SEGMENT 6 - US 41: WEST OF COUNTY N TO WEST OF COUNTY J (2.953 MILES)

6.1 Existing Conditions

Traffic and Operations Summary

Mainline traffic forecasts were developed for each section of segment 6 through consultation with WisDOT Traffic Forecasting section. The K30 hourly volume projections developed using the Northeast Region travel demand model for year 2038 indicate three lanes each direction, with residual hourly capacities of over 950 vehicles per hour for all sections. Traffic Analysis Forecasting Information System (TAFIS) generated K30 projections indicate a need for three lanes for most segments, with sufficient residual capacity. Additional detail concerning the traffic forecasts is available in the Traffic Forecasting Methodology memo in Appendix 1.

Safety Summary

The US 41 Interstate Conversion project has assessed crash data for a three year period along this segment of US 41. Table 6-1 below identifies the segments that exceed statewide averages for the same three year period.

Table 6-1: Segment 6 – US 41 Crash Data

SECTION	CRITERIA	3-YEAR AVERAGE RATE*	SEGMENT RATE*
West of County N to West of County CC (MM 147.0 to MM 148.0)	Total fatal and incapacitating crashes	1.7 (Urban)	4.3
	Total fatal crashes	0.2 (Urban)	2.2
West of WIS 55 to West of County J (MM 135.0 to MM 136.0)	Total fatal and incapacitating crashes	0.2 (Urban)	2.2

** 3-Year Average Rate (2005-2007) represents the Wisconsin statewide average number of crashes per 100 million vehicle miles traveled for urban and rural facilities. The Segment Rate represents the actual number of crashes per 100 million vehicle miles traveled for the mainline section listed.*

Roadway Summary

The US 41 Interstate Conversion project has quantified existing geometric deficiencies that require action. Table 6-2 below identifies the deficiencies.

Table 6-2: Segment 6 – Roadway Geometric Deficiencies

SECTION	MILE MARKER	CRITERIA	ACTUAL VALUE
County N to WIS 55 (MM 147.1 to MM 149.1)	147.1 to 147.3	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.10%
	147.3	Min. K Crest = 401	Grade change = 0.30%
	147.3 to 147.9	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.15%
	148.0 to 148.4	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.13%
	148.7	Superelevation R = 5729' Desired SE = 3.4%	SE = 2.8% Appropriate speed = 60 mph
WIS 55 to County J (MM 149.1 to MM 150.3)	149.1 to 149.3	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.11%
	149.4 to 149.5	Min. K Crest = 401	198

Structures Summary

Bridges

Summary of existing bridge conditions from Highway Structure Information are shown in Table 6-3 (page 6-3) and include bridge number, mile marker, bridge name, girder type, year built, year widened or raised, overlay or new deck year, current deck state, national bridge index values for deck, superstructure and substructure, sufficiency rating and inventory ratings as of October 31, 2012.

Summary of existing bridge geometry is shown in Table 6-4 (page 6-4) and includes bridge number, mile marker, bridge name, girder type, girder depth in inches, vertical clearance, superelevation and direction of super, clear bridge width, bridge length, number of spans, span configuration, bridge skew and cross road typical section.

Table 6-3: Segment 6 – Summary of Existing Bridge Conditions

BRIDGE NUMBER	MILE MARKER (MM)	BRIDGE NAME	GIRDER TYPE	YEAR BUILT	YEAR WIDENED OR RAISED	YEAR OVERLAY OR NEW DECK	CURRENT DECK STATE	NBI [1] DECK	NBI [1] SUPER	NBI [1] SUB	SUFFICIENCY RATING [2]	INVENTORY RATING [3]
B-44-0179	147.1	County N Bridge Over US 41	Concrete Deck Girder	2002	N/A	N/A	Original	8	8	8	97.5	24
B-44-0038	147.6	Buchanan Street Bridge Over US 41	Prestressed Concrete Deck Girder	1961	2009	1984	Original, Concrete Overlay, and Raised	7	7	8	79.5	20
B-44-0039	148.3	County CC Bridge Over US 41	Prestressed Concrete Deck Girder	1961	N/A	1993	Original and New Deck	8	7	7	76.8	16
B-44-0040	149.1	US 41 SB Bridge Over WIS 55	Continuous Concrete Haunch Slab	1961	N/A	2009	Original and Concrete Overlay	7	7	8	95.1	20
B-44-0041	149.1	US 41 NB Bridge Over WIS 55	Continuous Concrete Haunch Slab	1961	N/A	2009	Original and Concrete Overlay	7	7	8	93.1	21
B-44-0042	149.35	US 41 SB Bridge Over Maloney Road	Continuous Concrete Haunch Slab	1961	N/A	2009	Original and Concrete Overlay	7	7	7	90.6	16
B-44-0043	149.35	US 41 NB Bridge Over Maloney Road	Continuous Concrete Haunch Slab	1961	N/A	2009	Original and Concrete Overlay	7	6	7	90.6	16

1 The Federal Highway Administration (FHWA) Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges (Coding Guide) is the basis for the National Bridge Inventory (NBI) Inspection. Each bridge component, i.e. deck, superstructure, or substructure, is assigned a numeric rating code ranging from 9 to 0, with 9 being "excellent condition" and 0 being "failed condition". A bridge becomes structurally deficient when the condition of the deck, superstructure, or substructure condition is 4 or less.

2 Following a thorough review of the deck, superstructure and substructure, bridges are assigned a "sufficiency rating" number between one and 100. The rating takes into account some 75 factors reviewed during a bridge inspection and also considers a bridge's age, length and width, and the average amount of traffic the bridge handles. WisDOT uses the sufficiency ratings to help prioritize bridge improvements. A bridge with a sufficiency rating of 80 or less is eligible for bridge rehabilitation funding. A bridge with a sufficiency rating of 50 or less is eligible for replacement funding. Each year, all states including Wisconsin are required to submit a report to the FHWA that reviews the condition of its bridges.

3 The FHWA currently requires that two capacity ratings, referred to as the Inventory Rating and Operating Rating be submitted with the NBI file. The Inventory Rating is the load level that a structure can safely sustain for an indefinite period. The Operating Rating is the absolute maximum permissible load level to which a structure may be subjected. The FHWA requires that the standard AASHTO HS truck or lane loading be used as the vehicle when load rating with the Load Factor Rating method (LFR) and that the AASHTO HL-93 loading be utilized as the vehicle when load rating with the Load and Resistance Factor method (LRFR). The above table is shown in LFR using the AASHTO HS truck standard. Bridges are not eligible for replacement unless the Inventory Rating is HS10 or less.

Table 6-4: Segment 6 – Summary of Existing Bridge Geometry

BRIDGE NO.	MILE MARKER (MM)	BRIDGE NAME	GIRDER TYPE	GIRDER DEPTH (INCHES)	VERTICAL CLEARANCE (FEET)	SUPER-ELEVATION %	BRIDGE CLEAR WIDTH (FEET)	BRIDGE LENGTH (FEET)	NUMBER OF SPANS	SPAN CONFIGURATION (FEET)	BRIDGE SKEW	LOCAL ROAD TYPICAL SECTION
B-44-0179	147.1	County N Bridge Over US 41	Concrete Deck Girder	54	16.40	NC	100.16	220.47	2	108.27/108.27	1o 42' 00" RF	1 - 5' sidewalk, 1 - 5' bike lane, and 2 - 12' lanes with c&g each direction, approximately 32' median
B-44-0038	147.6	Buchanan Street Bridge Over US 41	Prestressed Concrete Deck Girder	36	16.54	NC	26	209.33	4	34.0/68.0/68.0/34.0	No Skew	1 - 11' lane and 1 - 3' shoulder in each direction
B-44-0039	148.3	County CC Bridge Over US 41	Prestressed Concrete Deck Girder	36	17.03	NC	29	211.33	4	38.0/68.0/68.0/32.0	No Skew	1 - 11' lane and 1 - 5' shoulder in each direction
B-44-0040	149.1	US 41 SB Bridge Over WIS 55	Continuous Concrete Haunch Slab	17 typ./ 29.5 @ pier	15.05	1.5	40.33	119.27	3	34.0/49.5/34.0	19o 30' 24" RF	End Spans: 2:1 slope paving; Middle Span: 1 - 12' lane and 1 - 10' shoulder in each direction
B-44-0041	149.1	US 41 NB Bridge Over WIS 55	Continuous Concrete Haunch Slab	17 typ./ 29.5 @ pier	15.39	1.5	40.33	119.27	3	34.0/49.5/34.0	19o 30' 24" RF	End Spans: 2:1 slope paving; Middle Span: 1 - 12' lane and 1 - 10' shoulder in each direction
B-44-0042	149.35	US 41 SB Bridge Over Maloney Road	Continuous Concrete Haunch Slab	15 typ./ 26 @ pier	15.33	1.0	40.33	110.77	3	33.5/42.0/33.5	19o 36' 40" LF	End Spans: 2:1 slope paving; Middle Span: 1 - 11' lane and 1 - 5' shoulder in each direction
B-44-0043	149.35	US 41 NB Bridge Over Maloney Road	Continuous Concrete Haunch Slab	15 typ./ 26 @ pier	15.17	1.0	40.33	110.77	3	33.5/42.0/33.5	19o 36' 40" LF	End Spans: 2:1 slope paving; Middle Span: 1 - 11' lane and 1 - 5' shoulder in each direction

Legend:
ES = Exception to Standard
RT = Superelevation Right
NC = Normal Crown
LT = Superelevation Left
LF = Left Forward
RF = Right Forward
N/A = Not Applicable
c&g = Curb and Gutter

Pre-NEPA Environmental Screening Summary

Impacts within Segment 6 consist of “low” and “medium” impact items. No “high” impact items were identified within Segment 6. Low impact items generally include potential impacts on wetlands, upland habitat, airports, Section 4(f), and Section 6(f) resources.

Segment 6 includes a wide variety of land uses and therefore “medium” impact ratings were given to many environmental factors given the assumption that additional land would be required along this segment. Medium impact items generally include potential impacts on general economic resources, community and residential resources, economic development and business, agriculture environmental justice, streams and floodplains, air quality, noise, and the ever present potential for erosion, storm water, historic, and archaeological impacts. Even though the perceived risk of impact is considered medium, further consideration will be needed to gain a better understanding of any imminent impacts, their severity, and mitigation or avoidance measures. Further information on environmental impacts can be seen in the Pre-NEPA Environmental Screening located in Appendix 4.

6.2 Expansion Design Concept

Mainline Segment 6

For ease in discussion, Segment 6 –West of County N to West of County J was broken into mainline sections with limits at interchange cross roads.

Section 1: West of County N (Freedom Road) to WIS 55 (Delanglade Street)

US 41 Alignment

This segment of US 41 is on existing alignment with the additional expansion lanes placed within the median.

US 41 Typical Section

Between County N and WIS 55 Interchanges, the mainline typical section consists of a 36.5’ median (14’ inside shoulders with 56-inch single face barriers). Northbound and Southbound US 41 have 3 – 12’ lanes and 12’ outside shoulders with 42-inch single face barrier for portions of the section with tight right-of-way or frontage roads constraints. Refer to Figure 6-1 (page 6-7) for Typical Section.

US 41 Ramps and Auxiliary Lanes

Review all exit ramp configurations for single or dual lane needs.

Refer to Exhibit 6-1 and Exhibit 6-2 (pages 6-8 and 6-9 respectively) for further discussion on County N southbound off ramp (6-1-A).

Refer to Exhibit 6-1 and Exhibit 6-2 (pages 6-8 and 6-9 respectively) for further discussion on County N northbound on ramp (6-1-B).

Refer to Exhibit 6-4 (page 6-11) for further discussion on WIS 55 southbound on ramp (6-1-C).

Refer to Exhibit 6-4 (page 6-11) for further discussion on WIS 55 northbound off ramp (6-1-D).

Frontage Roads

Refer to Exhibit 6-2 (page 6-9) for discussion on adjacent frontage road Randolph Drive (6-1-E).

Addressing Geometric Deficiencies

All geometric deficiencies are anticipated to be corrected during the long-term improvement expansion project. Refer to Exhibit 6-1 through Exhibit 6-5 (pages 6-8 through 6-12 respectively) for discussion on deficient vertical grades (6-1-F) from MM 147.1 to 147.3, MM 147.3 to 147.9 and MM 148.0 to 148.4. In addition, the superelevation (6-1-G) for the long horizontal curve at MM 148.7 will also be updated during the reconstruction project (refer to Exhibit 6-4 on page 6-11).

Right-of-Way Impacts

Conceptual plans do not show any right of way impacts, however a detailed design that incorporates vertical design and slope intercepts may identify additional locations for concrete barrier or beam guard used with steeper slopes to minimize right of way impacts. Based upon future cost analysis, it may be economical to purchase additional strip acquisitions.

Utilities

Refer to Exhibit 6-1 through Exhibit 6-6 (pages 6-8 through page 6-15 respectively) TDS Metrocom buried fiber optic facility located along the southerly R/W line between County N and WIS 55 (6-1-H).

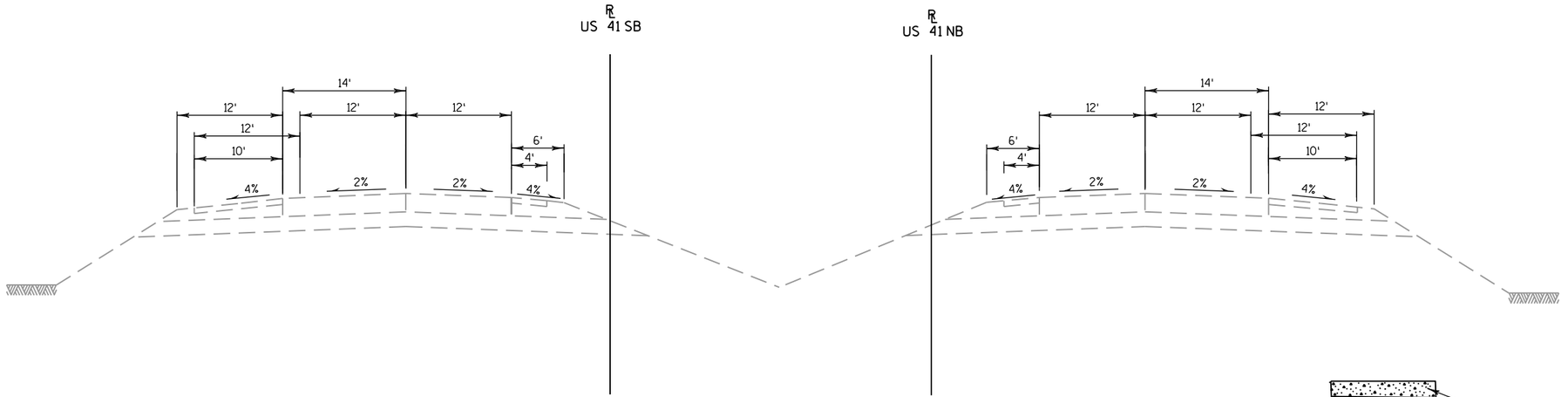
The following utilities are shown on Exhibit 6-2 (page 6-9):

- WE Energies has a buried gas facility crossing US 41 approximately 1040-feet east of County N (6-1-I).
- Time Warner has an overhead facility crossing US 41 approximately 60 feet west of Buchanan Street (6-1-J).
- The following utilities are shown on Exhibit 6-3 (page 6-10):
- Time Warner has an overhead facility crossing US 41 approximately 75 feet west of County CC (6-1-K).

Further Analysis Recommendations

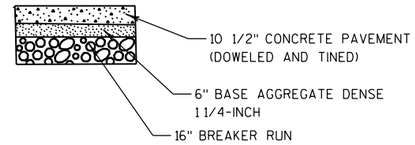
Refer to Exhibit 6-2 (page 6-9) for further discussion on County N off-ramp configuration and impacts (6-1-L).

2

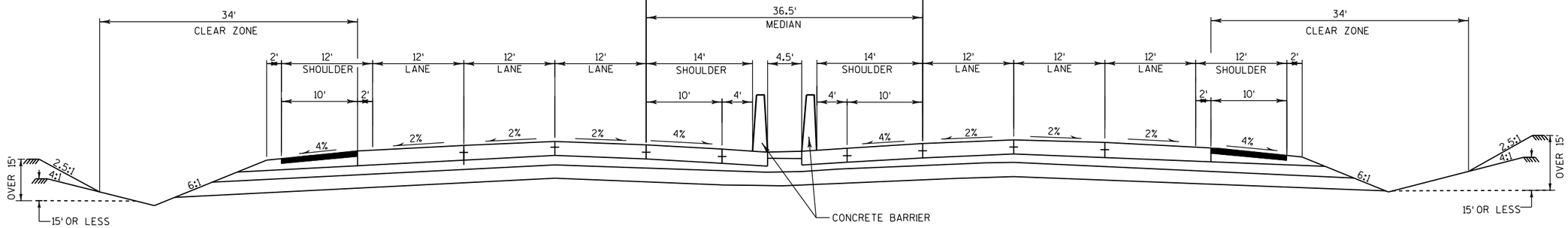


TYPICAL EXISTING SECTION

US 41 (CTH N TO CTH J)



NOTE: THE ASSUMED SECTION USED FOR COST ESTIMATE PURPOSES.



DESIRABLE PROPOSED SECTION

US 41 (CTH N TO CTH J)

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	FIGURE 6-I: US 41 (CTH N INTERCHANGE TO CTH J INTERCHANGE), TYPICAL EXISTING SECTION AND DESIRABLE PROPOSED SECTION	PAGE 6-7	E

FILE NAME : J:\44386\t1\Short Term Solutions\Amendment "5\TYICAL SECTIONS2.dgn PLOT DATE : 5/1/2013 PLOT BY : Jgallamore PLOT NAME : $FILE$ PLOT SCALE : 15:1

2

US 41 RAMPS AND AUXILIARY LANES (6-1-A): THE COUNTY N SOUTHBOUND OFF-RAMP FROM US 41 IS A TAPERED TYPE CONFIGURATION. THE RAMP IS CLOSE TO THE RANDOLPH DRIVE FRONTAGE ROAD AND MAY REQUIRE BARRIER OR DRAINAGE DITCH ADJUSTMENTS THAT ARE NOT CURRENTLY PRESENTED ON THE EXHIBITS.

US 41 RAMPS AND AUXILIARY LANES (6-1-B): THE COUNTY N NORTHBOUND ON-RAMP TO US 41 IS A PARALLEL TYPE CONFIGURATION. THE RAMP IS SHOWN AS 1000' LONG FROM THEORETICAL GORE POINT TO BEGIN OF TAPER POINT. THE 360' TAPER MERGES IN JUST TO THE WEST OF THE BUCHANAN ROAD OVERPASS. IF THE RAMP IS LENGTHENED AT ALL DURING THE FUTURE NEPA STUDY, THE RAMP GEOMETRY WILL IMPACT THE OVERPASS STRUCTURE GEOMETRY.

UTILITIES (6-1-H): TDS METROCOM HAS A BURIED FACILITY ALONG THE SOUTHERLY RIGHT OF WAY OF US 41 BETWEEN COUNTY N AND WIS 55.

DRAFT

2

SPIRIT CT

ALLEGIANCE CT

END SEGMENT 5

CTH N

GEOMETRIC DEFICIENCY (6-1-F):
APPROXIMATE START OF DEFICIENT VERTICAL GRADE
ACTUAL = 0.10%
DESIRED = 0.50%
MINIMUM = 0.30%

RANDOLPH DR

US 41 SB OFF RAMP

6-1-A

EXISTING RIGHT OF WAY

US 41 SB ON RAMP

US 41 SB

US 41 NB

PROPOSED US 41

US 41 NB OFF RAMP

US 41 NB ON RAMP

6-1-B

B-44-179
REHABILITATE

UTILITIES (6-1-H):

BEGIN SEGMENT 6

MATCHLINE

MATCHLINE

PATRIOT DR

MOASIS DR

MOASIS DR

UNITED DR

AMERICAN DR

CTH N

KELLY RD

E. PETER LN

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 6-1: US 41 SEGMENT 6 / SECTION 1 / SHEET 1	PAGE 6-8	E

FILE NAME : J:\44386\t1\Short Term Solutions\Amendment #5\CDS\0246A_P0.dgn PLOT DATE : 5/23/2013 PLOT BY : arosemeyer PLOT NAME : PLOT SCALE : 200:1

US 41 RAMPS AND AUXILIARY LANES (6-1-A): THE COUNTY N SOUTHBOUND OFF-RAMP FROM US 41 IS A TAPERED TYPE CONFIGURATION. THE RAMP IS CLOSE TO THE RANDOLPH DRIVE FRONTAGE ROAD AND MAY REQUIRE BARRIER OR DRAINAGE DITCH ADJUSTMENTS THAT ARE NOT CURRENTLY PRESENTED ON THE EXHIBITS.

US 41 RAMPS AND AUXILIARY LANES (6-1-B): THE COUNTY N NORTHBOUND ON-RAMP TO US 41 IS A PARALLEL TYPE CONFIGURATION. THE RAMP IS SHOWN AS 1000' LONG FROM THEORETICAL GORE POINT TO BEGIN OF TAPER POINT. THE 360' TAPER MERGES IN JUST TO THE WEST OF THE BUCHANAN ROAD OVERPASS. IF THE RAMP IS LENGTHENED AT ALL DURING THE FUTURE NEPA STUDY, THE RAMP GEOMETRY WILL IMPACT THE OVERPASS STRUCTURE GEOMETRY.

