Illinois Department of Transportation

Memorandum

To:	Keith Roberts	
From:	Kirk H. Brown	By: Cindy Stafford
Subject:	ADDENDUM TO PROJECT REPORT	
Date:	October 8, 2020	

FAI Route 270 (I-270)
Section 60B-1
Madison County
P-98-001-15
76J90

Replacement of S.N. 060-0035 carrying I-270 over the Mississippi River Connecting Madison County, IL to St. Louis, MO

The project report for the subject proposed improvement was approved July 11, 2018. The general scope of work for the proposed improvement consisted of replacing SN 060-0035 carrying FAI 270 (I-270) over the Mississippi River connecting Madison County, Illinois with St. Louis, Missouri. The bridge is locally known as the Chain of Rocks Bridge.

The purpose of the IDOT Phase I study is to identify the best possible solution for the replacement of the Chain of Rocks Bridge whereas MoDOT's I-270 North Environmental Assessment (EA), approved on April 13th, 2017 focused on the widening of I-270 up to the Chain of Rocks Bridge. Therefore, the details and impacts discussed within this project report focus on the I-270 Chain of Rocks Bridge. It is to be noted that IDOT's proposed design for the bridge replacement functions with the preferred reconfigured Riverview Drive interchange option identified and studied in the MoDOT EA.

Subsequent to design approval, further coordination was performed by MoDOT and IDOT to help ensure the most efficient bridge typical section was agreed upon by both states. To that end, the states' DOT's agreed to proceed with 10' inside and outside shoulders on the proposed Chain of Rocks Bridges in the ultimate 6 lane configuration. Due to this change in bridge typical section, refinements in geometrics, location drainage, and MOT were made to the Phase I design; ultimately reducing overall impacts. These changes also increase the amount of existing infrastructure reused. The purpose of this addendum is to discuss the resulting modified design now proposed for I-270 over the Mississippi River Bridge project. Copies of revised exhibits are attached to this memo.

District Addendum Design Approval Keith Roberts

Keith W. Roberts, IDOT Region Five Engineer (Acting)

Federal Categorical Exclusion Approved By 11/16/2020

FHWA Representative

A. Project location and Termini

The project is located within unincorporated Madison County, the city of St. Louis, Missouri, and a portion within unincorporated St. Louis County, Missouri. East of the bridge in Illinois is an "island" referred to as Chouteau Island, lying between the Mississippi River and the Chain of Rocks Canal. From the bridge heading east, I-270 continues over the Chain of Rocks Canal and intersects with IL Route 3. Heading west from the Chain of the Rocks Bridge along I-270 is Riverview Drive in St. Louis, Missouri.

The study limits for the project extend along I-270 from just west of Riverview Drive in St. Louis County, MO to just west of Chain of Rocks Canal Bridge in Madison County, IL.

I-270 is a Class I Truck Route on the Interstate Highway System and is a National Highway System (NHS) Route.

This project was processed as a Federally Approved Categorical Exclusion (Project Report) which is the required NEPA documentation for this project.

A location map of the project study area is shown on **Exhibit A**.

B. Existing Conditions

The Chain of Rocks Bridge carries four lanes of traffic, two in each direction. The lanes are 12-feet wide with shoulder widths of less than a foot. The bridge deck is approximately 6 ½ inches thick with a 2 ½ inch microsilica concrete overlay with a total thickness of approximately 9 inches.

The existing I-270 roadway leading up to the bridge is a divided expressway with open shoulders consisting of two 12-foot lanes in each direction and 4-foot inside and 10-feet outside bituminous shoulders and a grass median. Guardrail is present on the outside shoulder throughout the project corridor due to high fill slopes. The bituminous concrete roadway surface is approximately 10 inches in depth. No parking is allowed on the interstate.

Open drainage ditches are present along the I-270 corridor. A combination of open ditches and inlets lie along the eastbound exit ramp and westbound entrance ramp of the Riverview Drive interchange. Chouteau Island lies in a floodplain and is prone to frequent flooding. A private levee provides protection from 25-year floods. It is located just to the west of the east abutment of the Chain of Rocks Bridge.

