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WISCONSIN DIVISION

ENVIRONMENTAL EVALUATION OF FACILITIES DEVELOPMENT ACTIONS

Wisconsin Department of Transportation

Basic Sheet 1

Project ID 2709-03-00/70	**Project Termini** From: County Q To: County E ✓	**Funding Sources** - Check all that apply ☒ Federal ☒ State ☐ Local ✓
Route Designation (if applicable) Long Truck Route (State) National Highway System (NHS) Route ☒ Yes ☐ No ✓	**Nearest Community** Village of Richfield Town of Polk ✓	**Estimated Project Cost** $16,100,000 (FY 2013) now FY14 Real Estate Acquisition Portion of Estimated Cost $1,700,000 (FY 2013) need YOE
Project Name WIS 164, Lovers Lane ✓		
County Washington ✓	**Section-Township-Range** Sections 4, 5, 8, 9, 16, 17, 20, 21, 28, 29, 32, 33 T-9-N, R-19-E Sections 28, 29, 32, 33 T-10-N, R18-E	**Right of Way Acquisition**
Bridge Number(s), if applicable Not applicable	**Scheduled start date** (Operational Planning Meeting (OPM)) October 27, 2010 ✓	

	Acres
Fee	42.16
TLE	13.50
PLE	0.05 ← ?

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Functional Classification of Existing Route	Urban	Rural
Freeway/Expressway	☐	☐
Principal Arterial	☐	☒
Minor Arterial	☐	☐
Major Collector		☐
Minor Collector		☐
Collector	☐	
Local	☐	☐
No Functional Class	☐	☐

WisDOT Project Classification	
Resurfacing	☐
Pavement Replacement	☐
Reconditioning	☒
Expansion	☐
Bridge Rehabilitation	☐
Bridge Replacement	☐
A "Majors" Project	☐
SHRM	☐
Preventive Maintenance	☐
Safety	☐
Other, Describe	☐

☒ **FHWA Draft Categorical Exclusion, Draft Type 2c, No significant impacts indicated by initial assessment**

☐ **FHWA Final Categorical Exclusion, Type 2c, No significant impacts will occur**

☐ **FHWA Environmental Assessment, Type 3, No significant impacts indicated by initial assessment**

Preparer:

Stephen Huff RA Smith National 10/22/13 Project Manager
(Signature) (Company/Org.) (Date) (Title)

Traci Stenglein 10/22/13 Project Manager
(Signature) (Date) (Title)
(☒ Region ☐ Aeronautics ☐ Rails & Harbors)

(Signature) (Date) (Title)
(Director, Bureau of Technical Services)

Tracey Blankenship 12/10/2013 Maj Acj Proj. Mgr
(Signature) (Date) (Title)
(☒ FHWA ☐ FAA ☐ FTA ☐ FRA)

After reviewing and addressing substantive public comments [illegible] (EA), and coordinating with other agencies, it is determ

☐ **Will not** significantly affect t

☐ **Will not** significantly affect t

☐ **Has potential to** significantl

Preparer:

(Signature) (Company/Org.)

(Signature)
(☐ Region ☐ Aeronautics ☐

Minor comments by Mark Chandler to be resolved following final documentation after the public hearing.
TBlankenship
12/10/2013

Exhibit D

1. Purpose and need of proposed action:

Purpose of the Project

The purpose of the proposed action is to address poor pavement condition, safety, traffic flow, and to provide for adequate bicycle facilities. The WIS 164 project is approximately 7.5 miles in length and extends from just north of County Q to just north of County E in Washington County (see Exhibits 1 and 2).

Need for the Project

The need for proposed improvements is demonstrated through a combination of factors that include regional/local transportation and land use planning, system linkage and route importance, existing highway deficiencies, traffic demand, safety concerns, and environmental aspects.

Transportation and Land Use Planning

The Southeastern Wisconsin Regional Planning Commission (SEWRPC) prepares land use and transportation plans for a seven-county region including Washington County. This planning is conducted under the guidance of various technical and advisory committees consisting of representatives from state and federal agencies; universities; municipal and county planning, transportation, and public works departments; transit groups, private utilities, and environmental organizations. Public input is obtained through newsletters, public information meetings and hearings, and publication and distribution of various informational materials.

The adopted 2035 Regional Transportation Plan indicates capacity expansion to 4 lanes for WIS 164 from the Waukesha/Washington County line (County Q) to WIS 167 and right of way reservation for a 4 lane facility from WIS 167 to WIS 60. The adopted 2035 Regional Transportation System Plan is based on population, household, and employment growth in the region, forecast growth and transportation demand, and analysis of existing transportation facilities. Traffic forecasts are based on predicted growth patterns, number and types of trips made, routes taken, travel times, and other factors such as transit use.

At the local level, the Village of Richfield (formerly the Town of Richfield) had prepared a Comprehensive Plan for the Town of Richfield (Richfield 2025). The scope of the document includes profile of the demographic, economic and housing characteristics of the Village; an inventory and assessment of the environment, community facilities, and natural resources; visions, goals, objectives, policies and implementation strategies; and a series of maps that depict existing and future land use patterns in the Village.

The Comprehensive Plan indicates that current land use (in 2005) is primarily a mix of single family residential and agricultural uses with intermittent institutional, environmental, and commercial properties. Future land use in 2025 along the project corridor is projected to be largely single family residential properties with some institutional, environmental, and commercial properties.

While the adopted 2035 Regional Transportation Plan indicates capacity expansion or right of way reservation to accommodate future improvements for WIS 164, current traffic levels do not meet thresholds for expansion. Expansion is the addition of through travel lanes to provide additional capacity to improve the level of service of the highway. Expansion of WIS 164 was previously considered in past environmental review and related litigation. An Environmental Impact Statement was prepared for Project I.D. 2748-01-01, and the Record of Decision was approved in 2002. The past WIS 164 expansion sought to expand WIS 164 from 2 to 4 lanes. Capacity expansion is not being considered as part of this project, WIS 164 would remain a 2 lane highway. All proposed improvements would be related to preservation of the 2-lane highway by addressing safety, geometric, pavement, and drainage deficiencies within the project corridor. Right of way acquisition proposed as part of this project would be related to the improvements needed to address safety, geometric, pavement, and drainage concerns and would not be for reservation of right of way to accommodate future expansion of WIS 164 to four lanes.

Preliminary engineering for and construction of the proposed WIS 164 highway preservation project is presently included in the 2011-2014 Transportation Improvement Program for Southeastern Wisconsin under TIP #366. The purpose of the Transportation Improvement Program for Southeastern Wisconsin is to identify transportation improvements recommended for advancement during the 2011-2014 time frame, provide for a staging of improvements over the period 2011-2014 consistent with the regional transportation system plan, include estimates of

costs and revenues for the period 2011-2014, and relate the improvements recommended in the program to the adopted 2035 Regional Transportation Plan.

System Linkage and Route Importance

WIS 164 is part of the National Highway System (NHS) as designated under the National Highway System Designation Act of 1995. The NHS includes the Interstate Highway System as well as other roads, such as WIS 164, important to the economy, defense, and mobility. The NHS was developed by the United States Department of Transportation (DOT) in cooperation with the states, local officials, and metropolitan planning organizations (MPOs).

WIS 164 is a north-south highway, functionally classified as a principal arterial. Principal arterial highways are intended to serve moderate length through trips, higher density traffic, movements between regional economic centers, and to provide access to adjacent development while maintaining a high level of through traffic mobility. WIS 164 provides a link between the suburban areas of Waukesha, Pewaukee, and Sussex, with southern Washington County. WIS 164 serves as the backbone for east-west highways that collect and distribute traffic in southern Washington County.

Existing Highway Characteristics and Deficiencies

WIS 164 is a two-lane rural roadway between County Q and WIS 60 in the Village of Richfield and Town of Polk in Washington County. The roadway is generally on tangent and aligned along a section line. The project runs through the Kettle Moraine with many hills and valleys.

Existing highway characteristics were reviewed and analyzed for compliance with the Wisconsin Department of Transportation (WisDOT) Facilities Development Manual (FDM). The FDM provides policy, procedural requirements, and guidance encompassing the facilities development process within the WisDOT Division of Transportation Systems Development (DTSD). The FDM is applicable to all types of highway improvements on the state trunk highway system, other street/highway systems for which federal-aid highway funds may be utilized, state facilities road systems funded with state funds administered by the department, and other highways and roads for which the department may act as a administrative agent. Adherence to the requirements contained in the FDM will provide for the uniform development of highway systems and plans that reflect sound engineering practice and sensitive environmental concern.

The existing conditions for this project were reviewed with respect to design criteria for resurfacing, restoration, and rehabilitation (3R) projects per the FDM. 3R projects are intended to preserve and extend the service life of existing highways and enhance highway safety. The typical scope of such projects exceeds routine maintenance but is less than new construction or reconstruction. Examples of 3R work include:

- Resurfacing
- Pavement replacement
- Pavement structural and joint restoration
- Widening of lanes and shoulders
- Selected alterations to vertical and horizontal alignment
- Intersection improvements
- Bridge rehabilitation
- Traffic control improvements
- Removal, modification or shielding of roadside hazards

3R projects should preserve the safety benefits gained from previous construction by not worsening existing roadway geometrics. However, upgrading 3R projects to comply with the minimum geometric design criteria intended for new construction and reconstruction is often impractical. Constraints include cost to benefit considerations, the need to acquire extensive right of way, and unacceptable social or environmental impacts. Therefore, the FDM contains minimum geometric design criteria that were developed for 3R projects. They are intended to provide the lower limit for applying engineering judgment in designing 3R projects.

There are many locations along the WIS 164 corridor that meet 3R standards, but do not meet the current new construction standards for vertical sight distance, vertical grade, intersection sight distance, vision triangles, and side slopes within the clear zone. Residents expressed safety concerns and identified hazardous locations at the June 2011 public information meeting for this project. These locations, as well as other locations in the project limits that were determined to be below new construction standards or that have had higher than average crash rates, were examined for safety improvements. Several key deficiencies were identified that contribute to higher than average

crash rates and crash severities for similar rural state trunk highways and correlate to areas of concern raised by public comments:

- Insufficient sight distances at several hills and intersections.
- Lack of turn lanes at most intersections
- Long waits and delays at the WIS 167 (Holy Hill Road) intersection during rush hours and weekends
- Steep slopes off the shoulders down to the ditches
- Steep grades along WIS 164

Pavement Condition

WIS 164 was constructed as County J in the early to mid-1960s with 5 to 6.5 inches of asphalt over 9 inches of aggregate base course and was overlaid with 2.5 to 3.5 inches of asphalt in 2002. The initial service life of an asphalt pavement is approximately 22 years and the service life of an asphalt overly is approximately 12 years.

The existing asphalt overlaid pavement is in fair condition with transverse and longitudinal cracking along the project length. This cracking is deteriorating and is expected to continue to deteriorate as a higher rate until the proposed construction year of 2016.

Lane Width

The existing lanes of WIS 164 are 11 feet wide. See Exhibit 3 – Existing and Proposed Typical Sections. WIS 164 is on the National Highway System, and is a state designated truck route, with 9.4% of the AADT comprised of trucks. A 24 foot wide traveled way (12-foot wide travel lanes) is required per FDM 11-40 Attachment 1.2 for a Design Class 3RA3 roadway. A 24 foot wide traveled way (12-foot wide travel lanes) is required per FDM 11-15 Attachment 1.1 for a Design Class A2 reconstructed roadway.

Shoulder Width

The existing shoulders of WIS 164 are 8 feet wide. See Exhibit 3 – Existing and Proposed Typical Sections. Six foot wide shoulders are desirable for a design Class 3RA3 roadway per FDM 11-40 Attachment 1.2. FDM 11-40-1.6.1 states that existing lane and shoulder widths should not be reduced unless they exceed the new construction requirements.

Ten-foot wide shoulders (5 foot width paved for bike accommodation per FDM 11-45-10.3.2) are desirable for reconstruction per FDM 11-15 Attachment 1.1 for a Design Class A2 roadway.

Horizontal Alignment

The horizontal alignment of WIS 164 is generally on tangent and aligned along a section line except at the border of the Village of Richfield and Town of Polk where the section line shifts slightly. There are two horizontal curves with radii of 11,459 feet that have no superelevation. These existing curves meet both the 3R construction standards for a design speed of 55 mph and the new construction standards for a design speed of 60 mph. There are no horizontal alignment deficiencies.

Vertical Alignment

The vertical alignment along WIS 164 is rolling in nature. WIS 164 runs through the Northern Kettle Moraine, which has many hills and valleys. The vertical alignment along WIS 164 was evaluated using the rolling terrain criteria. There are two parts to the vertical alignment that are documented below: profile grade and vertical curves.

Profile Grade

The table below lists 8 locations where the profile grade along WIS 164 is steeper than new construction standards. The location and station ranges of those areas are listed below. FDM 11-40-1.5.6 states that profile grades generally do not need to be flattened on 3R projects. Steep grades and restricted horizontal or vertical curvature in combination however, may warrant corrective action.

Substandard Vertical Profile Grades Along the WIS 164 Project Corridor

Begin Station	End Station	Design Speed	Existing Grade	Maximum Profile Grade % (FDM 11-10 Attachment 5.3)
56+10	59+95	55	6.68%	5
102+50	114+45	55	7.93%	5
194+05	201+55	50	7.97%	5
246+55	250+90	50	8.00%	5
259+45	265+80	50	6.77%	5
414+65	420+35	55	5.86%	5
431+20	435+50	55	5.92%	5

Vertical Curves

The table below lists the vertical curves along WIS 164 within the project limits that do not meet desirable design speed criteria and notes what design speed criteria the curves do meet. Crest curves not within 15 mph of 3R design speed are required to be improved. Vertical curves that do not meet the desirable standard for reconstruction criteria were evaluated as part of the design process to determine if improvements would be needed.

Vertical Curves along the WIS 164 Project Corridor

Begin STA	End STA	Type	3R Design Speed (mph)	Comments
53+60	57+60	Sag	55	Meets minimum for 35 mph
57+60	67+40	Crest	55	Meets minimum for 50 mph
99+50	106+00	Sag	55	Meets minimum for 45 mph
111+00	117+50	Crest	55	Meets minimum for 50 mph
189+50	198+50	Crest	50	Below desirable for 50 mph
198+50	202+00	Sag	50	Meets minimum for 40 mph
225+50	230+00	Crest	50	Below desirable for 50 mph
236+00	239+50	Sag	50	Meets minimum for 45mph
239+50	249+00	Crest	50	Meets minimum for 45 mph
250+50	251+50	Sag	50	Below minimum for 25 mph
252+25	**253+25**	**Crest**	**50**	**Meets minimum for 30 mph**
264+50	273+00	Sag	50	Meets minimum for 40 mph
297+75	301+75	Sag	50	Below desirable for 50 mph
302+75	307+75	Crest	55	Below desirable for 55 mph
411+25	416+25	Sag	55	Meets minimum for 45 mph
417+75	424+75	Crest	55	Below minimum for 55 mph
429+25	432+25	Sag	55	Meets minimum for 35 mph
433+00	443+00	Crest	55	Below desirable for 55 mph

There is one crest vertical curve from STA 252+25 to 253+25 that does not meet minimum 3R requirements since it is not within 15 mph of the 3R design speed. This curve is on the southbound approach to the WIS 167 intersection so it should also meet the minimum Category 2 K-value for 45 mph. This location is considered to be a Category 2 Sight Distance because it is a high-speed 2-lane rural highway approach to an isolated stop sign, traffic signal, or roundabout where such control is unexpected. The existing curve only meets the minimum Category 2 sight distance for 30 mph. This curve is required to be improved to meet both the Category 1 and Category 2 sight distance for the design speed.

There are also three sag curves that are not within 15 mph of the 3R design speed. The 3R design criteria do not require these curves to be improved. These curves were evaluated to verify that there is not an existing crash history and that hazards do not exist in poor weather or night time driving conditions.

<u>Additional deficiencies</u>

Additional deficiencies found at spot locations throughout the corridor include:

- Foreslopes (slope off the shoulder) greater than 4 feet horizontal to 1 foot vertical
- Non-traversable ditches.

- Buildings within the clear zone (near Pleasant hill Road). The clear zone is defined as that roadside border area which is made available for safe use by errant vehicles. It starts at the edge of the traveled way and consists of the shoulder, a recoverable slope off the shoulder, and any traversable but non-recoverable slope with a clear run-out area at the bottom of the slope. Fixed objects within the clear zone are to be either removed, redesigned to be safely traversable, relocated, made breakaway, shielded with a longitudinal barrier or crash cushion, or delineated.
- Driveway embankment slopes greater than 6 feet horizontal to 1 foot vertical Culvert pipe ends located in the clear zone that are unprotected by traversable endwalls or unshielded by guardrail
- Utility poles located in the clear zone or near ditch bottoms
- Outdated guardrail installations

Traffic Demand

Existing and future traffic (Design Year 2038) is summarized in the table below. Annual Average Daily Traffic (AADT) reflects average travel conditions during the year rather than daily or seasonal fluctuations. Existing traffic volumes were derived from WisDOT's year 2013 manual count data.

Existing traffic in the WIS 164 corridor ranges from 6,700 to 9,600 vehicles per day (vpd) and is expected to reach a range of 8,500 to 13,800 vpd in Design Year 2038. Approximately 8.4% of the total AADT is truck traffic. WisDOT design guidelines and the Transportation Research Board's Highway Capacity Manual HCM 2000 indicate 15,000 AADT as the threshold volume that can be safely handled at an acceptable service level on a 2-lane rural/suburban highway that meets applicable/current design standards (existing WIS 164 does not meet current design standards). In Design Year 2038, all segments of the WIS 164 corridor within the project limits would have traffic volumes below this threshold. Capacity expansion is not being evaluated as part of this project.

WIS 164 Traffic Summary

Roadway Segment	Existing Traffic 2013 AADT	Future Traffic Construction Year 2018 AADT	Future Traffic Design Year 2038 AADT	Percent Increase (2013 – 2038)
County Q to Monches Road	9,600	10,400	13,800	44%
Monches Road to Hubertus Road	8,000*	8,700	10,500	31%
Hubertus Road to WIS 167	9,000	9,500	11,600	29%
WIS 167 to County E	6,700	7,100	8,500	27%
County E to North Project Limits	7,500	7,900	9,600	28%

*Most recent Existing Traffic County for Monches Road to Hubertus Road is from 2010

Safety

A summary of the reported crashes along WIS 164 within the project limits between the years 2005 and 2009 is provided below. From 2007 to 2009 there were a total of 74 crashes including 35 injury and 2 fatal crashes. The overall crash rate is 67% higher than the statewide average for similar roadways. About half of the crashes occurred at intersections (50%) and the other half occurred between intersections (50%). Both fatal crashes occurred between intersections. About half (49%) of the injury crashes occurred at intersections and the other half (51%) occurred between intersections. 47% of crashes were classified as injury crashes, which is 23% higher than the statewide average of 38% of crashes for rural highways. This means that almost one of every two crashes on WIS 164 results in an injury.

WIS 164 Crash Summary

Location or Pattern	Crash Rate[1]	Statewide Crash Rate[1]	Number & Severity of Crashes			
			Fatal	Injury	Property Damage	Total
WIS 164	129 (2005)	115	0	17	8	25
WIS 164	127 (2006)	109	0	10	14	24
WIS 164	124 (2007)	118	0	14	10	24
WIS 164	124 (2008)	130	1	12	12	25
WIS 164	129 (2009)	-	1	9	15	25
5 Year Average	127	76[2]	.4	12.4	11.8	24.6

[1]Crash rate based on 100 million vehicles miles traveled (100 MVMT)
[2]Beginning with the 2009 Statewide Crash Rates, crash rates are divided into 12 functional "peer" groups (i.e. "like" roadways) and are provided on a 5 year average. Previously, crash rates on the state system had been divided into three categories and were calculated on an annual basis.
Crash totals exclude deer crashes

Crash Locations or Patterns of Concern

Location or Pattern	Year	Number & Severity of Crashes				Crash Rate	Possible Factors Contributing to Crashes
		Fatal	Injury	Property Damage	Total		
WIS 164 Mainline Non-intersection Crashes	2009	1	4	7	12[3]	N/A	5 Weather/Wet road conditions.
WIS 164 Mainline Non-intersection Crashes	2008	1	6	4	12[3]	N/A	6 Weather/Wet road conditions.
WIS 164 Mainline Non-intersection Crashes	2007	0	8	6	14[3]	N/A	7 Weather/Wet road conditions.
WIS 164/Hubertus Rd. Intersection	2007-2009	0	5	2	7	.75[1]	4 Angle Crashes (3 sight, 1 weather); limited intersection sight distance, steep grade
WIS 164/Elmwood Rd. Intersection	2007-2009	0	4	3	7	.79[1]	5 Angle Crashes with no consistent pattern; intersection sight distance is not deficient, narrow roadway, no turning or bypass lanes
WIS 164/WIS 167 Intersection	2007-2009	0	2	5	7	.60[1]	5 Rear End Crashes; long intersection queues and limited SSD[4]
WIS 164, Monches Rd. to Elmwood Rd. Segment	2007-2009	1	3	4	8	94[2]	7 Loss Control; Steep grade appears to be a factor

[1]Crashes per million entering vehicles (MEV)
[2]Crash rate based on 100 million vehicles miles traveled (100 MVMT)
[3]Mainline excludes crashes which occurred within intersections
[4]Stopping Sight Distance (SSD) is the length of roadway ahead of a vehicle that is visible to the driver that is sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path

Both of the fatalities involved vehicles crossing the centerline, however there is no common factor for the vehicles deviating from the travel lane. Pavement conditions (snow/ice) and vertical profile were a factor in one of the crashes. The second fatal crash occurred on flat, dry pavement.

The higher than average crash rate and high number of weather related crashes may indicate less than desirable pavement surface condition.

Between Monches Road and Elmwood Road, there were a total of 7 crashes which resulted from a vehicle losing control; 5 occurred during snowy/icy conditions, including 1 fatality. WIS 164 has a vertical crest and a steep 8% profile grade in this location which clearly contributed to several of these crashes.

Three intersections on this project had more than 4 crashes during the 2007-2009 timeframe.

- Hubertus Road and WIS 164 had 4 angle crashes and of those 3 were attributed to sight issues. There is a vertical crest on WIS 164 south of Hubertus Road. Limited intersection sight distance and steep grades may contribute to crashes at this intersection.
- Elmwood Road and WIS 164 had 5 angle crashes; however there is no noted commonality documented in the crash reports. The profiles of both WIS 164 and Elmwood road are flat at this intersection. Furthermore, the horizontal alignment of both roadways is straight. The narrow roadway and lack of turning or bypass lanes may contribute to crashes at this intersection.
- The intersection of WIS 167 and WIS 164 had 5 rear end collisions; two of the crashes were related to the close proximity of the Friess Lake Pub entrance to the intersection. Long queues at the intersection and limited stopping sight distance may contribute to crashes at this intersection.

Bicycle Accommodations
Administrative Code Trans 75, which became effective on January 1, 2011, prohibits WisDOT from funding a new construction or reconstruction project without bicycle and pedestrian accommodations unless there is an approved exception. While this reconditioning project is exempt from the requirement to add bicycle or pedestrian facilities, bicycle accommodations would be provided via the 6-foot wide paved shoulder.

2. Summary of alternatives considered and if they are not proposed for adoption, why not:

No Build
This alternative would perpetuate the existing roadway without any changes to the physical dimensions of the roadway. This alternative would include stop-gap repair procedures such as patching of potholes or other severely deteriorated areas. Other than temporarily improving the spot problem locations, this alternative would not address the need to correct the identified deficiencies of the existing facility, and as such, is not recommended as the preferred alternative. While the No Build Alternative does not meet the project goals to improve safety for the project, it does serve as a baseline for a comparison of impacts related to the other alternatives.

Speed Limit Reduction
Comments were received at the first public information meeting supporting an alternative wherein the speed limit is lowered and no roadway improvements would be made. FHWA Publication No. FHWA-RD-97-084 shows that lowering speed limits at many locations studied nationwide had essentially no effect on driver speeds. A study done by the UW TOPS Lab in June of 2010 shows that many drivers do not comply with existing posted speed limits nor to the existing speed feedback signs in the 55 mph areas currently on WIS 164. This study along with common established engineering practice recommends that lowering the speed limits would be expected have little to no effect on driver speeds.

Transportation Research Board Special Report 254 notes that the perceived reasonableness of a speed limit affects both compliance and crash involvements. Sites with reasonable speed limits were safer than those with speed limits 5 to 10 mph below the reasonable levels. Transportation Research Record 1213 by Garber and Gadiraju titled “Factors Affecting Speed Variance and Its Influence on Accidents” further concludes that the difference between the design speed and the posted speed limit has an effect on the speed variance for all types of highways, and that the crash rates on highways increase with increasing speed variance. These studies indicate that lowering the speed limit on WIS 164 would lead to an increase in speed variance among drivers that will on one extreme obey the posted speed limit and on the other extreme will drive at a higher speed that feels comfortable for the driving conditions regardless of the posted speed limit. The speed study completed by the UW TOPS Lab already shows a lack of compliance with the current posted speed limits indicating that much of the traveling public already feels that the current posted speed limits are too low. Research indicates that an increase in speed variance will result in an increase in crashes.

Safety concerns related to the current speed variance among vehicles traveling in the WIS 164 corridor has been expressed by residents along the project corridor. Residents that regularly enter WIS 164 from sideroads or driveways noted that it can be difficult to judge a safe gap to enter traffic because some drivers conform to the current speed limits while others exceed it substantially. Drivers that conform to the posted speed limits are often followed too closely by traffic, which can result in unsafe passing attempts or long platoons of tailgating drivers that feel a higher travel speed is appropriate. Speed variance is anticipated to increase with a reduction in the posted speed limits.

As such, the alternative to lower the speed limits alone on WIS 164 with no geometric improvements does not meet the projects goals to improve safety, nor does it respond to public comments from the first public information meeting regarding the need to improve safety on this corridor.

Maintenance Overlay Only
This alternative would consist of placing a 2-inch asphalt overlay on the roadway. Spot safety and operational improvements and bicycle accommodations would not be included. This alternative would address the near- to mid-term pavement deficiencies without changes to the physical dimensions of the roadway or intersections. Other than a more permanent solution to improving the pavement surface and minor surface drainage problems, it does not address operational deficiencies, pedestrian and bicycle access and safety, or roadside safety and drainage deficiencies. Therefore, this alternative would not meet the purpose and need of the project and is not considered practicable.

Reconditioning with Spot Safety and Geometric Improvements (Preferred Alternative)
The reconditioning alternative with spot safety and geometric improvements would include milling the existing asphaltic surface of the roadway, widening the roadway to meet desirable lane and shoulder widths, include bicycle accommodations via a paved shoulder, correcting steep side slopes, and reconstructing WIS 164 at several locations to correct vertical alignment deficiencies that are associated with safety concerns.

As part of the reconditioning alternative, several sub-alternatives were considered for intersection improvements to correct geometric and safety deficiencies at the Shady Lane, WIS 167, and Pleasant Hill Road intersections with WIS 164.

<u>Shady Lane/WIS 164 Intersection</u>
Shady Lane currently intersects WIS164 in two locations within 900 feet of each other. The intersections have the following notable design deficiencies:

- Both intersections have a substandard intersection angle
- Neither intersection has a bypass lane
- Neither intersection has a right turn lane
- Intersection sight distance at both intersections is limited by the substandard crest vertical curve on WIS164 between the intersections
- There are trees within the vision triangle of the existing northern intersection that also restrict intersection sight distance

Despite these deficiencies noted above there is no significant crash history at either intersection; however, the vertical alignment of WIS 164 is recommended to be improved by cutting the crest vertical curve and reducing the approach grades to improve sight distance along WIS 164 as part of the reconditioning project independent of any of the intersection deficiencies at the Shady Lane intersections. Both Shady Lane intersections would either need to be reconstructed to match the new profile of WIS164, or eliminated with the project. Residents along Shady Lane have indicated a concern for safety of the two Shady Lane intersections with WIS 164.

Current design standards require reconstructing the substandard intersections as Type D Intersections with right turn lanes and bypass lanes. The following alternatives were developed and evaluated (see Exhibit 4 Shady Lane Alternatives):

Alternative 1: Improve southern intersection to current design standards, close northern intersection
Alternative 2: Improve northern intersection to current design standards, close southern intersection
Alternative 3: Realign Shady Lane to Hansen Drive, close both intersections

Alternative 1 would remove one conflict point on WIS 164 through the elimination of one intersection and increase the intersection spacing between the two remaining intersections along WIS164. It would also allow the bypass lane for

Shady Lane to end before the right turn lane taper for Upland Drive begins. Left turning vehicles would not be waiting on the back side of a crest curve as they would with Alternative 2, which was a concern expressed by residents at the public information meetings. Drivers turning right from Shady Lane to go southbound on WIS 164 would still have limited sight distance due to the crest curve north of the intersection, but with the proposed reconstruction of the crest vertical curve the intersection would meet desirable intersection sight distance for the design speed. Residents on the north end of Shady Lane traveling to and from the north on WIS 164 would be required to travel an additional 900 feet to the intersection to the south, since the north intersection would be eliminated.