FRONTAGE ROADS (6-1-E): RANDOLPH DRIVE IS A FRONTAGE ROAD THAT IS APPROXIMATELY 60' OFFSET FROM EDGE OF US 41 SOUTHBOUND LANE TO EDGE OF RANDOLPH DRIVE LANE. THIS DISTANCE IS ADEQUATE, ALTHOUGH CONSIDERATION SHOULD BE GIVEN FOR ROADSIDE DESIGN GUIDE REQUIREMENTS FOR DRAINAGE IMPROVEMENTS AND CLEAR ZONE TRAVERSABLE SIDE SLOPES.

UTILITIES (6-1-H): TDS METROCOM HAS A BURIED FACILITY ALONG THE SOUTHERLY RIGHT OF WAY OF US 41 BETWEEN COUNTY N AND WIS 55.

UTILITIES (6-1-I): WE ENERGIES HAS A BURIED GAS FACILITY CROSSING US 41 APPROXIMATELY 1040-FEET EAST OF COUNTY N.

UTILITIES (6-1-J): TIME WARNER HAS AN OVERHEAD FACILITY CROSSING US 41 APPROXIMATELY 60 FEET WEST OF BUCHANAN STREET.

FURTHER ANALYSIS RECOMMENDATIONS (6-1-L): IF THE INTERCHANGE TAPERED OFF-RAMP CONFIGURATION IS MODIFIED TO A PARALLEL OFF-RAMP CONFIGURATION DURING THE FUTURE NEPA STUDY, FURTHER IMPACTS TO RIGHT-OF-WAY OR NEARBY STRUCTURE OVERPASSES MAY REQUIRE ADJUSTMENTS SUCH AS CONCRETE BARRIER ADDITION WITH STEEPER SIDE SLOPES, LONGER BRIDGE SPANS, ETC.

DRAFT

HARTZHEIM DR

RANDOLPH DR

BUCHANAN RD

UTILITIES (6-1-I):

GEOMETRIC DEFICIENCY (6-1-F):
DEFICIENT VERTICAL CURVE
GRADE CHANGE 0.30%

EXISTING RIGHT OF WAY

UTILITIES (6-1-J):

B-44-38
RECONSTRUCT

US 41 SB
OFF RAMP

6-1-A

6-1-E

RANDOLPH DR

6-1-L

US 41 SB

US 41 NB

US 41 NB
ON RAMP

6-1-B

PROPOSED US 41

GEOMETRIC DEFICIENCY (6-1-F):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL = 0.15%
DESIRED = 0.50%
MINIMUM = 0.30%

GEOMETRIC DEFICIENCY (6-1-F):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL = 0.10%
DESIRED = 0.50%
MINIMUM = 0.30%

UTILITIES (6-1-H):

MATCHLINE

MATCHLINE

KELBE ST

BUCHANAN RD

STEPHEN ST

MOASIS DR

EBBEN RD

NIXON ST

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 6-2: US 41 SEGMENT 6 / SECTION 1 / SHEET 2	PAGE 6-9	E

FILE NAME : \\madw00\ingrproj\44386\t1\Short Term Solutions\Amendment #5\CDS\0247_P0.dgn PLOT DATE : 5/8/2013 PLOT BY : Jgallamore PLOT NAME : PLOT SCALE : 200:1

UTILITIES (6-1-H): TDS METROCOM HAS A BURIED FACILITY ALONG THE SOUTHERLY RIGHT OF WAY OF US 41 BETWEEN COUNTY N AND WIS 55.

UTILITIES (6-1-K): TIME WARNER HAS AN OVERHEAD FACILITY CROSSING US 41 APPROXIMATELY 75 FEET WEST OF COUNTY CC.

DRAFT

GEOMETRIC DEFICIENCY (6-1-F):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL = 0.15%
DESIRED = 0.50%
MINIMUM = 0.30%

GEOMETRIC DEFICIENCY (6-1-F):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL = 0.13%
DESIRED = 0.50%
MINIMUM = 0.30%

MATCHLINE

EXISTING RIGHT OF WAY

US 41 SB

US 41 NB

PROPOSED US 41

TYPICAL SECTION (SEE FIGURE 6-1)

UTILITIES (6-1-K):

COUNTY CC / ROSE HILL RD

B-44-39
RECONSTRUCT

UTILITIES (6-1-H):

MATCHLINE

STEPHEN ST

BOHM DR

LYNN ST

COUNTY CC / ROSE HILL RD

WEYENBERG RD

C. AND NW TRANS. RR

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 6-3: US 41 SEGMENT 6 / SECTION 1 / SHEET 3	PAGE 6-10	E

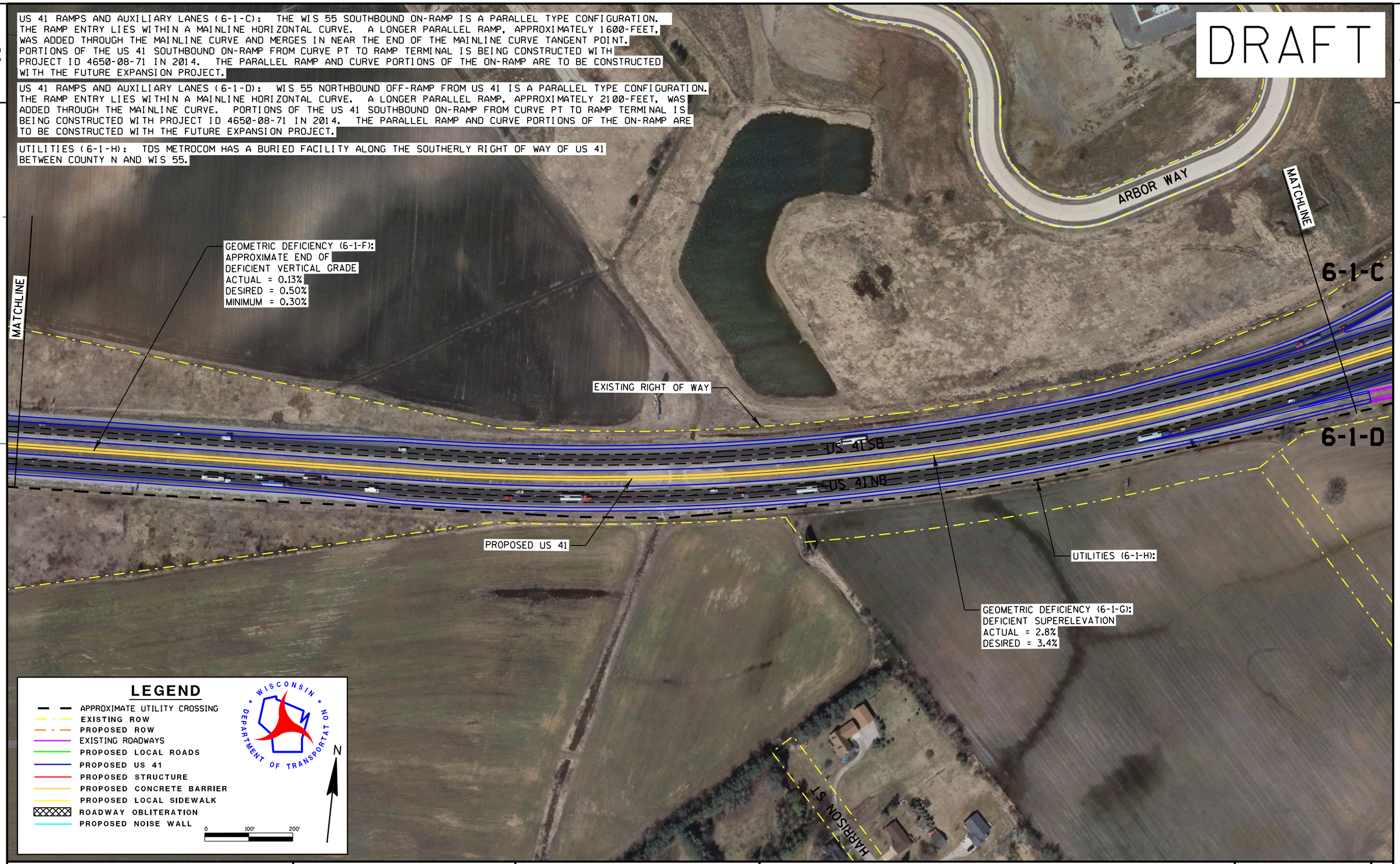
FILE NAME : \\madw00\ingrproj\44386\t1\Short Term Solutions\Amendment #5\CDS\0248_P0.dgn PLOT DATE : 5/8/2013 PLOT BY : Jgallamore PLOT NAME : PLOT SCALE : 200:1

US 41 RAMPS AND AUXILIARY LANES (6-1-C): THE WIS 55 SOUTHBOUND ON-RAMP IS A PARALLEL TYPE CONFIGURATION. THE RAMP ENTRY LIES WITHIN A MAINLINE HORIZONTAL CURVE. A LONGER PARALLEL RAMP, APPROXIMATELY 1600-FEET, WAS ADDED THROUGH THE MAINLINE CURVE AND MERGES IN NEAR THE END OF THE MAINLINE CURVE TANGENT POINT. PORTIONS OF THE US 41 SOUTHBOUND ON-RAMP FROM CURVE PT TO RAMP TERMINAL IS BEING CONSTRUCTED WITH PROJECT ID 4650-08-71 IN 2014. THE PARALLEL RAMP AND CURVE PORTIONS OF THE ON-RAMP ARE TO BE CONSTRUCTED WITH THE FUTURE EXPANSION PROJECT.

US 41 RAMPS AND AUXILIARY LANES (6-1-D): WIS 55 NORTHBOUND OFF-RAMP FROM US 41 IS A PARALLEL TYPE CONFIGURATION. THE RAMP ENTRY LIES WITHIN A MAINLINE HORIZONTAL CURVE. A LONGER PARALLEL RAMP, APPROXIMATELY 2100-FEET, WAS ADDED THROUGH THE MAINLINE CURVE. PORTIONS OF THE US 41 SOUTHBOUND ON-RAMP FROM CURVE PT TO RAMP TERMINAL IS BEING CONSTRUCTED WITH PROJECT ID 4650-08-71 IN 2014. THE PARALLEL RAMP AND CURVE PORTIONS OF THE ON-RAMP ARE TO BE CONSTRUCTED WITH THE FUTURE EXPANSION PROJECT.

UTILITIES (6-1-H): TDS METROCOM HAS A BURIED FACILITY ALONG THE SOUTHERLY RIGHT OF WAY OF US 41 BETWEEN COUNTY N AND WIS 55.

DRAFT



PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 6-4: US 41 SEGMENT 6 / SECTION 1 / SHEET 4	PAGE 6-11	E

2

US 41 RAMPS AND AUXILIARY LANES (6-1-C): THE WIS 55 SOUTHBOUND ON-RAMP IS A PARALLEL TYPE CONFIGURATION. THE RAMP ENTRY LIES WITHIN A MAINLINE HORIZONTAL CURVE. A LONGER PARALLEL RAMP, APPROXIMATELY 1600-FEET, WAS ADDED THROUGH THE MAINLINE CURVE AND MERGES IN NEAR THE END OF THE MAINLINE CURVE TANGENT POINT. PORTIONS OF THE US 41 SOUTHBOUND ON-RAMP FROM CURVE PT TO RAMP TERMINAL IS BEING CONSTRUCTED WITH PROJECT ID 4650-08-71 IN 2014. THE PARALLEL RAMP AND CURVE PORTIONS OF THE ON-RAMP ARE TO BE CONSTRUCTED WITH THE FUTURE EXPANSION PROJECT.

US 41 RAMPS AND AUXILIARY LANES (6-1-D): WIS 55 NORTHBOUND OFF-RAMP FROM US 41 IS A PARALLEL TYPE CONFIGURATION. THE RAMP ENTRY LIES WITHIN A MAINLINE HORIZONTAL CURVE. A LONGER PARALLEL RAMP, APPROXIMATELY 2100-FEET, WAS ADDED THROUGH THE MAINLINE CURVE. PORTIONS OF THE US 41 SOUTHBOUND ON-RAMP FROM CURVE PT TO RAMP TERMINAL IS BEING CONSTRUCTED WITH PROJECT ID 4650-08-71 IN 2014. THE PARALLEL RAMP AND CURVE PORTIONS OF THE ON-RAMP ARE TO BE CONSTRUCTED WITH THE FUTURE EXPANSION PROJECT.

UTILITIES (6-1-H): TDS METROCOM HAS A BURIED FACILITY ALONG THE SOUTHERLY RIGHT OF WAY OF US 41 BETWEEN COUNTY N AND WIS 55.

DRAFT

ARBOR WAY
WIS 55
EMERY LN
MALONEY RD
PROGRESS WAY
MATCHLINE
6-1-C
US 41SB ON RAMP
US 41SB OFF RAMP
B-44-40 RECONSTRUCT
EXISTING RIGHT OF WAY
B-44-42 RECONSTRUCT
US 41SB
US 41NB
6-1-D
B-44-41 RECONSTRUCT
US 41NB OFF RAMP
US 41NB ON RAMP
B-44-43 RECONSTRUCT
TOWER DR
UTILITIES (6-1-H):
GEOMETRIC DEFICIENCY (6-1-F):
APPROXIMATE START OF DEFICIENT VERTICAL GRADE
ACTUAL = 0.11%
DESIRED = 0.50%
MINIMUM = 0.30%
PROPOSED US 41
MALONEY RD
PROSPECT LN
MALONEY RD
PROSPECT LN
MATCHLINE

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

2

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 6-5: US 41 SEGMENT 6 / SECTION 1 / SHEET 5	PAGE 6-12	E

FILE NAME : J:\44386\t1\Short Term Solutions\Amendment "5\CDS\0250_PO.dgn PLOT DATE : 12/19/2013 PLOT BY : lzidek PLOT NAME : PLOT SCALE : 200:1

Section 2: WIS 55 (Delanglade Street) to West of County J (Hyland Avenue)

US 41 Alignment

This segment of US 41 is on existing alignment with the additional expansion lanes placed within the median.

US 41 Typical Section

Between WIS 55 and County J Interchanges, the mainline typical section consists of a 36.5' median (14' inside shoulders with 56-inch single face barriers). Northbound and Southbound US 41 have 3 – 12' lanes and 12' outside shoulders with 42-inch single face barrier for portions of the section with tight right-of-way or frontage roads constraints.

US 41 Ramps and Auxiliary Lanes

Review all exit ramp configurations for single or dual lane needs.

Refer to Exhibit 6-6 (page 6-15) for further discussion on WIS 55 southbound off ramp (6-2-A).

Refer to Exhibit 6-6 (page 6-15) for further discussion on WIS 55 northbound on ramp (6-2-B).

Frontage Roads

Refer to Exhibit 6-6 and Exhibit 6-7 (page 6-15 and 6-16 respectively) for discussion on adjacent frontage road Tower Drive (6-2-C).

Addressing Geometric Deficiencies

All geometric deficiencies are anticipated to be corrected during the long-term improvement expansion project. Refer to Exhibit 6-6 (page 6-15) for discussion on deficient vertical grades (6-2-D) from MM 149.1 to 149.3 and deficient vertical curve (6-2-E) from MM 149.4 to 149.5.

Right-of-Way Impacts

Conceptual plans do not show any right of way impacts, however a detailed design that incorporates vertical design and slope intercepts may identify additional locations for concrete barrier or beam guard used with steeper slopes to minimize right of way impacts. Based upon future cost analysis, it may be economical to purchase additional strip acquisitions.

Utilities

Refer to Exhibit 6-6 and Exhibit 6-7 (page 6-15 and 6-16 respectively) for TDS Metrocom buried facilities along the southerly right of way along US 41 between WIS 55 and County J (6-2-F).

The following utilities are shown on Exhibit 6-6 (page 6-15):

- WE Energies has buried gas line crossing US 41 at WIS 55 (6-2-G).
- Time Warner has an underground facility located approximately 50 feet east of WIS 55 (6-2-H).

- WE Energies has a pair of buried gas lines crossing US 41 at Maloney Road. (6-2-I).

Further Analysis Recommendations

If the interchange tapered off-ramp configuration is modified to a parallel off-ramp configuration during the future NEPA study, further impacts to right-of-way or nearby structure overpasses may require adjustments such as concrete barrier addition with steeper side slopes, longer bridge spans, etc.

US 41 RAMPS AND AUXILIARY LANES (6-2-A): THE WIS 55 SOUTHBOUND OFF-RAMP FROM US 41 IS A TAPERED TYPE CONFIGURATION. THE RAMP ENTRY LIES WITHIN THE US 41 SOUTHBOUND BRIDGE OVER MALONEY ROAD. PORTIONS OF THE WIS 55 SOUTHBOUND OFF-RAMP FROM CURVE PT TO RAMP TERMINAL IS BEING CONSTRUCTED WITH PROJECT ID 4650-08-71 IN 2014. THE TAPERED AND CURVE PORTIONS OF THE OFF-RAMP ARE TO BE CONSTRUCTED WITH THE FUTURE EXPANSION PROJECT.

US 41 RAMPS AND AUXILIARY LANES (6-1-B): WIS 55 NORTHBOUND ON-RAMP TO US 41 IS A PARALLEL TYPE CONFIGURATION. THE RAMP ENTRY LIES WITHIN THE US 41 NORTHBOUND BRIDGE OVER MALONEY ROAD. THE BRIDGE IS WITHIN THE TAPERED PORTION OF THE PARALLEL RAMP. PORTIONS OF THE WIS 55 NORTHBOUND ON-RAMP FROM CURVE PT TO RAMP TERMINAL IS BEING CONSTRUCTED WITH PROJECT ID 4650-08-71 IN 2014. THE TAPERED AND CURVE PORTIONS OF THE OFF-RAMP ARE TO BE CONSTRUCTED WITH THE FUTURE EXPANSION PROJECT.

FRONTAGE ROADS (6-2-C): TOWER DRIVE IS A FRONTAGE ROAD LOCATED JUST NORTHEAST OF MALONEY ROAD AND RUNS TO EAST LINE ROAD. IT IS APPROXIMATELY 55' TO 85' OFFSET FROM EDGE OF US 41 NORTHBOUND LANE TO EDGE OF TOWER DRIVE LANE. THIS DISTANCE IS ADEQUATE, ALTHOUGH CONSIDERATION SHOULD BE GIVEN FOR ROADSIDE DESIGN GUIDE REQUIREMENTS FOR DRAINAGE IMPROVEMENTS AND CLEAR ZONE TRAVERSABLE SIDE SLOPES.

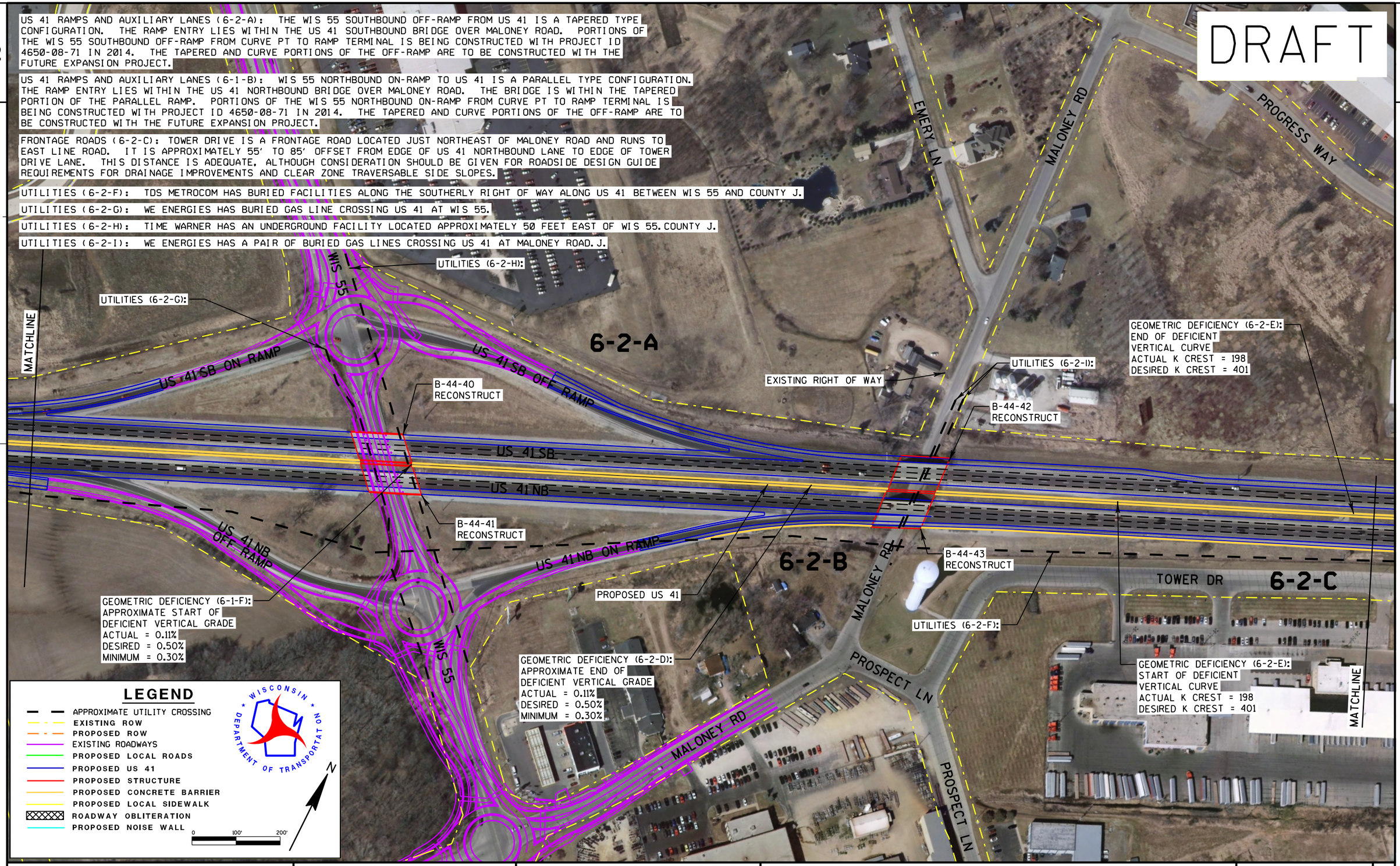
UTILITIES (6-2-F): TDS METROCOM HAS BURIED FACILITIES ALONG THE SOUTHERLY RIGHT OF WAY ALONG US 41 BETWEEN WIS 55 AND COUNTY J.

