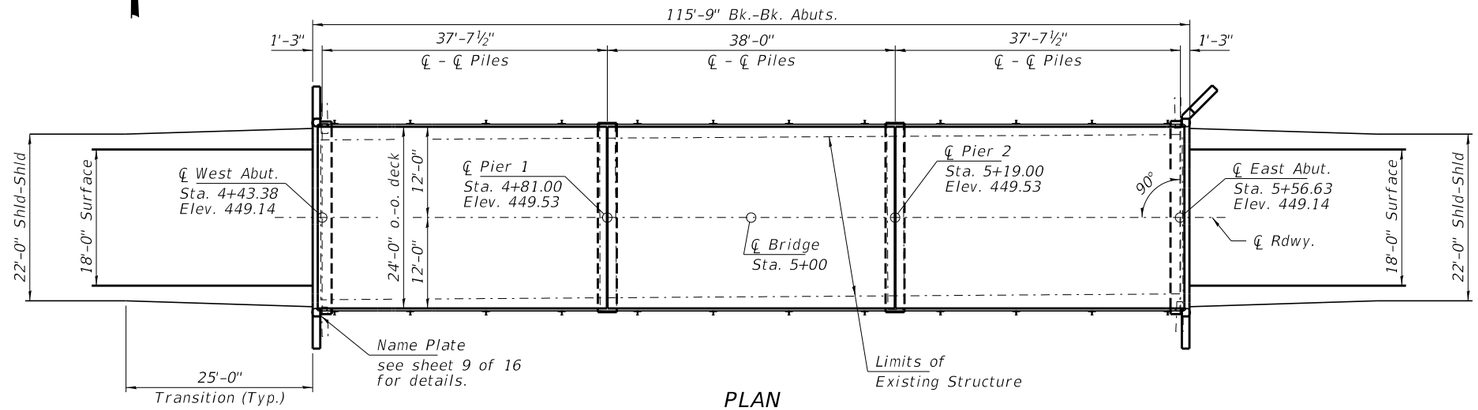
EXISTING STRUCTURE: Three Span Precast Concrete Deck Bridge on concrete bent abutment and pier caps with concrete encased piles, concrete wings & concrete slopewalls. 3 spans 37'-11", 37'-11", 37'-11", skew = 0°. Existing Structure No. 100-3094. Structure closed to traffic.

LIMITS OF REMOVAL: Superstructure beams, backwall, wingwalls and railing to be removed.

SALVAGE: Existing abutment and pier pile caps, piling to be salvaged.



ELEVATION



PLAN

GENERAL NOTES

Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions.

All bars to be epoxy coated.

Excavation required to construct the Abutments shall be included in the cost of Concrete Structures. No additional compensation will be allowed for Structure Excavation.

All proposed construction activities shall be in accordance with Nationwide Permit number 14 of the Department of the Army authorized under Section 404 of the Clean Water Act. The IEPA has issued Section 401 Water Quality Certification for this activity. See Special Provisions for conditions.

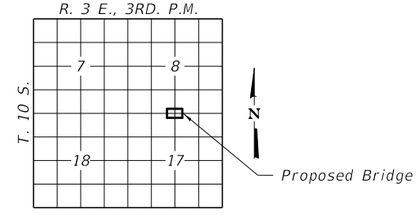
Plan dimensions and details relative to existing plans are subject to routine variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of work, however, the Contractor will be paid for the quantity actually furnished based upon the unit price bid for the work.

INDEX OF STRUCTURE SHEETS

SOUTH FORK SALINE RIVER
BUILT 202_ BY
WILLIAMSON COUNTY
SEC. 19-01243-00-BR
TR 573
STR. NO. 100-3094
LOADING HL-93

NAME PLATE

See Std. 515001



LOCATION SKETCH

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 8th Edition with all interims.

LOADING HL-93

Allow 25#/sq. ft. for future wearing surface.

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
fy = 60,000 psi (Reinf.)

PRECAST PRESTRESSED UNITS

f'c = 6,000 psi
f'ci = 5,000 psi
fpu = 270,000 psi (½"Ø low lax. strands)
fpbt = 201,960 psi (½"Ø low lax. strands)
fy = 60,000 psi (Reinf.)

EXISTING CONSTRUCTION

fc = 1,400 psi (Substructure)
fs = 20,000 psi (Reinf.)