C. Revised Design

<u>Revised Proposed Typical Section</u>

The proposed typical section of the I-270 River Bridge(s) over the Mississippi river has been revised to feature 10-foot inside and outside shoulders in lieu of the 12' shoulders previously proposed. This change to the typical section allows

the states to provide the most efficient river crossing and better mitigate environmental constraints while still meeting policy, improving corridor safety and providing the necessary lane and shoulder width for interim and future maintenance of traffic conditions. The existing and proposed typical sections can be found in **Exhibit B**.

Revised Horizontal and Vertical Design

The proposed horizontal alignment remained designed with a 60 mph design speed and meets IDOT policy. The max superelevation rate stayed at 6.0, with 4.0 percent superelevation obtained on the Illinois approach and 3.2% on the east end of the project limits, matching the existing Chain of Rock Canal Bridge typical section. This allowed for the re-use of much more existing PCC pavement in the current design. The horizontal stopping sight distance (HSSD) on the Illinois approach curve has been lengthened with the new policy curve. The entrance and exit ramps continue to follow MoDOT standards, with 1,000 feet initial curves and 6.0 percent max superelevation rate (5.4% obtained).

The proposed vertical alignment continues to follow both state Departments of Transportation geometric policies, with a 60 mph design speed and a vertical curve length of three times the design speed. Revisions to the proposed profile over the Mississippi River were made taking advantage of additional design flexibility lowering the overall profile while maintaining proper clearance from low steel to the river at three U.S. Coast Guard identified navigation spans. See **Exhibit C** for U.S Coast Guard coordination concerning the navigation spans. The vertical clearance over Riverview Drive remains increased from 14-feet 8-inches to 16-feet 6-inches (MoDOT Policy) to improve mobility and safety for heavy truck traffic utilizing Riverview Drive. The proposed plan and profile sheets with preliminary cross sections can be found in **Exhibit D.**

Revised Design Effect on Safety

As part of the original Project Report during Phase I, a safety analysis of various shoulder configurations was performed to better understand the projected crashes for the segment of I-270 over the Mississippi River. The conclusion of the analysis stated; “An 8-foot shoulder width is the minimum that should be considered based on the anticipated degradation in safety”

The study specifically compared the projected increase in crashes from the IDOT policy shoulder configuration of 12’ (Inside) and 12’ (outside) shoulders to an alternate configuration of 10’ (inside) and 10’ (outside). The proposed typical section moving forward includes the 10’ shoulder configuration. The analysis predicts negligible increase in crashes over a twenty-year study period with this reduction from policy shoulders.

The proposed 10’ shoulder configuration projects for 1.8 Fatal and 4.9 disabling crashes over the 20-year study period; a decrease from the existing conditions projected over the same 20-year study period. The proposed shoulder configuration selected in this Addendum to the Project Report is reasonable and consistent with the findings and conclusion of the shoulder analysis in the original Project Report.

Design Exceptions

No design exceptions are required for this project. The revision to 10 foot inside and outside shoulders is still within policy.

Pavement Drainage

A Location Drainage Study (LDS) was performed within the corridor. The LDS cited the need for compensatory storage on the Illinois approach. The approximate storage area is located on the north side of the Illinois approach east of the private levy. The amount of required storage was originally calculated at 100,880 cubic yards. Through coordination and guidance from IDOT District 8 the method of calculation was revised that, coupled with a reduction in fill, has resulted in a revised compensatory storage requirement of 27,684 cubic yards, reducing the amount of Right of Way required for the project**. See Technical Report A: Location Drainage Study** for further information regarding the proposed drainage improvements. See **Exhibit E: Construction Limits & Comp Storage Comparison** for a visual representation of the reduction.

Revisions to the Hydraulic Report

A Revised Hydraulic Report was completed taking into consideration the construction no rise requirement and balancing span configurations with sub structure size during the span configuration study and TS&L development. The revised hydraulic report was approved by the IDOT BBS on May 18th, 2020 please see **Exhibit F** for additional details.

