WIS 441 Tri-County Project Corridor Manual

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WIS 441 Tri-County Project
Corridor Manual
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WIS 441 Tri-County Project Corridor Manual
Chapter 1: CAE/CADD Standards

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Scope/Purpose
This chapter outlines the GRAEF WIS 441 Project FTP site directory structure including folder descriptions. It also addresses Microstation and design software data file standards as well as plan sheet development standards that are different from Chapter 15 Plan Preparation of the Facilities Development Manual. The file naming conventions, standard levels, legends, symbology, design project metadata, and other project specific plan production information descriptions are also addressed in this chapter.

Reference Documents
WisDOT Facilities Development Manual (FDM) – Chapter 15 Plan Preparation

Electronic Data and Plan Production Manual
The attached WIS 441 Project Electronic Data and Plans Production Manual includes instructions on the use of the GRAEF FTP site being used for the corridor, including standards for data exchange. It also includes Microstation Data File Standards, Design Software Standards for naming of alignments and profiles, and Plan Development Standards.

Attachments
- WIS441 Tri-County Project Electronic Data and Plans Production Manual (Dated 07-15-14)

WIS 441 Tri-County Project

Electronic Data and Plans Production Manual

07/15/14

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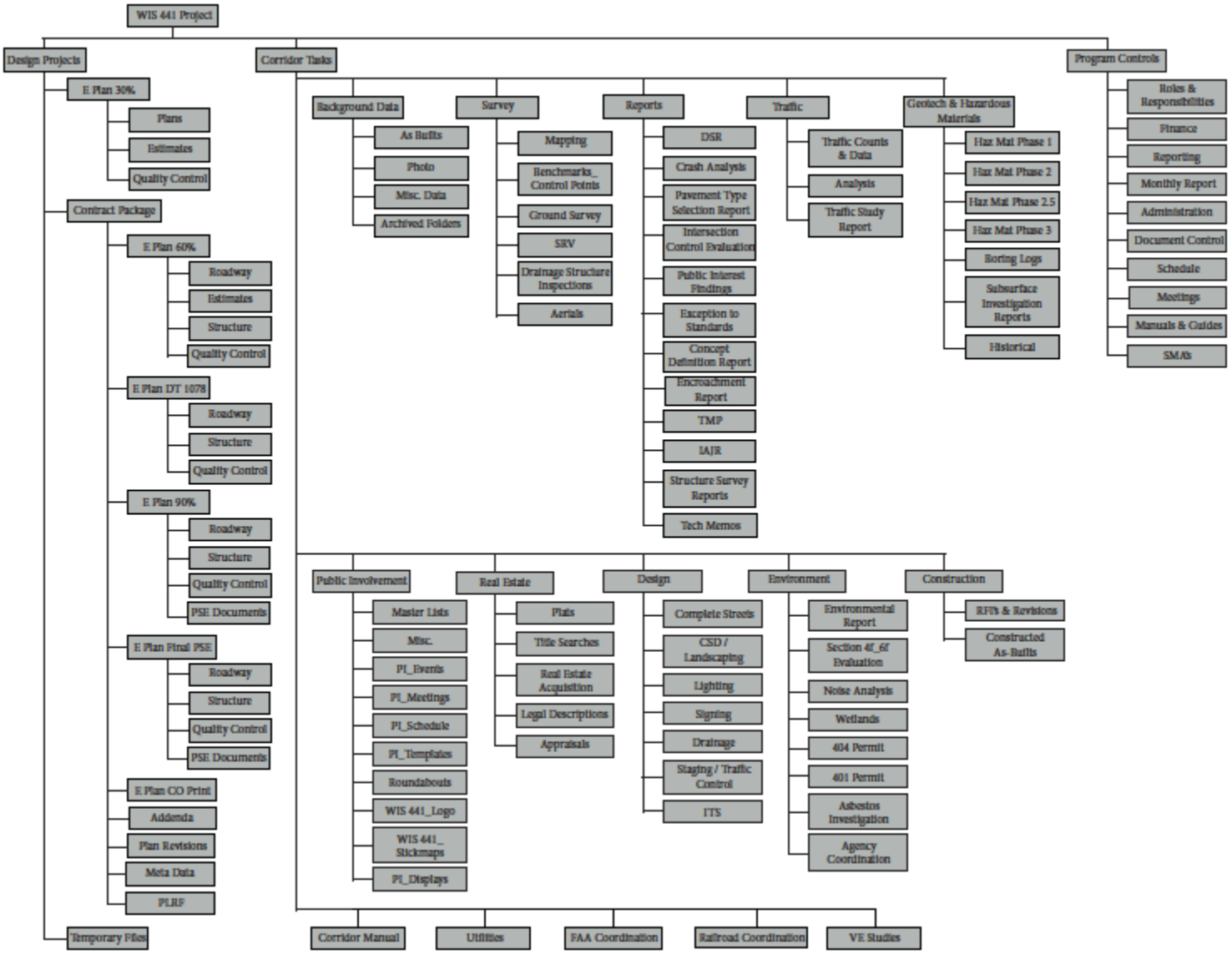
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Introduction

The WIS 441 Tri-County Project Team, in an effort to facilitate the transfer of electronic files between the WIS 441 design team and WisDOT will use the File Transfer Protocol (FTP) site that was established for the USH 41 Corridor Project. This site has been set up by GRAEF and is being maintained by Mary Beth Pettit (Graef).

For the WIS 441 Project, in an effort to standardize the files exchanged over the FTP site, the team developed standards for data exchange, which are established in this manual. These standards will evolve with the project, but major changes will be kept to a minimum.

FTP Directory Structure



Project FTP Site

FTP Site Location

The project FTP site is located at ftp://ftp5.graef-usa.com/WIS 441 PROJECT/

Use of FTP Site

Intention of FTP site usage

The FTP site is designed for the posting and copying of files only. The working files shall be maintained on the local network drives of the WIS 441 design team. The FTP site has been developed to transfer data from the WIS 441 design team to the Department. The posting of data allows members of the WIS 441 design team and the Department to have access to the same project files and data.

FTP Folder Descriptions

File Structure

The WIS 441 Project folder has been sub divided into **Corridor Tasks, Design Projects** and **Program Controls** folders. The following is an explanation of each of the folders and the materials that are expected to be posted. The **Corridor Tasks** folder shall maintain all the data and files specific to the WIS 441 corridor. The **Design Projects** folder shall maintain all of the data and files specific to the design of the WIS 441 corridor. The **Program Controls** folder shall maintain all the data and files specific to programming the WIS 441 corridor.

Program Controls

Roles and Responsibilities

Material to be posted:

- PC roles and responsibilities matrix
- PC Staffing plans (construction)
- Project Org charts

When to post:

Materials posted when available and as updated.

Finance

Material to be posted:

- Financially related Items, Spreadsheets or Graphs/Visual Displays

When to post:

Materials posted when/if requested.

Reporting

Material to be posted:

- Monthly Progress Report

When to post:

Materials posted monthly.

Monthly Report

Material to be posted:

- Monthly reporting documentation (drafts/finals/executive summaries)

When to post:

Materials posted when/if requested.

Administration

Material to be posted:

- Master Contact List, Administrative Items, Logos, Templates

When to post:

Materials posted when available and as updated.

Document Control

Material to be posted:

- Items for Design Document Control and Construction Document Control as Needed

When to post:

Materials posted when available.

Schedule

Material to be posted:

- Program Schedules (P6) sorted by Milestones, Function Specific Activities or other Requested Sorts
- Project Milestone Dates (Excel)

When to post:

Materials posted monthly.

Meetings

Material to be posted:

- Meeting Notes
- Agendas
- Actions
- Sign-In Sheets
- Meeting Hand-Outs

When to post:

Materials posted bi-weekly.

Manuals and Guides

Material to be posted:

- Any PC manual/guide with established processes and/or procedures.

When to post:

Materials posted when available and updated.

SMA

Material to be posted:

- Signed State Municipal Agreements (SMA's) and Documentation

When to post:

Materials posted when agreements are received back signed from the municipality.

Corridor Task Folders

Background Data

Material to be posted:

This folder will include historical data such as existing **As Builts**, **Photos**, **Archived Folders** information from previous WIS 441 study, and other **Miscellaneous** background information.

When to post:

Historical data shall be posted at the onset of the WIS 441 design. As WIS 441 construction projects are concluded, as built information shall be posted.

Surveys

Material to be posted:

Srv files, .dgn background **Mapping** files, **Ground Surveys** (radial topography), **Benchmarks_Control Points** information, section corner information, all **SRV** files, **Drainage Structure Inspections**, and **Aerial** backgrounds.

When to post:

As soon as available/updated

Design

Material to be posted:

This folder will include all design information such as information related to **Complete Streets, CSD/Landscaping, Lighting, Signing, Drainage, Staging/Traffic Control, and ITS.**

When to post:

As soon as available/updated

Reports

Material to be posted:

This folder will include all project reports such as the **Design Study Report (DSR), Exception to Standards, Crash Analysis, Concept Definition Report (CDR), Pavement Type Selection Report, Encroachment Report, Intersection Control Evaluation (ICE), Traffic Management Plan (TMP) Public Interest Findings (PIF), Interchange Access Justification Report (IAJR), Structure Survey Reports (SSR), and all other Technical Memos.**

When to post:

As soon as available/updated

Traffic

Material to be posted:

This folder will include **Traffic Counts and Data, Analysis, and Traffic Study Reports**.

When to post:

When available

Environment

Material to be posted:

The folder will include all environmental reports and data. Subfolders include: **Environmental Reports, Section 4f and 6f Evaluation, Noise Analysis, Wetlands, Asbestos Investigation, 404 Permit, 401 Permit, and Agency Coordination.**

When to post:

When available

Geotech and Hazardous Materials

Material to be posted:

This folder will include all hazardous materials (Haz Mat) and geotechnical information for the WIS 441 corridor. Sub folders include: **Haz Mat Phase 1, Haz Mat Phase 2, Haz Mat Phase 2.5, Haz Mat Phase 3, Boring Logs, Historical Soil Borings, and Subsurface Investigation Reports (SSIR).**

When to post:

When available

Public Involvement

Material to be posted:

This folder will include **Master lists, Misc, PI_Events, PI_Meetings, PI_Schedule, PI_Templates, Roundabouts, WIS 441_Logo, WIS 441_Stickmaps, PI Displays.**

When to post:

Post updated information whenever updates occur.

Construction

Material to be posted:

This folder will include the **RFI's and Revisions** from construction projects. This folder will also include **As Builts** as projects are constructed.

When to post:

Post updated information whenever updates occur.

Utilities

Material to be posted:

This folder will include all coordination between utilities.

When to post:

When available and as submitted.

FAA Coordination

Material to be posted:

This folder will include all coordination between FAA.

When to post:

When available and as submitted.

Railroad Coordination

Material to be posted:

This folder will include all coordination between railroads.

When to post:

When available and as submitted.

Real Estate

Material to be posted:

This folder will include **Plats, Title Searches, Real Estate Acquisition, Legal Descriptions, and Appraisals.**

When to post:

When available and as submitted.

VE Studies

Material to be posted:

This folder will contain data and reports related to the WIS 441 corridor Value Engineering (VE) studies.

When to post:

Materials posted when available.

Corridor Manual

Material to be posted:

This folder will contain data and graphics related to the corridor manual for the WIS 441 corridor.

When to post:

Materials posted when available. Updates posted on a monthly basis. Updates summarized in a transmittal update.

Design Projects

E Plan 30%

Material to be posted:

This folder will include the 30% design submittal including the **Plans, Estimates, and Quality Control** documentation.

When to post:

All 30% design materials will be posted on or before the 30% design due date.

Temporary Files

Material to be posted:

This folder will include all temporary files for transfer between the design team and the department.

When to post:

Folder available as needed for the transfer of large files.

All design project submittals shall be separated by CONTRACT package with the following sub folders to track the submittals.

E Plan 60%

Material to be posted:

This folder will include the 60% design submittal including the **Roadway** plans**, Estimates, Structure** plans**, and Quality Control** documentation.

When to post:

All 60% design materials will be posted on or before the 60% design due date.

E Plan DT 1078

Material to be posted:

This folder will include the DT 1078 design submittal to utilities including the **Roadway, Structure, and Quality Control** documentation.

When to post:

All DT 1078 design materials will be posted on or before the DT 1078 due date.

E Plan 90%

Material to be posted:

This folder will include the 90% design submittal including the **Roadway** plans**, Structure** plans**, Quality Control** documentation, **and PS&E Documents**. The estimates are included with the PS&E documents.

When to post:

All 90% design materials will be posted on or before the 90% design due date.

E Plan Final PS&E

Material to be posted:

This folder will include the Final PS&E design submittal including the **Roadway** plans**, Structure** plans**, Quality Control** documentation, **and PS&E Documents**. The estimates are included with the PS&E documents.

When to post:

All Final PS&E design materials will be posted on or before the Final PS&E design due date.

E Plan CO Print

Material to be posted:

This folder will include the Central Office pdf plan as supplied to contractors.

When to post:

After any comments from the Final PS&E submittal has occurred.

Addenda

Material to be posted:

This folder will include any addenda required for the WIS 441 construction projects.

When to post:

All Addenda shall be posted per FDM requirements. Any addenda posted outside of the dates as established in the FDM will require coordination with Central Office.

Plan Revisions

Material to be posted:

This folder will include any plan revisions required for the WIS 441 construction projects.

When to post:

All plan revisions shall be coordinated with construction.

MetaData

Material to be posted:

This folder will include all design data as established in the FDM

When to post:

All Final PS&E design materials will be posted after the PS&E is checked by Central Office and corrected by the designer and before the project is let.

PLRF

Material to be posted:

This folder will include the electronic plan reference files including all alignments, proposed geometrics, etc.

When to post:

All electronic file information posted to the ftp site weekly or as it is updated by the designer.

Project Design File Posting and Management

Design Files to be Posted

All design files should be posted when they first become available, especially the plan reference file (plrf) information. If changes have been made to any of the design files, then the updated files should be posted weekly at a minimum. Postings that are made on request can be made to the Temporary Items folder if they do not need to be kept in the project directory.

- Example Files To be Posted Weekly if Changed

File Type	Posting Location
Alignment Files (.dgn)	NE_xxxxxxxxEx / plrf

Profile Files (.dgn)	NE_xxxxxxxxEx / plrf
PW - Edge of Pavement Files (.dgn)	NE_xxxxxxxxEx / plrf
Typical Sections (.dgn)	NE_xxxxxxxxEx / xxxx

Etc. (refer to the prefix codes in Appendix A for a list of critical design files)

- Example Files To be Posted on Request

File Type	Posting Location
Plan Sheets at Tie Points (.dgn)	NE_xxxxxxxxEx / xxxx
Cross Sections at Tie Points (.dgn)	NE_xxxxxxxxEx / xxxx
Design Alignment Files (Various)	NE_xxxxxxxxEx / SDMS (sdms, xml, kcm, kcp)
Design Profile Files (Various)	NE_xxxxxxxxEx / SDMS (sdms, xml, kcm, kcp)
Public Meeting Displays	NE_xxxxxxxxEx / exhb
Others not specified	

Plan and Plat Sets for Review

Plan and Plat sets will be submitted for review at 30%, 60%, draft PS&E and final. To avoid large space requirements and prevent alteration of these files, they will be submitted in Acrobat .pdf format.

Local Host Directory Structure

The directory of your local system is not mandated. However, you may find it helpful to follow a structure similar to that of the FTP site for ease in copying files to and from the FTP site, especially considering the desire for lack of directory paths for reference files in Microstation.

Microstation Data File Standards

Microstation Standards - General

See Facilities Development Manual 15-5-2. All plan sheet files shall be delivered in Microstation format in coordinate correct position. The use of base data reference files is encouraged.

CADDS seed file

All files shall use the seed file Seed2dV8.dgn. If earlier files used SF_SEED2D.dgn that is ok, but new files should use the Seed2dV8.dgn seed file. This will set the appropriate drawing units, global origin, and coordinate system as described in FDM 15-5-2. The seed file can be found at the DOT FTP website: ftp.dot.state.wi.us/transp/roads/microstation/ in file V8_seed.exe.

CADDS color table

All files shall use the color table WDOT.tbl. This table can be obtained from the DOT FTP website: ftp.dot.state.wi.us/transp/roads/microstation/ in file V8_all.exe.

CADDS Cell Libraries and Cell Files

See FDM Procedure 15-5-4.

Cell files can be located on the DOT FTP web site at: ftp.dot.state.wi.us/transp/roads/microstation/ in file V8_all.exe.

PDF versions of the cell libraries are also available at: ftp.dot.state.wi.us/transp/roads/microstation/ in directory PDF.

CADDS Weight, Levels, Text, and Feature Standards

For Files not mentioned below.
See FDM Procedure 15-5-2.

Plan Sheet File Naming Conventions

These files are to be located in the Plan directory.
See FDM Procedure 15-5-3.
With the addition of “Paving Grade” sheets with the numbering convention of 021601_pg These sheets should follow the Plan Detail sheets and just show the proposed roadway design, structures (bridges, walls, signs and stormsewer) The drawings should be laid out exactly the same as their corresponding Paving Detail sheet without the topo and contain just the paving grades, cross slopes and lane widths along with the proposed structure and r/l callouts.

These files will be located in the directory /NE_xxxxxxxxEB/xxxx, or NE_xxxxxxxxEW/xxxx

Referencing Files in Microstation

Hard coding of the reference file path in Microstation will not be allowed. The “Save Full Path” toggle often used when attaching a reference file should not be used. Consultants should use the Microstation Configuration Variable MS_RFDIR to identify directories where reference files are located. Be cognizant that when posting files on the FTP SITE to detach unneeded raster files from the files you are posting because other consultants

may not have/need these raster files and they are in most cases large in files size and may prolong the period it takes to open and/or print files.

TRUE SCALE NOTICE

For all Microstation files, ensure that the "True Scale" setting is turned OFF. This should be verified under the menu command: WORKSPACE → PREFERENCES → select the Reference category → ensure the box next to True Scale is unchecked.

The working units for DOT Microstation files are survey feet. The true scale feature exists to allow a file developed in metric units to be directly referenced into an English unit file without conversion; however, since the survey foot is longer than the international foot a great deal of inaccuracy is brought into files when true scale is utilized and Microstation does a direct conversion of the data unbeknownst to the user. To avoid this issue, ensure that true scale is turned off.

Microstation Base Data File Standards

Graphical parameters such as level, color, weight, and line code (style) shall follow the standards as specified in the level library located on the WisDOT internet site at:
http://www.dot.state.wi.us/business/engrserv/roadway-design-mstn.htm.
Under v8_dgnlib.exe → click on "WisDOT_cadds_levels.pdf"

US41.DGNLIB WAS ALSO CREATED FOR USE ON THE 41 CORRIDOR PROJECT. This file contains new levels that have been added to Microstation V8 in addition to the standard WisDOT levels. These levels are intended to be specific to the USH 41 Corridor project. In order to use this file, place the file in the same directory as "WiSDOT_CADDS_LEVELS.DGN" and make sure that the Microstation path for your current workspace is directed to this location. (A copy of the US41.DGNLIB file is in the CADDS Standards folder under Corridor Tasks.)

A list of codes and prefixes used in naming the base data files is located in Appendix A.

These Base Data Files are to be kept on the FTP site under DESIGN PROJECTS - PLRF.

Microstation Base Data File Naming

The naming conventions are limited by DOT filing cabinet restrictions. The entire directory path from /NExxxxxxxxEB to ***.dgn can be no longer than 50 characters. Therefore, some shortened reference codes will be necessary to make an understandable, project specific file name that is compatible with file cabinet. Due to the file sharing involved, base data file name conventions in this document override those in the Facilities Development Manual.

ROADWAY ALIGNMENTS

File Name

A separate alignment file shall be developed for each construction project. The preliminary design will contain appropriately scaled alignments (20 and/or 50 and/or 100); alignment files should be named in the following manner:

Description	Consultant		Project Code		Prefix		Alt	.dgn
# of Characters	2	_	8	_	ali	_	3	

For example, an alignment file in the off-alignment section, done by HNTB, would be the following: HN_15177572_ali.dgn. An alignment file for the mainline would be the following: HN_15177572_ali_ML.dgn.

There will be one alignment file containing all the alignments in a given construction ID.

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Stationing and Tic Spacing
  Proposed alignment chains for 20, 50 and 100 scales should be based on the statewide CAiCE defaults as shown in the following table:

Scale	Station	Major Tic	Minor Tic	Major Tic	Minor Tic	Offset
	Label	Label	Label	Size	Size	
100 Scale	500	500	100	14	7	10
50 Scale	200	200	100	7	3.5	10
20 Scale	100	100	25	2.8	1.4	

- Microstation (CAiCE) Settings
  - Proposed Horizontal Alignment
  - Existing Horizontal Alignment

VERTICAL PROFILES

File Name

A separate profile file shall be developed for each roadway profile at an appropriate scale to match the alignment scale (20 or 50 or 100). The profile file names should be named in the following manner:

Description	Consultant		Project Code		Prefix		Roadway Code		alt	.dgn
# of Characters	2	_	8	_	pro	_	5	_	3	
Example	HN_15177572_pro_MNW.dgn									

The 3 digit alternative field should be a combination of the single digit alpha-numeric alternate and the double digit numeric suffix from the profile name that exists in the design software (See Project Design Software Data Files section).

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Profile Text Sizes

Scale	Proposed	Stationing	Datum	Existing

	elevation		Left, Right	elevation (not required)
100 Scale	14	14	17.5	12
50 Scale	7	7	8.75	6
20 Scale	2.8	2.8	3.5	2.4

- Microstation (CAiCE) Settings
  - Finished Vertical Profile
  - Original Vertical Profile

PROPOSED WORK (C&G, SIDE WALK, LANE LINES, ETC.)

File Name

A separate proposed work file shall be developed for each construction ID. This file contains the proposed work, new pavement, sidewalk, curb & gutter, barrier, shoulders, etc. The proposed work files should be named in the following manner:

Description	Consultant		Project Code		Prefix	.dgn
# of Characters	2	_	8	_	pw	

For example, the proposed Roadway and Sidewalk design for the Midway project done by URS would be the following: UR_15177577_pw.dgn.

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Microstation (CAiCE) Settings
  - New Pavement
  - Curb & Gutter
  - Sidewalk

RIGHT-OF-WAY

File Name

A separate file shall be developed for each construction ID. This file contains the existing and proposed right-of-way, section lines and property lines, TLE and PLEs. The file should be named in the following manner:

Description	Consultant		Project Code		Prefix	.dgn
# of Characters	2	_	8	_	row	

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Microstation (CAiCE) Settings
  - Existing right-of-way
  - Proposed right-of-way

SLOPE INTERCEPTS

File Name

A separate file shall be developed for each construction ID. This file contains the ultimate slope intercepts for all roadways. The file should be named in the following manner:

Description	Consultant		Project Code		Prefix	.dgn
# of Characters	2	_	8	_	si	

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Microstation (CAiCE) Settings
  - Slope Intercepts

TOPOGRAPHY (survey data and additional topography not in the mapping)

File Name

A separate file shall be developed for each construction ID. This file contains the survey data requested by the designer. The file should be named in the following manner:

Description	Consultant		Project Code		Prefix		Alt	.dgn
# of Characters	2	_	8	_	tp	_	3	

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Microstation (CAiCE) Settings
  - Existing topography features

EXISTING UTILITIES

File Name

A separate file shall be developed for each construction ID. This file contains the utility survey data requested by the designer. A separate file should be created for each scale (20, 50, 100). The file should be named in the following manner:

Description	Consultant		Project Code		Prefix		Scale	.dgn
# of Characters	2	_	8	_	ut	_	3	

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Microstation (CAiCE) Settings
  - Existing utilities

NOTE: UT files will be located in the Utility Coordination folder under the Corridor Tasks folder.

STORM SEWER

File Name

A separate file at an appropriate scale shall be developed for each construction ID. This file contains proposed storm sewer pipe, manhole and inlet locations, and water flow arrows (any item included with the storm sewer bid items). The file should be named in the following manner:

Description	Consultant		Project Code		Prefix		Alt	.dgn
# of Characters	2	_	8	_	ss	_	3	

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Microstation (CAiCE) Settings
  - Proposed Storm Sewer Pipes
  - Proposed Manholes
  - Proposed Inlets
  - Flow arrows

DRAINAGE

File Name

A separate file at an appropriate scale shall be developed for each construction ID. This file contains proposed drainage pipe, inlet locations, detention ponds, & water flow arrows (non-storm sewer related drainage). The file should be named in the following manner:

Description	Consultant		Project Code		Prefix		Alt	.dgn
# of Characters	2	_	8	_	dr	_	3	

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

File Standards

- Microstation (CAiCE) Settings
  - Proposed Drainage Pipes
  - Proposed Inlets
  - Flow arrows

OTHER DESIGN REFERENCE FILES

Other design reference files that are not specifically addressed in this section should be named using the following convention:

File Name

Description	Consultant		Project Code		Prefix		Alt *	.dgn
# of Characters	2	_	8	_	3	_	3	

* The Alt designation may be omitted if there is only one alternative for the reference file.

See Appendix A for a list of the appropriate prefix, project, and consultant codes.

Files, which are created for individual consultant use do not need to have a specified naming convention. Please use the consultant code as a prefix, followed by an underscore and a 10-character description. Do not place these files on the FTP site unless it is necessary to understand the file. Communication between designers is the key here.

Other Alignments and Profiles

There are a number of other alignments and profiles, which may need to be utilized for the design of the project (such as ditches).

These files will not be regularly maintained on the FTP site. However, communication is necessary to make sure that the station, offset, elevation, and slope are consistent between projects.

Survey Information

These files are located in the /WIS 441 PROJECT/CORRIDOR TASKS/REFERENCE MATERIALS/Surveys folder. They are to be copied and used as reference files in the pw and plrf folders. Users will be notified of updates to the strips and if new ones become available. Additional information on survey information is included in /WIS 441 PROJECT/DESIGN PROJECTS/TRI-COUNTY PARTNERS/Corridor Wide Files/Survey. An index for these files is located on the FTP site, and a survey data description is given in Appendix B.

(address changes in work/ modified topo)

These files may need to be modified in the future to address the proposed work becoming existing. This issue will be addressed at a later date.

3D Surface Files

The 3D Surface files from WisDOT survey and mapping are located in the /WIS 441 PROJECT/CORRIDOR TASKS/REFERENCE MATERIALS/Surveys/2008 DTM Files directory. These files are in .srv format. An index for these files is located on the FTP site, and a survey data description is given in Appendix B.

Cross Section Sheets

Cross section sheets shall be posted for the sections 200' feet from either end of the project and at project crossings. These will be in the /plan directory. These will be named as established by FDM procedure 15-5-3.

Exhibits-Post only upon request

A display should use the following naming convention:

Description	Consultant		Prefix		Description	.dgn
# of Characters	2	_	d	_	9	

For example, a display for a Public Information Meeting created by the NE region for the USH 41 corridor may have the name: NE_d_41pim1.dgn

See Appendix A for a list of the appropriate prefix, project, and consultant codes. Descriptions do not have a specific code, but further description needs to be given in the Meta Data sheet.

Microstation Bridge & Structures Design File Naming

The naming conventions to be used for the structure design files are summarized in Appendix C.

Design Software Data File Standards

Naming of Alignments and Profiles In the Design Software

Roadway Alignments and Profiles are to be named using the roadway alignment codes in appendix A. Alignments will use the roadway alignment code as a prefix (maximum 5 digit), and there will be a 2 digit maximum numeric suffix to specify the alignment alternative. Profile prefix will match the associated roadway alignment prefix, one alpha digit is available for profile alternatives to be associated to a single alignment, and the numeric suffix will match the suffix of the associated roadway alignment.

Description	prefix	alt	Numeric suffix
# of characters (alignments)	5 max	N/A	2
# of characters (profiles)	5 max	1	2

Example: Dousman St has 2 horizontal alignment alternatives, 1 profile for the first alternative and 3 options on profile for the second alternative. The names of the first horizontal alignment and profile are dous1 and dousa1. The name of the second horizontal alignment is dous2, and the associated profile options are named dousa2, dousb2, and dousc2.

Unique Alignment and Profile names will need to be used in the design software to prevent overwriting when they are being imported. The alignment codes shall be used for the individual road segments, but for other undefined alignments (such as temporary roadways, ditches, crossovers, or other features) use a unique naming convention that identifies the geometry element it is associated with.

Posting of Design Software Data Files

Due to the different design software in use on this project, the posting of alignment and profile files to the FTP site shall be in SDMS, Land xml, kcp, or kcm formats that is to be used in the Electronic Data Certification at the project's completion.

All profile and alignment data is to be posted when they are updated and an email should be sent out to the design team. Cross section data is to be posted as requested. ***All design software files are to be posted to the /WIS 441 PROJECT/DESIGN PROJECTS/TRI-COUNTY PARTNERS appropriate segement sdms directory.***

The files will be required to contain DOT's standard feature codes. Contact Carolyn Sampson (920-492-5695) for the most current feature code tables.

Naming Conventions for posting Design Software Data

Alignment and Profile

The filename will have a similar format to the alignment and profile Microstation files, but using the alignment code instead of the project code:

Description	Consultant		Prefix (ali or pro)		Roadway Code		alt	Extension

# of Characters	2	_	3	_	5	_	2 or 3	.ali or .pro

The extension for alignment files is .ali, and the extension for profile files is .pro. The 2 digit alternative field for alignments is the numeric suffix from the alignment name that exists in the design software (See Project Design Software Data Files Section). The 3 digit alternative field for profiles is a combination of the single digit alpha-numeric alternate and the double digit numeric suffix from the profile name that exists in the design software (See Project Design Software Data Files Section). The alternative code is to be removed after the selection of the preferred alternate.

Cross Sections

The filename will be as follows:

Description	Consultant		XS		Profile Code		Type (ex or fin)		Alt stage		.soe
# of Characters	2	_	2	_	8	_	3	_	4		
Example:	NE_XS_41NBC4_EX_S2.soe										

The “ex” or “fin” after the profile tag signifies whether the cross sections are existing ground or with proposed finished ground. The alternate tag will identify the appropriate stage or alternative that the cross section applies to.

Plan Sheet Development Standards

The abbreviations used in the standards below are the following

LV=Level
CO=Color (numbers reflect WDOT.ctb color table)
- 0=Black/White
- 1=Blue
- 2=Green
- 3=Red
- 4=Yellow
- 5=Purple
- 6=Orange
- 32=Pink
- 175=Grey
- 248=Salmon

WT=Line Weight
LC=Line Style
TX=Text Size (Microstation Setting)

Title Sheet

MAP- Use county map files provided by the Region.

For conventional symbols (specifically utilities) applicable to the WIS 441 Corridor use the Title Sheet Cell file found on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Design/Misc/

Typical Section Sheets

Notes: - Use solid lines for existing typical sections not dashed
- Use line weight 1 for existing typical sections and line weight of 2 for proposed

Slopes

- Pavement
  .02 '/'
- FS/BS
  4:1

Plan and Profile Sheets

SCALE

Use an appropriate plan sheet scale for all sheets (100 or 50 or 20). These would print out as 1"=200', 1"=100' or 1"=40' on an 11x17 sheet.
- The text sizes shown below reflect 100 scale. Adjust if necessary

EBS and MARSH EXCAVATION NOTES (WT=1, TX=10, LV= P_MISC_TXT)

- EBS hatching (WT=1, LV= P_PROF_MISC)
  angle = 45 degrees
  spacing = 10
- Marsh cross hatching (WT=1, LV= P_PROF_MISC)
  angle = 45 degrees & 135 degrees
  spacing = 10

DRIVEWAY NOTES (WT=1, TX=10, LV=P_MISC_TXT)

- Driveway pipes will be labeled in plan view, *not* labeled in the profile view.
- The driveway notes in the plan view will be the same as those in the cross section sheets, *except* the size of the text. (This is to conserve space with the numerous notes.)

  STA 306+40 NB
  FE LT
  1 – 18" C.P. REQ'D.

PIPE NOTES (WT=1, TX=14, LV= P_MISC_TXT)

- Examples:

  STA 11+11
  1 – 18" C.P.
  2 – APRON ENDWALLS
  1 – CONC. COLLAR REQ'D.
  SKEW 20° LHF

  STA 104+40 EB
  1 – 24" RCCP CL. III
  1 – 8MS INLET, 30' LT.
  1 – REINF. CONC. APRON ENDWALL RT.

SURFACE DRAIN NOTES (WT=1, TX=10, LV= P_MISC_TXT)

- PLAN (WT=1, TX=10, P_MISC_TXT)

  INL 25 or **MH 11**
- PROFILE (WT=1, TX=6, LV= P_MISC_TXT)

  STA 108+60
  2 – 1V INLETS
  SEE SLOPE DRAIN DETAIL

PLAN STRUCTURE NOTE (WT=1, TX=14, LV= P_MISC_TXT)

B-9-211

PROFILE STRUCTURE NOTE (WT=1, TX=14, LV= P_MISC_TXT)

STA 10+10
STRUCTURE B-9-211 REQ'D
2 SPAN – 54" PRESTRESSED GIRDER
ROADWAY WIDTH 36'
SKEW 3 14 40
MINIMUM VERTICAL CLEARANCE 16.75'
SEE STRUCTURAL DRAWINGS

BEGIN/END PROJECT NOTES (WT=3, TX=17.5, LV= P_MISC_TXT)

PLAN CONSTRUCTION NOTES (WT=2, TX=14, LV= P_MISC_TXT)

CONSTRUCTION LIMITS
STA 20+00
MATCH EXISTING
SAWCUT REQ'D.

PROFILE BEGIN/END CONSTRUCTION/GRADING NOTES (WT=3, TX=14, LV= P_MISC_TXT)

ALIGNMENT REFERENCE LINE OR CENTERLINE NOTE (WT=1, TX=14, LV= P_MISC_TXT)

STH 29 EB RT

INTERSECTION NOTES (WT=2, TX=14, LV= P_MISC_TXT)

STA 544+86 EB = STA 50+00 L

PROPERTY OWNERS (WT=1, TX=10, LV= P_MISC_TXT)

Cross Section Sheets

SCALE

- Use 10x10 scale – 441 (rural section)
- Use 10x5 for urban section (WIS 441)

MATCH LINE NOTES
Matchlines should be used whenever possible on plan sheets and may be placed at odd stations (i.e. 100+15) so to not overlap stations and tic marks.

- Median Match Lines
  - NB and SB stationing are cut from construction reference line alignment.

    (One per sheet) (WT=2,TX=17.5, LV= P_MISC_TXT)

    SEE NB CROSS SECTIONS or SEE SB CROSS SECTIONS

  - NB and SB stationing are cut from construction reference line alignment.

    (One per section) (WT=2, TX=14, LV=P_XS_TEXT)

    MATCH LINE OR MATCH LINE
    SEE SB LINE SEE NB LINE

- Ramp and Frontage Road Match Lines
  - NB and SB cross sections (WT=2, TX=14, LV= P_XS_TEXT)

    (One per section)
    MATCH LINE
    SEE FS LINE

  - Ramp or Frontage Road cross sections (WT=2, TX=14, LV= P_XS_TEXT)

    (One per section)
    MATCH LINE OR MATCH LINE
    SEE NB LINE SEE SB LINE

- Station Match Lines (WT=2, TX=14, LV= P_XS_TEXT)
  - Split sections on sheets

    MATCH LINE OR MATCH LINE A AND MATCH LINE B
    FS LINE OR NA LINE

EBS and MARSH EXCAVATION NOTES (WT=1, TX=14, LV= P_XS_TEXT)

- EBS hatching (WT=1, LV= P_XS_EAR_EBS)
  angle = 45 degrees
  spacing =10
- Marsh cross hatching (WT=1, LV= P_XS_BOLD)
  angle = 45 degrees and 135 degrees
  spacing = 10

Appendix A

Codes for use in Microstation and SDMS file naming conventions. Contact Wally Wolak if additional codes are necessary.

Project ID's and Project Codes

Preliminary & Final ID's

Design Project ID	Construction Project ID – (Project Code is 8-digit number)	Responsible Firm	Project Name
1517-07-04 System	1517-07-71	Kapur	US 10 Mainline (Coldspring Road – US 41)
1517-07-04 System	1517-07-72	Kapur	US 41 Interchange Phase 1
1517-07-04 System	1517-07-73	Kapur	US 41 Interchange Phase 2
1517-07-04 System	1517-07-74	Kapur	US 41 Mainline Phase 1
1517-07-04 System	1517-07-75	Kapur	US 41 Mainline Phase 2
1517-07-04 System	1517-07-76	URS	Little Lake Butte des Morts Structure Phase 1
1517-07-04 System	1517-07-77	URS	Little Lake Butte des Morts Structure Phase 2
1517-07-04 System	1517-07-78	Kapur	US 10 / WIS 441 Mainline (LLBDM – Tayco Street) Phase 1
1517-07-04 System	1517-07-79	Kapur	US 10 / WIS 441 Mainline (LLBDM – Tayco Street) Phase 2
1517-07-04 System	1517-07-80	Kapur	US 41 Interchange Early Steel Fabrication
1517-07-04 System	1517-07-81	URS	Little Lake Butte des Morts Early Steel Fabrication
1517-07-04 Off-Alignment	1517-75-71	HNTB	US 10 / WIS 441 Mainline (Tayco Street – Racine Road)
1517-07-04 Off-Alignment	1517-75-72	HNTB	US 10 / WIS 441 Mainline (Racine Road – Appleton Road)

1517-07-04 Tangent	1517-75-73	Kapur	US 10 / WIS 441 Mainline (Appleton Road – Oneida Street)
1517-07-04 Tangent	1517-75-74	Kapur	WIS 441 Mainline (Oneida Street – Project Limits)
1517-07-04 Off-Alignment	1517-75-75	HNTB	Racine Road (CTH P) Interchange
1517-07-04 Off-Alignment	1517-75-76	HNTB	Racine Road Reconstruction
1517-07-04 Off-Alignment	1517-75-77	URS	Midway Road (CTH AP) Interchange
1517-07-04 Tangent	1517-75-78	Kapur	Appleton Road (WIS 47) Interchange
1517-07-04 Tangent	1517-75-79	Kapur	Oneida Street (US 10) Interchange

Prefix Codes
(3 characters - more codes to be added as requested)

Prefix	Description
ali	Alignments - Horizontal alignment
cone	Contours – Existing
conp	Contours – Proposed
dr	Drainage culverts
ecp	Erosion Control - Permanent
ect	Erosion Control - Temporary
ew	Earth work
fen	Fence
gr	Paving Grades
lg	Lighting - Street Lighting
topo	Mapping - Central office mapping from flights
ml	Match Lines
nw	Noise Walls
pd	Plan details
pnd	Ponds
pro	Profile - Vertical profile
pm	Pavement Marking
ps1	Permanent Signing Type 1
ps2	Permanent Signing Type 2
pw	Proposed Work
pwt	Temporary Proposed Work
ret	Retaining Walls
rm	Removals
row	Right of Way
sb	Soil Borings
si	Slope Intercepts
ss	Storm Sewer

stg	Staging
str	Structures - Bridges, box culverts
tp	Topography - Surveyed topography not in mapping
ts	Traffic Signals - proposed
ut	Utilities - Surveyed utilities and updates
wet	Wetlands
xs	Cross sections

-If staging is needed add stage # designator to the end of the file name.

s1, s2,..	Construction Staging files (example ne_0302_pw_s1)

Consultant Codes
(2 characters)

NE	DOT NE REGION
CO	DOT Central Office
BH	Becher Hoppe
HN	HNTB Corporation
JT	JT Engineering
KA	Kapur Associates
KS	K. Singh & Associates

OR	Ourston
PA	Patrick Engineering
SP	Spann and Associates
UR	URS Corporation

Roadway Codes
(5 characters max-more to be added upon assignment and request)

Roadway	Designator	Responsible Firm
APPLETON ROAD NB	ANB	KA
APPLETON ROAD NE RAMP	ANE	KA
APPLETON ROAD NW RAMP	ANW	KA
MIDWAY ROAD (CTH AP) EB	MEB	UR
MIDWAY ROAD (CTH AP) WB	MWB	UR
MIDWAY ROAD AT ONEIDA	M	UR
APPLETON ROAD SB	ASB	KA
APPLETON ROAD SE RAMP	ASE	KA
APPLETON ROAD SW RAMP	ASW	KA
DRUM CORPS DRIVE	D	KA
US 10 / WIS 441 EB	EB	KA, HN
US 10 / WIS 441 WB	WB	KA, HN
EAST MEADOW GROVE	MD	UR
ONEIDA STREET NB	TNB	UR
ONEIDA STREET SB	TSB	UR
ONEIDA STREET NE RAMP	TNE	KA, UR
ONEIDA STREET NW RAMP	TNW	KA, UR
ONEIDA STREET SE RAMP	TSE	KA, UR
ONEIDA STREET SW RAMP	TSW	KA, UR

WEST VALLEY ROAD	V	KA
WEST VALLEY ROAD / EAST ROELAND AVE	V	UR
US 10 EB TO US 41 NB	FEN	KA
US 10 EB TO US 41 SB	FES	KA
US 41 NB TO 10 / WIS 441 EB	FNE	KA
US 41 NB TO 10 WB	FNW	KA
US 41 SB TO US 10 / WIS 441 EB	FSE	KA
US 41 SB TO US 10 WB	FSW	KA
US 10 /WIS 441 WB TO US 41 NB	FWN	KA
US 10 / WIS 441 WB TO US 41 SB	FWS	KA
US 41 NB	NB	KA
US 41 SB	SB	KA
RACINE ROAD RAMP CONNECTOR NB	CNB	HN
RACINE ROAD RAMP CONNECTOR SB	CSB	HN
MIDWAY ROAD NE RAMP	MNE	HN, UR
MIDWAY ROAD NW RAMP	MNW	HN, UR
MIDWAY ROAD SE RAMP	MSE	HN, UR
MIDWAY ROAD SW RAMP	MSW	HN, UR
9TH STREET	NS	HN
RACINE ROAD (CTH P) NB	RNB	UR
RACINE ROAD (CTH P) SB	RSB	UR
RACINE ROAD NE RAMP	RNE	HN
RACINE ROAD NW RAMP	RNW	HN
RACINE ROAD SE RAMP	RSE	HN
RACINE ROAD SE BYPASS	RSEC	HN
RACINE ROAD SW RAMP	RSW	HN
RACINE ROAD SW BYPASS	RSWC	HN
RACINE ROAD ROUNDABOUT	RRT	HN
STH 441 WB ROUNDABOUT	RRN	HN
TAYCO STREET	TS	HN
12TH STREET	TWS	HN
RACINE ROAD AT MIDWAY	R	UR

Appendix B

Survey Files

All WisDOT survey files are located on the ftp site at / Projects / USH41CEP / CORRIDOR TASKS / Surveys in the following folders:

441 Tri-County Project
All WisDOT survey files are located on the ftp site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Survey/

Mapping

- WisDOT central office mapping files (.dgn format) Mapping file summary.xls

SRV

- WisDOT central office .srv files
- SRV file summary.xls

Ground Survey

- Various survey data provided by WisDOT NE Region, organized by project segment and in respective format folder (DGN, KCM, XML, KCP, etc.)
- Ground survey summary.pdf

UTILITIES

- Survey data of utilities will be in the respective Ground Survey folder
- The actual composite utility base data files (ut files), will be under the Corridor Task folder for Utility Coordination, under the county and the design project folder
- A UT file update log.xls will also be maintained under the Utility Coordination folder

All survey information is in Survey Feet

Horizontal Datum:

Winnebago NAD83(1991) WCCS
Calumet County?

