**TO OFFICE:** District 2

**DATE:** August 22, 2018

**ATTENTION:** Dave Little

**REF. NO.:**
County Winneshiek
Proj. No. HSIPX-150-5(8)—3L-96
PIN: 18-96-150-010

**FROM:** Nick Humpal\Duane Nie

**OFFICE:** District 2 Design

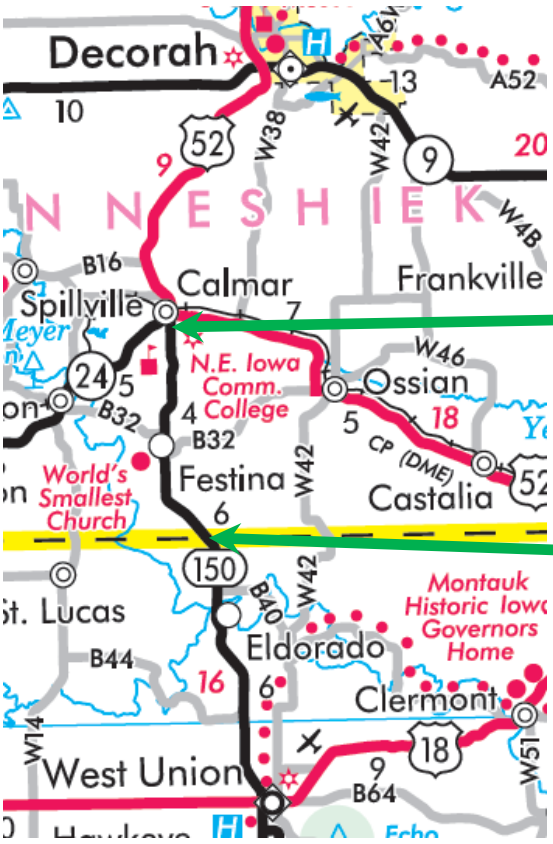
**SUBJECT:** FY 2020 Project Concept; HMA Paved Shoulders-**FINAL**

**DATE OF REVIEW:** July 16, 2018

**INTRODUCTION:**
The purpose of this project is to construct 4-foot wide HMA paved shoulders with milled rumble strips along IA 150 in Winneshiek County. Beginning at the Fayette County Line and extending to a point south of Hancock Street in the city of Calmar. This improvement will address single vehicle leaving the roadway on the right and other safety issues.

**ATTENDEES:** Mark Callahan, Ron Loecher, Gabe Zittergruen, Duane Nie and Tracy Meise

**PROJECT LOCATION:**




END PROJECT
South of Hancock Street in Calmar
R.P. 97.1

START PROJECT
County Line
R.P. 90.0

**PROJECT DATA:**

ROUTE: IA 150
LOCATION: From the Fayette County Line north to south of Hancock Street in the city of Calmar.
Start of Project: R.P. 90.0
End of Project: R.P. 97.3
LENGTH: 7.3 miles
NATIONAL HIGHWAY SYSTEM: Yes
MAINTENANCE SERVICE LEVEL: B
2017 TRAFFIC: 2423 ADT with 14 percent trucks
PRESENT PAVEMENT SURFACE: PCC with spot HMA sections
PRESENT PAVEMENT WIDTH: 22 feet
PRESENT SHOULDER WIDTH: 10 feet Granular

**EXISTING CONDITIONS AND PROPOSED WORK:**

The section of IA 150 from the Fayette County Line to the south city limits of Calmar is an 8 inch PCC pavement constructed 22 feet wide. The shoulders were constructed 10 feet wide with earth. Granular surfacing material has since been placed on the shoulders. The original subdrains were placed at the outer edge of the 42-foot-wide top section. It is assumed these subdrains are no longer functioning. In 1991 approximately 30,100 lineal feet of 4 inch subdrains were placed adjacent to the PCC slab and subbase. The existing granular shoulder has a cross slope more than 4%.

The purpose of this project is to provide 4-foot HMA paved shoulders on each side of IA 150. The shoulders will be constructed 6 inches thick with a cross slope of 4%. The granular shoulders beyond the HMA paved shoulders will be constructed to a cross slope of 4 to 6%. A determination was made, during the concept review, that additional subdrains are warranted. Lost or damaged existing subdrain outlets will be replaced.