Alternative 2 would remove one conflict point on WIS 164 through the elimination of one of the Shady Lane intersections with WIS 164. Two intersections, Shady Lane and Hansen Drive, would remain spaced too closely to each other. This alternative would also require northbound traffic on WIS 164 turning left at Shady Lane to wait for an opening to turn across WIS 164 on the back side of a crest curve. This was a concern raised by several residents at the public information meetings. The vertical curve would be improved to meet stopping sight distance requirements, which would improve this existing condition. Since the majority of drivers in and out of Shady Lane are likely traveling to and from the south this alternative would require drivers to drive 900 feet further to reach their destination. The bypass lane for Shady Lane would become a right turn only lane for Upland Drive. Special signing and pavement marking would be required to address this less than desirable geometry.

Alternative 3 (Preferred) would remove two conflict points on WIS 164 through the elimination of both Shady Lane intersections and would re-route Shady Lane traffic to Hansen Drive to access WIS 164. This alternative would move left turning traffic north of the crest curve on WIS 164 between the existing Shady Lane intersections. This would eliminate the concerns noted by Shady Lane residents at the public information meeting about waiting to turn left on the back side of the crest vertical curve. Since the majority of drivers in and out of Shady Lane are likely traveling to and from the south this alternative would require drivers to drive approximately 700 to 1500 feet farther to reach their destination. The Village of Richfield has expressed concern with this alternative because it would create a long cul-de-sac that would violate the Village of Richfield ordinance for maximum cul-de-sac length. It was discussed with the Village that a gated emergency access could be added on WIS164 at the cul-de-sac to provide another point of entry to Shady Lane if there was an emergency.

Summary of Shady Lane/WIS 164 Intersection Alternative Impacts

Estimated Costs and Impacts for the Shady Lane Intersection Alternatives

	Alternative 1	Alternative 2	Alternative 3 (Preferred)
Real Estate Acquisition	2.31 acres	2.36 acres	2.86 acres
Construction Cost[1]	$380,000	$405,000	$385,000
Relocations			
Residential	0	0	0
Business	0	0	0
Farmland Impacts	0.34 acres	0.34 acres	0.34 acres
Wetland Impacts	0 acres	0 acres	0 acres
Stream Crossings Impacted	No	No	No
Endangered Species Impacted	No	No	No
Other Environmental Impacts:			
Primary Environmental Corridor	0 acres	0 acres	0 acres
Secondary Environmental Corridor	0.55 acres	0.60 acres	0.55 acres
Isolated Natural Area	0 acres	0 acres	0 acres
Historical Sites Impacted	0	0	0
Archeological Sites Impacted	0	0	0

[1]Construction cost assumes $2.1 million dollars per mile of roadway along the centerline. It does not include the cost to cut down the hill on WIS 164 at Shady Lane or to resurface the existing WIS 164 lanes.

There was general support for Alternative 3 from the Shady Lane residents that attended the second public information meeting. There was not a lot of opposition to the added travel distance to access WIS 164 because they recognized the benefit of the improved intersection sight distance at the Hansen Drive/Upland Drive intersection.

The Village of Richfield was not in favor of Alternative 3 since it would result in a cul de sac with a length of

approximately 1,500' and serving 8 residents. Village ordinance 66.06(C)(1) states: "*Cul-de-sac streets designed to have one end permanently closed shall not, as a general rule, exceed 800 feet in length as measured from the point of radius of the turnaround to the nearest intersecting street and, in no case, shall more than nine single-family dwelling unit lots abut and have direct access to a cul-de-sac street. All cul-de-sac streets designed to have one end permanently closed shall terminate in a circular turnaround."*

Alternative 3 is the preferred alternative for improvements at the Shady Lane/WIS 164 intersections. Alternative 3 provides the best compromise of the three alternatives considered because it:

- Would eliminate two points of conflict on WIS 164 at the the north and south Shady lane intersections
- Would provide a location for Shady Lane residents to access WIS164 with acceptable intersection sight distance at Hansen Drive

<u>WIS 164/WIS 167 Intersection</u>

The WIS 167/WIS 164 Intersection has the following notable design deficiencies:

- The existing 4-way stop controlled intersection lacks the traffic capacity required for the existing traffic volumes causing lengthy backups on WIS 164 and WIS 167 during peak traffic periods
- There is a pattern of rear end crashes approaching the intersection
- There are steep grades on WIS 164 approaching WIS 167
- Sight distance to queuing vehicles on the south leg of the WIS 164/WIS 167 intersection is below desirable standards

A Year 2038 operational analysis was conducted for all-way stop, traffic signal, and roundabout alternatives. The highest turning volumes are expected to occur to/from the east. Southbound/eastbound traffic volumes are expected to be somewhat higher in the morning peak and northbound/westbound traffic volumes are expected to be somewhat higher in the evening peak (commuter split). Traffic volumes are expected to follow typical seasonal fluctuations (ie. higher volumes in the summer months and lower volumes in the winter months).

Select movements for the all-way stop control alternative are expected to operate unacceptably at LOS E and F conditions under the Year 2038 traffic volumes. Therefore, stop control was not considered a viable intersection control alternative and was not further evaluated.

The following intersection control alternatives were developed and evaluated (See Exhibit 5 – WIS 167 Alternatives):

Alternative 1: Roundabout
Alternative 2: Traffic Signal

Alternative 1 (Preferred) would reconstruct the intersection as a modern single lane roundabout. The roundabout alternative would operate acceptably at LOS A conditions under the Year 2038 traffic volumes and would operate with minimal delay.

Alternative 2 would reconstruct the intersection with turn lanes and traffic signal control. The traffic signal control alternative is expected to operate acceptably at LOS B or better conditions. A signal warrant analysis was performed at the study intersection based on the Eight-Hour Warrant (Warrant 1), Four-Hour Warrant (Warrant 2), and Peak Hour Warrant (Warrant 3), as outlined in the *Manual on Uniform Traffic Control Devices (MUTCD)*, 2009 edition. All three warrants were met under the existing traffic conditions.

Summary of WIS 167/WIS 164 Intersection Alternative Impacts

Estimated Costs and Impacts for the WIS 167 Intersection Alternatives

	Alternative 1 Roundabout (Preferred)	Alternative 2 Traffic Signal
Real Estate Acquisition	6.3 acres	6.8 acres
Construction Cost[1]	$2,120,000	$2,530,000
Relocations		
Residential	1	1
Business	0	0
Farmland Impacts	3.63 acres	3.37 acres
Wetland Impacts	0.01 acres	0 acres
Stream Crossings Impacted	No	No
Endangered Species Impacted	No	No
Other Environmental Impacts		
Primary Environmental Corridor	0 acres	0 acres
Secondary Environmental Corridor	0 acres	0 acres
Isolated Natural Area	0.18 acres	0.12 acres
Historical Sites Impacted	0	0
Archaeological Sites Impacted	0	0

[1]Construction cost assumes $2.1 million dollars per mile of roadway along the centerline

Although both intersection alternatives would operate with minimal delay, the roundabout alternative would be expected to provide shorter delays and queues than the signalize intersection alternative.

Due to lower vehicle speeds, a reduction in number of conflict points, and the elimination of potential high-speed angle crashes, the roundabout alternative would be expected to provide safer vehicular operations when compared the traffic signal control alternative. Based on a study by the Insurance Institute for Highway Safety, U.S. roundabouts decreased fatal crashes by 90% and injury crashes by 76%.

All of the crashes occurring at the study intersection involved an angle or rear-end collision. The traffic signal alternative is not expected to address these crash types. The roundabout alternative would be expected to eliminate a majority of the angle crashes. Reducing crashes can provide an improved quality of life and economic benefits to a community. A severe injury crash represents an economic loss of nearly $63,500 and a fatal crash represents a loss of $1.3 million (FDM 11-26, Table 15.1).

The traffic signal alternative would restrict several driveways located near the intersection to right-in/right-out. Restriction of these access points is expected to improve safety at the intersection but reduce access to adjacent properties. The roundabout can provide full access to the residential access points through the use of shorter splitter islands or an island cut through.

Alternative 1, the roundabout alternative, is the preferred alternative for the WIS 164 intersection with WIS 167 because it provides a safety advantage, fewer impacts, better access to abutting properties, and lower costs as compared to the traffic signal alternative.

<u>Pleasant Hill Road/WIS 164 Intersection</u>

The intersection of WIS 164 and Pleasant Hill Road has the following notable deficiencies:

- Substandard intersection sight distance
- No vision triangles
- Obstructions in the clear zone
- No right turn lanes or bypass lanes

Buildings are located immediately adjacent to the roadway in three of the four intersection quadrants. The buildings in the northeast, northwest, and southeast quadrants of the intersection are within the 18 foot minimum 3R clear zone. The posted speed limit on WIS 164 has been lowered to 40 mph through this intersection to account for the substandard intersection features, but driver compliance with the reduced posted speed is low.

Four crashes were reported at this intersection between 2005 and 2009. All of the crashes resulted from a vehicle on Pleasant Hill Road failing to yield to traffic on WIS 164. At least one of the vehicles struck a building adjacent to the intersection after the crash in two of the four crashes. There have been many additional close calls that did not result in a crash at the intersection according to comments received at the public information meetings.

Current design standards would require upgrading the intersection to a Type B1 intersection with a minimum of 300 foot right turn lanes in a resurfacing segment, or 450 foot right turn lanes if the intersection would be reconstructed. Buildings on all three corners would need to be razed to add the turn lanes unless WIS164 would be realigned or the Pleasant Hill intersection would be moved to the north of south. The following alternatives were developed and evaluated (See Exhibit 6 – Pleasant Hill Road Alternatives):
Alternative 1: Add turn lanes to WIS164 without shifting the roadway, resurface WIS164
Alternative 2: Realign Pleasant Hill Road north of the current intersection location, resurface WIS164
Alternative 3: Realign Pleasant Hill Road south of the current intersection location, resurface WIS164
Alternative 4: Realign WIS164 approximately 30 feet west at the Pleasant Hill Road intersection

Alternative 1 would improve the clear zone, would provide adequate intersection sight distance and would provide right turn lanes at the intersection, but would also require the relocation of 5 parcels including a business. At the first public information meeting the owner of the tavern on the northeast corner and the owner of the residential parcel in the southeast quadrant indicated that they do not want to be relocated.

Alternative 2 would improve the intersection sight distance to meet desirable standards, would provide vision triangles, and would provide right turn lanes at the intersection. The first horizontal curve on Pleasant Hill Road south of WIS 164 would need to be posted at 30 mph to minimize the impacts of the realigned roadway to surrounding parcels. This is the only alternative considered that would have no relocations. The realigned roadway would pass through farm fields and undeveloped land. Part of the realignment would move traffic from Pleasant Hill Road into a developing subdivision using Steeple Drive and Majestic Drive to access WIS 164. This would be controversial in this relatively new and developing subdivision since the property owners would have had no reason to think that Pleasant Hill would be realigned through the subdivision when they purchased their property. The realigned roadway would sever the farm field into two pieces making it harder for the owner to farm this field. Alternative 2 would not address the clear zone issues at the existing intersection. Guardrail could be installed along the east and west side of the roadway to shield the buildings, but the roadway and guardrail would still be very close to the buildings. The existing residential and commercial access points would be closed and relocated to the proposed Pleasant Hill Drive cul-de-sacs.

Alternative 3 would also improve the intersection sight distance to meet desirable standards, would provide vision triangles, and would provide right turn lanes at the intersection, but the new Pleasant Hill Road alignment would go through a much more developed area. There would be one residential relocation with this alternative, and the roadway would be relatively close to two other houses. The owner of the residential relocation with this alternative has expressed strong opposition to Alternative 3. Alternative 3 would not address the clear zone issues at the existing intersection. Guardrail could be installed along the east and west side of the roadway to shield the buildings, but the roadway and guardrail would still be very close to the buildings. The existing residential and commercial access points would be closed and relocated to the proposed Pleasant Hill Drive cul-de-sacs.

Alternative 4 (Preferred) would improve the intersection sight distance to meet desirable standards, would provide vision triangles, and would provide right turn lanes at the intersection by shifting the centerline of WIS 164 west approximately 30 feet. The realignment would require the relocation of two residential parcels; one in the south west quadrant and one in the northwest quadrant of the intersection. Both of these property owners have indicated that they would not be opposed to being relocated. Alternative 4 is the only alternative, besides Alternative 1, that eliminates all of the buildings from the clear zone without guardrail. In addition to the two residential relocations, Alternative 4 requires real estate strip takings only from the parcels adjacent to WIS 164. Access to the remaining residential and commercial parcels would remain the same with this alternative.

Summary of Pleasant Hill Road/WIS 164 Intersection Alternative Impacts

Estimated Costs and Impacts for the Pleasant Hill Road Intersection Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4 (Preferred)
Real Estate Acquisition[1]	3.22 acres	3.83 acres	5.72 acres	2.68 acres
Construction Cost[2]	$530,000	$990,000	$1,530,000	$1,340,000
Relocations				
Residential	4	0	1	2
Business	1	0	0	0
Farmland Impacts	0.59 acres	3.77 acres	0.75 acres	0.25 acres
Wetland Impacts	0.04 acres	0.02 acres	0.31 acres	0.06 acres
Stream Crossings Impacted	No	No	No	No
Endangered Species Impacted	No	No	No	No
Other Environmental Impacts				
Primary Environmental Corridor	0 acres	0 acres	0.17 acres	0 acres
Secondary Environmental Corridor	0 acres	0 acres	0 acres	0 acres
Isolated Natural Area	0 acres	0 acres	0 acres	0 acres
Historical Sites Impacted	0	0	0	0
Archaeological Sites Impacted	0	0	0	0
Adequate Clear Zone Provided	Yes	**No**	**No**	Yes
Adequate Intersection Sight Distance Provided	Yes	Yes	Yes	Yes
Adequate Turn Lanes Provided	Yes	Yes	Yes	Yes

[1]Real Estate required estimate includes land required to realign the intersection, add cul-de-sacs, and add turn lanes. The total acreage of each relocation parcel is included in the total Real Estate Acquisition area for each alternative.
[2]Construction Cost assumes $2.1 million dollars per mile of roadway along the centerline for reconstruction and $450,000 per mile or roadway along centerline for resurfacing.

There was general support for Alternatives 1 and 4 at the second public information meeting.

Alternative 4 is the preferred alternative for improvements to the Pleasant Hill Road/WIS 164 intersection. This alternative is not the least expensive option, but the higher construction cost would be offset with lower real estate costs than Alternative 1 since there are fewer relocations. Alternative 4 provides the best compromise of the four alternatives considered because it:

- Would correct all of the substandard design features at the intersection
- Would have fewer relocations than Alternative 1
- Would not affect the subdivision traffic on Majestic Drive like Alternative 2
- Would cost less to construct than Alternative 3
- Would fully address the issues related to the buildings being so close to the road, unlike Alternatives 2 and 3 where the buildings would be protected by guardrail but would remain close to WIS164
- Would not significantly change access for the residences and business that would remain like Alternatives 2 and 3

Right of way acquisition would be anticipated throughout the WIS 164 project corridor to accommodate the intersection and geometric improvements that would address safety and operational issues; regrading of ditches along nearly the entire corridor to improve drainage, reduce steep side slopes, and address ditch traversability issues; and increased storm water management requirements including right of way for ponds and flat bottom ditches.

3. Description of Proposed Action (attach project location map and other appropriate graphics):

Under the preferred alternative, WIS 164 would be reconditioned with spot safety and geometric improvements to enhance safety and mobility through the corridor while minimizing impacts to the surrounding environment. See Exhibit 3 – Existing and Proposed Typical Sections and Exhibit 7 – Preliminary Plan View Layouts.

Within the reconditioning segments, 1 inch of the existing asphaltic surface would be milled off the roadway and a four inch asphalt overlay would be constructed. The two travel lanes would be widened to 12 feet to meet the required width for the roadway classification and shoulders would be widened to 10 feet total width, with 6 feet paved to accommodate bicycles. The widened roadway cross section would also help to address run off the road type crashes.

Five segments of WIS 164 would be reconstructed to address substandard vertical alignment characteristics and improve stopping and intersection sight distances. Those segments include STA 50+50 to STA 74+50 (south of Shady Lane to north of Hansen Drive/Upland Drive), STA 98+00 to STA 130+00 (north of Monches Road to 1500 feet south of Elmwood Road), STA 183+50 to STA 206+00 (south of St. Gabriel Lane to north of Hubertus Road, and STA 230+50 to STA 264+50 (south of Golden Drive to north of WIS 167).

The reconstructed roadway would consist of two 12-foot wide travel lanes and 10-foot wide shoulders. Six feet of the shoulder would be paved to accommodate bicycles.

By-pass and right turn lanes would be constructed at intersections throughout the corridor to improve safety by allowing traffic to either bypass turning vehicles or by allowing turning traffic to pull out of through lanes. See Exhibit 7 – Preliminary Plan View Layouts for locations.

Several intersections would be reconstructed to address safety and operational concerns. At the Shady Lane/WIS 164 intersections, both Shady Lane intersections with WIS 164 would be eliminated and Shady Lane would be realigned to connect to Hansen Drive. A roundabout would be constructed at the WIS 164 intersection with WIS 167. At the Pleasant Hill Road/WIS 164 intersection, the centerline of WIS 164 would be shifted approximately 30 feet to the west to enhance safety by providing adequate clear zones to existing buildings and vision triangles at the corners of the intersection without significantly impacting access to businesses and residents.

Ditches and side slopes throughout the corridor would be regraded to meet current clear zone and traversability standards and to improve drainage issues at spot locations.

No changes to the posted speed limits in the corridor are anticipated as part of this project.

WIS 164 would be closed to through traffic during construction in stages with a posted detour. Access will be maintained to local residences and businesses and for emergency vehicles during construction. The first stage will include construction of the roundabout at the WIS 167/WIS 164 intersection and construction of WIS 164 south of WIS 167. The second stage would include construction on WIS 164 north of WIS 167.

Right of way acquisition would be anticipated throughout the WIS 164 project corridor to accommodate the intersection and geometric improvements that would address safety and operational issues; regrading of ditches along nearly the entire corridor to improve drainage, reduce steep side slopes, and address ditch traversability issues; and increased storm water management requirements including right of way for ponds and flat bottom ditches.

Real estate required for the WIS 164 project would include:

- Total new right of way fee acquisition of 42.16 acres
- Total temporary limited easements (TLE) for grading purposes of 13.50 acres
- Total permanent limited easements (PLE) for drainage structure or ditch maintenance of 0.05 acres

The real estate that would be required for the WIS 164 improvements is attributed to:

- Reconstructing WIS 164 at Shady Lane to improve substandard vertical geometrics and improve sight distance: 1.3 acres fee acquisition, 0.6 acres TLE, and 0 PLE
- Realigning Shady Lane to Hansen Drive to eliminate Shady Lane intersections with WIS 164: 0.4 acres fee acquisition, 0.3 acres TLE, and 0.01 PLE
- Reconstructing WIS 164 at Monches Road to reduce the steep grade that exceeds current design standards: 7.8 acres fee acquisition, 2.1 acres TLE, and 0 PLE

- Reconstructing WIS 164 at Hubertus Road to reduce steep slopes, improve vertical curves to current design standards, and improve sight distances: 2.6 acres fee acquisition, 1.2 acres TLE, and 0.01 acres PLE
- Reconstructing WIS 164 at WIS 167 to reduce steep slopes, improve vertical curves to current design standards, and improve sight distances: 3.0 acres fee acquisition, 1.2 acres TLE, and 0.01 PLE
- Construction of a stormwater detention pond at the WIS 164/WIS 167 intersection to maintain peak runoff flows and reduce total suspended solids in stormwater runoff = 3.0 acres fee acquisition, 0.1 acres TLE, and 0.01 PLE
- Realigning WIS 164 at Pleasant Hill Road to improve intersection sight distances and clear zones to current design standards: 2.4 acres fee acquisition, 0.3 acres TLE, and 0 PLE
- Resurfacing areas along the remainder of the WIS 164 project corridor with safety improvements = 21.7 acres fee acquisition, 7.6 acres TLE, and 0.01 acres PLE

Eliminating any one of the spot improvements listed above would not eliminate all of the right-of-way acquisition estimated for that segment of the project. A portion of the additional right-of-way estimated for each spot improvement would still be required to address the standard improvements of added lane width, added shoulder width and traversable ditch slopes.

The 21.7 acres of right of way acquisition along the corridor would generally be required to address added lane width, added shoulder width and traversable ditch slopes to meet current design standards. Although FHWA typically does not recommend the acquisition of PLE, WisDOT has identified PLE as the appropriate real estate interest for the installation and maintenance of riprap used for erosion control at the discharge ends of culvert pipes shown at the following locations: STA 24+50 left (Shady Lane), STA 185+50 to STA 185+70 left, STA 203+35 to STA 203+60 left, STA 212+30 to STA 212+60 left, STA 238+35 to STA 238+75 left, STA 372+90 to STA 373+10 right.

The total right of way acquisition required by this project (42.1 acres) would be similar to the amount of right of way estimated for a 4-lane expansion alternative studied in 2001. See Exhibit S-1, County J/WIS 164 Final Environmental Impact Statement (Final EIS), Project ID 2748-01-01 (December 11, 2001). Copies of this document can be obtained from WisDOT. The County J/WIS 164 Final EIS estimated right of way acquisition for the length of road considered under the current study at approximately 46.6 to 51.7 acres, from Bark River (just south of County Q, this project's southern terminus) to County E.

The real estate requirements of the County J/WIS 164 Final EIS recommended alternative were largely based on two factors: (1) an assumption of a 160-foot right of way width for much of the corridor, see Exhibit 2-2, County J/WIS 164 Final EIS; and (2) the identification of several critical areas where design indicated more right of way width could be expected.

The critical areas where wider right of way widths could be expected under the County J/WIS 164 Final EIS were due to large cuts, fills, or intersection improvements meant to address geometric deficiencies such as slope and sight distance. This project also addresses some of the same geometric deficiencies. In order to address these geometric deficiencies, even for the currently studied two-lane highway, right of way would be required at several intersections, as well as on hills for cut or fill slopes, as identified in the bullets above.

This 160-foot corridor assumed by the County J/WIS 164 Final EIS met minimum clear zone requirements for a four-lane highway, but it did not address detailed design issues and would not meet current design standards. For instance, had current storm water runoff controls applied to the previous project, more right of way acquisition would likely have been required for ponds, flat bottom ditches, and other runoff control strategies. If a similar four-lane expansion project were proposed today, more right of way width along the corridor would likely be required.

Because similar geometric deficiencies are addressed by this study, and due to more stringent design standards, this project would have similar right of way requirements to the County J/WIS 164 Final EIS recommended alternative.

4. In general terms, briefly discuss the construction and operational energy requirements and conservation potential of the various alternatives under consideration. Indicate whether the savings in operational energy are greater than the energy required to construct the facility:

Energy consumption related to roadway construction includes energy required by raw materials and equipment to build and maintain the roadway. Operational energy is the direct consumption of fuel by vehicles using the roadway. Fuel usage is affected by vehicle type, roadway grade, speed, and congestion. The no-build alternative requires no construction energy except for periodic roadway maintenance, which would become more frequent in the future. Operation energy would remain high. Because the preferred alternative requires construction activity, more construction energy is used for excavation, filling, hauling, and pavement construction and material manufacturing than the no-build alternative. However, the operation energy required would decrease over time. The initial construction energy costs for the preferred alternative would be recovered over time due to long-term savings in operational energy costs and reduced future maintenance energy costs.

5. Describe existing land use (attach land use maps, if available):

a. Land use of properties that adjoin the project:

The land adjacent to the project corridor is primarily a mix of agricultural and single family residential land uses. There is limited commercial development including two bars/restaurants adjacent to WIS 164. Two churches, a school, a fire station, and a cemetery are also located adjacent to the corridor. Some open space, wetland, and woodland areas are adjacent to the project. See Exhibit 8 – Village of Richfield and Town of Polk Land Use Plans.

b. Land use surrounding project area:

The land use surrounding the project area mirrors the land use adjacent to the project corridor and is mainly a mix of agricultural and residential land uses with interspersed commercial, institutional, and undeveloped areas.

6. **Briefly identify adopted local or regional plans for the project area and zoning regulations. Discuss whether the proposed action is compatible with the plan or zoning:**

The proposed action is in conformity with the current and future land use plans for the Village of Richfield and Town of Polk in Washington County. The proposed WIS 164 project is in conformity with the Southeastern Wisconsin Regional Planning Commission's (SEWRPC's) Regional Transportation Plan for Southeastern Wisconsin: 2035. The proposed action is identified as No. 366 (Resurfacing of WIS 164 from County Q to WIS 60 in Washington County) of SEWRPC's 2011-2014 Transportation Improvement Plan (TIP). The proposed action has no effect on the expected type of development or land use in the immediate area. It does not prohibit or promote one type of land use over another.

7. Describe how the project development process complied with Executive Order 12898 on Environmental Justice. If populations of any group covered by EO 12898 are present in the project area, complete Factor Sheet B-4, Environmental Justice:

How was information obtained about the presence of populations covered by EO 12898?	
☒ Windshield Survey	☐ Official Plan
☒ US Census Data	☐ Survey Questionnaire
☐ Real Estate Company	☐ WisDOT Real Estate
☒ Public Information Meeting	☐ Local Government
☐ Human Resources Agency Identify agency Identify plan, approval authority and date of approval	
☐ Other (Identify)	

a. ☒ No - Populations covered by EO 12898 are not present in project area.
b. ☐ Yes - Populations covered by EO 12898 are present. Factor Sheet B-4 must be completed.

8. **Indicate whether individuals covered by Title VI of the 1964 Civil Rights Act, the Americans with Disabilities Act or the Age Discrimination Act were identified:** *Title VI prohibits discrimination on the basis of race, color, or country of origin.*
   a. ☒ No - Individuals covered by the above laws were not identified.
   b. ☐ Yes - Individuals covered by the above laws were identified.
      ☐ Civil Rights issues were not identified.
      ☐ Civil Rights issues were identified. Explain:

9. Briefly summarize public involvement methods:

a. Meetings.

Date	Meeting Sponsor (WisDOT, RPC, MPO, etc.)	Type of Meeting (PIM, Public Hearings, etc.)	Location	Approx. # Attendees
6/7/2011	WisDOT	PIM	Richfield Village Hall	100
2/9/2012	WisDOT	PIM	Richfield Village Hall	180
2/14/2013	WisDOT	PIM	Friess Lake School	100

b. Other methods, describe:

N/A

c. **Identify groups that participated in the public involvement process. Include any organizations and special interest groups:**

The Highway J Citizens Group, U.A., has participated in both public information meetings and has submitted prepared comments and information to WisDOT.

The Waukesha County Environmental Action League (WEAL) has submitted prepared comments to WisDOT.

See Exhibit 9 for Highway J Citizens Group, U.A and Waukesha County Environmental Action League correspondence.

d. Indicate plans for additional public involvement, if applicable:

One additional public information meeting is planned to be held. The purpose of the additional public information meeting will be to inform the public of the proposed staging concepts for construction.

10. Briefly summarize the results of public involvement:

a. Describe the issues, if any, identified by individuals or groups during the public involvement process:

Several key issues were raised by attendees at the first public information meeting:

- Safety concerns at intersections and driveways with crest vertical curve sight distance constraints and areas with steep grades and blowing snow.
- Comments were received to cut down the hills near Hubertus Road and north of Monches Road.
- Concerns about delays at the WIS 167/WIS 164 intersection.
- Comments were received that turn lanes and bypass lanes should be added at intersections throughout the corridor and that turning radii should be increased.
- Requests were made to reduce the speed limit to 40 or 45 mph throughout the corridor. Some attendees believed that current travel speeds are too fast.
- A request was made for better snowmobile accommodation in the project corridor.
- Some attendees were in favor of not doing any work on WIS 164. They felt there was not funding available to do the work and that the project will ruin the rural character of the corridor.
- There was both support and opposition for roundabouts. Many attendees like the roundabout at the County Q/WIS 164 intersection, but many don't like it even though it dramatically improved the traffic back-ups.

- Several attendees noted localized drainage issues.

Several key issues were raised by attendees at the second public information meeting:

- More support than opposition was noted for the roundabout alternative at the WIS 167/WIS 164 intersection.
- There was general support for cutting of hills to improve sight distance and reduce longitudinal grades.
- Some attendees noted that nothing needs to be done except to reduce the speed limit to 45 mph.
- Some attendees would like to preserve the rural character of the corridor.
- There was a request for consistent speed limits through the project limits. The existing posted speed goes from 55 mph to 50 mph to 40 mph to 55 mph. They noted that this is confusing and difficult to enforce.
- Some attendees would like to see WIS 164 expanded to 4 lanes now.
- Several attendees noted localized drainage issues.