All data has units of Survey Feet

Vertical Datum:

Winnebago: NGVD 29
Calumet County?

Appendix C

Bridge & Structure Plans Electronic Data File Standards

Design File Location on FTP:
All structure design files and related structure information will be located on the WIS 441 FTP site under the project ID folder, such as:

ftp://ftp5.graef-usa.com/WIS441PROJECT/DESIGNPROJECTS/Template-ContractPackage/Structure/

Plan Sheet Design Files:
In order to maintain a consistent file naming convention for all of the structure design files, each structure designer is to utilize the following design file naming convention.

	Page #	-	Structure #	-	Description Code	Extension
# of Characters	2	1	3 or 4	1	See table	.dgn
Example:	01-615-GP.dgn					

Page Number: The order of the sheet in the final plan set.
Structure Number: The last digits of the bridge number. (i.e. for B-05-634, the # is 634)
Description Code: The table below defines the codes for the design file naming standards.
Extension: Design files are assumed to be MicroStation DGN files

Code	Drawing Description
BRIDGES & GENERAL	
GP	General plan and elevation
GP-UNIT#	General plan and Elevation only when more than 1 GP sheet is needed for multiple units of long structures
DWG-LIST	List of drawings (this sheet only needed when drawing list is lengthy)
XSECT	Bridge Cross Section, Layout Data, and quantities
NOTES	General notes if not included on general plan
QTY	Schedule of Total Estimated Quantities (this sheet only needed for lengthy quantities list that cannot be combined with general notes or cross section sheet)
PLAN-ELEV-SPAN#-#	Detailed Plan and Elevation for Spans # to # (for complex bridges only requiring more detailed plan & elev. sheets)
SOILS	Subsurface Exploration
STAGE	Construction Staging (for bridges with complex construction staging only)
EXCAV-N-ABUT	Excavation Plan for North Abutment
EXCAV-PIER#-#	Excavation Plan for Piers # Through # (only for bridges requiring details for complex excavation constraints)
FDN-LAYOUT-UNIT#	Foundation Layout & pile data-unit # (Include the unit# only when there are multiple units requiring separate fdn layout

	sheets)
FDN-DOWEL	Layouts of dowels for foundations
N-ABUT	North Abutment plans. (If more than 1 sheet is required consider using the detailed sheet codes listed below) (Use S for south, E for east, W for west for the applicable abutment.)
N-ABUT-PLAN-ELEV	North Abutment Plan, Elevation & Sections
N-ABUT-DET	North Abutment Details
N-ABUT-WING	Wingwall details for north abutment
N-ABUT-BAR	North Abutment Reinforcement Bar Schedule and Bend Details
N-ABUT-DIAPH	North Abutment Diaphragm
PIER#	Pier plans. (If more than 1 sheet is required consider using the detailed sheet codes listed below)
PIER#-FND	Foundation Plan and Sections for Pier # (use this sheet when not able to be combine with overall plan & elevation sheet for pier)
PIER#-FDN-BAR	Reinforcement Bar Schedule and Bend Details for pier foundation (use this sheet only when not convenient to combine this rebar info with that for the remaining portion of the piers)
PIER#-PLAN-ELEV	Plan, Elevation & Sections for Pier #
PIER#-CAP-REINF	Pier Cap Reinforcement (use this sheet when not able to combine this info with that for the pier plan and elevation sheet)
PIER#-REINF	Reinforcement Details for Pier #
PIER#-BAR	Pier Reinforcement Bar Schedule and Bend Details (use this sheet when not able to combine this info with that for the pier reinforcement details sheet)
PIER#-DIAPH	Pier # Diaphragm
DRAIN-PIER	Piping details for deck drains at Piers
BRNG-PED-REINF	Bearing Pedestal Reinforcement (use this sheet for bridges with special pedestals required for complex bearing systems (Pots, etc.)
BRNG-LAYOUT	Bearing Layout Unit #
BRNG-DET	Bearing Details
JACKING	Jacking Provision Details
FRAMING-UNIT#	Girder Layout & Framing Plan Unit #
GIRDR	Girder plans. (If more than 1 sheet is required consider using the detailed sheet codes listed below)
GIRDR-ELEV-UNIT#	Girder Elevation Field Sections Unit #
GIRDR-SPLICE	Girder Field Splice Details
GIRDR-MISC	Girder Miscellaneous Details
GIRDR-BRACE	Girder Bracing Details
GIRDR-ACCESS	Girder Access Hatch, Vent Hole & Drain Hole
GIRDR-CAMB-UNIT#	Girder Camber Diagram for Unit #
DIAPH	Steel Diaphragm detail between girders.
SUPER	Superstructure details. (If more than 1 sheet is required consider using the detailed sheet codes listed below)
SLAB-ELEV	Top of Slab Elevations for Unit #

TAN-OFFSETS-UNIT#	Tangent Offsets Unit #
DECK-LAYOUT-UNIT#	Deck Layout for Unit #
DECK-SECT-UNIT#	Deck Sections for Unit #
DECK-REINF-TOP	Top Deck Reinforcement
DECK-REINF-BOT	Bottom Deck Reinforcement
DECK-MISC	Miscellaneous Deck Details
DECK-BAR	Deck Reinforcement Schedule
DRAIN	Floor Drains
DRAIN-PIPE	Floor Drain Piping
JOINT-ABUT-N	Expansion Joint North Abutment
JOINT-PIER#	Expansion Joint Pier #
JOINT-REINF	Expansion Joint Reinforcement & Details
JOINT-DET	Expansion Joint Cover Plates
JOINT-SECT	Expansion Joint Sections
PARAP	Parapet plans (If more than 1 sheet is required consider using the detailed sheet codes listed below)
PARAP-LAYOUT-UNIT#	Parapet Layout for Unit #
PARAP-ELEV-UNIT#	Parapet Elevation for Unit #
PARAP-EMBED-UNIT#	Parapet Embeded Work for Unit #
PARAP-SECT	Parapet Sections
PARAP-DET	Parapet Details
PARAP-BAR-UNIT#	Parapet Reinforcement Schedule for Unit #
PARAP-LIGHT-UNIT#	Parapet Light Pole Base Layout for Unit #
LIGHT	Lighting Details
LIGHT-BASE-REINF-UNIT#	Parapet Light Pole Base Reinforcement for Unit #
SIGN-BASE-UNIT#	Parapet Sign Base Layout Unit #
SIGN-BASE-REINF	Parapet Sign Base Reinforcement for Unit #
AESTH	Bridge Aesthetics Plans
FENCE	Fencing Details
RAIL	Railing Details
DEMO	Demolition Plan
BOX CULVERTS	
HEADR	Header Beam Reinforcing
XSECT	Typical Section Through Box Culvert
SLAB-TOP	Top Slab Reinforcing Plan
SLAB-BOT	Bottom Slab Reinforcing Plan
SLAB-BAR	Slab Reinforcing Schedule
WING	Wingwall Reinforcing Elevations / Schedules / Details
APRN-S	Apron Reinforcing Plan / Schedules / Details (Use “S, N, E, W” for apron location: south, north, east, west)

If there is more than one sheet for a particular page description code, then the page number will distinguish between the sheets (Example: 04-638-ABUT-S and 05-638-ABUT-S), otherwise the detailed codes can be used to further identify the sheet content.

Reference Files
In order to create the design files it may be necessary to create several DGN files and reference them into one ultimate sheet file. Naming guidance for the reference files is described below:

	R	Page #		Structure #		Description Code	Extension
# of Characters	1	2	-	3 or 4	-	See table	.dgn
Example:	R01-615-Layout.dgn						

R: This will identify the DGN file as a reference file for a particular page
Page Number: The final plan page # that will utilize the reference file.
Structure Number: The last digits of the bridge number. (i.e. for B-05-634, the # is 634)
Description Code: The table below defines the codes for the reference file naming.
Extension: Reference files are assumed to be MicroStation DGN files

Code		Reference File Description
Border		Sheet Borders
Notes		Notes, labels, arrows, stationing, dimensions, etc.
Layout		parapet & deck edge / box culvert cell and wing walls outline for reference into GP, and roadway design STR file
QTY		Schedule of total estimated quantities

STR Files
In order to create the overall project structure layout (STR) file for the roadway plans, each of the individual bridge layout files will be used to reference into the roadway design files.

The STR file will be located under the individual roadway design plan reference (PLRF) file folder, such as:

ftp://ftp5.graef-usa.com/WIS441PROJECT/DESIGNPROJECTS/Template-ContractPackage/PLRF/

Appendix D

IT Team Member Contact Information

Firm	Name	Phone	e-mail	Responsibility
WISDOT NE Region	Keith Sowinski	920-492-4132	Keith.sowinski@dot.state.wi.us	Design/ IT Coordination/ Posting
WISDOT NE Region	Carolyn Sampson	920-492-5695	carolyn.sampson@dot.state.wi.us	CAD
Kapur	Justin Arndt	414-751-7233	jarndt@kapur-assoc.com	Design/CAD
URS	Nick Becker	414-831-4122	Nick.becker@urs.com	Design/CAD
HNTB	Nick Spitzer	414-410-6754	nspitzer@hntb.com	Design/CAD

Design Software

Firm	Software
WisDOT	CAiCE
HNTB	InRoads
Kapur	InRoads
URS	InRoads

WIS 441 Tri-County Project Corridor Manual

Chapter 2: Corridor Standards

Please see each section of this chapter regarding *Issued* and *Revised* dates.

Scope/Purpose

This chapter includes corridor issues not addressed in an individual chapter, but that still warrant documentation. As additional corridor issues arise they will be recorded here.

Section 2a:	PS&E Delivery Schedules
Section 2b:	NER and Consultant Contact Lists
Section 2c:	SPV Naming/Numbering
Section 2d:	Project Limits/IDs
Section 2e:	Public Interest Findings
Section 2f:	Fencing
Section 2g:	Signing
Section 2h:	Maintenance Crossovers
Section 2i:	Crash Investigation Sites
Section 2j:	Law Enforcement Pads
Section 2k:	Bike/Pedestrian Accommodations
Section 2l:	FIIPS and PS&E Coordination
Section 2m:	State Municipal Agreements (SMAs)
Section 2n:	Document Control
Section 2o:	Railroad Coordination

WIS 441 Tri-County Project Corridor Manual

Section 2a: PS&E Delivery Schedules

Chapter Contact: Mike Beurket

Issued: February 14, 2012

Revised:

March 8, 2012	March 15, 2013	March 17, 2014
April 4, 2012	April 15, 2013	April 15, 2014
May 7, 2012	May 15, 2013	May 15, 2014
June 15, 2012	June 17, 2013	July 15, 2014
July 13, 2012	July 15, 2013	August 19, 2014
August 15, 2012	August 15, 2013	September 19, 2014
September 14, 2012	September 16, 2013	October 17, 2014
October 19, 2012	September 16, 2013	November 17, 2014
November 15, 2012	October 15, 2013	January 17, 2015
December 17, 2012	November 15, 2013	
January 15, 2013	December 16, 2013	
February 15, 2013	February 17, 2014	

Scope/Purpose

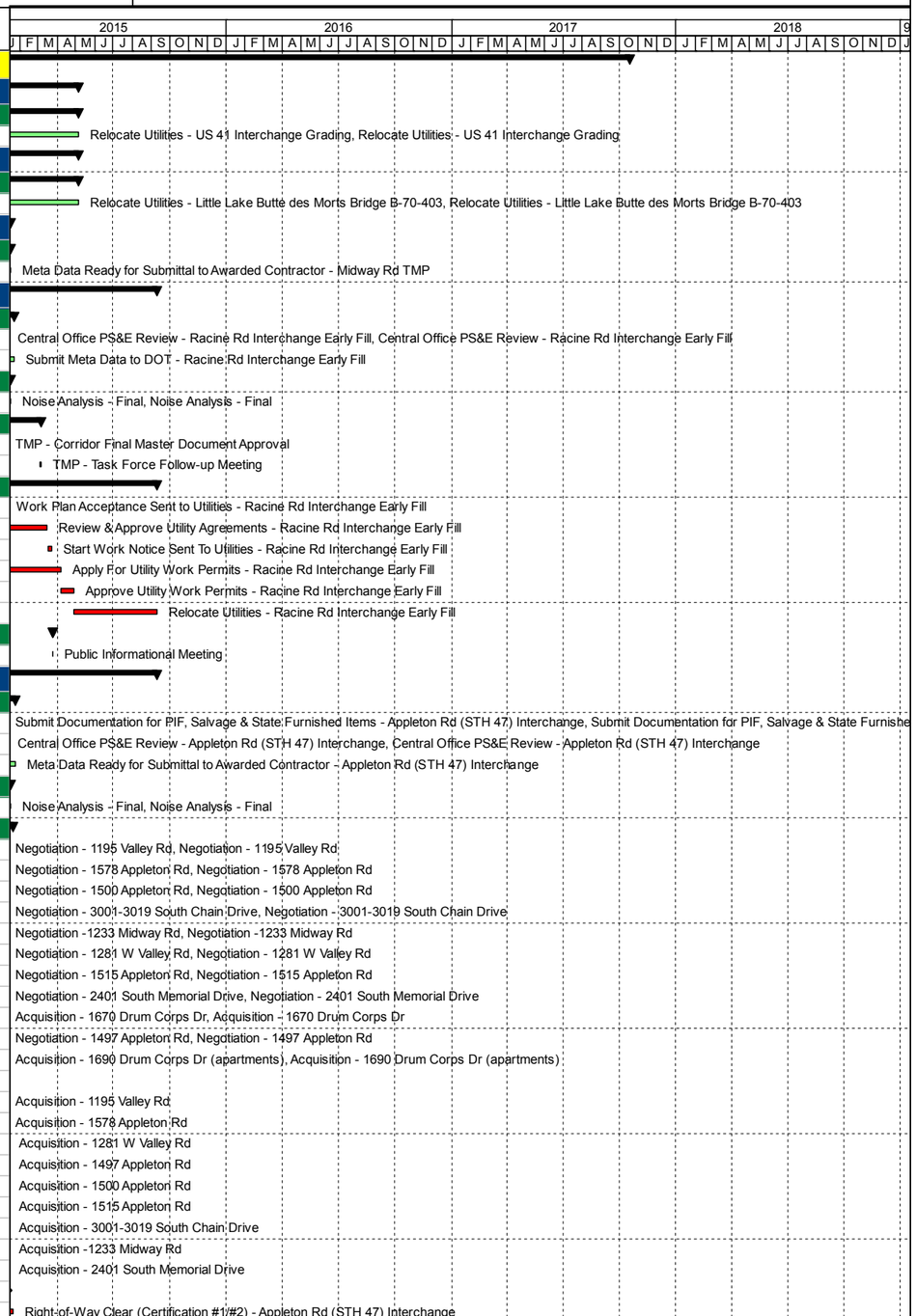
This chapter section provides the design and construction schedules, as well as funding scenarios for advancement, of the WIS 441 Tri-County Project. The attached schedules are subject to change. Please see the FTP site for the most current version.

ftp://ftp5.graef-usa.com/WIS441PROJECT/PROGRAMCONTROLS/SCHEDULES/P6Schedules/

Attachments

- WIS 441 Milestone Schedule (Dated 01-07-15)
- WIS 441 Design Delivery Schedule (Dated 12-17-14)
- Funding Scenarios – Tech Memo 8 (Dated 02-10-12)

Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
WIS 441 Tri-County Project		1484	20-Dec-11 A	17-Oct-17	10-Dec-13	19-Jul-18	194			
1517-07-72 US 41 Interchange Grading		95	15-Mar-14 A	06-May-15	20-Mar-18	19-Jul-18	819			
Utilities		95	15-Mar-14 A	06-May-15	20-Mar-18	19-Jul-18	819			
C03E-3442695	Relocate Utilities - US 41 Interchange Grading	95	15-Mar-14 A	06-May-15	20-Mar-18	19-Jul-18	819	EBEL		5/13/14
1517-07-76 Little Lake Butte des Morts Bridge B-70-403		95	15-Mar-14 A	06-May-15	20-Mar-18	19-Jul-18	819			
Utilities		95	15-Mar-14 A	06-May-15	20-Mar-18	19-Jul-18	819			
C03E-3443675	Relocate Utilities - Little Lake Butte des Morts Bridge B-70-403	95	15-Mar-14 A	06-May-15	20-Mar-18	19-Jul-18	819	EBEL		8/12/14
1517-75-82 Midway Rd TMP		10	05-Jan-15	16-Jan-15	28-Jan-15	10-Feb-15	17			
Design - General, 30%, 60%, 75%, 90%, PS&E		10	05-Jan-15	16-Jan-15	28-Jan-15	10-Feb-15	17			
C03E-3469245	Meta Data Ready for Submittal to Awarded Contractor - Midway Rd TMP	10	05-Jan-15	16-Jan-15*	28-Jan-15	10-Feb-15	17	EBEL		2/10/15
1517-75-71 Racine Rd Interchange Early Fill		354	18-Nov-13 A	09-Sep-15	30-Jun-14	19-Jul-18	731			
Design - General, 30%, 60%, 75%, 90%, PS&E		55	31-Oct-14 A	21-Jan-15	20-Feb-15	10-Mar-15	34			
C03E-3445240	Central Office PS&E Review - Racine Rd Interchange Early Fill	45	31-Oct-14 A	07-Jan-15	20-Feb-15	24-Feb-15	34	EBEL		3/10/15
C03E-3447290	Submit Meta Data to DOT - Racine Rd Interchange Early Fill	10	08-Jan-15	21-Jan-15*	25-Feb-15	10-Mar-15	34	EBEL		3/10/15
Environmental		1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897			
C03E-3453875	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897	EBEL		3/10/15
TMP - Tasks		44	05-Jan-15	05-Mar-15	19-Jul-18	19-Jul-18	863			
C03E-3464980	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	19-Jul-18	19-Jul-18	907	EBEL		3/10/15
C03E-3469885	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL		3/10/15
Utilities		176	05-Jan-15	09-Sep-15	30-Jun-14	10-Mar-15	-129			
C03E-3445210	Work Plan Acceptance Sent to Utilities - Racine Rd Interchange Early Fill	1	05-Jan-15	05-Jan-15	30-Jun-14	30-Jun-14	-129	EBEL		3/10/15
C03E-3445215	Review & Approve Utility Agreements - Racine Rd Interchange Early Fill	50	06-Jan-15	16-Mar-15	06-Aug-14	15-Oct-14	-104	EBEL		3/10/15
C03E-3445150	Start Work Notice Sent To Utilities - Racine Rd Interchange Early Fill	5	17-Mar-15	23-Mar-15	16-Oct-14	22-Oct-14	-104	EBEL		3/10/15
C03E-3445155	Apply For Utility Work Permits - Racine Rd Interchange Early Fill	65	06-Jan-15	06-Apr-15	01-Jul-14	01-Oct-14	-129	EBEL		3/10/15
C03E-3445220	Approve Utility Work Permits - Racine Rd Interchange Early Fill	15	07-Apr-15	27-Apr-15	02-Oct-14	22-Oct-14	-129	EBEL		3/10/15
C03E-3445145	Relocate Utilities - Racine Rd Interchange Early Fill	95	28-Apr-15	09-Sep-15*	23-Oct-14	10-Mar-15	-129	EBEL		3/10/15
Workshops, Local Agency, PIM & General Meetings		1	25-Mar-15	25-Mar-15	19-Jul-18	19-Jul-18	849			
C03E-3459730	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	19-Jul-18	19-Jul-18	849	EBEL		3/10/15
1517-75-78 Appleton Rd (STH 47) Interchange		398	18-Nov-13 A	09-Sep-15	27-Jun-14	19-Jul-18	731			
Design - General, 30%, 60%, 75%, 90%, PS&E		99	02-Sep-14 A	22-Jan-15	19-Feb-15	19-Jul-18	893			
C03E-3469275	Submit Documentation for PIF, Salvage & State Furnished Items - Appleton Rd (STH 47) Interchange	10	02-Sep-14 A	05-Jan-15	19-Jul-18	19-Jul-18	907	VRAN		3/10/15
C03E-3446955	Central Office PS&E Review - Appleton Rd (STH 47) Interchange	45	03-Nov-14 A	08-Jan-15	19-Feb-15	24-Feb-15	33	VRAN		3/10/15
C03E-3447325	Meta Data Ready for Submittal to Awarded Contractor - Appleton Rd (STH 47) Interchange	10	09-Jan-15	22-Jan-15*	25-Feb-15	10-Mar-15	33	VRAN		3/10/15
Environmental		1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897			
C03E-3454365	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897	VRAN		3/10/15
Plats & Real Estate		67	29-Sep-14 A	19-Jan-15	01-Oct-14	31-Oct-14	-52			
C03E-3450130	Negotiation - 1195 Valley Rd	64	29-Sep-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3450200	Negotiation - 1578 Appleton Rd	64	29-Sep-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3450185	Negotiation - 1500 Appleton Rd	64	03-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3464485	Negotiation - 3001-3019 South Chain Drive	64	09-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3464680	Negotiation -1233 Midway Rd	64	15-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3450230	Negotiation - 1281 W Valley Rd	64	16-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3454840	Negotiation - 1515 Appleton Rd	64	16-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3464725	Negotiation - 2401 South Memorial Drive	64	16-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3454940	Acquisition - 1670 Drum Corps Dr	5	02-Dec-14 A	05-Jan-15	17-Oct-14	17-Oct-14	-51	VRAN		3/10/15
C03E-3450140	Negotiation - 1497 Appleton Rd	64	03-Dec-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3454970	Acquisition - 1690 Drum Corps Dr (apartments)	5	16-Dec-14 A	05-Jan-15	17-Oct-14	17-Oct-14	-51	VRAN		3/10/15
C03E-3446745	Negotiate Acquisition of All Parcels & Easements - Appleton Rd (STH 47) Interchange	0		05-Jan-15*		01-Oct-14	-63	VRAN		3/10/15
C03E-3450125	Acquisition - 1195 Valley Rd	0	05-Jan-15	05-Jan-15	17-Oct-14	17-Oct-14	-51	VRAN		3/10/15
C03E-3450210	Acquisition - 1578 Appleton Rd	0	05-Jan-15	05-Jan-15	17-Oct-14	17-Oct-14	-51	VRAN		3/10/15
C03E-3450240	Acquisition - 1281 W Valley Rd	5	05-Jan-15	09-Jan-15	13-Oct-14	17-Oct-14	-56	VRAN		3/10/15
C03E-3450150	Acquisition - 1497 Appleton Rd	5	05-Jan-15	09-Jan-15	13-Oct-14	17-Oct-14	-56	VRAN		3/10/15
C03E-3450195	Acquisition - 1500 Appleton Rd	5	05-Jan-15	09-Jan-15	13-Oct-14	17-Oct-14	-56	VRAN		3/10/15
C03E-3454850	Acquisition - 1515 Appleton Rd	5	05-Jan-15	09-Jan-15	13-Oct-14	17-Oct-14	-56	VRAN		3/10/15
C03E-3464495	Acquisition - 3001-3019 South Chain Drive	5	05-Jan-15	09-Jan-15	13-Oct-14	17-Oct-14	-56	VRAN		3/10/15
C03E-3464690	Acquisition -1233 Midway Rd	5	05-Jan-15	09-Jan-15	13-Oct-14	17-Oct-14	-56	VRAN		3/10/15
C03E-3464735	Acquisition - 2401 South Memorial Drive	5	05-Jan-15	09-Jan-15	13-Oct-14	17-Oct-14	-56	VRAN		3/10/15
C03E-3446915	Acquire Parcels & Easements - Appleton Rd (STH 47) Interchange	0		09-Jan-15*		17-Oct-14	-56	VRAN		3/10/15
C03E-3446890	Right-of-Way Clear (Certification #1/#2) - Appleton Rd (STH 47) Interchange	6	12-Jan-15	19-Jan-15*	24-Oct-14	31-Oct-14	-52	VRAN		3/10/15

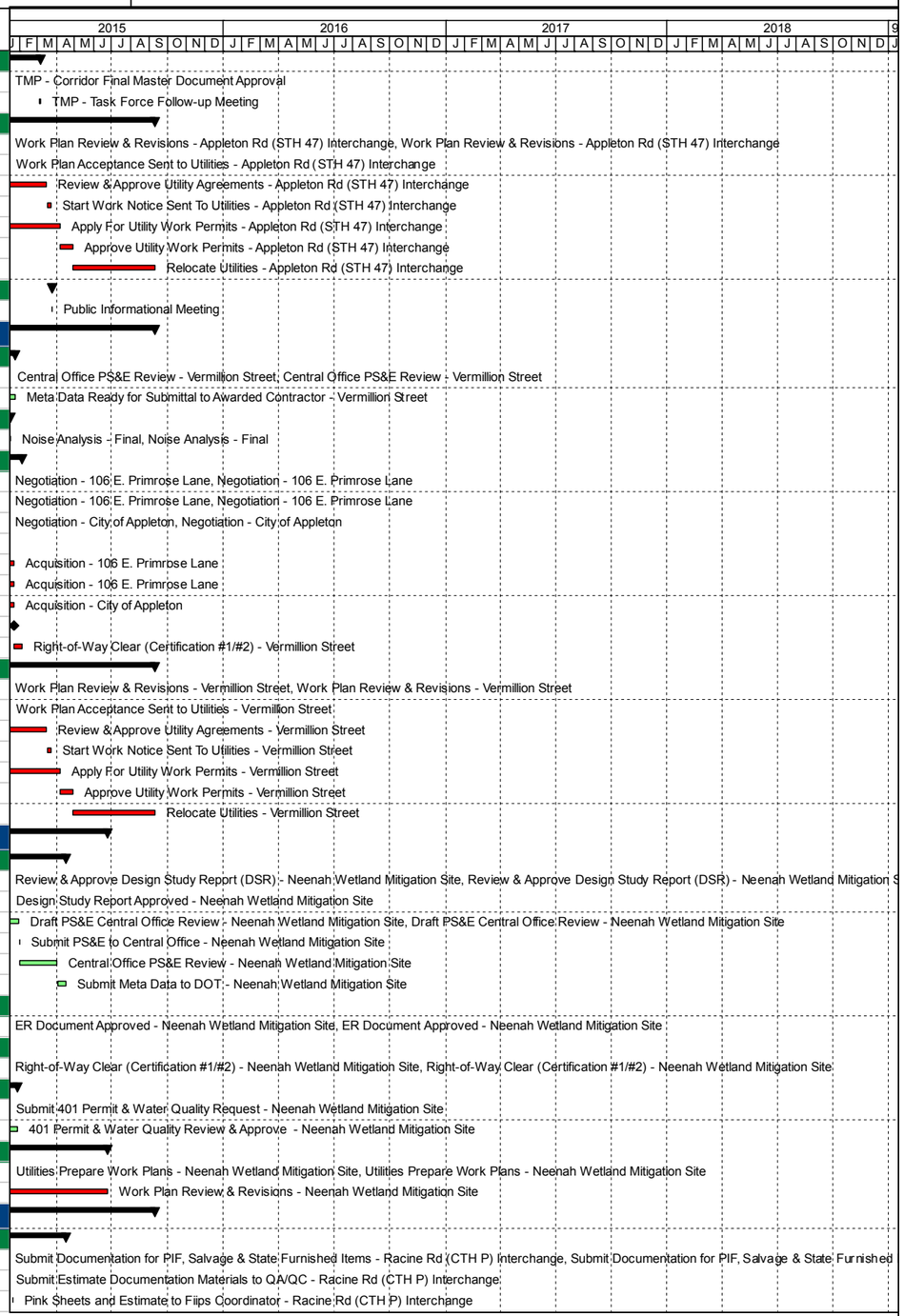


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

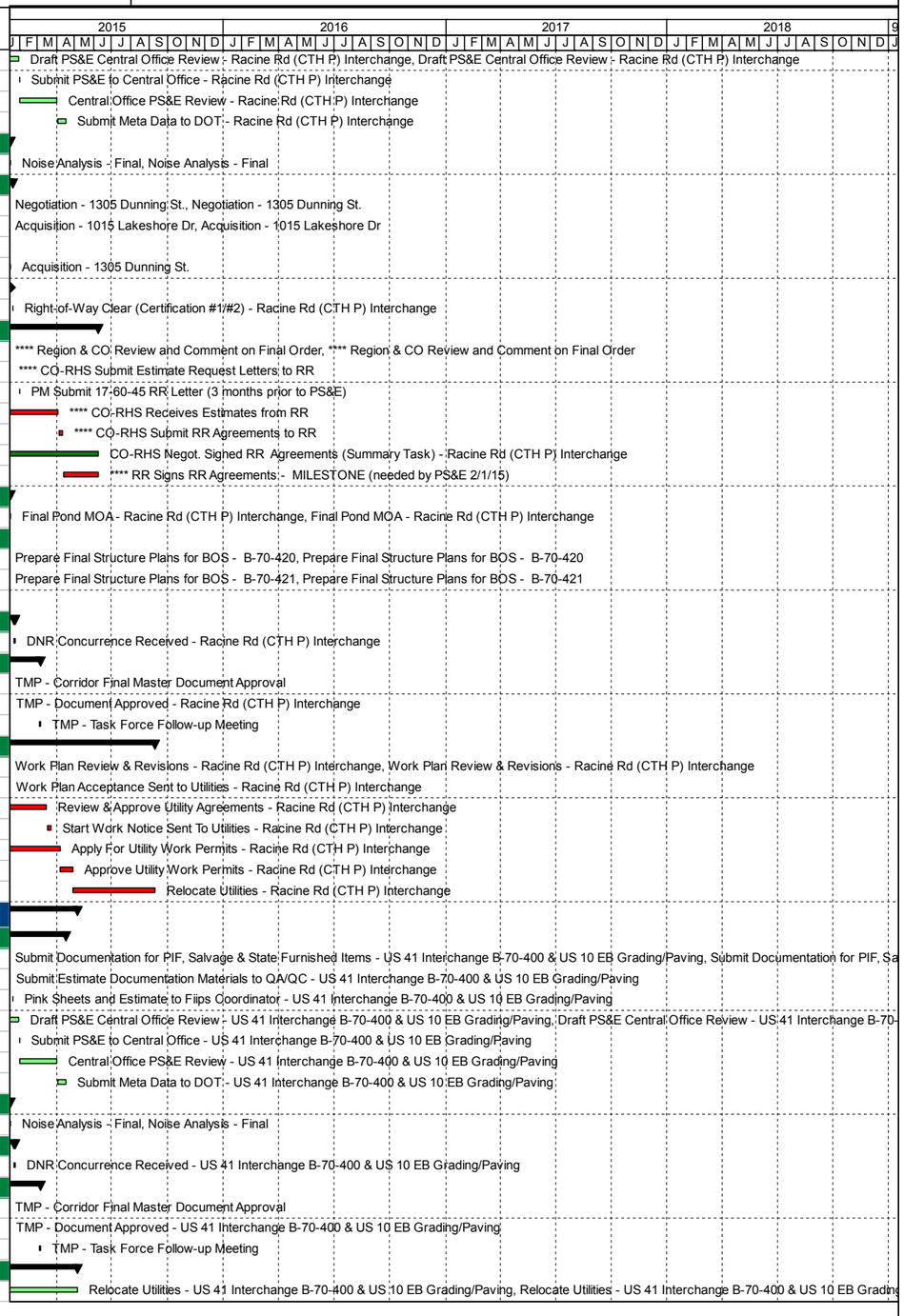
WIS 441 Project Milestone Schedule

Data Date: 05-Jan-15
Run Date: 07-Jan-15

Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
TMP - Tasks		44	05-Jan-15	05-Mar-15	19-Jul-18	19-Jul-18	863			
C03E-3465030	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	19-Jul-18	19-Jul-18	907	VRAN		3/10/15
C03E-3469890	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	VRAN		3/10/15
Utilities		398	14-Jan-14 A	09-Sep-15	27-Jun-14	10-Mar-15	-129			
C03E-3446900	Work Plan Review & Revisions - Appleton Rd (STH 47) Interchange	120	14-Jan-14 A	05-Jan-15	27-Jun-14	27-Jun-14	-129	VRAN		3/10/15
C03E-3446925	Work Plan Acceptance Sent to Utilities - Appleton Rd (STH 47) Interchange	1	05-Jan-15	05-Jan-15	30-Jun-14	30-Jun-14	-129	VRAN		3/10/15
C03E-3446930	Review & Approve Utility Agreements - Appleton Rd (STH 47) Interchange	50	06-Jan-15	16-Mar-15	06-Aug-14	15-Oct-14	-104	VRAN		3/10/15
C03E-3446865	Start Work Notice Sent To Utilities - Appleton Rd (STH 47) Interchange	5	17-Mar-15	23-Mar-15	16-Oct-14	22-Oct-14	-104	VRAN		3/10/15
C03E-3446870	Apply For Utility Work Permits - Appleton Rd (STH 47) Interchange	65	06-Jan-15	06-Apr-15	01-Jul-14	01-Oct-14	-129	VRAN		3/10/15
C03E-3446935	Approve Utility Work Permits - Appleton Rd (STH 47) Interchange	15	07-Apr-15	27-Apr-15	02-Oct-14	22-Oct-14	-129	VRAN		3/10/15
C03E-3446860	Relocate Utilities - Appleton Rd (STH 47) Interchange	95	28-Apr-15	09-Sep-15*	23-Oct-14	10-Mar-15	-129	VRAN		3/10/15
Workshops, Local Agency, PIM & General Meetings		1	25-Mar-15	25-Mar-15	19-Jul-18	19-Jul-18	849			
C03E-3470170	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	19-Jul-18	19-Jul-18	849	VRAN		3/10/15
1517-75-81 Vermillion Street		369	15-Nov-13 A	09-Sep-15	27-Jun-14	19-Jul-18	731			
Design - General, 30%, 60%, 75%, 90%, PS&E		55	03-Nov-14 A	22-Jan-15	19-Feb-15	10-Mar-15	33			
C03E-3467620	Central Office PS&E Review - Vermillion Street	45	03-Nov-14 A	08-Jan-15	19-Feb-15	24-Feb-15	33	VRAN		3/10/15
C03E-3467630	Meta Data Ready for Submittal to Awarded Contractor - Vermillion Street	10	09-Jan-15	22-Jan-15*	25-Feb-15	10-Mar-15	33	VRAN		3/10/15
Environmental		1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897			
C03E-3467465	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897	VRAN		3/10/15
Plats & Real Estate		78	16-Oct-14 A	03-Feb-15	01-Oct-14	31-Oct-14	-63			
C03E-3457645	Negotiation - 106 E. Primrose Lane	64	16-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3457975	Negotiation - 106 E. Primrose Lane	64	16-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3469875	Negotiation - City of Appleton	64	16-Oct-14 A	05-Jan-15	01-Oct-14	01-Oct-14	-63	VRAN		3/10/15
C03E-3467605	Negotiate Acquisition of All Parcels & Easements - Vermillion Street	0		05-Jan-15*		01-Oct-14	-63	VRAN		3/10/15
C03E-3457655	Acquisition - 106 E. Primrose Lane	12	05-Jan-15	20-Jan-15	02-Oct-14	17-Oct-14	-63	VRAN		3/10/15
C03E-3457985	Acquisition - 106 E. Primrose Lane	12	05-Jan-15	20-Jan-15	02-Oct-14	17-Oct-14	-63	VRAN		3/10/15
C03E-3469880	Acquisition - City of Appleton	12	05-Jan-15	20-Jan-15	02-Oct-14	17-Oct-14	-63	VRAN		3/10/15
C03E-3467635	Acquire Parcels & Easements - Vermillion Street	0		20-Jan-15*		17-Oct-14	-63	VRAN		3/10/15
C03E-3467640	Right-of-Way Clear (Certification #1/#2) - Vermillion Street	10	21-Jan-15	03-Feb-15*	20-Oct-14	31-Oct-14	-63	VRAN		3/10/15
Utilities		369	15-Nov-13 A	09-Sep-15	27-Jun-14	10-Mar-15	-129			
C03E-3467540	Work Plan Review & Revisions - Vermillion Street	120	15-Nov-13 A	05-Jan-15	27-Jun-14	27-Jun-14	-129	VRAN		3/10/15
C03E-3467545	Work Plan Acceptance Sent to Utilities - Vermillion Street	1	05-Jan-15	05-Jan-15	30-Jun-14	30-Jun-14	-129	VRAN		3/10/15
C03E-3467570	Review & Approve Utility Agreements - Vermillion Street	50	06-Jan-15	16-Mar-15	06-Aug-14	15-Oct-14	-104	VRAN		3/10/15
C03E-3467575	Start Work Notice Sent To Utilities - Vermillion Street	5	17-Mar-15	23-Mar-15	16-Oct-14	22-Oct-14	-104	VRAN		3/10/15
C03E-3467580	Apply For Utility Work Permits - Vermillion Street	65	06-Jan-15	06-Apr-15	01-Jul-14	01-Oct-14	-129	VRAN		3/10/15
C03E-3467590	Approve Utility Work Permits - Vermillion Street	15	07-Apr-15	27-Apr-15	02-Oct-14	22-Oct-14	-129	VRAN		3/10/15
C03E-3467625	Relocate Utilities - Vermillion Street	95	28-Apr-15	09-Sep-15*	23-Oct-14	10-Mar-15	-129	VRAN		3/10/15
1517-07-83 Neenah Wetland Mitigation Site		220	13-Aug-14 A	24-Jun-15	18-Nov-14	12-May-15	-30			
Design - General, 30%, 60%, 75%, 90%, PS&E		135	08-Oct-14 A	16-Apr-15	05-Jan-15	12-May-15	18			
C03E-3468810	Review & Approve Design Study Report (DSR) - Neenah Wetland Mitigation Site	10	08-Oct-14 A	05-Jan-15	29-Jan-15	29-Jan-15	19	EBEL	5/12/15	7/14/15
C03E-3468815	Design Study Report Approved - Neenah Wetland Mitigation Site	1	05-Jan-15	05-Jan-15	29-Jan-15	29-Jan-15	18	EBEL	5/12/15	7/14/15
C03E-3468820	Draft PS&E Central Office Review - Neenah Wetland Mitigation Site	42	01-Dec-14 A	29-Jan-15	05-Jan-15	29-Jan-15	0	EBEL	5/12/15	7/14/15
C03E-3468825	Submit PS&E to Central Office - Neenah Wetland Mitigation Site	1	30-Jan-15*	30-Jan-15	30-Jan-15	30-Jan-15	0	EBEL	5/12/15	7/14/15
C03E-3468830	Central Office PS&E Review - Neenah Wetland Mitigation Site	45	30-Jan-15*	02-Apr-15	30-Jan-15	02-Apr-15	0	EBEL	5/12/15	7/14/15
C03E-3468835	Submit Meta Data to DOT - Neenah Wetland Mitigation Site	10	03-Apr-15	16-Apr-15*	29-Apr-15	12-May-15	18	EBEL	5/12/15	7/14/15
Environmental		35	13-Aug-14 A	05-Jan-15	29-Jan-15	29-Jan-15	19			
C03E-3468840	ER Document Approved - Neenah Wetland Mitigation Site	35	13-Aug-14 A	05-Jan-15	29-Jan-15	29-Jan-15	19	EBEL	5/12/15	7/14/15
Plats & Real Estate		10	11-Dec-14 A	05-Jan-15	30-Jan-15	30-Jan-15	20			
C03E-3469050	Right-of-Way Clear (Certification #1/#2) - Neenah Wetland Mitigation Site	10	11-Dec-14 A	05-Jan-15*	30-Jan-15	30-Jan-15	20	EBEL	5/12/15	7/14/15
Stormwater Corridor Management Plan and 401/404 Permits		16	05-Jan-15	26-Jan-15	08-Jan-15	29-Jan-15	3			
C03E-3468880	Submit 401 Permit & Water Quality Request - Neenah Wetland Mitigation Site	1	05-Jan-15	05-Jan-15	08-Jan-15	08-Jan-15	3	EBEL	5/12/15	7/14/15
C03E-3468895	401 Permit & Water Quality Review & Approve - Neenah Wetland Mitigation Site	15	06-Jan-15	26-Jan-15	09-Jan-15	29-Jan-15	3	EBEL	5/12/15	7/14/15
Utilities		147	06-Nov-14 A	24-Jun-15	18-Nov-14	12-May-15	-30			
C03E-3468935	Utilities Prepare Work Plans - Neenah Wetland Mitigation Site	120	06-Nov-14 A	06-Jan-15	18-Nov-14	19-Nov-14	-30	EBEL	5/12/15	7/14/15
C03E-3468940	Work Plan Review & Revisions - Neenah Wetland Mitigation Site	120	07-Jan-15	24-Jun-15*	20-Nov-14	12-May-15	-30	EBEL	5/12/15	7/14/15
1517-75-75 Racine Rd (CTH P) Interchange		403	15-Feb-13 A	09-Sep-15	25-Aug-14	19-Jul-18	731			
Design - General, 30%, 60%, 75%, 90%, PS&E		125	21-Oct-14 A	16-Apr-15	17-Nov-14	12-May-15	18			
C03E-3469295	Submit Documentation for PIF, Salvage & State Furnished Items - Racine Rd (CTH P) Interchange	25	21-Oct-14 A	05-Jan-15	29-Jan-15	29-Jan-15	19	EBEL	5/12/15	7/14/15
C03E-3467990	Submit Estimate Documentation Materials to QA/QC - Racine Rd (CTH P) Interchange	1	05-Jan-15*	05-Jan-15	17-Nov-14	17-Nov-14	-31	EBEL	5/12/15	7/14/15
C03E-3467975	Pink Sheets and Estimate to Fiips Coordinator - Racine Rd (CTH P) Interchange	1	19-Jan-15*	19-Jan-15	19-Jan-15	19-Jan-15	0	EBEL	5/12/15	7/14/15



