CORRESPONDENCE/MEMORANDUM _____ **State of Wisconsin**
Southwest Region
Local Program Management

Date: January 10, 2013

To: Brian Meyer, P.E.
WisDOT Bureau of Project Development
Local Project Delivery Section – Southwest Region

From: Mike Banaszak, P.E.
Local Program Management Consultant

Subject: ID 5897-00-01
Wisconsin Dells - Reedsburg
(Fawn Valley Drive to IH 90)
CTH H
Sauk County

REQUEST FOR THE USE OF ALTERNATIVE "3R" STANDARDS

Pursuant to Chapter Trans 205 of the Wisconsin Administrative Code, Sauk County is requesting approval to use the Department of Transportation's "Design Criteria for Resurfacing, Restoration and Rehabilitation" Standards as defined in section 11-40-1 of the Facilities Development Manual for the subject reconditioning project.

In accordance to Chapter Trans 205.035(5), we feel the design is adequate for this section of roadway, is cost effective, provides safety improvements where needed, and balances the effects of the environmental constraints and residential impacts. Therefore we request your approval of the use of "3R" standards.

RECOMMENDED:

_____ 1-18-13
WisDOT SW – Region Project Development Section — Date
Local Program Project Manager

APPROVED:

_____ 1/18/13
WisDOT SW – Region Project Development Section — Date
Local Program Supervisor

REQUEST FOR THE USE OF ALTERNATIVE "3R" STANDARDS

PURPOSE

Pursuant to Trans 205.035 of the Wisconsin Administrative Code a request is being made by the Sauk County Highway Department to permit the use of the Department's "3R" standards in lieu of the standards in s. Trans 205.03. The Design Class is C4 and Sauk County requests that Design Class 3RC3 be approved.

The project is located in the City of Reedsburg; Town of Reedsburg, Sections 2 and 1 of T12N, R4E; Town of Winfield, Sections 36, 25, and 24 of T13N, R4E; Town of Dellona, Sections 19, 20, 21, 16, 15, 14, 11, and 12 of T13N, R5E; Town of Delton and City of Wisconsin Dells, Sections 7, 8, and 5 of T13N, R6E, Sauk County, Wisconsin. The project is a pavement replacement of CTH H from Fawn Valley Drive to North Frontage Road, which is approximately 12.24 miles. CTH H is functionally classified as a major collector. See attached preliminary plans.

It is proposed to pulverize and relay the existing 4 inches of asphalt pavement and pave 4 inches of new HMA pavement. Where there is urban curb and gutter to remain, the existing pavement structure will be milled 3 inches and replaced with 3 inches of new HMA pavement to match the existing curb and gutter elevations. The offset width to the flag of curb is 14 feet.

At the Dell Creek bridge crossing, the pulverizing operation will be matching into the existing bridge, P-56-0070, with a milled butt joint. No work on the bridge will be performed. The existing beamguard terminals will be replaced with MGS Guardrail Terminal Energy Absorbing Terminals.

At the I90/94 bridge underpasses, the pulverizing operation will be matching into the existing pavement before the existing beamguard starts under the bridges using a milled butt joint. The existing pavement under these bridges will milled 4 inches and replaced with 4 inches of new HMA pavement to maintain the existing vertical clearance under the bridges. No work on the bridges will be performed. The existing beamguard will be replaced under the bridges with MGS Guardrail 3 and MGS Guardrail Terminal Energy Absorbing Terminals.

At existing side roads with no curb and gutter, the intersections will be pulverized and overlayed. At the existing side roads that have curb and gutter, the intersections will be milled and paved with new HMA pavement. All the intersections will have milled butt joints to match into the existing pavement at the limits shown on the plans.