UTILITIES (6-2-G): WE ENERGIES HAS BURIED GAS LINE CROSSING US 41 AT WIS 55.

UTILITIES (6-2-H): TIME WARNER HAS AN UNDERGROUND FACILITY LOCATED APPROXIMATELY 50 FEET EAST OF WIS 55.COUNTY J.

UTILITIES (6-2-I): WE ENERGIES HAS A PAIR OF BURIED GAS LINES CROSSING US 41 AT MALONEY ROAD.J.

DRAFT



PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 6-6: US 41 SEGMENT 6 / SECTION 2 / SHEET 1	PAGE 6-15	E

FILE NAME : J:\44386\t1\Short Term Solutions\Amendment "5\CDS\0250A_PO.dgn PLOT DATE : 12/19/2013 PLOT BY : lzidek PLOT NAME : PLOT SCALE : 200:1

FRONTAGE ROADS (6-2-C): TOWER DRIVE IS A FRONTAGE ROAD LOCATED JUST NORTHEAST OF MALONEY ROAD AND RUNS TO EAST LINE ROAD. IT IS APPROXIMATELY 55' TO 85' OFFSET FROM EDGE OF US 41 NORTHBOUND LANE TO EDGE OF TOWER DRIVE LANE. THIS DISTANCE IS ADEQUATE, ALTHOUGH CONSIDERATION SHOULD BE GIVEN FOR ROADSIDE DESIGN GUIDE REQUIREMENTS FOR DRAINAGE IMPROVEMENTS AND CLEAR ZONE TRAVERSABLE SIDE SLOPES.

UTILITIES (6-2-F): TDS METROCOM HAS BURIED FACILITIES ALONG THE SOUTHERLY RIGHT OF WAY ALONG US 41 BETWEEN WIS 55 AND COUNTY J.

DRAFT

2

2

NORTHRIDGE DR

PROGRESS WAY

NORTHRIDGE DR

END SEGMENT 6, BEGIN SEGMENT 7

TIE IN PROPOSED US 41 (CTH J TO CTH S)

EXISTING RIGHT OF WAY

US 41 SB

US 41 NB

6-2-C

TOWER DR

PROPOSED US 41

UTILITIES (6-2-F):

E. LINE RD

MATCHLINE

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 6-7: US 41 SEGMENT 6 / SECTION 2 / SHEET 2	PAGE 6-16	E

FILE NAME : \\madw00\ingrproj\44386\t1\Short Term Solutions\Amendment #5\CDS\0251_PO.dgn PLOT DATE : 3/11/2014 8:05:58 AM PLOT BY : lzidek PLOT NAME : PLOT SCALE : 200:1

Structures

Bridges

Summary of potential bridge geometry is shown in Table 6-5 (page 6-18) and include bridge number, mile marker, bridge name, existing bridge age in 2013, girder type, girder depth, desired vertical clearance, minimum vertical clearance, potential vertical clearance, superelevation and direction of curve, clear bridge width, bridge length, number of spans, span configuration, bridge skew, local road typical section, and design recommendations.

Table 6-5: Segment 6 – Summary of Potential Bridge Geometry

BRIDGE NO.	MILE MARKER (MM)	BRIDGE NAME	AGE IN 2013	GIRDER TYPE	GIRDER DEPTH (INCH)	DESIRED VERT. CLEAR (FEET)	MIN. VERT. CLEAR (FEET)	VERT. CLEAR (FEET)	SUPER % & DIR.	BRIDGE CLEAR WIDTH (FEET)	BRIDGE LENGTH (FEET)	NO. OF SPANS	SPAN CONFIG. (FEET)	BRIDGE SKEW	LOCAL ROAD TYPICAL SECTION	DESIGN RECOMMENDATIONS
B-44-0179	147.1	County N Over US 41	16	Concrete Deck Girder	54	16.75	16.00 or ES	16.40	NC	100.16	220.47	2	108.27/108.27	1º 42' 00" RF	1 - 5' sidewalk, 1 - 5' bike lane, and 2 - 12' lanes with c&g each direction, approximately 32' median	Bridge cross section meets requirements of Alternative 2. Assume rehabilitation with no raising required.
B-44-0038	147.6	Buchanan Street Over US 41	57	Prestressed Concrete Deck Girder	45	16.75	16.33	16.75	NC	40	223.00	2	109.5/109.5	No Skew	1-12' lane and 1 - 8' shoulder in each direction.	Reconstruction since age of bridge will be over 50-years in 2018.
B-44-0039	148.3	County CC Over US 41	57	Prestressed Concrete Deck Girder	45	16.75	16.33	16.75	NC	40	223.00	2	109.5/109.5	No Skew	1-12' lane and 1 - 8' shoulder in each direction.	Reconstruction since age of bridge will be over 50-years in 2018.
B-44-0040	149.1	US 41 SB Over WIS 55	57	Continuous Concrete Haunch Slab	36	16.75	16.33	16.75	NC	62	203.68	2	99.7/99.7	19º 30' RF	End Spans: 2:1 Slope paving; 8' terrace and 8' path, 2 - 12' lanes with 4' bike lane with c&g each side; 16' median	Reconstruction since age of bridge will be over 50-years in 2018.
B-44-0041	149.1	US 41 NB Over WIS 55	57	Continuous Concrete Haunch Slab	36	16.75	16.33	16.75	NC	62	203.68	2	99.7/99.7	19º 30' RF	End Spans: 2:1 Slope paving; 8' terrace and 8' path, 2 - 12' lanes with 4' bike lane with c&g each side; 16' median	Reconstruction since age of bridge will be over 50-years in 2018.
B-44-0042	149.4	US 41 SB Over Maloney Road	57	Continuous Concrete Haunch Slab	36	15.25	14.75	15.25	NC	65.58 to 74.81	131.00	3	31.4/63.9/31.4	20º 00' LF	End Spans: 2:1 Slope paving; Middle Span: 1-12' lane and 1 - 8' shoulder in each direction.	Reconstruction since age of bridge will be over 50-years in 2018.
B-44-0043	149.4	US 41 NB Over Maloney Road	57	Continuous Concrete Haunch Slab	36	15.25	14.75	15.25	NC	75.96 to 73.28	131.00	3	31.4/63.9/31.4	20º 00' LF	End Spans: 2:1 Slope paving; Middle Span: 1-12' lane and 1 - 8' shoulder in each direction.	Reconstruction since age of bridge will be over 50-years in 2018.

Legend:
ES = Exception to Standard
RT = Superelevation Right
NC = Normal Crown
LT = Superelevation Left
LF = Left Forward
RF = Right Forward
N/A = Not Applicable
c&g = Curb and Gutter

Interchanges

County N (Freedom Road) Interchange

Interchange Alternatives Summary

Three short-term to intermediate improvement alternatives were analyzed for the County N (Freedom Road) Interchange within the Operational Needs Assessment Final Report prepared for WisDOT on November 2011 (see Appendix 14).

Alternative 1 improves the interchange operational and safety problems by extending acceleration lanes at northbound and southbound on ramp merge locations.

Alternative 2, in addition to Alternative 1, realigns the access at Evergreen due to the deficient approach angle and poor profile grade.

Alternatives 3 is a roundabout alternative designed for year 2020 and 2035 traffic volumes. This alternative also includes improvements outlined within Alternatives 1 and 2.

Alternative 4 is an alternative that improves the frontage road and ramp terminal intersections evaluated using 2038 traffic volumes. Refer to Figure 6-2 (page 6-20) for County N Interchange Layout. Refer to Appendix 15 for operational analysis. Alternative 4 incorporates Alternative 1 and Alternative 2. The existing two lanes in each direction along County N are sufficient through year 2038. Improvements are mostly in side road or ramp lane configuration adjustments for operational and safety improvements. Alternative 4 intersection improvements include:

The County N and Evergreen Drive Intersection improvements include:

- Alternative 2 intersection realignment.
- The existing westbound combined left-turn, thru, and right-turn lane is separated into a 300’ long left-turn lane and combined thru and right-turn lane.
- The existing eastbound combined left-turn, thru, and right-turn lane is separated into a 100’ long right-turn lane and combined thru and left-turn lane.

The County N and US 41 southbound ramp intersection improvements include:

- The existing off-ramp combined thru and left-turn lane and dedicated right-turn lane is modified to add an additional dedicated left-turn lane.

The County N and US 41 northbound ramp intersection improvements include:

- The existing off-ramp combined thru and left-turn lane and dedicated right-turn lane is modified to add an additional dedicated left-turn lane.

County N and Patriot Drive/Moasis Drive intersection improvements include:

The existing westbound combined left-turn, thru, and right-turn lane is separated into a 50’ long right-turn lane and combined thru and left-turn lane.

US 41 & CTH N (2038)

DRAFT

CTH N / FREEDOM RD

MOASIS DR

EVERGREEN DR

CTH N / FREEDOM RD

RANDOLPH RD

MAPLE DR

MOASIS DR

USH 41

EVERGREEN DR

LEGEND

- EXISTING ROW
- PROPOSED ROW
- EXISTING LOCAL ROADS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	FIGURE 6-2: US 41/COUNTY N INTERCHANGE	PAGE 6-20	E

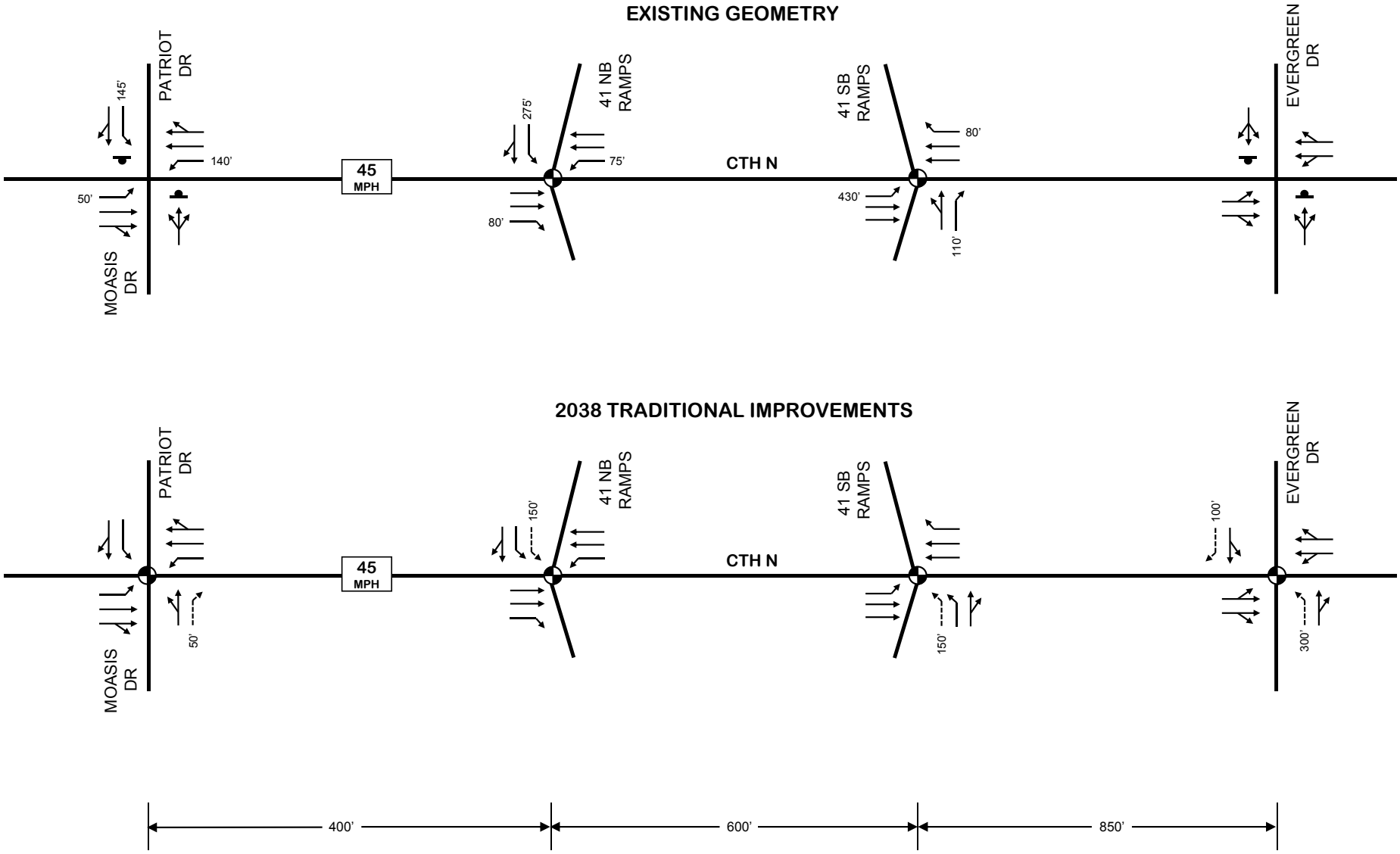
FILE NAME : J:\44386\t1\Short Term Solutions\Amendment #5\CDS\CTH-N_PO.dgn PLOT DATE : 5/23/2013 PLOT BY : arosemeyer PLOT NAME : PLOT SCALE : 400:1

FIGURE 6-3: US 41/CTH N, EXISTING GEOMETRY AND 2038 TRADITIONAL IMPROVEMENTS

PREPARED 2-13-13

N

NOT TO SCALE



Legend

XX' BASE GEOMETRICS PLANNED TURN BAY LENGTH	MEDIAN DIVIDED ROADWAY	TRAFFIC SIGNAL	OPERATIONAL PROBLEMS REMAIN
(+XX') ADDITIONAL TURN BAY LENGTH RECOMMENED	BASE GEOMETRICS	STOP SIGN	
(LA-XX') LOOK-AHEAD TURN LANE – STORAGE LENGTH	ADDITIONAL IMPROVEMENT RECOMMENDED	(R) ROUNDABOUT	

Alternative Represented in Expansion Design Concept

Alternative 4 is represented in the expansion design concept (see Figure 6-2 on page 6-20). Figure 6-3 (page 6-21) is a line diagram indicating Year 2038 traditional intersection improvements required.

The Alternative 1 improvements could be implemented early as a short-term improvement or could be constructed with the long term expansion project. Due to the anticipated minor modifications to the mainline vertical profile, early implementation would need to occur sufficiently in advance of the long term improvements to receive return on investment.

Concerning incorporation of Alternative 2, the most constrained portion of the intersection improvements at County N and Evergreen is along the north leg of the intersection. The existing speed along County N is 45 mph requiring a transitional urban roadway typical section. Widening the roadway through the intersection to include two lanes in each direction and bicycle lanes is very tight through the north leg and will require some right-of-way acquisition, although no relocations (See Right-of-way impacts below). Transitioning the roadway from a 4-lane to a 2-lane section on the north leg will conflict with the existing box culvert structure under County N. Since there is a conflict with the structure, it would be practical to place the transition to the north of the existing structure and reconstruct the new structure to the widened roadway section rather than a transitional section. Another consideration would be to lower the posted speed along County N within the vicinity of the interchange so that it falls into the low speed urban roadway cross section rather than the transitional roadway cross section requirements for clear zone. This may reduce impacts to the adjacent properties.

Traffic Operations

Year 2038 traffic analysis was conducted at the County N interchange intersections using the geometrics presented in Alternative 4. A summary of the Year 2038 intersection operating conditions is provided in Table 6-6.

Table 6-6: County N Interchange Intersection Level of Service (LOS)

County N Intersection	Intersection Type	Peak Hour LOS by Intersection	
		AM	PM
Evergreen Drive	Traffic Signal	B	D
US 41 Southbound Ramps	Traffic Signal	B	B
US 41 Northbound Ramps	Traffic Signal	B	B
Moasis Drive	2-Way Stop	F*	F*

**Local traffic circulation study needed*

Right-of-Way Impacts

There are no anticipated right-of-way impacts for the identified ramp modifications. For right-turn intersection modifications at Moasis Drive, approximately 0.1 acres will be required from the gas station in the northeast quadrant of the intersection. For the improvements at the County N and Evergreen Drive intersection, the majority of the right-of-way impacts are located along the west leg of the intersection (approximately 0.50 acres is required). Only minor right-of-way acquisition

is required for sidewalk construction on the east leg of the intersection. Less than 0.1 acres acquisition is required with no significant impacts to adjacent residential properties. For the north leg of the intersection, an industrial facility along the west side of County N and two close residential homes along the east side are very tight to the existing right-of-way line and may make it difficult for clear zone issues of a transitional roadway typical section. Approximately 0.2 acres acquisition is required. No acquisition is required along the south leg of the intersection.

Access

Alternative 4 would require only minor access changes for the improvements at the intersection of County N and Evergreen Drive.

The service station located in the northeast quadrant of the intersection of County N and Moasis Drive will have one of its driveway access points closed since it is located within the new right turn bay on the intersection east leg.

Complete Streets

Alternative 4 would include a sidewalk along both sides of County N and Evergreen Drive. No sidewalk is shown along the north side of Moasis Drive or Patriot Drive. Adding sidewalk in these areas would impact parking lot operations in the northeast and northwest quadrants of the intersection. A 5’ wide bike lane would be provided for all new reconstruction areas. The existing portions of County N including the County N bridge over US 41 does not include bicycle accommodations as shown.

Further Analysis Recommendations

The future NEPA study should evaluate the traffic operations for the County N corridor taking into consideration the designated traffic movements at the Patriot Drive/Moasis Drive intersection with County N. Currently, a monument is located within the eastbound lane within the southeast quadrant of the Patriot Drive and American Drive intersection (see Figure 6-4 below).

The eastbound traffic along Patriot drive is directed southward along American Drive one block down to Elm Drive rather than continuing to County N. This leaves the one block segment of Patriot Drive between American Drive and County N only servicing the two driveway entrances for the gas station located in the northwest quadrant of the intersection. With this traffic flow, using 2038 traffic volumes, additional improvements to the Elm Drive and County N intersection may be warranted. Signalized improvements at Moasis Drive and County N were included in the cost estimate. An additional signalized intersection improvement was also included for Elm Drive and County N as a conservative cost estimate approach.

Figure 6-4: Patriot Drive Monument



WIS 55 (Delanglade Street) Interchange (Current PDS Project ID 4650-08-71)

A previous WisDOT Backbone Needs and Improvement Study was prepared on June 20, 2008 and included one short-term improvement and two long-term improvements using a 2035 design year. See Appendix 13 for the WisDOT Backbone Needs and Improvement Study for Alternatives 1 thru 3. Project ID 4650-08-71 is a WisDOT design project for the WIS 55 interchange roundabout alternative improvements to be constructed in year 2014. The improvements to be constructed have been included in the mainline Segment Exhibits. Future expansion to two lanes for the southbound direction may be conducted when the mainline bridge over WIS 55 is replaced. The pavement may also require reconditioning at the time of mainline construction. Therefore, a contingency of $10 million dollars have been added to account for the potential expansion and pavement work.

6.3 Cost Summary

Table 6-7 below summarizes the costs for Segment 6. Individual one page cost summaries using the US 41 Majors cost estimating worksheets are included for each US 41 mainline segment and Interchange. See Appendix 6 for a detailed breakdown of these cost estimating worksheets.