WATERWAY INFORMATION

Drainage Area = 54.3 Sq. Mi. — Existing Low Grade Elev. 444.0 at Sta. 8+00; Proposed Low Grade Elev. 444.0 at Sta. 8+00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
Ten-Year	10	3760	560	650	445.7	0.4	0.3	446.1	446.0
Design	15	4210	580	680	446.0	0.4	0.3	446.4	446.3
Base	100	6380	700	800	447.4	0.3	0.3	447.7	447.7
Scour Check	200	7250	700	810	447.8	0.2	0.2	448.0	448.0
Max. Calc.	500	8400	700	810	448.4	0.2	0.2	448.6	448.6

Low water approach to remain in place

SEISMIC DATA

Seismic Performance Zone (SPZ) = B
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.087g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.297g
Soil Site Class = D

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current "AASHTO LRFD Specifications."

Steven W. Meggenson 07/20/2021
ILLINOIS STRUCTURAL ENGINEER NO. 081-6064

LICENSED STRUCTURAL ENGINEER — STEVEN W. MEGGINSON 081-6064 SPRINGFIELD, IL — STATE OF ILLINOIS

Expires 11-30-2022

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Stone Dumped Riprap, Class A4	Tons			460
Removal of Existing Superstructures	Each			1
Concrete Removal	Cu. Yd.		4.8	4.8
Concrete Structures	Cu. Yd.		8.2	8.2
Precast Prestressed Conc. Deck Beams (17" Depth)	Sq. Ft.	2,742		2,742
Reinforcement Bars, Epoxy Coated	Pound		580	580
Steel Railing, Type S1	Foot		224	224
Name Plates	Each		1	1
Controlled Low-Strength Material	Cu. Yd.		34	34
Terminal Marker - Direct Applied	Each			4

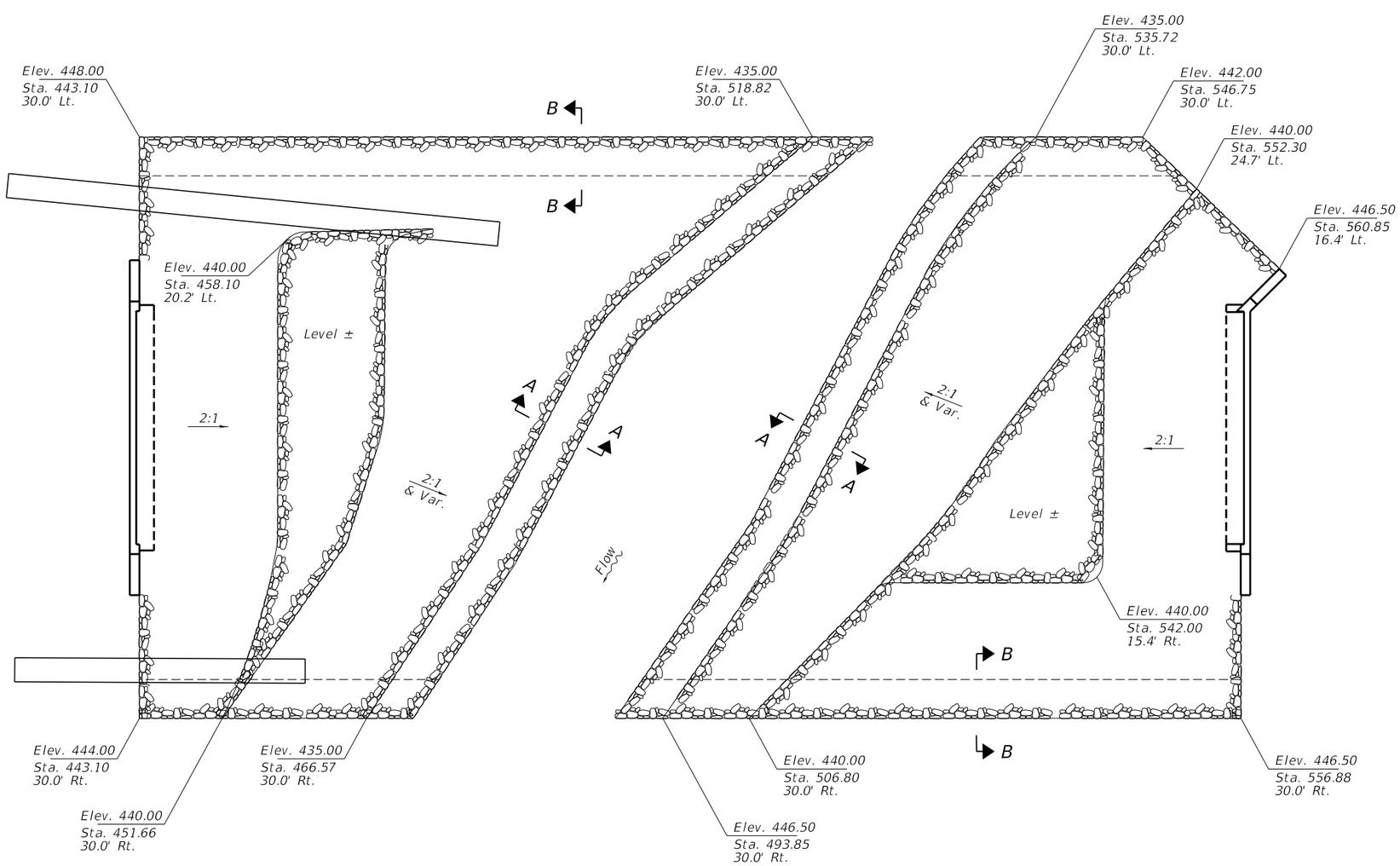
FILE NAME = 200150-shl-brldge.dgn	USER NAME = rhoslck	DESIGNED - J.R.B.	REVISED -
HAMPTON, LENZINI AND RENWICK, INC. 3085 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORP. 184.000959		CHECKED - S.W.M.	REVISED -
	PLOT SCALE = $SCALE$	DRAWN - T.D.S.	REVISED -
	PLOT DATE = 7/20/2021	CHECKED - S.W.M.	REVISED -