Reduction in Proposed Right-of-way

As a result of the improved profile and lowered compensatory storage requirement for the project the amount of right of way required on the Illinois side was reduced by 12.25 acres. Please see the revised **Table 1** below for details.

TABLE 1: RIGHT OF WAY				
STATE	**PARCELS**	**2018 ACRES**	**2020 ACRES**	**DISPLACEMENTS**
Illinois	9	26.75	14.40	1
Missouri	2	4.07	4.07	0
TOTAL	**11**	**30.72**	**18.47**	**1**

Reduction in Wetland Impacts

As a result of the improved profile and lowered compensatory storage requirement for the project, the amount of Wetland Impacts were reduced by 0.522 acres and the amount of required wetland compensation reduced by 0.800 acres. Please see **Table 2** for additional details.

Table 2: Reduction in Individual Wetland Impacts				
Wetland Site No.	**Type**	**2018 Impact (ac)**	**2020 Impact (ac)**	**Reduction in impact (ac)**
10	Forested	1.020	1.020	0.000
20	Wet Mead	0.002	0.000	0.002
33	Wet Mead	0.260	0.110	0.150
37	Wet Mead	0.400	0.050	0.350
38	Wet Mead	0.060	0.040	0.020
Overall Wetland Impacts				
TOTAL		1.742	1.220	0.522
Overall Wetland Compensation				
TOTAL		2.613	1.830	0.800

Coordination required with U.S. Fish & Wildlife Service (USFWS) and the Illinois Department of Natural Resources (IDNR)

- The biological clearances for this project are expired as they are only valid for two years. The original coordination regarding biological resources took place with IDNR, USFWS, MODOT and the Missouri Department of Conservation. IDOT BDE will coordinate with these agencies to update the existing biological resources within the project area. This coordination will address any newly listed or delisted species and address any changes to the project scope or commitments.
- The 2018 NRR states once the dates of construction are determined, coordination with USFWS should occur to determine if additional surveys are needed (mist netting) for bats.
- IDOT BDE will coordinate with the USFWS and IDNR to ensure the 2018 commitments to protect the endangered Pallid Sturgeon are still applicable.

Revision to Transportation Management Plan & Recommendations

Since completion of the Project Report, the Maintenance of Traffic details have been further refined based on the proposed final shoulder widths and overall project configurations. The most notable change since the Project Report completion extended the MOT phasing to the east for several benefits, including:

- Utilization of existing PCC Pavement constructed with the new I-270 Canal Bridge
- Utilization of existing I-270 median area to reduce widening of I-270 to the outside
- Adjustment to match the 10' inside and outside shoulders across the proposed Mississippi River Bridge Structure
- Refinement based on revised Vertical Alignment of the Mississippi River Bridge Structure
- Coordination with the I-270 Add Lane (Phase I) Study that overlaps with this bridge replacement project

It is worth noting this change still allowed for EB and WB traffic to shift to the new EB structure with 11' lanes (as previously proposed and approved in the Phase I Project Report) while the existing structure is removed and the proposed WB structure is constructed.

Further refinements to the MOT configurations will be required as the design of the Riverview Drive interchange is advanced by MODOT.

A revised Traffic Management Plan can be found as **Exhibit G** for additional details.

Revision to Estimate of Costs

Since completion of the Project Report, additional bridge details have been further refined based on the proposed final shoulder widths, available geotechnical information, and coordination with IDOT Bridge office. This resulted in a refined cost estimate. The bridge study resulted in higher than anticipated scour, resulting in larger drilled shaft substructure. Maintaining a Hydraulics "no rise" condition during construction suggests smaller spans and H pile is not the most feasible approach. This resulted in use of large substructure with longer consistent spans throughout the structure. These factors all resulted in an increased estimated construction cost to the project of $23,629,935 for a new total of $246,256,000. A detailed cost estimate is included as **Exhibit H** for additional details.