Several key issues were raised by attendees at the third public information meeting:

- There was general support for the roundabout alternative at the WIS 167/WIS 164 intersection.
- There was general support for cutting of hills to improve sight distance and reduce longitudinal grades.
- There was general support for the proposed improvements at the WIS 164/Pleasant Hill Road intersection.
- There was general support for the proposed realignment of Shady Lane to intersect at Hanson Drive and removal of the two Shady Lane intersections with WIS 164.
- Some attendees noted that nothing needs to be done except to reduce the speed limit to 45 mph.
- There was a request for consistent speed limits through the project limits. The existing posted speed goes from 55 mph to 50 mph to 40 mph to 55 mph. They noted that this is confusing and difficult to enforce.
- Several attendees noted localized drainage issues.
- Many attendees were interested in specific impacts to their property including right of way acquisition areas and timing, and impacts to driveways and trees

Additionally, some members of the public, as well as the Highway J Citizens Group, U.A and Waukesha County Environmental Action League, have indicated concerns that the proposed WIS 164 recondition project is virtually identical to the corridor preservation portion of the previously litigated WIS 164 Record of Decision (ROD) approved in 2002. See Exhibit 9 for correspondence from the Highway J Citizens Group, U.A and Waukesha County Environmental Action League.

b. Briefly describe how the issues identified above were addressed:

- Safety concerns regarding steep hills and sight distance concerns would be addressed by reconstructing deficient roadway segments that have crash or near-miss problems.
- Concerns regarding the WIS 167/WIS 164 intersection would be addressed by reconstructing the intersection as a roundabout with the capacity for the existing and projected traffic volumes.
- The suggested speed limit reduction alternative was considered with the review of FHWA and UW Tops Lab studies regarding speed limit reduction effectiveness. It was concluded that lowering speed limits within this corridor and similar highway corridors has very limited effect on the observed travel speeds. The most deficient geometric elements in the corridor that have had a significant crash history would be eliminated by making spot safety and geometric improvements.
- Concerns about maintaining the rural character of the roadway would be addressed with the proposed design. Providing no geometric improvements to the roadway would not address the project's purpose or need. The proposed design would maintain a rural cross section except where curb and gutter would substantially reduce impacts. The proposed design would minimize impacts to the adjacent resources to the extent practical while addressing the project's purpose and need.
- Snowmobiles would be better accommodated in the project corridor with the proposed design that includes flattening the ditch foreslopes and back slopes along WIS 164, particularly at driveways, which was an area of particular concern expressed by snowmobile club representatives.
- Localized drainage issues would be addressed with the proposed ditch and culvert design.
- WIS 164 will not be considered for expansion to 4-lanes until warranted by traffic volumes.
- Specific impacts to properties were explained and discussed with individual attendees and the real estate process for compensation to impacts to private property was explained to them

- Response letters were sent to the Highway J Citizens Group, U.A and Waukesha County Environmental Action League, noting that no expansion or "interim" expansion is proposed as part of this project. This concern is also addressed in Basic Sheet 2 of this document. See Exhibit 9 for correspondence from the Highway J Citizens Group, U.A and Waukesha County Environmental Action League.

11. Local/regional government coordination:

a. Identify units of government contacted and provide the date coordination was initiated:

Unit of Government	Coordination	Coordination Initiation Date	Coordination Completion Date	Comments
MPO, RPC, City, County, Village, Town, etc.	Correspondence Attached Y/N			
Village of Richfield	N	10/27/2010	Ongoing	See below.
Town of Polk	N	10/27/2010	Ongoing	See below.
Washington County	N	10/27/2010	Ongoing	See below.

b. Describe the issues, if any, identified by units of government during the public involvement process:

The Village of Richfield noted that there are long back-ups on WIS 164 from WIS 167 to Hubertus Road.

Village officials also are concerned about the varying speed limits within the project corridor and would prefer more consistency.

Washington County was also interested in the possibility of lowering the speed limit.

c. Briefly describe how the issues identified above were addressed:

An intersection evaluation was conducted for the WIS 167/WIS 164 intersection to analyze operations and determine if the intersection should remain a 4-way stop control, be signalized, or if a roundabout should be constructed.

Speed limit concerns were addressed through discussion of the design team being tasked with designing to driver expectations and designing within the speed limits set by the Department of Transportation.

d. Indicate any unresolved issues or ongoing discussion:

None

Basic Sheet 3

Coordination

INTERNAL WisDOT	**Coordination Required?**	**Correspondence Attached? Y = Yes N = No**	**Comments** Explain or give results. If no correspondence is attached to this document, indicate when coordination with the agency was initiated and, if available, when coordination was completed. If coordination is not required, state why.
Bureau of Aeronautics	☒ No	Y	Coordination is not required. Project is not located within 2 miles (3.22 km) of a public or military use airport nor would the project change the horizontal or vertical alignment of a transportation facility located within 4 miles (6.44 km) of a public use or military airport. See Exhibit 10 – Bureau of Aeronautics Correspondence
	☐ Yes		Coordination has been completed and no effects to the private use airports are anticipated
Bureau of Rails & Harbors	☒ No		Coordination is not required because no railways or harbors are in or planned in the project area.
	☐ Yes		Coordination has been completed and project effects have been addressed. Explain:
Regional Real Estate Section	☐ No		Coordination is not required because no inhabited houses or active businesses would be acquired.
	☒ Yes	N	Coordination has been completed. Project effects and relocation assistance have been addressed. See the Conceptual Stage Relocation Plan attached as Exhibit 11.
STATE AGENCY	**Coordination Required? Y = Yes N = No**	**Correspondence Attached? Y = Yes N = No**	
Agriculture (DATCP)	Y	Y	An initial coordination letter and Farmland Conversion Impact Rating form were sent to DATCP on October 30, 2012. An updated Agricultural Impact Notice was sent on November 30, 2012. An Agricultural Impact Statement is not required per DATCP's response on 12/3/2012. See Exhibit 12, Department of Agriculture, Trade & Consumer Protection Correspondence, U.S. Department of Agriculture Farmland Conversion Impact Rating Sheet, and Agricultural Impact Notice.
Natural Resources (WDNR)	Y	Y	See attached initial review letter dated January 2, 2012 (Exhibit 13).
State Historic Preservation Office (SHPO)	Y	Y	The Section 106 Review form was approved by WisDOT's Environmental Services Section (ESS), on February 20, 2013 and by SHPO on March 13, 2013. See Exhibit 14.
Others:	N/A	N/A	N/A
FEDERAL AGENCY	**Coordination Required? Y = Yes N = No**	**Correspondence Attached? Y = Yes N = No**	
Advisory Council on Hist.Pres. (ACHP)	N	N	Coordination is not required because the project does not adversely impact any historic resources.

Corps of Engineers (COE)	Y	N	An initial coordination letter was sent to the COE on April 26, 2012. See Exhibit 15. A copy of the wetland delineation report was sent to the COE on September 26, 2012. Coordination is ongoing and a permit application for wetland filling will be completed in consultation with WisDOT and the DNR.
Environmental Protection Agency (EPA)	N	N	Coordination is not required due to the relatively simple nature of the project and there are no impacts to sensitive environmental resources
National Park Service (NPS)	N	N	Coordination is not required because the project does not adversely impact any federally funded park land.
Nat. Resource Cons. Service (NRCS)	N	N	The Farmland Conversion Impact Rating (Form AD-1006) for WIS 164 is below 60 total points in Part VI. Per FDM 5-5-5 no coordination with the NRCS is required. (See Exhibit 12, Department of Agriculture, Trade & Consumer Protection Correspondence and U.S. Department of Agriculture Farmland Conversion Impact Rating Sheet).
US Coast Guard (USCG)	N	N	Coordination is not required because the project does not impact coastal or Great Lakes waters.
Fish & Wildlife Serv. (FWS)	Y	Y	An initial coordination letter was sent to FWS on April 26, 2012. The FWS response is attached. See Exhibit 16.
Other(Identify)	N/A	N/A	N/A
AMERICAN INDIAN TRIBES	Y	Y	Letters were sent in April 26, 2012 to the American Indian Tribes for Washington County. No issues. See Exhibit 17, Native American Tribes Correspondence.

Basic Sheet 4
Environmental Factors Matrix

FACTORS	EFFECTS				
	Adverse	Benefit	None Identified	Factor Sheet Attached	Note: Comments should be of a summary nature and should not extensively duplicate information contained in an attached factor sheet. If an "adverse" effect is permanent, a factor sheet must be attached. If an "adverse" effect is temporary, it must be explained on this sheet under "comments". If "None Identified" is indicated, explain why. **Comments**
A. ECONOMIC FACTORS					
A-1 General Economics	☒	☒	☐	☒	While there may be temporary disruption during construction, no effects on general economics are anticipated.
A-2 Business	☒	☒	☐	☒	The area's businesses may benefit from the proposed action as a safer facility may encourage more travel. Short-term inconveniences in access would occur during construction.
A-3 Agriculture	☒	☐	☐	☒	Strip fee right of way acquisition would reduce amount of farming acreage.
B. SOCIAL/CULTURAL FACTORS					
B-1 Community or Residential	☒	☒	☐	☒	Under the proposed action, WIS 164 would be closed to through traffic during staged construction with a posted detour. This would result in short-term, adverse effects to nearby residences and businesses. After construction, road users would benefit from a safer, more efficient facility. Two residences would be relocated as a result of safety improvements to the intersection of WIS 164 and Pleasant Hill Road. One residence would be relocated as a result of improvements to the WIS 164/WIS 167 intersection
B-2 Indirect Effects	☐	☐	☒	☐	This factor sheet is currently being developed. At this time, address these issues in other factor sheets.
B-3 Cumulative Effects	☐	☐	☒	☐	This factor sheet is currently being developed. At this time, address these issues in other factor sheets.
B-4 Environmental Justice	☐	☐	☒	☐	Review of US Census Data and Windshield Survey along the project reveals no environmental justice concerns. No concerns for environmental justice have been expressed through three Public Informational Meetings.
B-5 Historic Resources	☐	☐	☒	☐	No properties affected. The Section 106 Review form was approved by WisDOT's Environmental Services Section (ESS), on February 20, 2013 and by SHPO on March 13, 2013. See Exhibit 14.
B-6 Archaeological Sites	☐	☐	☒	☐	No properties affected. The Section 106 Review form was approved by WisDOT's Environmental Services Section (ESS) on February 20, 2013 and by SHPO on March 13, 2013. See Exhibit 14.
B-7 Tribal Issues	☐	☐	☒	☐	No tribal units have expressed concerns with this project.

B-8 Section 4(f) and 6(f) or Other Unique Areas	☐	☐	☒	☒	Heritage Trails County Park is located adjacent to WIS 164 approximately 3,300 feet north of County E. Richfield Historical Park and Nature Park is locate on the east side of WIS 164 south of Pleasant Hill Road. No fee acquisition or permanent limited easements would be required from either park. Temporary limited easements are required at both parks. Concurrence with the temporary impacts has been provided by the Village of Richfield and the Washington County Planning and Parks Department. See Exhibit 18.
B-9 Aesthetics	☒	☒	☐	☒	There would be temporary adverse visual effects from equipment and material stockpiles during construction. The proposed action would create an updated and clean appearance to the project corridor after construction.
C. NATURAL SYSTEM FACTORS					
C-1 Wetlands	☒	☐	☐	☒	Wetland areas would be disturbed by grading for roadbed widening, intersection improvements, ditch grading, and culvert replacements and extensions.
C-2 Rivers, Streams and Floodplains	☒	☐	☐	☒	Two rivers, the Oconomowoc River and the Coney River, cross the proposed project. Existing pipe culverts located at these stream crossings would remain in place and shielded with beam guard. No in-stream work is anticipated.
C-3 Lakes or Other Open Water	☐	☐	☒	☐	There are no lakes or other areas of open water located adjacent to the project corridor.
C-4 Groundwater, Wells, and Springs	☐	☐	☒	☐	There are no known wells or springs and no expected impacts to the groundwater.
C-5 Upland Wildlife and Habitat	☐	☐	☒	☐	No Upland Wildlife and Habitat within project corridor.
C-6 Coastal Zones	☐	☐	☒	☐	The project is not located along or near a Coastal or Great Lakes water.
C-7Threatened and Endangered Species	☐	☐	☒	☐	Impacts to Threatened and Endangered Species are not anticipated.
D. PHYSICAL FACTORS					
D-1 Air Quality	☐	☐	☒	☐	This project is listed in "A Transportation Improvement Program for Southeastern Wisconsin: 2011-2014" as Project 366. This project is exempt from permit requirements under Wisconsin Administrative Code - Chapter NR 411. No substantial impacts to air quality are expected.
D-2 Construction Stage Sound Quality	☒	☐	☐	☒	WisDOT Standard Specifications 107.8 (6) and 108.7.1 would apply.
D-3 Traffic Noise	☐	☐	☒	☐	A noise analysis was not required for this project. No impacts are anticipated.
D-4 Hazardous Substances or Contamination	☐	☐	☒	☒	No contaminated areas are expected to be impacted by the proposed action.
D-5 Stormwater	☐	☐	☒	☒	Vegetative swales and a dry pond are proposed to maintain existing peak stormwater runoff discharges after construction
D-6 Erosion Control	☐	☐	☒	☒	Best Management Practices" would be utilized during construction to control runoff from the site.
E. OTHER FACTORS					
E-1	☐	☐	☐		N/A
E-2	☐	☐	☐		N/A

Basic Sheet 5
Alternatives Comparison Matrix

(All estimates, including costs, are based on conditions described in this document at the time of preparation. Additional agency or public involvement may change these estimates in the future.)

ENVIRONMENTAL ISSUE	UNIT MEASURE	ALTERNATIVES/SECTIONS			
		No Action	Speed Limit Red.	Maintenance Overlay Only	Resurfacing w Spot Safety and Geometric Improvements (**Preferred**)
Project Length	Miles	0	7.49	7.49	7.49
Preliminary Cost Estimate*					
Construction	Million $	0.07	0.008	1.2	14.4
Real Estate	Million $	0	0	0	1.7
Total	Million $	0.07	.008	1.2	16.1
Land Conversions					
Wetland Area Converted to ROW	Acres	0	0	0	1.25
Upland Habitat Area Converted to ROW	Acres	0	0	0	0
Other Area Converted to ROW	Acres	0	0	0	40.91
Total Area Converted to ROW	Acres	0	0	0	42.16
Real Estate					
Number of Farms Affected	Number	0	0	0	34
Total Area Required From Farm Operations	Acres	0	0	0	23.87 (Fee) 4.92 (Easement)
AIS Required	Yes/No	No	No	No	No
Farmland Rating	Score	0	0	0	33
Total Buildings Required	Number	0	0	0	3
Housing Units Required	Number	0	0	0	3
Commercial Units Required	Number	0	0	0	0
Other Buildings or Structures Required	Number (Type)	0	0	0	0
Environmental Issues					
Indirect Effects	Yes/No	No	No	No	No
Cumulative Effects	Yes/No	No	No	No	No
Environmental Justice Populations	Yes/No	No	No	No	No
Historic Properties	Number	0	0	0	0
Archeological Sites	Number	0	0	0	0
106 MOA Required	Yes/No	No	No	No	No
4(f) Evaluation Required	Yes/No	No	No	No	Yes
Flood Plain	Yes/No	No	No	No	Yes
Total Wetlands Filled	Acres	0	0	0	1.609
Stream Crossings	Number	0	0	0	2
Endangered Species	Yes/No	No	No	No	No
Air Quality Permit Required	Yes/No	No	No	No	No
Design Year Noise Sensitive Receptors No Impact Impacted	 Number Number	N/A	N/A	N/A	N/A
Contaminated Sites	Number	0	0	0	0

*Preliminary Construction Cost Estimates are in 2013 Dollars

Basic Sheet 6
Traffic Summary Matrix

	ALTERNATIVES/SECTIONS				
	County Q to Monches Road	Monches Road to Hubertus Road	Hubertus Road to WIS 167	WIS 167 to Pleasant Hill Road	Pleasant Hill Road to WIS 175
TRAFFIC VOLUMES					
Existing ADT Yr. 2013	9,600	8,000 (2010 ADT)	9,000	6,700	7,500
Const. Yr. ADT Yr. 2018	10,400	8,700	9,500	7,100	7,900
Const. Plus 10 Yr. ADT Yr. 2028	12,100	9,600	10,600	7,800	8,700
Design Yr. ADT Yr. 2038	13,800	10,500	11,600	8,500	9,600
DHV Yr. 2038	1,590	1,210	1,330	980	1,100
TRAFFIC FACTORS					
K_{100}(%)	11.5	11.5	11.5	11.5	11.5
D (%)	60/40	60/40	60/40	60/40	60/40
Design Year T (% of ADT)	8.4	8.4	8.4	8.4	8.4
T (% of DHV)	7.9	7.9	7.9	7.9	7.9
Level of Service (2035)	E	E	E	E	E
SPEEDS					
Existing Posted (mph)	55	55 (Monches Rd – Cherokee Tr) 50 (Cherokee Tr – Hubertus Rd)	50	50 (Hubertus Rd – 600' S. of Pleasant Hill Rd) 40 (600' S. of Pleasant Hill Rd – Pleasant Hill Rd)	40 (Pleasant Hill Rd – 600' N. of Pleasant Hill Rd) 55 (600' N. of Pleasant Hill Rd – WIS 175)
Future Posted (mph)	55	55 (Monches Rd – Cherokee Tr) 50 (Cherokee Tr - Hubertus Rd)	50	50	50 (Pleasant Hill Rd – 600' N. of Pleasant Hill Rd) 55 (600' N. of Pleasant Hill Rd – WIS 175)
Design Year 2038 Project Design Speed (mph)	60	60	60	60	60
OTHER (Specify)					
P (% of ADT)	14.6	14.6	14.6	14.6	14.6
K (% OF ADT)	N/A	N/A	N/A	N/A	N/A

ADT = Average Daily Traffic
K [$_{30/100/200}$] : K_{30} = Interstate, K_{100} = Rural, K_{200} = Urban, % = ADT in DHV
T = Trucks
DHV = Design Hourly Volume
D = % DHV in predominate direction of travel
P = % ADT in peak hour
K_8 = % ADT occurring in the average of the 8 highest consecutive hours of traffic on an average day. (Only required when a carbon monoxide analysis must be performed per Wisconsin Administrative Code - Chapter NR 411.)

Basic Sheet 7
EIS Significance Criteria

When the significance of impact of a transportation project proposal is uncertain, an environmental assessment (ES) is prepared to assist in making this determination. If it is found that significant impact(s) will result, the preparation of an environmental impact statement (EIS) should commence immediately. Indicate whether the issue listed below is a concern for the proposed action or alternative. If the issue is a concern, explain how it is to be addressed or where it is addressed in this environmental document.

1) Will the proposed action stimulate substantial indirect environmental effects?

☒ No
☐ Yes – Explain or indicate where addressed.

Projects that are considered Categorical Exclusions do not require assessment of indirect and cumulative environmental effects as past experience with similar actions has indicated that these actions do not involve significant environmental impacts. Under the Federal Highway Administration guidelines and the Code of Federal Regulations (CFR) Title 23 Section 771.117(d), projects such as the proposed WIS 164 rehabilitation that modernize a highway through resurfacing; restoration; rehabilitation; reconstruction; addition of shoulders; or addition of auxiliary lanes including lanes for parking, weaving, turning or climbing may be considered Categorical Exclusions if no extraordinary circumstances such as impacts to endangered species, protected cultural sites, wetlands, and other environmental resources occur. Impacts to environmental resources for the proposed action are not considered to be significant as they have been evaluated and avoidance and mitigation strategies have been coordinated with the appropriate agencies as shown in the following Factor Sheets and therefore analysis of indirect and cumulative effects is not required.

2) Will the proposed action contribute to cumulative effects of repeated actions?

☒ No
☐ Yes – Explain or indicate where addressed.

See question 1 above for explanation.

3) Will the creation of a new environmental effect result from this proposed action?

☒ No
☐ Yes – Explain or indicate where addressed.

4) Will the proposed action impact geographically scarce resources?

☒ No
☐ Yes – Explain or indicate where addressed.

5) Will the proposed action have a precedent-setting nature?

☒ No
☐ Yes – Explain or indicate where addressed.

6) Is the degree of controversy associated with the proposed action high?

☒ No
☐ Yes – Explain or indicate where addressed.

7) Will the proposed action be in conflict with official agency plans or local, state, or national policies, including conflicts resulting from potential effects of transportation on land use and land use on transportation demand?

☒ No
☐ Yes – Explain or indicate where addressed.

Basic Sheet 8
Environmental Commitments

Identify and describe any commitments made to protect the environment. Indicate when the commitment should be implemented and who in WisDOT will have jurisdiction to assure fulfillment for each commitment. Note if the commitment will be recorded in the plans, "special provisions", "notes to construction" or some other written format. Note if the commitment is mandated by law, and therefore legally binding.

Commitments on Basic Sheet 8 supplement environmental commitments incorporated in WisDOT's Standard Specifications for Highway and Bridge Construction.

ATTACH A COPY OF THIS PAGE TO THE DESIGN STUDY REPORT AND THE PS&E SUBMITTAL PACKAGE

Factors	Commitments
A-1 General Economics	Access to residences and businesses for local and emergency vehicles during construction would be provided and addressed in the project special provisions. The WisDOT construction engineer will assure fulfillment of these measures during construction
A-2 Business	Access to residences and businesses for local and emergency vehicles during construction would be provided and addressed in the project special provisions. The WisDOT construction engineer will assure fulfillment of these measures during construction.
A-3 Agriculture	Access would be maintained to field entrances during construction. Normal erosion control measures would be taken. The WisDOT construction engineer will assure fulfillment of these measures during construction.
B-1 Community or Residential	Access to residences and businesses for local and emergency vehicles during construction would be provided and addressed in the project special provisions. The WisDOT construction engineer will assure fulfillment of these measures during construction.
B-2 Indirect Effects	No commitments needed.
B-3 Cumulative Effects	No commitments needed.
B-4 Environmental Justice	No commitments needed.
B-5 Historic Resources	No commitments needed.
B-6 Archaeological Sites	The following language will be added to the contract special provisions: WisDOT shall ensure an archaeologist is present to monitor project-related ground-disturbing activities adjacent to the cemetery site BWT-0035 Note: An archaeologist qualified to excavate human burial sites (per Wis. Stats. 157.70 (1) (i) and Wis. Admin Code § HS 2.04 (6) (a)) will oversee the monitoring activities. The WisDOT PM/Construction Engineer shall take measures to ensure that cemetery site BWT-0035 is not used for borrow or waste disposal and the site area should not be used for the staging of personnel, equipment and/or supplies Coordinate with WisDOT Environmental Services Section (Lynn Cloud (608) 266-0099) in regards to scheduling the archaeologist. A two week advance notice of any ground disturbance is preferred to ensure availability of the archaeologist. No ground disturbing activities should occur beyond the currently proposed project area without prior permission from the WHS in the area near cemetery site: BWT-0035, per Wis. Stat. 157.70. The WisDOT construction engineer will assure fulfillment of these measures during construction.
B-7 Tribal Issues	No commitments needed.

B-8 Section 4(f) and 6(f) or Other Unique Areas	No commitments Needed.
B-9 Aesthetics	No commitments needed.
C-1 Wetlands	Wetland fills of 1.609 acres will be mitigated at a location agreed upon by WisDOT and the Wisconsin DNR. The WisDOT project manager will assure fulfillment of this commitment.
C-2 Rivers, Streams & Floodplains	No in-stream activity work will be done in the streams crossing the project during the spawning time for fish, which is from May 1st to June 30th in any year. The WisDOT construction engineer will assure fulfillment of these measures during construction.
C-3 Lakes or other Open Water	No commitments needed.
C-4 Groundwater, Wells and springs	No commitments needed.
C-5 Upland Wildlife and Habitat	No commitments needed.
C-6 Coastal Zones	No commitments needed.
C-7 Threatened and Endangered Species	No commitments needed.
D-1 Air Quality	No commitments needed.
D-2 Construction Stage Sound Quality	Check all that apply: ☒ WisDOT Standard Specification 107.8(6) and 108.7.1 will apply. ☐ Special construction stage noise abatement measures will be required. Describe:
D-3 Traffic Noise	No commitments needed.
D-4 Hazardous Substances Contamination	No commitments needed.
D-5 Stormwater	Storm water management would be carried out in accordance with TRANS 401. Storm water management would include discharging runoff water into flat, grass-lined ditches and swales to slow the runoff water and settle out contaminants before entering adjacent wetlands. A combination of flat bottom ditches, ditch checks, and a dry pond would ensure pre and post-construction runoff volumes to be equivalent or to minimize increases to the extent practicable. The WisDOT construction engineer will assure fulfillment of these measures during construction.
D-6 Erosion Control	Erosion control in accordance with TRANS 401 and WisDOT's Facilities Development Manual, Chapter 10 is outlined in the plans and specifications (Erosion Control Plan – ECP). The contractor would also complete and administer an approved Erosion Control Implementation Plan – ECIP with enforcement by the WisDOT construction engineer. Additional borrow and waste sites not included in the original ECIP may not be used until a revised ECIP is approved by WisDOT. Short-term / temporary erosion control measures during construction would include erosion bales, silt fence, erosion mats, special ditch checks, temporary seeding, permanent seeding and mulching of exposed soil, slope sodding, erosion mat on steep slopes, and dust abatement. The WisDOT construction engineer will assure fulfillment of these measures during construction.
E Other	N/A

Factor Sheet A-1

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Briefly describe the existing economic characteristics of the area around the project:

Economic Activity	Description
a. Agriculture	There are active farms throughout the project corridor.
b. Retail business	There are two bar/restaurants located adjacent to the project corridor.
c. Wholesale business	None
d. Heavy industry	None
e. Light industry	None
f. Tourism	Holy Hill and the Basilica of the National Shrine of Mary, Help of Christians is located west of the project corridor, south of WIS 167.
g. Recreation	Richfield Historical Park and Nature Park is located east of WIS 164, south of Pleasant Hill Road. Heritage Trails Park is located west of WIS 164, north of County E. Use of the parks would not be impacted by the proposed action.
h. Forestry	There are no known managed forests in the project area.
i.	N/A

2. Discuss the economic advantages and disadvantages of the proposed action and whether advantages would outweigh disadvantages. Indicate how the project would affect the characteristics described in item 1 above:

The improvements to WIS 164 have been proposed in response to poor roadway condition, and inefficient traffic operations and safety concerns at spot locations. The improvements would provide improved access to the project area by creating more efficient and safer traffic operations. It is anticipated that economic benefits from the project would outweigh losses from initial business interruption and long term costs associated with crashes and roadway maintenance. Failure to implement the proposed improvements would result in deteriorated traffic conditions at intersections, increased delays along WIS 164 and impedance of turning movements at side streets and driveways.

It is expected that the advantages would outweigh the disadvantages due to the relatively short duration of inconveniences during one construction season. While disadvantages would be realized during construction, advantages would be realized immediately following construction and until the design year of 2036.

3. What effect will the proposed action have on the potential for economic development in the project area?

☒ **The proposed project will have no effect on economic development.**

☐ **The proposed project will have an effect on economic development.**
☐ Increase, describe: _____

☐ Decrease, describe: _____+

Factor Sheet A-2

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Is a Conceptual Stage Relocation Plan attached to this document?

☐ Yes

☒ No - (Explain) There would be no businesses relocated as part of this project.

2. Describe the economic development or existing business areas affected by the proposed action:

The land use adjacent to the project corridor is primarily agricultural and residential with limited commercial business within the project limits. The commercial business along the corridor is comprised of two bar/restaurants.

3. Identify and discuss existing modes of transportation and their traffic within the economic development or existing business area:

The primary mode of transportation along WIS 164 consists of 90.6% passenger vehicles and 9.4% trucks and buses. There is no mass transit within the project corridor. Bicyclists utilize WIS 164. Traffic within the project corridor consists largely of residents, commuters, and people utilizing local businesses and services.

See the Traffic Summary Matrix on Basic Sheet 6 for more detailed information on traffic in the project corridor.

4. **Identify and discuss effects on the economic development potential and existing businesses that are dependent upon the transportation facility for continued economic viability:**

☐ The proposed project will have no effect on a transportation-dependent business or industry.

☒ The proposed action may change the conditions for a business that is dependent upon the transportation facility. Identify effects, including effects which may occur during construction.

WIS 164 would be closed to through traffic; however, the roadway would remain open to local businesses and residences throughout construction. While there may be some temporary disruption during construction, long-term effects on businesses are not anticipated.

5. Describe both beneficial and adverse effects on:

A. The existing business area affected by the proposed action. Include any factors identified by business people that they feel are important or controversial.

