

**TO OFFICE:** District 2

**ATTENTION:** Dave Little

**FROM:** Mark Callahan/Tracy Meise

**OFFICE:** District 2 Design

**SUBJECT:** FY 2019 3R Concept Statement-FINAL

**DATE:** December 18, 2017

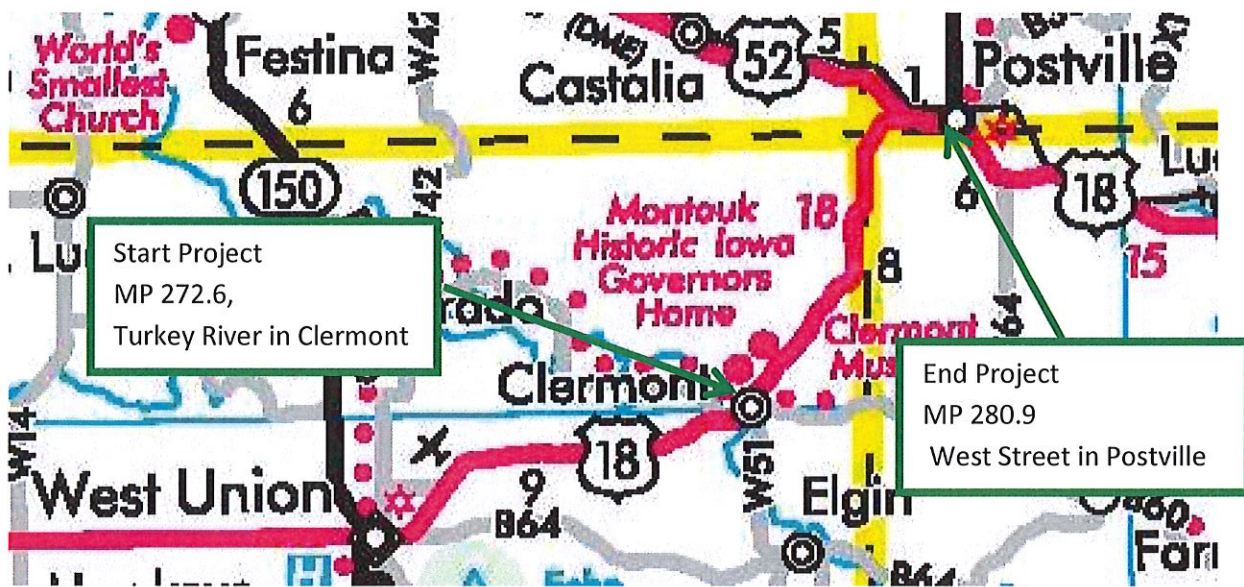
**REF. NO.:**  
County: Fayette  
Proj. No.: NHSN-18-8(46)—2R-33  
PIN: 18-33-018-010

**DATE OF REVIEW:** November 8, 2017

**PARTICIPANTS:** District 2: Mark Callahan, Tracy Meise, Ron Loecher and Gabe Zittergruen

**INTRODUCTION:**

This project involves rehabilitating U.S. 18 from the Turkey River in Clermont in Fayette County northeasterly to West Street in Postville in Allamakee County. This corridor includes 2-lane urban sections in Clermont and Postville and a rural two lane section between the two towns. A 4,000-foot long eastbound U.S. 18 climbing lane exists immediately east of Clermont.