Table 6-7: Segment 6 – Cost Summary

MAINLINE SEGMENT LIMITS/INTERCHANGE	SHORT-TERM COSTS*	LONG-TERM COSTS*	TOTALS
West of County N to West of County J			
Major Roadway Items		$16,130,000	
Allowance Items		$9,642,000	
Structures		$6,014,000	
Special Construction Elements		$0	
Context Sensitive Solutions (CSS)		$1,589,000	
Scope Change Allowance Items		$8,010,000	
Project Delivery Allowance Items		$14,316,000	
External Costs and Risk Assessment		$3,671,000	$59,417,000
County N Interchange			
Short-Term Alternative 1	$699,000		$699,000
Long-Term Alternative 4			
Major Roadway Items		$3,253,000	
Allowance Items		$1,946,000	
Structures		$1,818,000	
Special Construction Elements		$1,000,000	
Context Sensitive Solutions (CSS)		$401,000	
Scope Change Allowance Items		$2,020,000	
Project Delivery Allowance Items		$3,623,000	
External Costs and Risk Assessment		$926,000	$14,987,000
WIS 55 Interchange			
		$10,000,000	$10,000,000
Segment 6 Total	**$699,000**	**$84,404,000**	**$85,103,000**

**Costs are shown in 2013 dollars with no future year construction or material cost increases from inflation included.*

SEGMENT 7 - US 41: WEST OF COUNTY J TO ORANGE LANE (10.706 MILES)

7.1 Existing Conditions

Traffic and Operations Summary

Mainline traffic forecasts were developed for each section of segment 7 through consultation with WisDOT Traffic Forecasting section. The K30 hourly volume projections developed using the Northeast Region travel demand model for year 2038 indicate three lanes each direction, with residual hourly capacities of over 1,250 vehicles per hour for all sections. Traffic Analysis Forecasting Information System (TAFIS) generated K30 projections show similar results. Additional detail concerning the traffic forecasts is available in the Traffic Forecasting Methodology memo in Appendix 1.

Safety Summary

The US 41 Interstate Conversion project has assessed crash data for a three year period along this segment of US 41. Table 7-1 below identifies the segments that exceed statewide averages for the same three year period.

Table 7-1: Segment 7 – US 41 Crash Data

SECTION	CRITERIA	3-YEAR AVERAGE RATE*	SEGMENT RATE*
South of County U to Apple Creek (MM 154.0 to 155.0)	Total fatal and incapacitating crashes	3.3 (Rural)	6.1
	Total fatal crashes	0.5 (Rural)	2.0
South of County S to South of Little Rapids Road (MM 157.0 to 158.0)	Total fatal crashes	0.5 (Rural)	1.7
South of Little Rapids Road to North of Little Rapids Road (MM 158.0 to 159.0)	Total fatal crashes	0.5 (Rural)	1.6

** 3-Year Average Rate (2005-2007) represents the Wisconsin statewide average number of crashes per 100 million vehicle miles traveled for urban and rural facilities. The Segment Rate represents the actual number of crashes per 100 million vehicle miles traveled for the mainline section listed..*

Roadway Summary

The US 41 Interstate Conversion project has quantified existing geometric deficiencies that require action. Table 7-2 below identifies the deficiencies.

Table 7-2: Segment 7 – Roadway Geometric Deficiencies

SECTION	MILE MARKER	CRITERIA	ACTUAL VALUE
County J to Wrightstown Road (MM 150.3 to 152.9)	151.3 to 151.4	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.18%
	151.7 to 152.0	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.09%
	152.4	Superelevation R = 5229' Desired SE = 3.4%	SE = 2.8% Appropriate speed = 60 mph
	152.7 to 152.8 NB	Min. K Crest = 401	78
Wrightstown Road to County U (MM 152.9 to 154.6)	153.2	Superelevation R = 3772' Desired SE = 4.6%	SE = 2.8% Appropriate speed = 55 mph
County U to Orange Lane (MM 154.6 to 160.4)	154.9 to 155.2	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.24%
	156.0 to 156.1	Min. K Crest = 401	52
	156.1 to 156.2	Min. K Sag = 181	174
	156.6	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.12%
	157.1	Min. K Crest = 401	Grade change = 0.5%
	158.9 to 159.1	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.16%
	159.2 to 160.1	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.11%
	160.4	Superelevation R = 5729' Desired SE = 3.4%	SE = 2.8% Appropriate speed = 60 mph
	159.8 to 160.1	Min. Vertical Grade = 0.5% Desired = 0.3% min.	0.15%

Structures Summary

Bridges

Summary of existing bridge conditions from Highway Structure Information are shown in Table 7-3 (page 7-3) and include bridge number, mile marker, bridge name, girder type, year built, year widened or raised, overlay or new deck year, current deck state, national bridge index values for deck, superstructure and substructure, sufficiency rating and inventory ratings as of October 31, 2012.

Summary of existing bridge geometry is shown in Table 7-4 (page 7-4) and includes bridge number, mile marker, bridge name, girder type, girder depth in inches, vertical clearance, superelevation and direction of super, clear bridge width, bridge length, number of spans, span configuration, bridge skew and cross road typical section.

Table 7-3: Segment 7 – Summary of Existing Bridge Conditions

BRIDGE NUMBER	MILE MARKER (MM)	BRIDGE NAME	GIRDER TYPE	YEAR BUILT	YEAR WIDENED OR RAISED	YEAR OVERLAY OR NEW DECK	CURRENT DECK STATE	NBI [1] DECK	NBI [1] SUPER	NBI [1] SUB	SUFFICIENCY RATING [2]	INVENTORY RATING [3]
B-44-0044	150.3	County J Bridge Over US 41	Prestressed Concrete Deck Girder	1961	N/A	2010	New Deck	8	7	8	99	20
B-44-0071	151.5	US 41 SB Bridge Over CTH JJ	Prestressed Concrete Deck Girder	2000	N/A	2000	Original	7	7	7	95.4	22
B-44-0072	151.5	US 41 NB Bridge Over CTH JJ	Prestressed Concrete Deck Girder	1999	N/A	1999	Original	7	8	8	95.7	21
B-44-0073	152.9	US 41 SB Bridge Over Wrightstown Road	Prestressed Concrete Deck Girder	2000	N/A	2000	Original	7	7	7	96.4	22
B-44-0074	152.9	US 41 NB Bridge Over Wrightstown Road	Prestressed Concrete Deck Girder	2000	N/A	2000	Original	8	8	8	95.7	22
B-44-0159	154.6	US 41 SB Bridge Over County U	Prestressed Concrete Deck Girder	1999	N/A	1999	Original	8	8	7	97	22
B-44-0160	154.6	US 41 NB Bridge Over County U	Prestressed Concrete Deck Girder	1999	N/A	1999	Original	8	8	7	99	22
B-05-0080	155.0	US 41 SB Bridge Over Apple Creek	Continous Steel Deck Girder	1987	N/A	1987	Bituminous Overlay	6	6	7	93.1	18
B-05-0053	155.0	US 41 NB Bridge Over Apple Creek	Continous Steel Deck Girder	1963	N/A	1963	Bituminous Overlay	5	6	7	95	21
B-05-0162	157.5	County S Bridge Over US 41	Prestressed Concrete Deck Girder	1999	N/A	1999	Original	7	7	8	94	21
B-05-0165	158.4	US 41 SB Bridge Over Little Rapids Road	Prestressed Concrete Deck Girder	2000	N/A	2000	Original	7	7	7	100	23
B-05-0200	158.4	US 41 NB Bridge Over Little Rapids Road	Prestressed Concrete Deck Girder	2000	N/A	2000	Original	7	8	7	100	23

1 The Federal Highway Administration (FHWA) Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges (Coding Guide) is the basis for the National Bridge Inventory (NBI) Inspection. Each bridge component, i.e. deck, superstructure, or substructure, is assigned a numeric rating code ranging from 9 to 0, with 9 being "excellent condition" and 0 being "failed condition". A bridge becomes structurally deficient when the condition of the deck, superstructure, or substructure condition is 4 or less.

2 Following a thorough review of the deck, superstructure and substructure, bridges are assigned a "sufficiency rating" number between one and 100. The rating takes into account some 75 factors reviewed during a bridge inspection and also considers a bridge's age, length and width, and the average amount of traffic the bridge handles. WisDOT uses the sufficiency ratings to help prioritize bridge improvements. A bridge with a sufficiency rating of 80 or less is eligible for bridge rehabilitation funding. A bridge with a sufficiency rating of 50 or less is eligible for replacement funding. Each year, all states including Wisconsin are required to submit a report to the FHWA that reviews the condition of its bridges.

3 The FHWA currently requires that two capacity ratings, referred to as the Inventory Rating and Operating Rating be submitted with the NBI file. The Inventory Rating is the load level that a structure can safely sustain for an indefinite period. The Operating Rating is the absolute maximum permissible load level to which a structure may be subjected. The FHWA requires that the standard AASHTO HS truck or lane loading be used as the vehicle when load rating with the Load Factor Rating method (LFR) and that the AASHTO HL-93 loading be utilized as the vehicle when load rating with the Load and Resistance Factor method (LRFR). The above table is shown in LFR using the AASHTO HS truck standard. Bridges are not eligible for replacement unless the Inventory Rating is HS10 or less.

Table 7-4: Segment 7 – Summary of Existing Bridge Geometry

BRIDGE NO.	MILE MARKER (MM)	BRIDGE NAME	GIRDER TYPE	GIRDER DEPTH (INCHES)	VERTICAL CLEARANCE (FEET)	SUPER-ELEVATION %	BRIDGE CLEAR WIDTH (FEET)	BRIDGE LENGTH (FEET)	NUMBER OF SPANS	SPAN CONFIGURATION (FEET)	BRIDGE SKEW	LOCAL ROAD TYPICAL SECTION
B-44-0044	150.3	County J Bridge Over US 41	Prestressed Concrete Deck Girder	36	16.33	NC	34.00	216.52	4	35.5/70.5/70.5/35.5	16° 17' 15" RF	1 - 12' lane and 1 - 5' shoulder in each direction
B-44-0071	151.5	US 41 SB Bridge Over CTH JJ	Prestressed Concrete Deck Girder	54	15.32	NC	40.00	99.51	1	95.47	13° 00' RF	2:1 slope paving, 1 - 12' lane and 1 - 5' shoulder in each direction
B-44-0072	151.5	US 41 NB Bridge Over CTH JJ	Prestressed Concrete Deck Girder	54	15.03	NC	40	99.51	1	95.47	13° 00' RF	2:1 slope paving, 1 - 12' lane and 1 - 5' shoulder in each direction
B-44-0073	152.9	US 41 SB Bridge Over Wrightstown Road	Prestressed Concrete Deck Girder	54	15.03	NC	40	106.15	1	101.7	27° 34' RF	2:1 slope paving, 1 - 12' lane and 1 - 5' min. shoulder in each direction
B-44-0074	152.9	US 41 NB Bridge Over Wrightstown Road	Prestressed Concrete Deck Girder	54	15.12	NC	40	106.15	1	101.7	27° 34' RF	2:1 slope paving, 1 - 12' lane and 1 - 5' min. shoulder in each direction
B-44-0159	154.6	US 41 SB Bridge Over County U	Prestressed Concrete Deck Girder	36	17.68	NC	40	140.98	2	67.91/67.91	40° 00' LF	End Spans: 16' median; 1 - 12' lane with c&g inside and 1 - 12' outside shoulder in each direction
B-44-0160	154.6	US 41 NB Bridge Over County U	Prestressed Concrete Deck Girder	36	17.68	NC	40	140.98	2	67.91/67.91	40° 00' LF	End Spans: 16' median; 1 - 12' lane with c&g inside and 1 - 12' outside shoulder in each direction
B-05-0080	155.0	US 41 SB Bridge Over Apple Creek	Continous Steel Deck Girder	33	N/A	NC	40	125.83	2	62.0/62.0	No Skew	N/A
B-05-0053	155.0	US 41 NB Bridge Over Apple Creek	Continous Steel Deck Girder	33	N/A	NC	40	125.83	2	62.0/62.0	No Skew	N/A
B-05-0162	157.5	County S Bridge Over US 41	Prestressed Concrete Deck Girder	54	16.70	NC	64	212.17	2	100.0/106.0	18° 47' LF	16' median, 1 - 12' lane with c&g inside and 1 - 12' outside shoulder in each direction
B-05-0165	158.4	US 41 SB Bridge Over Little Rapids Road	Prestressed Concrete Deck Girder	45	15.03	NC	40	86.33	1	81.0	No Skew	2:1 slope paving, 1 - 12' lane and 1 - 8' shoulder with c&g in each direction
B-05-0200	158.4	US 41 NB Bridge Over Little Rapids Road	Prestressed Concrete Deck Girder	45	15.03	NC	40	86.33	1	81.0	No Skew	2:1 slope paving, 1 - 12' lane and 1 - 8' shoulder with c&g in each direction

Legend:
RT = Superelevation Right
NC = Normal Crown
LT = Superelevation Left
LF = Left Forward
RF = Right Forward
N/A = Not Applicable
c&g = Curb and Gutter

Pre-NEPA Environmental Screening Summary

Impacts within Segment 7 mainly consist of “low” and “medium” impact items. Low impact items generally include potential impacts on general economic resources, upland habitat, and aesthetics.

Medium impact items along this segment vary, but generally include potential impacts on community and residential resources, economic development and business, agriculture, environmental justice, wetlands, air quality, noise, and the ever present potential for erosion, storm water, and historic impacts. Even though the perceived risk of impact is considered medium, further consideration will be needed to gain a better understanding of any imminent impacts, their severity, and mitigation or avoidance measures.

High impact items included impacts on streams and floodplains, Section 4(f), and archaeological resources. General discussion about these impacts can be seen below. Further information on environmental impacts can be seen in the Pre-NEPA Environmental Screening located in Appendix 4.

County J to County U

Section 4(f)

Analysis of conceptual highway design indicates the potential to encroach upon St. Patrick’s Cemetery. Work within the cemeteries should be avoided as they are protected under Wis. Stats. 157.70 and would constitute a Section 4(f) use.

Archaeological Resources

Analysis of conceptual highway design indicates the potential to encroach upon St. Patrick’s Cemetery, located between US 41 and the East US 41 Frontage Road. Burial sites are protected under Wis. Stats. 157.70 and will need to be taken into consideration during the design and construction phases to avoid the disturbance of human burials.

No known designated archaeological sites and no national register listed sites exist in the project area. An archaeological survey was completed along the existing US 41 corridor within Outagamie County in June of 1960, however it was recorded that the section of US 41 within the Towns of Kaukauna and Vandenbroek were not adequately field checked. (Penman, WHS, 1978) The Section 106 process will have to be completed unless it is eligible for WisDOT’s screening list for archaeology.

County U to North of County S (Orange Lane)

Streams and Floodplains

Five separate streams cross under US 41 between County U and Orange Lane to the north of County S including, Apple Creek, Ashwaubenon Creek, South Branch Ashwaubenon Creek, and two unnamed streams. (WDNR Surface Water Data Viewer, 2012) The potential realignment of French Road and Mid Valley Drive would require two new stream crossings over the Ashwaubenon Creek in the northeast and southwest quadrants of the County S interchange.

This segment of US 41 also passes through a floodplain that follows the South Branch Ashwaubenon Creek and is adjacent to WisDOT highway right-of-way.

Migratory bird nests may exist on bridges and fish habitat may be present in the stream. Impacts to streams, floodplains, and habitat should be assessed in coordination with the WDNR, USACE, and the U.S. Fish & Wildlife Service.

Section 4(f)

Analysis of conceptual highway design indicates the potential to encroach upon South Lawrence Cemetery. Work within the cemeteries should be avoided as they are protected under Wis. Stats. 157.70 and would constitute a Section 4(f) use.

Archaeological Resources

Analysis of conceptual highway design indicates the potential to encroach upon South Lawrence Cemetery, located between US 41 and French Road. Burial sites are protected under Wis. Stats. 157.70. Conceptual design of the mainline expansion has taken the cemetery under consideration to avoid any potential work within the cemetery.

No known designated archaeological sites and no national register listed sites exist in the project area. (Wisconsin Historic Preservation Database, 2012) Initial analysis indicates the potential for archaeological sites in the area is low due to previous construction, however the Section 106 process will have to be completed unless it is eligible for WisDOT's screening list for archaeology.

7.2 Expansion Design Concept

Mainline Segment 7

For ease in discussion, Segment 7 –West of County J to Orange Lane was broken into mainline sections with limits at interchange cross roads.

Section 1: West of County J (Hyland Avenue) to County U (South County Line Road)

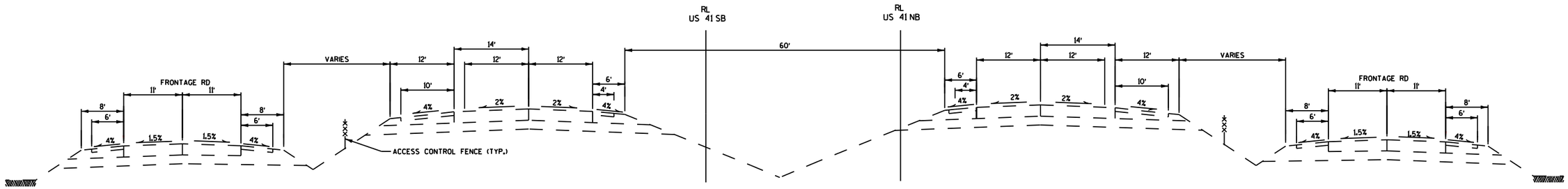
US 41 Alignment

This section of US 41 mainline from west of County J to County U is on existing alignment.

US 41 Typical Section

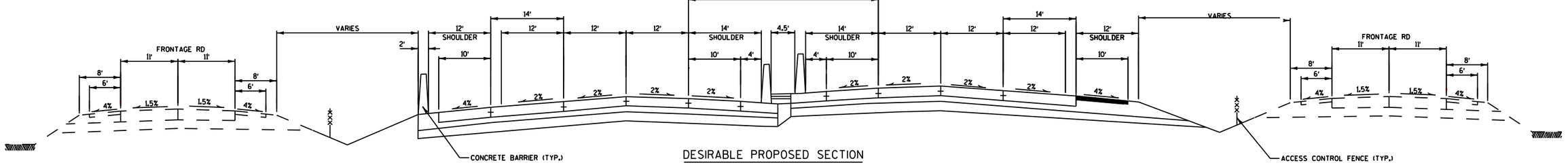
The mainline typical section west of County J for US 41 mainline consists of a 36.5' median (14' inside shoulders with 56-inch single face barriers). The US 41 mainline has 3-12' lanes in both directions. Both NB and SB mainline have 12' outside shoulders with 42-inch single face barrier or for portions of the section that are close in proximity to the frontage roads. Refer to Figure 7-1 (page 7-7) for Typical Section.

2



TYPICAL EXISTING SECTION

US 41 (WEST OF COUNTY J TO COUNTY U)



DESIRABLE PROPOSED SECTION

US 41 (WEST OF COUNTY J TO COUNTY U)

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: WINNEBAGO/ OUTAGAMIE	FIGURE 7-1: US 41 (WEST OF CTH J TO CTH U), TYPICAL EXISTING SECTION AND DESIRABLE PROPOSED SECTION	PAGE 7-7	E

US 41 Ramps and Auxiliary Lanes

Review all exit ramp configurations for single or dual lane needs.

Refer to Exhibit 7-1 (page 7-10) for further discussion on the County J ramps. (7-1-A)

Refer to Exhibit 7-6 through Exhibit 7-8 (pages 7-15 through 7-17) for further discussion on the auxiliary lane from the weigh-in motion facility to County U. (7-1-B)

Frontage Roads

Refer to Exhibit 7-2 through Exhibit 7-8 (pages 7-11 through 7-17) for further discussion on the use of concrete barrier on the outside shoulders. (7-1-C) Refer to Appendix 23 for quantities of barrier included in the cost estimate.

Addressing Geometric Deficiencies

Refer to Exhibit 7-1 (page 7-10) for further discussion on the deficient profile grade at mile marker 150.2. (7-1-D)

Refer to Exhibit 7-3 (page 7-12) for further discussion on the deficient profile grade at mile marker 151.3. (7-1-E)

Refer to Exhibit 7-3 and Exhibit 7-4 (pages 7-12 to 7-13) for further discussion on the deficient profile grade at mile marker 151.3. (7-1-F)

Refer to Exhibit 7-5 (page 7-14) for further discussion on the deficient superelevation at mile marker 152.4. (7-1-G)

Refer to Exhibit 7-6 (page 7-15) for further discussion on the deficient superelevation at mile marker 153.2. (7-1-H)

Right-of-Way Impacts

Preliminary plans do not show right of way impacts; however a detailed design that incorporates vertical design and slope intercepts may identify right of way impacts, including temporary limited easements.

Utilities

The following utilities are shown on Exhibit 7-1 (page 7-10):

- TDS Metrocom has an existing fiber optic facility within the US 41 right of way (south of US 41 mainline) starting at the Ballard Street crossing and ending at the County J crossing where the fiber optic crosses under US 41 along County J. (7-1-I)
- American Transmission Company (ATC) has an existing 138kV overhead power line that crosses over US 41 approximately 900 feet ENE of the County J overpass. ATC also has an existing 345kV overhead power line that crosses over US 41 approximately 1,600 feet SSW of the Wrightstown Road crossing. (7-1-J)

The following utilities are shown on Exhibit 7-2 (page 7-11):

- Time Warner has buried facilities crossing US 41 approximately 2554 feet northwest of County J. (7-1-K)

The following utilities are shown on Exhibit 7-3 (page 7-12):

- US Signal Company has an existing underground fiber optic facility that crosses under US 41 along the County JJ crossing. (7-1-L)

The following utilities are shown on Exhibit 7-4 (page 7-13):

- Time Warner has buried facilities crossing US 41 approximately 3450 feet northwest of CTH JJ. (7-1-M)

The following utilities are shown on Exhibit 7-5 (page 7-14):

- ATC has an existing 345KV overhead power line that crosses over US 41 approximately 1,600 feet SW of the Wrightstown Road crossing. (7-1-N)

The following utilities are shown on Exhibit 7-6 (page 7-15):

- Time Warner has buried facilities crossing US 41 approximately 380 feet northeast of Wrightstown Rd. (7-1-O)

The following utilities are shown on Exhibit 7-8 (page 7-17):

- ANR Pipeline has an existing 30-inch pipeline facility that crosses under US 41 approximately 2,200 feet south of SSW of the County U overpass structure. (7-1-P)

2

US 41 RAMPS (7-1-A): THE SB AND NB OFF RAMPS WILL REQUIRE SOME RECONFIGURATION DUE TO THE EXIT RAMP GEOMETRICS. THE REMAINING RAMPS MATCH INTO THE EXISTING CONFIGURATIONS WITH ONLY MINOR CHANGES. BOTH ON RAMPS HAVE PARALLEL CONFIGURATIONS HAVING 1,200 FOOT PARALLEL SECTIONS WITH A 360 FOOT TAPERS.