POSTED SPEED LIMIT AREAS

35 MPH	**45 MPH**	**55 MPH**
Sta 52+48.54 – 60+00	Sta 60+00 – 119+00	Sta 119+00 – 692+00
Sta 692+00 – 698+68.81		

DESIGN CLASS

The 2011 ADT is 7300 and the 2034 projected ADT is 9200. The 2034 projected ADT along CTH H, going northeast of Reedsburg, gradually decreases down to 3650 in the City of Wisconsin Dells. The higher ADT will be used throughout the entire length of the project for pavement structure consistency. The traffic projection of 9200 places CTH H in Design Class C4 of Trans 205.03 or design class 3RC3 of Trans 205.035 having the following requirements:

Design Class	Traveled Way	Shoulder	Roadway
C4	24	8	40
3RC3	22	6	34

JUSTIFICATION

The existing lanes are 12 feet with 6 foot shoulders. The proposed typical section includes 11 foot lanes and 6 foot shoulders. The project will pulverize 4 inches of the existing pavement and add 4 inches of HMA pavement type E-3 on the pulverized material. This will raise the finished grade of CTH H by 4 inches. Using the 3RC3 standard 11-foot lane width will allow for the 1 foot decrease in overall roadway width and the raise in grade to be constructed within the existing roadway section. If C4 standards of 8 foot shoulder width was required, the entire roadway would need to be reconstructed. Sauk County Highway Department has determined that reconstructing the project would have the following additional impacts:

- Filling the fore slopes
- Reditching
- Extending the back slopes
- Acquisition of new right of way
- Potential impacts to archeological sites
- Wetland impacts
- Potential utility relocations
- Soil disturbance requiring erosion control and storm water management
- Increased involvement with the DNR due to the proximity to Dell Creek
- Increased costs not previously included in the program

In one isolated location where there is existing curb and gutter to remain, the existing pavement structure will be milled 3 inches and replaced with 3 inches of new HMA pavement to match the existing curb and gutter elevations. The offset width to the flag of curb is 14 feet.

DESIGN CONTROLS

Traffic Data:
Yr 2011 = 7300
Yr 2034 = 9200

Design Speed:
55 mph

Horizontal Curves and Superelevation:
3R standards require that all horizontal curves with an existing curve radius equal to the required radius for the design speed but having a superelevation rate less than required, the superelevation rate must be increased to the required rate. Material in the transition areas from pulverizing to milling will be used to correct the superelevation rates.

HORIZONTAL CURVE INFORMATION

PI Station	Radius	Existing Superelevation	Corrected Superelevation	Design Speed	Posted Speed
49+90.75	1910.08'	5.00%	---	55 mph	35 mph
67+86.64	1146.28'	6.00%	---	55 mph	45 mph
97+56.51	963.00'	6.00%	---	50 mph	45 mph
123+74.34	3890.00'	3.20%	---	55 mph	55 mph
157+40.03	5729.65'	2.30%	2.40%	55 mph	55 mph
169+65.23	955.37'	6.00%	---	50 mph*	55 mph
180+26.24	955.37'	6.00%	---	50 mph*	55 mph
207+64.78	1205.00'	6.00%	---	55 mph	55 mph
232+64.62	1170.00'	6.00%	---	55 mph	55 mph
277+23.93	3437.87'	3.50%	---	55 mph	55 mph
313+42.99	5729.65'	2.30%	2.40%	55 mph	55 mph
345+78.45	2797.98'	5.40%	---	55 mph	55 mph
365+38.78	1627.60'	5.40%	---	55 mph	55 mph
383+45.58	1432.50'	5.70%	---	55 mph	55 mph
399+62.71	2728.52'	4.10%	---	55 mph	55 mph

421+78.49	2292.00'	4.50%	4.60%	55 mph	55 mph
439+76.12	5729.58'	2.30%	2.40%	55 mph	55 mph
451+76.95	5730.00'	2.30%	2.40%	55 mph	55 mph
468+72.43	5730.00'	2.30%	2.40%	55 mph	55 mph
525+42.63	11460.00'	N.C.	---	55 mph	55 mph
556+96.37	1910.00'	5.00%	---	55 mph	55 mph
599+21.86	2865.00'	4.00%	---	55 mph	55 mph
613+02.14	1146.00'	6.00%	---	55 mph	55 mph
627+94.43	1146.00'	6.00%	---	55 mph	55 mph
654+63.32	1146.00'	6.00%	---	55 mph	55 mph
680+69.04	1432.50'	5.70%	---	55 mph	55 mph

*Advisory signing for 50 mph to remain in place.

Stopping Sight Distance for Vertical Curves:
3R standards require that all vertical curves be within 15 mph of the design speed stopping sight distance on projects with a design traffic volume over 1,500 ADT. From visual inspection, all vertical curves appear to meet the stopping sight distance for the statutory or posted speed limit.