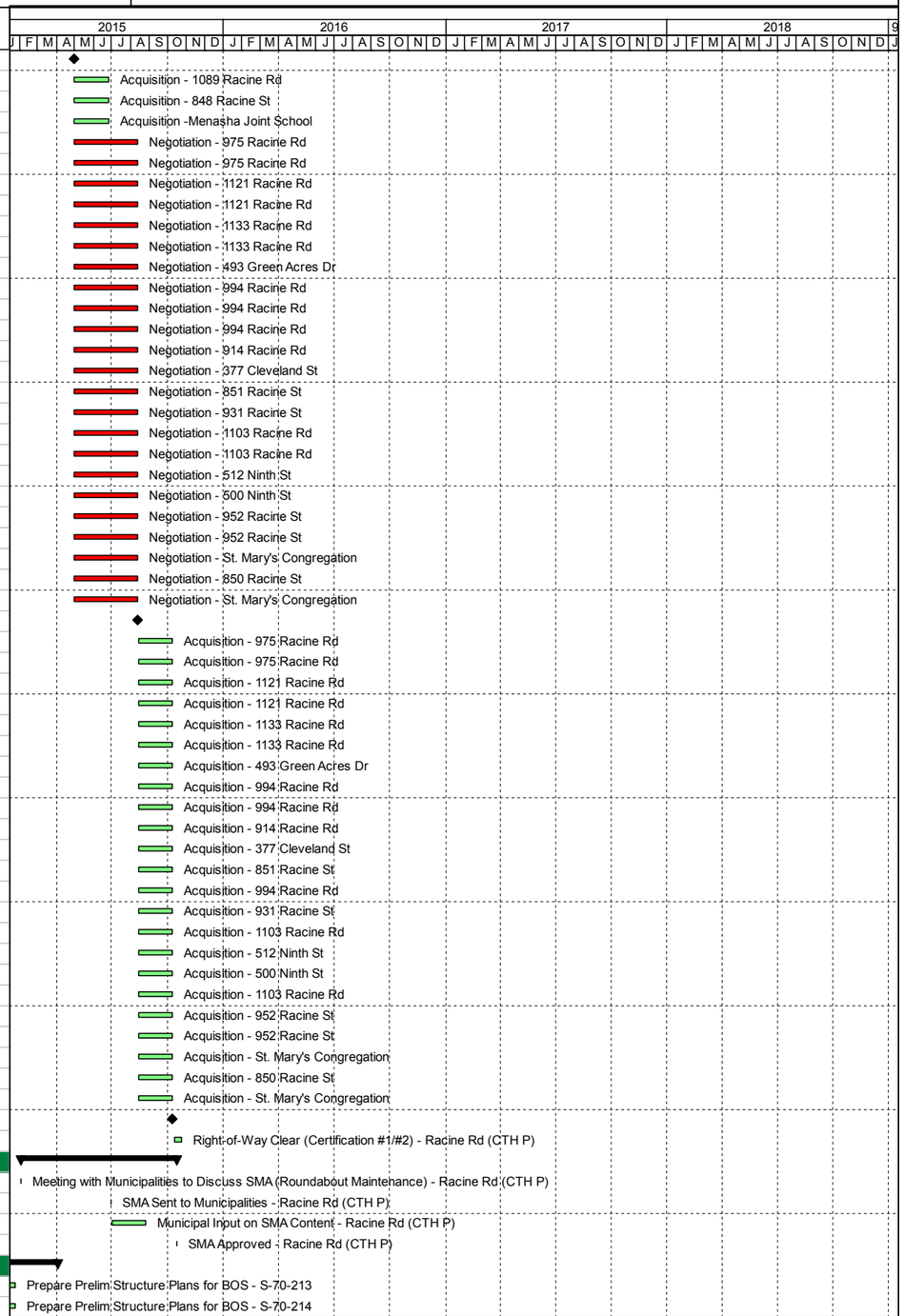
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3446215	Draft PS&E Central Office Review - Racine Rd (CTH P) Interchange	42	01-Dec-14 A	29-Jan-15	05-Jan-15	29-Jan-15	0	EBEL	5/12/15	7/14/15
C03E-3446210	Submit PS&E to Central Office - Racine Rd (CTH P) Interchange	1	30-Jan-15*	30-Jan-15	30-Jan-15	30-Jan-15	0	EBEL	5/12/15	7/14/15
C03E-3446220	Central Office PS&E Review - Racine Rd (CTH P) Interchange	45	30-Jan-15*	02-Apr-15	30-Jan-15	02-Apr-15	0	EBEL	5/12/15	7/14/15
C03E-3447310	Submit Meta Data to DOT - Racine Rd (CTH P) Interchange	10	03-Apr-15	16-Apr-15*	29-Apr-15	12-May-15	18	EBEL	5/12/15	7/14/15
Environmental		1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897			
C03E-3454155	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897	EBEL	5/12/15	7/14/15
Plats & Real Estate		105	19-Aug-14 A	19-Jan-15	16-Jan-15	30-Jan-15	10			
C03E-3455665	Negotiation - 1305 Dunning St.	74	19-Aug-14 A	05-Jan-15	16-Jan-15	16-Jan-15	10	EBEL	5/12/15	7/14/15
C03E-3450455	Acquisition - 1015 Lakeshore Dr	10	09-Dec-14 A	05-Jan-15	30-Jan-15	30-Jan-15	20	EBEL	5/12/15	7/14/15
C03E-3446010	Negotiate Acquisition of All Parcels & Easements - Racine Rd (CTH P) Interchange	0		05-Jan-15		30-Jan-15	20	EBEL	5/12/15	7/14/15
C03E-3455675	Acquisition - 1305 Dunning St.	10	05-Jan-15	16-Jan-15	19-Jan-15	30-Jan-15	10	EBEL	5/12/15	7/14/15
C03E-3446180	Acquire Parcels & Easements - Racine Rd (CTH P) Interchange	0		16-Jan-15		30-Jan-15	10	EBEL	5/12/15	7/14/15
C03E-3446155	Right-of-Way Clear (Certification #1/#2) - Racine Rd (CTH P) Interchange	0	19-Jan-15	19-Jan-15*	30-Jan-15	30-Jan-15	10	EBEL	5/12/15	7/14/15
Railroad		166	28-Aug-14 A	08-Jun-15	25-Aug-14	19-Jul-18	797			
RR03E-27325	**** Region & CO Review and Comment on Final Order	15	28-Aug-14 A	05-Jan-15	19-Jul-18	19-Jul-18	907	EBEL	5/12/15	7/14/15
RR03E-27440	**** CO-RHS Submit Estimate Request Letters to RR	5	05-Jan-15	09-Jan-15	25-Aug-14	29-Aug-14	-90	EBEL	5/12/15	7/14/15
RR03E-27435	PM Submit 17-60-45 RR Letter (3 months prior to PS&E)	1	30-Jan-15*	30-Jan-15	19-Jul-18	19-Jul-18	887	EBEL	5/12/15	7/14/15
RR03E-27445	**** CO-RHS Receives Estimates from RR	60	12-Jan-15	03-Apr-15	02-Sep-14	24-Nov-14	-90	EBEL	5/12/15	7/14/15
RR03E-27450	**** CO-RHS Submit RR Agreements to RR	5	06-Apr-15	10-Apr-15	25-Nov-14	03-Dec-14	-90	EBEL	5/12/15	7/14/15
RR03E-27395	CO-RHS Negot. Signed RR Agreements (Summary Task) - Racine Rd (CTH P) Interchange	110	05-Jan-15	08-Jun-15	25-Aug-14	30-Jan-15	-90	EBEL	5/12/15	7/14/15
RR03E-27455	**** RR Signs RR Agreements - MILESTONE (needed by PS&E 2/1/15)	40	13-Apr-15	08-Jun-15*	04-Dec-14	30-Jan-15	-90	EBEL	5/12/15	7/14/15
State/Municipal Agreement		1	01-Nov-14 A	16-Jan-15	16-Jan-15	29-Jan-15	9			
C03E-3470245	Final Pond MOA - Racine Rd (CTH P) Interchange	1	01-Nov-14 A	16-Jan-15	16-Jan-15	29-Jan-15	9	EBEL	5/12/15	7/14/15
Geo-Tech & Structures		227	15-Feb-13 A	05-Jan-15	01-Dec-14	01-Dec-14	-22			
C03E-3448000	Prepare Final Structure Plans for BOS - B-70-420	100	15-Feb-13 A	05-Jan-15	01-Dec-14	01-Dec-14	-22	EBEL	5/12/15	7/14/15
C03E-3448030	Prepare Final Structure Plans for BOS - B-70-421	100	15-Feb-13 A	05-Jan-15	01-Dec-14	01-Dec-14	-22	EBEL	5/12/15	7/14/15
C03E-3446075	Prepare Final Structure Plans for BOS - Racine Rd (CTH P) Interchange	0		05-Jan-15*		01-Dec-14	-22	EBEL	5/12/15	7/14/15
Stormwater Corridor Management Plan and 401/404 Permits		1	22-Jan-15	22-Jan-15	29-Jan-15	29-Jan-15	5			
C03E-3468345	DNR Concurrence Received - Racine Rd (CTH P) Interchange	1	22-Jan-15	22-Jan-15	29-Jan-15	29-Jan-15	5	EBEL	5/12/15	7/14/15
TMP - Tasks		44	05-Jan-15	05-Mar-15	27-Oct-14	19-Jul-18	863			
C03E-3464985	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	19-Jul-18	19-Jul-18	907	EBEL	5/12/15	7/14/15
C03E-3467980	TMP - Document Approved - Racine Rd (CTH P) Interchange	1	05-Jan-15*	05-Jan-15	27-Oct-14	27-Oct-14	-46	EBEL	5/12/15	7/14/15
C03E-3469895	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL	5/12/15	7/14/15
Utilities		369	13-Nov-13 A	09-Sep-15	02-Sep-14	12-May-15	-84			
C03E-3446165	Work Plan Review & Revisions - Racine Rd (CTH P) Interchange	120	13-Nov-13 A	05-Jan-15	02-Sep-14	02-Sep-14	-84	EBEL	5/12/15	7/14/15
C03E-3446190	Work Plan Acceptance Sent to Utilities - Racine Rd (CTH P) Interchange	1	05-Jan-15	05-Jan-15	03-Sep-14	03-Sep-14	-84	EBEL	5/12/15	7/14/15
C03E-3446195	Review & Approve Utility Agreements - Racine Rd (CTH P) Interchange	50	06-Jan-15	16-Mar-15	09-Oct-14	19-Dec-14	-59	EBEL	5/12/15	7/14/15
C03E-3446130	Start Work Notice Sent To Utilities - Racine Rd (CTH P) Interchange	5	17-Mar-15	23-Mar-15	22-Dec-14	29-Dec-14	-59	EBEL	5/12/15	7/14/15
C03E-3446135	Apply For Utility Work Permits - Racine Rd (CTH P) Interchange	65	06-Jan-15	06-Apr-15	04-Sep-14	05-Dec-14	-84	EBEL	5/12/15	7/14/15
C03E-3446200	Approve Utility Work Permits - Racine Rd (CTH P) Interchange	15	07-Apr-15	27-Apr-15	08-Dec-14	29-Dec-14	-84	EBEL	5/12/15	7/14/15
C03E-3446125	Relocate Utilities - Racine Rd (CTH P) Interchange	95	28-Apr-15	09-Sep-15*	30-Dec-14	12-May-15	-84	EBEL	5/12/15	7/14/15
1517-07-79 US 41 Interchange B-70-400 & US 10 EB Grading/Paving		277	18-Nov-13 A	06-May-15	27-Oct-14	19-Jul-18	819			
Design - General, 30%, 60%, 75%, 90%, PS&E		125	21-Oct-14 A	16-Apr-15	17-Nov-14	12-May-15	18			
C03E-3469285	Submit Documentation for PIF, Salvage & State Furnished Items - US 41 Interchange B-70-400 & US	25	21-Oct-14 A	05-Jan-15	29-Jan-15	29-Jan-15	19	EBEL	5/12/15	7/14/15
C03E-3468050	Submit Estimate Documentation Materials to QA/QC - US 41 Interchange B-70-400 & US 10 EB Gradi	1	05-Jan-15*	05-Jan-15	17-Nov-14	17-Nov-14	-31	EBEL	5/12/15	7/14/15
C03E-3468035	Pink Sheets and Estimate to Flips Coordinator - US 41 Interchange B-70-400 & US 10 EB Grading/Pa	1	19-Jan-15*	19-Jan-15	19-Jan-15	19-Jan-15	0	EBEL	5/12/15	7/14/15
C03E-3465125	Draft PS&E Central Office Review - US 41 Interchange B-70-400 & US 10 EB Grading/Paving	42	01-Dec-14 A	29-Jan-15	05-Jan-15	29-Jan-15	0	EBEL	5/12/15	7/14/15
C03E-3465130	Submit PS&E to Central Office - US 41 Interchange B-70-400 & US 10 EB Grading/Paving	1	30-Jan-15*	30-Jan-15	30-Jan-15	30-Jan-15	0	EBEL	5/12/15	7/14/15
C03E-3465140	Central Office PS&E Review - US 41 Interchange B-70-400 & US 10 EB Grading/Paving	45	30-Jan-15*	02-Apr-15	30-Jan-15	02-Apr-15	0	EBEL	5/12/15	7/14/15
C03E-3465145	Submit Meta Data to DOT - US 41 Interchange B-70-400 & US 10 EB Grading/Paving	10	03-Apr-15	16-Apr-15*	29-Apr-15	12-May-15	18	EBEL	5/12/15	7/14/15
Environmental		1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897			
C03E-3465085	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	06-Jul-18	19-Jul-18	897	EBEL	5/12/15	7/14/15
Stormwater Corridor Management Plan and 401/404 Permits		1	22-Jan-15	22-Jan-15	29-Jan-15	29-Jan-15	5			
C03E-3468375	DNR Concurrence Received - US 41 Interchange B-70-400 & US 10 EB Grading/Paving	1	22-Jan-15	22-Jan-15	29-Jan-15	29-Jan-15	5	EBEL	5/12/15	7/14/15
TMP - Tasks		44	05-Jan-15	05-Mar-15	27-Oct-14	19-Jul-18	863			
C03E-3465165	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	19-Jul-18	19-Jul-18	907	EBEL	5/12/15	7/14/15
C03E-3468040	TMP - Document Approved - US 41 Interchange B-70-400 & US 10 EB Grading/Paving	1	05-Jan-15*	05-Jan-15	27-Oct-14	27-Oct-14	-46	EBEL	5/12/15	7/14/15
C03E-3469900	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL	5/12/15	7/14/15
Utilities		95	15-Mar-14 A	06-May-15	09-Jan-15	12-May-15	4			
C03E-3465325	Relocate Utilities - US 41 Interchange B-70-400 & US 10 EB Grading/Paving	95	15-Mar-14 A	06-May-15*	09-Jan-15	12-May-15	4	EBEL	5/12/15	7/14/15



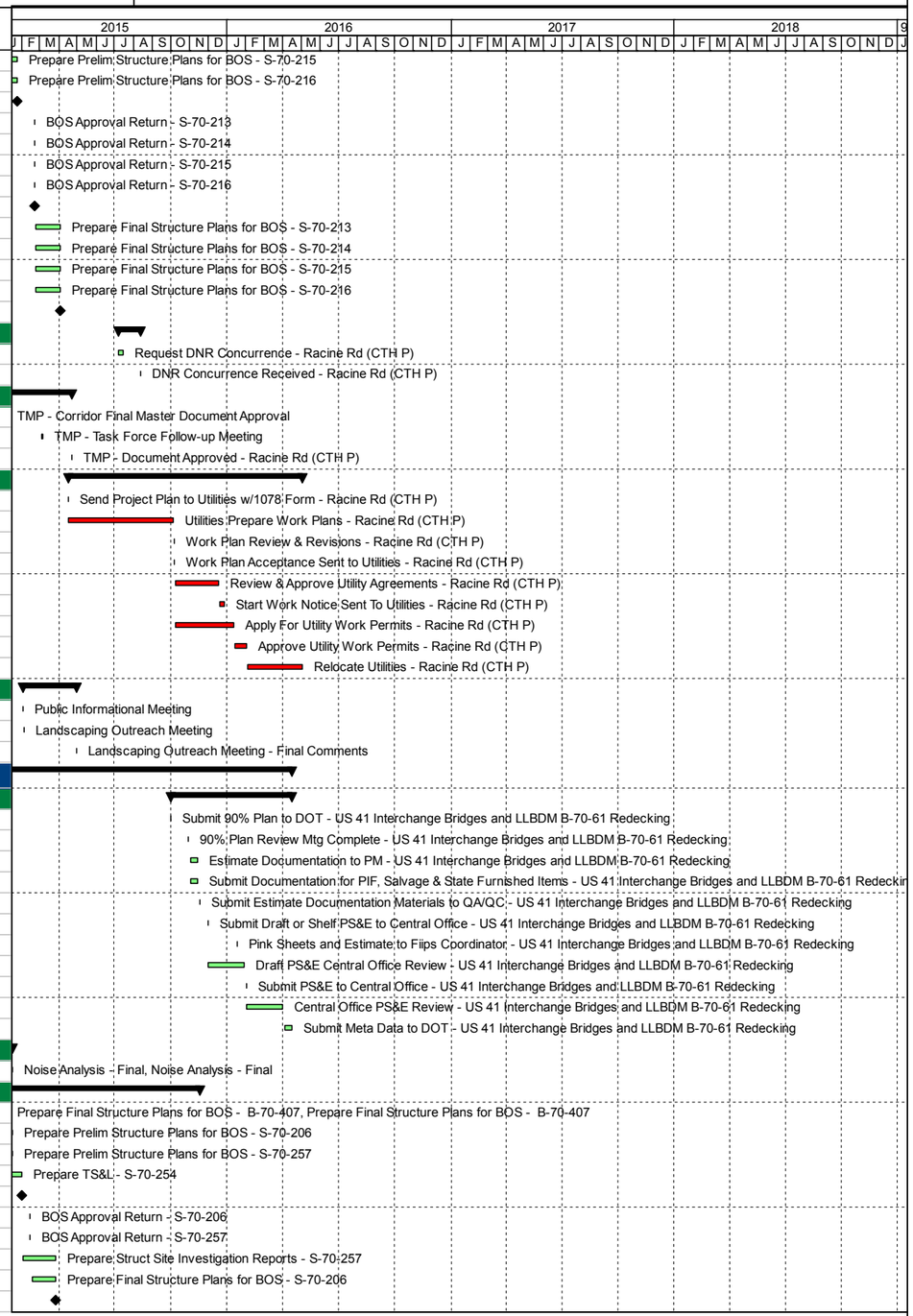
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
Workshops, Local Agency, PIM & General Meetings		1	25-Mar-15	25-Mar-15	19-Jul-18	19-Jul-18	849			
C03E-3465075	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	19-Jul-18	19-Jul-18	849	EBEL	5/12/15	7/14/15
1517-75-76 Racine Rd (CTH P)		1112	18-Nov-13 A	03-May-16	04-Nov-14	19-Jul-18	566			
Design - General, 30%, 60%, 75%, 90%, PS&E		1038	17-Nov-14 A	20-Jan-16	04-Nov-14	08-Mar-16	34			
C03E-3446365	Provide Slope Intercepts to WisDOT Plats - Racine Rd (CTH P)	1	17-Nov-14 A	14-Jan-15	04-Nov-14	13-Nov-14	-40	EBEL		3/8/16
C03E-3451735	Submit 30% Plan to DOT - Racine Rd (CTH P)	1	15-Jan-15*	15-Jan-15	14-Nov-14	14-Nov-14	-40	EBEL		3/8/16
C03E-3451740	30% Plan Review Mtg Complete - Racine Rd (CTH P)	1	30-Jan-15	30-Jan-15	03-Dec-14	03-Dec-14	-40	EBEL		3/8/16
C03E-3446480	Submit 60% Plan to DOT - Racine Rd (CTH P)	1	02-Mar-15*	02-Mar-15	05-Jan-15	05-Jan-15	-40	EBEL		3/8/16
C03E-3446355	60% Plan Review Mtg Complete - Racine Rd (CTH P)	1	17-Mar-15	17-Mar-15	20-Jan-15	20-Jan-15	-40	EBEL		3/8/16
C03E-3470185	Submit Design Study Report Revison - Racine Rd (CTH P)	0	01-Apr-15	01-Apr-15	03-Feb-15	03-Feb-15	-40	EBEL		3/8/16
C03E-3446490	75% Constructability Review Meeting / staging plans due - Racine Rd (CTH P)	1	02-Apr-15*	02-Apr-15	02-Apr-15	02-Apr-15	0	EBEL		3/8/16
C03E-3470190	Design Study Report Revison Approved - Racine Rd (CTH P)	0	15-Apr-15	15-Apr-15	17-Feb-15	17-Feb-15	-40	EBEL		3/8/16
C03E-3446265	DT1078 Plan Sent To Becher Hoppe - Racine Rd (CTH P)	1	15-Apr-15	15-Apr-15	18-Feb-15	18-Feb-15	-40	EBEL		3/8/16
C03E-3446470	Submit 90% Plan to DOT - Racine Rd (CTH P)	1	23-Jun-15	23-Jun-15*	23-Jun-15	23-Jun-15	0	EBEL		3/8/16
C03E-3446450	90% Plan Review Mtg Complete - Racine Rd (CTH P)	1	07-Jul-15	07-Jul-15	21-Aug-15	21-Aug-15	33	EBEL		3/8/16
C03E-3467965	Estimate Documentation to PM - Racine Rd (CTH P)	5	08-Jul-15	14-Jul-15	24-Aug-15	28-Aug-15	33	EBEL		3/8/16
C03E-3469300	Submit Documentation for PIF, Salvage & State Furnished Items - Racine Rd (CTH P)	5	08-Jul-15	14-Jul-15	23-Oct-15	29-Oct-15	76	EBEL		3/8/16
C03E-3467970	Submit Estimate Documentation Materials to QA/QC - Racine Rd (CTH P)	1	18-Aug-15*	18-Aug-15	31-Aug-15	31-Aug-15	9	EBEL		3/8/16
C03E-3458755	Submit Draft PS&E to Central Office - Racine Rd (CTH P)	1	01-Sep-15*	01-Sep-15	01-Sep-15	01-Sep-15	0	EBEL		3/8/16
C03E-3467955	Pink Sheets and Estimate to Fiips Coordinator - Racine Rd (CTH P)	1	16-Oct-15*	16-Oct-15	16-Oct-15	16-Oct-15	0	EBEL		3/8/16
C03E-3446460	Draft PS&E Central Office Review - Racine Rd (CTH P)	42	01-Sep-15	29-Oct-15	01-Sep-15	29-Oct-15	0	EBEL		3/8/16
C03E-3446455	Submit PS&E to Central Office - Racine Rd (CTH P)	1	30-Oct-15*	30-Oct-15	30-Oct-15	30-Oct-15	0	EBEL		3/8/16
C03E-3446465	Central Office PS&E Review - Racine Rd (CTH P)	45	30-Oct-15*	06-Jan-16	30-Oct-15	06-Jan-16	0	EBEL		3/8/16
C03E-3447315	Submit Meta Data to DOT - Racine Rd (CTH P)	10	07-Jan-16	20-Jan-16*	24-Feb-16	08-Mar-16	34	EBEL		3/8/16
Environmental		229	18-Nov-13 A	16-Mar-15	02-Jan-15	31-Aug-15	119			
C03E-3454225	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	18-Aug-15	31-Aug-15	160	EBEL		3/8/16
C03E-3470175	Submit Design Refinement Memo	1	16-Feb-15*	16-Feb-15	02-Jan-15	02-Jan-15	-31	EBEL		3/8/16
C03E-3470180	Design Refinement Memo Approved by FHWA	1	16-Mar-15*	16-Mar-15	17-Feb-15	17-Feb-15	-19	EBEL		3/8/16
Plats & Real Estate		445	28-Jan-14 A	23-Oct-15	08-Dec-14	30-Oct-15	5			
C03E-3446300	Review Preliminary Plat (Plat Review Mtg) - Racine Rd (CTH P)	1	02-Feb-15*	02-Feb-15	02-Feb-15	02-Feb-15	0	EBEL		3/8/16
C03E-3446335	Revise Plat - Racine Rd (CTH P)	15	03-Feb-15	23-Feb-15	09-Mar-15	27-Mar-15	24	EBEL		3/8/16
C03E-3446260	Relocation Order Approved - Racine Rd (CTH P)	0	15-Apr-15	15-Apr-15	27-Mar-15	27-Mar-15	-12	EBEL		3/8/16
C03E-3446395	Record Plat and Write Legal Document - Racine Rd (CTH P)	5	15-Apr-15*	21-Apr-15	30-Mar-15	03-Apr-15	-12	EBEL		3/8/16
C03E-3446270	RW Plat To RE - Racine Rd (CTH P)	1	22-Apr-15	22-Apr-15	06-Apr-15	06-Apr-15	-12	EBEL		3/8/16
C03E-3449425	Appraisal (Hired/Completed/Reviewed) - 975 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449440	Appraisal (Hired/Completed/Reviewed) - 975 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449455	Appraisal (Hired/Completed/Reviewed) - 1121 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449470	Appraisal (Hired/Completed/Reviewed) - 1121 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449500	Appraisal (Hired/Completed/Reviewed) - 1133 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449515	Appraisal (Hired/Completed/Reviewed) - 1133 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449545	Appraisal (Hired/Completed/Reviewed) - 493 Green Acres Dr	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449575	Appraisal (Hired/Completed/Reviewed) - 994 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449590	Appraisal (Hired/Completed/Reviewed) - 994 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449605	Appraisal (Hired/Completed/Reviewed) - 994 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449635	Appraisal (Hired/Completed/Reviewed) - 914 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449650	Appraisal (Hired/Completed/Reviewed) - 377 Cleveland St	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449680	Appraisal (Hired/Completed/Reviewed) - 851 Racine St	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449770	Appraisal (Hired/Completed/Reviewed) - 931 Racine St	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449800	Appraisal (Hired/Completed/Reviewed) - 1103 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449815	Appraisal (Hired/Completed/Reviewed) - 1103 Racine Rd	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449895	Appraisal (Hired/Completed/Reviewed) - 512 Ninth St	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449905	Appraisal (Hired/Completed/Reviewed) - 500 Ninth St	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449935	Appraisal (Hired/Completed/Reviewed) - 952 Racine St	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449950	Appraisal (Hired/Completed/Reviewed) - 952 Racine St	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449980	Appraisal (Hired/Completed/Reviewed) - St. Mary's Congregation	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3457440	Appraisal (Hired/Completed/Reviewed) - 850 Racine St	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3457455	Appraisal (Hired/Completed/Reviewed) - St. Mary's Congregation	65	28-Jan-14 A	30-Apr-15	08-Dec-14	06-Apr-15	-18	EBEL		3/8/16
C03E-3449915	Negotiation - 848 Racine St	74	04-Apr-14 A	30-Apr-15	24-Mar-15	20-Jul-15	56	EBEL		3/8/16
C03E-3464590	Negotiation - Menasha Joint School	74	07-Apr-14 A	30-Apr-15	24-Mar-15	20-Jul-15	56	EBEL		3/8/16
C03E-3449525	Negotiation - 1089 Racine Rd	74	14-May-14 A	30-Apr-15	24-Mar-15	20-Jul-15	56	EBEL		3/8/16



Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3446340	Complete Appraisal of All Parcels & Easements - Racine Rd (CTH P)	0		30-Apr-15*		06-Apr-15	-18	EBEL		3/8/16
C03E-3449535	Acquisition - 1089 Racine Rd	40	01-May-15	26-Jun-15	21-Aug-15	16-Oct-15	79	EBEL		3/8/16
C03E-3449925	Acquisition - 848 Racine St	40	01-May-15	26-Jun-15	21-Aug-15	16-Oct-15	79	EBEL		3/8/16
C03E-3464600	Acquisition -Menasha Joint School	40	01-May-15	26-Jun-15	21-Aug-15	16-Oct-15	79	EBEL		3/8/16
C03E-3449420	Negotiation - 975 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449435	Negotiation - 975 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449450	Negotiation - 1121 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449465	Negotiation - 1121 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449495	Negotiation - 1133 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449510	Negotiation - 1133 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449540	Negotiation - 493 Green Acres Dr	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449570	Negotiation - 994 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449585	Negotiation - 994 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449600	Negotiation - 994 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449630	Negotiation - 914 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449645	Negotiation - 377 Cleveland St	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449675	Negotiation - 851 Racine St	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449765	Negotiation - 931 Racine St	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449795	Negotiation - 1103 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449810	Negotiation - 1103 Racine Rd	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449890	Negotiation - 512 Ninth St	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449900	Negotiation - 500 Ninth St	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449930	Negotiation - 952 Racine St	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449945	Negotiation - 952 Racine St	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3449975	Negotiation - St. Mary's Congregation	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3457435	Negotiation - 850 Racine St	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3457450	Negotiation - St. Mary's Congregation	74	01-May-15	13-Aug-15	07-Apr-15	20-Jul-15	-18	EBEL		3/8/16
C03E-3446255	Negotiate Acquisition of All Parcels & Easements - Racine Rd (CTH P)	0		13-Aug-15*		20-Jul-15	-18	EBEL		3/8/16
C03E-3449430	Acquisition - 975 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449445	Acquisition - 975 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449460	Acquisition - 1121 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449475	Acquisition - 1121 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449505	Acquisition - 1133 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449520	Acquisition - 1133 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449550	Acquisition - 493 Green Acres Dr	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449580	Acquisition - 994 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449595	Acquisition - 994 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449640	Acquisition - 914 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449655	Acquisition - 377 Cleveland St	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449685	Acquisition - 851 Racine St	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449610	Acquisition - 994 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449775	Acquisition - 931 Racine St	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449805	Acquisition - 1103 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449885	Acquisition - 512 Ninth St	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449910	Acquisition - 500 Ninth St	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449820	Acquisition - 1103 Racine Rd	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449940	Acquisition - 952 Racine St	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449955	Acquisition - 952 Racine St	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3449985	Acquisition - St. Mary's Congregation	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3457445	Acquisition - 850 Racine St	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3457460	Acquisition - St. Mary's Congregation	40	14-Aug-15	09-Oct-15	21-Aug-15	16-Oct-15	5	EBEL		3/8/16
C03E-3446425	Acquire Parcels & Easements - Racine Rd (CTH P)	0		09-Oct-15*		16-Oct-15	5	EBEL		3/8/16
C03E-3446400	Right-of-Way Clear (Certification #1/#2) - Racine Rd (CTH P)	10	12-Oct-15	23-Oct-15*	19-Oct-15	30-Oct-15	5	EBEL		3/8/16
State/Municipal Agreement		183	02-Feb-15	16-Oct-15	19-Jun-15	16-Oct-15	0			
C03E-3469865	Meeting with Municipalities to Discuss SMA (Roundabout Maintenance) - Racine Rd (CTH P)	1	02-Feb-15*	02-Feb-15	19-Jun-15	19-Jun-15	98	EBEL		3/8/16
C03E-3466245	SMA Sent to Municipalities - Racine Rd (CTH P)	1	30-Jun-15*	30-Jun-15	06-Jul-15	06-Jul-15	4	EBEL		3/8/16
C03E-3468260	Municipal Input on SMA Content - Racine Rd (CTH P)	40	01-Jul-15	25-Aug-15	07-Jul-15	31-Aug-15	4	EBEL		3/8/16
C03E-3466250	SMA Approved - Racine Rd (CTH P)	1	16-Oct-15*	16-Oct-15	16-Oct-15	16-Oct-15	0	EBEL		3/8/16
Geo-Tech & Structures		65	05-Jan-15	03-Apr-15	05-Jan-15	31-Aug-15	105			
C03E-3462895	Prepare Prelim Structure Plans for BOS - S-70-213	14	05-Jan-15*	22-Jan-15	05-Jan-15	22-Jan-15	0	EBEL		3/8/16
C03E-3462930	Prepare Prelim Structure Plans for BOS - S-70-214	14	05-Jan-15*	22-Jan-15	05-Jan-15	22-Jan-15	0	EBEL		3/8/16



Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3462965	Prepare Prelim Structure Plans for BOS - S-70-215	14	05-Jan-15*	22-Jan-15	05-Jan-15	22-Jan-15	0	EBEL		3/8/16
C03E-3463000	Prepare Prelim Structure Plans for BOS - S-70-216	14	05-Jan-15*	22-Jan-15	05-Jan-15	22-Jan-15	0	EBEL		3/8/16
C03E-3446315	Prepare Prelim Structure Plans for BOS - Racine Rd (CTH P)	0		22-Jan-15*		22-Jan-15	0	EBEL		3/8/16
C03E-3462905	BOS Approval Return - S-70-213	1	20-Feb-15	20-Feb-15	20-Jul-15	20-Jul-15	105	EBEL		3/8/16
C03E-3462940	BOS Approval Return - S-70-214	1	20-Feb-15	20-Feb-15	20-Jul-15	20-Jul-15	105	EBEL		3/8/16
C03E-3462975	BOS Approval Return - S-70-215	1	20-Feb-15	20-Feb-15	20-Jul-15	20-Jul-15	105	EBEL		3/8/16
C03E-3463010	BOS Approval Return - S-70-216	1	20-Feb-15	20-Feb-15	20-Jul-15	20-Jul-15	105	EBEL		3/8/16
C03E-3446475	BOS Approval Return - Racine Rd (CTH P)	0		20-Feb-15*		20-Jul-15	105	EBEL		3/8/16
C03E-3462900	Prepare Final Structure Plans for BOS - S-70-213	30	23-Feb-15	03-Apr-15	21-Jul-15	31-Aug-15	105	EBEL		3/8/16
C03E-3462935	Prepare Final Structure Plans for BOS - S-70-214	30	23-Feb-15	03-Apr-15	21-Jul-15	31-Aug-15	105	EBEL		3/8/16
C03E-3462970	Prepare Final Structure Plans for BOS - S-70-215	30	23-Feb-15	03-Apr-15	21-Jul-15	31-Aug-15	105	EBEL		3/8/16
C03E-3463005	Prepare Final Structure Plans for BOS - S-70-216	30	23-Feb-15	03-Apr-15	21-Jul-15	31-Aug-15	105	EBEL		3/8/16
C03E-3446320	Prepare Final Structure Plans for BOS - Racine Rd (CTH P)	0		03-Apr-15*		31-Aug-15	105	EBEL		3/8/16
Stormwater Corridor Management Plan and 401/404 Permits		26	08-Jul-15	12-Aug-15	24-Sep-15	29-Oct-15	55			
C03E-3468330	Request DNR Concurrence - Racine Rd (CTH P)	5	08-Jul-15	14-Jul-15	24-Sep-15	30-Sep-15	55	EBEL		3/8/16
C03E-3468335	DNR Concurrence Received - Racine Rd (CTH P)	1	12-Aug-15	12-Aug-15	29-Oct-15	29-Oct-15	55	EBEL		3/8/16
TMP - Tasks		78	05-Jan-15	22-Apr-15	22-Apr-15	19-Jul-18	829			
C03E-3464965	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	22-Jun-15	22-Jun-15	120	EBEL		3/8/16
C03E-3469905	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL		3/8/16
C03E-3467960	TMP - Document Approved - Racine Rd (CTH P)	1	22-Apr-15	22-Apr-15*	22-Apr-15	22-Apr-15	0	EBEL		3/8/16
Utilities		268	16-Apr-15	03-May-16	19-Feb-15	08-Mar-16	-40			
C03E-3446360	Send Project Plan to Utilities w/1078 Form - Racine Rd (CTH P)	1	16-Apr-15	16-Apr-15	19-Feb-15	19-Feb-15	-40	EBEL		3/8/16
C03E-3446330	Utilities Prepare Work Plans - Racine Rd (CTH P)	120	17-Apr-15	05-Oct-15	20-Feb-15	07-Aug-15	-40	EBEL		3/8/16
C03E-3446410	Work Plan Review & Revisions - Racine Rd (CTH P)	1	06-Oct-15	06-Oct-15	10-Aug-15	10-Aug-15	-40	EBEL		3/8/16
C03E-3446435	Work Plan Acceptance Sent to Utilities - Racine Rd (CTH P)	1	07-Oct-15	07-Oct-15	11-Aug-15	11-Aug-15	-40	EBEL		3/8/16
C03E-3446440	Review & Approve Utility Agreements - Racine Rd (CTH P)	50	08-Oct-15	18-Dec-15	17-Sep-15	25-Nov-15	-15	EBEL		3/8/16
C03E-3446375	Start Work Notice Sent To Utilities - Racine Rd (CTH P)	5	21-Dec-15	28-Dec-15	30-Nov-15	04-Dec-15	-15	EBEL		3/8/16
C03E-3446380	Apply For Utility Work Permits - Racine Rd (CTH P)	65	08-Oct-15	12-Jan-16	12-Aug-15	11-Nov-15	-40	EBEL		3/8/16
C03E-3446445	Approve Utility Work Permits - Racine Rd (CTH P)	15	13-Jan-16	02-Feb-16	12-Nov-15	04-Dec-15	-40	EBEL		3/8/16
C03E-3446370	Relocate Utilities - Racine Rd (CTH P)	65	03-Feb-16	03-May-16*	07-Dec-15	08-Mar-16	-40	EBEL		3/8/16
Workshops, Local Agency, PIM & General Meetings		64	02-Feb-15	30-Apr-15	02-Feb-15	19-Jul-18	823			
C03E-3459735	Public Informational Meeting	1	02-Feb-15*	02-Feb-15	02-Feb-15	02-Feb-15	0	EBEL		3/8/16
C03E-3460495	Landscaping Outreach Meeting	1	04-Feb-15*	04-Feb-15	25-Apr-18	25-Apr-18	823	EBEL		3/8/16
C03E-3460500	Landscaping Outreach Meeting - Final Comments	1	30-Apr-15	30-Apr-15	19-Jul-18	19-Jul-18	823	EBEL		3/8/16
1517-07-77 US 41 Interchange Bridges and LLBDM Bridge B-70-61 Redecking		507	19-Jul-13 A	15-Apr-16	03-Dec-14	19-Jul-18	578			
Design - General, 30%, 60%, 75%, 90%, PS&E		138	01-Oct-15	15-Apr-16	01-Oct-15	10-May-16	17			
C03E-3444020	Submit 90% Plan to DOT - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	1	01-Oct-15	01-Oct-15*	01-Oct-15	01-Oct-15	0	EBEL	5/10/16	7/12/16
C03E-3444000	90% Plan Review Mtg Complete - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	1	30-Oct-15	30-Oct-15	02-Nov-15	02-Nov-15	1	EBEL	5/10/16	7/12/16
C03E-3468065	Estimate Documentation to PM - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	10	02-Nov-15	13-Nov-15	03-Nov-15	16-Nov-15	1	EBEL	5/10/16	7/12/16
C03E-3469305	Submit Documentation for PIF, Salvage & State Furnished Items - US 41 Interchange Bridges and LLE	10	02-Nov-15	13-Nov-15	18-Jan-16	29-Jan-16	51	EBEL	5/10/16	7/12/16
C03E-3468070	Submit Estimate Documentation Materials to QA/QC - US 41 Interchange Bridges and LLBDM B-70-6	1	17-Nov-15*	17-Nov-15	17-Nov-15	17-Nov-15	0	EBEL	5/10/16	7/12/16
C03E-3458780	Submit Draft or Shelf PS&E to Central Office - US 41 Interchange Bridges and LLBDM B-70-61 Redec	1	01-Dec-15*	01-Dec-15	01-Dec-15	01-Dec-15	0	EBEL	5/10/16	7/12/16
C03E-3468055	Pink Sheets and Estimate to Fiips Coordinator - US 41 Interchange Bridges and LLBDM B-70-61 Red	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	EBEL	5/10/16	7/12/16
C03E-3444010	Draft PS&E Central Office Review - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	42	01-Dec-15	29-Jan-16	01-Dec-15	29-Jan-16	0	EBEL	5/10/16	7/12/16
C03E-3444005	Submit PS&E to Central Office - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	1	01-Feb-16*	01-Feb-16	01-Feb-16	01-Feb-16	0	EBEL	5/10/16	7/12/16
C03E-3444015	Central Office PS&E Review - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	45	01-Feb-16*	01-Apr-16	01-Feb-16	01-Apr-16	0	EBEL	5/10/16	7/12/16
C03E-3447265	Submit Meta Data to DOT - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	10	04-Apr-16	15-Apr-16*	27-Apr-16	10-May-16	17	EBEL	5/10/16	7/12/16
Environmental		1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222			
C03E-3453455	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222	EBEL	5/10/16	7/12/16
Geo-Tech & Structures		226	19-Jul-13 A	18-Nov-15	03-Dec-14	01-Dec-15	7			
C03E-3448385	Prepare Final Structure Plans for BOS - B-70-407	100	19-Jul-13 A	05-Jan-15	01-Dec-15	01-Dec-15	233	EBEL	5/10/16	7/12/16
C03E-3462650	Prepare Prelim Structure Plans for BOS - S-70-206	9	05-Jan-15*	15-Jan-15	03-Dec-14	15-Dec-14	-21	EBEL	5/10/16	7/12/16
C03E-3465390	Prepare Prelim Structure Plans for BOS - S-70-257	9	05-Jan-15*	15-Jan-15	03-Dec-14	15-Dec-14	-21	EBEL	5/10/16	7/12/16
C03E-3465490	Prepare TS&L - S-70-254	20	05-Jan-15*	30-Jan-15	05-Jan-15	30-Jan-15	0	EBEL	5/10/16	7/12/16
C03E-3443860	Prepare TS&L - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	0		30-Jan-15*		30-Jan-15	0	EBEL	5/10/16	7/12/16
C03E-3462660	BOS Approval Return - S-70-206	1	13-Feb-15	13-Feb-15	16-Oct-15	16-Oct-15	173	EBEL	5/10/16	7/12/16
C03E-3465400	BOS Approval Return - S-70-257	1	13-Feb-15	13-Feb-15	16-Oct-15	16-Oct-15	173	EBEL	5/10/16	7/12/16
C03E-3465410	Prepare Struct Site Investigation Reports - S-70-257	40	02-Feb-15	27-Mar-15	05-Aug-15	30-Sep-15	131	EBEL	5/10/16	7/12/16
C03E-3462655	Prepare Final Structure Plans for BOS - S-70-206	30	16-Feb-15	27-Mar-15	19-Oct-15	01-Dec-15	173	EBEL	5/10/16	7/12/16
C03E-3443895	Prepare Struct Site Investigation Reports - US 41 Interchange Bridges and LLBDM B-70-61 Redeckin	0		27-Mar-15*		30-Sep-15	131	EBEL	5/10/16	7/12/16

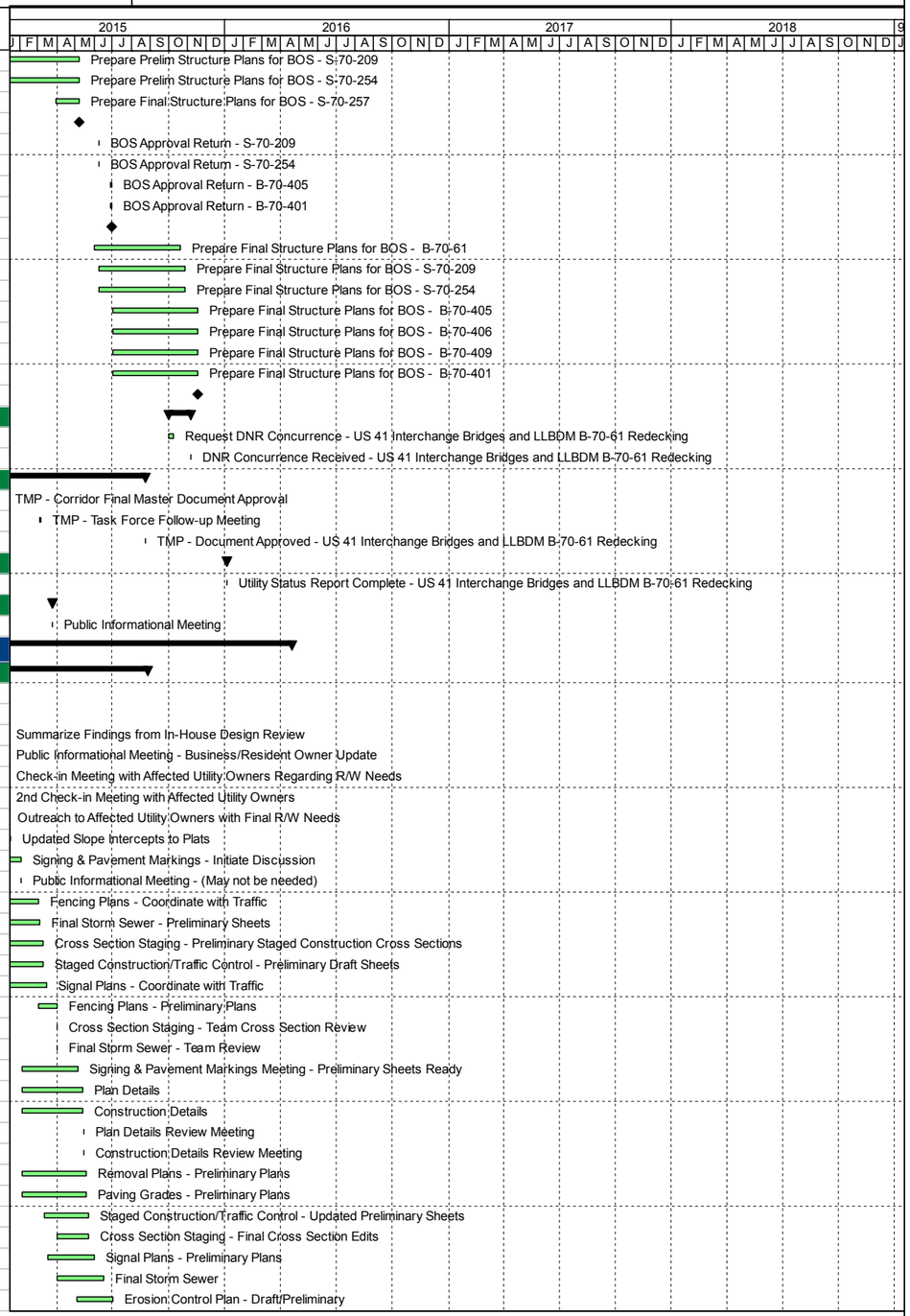


Remaining Level of Effort
Remaining Work
Summary
Actual Level of Effort
Critical Remaining Work
Actual Work
Milestone

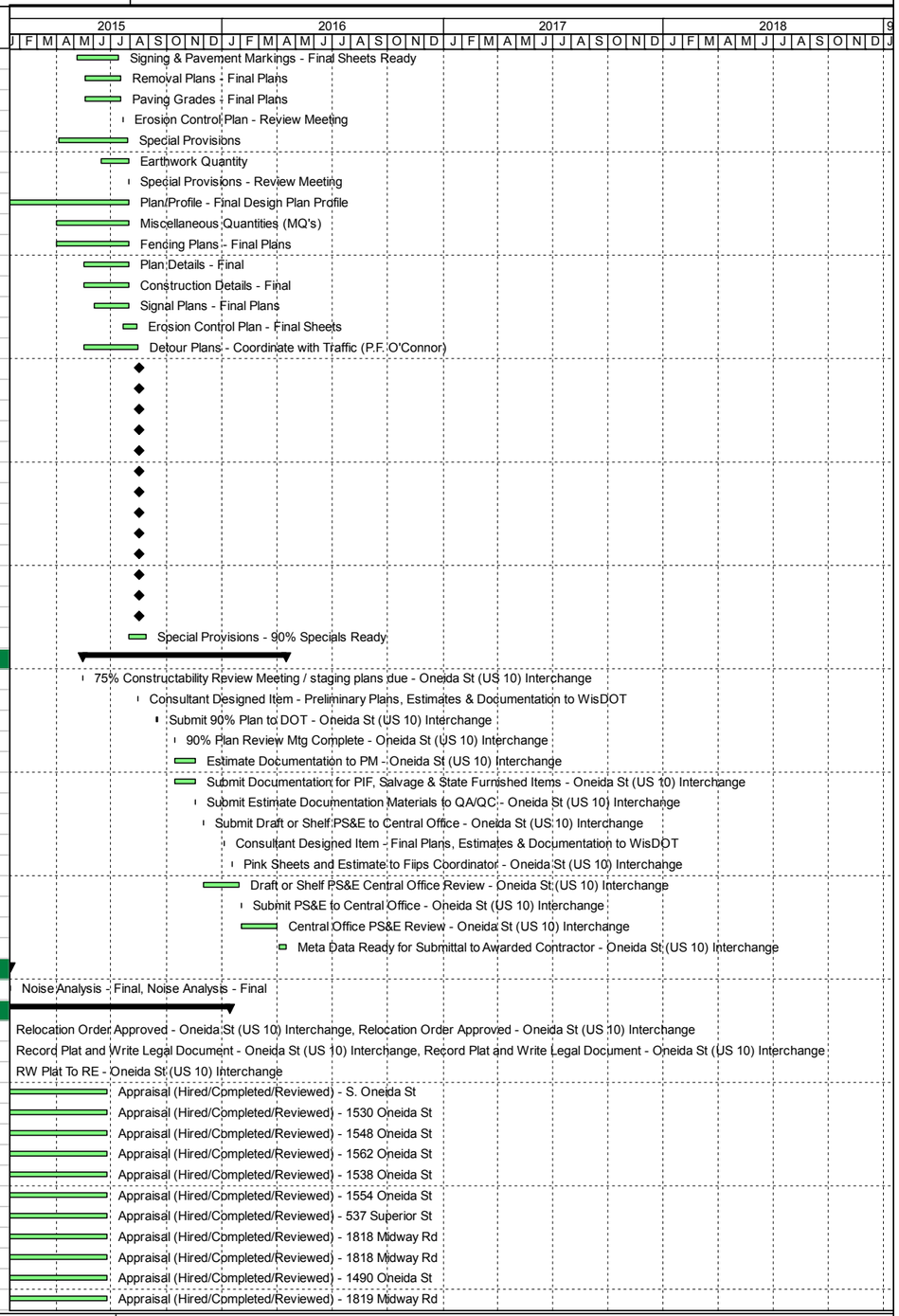
WIS 441 Project Milestone Schedule

Data Date: 05-Jan-15
Run Date: 07-Jan-15

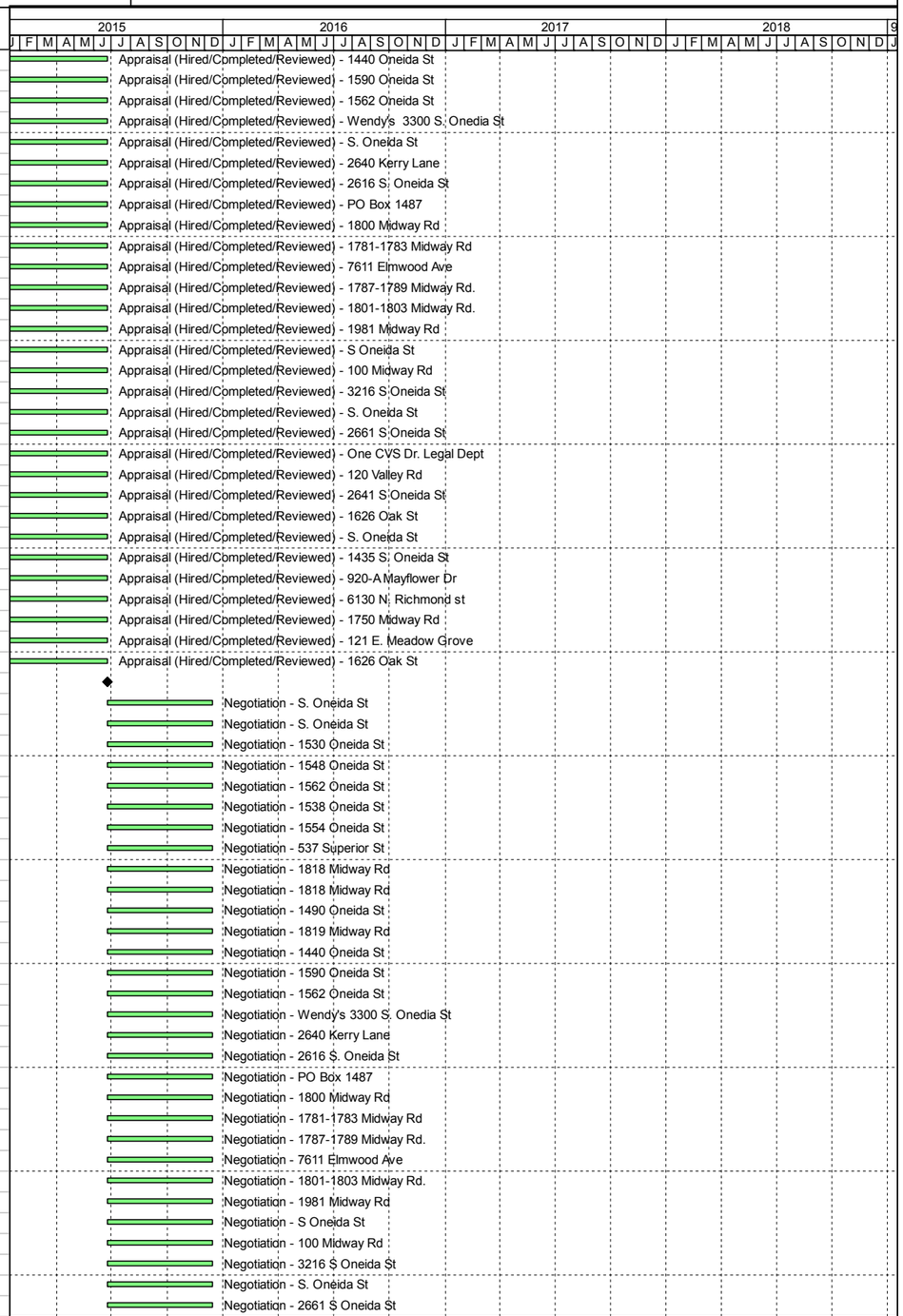
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3462755	Prepare Prelim Structure Plans for BOS - S-70-209	90	05-Jan-15*	08-May-15	05-Jan-15	08-May-15	0	EBEL	5/10/16	7/12/16
C03E-3465495	Prepare Prelim Structure Plans for BOS - S-70-254	90	05-Jan-15	08-May-15	04-Feb-15	10-Jun-15	22	EBEL	5/10/16	7/12/16
C03E-3465415	Prepare Final Structure Plans for BOS - S-70-257	30	30-Mar-15	08-May-15	19-Oct-15	01-Dec-15	143	EBEL	5/10/16	7/12/16
C03E-3443865	Prepare Prelim Structure Plans for BOS - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	0		08-May-15*		10-Jun-15	22	EBEL	5/10/16	7/12/16
C03E-3462765	BOS Approval Return - S-70-209	1	09-Jun-15	09-Jun-15	09-Jul-15	09-Jul-15	22	EBEL	5/10/16	7/12/16
C03E-3465505	BOS Approval Return - S-70-254	1	09-Jun-15	09-Jun-15	09-Jul-15	09-Jul-15	22	EBEL	5/10/16	7/12/16
C03E-3448330	BOS Approval Return - B-70-405	1	29-Jun-15*	29-Jun-15	29-Jun-15	29-Jun-15	0	EBEL	5/10/16	7/12/16
C03E-3448270	BOS Approval Return - B-70-401	1	29-Jun-15*	29-Jun-15	29-Jun-15	29-Jun-15	0	EBEL	5/10/16	7/12/16
C03E-3444025	BOS Approval Return - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	0		29-Jun-15*		16-Oct-15	78	EBEL	5/10/16	7/12/16
C03E-3447935	Prepare Final Structure Plans for BOS - B-70-61	100	01-Jun-15*	19-Oct-15	01-Jun-15	19-Oct-15	0	EBEL	5/10/16	7/12/16
C03E-3462760	Prepare Final Structure Plans for BOS - S-70-209	100	10-Jun-15	28-Oct-15	10-Jul-15	01-Dec-15	22	EBEL	5/10/16	7/12/16
C03E-3465520	Prepare Final Structure Plans for BOS - S-70-254	100	10-Jun-15	28-Oct-15	10-Jul-15	01-Dec-15	22	EBEL	5/10/16	7/12/16
C03E-3448325	Prepare Final Structure Plans for BOS - B-70-405	100	01-Jul-15*	18-Nov-15	01-Jul-15	18-Nov-15	0	EBEL	5/10/16	7/12/16
C03E-3448355	Prepare Final Structure Plans for BOS - B-70-406	100	01-Jul-15*	18-Nov-15	01-Jul-15	18-Nov-15	0	EBEL	5/10/16	7/12/16
C03E-3448445	Prepare Final Structure Plans for BOS - B-70-409	100	01-Jul-15*	18-Nov-15	01-Jul-15	18-Nov-15	0	EBEL	5/10/16	7/12/16
C03E-3448265	Prepare Final Structure Plans for BOS - B-70-401	100	01-Jul-15*	18-Nov-15	01-Jul-15	18-Nov-15	0	EBEL	5/10/16	7/12/16
C03E-3443870	Prepare Final Structure Plans for BOS - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	0		18-Nov-15*		01-Dec-15	7	EBEL	5/10/16	7/12/16
Stormwater Corridor Management Plan and 401/404 Permits		26	02-Oct-15	06-Nov-15	23-Dec-15	29-Jan-16	56			
C03E-3468380	Request DNR Concurrence - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	5	02-Oct-15	08-Oct-15	23-Dec-15	30-Dec-15	56	EBEL	5/10/16	7/12/16
C03E-3468385	DNR Concurrence Received - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	1	06-Nov-15	06-Nov-15	29-Jan-16	29-Jan-16	56	EBEL	5/10/16	7/12/16
TMP - Tasks		165	05-Jan-15	24-Aug-15	24-Aug-15	19-Jul-18	742			
C03E-3464995	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	30-Sep-15	30-Sep-15	191	EBEL	5/10/16	7/12/16
C03E-3469915	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL	5/10/16	7/12/16
C03E-3468060	TMP - Document Approved - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	1	24-Aug-15*	24-Aug-15	24-Aug-15	24-Aug-15	0	EBEL	5/10/16	7/12/16
Utilities		1	04-Jan-16	04-Jan-16	29-Jan-16	29-Jan-16	19			
C03E-3443920	Utility Status Report Complete - US 41 Interchange Bridges and LLBDM B-70-61 Redecking	1	04-Jan-16*	04-Jan-16	29-Jan-16	29-Jan-16	19	EBEL	5/10/16	7/12/16
Workshops, Local Agency, PIM & General Meetings		1	25-Mar-15	25-Mar-15	25-Mar-15	25-Mar-15	0			
C03E-3459760	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	EBEL	5/10/16	7/12/16
1517-75-79 Oneida St (US 10) Interchange		634	22-Oct-13 A	19-Apr-16	26-Sep-14	19-Jul-18	576			
Design Development		169	05-Jan-15	28-Aug-15	26-Sep-14	14-Sep-15	10			
C03E-3469980	Finish Design Modifications / Enhancements	0		05-Jan-15*		24-Oct-14	-46	VRAN	5/10/16	2/14/17
C03E-3469990	Finalize Design Concepts & R/W Needs	0		05-Jan-15*		12-Dec-14	-13	VRAN	5/10/16	2/14/17
C03E-3469975	Summarize Findings from In-House Design Review	1	05-Jan-15*	05-Jan-15	26-Sep-14	26-Sep-14	-67	VRAN	5/10/16	2/14/17
C03E-3469985	Public Informational Meeting - Business/Resident Owner Update	1	05-Jan-15*	05-Jan-15	19-Nov-14	19-Nov-14	-29	VRAN	5/10/16	2/14/17
C03E-3470005	Check-in Meeting with Affected Utility Owners Regarding R/W Needs	1	05-Jan-15*	05-Jan-15	01-Oct-14	01-Oct-14	-64	VRAN	5/10/16	2/14/17
C03E-3470010	2nd Check-in Meeting with Affected Utility Owners	1	05-Jan-15*	05-Jan-15	25-Nov-14	25-Nov-14	-25	VRAN	5/10/16	2/14/17
C03E-3470000	Outreach to Affected Utility Owners with Final R/W Needs	1	07-Jan-15*	07-Jan-15	07-Jan-15	07-Jan-15	0	VRAN	5/10/16	2/14/17
C03E-3470015	Updated Slope Intercepts to Plats	1	16-Jan-15*	16-Jan-15	16-Jan-15	16-Jan-15	0	VRAN	5/10/16	2/14/17
C03E-3468620	Signing & Pavement Markings - Initiate Discussion	20	06-Jan-15*	02-Feb-15	06-Jan-15	02-Feb-15	0	VRAN	5/10/16	2/14/17
C03E-3469995	Public Informational Meeting - (May not be needed)	1	02-Feb-15*	02-Feb-15	02-Feb-15	02-Feb-15	0	VRAN	5/10/16	2/14/17
C03E-3468690	Fencing Plans - Coordinate with Traffic	35	13-Jan-15*	02-Mar-15	13-Jan-15	02-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3468570	Final Storm Sewer - Preliminary Sheets	41	06-Jan-15*	03-Mar-15	06-Jan-15	03-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3468555	Cross Section Staging - Preliminary Staged Construction Cross Sections	46	06-Jan-15*	10-Mar-15	12-Mar-15	14-May-15	47	VRAN	5/10/16	2/14/17
C03E-3468545	Staged Construction/Traffic Control - Preliminary Draft Sheets	40	14-Jan-15*	10-Mar-15	20-Mar-15	14-May-15	47	VRAN	5/10/16	2/14/17
C03E-3468655	Signal Plans - Coordinate with Traffic	45	13-Jan-15*	16-Mar-15	13-Jan-15	16-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3468695	Fencing Plans - Preliminary Plans	22	03-Mar-15	01-Apr-15	14-Apr-15	13-May-15	30	VRAN	5/10/16	2/14/17
C03E-3468560	Cross Section Staging - Team Cross Section Review	1	01-Apr-15*	01-Apr-15	22-Jul-15	22-Jul-15	79	VRAN	5/10/16	2/14/17
C03E-3468575	Final Storm Sewer - Team Review	1	01-Apr-15*	01-Apr-15	01-Apr-15	01-Apr-15	0	VRAN	5/10/16	2/14/17
C03E-3468625	Signing & Pavement Markings Meeting - Preliminary Sheets Ready	66	03-Feb-15	05-May-15	06-Apr-15	07-Jul-15	44	VRAN	5/10/16	2/14/17
C03E-3468590	Plan Details	73	03-Feb-15*	14-May-15	03-Feb-15	14-May-15	0	VRAN	5/10/16	2/14/17
C03E-3468605	Construction Details	73	03-Feb-15*	14-May-15	03-Feb-15	14-May-15	0	VRAN	5/10/16	2/14/17
C03E-3468595	Plan Details Review Meeting	1	15-May-15	15-May-15	29-Jun-15	29-Jun-15	30	VRAN	5/10/16	2/14/17
C03E-3468610	Construction Details Review Meeting	1	15-May-15	15-May-15	29-Jun-15	29-Jun-15	30	VRAN	5/10/16	2/14/17
C03E-3468670	Removal Plans - Preliminary Plans	75	03-Feb-15*	18-May-15	03-Feb-15	18-May-15	0	VRAN	5/10/16	2/14/17
C03E-3468680	Paving Grades - Preliminary Plans	75	03-Feb-15*	18-May-15	03-Feb-15	18-May-15	0	VRAN	5/10/16	2/14/17
C03E-3468550	Staged Construction/Traffic Control - Updated Preliminary Sheets	53	11-Mar-15	22-May-15	01-Jul-15	14-Sep-15	79	VRAN	5/10/16	2/14/17
C03E-3468565	Cross Section Staging - Final Cross Section Edits	37	02-Apr-15	22-May-15	23-Jul-15	14-Sep-15	79	VRAN	5/10/16	2/14/17
C03E-3468660	Signal Plans - Preliminary Plans	55	17-Mar-15	02-Jun-15	28-Apr-15	14-Jul-15	30	VRAN	5/10/16	2/14/17
C03E-3468580	Final Storm Sewer	53	02-Apr-15	16-Jun-15	01-Jul-15	14-Sep-15	63	VRAN	5/10/16	2/14/17
C03E-3468635	Erosion Control Plan - Draft/Preliminary	43	04-May-15*	02-Jul-15	04-May-15	02-Jul-15	0	VRAN	5/10/16	2/14/17



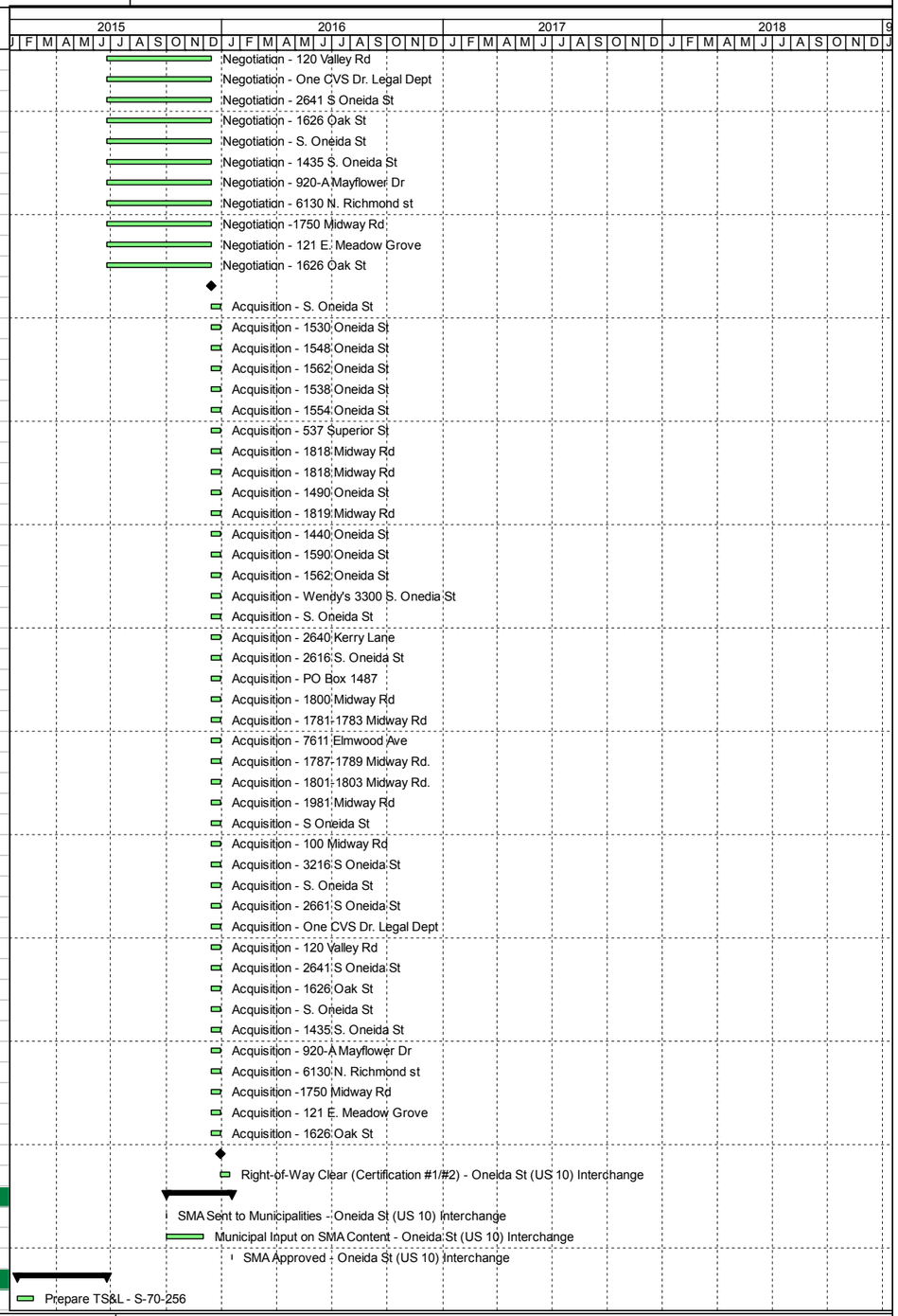
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3468630	Signing & Pavement Markings - Final Sheets Ready	48	06-May-15	13-Jul-15	08-Jul-15	14-Sep-15	44	VRAN	5/10/16	2/14/17
C03E-3468675	Removal Plans - Final Plans	43	19-May-15	17-Jul-15	15-Jul-15	14-Sep-15	40	VRAN	5/10/16	2/14/17
C03E-3468685	Paving Grades - Final Plans	43	19-May-15	17-Jul-15	15-Jul-15	14-Sep-15	40	VRAN	5/10/16	2/14/17
C03E-3468640	Erosion Control Plan - Review Meeting	1	20-Jul-15*	20-Jul-15	20-Jul-15	20-Jul-15	0	VRAN	5/10/16	2/14/17
C03E-3468715	Special Provisions	82	06-Apr-15*	29-Jul-15	20-Apr-15	12-Aug-15	10	VRAN	5/10/16	2/14/17
C03E-3468710	Earthwork Quantity	34	15-Jun-15*	30-Jul-15	28-Jul-15	14-Sep-15	31	VRAN	5/10/16	2/14/17
C03E-3468720	Special Provisions - Review Meeting	1	30-Jul-15	30-Jul-15	13-Aug-15	13-Aug-15	10	VRAN	5/10/16	2/14/17
C03E-3468705	Plan/Profile - Final Design Plan Profile	148	06-Jan-15*	31-Jul-15	17-Feb-15	14-Sep-15	30	VRAN	5/10/16	2/14/17
C03E-3468650	Miscellaneous Quantities (MQ's)	87	01-Apr-15*	31-Jul-15	01-Apr-15	31-Jul-15	0	VRAN	5/10/16	2/14/17
C03E-3468700	Fencing Plans - Final Plans	86	02-Apr-15	31-Jul-15	14-May-15	14-Sep-15	30	VRAN	5/10/16	2/14/17
C03E-3468600	Plan Details - Final	54	18-May-15	31-Jul-15	30-Jun-15	14-Sep-15	30	VRAN	5/10/16	2/14/17
C03E-3468615	Construction Details - Final	54	18-May-15	31-Jul-15	30-Jun-15	14-Sep-15	30	VRAN	5/10/16	2/14/17
C03E-3468665	Signal Plans - Final Plans	43	03-Jun-15	31-Jul-15	15-Jul-15	14-Sep-15	30	VRAN	5/10/16	2/14/17
C03E-3468645	Erosion Control Plan - Final Sheets	18	21-Jul-15	13-Aug-15	19-Aug-15	14-Sep-15	21	VRAN	5/10/16	2/14/17
C03E-3468585	Detour Plans - Coordinate with Traffic (P.F. O'Connor)	64	18-May-15	14-Aug-15	16-Jun-15	14-Sep-15	20	VRAN	5/10/16	2/14/17
C03E-3468480	Title Sheets - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468485	General Notes/Utility Contacts - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468490	Project Overview - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468495	Typical Cross Sections - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468500	Wetland Details - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468505	Invasive Species - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468510	Landscaping by Others - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468515	Pond Details by Others - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468520	Irrigation - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468525	ITS - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468530	Lighting - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468535	Wavetronix - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468540	Alignment Plan - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3468725	Special Provisions - 90% Specials Ready	21	31-Jul-15	28-Aug-15	14-Aug-15	14-Sep-15	10	VRAN	5/10/16	2/14/17
Design - General, 30%, 60%, 75%, 90%, PS&E		235	15-May-15	15-Apr-16	15-May-15	10-May-16	17			
C03E-3447225	75% Constructability Review Meeting / staging plans due - Oneida St (US 10) Interchange	1	15-May-15*	15-May-15	15-May-15	15-May-15	0	VRAN	5/10/16	2/14/17
C03E-3470195	Consultant Designed Item - Preliminary Plans, Estimates & Documentation to WisDOT	1	14-Aug-15*	14-Aug-15	14-Aug-15	14-Aug-15	0	VRAN	5/10/16	2/14/17
C03E-3447205	Submit 90% Plan to DOT - Oneida St (US 10) Interchange	1	15-Sep-15	15-Sep-15*	15-Sep-15	15-Sep-15	0	VRAN	5/10/16	2/14/17
C03E-3447185	90% Plan Review Mtg Complete - Oneida St (US 10) Interchange	1	14-Oct-15	14-Oct-15	14-Oct-15	14-Oct-15	0	VRAN	5/10/16	2/14/17
C03E-3468205	Estimate Documentation to PM - Oneida St (US 10) Interchange	24	15-Oct-15	17-Nov-15	15-Oct-15	17-Nov-15	0	VRAN	5/10/16	2/14/17
C03E-3469340	Submit Documentation for PIF, Salvage & State Furnished Items - Oneida St (US 10) Interchange	24	15-Oct-15	17-Nov-15	28-Dec-15	29-Jan-16	49	VRAN	5/10/16	2/14/17
C03E-3468210	Submit Estimate Documentation Materials to QA/QC - Oneida St (US 10) Interchange	1	18-Nov-15*	18-Nov-15	18-Nov-15	18-Nov-15	0	VRAN	5/10/16	2/14/17
C03E-3458805	Submit Draft or Shelf PS&E to Central Office - Oneida St (US 10) Interchange	1	01-Dec-15*	01-Dec-15	01-Dec-15	01-Dec-15	0	VRAN	5/10/16	2/14/17
C03E-3470200	Consultant Designed Item - Final Plans, Estimates & Documentation to WisDOT	1	04-Jan-16*	04-Jan-16	04-Jan-16	04-Jan-16	0	VRAN	5/10/16	2/14/17
C03E-3468195	Pink Sheets and Estimate to Fiips Coordinator - Oneida St (US 10) Interchange	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	VRAN	5/10/16	2/14/17
C03E-3447195	Draft or Shelf PS&E Central Office Review - Oneida St (US 10) Interchange	42	01-Dec-15	29-Jan-16	01-Dec-15	29-Jan-16	0	VRAN	5/10/16	2/14/17
C03E-3447190	Submit PS&E to Central Office - Oneida St (US 10) Interchange	1	01-Feb-16*	01-Feb-16	01-Feb-16	01-Feb-16	0	VRAN	5/10/16	2/14/17
C03E-3447200	Central Office PS&E Review - Oneida St (US 10) Interchange	45	01-Feb-16*	01-Apr-16	01-Feb-16	01-Apr-16	0	VRAN	5/10/16	2/14/17
C03E-3447330	Meta Data Ready for Submittal to Awarded Contractor - Oneida St (US 10) Interchange	10	04-Apr-16	15-Apr-16*	27-Apr-16	10-May-16	17	VRAN	5/10/16	2/14/17
Environmental		1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222			
C03E-3454435	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222	VRAN	5/10/16	2/14/17
Plats & Real Estate		485	20-Jan-14 A	13-Jan-16	22-Jan-15	19-Jul-18	645			
C03E-3446995	Relocation Order Approved - Oneida St (US 10) Interchange	20	20-Jan-14 A	05-Jan-15	19-Jul-18	19-Jul-18	906	VRAN	5/10/16	2/14/17
C03E-3447130	Record Plat and Write Legal Document - Oneida St (US 10) Interchange	5	20-Jan-14 A	05-Jan-15	22-Jan-15	22-Jan-15	13	VRAN	5/10/16	2/14/17
C03E-3447005	RW Plat To RE - Oneida St (US 10) Interchange	1	06-Jan-15	06-Jan-15	23-Jan-15	23-Jan-15	13	VRAN	5/10/16	2/14/17
C03E-3457890	Appraisal (Hired/Completed/Reviewed) - S. Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450255	Appraisal (Hired/Completed/Reviewed) - 1530 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450265	Appraisal (Hired/Completed/Reviewed) - 1548 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450280	Appraisal (Hired/Completed/Reviewed) - 1562 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450295	Appraisal (Hired/Completed/Reviewed) - 1538 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450310	Appraisal (Hired/Completed/Reviewed) - 1554 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450325	Appraisal (Hired/Completed/Reviewed) - 537 Superior St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450340	Appraisal (Hired/Completed/Reviewed) - 1818 Midway Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450360	Appraisal (Hired/Completed/Reviewed) - 1818 Midway Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450375	Appraisal (Hired/Completed/Reviewed) - 1490 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450385	Appraisal (Hired/Completed/Reviewed) - 1819 Midway Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17