UTILITIES (7-1-I): TDS METROCOM HAS AN EXISTING FIBER OPTIC FACILITY WITHIN THE US 41 RIGHT OF WAY (SOUTH OF US 41 MAINLINE) STARTING AT THE BALLARD STREET CROSSING AND ENDING AT THE COUNTY J CROSSING WHERE THE FIBER OPTIC CROSSES UNDER US 41 ALONG COUNTY J.

UTILITIES (7-1-J): AMERICAN TRANSMISSION COMPANY (ATC) HAS AN EXISTING 138KV OVERHEAD POWER LINE THAT CROSSES OVER US 41 APPROXIMATELY 900 FEET EAST NORTHEAST OF THE COUNTY J OVERPASS. ATC ALSO HAS AN EXISTING 345KV OVERHEAD POWER LINE THAT CROSSES OVER US 41 APPROXIMATELY 1,600 FEET SOUTH SOUTHWEST OF THE WRIGHTSTOWN ROAD CROSSING.

DRAFT

2

PROGRESS WAY

KELSO RD

COUNTY J

STRUCTURE B-44-44
RECONSTRUCT

UTILITIES (7-1-I)

GEOMETIC DEFICIENCY (7-1-D):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.24%
DESIRED: 0.50%
MINIMUM: 0.30%

US 41 SB ON RAMP

US 41 SB OFF RAMP

PROPOSED US 41

END SEGMENT 6

US 41 SB

US 41 NB

7-1-A

7-1-A

US 41 NB OFF RAMP

US 41 NB ON RAMP

TOWER DR

BEGIN SEGMENT 7

E LINE RD

EXISTING RIGHT OF WAY

UTILITIES (7-1-J)

MATCH LINE

GEOMETIC DEFICIENCY (7-1-D):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.24%
DESIRED: 0.50%
MINIMUM: 0.30%

E 41 FRONTAGE RD

CANADIAN NATIONAL RAILWAY

COUNTY J

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 7-1: US 41 SEGMENT 7 / SECTION 1 / SHEET 1	PAGE 7-10	E

2

US 41 FRONTAGE ROADS (7-1-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE WEST 41 FRONTAGE ROAD OR EAST 41 FRONTAGE ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

UTILITIES (7-1-K): TIME WARNER HAS BURIED FACILITIES CROSSING US 41 APPROXIMATELY 2554 FEET NORTHWEST OF COUNTY J.

DRAFT

2

ELECTRIC CITY BLVD

KELSO RD

FARRELL RD

UTILITIES (7-1-K)

PROPOSED US 41

EXHIBIT 7-2 OPTIONAL CONCRETE BARRIER QUANTITY = 2,740 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 0 LF REQUIRED

KELSO RD

7-1-C

US 41 SB

US 41 NB

7-1-C

TYPICAL SECTION (SEE FIGURE 7-1)

MATCH LINE

MATCH LINE

E 41 FRONTAGE RD

CANADIAN NATIONAL RAILWAY

KELSO RD

EXISTING RIGHT OF WAY

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 7-2: US 41 SEGMENT 7 / SECTION 1 / SHEET 2	PAGE 7-11	E

US 41 FRONTAGE ROADS (7-1-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE WEST 41 FRONTAGE ROAD OR EAST 41 FRONTAGE ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

UTILITIES (7-1-L): US SIGNAL COMPANY HAS AN EXISTING UNDERGROUND FIBER OPTIC FACILITY THAT CROSSES UNDER US 41 ALONG THE COUNTY JJ CROSSING.

DRAFT

GEOMETRIC DEFICIENCY (7-1-E):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.18%
DESIRED: 0.50%
MINIMUM: 0.30%

STRUCTURE B-44-71
RECONSTRUCT

GEOMETRIC DEFICIENCY (7-1-F):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.08%
DESIRED: 0.50%
MINIMUM: 0.30%

EXHIBIT 7-3 OPTIONAL CONCRETE BARRIER QUANTITY = 3,160 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 140 LF REQUIRED

MATCH LINE

PROPOSED US 41

KELSO RD

7-1-C

COUNTY JJ

W 41 FRONTAGE RD

US 41 SB

US 41 NB

7-1-C

E 41 FRONTAGE RD

UTILITIES (7-1-L)

STRUCTURE B-44-72
RECONSTRUCT

MATCH LINE

E 41 FRONTAGE RD

CANADIAN NATIONAL RAILWAY

GEOMETRIC DEFICIENCY (7-1-E):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.18%
DESIRED: 0.50%
MINIMUM: 0.30%

EXISTING RIGHT OF WAY

WIS 96

RIVER BEND DR

WIS 96

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 7-3: US 41 SEGMENT 7 / SECTION 1 / SHEET 3	PAGE 7-12	E

2

US 41 FRONTAGE ROADS (7-1-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE WEST 41 FRONTAGE ROAD OR EAST 41 FRONTAGE ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

UTILITIES (7-1-M): TIME WARNER HAS BURIED FACILITIES CROSSING US 41 APPROXIMATELY 3450 FEET NORTHWEST OF COUNTY JJ.

DRAFT

2

MATCH LINE

BODDE RD

GEOMETRIC DEFICIENCY (7-1-F):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.08%
DESIRED: 0.50%
MINIMUM: 0.30%

EXHIBIT 7-4 OPTIONAL CONCRETE BARRIER QUANTITY = 1,170 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 3,510 LF REQUIRED

PROPOSED US 41

UTILITIES (7-1-M)

W 41 FRONTAGE RD

US 41 SB

US 41 NB

7-1-C

E 41 FRONTAGE RD

MATCH LINE

E 41 FRONTAGE RD

CANADIAN NATIONAL RAILWAY

TOWN CLUB RD

EXISTING RIGHT OF WAY

TOWN CLUB RD

WIS 96

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 7-4: US 41 SEGMENT 7 / SECTION 1 / SHEET 4	PAGE 7-13	E

2

US 41 FRONTAGE ROADS (7-1-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE WEST 41 FRONTAGE ROAD OR EAST 41 FRONTAGE ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

UTILITIES (7-1-N): ATC HAS AN EXISTING 345KV OVERHEAD POWER LINE THAT CROSSES OVER US 41 APPROXIMATELY 1,600 FEET SOUTH SOUTHWEST OF THE WRIGHTSTOWN ROAD CROSSING.

DRAFT

2



PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 7-5: US 41 SEGMENT 7 / SECTION 1 / SHEET 5	PAGE 7-14	E

US 41 EXISTING WEIGH IN MOTION FACILITY (7-1-B): US 41 NB FROM THE WEIGH IN MOTION FACILITY TO JUST NORTH OF COUNTY U INTERCHANGE WILL BE RECONFIGURED TO INCLUDE AN AUXILIARY LANE TO IMPROVE MERGING MOVEMENTS BETWEEN TRAFFIC ENTERING US 41 FROM THE WEIGH IN MOTION FACILITY AND VEHICLES EXITING US 41 NB ONTO COUNTY U. THE LENGTH OF THE PROPOSED AUXILIARY LANE IS APPROXIMATELY 3,400 FEET AND IT EXTENDS OVER THE COUNTY U OVERPASS.

US 41 FRONTAGE ROADS (7-1-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE WEST 41 FRONTAGE ROAD OR EAST 41 FRONTAGE ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

UTILITIES (7-1-O): TIME WARNER HAS BURIED FACILITIES CROSSING US 41 APPROXIMATELY 380 FEET NORTHEAST OF WRIGHTSTOWN RD

DRAFT

2

2

WRIGHTSTOWN RD

McCABE RD

CINDY ANN LN

STRUCTURE B-44-73
RECONSTRUCT

PROPOSED US 41

UTILITIES (7-1-O)

GEOMETRIC DEFICIENCY (7-1-H):
DEFICIENT SUPERELEVATION
ACTUAL: 2.8%
DESIRED: 4.6%

W FRONTAGE RD

7-1-C

W 41 FRONTAGE RD

US 41 SB

US 41 NB

7-1-C

7-1-B

E 41 FRONTAGE RD

MATCH LINE

EXHIBIT 7-6 OPTIONAL CONCRETE BARRIER QUANTITY = 2,190 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 2,870 LF REQUIRED

EXISTING WEIGH-IN-MOTION FACILITY

EXISTING RIGHT OF WAY

MATCH LINE

STRUCTURE B-44-74
RECONSTRUCT

WRIGHTSTOWN RD

ROYAL SAINT PATS DR

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 7-6: US 41 SEGMENT 7 / SECTION 1 / SHEET 6	PAGE 7-15	E

US 41 EXISTING WEIGH IN MOTION FACILITY (7-1-B): US 41 NB FROM THE WEIGH IN MOTION FACILITY TO JUST NORTH OF COUNTY U INTERCHANGE WILL BE RECONFIGURED TO INCLUDE AN AUXILIARY LANE TO IMPROVE MERGING MOVEMENTS BETWEEN TRAFFIC ENTERING US 41 FROM THE WEIGH IN MOTION FACILITY AND VEHICLES EXITING US 41 NB ONTO COUNTY U. THE LENGTH OF THE PROPOSED AUXILIARY LANE IS APPROXIMATELY 3,400 FEET AND IT EXTENDS OVER THE COUNTY U OVERPASS.

US 41 FRONTAGE ROADS (7-1-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE WEST 41 FRONTAGE ROAD OR EAST 41 FRONTAGE ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

DRAFT

2

2

PROPOSED US 41

EXHIBIT 7-7 CONCRETE BARRIER QUANTITY = 2,960 LF REQUIRED

W 41 FRONTAGE RD

US 41 SB

US 41 NB

MATCH LINE

ST. PATRICK CEMETERY

7-1-B

EXISTING WEIGH-IN-MOTION FACILITY

E 41 FRONTAGE RD

EXISTING RIGHT OF WAY

MATCH LINE

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	EXHIBIT 7-7: US 41 SEGMENT 7 / SECTION 1 / SHEET 7	PAGE 7-16	E

US 41 EXISTING WEIGH IN MOTION FACILITY (7-1-B): US 41 NB FROM THE WEIGH IN MOTION FACILITY TO JUST NORTH OF COUNTY U INTERCHANGE WILL BE RECONFIGURED TO INCLUDE AN AUXILIARY LANE TO IMPROVE MERGING MOVEMENTS BETWEEN TRAFFIC ENTERING US 41 FROM THE WEIGH IN MOTION FACILITY AND VEHICLES EXITING US 41 NB ONTO COUNTY U. THE LENGTH OF THE PROPOSED AUXILIARY LANE IS APPROXIMATELY 3,400 FEET AND IT EXTENDS OVER THE COUNTY U OVERPASS.

US 41 FRONTAGE ROADS (7-1-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE WEST 41 FRONTAGE ROAD OR EAST 41 FRONTAGE ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

UTILITIES (7-1-P): ANR PIPELINE HAS AN EXISTING 30-INCH PIPELINE FACILITY THAT CROSSES UNDER US 41 APPROXIMATELY 2,200 FEET SOUTH OF SOUTH SOUTHWEST OF THE COUNTY U OVERPASS STRUCTURE.

DRAFT

2

2

UTILITIES (7-1-P)

EXHIBIT 7-8 OPTIONAL CONCRETE BARRIER QUANTITY =1,070 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 1,900 LF REQUIRED

PROPOSED US 41

W 41 FRONTAGE RD

7-1-C

US 41 SB ENTRANCE RAMP

US 41 SB

US 41 NB

E 41 FRONTAGE RD

7-1-B

7-1-C

US 41 NB EXIT RAMP

MATCH LINE

EXISTING WEIGH-IN-MOTION FACILITY

EXISTING RIGHT OF WAY

MATCH LINE

COUNTY U

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE/BROWN	EXHIBIT 7-8: US 41 SEGMENT 7 / SECTION 1 / SHEET 8	PAGE 7-17	E

Section 2: County U (South County Line Road) to County S (Freedom Road)

US 41 Alignment

Refer to Exhibit 7-11 (page 7-23) for further discussion on the US 41 horizontal alignments. (7-2-A)

US 41 Typical Section

The mainline typical section west of County J for US 41 mainline consists of a 36.5' median (14' inside shoulders with 56-inch single face barriers). The US 41 mainline has 3-12' lanes in both directions. Both NB and SB mainline have 12' outside shoulders with 42-inch single face barrier or for portions of the section that are close in proximity to the frontage roads. The mainline typical section at the South Lawrence Cemetery has the same typical section as described above but the existing NB outside barrier and desired NB outside barrier are in the identical location. Refer to Figure 7-2 and Figure 7-3 (pages 7-19 and 7-20) for Typical Section.

US 41 Ramps and Auxiliary Lanes

Review all exit ramp configurations for single or dual lane needs. Refer to Exhibit 7-9 (page 7-21) for further discussion on the auxiliary lane and ramps at the County U interchange. (7-2-B)

Frontage Roads

Refer to Exhibit 7-9 and Exhibit 7-13 (pages 7-21 and 7-25) for further discussion on the use of barrier between the US 41 mainline and the frontage roads. (7-2-C) Refer to Appendix 23 for quantities of barrier included in the cost estimate.

Addressing Geometric Deficiencies

Refer to Exhibit 7-9 (page 7-21) for further discussion on the deficient profile grade at mile marker 155.1. (7-2-D)

Refer to Exhibit 7-11 (page 7-23) for further discussion on the deficient profile curve at mile marker 156.1. (7-2-E)

Refer to Exhibit 7-12 (page 7-24) for further discussion on the deficient profile grade at mile marker 156.6. (7-2-F)

Right-of-Way Impacts

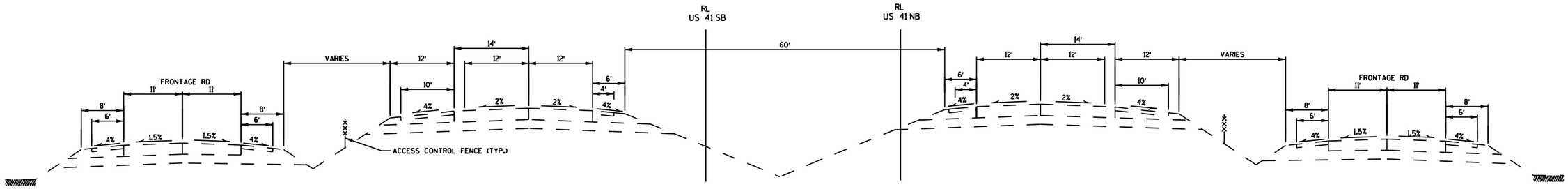
Preliminary plans do not show right of way impacts; however a detailed design that incorporates vertical design and slope intercepts may identify right of way impacts, including temporary limited easements.

Utilities

The following utilities are shown on Exhibit 7-12 (page 7-24):

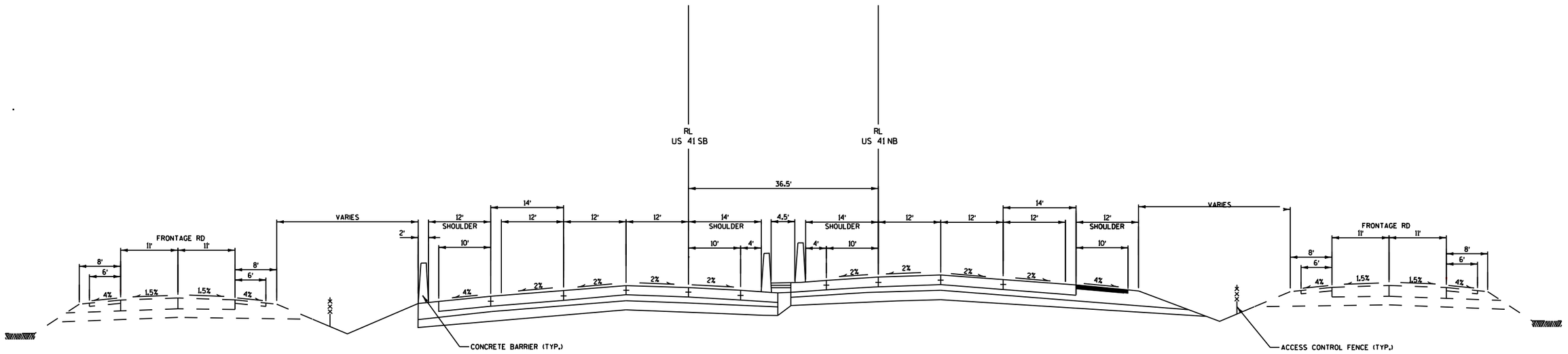
- Time Warner has buried facilities crossing US 41 at Golden Glow Road. (7-2-G)
- American Transmission Company (ATC) has an existing 138kV overhead power line that crosses 1430 feet NE of Golden Glow Rd. (138kV). (7-2-H)

2



TYPICAL EXISTING SECTION

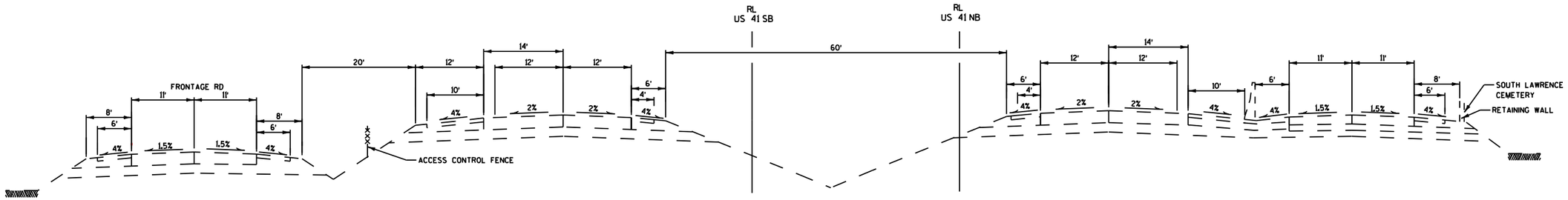
US 41 (COUNTY U TO COUNTY S, EXCEPT AREA AT SOUTH LAWRENCE CEMETERY, SHOWN IN FIGURE 7-3)



DESIRABLE PROPOSED SECTION

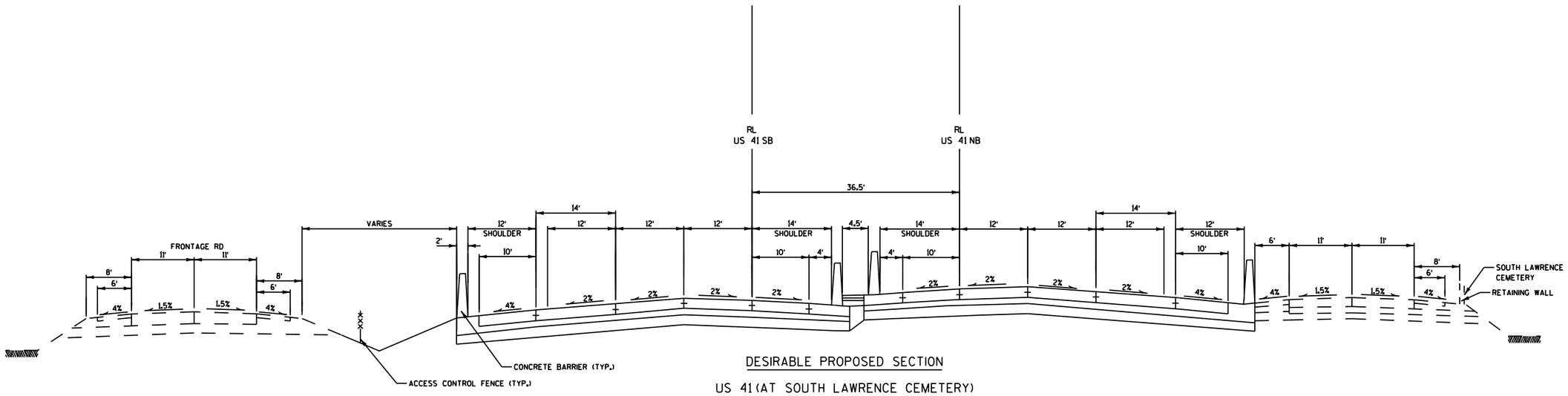
US 41 (COUNTY U TO COUNTY S, EXCEPT AREA AT SOUTH LAWRENCE CEMETERY, SHOWN IN FIGURE 7-3)

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: WINNEBAGO/ OUTAGAMIE	FIGURE 7-2: US 41 (CTH U TO CTH S), TYPICAL EXISTING SECTION AND DESIRABLE PROPOSED SECTION	PAGE 7-19	E



TYPICAL EXISTING SECTION

US 41 (AT SOUTH LAWRENCE CEMETERY)



DESIRABLE PROPOSED SECTION

US 41 (AT SOUTH LAWRENCE CEMETERY)

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: WINNEBAGO/ OUTAGAMIE	FIGURE 7-3: US 41 (AT SOUTH LAWRENCE CEMETERY), TYPICAL EXISTING SECTION AND DESIRABLE PROPOSED SECTION	PAGE 7-20	E

2

US 41 EXISTING WEIGH IN MOTION FACILITY (7-2-B): US 41 NB FROM THE WEIGH IN MOTION FACILITY TO JUST NORTH OF COUNTY U INTERCHANGE WILL BE RECONFIGURED TO INCLUDE AN AUXILIARY LANE TO IMPROVE MERGING MOVEMENTS BETWEEN TRAFFIC ENTERING US 41 FROM THE WEIGH IN MOTION FACILITY AND VEHICLES EXITING US 41 NB ONTO COUNTY U. THE LENGTH OF THE PROPOSED AUXILIARY LANE IS APPROXIMATELY 3,400 FEET AND IT EXTENDS OVER THE COUNTY U OVERPASS.