Grades:
From visual inspection, existing grades appear to be within standards.

Intersection Sight Distance and Vision Triangles:
From visual inspection, intersection sight distance was found to be within standards. There are no sight distance or geometric constraints. There are no warrants to provide vision triangles based on crash history.

Cross Section:

Lane and Shoulder Widths: The existing roadway consists of a 24 foot traveled roadway with 3 foot paved shoulders and 3 foot base aggregate dense shoulders. The proposed cross section for this project is a 22 foot traveled roadway with 4 foot paved shoulders and 2 foot base aggregate dense shoulders. This meets the minimum for the 3RC3 design class.

Bridge width and structural capacity: Structure P-56-0070, located at Station 399+17.83 – Station 399+54.00, was constructed in 1971 and has a sufficiency rating of 82.1, an HS15 inventory rating, and an HS30 operation rating. It is a 33.5 foot concrete deck steel girder bridge with a clear roadway width of 31.5 feet and Type W railing. The 31.5 foot clear roadway width meets criteria (28' min) for the design ADT of 4550 for this section of CTH H. No work is being done to the structure.

Vertical Clearance: The vertical clearance at I90/94 will remain the same as existing. Structure B-56-0037 (EB) has an existing vertical clearance of 15.6' and structure B-56-0038 (WB) has an existing vertical clearance of 15.62'. Both structures meet the minimum vertical clearance of 14'-6" required for 3R projects.

Roadside Design:

Safety Analysis: The crash data provided by the Wisconsin Traffic Operations and Safety Laboratory for the time period of 2009-2011 showed lower than average crash rates. There are no significant crash locations. 24% of the crashes did occur near the various intersections. No individual intersection had more than 1 crash total over the 3 years, except the CTH P intersection and the Coon Bluff intersection. The CTH P intersection had 3 crashes, one crash each year. The Coon Bluff intersection had 2 crashes in the 3 year period. The CTH P intersection crash rate is 0.49, which is considerably lower than the state intersection crash rate of 1.5. There is no traffic data available on Coon Bluff Road to determine the intersection crash rate but as noted above the geometry at all intersections is within design standards.

Roadway	Crash Rate (Year)	Statewide Crash Rate (Year)	Number & Severity of Crashes*			
			Fatal	Injury	Property Damage	Total No. Crashes
CTH H	61	(2011)	0	8	12	20
	37	101 (2010)	1	4	7	12
	43	142 (2009)	0	7	7	14

* Excludes deer related crashes

Clear Zone Width and Lateral Clearance: The proposed clear zone for 3RC3 is 18 feet. The lateral clearance meets the minimum requirement of 6 feet without roadside barrier and 6 feet with roadside barrier for Class C4.

Urban and Suburban Roadways – With Shoulders: The City of Reedsburg has curb and gutter on the west side of the roadway for approximately 613 feet. The width to the flag of curb is 14' from the road centerline.

Roadways with Curbs and Posted Speeds of 40 mph or Less: In the reduced speed zone areas, there is curb and gutter located on CTH H for the City of Reedsburg. 6 inch barrier curb exists in this section.

Roadways with Curbs and Posted Speeds of 40 mph or Greater: There is no curb and gutter in areas where the posted speed is 40 mph or greater.

Slopes and Ditches: The slopes and ditches appear to meet current design standards based on as-built plans and will be unchanged by this project.

Guardrail: This project will replace all the existing beamguard with the current standard MGS Guardrail and MGS Guardrail Terminal EATs. There is existing guardrail present on the structure, P-56-0070, with obsolete guardrail terminals which will be replaced with MGS Guardrail Terminal EATs that meet current design standards. The existing guardrail on the existing bridge is Type W standard railing and will not be changed. No work is anticipated on the bridge.

CONCLUSION

In summary and in accordance with Chapter Trans 205.035(5), Sauk County believes the design to be adequate for this section of roadway, is cost effective, provides safety improvements as needed, and balances the effects of the environmental concerns and right of way acquisition. Therefore, we request your approval of the use of 3RC3 standards for this project.

Attachments

- Location Map
- Typical Sections
- Plans