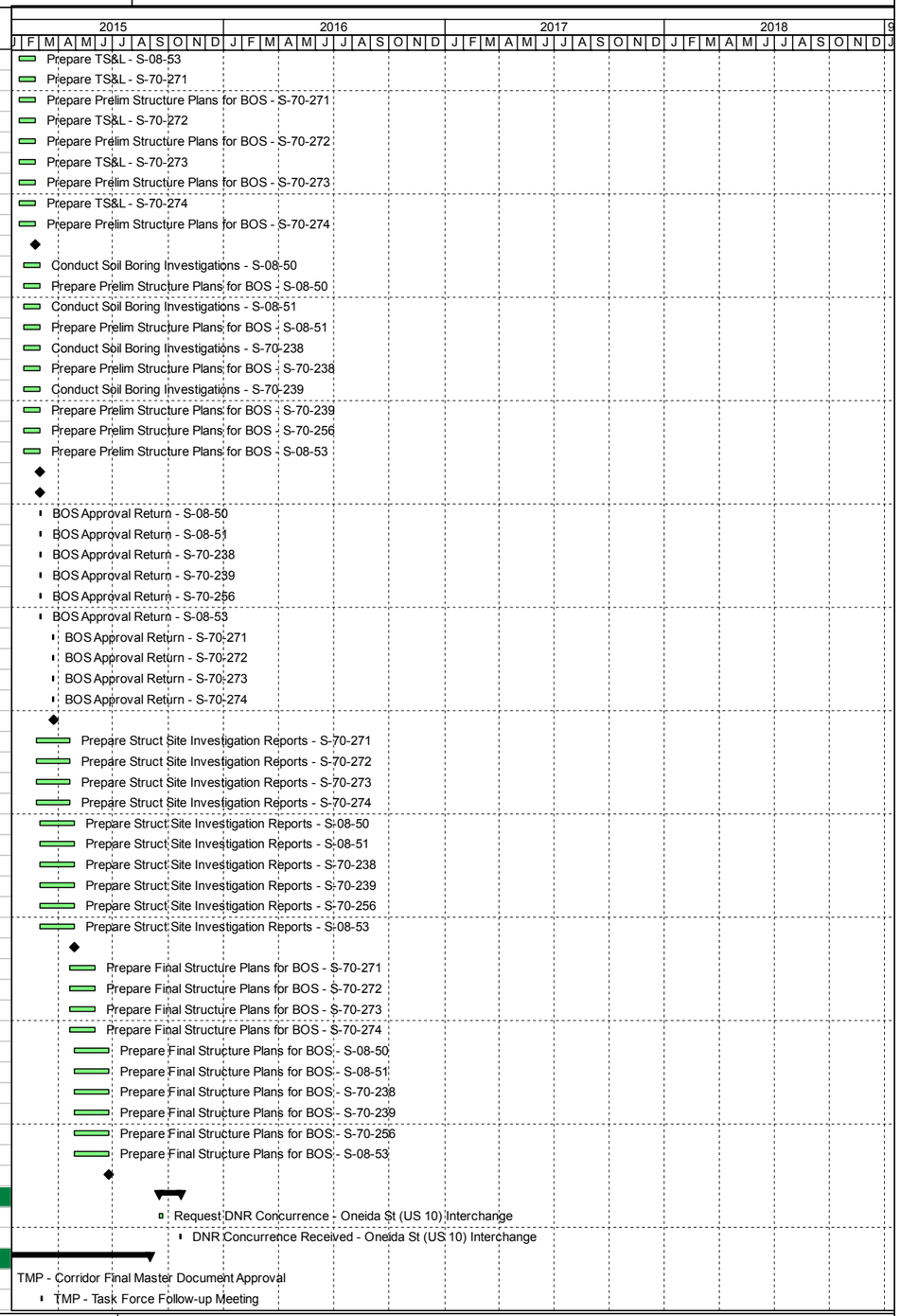
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3450400	Appraisal (Hired/Completed/Reviewed) - 1440 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450415	Appraisal (Hired/Completed/Reviewed) - 1590 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450430	Appraisal (Hired/Completed/Reviewed) - 1562 Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3450870	Appraisal (Hired/Completed/Reviewed) - Wendy's 3300 S. Onedia St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457905	Appraisal (Hired/Completed/Reviewed) - S. Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455385	Appraisal (Hired/Completed/Reviewed) - 2640 Kerry Lane	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455400	Appraisal (Hired/Completed/Reviewed) - 2616 S. Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455415	Appraisal (Hired/Completed/Reviewed) - PO Box 1487	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455445	Appraisal (Hired/Completed/Reviewed) - 1800 Midway Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455460	Appraisal (Hired/Completed/Reviewed) - 1781-1783 Midway Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455205	Appraisal (Hired/Completed/Reviewed) - 7611 Elmwood Ave	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455475	Appraisal (Hired/Completed/Reviewed) - 1787-1789 Midway Rd.	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455490	Appraisal (Hired/Completed/Reviewed) - 1801-1803 Midway Rd.	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3455505	Appraisal (Hired/Completed/Reviewed) - 1981 Midway Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3456675	Appraisal (Hired/Completed/Reviewed) - S Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457485	Appraisal (Hired/Completed/Reviewed) - 100 Midway Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457500	Appraisal (Hired/Completed/Reviewed) - 3216 S Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457530	Appraisal (Hired/Completed/Reviewed) - S. Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457545	Appraisal (Hired/Completed/Reviewed) - 2661 S Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457935	Appraisal (Hired/Completed/Reviewed) - One CVS Dr. Legal Dept	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457560	Appraisal (Hired/Completed/Reviewed) - 120 Valley Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457575	Appraisal (Hired/Completed/Reviewed) - 2641 S Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457590	Appraisal (Hired/Completed/Reviewed) - 1626 Oak St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457620	Appraisal (Hired/Completed/Reviewed) - S. Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457635	Appraisal (Hired/Completed/Reviewed) - 1435 S. Oneida St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457665	Appraisal (Hired/Completed/Reviewed) - 920-A Mayflower Dr	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457680	Appraisal (Hired/Completed/Reviewed) - 6130 N. Richmond st	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3464700	Appraisal (Hired/Completed/Reviewed) - 1750 Midway Rd	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3464610	Appraisal (Hired/Completed/Reviewed) - 121 E. Meadow Grove	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3465910	Appraisal (Hired/Completed/Reviewed) - 1626 Oak St	120	07-Jan-15	24-Jun-15	26-Jan-15	13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3447075	Complete Appraisal of All Parcels & Easements - Oneida St (US 10) Interchange	0		24-Jun-15*		13-Jul-15	13	VRAN	5/10/16	2/14/17
C03E-3457885	Negotiation - S. Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457900	Negotiation - S. Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450250	Negotiation - 1530 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450260	Negotiation - 1548 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450275	Negotiation - 1562 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450290	Negotiation - 1538 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450305	Negotiation - 1554 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450320	Negotiation - 537 Superior St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450335	Negotiation - 1818 Midway Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450355	Negotiation - 1818 Midway Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450370	Negotiation - 1490 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450380	Negotiation - 1819 Midway Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450395	Negotiation - 1440 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450410	Negotiation - 1590 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450425	Negotiation - 1562 Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450865	Negotiation - Wendy's 3300 S. Onedia St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455380	Negotiation - 2640 Kerry Lane	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455395	Negotiation - 2616 S. Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455410	Negotiation - PO Box 1487	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455440	Negotiation - 1800 Midway Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455455	Negotiation - 1781-1783 Midway Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455470	Negotiation - 1787-1789 Midway Rd.	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455200	Negotiation - 7611 Elmwood Ave	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455485	Negotiation - 1801-1803 Midway Rd.	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455500	Negotiation - 1981 Midway Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3456670	Negotiation - S Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457480	Negotiation - 100 Midway Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457495	Negotiation - 3216 S Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457525	Negotiation - S. Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457540	Negotiation - 2661 S Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17



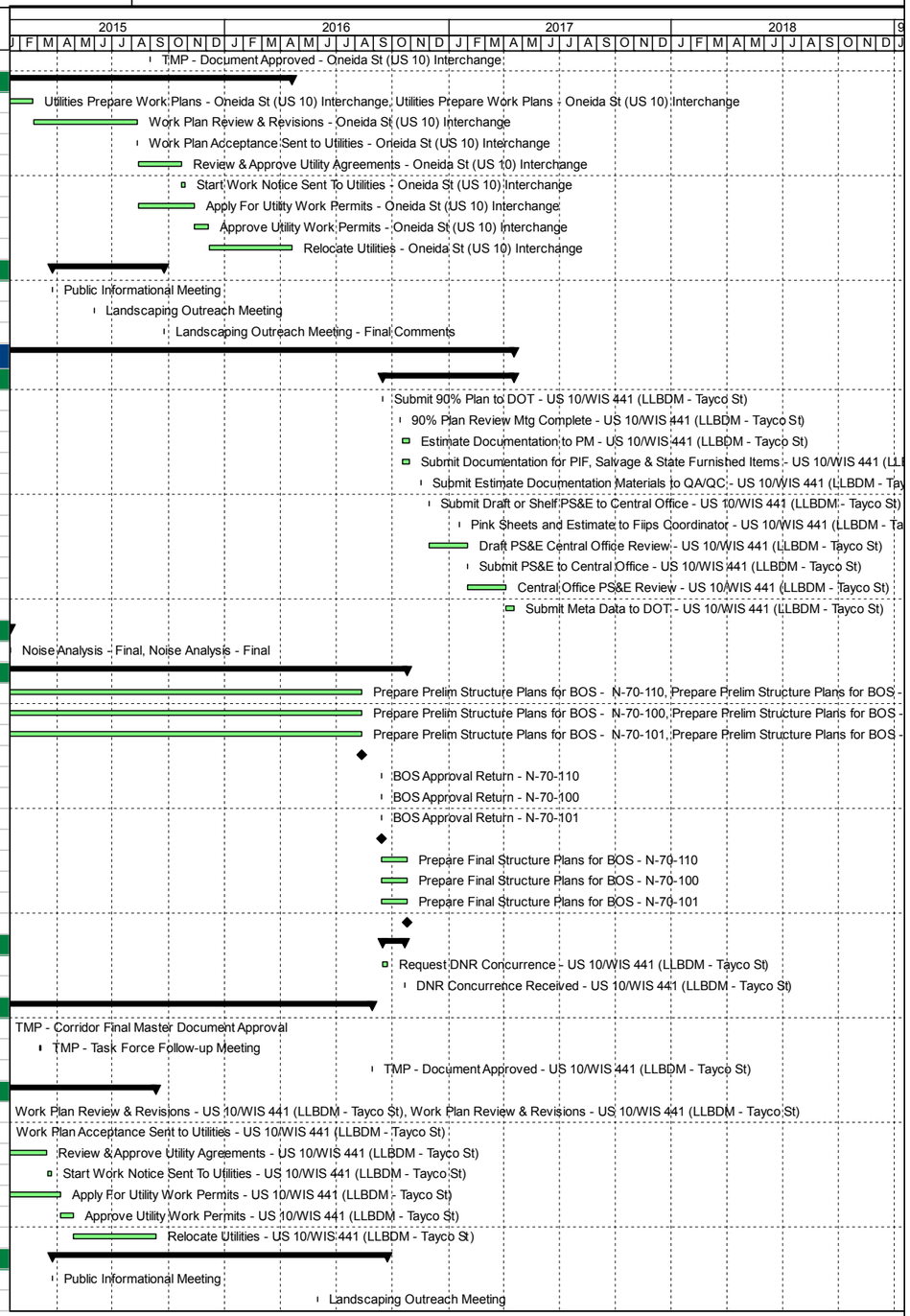
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3457555	Negotiation - 120 Valley Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457945	Negotiation - One CVS Dr. Legal Dept	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457570	Negotiation - 2641 S Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457585	Negotiation - 1626 Oak St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457615	Negotiation - S. Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457630	Negotiation - 1435 S. Oneida St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457660	Negotiation - 920-A Mayflower Dr	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457675	Negotiation - 6130 N. Richmond st	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3464695	Negotiation -1750 Midway Rd	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3464605	Negotiation - 121 E. Meadow Grove	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3465915	Negotiation - 1626 Oak St	120	25-Jun-15	14-Dec-15	14-Jul-15	04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3446990	Negotiate Acquisition of All Parcels & Easements - Oneida St (US 10) Interchange	0		14-Dec-15*		04-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457895	Acquisition - S. Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450245	Acquisition - 1530 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450270	Acquisition - 1548 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450285	Acquisition - 1562 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450300	Acquisition - 1538 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450315	Acquisition - 1554 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450330	Acquisition - 537 Superior St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450345	Acquisition - 1818 Midway Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450350	Acquisition - 1818 Midway Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450365	Acquisition - 1490 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450390	Acquisition - 1819 Midway Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450405	Acquisition - 1440 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450420	Acquisition - 1590 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450435	Acquisition - 1562 Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3450875	Acquisition - Wendy's 3300 S. Onedia St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457910	Acquisition - S. Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455390	Acquisition - 2640 Kerry Lane	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455405	Acquisition - 2616 S. Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455420	Acquisition - PO Box 1487	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455450	Acquisition - 1800 Midway Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455465	Acquisition - 1781-1783 Midway Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455210	Acquisition - 7611 Elmwood Ave	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455480	Acquisition - 1787-1789 Midway Rd.	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455495	Acquisition - 1801-1803 Midway Rd.	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3455510	Acquisition - 1981 Midway Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3456680	Acquisition - S Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457490	Acquisition - 100 Midway Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457505	Acquisition - 3216 S Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457535	Acquisition - S. Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457550	Acquisition - 2661 S Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457940	Acquisition - One CVS Dr. Legal Dept	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457565	Acquisition - 120 Valley Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457580	Acquisition - 2641 S Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457595	Acquisition - 1626 Oak St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457625	Acquisition - S. Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457640	Acquisition - 1435 S. Oneida St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457670	Acquisition - 920-A Mayflower Dr	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3457685	Acquisition - 6130 N. Richmond st	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3464705	Acquisition -1750 Midway Rd	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3464615	Acquisition - 121 E. Meadow Grove	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3465920	Acquisition - 1626 Oak St	10	15-Dec-15	29-Dec-15	05-Jan-16	18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3447160	Acquire Parcels & Easements - Oneida St (US 10) Interchange	0		29-Dec-15*		18-Jan-16	13	VRAN	5/10/16	2/14/17
C03E-3447135	Right-of-Way Clear (Certification #1/#2) - Oneida St (US 10) Interchange	10	30-Dec-15	13-Jan-16*	19-Jan-16	01-Feb-16	13	VRAN	5/10/16	2/14/17
State/Municipal Agreement		74	01-Oct-15	18-Jan-16	01-Oct-15	18-Jan-16	0			
C03E-3466315	SMA Sent to Municipalities - Oneida St (US 10) Interchange	1	01-Oct-15*	01-Oct-15	01-Oct-15	01-Oct-15	0	VRAN	5/10/16	2/14/17
C03E-3468290	Municipal Input on SMA Content - Oneida St (US 10) Interchange	40	02-Oct-15	30-Nov-15	02-Oct-15	30-Nov-15	0	VRAN	5/10/16	2/14/17
C03E-3466320	SMA Approved - Oneida St (US 10) Interchange	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	VRAN	5/10/16	2/14/17
Geo-Tech & Structures		105	27-Jan-15	23-Jun-15	27-Jan-15	30-Nov-15	111			
C03E-3465700	Prepare TS&L - S-70-256	20	27-Jan-15*	23-Feb-15	27-Jan-15	23-Feb-15	0	VRAN	5/10/16	2/14/17



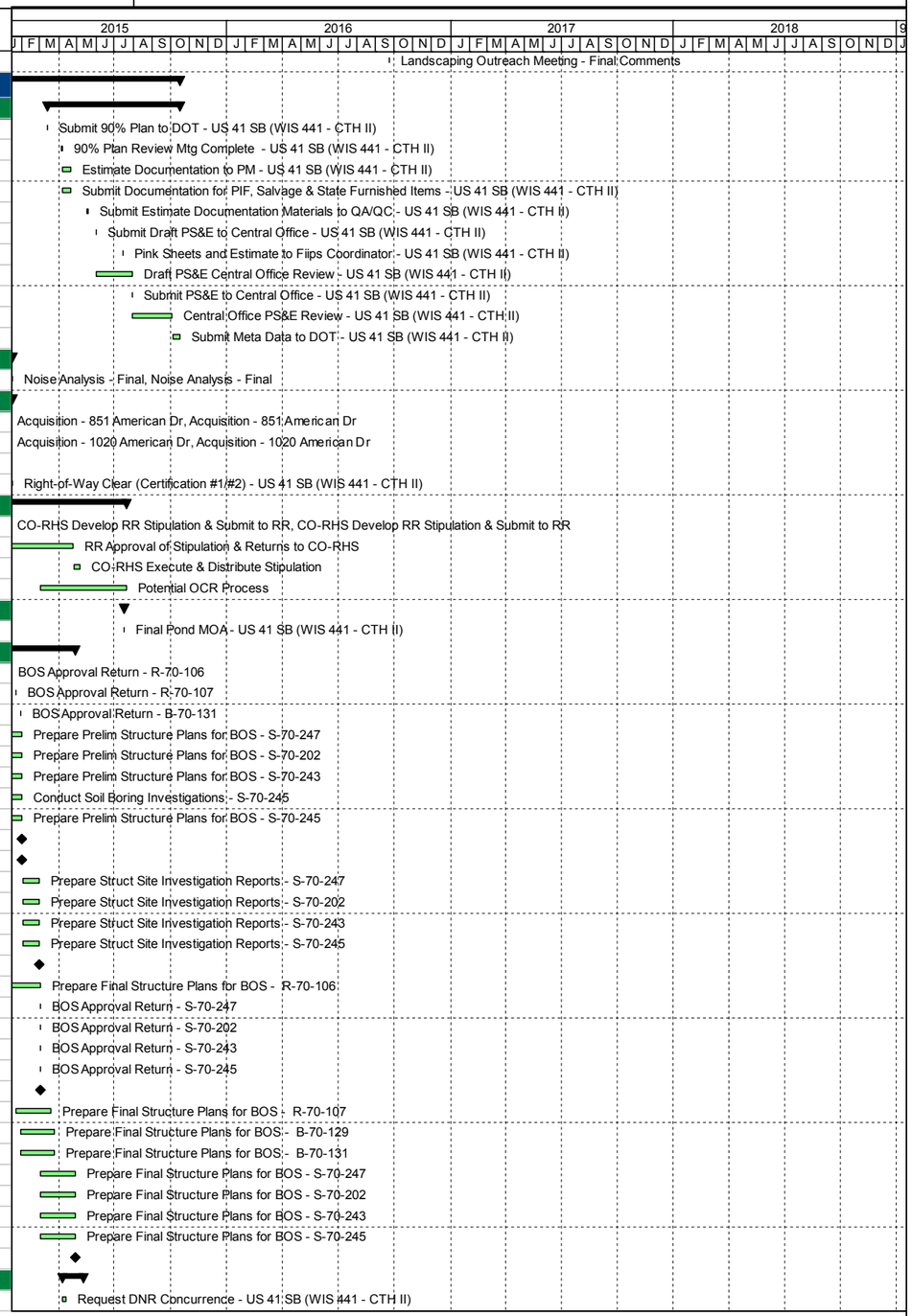
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3465735	Prepare TS&L - S-08-53	20	27-Jan-15*	23-Feb-15	27-Jan-15	23-Feb-15	0	VRAN	5/10/16	2/14/17
C03E-3470060	Prepare TS&L - S-70-271	20	27-Jan-15*	23-Feb-15	27-Jan-15	23-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3470065	Prepare Prelim Structure Plans for BOS - S-70-271	20	27-Jan-15	23-Feb-15	17-Apr-15	14-May-15	58	VRAN	5/10/16	7/10/18
C03E-3470085	Prepare TS&L - S-70-272	20	27-Jan-15*	23-Feb-15	27-Jan-15	23-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3470090	Prepare Prelim Structure Plans for BOS - S-70-272	20	27-Jan-15	23-Feb-15	17-Apr-15	14-May-15	58	VRAN	5/10/16	7/10/18
C03E-3470110	Prepare TS&L - S-70-273	20	27-Jan-15*	23-Feb-15	27-Jan-15	23-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3470115	Prepare Prelim Structure Plans for BOS - S-70-273	20	27-Jan-15	23-Feb-15	17-Apr-15	14-May-15	58	VRAN	5/10/16	7/10/18
C03E-3470135	Prepare TS&L - S-70-274	20	27-Jan-15*	23-Feb-15	27-Jan-15	23-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3470140	Prepare Prelim Structure Plans for BOS - S-70-274	20	27-Jan-15	23-Feb-15	17-Apr-15	14-May-15	58	VRAN	5/10/16	7/10/18
C03E-3447045	Prepare TS&L - Oneida St (US 10) Interchange	0		23-Feb-15*		23-Feb-15	0	VRAN	5/10/16	2/14/17
C03E-3462255	Conduct Soil Boring Investigations - S-08-50	20	03-Feb-15	02-Mar-15	17-Apr-15	14-May-15	53	VRAN	5/10/16	2/14/17
C03E-3462265	Prepare Prelim Structure Plans for BOS - S-08-50	20	03-Feb-15*	02-Mar-15	03-Feb-15	02-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3462290	Conduct Soil Boring Investigations - S-08-51	20	03-Feb-15	02-Mar-15	17-Apr-15	14-May-15	53	VRAN	5/10/16	2/14/17
C03E-3462300	Prepare Prelim Structure Plans for BOS - S-08-51	20	03-Feb-15*	02-Mar-15	03-Feb-15	02-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3462325	Conduct Soil Boring Investigations - S-70-238	20	03-Feb-15	02-Mar-15	17-Apr-15	14-May-15	53	VRAN	5/10/16	2/14/17
C03E-3462335	Prepare Prelim Structure Plans for BOS - S-70-238	20	03-Feb-15*	02-Mar-15	03-Feb-15	02-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3462360	Conduct Soil Boring Investigations - S-70-239	20	03-Feb-15	02-Mar-15	17-Apr-15	14-May-15	53	VRAN	5/10/16	2/14/17
C03E-3462370	Prepare Prelim Structure Plans for BOS - S-70-239	20	03-Feb-15*	02-Mar-15	03-Feb-15	02-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3465705	Prepare Prelim Structure Plans for BOS - S-70-256	20	03-Feb-15*	02-Mar-15	03-Feb-15	02-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3465740	Prepare Prelim Structure Plans for BOS - S-08-53	20	03-Feb-15*	02-Mar-15	03-Feb-15	02-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3447040	Conduct Soil Boring Investigations - Oneida St (US 10) Interchange	0		02-Mar-15*		14-May-15	53	VRAN	5/10/16	2/14/17
C03E-3447050	Prepare Prelim Structure Plans for BOS - Oneida St (US 10) Interchange	0		02-Mar-15*		14-May-15	53	VRAN	5/10/16	2/14/17
C03E-3462275	BOS Approval Return - S-08-50	1	03-Mar-15	03-Mar-15	01-Oct-15	01-Oct-15	150	VRAN	5/10/16	2/14/17
C03E-3462310	BOS Approval Return - S-08-51	1	03-Mar-15	03-Mar-15	01-Oct-15	01-Oct-15	150	VRAN	5/10/16	2/14/17
C03E-3462345	BOS Approval Return - S-70-238	1	03-Mar-15	03-Mar-15	01-Oct-15	01-Oct-15	150	VRAN	5/10/16	2/14/17
C03E-3462380	BOS Approval Return - S-70-239	1	03-Mar-15	03-Mar-15	01-Oct-15	01-Oct-15	150	VRAN	5/10/16	2/14/17
C03E-3465715	BOS Approval Return - S-70-256	1	03-Mar-15	03-Mar-15	01-Oct-15	01-Oct-15	150	VRAN	5/10/16	2/14/17
C03E-3465750	BOS Approval Return - S-08-53	1	03-Mar-15	03-Mar-15	01-Oct-15	01-Oct-15	150	VRAN	5/10/16	2/14/17
C03E-3470075	BOS Approval Return - S-70-271	1	24-Mar-15	24-Mar-15	15-Oct-15	15-Oct-15	145	VRAN	5/10/16	7/10/18
C03E-3470100	BOS Approval Return - S-70-272	1	24-Mar-15	24-Mar-15	15-Oct-15	15-Oct-15	145	VRAN	5/10/16	7/10/18
C03E-3470125	BOS Approval Return - S-70-273	1	24-Mar-15	24-Mar-15	15-Oct-15	15-Oct-15	145	VRAN	5/10/16	7/10/18
C03E-3470150	BOS Approval Return - S-70-274	1	24-Mar-15	24-Mar-15	15-Oct-15	15-Oct-15	145	VRAN	5/10/16	7/10/18
C03E-3447210	BOS Approval Return - Oneida St (US 10) Interchange	0		24-Mar-15*		15-Oct-15	145	VRAN	5/10/16	2/14/17
C03E-3470070	Prepare Struct Site Investigation Reports - S-70-271	40	24-Feb-15	20-Apr-15	20-Jul-15	14-Sep-15	103	VRAN	5/10/16	7/10/18
C03E-3470095	Prepare Struct Site Investigation Reports - S-70-272	40	24-Feb-15	20-Apr-15	20-Jul-15	14-Sep-15	103	VRAN	5/10/16	7/10/18
C03E-3470120	Prepare Struct Site Investigation Reports - S-70-273	40	24-Feb-15	20-Apr-15	20-Jul-15	14-Sep-15	103	VRAN	5/10/16	7/10/18
C03E-3470145	Prepare Struct Site Investigation Reports - S-70-274	40	24-Feb-15	20-Apr-15	20-Jul-15	14-Sep-15	103	VRAN	5/10/16	7/10/18
C03E-3462285	Prepare Struct Site Investigation Reports - S-08-50	40	03-Mar-15	27-Apr-15	20-Jul-15	14-Sep-15	98	VRAN	5/10/16	2/14/17
C03E-3462320	Prepare Struct Site Investigation Reports - S-08-51	40	03-Mar-15	27-Apr-15	20-Jul-15	14-Sep-15	98	VRAN	5/10/16	2/14/17
C03E-3462355	Prepare Struct Site Investigation Reports - S-70-238	40	03-Mar-15	27-Apr-15	20-Jul-15	14-Sep-15	98	VRAN	5/10/16	2/14/17
C03E-3462390	Prepare Struct Site Investigation Reports - S-70-239	40	03-Mar-15	27-Apr-15	20-Jul-15	14-Sep-15	98	VRAN	5/10/16	2/14/17
C03E-3465725	Prepare Struct Site Investigation Reports - S-70-256	40	03-Mar-15	27-Apr-15	20-Jul-15	14-Sep-15	98	VRAN	5/10/16	2/14/17
C03E-3465760	Prepare Struct Site Investigation Reports - S-08-53	40	03-Mar-15	27-Apr-15	20-Jul-15	14-Sep-15	98	VRAN	5/10/16	2/14/17
C03E-3447080	Prepare Struct Site Investigation Reports - Oneida St (US 10) Interchange	0		27-Apr-15*		14-Sep-15	98	VRAN	5/10/16	2/14/17
C03E-3470080	Prepare Final Structure Plans for BOS - S-70-271	30	21-Apr-15	02-Jun-15	16-Oct-15	30-Nov-15	126	VRAN	5/10/16	7/10/18
C03E-3470105	Prepare Final Structure Plans for BOS - S-70-272	30	21-Apr-15	02-Jun-15	16-Oct-15	30-Nov-15	126	VRAN	5/10/16	7/10/18
C03E-3470130	Prepare Final Structure Plans for BOS - S-70-273	30	21-Apr-15	02-Jun-15	16-Oct-15	30-Nov-15	126	VRAN	5/10/16	7/10/18
C03E-3470155	Prepare Final Structure Plans for BOS - S-70-274	30	21-Apr-15	02-Jun-15	16-Oct-15	30-Nov-15	126	VRAN	5/10/16	7/10/18
C03E-3462270	Prepare Final Structure Plans for BOS - S-08-50	40	28-Apr-15	23-Jun-15	02-Oct-15	30-Nov-15	111	VRAN	5/10/16	2/14/17
C03E-3462305	Prepare Final Structure Plans for BOS - S-08-51	40	28-Apr-15	23-Jun-15	02-Oct-15	30-Nov-15	111	VRAN	5/10/16	2/14/17
C03E-3462340	Prepare Final Structure Plans for BOS - S-70-238	40	28-Apr-15	23-Jun-15	02-Oct-15	30-Nov-15	111	VRAN	5/10/16	2/14/17
C03E-3462375	Prepare Final Structure Plans for BOS - S-70-239	40	28-Apr-15	23-Jun-15	02-Oct-15	30-Nov-15	111	VRAN	5/10/16	2/14/17
C03E-3465730	Prepare Final Structure Plans for BOS - S-70-256	40	28-Apr-15	23-Jun-15	02-Oct-15	30-Nov-15	111	VRAN	5/10/16	2/14/17
C03E-3465765	Prepare Final Structure Plans for BOS - S-08-53	40	28-Apr-15	23-Jun-15	02-Oct-15	30-Nov-15	111	VRAN	5/10/16	2/14/17
C03E-3447055	Prepare Final Structure Plans for BOS - Oneida St (US 10) Interchange	0		23-Jun-15*		30-Nov-15	111	VRAN	5/10/16	2/14/17
Stormwater Corridor Management Plan and 401/404 Permits		26	16-Sep-15	21-Oct-15	23-Dec-15	29-Jan-16	68			
C03E-3468450	Request DNR Concurrence - Oneida St (US 10) Interchange	5	16-Sep-15	22-Sep-15	23-Dec-15	30-Dec-15	68	VRAN	5/10/16	2/14/17
C03E-3468455	DNR Concurrence Received - Oneida St (US 10) Interchange	1	21-Oct-15	21-Oct-15	29-Jan-16	29-Jan-16	68	VRAN	5/10/16	2/14/17
TMP - Tasks		170	05-Jan-15	31-Aug-15	31-Aug-15	19-Jul-18	737			
C03E-3465020	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	14-Sep-15	14-Sep-15	179	VRAN	5/10/16	2/14/17
C03E-3469925	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	VRAN	5/10/16	2/14/17



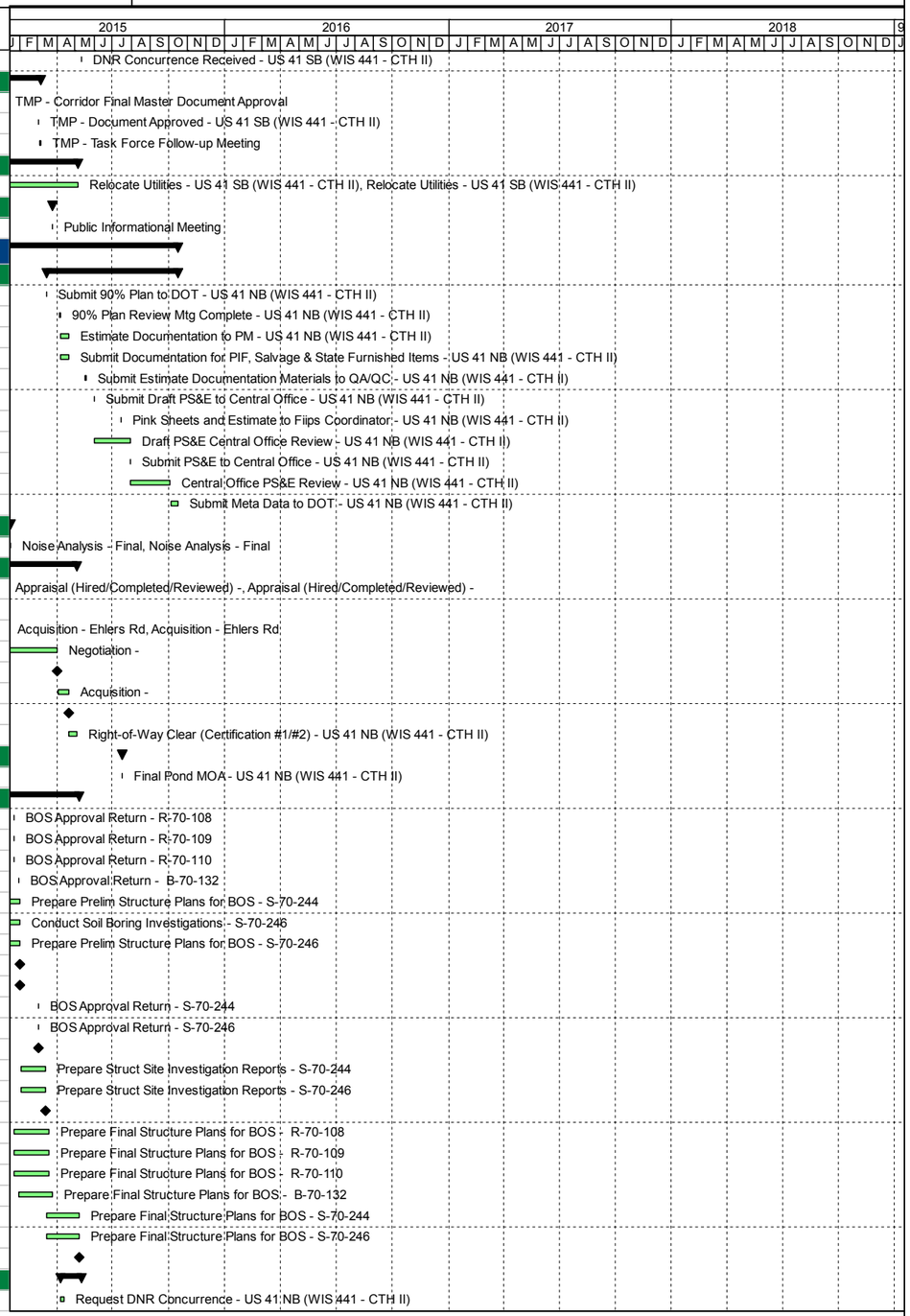
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3468200	TMP - Document Approved - Oneida St (US 10) Interchange	1	31-Aug-15*	31-Aug-15	31-Aug-15	31-Aug-15	0	VRAN	5/10/16	2/14/17
Utilities		634	22-Oct-13 A	19-Apr-16	26-Jan-15	10-May-16	15			
C03E-3447065	Utilities Prepare Work Plans - Oneida St (US 10) Interchange	120	22-Oct-13 A	20-Feb-15	26-Jan-15	13-Mar-15	15	VRAN	5/10/16	2/14/17
C03E-3447145	Work Plan Review & Revisions - Oneida St (US 10) Interchange	120	23-Feb-15	10-Aug-15	16-Mar-15	31-Aug-15	15	VRAN	5/10/16	2/14/17
C03E-3447170	Work Plan Acceptance Sent to Utilities - Oneida St (US 10) Interchange	1	11-Aug-15	11-Aug-15	01-Sep-15	01-Sep-15	15	VRAN	5/10/16	2/14/17
C03E-3447175	Review & Approve Utility Agreements - Oneida St (US 10) Interchange	50	12-Aug-15	21-Oct-15	08-Oct-15	18-Dec-15	40	VRAN	5/10/16	2/14/17
C03E-3447110	Start Work Notice Sent To Utilities - Oneida St (US 10) Interchange	5	22-Oct-15	28-Oct-15	21-Dec-15	28-Dec-15	40	VRAN	5/10/16	2/14/17
C03E-3447115	Apply For Utility Work Permits - Oneida St (US 10) Interchange	65	12-Aug-15	11-Nov-15	02-Sep-15	04-Dec-15	15	VRAN	5/10/16	2/14/17
C03E-3447180	Approve Utility Work Permits - Oneida St (US 10) Interchange	15	12-Nov-15	04-Dec-15	07-Dec-15	28-Dec-15	15	VRAN	5/10/16	2/14/17
C03E-3447105	Relocate Utilities - Oneida St (US 10) Interchange	95	07-Dec-15	19-Apr-16*	29-Dec-15	10-May-16	15	VRAN	5/10/16	2/14/17
Workshops, Local Agency, PIM & General Meetings		129	25-Mar-15	23-Sep-15	25-Mar-15	19-Jul-18	721			
C03E-3459785	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	VRAN	5/10/16	2/14/17
C03E-3460595	Landscaping Outreach Meeting	1	01-Jun-15*	01-Jun-15	28-Mar-18	28-Mar-18	721	VRAN	5/10/16	2/14/17
C03E-3460600	Landscaping Outreach Meeting - Final Comments	1	23-Sep-15	23-Sep-15	19-Jul-18	19-Jul-18	721	VRAN	5/10/16	2/14/17
1517-07-78 US 10/WIS 441 Mainline (LLBDM - Tayco St)		1236	20-Dec-11 A	18-Apr-17	06-Feb-15	19-Jul-18	321			
Design - General, 30%, 60%, 75%, 90%, PS&E		152	15-Sep-16	18-Apr-17	15-Sep-16	09-May-17	15			
C03E-3444265	Submit 90% Plan to DOT - US 10/WIS 441 (LLBDM - Tayco St)	1	15-Sep-16	15-Sep-16*	15-Sep-16	15-Sep-16	0	EBEL		5/9/17
C03E-3444245	90% Plan Review Mtg Complete - US 10/WIS 441 (LLBDM - Tayco St)	1	14-Oct-16	14-Oct-16	02-Nov-16	02-Nov-16	13	EBEL		5/9/17
C03E-3468005	Estimate Documentation to PM - US 10/WIS 441 (LLBDM - Tayco St)	10	17-Oct-16	28-Oct-16	03-Nov-16	16-Nov-16	13	EBEL		5/9/17
C03E-3469330	Submit Documentation for PIF, Salvage & State Furnished Items - US 10/WIS 441 (LLBDM - Tayco St)	10	17-Oct-16	28-Oct-16	18-Jan-17	31-Jan-17	65	EBEL		5/9/17
C03E-3468010	Submit Estimate Documentation Materials to QA/QC - US 10/WIS 441 (LLBDM - Tayco St)	1	17-Nov-16*	17-Nov-16	17-Nov-16	17-Nov-16	0	EBEL		5/9/17
C03E-3458765	Submit Draft or Shelf PS&E to Central Office - US 10/WIS 441 (LLBDM - Tayco St)	0	01-Dec-16*	01-Dec-16	30-Nov-16	30-Nov-16	0	EBEL		5/9/17
C03E-3467995	Pink Sheets and Estimate to Fiips Coordinator - US 10/WIS 441 (LLBDM - Tayco St)	1	18-Jan-17*	18-Jan-17	18-Jan-17	18-Jan-17	0	EBEL		5/9/17
C03E-3444255	Draft PS&E Central Office Review - US 10/WIS 441 (LLBDM - Tayco St)	44	01-Dec-16	31-Jan-17	01-Dec-16	31-Jan-17	0	EBEL		5/9/17
C03E-3444250	Submit PS&E to Central Office - US 10/WIS 441 (LLBDM - Tayco St)	1	01-Feb-17*	01-Feb-17	01-Feb-17	01-Feb-17	0	EBEL		5/9/17
C03E-3444260	Central Office PS&E Review - US 10/WIS 441 (LLBDM - Tayco St)	45	01-Feb-17*	04-Apr-17	01-Feb-17	04-Apr-17	0	EBEL		5/9/17
C03E-3447270	Submit Meta Data to DOT - US 10/WIS 441 (LLBDM - Tayco St)	10	05-Apr-17	18-Apr-17*	26-Apr-17	09-May-17	15	EBEL		5/9/17
Environmental		1	18-Nov-13 A	16-Jan-15	15-Nov-16	30-Nov-16	477			
C03E-3453525	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	15-Nov-16	30-Nov-16	477	EBEL		5/9/17
Geo-Tech & Structures		1113	20-Dec-11 A	25-Oct-16	06-Feb-15	30-Nov-16	24			
C03E-3449010	Prepare Prelim Structure Plans for BOS - N-70-110	30	20-Dec-11 A	12-Aug-16	06-Feb-15	16-Sep-16	24	EBEL		5/9/17
C03E-3449160	Prepare Prelim Structure Plans for BOS - N-70-100	30	20-Dec-11 A	12-Aug-16	06-Feb-15	16-Sep-16	24	EBEL		5/9/17
C03E-3449190	Prepare Prelim Structure Plans for BOS - N-70-101	30	20-Dec-11 A	12-Aug-16	06-Feb-15	16-Sep-16	24	EBEL		5/9/17
C03E-3444110	Prepare Prelim Structure Plans for BOS - US 10/WIS 441 (LLBDM - Tayco St)	0		12-Aug-16*		16-Sep-16	24	EBEL		5/9/17
C03E-3449020	BOS Approval Return - N-70-110	1	13-Sep-16	13-Sep-16	17-Oct-16	17-Oct-16	24	EBEL		5/9/17
C03E-3449170	BOS Approval Return - N-70-100	1	13-Sep-16	13-Sep-16	17-Oct-16	17-Oct-16	24	EBEL		5/9/17
C03E-3449200	BOS Approval Return - N-70-101	1	13-Sep-16	13-Sep-16	17-Oct-16	17-Oct-16	24	EBEL		5/9/17
C03E-3444270	BOS Approval Return - US 10/WIS 441 (LLBDM - Tayco St)	0		13-Sep-16*		17-Oct-16	24	EBEL		5/9/17
C03E-3449015	Prepare Final Structure Plans for BOS - N-70-110	30	14-Sep-16	25-Oct-16	18-Oct-16	30-Nov-16	24	EBEL		5/9/17
C03E-3449165	Prepare Final Structure Plans for BOS - N-70-100	30	14-Sep-16	25-Oct-16	18-Oct-16	30-Nov-16	24	EBEL		5/9/17
C03E-3449195	Prepare Final Structure Plans for BOS - N-70-101	30	14-Sep-16	25-Oct-16	18-Oct-16	30-Nov-16	24	EBEL		5/9/17
C03E-3444115	Prepare Final Structure Plans for BOS - US 10/WIS 441 (LLBDM - Tayco St)	0		25-Oct-16*		30-Nov-16	24	EBEL		5/9/17
Stormwater Corridor Management Plan and 401/404 Permits		26	16-Sep-16	21-Oct-16	27-Dec-16	31-Jan-17	70			
C03E-3468350	Request DNR Concurrence - US 10/WIS 441 (LLBDM - Tayco St)	5	16-Sep-16	22-Sep-16	27-Dec-16	02-Jan-17	70	EBEL		5/9/17
C03E-3468355	DNR Concurrence Received - US 10/WIS 441 (LLBDM - Tayco St)	1	21-Oct-16	21-Oct-16	31-Jan-17	31-Jan-17	70	EBEL		5/9/17
TMP - Tasks		423	05-Jan-15	29-Aug-16	29-Aug-16	19-Jul-18	484			
C03E-3464975	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	14-Sep-16	14-Sep-16	434	EBEL		5/9/17
C03E-3469910	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL		5/9/17
C03E-3468000	TMP - Document Approved - US 10/WIS 441 (LLBDM - Tayco St)	1	29-Aug-16*	29-Aug-16	29-Aug-16	29-Aug-16	0	EBEL		5/9/17
Utilities		369	15-Nov-13 A	09-Sep-15	31-Aug-16	09-May-17	425			
C03E-3444205	Work Plan Review & Revisions - US 10/WIS 441 (LLBDM - Tayco St)	120	15-Nov-13 A	05-Jan-15	31-Aug-16	31-Aug-16	425	EBEL		5/9/17
C03E-3444230	Work Plan Acceptance Sent to Utilities - US 10/WIS 441 (LLBDM - Tayco St)	1	05-Jan-15	05-Jan-15	01-Sep-16	01-Sep-16	425	EBEL		5/9/17
C03E-3444235	Review & Approve Utility Agreements - US 10/WIS 441 (LLBDM - Tayco St)	50	06-Jan-15	16-Mar-15	10-Oct-16	20-Dec-16	450	EBEL		5/9/17
C03E-3444170	Start Work Notice Sent To Utilities - US 10/WIS 441 (LLBDM - Tayco St)	5	17-Mar-15	23-Mar-15	21-Dec-16	27-Dec-16	450	EBEL		5/9/17
C03E-3444175	Apply For Utility Work Permits - US 10/WIS 441 (LLBDM - Tayco St)	65	06-Jan-15	06-Apr-15	02-Sep-16	06-Dec-16	425	EBEL		5/9/17
C03E-3444240	Approve Utility Work Permits - US 10/WIS 441 (LLBDM - Tayco St)	15	07-Apr-15	27-Apr-15	07-Dec-16	27-Dec-16	425	EBEL		5/9/17
C03E-3444165	Relocate Utilities - US 10/WIS 441 (LLBDM - Tayco St)	95	28-Apr-15	09-Sep-15*	28-Dec-16	09-May-17	425	EBEL		5/9/17
Workshops, Local Agency, PIM & General Meetings		384	25-Mar-15	23-Sep-16	25-Mar-15	19-Jul-18	466			
C03E-3459745	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	EBEL		5/9/17
C03E-3460515	Landscaping Outreach Meeting	1	31-May-16*	31-May-16	28-Mar-18	28-Mar-18	466	EBEL		5/9/17