STATE OF ILLINOIS
WILLIAMSON COUNTY HIGHWAY DEPARTMENT

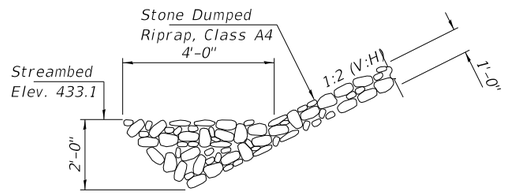
GENERAL PLAN AND ELEVATION
STRUCTURE NO. 100-3094
SHEET NO. 1 OF 16 SHEETS

T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
573	19-01243-00-BR	WILLIAMSON	32	5
CANAVILLE ROAD		CONTRACT NO.		
	ILLINOIS	FED. AID PROJECT		

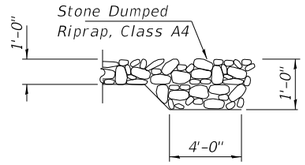
Attachment 3



RIPRAP DETAILS



SECTION A-A



SECTION B-B

BILL OF MATERIAL

Item	Unit	Quantity
Stone Dumped Riprap, Class A4	Ton	460

FILE NAME = 200150-shl-brldge.dgn	USER NAME = rhoslck	DESIGNED - J.R.B.	REVISED -	STATE OF ILLINOIS WILLIAMSON COUNTY HIGHWAY DEPARTMENT	RIPRAP LAYOUT STRUCTURE NO. 100-3094	T.R.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
HAMPTON, LENZINI AND RENWICK, INC. 3085 STEVENSON DRIVE, SUITE 201 SPRINGFIELD, ILLINOIS 62703 ILLINOIS PROFESSIONAL DESIGN FIRM LS / PE / SE CORP. 184.000959		CHECKED - S.W.M.	REVISED -			573	19-01243-00-BR	WILLIAMSON	32	6
	PLOT SCALE = $SCALE$	DRAWN - T.D.S.	REVISED -			CANAVILLE ROAD		CONTRACT NO.		
	PLOT DATE = 7/20/2021	CHECKED - S.W.M.	REVISED -		SHEET NO. 2 OF 16 SHEETS			ILLINOIS	FED. AID PROJECT	