This section of IA 150 does not fall within an Outstanding Iowa Waters watershed. There do not appear to be any archaeologically significant locations of interest in this corridor.

**PAVEMENT HISTORY**:

R.P. 90.03 to R.P. 97.1
ORIGINAL PAVEMENT: 8 inch PCC
COARSE AGGREGATE SOURCE: Eldorado-Jacobson; Class I Durability Crushed Limestone
YEAR CONSTRUCTED: 1958

**SAFETY CONSIDERATIONS:**

A review of the crash history from January 1, 2008 to July 9, 2018 found that 78 crashes occurred in the project corridor. The crash rate for the corridor during this time was 144.4 crashes per one hundred million vehicle miles traveled (C/HMVM). The average statewide crash rate for a rural Iowa primary highway is 90 C/HMVM.

The crashes resulted in 1 fatality, 11 serious injuries, 7 minor injuries, 14 possible injuries, and 58 property damage only crashes. 13 crashes involved a vehicle crossing the centerline, 9 crashes involved a vehicle leaving the roadway on the right, and 4 crashes involved a vehicle leaving the roadway on the left.

**B32/123rd Street East Intersection:** There were 7 crashes that occurred at the B32/123rd Street East intersection. The crash rate for this intersection was 0.65 crashes per million entering vehicles (C/MEV), which compares to the statewide average of 0.80 C/MEV at municipal primary road/secondary road intersection.

**B32 West Intersection:** There were 6 crashes that occurred at the B32 West intersection. The crash rate for this intersection was 0.54 C/MEV which compares to the statewide average of 0.90 C/MEV at rural primary road/secondary road intersection.

**¼ Mile south of B32 West Intersection:** A northbound tractor-trailer entered the east ditch, coming to a rest after colliding with a field entrance, resulting in one fatality.

This project will help address several safety concerns including the following:

- Run-off-the-road crashes
- Maintenance operations: granular shoulder edge rutting and shoulder shaping
- Cross Centerline crashes

**ADDITIONAL DESIGN CONSIDERATIONS:**

New Hampton Construction and Elkader/West Union Maintenance should coordinate inspection of mainline pipes to determine if any pipe separations or other deterioration exists that needs be repaired in advance of or with this project. Subdrain outlets will also be inspected.

Ten foot paved HMA fillets will be designed for construction at existing granular side road locations. District staff will discuss whether to include extended HMA fillets along county gravel side roads with this project. If so, an agreement with Winneshiek County will be needed to address the cost of the work.

There is a property of significance two blocks north of the endpoint of this project. It will not be affected by this project.

Saint Aloysius Cemetery (96-00730) is located near the project. It appears this project will likely meet the Minor Projects program for cultural resources compliance. At this time, no formal survey appears necessary.

Northeast Iowa Community College is located at the north end of the project on the left side of IA 150.

The shoulders are at or near 10 feet wide. No earth shoulder construction should be needed to tie the outer shoulder to the foreslope.

The existing shoulder cross slopes are steep, approximately 10% cross slope. The shoulder stone quantity used in the plans will need to take this steepness into account.

A decision regarding whether the existing granular shoulder material to be excavated is in good enough condition to use to build up the existing outer shoulder will be made at the time of the project field exam.

A note stating that some new granular shoulder material will need to be placed in advance of excavation to provide a platform for the excavation (pre-shouldering) will be included in the plan documents.

There are no bridges within the project area. However, there are three reinforced concrete box culverts within the project area.

A note stating that a vertical edge similar to what can be achieved with a milling machine should be included in the plan documents.

A note stating that excavating through existing HMA paved entrance fillets is to be incidental to the excavation work item should be included in the plan documents. A tabulation for “full fillet” removal of HMA paved entrances, in any, will be included in the plans.

There are locations where chevrons have been placed at horizontal curve locations. Consideration was given to constructing 10-foot wide paved shoulders through these curves. These 10-foot wide paved shoulders will not be a part of this project.

There are few station markers posted near the right of way along the project. Having station markers installed in advance of construction would be useful.

There is a backslope slide immediately north of 145th Street, right side. This slide may be included, using separate funding, with the project if local maintenance staff cannot address it in advance. Either a temporary easement or an agreement to work on private property will be needed to perform the repair work. Also, there are utility poles at the top of slope that will need to be worked around.