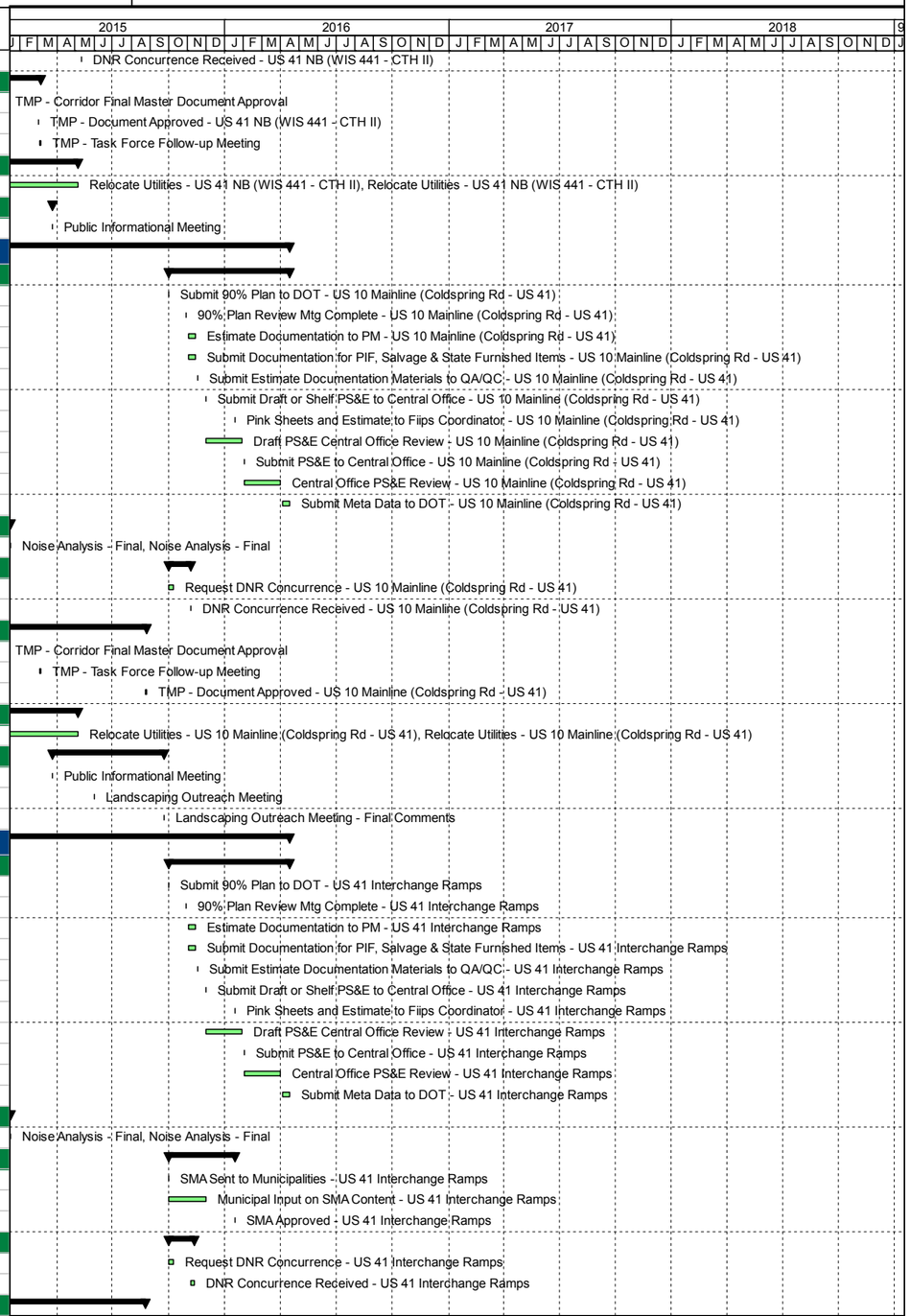
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3460520	Landscaping Outreach Meeting - Final Comments	1	23-Sep-16	23-Sep-16	19-Jul-18	19-Jul-18	466	EBEL		5/9/17
1517-07-74 US 41 SB (WIS 441 - CTH II)		406	18-Nov-13 A	16-Oct-15	14-Jan-15	19-Jul-18	704			
Design - General, 30%, 60%, 75%, 90%, PS&E		154	13-Mar-15	16-Oct-15	13-Mar-15	09-Feb-16	78			
C03E-3443285	Submit 90% Plan to DOT - US 41 SB (WIS 441 - CTH II)	1	13-Mar-15	13-Mar-15*	13-Mar-15	13-Mar-15	0	EBEL	2/9/16	7/11/17
C03E-3443265	90% Plan Review Mtg Complete - US 41 SB (WIS 441 - CTH II)	1	06-Apr-15*	06-Apr-15	06-Apr-15	06-Apr-15	0	EBEL	2/9/16	7/11/17
C03E-3468125	Estimate Documentation to PM - US 41 SB (WIS 441 - CTH II)	10	07-Apr-15	20-Apr-15	04-May-15	15-May-15	19	EBEL	2/9/16	7/11/17
C03E-3469315	Submit Documentation for PIF, Salvage & State Furnished Items - US 41 SB (WIS 441 - CTH II)	10	07-Apr-15	20-Apr-15	17-Jul-15	30-Jul-15	72	EBEL	2/9/16	7/11/17
C03E-3468130	Submit Estimate Documentation Materials to QA/QC - US 41 SB (WIS 441 - CTH II)	1	18-May-15*	18-May-15	18-May-15	18-May-15	0	EBEL	2/9/16	7/11/17
C03E-3465050	Submit Draft PS&E to Central Office - US 41 SB (WIS 441 - CTH II)	1	01-Jun-15*	01-Jun-15	01-Jun-15	01-Jun-15	0	EBEL	2/9/16	7/11/17
C03E-3468115	Pink Sheets and Estimate to Fiips Coordinator - US 41 SB (WIS 441 - CTH II)	1	15-Jul-15*	15-Jul-15	15-Jul-15	15-Jul-15	0	EBEL	2/9/16	7/11/17
C03E-3443275	Draft PS&E Central Office Review - US 41 SB (WIS 441 - CTH II)	44	01-Jun-15	30-Jul-15	01-Jun-15	30-Jul-15	0	EBEL	2/9/16	7/11/17
C03E-3443270	Submit PS&E to Central Office - US 41 SB (WIS 441 - CTH II)	1	31-Jul-15*	31-Jul-15	31-Jul-15	31-Jul-15	0	EBEL	2/9/16	7/11/17
C03E-3443280	Central Office PS&E Review - US 41 SB (WIS 441 - CTH II)	45	31-Jul-15*	02-Oct-15	31-Jul-15	02-Oct-15	0	EBEL	2/9/16	7/11/17
C03E-3447250	Submit Meta Data to DOT - US 41 SB (WIS 441 - CTH II)	10	05-Oct-15	16-Oct-15*	27-Jan-16	09-Feb-16	78	EBEL	2/9/16	7/11/17
Environmental		1	18-Nov-13 A	16-Jan-15	15-May-15	29-May-15	94			
C03E-3453245	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	15-May-15	29-May-15	94	EBEL	2/9/16	7/11/17
Plats & Real Estate		44	27-Oct-14 A	16-Jan-15	17-Jul-15	31-Jul-15	139			
C03E-3464330	Acquisition - 851 American Dr	12	27-Oct-14 A	05-Jan-15	17-Jul-15	17-Jul-15	139	EBEL	2/9/16	7/11/17
C03E-3464375	Acquisition - 1020 American Dr	12	30-Oct-14 A	05-Jan-15	17-Jul-15	17-Jul-15	139	EBEL	2/9/16	7/11/17
C03E-3443240	Acquire Parcels & Easements - US 41 SB (WIS 441 - CTH II)	0		05-Jan-15*		17-Jul-15	139	EBEL	2/9/16	7/11/17
C03E-3443215	Right-of-Way Clear (Certification #1/#2) - US 41 SB (WIS 441 - CTH II)	10	05-Jan-15	16-Jan-15*	20-Jul-15	31-Jul-15	139	EBEL	2/9/16	7/11/17
Railroad		269	01-Jul-14 A	20-Jul-15	14-Jan-15	30-Jul-15	8			
B03A-13570	CO-RHS Develop RR Stipulation & Submit to RR	40	01-Jul-14 A	05-Jan-15	14-Jan-15	14-Jan-15	8	EBEL	2/9/16	7/11/17
B03A-13670	RR Approval of Stipulation & Returns to CO-RHS	80	05-Jan-15	24-Apr-15	31-Mar-15	21-Jul-15	61	EBEL	2/9/16	7/11/17
B03A-13870	CO-RHS Execute & Distribute Stipulation	7	27-Apr-15	05-May-15	22-Jul-15	30-Jul-15	61	EBEL	2/9/16	7/11/17
B03A-13770	Potential OCR Process	100	02-Mar-15	20-Jul-15	12-Mar-15	30-Jul-15	8	EBEL	2/9/16	7/11/17
State/Municipal Agreement		1	17-Jul-15	17-Jul-15	17-Jul-15	17-Jul-15	0			
C03E-3470260	Final Pond MOA - US 41 SB (WIS 441 - CTH II)	1	17-Jul-15*	17-Jul-15	17-Jul-15	17-Jul-15	0	EBEL	2/9/16	7/11/17
Geo-Tech & Structures		81	05-Jan-15	27-Apr-15	16-Jan-15	01-Jun-15	24			
C03E-3461740	BOS Approval Return - R-70-106	1	05-Jan-15	05-Jan-15	03-Apr-15	03-Apr-15	64	EBEL	2/9/16	7/11/17
C03E-3461775	BOS Approval Return - R-70-107	1	21-Jan-15	21-Jan-15	03-Apr-15	03-Apr-15	52	EBEL	2/9/16	7/11/17
C03E-3462240	BOS Approval Return - B-70-131	1	28-Jan-15*	28-Jan-15	03-Apr-15	03-Apr-15	47	EBEL	2/9/16	7/11/17
C03E-3463910	Prepare Prelim Structure Plans for BOS - S-70-247	20	05-Jan-15*	30-Jan-15	16-Jan-15	12-Feb-15	9	EBEL	2/9/16	7/11/17
C03E-3462510	Prepare Prelim Structure Plans for BOS - S-70-202	20	05-Jan-15*	30-Jan-15	16-Jan-15	12-Feb-15	9	EBEL	2/9/16	7/11/17
C03E-3464015	Prepare Prelim Structure Plans for BOS - S-70-243	20	05-Jan-15*	30-Jan-15	16-Jan-15	12-Feb-15	9	EBEL	2/9/16	7/11/17
C03E-3464075	Conduct Soil Boring Investigations - S-70-245	20	05-Jan-15	30-Jan-15	16-Jan-15	12-Feb-15	9	EBEL	2/9/16	7/11/17
C03E-3464085	Prepare Prelim Structure Plans for BOS - S-70-245	20	05-Jan-15*	30-Jan-15	16-Jan-15	12-Feb-15	9	EBEL	2/9/16	7/11/17
C03E-3443120	Conduct Soil Boring Investigations - US 41 SB (WIS 441 - CTH II)	0		30-Jan-15*		12-Feb-15	9	EBEL	2/9/16	7/11/17
C03E-3443130	Prepare Prelim Structure Plans for BOS - US 41 SB (WIS 441 - CTH II)	0		30-Jan-15*		12-Feb-15	9	EBEL	2/9/16	7/11/17
C03E-3463930	Prepare Struct Site Investigation Reports - S-70-247	20	02-Feb-15	27-Feb-15	13-Feb-15	12-Mar-15	9	EBEL	2/9/16	7/11/17
C03E-3462530	Prepare Struct Site Investigation Reports - S-70-202	20	02-Feb-15	27-Feb-15	13-Feb-15	12-Mar-15	9	EBEL	2/9/16	7/11/17
C03E-3464035	Prepare Struct Site Investigation Reports - S-70-243	20	02-Feb-15	27-Feb-15	13-Feb-15	12-Mar-15	9	EBEL	2/9/16	7/11/17
C03E-3464105	Prepare Struct Site Investigation Reports - S-70-245	20	02-Feb-15	27-Feb-15	13-Feb-15	12-Mar-15	9	EBEL	2/9/16	7/11/17
C03E-3443160	Prepare Struct Site Investigation Reports - US 41 SB (WIS 441 - CTH II)	0		27-Feb-15*		12-Mar-15	9	EBEL	2/9/16	7/11/17
C03E-3461735	Prepare Final Structure Plans for BOS - R-70-106	40	06-Jan-15	02-Mar-15	06-Apr-15	01-Jun-15	64	EBEL	2/9/16	7/11/17
C03E-3463920	BOS Approval Return - S-70-247	1	02-Mar-15	02-Mar-15	03-Apr-15	03-Apr-15	24	EBEL	2/9/16	7/11/17
C03E-3462520	BOS Approval Return - S-70-202	1	02-Mar-15	02-Mar-15	03-Apr-15	03-Apr-15	24	EBEL	2/9/16	7/11/17
C03E-3464025	BOS Approval Return - S-70-243	1	02-Mar-15	02-Mar-15	03-Apr-15	03-Apr-15	24	EBEL	2/9/16	7/11/17
C03E-3464095	BOS Approval Return - S-70-245	1	02-Mar-15	02-Mar-15	03-Apr-15	03-Apr-15	24	EBEL	2/9/16	7/11/17
C03E-3443290	BOS Approval Return - US 41 SB (WIS 441 - CTH II)	0		02-Mar-15*		03-Apr-15	24	EBEL	2/9/16	7/11/17
C03E-3461770	Prepare Final Structure Plans for BOS - R-70-107	40	22-Jan-15	18-Mar-15	06-Apr-15	01-Jun-15	52	EBEL	2/9/16	7/11/17
C03E-3462215	Prepare Final Structure Plans for BOS - B-70-129	40	29-Jan-15*	25-Mar-15	06-Apr-15	01-Jun-15	47	EBEL	2/9/16	7/11/17
C03E-3462235	Prepare Final Structure Plans for BOS - B-70-131	40	29-Jan-15	25-Mar-15	06-Apr-15	01-Jun-15	47	EBEL	2/9/16	7/11/17
C03E-3463915	Prepare Final Structure Plans for BOS - S-70-247	40	03-Mar-15	27-Apr-15	06-Apr-15	01-Jun-15	24	EBEL	2/9/16	7/11/17
C03E-3462515	Prepare Final Structure Plans for BOS - S-70-202	40	03-Mar-15	27-Apr-15	06-Apr-15	01-Jun-15	24	EBEL	2/9/16	7/11/17
C03E-3464020	Prepare Final Structure Plans for BOS - S-70-243	40	03-Mar-15	27-Apr-15	06-Apr-15	01-Jun-15	24	EBEL	2/9/16	7/11/17
C03E-3464090	Prepare Final Structure Plans for BOS - S-70-245	40	03-Mar-15	27-Apr-15	06-Apr-15	01-Jun-15	24	EBEL	2/9/16	7/11/17
C03E-3443135	Prepare Final Structure Plans for BOS - US 41 SB (WIS 441 - CTH II)	0		27-Apr-15*		01-Jun-15	24	EBEL	2/9/16	7/11/17
Stormwater Corridor Management Plan and 401/404 Permits		26	07-Apr-15	12-May-15	25-Jun-15	30-Jul-15	56			
C03E-3468410	Request DNR Concurrence - US 41 SB (WIS 441 - CTH II)	5	07-Apr-15	13-Apr-15	25-Jun-15	01-Jul-15	56	EBEL	2/9/16	7/11/17



Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3468415	DNR Concurrence Received - US 41 SB (WIS 441 - CTH II)	1	12-May-15	12-May-15	30-Jul-15	30-Jul-15	56	EBEL	2/9/16	7/11/17
TMP - Tasks		44	05-Jan-15	05-Mar-15	02-Mar-15	19-Jul-18	863			
C03E-3465040	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	12-Mar-15	12-Mar-15	49	EBEL	2/9/16	7/11/17
C03E-3468120	TMP - Document Approved - US 41 SB (WIS 441 - CTH II)	1	02-Mar-15*	02-Mar-15	02-Mar-15	02-Mar-15	0	EBEL	2/9/16	7/11/17
C03E-3469930	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL	2/9/16	7/11/17
Utilities		95	15-Mar-14 A	06-May-15	05-Oct-15	09-Feb-16	193			
C03E-3443185	Relocate Utilities - US 41 SB (WIS 441 - CTH II)	95	15-Mar-14 A	06-May-15*	05-Oct-15	09-Feb-16	193	EBEL	2/9/16	7/11/17
Workshops, Local Agency, PIM & General Meetings		1	25-Mar-15	25-Mar-15	25-Mar-15	25-Mar-15	0			
C03E-3459805	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	EBEL	2/9/16	7/11/17
1517-07-75 US 41 NB (WIS 441 - CTH II)		440	18-Nov-13 A	16-Oct-15	02-Jan-15	19-Jul-18	704			
Design - General, 30%, 60%, 75%, 90%, PS&E		153	16-Mar-15	16-Oct-15	13-Mar-15	09-Feb-16	78			
C03E-3443530	Submit 90% Plan to DOT - US 41 NB (WIS 441 - CTH II)	1	16-Mar-15	16-Mar-15*	13-Mar-15	13-Mar-15	-1	EBEL	2/9/16	7/11/17
C03E-3443510	90% Plan Review Mtg Complete - US 41 NB (WIS 441 - CTH II)	1	06-Apr-15*	06-Apr-15	06-Apr-15	06-Apr-15	0	EBEL	2/9/16	7/11/17
C03E-3468145	Estimate Documentation to PM - US 41 NB (WIS 441 - CTH II)	10	07-Apr-15	20-Apr-15	04-May-15	15-May-15	19	EBEL	2/9/16	7/11/17
C03E-3469320	Submit Documentation for PIF, Salvage & State Furnished Items - US 41 NB (WIS 441 - CTH II)	10	07-Apr-15	20-Apr-15	17-Jul-15	30-Jul-15	72	EBEL	2/9/16	7/11/17
C03E-3468150	Submit Estimate Documentation Materials to QA/QC - US 41 NB (WIS 441 - CTH II)	1	18-May-15*	18-May-15	18-May-15	18-May-15	0	EBEL	2/9/16	7/11/17
C03E-3465340	Submit Draft PS&E to Central Office - US 41 NB (WIS 441 - CTH II)	1	01-Jun-15*	01-Jun-15	01-Jun-15	01-Jun-15	0	EBEL	2/9/16	7/11/17
C03E-3468135	Pink Sheets and Estimate to Fiips Coordinator - US 41 NB (WIS 441 - CTH II)	1	15-Jul-15*	15-Jul-15	15-Jul-15	15-Jul-15	0	EBEL	2/9/16	7/11/17
C03E-3443520	Draft PS&E Central Office Review - US 41 NB (WIS 441 - CTH II)	44	01-Jun-15	30-Jul-15	01-Jun-15	30-Jul-15	0	EBEL	2/9/16	7/11/17
C03E-3443515	Submit PS&E to Central Office - US 41 NB (WIS 441 - CTH II)	1	31-Jul-15*	31-Jul-15	31-Jul-15	31-Jul-15	0	EBEL	2/9/16	7/11/17
C03E-3443525	Central Office PS&E Review - US 41 NB (WIS 441 - CTH II)	45	31-Jul-15*	02-Oct-15	31-Jul-15	02-Oct-15	0	EBEL	2/9/16	7/11/17
C03E-3447255	Submit Meta Data to DOT - US 41 NB (WIS 441 - CTH II)	10	05-Oct-15	16-Oct-15*	27-Jan-16	09-Feb-16	78	EBEL	2/9/16	7/11/17
Environmental		1	18-Nov-13 A	16-Jan-15	15-May-15	29-May-15	94			
C03E-3453315	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	15-May-15	29-May-15	94	EBEL	2/9/16	7/11/17
Plats & Real Estate		323	28-Jan-14 A	04-May-15	31-Mar-15	31-Jul-15	63			
C03E-3465940	Appraisal (Hired/Completed/Reviewed) -	65	28-Jan-14 A	05-Jan-15	31-Mar-15	31-Mar-15	62	EBEL	2/9/16	7/11/17
C03E-3443400	Complete Appraisal of All Parcels & Easements - US 41 NB (WIS 441 - CTH II)	0		05-Jan-15*		31-Mar-15	62	EBEL	2/9/16	7/11/17
C03E-3464420	Acquisition - Ehlers Rd	12	15-Dec-14 A	08-Jan-15	14-Jul-15	17-Jul-15	135	EBEL	2/9/16	7/11/17
C03E-3465945	Negotiation -	64	05-Jan-15	02-Apr-15	02-Apr-15	01-Jul-15	63	EBEL	2/9/16	7/11/17
C03E-3443315	Negotiate Acquisition of All Parcels & Easements - US 41 NB (WIS 441 - CTH II)	0		02-Apr-15*		01-Jul-15	63	EBEL	2/9/16	7/11/17
C03E-3465950	Acquisition -	12	03-Apr-15	20-Apr-15	02-Jul-15	17-Jul-15	63	EBEL	2/9/16	7/11/17
C03E-3443485	Acquire Parcels & Easements - US 41 NB (WIS 441 - CTH II)	0		20-Apr-15*		17-Jul-15	63	EBEL	2/9/16	7/11/17
C03E-3443460	Right-of-Way Clear (Certification #1/#2) - US 41 NB (WIS 441 - CTH II)	10	21-Apr-15	04-May-15*	20-Jul-15	31-Jul-15	63	EBEL	2/9/16	7/11/17
State/Municipal Agreement		1	17-Jul-15	17-Jul-15	17-Jul-15	17-Jul-15	0			
C03E-3470265	Final Pond MOA - US 41 NB (WIS 441 - CTH II)	1	17-Jul-15*	17-Jul-15	17-Jul-15	17-Jul-15	0	EBEL	2/9/16	7/11/17
Geo-Tech & Structures		90	05-Jan-15	08-May-15	02-Jan-15	01-Jun-15	15			
C03E-3461810	BOS Approval Return - R-70-108	1	21-Jan-15	21-Jan-15	03-Apr-15	03-Apr-15	52	EBEL	2/9/16	7/11/17
C03E-3461950	BOS Approval Return - R-70-109	1	21-Jan-15	21-Jan-15	03-Apr-15	03-Apr-15	52	EBEL	2/9/16	7/11/17
C03E-3461985	BOS Approval Return - R-70-110	1	21-Jan-15	21-Jan-15	03-Apr-15	03-Apr-15	52	EBEL	2/9/16	7/11/17
C03E-3451050	BOS Approval Return - B-70-132	1	28-Jan-15*	28-Jan-15	28-Jan-15	28-Jan-15	0	EBEL	2/9/16	7/11/17
C03E-3464050	Prepare Prelim Structure Plans for BOS - S-70-244	20	05-Jan-15*	30-Jan-15	02-Jan-15	29-Jan-15	-1	EBEL	2/9/16	7/11/17
C03E-3464110	Conduct Soil Boring Investigations - S-70-246	20	05-Jan-15	30-Jan-15	02-Jan-15	29-Jan-15	-1	EBEL	2/9/16	7/11/17
C03E-3464120	Prepare Prelim Structure Plans for BOS - S-70-246	20	05-Jan-15*	30-Jan-15	02-Jan-15	29-Jan-15	-1	EBEL	2/9/16	7/11/17
C03E-3443365	Conduct Soil Boring Investigations - US 41 NB (WIS 441 - CTH II)	0		30-Jan-15*		29-Jan-15	-1	EBEL	2/9/16	7/11/17
C03E-3443375	Prepare Prelim Structure Plans for BOS - US 41 NB (WIS 441 - CTH II)	0		30-Jan-15*		29-Jan-15	-1	EBEL	2/9/16	7/11/17
C03E-3464060	BOS Approval Return - S-70-244	1	02-Mar-15	02-Mar-15	03-Apr-15	03-Apr-15	24	EBEL	2/9/16	7/11/17
C03E-3464130	BOS Approval Return - S-70-246	1	02-Mar-15	02-Mar-15	03-Apr-15	03-Apr-15	24	EBEL	2/9/16	7/11/17
C03E-3443535	BOS Approval Return - US 41 NB (WIS 441 - CTH II)	0		02-Mar-15*		03-Apr-15	24	EBEL	2/9/16	7/11/17
C03E-3464070	Prepare Struct Site Investigation Reports - S-70-244	30	02-Feb-15	13-Mar-15	30-Jan-15	12-Mar-15	-1	EBEL	2/9/16	7/11/17
C03E-3464140	Prepare Struct Site Investigation Reports - S-70-246	30	02-Feb-15	13-Mar-15	30-Jan-15	12-Mar-15	-1	EBEL	2/9/16	7/11/17
C03E-3443405	Prepare Struct Site Investigation Reports - US 41 NB (WIS 441 - CTH II)	0		13-Mar-15*		12-Mar-15	-1	EBEL	2/9/16	7/11/17
C03E-3461805	Prepare Final Structure Plans for BOS - R-70-108	40	22-Jan-15	18-Mar-15	06-Apr-15	01-Jun-15	52	EBEL	2/9/16	7/11/17
C03E-3461945	Prepare Final Structure Plans for BOS - R-70-109	40	22-Jan-15	18-Mar-15	06-Apr-15	01-Jun-15	52	EBEL	2/9/16	7/11/17
C03E-3461980	Prepare Final Structure Plans for BOS - R-70-110	40	22-Jan-15	18-Mar-15	06-Apr-15	01-Jun-15	52	EBEL	2/9/16	7/11/17
C03E-3451073	Prepare Final Structure Plans for BOS - B-70-132	40	29-Jan-15	25-Mar-15	06-Apr-15	01-Jun-15	47	EBEL	2/9/16	7/11/17
C03E-3464055	Prepare Final Structure Plans for BOS - S-70-244	40	16-Mar-15	08-May-15	06-Apr-15	01-Jun-15	15	EBEL	2/9/16	7/11/17
C03E-3464125	Prepare Final Structure Plans for BOS - S-70-246	40	16-Mar-15	08-May-15	06-Apr-15	01-Jun-15	15	EBEL	2/9/16	7/11/17
C03E-3443380	Prepare Final Structure Plans for BOS - US 41 NB (WIS 441 - CTH II)	0		08-May-15*		01-Jun-15	15	EBEL	2/9/16	7/11/17
Stormwater Corridor Management Plan and 401/404 Permits		26	07-Apr-15	12-May-15	25-Jun-15	30-Jul-15	56			
C03E-3468420	Request DNR Concurrence - US 41 NB (WIS 441 - CTH II)	5	07-Apr-15	13-Apr-15	25-Jun-15	01-Jul-15	56	EBEL	2/9/16	7/11/17



Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3468425	DNR Concurrence Received - US 41 NB (WIS 441 - CTH II)	1	12-May-15	12-May-15	30-Jul-15	30-Jul-15	56	EBEL	2/9/16	7/11/17
TMP - Tasks		44	05-Jan-15	05-Mar-15	02-Mar-15	19-Jul-18	863			
C03E-3465045	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	12-Mar-15	12-Mar-15	49	EBEL	2/9/16	7/11/17
C03E-3468140	TMP - Document Approved - US 41 NB (WIS 441 - CTH II)	1	02-Mar-15*	02-Mar-15	02-Mar-15	02-Mar-15	0	EBEL	2/9/16	7/11/17
C03E-3469935	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL	2/9/16	7/11/17
Utilities		95	15-Mar-14 A	06-May-15	05-Oct-15	09-Feb-16	193			
C03E-3443430	Relocate Utilities - US 41 NB (WIS 441 - CTH II)	95	15-Mar-14 A	06-May-15*	05-Oct-15	09-Feb-16	193	EBEL	2/9/16	7/11/17
Workshops, Local Agency, PIM & General Meetings		1	25-Mar-15	25-Mar-15	25-Mar-15	25-Mar-15	0			
C03E-3459810	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	EBEL	2/9/16	7/11/17
1517-07-71 US 10 Mainline (Coldspring Rd - US 41)		532	18-Nov-13 A	15-Apr-16	25-Mar-15	19-Jul-18	578			
Design - General, 30%, 60%, 75%, 90%, PS&E		138	01-Oct-15	15-Apr-16	01-Oct-15	10-May-16	17			
C03E-3442550	Submit 90% Plan to DOT - US 10 Mainline (Coldspring Rd - US 41)	1	01-Oct-15	01-Oct-15*	01-Oct-15	01-Oct-15	0	EBEL	5/10/16	7/11/17
C03E-3442530	90% Plan Review Mtg Complete - US 10 Mainline (Coldspring Rd - US 41)	1	30-Oct-15	30-Oct-15	02-Nov-15	02-Nov-15	1	EBEL	5/10/16	7/11/17
C03E-3468105	Estimate Documentation to PM - US 10 Mainline (Coldspring Rd - US 41)	10	02-Nov-15	13-Nov-15	03-Nov-15	16-Nov-15	1	EBEL	5/10/16	7/11/17
C03E-3469325	Submit Documentation for PIF, Salvage & State Furnished Items - US 10 Mainline (Coldspring Rd - US	10	02-Nov-15	13-Nov-15	18-Jan-16	29-Jan-16	51	EBEL	5/10/16	7/11/17
C03E-3468110	Submit Estimate Documentation Materials to QA/QC - US 10 Mainline (Coldspring Rd - US 41)	1	17-Nov-15*	17-Nov-15	17-Nov-15	17-Nov-15	0	EBEL	5/10/16	7/11/17
C03E-3465330	Submit Draft or Shelf PS&E to Central Office - US 10 Mainline (Coldspring Rd - US 41)	1	01-Dec-15*	01-Dec-15	01-Dec-15	01-Dec-15	0	EBEL	5/10/16	7/11/17
C03E-3468095	Pink Sheets and Estimate to Fiips Coordinator - US 10 Mainline (Coldspring Rd - US 41)	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	EBEL	5/10/16	7/11/17
C03E-3442540	Draft PS&E Central Office Review - US 10 Mainline (Coldspring Rd - US 41)	42	01-Dec-15	29-Jan-16	01-Dec-15	29-Jan-16	0	EBEL	5/10/16	7/11/17
C03E-3442535	Submit PS&E to Central Office - US 10 Mainline (Coldspring Rd - US 41)	1	01-Feb-16*	01-Feb-16	01-Feb-16	01-Feb-16	0	EBEL	5/10/16	7/11/17
C03E-3442545	Central Office PS&E Review - US 10 Mainline (Coldspring Rd - US 41)	45	01-Feb-16*	01-Apr-16	01-Feb-16	01-Apr-16	0	EBEL	5/10/16	7/11/17
C03E-3447235	Submit Meta Data to DOT - US 10 Mainline (Coldspring Rd - US 41)	10	04-Apr-16	15-Apr-16*	27-Apr-16	10-May-16	17	EBEL	5/10/16	7/11/17
Environmental		1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222			
C03E-3453030	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222	EBEL	5/10/16	7/11/17
Stormwater Corridor Management Plan and 401/404 Permits		26	02-Oct-15	06-Nov-15	23-Dec-15	29-Jan-16	56			
C03E-3468400	Request DNR Concurrence - US 10 Mainline (Coldspring Rd - US 41)	5	02-Oct-15	08-Oct-15	23-Dec-15	30-Dec-15	56	EBEL	5/10/16	7/11/17
C03E-3468405	DNR Concurrence Received - US 10 Mainline (Coldspring Rd - US 41)	1	06-Nov-15	06-Nov-15	29-Jan-16	29-Jan-16	56	EBEL	5/10/16	7/11/17
TMP - Tasks		166	05-Jan-15	25-Aug-15	25-Aug-15	19-Jul-18	741			
C03E-3465025	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	30-Sep-15	30-Sep-15	191	EBEL	5/10/16	7/11/17
C03E-3469940	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL	5/10/16	7/11/17
C03E-3468100	TMP - Document Approved - US 10 Mainline (Coldspring Rd - US 41)	1	25-Aug-15*	25-Aug-15	25-Aug-15	25-Aug-15	0	EBEL	5/10/16	7/11/17
Utilities		95	15-Mar-14 A	06-May-15	08-Jan-16	10-May-16	258			
C03E-3442450	Relocate Utilities - US 10 Mainline (Coldspring Rd - US 41)	95	15-Mar-14 A	06-May-15*	08-Jan-16	10-May-16	258	EBEL	5/10/16	7/11/17
Workshops, Local Agency, PIM & General Meetings		129	25-Mar-15	23-Sep-15	25-Mar-15	19-Jul-18	721			
C03E-3459790	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	EBEL	5/10/16	7/11/17
C03E-3460605	Landscaping Outreach Meeting	1	01-Jun-15*	01-Jun-15	28-Mar-18	28-Mar-18	721	EBEL	5/10/16	7/11/17
C03E-3460610	Landscaping Outreach Meeting - Final Comments	1	23-Sep-15	23-Sep-15	19-Jul-18	19-Jul-18	721	EBEL	5/10/16	7/11/17
1517-07-80 US 41 Interchange Ramps		532	18-Nov-13 A	15-Apr-16	25-Mar-15	19-Jul-18	578			
Design - General, 30%, 60%, 75%, 90%, PS&E		138	01-Oct-15	15-Apr-16	01-Oct-15	10-May-16	17			
C03E-3469380	Submit 90% Plan to DOT - US 41 Interchange Ramps	1	01-Oct-15	01-Oct-15*	01-Oct-15	01-Oct-15	0	EBEL	5/10/16	7/11/17
C03E-3469390	90% Plan Review Mtg Complete - US 41 Interchange Ramps	1	30-Oct-15	30-Oct-15	02-Nov-15	02-Nov-15	1	EBEL	5/10/16	7/11/17
C03E-3469400	Estimate Documentation to PM - US 41 Interchange Ramps	10	02-Nov-15	13-Nov-15	03-Nov-15	16-Nov-15	1	EBEL	5/10/16	7/11/17
C03E-3469410	Submit Documentation for PIF, Salvage & State Furnished Items - US 41 Interchange Ramps	10	02-Nov-15	13-Nov-15	18-Jan-16	29-Jan-16	51	EBEL	5/10/16	7/11/17
C03E-3469420	Submit Estimate Documentation Materials to QA/QC - US 41 Interchange Ramps	1	17-Nov-15*	17-Nov-15	17-Nov-15	17-Nov-15	0	EBEL	5/10/16	7/11/17
C03E-3469430	Submit Draft or Shelf PS&E to Central Office - US 41 Interchange Ramps	1	01-Dec-15*	01-Dec-15	01-Dec-15	01-Dec-15	0	EBEL	5/10/16	7/11/17
C03E-3469450	Pink Sheets and Estimate to Fiips Coordinator - US 41 Interchange Ramps	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	EBEL	5/10/16	7/11/17
C03E-3469440	Draft PS&E Central Office Review - US 41 Interchange Ramps	42	01-Dec-15	29-Jan-16	01-Dec-15	29-Jan-16	0	EBEL	5/10/16	7/11/17
C03E-3469460	Submit PS&E to Central Office - US 41 Interchange Ramps	1	01-Feb-16*	01-Feb-16	01-Feb-16	01-Feb-16	0	EBEL	5/10/16	7/11/17
C03E-3469470	Central Office PS&E Review - US 41 Interchange Ramps	45	01-Feb-16*	01-Apr-16	01-Feb-16	01-Apr-16	0	EBEL	5/10/16	7/11/17
C03E-3469480	Submit Meta Data to DOT - US 41 Interchange Ramps	10	04-Apr-16	15-Apr-16*	27-Apr-16	10-May-16	17	EBEL	5/10/16	7/11/17
Environmental		1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222			
C03E-3469490	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222	EBEL	5/10/16	7/11/17
State/Municipal Agreement		74	01-Oct-15	18-Jan-16	01-Oct-15	18-Jan-16	0			
C03E-3469500	SMA Sent to Municipalities - US 41 Interchange Ramps	1	01-Oct-15*	01-Oct-15	01-Oct-15	01-Oct-15	0	EBEL	5/10/16	7/11/17
C03E-3469510	Municipal Input on SMA Content - US 41 Interchange Ramps	40	02-Oct-15	30-Nov-15	02-Oct-15	30-Nov-15	0	EBEL	5/10/16	7/11/17
C03E-3469520	SMA Approved - US 41 Interchange Ramps	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	EBEL	5/10/16	7/11/17
Stormwater Corridor Management Plan and 401/404 Permits		30	02-Oct-15	12-Nov-15	17-Dec-15	29-Jan-16	52			
C03E-3469780	Request DNR Concurrence - US 41 Interchange Ramps	5	02-Oct-15	08-Oct-15	17-Dec-15	23-Dec-15	52	EBEL	5/10/16	7/11/17
C03E-3469790	DNR Concurrence Received - US 41 Interchange Ramps	5	06-Nov-15	12-Nov-15	25-Jan-16	29-Jan-16	52	EBEL	5/10/16	7/11/17
TMP - Tasks		165	05-Jan-15	24-Aug-15	24-Aug-15	19-Jul-18	742			