Project Location

**PROJECT DATA:**

ROUTE: U.S. 18

LOCATION: From the Turkey River in Clermont to West Street in Postville

START PROJECT: MP 272.6

END PROJECT: MP 280.9

LENGTH: 8.3 miles

NATIONAL HIGHWAY PERFORMANCE PROGRAM: Yes

PLANNING CLASS: 2

MAINTENANCE SERVICE LEVEL: B

TRAFFIC: Clermont to the Clayton County Line: 2019: 2600 ADT with 18% Trucks

2039: 2900 ADT with 18% Trucks

Clayton County Line to Postville: 2019: 3700 ADT with 13% Trucks

2039: 4100 ADT with 13% Trucks

PRESENT PAVEMENT SURFACE: HMA

PRESENT PAVEMENT WIDTH: 24 feet rural width

An EB climbing lane exists from STA 580+20.00 to STA 620+20.00

PRESENT SHOULDER WIDTH: 8-foot granular

MP to MP	Dir.	Type	Avg. Str. No.	80% Str. No.	Rut Depth	PCI	IRI	K Value
270.50 to 273.05	B	COM	4.69	3.26	0.18	62	171	131
273.05 to 274.96	B	HMA	6.95	4.27	0.22	41	173	141
274.96 to 276.14	B	COM	4.09	1.94	0.28	50	126	106
276.14 to 277.16	B	HMA	6.56	5.89	0.23	45	160	135
277.16 to 278.10	B	COM	6.26	0.22	0.30	56	109	131
278.10 to 279.58	B	COM	3.83	1.53	0.40	41	150	111
279.58 to 280.85	B	COM	4.41	2.11	0.39	39	174	106

**PAVEMENT HISTORY:**

**MP 272.60 to MP 273.05**

ORIGINAL PAVEMENT: PC7 (10"-7"-10")

COARSE AGGREGATE SOURCE: Marquette, Crushed Limestone, Class 3I

YEAR CONSTRUCTED: 1930

RESURFACED: 1965, 3" HMA, Houg, Crushed Limestone

WIDENED AND RESURFACED: 1976, 2" HMA, Pattison, Crushed Limestone

RESURFACED: 1991, 2" HMA with 2" milling, Green, Crushed Limestone

**MP 273.05 to MP 274.96**

ORIGINAL PAVEMENT: 11" HMA

COARSE AGGREGATE SOURCE: Pattison Quarry, Crushed Limestone

YEAR CONSTRUCTED: 1977

RESURFACED: 1991- 4" HMA, Green Quarry, Crushed Limestone



**MP 274.96 to MP 276.14**

ORIGINAL PAVEMENT: PC7 (10"-7"-10")

COARSE AGGREGATE SOURCE: Marquette, Crushed Limestone, Class 1

YEAR CONSTRUCTED: 1930

RESURFACED: 1965, 2" HMA, Houg, Crushed Limestone

WIDENED AND RESURFACED: 1977, 3" HMA, Pattison Quarry, Crushed Limestone

RESURFACED: 1991, 4" HMA, Green Quarry, Crushed Limestone

**MP 276.14 to MP 277.16**

ORIGINAL PAVEMENT: 11" HMA

COARSE AGGREGATE SOURCE: Pattison Quarry, Crushed Limestone

YEAR CONSTRUCTED: 1977

RESURFACED: 1991- 4" HMA, Green Quarry, Crushed Limestone

**MP 277.16 to MP 278.10**

ORIGINAL PAVEMENT: PC7 (10"-7"-10")

COARSE AGGREGATE SOURCE: Marquette, Crushed Limestone, Class 1

YEAR CONSTRUCTED: 1930

RESURFACED: 1965, 2" HMA, Houg, Crushed Limestone

WIDENED AND RESURFACED: 1977, 3" HMA, Pattison Quarry, Crushed Limestone

RESURFACED: 1991, 4" HMA, Green Quarry, Crushed Limestone

**MP 278.10 to MP 279.58**

ORIGINAL PAVEMENT: PC7 (10"-7"-10")

COARSE AGGREGATE SOURCE: Marquette, Crushed Limestone, Class 1

YEAR CONSTRUCTED: 1930

RESURFACED: 1965, 2" HMA, Houg, Crushed Limestone

WIDENED AND RESURFACED: 1977, 3" HMA, Pattison Quarry, Crushed Limestone

RESURFACED: 1991, 4" HMA, Green Quarry, Crushed Limestone

**MP 279.58 to MP 280.85**

ORIGINAL PAVEMENT: PC7 (10"-7"-10")