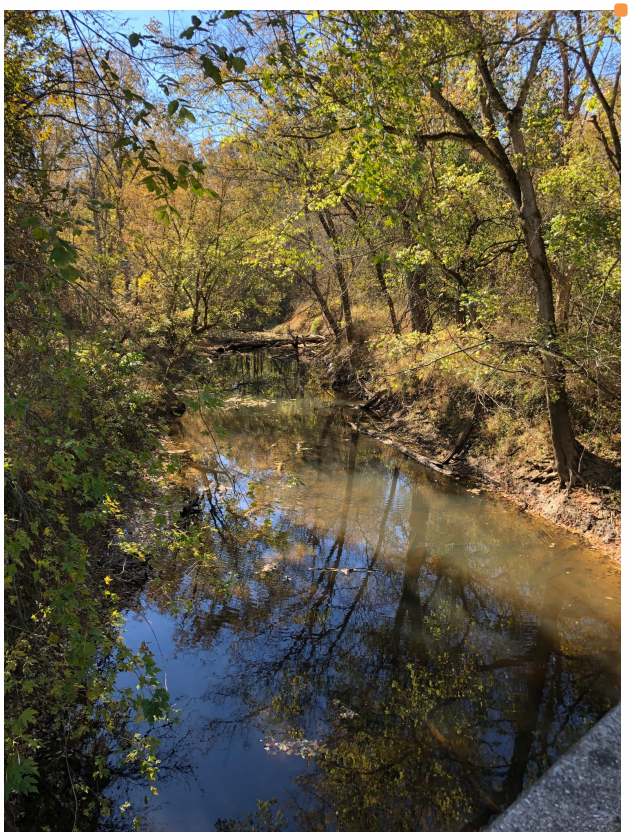
Attachment 3

ILLINOIS
Illinois Natural History Survey
PRAIRIE RESEARCH INSTITUTE

Aquatic
Survey Report

Survey of Crayfishes in South Fork Saline River at the Canaville Road (TR 573) bridge, Williamson County, Illinois

IDOT Sequence Number: 23440



Prepared by:
Christopher A. Taylor

INHS/IDOT Statewide Biological Survey & Assessment Program
2021:77
29 November 2021

PROJECT SUMMARY

This report is submitted in response to a request made by the Illinois Department of Transportation (IDOT) to the Illinois Natural History Survey (INHS) for a crayfish survey in the South Fork of the Saline River at the Canaville Road (TR 573) bridge located 2.2 mi E of Hudgens, Williamson County, Illinois – specifically to document the presence of the state endangered Indiana Crayfish.

A survey for crayfishes was conducted in the South Fork of the Saline River at the Canaville Road (TR 573) bridge by INHS personnel on 8 November 2021. Crayfishes were collected from approximately 50 yards downstream (south) of the bridge to directly under the bridge. Two species of crayfish, including the State Endangered Indiana Crayfish, were collected during the survey. The species were found throughout the entire 50 yards of sampled stream. We believe that our sampling efforts resulted in an accurate assessment of the crayfish assemblage present within the South Fork of the Saline River at the Canaville Road (TR 573) bridge project area.

The South Fork of the Saline River at the Canaville Road (TR 573) bridge a medium-sized stream with low gradient and loose substrates and considerable woody debris at the sampling location. Suitable habitat for the Indiana Crayfish is found at the project location.

Survey Lead By: Christopher A. Taylor, Principal Research Scientist
Dusty Swedberg, INHS Scientific Specialist

Edited by: Mark J. Wetzel, INHS Research Affiliate

GIS Layers: Janet L. Jarvis, INHS GIS and 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

TABLE OF CONTENTS

Cover photo: South Fork of the Saline River at the Canaville Road (TR 573) bridge located 2.2 mi E of Hudgens, Williamson County, Illinois, on 8 November 2021 (C. A. Taylor, photo). Picture facing downstream of the bridge in a southwesterly direction.

INTRODUCTION

This report is submitted in response made by Kimberly Burkwald of the Illinois Department of Transportation (IDOT) to Rachel Vinsel of the Illinois Natural History Survey (INHS) on 30 August 2021 for a crayfish survey in the South Fork of the Saline River at the Canaville Road (TR 573) bridge located 2.2 mi E of Hudgens, Williamson County, Illinois (Latitude 37.6559°N, Longitude 88.9013°W) [IDOT Sequence No. 23440, Section 19-01243-00-BR; bridge structure number 100-3093; INHS Project No. FS-1552]. Specifically, IDOT inquired about the status of the state endangered Indiana Crayfish (*Faxonius indianensis*) (Illinois Endangered Species Protection Board [IESPB] 2020).

The Division of Highways proposes the replacement of the bridge superstructure and the installation of stone riprap around piers and abutments and the reconstruction of roadway approaches. This report summarizes the results of the crayfish and habitat surveys conducted in the South Fork of the Saline River at the Canaville Road (TR 573) bridge located 2.2 mi E of Hudgens, Williamson County, Illinois by INHS personnel on 8 November 2021.