US 41 FRONTAGE ROADS (7-2-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE MID VALLEY DRIVE OR FRENCH ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

DRAFT

2

W 41 FRONTAGE RD

COUNTY U

STRUCTURE B-44-159
RECONSTRUCT

EXHIBIT 7-9 OPTIONAL CONCRETE BARRIER QUANTITY = 1,300 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 2,640 LF REQUIRED

US 41 SB ENTRANCE RAMP

7-2-C

US 41 SB EXIT RAMP

PROPOSED US 41

MID VALLEY DR

US 41 SB

US 41 NB

7-2-B

7-2-C

FRENCH RD

MATCH LINE

US 41 NB EXIT RAMP

US 41 NB ENTRANCE RAMP

COUNTY U

STRUCTURE B-44-160
RECONSTRUCT

EXISTING RIGHT OF WAY

GEOMETRIC DEFICIENCY (7-2-D):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.24%
DESIRED: 0.50%
MINIMUM: 0.30%

GEOMETRIC DEFICIENCY (7-2-D):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.24%
DESIRED: 0.50%
MINIMUM: 0.30%

CTH DDD

MATCH LINE

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-9: US 41 SEGMENT 7 / SECTION 2 / SHEET 1	PAGE 7-21	E

2

DRAFT

2

STRUCTURE B-05-80
RECONSTRUCT

EXHIBIT 7-10 CONCRETE BARRIER QUANTITY = 5,640 LF REQUIRED

PROPOSED US 41

MID VALLEY DR

US 41 SB

US 41 NB

FRENCH RD

MATCH LINE

APPLE PL

STRUCTURE B-05-53
RECONSTRUCT

EXISTING RIGHT OF WAY

MATCH LINE

APPLE CREEK RD

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

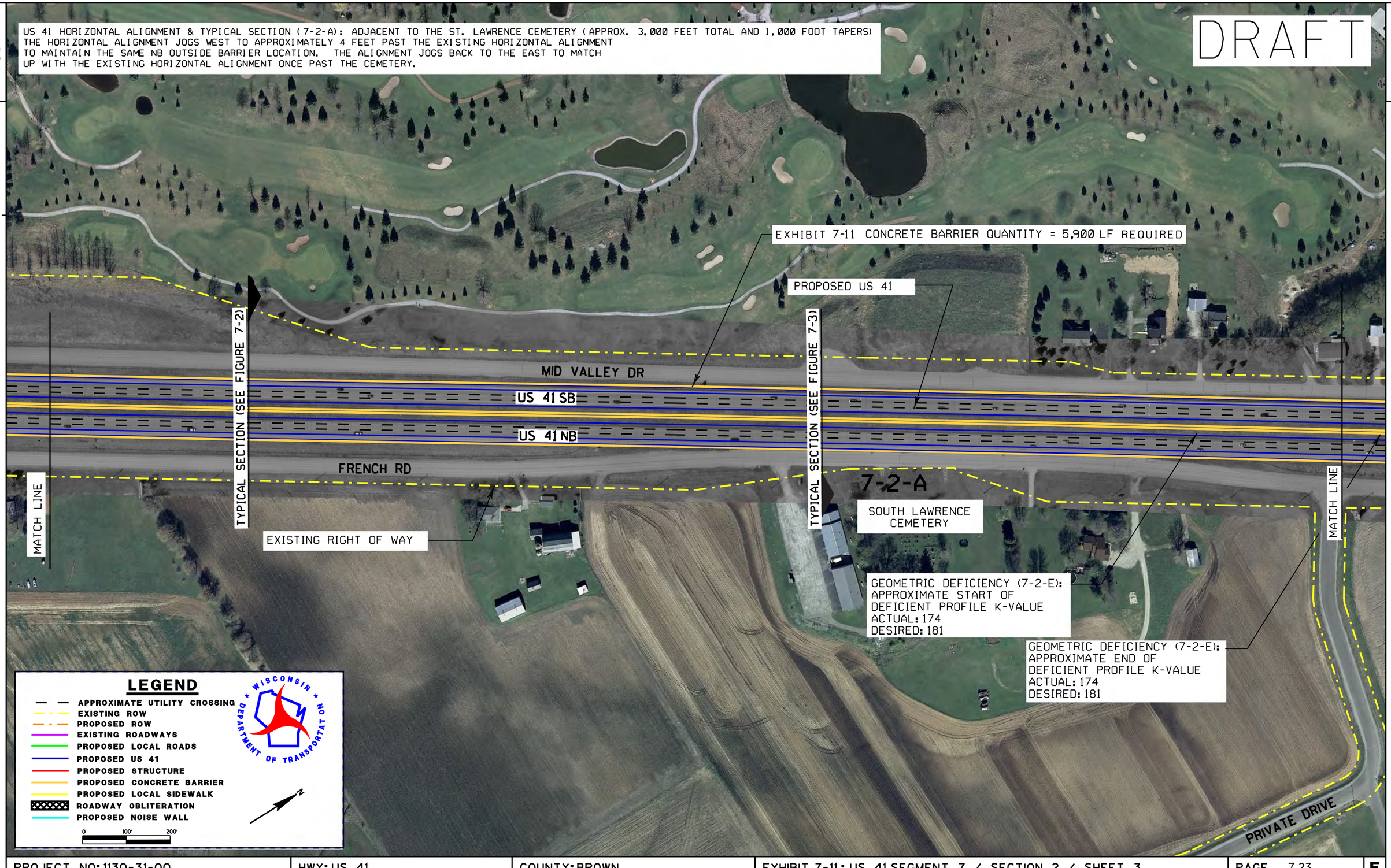
WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-10: US 41 SEGMENT 7 / SECTION 2 / SHEET 2	PAGE 7-22	E

US 41 HORIZONTAL ALIGNMENT & TYPICAL SECTION (7-2-A): ADJACENT TO THE ST. LAWRENCE CEMETERY (APPROX. 3,000 FEET TOTAL AND 1,000 FOOT TAPERS) THE HORIZONTAL ALIGNMENT JOGS WEST TO APPROXIMATELY 4 FEET PAST THE EXISTING HORIZONTAL ALIGNMENT TO MAINTAIN THE SAME NB OUTSIDE BARRIER LOCATION. THE ALIGNMENT JOGS BACK TO THE EAST TO MATCH UP WITH THE EXISTING HORIZONTAL ALIGNMENT ONCE PAST THE CEMETERY.

DRAFT



PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-11: US 41 SEGMENT 7 / SECTION 2 / SHEET 3	PAGE 7-23	E

2

UTILITIES (7-2-G): TIME WARNER HAS BURIED FACILITIES CROSSING US 41 AT GOLDEN GLOW RD.

UTILITIES (7-2-H): AMERICAN TRANSMISSION COMPANY (ATC) HAS AN EXISTING 138KV OVERHEAD POWER LINE THAT CROSSES 1430 FEET NE OF GOLDEN GLOW RD. (138KV).

DRAFT

2



PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-12: US 41 SEGMENT 7 / SECTION 2 / SHEET 4	PAGE 7-24	E

2

US 41 FRONTAGE ROADS (7-2-C): THERE ARE NO IMPACTS FORESEEN TO EITHER THE MID VALLEY DRIVE OR FRENCH ROAD. CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

DRAFT

2

COUNTY F

EXHIBIT 7-13 OPTIONAL CONCRETE BARRIER QUANTITY = 480 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 4,640 LF REQUIRED

PROPOSED US 41

MID VALLEY RD

7-2-C

MID VALLEY DR

US 41 SB

US 41 NB

FRENCH RD

7-2-C

MATCH LINE

FRENCH RD

MATCH LINE

EXISTING RIGHT OF WAY

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-13: US 41 SEGMENT 7 / SECTION 2 / SHEET 5	PAGE 7-25	E

Section 3: County S (Freedom Road) to Orange Lane

US 41 Alignment

This section of US 41 mainline from west of County J to County U is on existing alignment.

US 41 Typical Section

The mainline typical section west of County J for US 41 mainline consists of a 36.5' median (14' inside shoulders with 56-inch single face barriers). The US 41 mainline has 3-12' lanes in both directions. Both NB and SB mainline have 12' outside shoulders with 42-inch single face barrier or for portions of the section that are close in proximity to the frontage roads.

Refer to Figure 7-4 (page 7-28) for Typical Section.

Frontage Roads

Refer to Exhibit 7-14 and Exhibit 7-16 through Exhibit 7-21 (pages 7-29 and 7-31 through 7-36) for further discussion on the use of barrier between the US 41 mainline and the frontage roads. (7-3-A)

Refer to Exhibit 7-15 (page 7-30) for further discussion on the relocation of frontage roads at the County S interchange. (7-3-B)

Refer to Appendix 23 for quantities of barrier included in the cost estimate.

Addressing Geometric Deficiencies

Refer to Exhibit 7-17 (page 7-32) for further discussion on the deficient profile grade at mile marker 159.0. (7-3-C)

Refer to Exhibit 7-18 (page 7-33) for further discussion on the deficient profile grade at mile marker 159.3. (7-3-D)

Refer to Exhibit 7-19 (page 7-34) for further discussion on the deficient profile grade at mile marker 159.9. (7-3-E)

Refer to Exhibit 7-20 (page 7-35) for further discussion on the deficient superelevation at mile marker 160.4. (7-3-F)

Refer to Exhibit 7-20 (page 7-35) for further discussion on the deficient profile grade at mile marker 160.7. (7-3-G)

Right-of-Way Impacts

Preliminary plans do not show right of way impacts; however a detailed design that incorporates vertical design and slope intercepts may identify right of way impacts, including temporary limited easements.

Utilities

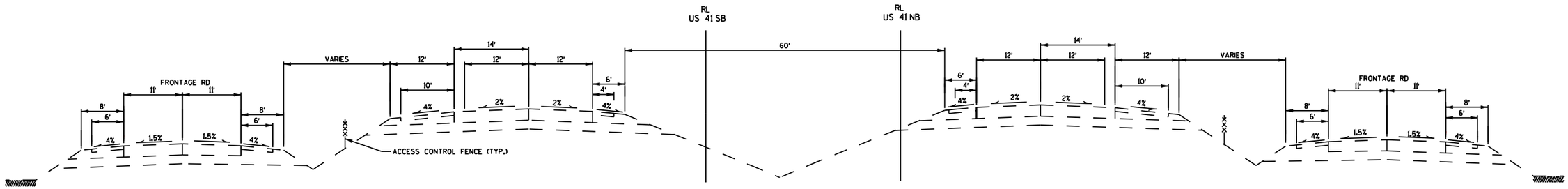
The following utilities are shown on Exhibit 7-16 (page 7-31):

- ANR Pipeline Company has buried gas crossings (6-inch and 8-inch) located 2100 feet northeast of CTH S. (7-3-H)

The following utilities are shown on Exhibit 7-17 (page 7-32):

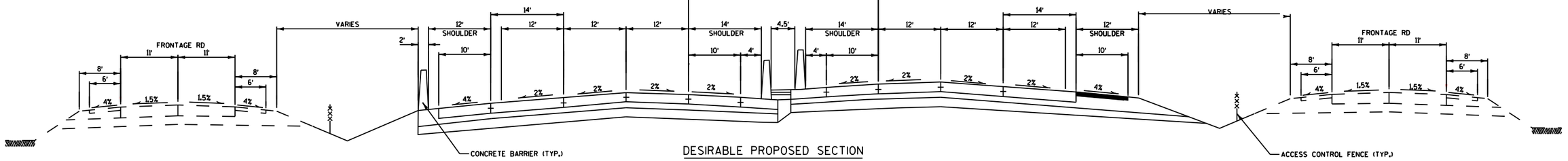
- American Transmission Company has a 345 kv overhead electric line crossing located 1115 feet northeast of Little Rapids Rd. (7-3-I)

2



TYPICAL EXISTING SECTION

US 41 (WEST OF COUNTY S TO ORANGE LANE)



DESIRABLE PROPOSED SECTION

US 41 (WEST OF COUNTY S TO ORANGE LANE)

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: WINNEBAGO/ OUTAGAMIE	FIGURE 7-4: US 41 (CTH S TO ORANGE LANE), TYPICAL EXISTING SECTION AND DESIRABLE PROPOSED SECTION	PAGE 7-28	E

DRAFT

EXHIBIT 7-14 OPTIONAL CONCRETE BARRIER QUANTITY = 1,210 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 470 LF REQUIRED

COUNTY S

US 41 SB EXIT RAMP

7-3-A

MID VALLEY DR

US 41 SB ENTRANCE RAMP

US 41 SB

US 41 NB

7-3-A

MATCH LINE

PROPOSED US 41

STRUCTURE B-05-162
RECONSTRUCT

US 41 NB ENTRANCE RAMP

US 41 NB EXIT RAMP

MATCH LINE

EXISTING RIGHT OF WAY

PROPOSED RIGHT OF WAY

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

FRENCH RD

COUNTY S

US 41 FRONTAGE ROADS (7-3-A): CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-14: US 41 SEGMENT 7 / SECTION 3 / SHEET 1	PAGE 7-29	E

US 41 FRONTAGE ROADS (7-3-B): AT THE COUNTY S INTERCHANGE, THE FRONTAGE ROADS WILL BE RELOCATED TO A MINIMUM 1320 FEET FROM THE RAMP TERMINALS.

DRAFT

2

2

EXISTING RIGHT OF WAY

PROPOSED RIGHT OF WAY

MID VALLEY DR

US 41SB EXIT RAMP

US 41SB

US 41NB

US 41NB ENTRANCE RAMP

FRENCH RD

OAK STREAM DR

7-3-B

COUNTY S

HICKORY RD

US 41SB ENTRANCE RAMP

US 41NB EXIT RAMP

COUNTY F

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 150' 300'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-15: US 41 SEGMENT 7 / SECTION 3 / SHEET 2	PAGE 7-30	E

US 41 FRONTAGE ROADS (7-3-A): CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

UTILITIES (7-3-H): ANR PIPELINE COMPANY HAS BURIED GAS CROSSINGS (6-INCH AND 8-INCH) LOCATED 2100 FEET NORTHEAST OF CTH S.

DRAFT

2

2

STRUCTURE B-05-165
RECONSTRUCT

UTILITIES (7-3-H)

PROPOSED US 41

MID VALLEY DR

7-3-A

US 41 SB

US 41 NB

FRENCH RD

7-3-A

LITTLE RAPIDS RD

MATCH LINE

MATCH LINE

EXISTING RIGHT OF WAY

EXHIBIT 7-16 OPTIONAL CONCRETE BARRIER QUANTITY = 1,320 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 4,310 LF REQUIRED

STRUCTURE B-05-200
RECONSTRUCT

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-16: US 41 SEGMENT 7 / SECTION 3 / SHEET 3	PAGE 7-31	E

2

US 41 FRONTAGE ROADS (7-3-A): CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

UTILITIES (7-3-I): AMERICAN TRANSMISSION COMPANY HAS A 345 KV OVERHEAD ELECTRIC LINE CROSSING LOCATED 1115 FEET NORTHEAST OF LITTLE RAPIDS RD.

DRAFT

EXHIBIT 7-17 OPTIONAL CONCRETE BARRIER QUANTITY = 5,850 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 0 LF REQUIRED

GEOMETRIC DEFICIENCY (7-3-C):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.16%
DESIRED: 0.50%
MINIMUM: 0.30%

PROPOSED US 41

UTILITIES (7-3-I)

MATCH LINE

7-3-A

MID VALLEY DR

US 41 SB

US 41 NB

7-3-A

FRENCH RD

LITTLE RAPIDS RD

SHADY CT

EXISTING RIGHT OF WAY

MATCH LINE

GEOMETRIC DEFICIENCY (7-3-C):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.16%
DESIRED: 0.50%
MINIMUM: 0.30%

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-17: US 41 SEGMENT 7 / SECTION 3 / SHEET 4	PAGE 7-32	E

US 41 FRONTAGE ROADS (7-3-A): CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

DRAFT

EXHIBIT 7-18 OPTIONAL CONCRETE BARRIER QUANTITY = 5,900 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 0 LF REQUIRED

PROPOSED US 41

GEOMETRIC DEFICIENCY (7-3-D):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.14%
DESIRED: 0.50%
MINIMUM: 0.30%

MATCH LINE

7-3-A

MID VALLEY DR

US 41 SB

US 41 NB

7-3-A

FRENCH RD

GEOMETRIC DEFICIENCY (7-3-D):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.14%
DESIRED: 0.50%
MINIMUM: 0.30%

LARRY LN

EXISTING RIGHT OF WAY

MATCH LINE

LARRY LN

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-18: US 41 SEGMENT 7 / SECTION 3 / SHEET 5	PAGE 7-33	E

2

US 41 FRONTAGE ROADS (7-3-A): CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

DRAFT

2

EXHIBIT 7-19 OPTIONAL CONCRETE BARRIER QUANTITY = 5,900 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 0 LF REQUIRED

BIRCHWOOD RD

PROPOSED US 41

MATCH LINE

7-3-A

MID VALLEY DR

US 41 SB

US 41 NB

7-3-A

FRENCH RD

GEOMETRIC DEFICIENCY (7-3-E):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.11%
DESIRED: 0.50%
MINIMUM: 0.30%

FRENCH CT

MATCH LINE

GEOMETRIC DEFICIENCY (7-3-E):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.11%
DESIRED: 0.50%
MINIMUM: 0.30%

EXISTING RIGHT OF WAY

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-19: US 41 SEGMENT 7 / SECTION 3 / SHEET 6	PAGE 7-34	E

US 41 FRONTAGE ROADS (7-3-A): CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

DRAFT

EXHIBIT 7-20 OPTIONAL CONCRETE BARRIER QUANTITY = 3,660 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 0 LF REQUIRED

PROPOSED US 41

ORANGE LN

GEOMETRIC DEFICIENCY (7-3-G):
APPROXIMATE START OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.15%
DESIRED: 0.50%
MINIMUM: 0.30%

MATCH LINE

MID VALLEY DR

7-3-A

US 41 SB

US 41 NB

7-3-A

FRENCH RD

GEOMETRIC DEFICIENCY (7-3-F):
DEFICIENT SUPERELEVATION
ACTUAL: 2.8%
DESIRED: 3.4%

GEOMETRIC DEFICIENCY (7-3-G):
APPROXIMATE END OF
DEFICIENT VERTICAL GRADE
ACTUAL: 0.15%
DESIRED: 0.50%
MINIMUM: 0.30%

EXISTING RIGHT OF WAY

MATCH LINE

CREAMERY RD

SOUTHBRIDGE RD

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

0 100' 200'

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-20: US 41 SEGMENT 7 / SECTION 3 / SHEET 7	PAGE 7-35	E

US 41 FRONTAGE ROADS (7-3-A): CONCRETE BARRIER WILL BE REQUIRED BETWEEN THE FRONTAGE ROADS AND US 41 MAINLINE IN SELECT LOCATIONS WHERE THE DISTANCE BETWEEN THE FRONTAGE ROAD AND US 41 IS LESS THAN OR EQUAL TO 65 FEET. IN SOME LOCATIONS, THE CONCRETE BARRIER IS CONSIDERED OPTIONAL WHERE THE BARRIER IS 65 FEET AWAY AND US 41 AND THE FRONTAGE ROAD ARE PARALLEL.

DRAFT

EXHIBIT 7-21 OPTIONAL CONCRETE BARRIER QUANTITY = 480 LF
QUANTITY IS NOT INCLUDED IN THE ESTIMATE; 0 LF REQUIRED

MATCH PROJECT 1133-06-71

7-3-A

MATCH LINE

PROPOSED US 41

EXISTING RIGHT OF WAY

QUARRY PARK DR

PDO DR

MID VALLEY DR

US 41 SB

US 41 NB

LEGEND

- APPROXIMATE UTILITY CROSSING
- EXISTING ROW
- PROPOSED ROW
- EXISTING ROADWAYS
- PROPOSED LOCAL ROADS
- PROPOSED US 41
- PROPOSED STRUCTURE
- PROPOSED CONCRETE BARRIER
- PROPOSED LOCAL SIDEWALK
- ROADWAY OBLITERATION
- PROPOSED NOISE WALL

0 100' 200'

WISCONSIN DEPARTMENT OF TRANSPORTATION

N

PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	EXHIBIT 7-21: US 41 SEGMENT 7 / SECTION 3 / SHEET 8	PAGE 7-36	E

Further Analysis Recommendations

Review the need for the optional outside barrier wall, considering both safety concerns between the US 41 mainline and the frontage road and the snow removal complications of continuous barrier wall.