COARSE AGGREGATE SOURCE: Marquette, Crushed Limestone, Class 1

YEAR CONSTRUCTED: 1937

RESURFACED: 1965, 2" HMA, Houg, Crushed Limestone

WIDENED AND RESURFACED: 1977, 3" HMA, Pattison Quarry, Crushed Limestone

RESURFACED: 1991, 4" HMA, Green Quarry, Crushed Limestone

**EXISTING CONDITIONS:**

The HMA pavement surface has a moderate amount of transverse cracking spaced at regular intervals. There is some roll down of the cracks giving a fairly rough riding condition. Maintenance staff notes this roadway section has a significant amount of heaving during the winter time. Slurry leveling of the transverse joints and at spot locations along the longitudinal widening joint was performed via an MP project in 2013. There are several areas that will require full depth patching. A project to provide 4-foot paved shoulders through a series of horizontal curves from MP 277.4 to 278.3 was constructed in 2006.

The City of Clermont has performed a streetscaping project that included decorative concrete and brick paver sidewalk work. This streetscaping will be impacted by ADA work be performed as part of this project.

**DESIGN CONSIDERATIONS:**

The current posted speed limit is 55 mph in the rural area from Clermont to Postville.

**Roadway:**

Minimum vertical curve: the 3R minimum vertical curve shall provide for 35 mph stopping sight distance. There are no vertical curves with a stopping sight distance less than 35 mph.

Horizontal curvature: the 3R maximum horizontal degree of curvature is 6 degrees. There is one horizontal curve at station 59+50 in the town of Postville that has a degree of curvature of 8 degrees. This curve will not be addressed with this project.

Gradient: the 3R maximum gradient is 6%. There is a 7% grade immediately east of Clermont. An eastbound climbing exists along this grade. The grade will not be addressed by this project.

Lane Width: the 3R acceptable width is 12 feet. The existing lane width is 12 feet.

Shoulder Width: the acceptable effective shoulder width is 6 feet. The existing granular shoulders range in width from 8 to beyond 10 feet. The existing shoulder cross slope exceeds 6 percent. The shoulder cross slope will be flattened to 4 to 6 percent as part of this project. Also, this section of US 18 is part of the National Highway Performance Program System. The project will include 4-foot paved shoulders. Currently there are 19,045 lineal feet of existing paved shoulders varying in width from 4 to 10 feet.

Roadway pipes and culverts identified with object markers will be extended where practical to a point beyond the outside edge of shoulder. There are no pipes identified with object markers.

Fayette and Clayton counties may be interested in extended paved granular side road fillets. This would eliminate the need to maintain the granular surfacing of the side road at the US 18 intersections, eliminating an operational safety issue. An agreement with each County will be needed to address this work.

**Slopes:**

Foreslopes: the 3R acceptable maximum foreslope is 3:1. Existing slopes are 3:1 or flatter.

Transverse slopes at entrances and side roads: the 3R acceptable transverse slope is 6:1. Slopes steeper than 6:1 will be addressed as part of this project where practical and where right of way permits.

Currently there are 2,287 lineal feet of cable guardrail. This cable guardrail will be updated to high tension guardrail as part of the project.

Fixed objects should not be present in the clear zone. Above ground utilities are located at or near the right of way line.

**Bridges:** There are no bridges within the project limits.

**Subdrains:**

Approximately 60% of U.S. 18 is treated with existing subdrains. An additional 16,000 lineal feet of subdrains will be installed as part of the project in order to provide 100% coverage.



**Intersection Turn Lane Warrants:**

Right and left turn lane warrants were reviewed at the U.S. 52 intersection. This is a 3-leg intersection with U.S. 52 traffic required to stop. Currently there is a major westbound right turn lane. An eastbound left turn lane is not warranted.

Five gravel side road T intersections exist. Each of these intersections has a safety dike.

According Design Manual Section 3C-5, centerline rumble strips should be included with this project. Shoulder rumble strips will also be included with the project.

**CORRIDOR CRASH HISTORY:**

Crashes for the period from January 1, 2007 to July 31, 2017 were reviewed for this segment of U.S. 18. A total of 133 reportable crashes occurred that included 3 fatal crashes, 6 major injury crashes, 16 minor injury crashes, 10 possible/unknown injury crashes and 98 property damage only (PDO) crashes. These crashes resulted in 6 fatalities, 8 serious injuries, 21 minor injuries and 14 possible injuries. The crash rate for this period was 154.5 crashes per hundred million vehicle miles traveled (C/HMVM), which compares with a 2005-2014 statewide average crash rate of 87 C/HMVM along a rural primary US route.