**FEASIBLE ALTERNATIVE:**

**Alternative One:**

Construct 4-foot HMA paved shoulders 6 inches thick. Add granular shoulder material to flatten the granular shoulder cross slope to 4 percent. Add subdrains and outlets where needed. Add centerline and shoulder rumble strips. Place milled in pavement markings. Address a slope failure if it is not addressed with local forces.

| Bid Item | Unit | Quantity | Unit Price | Rounded Price |
|---|---|---|---|---|
| 6" Paved Shoulder | SY | 300,800 | $22.25 | 743,640 |
| Excavation | CY | 5,570 | $11.95 | 66,570 |
| Gran. Shoulder | TON | 10,528 | $21.90 | 230,560 |
| Subdrains | LF | 1,000 | $10.00 | 10,000 |
| Subdrain Outlets | EACH | 25 | $250.00 | 6,250 |
| Pvmt Sample | | | | 2,000 |
| Pave Marks | STA | 1,128 | $10.00 | 11,280 |
| Grooving | STA | 752 | $15.00 | 11,280 |
| Flaggers | | | | 52,200 |
| Pilot Car | | | | 19,500 |
| Traffic Control | | | | 15,000 |
| Mobilization | | | | 35,000 |
| Rumble Strips | STA | 1,128 | $11.00 | 12,480 |
| Emulsion | | | | 2,000 |
| Slide Repair | | | | 30,000 |
| Unquantified Items | | | 7.5% of total minus slide repair | 91,325 |
| | | | | |
| | | | **Alternative 1 Total** | **$ 1,339,085** |
| | | | | |

**RECOMMENDATIONS:**

Recommended the project develop as described above to install 4' HMA paved shoulders.

**TRAFFIC IMPACTS:**

Traffic will be maintained during construction. No detour is required. Also, no special traffic control related items are anticipated to be needed during construction.

| 3R Project Schedule System | Yes | No |
|---|---|---|
| **TRIGGERS:** | | |
| Metric Project | | X |
| Consultant Involved | | X |
| Lighting | | X |
| Traffic Signals | | X |
| Traffic Signs | | X |
| Railroad | | X |
| Access Control | | X |
| **NEEDS:** | | |
| Survey | | X |
| Geotechnical/Borrow Site/Slope Stabilization | | X |
| Structures | | X |
| Utility Relocations | | X |
| City/County Agreement (Extended HMA Fillets) | X | |
| Right of Way Needed (Temporary Easement) | X | |

**ESTIMATED COST:**
Alternative One $1,339,085

**TONS HMA:** 11,500 Tons

**FUNDS PROGRAMMED:**
The current development estimate shown in PSS is $1,100,000. District 2 has designated this project as a candidate for the FY 2020 HSIP program. A letting date of December 17, 2019 has tentatively been established.

Dave R Little Apr 23, 2018

APPROVED Date
Dave Little
Assistant District 2 Engineer

Cc.

| | | | |
|---|---|---|---|
| T. Abbett | P. Andera | B. Azeltine | Z. Bitting |
| C. Brakke | K. Brink | T. Brunscheon | R. Burns |
| N. Cuva | M. Dell | J. Dighton | B. Dolan |
| M. Eilders | J. Ellingson | D. Erickson | R. Gelhaus |
| S. Gent | S. Godbold | T. Hanson | P. Hjelmstad |
| B. Hofer | N. Humpal | P. C. Keen | M. Kennerly |
| J. Laaser-Webb | D. Little | R. Loecher | S. Loge |
| D. Maifield | S. Megivern | T. Meise | J. Monroe |
| D. Newell | K. Nicholson | T. Nicholson | D. Nie |
| G. Novey | K. Patel | G. Pavelka | A. Poole |
| C. Poole | D. Popp | E. J. Ranney | R. Reichter |
| D. Roeber | K. Rostad | J. Ruter | M. Sankey |
| M. Serio | K. Smith | M. Solberg | D. Sprengeler |
| D. Steenhard | C. Suntken | M. Swenson | R. Taylor |
| D. Tebben | B. Thede | F. Todey | J. Weber |
| R. Welper | C. Wood | G. Zittergruen | |