PROJECT LOCATION

Sampling for crayfishes was conducted in the South Fork of the Saline River at the Canaville Road (TR 573) bridge, located 2.2 mi east of the town of Hudgens in Williamson County, Illinois (**Cover photo**; **Figure 1**). A point centered on the bridge is used for the following locality information as a reference point for the project: latitude 37.6559°N, longitude 88.9013°W. **Appendix 1** references the shapefiles with sampling point information for the South Fork of the Saline River project site, as discussed in this report.

HABITAT CHARACTERIZATION

The South Fork of the Saline River at the Canaville Road (TR 573) bridge 2.2 mi E of Hudgens, Williamson County, Illinois (**cover photo; Figure 1**) was visited by INHS personnel on 8 November 2021. We examined a reach of the river from immediately under the Canaville Road (TR 573) bridge to approximately 50 yards downstream of it. The river ranged from 10-12 yards in width and 0.3 to 3.0 feet in depth. No water flow was detected. The predominant substrate observed at this site was a mud and silt. Riprap and rock rubble were present on both banks and instream under the bridge and abundant logs and smaller woody debris were found both and up and downstream of the bridge (**Fig. 2**). Both river banks were steep from erosional events and were tree-lined. Some woodland surrounded the River downstream of the TR 573 bridge (**Fig. 1**).

BACKGROUND

South Fork of the Saline River drains the north slopes of the Shawnee Hills in Johnson, Pope, Saline and Williamson counties. It merges with the Middle and North Forks of the Saline River forming the Saline River in southeastern Saline Co. The Saline River drainage is home to seven native crayfish species (INHS Crustacean Collection 2021; Bloomer and Taylor 2021). Of those, the state endangered Indiana Crayfish is the only species listed at the state or federal level as threatened or endangered. The Indiana Crayfish is found across the majority of the South Fork Saline River and downstream portions drainage of the Saline River drainage in extreme southern Gallatin and northeastern Hardin cos. The species has repeatedly been collected in the South Fork Saline River drainage over the past 20 years and the drainage harbors the largest population of the species in Illinois.

METHODS

A survey for crayfishes was conducted in the South Fork of the Saline River at the Canaville Road (TR 573) bridge 2.2 mi E of Hudgens, Williamson County, Illinois on 8 November 2021 at 1100 hrs by INHS personnel C. A. Taylor and D. Swedberg.

Given the absence of water flow, quantitative sampling methods could not be employed. Crayfishes were instead collected by kick-seining with a 10' minnow seine with 1/8" mesh seine for 30 minutes. The seine was set around riprap or woody debris piles and the rock or woody debris was vigorously disturbed by kicking. The seine was then quickly raised and all crayfishes in the net were counted and identified. Two to three specimens of each crayfish species collected were vouchered and deposited in the INHS Crustacean Collection. All other crayfish were released.

Nomenclature for crayfishes discussed in this report follows Crandall and DeGrave (2017). The current status of threatened and endangered species of crayfishes discussed in this report are taken from U.S. Department of Interior, Fish and Wildlife Service (USDI, FWS) (1996, 1997) and Illinois Endangered Species Protection Board (IESPB) (2020).

RESULTS AND DISCUSSION

Two species of crayfishes, including 13 state endangered Indiana Crayfish were collected at the South Fork Saline River at the Canaville Road bridge site during our sampling visit on 8 November 2021 (**Table 1**). One Indiana Crayfish was found in woody debris immediately under the TR 753 bridge, while the remaining 12 individuals were found in woody debris from 5 to 25 yards downstream of the bridge. We believe that our sampling efforts resulted in an accurate assessment of the crayfish assemblage present within the South Fork of the Saline River at the Canaville Road (TR 573) bridge project area.

Our sampling results confirm the presence of one state-listed aquatic species and suitable habitat for it at the proposed project site. The Indiana Crayfish normally occurs in medium-gradient small to medium sized streams with bottom substrates of gravel and rock (Page 1985). Such habitat is not present at the proposed South Fork Saline River project site. Most stream dwelling crayfishes require some form of habitat structure (i.e. fractured rock, rooted vegetation and tree roots, or woody debris) to provide refuge from fish and terrestrial predators (Taylor and Schuster 2004). The abundance of woody debris at the site provides that refuge for the Indiana Crayfish and individuals have likely colonized it from more upstream regions of the drainage that drain the higher elevation Shawnee Hills. The presence of 13 Indiana Crayfish at the proposed project location, and the historical collection of the species from the South Fork Saline River approximately 2.5 miles downstream of the Canaville Road bridge, demonstrate that the species can inhabit lower gradient stream sites with soft mud and silt substrates. The absence of woody debris would negatively affect the species' abundance at locations. Given the abundance of historical records for the Indiana Crayfish throughout the South Fork Saline River drainage from various times of the year, we believe that they are year around residences of the South Fork Saline River at the Canaville Road bridge site with abundances that do not fluctuate greatly over the course of a year.