Structures

Summary of potential bridge geometry is shown in Table 7-5 (page 7-38) and includes bridge number, mile marker, bridge name, existing bridge age in 2013, girder type, girder depth, desired vertical clearance, minimum vertical clearance, potential vertical clearance, superelevation and direction of curve, clear bridge width, bridge length, number of spans, span configuration, bridge skew, local road typical section, and design recommendations.

Table 7-5: Segment 7 – Summary of Potential Bridge Geometry

BRIDGE NO.	MILE MARKER (MM)	BRIDGE NAME	AGE IN 2013	GIRDER TYPE	GIRDER DEPTH (INCH)	DESIRED VERT. CLEAR (FEET)	MIN. VERT. CLEAR (FEET)	VERT. CLEAR (FEET)	SUPER % & DIR.	BRIDGE CLEAR WIDTH (FEET)	BRIDGE LENGTH (FEET)	NO. OF SPANS	SPAN CONFIG. (FEET)	BRIDGE SKEW	LOCAL ROAD TYPICAL SECTION	DESIGN RECOMMENDATIONS
B-44-0072	151.5	US 41 NB Over CTH JJ	19	Prestressed Concrete Deck Girder	36	16.75	16.33	16.75	NC	62	180.00	2	89/89	13 ^{o} 00' RF	10' raised median from BOC to BOC, 3' wide median c&g, 4 - 12' lanes with 6' outside and 6' median shouders (14' clear zone)	A single (144') span structure reconstruction was looked at instead of a 2-span structure reconstruction but was not preferred since it would require 3.33' elevation adjustment. This adjustment is due to the increase in girder height and the difference in existing and desirable clearance. The US 41 SB bridge deck at County JJ must be raised 0.3' to accommodate the desirable clearance.
B-44-0073	152.9	US 41 SB Over Wrightstown Road	18	Prestressed Concrete Deck Girder	36	16.75	16.33	16.75	NC	62	195.00	2	96.5/96.5	27 ^{o} 34' RF	10' raised median from BOC to BOC, 3' wide median c&g, 4 - 12' lanes with 6' outside and 6' median shouders (14' clear zone)	A single (144') span structure reconstruction was looked at instead of a 2-span structure construction but was not preferred since it would require 3.53' elevation adjustment. This adjustment is due to the increase in girder height and the difference in existing and desirable clearance. Maintain existing deck elevation and lower Wrightstown Road profile 0.6'.
B-44-0074	152.9	US 41 NB Over Wrightstown Road	18	Prestressed Concrete Deck Girder	36	16.75	16.33	16.75	NC	62	195.00	2	96.5/96.5	27 ^{o} 34' RF	10' raised median from BOC to BOC, 3' wide median c&g, 4 - 12' lanes with 6' outside and 6' median shouders (14' clear zone)	A single (144') span structure reconstruction was looked at instead of a 2-span structure construction but was not preferred since it would require 3.53' elevation adjustment. This adjustment is due to the increase in girder height and the difference in existing and desirable clearance. Maintain existing deck elevation and lower Wrightstown Road profile 0.6'.
B-44-0159	154.6	US 41 SB Over County U	19	Prestressed Concrete Deck Girder	36	16.75	16.33	17.20	NC	62	212.00	2	105/105	40 ^{o} 00' LF	14' raised median from BOC to BOC, 3' wide median c&g, 4 - 12' lanes with 6' outside shouders (14' clear zone).	The preferred option eliminates the existing retaining walls located in front of the bridge abutments. Recommend reconstruction with all profiles to remain the same.

BRIDGE NO.	MILE MARKER (MM)	BRIDGE NAME	AGE IN 2013	GIRDER TYPE	GIRDER DEPTH (INCH)	DESIRED VERT. CLEAR (FEET)	MIN. VERT. CLEAR (FEET)	VERT. CLEAR (FEET)	SUPER % & DIR.	BRIDGE CLEAR WIDTH (FEET)	BRIDGE LENGTH (FEET)	NO. OF SPANS	SPAN CONFIG. (FEET)	BRIDGE SKEW	LOCAL ROAD TYPICAL SECTION	DESIGN RECOMMENDATIONS
B-44-0160	154.6	US 41 NB Over County U	19	Prestressed Concrete Deck Girder	36W	16.75	16.33	17.20	NC	74	212.00	2	105/105	40° 00' LF	14' raised median from BOC to BOC, 3' wide median c&g, 4 - 12' lanes with 6' outside shouders (14' clear zone).	The preferred option eliminates the existing retaining walls located in front of the bridge abutments. Recommend reconstruction with all profiles to remain the same. An auxiliary lane from the NB weigh facility will extend across structure B-44-160.
B-05-0080	155.0	US 41 SB Over Apple Creek	31	Continous Steel Deck Girder	33	N/A	N/A	N/A	NC	62	132.00	2	64.0/64.0	No Skew	N/A	Rehabilitate the existing structure by widening and raising the deck 0.33' by adjusting the US 41 SB profile.
B-05-0053	155.0	US 41 NB Over Apple Creek	55	Continous Steel Deck Girder	33	N/A	N/A	N/A	NC	62	132.00	2	64.0/64.0	No Skew	N/A	Rehabilitate the existing structure by widening and raising the deck 0.33' by adjusting the US 41 SB profile. Additional width required to accommodate new on-ramp taper from County U interchange.
B-05-0162	157.5	County S Over US 41	19	Prestressed Concrete Deck Girder	54	16.75	16.33	16.70	NC	88	212.00	2	106.0/106.0	18° 47' LF	3' raised median from BOC to BOC, 3' wide median c&g, 2 - 12' lanes with 10' shoulders, and 11' turn lanes.	The preferred option is to widen the structure to accommodate the need for longer turn lanes at the ramp terminals. New structure will have a 6’ raised median including median c & g, 12’ turn lanes, 12’ thru lanes, 8’ shoulders, 6’ sidewalks, and concrete barriers between the shoulder and the sidewalk, and at the outside edge of the sidewalk.
B-05-0165	158.4	US 41 SB Over Little Rapids Road	18	Prestressed Concrete Deck Girder	36	15.25	14.75	15.30	NC	62	151.00	2	74.5/74.5	No Skew	3' raised median from BOC to BOC, 3' wide median c&g, 2 - 12' lanes with 6' shoulders and 14' clear zone.	The preferred option decreases the girder height resulting in no mainline or side road profile modifications. Recommend reconstruction with all profiles to remain the same.
B-05-0200	158.4	US 41 NB Over Little Rapids Road	22	18	Prestressed Concrete Deck Girder	36	14.75	15.30	NC	62	151.00	2	74.5/74.5	No Skew	3' raised median from BOC to BOC, 3' wide median c&g, 2 - 12' lanes with 6' shoulders and 14' clear zone.	The preferred option decreases the girder height resulting in no mainline or side road profile modifications. Recommend reconstruction with all profiles to remain the same.

Legend:

ES = Exception to Standard
RT = Superelevation Right
NC = Normal Crown
LT = Superelevation Left
LF = Left Forward
RF = Right Forward
N/A = Not Applicable
c&g = Curb and Gutter

Interchanges

County J (Hyland Avenue) Interchange

Interchange Alternatives Summary

The ramp terminals at the County J interchange have recently been constructed as single lane roundabouts. Therefore there were no alternatives for the County J interchange in the Phase 1 report. As such, no short term improvements were identified. The roundabouts will maintain a LOS C or better in the year 2020. In 2038, the roundabouts fail at two approaches with the existing geometry. Semi-bypass lanes will be required at the northbound off ramp for the northbound County J approach, and at the southbound off ramp for the southbound exit ramp approach.

Alternative Represented in Expansion Design Concept

The semi-bypass lanes are represented in the expansion design concept (see Figure 7-5 on page 7-42). Figure 7-6 (page 7-436-21) is a line diagram indicating Year 2038 traditional intersection improvements required.

The County J structure over US 41 is being replaced with a longer bridge to accommodate additional lanes on US 41. The bridge is also being widened to two 12- foot lanes and a 6-foot shoulder in each direction. The widened structure will facilitate the addition of bypass lanes at the roundabouts and bicycle facilities. Semi-bypass lanes are also being added to the existing roundabouts, in the northbound County J approach of the northbound ramp terminal intersection, and the southbound exit ramp approach of the southbound ramp terminal intersection.

Traffic Operations

Year 2038 traffic analysis was conducted at the County J interchange intersections. A summary of the Year 2038 intersection operating conditions is provided in Table 7-6.

Table 7-6: County J Interchange Intersection Level of Service (LOS)

County J Intersection	Intersection Type	Peak Hour LOS by Intersection	
		AM	PM
US 41 Southbound Ramps	Roundabout	B	D
US 41 Northbound Ramps	Roundabout	A	C

Right-of-Way Impacts

There are no major right of way impacts, relocations, or acquisitions.

Access

There are no significant access issues for parcels within the interchange footprint.

Complete Streets

Pedestrian accommodations are not present at this interchange due to the rural location. Paved shoulders are wide enough to accommodate bicycles. The identified interchange concept will include 6-foot wide shoulders to accommodate bicycle traffic.

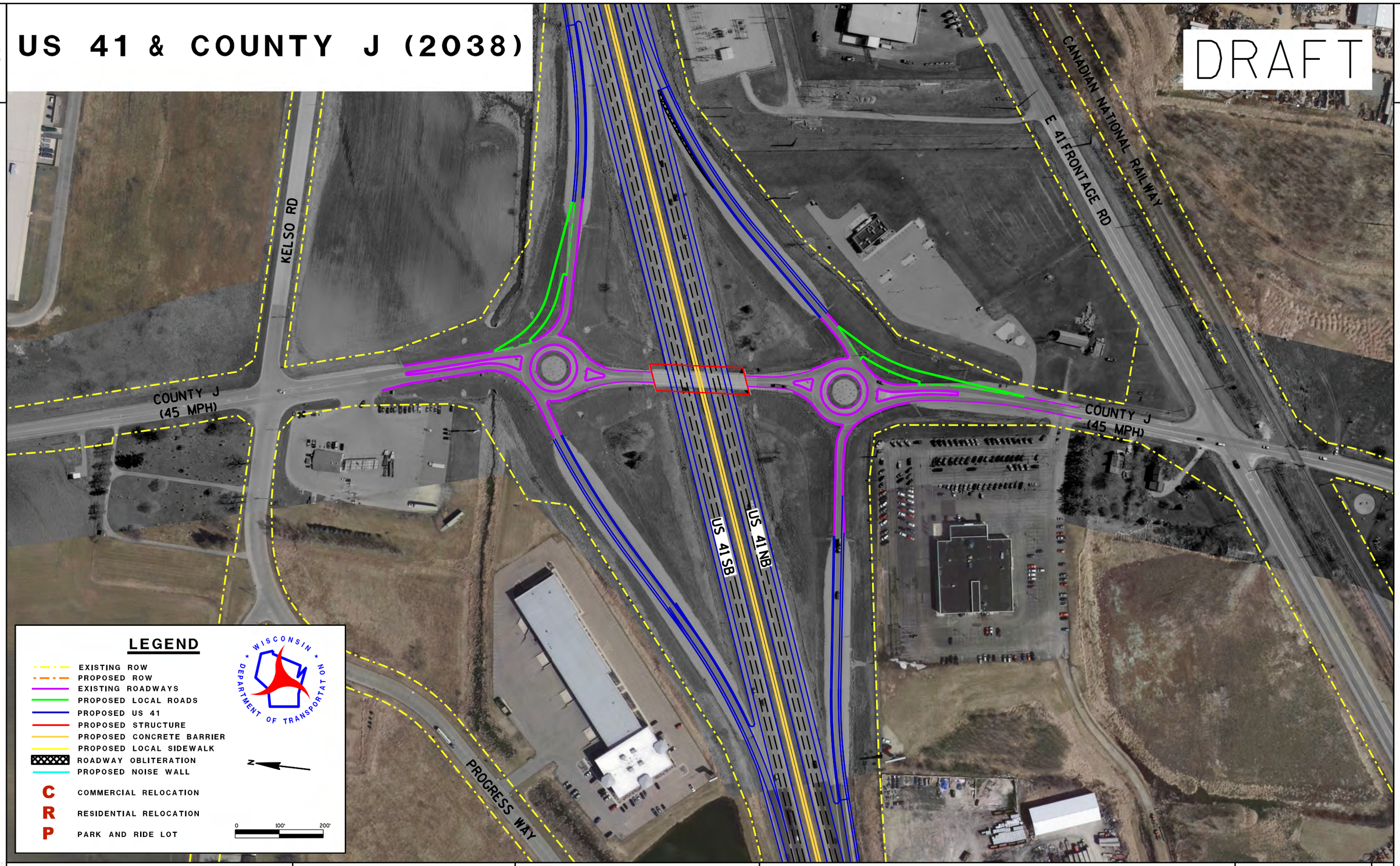
Further Analysis Recommendations

As identified in the Select Interchange Analysis Update, the County J roundabouts would operate poorly without semi-bypass lanes at each intersection. There are various combinations of geometric improvements that would result in adequate traffic operations in year 2038. Those combinations should be further explored to minimize environmental and real estate impacts.

2 US 41 & COUNTY J (2038)

DRAFT

2

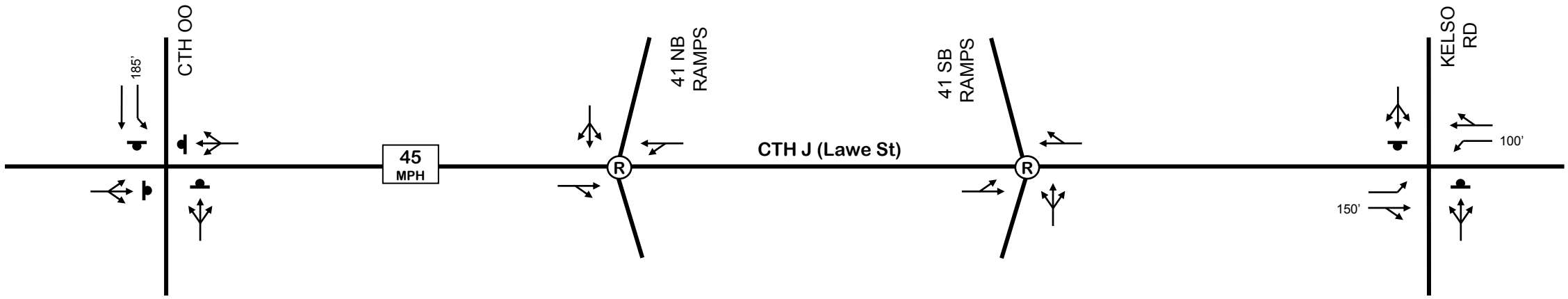


PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: OUTAGAMIE	FIGURE 7-5: US 41/COUNTY J INTERCHANGE	PAGE 7-42	E

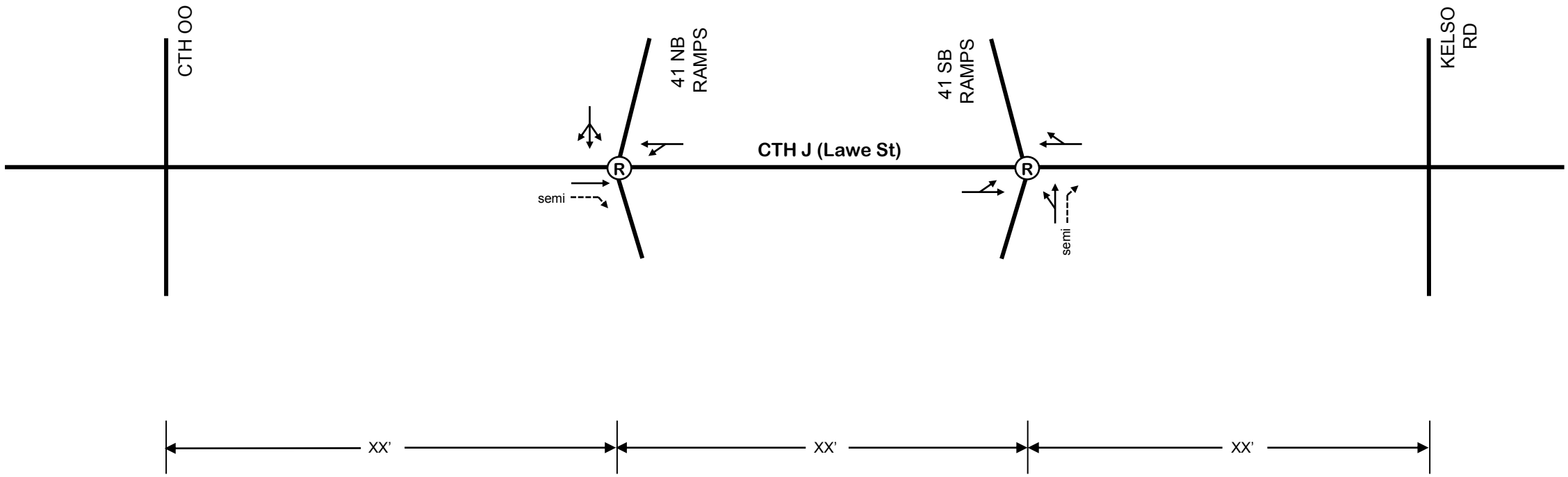
FIGURE 7-6: COUNTY J INTERCHANGE, EXISTING GEOMETRY AND 2038 IMPROVEMENTS
PREPARED 9-3-13

N
NOT TO SCALE

EXISTING GEOMETRY



2038 TRADITIONAL IMPROVEMENTS



Legend

XX'	BASE GEOMETRICS PLANNED TURN BAY LENGTH		MEDIAN DIVIDED ROADWAY	TRAFFIC SIGNAL	OPERATIONAL PROBLEMS REMAIN
(+XX')	ADDITIONAL TURN BAY LENGTH RECOMMENED	→	BASE GEOMETRICS	STOP SIGN	
(LA-XX')	LOOK-AHEAD TURN LANE – STORAGE LENGTH	⇢	ADDITIONAL IMPROVEMENT RECOMMENDED	(R) ROUNDABOUT	

County U (South County Line Road) Interchange

Interchange Alternatives Summary

Three short-term improvement alternatives (Alternatives 1 through 3) for the County U Interchange were developed within the Operational Needs Assessment Phase I Final Report dated November 2011 (see Appendix 14).

Alternative 1 addresses truck operations associated with the existing weigh station located along northbound US 41 south of the County U interchange. Alternative 1 adds a 3000 foot northbound auxiliary lane from the truck weight station exit to County U.

Alternative 2 incorporates a Weight in Motion (WIM) scale at the location of the existing weight facility. This WIM improvement is currently being incorporated into the pavement rehabilitation project along US 41 and scheduled for construction in 2017.

Alternative 3 reconstructs the County U ramp terminals as roundabouts, along with the West Frontage road intersection with County U. As identified within the Phase I Final Report, single lane roundabouts would accommodate anticipated 2035 traffic demands.

Alternative Represented in Expansion Design Concept

Alternative 2 is represented in the expansion design concept (see Figure 7-7 on page 7-46). Figure 7-8 (page 7-47) is a line diagram indicating Year 2038 traditional intersection improvements required.

Alternative 2 identified interchange concepts are to construct a 3000 foot auxiliary lane from the weight in motion facility to the northbound US 41 entrance ramp. The weight in motion facility is expected to be built prior to the implementation of the long term improvements to the interchange. County U will be widened to include a raised median, 2- 12 foot lanes per direction and 6 foot paved shoulders. Entrance and exit ramps will be constructed to current standards. The ramp terminals will remain as stop conditions for the ramps. Roundabouts will not be built at the ramp terminals.

Traffic Operations

Year 2038 traffic analysis was conducted at the County U interchange intersections using the geometrics presented in Alternative 2. A summary of the Year 2038 intersection operating conditions is provided in Table 7-7.

Table 7-7: County U Interchange Intersection Level of Service (LOS)

County U Intersection	Intersection Type	Peak Hour LOS by Intersection	
		AM	PM
West Frontage Road	Two-Way Stop Control	C	C
US 41 Southbound Ramps	Two-Way Stop Control	C	C
US 41 Northbound Ramps	Two-Way Stop Control	B	C
County AA/Bluemound Drive	Two-Way Stop Control	C	B

Right-of-Way Impacts

There are no major right of way impacts, relocations, or acquisitions.

Access

There are no significant access issues for parcels within the interchange footprint.