Business owners are concerned about the disruption to traffic and difficulties for customers and deliveries to access their businesses. Access to businesses (local traffic) will be maintained during construction. Short term adverse effects include temporary disruptions to access during construction. Long-term, the existing businesses may benefit from the proposed action through a desire of the general public to use an improved facility.

B. The existing employees in businesses affected by the proposal. Include, as appropriate, a discussion of effects on minority populations or low-income populations.

Existing employees would benefit from improved travel conditions on the reconstructed roadway. Temporary disruptions to access would also adversely affect employees of the adjacent business. Access to businesses would be maintained during construction.

6. Estimated number of businesses and jobs that would be created or displaced because of the project:

Business/Job Type	Businesses			Jobs	
	Created	Displaced	Value	Created	Displaced
L. Retail	0	0	0	0	0
Service	0	0	0	0	0
Wholesale	0	0	0	0	0
Manufacturing	0	0	0	0	0
Other (List)	0	0	0	0	0

7. Are any owners or employees of created or displaced businesses elderly, disabled, low-income or members of a minority group?

☒ No
☐ Yes – If yes, complete Factor Sheet B-4, Environmental Justice Evaluation.

8. Is Special Relocation Assistance Needed?

☒ No
☐ Yes – Describe special relocation needs.

9. Identify all sources of information used to obtain data in item 8:

☐ WisDOT Real Estate Conceptual Stage Relocation Plan ☐ Multiple Listing Service (MLS)
☐ Newspaper listing(s) ☐ Other - Identify:

10. Describe the business relocation potential in the community:

A. Total number of available business buildings in the community. _____

B. Number of available and comparable business buildings by type and price (Include business buildings in price ranges comparable to those being dislocated, if any).

Number of available and comparable type business buildings in the price range of _____
Number of available and comparable type business buildings in the price range of _____
Number of available and comparable type business buildings in the price range of _____

Not applicable as there would be no business relocations as part of this project.

11. Describe how relocation assistance will be provided in compliance with the WisDOT Relocation Manual or FHWA regulation 49 CFR Part 24. Check all that apply:

☐ Business acquisitions and relocations will be completed in accordance with the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended." In addition to providing for payment of "Just Compensation" for property acquired, additional benefits are available to eligible displaced persons forced to relocate from their business. Some available benefits include relocation advisory services, reimbursement of moving expenses, replacement of business payments. In compliance with State law, no person would be displaced unless a comparable replacement business would be provided.

Compensation is available to all displaced persons without discrimination. Before initiating property acquisition activities, property owners will be contacted and given an explanation of the details of the acquisition process and Wisconsin's Eminent Domain Law under Section 32.05, Wisconsin Statutes. Any property to be acquired will be inspected by one or more professional appraisers. The property owner will be invited to accompany the appraiser during the inspection to ensure the appraiser is informed of every aspect of the property. Property owners will be given the opportunity to obtain an appraisal by a qualified appraiser that will be considered by WisDOT in establishing just compensation. Reasonable cost of an owner's appraisal will be reimbursed to the owner if received within 60 days of initiation of negotiations. Based on the appraisal(s) made, the value of the property will be determined, and that amount offered to the owner.

☐ Describe other relocation assistance requirements, not identified above.

Not applicable as there would be no business relocations as part of this project.

12. Identify any difficulties relocating a business displaced by the proposed action and describe any special services needed to remedy identified unusual conditions:

Not applicable as there would be no business relocations as part of this project.

13. Describe any additional measures that will be used to minimize adverse effects or provide benefits to those relocated. Also discuss accommodations made to minimize adverse effects to businesses that may be affected by the project, but not relocated:

WIS 164 would be closed to through traffic, but emergency access would be provided at all times and the roadway would remain open to local businesses throughout construction. Access to properties would be maintained for local traffic and emergency vehicles.

Factor Sheet A-3

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Total acquisition interest, by type of agricultural land use:

Type of Land Acquired From Farm Operations	Type of Acquisition (acres)		Total Area Acquired (acres)
	Fee Simple	Easement	
Crop land and pasture	20.37	3.47	23.84
Woodland	0.91	0.10	1.01
Land of undetermined or other use (e.g., wetlands, yards, roads, etc.)	2.59	1.35	3.94
Totals	23.87	4.92	28.79

2. Indicate number of farm operations from which land will be acquired:

Acreage to be Acquired	Number of Farm Operations
Less than I acre	25
1 acre to 5 acres	9
More than 5 acres	0

3. Is land to be converted to highway use covered by the Farmland Protection Policy Act?

☐ No
- ☐ The land was purchased prior to August 6, 1984 for the purpose of conversion.
- ☐ The acquisition does not directly or indirectly convert farmland.
- ☐ The land is clearly not farmland
- ☐ The land is already in, or committed to urban use or water storage.

☒ Yes (This determination is made by the Natural Resources Conservation Service (NRCS) via the completion of the Farmland Impact Conversion Rating Form, NRCS Form AD-1006) **See Exhibit 12.**
- ☒ The land is prime farmland which is not already committed to urban development or water storage.
- ☐ The land is unique farmland.
- ☐ The land is farmland which is of statewide or local importance as determined by the appropriate state or local government agency.

4. Has the Farmland Impact Conversion Rating Form (AD-1006) been submitted to NRCS?

☒ No - Explain.
Per FDM 5-5-5 no notification to the NRCS is required if the Site Assessment Criteria Score (Part VI of the from) is less than 60 points for this project alternative. Date Form AD-1006 completed. October 12, 2012.

☐ Yes
- ☐ The Site Assessment Criteria Score (Part VI of the form) is less than 60 points for this project alternative. Date Form AD-1006 completed. _____
- ☐ The Site Assessment Criteria Score is 60 points or greater. Date Form AD-1006 completed. _____

5. Is an Agricultural Impact Statement (AIS) Required?

☒ No
- ☐ Eminent Domain will not be used for this acquisition
- ☐ The project is a "Town Highway" project
- ☒ The acquisition is less than 1 acre
- ☒ The acquisition is 1-5 acres and DATCP chooses not to do an AIS.
- ☐ Other. Describe _____

☐ Yes
- ☐ Eminent Domain may be used for this acquisition.
- ☐ The project is not a "Town Highway" project
- ☐ The acquisition is 1-5 acres and DATCP chooses to do an AIS.
- ☐ The acquisition is greater than 5 acres

6. Is an Agricultural Impact Notice (AIN) Required?

☐ No, the project is not a State Trunk Highway Project - AIN not required but complete questions 7-16.

☐ Yes, the project is a State Trunk Highway Project - AIN may be required.

Is the land acquired "non-significant"?

☐ Yes - (All must be checked) An AIN is not required but complete questions 7-16.
- ☐ Less than 1 acre in size
- ☐ Results in no severances
- ☐ Does not significantly alter or restrict access
- ☐ Does not involve moving or demolishing any improvements necessary to the operation of the farm
- ☐ Does not involve a high value crop

☒ No
- ☒ Acquisition 1 to 5 acres - **AIN required**. Complete Pages 1 and 2, Form DT1999, (Pages 1 and 2, Figure 1, Procedure 21-25-30.) See Exhibit 12 – Department of Agriculture, Trade & Consumer Protection Correspondence, U.S. Department of Agriculture Farmland Conversion Impact Rating Sheet, and Agricultural Impact Notice
- ☐ Acquisition over 5 acres - **AIN required**. Complete Pages 1, 3 and 4, Form DT1999. (Pages 1, 3 and 4, Figure 1, Procedure 21-25-30)

If an AIN is completed, do not complete the following questions 7-16.

See Exhibit 12 - Department of Agriculture, Trade & Consumer Protection Correspondence, U.S. Department of Agriculture Farmland Conversion Impact Rating Sheet, and Agricultural Impact Notice

7. Identify and describe effects to farm operations because of land lost due to the project:

☐ Does Not Apply.

☐ Applies – Discuss.

8. Describe changes in access to farm operations caused by the proposed action:

☐ Does Not Apply.

☐ Applies – Discuss.

9. Indicate whether a farm operation will be severed because of the project and describe the severance (include area of original farm and size of any remnant parcels):

☒ Does Not Apply.

☐ Applies – Discuss.

10. Identify and describe effects generated by the acquisition or relocation of farm operation buildings, structures or improvements (e.g., barns, silos, stock watering ponds, irrigation wells, etc.). Address the location, type, condition and importance to the farm operation as appropriate:

☐ Does Not Apply.

☐ Applies – Discuss.

11. Describe effects caused by the elimination or relocation of a cattle/equipment pass or crossing. Attach plans, sketches, or other graphics as needed to clearly illustrate existing and proposed location of any cattle/equipment pass or crossing:

- ☐ Does Not Apply.
- ☐ Replacement of an existing cattle/equipment pass or crossing is not planned. Explain.
- ☐ Cattle/equipment pass or crossing will be replaced.
- ☐ Replacement will occur at same location.
- ☐ Cattle/equipment pass or crossing will be relocated. Describe.

12. Describe the effects generated by the obliteration of the old roadway:

- ☒ Does Not Apply.
- ☐ Applies – Discuss.

13. Identify and describe any proposed changes in land use or indirect development that will affect farm operations and are related to the development of this project:

- ☐ Does Not Apply.
- ☐ Applies – Discuss.

14. Describe any other project-related effects identified by a farm operator or owner that may be adverse, beneficial or controversial:

- ☐ No effects indicated by farm operator or owner.
- ☐ Applies – Discuss.

15. Indicate whether minority or low-income population farm owners, operators, or workers will be affected by the proposal: (Include migrant workers, if appropriate.)

- ☐ No
- ☐ Applies – Discuss.

16. Describe measures to minimize adverse effects or enhance benefits to agricultural operations:

Factor Sheet B-1

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. **Give a brief description of the community or neighborhood affected by the proposed action:**

Name of Community/Neighborhood
Village of Richfield
Incorporated
☒ Yes ☐ No

Total Population
11,300 (2010 Census)

Demographic Characteristics

Census Year 2010	% of Population
White	96.9
African American	0.1
Asian	1.1
Hispanic/Latino	1.4
Owner Occupied housing	91.6

Name of Community/Neighborhood
Town of Polk
Incorporated
☐ Yes ☒ No

Total Population
3,937 (2010 Census)

Demographic Characteristics

Census Year 2010	% of Population
White	98.0
African American	0.3
Asian	0.5
Hispanic/Latino	1.0
Owner Occupied housing	90.9

2. **Identify and discuss existing modes of transportation and their importance within the community or Neighborhood:**

The primary mode of transportation is driving for commuting to work, schools, and to local and nearby businesses, and churches (passenger vehicles make up over 90% of traffic). The large percentage of passenger vehicle use for traveling to/from work, schools, and to local and nearby businesses and churches stresses the importance of providing a safe, efficient, and well maintained roadway system for this community.

3. Identify and discuss the probable changes resulting from the proposed action to the existing modes of transportation and their function within the community or neighborhood:

The proposed action would not be expected to change the existing modes of transportation. With the addition of bicycle accommodations it is anticipated that there may be a small increase in the number of bicycle commuters. The area is relatively rural in nature and a major change in the way people commute is not expected with this project.

4. Briefly discuss the proposed action's direct and indirect effect(s) on existing and planned land use in the community or neighborhood:

The proposed action is not expected to change the existing or planned land use within the area.

5. Address any changes to emergency or other public services during and after construction of the proposed project:

It is anticipated that the roadway would be closed to through traffic during construction. However, local access to homes, businesses, and schools would be maintained during this time. While temporary inconveniences may occur during construction, no interruption to vital emergency or public services would be expected. After construction, access to adjacent properties and side streets would remain the same as prior to construction for emergency vehicles and other services.

6. Describe any physical or access changes that will result. This could include effects on lot frontages, side slopes or driveways (steeper or flatter), sidewalks, reduced terraces, tree removals, vision corners, etc.:

Under the proposed action in the resurfacing segment, the most pronounced physical change would be the new roadway overlay pavement and widened roadbed. Driveway slopes within the resurfacing segment are expected to remain approximately the same. Tree removals and regrading of ditches would be expected for the widened roadbed in the resurfacing segment and in areas widened for proposed turn and bypass lanes.

Within the reconstruction segments, the most pronounced physical changes would include cutting and regrading four hills that do not meet current standards for stopping sight distance and exceed maximum vertical slopes. In these areas there will be tree removals, cutting of hills adjacent to the roadway, increases in driveway slopes, addition of curb and gutter and retaining walls in some locations.

At the WIS 167/WIS 164 intersection, the most pronounced physical change would be the main roundabout elements including the central island, colored concrete truck apron, and circulatory roadway.

At the Pleasant Hill Road/WIS 164 intersection the most pronounced physical changes would include the shifting of WIS 164 to the west and the removal of two existing residences on the west side of WIS 164 to accommodate the realigned roadway.

7. Indicate whether a community/neighborhood facility will be affected by the proposed action and indicate what effect(s) this will have on the community/neighborhood:

The proposed action is expected to have a minor temporary effect on Friess Lake School during construction. Parents may need to adjust the routes they use to drop off students at the school during when the school year overlaps with construction work. The roundabout reconstruction work would be completed during the summer months, starting after the school year is finished in June and completed prior to the start of the following school year in September.

The proposed action may also have minor temporary effect on people who attend St. Gabriel Catholic Parish, Wooded Hills Bible Church, and First Presbyterian Church during construction.

8. Identify and discuss factors that residents have indicated to be important or controversial:

- Safety concerns at intersections and driveways with crest vertical curve sight distance constraints and areas with steep grades and blowing snow.
- Delays at the WIS 167/WIS 164 intersection.
- Comments were received that turn lanes and bypass lanes should be added at intersections throughout the corridor and that turning radii should be increased.
- Requests were made to reduce the speed limit to 40 or 45 mph throughout the corridor. Some public information meeting attendees believed that current travel speeds are too fast.
- A request was made for better snowmobile accommodation in the project corridor.
- There were comments in favor of not doing any work on WIS 164. It was felt there was not funding available to do the work and that the project will ruin the rural character of the corridor.

- There was both support and opposition for roundabouts. Some public information meeting attendees like the roundabout at the County Q/WIS 164 intersection, but many don't like it even though it dramatically improved the traffic back-ups.
- Some public information meeting attendees would like to preserve the rural character of the corridor.
- There was a request for consistent speed limits through the project limits. The existing posted speed goes from 55 mph to 50 mph to 40 mph to 55 mph. They noted that this is confusing and difficult to enforce.
- Some public information meeting attendees would like to see WIS 164 expanded to 4 lanes now.
- Several attendees noted localized drainage issues.

9. List any Community Sensitive Design considerations, such as design considerations and potential mitigation measures.

Bicycle accommodations would be included in the WIS 164 project to address bicyclist needs.

10. Indicate the number and type of any residential buildings that will be acquired because of the proposed action. If either item a) or b) is checked, items 11 through 18 do not need to be addressed or included in the environmental document. If item c) is checked, complete items 11 through 18 and attach the Conceptual Stage Relocation Plan to the environmental document:

a. ☐ None identified.
b. ☐ No occupied residential building will be acquired as a result of this project. Provide number and description of non-occupied buildings to be acquired.
c. ☒ Occupied residential building(s) will be acquired. Provide number and description of buildings, e.g., single family homes, apartment buildings, condominiums, duplexes, etc.

Two occupied single family homes and one occupied multi-family home (2 of 3 units occupied) would be acquired.

11. Anticipated number of households that will be relocated from the occupied residential buildings identified in item 10c, above:

Total Number of Households to be Relocated.
4

(Note that this number may be greater than the number shown in 10c) above because an occupied apartment building may have many households.)

a. Number by Ownership

Number of Households Living in Owner Occupied Building	Number of Households Living in Rented Quarters
2	2

b. Number of households to be relocated that have.

1 Bedroom	2 Bedroom	3 Bedroom	4 or More Bedrooms
0	0	4	0

c. Number of relocated households by type and price range of dwelling.

Number of Single Family Dwelling 2	Price Range $188,000 - $197,000
Number of Multi-Family Dwellings 1	Price Range $142,000
Number of Apartment 0	Price Range N/A

12. Describe the relocation potential in the community:

a. Number of Available Dwellings (within the Village of Richfield Price Range $125,000 - $210,000)

1 Bedroom	2 Bedrooms	3 Bedrooms	4 or More Bedrooms
0	0	0	1

b. Number of Available and Comparable Dwellings by Location (Price Rand $125,000 - $210,000)

1 home within Richfield (1 mile)
15 homes within Jackson (7 miles)
9 homes within Slinger (8 miles)
76 homes within West Bend (15 miles)
60 homes within Hartford (12 miles)
18 homes within Germantown (5 miles)

c. Number of Available and Comparable Dwellings by Type and Price. (Include dwellings in price ranges comparable to those being dislocated, if any.)

Single Family Dwellings	Price Range
Jackson (15 homes)	$134,000-$210,000
Slinger (9 homes)	$129,900-$209,900
West Bend (76 homes)	$125,000-$205,900
Hartford (60 homes)	$125,000-$210,000
Germantown (18homes)	$139,000-$210,000
Multi-Family Dwellings	**Price Range**
N/A	N/A
Apartments	**Price Range**
6 (4 in West Bend, 1 in Hartford, 1 in Germantown)	$785-$995 per month

13. Identify all the sources of information used to obtain the data in item 12:

☒ WisDOT Real Estate Conceptual Stage Relocation Plan
☒ Newspaper Listing(s)
Milwaukee Journal Sentinel
West Bend Daily News
Washington County magazines – apartments for rent
☒ Multiple Listing Service (MLS)
☒ Other – Identify Internet Real Estate Sites
ForRent.com
rent.com
housesandapartmentsforrent.com

14. Indicate the number of households to be relocated that have the following special characteristics:

☐ None identified.
☒ Yes - 4 total households to be relocated. Complete table below

Special Characteristics	Number of Households with Individuals with Special Characteristics
Elderly	0
Disabled	0
Low income	0
Minority	0
Household of large family (5 or more)	1
Not Known	0
No special characteristics	3

15. Describe how relocation assistance will be provided in compliance with the WisDOT Relocation Manual or FHWA regulation 49 CFR Part 24:

☒ Residential acquisitions and relocations will be completed in accordance with the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended." In addition to providing for payment of "Just Compensation" for property acquired, additional benefits are available to eligible displaced persons required to relocate from their residence. Some available benefits include relocation advisory services, reimbursement of moving expenses, replacement housing payments, and down payment assistance. In

compliance with State law, no person would be displaced unless a comparable replacement dwelling would be provided. Federal law also requires that decent, safe, and sanitary replacement dwelling must be made available before any residential displacement can occur.

Compensation is available to all displaced persons without discrimination. Before initiating property acquisition activities, property owners would be contacted and given an explanation of the details of the acquisition process and Wisconsin's Eminent Domain Law under Section 32.05, Wisconsin Statutes. Any property to be acquired would be inspected by one or more professional appraisers. The property owner would be invited to accompany the appraiser during the inspection to ensure the appraiser is informed of every aspect of the property. Property owners will be given the opportunity to obtain an appraisal by a qualified appraiser that will be considered by WisDOT in establishing just compensation. Based on the appraisal(s) made, the value of the property would be determined, and that amount offered to the owner.

☐ Identify other relocation assistance requirements not identified above.

16. Identify any difficulties or unusual conditions for relocating households displaced by the proposed action:

No difficulties or unusual conditions for relocating households were identified. See Exhibit 11 – Conceptual Stage Relocation Plan.

17. Indicate whether Special Relocation Assistance Service will be needed. Describe any special services or housing programs needed to remedy identified difficulties or unusual conditions noted in item #14 above:

☒ None identified

☐ Yes - Describe services that will be required

18. Describe any additional measures that will be used to minimize adverse effects or provide benefits to those relocated, those remaining, or to community facilities affected:

Coordination has begun with households that would be relocated to ensure they understand the process and to minimize adverse effects to the households.

Factor Sheet B-8

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Property Name:

Richfield Historical Park and Nature Park

2. Location:

Village of Richfield, Section 9, T-9-N, R-19-E (East of WIS 164, south of Pleasant Hill Road)

3. Ownership or Administration:

Village of Richfield

4. Type of Resource:

- ☒ Public Park.
- ☐ Recreational lands.
- ☐ Ice Age National Scenic Trail.
- ☐ NRCS Wetland Reserve Program.
- ☐ Wildlife Refuge.
- ☐ Waterfowl Refuge.
- ☐ Historic/Archaeological Site eligible for the National Register of Historic Places (NRHP).
- ☐ Other – Identify:

5. Do FHWA requirements for section 4(f) apply to the project's use of the property?

- ☒ No - Check all that apply:
  - ☐ Project is not federally funded.
  - ☒ No land will be acquired in fee or PLE and the alternative will not affect the use.
  - ☐ Property is not on or eligible for the NRHP.
  - ☐ Property is on or eligible for the NRHP however includes a de minimus effect finding.
  - ☐ Interstate Highway System Exemption.
  - ☐ Other - Explain:

A temporary limited occupancy (TLE) of the Section 4(f) resource will be required. The officials with jurisdiction over the Section 4(f) resource have agreed that the Temporary Occupancy of Land Section 4(f) exception applies to the resource. See Exhibit 18 - Impact to Section 4(f) Property Correspondence for a copy of the written agreement.

- ☐ Yes - Check all that apply:
  - ☐ Indicate which of the Programmatic/Negative Declaration 4(f) Evaluation(s) applies.
    - ☐ Historic Bridge.
    - ☐ Park minor involvement.
    - ☐ Historic site minor involvement.
    - ☐ Independent bikeway or walkway.
    - ☐ Great River Road.
    - ☐ Net Benefit to Section 4(f) Property. Explain: _____
  - ☐ Full 4(f) evaluation approved on _____.

6. Was special funding used to acquire the land or to make improvements on the property?

☒ No - Special funding was not used for the acquisition of this property.

☐ Yes:

- ☐ s.6(f) LWCF (Formerly LAWCON).
- ☐ Dingell-Johnson (D/J funds).
- ☐ Pittman-Robertson (P/R funds).
- ☐ Other – Describe:

7. Describe the significance of the property:

The Richfield Historical Park and Nature Park is located adjacent to the Coney-Oconomowoc Nature Preserve. The Historical Park is comprised of several buildings that the Richfield Historical Society is restring and preserving to create a living museum of Richfield's history. This park includes log buildings from the time of the early settlers and continues through life on the saw and grist mill homestead, and then on to the era of cash cropping and dairy farming.

There are several distinctive areas at the 29-acre park:

- The Grist Mill, which is the central focus of the park, with all the original equipment intact. This area includes the miller's home, also being restored, and supporting buildings
- Pioneer Homestead, featuring log buildings which enlighten visitors about the life style of the early settlers in Richfield
- Other areas yet to be developed into more educational opportunities

8. Describe the proposed alternative's effects on this property:

a. Describe any effects on or uses of land from the property. For other areas, include or attach statements from officials having jurisdiction over the property which discusses the alternative's effects on the property: **(A map, sketch, plan, or other graphic which clearly illustrates use of the property and the project's use and effects on the property must be included.)**

A temporary limited easement would be required at the Richfield Historical Park and Nature Park to replace the culvert pipe under the driveway to the park and regrade the ditches adjacent to the park. All disturbed areas would be restored to their prior condition after construction ofand regrading are complete. There would be no permanent changes to the park entrance, park sign, or any park land due to the proposed action. See Exhibit 7 – Preliminary Plan View Layouts for proposed work adjacent to the Richfield Historical Park and Nature Park. The use of the park would not be impacted or modified as part of this action.

b. Discuss the following alternatives and describe whether they are feasible and prudent and why:

1. Do nothing alternative.

The purpose of the project is to address poor pavement condition, safety, traffic flow, and to provide for adequate bicycle facilities. The do nothing alternative is not feasible as it does not address the needs of the project.

2. Improvement without using the 4(f) lands.

To improve WIS 164 to meet the purpose and need of the project without impacting the 4(f) lands, the roadway could be shifted slightly to the west to allow for the necessary widening of WIS 164 to meet current design standards. This alternative would require additional reconstruction on the west side of the road and to the north and south requiring additional fee right of way acquisition. This alternative would not be prudent given the additional costs required to shift the roadway away from the park to avoid a minor temporary impact.

3. Alternatives on new location.

This project is a reconditioning project to improve the condition and safety of the existing roadway, therefore an alternative on new location was not evaluated.

9. Indicate which measures will be used to minimize adverse effects, mitigate for unavoidable adverse effects or enhance beneficial effects:

- ☐ Replacement of lands used with lands of reasonably equivalent usefulness and location, and of at least comparable value.
- ☐ The Small Conversion Policy for Lands Subject to Section 6(f) will be used.
- ☐ Replacement of facilities impacted by the project including sidewalks, paths, lights, trees, and other facilities.
- ☒ Restoration and landscaping of disturbed areas.
- ☐ Incorporation of design features and habitat features where necessary to reduce or minimize impacts to the section 4(f) property.
- ☐ Payment of the fair market value of the land and improvement taken.
- ☐ Improvements to the remaining 4(f) site equal to the fair market value of the land and improvements taken.
- ☐ Such additional or alternative mitigation measures determined necessary based on consultation with officials having jurisdiction. The additional or alternative mitigation measures are listed or summarized below:

- ☐ Property is a historic property or an archeological site. The conditions or mitigation stipulations are listed or summarized below:

- ☐ Other – Describe:

10. Briefly summarize the results of coordination with other agencies that were consulted about the project and its effects on the property:

A letter was sent to the Village of Richfield describing the proposed impacts to Richfield Historical Park and Nature Park. The officials with jurisdiction over the Section 4(f) resource have agreed that the Temporary Occupancy of Land Section 4(f) exception applies to the resource. See Exhibit 18 - Impact to Section 4(f) Property Correspondence for a copy of the written agreement.

Factor Sheet B-8

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Property Name:

Heritage Trails County Park

2. Location:

Town of Polk, Section 29, T-10-N, R-19-E (West of WIS 164, north of County E)

3. Ownership or Administration:

Washington County

4. Type of Resource:

- ☒ Public Park.
- ☐ Recreational lands.
- ☐ Ice Age National Scenic Trail.
- ☐ NRCS Wetland Reserve Program.
- ☐ Wildlife Refuge.
- ☐ Waterfowl Refuge.
- ☐ Historic/Archaeological Site eligible for the National Register of Historic Places (NRHP).
- ☐ Other – Identify:

5. Do FHWA requirements for section 4(f) apply to the project's use of the property?

- ☒ No - Check all that apply:
  - ☐ Project is not federally funded.
  - ☒ No land will be acquired in fee or PLE and the alternative will not affect the use.
  - ☐ Property is not on or eligible for the NRHP.
  - ☐ Property is on or eligible for the NRHP however includes a de minimus effect finding.
  - ☐ Interstate Highway System Exemption.
  - ☐ Other - Explain:

A temporary limited occupancy (TLE) of the Section 4(f) resource will be required. The officials with jurisdiction over the Section 4(f) resource have agreed that the Temporary Occupancy of Land Section 4(f) exception applies to the resource. See Exhibit 18 - Impact to Section 4(f) Property Correspondence for a copy of the written agreement.

- ☐ Yes - Check all that apply:
  - ☐ Indicate which of the Programmatic/Negative Declaration 4(f) Evaluation(s) applies.
    - ☐ Historic Bridge.
    - ☐ Park minor involvement.
    - ☐ Historic site minor involvement.
    - ☐ Independent bikeway or walkway.
    - ☐ Great River Road.
    - ☐ Net Benefit to Section 4(f) Property. Explain: _____
  - ☐ Full 4(f) evaluation approved on _____.

6. Was special funding used to acquire the land or to make improvements on the property?

☒ No - Special funding was not used for the acquisition of this property.

☐ Yes:

- ☐ s.6(f) LWCF (Formerly LAWCON).
- ☐ Dingell-Johnson (D/J funds).
- ☐ Pittman-Robertson (P/R funds).
- ☐ Other – Describe:

7. Describe the significance of the property:

Heritage Trails County Park was acquired by Washington County Park System in 1978. The 234 acres of rolling Kettle Moraine hills, valleys and meadows provide many panoramic views, miles of hiking trails and picnic opportunities. Park Amenities include:

- Picnic area with views of Holy Hill
- Playground equipment
- Portable restrooms
- Hiking trails
- 1 reservable shelter
- Soccer fields

8. Describe the proposed alternative's effects on this property:

a. Describe any effects on or uses of land from the property. For other areas, include or attach statements from officials having jurisdiction over the property which discusses the alternative's effects on the property: **(A map, sketch, plan, or other graphic which clearly illustrates use of the property and the project's use and effects on the property must be included.)**

A temporary limited easement would be required at the Heritage Trails County Park to regrade the ditch adjacent to the park. All disturbed areas would be restored to their prior condition after the regrading is complete. There would be no permanent changes to the park land. See Exhibit 7 – Preliminary Plan View Layouts for proposed work adjacent to Heritage Trails County Park. The use of the park would not be impacted or modified as part of this action.

b. Discuss the following alternatives and describe whether they are feasible and prudent and why:

1. Do nothing alternative.

The purpose of the project is to address poor pavement condition, safety, traffic flow, and to provide for adequate bicycle facilities. The do nothing alternative is not feasible as it does not address the needs of the project.