Eighteen of the crashes involved either crossed centerline or ran off the road on the left type crashes. These crashes resulted in 4 fatalities, 1 major injury, 8 minor injuries and 3 possible injuries. This type of crash will be addressed by placement of centerline rumble strips.

During the period there were 3 PDO crashes at the U.S. 18/U.S. 52 T-intersection. The 2007-2017 crash rate for this intersection was 0.22 crashes per million entering vehicles (C/MEV), which compares with a statewide average crash rate of 1.0 C/MEV at a rural primary road/primary road intersection.

**ADDITIONAL DESIGN CONSIDERATIONS:**

OLE notes that there are a number of National Register listed properties within and near Clermont, including Montauk. Additionally, some of the properties may possess contributing elements that include sidewalks, retaining walls, and fencing. A historical/architectural survey (H03) will be needed to know which properties need further consideration or avoidance. It appears at this time that vibration monitoring will likely be needed on a number of historic properties.

Significant ADA sidewalk and sidewalk ramp design will be performed in the town of Clermont. A consultant will be hired to perform the ADA design and ROW acquisition for this work as part of project NHSN-018-8(47)—2R-33. This project is estimated to cost \$339,300. This project will start at the east end of the Turkey River Bridge and extend to the east side of the Stone Street intersection.

Clermont officials noted that water mains and sanitary sewers should not need to be addressed with this project.

The existing sidewalk project with brick pavers was constructed in 2006. Some of the existing pavers have citizens' names on them. The ADA plans should note that these bricks are to be carefully removed and provided to the City for their use. City officials do not believe that there are any coal chutes currently under the sidewalk as they were addressed during in the 2006 project.

There are water valves that will need adjustment. City staff specifically noted valves at the W51 intersection.

There are several intake tops that should be considered for replacement.

There is a small section of curb and gutter that should to be replaced in Clermont.

Some light poles/foundations may need to be relocated as part of the ADA design in Clermont.

The Office of Location and Environment will be contacted regarding the limestone sidewalk sections in the block just west of Stone Street on the right/southeast side of U.S. 18.

Earth shoulder fill will be considered throughout the project, especially in areas where the existing shoulder is over 10' wide.

Grooved centerline pavement markings should not be included when centerline rumble strips are specified.

Slurry will not be used to fill existing shoulder rumble strips prior to resurfacing.

Maintenance staff should review all mainline drainage structures to identify any deterioration issues.

**FEASIBLE ALTERNATIVES:**

Structural analysis indicates an HMA overlay thickness of 6 inches is needed to provide a 20-year design life in those pavement sections that include the original 10-7-10 PCC pavement. Less than 2 inches of HMA is required for a 20-year design in those pavement sections reconstructed in 1977.

For each of the following alternatives the work in Clermont and in Postville will remain the same. This work will include 0.75 inch of pavement scarification followed by a 3.0 inch HMA overlay.

**Clermont Resurfacing from the Turkey River Bridge to east of Stone Street (Excluding ADA Costs):**

Scarification	\$ 13,000
HMA Resurfacing	\$ 109,000
Full Depth Patching	\$ 23,000
Unquantified Bid Items	\$ 8,000
City Parking Paving (If desired by Clermont)	\$ 24,000
Total Work in Clermont:	\$ 177,000

(ADA Project NHSN-018-8(47)—2R-33 is estimated to cost \$339,300.)

**Postville Resurfacing from the start of the curbed section through the West Street intersection:**

Scarification	\$ 7,000
Base Widening	\$ 9,000
HMA Resurfacing	\$ 66,000
Full Depth Patching	\$ 23,000
Unquantified Bid Items	\$ 7,000
Total Work in Postville	\$ 112,000

**U.S. 18 from Stone Street in Clermont to the curbed section in Postville:**

**Alternative 1: Four Inch CIPR and Four Inch HMA Resurfacing**

Install subdrains and perform full depth patching. Cold in-place recycle 4-inches of existing pavement. Spread the recycled material to depth of 3 inches and a width of 32 feet. This material will form the base for the 4-foot paved shoulders. Resurface with 4.0 inches of HMA 32 feet wide. Install centerline and shoulder rumble strips, flatten transverse slopes and extend side road and entrance pipes.

