IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:District 5DATE:August 23rd, 2018ATTENTION:James V. ArmstrongPROJECT:Monroe County
NHSN-005-2(44)--2R-68
PIN: 19-68-005-010FROM:Anthony J. KleinPROJECT:Monroe County
NHSN-005-2(44)--2R-68
PIN: 19-68-005-010

OFFICE: District 5 Design

SUBJECT: FY 2021 – Culvert Replacement Project Concept

PROJECT LOCATION MAP: Page 3 or Click Here

BACKGROUND: Monroe County, IA 5, MM 42.9

A depression is located adjacent to Iowa Highway 5 (IA 5) approximately 1.5 miles south of the city of Lovilia near station 191+82. The depression is along the east side of the right of way between the highway and a set of railroad tracks. Railroad tracks were once located under IA 5. A trestle bridge carried IA 5 over the tracks during the time in which the tracks were used. The tracks were abandoned in the 1930s and the trestle bridge was removed. The void under the bridge was filled in with earth and a 24 inch concrete pipe was installed for drainage. Over time the 24 inch pipe has ceased to function and standing water is present along the east side of the right of way in the depressed area. The cause of failure of the 24 inch pipe is not known for certain; it may have silted in or structurally failed which caused a blockage. The depression is a safety issue for errant vehicles that may run off the road into the standing water. The depth of water varies throughout the year but based on field survey and roadway plans it may be up to 10 feet at times. The standing water may also weaken the soils that make up the highway embankment. The effect of weakened soil subbase may cause harm to the pavement structure.

<u>RECOMMENDATIONS</u>:

A concept was developed to install a 30 inch RCP to drain the water. The RCP would be installed by jacking the pipe under IA 5. The culvert flow lines would match the bottom of the ditch and depression on each side of the highway. This scenario would allow for installation of the pipe without closing the roadway.

This also involves regrading the west foreslope to correct a sloughing bank and regrading of the east foreslope. The east foreslope would be graded to meet current foreslope criteria. Under this scenario the foreslope grading would somewhat improve the possibility of an errant vehicle maintaining control.

In addition to the 24 inch pipe there are also 2' x 2' reinforced concrete box (RCB) culverts located nearby. It appears from the roadway plans the intent of the boxes was to capture ditch drainage and dikes were placed to divert flow to these boxes so that the flow would not be conveyed into the railroad right of way. These culverts can be abandoned in place along with the 24 inch RCP. It should be noted during a field visit the 2' x 2' RCB at station 190+59 and the 24 inch RCP could not be located. The 2' x 2' box at station 193+82 was located. These drainage structures can all be abandoned since the proposed 30 inch RCP can hydraulically convey the 50 year storm. The existing drainage structures are all at least 80 years old and abandoning them at this point is justifiable.

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SPECIAL CONSIDERATIONS:

It is anticipated that temporary easements will be needed during construction and permanent easements\right of way will be needed for future maintenance. The project is located within a Zone X flood hazard area. Base flood elevations have not been established in this zone. A DNR Floodplain Development Permit will not be required. The creek is not a protected stream. The Office of Location and Environment has not reviewed this project but environmental review and clearances may be required. A ground survey will be required. Preliminary Bridge will provide a drawing that shows the limits of survey. The presence of existing utilities unknown. Railroads are present in the project area and railroad expansion is not expected.

It is anticipated the work for the primary project would be awarded to one prime contractor. The Office of Bridges and Structures will coordinate the plan preparation with assistance from the Office of Design.

Trails are not present within the immediate project area and trail expansion is not expected in this area.

ESTIMATED COST:

| | 00.000 |
|------------------------------|---------------------|
| Embankment in Place | \$ 89,000 |
| 30 inch RCP, Trenchless | \$ 101,000 |
| 30 inch RCP Apron | \$ 2,400 |
| Revetment, Class E | \$ 1000 |
| Abandon 2' x 2' RCB Culverts | \$ 4,000 |
| Abandon 24 inch RCP Culvert | \$ 4,000 |
| Clear and Grub | \$ 1,500 |
| Seeding\Surface Restoration | \$ 2,000 |
| Traffic Control | \$ 5,000 |
| Mobilization (5%) | \$ 11,000 |
| Contingencies (15%) | \$ <u>32,000</u> |
| | \$ 252,900 |

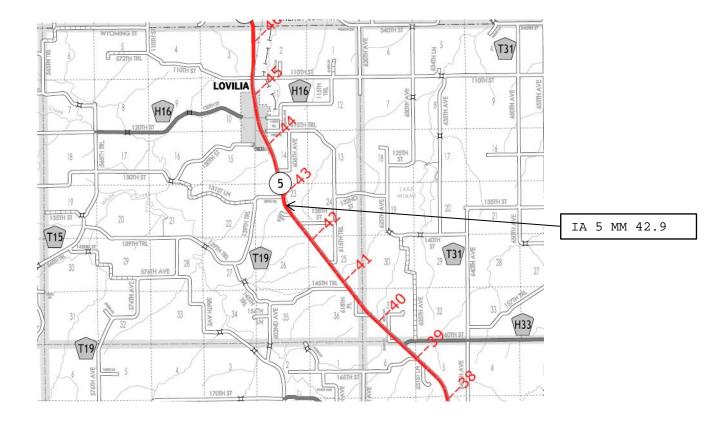
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FUNDS PROGRAMMED:

\$ 250,000 was budgeted for this project as a FY '21 project.

It has been identified by the District 5 office for construction in FY 2021. A schedule of events for plan development will be determined following approval of the Project Concept.

LOCATION MAP:



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cc:

C. Purcell D. L. Maifield F. W. Todey C. C. Poole M. A. Swenson D. R. Tebben D. L. Newell T. D. Hanson T. D. Crouch D. E. Sprengeler J. R. Webb B. M. Clancy M. E. Ross J. Garton M. J. Kennerly C. B. Brakke A. A. Welch S. Anderson M. J. Sankey B. D. Hofer B. E. Azeltine S. J. Gent J.W. Laaser-Webb E. C. Wright A.J. Klein T. Quam J. Selmer J. Woodcock K. D. Nicholson S. J. Megivern N. M. Miller G. A. Novey R. A. Younie K. Brink D.R. Claman W.A. Sorenson M. Van Dyke H. Torres-Cacho J. R. Phillips FHWA P.C. Keen