2. Improvement without using the 4(f) lands.

To improve WIS 164 to meet the purpose and need of the project without impacting the 4(f) lands, the roadway could be shifted slightly to the east to allow for the necessary widening of WIS 164 to meet current design standards. This alternative would require additional reconstruction on the east side of the road and to the north and south requiring additional fee right of way acquisition. This alternative would not be prudent given the additional costs required to shift the roadway away from the park to avoid a minor temporary impact.

3. Alternatives on new location.

This project is a reconditioning project to improve the condition and safety of the existing roadway, therefore an alternative on new location was not evaluated.

9. Indicate which measures will be used to minimize adverse effects, mitigate for unavoidable adverse effects or enhance beneficial effects:

- ☐ Replacement of lands used with lands of reasonably equivalent usefulness and location, and of at least comparable value.
- ☐ The Small Conversion Policy for Lands Subject to Section 6(f) will be used.
- ☐ Replacement of facilities impacted by the project including sidewalks, paths, lights, trees, and other facilities.
- ☒ Restoration and landscaping of disturbed areas.
- ☐ Incorporation of design features and habitat features where necessary to reduce or minimize impacts to the section 4(f) property.
- ☐ Payment of the fair market value of the land and improvement taken.
- ☐ Improvements to the remaining 4(f) site equal to the fair market value of the land and improvements taken.
- ☐ Such additional or alternative mitigation measures determined necessary based on consultation with officials having jurisdiction. The additional or alternative mitigation measures are listed or summarized below:

- ☐ Property is a historic property or an archeological site. The conditions or mitigation stipulations are listed or summarized below:

- ☐ Other – Describe:

10. Briefly summarize the results of coordination with other agencies that were consulted about the project and its effects on the property:

A letter was sent to the Washington County Parks Department describing the proposed impacts to Heritage Trails County Park. The officials with jurisdiction over the Section 4(f) resource have agreed that the Temporary Occupancy of Land Section 4(f) exception applies to the resource. See Exhibit 18 - Impact to Section 4(f) Property Correspondence for a copy of the written agreement.

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Factor Sheet B-9

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Landscape Characteristics:

a. Identify and briefly describe the visual character of the landscape:

The landscape encompassing the WIS 164 project area is characterized by rolling terrain. Land use in the area is primarily residential and agricultural with very limited commercial development along the project corridor. Mature deciduous trees are scattered along the project corridor

b. Indicate the visual quality of the view-shed and identify landscape elements which would be visually sensitive:

On WIS 164, the existing deteriorated pavement and variable shoulders and ditches do not exhibit an orderly and aesthetically pleasing environment. The landscaped and grassed residential areas and mature trees lining the roadway provide a softer, pleasing view and enhance the quality of the view shed.

2. User/viewer Characteristics:

a. Identify and discuss the viewers who will have a <u>view of</u> the improved transportation facility:

Viewers of the improved facility include adjacent residents and employees and patrons of the abutting businesses, churches, and school.

b. Identify and discuss users of the transportation facility who will have a <u>view from</u> the facility:

Viewers from the improved facility include those commuting to and from work, school, and local businesses on a daily basis.

3. Effects:

a. Describe whether and how the project would affect the visual character of the landscape:

The visual character within the resurfacing segments would remain largely the same, although there would be a slight widening of the roadbed throughout the project and widening at intersections for turn lane additions. This widening would require regrading of the ditches and removal of mature trees throughout the project corridor.

Within the reconstruction segments the project would add curb and gutter to reduce impacts to surrounding properties which may give a more orderly feel to these segments of WIS 164.

b. Indicate the effects the project would have on the viewer groups:

Both viewers of the facility and from the facility would notice the change in roadway geometry and addition of turn lanes at intersections throughout the project, the addition of curb and gutter in segments where the roadway is being cut down to reduce steep vertical slopes on the roadway, and tree removals throughout the project. These are important visual cues, especially for viewers from the facility, that roadway characteristics are changing and driver awareness is heightened.

4. Mitigation:

a. Have aesthetic commitments been made?

☒ No

☐ Yes - Discuss:

Factor Sheet C-1

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Describe Wetlands:

	Wetland 1		Wetland 2		Wetland 3		Wetland 4	
Name (If known)	W1		W2		W3		W4	
Location County	Washington		Washington		Washington		Washington	
Location (Section-Township-Range)	S33-T10N-R19E		S32-T10N-R19E		S33-T10N-R19E		S32-T10N-R19E	
Location Map	See Exhibit 7		See Exhibit 7		See Exhibit 7		See Exhibit 7	
Wetland Type(s)[1]	**RPF and RPE** Wet meadow/ - Atypical (mowed) wetland Shrub-carr (willow) Second growth, Southern wet- wet-mesic lowland hardwoods		**RPE** Shallow Marsh Wet meadow Shrub-carr (willow thicket		**RPE and RPF (D)** Wet meadow Shrub-carr (willow thicket) Second growth, Southern wet - wet-mesic lowland hardwoods		**RPE (D)** Atypical (farmed) wetland Wet meadow	
Total Wetland Loss	Acres 0.235		Acres 0.121		Acres 0.055		Acres 0.011	
Wetland is: (Check all that apply)[2]	Yes	No	Yes	No	Yes	No	Yes	No
• **Isolated from stream, lake or other surface water body**		X		X		X		X
• **Not contiguous (in contact with) a stream, lake, or other water body, but within 5-year floodplain**		X		X		X		X
• **If adjacent or contiguous, identify stream, lake or water body by Section-Township-Range**	Coney River		Coney River		Coney River		Coney River	

[1]Use wetland types as specified in the "WisDOT Wetland Mitigation Banking Technical Guideline, Table 3-C"
[2]If wetland is contiguous to a stream, complete Factor Sheet C-2, Rivers, Streams and Floodplains Impact Evaluation. If wetland is contiguous to a lake or other water body, complete Factor Sheet C-3, Lake or Water Body Impact Evaluation.

1. Describe Wetlands (continued):

	Wetland 5		Wetland 6		Wetland 7		Wetland 8	
Name (If known)	W5		W6		W7		W11	
Location County	Washington		Washington		Washington		Washington	
Location (Section-Township-Range)	S33-T10N-R19E		S32-T10N-R19E		S5-T9N-R19E		S8-T9N-R19E	
Location Map	See Exhibit 7		See Exhibit 7		See Exhibit 7		See Exhibit 7	
Wetland Type(s)[1]	**RPF and RPE** Shallow marsh Fresh (wet) meadow Second growth, Southern wet-wet-mesic lowland hardwoods		**RPF and RPE** Shallow marsh Fresh (wet) meadow Second growth, Southern wet-wet-mesic lowland hardwoods		**RPF and RPE** Shallow marsh Fresh (wet) meadow Second growth, Southern wet-wet-mesic lowland hardwoods		**M** Wet meadow	
Total Wetland Loss	Acres 0.257		Acres 0.174		Acres 0.012		Acres 0.062	
Wetland is: (Check all that apply)[2]	Yes	No	Yes	No	Yes	No	Yes	No
• **Isolated from stream, lake or other surface water body**		X		X	X		X	
• **Not contiguous (in contact with) a stream, lake, or other water body, but within 5-year floodplain**		X		X		X		X
• **If adjacent or contiguous, identify stream, lake or water body by Section-Township-Range**	Coney River		Coney River		N/A		N/A	

[1]Use wetland types as specified in the "WisDOT Wetland Mitigation Banking Technical Guideline, Table 3-C"

[2]If wetland is contiguous to a stream, complete Factor Sheet C-2, Rivers, Streams and Floodplains Impact Evaluation. If wetland is contiguous to a lake or other water body, complete Factor Sheet C-3, Lake or Water Body Impact Evaluation.

1. Describe Wetlands (continued):

	Wetland 9		Wetland 10		Wetland 11	
Name (If known)	W12		W13		W14	
Location County	Washington		Washington		Washington	
Location (Section-Township-Range)	S9-T9N-R19E		S8-T9N-R19E		S9-T9N-R19E	
Location Map	See Exhibit 7		See Exhibit 7		See Exhibit 7	
Wetland Type(s)[1]	**RPF and RPE (D)** Atypical (mowed) wetland Second growth, Southern wet- wet-mesic lowland hardwoods		**RPF and RPE** Wet meadow Second growth, Southern wet-wet-mesic lowland hardwoods **(ADID)**		**RPF and RPE** Wet meadow Second growth, Southern wet- wet-mesic lowland hardwoods **(ADID)**	
Total Wetland Loss	Acres 0.006		Acres 0.409		Acres 0.267	
Wetland is: (Check all that apply)[2]	Yes	No	Yes	No	Yes	No
• **Isolated from stream, lake or other surface water body**	X			X		X
• **Not contiguous (in contact with) a stream, lake, or other water body, but within 5-year floodplain**		X		X		X
• **If adjacent or contiguous, identify stream, lake or water body by Section-Township-Range**	N/A		Oconomowoc River		Oconomowoc River	

[1]Use wetland types as specified in the "WisDOT Wetland Mitigation Banking Technical Guideline, Table 3-C"
[2]If wetland is contiguous to a stream, complete Factor Sheet C-2, Rivers, Streams and Floodplains Impact Evaluation. If wetland is contiguous to a lake or other water body, complete Factor Sheet C-3, Lake or Water Body Impact Evaluation.

2. Are any impacted wetlands considered "wetlands of special status" per WisDOT Wetland Mitigation Banking Technical Guideline, page 10?

☐ No
☒ Yes:
  ☒ Advanced Identification Program (ADID) Wetlands
  ☐ Other – Describe: _____

3. Describe proposed work in the wetland(s), e.g., excavation, fill, marsh disposal, other:

The proposed roadway widening, reconstruction, intersection improvements, and pipe culvert replacements would require excavation and fill within wetland areas.

4. **List any observed or expected waterfowl and wildlife inhabiting or dependent upon the wetland:** (List should include both permanent, migratory and seasonal residents).

   Songbirds (brown wrens, cardinals, gold finches, robins, owls, etc.), small mammals, gray squirrels, chipmunks, opossums, woodchucks, raccoons, rabbits, foxes, as well as frogs, toads, snakes, etc.

5. Federal Highway Administration (FHWA) Wetland Policy:

☐ Not Applicable - Explain

☐ Individual Wetland Finding Required - Summarize why there are no practicable alternatives to the use of the wetland.

☒ Statewide Wetland Finding: **NOTE: All three boxes below must be checked for the Statewide Wetland Finding to apply.**

- ☒ Project is either a bridge replacement or other reconstruction within 0.3 mile of the existing location.
- ☒ The project requires the use of 7.4 acres or less of wetlands.
- ☒ The project has been coordinated with the DNR and there have been no significant concerns expressed over the proposed use of the wetlands.

6. Erosion control or storm water management practices which will be used to protect the wetland are indicated on form: (Check all that apply)

☒ Factor Sheet D-6, Erosion Control Impact Evaluation.
☒ Factor Sheet D-5, Stormwater Impact Evaluation.
☐ Neither Factor Sheet - Briefly describe measures to be used

7. U S Army Corps of Engineers (USACE) Jurisdiction - Section 404 Permit (Clean Water Act)

☐ Not Applicable - No fill to be placed in wetlands or wetlands are not under USACE jurisdiction.
☒ Applicable - Fill will be placed in wetlands under the jurisdiction of the USACE.
Indicate area of wetlands filled: Acres 1.609
Type of 404 permit anticipated:
- ☐ Individual Section 404 Permit required.
- ☒ General Permit (GP) or Letter Of Permission (LOP) required to satisfy Section 404 Compliance.
  Indicate which GP or LOP is required:
  - ☐ Non-Reporting GP
  - ☒ Provisional GP -- **Regional GP**
  - ☐ Provisional LOP
  - ☐ Programmatic GP

  Expiration date of 404 Permit, if known _____

8. Section 10 Waters (Rivers and Harbors Act). For navigable waters of the United States (Section 10) indicate which 404 permit is required:

☒ No Section 10 Waters.

Indicate whether Pre-Construction Notification (PCN) to the USACE is:
☐ Not applicable.
☐ Required: Submitted on: (Date)

Status of PCN
USACE has made the following determination on: (Date)

USACE is in the process of review, anticipated date of determination is: (Date)

9. Wetland Avoidance and Impact Minimization: [Note: Required before compensation is acceptable]

A. Wetland Avoidance:

1. Describe methods used to avoid the use of wetlands, such as using a lower level of improvement or placing the roadway on new location, etc.:

   A reconstruction alternative would result in approximately the same width of roadway and grading limits as the reconditioning alternative and the impacts to the wetlands would remain approximately the same. Reconstruction on a new alignment would not be prudent due to added costs and environmental impacts so avoiding the impacts to wetlands is not feasible.

2. Indicate the total area of wetlands avoided:
   Acres: N/A

B. Minimize the amount of wetlands affected:

1. Describe methods used to minimize the use of wetlands, such as a steepening of side slopes or use of retaining walls, equalizer pipes, upland disposal of hydric soils, etc.:

   Due to site constraints, wetlands present on both sides of the roadway, and the need to provide a safe travel way, total wetland avoidance would not be feasible. Minimization efforts would include 3:1 side slopes outside the clear zone compared to the typical 4:1. Other minimization techniques would include excavating and disposing of marsh material in non-wetlands and maintaining natural drainage where feasible.

2. Indicate the total area of wetlands saved through minimization:
   Acres: 0.72

10. Compensation for Unavoidable Wetland Loss:

According to Section 401 (b) (1), of the Clean Water Act, unavoidable wetland losses must be mitigated on-site, if possible. If no on-site opportunities exist, near/off-site wetland compensation sites must be considered. If neither exists, the losses may be debited to an existing wetland mitigation bank site. Compensation ratios are based on WisDOT Wetland Mitigation Banking Technical Guideline.

	Type	Acre(s) Loss	Ratio	Compensation Type and Acreage			
				On-site	Near/off site	Consolidation Site	Bank site
RPF(N)	Riparian wetland (wooded)	0.170 0.250 **ADID**	1.5:1 2:1	---	---	0.255 0.500	---
RPF(D)	Degraded riparian wetland (wooded)	0.617 0.426 **ADID**	1.5:1 2:1	---	---	0.926 0.852	---
RPE(N)	Riparian wetland (emergent)	---	---	---	---	---	---
RPE(D)	Degraded riparian wetland (emergent)	0.084	1.5:1	---	---	0.126	---
M(N)	Wet and sedge meadows, wet prairie, vernal pools, fens	0.062	---	---	---	0.930	---
M(D)	Degraded meadow	---	---	---	---	---	---
SM	Shallow marsh	---	---	---	---	---	---
DM	Deep marsh	---	---	---	---	---	---
AB(N)	Aquatic bed	---	---	---	---	---	---
AB(D)	Degraded aquatic bed	---	---	---	---	---	---
SS	Shrub Swamp, shrub carr, alder thicket	---	---	---	---	---	---
WS(N)	Wooded swamp	---	---	---	---	---	---
WS(D)	Degraded wooded swamp	---	---	---	---	---	---
Bog	Open and forested bogs	---	---	---	---	---	---

D = Degraded
N = Non-degraded
*Impacts to wetlands and mitigation are currently being coordinated with WisDOT

11. If on-site compensation is proposed, describe how a search for a compensation site was conducted:

No on-site compensation is proposed.

12. Summarize the coordination with other agencies regarding the compensation for unavoidable wetland losses: Attach appropriate correspondence:

Coordination with the Corps of Engineers is ongoing.

Factor Sheet C-2

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Stream Name: Coney River

2. Stream Type: (Indicate Trout Stream Class, if known)
- ☐ Unknown
- ☒ Warm water
- ☐ Cold water
  If trout stream, identify trout stream classification: _____
- ☐ Wild and Scenic River

Per the WDNR, the Coney River is considered a cool (warm transition) headwater.

3. Size of Upstream Watershed Area: (Square miles or acres)
10.5 Square Miles

4 Stream flow characteristics:
- ☒ Permanent Flow (year-round)
- ☐ Temporary Flow (dry part of year)

5. Stream Characteristics:

A. Substrate:
   1. ☐ Sand
   2. ☒ Silt
   3. ☐ Clay
   4. ☐ Cobbles
   5. ☐ Other-describe:

B. Average Water Depth: 6”

C. Vegetation in Stream
   ☒ Absent
   ☐ Present - If known describe:

D. Identify Aquatic Species Present:
   Not available

E. If water quality data is available, include this information:
   Not available

F. Is this river or stream on the WDNR’s “Impaired Waters” list?
   ☒ No
   ☐ Yes - List: _____

6. If bridge or box culvert replacement, are migratory bird nests present?
- ☒ Not Applicable
- ☐ None identified
- ☐ Yes – Identify Bird Species present
  Estimated number of nests is:

7. Is a Fish & Wildlife Depredation Permit required to remove swallow nests?
- ☒ Not Applicable
- ☐ Yes
- ☐ No - Describe mitigation measures:

8. Describe land adjacent to stream*:*

The land immediately adjacent to the stream near the project corridor is wetland with residential properties on the east side of WIS 164 to the north and south of the wetlands and stream and farm land on the west side of WIS 164 to the north of the wetlands and stream and residential property to the south of the wetlands and stream.

9. Identify upstream or downstream dischargers or receivers (if any) within 0.8 kilometers (1/2 mile) of the project site:

There are no dischargers or receivers near the project.

10. Describe proposed work in, over, or adjacent to stream. Indicate whether the work is within the 100-year floodplain and whether it is a crossing or a longitudinal encroachment: [Note: Coast Guard must be notified when Section 10 waters are affected by a proposal. Also see Wetland Evaluation, Factor Sheet C-1, Question 8.]

The work over the adjacent stream would include resurfacing of the roadway. 7 foot by 5 foot pipe arch culvert would remain in place. Beam guard would be utilized to shield the steep shoulder slopes at the culvert pipe.

11. Discuss the effects of any backwater which would be created by the proposed action. Indicate whether the proposed activities would be in compliance with NR 116 by creating 0.01 ft. backwater or less:

No additional backwater would be anticipated to be created by the proposed construction actions. The proposed activities
would be in compliance with NR 116.

12. Describe and provide the results of coordination with any floodplain zoning authority:

Not required as there is no anticipated change in upstream water surface elevations.

13. Would the proposal or any changes in the design flood, or backwater cause any of the following impacts?

- ☒ No impacts would occur.
- ☐ Significant interruption or termination of emergency vehicle service or a community's only evacuation route.
- ☐ Significant flooding with a potential for property loss and a hazard to life.
- ☐ Significant impacts on natural floodplain values such as flood storage, fish or wildlife habitat, open space, aesthetics, etc.

14. Discuss existing or planned floodplain use and briefly summarize the project's effects on that use:

The existing floodplain is primarily wetland and open space. The proposed action would not be expected to impact the current use of the floodplain.

15. Discuss probable direct impacts to water quality within the floodplain, both during and after construction. Include the probable effects on plants, animals, and fish inhabiting or dependent upon the stream:

Because of the erosion control measures that would be utilized during and after the construction minimal to no impacts would be expected to water quality within the floodplain or plant, animals, and fish inhabiting this water way. Also, no in-stream work would be allowed to occur between May 1 and June 30 per DNR requirements.

16. Are measures proposed to enhance beneficial effects?

- ☒ No
- ☐ Yes. Describe: _____

Factor Sheet C-2

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Stream Name: Oconomowoc River

2. Stream Type: (Indicate Trout Stream Class, if known)
- ☐ Unknown
- ☒ Warm water
- ☐ Cold water
  If trout stream, identify trout stream classification: _____
- ☐ Wild and Scenic River

Per the WDNR, the Oconomowoc River is considered a cool (warm transition) headwater.

3. Size of Upstream Watershed Area: (Square miles or acres)
12 Square Miles

4 Stream flow characteristics:
- ☒ Permanent Flow (year-round)
- ☐ Temporary Flow (dry part of year)

5. Stream Characteristics:

A. Substrate:
   1. ☒ Sand
   2. ☐ Silt
   3. ☐ Clay
   4. ☒ Cobbles
   5. ☐ Other-describe:

B. Average Water Depth: 6”

C. Vegetation in Stream
   ☒ Absent
   ☐ Present - If known describe:

D. Identify Aquatic Species Present:
   Not available

E. If water quality data is available, include this information:
   Not available

F. Is this river or stream on the WDNR’s “Impaired Waters” list?
   ☒ No
   ☐ Yes - List: _____

6. If bridge or box culvert replacement, are migratory bird nests present?
- ☒ Not Applicable
- ☐ None identified
- ☐ Yes – Identify Bird Species present
  Estimated number of nests is:

7. Is a Fish & Wildlife Depredation Permit required to remove swallow nests?
- ☒ Not Applicable
- ☐ Yes
- ☐ No - Describe mitigation measures:

8. Describe land adjacent to stream*:*

The land immediately adjacent to the stream near the project corridor is wetland with residential properties on the east side of WIS 164 to the north and south of the wetlands and stream and farm land on the west side of WIS 164 to the north and south of the wetlands and stream.

9. Identify upstream or downstream dischargers or receivers (if any) within 0.8 kilometers (1/2 mile) of the project site:

There are no dischargers or receivers near the project.

10. Describe proposed work in, over, or adjacent to stream. Indicate whether the work is within the 100-year floodplain and whether it is a crossing or a longitudinal encroachment: [Note: Coast Guard must be notified when Section 10 waters are affected by a proposal. Also see Wetland Evaluation, Factor Sheet C-1, Question 8.]

The work over the adjacent stream would include resurfacing of the roadway. The existing dual 13 foot by 9 foot pipe arch culvert would remain in place. Beam guard would be utilized to shield the steep shoulder slopes at the culvert pipe.

11. Discuss the effects of any backwater which would be created by the proposed action. Indicate whether the proposed activities would be in compliance with NR 116 by creating 0.01 ft. backwater or less:

No additional backwater would be anticipated to be created by the proposed construction actions. The proposed activities would be in compliance with NR 116.

12. Describe and provide the results of coordination with any floodplain zoning authority:

Not required as there is no change in upstream water surface elevations.

13. Would the proposal or any changes in the design flood, or backwater cause any of the following impacts?

- ☒ No impacts would occur.
- ☐ Significant interruption or termination of emergency vehicle service or a community's only evacuation route.
- ☐ Significant flooding with a potential for property loss and a hazard to life.
- ☐ Significant impacts on natural floodplain values such as flood storage, fish or wildlife habitat, open space, aesthetics, etc.

14. Discuss existing or planned floodplain use and briefly summarize the project's effects on that use:

The existing floodplain is primarily wetland and open space. The proposed action would not be expected to impact the current use of the floodplain.

15. Discuss probable direct impacts to water quality within the floodplain, both during and after construction. Include the probable effects on plants, animals, and fish inhabiting or dependent upon the stream:

Because of the erosion control measures that would be utilized during and after the construction minimal to no impacts would be expected to water quality within the floodplain or plant, animals, and fish inhabiting this water way. Also, no in-stream work would be allowed to occur between May 1 and June 30 per DNR requirements.

16. Are measures proposed to enhance beneficial effects?

- ☒ No
- ☐ Yes. Describe: _____

Factor Sheet C-7

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Are there any known threatened or endangered species in the vicinity of the project?

☐ None identified

☒ Yes - Identify the species and indicate its status on Federal or State lists:

Species Common Name	Species Scientific Name	Federal Status	State Status	Affected by Project? Y/N
Plants				
Kitten Tails	Besseya bullii	N/A	Threatened	To be determined
Animals				
Butler's Garter Snake	Thamnophis butleri	N/A	Threatened	Y
Slender Madtom (fish)	Noturus exellis	N/A	Endangered	N

3. **Explain How a Species Is or Is Not Affected by the Action:**

☒ Species Not Affected:

Slender Madtom – No impact expected as there is no in-stream work at the Oconomowoc River or Coney River.

☒ Species Affected:

Kitten Tails - Kitten tails have been found in close proximity to the road corridor and there is a chance they may be found in areas proposed for impact, especially those adjacent to woodlots as kitten tails are a found in small woodland openings. DNR staff will survey for kitten tails during the summer to determine presence or absence. If kitten tails are present they may be transplanted prior to construction to avoid take.

Butler's Garter Snake – Fencing would be utilized adjacent to habitat areas during construction to prevent impact to the Butler's Garter Snake if still listed as a Threatened species at the time of construction.

4. Describe Coordination:

U.S. Fish & Wildlife Service:

☐ Has Section 7 coordination been completed?

☒ No – **No Federally listed endangered species are affected**.

☐ Yes - Describe mitigation required to protect the federally listed endangered species:

WDNR

☐ Has coordination with DNR been completed?

☐ No

☒ Yes - Describe mitigation required to protect the state-listed species:

Kitten Tails - Kitten tails have been found in close proximity to the road corridor and there is a chance they may be found in areas proposed for impact, especially those adjacent to woodlots as kitten tails are a found in small woodland openings. DNR staff will survey for kitten tails during the summer to determine presence or absence. If kitten tails are present they may be transplanted prior to construction to avoid take.

Factor Sheet D-2

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Identify and describe residences, schools, libraries, or other noise sensitive areas near the proposed action and which will be in use during construction of the proposed action. Include the number of persons potentially affected:

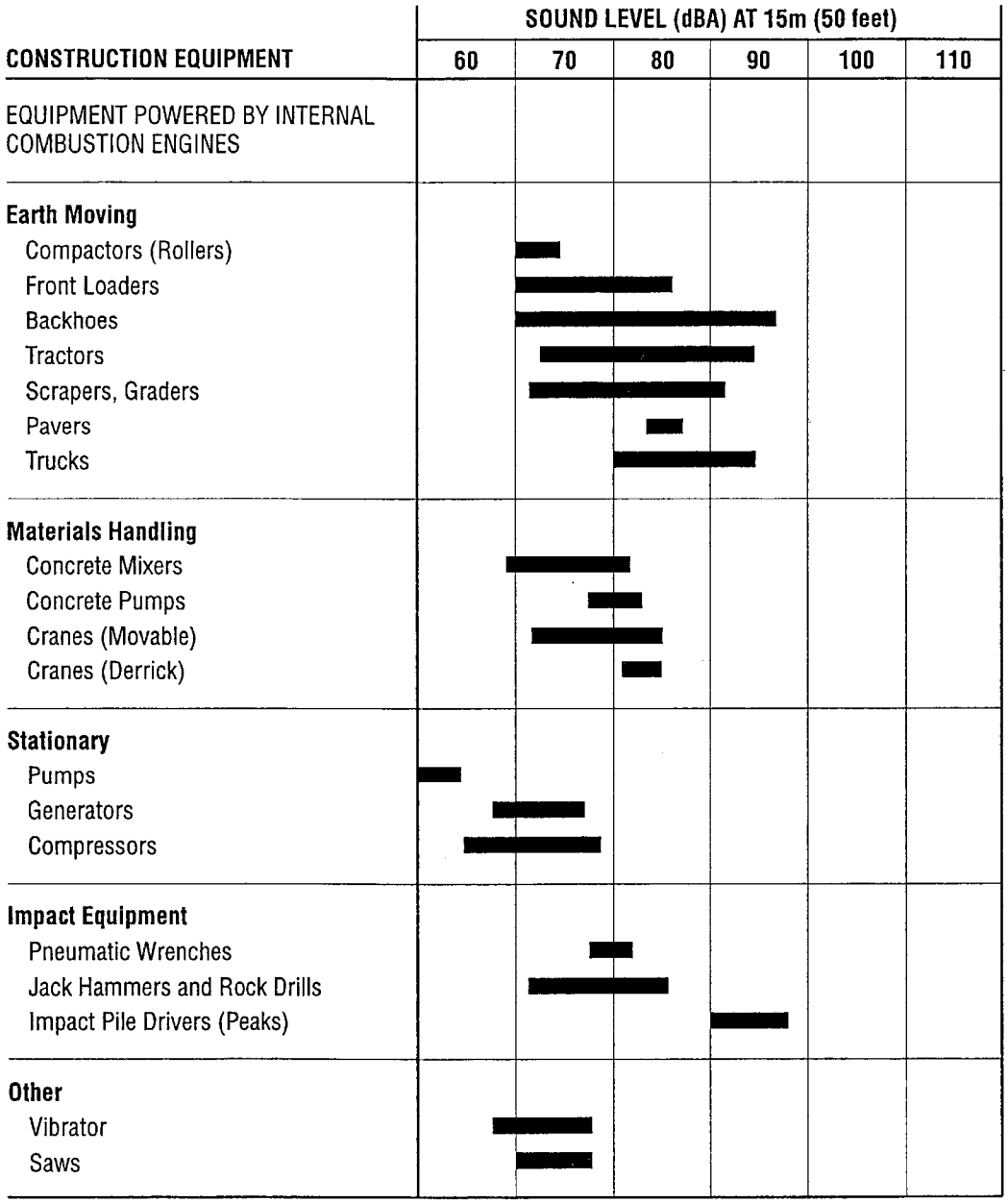
A school, two churches, and single family residences are considered to be noise sensitive areas within the project's area of effect. The estimated number of persons potentially affected by construction noise is approximately 400 - 450.