ACKNOWLEDGMENTS

J.L. Jarvis (INHS) prepared the map in **Figure 1** and the associated shapefiles referenced in **Appendix 1**; and M.J. Wetzel (INHS) edited the report.

LITERATURE CITED

Bloomer, C. C. and C. A. Taylor. 2021. American Crayfish Atlas. Internet. https://americancrayfishatlas.web.illinois.edu/ (Accessed 28 November).

Crandall, K. A. and S. DeGrave. 2017. An updated classification of the freshwater crayfishes (Decapoda: Astacidae) of the world, with a complete species list. Journal of Crustacean Biology 37(5): 615-653.

Illinois Endangered Species Protection Board (IESPB). 2020. Checklist of Endangered and Threatened Animals and Plants of Illinois. Illinois Endangered Species Protection Board, Springfield, Illinois. 10 pp. Published online at https://www2.illinois.gov/dnr/ESPB/Documents/ET%20List%20Review%20and%20Revision/Illinois%20Endangered%20and%20Threatened%20Species.pdf

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Page, L. M. 1985. The Crayfishes and Shrimps of Illinois. Illinois Natural History Survey Bulletin 33(4): 335-448.

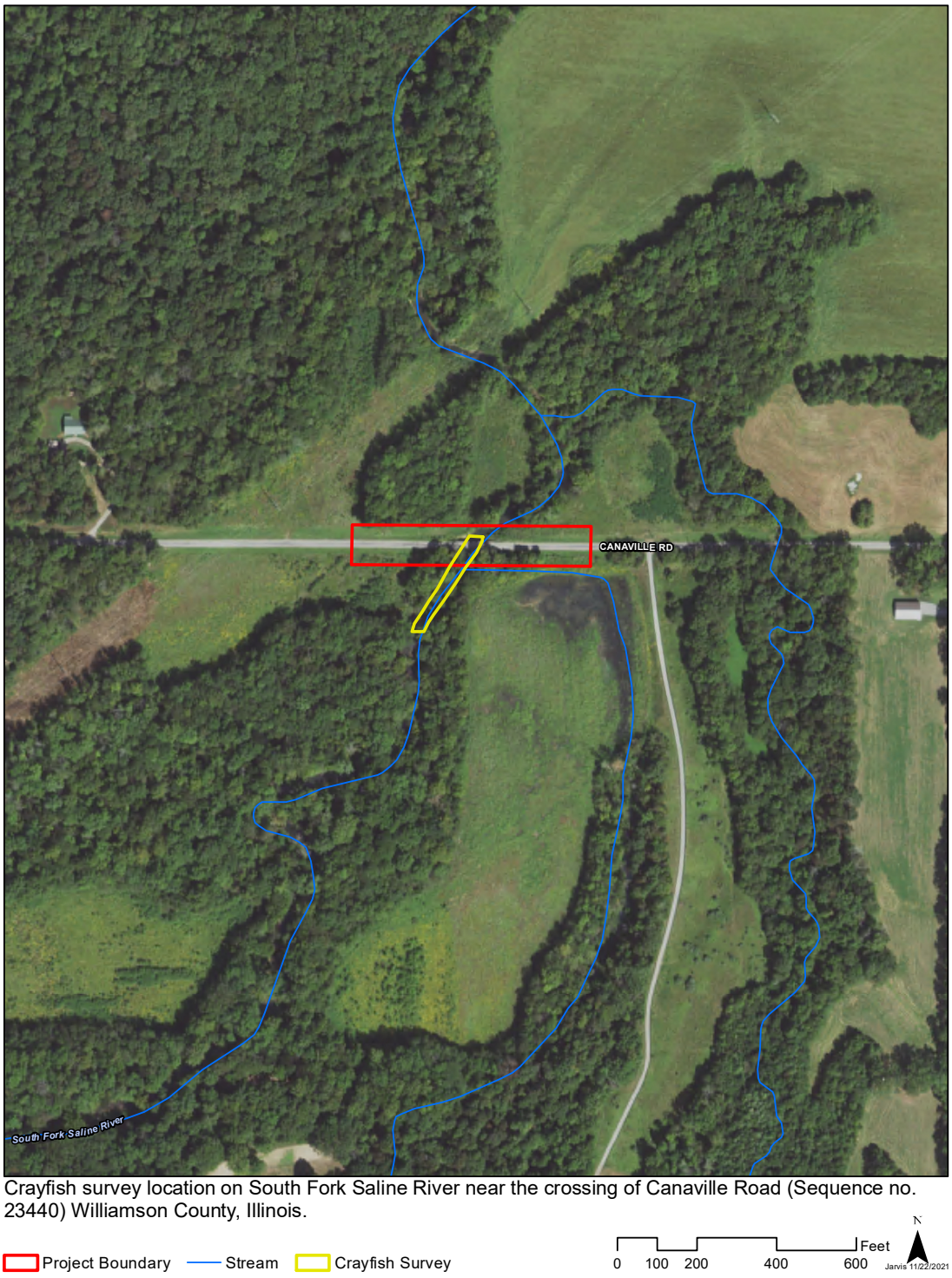
Taylor, C. A. and G. A. Schuster. 2004. The Crayfishes of Kentucky. Illinois Natural History Survey Special Publication No. 28. vii + 219 pp.