Subdrains	\$ 150,000
Patching	\$ 129,000
Cold In-Place Recycling	\$ 342,000
HMA Resurfacing	\$ 1,593,000
Granular Shoulders	\$ 172,000
Pipe Extensions/Slope Flattening	\$ 50,000
Pavement Markings	\$ 68,000
Rumble Strips	\$ 15,000
Flaggers/Pilot Cars	\$ 182,000
Mobilization/Traffic Control	\$ 120,000
Mitigation	\$ 50,000
Incentives	\$ 80,000
Unquantified Items	\$ 193,000
TOTAL:	\$ 3,144,000

**Alternative 2: Three Inch CIP with Four Inch HMA Resurfacing**

Install subdrains and perform full depth patching. Add 4-foot base widening. Cold-in-place recycle 3.0 inches of existing pavement 32 feet wide. Resurface with 4.0 inches of HMA. Install centerline and shoulder rumble strips, flatten transverse slopes and extend side road and entrance pipes.

Subdrains	\$ 150,000
Patching	\$ 129,000
Base Widening	\$ 517,000
Cold In Place Recycling	\$ 394,000
HMA Resurfacing	\$ 1,593,000
Granular Shoulders	\$ 172,000
Pipe Extensions/Slope Flattening	\$ 50,000
Pavement Markings	\$ 68,000
Rumble Strips	\$ 15,000
Flaggers/Pilot Cars	\$ 182,000
Mobilization/Traffic Control	\$ 120,000
Mitigation	\$ 50,000
Incentives	\$ 80,000
Unquantified Items	\$ 199,000
TOTAL:	\$ 3,719,000

**Alternative 3: Two Inch Strengthening with Three Inch HMA Resurfacing**

Install subdrains and perform full depth patching. Scarify the existing pavement 0.5 inches. Place 2.0 inch HMA strengthening Add 4-foot base widening. Resurface with 3.0 inches of HMA. Install centerline and shoulder rumble strips, flatten transverse slopes and extend side road and entrance pipes.



Subdrains	\$ 150,000
Patching	\$ 129,000
Scarification	\$ 100,000
Two Inch Strengthening	\$ 289,000
Base Widening	\$ 517,000
HMA Resurfacing	\$ 1,195,000
Granular Shoulders	\$ 155,000
Pipe Extensions/Slope Flattening	\$ 50,000
Pavement Markings	\$ 68,000
Rumble Strips	\$ 15,000
Flaggers/Pilot Cars	\$ 182,000
Mobilization/Traffic Control	\$ 120,000
Mitigation	\$ 50,000
Incentives	\$ 80,000
Unquantified Items	\$ 148,000
<b>TOTAL:</b>	<b>\$ 3,248,000</b>

<b>3R Project Schedule System</b>	<b>Yes</b>	<b>No</b>
<b>TRIGGERS:</b>		
Metric Project		X
Consultant Involved (ADA)	X	
Lighting (relocation of light poles)	X	
Traffic Signals		X
Traffic Signs		X
Railroad		X
Access Control		X
<b>NEEDS:</b>		
Survey (ADA work)	X	
Geotechnical/Borrow Site/Slope Stabilization		X
Structures		X
Utility Relocations (Urban)		X
City/County Agreement (Side Road Fillets)	X	
Right of Way Needed (ADA Easements)	X	

**RECOMMENDATIONS:**

The recommended method of rehabilitation for this project is Alternative 2.

**TONS HMA:**                    39,100

**TRAFFIC EFFECTS:**

Traffic will be maintained on the project at all times. No special traffic related work restrictions are anticipated.



**FUNDS PROGRAMMED:**


This project will be supported with District 2 FY 2019 3R funds. The project is currently scheduled for letting April 16, 2019.



APPROVED

Dave Little

Assistant District 2 Engineer



DATE

Cc:

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