2. Describe the types of construction equipment to be used on the project. Discuss the expected severity of noise levels including the frequency and duration of any anticipated high noise levels:

The noise generated by construction equipment would vary greatly, depending on equipment type/model/make, duration of operation and specific type of work effort. However, typical noise levels may occur in the 67 to 107 dBA range at a distance of 50 feet.

3. Describe the construction stage noise abatement measures to minimize identified adverse noise effects. Check all that apply:

- ☒ WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply.
- ☐ WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply with the exception that the hours of operation requiring the engineer's written approval for operations will be changed to _____ P.M. until _____A.M.
- ☐ WisDOT Standard Specifications 107.8(6) and 108.7.1 will apply with the exception that the hours of operation requiring the engineer's written approval for operations will be changed to _____ P.M. until _____A.M.
- ☐ Special construction stage noise abatement measures will be required. Describe:



Construction Equipment Sound Levels

Source: U.S. Report to the President and Congress on Noise, February, 1972

Factor Sheet D-4

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Briefly describe the results of the Phase 1 Hazardous Materials Assessment for this alternative. Do not use property identifiers (owner name, address or business name):

Site Reference #	Land Use of Concern (Past or Present)	Contaminants of Concern	Phase 1 Recommendations	Phase 2 Recommended? Y/N
1	Residential	Petroleum	No further investigation	N
2	Residential/Agricultural	Petroleum	No further investigation	N
3	Residential/Agricultural	Petroleum	No further investigation	N
4	Fire Department	Petroleum	No further investigation	N
5	Residential/Agricultural	Petroleum	No further investigation	N
6	Residential	Petroleum	No further investigation	N
7	Residential	Petroleum	No further investigation	N
8	Residential/Agricultural	Petroleum	No further investigation	N
9	Residential	Petroleum	No further investigation	N
10	Agricultural	Petroleum	No further investigation	N
11	Residential	Petroleum	No further investigation	N
12	Residential/Agricultural	Petroleum	No further investigation	N
13	Residential	Petroleum	No further investigation	N
14	Residential/Agricultural	Petroleum	No further investigation	N
15	Residential	Petroleum	No further investigation	N

Attach additional sheets, if necessary
Additional comments: _____

2. Were any parcels not included in the Phase 1 assessment?

☒ No
☐ Yes - How many:
Why were they not reviewed?

3. Have Phase 2 or 2.5 Assessments been completed? Discuss the results:

Site Reference #	Phase 2/2.5 Recommendations	Remediation Recommended?		Is WisDOT a Responsible Party?	
		Yes	No	Yes	No

No Phase 2 or 2.5 Assessments were recommended to be completed.

4. Describe the results of any additional investigations performed by WisDOT or others: (Include the number of sites investigated, the level of investigation and results for each site)

Hazardous material investigations have not been completed for the structures proposed for demolition. These investigations will be completed by WisDOT SE Region prior to PS&E for the demolition contract.

No additional investigations have been performed at this time.

5. Describe proposed action to avoid hazardous materials contamination:

Due to the nature of the proposed improvements, resurfacing an rural highway with spot geometric and intersection improvements, it may not be possible to avoid potential contamination sites if they are discovered during construction.

6. Describe the remediation and waste management practices to be included in the design for areas where contamination cannot be avoided (e.g., waste handling plan, remediation of contamination, design changes to minimize disturbances):

Contract special provisions would address any unresolved contaminated areas.

7. List any parcels with known contamination, proposed for acquisition:

No parcels with known contamination are proposed for acquisition.

8. Bridge Projects Only: Has the structure been inspected for the presence of asbestos containing materials (ACMs)? *N/A*

☐ No - Explain

☐ Yes:

Were regulated ACMs identified?

☐ No

☐ Yes:

State the standard language to be incorporated in the special provisions of the project:

Factor Sheet D-5

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Indicate whether the affected area may cause a discharge or will discharge to the waters of the state (Trans 401.03).

Special consideration should be given to areas that are sensitive to water quality degradation. Provide specific recommendations on the level of protection needed.

☐ No water special natural resources are affected by the alternative.
☒ Yes - Water special natural resources exist in the project area.
- ☒ River/stream (Oconomowoc River and Coney River)
- ☒ Wetland
- ☐ Lake
- ☐ Endangered species habitat
- ☐ Other – Describe

_____

During construction, erosion control strategies would include measures to minimize soil erosion such as seeding exposed slopes, silt fences, erosion bales, erosion mats, and inlet protection. These measures would provide protection for existing wetland and stream areas. In addition, storm water management techniques would include discharging runoff water into flat, grass-lined ditches and swales to slow the water and settle out contaminants before entering adjacent wetlands and streams. A Statewide Wetland Finding has been coordinated with DNR and found to be applicable for the wetlands within the project limits.

2. Indicate whether circumstances exist in the project vicinity that require additional or special consideration, such as an increase in peak flow, total suspended solids (TSS) or water volume.

☒ No additional or special circumstances are present.
☐ Yes - Additional or special circumstances exist. Indicate all that are present.

☐ Areas of groundwater discharge	☐ Areas of groundwater recharge
☐ Stream relocations	☐ Overland flow/runoff
☐ Long or steep cut or fill slopes	☐ High velocity flows
☐ Cold water stream	☐ Impaired waterway
☐ Large quantity flows	☐ Exceptional/outstanding resource waters
☐ Increased backwater	

☐ Other - Describe any unique, innovative, or atypical stormwater management measures to be used to manage additional or special circumstances. _____

3. Describe the overall stormwater management strategy to minimize adverse effects and enhance beneficial effects.

Proposed ditches would be located as close to the roadway as practicable and made traversable to meet clear zone requirements. Ditch depths would be kept at or near the required minimum values to reduce grading impacts to adjacent properties. Ditch slopes and discharge points would be designed to slowly release water to minimize the potential for erosion. A proposed dry pond would be planted with appropriate vegetation to blend in with the surrounding vegetation.

4. Indicate how the stormwater management plan will be compatible with fulfilling Trans 401 requirements.

Storm water management would be carried out in accordance with TRANS 401-Construction Site Erosion Control and

Storm Water Management Procedures. A combination of flat bottom ditches, ditch checks, and a dry pond would ensure pre and post-construction runoff volumes are as close to equivalent as practicable.

5. Identify the stormwater management measures to be utilized.

- ☒ Swale treatment (parallel to flow) Trans 401.106(10)
- ☐ Vegetated filter strips (perpendicular to flow)
- ☐ Constructed storm water wetlands
- ☐ Buffer areas – Trans 401.106(6)
  Describe - _____
- ☐ In-line storm sewer treatment, such as catch basins, non-mechanical treatment systems.
- ☒ Detention/retention basins – Trans 401.106(6)(3)
- ☐ Distancing outfalls from waterway edge
- ☐ Infiltration – Trans 401.106(5)
- ☐ Other
  _____

6. Indicate whether any Drainage District may be affected by the project.

- ☒ No - None identified
- ☐ Yes

  Has initial coordination with a drainage board been completed?
  - ☐ No - Explain
  - ☐ Yes - Discuss results _____

7. Indicate whether the project is within WisDOT's Phase I or Phase II stormwater management areas.

Note: See Procedure 20-30-1, Figure 1, Attachment A4, the Cooperative Agreement between WisDOT and WisDNR. Contact Regional Stormwater/erosion Control Engineer if assistance in needed to complete the following:

- ☒ No - the project is outside of WisDOT's stormwater management area.
- ☐ Yes - The project affects one of the following and is regulated by a WPDES stormwater discharge permit, issued by the WisDNR:
  - ☐ A WisDOT storm sewer system, located within a municipality with a population greater than 100,000.
  - ☐ A WisDOT storm sewer system located within the area of a notified owner of a municipal separate storm sewer system.
  - ☐ An urbanized area, as defined by the U.S. Census Bureau, NR216.02(3).
  - ☐ A municipal separate storm sewer system serving a population less than 10,000.

8. Has the effect on downstream properties been considered?

- ☐ No
- ☒ Yes - Coordination is in process.

9. Are there any property acquisitions required for storm water management purposes?

- ☐ No
- ☒ Yes - Complete the following:
  - ☒ Safety measures, such as fencing are <u>not</u> needed for potential conflicts with existing and expected surrounding land use.
  - ☐ Safety measures <u>are</u> needed for potential conflicts with existing and expected surrounding land use.

    Describe:

Factor Sheet D-6

Alternative Reconditioning with Spot Safety and Geometric Improvements	Total Length of Center Line of Existing Roadway : 7.494 Length of This Alternative: 7.494
Preferred ☒ Yes ☐ No ☐ None Identified	

1. Give a brief description of existing and proposed slopes in the project area, both perpendicular and longitudinal to the project. Include both existing and proposed slope length, percent slope and soil types.

Existing Slopes - Longitudinal slopes are gently rolling ranging from flat to 8 percent. Perpendicular slopes are generally in the 25 to 33 percent range in the ditches. Perpendicular slopes beyond the ditches range from 2 percent to 33 percent (3:1) with some sections in cuts that are up to 2.5:1 slopes.

Proposed Slopes - Longitudinal slopes would remain gently rolling with reduction of slope to 5% at four spot locations within the project corridor. Perpendicular slopes on the pavement and shoulders would generally vary from 2 percent to 4 percent. Perpendicular slopes beyond the edge of shoulder would be flattened to 25 percent (4:1) or flatter within the clear zone and typically would not be steeper than 33 percent (3:1). In locations where longitudinal grades would be reduced resulting in large cuts, side slopes outside of the clear zone would be 2.5:1. Cuts greater than 25 feet would be benched to minimize erosion.

Soil Types – Casco, Fox, and Theresa soils are the predominant soil types encountered on the project. Casco soils consist of shallow clay over sand and gravel. Fox soils consist of clay over deep sand and gravel. Theresa soils consist of silt over highly calcareous loam till.

2. **Indicate all natural resources to be affected by the proposal that are sensitive to erosion, sedimentation, or waters of the state quality degradation and provide specific recommendations on the level of protection needed.**
   - ☐ No - there are no sensitive resources affected by the proposal.
   - ☒ Yes - Sensitive resources exist in or adjacent to the area affected by the project.
     - ☒ River/stream
     - ☐ Lake
     - ☒ Wetland
     - ☐ Endangered species habitat
     - ☐ Other - Describe _____

3. Are there circumstances requiring additional or special consideration?
   - ☐ No - Additional or special circumstances are not present.
   - ☒ Yes - Additional or special circumstances exist. Indicate all that are present.
     - ☐ Areas of groundwater discharge
     - ☐ Overland flow/runoff
     - ☒ Long or steep cut or fill slopes **– Long, steep cut slopes at the hill on WIS 164 north of Monches Road would be benched and temporary settling basins utilized to minimize erosion.**
     - ☐ Areas of groundwater recharge (fractured bedrock, wetlands, streams)
     - ☐ Other - Describe any unique or atypical erosion control measures to be used to manage additional or special circumstances_____

4. Describe overall erosion control strategy to minimize adverse effects and/or enhance beneficial effects.

The erosion control plan would include the appropriate items, per construction area, to protect the soil from washing into the adjacent wetland and stream areas during construction. The erosion control measures would minimize the amount of land exposed per stage, use temporary seeding and silt fence early on to protect working areas, use ditch checks and erosion mat on the steeper slopes, turbidity barrier along stream crossings, storm water runoff would be

directed along the existing vegetative swales as practical, rip rap would be used at the ends of culvert pipes and would provide for permanent restoration of disturbed areas when each stage is complete.

Erosion control measures would be implemented according to the requirements outlined in the WisDOT Facilities Development Manual. The contractor would be responsible for developing an ECIP prior to construction.

5. Erosion control measures reached consensus with the appropriate authorities as indicated below:

- ☒ WisDNR
- ☐ County Land Conservation Department
- ☐ American Indian Tribe
- ☐ US Army Corps of Engineers

The Erosion Control Plan would be coordinated through the WisDOT-WisDNR liaison process and TRANS 401 during the final design phase of the project. The contractor would be required to prepare an Erosion Control Implementation Plan (ECIP), which identifies timing and staging of the project's erosion control measures. The ECIP would be submitted to the WisDNR and to WisDOT 14 days prior to the preconstruction conference per TRANS 401.08(1) and must be approved by WisDOT before implementation.

6. **Identify the temporary and permanent erosion control measures to be utilized on the project. Consult the FDM, Chapter 10, and the Products Acceptability List (PAL).**

- ☒ Minimize the amount of land exposed at one time
- ☒ Temporary seeding
- ☒ Silt fence
- ☒ Ditch checks
- ☒ Erosion or turf reinforcement mat
- ☒ Ditch or slope sodding
- ☐ Soil stabilizer
- ☒ Inlet protection
- ☒ Turbidity barriers
- ☒ Temporary settling basin
- ☒ Mulching
- ☐ Other - Describe _____
- ☒ Detention basin
- ☒ Vegetative swales
- ☐ Pave haul roads
- ☒ Dust abatement
- ☒ Rip rap
- ☐ Buffer strips
- ☐ Dewatering – Describe method
- ☐ Silt screen
- ☐ Temporary diversion channel
- ☒ Permanent seeding

ENVIRONMENTAL REPORT EXHIBITS

1. Project Location Map
2. Project Overview
3. Existing and Proposed Typical Sections
4. Shady Lane Alternatives
5. WIS 167 Alternatives
6. Pleasant Hill Road Alternatives
7. Preliminary Plan View Layouts
8. Village of Richfield and Town of Polk Land Use Plans
9. Highway J Citizens Group and Waukesha County Environmental Action League Correspondence
10. Bureau of Aeronautics Correspondence
11. Conceptual Stage Relocation Plan
12. Department of Agriculture, Trade & Consumer Protection Correspondence, U.S. Department of Agriculture Farmland Conversion Impact Rating Sheet, and Agricultural Impact Notice
13. Wisconsin Department of Natural Resources Correspondence
14. State Historic Preservation Office Section 106 Documentation
15. U.S. Army Corps of Engineers Correspondence
16. US Fish and Wildlife Service Correspondence
17. Native American Tribes Correspondence
18. Impact to Section 4(f) Property Correspondence

Exhibit 1

Project Location Map

PROJECT LOCATION MAP

ID 2709-03-00
WIS 164
COUNTY Q TO COUNTY E
WASHINGTON COUNTY

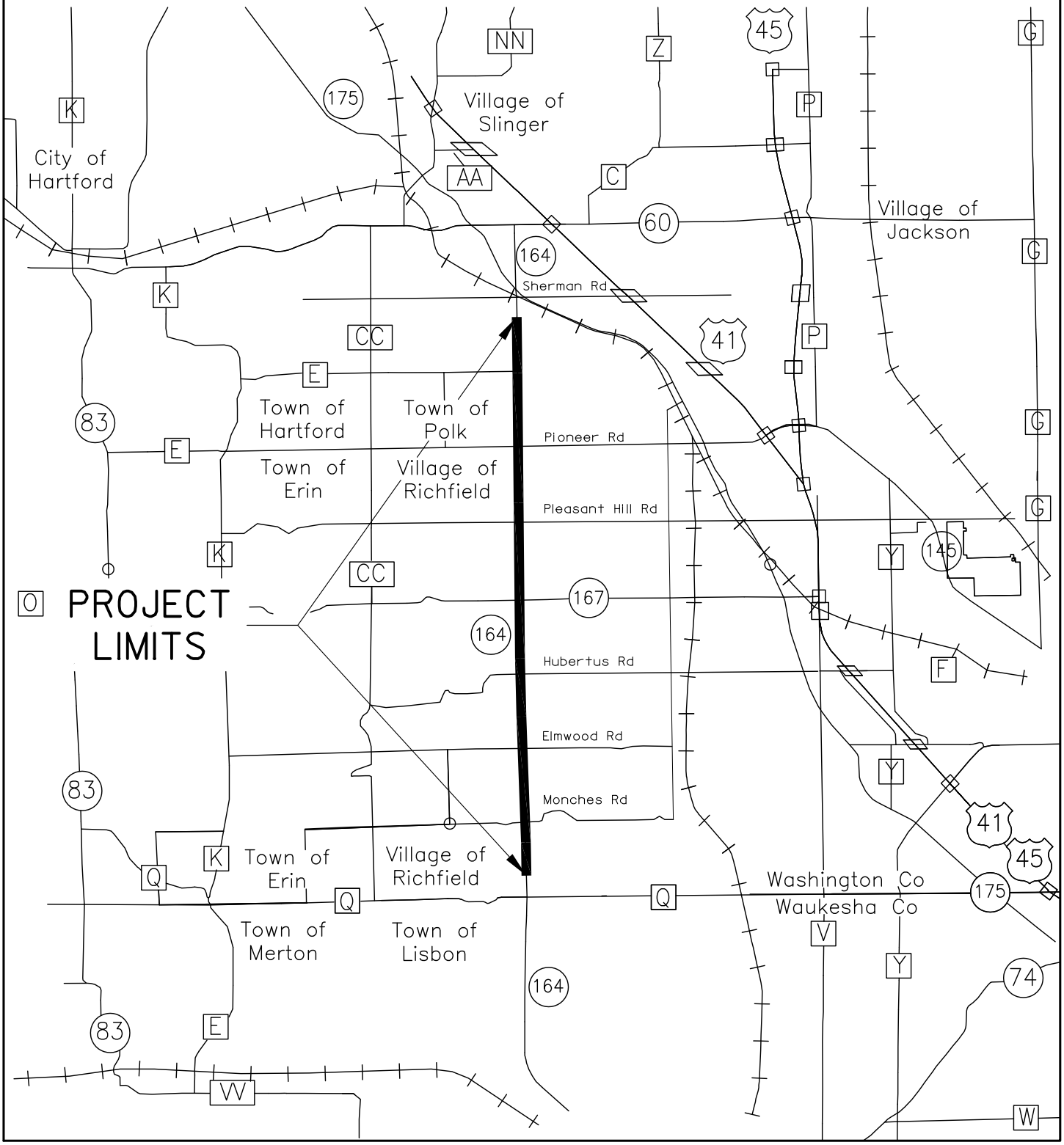
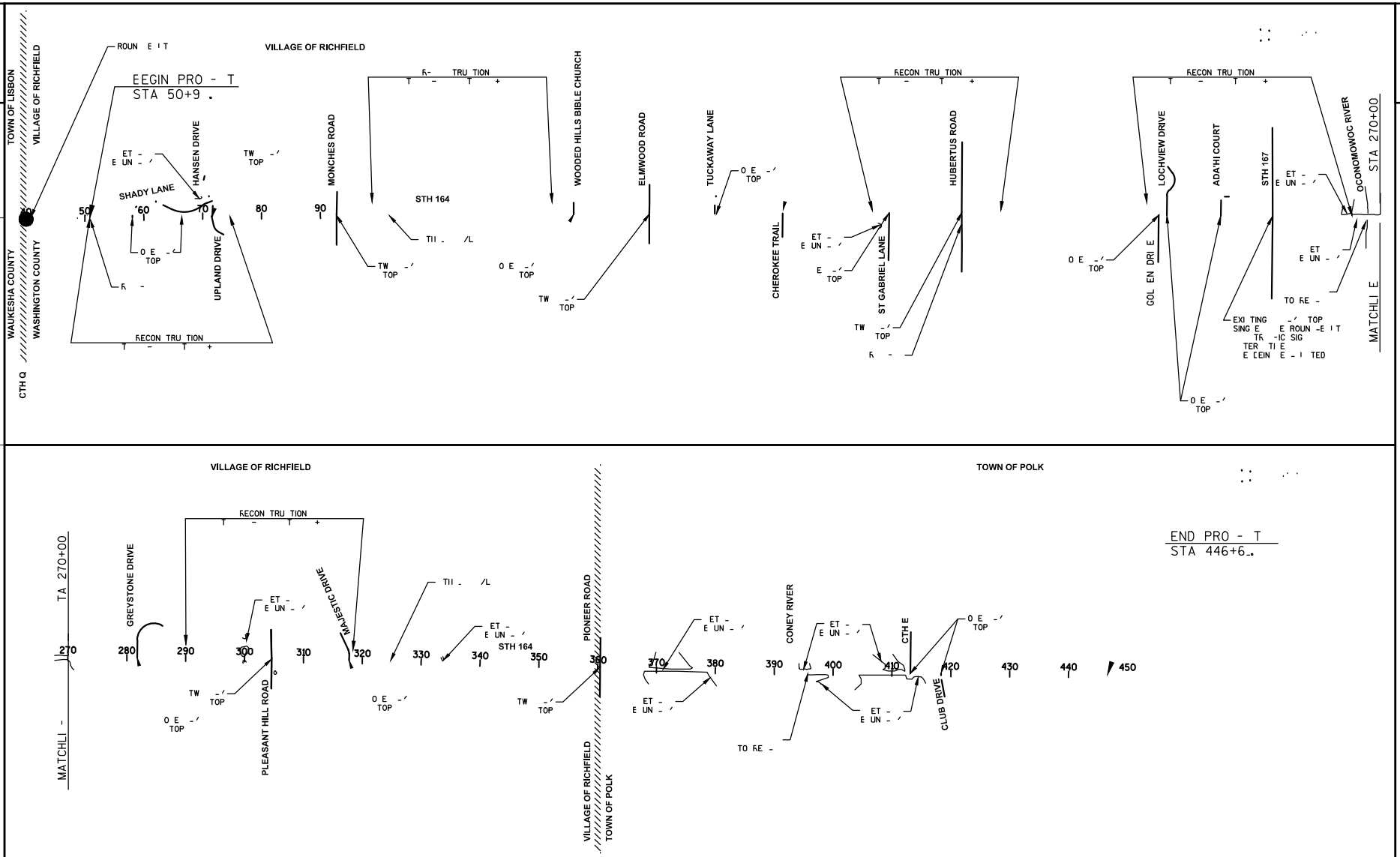


Exhibit 2

Project Overview



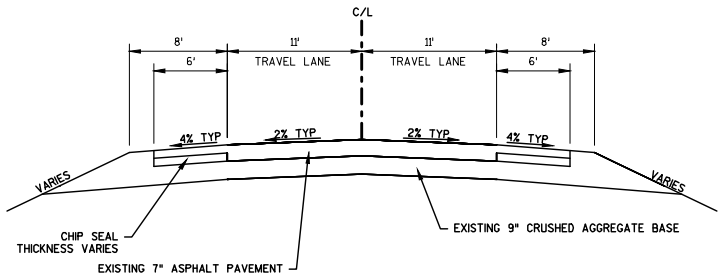
PRO - T N • -	H ′: TII	UNTY: - H TON	PRO - T O ERV EW	S : TS	SHEET	E

E E : T:\1102717\ - \CI L3D\27090300\SHEETSP - \020201 T -TE : /22/2013 : T E' ' - KWOOD, E PLOT E : ---------- WISD T/ HEET

Exhibit 3

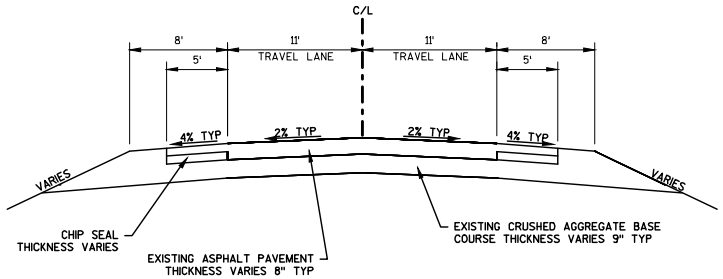
Existing and Proposed Typical Sections

2



EXISTING TYPICAL SECTION - STH 164

STA 50+95 - STA 251+76

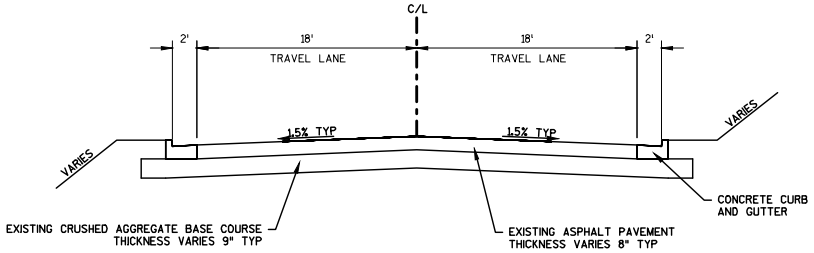


EXISTING TYPICAL SECTION - STH 164

STA 251+76 - STA 302+91 *
STA 306+37** - STA 446+61

* CURB AND GUTTER FROM STA 300+58 - STA 302+91 ON RIGHT SIDE
** CURB AND GUTTER FROM STA 306+37 - STA 306+42 ON RIGHT SIDE

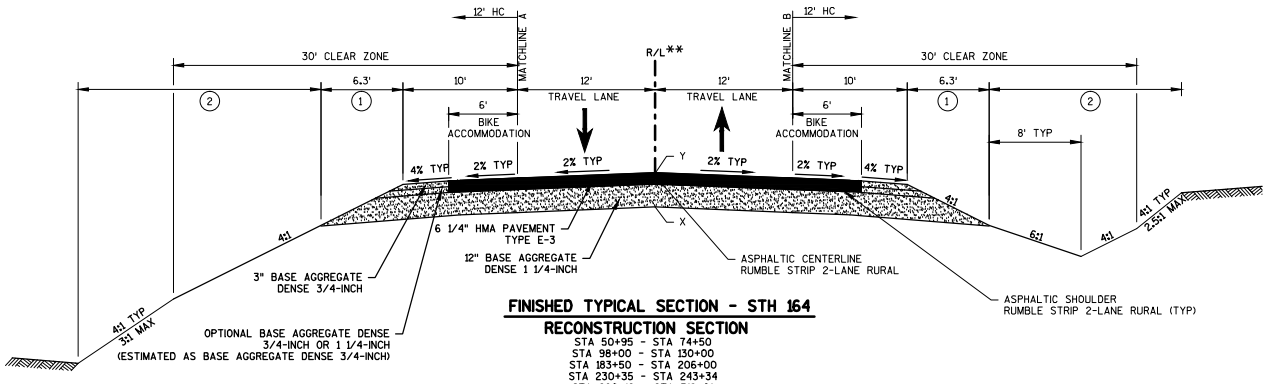
2



EXISTING TYPICAL SECTION - STH 164
NEAR PLEASANT HILL ROAD
STA 302+91 - STA 306+37

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET -----	E

FILE NAME : I:\110272\CADD\CIVIL3D\2709030O\SHEETSPLAN\020303_TS EXIST.DWG PLOT DATE : 9/3/2008 9:36 AM PLOT BY : WANDSCHNEIDER, BILL PLOT NAME : ---------- PLOT SCALE : 1 IN:10 FT



FINISHED TYPICAL SECTION - STH 164

RECONSTRUCTION SECTION

STA 50+95 - STA 74+50
STA 98+00 - STA 130+00
STA 183+50 - STA 206+00
STA 230+35 - STA 243+34
STA 290+12 - STA 318+01

V=60 MPH

LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

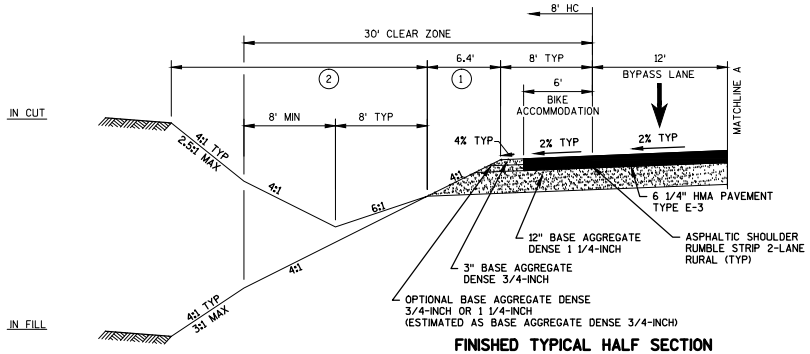
(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