U.S. Department of the Interior, Fish and Wildlife Service (USDI, FWS). 1996. Endangered and threatened species, plant and animal taxa; proposed rule. Part III. 50 CFR Part 17. Federal Register 61(40):7596-7613. February 28.

U.S. Department of Interior, Fish and Wildlife Service (USDI, FWS). 1997. Endangered and threatened wildlife and plants. Federal Register, 50 CFR Part 17.11 and 17.12. October 31, 1996. 46 pp. [This document is a compilation and special reprint, current as of October 31, 1996, that was printed by the U.S. Government Printing Office in 1997].

Table 1. List of crayfish species and number of individuals collected in the South Fork of the Saline River at the Canaville Road (TR 573) bridge 2.2 mi E of Hudgens, Williamson County, Illinois by INHS personnel on 8 November 2021. ***** = listed as state-endangered in Illinois (IESPB 2020). # = number of individuals collected

Family	Scientific name	Common name	#
Cambaridae	*Lacunicambarus chimera*	Crawzilla Crawdad	9
	*Faxonius indianensis**	Indiana Crayfish	13



Crayfish survey location on South Fork Saline River near the crossing of Canaville Road (Sequence no. 23440) Williamson County, Illinois.

Figure 1. Map of the South Fork of the Saline River at the Canaville Road (TR 573) bridge located 2.2 mi E of Hudgens, Williamson County, Illinois by INHS personnel on 8 November 2021 (Map created by J.L. Jarvis, INHS GIS and Remote Sensing Specialist).