Complete Streets

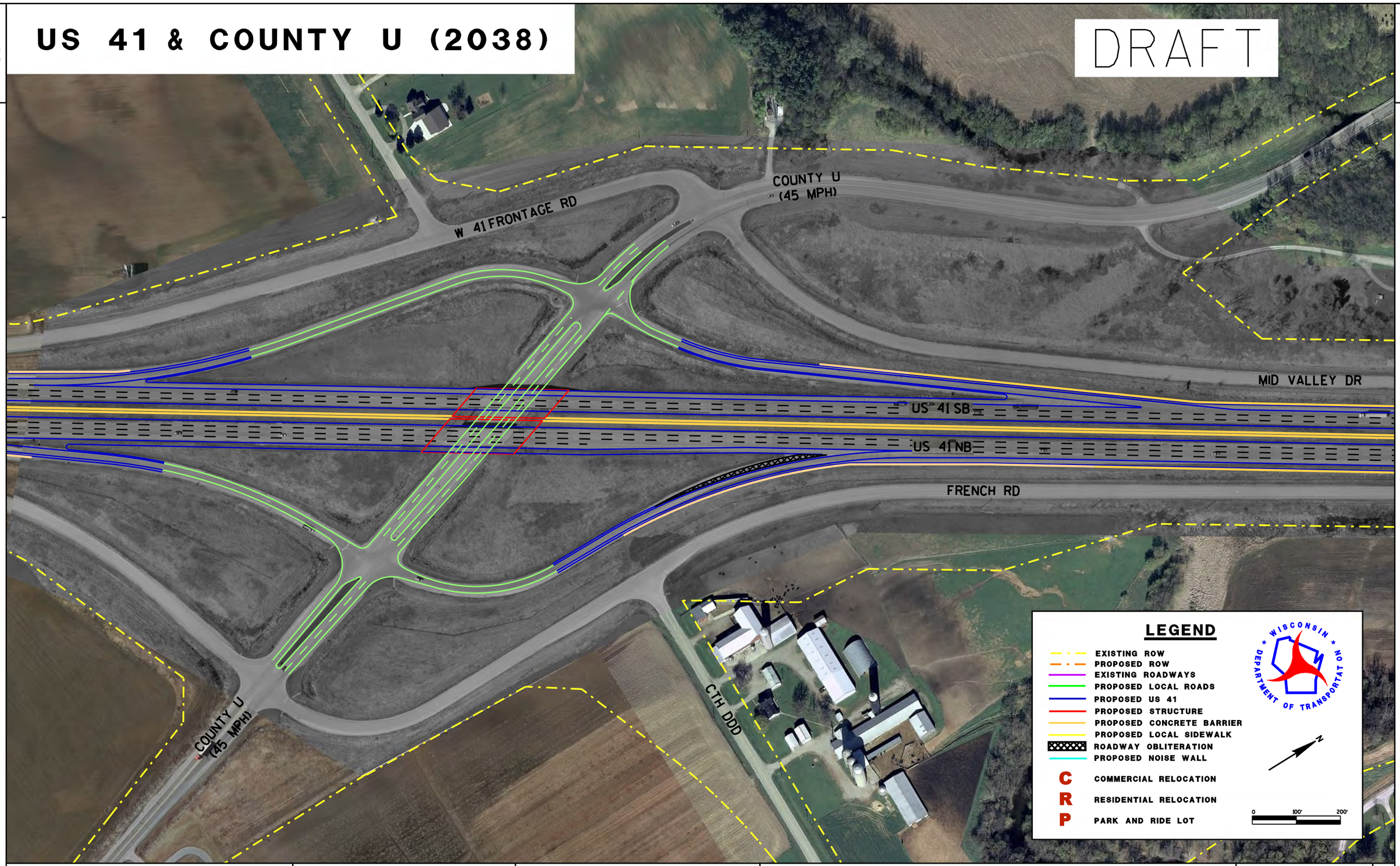
Pedestrian accommodations are not present at this interchange due to the rural location. Paved shoulders are wide enough to accommodate bicycles. The identified interchange concept will include 6-foot wide shoulders to accommodate pedestrian and bicycle traffic.

Further Analysis Recommendations

Consideration of moving the Frontage Road intersections further from the US 41 ramp terminals should be made.

US 41 & COUNTY U (2038)

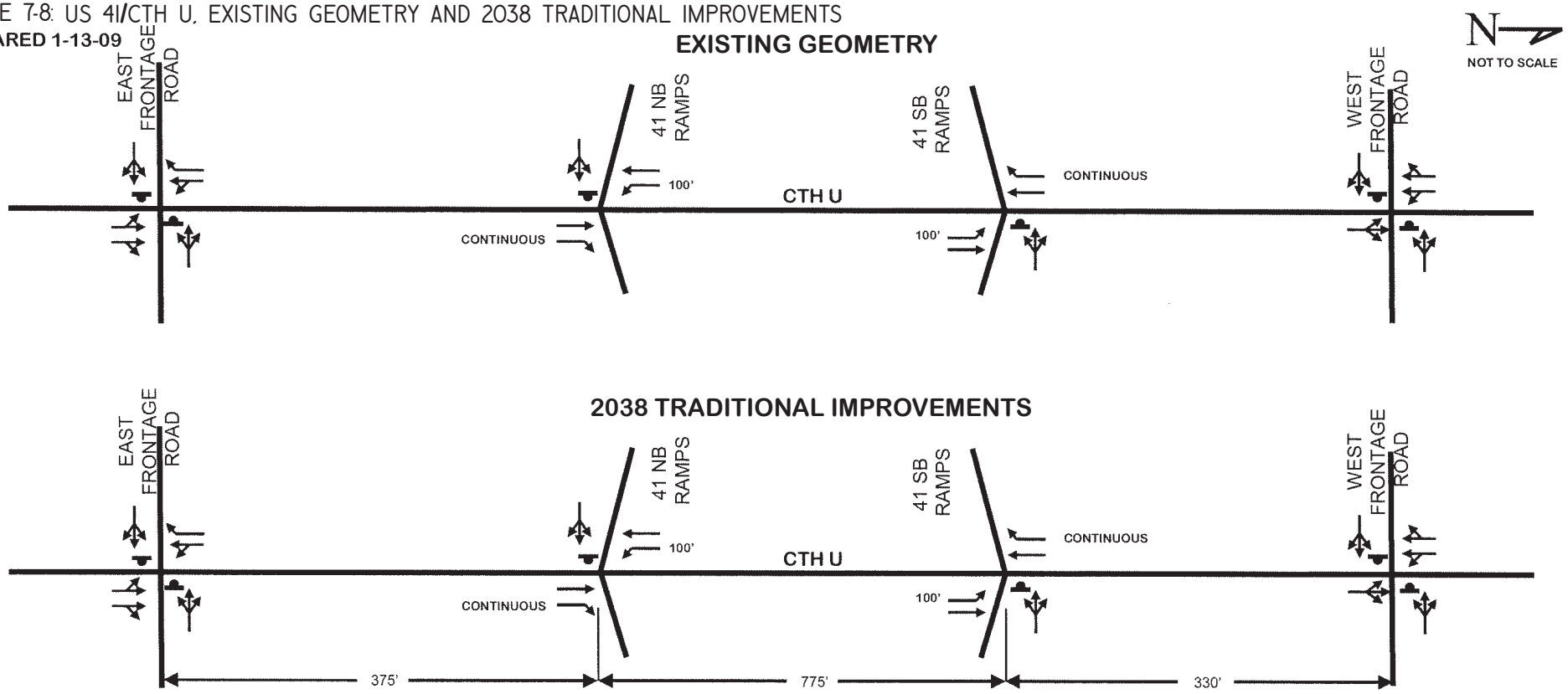
DRAFT



PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	FIGURE 7-7: US 41/COUNTY U INTERCHANGE	PAGE 7-46	E

FIGURE 7-8: US 41/CTH U, EXISTING GEOMETRY AND 2038 TRADITIONAL IMPROVEMENTS

PREPARED 1-13-09



Legend

XX' BASE GEOMETRICS PLANNED TURN BAY LENGTH	MEDIAN DIVIDED ROADWAY	TRAFFIC SIGNAL	OPERATIONAL PROBLEMS REMAIN
(+XX') ADDITIONAL TURN BAY LENGTH RECOMMENED	BASE GEOMETRICS	STOP SIGN	
(LA-XX') LOOK-AHEAD TURN LANE – STORAGE LENGTH	ADDITIONAL IMPROVEMENT RECOMMENDED	(R) ROUNDABOUT	

County S (Freedom Road) Interchange

Interchange Alternatives Summary

Three short-term improvement alternatives (Alternatives 1 through 3) for the County S Interchange were developed within the Operational Needs Assessment Phase I Final Report dated November 2011 (see Appendix 14).

Alternative 1 addresses the operational and safety problems at the interchange by extending the right turn storage lengths at the northbound and southbound exit ramps, along with constructing a continuous right turn lane in the westbound direction at Mid Valley Drive.

Alternative 2 addresses the operational and safety problems at the interchange by incorporating all improvements from Alternative 1, along with signalizing the ramp terminal intersections and providing left turn storage at various approaches of the Mid Valley Drive intersection.

Alternative 3 is a roundabout concept that is anticipated to accommodate both 2020 and 2035 traffic demands. The roundabout alternative maintains a two-lane facility and provides one-lane roundabouts along the corridor. A system of roundabouts at this location will allow for the use of right-in/right-outs at future driveway locations as U-Turns are accommodated within the roundabouts.

Alternative 4 was developed to address year 2038 traffic demands, along with access management guidelines. Increased projected year 2038 turning volumes at the ramp terminals will require additional turn lane storage. In lieu of roundabouts, turn lanes will be added at the ramp terminals and extended across structure B-5-162. Sidewalks and 6 foot wide paved shoulders will be added to both sides of the structure to accommodate both pedestrians and bicycles. An additional long term improvement is to relocate the intersections of the frontage roads with County S. These intersections will be relocated to a minimum 1320’ from the ramp termini.

Alternative Represented in Expansion Design Concept

Alternative 4 was identified as meeting the long term capacity and access management needs as presented in Figure 7-9 (page 7-50). Figure 7-10 (page 7-51) is a line diagram showing Alternative 4 interchange improvements required.

Year 2038 traffic indicates a long term alternative will be necessary. Increased projected turning volumes at the ramp terminals will require additional turn lane storage. In lieu of roundabouts, turn lanes will be added at the ramp terminals and extended across structure B-5-162. Sidewalks and 6 foot wide paved shoulders will be added to both sides of the structure to accommodate both pedestrians and bicycles. An additional long term improvement is to relocate the intersections of the frontage roads with County S. These intersections will be relocated to a minimum 1320’ from the ramp termini.

Traffic Operations

Year 2038 traffic analysis was conducted at the County S interchange intersections using the geometrics presented in Alternative 4. A summary of the Year 2038 intersection operating conditions is provided in Table 7-8.

Table 7-8: County S Interchange Intersection Level of Service (LOS)

County S Intersection	Intersection Type	Peak Hour LOS by Intersection	
		AM	PM
Mid Valley Drive	Two-Way Stop Control	C	D
US 41 Southbound Ramps	Traffic Signal	B	B
US 41 Northbound Ramps	Traffic Signal	B	B
French Road	Two-Way Stop Control	B	D

Right-of-Way Impacts

There are no right-of-way impacts, relocations, or acquisitions.

The relocation of the frontage roads will require major acquisition of additional right of way, including wetlands. There are no relocations required.

Access

There are no changes to access within the footprint of the interchange modifications.

Several businesses and residences will have their access changed due to the relocation of the frontage roads.

Complete Streets

Sidewalks and 6 foot wide paved shoulders will be added to both sides of the County S structure to accommodate pedestrians and bicycles.

Further Analysis Recommendations

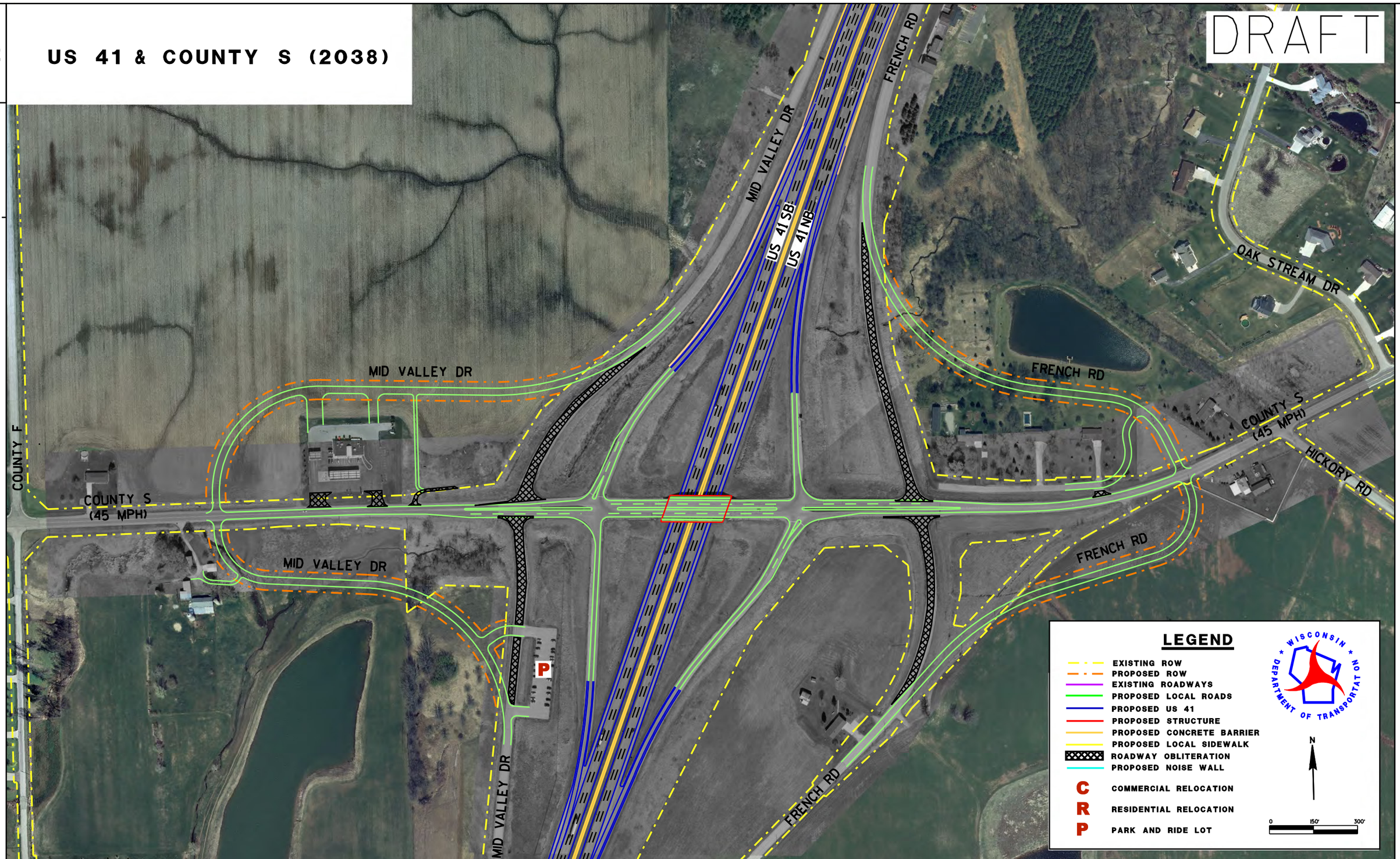
Coordination with Brown County's on-going southern bridge crossing study is required moving forward to accurately represent the anticipated travel patterns if the proposed Fox River crossing is completed.

2

US 41 & COUNTY S (2038)

DRAFT

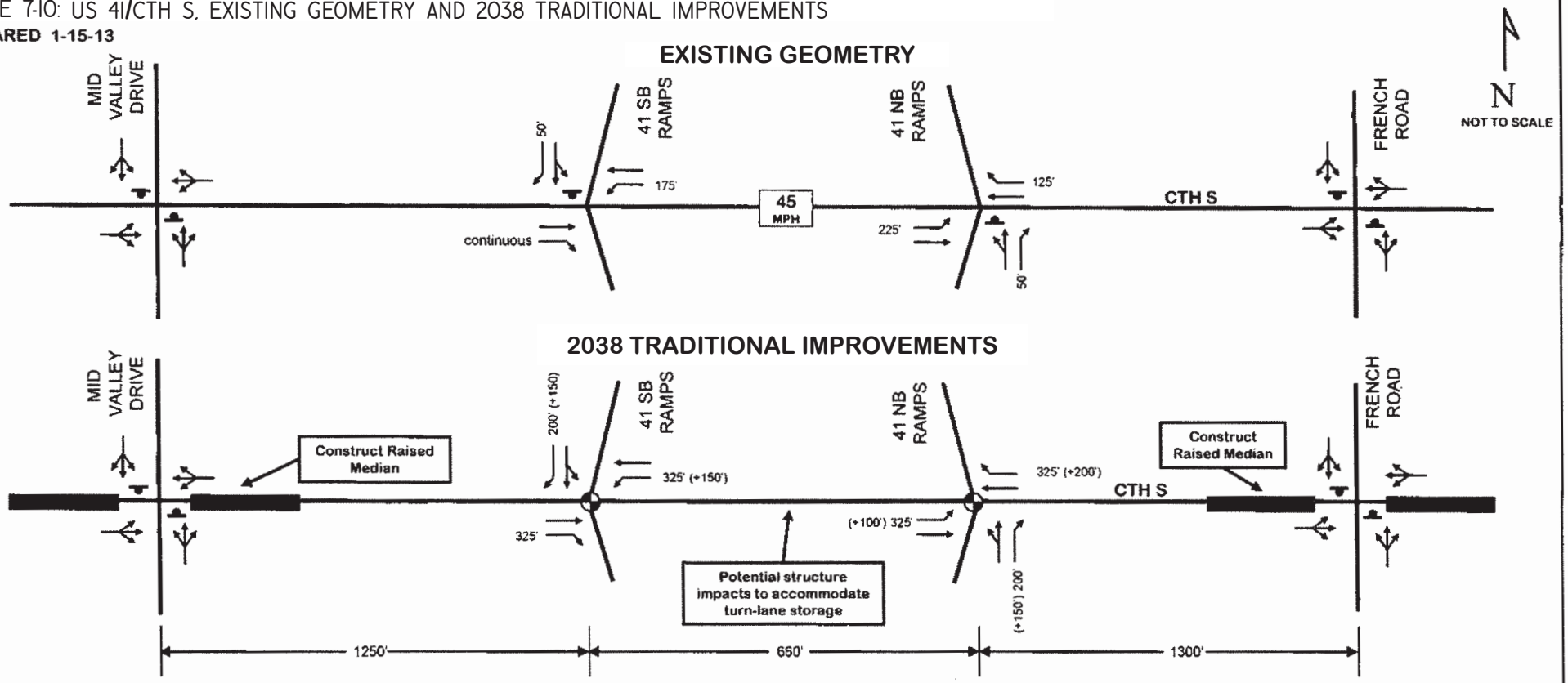
2



PROJECT NO: 1130-31-00	HWY: US 41	COUNTY: BROWN	FIGURE 7-9: US 41/COUNTY S INTERCHANGE	PAGE 7-50	E

FIGURE 7-10: US 41/CTH S, EXISTING GEOMETRY AND 2038 TRADITIONAL IMPROVEMENTS

PREPARED 1-15-13



Legend

XX'	BASE GEOMETRICS PLANNED TURN BAY LENGTH		MEDIAN DIVIDED ROADWAY		TRAFFIC SIGNAL
(+XX')	ADDITIONAL TURN BAY LENGTH RECOMMENED	→	BASE GEOMETRICS		STOP SIGN
(LA-XX')	LOOK-AHEAD TURN LANE – STORAGE LENGTH	----→	ADDITIONAL IMPROVEMENT RECOMMENDED	(R)	ROUNDABOUT

OPERATIONAL PROBLEMS REMAIN

7.3 Cost Summary

Table 7-9 below summarizes the costs for Segment 7. Individual one page cost summaries using the US 41 Majors cost estimating worksheets are included for each US 41 mainline segment and Interchange. See Appendix 6 for a detailed breakdown of these cost estimating worksheets.

Table 7-9: Segment 7 – Cost Summary

MAINLINE SEGMENT LIMITS/INTERCHANGE	SHORT-TERM COSTS*	LONG-TERM COSTS*	TOTALS
West of County J to Orange Line			
Major Roadway Items		$52,077,000	
Allowance Items		$31,127,000	
Structures		$14,543,000	
Special Construction Elements		$0	
Context Sensitive Solutions (CSS)		$4,887,000	
Scope Change Allowance Items		$24,632,000	
Project Delivery Allowance Items		$44,161,000	
External Costs and Risk Assessment		$11,290,000	$182,717,000
County J (Lawe Street) Interchange			
Major Roadway Items		$558,000	
Allowance Items		$335,000	
Structures		$1,717,000	
Special Construction Elements		$0	
Context Sensitive Solutions (CSS)		$131,000	
Scope Change Allowance Items		$658,000	
Project Delivery Allowance Items		$1,180,000	
External Costs and Risk Assessment		$301,000	$4,880,000
County U Interchange			
Long-Term Alternative 2			
Major Roadway Items		$1,017,000	
Allowance Items		$607,000	
Structures		$0	
Special Construction Elements		$0	
Context Sensitive Solutions (CSS)		$81,000	
Scope Change Allowance Items		$409,000	
Project Delivery Allowance Items		$733,000	
External Costs and Risk Assessment		$187,000	$3,034,000
County S Interchange			
Short-Term Alternative 2	$706,000		$706,000
Long-Term Alternative 4			
Major Roadway Items		$1,940,000	
Allowance Items		$1,158,000	
Structures		$2,314,000	
Special Construction Elements		$0	
Context Sensitive Solutions (CSS)		$271,000	
Scope Change Allowance Items		$1,364,000	
Project Delivery Allowance Items		$2,445,000	
External Costs and Risk Assessment		$625,000	$10,117,000
Segment 7 Total	**$706,000**	**$200,748,000**	**$201,454,000**

**Costs are shown in 2013 dollars with no future year construction or material cost increases from inflation included.*