** CENTERLINE OF CONSTRUCTION STA 290+12.20 TO STA 318+01.24 (STA 1290+11.74 TO STA 1318+01.95 ALONG CENTERLINE)

"X"= POINTS REFERRED TO ON CROSS SECTIONS

"Y"= POINTS REFERRED TO ON PROFILE

HC= HORIZONTAL CLEARANCE

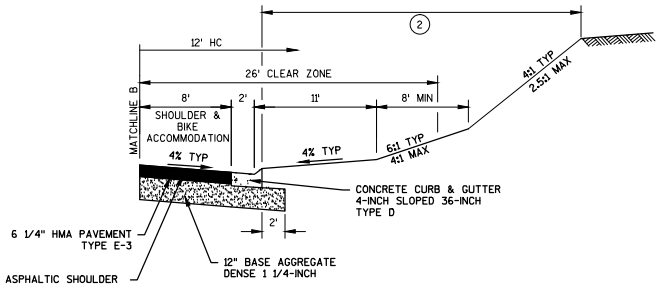


FINISHED TYPICAL HALF SECTION

BYPASS LANE

(MATCHLINE B IS A MIRROR IMAGE)

STA 129+34 - STA 130+00 RT
STA 183+50 - STA 190+78 LT
STA 230+35 - STA 232+23 LT
STA 234+05 - STA 238+03 RT
STA 239+29 - STA 240+00 RT
STA 1314+03 - STA 1318+02 RT



FINISHED TYPICAL HALF SECTION

SHOULDER CURB

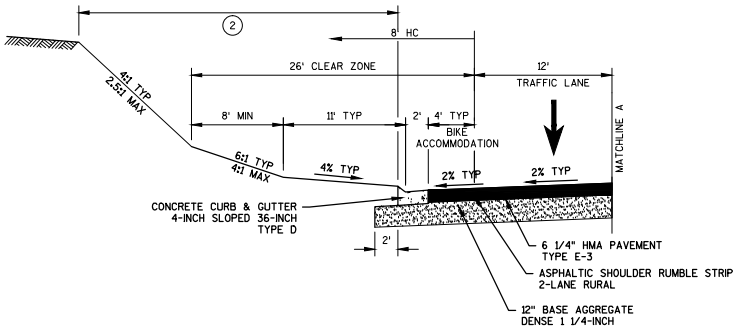
(MATCHLINE A IS A MIRROR IMAGE)

STA 61+12 - STA 65+38 RT
STA 61+96 - STA 68+25 LT
STA 104+80 - STA 123+35 LT
STA 106+00 - STA 123+85 RT
STA 236+96 - STA 239+83 RT
STA 239+50 - STA 242+41 LT
STA 252+50 - STA 262+50 RT

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

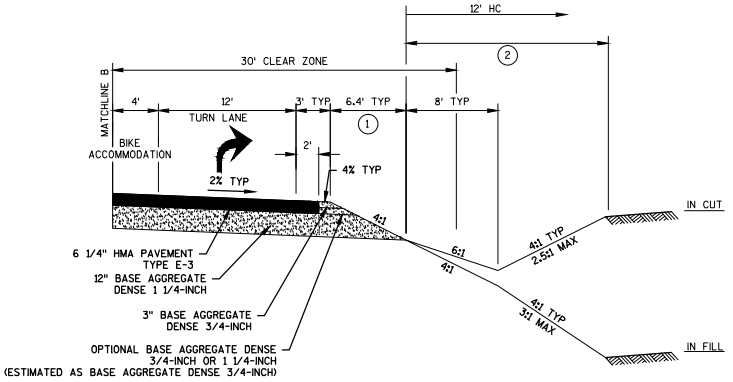
FILE NAME : T:\1102717\CADD\CIVIL3D\27090300\SHEETSPLAN\020320_TS PROP.DWG PLOT DATE : 9/3/2008 9:36 AM PLOT BY : BLACKWOOD, JAMES PLOT NAME : _____ PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 42



FINISHED TYPICAL HALF SECTION
BYPASS LANE WITH SHOULDER CURB

(MATCHLINE B IS A MIRROR IMAGE)
STA 58+40 - STA 61+12 RT
STA 232+96 - STA 236+96 RT
STA 239+83 - STA 243+34 RT



FINISHED TYPICAL HALF SECTION
RIGHT TURN LANE

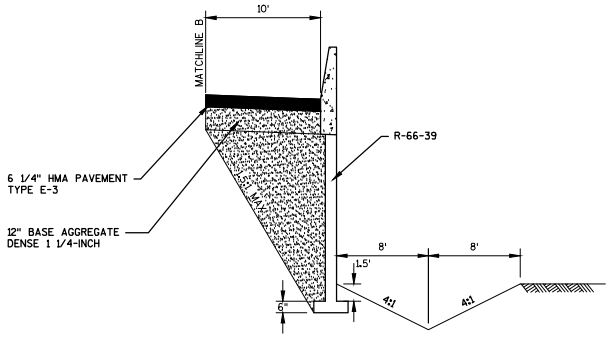
(MATCHLINE A IS A MIRROR IMAGE)
STA 68+25 - STA 70+88 RT
STA 72+39 - STA 74+50 LT
STA 98+00 - STA 98+89 LT
STA 183+50 - STA 185+89 RT
STA 192+25 - STA 198+25 RT
STA 199+61 - STA 204+45 LT
STA 234+53 - STA 239+50 LT
STA 1299+38 - STA 1302+00 RT
STA 1305+28 - STA 1310+28 LT

HC= HORIZONTAL CLEARANCE

LEGEND

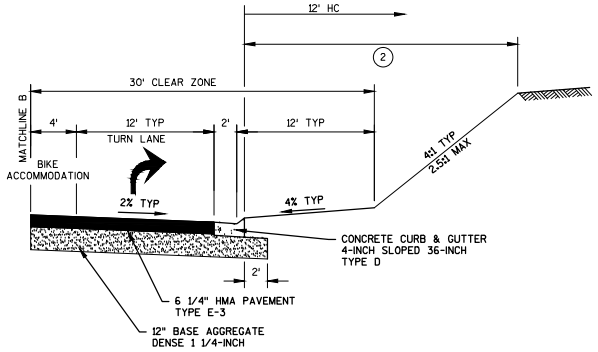
(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH



FINISHED TYPICAL HALF SECTION
RETAINING WALL

STA 57+25 - STA 58+40

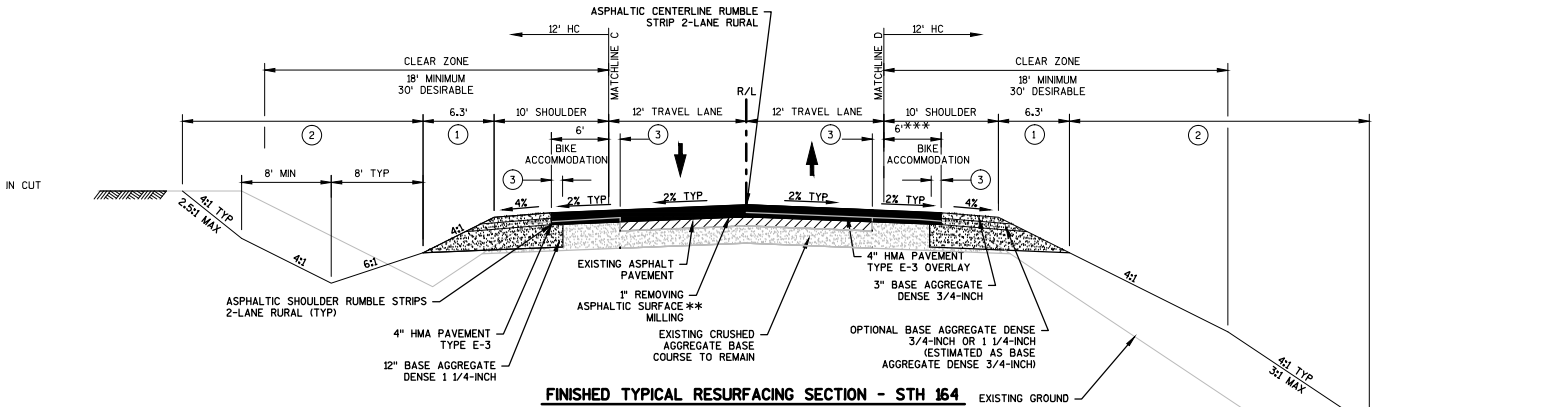


FINISHED TYPICAL HALF SECTION
RIGHT TURN LANE WITH SHOULDER CURB

(MATCHLINE A IS A MIRROR IMAGE)
STA 66+86 - STA 68+25 RT
STA 230+35 - STA 231+65 RT
STA 239+50 - STA 240+03 LT
STA 1302+00 - STA 1303+99 RT

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

FILE NAME : T:\1102717\CADD\CIVIL3D\27090300\SHEETSPLAN\020321_TS PROP.DWG PLOT DATE : 9/3/2008 9:36 AM PLOT BY : BLACKWOOD, JAMES PLOT NAME : ---------- PLOT SCALE : 1 IN:10 FT



FINISHED TYPICAL RESURFACING SECTION - STH 164

STA 74+50 - STA 98+00
STA 130+00 - STA 183+50
STA 206+00 - STA 230+35
STA 265+00 - STA 290+12
STA 318+01 - STA 400+17
STA 426+12 - STA 446+61

V=60 MPH

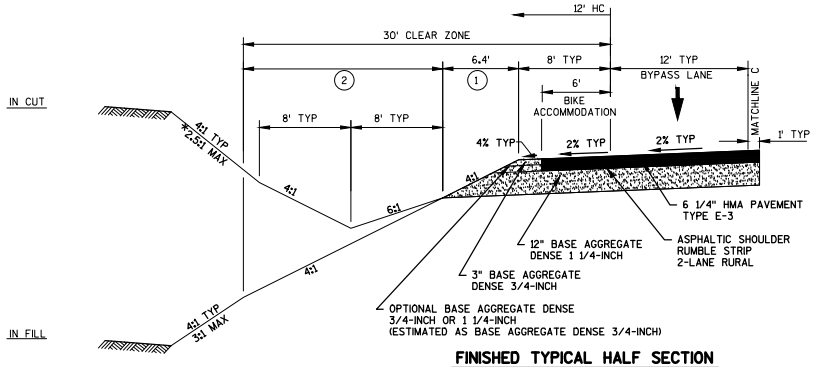
LEGEND

1. SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B
2. SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH
3. WIDTH VARIES 0'-4'. BEGIN FULL DEPTH PAVEMENT AT EXISTING EDGE OF PAVED SHOULDER
4. WIDTH VARIES 0'-5'. BEGIN FULL DEPTH PAVEMENT AT EDGE OF EXISTING PAVED SHOULDER

** REMOVE 1" AT REFERENCE LINE. PROFILE MILL PAVEMENT AT 2% CROSS SLOPE TO EXISTING EDGE OF PAVED SHOULDER SO THAT PAVEMENT CROWN IS LOCATED ON REFERENCE LINE

*** 10' STA 276+00 - STA 278+59

HC= HORIZONTAL CLEARANCE

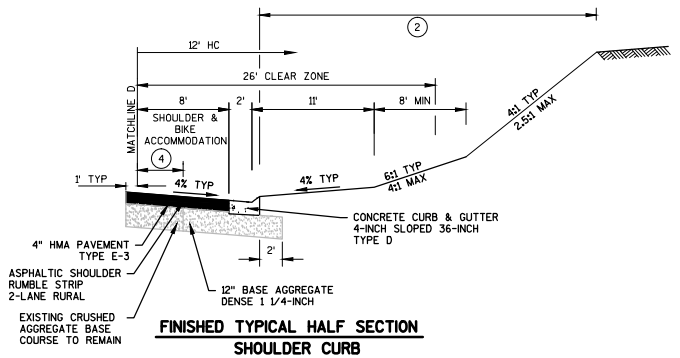


FINISHED TYPICAL HALF SECTION

BYPASS LANE

(MATCHLINE D IS A MIRROR IMAGE)

STA 130+00 - STA 137+26 RT
STA 153+31 - STA 161+23 RT
STA 164+26 - STA 172+70 LT
STA 182+35 - STA 183+50 LT
STA 228+15 - STA 230+35 LT
STA 278+09 - STA 286+01 RT
STA 318+01 - STA 322+02 RT



FINISHED TYPICAL HALF SECTION

SHOULDER CURB

(MATCHLINE C IS A MIRROR IMAGE)

STA 217+95 - STA 219+40 LT
STA 224+00 - STA 227+00 RT
STA 323+50 - STA 326+00 RT
STA 328+00 - STA 331+50 LT

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

FILE NAME : T:\1102717\CADD\CIVIL3D\27090300\SHEETSPLAN\020322_TS PROP.DWG PLOT DATE : 9/3/2008 9:36 AM PLOT BY : BLACKWOOD, JAMES PLOT NAME : ---------- PLOT SCALE : 1 IN:10 FT

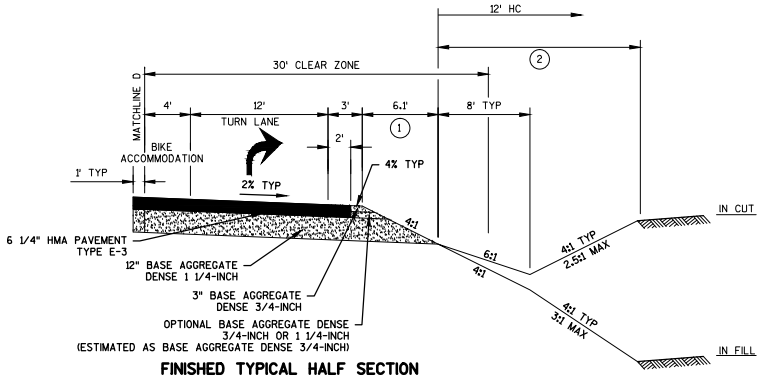
HC= HORIZONTAL CLEARANCE

LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

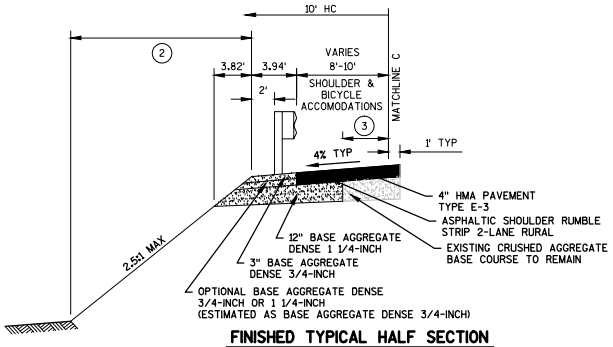
(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

(3) WIDTH VARIES 3'-5'. BEGIN FULL DEPTH PAVEMENT AT EDGE OF EXISTING PAVED SHOULDER



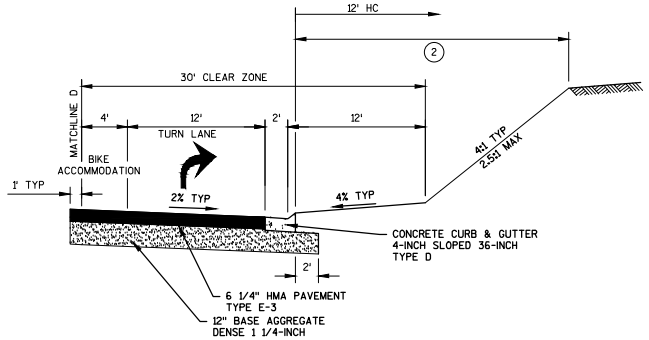
FINISHED TYPICAL HALF SECTION
RIGHT TURN LANE

(MATCHLINE C IS A MIRROR IMAGE)
STA 74+50 - STA 77+39 LT
STA 86+60 - STA 92+11 RT
STA 93+39 - STA 98+00 LT
STA 133+72 - STA 138+72 LT
STA 139+74 - STA 145+24 RT
STA 146+52 - STA 152+02 LT
STA 162+30 - STA 165+80 RT
STA 157+73 - STA 161+73 LT
STA 180+89 - STA 183+50 RT
STA 282+51 - STA 286+51 LT
STA 318+52 - STA 323+52 LT
STA 354+33 - STA 359+84 RT
STA 361+01 - STA 336+52 LT



FINISHED TYPICAL HALF SECTION
BEAM GUARD SECTION

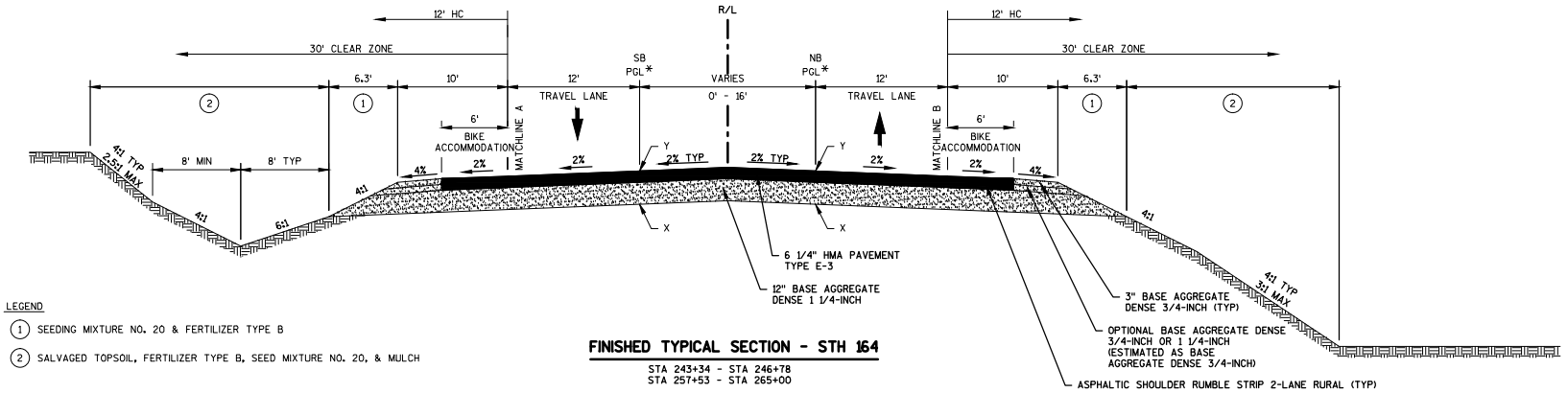
(MATCHLINE D IS A MIRROR IMAGE)
STA 265+70 - STA 268+88 RT
STA 266+93 - STA 270+11 LT
STA 393+46 - STA 397+83 LT
STA 395+34 - STA 397+06 RT



FINISHED TYPICAL HALF SECTION
RIGHT TURN LANE WITH SHOULDER CURB

(MATCHLINE C IS A MIRROR IMAGE)
STA 165+80 - STA 167+80 RT
STA 227+00 - STA 230+35 RT

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E



LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

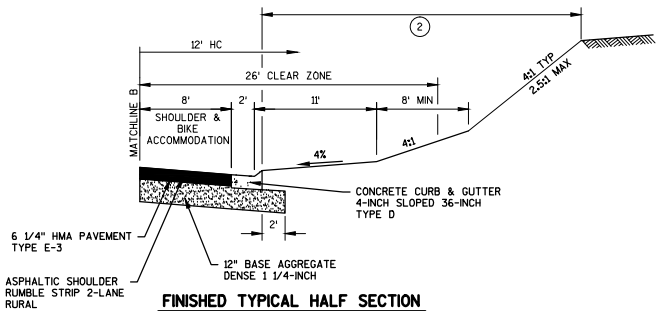
* NB PGL VARIES 6' LT TO 7' RT OF R/L
SB PBL VARIES 0' LT TO 22' LT OF R/L

HC= HORIZONTAL CLEARANCE

FINISHED TYPICAL SECTION - STH 164

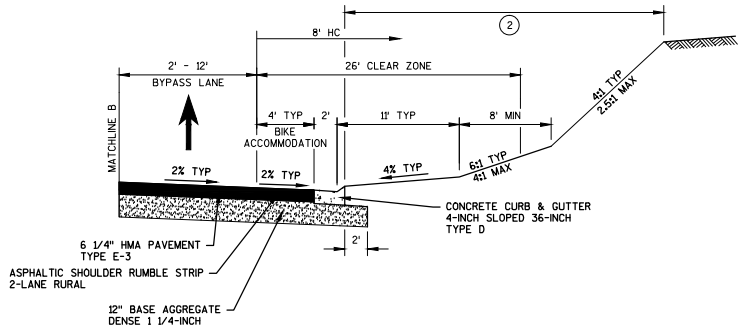
STA 243+34 - STA 246+78
STA 257+53 - STA 265+00

V=60 MPH



FINISHED TYPICAL HALF SECTION

(MATCHLINE A IS A MIRROR IMAGE)
STA 243+34 - STA 246+78 LT
STA 258+50 - STA 262+50 RT



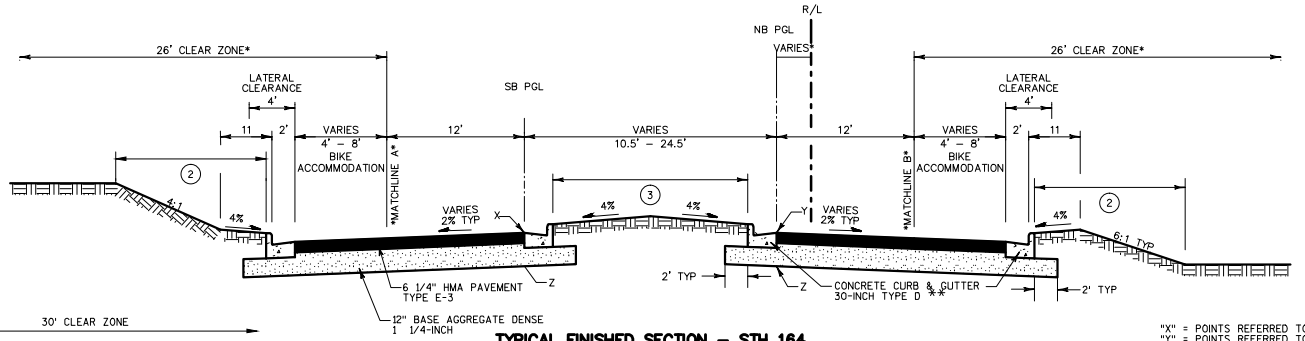
FINISHED TYPICAL HALF SECTION
BYPASS LANE WITH SHOULDER CURB

STA 243+34 - STA 246+78 RT

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

FILE NAME : T:\1102717\CADD\CIVIL3D\27090300\SHEETSPLAN\020329_TS PROP.DWG PLOT DATE : 9/3/2008 9:36 AM PLOT BY : BLACKWOOD, JAMES PLOT NAME : _____ PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 42



TYPICAL FINISHED SECTION – STH 164
ROUNDABOUT SPLITTER ISLAND

STA 246+78 - STA 251+35
STA 252+76 - STA 257+53

"X" = POINTS REFERRED TO ON WB PROFILE
"Y" = POINTS REFERRED TO ON EB PROFILE
"Z" = POINTS REFERRED TO ON CROSS SECTIONS

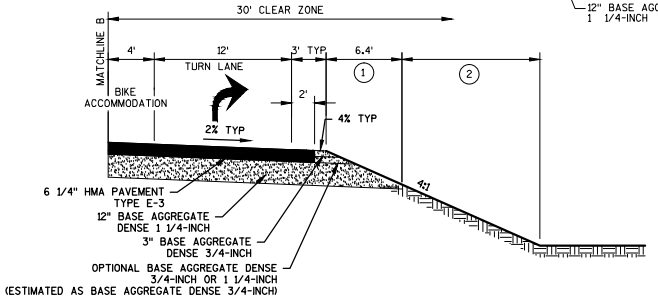
LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

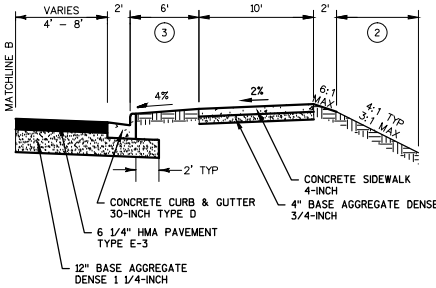
(3) SOD, FERTILIZER TYPE B AND TOPSOIL

* VARIES 18' LT TO 10.5' RT



FINISHED TYPICAL HALF SECTION
RIGHT TURN LANE

STA 254+50 - STA 275+53



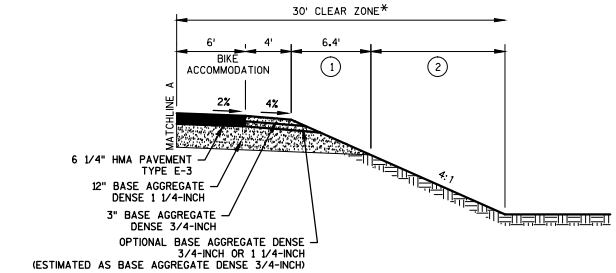
FINISHED TYPICAL HALF SECTION

(MATCHLINE A IS A MIRROR IMAGE)
STA 249+81 - STA 251+35 LT
STA 250+00 - STA 251+35 RT
STA 252+76 - STA 254+17 LT
STA 252+76 - STA 254+22 RT

* CLEAR ZONE VARIES

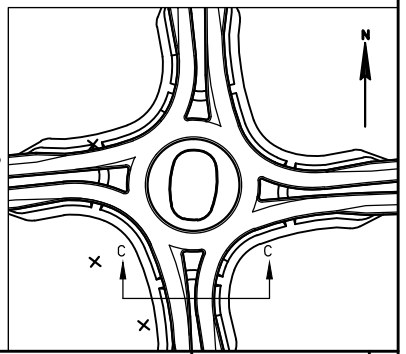
STATION	SIDE	CLEAR ZONE
246+78 - 249+15	LT	20'
246+78 - 248+33	RT	26'
248+33 - 248+83	RT	22'
248+83 - 249+83	RT	20'
254+30 - 255+30	LT	28'
255+30 - 257+53	LT	30'
254+33 - 255+05	RT	28'
255+05 - 257+53	RT	30'

** CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE D FROM STA 246+78 TO STA 249+94, STA 254+30 TO STA 257+33 LT, AND STA 255+05 TO STA STA 257+33 RT



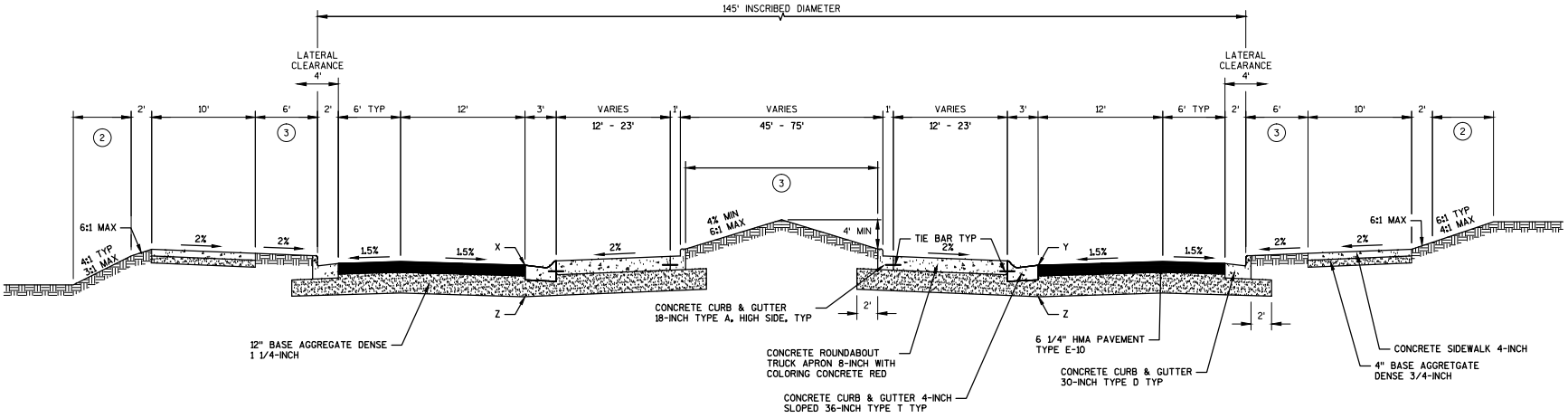
FINISHED TYPICAL HALF SECTION
RURAL SHOULDER SECTION

STA 254+33 - STA 257+53 RT



PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

2



TYPICAL FINISHED SECTION - ROUNDABOUT

SECTION B-B

"X" = POINTS REFERRED TO ON WB PROFILE
"Y" = POINTS REFERRED TO ON EB PROFILE
"Z" = POINTS REFERRED TO ON CROSS SECTIONS

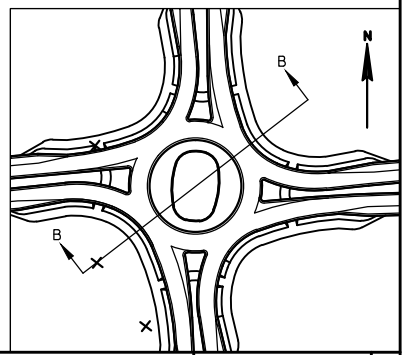
* CONCRETE CURB & GUTTER 4-INCH SLOPED 30-INCH TYPE J ON LOCATIONS SHOWN IN PAVING DETAILS

LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

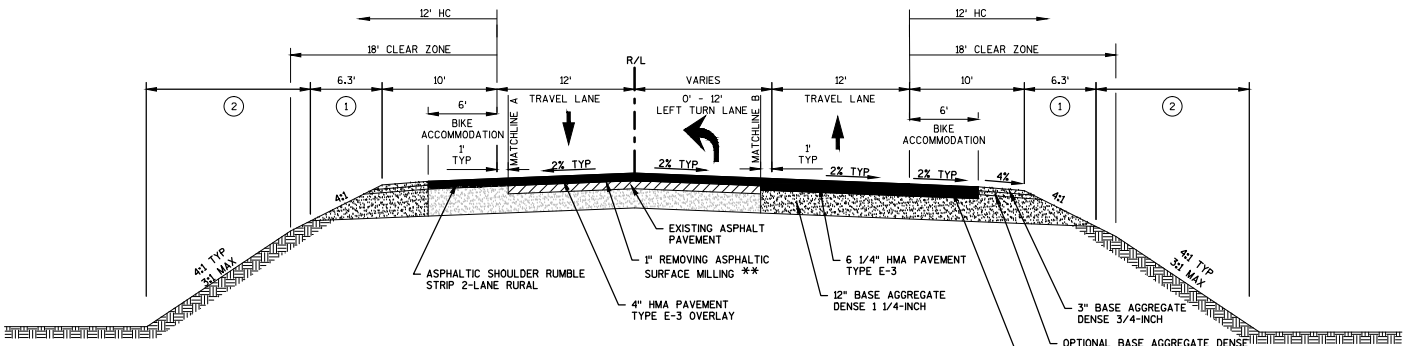
(3) SOD LAWN, TOPSOIL AND FERTILIZER TYPE B



PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

FILE NAME : T:\1102717\CADD\CIVIL3D\27090300\SHEETSPLAN\020327_TS PROP.DWG PLOT DATE : 9/3/2008 9:36 AM PLOT BY : BLACKWOOD, JAMES PLOT NAME : _____ PLOT SCALE : 1" = 10'_XREF

WISDOT/CADDS SHEET 42



FINISHED TYPICAL SECTION - STH 164

STA 400+17 - STA 426+12
V=60 MPH

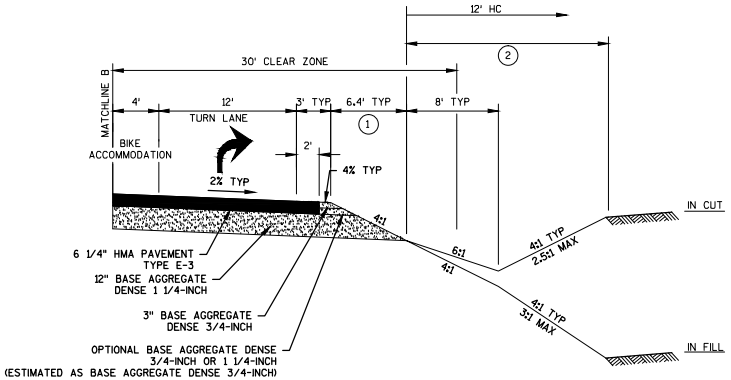
LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

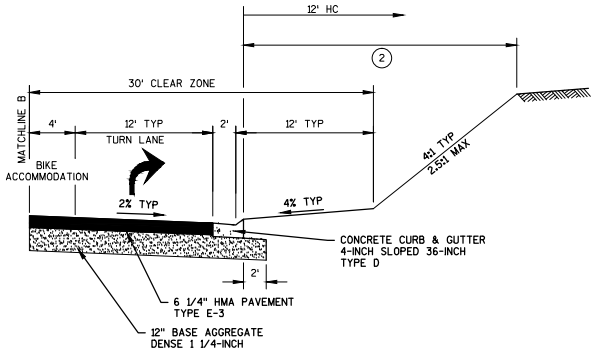
** REMOVE 1" AT REFERENCE LINE, PROFILE MILL PAVEMENT AT 2% CROSS SLOPE TO EXISTING EDGE OF PAVED SHOULDER SO THAT PAVEMENT CROWN IS LOCATED ON REFERENCE LINE

HC= HORIZONTAL CLEARANCE



FINISHED TYPICAL HALF SECTION
RIGHT TURN LANE

STA 412+65 - STA 416+25 RT
STA 413+78 - STA 422+74 LT

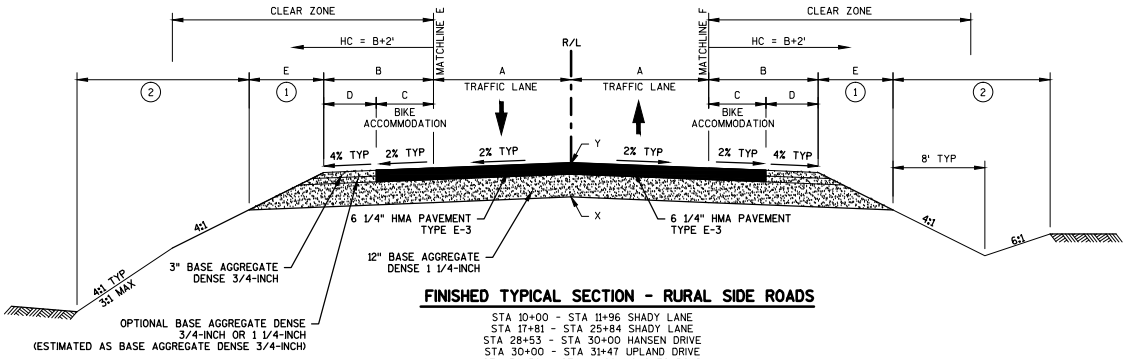


FINISHED TYPICAL HALF SECTION
RIGHT TURN LANE WITH SHOULDER CURB

(MATCHLINE A IS A MIRROR IMAGE)

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

FILE NAME : T:\1102717\CADD\CIVIL3D\27090300\SHEETSPLAN\020328_TS PROP.DWG PLOT DATE : 9/3/2008 9:36 AM PLOT BY : BLACKWOOD, JAMES PLOT NAME : _____ PLOT SCALE : 1 IN:10 FT



FINISHED TYPICAL SECTION - RURAL SIDE ROADS

STA 10+00 - STA 11+96 SHADY LANE
STA 17+81 - STA 25+84 SHADY LANE
STA 28+53 - STA 30+00 HANSEN DRIVE
STA 30+00 - STA 31+47 UPLAND DRIVE
STA 38+30 - STA 41+69 MONCHES ROAD
STA 48+56 - STA 50+00 WOODED HILLS BIBLE CHURCH
STA 58+31 - STA 61+69 ELMWOOD ROAD
STA 68+53 - STA 70+00 TUCKAWAY LANE
STA 80+00 + STA 81+54 CHEROKEE TRAIL
STA 90+00 - STA 93+23 ST GABRIEL LANE
STA 103+28 - STA 118+00 HUBERTUS ROAD
STA 136+00 - STA 140+00 LOCHVIEW ROAD
STA 188+58 - STA 190+00 GREYSTONE DRIVE
STA 197+04 - STA 200+40 PLEASANT HILL ROAD
STA 208+52 - STA 210+00 MAJESTIC DRIVE
STA 218+36 - STA 221+64 PIONEER ROAD
STA 224+95 - STA 230+00 CTH E
STA 240+00 - STA 241+44 CLUB DRIVE

LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

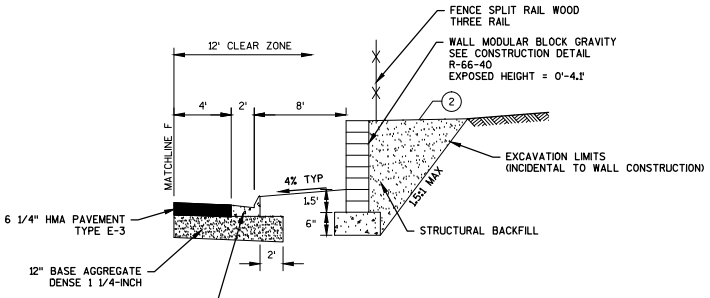
"X"= POINTS REFERRED TO ON CROSS SECTIONS

"Y"= POINTS REFERRED TO ON PROFILE

HC= HORIZONTAL CLEARANCE

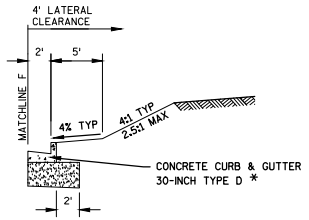
* USE CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE D ON HUBERTUS ROAD AND WOODED HILLS

ROADWAY	CLEAR ZONE	TYPICAL WIDTHS				
		A	B	C	D	E
SHADY LANE	10'	11'	3'	0'	3'	6.4'
UPLAND DRIVE	14'	11'	3'	0'	3'	6.4'
HANSEN DRIVE	10'	12'	3'	0'	3'	6.4'
MONCHES ROAD	14'	11'	3'	0'	3'	6.4'
WOODED HILLS BIBLE CHURCH	14'	12'	3'	0'	3'	6.4'
ELMWOOD ROAD	14'	11'	3'	0'	3'	6.4'
TUCKAWAY LANE	10'	11.5'	3'	0'	3'	6.4'
CHEROKEE TRAIL	10'	11'	3'	0'	3'	6.4'
ST GABRIEL LANE	14'	12'	3'	0'	3'	6.4'
HUBERTUS ROAD	14'	11'-16.5'	6'	5'	1'	6.5'
GOLDEN DRIVE	SEE URBAN TYPICAL SECTIONS					
LOCHVIEW ROAD	10'	11.5'	3'	0'	3'	6.4'
ADA'HI COURT	SEE URBAN TYPICAL SECTIONS					
STH 167	SEE STH 167 TYPICAL SECTIONS					
GREYSTONE DRIVE	10'	12'	3'	0'	3'	6.4'
PLEASANT HILL ROAD	10'	14'	N/A	0'	3'	6.4'
MAJESTIC DRIVE	10'	12'	3'	0'	3'	6.4'
PIONEER ROAD	16'	11'	3'	0'	3'	6.4'
CTH E	16'	12'	6'	5'	1'	6.5'
CLUB DRIVE	14'	11.5'	3'	0'	3'	6.4'



FINISHED TYPICAL HALF SECTION
RETAINING WALL SECTION R-66-40

STA 114+53 - STA 115+50 RT HUBERTUS ROAD

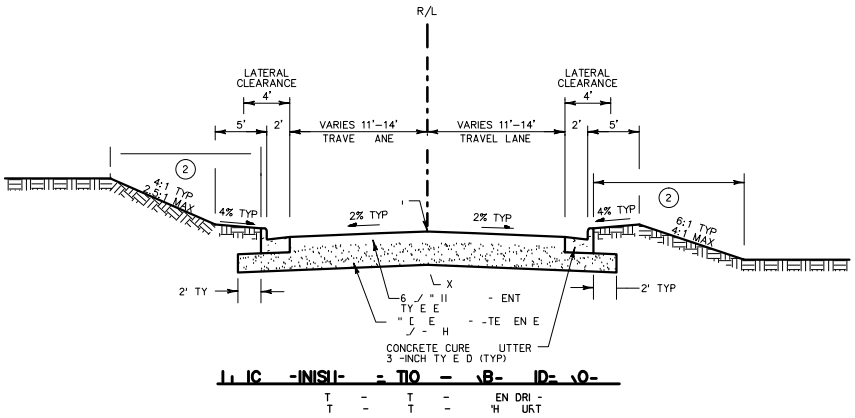


FINISHED TYPICAL HALF SECTION
SHOULDER CURB SECTION

(MATCHLINE E IS A MIRROR IMAGE)

STA 48+70 - STA 49+27 RT WOODED HILLS
STA 90+73 - STA 92+23 LT ST GABRIEL LANE
STA 113+25 - STA 114+85 LT HUBERTUS ROAD
STA 113+75 - STA 116+35 RT HUBERTUS ROAD

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E



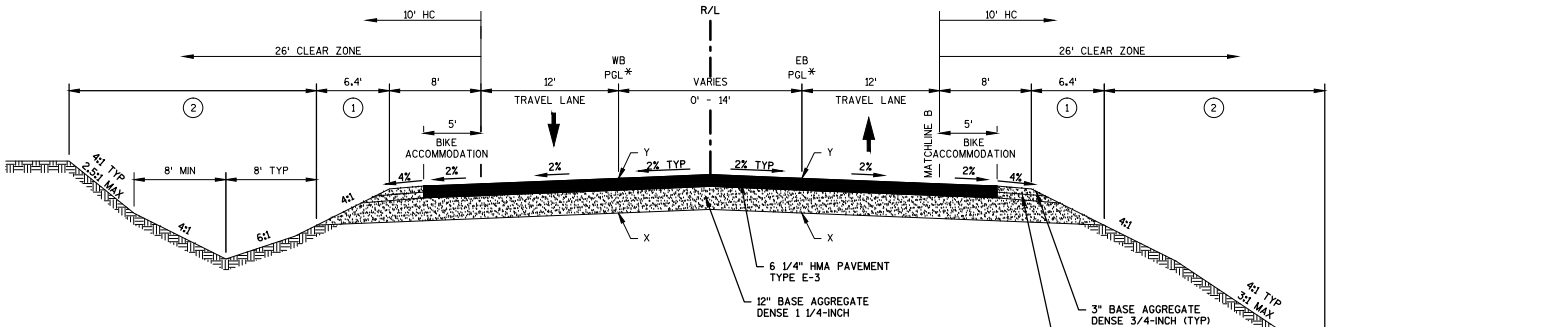
J, IC -INISLI- = TIO — \B- ID- \O-

T - T - EN DRI -
T - T - 'H URT

"X" = TS RE ERRE TO ON WE E
"/" = TS RE ERRE TO O EF E
' " = INTS RE ERRED TO ON CROSS ECTIONS

- END

(2) ALVA ED TOPSOIL E TILI ER TY E B, EED MIXTURE N . ULCH



LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

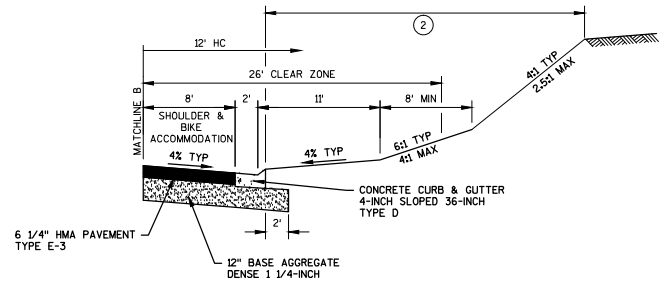
* EB PGL VARIES 0' LT TO 21' LT
WB PGL VARIES 0' LT TO 35' LT

HC= HORIZONTAL CLEARANCE

FINISHED TYPICAL SECTION - STH 167

STA 158+75 - STA 165+56
STA 174+10 - STA 181+25

V=50 MPH

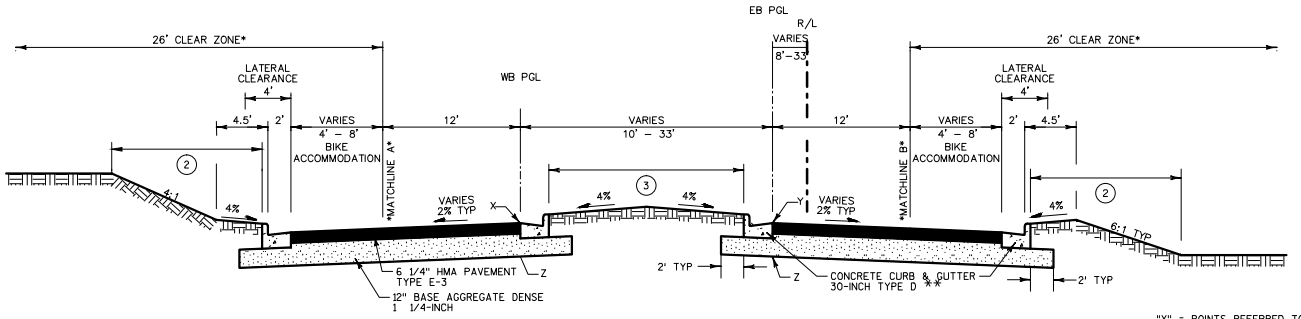


FINISHED TYPICAL HALF SECTION
SHOULDER CURB

STA 158+75 - STA 165+56 RT

PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

FILE NAME : T:\1102717\CADD\CIVIL3D\27090300\SHEETSPLAN\020330_TS PROP.DWG PLOT DATE : 9/3/2008 9:36 AM PLOT BY : BLACKWOOD, JAMES PLOT NAME : _____ PLOT SCALE : 1 IN:10 FT



TYPICAL FINISHED SECTION – STH 167
ROUNDABOUT SPLITTER ISLAND

STA 165+56 - STA 169+08
STA 170+46 - STA 174+10

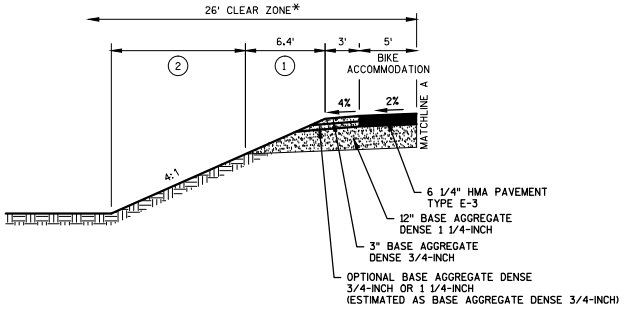
"X" = POINTS REFERRED TO ON WB PROFILE
"Y" = POINTS REFERRED TO ON EB PROFILE
"Z" = POINTS REFERRED TO ON CROSS SECTIONS

LEGEND

(1) SEEDING MIXTURE NO. 20 & FERTILIZER TYPE B

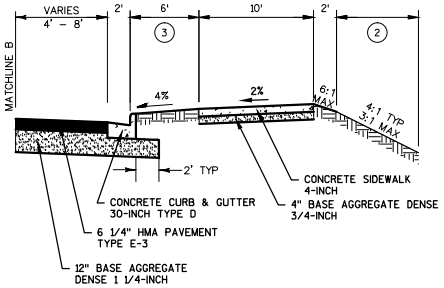
(2) SALVAGED TOPSOIL, FERTILIZER TYPE B, SEED MIXTURE NO. 20, & MULCH

(3) SOD, FERTILIZER TYPE B AND TOPSOIL



FINISHED TYPICAL HALF SECTION
RURAL SHOULDER SECTION

STA 165+56 - STA 167+76 LT



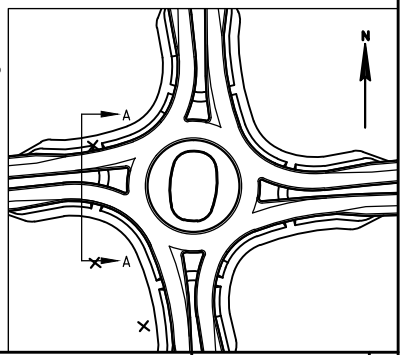
FINISHED TYPICAL HALF SECTION

(MATCHLINE A IS A MIRROR IMAGE)
STA 162+96 - STA 169+08 LT
STA 167+75 - STA 169+08 RT
STA 170+46 - STA 171+79 LT
STA 170+46 - STA 171+75 RT

* CLEAR ZONE VARIES

STATION	SIDE	CLEAR ZONE
165+56 - 166+80	LT	26'
166+80 - 167+75	LT	16'
165+56 - 166+54	RT	26'
166+54 - 167+54	RT	18'

** CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE D FROM STA 165+56 – STA 166+95 LT AND STA 165+56 – STA 167+55 RT



PROJECT NO: 2709-03-70	HWY: STH 164	COUNTY: WASHINGTON	TYPICAL SECTION	SHEET _____	E

Exhibit 4

Shady Lane Alternatives

WIS 164/SHADY LANE
INTERSECTION ALTERNATIVE 1
CLOSE NORTH INTERSECTION

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

SHADY LANE

WIS 164

HANSEN DRIVE

UPLAND DRIVE

RETAINING WALL

RELOCATED ACCESS

191 STATE HWY 164

197 STATE HWY 164

200 STATE HWY 164

204 STATE HWY 164

350 STATE HWY 164

4545 HANSEN DR

350 PRESERVE WAY

4440 COUNTY LINE O

4338 TIMBER DR

4334 TIMBER DR

4335 TIMBER DR

300 UPLAND CT

301 UPLAND CT

50 55 60 65 70 75 80 25 22 34

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK

WIS 164/SHADY LANE
INTERSECTION ALTERNATIVE 2
CLOSE SOUTH INTERSECTION

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

SHADY LANE

HANSEN DRIVE

UPLAND DRIVE

WIS 164

191 STATE HWY 164

197 STATE HWY 164

200 STATE HWY 164

204 STATE HWY 164

350 STATE HWY 164

4545 HANSEN DR

350 PRESERVE WAY

4440 COUNTY LINE O

4335 TIMBER DR

4338 TIMBER DR

4334 TIMBER DR

300 UPLAND CT

301 UPLAND CT

RELOCATED ACCESS

50 55 60 65 70 75 22 25 34

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK

WIS 164/SHADY LANE INTERSECTION ALTERNATIVE 3 REALIGN TO HANSEN DRIVE

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

SHADY LANE

HANSEN DRIVE

UPLAND DRIVE

WIS 164

PIPE GATE

EMERGENCY ACCESS

RELOCATED ACCESS

191 STATE HWY 164

197 STATE HWY 164

200 STATE HWY 164

204 STATE HWY 164

350 STATE HWY 164

4440 COUNTY LINE O

4545 HANSEN DR

350 PRESERVE WAY

4335 TIMBER DR

4338 TIMBER DR

4334 TIMBER DR

300 UPLAND CT

301 UPLAND CT

50 55 60 65 70 75

22 25 28 34

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK

Exhibit 5

WIS 167 Alternatives

WIS 164/WIS 167 INTERSECTION
ALTERNATIVE 1 ROUNDABOUT

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

MATCH EXISTING
AT STA 158+75

HOLY HILL ROAD / WIS 167

ADA'HI COURT

POTENTIAL
RESIDENTIAL
DISPLACEMENT

4548
ADA'HI CT

RELOCATE
ACCESS

REMOVE
ACCESS

4510
LOCH VIEW
RD

4513
ADA'HI CT

1639
STATE HWY
164

4505
STATE HWY
167

1582
STATE HWY
164

RELOCATE
ACCESS

REMOVE
ACCESS

4493
STATE HWY
167

1608
STATE HWY
164

RELOCATE
ACCESS

1750
STATE HWY
164

FRIESS LAKE
SCHOOL

1780
STATE HWY
164

OCONOMOWOC RIVER

MATCH EXISTING
AT STA 181+25

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK

WIS 164/WIS 167 INTERSECTION
ALTERNATIVE 2 TRAFFIC SIGNAL

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

MATCH EXISTING
AT STA 158+25

HOLY HILL ROAD / WIS 167

ADA'HI COURT

POTENTIAL
RESIDENTIAL
DISPLACEMENT

4548
ADA'HI CT

4513
ADA'HI CT

1639
STATE HWY
164

4505
STATE HWY
167

1582
STATE HWY
164

RELOCATE
ACCESS

REMOVE
ACCESS

1608
STATE HWY
164

4493
STATE HWY
167

RELOCATE
ACCESS

1750
STATE HWY
164

FRIESS LAKE
SCHOOL

1780
STATE HWY
164

RIGHT IN / RIGHT OUT
ONLY

OCONOMOWOC RIVER

MATCH EXISTING
AT STA 181+25

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK

Exhibit 6

Pleasant Hill Road Alternatives

WIS 164/PLEASANT HILL ROAD INTERSECTION ALTERNATIVE 1
WIDEN EXISTING ROADWAYS

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

4560 GREYSTONE DR

4537 PLEASANT HILL RD

4525 PLEASANT HILL RD

2055 STATE HWY 164

POTENTIAL RESIDENTIAL DISPLACEMENT

2097 STATE HWY 164

4518 PLEASANT HILL RD

POTENTIAL RESIDENTIAL DISPLACEMENT

2103 STATE HWY 164

MAJESTIC DRIVE

195

205

290 295 300 305 310 315 320

2002 STATE HWY 164

2012 STATE HWY 164

2040 STATE HWY 164

2070 STATE HWY 164

2080 STATE HWY 164

2098 STATE HWY 164

2102 STATE HWY 164

2108 STATE HWY 164

POTENTIAL RESIDENTIAL DISPLACEMENT

4434 PLEASANT HILL RD

POTENTIAL COMMERCIAL DISPLACEMENT

2054 STATE HWY 164

POTENTIAL RESIDENTIAL DISPLACEMENT

PLEASANT HILL ROAD

4475 PLEASANT HILL RD

4455 PLEASANT HILL RD

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK

WIS 164/PLEASANT HILL ROAD
INTERSECTION ALTERNATIVE 2
REALIGN PLEASANT HILL INTERSECTION NORTH

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

4560 GREYSTONE DR
4554 GREYSTONE DR
2055 STATE HWY 164
4525 PLEASANT HILL RD
2097 STATE HWY 164
4518 PLEASANT HILL RD
2103 STATE HWY 164
2102 STATE HWY 164
2108 STATE HWY 164
2098 STATE HWY 164
4434 PLEASANT HILL RD
MAJESTIC DRIVE
PLEASANT HILL ROAD
1978 STATE HWY 164
2002 STATE HWY 164
2012 STATE HWY 164
2040 STATE HWY 164
2070 STATE HWY 164
2080 STATE HWY 164
2054 STATE HWY 164
4465 PLEASANT HILL RD
4475 PLEASANT HILL RD
4455 PLEASANT HILL RD

RELOCATE ACCESS
REMOVE ACCESS
REMOVE ACCESS
RELOCATE ACCESS

290 295 300 305 310 315 320

CONEY RIVER / OCONOMOWOC RIVER NATURE PRESERVE

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK

WIS 164/PLEASANT HILL ROAD INTERSECTION ALTERNATIVE 3 REALIGN PLEASANT HILL INTERSECTION SOUTH

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

POTENTIAL RESIDENTIAL DISPLACEMENT

4537 PLEASANT HILL ROAD

4560 GREYSTONE DR

4554 GREYSTONE DR

2055 STATE HWY 164

4525 PLEASANT HILL RD

4518 PLEASANT HILL RD

2097 STATE HWY 164

2103 STATE HWY 164

RELOCATE ACCESS

REMOVE ACCESS

REMOVE ACCESS

2102 STATE HWY 164

2108 STATE HWY 164

RELOCATE ACCESS

2098 STATE HWY 164

2080 STATE HWY 164

2070 STATE HWY 164

2040 STATE HWY 164

REMOVE ACCESS

2002 STATE HWY 164

1978 STATE HWY 164

2012 STATE HWY 164

RELOCATE ACCESS

2054 STATE HWY 164

4465 PLEASANT HILL RD

4455 PLEASANT HILL RD

4475 PLEASANT HILL RD

4434 PLEASANT HILL RD

PLEASANT HILL ROAD

MAJESTIC DRIVE

290 295 300 305 310 315 195 205 205 202

MATCH EXISTING 100 FT SOUTH OF EDGE OF SHEET

CONEY RIVER / OCONOMOWOC RIVER NATURE PRESERVE

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK

WIS 164/PLEASANT HILL ROAD INTERSECTION ALTERNATIVE 4 REALIGN WIS 164 WEST

N

SCALE, FEET 0 100 200

2010 AERIAL PHOTOGRAPH

4537 PLEASANT HILL RD

4560 GREYSTONE DR

4554 GREYSTONE DR

2055 STATE HWY 164

4525 PLEASANT HILL RD

POTENTIAL RESIDENTIAL DISPLACEMENT

2097 STATE HWY 164

4518 PLEASANT HILL RD

POTENTIAL RESIDENTIAL DISPLACEMENT

MAJESTIC DRIVE

2103 STATE HWY 164

2102 STATE HWY 164

2108 STATE HWY 164

2098 STATE HWY 164

4434 PLEASANT HILL RD

PLEASANT HILL ROAD

2002 STATE HWY 164

1978 STATE HWY 164

2012 STATE HWY 164

2040 STATE HWY 164

2070 STATE HWY 164

2080 STATE HWY 164

2054 STATE HWY 164

4465 PLEASANT HILL RD

4455 PLEASANT HILL RD

4475 PLEASANT HILL RD

290 295 300 305 310 315 320

195 200 205 210

LEGEND

- RIGHT OF WAY
- TEMPORARY LIMITED EASEMENT
- PROPERTY LINES
- GRADING LIMITS
- WETLAND BOUNDARY
- PRIMARY ENVIROMENTAL CORRIDOR
- SECONDARY ENVIROMENTAL COORIDOR
- ISOLATED NATURAL RESOURCE AREA
- NATURE PRESERVE
- COUNTY PARK