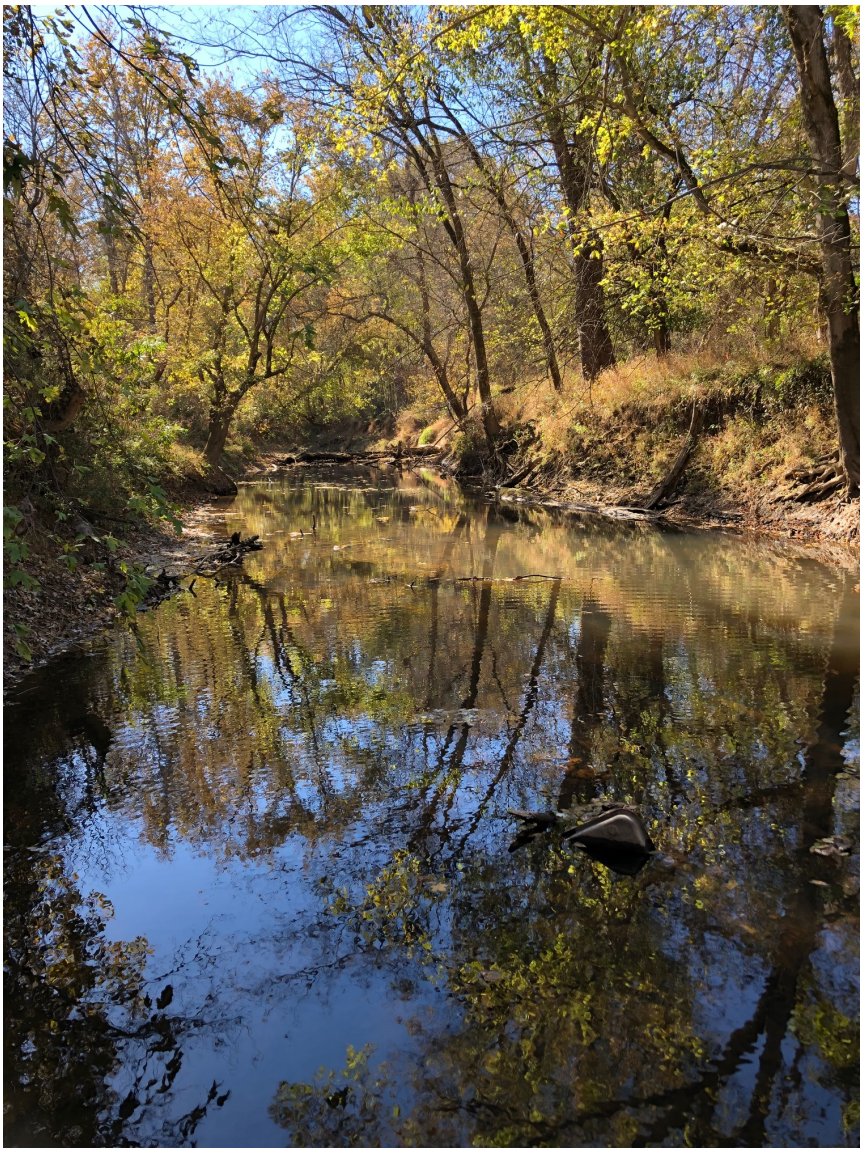


Figure 2. South Fork of the Saline River looking downstream from the Canaville Road (TR 573) bridge located 2.2 mi E of Hudgens, Williamson County, Illinois (photo by C. A. Taylor).

Appendix 1

This appendix cover page references < **23440_Crayfish_Survey_GIS.zip** > containing an ArcGIS shapefiles with sampling point information for the site discussed in this report. Specifically, this shapefile includes site information for South Fork of the Saline River at the Canaville Road (TR 573) bridge located 2.2 mi E of Hudgens, Williamson County, Illinois where a survey for crayfishes were conducted by INHS personnel on 8 November 2021.

The ArcGIS shapefile and this report were both submitted to IDOT via the IDOT Site Assessment Tracking System extranet website (Frostycap) on 29 November 2021.

5) An **implementing agreement**, which shall include, but not be limited to (on a separate piece of paper containing signatures):

A) Names and signatures of all participants in the execution of the conservation plan;

J. Travis Emery, P.E.
Williamson County Engineer
1817 N. Court Street
Marion, IL 62959

Jay Kranz
Local Roads & Streets Engineer
Illinois Department of Transportation, District 9
State Transportation Building, PO Box 100
Carbondale, IL 62903

B) The obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities included in the conservation plan and a schedule for preparation of progress reports to be provided to the IDNR;

The Illinois Depart of Natural Resources is responsible for the review of this conservation plan and for the subsequent issuance of the Incidental Take Authorization.

The Illinois Department of Transportation is responsible for all biological clearance coordination and recommendations related to the project.

Williamson County is responsible for securing authorization for the incidental take, securing all permits, inspection of the work and overseeing contactor compliance with the contact documents. Williamson County is responsible for notifying IDOT when the project reaches 100% completion so that post construction surveys may be tasked.

The Contractor is responsible for complying with any commitments and implementing any best management practices related to their construction practices on this project as outlined in the Incidental Take Authorization.

Post construction monitoring will be performed by INHS following completion of the project. Monitoring reports will be prepared by the INHS and submitted to IDOT for review. Monitoring reports will be coordinated with the IDNR.

C) Certification 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;

The Illinois Department of Natural Resources shall be responsible for the review of this Conservation Plan and for subsequent issuance of the Incidental Take Authorization. Canville Road is under the jurisdiction and maintenance of the Williamson County Highway Department.

This project is authorized by the Illinois Department of Transportation, who oversees the use of state-distributed funding among local agencies.

D) Assurance of compliance with all other federal, State and local regulations pertinent to the proposed action and to execution of the conservation plan;

The Illinois Department of Transportation and Williamson County exclusively abide by the National Environment Policy Act and all associated federal and state environmental laws in carrying out their mission of performing the most environmentally sensitive methods of transportation planning and engineering.

E) **Copies of any final federal authorizations for a taking already issued to the applicant**, if any.

Since Indian Crayfish (Faxonius Indianesis) is not federally threatened or endangered, this does not apply