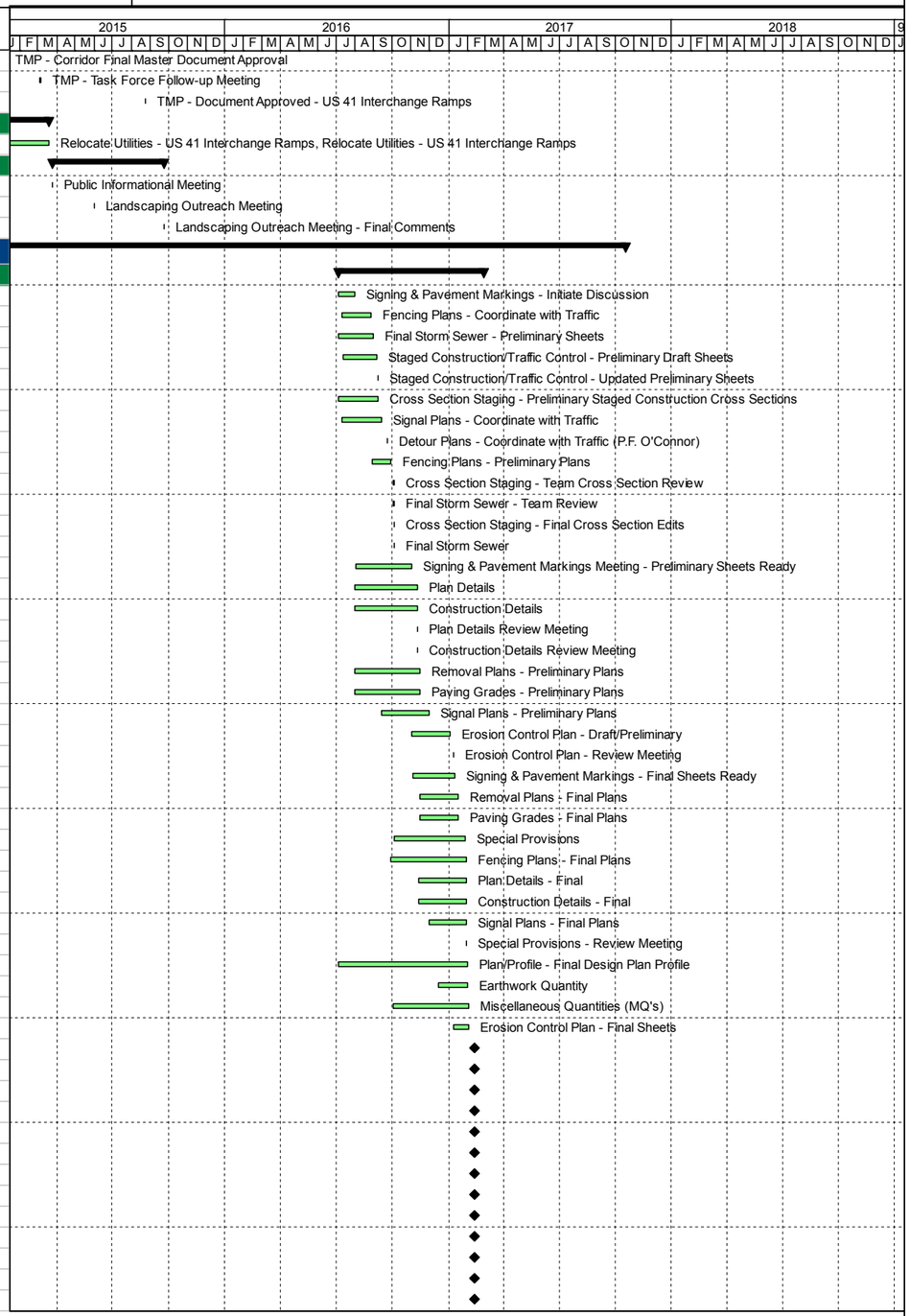


Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

WIS 441 Project Milestone Schedule

Data Date: 05-Jan-15
Run Date: 07-Jan-15

Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3469810	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	30-Sep-15	30-Sep-15	191	EBEL	5/10/16	7/11/17
C03E-3469945	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	EBEL	5/10/16	7/11/17
C03E-3469820	TMP - Document Approved - US 41 Interchange Ramps	1	24-Aug-15*	24-Aug-15	24-Aug-15	24-Aug-15	0	EBEL	5/10/16	7/11/17
Utilities		95	15-Mar-14 A	18-Mar-15	26-Feb-16	10-May-16	293			
C03E-3469830	Relocate Utilities - US 41 Interchange Ramps	95	15-Mar-14 A	18-Mar-15*	26-Feb-16	10-May-16	293	EBEL	5/10/16	7/11/17
Workshops, Local Agency, PIM & General Meetings		129	25-Mar-15	23-Sep-15	25-Mar-15	19-Jul-18	721			
C03E-3469860	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	EBEL	5/10/16	7/11/17
C03E-3469840	Landscaping Outreach Meeting	1	01-Jun-15*	01-Jun-15	28-Mar-18	28-Mar-18	721	EBEL	5/10/16	7/11/17
C03E-3469850	Landscaping Outreach Meeting - Final Comments	1	23-Sep-15	23-Sep-15	19-Jul-18	19-Jul-18	721	EBEL	5/10/16	7/11/17
1517-75-77 Midway Rd (CTH AP) Interchange		979	15-Nov-13 A	17-Oct-17	10-Dec-13	19-Jul-18	194			
Design Development		168	05-Jul-16	28-Feb-17	05-Jul-16	22-Mar-17	16			
C03E-3466715	Signing & Pavement Markings - Initiate Discussion	20	05-Jul-16*	01-Aug-16	05-Jul-16	01-Aug-16	0	VRAN		2/13/18
C03E-3466785	Fencing Plans - Coordinate with Traffic	35	11-Jul-16*	26-Aug-16	11-Jul-16	26-Aug-16	0	VRAN		2/13/18
C03E-3466665	Final Storm Sewer - Preliminary Sheets	41	05-Jul-16*	30-Aug-16	05-Jul-16	30-Aug-16	0	VRAN		2/13/18
C03E-3466640	Staged Construction/Traffic Control - Preliminary Draft Sheets	40	12-Jul-16*	06-Sep-16	26-Jul-16	20-Sep-16	10	VRAN		2/13/18
C03E-3466645	Staged Construction/Traffic Control - Updated Preliminary Sheets	0	07-Sep-16	07-Sep-16	22-Mar-17	22-Mar-17	139	VRAN		2/13/18
C03E-3466650	Cross Section Staging - Preliminary Staged Construction Cross Sections	46	05-Jul-16*	07-Sep-16	18-Jul-16	20-Sep-16	9	VRAN		2/13/18
C03E-3466750	Signal Plans - Coordinate with Traffic	45	11-Jul-16*	12-Sep-16	11-Jul-16	12-Sep-16	0	VRAN		2/13/18
C03E-3466680	Detour Plans - Coordinate with Traffic (P.F. O'Connor)	0	22-Sep-16	22-Sep-16	22-Mar-17	22-Mar-17	128	VRAN		2/13/18
C03E-3466790	Fencing Plans - Preliminary Plans	22	29-Aug-16	28-Sep-16	20-Oct-16	18-Nov-16	37	VRAN		2/13/18
C03E-3466655	Cross Section Staging - Team Cross Section Review	1	03-Oct-16*	03-Oct-16	22-Mar-17	22-Mar-17	120	VRAN		2/13/18
C03E-3466670	Final Storm Sewer - Team Review	1	03-Oct-16*	03-Oct-16	03-Oct-16	03-Oct-16	0	VRAN		2/13/18
C03E-3466660	Cross Section Staging - Final Cross Section Edits	0	04-Oct-16	04-Oct-16	22-Mar-17	22-Mar-17	120	VRAN		2/13/18
C03E-3466675	Final Storm Sewer	0	04-Oct-16	04-Oct-16	22-Mar-17	22-Mar-17	120	VRAN		2/13/18
C03E-3466720	Signing & Pavement Markings Meeting - Preliminary Sheets Ready	66	02-Aug-16	02-Nov-16	12-Oct-16	13-Jan-17	50	VRAN		2/13/18
C03E-3466685	Plan Details	73	01-Aug-16*	10-Nov-16	01-Aug-16	10-Nov-16	0	VRAN		2/13/18
C03E-3466700	Construction Details	73	01-Aug-16*	10-Nov-16	01-Aug-16	10-Nov-16	0	VRAN		2/13/18
C03E-3466690	Plan Details Review Meeting	1	11-Nov-16	11-Nov-16	05-Jan-17	05-Jan-17	37	VRAN		2/13/18
C03E-3466705	Construction Details Review Meeting	1	11-Nov-16	11-Nov-16	05-Jan-17	05-Jan-17	37	VRAN		2/13/18
C03E-3466765	Removal Plans - Preliminary Plans	75	01-Aug-16*	14-Nov-16	01-Aug-16	14-Nov-16	0	VRAN		2/13/18
C03E-3466775	Paving Grades - Preliminary Plans	75	01-Aug-16*	14-Nov-16	01-Aug-16	14-Nov-16	0	VRAN		2/13/18
C03E-3466755	Signal Plans - Preliminary Plans	55	13-Sep-16	30-Nov-16	03-Nov-16	20-Jan-17	37	VRAN		2/13/18
C03E-3466730	Erosion Control Plan - Draft/Preliminary	43	02-Nov-16*	03-Jan-17	02-Nov-16	03-Jan-17	0	VRAN		2/13/18
C03E-3466735	Erosion Control Plan - Review Meeting	1	09-Jan-17*	09-Jan-17	09-Jan-17	09-Jan-17	0	VRAN		2/13/18
C03E-3466725	Signing & Pavement Markings - Final Sheets Ready	48	03-Nov-16	11-Jan-17	16-Jan-17	22-Mar-17	50	VRAN		2/13/18
C03E-3466770	Removal Plans - Final Plans	43	15-Nov-16	16-Jan-17	23-Jan-17	22-Mar-17	47	VRAN		2/13/18
C03E-3466780	Paving Grades - Final Plans	43	15-Nov-16	16-Jan-17	23-Jan-17	22-Mar-17	47	VRAN		2/13/18
C03E-3466810	Special Provisions	82	04-Oct-16*	27-Jan-17	26-Oct-16	20-Feb-17	16	VRAN		2/13/18
C03E-3466795	Fencing Plans - Final Plans	86	29-Sep-16	30-Jan-17	21-Nov-16	22-Mar-17	37	VRAN		2/13/18
C03E-3466695	Plan Details - Final	54	14-Nov-16	30-Jan-17	06-Jan-17	22-Mar-17	37	VRAN		2/13/18
C03E-3466710	Construction Details - Final	54	14-Nov-16	30-Jan-17	06-Jan-17	22-Mar-17	37	VRAN		2/13/18
C03E-3466760	Signal Plans - Final Plans	43	01-Dec-16	30-Jan-17	23-Jan-17	22-Mar-17	37	VRAN		2/13/18
C03E-3466815	Special Provisions - Review Meeting	1	30-Jan-17	30-Jan-17	21-Feb-17	21-Feb-17	16	VRAN		2/13/18
C03E-3466800	Plan/Profile - Final Design Plan Profile	148	05-Jul-16*	31-Jan-17	24-Aug-16	22-Mar-17	36	VRAN		2/13/18
C03E-3466805	Earthwork Quantity	34	15-Dec-16*	31-Jan-17	03-Feb-17	22-Mar-17	36	VRAN		2/13/18
C03E-3466745	Miscellaneous Quantities (MQ's)	87	03-Oct-16*	02-Feb-17	03-Oct-16	02-Feb-17	0	VRAN		2/13/18
C03E-3466740	Erosion Control Plan - Final Sheets	18	10-Jan-17	02-Feb-17	27-Feb-17	22-Mar-17	34	VRAN		2/13/18
C03E-3466575	Title Sheets - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466580	General Notes/Utility Contacts - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466585	Project Overview - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466590	Typical Cross Sections - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466595	Wetland Details - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466600	Invasive Species - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466605	Landscaping by Others - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466610	Pond Details by Others - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466615	Irrigation - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466620	ITS - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466625	Lighting - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466630	Wavetronix - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18
C03E-3466635	Alignment Plan - Drafted and Ready for Final Revisions	0		13-Feb-17*		13-Feb-17	0	VRAN		2/13/18



Remaining Level of Effort | Remaining Work | Summary

Actual Level of Effort | Critical Remaining Work

Actual Work | Milestone

WIS 441 Project Milestone Schedule

Data Date: 05-Jan-15

Run Date: 07-Jan-15

Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3466820	Special Provisions - 90% Specials Ready	21	31-Jan-17	28-Feb-17	22-Feb-17	22-Mar-17	16	VRAN		2/13/18
Design - General, 30%, 60%, 75%, 90%, PS&E		275	21-Sep-16	17-Oct-17	21-Sep-16	13-Feb-18	82			
C03E-3446735	75% Constructability Review Meeting / staging plans due - Midway Rd (CTH AP) Interchange	1	21-Sep-16*	21-Sep-16	21-Sep-16	21-Sep-16	0	VRAN		2/13/18
C03E-3470205	Consultant Designed Item - Preliminary Plans, Estimates & Documentation to WisDOT	1	23-Feb-17*	23-Feb-17	23-Feb-17	23-Feb-17	0	VRAN		2/13/18
C03E-3446715	Submit 90% Plan to DOT - Midway Rd (CTH AP) Interchange	1	23-Mar-17	23-Mar-17*	23-Mar-17	23-Mar-17	0	VRAN		2/13/18
C03E-3446695	90% Plan Review Mtg Complete - Midway Rd (CTH AP) Interchange	1	21-Apr-17	21-Apr-17	02-May-17	02-May-17	7	VRAN		2/13/18
C03E-3468165	Estimate Documentation to PM - Midway Rd (CTH AP) Interchange	10	24-Apr-17	05-May-17	03-May-17	16-May-17	7	VRAN		2/13/18
C03E-3469345	Submit Documentation for PIF, Salvage & State Furnished Items - Midway Rd (CTH AP) Interchange	10	24-Apr-17	05-May-17	18-Jul-17	31-Jul-17	59	VRAN		2/13/18
C03E-3468170	Submit Estimate Documentation Materials to QA/QC - Midway Rd (CTH AP) Interchange	1	17-May-17*	17-May-17	17-May-17	17-May-17	0	VRAN		2/13/18
C03E-3458790	Submit Draft or Shelf PS&E to Central Office - Midway Rd (CTH AP) Interchange	1	01-Jun-17*	01-Jun-17	01-Jun-17	01-Jun-17	0	VRAN		2/13/18
C03E-3470210	Consultant Designed Item - Final Plans, Estimates & Documentation to WisDOT	1	30-Jun-17*	30-Jun-17	30-Jun-17	30-Jun-17	0	VRAN		2/13/18
C03E-3468155	Pink Sheets and Estimate to Fiips Coordinator - Midway Rd (CTH AP) Interchange	1	18-Jul-17*	18-Jul-17	18-Jul-17	18-Jul-17	0	VRAN		2/13/18
C03E-3446705	Draft or Shelf PS&E Central Office Review - Midway Rd (CTH AP) Interchange	42	01-Jun-17	31-Jul-17	01-Jun-17	31-Jul-17	0	VRAN		2/13/18
C03E-3446700	Submit PS&E to Central Office - Midway Rd (CTH AP) Interchange	1	01-Aug-17*	01-Aug-17	01-Aug-17	01-Aug-17	0	VRAN		2/13/18
C03E-3446710	Central Office PS&E Review - Midway Rd (CTH AP) Interchange	45	01-Aug-17*	03-Oct-17	01-Aug-17	03-Oct-17	0	VRAN		2/13/18
C03E-3447320	Meta Data Ready for Submittal to Awarded Contractor - Midway Rd (CTH AP) Interchange	10	04-Oct-17	17-Oct-17*	31-Jan-18	13-Feb-18	82	VRAN		2/13/18
Environmental		1	18-Nov-13 A	16-Jan-15	17-May-17	31-May-17	606			
C03E-3454295	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	17-May-17	31-May-17	606	VRAN		2/13/18
Plats & Real Estate		540	20-Jan-14 A	02-Mar-16	02-Jun-16	19-Jul-18	610			
C03E-3446505	Relocation Order Approved - Midway Rd (CTH AP) Interchange	20	20-Jan-14 A	05-Jan-15	19-Jul-18	19-Jul-18	907	VRAN		2/13/18
C03E-3446640	Record Plat and Write Legal Document - Midway Rd (CTH AP) Interchange	5	20-Jan-14 A	05-Jan-15	02-Jun-16	02-Jun-16	362	VRAN		2/13/18
C03E-3446515	RW Plat To RE - Midway Rd (CTH AP) Interchange	1	05-Jan-15	05-Jan-15	03-Jun-16	03-Jun-16	362	VRAN		2/13/18
C03E-3450010	Appraisal (Hired/Completed/Reviewed) - 1609 Hickory Hollow Ln	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3450025	Appraisal (Hired/Completed/Reviewed) - 1567 Hickory Hollow Ln	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3450040	Appraisal (Hired/Completed/Reviewed) - 1587 Hickory Hollow Ln	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3450055	Appraisal (Hired/Completed/Reviewed) - 1575 Hickory Hollow Ln	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3450070	Appraisal (Hired/Completed/Reviewed) - 1601 Hickory Hollow Ln	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3450085	Appraisal (Hired/Completed/Reviewed) - 501 Marquette Ave S	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3450100	Appraisal (Hired/Completed/Reviewed) - Hickory Hollow Lane	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3450115	Appraisal (Hired/Completed/Reviewed) - 1639 Hickory Hollow Lane	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454650	Appraisal (Hired/Completed/Reviewed) - 1631 Hickory Hollow Lane	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454665	Appraisal (Hired/Completed/Reviewed) - 1665 Century Oaks Ct	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454680	Appraisal (Hired/Completed/Reviewed) - 1645 Century Oaks Ct	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454695	Appraisal (Hired/Completed/Reviewed) - 1619 Racine Rd #1	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454710	Appraisal (Hired/Completed/Reviewed) - 1617 Racine Rd	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454725	Appraisal (Hired/Completed/Reviewed) - Racine Road	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454740	Appraisal (Hired/Completed/Reviewed) - 1563 Hickory Hollow Lane	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454755	Appraisal (Hired/Completed/Reviewed) - 1486 Earl St	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3454770	Appraisal (Hired/Completed/Reviewed) - 775 Midway Rd	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3457470	Appraisal (Hired/Completed/Reviewed) - Hickory Hollow Lane	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3464220	Appraisal (Hired/Completed/Reviewed) - 795 Midway Rd	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3464760	Appraisal (Hired/Completed/Reviewed) - Racine Rd/CTH P	148	06-Jan-15	31-Jul-15	06-Jun-16	03-Jan-17	362	VRAN		2/13/18
C03E-3446585	Complete Appraisal of All Parcels & Easements - Midway Rd (CTH AP) Interchange	0		31-Jul-15*		03-Jan-17	362	VRAN		2/13/18
C03E-3450005	Negotiation - 1609 Hickory Hollow Ln	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3450020	Negotiation - 1567 Hickory Hollow Ln	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3450035	Negotiation - 1587 Hickory Hollow Ln	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3450050	Negotiation - 1575 Hickory Hollow Ln	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3450065	Negotiation - 1601 Hickory Hollow Ln	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3450080	Negotiation - 501 Marquette Ave S	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3450095	Negotiation - Hickory Hollow Lane	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3450110	Negotiation - 1639 Hickory Hollow Lane	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454645	Negotiation - 1631 Hickory Hollow Lane	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454660	Negotiation - 1665 Century Oaks Ct	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454675	Negotiation - 1645 Century Oaks Ct	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454690	Negotiation - 1619 Racine Rd #1	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454705	Negotiation - 1617 Racine Rd	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454720	Negotiation - Racine Road	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454735	Negotiation - 1563 Hickory Hollow Lane	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454750	Negotiation - 1486 Earl St	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3454765	Negotiation - 775 Midway Rd	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3457465	Negotiation - Hickory Hollow Lane	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18

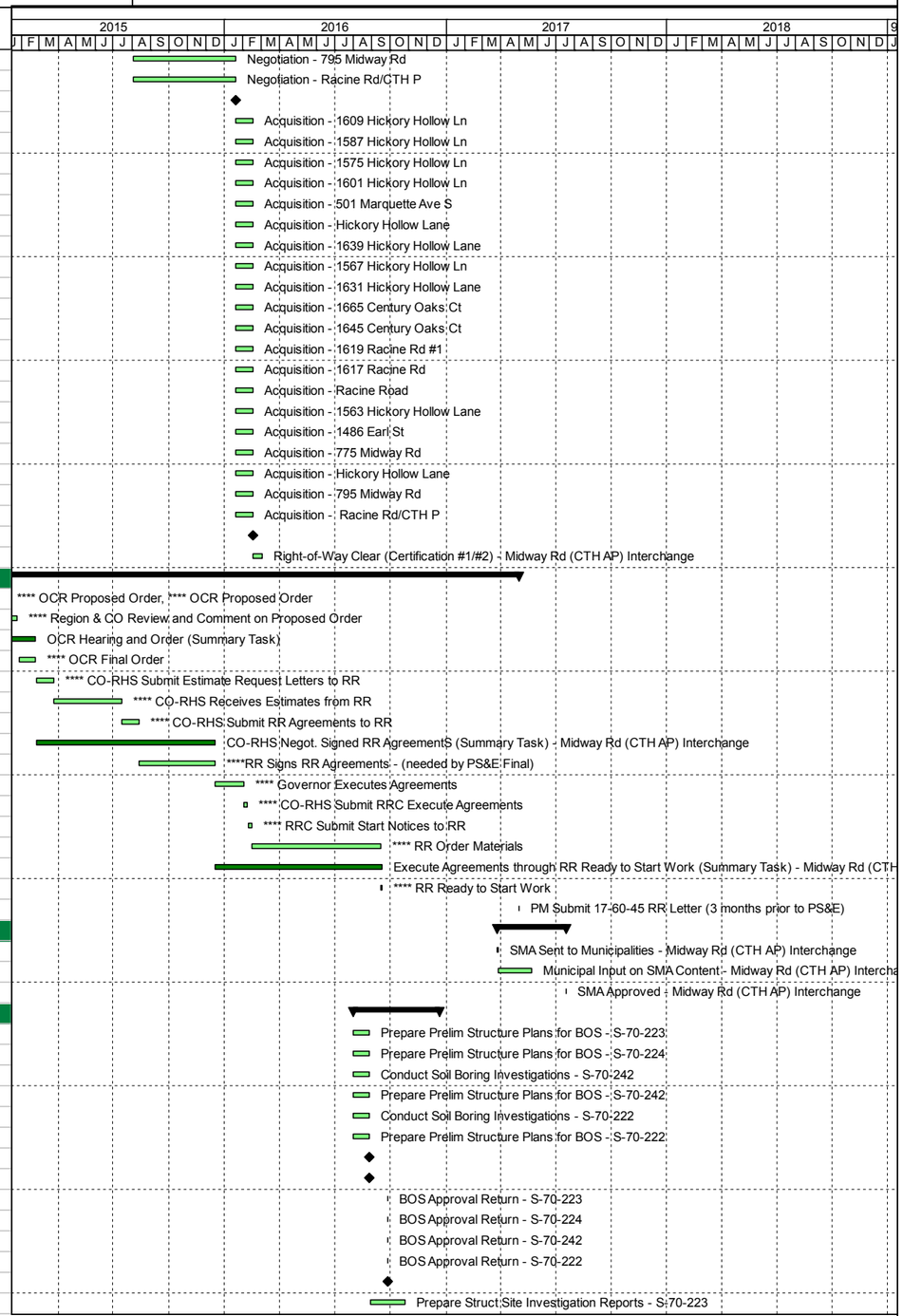


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

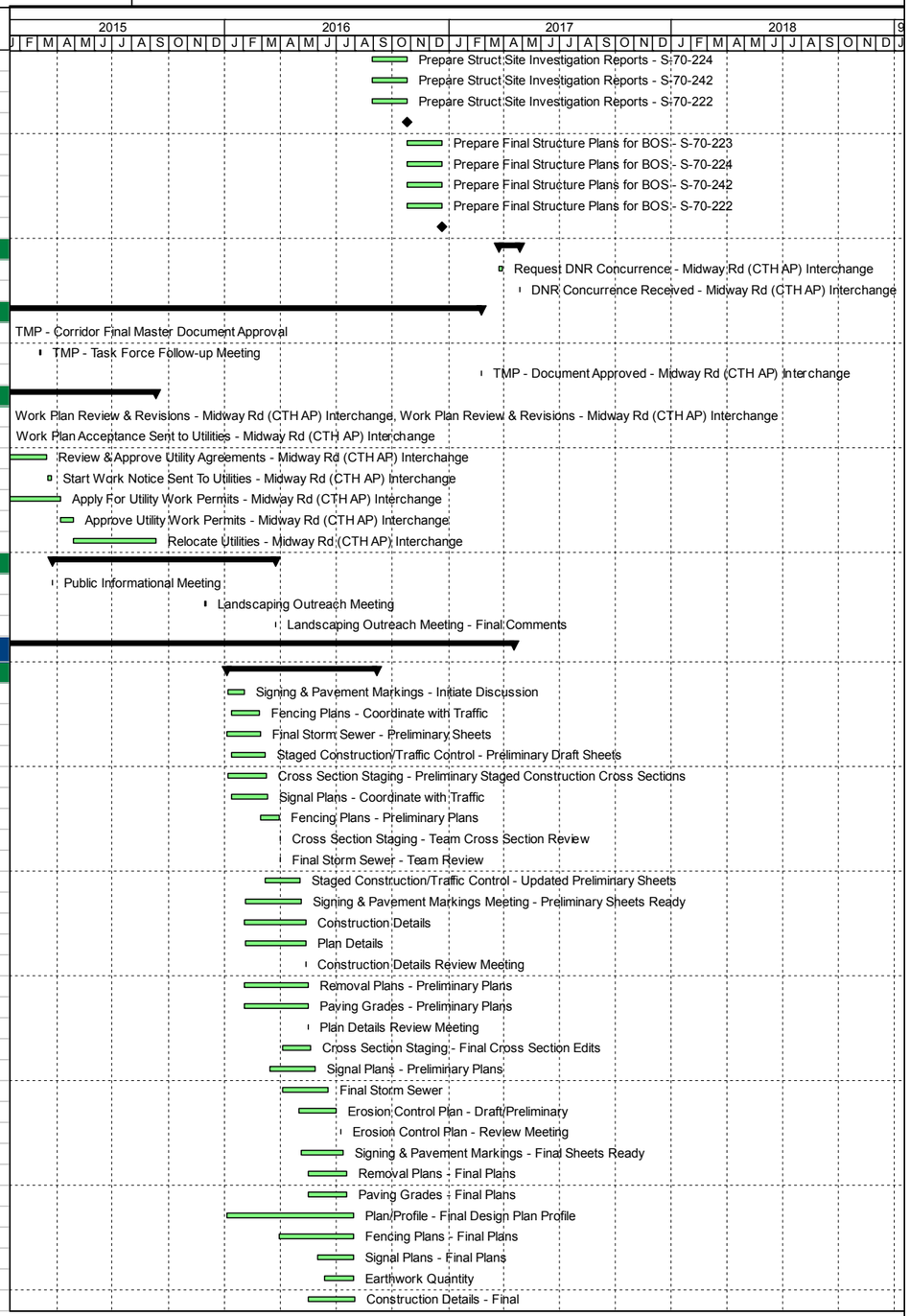
WIS 441 Project Milestone Schedule

Data Date: 05-Jan-15
Run Date: 07-Jan-15

Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3464215	Negotiation - 795 Midway Rd	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3464755	Negotiation - Racine Rd/CTH P	117	03-Aug-15	19-Jan-16	04-Jan-17	16-Jun-17	362	VRAN		2/13/18
C03E-3446500	Negotiate Acquisition of All Parcels & Easements - Midway Rd (CTH AP) Interchange	0		19-Jan-16*		16-Jun-17	362	VRAN		2/13/18
C03E-3450015	Acquisition - 1609 Hickory Hollow Ln	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3450045	Acquisition - 1587 Hickory Hollow Ln	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3450060	Acquisition - 1575 Hickory Hollow Ln	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3450075	Acquisition - 1601 Hickory Hollow Ln	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3450090	Acquisition - 501 Marquette Ave S	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3450105	Acquisition - Hickory Hollow Lane	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3450120	Acquisition - 1639 Hickory Hollow Lane	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3450030	Acquisition - 1567 Hickory Hollow Ln	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454655	Acquisition - 1631 Hickory Hollow Lane	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454670	Acquisition - 1665 Century Oaks Ct	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454685	Acquisition - 1645 Century Oaks Ct	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454700	Acquisition - 1619 Racine Rd #1	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454715	Acquisition - 1617 Racine Rd	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454730	Acquisition - Racine Road	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454745	Acquisition - 1563 Hickory Hollow Lane	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454760	Acquisition - 1486 Earl St	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3454775	Acquisition - 775 Midway Rd	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3457475	Acquisition - Hickory Hollow Lane	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3464225	Acquisition - 795 Midway Rd	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3464765	Acquisition - Racine Rd/CTH P	21	20-Jan-16	17-Feb-16	19-Jun-17	18-Jul-17	362	VRAN		2/13/18
C03E-3446670	Acquire Parcels & Easements - Midway Rd (CTH AP) Interchange	0		17-Feb-16*		18-Jul-17	362	VRAN		2/13/18
C03E-3446645	Right-of-Way Clear (Certification #1/#2) - Midway Rd (CTH AP) Interchange	10	18-Feb-16	02-Mar-16*	19-Jul-17	01-Aug-17	362	VRAN		2/13/18
Railroad		861	10-Dec-13 A	01-May-17	10-Dec-13	13-Feb-18	200			
RR03E-27520	**** OCR Proposed Order	25	25-Jun-14 A	05-Jan-15	27-May-16	27-May-16	359	VRAN		2/13/18
RR03E-27525	**** Region & CO Review and Comment on Proposed Order	15	05-Jan-15	23-Jan-15	31-May-16	20-Jun-16	359	VRAN		2/13/18
RR03E-27505	OCR Hearing and Order (Summary Task)	121	10-Dec-13 A	23-Feb-15	10-Dec-13	20-Jul-16	359	VRAN		2/13/18
RR03E-27530	**** OCR Final Order	21	26-Jan-15	23-Feb-15	21-Jun-16	20-Jul-16	359	VRAN		2/13/18
RR03E-27540	**** CO-RHS Submit Estimate Request Letters to RR	21	24-Feb-15	24-Mar-15	21-Jul-16	18-Aug-16	359	VRAN		2/13/18
RR03E-27545	**** CO-RHS Receives Estimates from RR	80	25-Mar-15	15-Jul-15	19-Aug-16	13-Dec-16	359	VRAN		2/13/18
RR03E-27550	**** CO-RHS Submit RR Agreements to RR	20	16-Jul-15	12-Aug-15	14-Dec-16	10-Jan-17	359	VRAN		2/13/18
RR03E-27535	CO-RHS Negot. Signed RR AgreementS (Summary Task) - Midway Rd (CTH AP) Interchange	207	24-Feb-15	15-Dec-15	21-Jul-16	10-May-17	359	VRAN		2/13/18
RR03E-27555	****RR Signs RR Agreements - (needed by PS&E Final)	86	13-Aug-15	15-Dec-15	11-Jan-17	10-May-17	359	VRAN		2/13/18
RR03E-27565	**** Governor Executes Agreements	32	16-Dec-15	01-Feb-16	11-May-17	26-Jun-17	359	VRAN		2/13/18
RR03E-27570	**** CO-RHS Submit RRC Execute Agreements	5	02-Feb-16	08-Feb-16	27-Jun-17	03-Jul-17	359	VRAN		2/13/18
RR03E-27575	**** RRC Submit Start Notices to RR	5	09-Feb-16	15-Feb-16	05-Jul-17	11-Jul-17	359	VRAN		2/13/18
RR03E-27580	**** RR Order Materials	150	16-Feb-16	15-Sep-16	12-Jul-17	12-Feb-18	359	VRAN		2/13/18
RR03E-27560	Execute Agreements through RR Ready to Start Work (Summary Task) - Midway Rd (CTH AP) Interc	193	16-Dec-15	16-Sep-16	11-May-17	13-Feb-18	359	VRAN		2/13/18
RR03E-27590	**** RR Ready to Start Work	1	16-Sep-16	16-Sep-16*	13-Feb-18	13-Feb-18	359	VRAN		2/13/18
RR03E-27585	PM Submit 17-60-45 RR Letter (3 months prior to PS&E)	1	01-May-17*	01-May-17	01-May-17	01-May-17	0	VRAN		2/13/18
State/Municipal Agreement		80	27-Mar-17	18-Jul-17	04-Apr-17	18-Jul-17	0			
C03E-3466305	SMA Sent to Municipalities - Midway Rd (CTH AP) Interchange	1	27-Mar-17*	27-Mar-17	04-Apr-17	04-Apr-17	6	VRAN		2/13/18
C03E-3468280	Municipal Input on SMA Content - Midway Rd (CTH AP) Interchange	40	28-Mar-17	22-May-17	05-Apr-17	31-May-17	6	VRAN		2/13/18
C03E-3466310	SMA Approved - Midway Rd (CTH AP) Interchange	1	18-Jul-17*	18-Jul-17	18-Jul-17	18-Jul-17	0	VRAN		2/13/18
Geo-Tech & Structures		100	01-Aug-16	21-Dec-16	01-Aug-16	01-Jun-17	115			
C03E-3463350	Prepare Prelim Structure Plans for BOS - S-70-223	20	01-Aug-16*	26-Aug-16	01-Aug-16	26-Aug-16	0	VRAN		2/13/18
C03E-3463385	Prepare Prelim Structure Plans for BOS - S-70-224	20	01-Aug-16*	26-Aug-16	01-Aug-16	26-Aug-16	0	VRAN		2/13/18
C03E-3463970	Conduct Soil Boring Investigations - S-70-242	20	01-Aug-16	26-Aug-16	12-Aug-16	09-Sep-16	9	VRAN		2/13/18
C03E-3463980	Prepare Prelim Structure Plans for BOS - S-70-242	20	01-Aug-16*	26-Aug-16	01-Aug-16	26-Aug-16	0	VRAN		2/13/18
C03E-3465605	Conduct Soil Boring Investigations - S-70-222	20	01-Aug-16	26-Aug-16	12-Aug-16	09-Sep-16	9	VRAN		2/13/18
C03E-3465600	Prepare Prelim Structure Plans for BOS - S-70-222	20	01-Aug-16*	26-Aug-16	01-Aug-16	26-Aug-16	0	VRAN		2/13/18
C03E-3446550	Conduct Soil Boring Investigations - Midway Rd (CTH AP) Interchange	0		26-Aug-16*		09-Sep-16	9	VRAN		2/13/18
C03E-3446560	Prepare Prelim Structure Plans for BOS - Midway Rd (CTH AP) Interchange	0		26-Aug-16*		26-Aug-16	0	VRAN		2/13/18
C03E-3463360	BOS Approval Return - S-70-223	1	27-Sep-16	27-Sep-16	05-Apr-17	05-Apr-17	134	VRAN		2/13/18
C03E-3463395	BOS Approval Return - S-70-224	1	27-Sep-16	27-Sep-16	05-Apr-17	05-Apr-17	134	VRAN		2/13/18
C03E-3463990	BOS Approval Return - S-70-242	1	27-Sep-16	27-Sep-16	05-Apr-17	05-Apr-17	134	VRAN		2/13/18
C03E-3465610	BOS Approval Return - S-70-222	1	27-Sep-16	27-Sep-16	05-Apr-17	05-Apr-17	134	VRAN		2/13/18
C03E-3446720	BOS Approval Return - Midway Rd (CTH AP) Interchange	0		27-Sep-16*		05-Apr-17	134	VRAN		2/13/18
C03E-3463370	Prepare Struct Site Investigation Reports - S-70-223	40	29-Aug-16	24-Oct-16	12-Jan-17	08-Mar-17	95	VRAN		2/13/18



Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3463405	Prepare Struct Site Investigation Reports - S-70-224	40	29-Aug-16	24-Oct-16	12-Jan-17	08-Mar-17	95	VRAN		2/13/18
C03E-3464000	Prepare Struct Site Investigation Reports - S-70-242	40	29-Aug-16	24-Oct-16	12-Jan-17	08-Mar-17	95	VRAN		2/13/18
C03E-3465620	Prepare Struct Site Investigation Reports - S-70-222	40	29-Aug-16	24-Oct-16	12-Jan-17	08-Mar-17	95	VRAN		2/13/18
C03E-3446590	Prepare Struct Site Investigation Reports - Midway Rd (CTH AP) Interchange	0		24-Oct-16*		08-Mar-17	95	VRAN		2/13/18
C03E-3463355	Prepare Final Structure Plans for BOS - S-70-223	40	25-Oct-16	21-Dec-16	06-Apr-17	01-Jun-17	115	VRAN		2/13/18
C03E-3463390	Prepare Final Structure Plans for BOS - S-70-224	40	25-Oct-16	21-Dec-16	06-Apr-17	01-Jun-17	115	VRAN		2/13/18
C03E-3463985	Prepare Final Structure Plans for BOS - S-70-242	40	25-Oct-16	21-Dec-16	06-Apr-17	01-Jun-17	115	VRAN		2/13/18
C03E-3465625	Prepare Final Structure Plans for BOS - S-70-222	40	25-Oct-16	21-Dec-16	06-Apr-17	01-Jun-17	115	VRAN		2/13/18
C03E-3446565	Prepare Final Structure Plans for BOS - Midway Rd (CTH AP) Interchange	0		21-Dec-16*		01-Jun-17	115	VRAN		2/13/18
Stormwater Corridor Management Plan and 401/404 Permits		26	24-Mar-17	28-Apr-17	23-Jun-17	31-Jul-17	64			
C03E-3468430	Request DNR Concurrence - Midway Rd (CTH AP) Interchange	5	24-Mar-17	30-Mar-17	23-Jun-17	29-Jun-17	64	VRAN		2/13/18
C03E-3468435	DNR Concurrence Received - Midway Rd (CTH AP) Interchange	1	28-Apr-17	28-Apr-17	31-Jul-17	31-Jul-17	64	VRAN		2/13/18
TMP - Tasks		549	05-Jan-15	24-Feb-17	24-Feb-17	19-Jul-18	358			
C03E-3465005	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	22-Mar-17	22-Mar-17	567	VRAN		2/13/18
C03E-3469950	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	VRAN		2/13/18
C03E-3468160	TMP - Document Approved - Midway Rd (CTH AP) Interchange	1	24-Feb-17*	24-Feb-17	24-Feb-17	24-Feb-17	0	VRAN		2/13/18
Utilities		419	15-Nov-13 A	09-Sep-15	05-Jun-17	13-Feb-18	619			
C03E-3446655	Work Plan Review & Revisions - Midway Rd (CTH AP) Interchange	120	15-Nov-13 A	05-Jan-15	05-Jun-17	05-Jun-17	619	VRAN		2/13/18
C03E-3446680	Work Plan Acceptance Sent to Utilities - Midway Rd (CTH AP) Interchange	1	05-Jan-15	05-Jan-15	06-Jun-17	06-Jun-17	619	VRAN		2/13/18
C03E-3446685	Review & Approve Utility Agreements - Midway Rd (CTH AP) Interchange	50	06-Jan-15	16-Mar-15	13-Jul-17	21-Sep-17	644	VRAN		2/13/18
C03E-3446620	Start Work Notice Sent To Utilities - Midway Rd (CTH AP) Interchange	5	17-Mar-15	23-Mar-15	22-Sep-17	28-Sep-17	644	VRAN		2/13/18
C03E-3446625	Apply For Utility Work Permits - Midway Rd (CTH AP) Interchange	65	06-Jan-15	06-Apr-15	07-Jun-17	07-Sep-17	619	VRAN		2/13/18
C03E-3446690	Approve Utility Work Permits - Midway Rd (CTH AP) Interchange	15	07-Apr-15	27-Apr-15	08-Sep-17	28-Sep-17	619	VRAN		2/13/18
C03E-3446615	Relocate Utilities - Midway Rd (CTH AP) Interchange	95	28-Apr-15	09-Sep-15*	29-Sep-17	13-Feb-18	619	VRAN		2/13/18
Workshops, Local Agency, PIM & General Meetings		256	25-Mar-15	24-Mar-16	25-Mar-15	19-Jul-18	594			
C03E-3459770	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	VRAN		2/13/18
C03E-3460565	Landscaping Outreach Meeting	1	30-Nov-15*	30-Nov-15	28-Mar-18	28-Mar-18	594	VRAN		2/13/18
C03E-3460570	Landscaping Outreach Meeting - Final Comments	1	24-Mar-16	24-Mar-16	19-Jul-18	19-Jul-18	594	VRAN		2/13/18
1517-75-72 US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)		829	18-Nov-13 A	18-Apr-17	09-Dec-14	19-Jul-18	321			
Design Development		174	04-Jan-16	06-Sep-16	04-Jan-16	14-Sep-16	6			
C03E-3466465	Signing & Pavement Markings - Initiate Discussion	20	06-Jan-16*	02-Feb-16	06-Jan-16	02-Feb-16	0	VRAN	5/9/17	7/10/18
C03E-3466535	Fencing Plans - Coordinate with Traffic	35	11-Jan-16*	26-Feb-16	11-Jan-16	26-Feb-16	0	VRAN	5/9/17	7/10/18
C03E-3466415	Final Storm Sewer - Preliminary Sheets	41	04-Jan-16*	29-Feb-16	04-Jan-16	29-Feb-16	0	VRAN	5/9/17	7/10/18
C03E-3466390	Staged Construction/Traffic Control - Preliminary Draft Sheets	40	12-Jan-16*	07-Mar-16	19-Jan-16	14-Mar-16	5	VRAN	5/9/17	7/10/18
C03E-3466400	Cross Section Staging - Preliminary Staged Construction Cross Sections	46	06-Jan-16*	09-Mar-16	11-Jan-16	14-Mar-16	3	VRAN	5/9/17	7/10/18
C03E-3466500	Signal Plans - Coordinate with Traffic	45	11-Jan-16*	11-Mar-16	11-Jan-16	11-Mar-16	0	VRAN	5/9/17	7/10/18
C03E-3466540	Fencing Plans - Preliminary Plans	22	29-Feb-16	29-Mar-16	13-Apr-16	12-May-16	32	VRAN	5/9/17	7/10/18
C03E-3466405	Cross Section Staging - Team Cross Section Review	1	01-Apr-16*	01-Apr-16	26-Jul-16	26-Jul-16	80	VRAN	5/9/17	7/10/18
C03E-3466420	Final Storm Sewer - Team Review	1	01-Apr-16*	01-Apr-16	01-Apr-16	01-Apr-16	0	VRAN	5/9/17	7/10/18
C03E-3466395	Staged Construction/Traffic Control - Updated Preliminary Sheets	40	08-Mar-16	02-May-16	20-Jul-16	14-Sep-16	94	VRAN	5/9/17	7/10/18
C03E-3466470	Signing & Pavement Markings Meeting - Preliminary Sheets Ready	66	03-Feb-16	04-May-16	05-Apr-16	07-Jul-16	44	VRAN	5/9/17	7/10/18
C03E-3466450	Construction Details	73	02-Feb-16*	12-May-16	02-Feb-16	12-May-16	0	VRAN	5/9/17	7/10/18
C03E-3466435	Plan Details	73	03-Feb-16*	13-May-16	03-Feb-16	13-May-16	0	VRAN	5/9/17	7/10/18
C03E-3466455	Construction Details Review Meeting	1	13-May-16	13-May-16	28-Jun-16	28-Jun-16	31	VRAN	5/9/17	7/10/18
C03E-3466515	Removal Plans - Preliminary Plans	75	02-Feb-16*	16-May-16	02-Feb-16	16-May-16	0	VRAN	5/9/17	7/10/18
C03E-3466525	Paving Grades - Preliminary Plans	75	02-Feb-16*	16-May-16	02-Feb-16	16-May-16	0	VRAN	5/9/17	7/10/18
C03E-3466440	Plan Details Review Meeting	1	16-May-16	16-May-16	28-Jun-16	28-Jun-16	30	VRAN	5/9/17	7/10/18
C03E-3466410	Cross Section Staging - Final Cross Section Edits	35	04-Apr-16	20-May-16	27-Jul-16	14-Sep-16	80	VRAN	5/9/17	7/10/18
C03E-3466505	Signal Plans - Preliminary Plans	55	14-Mar-16	27-May-16	27-Apr-16	14-Jul-16	32	VRAN	5/9/17	7/10/18
C03E-3466425	Final Storm Sewer	54	04-Apr-16	17-Jun-16	29-Jun-16	14-Sep-16	61	VRAN	5/9/17	7/10/18
C03E-3466480	Erosion Control Plan - Draft/Preliminary	43	02-May-16*	30-Jun-16	02-May-16	30-Jun-16	0	VRAN	5/9/17	7/10/18
C03E-3466485	Erosion Control Plan - Review Meeting	1	08-Jul-16*	08-Jul-16	08-Jul-16	08-Jul-16	0	VRAN	5/9/17	7/10/18
C03E-3466475	Signing & Pavement Markings - Final Sheets Ready	48	05-May-16	13-Jul-16	08-Jul-16	14-Sep-16	44	VRAN	5/9/17	7/10/18
C03E-3466520	Removal Plans - Final Plans	43	17-May-16	18-Jul-16	15-Jul-16	14-Sep-16	41	VRAN	5/9/17	7/10/18
C03E-3466530	Paving Grades - Final Plans	43	17-May-16	18-Jul-16	15-Jul-16	14-Sep-16	41	VRAN	5/9/17	7/10/18
C03E-3466550	Plan/Profile - Final Design Plan Profile	148	04-Jan-16*	29-Jul-16	17-Feb-16	14-Sep-16	32	VRAN	5/9/17	7/10/18
C03E-3466545	Fencing Plans - Final Plans	86	30-Mar-16	29-Jul-16	13-May-16	14-Sep-16	32	VRAN	5/9/17	7/10/18
C03E-3466510	Signal Plans - Final Plans	43	31-May-16	29-Jul-16	15-Jul-16	14-Sep-16	32	VRAN	5/9/17	7/10/18
C03E-3466555	Earthwork Quantity	34	13-Jun-16*	29-Jul-16	28-Jul-16	14-Sep-16	32	VRAN	5/9/17	7/10/18
C03E-3466460	Construction Details - Final	54	16-May-16	01-Aug-16	29-Jun-16	14-Sep-16	31	VRAN	5/9/17	7/10/18



Remaining Level of Effort | Remaining Work | Summary

Actual Level of Effort | Critical Remaining Work

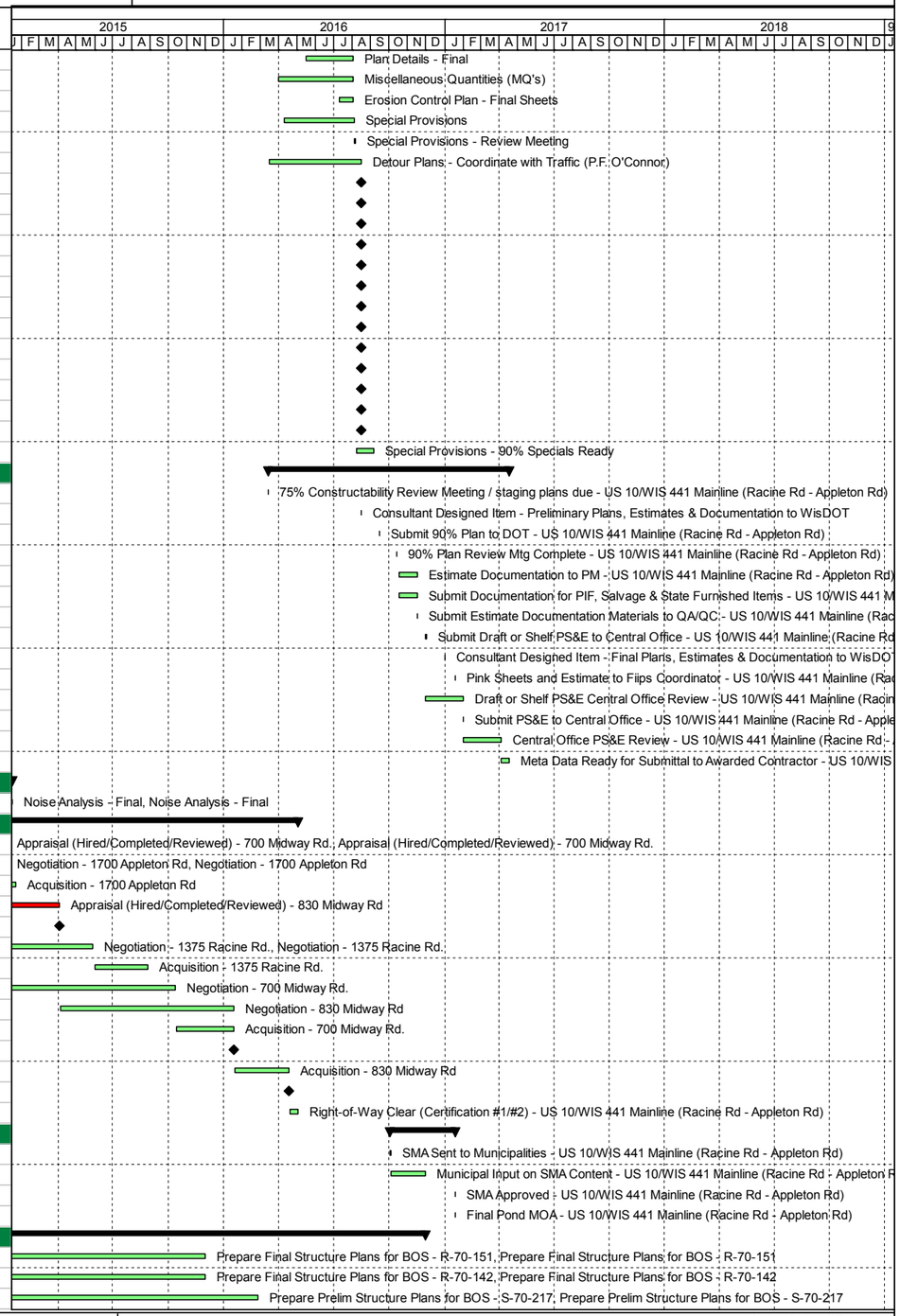
Actual Work | Milestone

WIS 441 Project Milestone Schedule

Data Date: 05-Jan-15

Run Date: 07-Jan-15

Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3466445	Plan Details - Final	54	17-May-16	02-Aug-16	29-Jun-16	14-Sep-16	30	VRAN	5/9/17	7/10/18
C03E-3466495	Miscellaneous Quantities (MQ's)	87	01-Apr-16*	03-Aug-16	01-Apr-16	03-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466490	Erosion Control Plan - Final Sheets	18	11-Jul-16	03-Aug-16	19-Aug-16	14-Sep-16	29	VRAN	5/9/17	7/10/18
C03E-3466560	Special Provisions	82	11-Apr-16*	04-Aug-16	19-Apr-16	12-Aug-16	6	VRAN	5/9/17	7/10/18
C03E-3466565	Special Provisions - Review Meeting	1	05-Aug-16	05-Aug-16	15-Aug-16	15-Aug-16	6	VRAN	5/9/17	7/10/18
C03E-3466430	Detour Plans - Coordinate with Traffic (P.F. O'Connor)	107	16-Mar-16	15-Aug-16	14-Apr-16	14-Sep-16	21	VRAN	5/9/17	7/10/18
C03E-3466325	Title Sheets - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466330	General Notes/Utility Contacts - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466335	Project Overview - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466340	Typical Cross Sections - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466345	Wetland Details - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466350	Invasive Species - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466355	Landscaping by Others - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466360	Pond Details by Others - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466365	Irrigation - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466370	ITS - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466375	Lighting - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466380	Wavetronix - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466385	Alignment Plan - Drafted and Ready for Final Revisions	0		15-Aug-16*		15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3466570	Special Provisions - 90% Specials Ready	21	08-Aug-16	06-Sep-16	16-Aug-16	14-Sep-16	6	VRAN	5/9/17	7/10/18
Design - General, 30%, 60%, 75%, 90%, PS&E		281	15-Mar-16	18-Apr-17	15-Mar-16	23-May-17	25			
C03E-3445510	75% Constructability Review Meeting / staging plans due - US 10/WIS 441 Mainline (Racine Rd - Appl	1	15-Mar-16*	15-Mar-16	15-Mar-16	15-Mar-16	0	VRAN	5/9/17	7/10/18
C03E-3470215	Consultant Designed Item - Preliminary Plans, Estimates & Documentation to WisDOT	1	15-Aug-16*	15-Aug-16	15-Aug-16	15-Aug-16	0	VRAN	5/9/17	7/10/18
C03E-3445490	Submit 90% Plan to DOT - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	15-Sep-16	15-Sep-16*	15-Sep-16	15-Sep-16	0	VRAN	5/9/17	7/10/18
C03E-3445470	90% Plan Review Mtg Complete - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	14-Oct-16	14-Oct-16	14-Oct-16	14-Oct-16	0	VRAN	5/9/17	7/10/18
C03E-3468185	Estimate Documentation to PM - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	23	17-Oct-16	16-Nov-16	17-Oct-16	16-Nov-16	0	VRAN	5/9/17	7/10/18
C03E-3469335	Submit Documentation for PIF, Salvage & State Furnished Items - US 10/WIS 441 Mainline (Racine R	23	17-Oct-16	16-Nov-16	30-Dec-16	31-Jan-17	52	VRAN	5/9/17	7/10/18
C03E-3468190	Submit Estimate Documentation Materials to QA/QC - US 10/WIS 441 Mainline (Racine Rd - Appleton	1	17-Nov-16*	17-Nov-16	17-Nov-16	17-Nov-16	0	VRAN	5/9/17	7/10/18
C03E-3458785	Submit Draft or Shelf PS&E to Central Office - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	01-Dec-16*	01-Dec-16	01-Dec-16	01-Dec-16	0	VRAN	5/9/17	7/10/18
C03E-3470220	Consultant Designed Item - Final Plans, Estimates & Documentation to WisDOT	1	02-Jan-17*	02-Jan-17	02-Jan-17	02-Jan-17	0	VRAN	5/9/17	7/10/18
C03E-3468175	Pink Sheets and Estimate to Fiips Coordinator - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	18-Jan-17*	18-Jan-17	18-Jan-17	18-Jan-17	0	VRAN	5/9/17	7/10/18
C03E-3445480	Draft or Shelf PS&E Central Office Review - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	44	01-Dec-16	31-Jan-17	01-Dec-16	31-Jan-17	0	VRAN	5/9/17	7/10/18
C03E-3445475	Submit PS&E to Central Office - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	01-Feb-17*	01-Feb-17	01-Feb-17	01-Feb-17	0	VRAN	5/9/17	7/10/18
C03E-3445485	Central Office PS&E Review - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	45	01-Feb-17*	04-Apr-17	01-Feb-17	04-Apr-17	0	VRAN	5/9/17	7/10/18
C03E-3447295	Meta Data Ready for Submittal to Awarded Contractor - US 10/WIS 441 Mainline (Racine Rd - Appleto	10	05-Apr-17*	18-Apr-17	10-May-17	23-May-17	25	VRAN	5/9/17	7/10/18
Environmental		1	18-Nov-13 A	16-Jan-15	15-Nov-16	30-Nov-16	477			
C03E-3453945	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	15-Nov-16	30-Nov-16	477	VRAN	5/9/17	7/10/18
Plats & Real Estate		405	20-Jun-14 A	02-May-16	09-Dec-14	01-Feb-17	192			
C03E-3455790	Appraisal (Hired/Completed/Reviewed) - 700 Midway Rd.	65	20-Jun-14 A	05-Jan-15	11-Mar-15	11-Mar-15	48	VRAN	5/9/17	7/10/18
C03E-3454795	Negotiation - 1700 Appleton Rd	64	18-Sep-14 A	05-Jan-15	02-Jan-17	02-Jan-17	510	VRAN	5/9/17	7/10/18
C03E-3454805	Acquisition - 1700 Appleton Rd	12	05-Jan-15	20-Jan-15	03-Jan-17	18-Jan-17	510	VRAN	5/9/17	7/10/18
C03E-3449365	Appraisal (Hired/Completed/Reviewed) - 830 Midway Rd	65	05-Jan-15*	03-Apr-15	09-Dec-14	11-Mar-15	-17	VRAN	5/9/17	7/10/18
C03E-3445360	Complete Appraisal of All Parcels & Easements - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		03-Apr-15*		11-Mar-15	-17	VRAN	5/9/17	7/10/18
C03E-3455755	Negotiation - 1375 Racine Rd.	200	15-Aug-14 A	29-May-15	20-May-16	17-Oct-16	353	VRAN	5/9/17	7/10/18
C03E-3455765	Acquisition - 1375 Racine Rd.	65	01-Jun-15	28-Aug-15	18-Oct-16	18-Jan-17	353	VRAN	5/9/17	7/10/18
C03E-3455785	Negotiation - 700 Midway Rd.	200	05-Jan-15	13-Oct-15	07-Jan-16	17-Oct-16	257	VRAN	5/9/17	7/10/18
C03E-3449360	Negotiation - 830 Midway Rd	200	06-Apr-15	18-Jan-16	07-Jan-16	17-Oct-16	192	VRAN	5/9/17	7/10/18
C03E-3455795	Acquisition - 700 Midway Rd.	65	14-Oct-15	18-Jan-16	18-Oct-16	18-Jan-17	257	VRAN	5/9/17	7/10/18
C03E-3445275	Negotiate Acquisition of All Parcels & Easements - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		18-Jan-16*		02-Jan-17	245	VRAN	5/9/17	7/10/18
C03E-3449370	Acquisition - 830 Midway Rd	65	19-Jan-16	18-Apr-16	18-Oct-16	18-Jan-17	192	VRAN	5/9/17	7/10/18
C03E-3445445	Acquire Parcels & Easements - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		18-Apr-16*		18-Jan-17	192	VRAN	5/9/17	7/10/18
C03E-3445420	Right-of-Way Clear (Certification #1/#2) - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	10	19-Apr-16	02-May-16*	19-Jan-17	01-Feb-17	192	VRAN	5/9/17	7/10/18
State/Municipal Agreement		76	03-Oct-16	18-Jan-17	03-Oct-16	18-Jan-17	0			
C03E-3466295	SMA Sent to Municipalities - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	03-Oct-16*	03-Oct-16	03-Oct-16	03-Oct-16	0	VRAN	5/9/17	7/10/18
C03E-3468285	Municipal Input on SMA Content - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	40	04-Oct-16	30-Nov-16	04-Oct-16	30-Nov-16	0	VRAN	5/9/17	7/10/18
C03E-3466300	SMA Approved - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	18-Jan-17*	18-Jan-17	18-Jan-17	18-Jan-17	0	VRAN	5/9/17	7/10/18
C03E-3470250	Final Pond MOA - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	18-Jan-17*	18-Jan-17	18-Jan-17	18-Jan-17	0	VRAN	5/9/17	7/10/18
Geo-Tech & Structures		674	20-Feb-14 A	29-Nov-16	20-Jan-15	29-Nov-16	0			
C03E-3448985	Prepare Final Structure Plans for BOS - R-70-151	40	20-Feb-14 A	01-Dec-15	31-Dec-15	29-Nov-16	253	VRAN	5/9/17	7/10/18
C03E-3448925	Prepare Final Structure Plans for BOS - R-70-142	40	03-Apr-14 A	01-Dec-15	31-Dec-15	29-Nov-16	253	VRAN	5/9/17	7/10/18
C03E-3463035	Prepare Prelim Structure Plans for BOS - S-70-217	20	18-Aug-14 A	26-Feb-16	20-Jan-15	14-Mar-16	11	VRAN	5/9/17	7/10/18

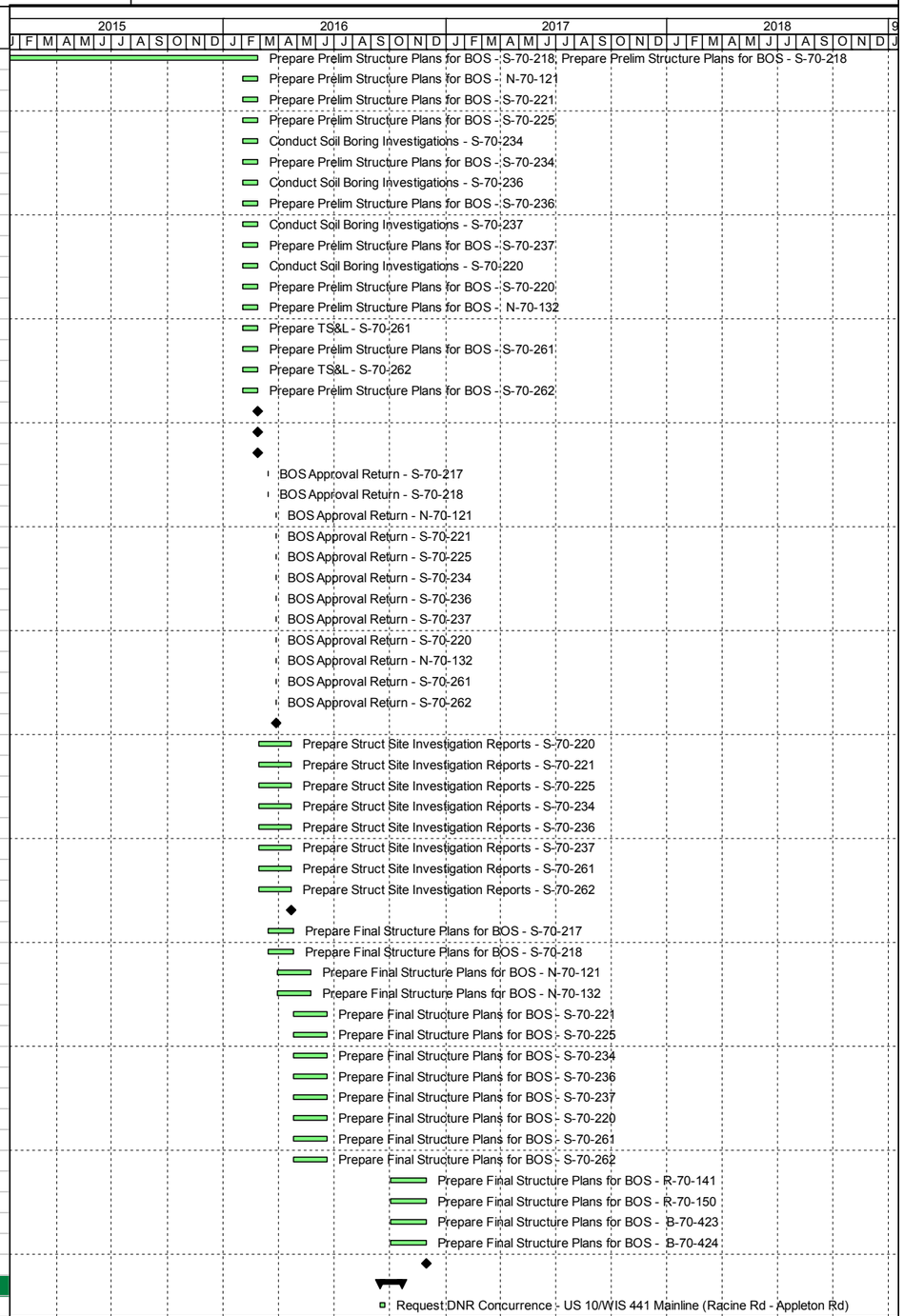


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

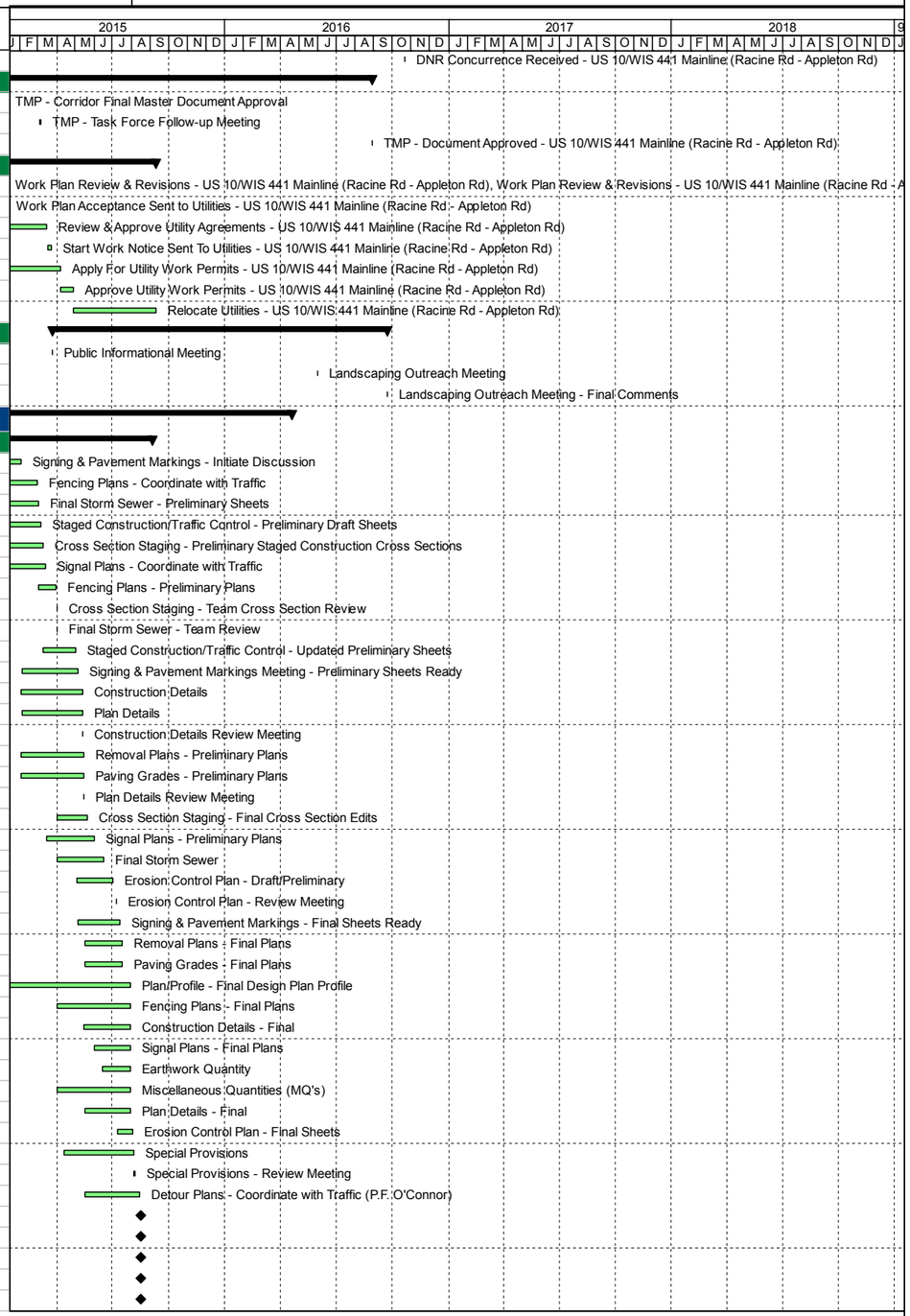
WIS 441 Project Milestone Schedule

Data Date: 05-Jan-15
Run Date: 07-Jan-15

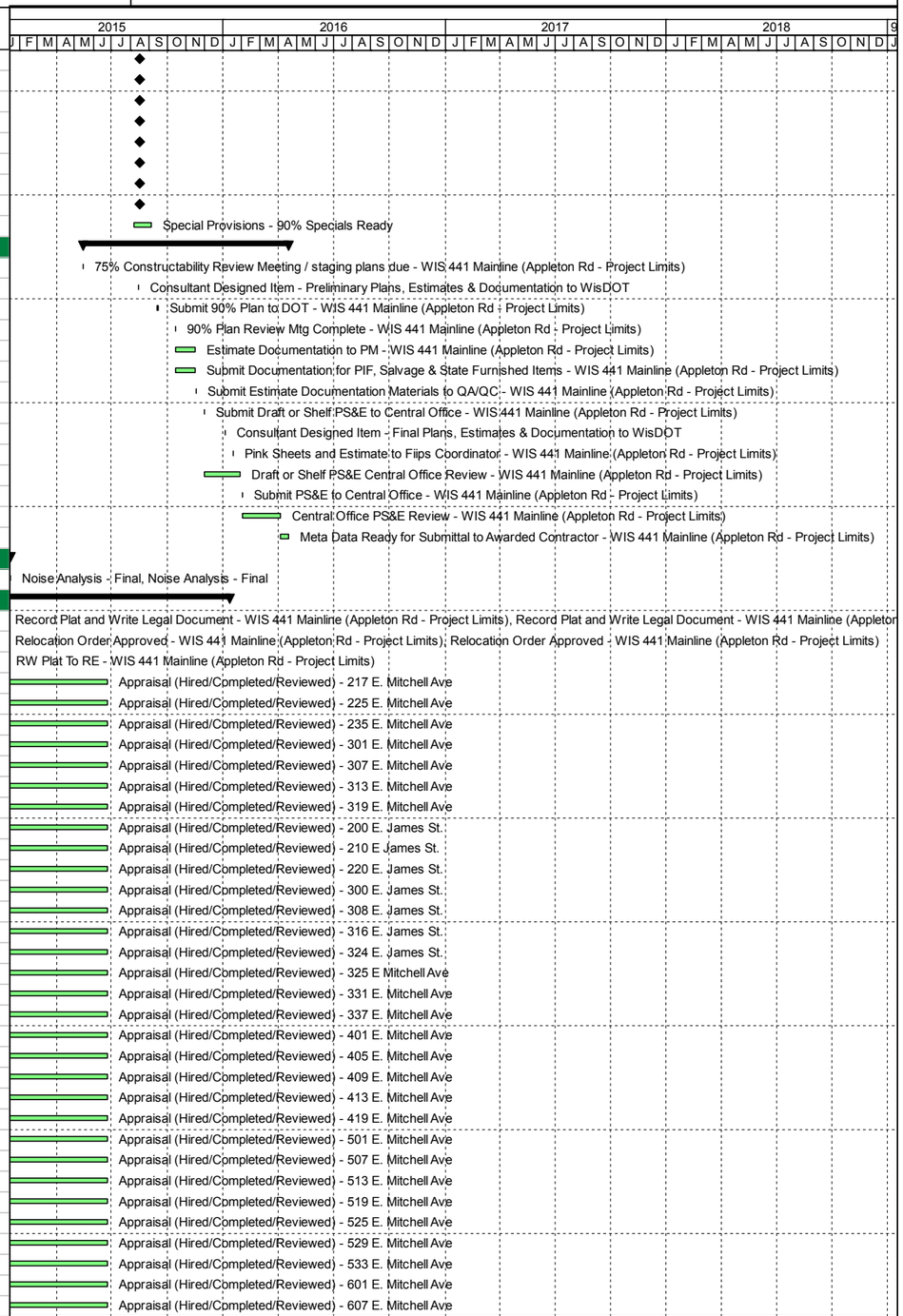
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3463210	Prepare Prelim Structure Plans for BOS - S-70-218	20	18-Aug-14 A	26-Feb-16	20-Jan-15	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3449070	Prepare Prelim Structure Plans for BOS - N-70-121	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463315	Prepare Prelim Structure Plans for BOS - S-70-221	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463420	Prepare Prelim Structure Plans for BOS - S-70-225	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463725	Conduct Soil Boring Investigations - S-70-234	20	01-Feb-16	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463735	Prepare Prelim Structure Plans for BOS - S-70-234	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463795	Conduct Soil Boring Investigations - S-70-236	20	01-Feb-16	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463805	Prepare Prelim Structure Plans for BOS - S-70-236	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463830	Conduct Soil Boring Investigations - S-70-237	20	01-Feb-16	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463840	Prepare Prelim Structure Plans for BOS - S-70-237	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463270	Conduct Soil Boring Investigations - S-70-220	20	01-Feb-16	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463280	Prepare Prelim Structure Plans for BOS - S-70-220	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3464920	Prepare Prelim Structure Plans for BOS - N-70-132	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3465630	Prepare TS&L - S-70-261	20	01-Feb-16*	26-Feb-16	01-Feb-16	26-Feb-16	0	VRAN	5/9/17	7/10/18
C03E-3465635	Prepare Prelim Structure Plans for BOS - S-70-261	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3465665	Prepare TS&L - S-70-262	20	01-Feb-16*	26-Feb-16	01-Feb-16	26-Feb-16	0	VRAN	5/9/17	7/10/18
C03E-3465670	Prepare Prelim Structure Plans for BOS - S-70-262	20	01-Feb-16*	26-Feb-16	16-Feb-16	14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3445325	Conduct Soil Boring Investigations - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		26-Feb-16*		14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3445330	Prepare TS&L - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		26-Feb-16*		26-Feb-16	0	VRAN	5/9/17	7/10/18
C03E-3445335	Prepare Prelim Structure Plans for BOS - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		26-Feb-16*		14-Mar-16	11	VRAN	5/9/17	7/10/18
C03E-3463045	BOS Approval Return - S-70-217	1	14-Mar-16	14-Mar-16	30-Sep-16	30-Sep-16	141	VRAN	5/9/17	7/10/18
C03E-3463220	BOS Approval Return - S-70-218	1	14-Mar-16	14-Mar-16	30-Sep-16	30-Sep-16	141	VRAN	5/9/17	7/10/18
C03E-3449080	BOS Approval Return - N-70-121	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3463325	BOS Approval Return - S-70-221	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3463430	BOS Approval Return - S-70-225	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3463745	BOS Approval Return - S-70-234	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3463815	BOS Approval Return - S-70-236	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3463850	BOS Approval Return - S-70-237	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3463290	BOS Approval Return - S-70-220	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3464930	BOS Approval Return - N-70-132	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3465645	BOS Approval Return - S-70-261	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3465680	BOS Approval Return - S-70-262	1	28-Mar-16	28-Mar-16	30-Sep-16	30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3445495	BOS Approval Return - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		28-Mar-16*		30-Sep-16	131	VRAN	5/9/17	7/10/18
C03E-3463300	Prepare Struct Site Investigation Reports - S-70-220	40	29-Feb-16	22-Apr-16	20-Jul-16	14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3463335	Prepare Struct Site Investigation Reports - S-70-221	40	29-Feb-16	22-Apr-16	20-Jul-16	14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3463440	Prepare Struct Site Investigation Reports - S-70-225	40	29-Feb-16	22-Apr-16	20-Jul-16	14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3463755	Prepare Struct Site Investigation Reports - S-70-234	40	29-Feb-16	22-Apr-16	20-Jul-16	14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3463825	Prepare Struct Site Investigation Reports - S-70-236	40	29-Feb-16	22-Apr-16	20-Jul-16	14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3463860	Prepare Struct Site Investigation Reports - S-70-237	40	29-Feb-16	22-Apr-16	20-Jul-16	14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3465655	Prepare Struct Site Investigation Reports - S-70-261	40	29-Feb-16	22-Apr-16	20-Jul-16	14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3465690	Prepare Struct Site Investigation Reports - S-70-262	40	29-Feb-16	22-Apr-16	20-Jul-16	14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3445365	Prepare Struct Site Investigation Reports - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		22-Apr-16*		14-Sep-16	100	VRAN	5/9/17	7/10/18
C03E-3463040	Prepare Final Structure Plans for BOS - S-70-217	30	15-Mar-16	25-Apr-16	17-Oct-16	29-Nov-16	151	VRAN	5/9/17	7/10/18
C03E-3463215	Prepare Final Structure Plans for BOS - S-70-218	30	15-Mar-16	25-Apr-16	17-Oct-16	29-Nov-16	151	VRAN	5/9/17	7/10/18
C03E-3449075	Prepare Final Structure Plans for BOS - N-70-121	40	29-Mar-16	23-May-16	03-Oct-16	29-Nov-16	131	VRAN	5/9/17	7/10/18
C03E-3464945	Prepare Final Structure Plans for BOS - N-70-132	40	29-Mar-16	23-May-16	03-Oct-16	29-Nov-16	131	VRAN	5/9/17	7/10/18
C03E-3463320	Prepare Final Structure Plans for BOS - S-70-221	40	25-Apr-16	20-Jun-16	03-Oct-16	29-Nov-16	112	VRAN	5/9/17	7/10/18
C03E-3463425	Prepare Final Structure Plans for BOS - S-70-225	40	25-Apr-16	20-Jun-16	03-Oct-16	29-Nov-16	112	VRAN	5/9/17	7/10/18
C03E-3463740	Prepare Final Structure Plans for BOS - S-70-234	40	25-Apr-16	20-Jun-16	03-Oct-16	29-Nov-16	112	VRAN	5/9/17	7/10/18
C03E-3463810	Prepare Final Structure Plans for BOS - S-70-236	40	25-Apr-16	20-Jun-16	03-Oct-16	29-Nov-16	112	VRAN	5/9/17	7/10/18
C03E-3463845	Prepare Final Structure Plans for BOS - S-70-237	40	25-Apr-16	20-Jun-16	03-Oct-16	29-Nov-16	112	VRAN	5/9/17	7/10/18
C03E-3463285	Prepare Final Structure Plans for BOS - S-70-220	40	25-Apr-16	20-Jun-16	03-Oct-16	29-Nov-16	112	VRAN	5/9/17	7/10/18
C03E-3465660	Prepare Final Structure Plans for BOS - S-70-261	40	25-Apr-16	20-Jun-16	03-Oct-16	29-Nov-16	112	VRAN	5/9/17	7/10/18
C03E-3465695	Prepare Final Structure Plans for BOS - S-70-262	40	25-Apr-16	20-Jun-16	03-Oct-16	29-Nov-16	112	VRAN	5/9/17	7/10/18
C03E-3448895	Prepare Final Structure Plans for BOS - R-70-141	40	03-Oct-16*	29-Nov-16	03-Oct-16	29-Nov-16	0	VRAN	5/9/17	7/10/18
C03E-3448955	Prepare Final Structure Plans for BOS - R-70-150	40	03-Oct-16*	29-Nov-16	03-Oct-16	29-Nov-16	0	VRAN	5/9/17	7/10/18
C03E-3448055	Prepare Final Structure Plans for BOS - B-70-423	40	03-Oct-16*	29-Nov-16	03-Oct-16	29-Nov-16	0	VRAN	5/9/17	7/10/18
C03E-3448090	Prepare Final Structure Plans for BOS - B-70-424	40	03-Oct-16*	29-Nov-16	03-Oct-16	29-Nov-16	0	VRAN	5/9/17	7/10/18
C03E-3445340	Prepare Final Structure Plans for BOS - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	0		29-Nov-16*		29-Nov-16	0	VRAN	5/9/17	7/10/18
Stormwater Corridor Management Plan and 401/404 Permits		26	16-Sep-16	21-Oct-16	27-Dec-16	31-Jan-17	70			
C03E-3468440	Request DNR Concurrence - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	5	16-Sep-16	22-Sep-16	27-Dec-16	02-Jan-17	70	VRAN	5/9/17	7/10/18



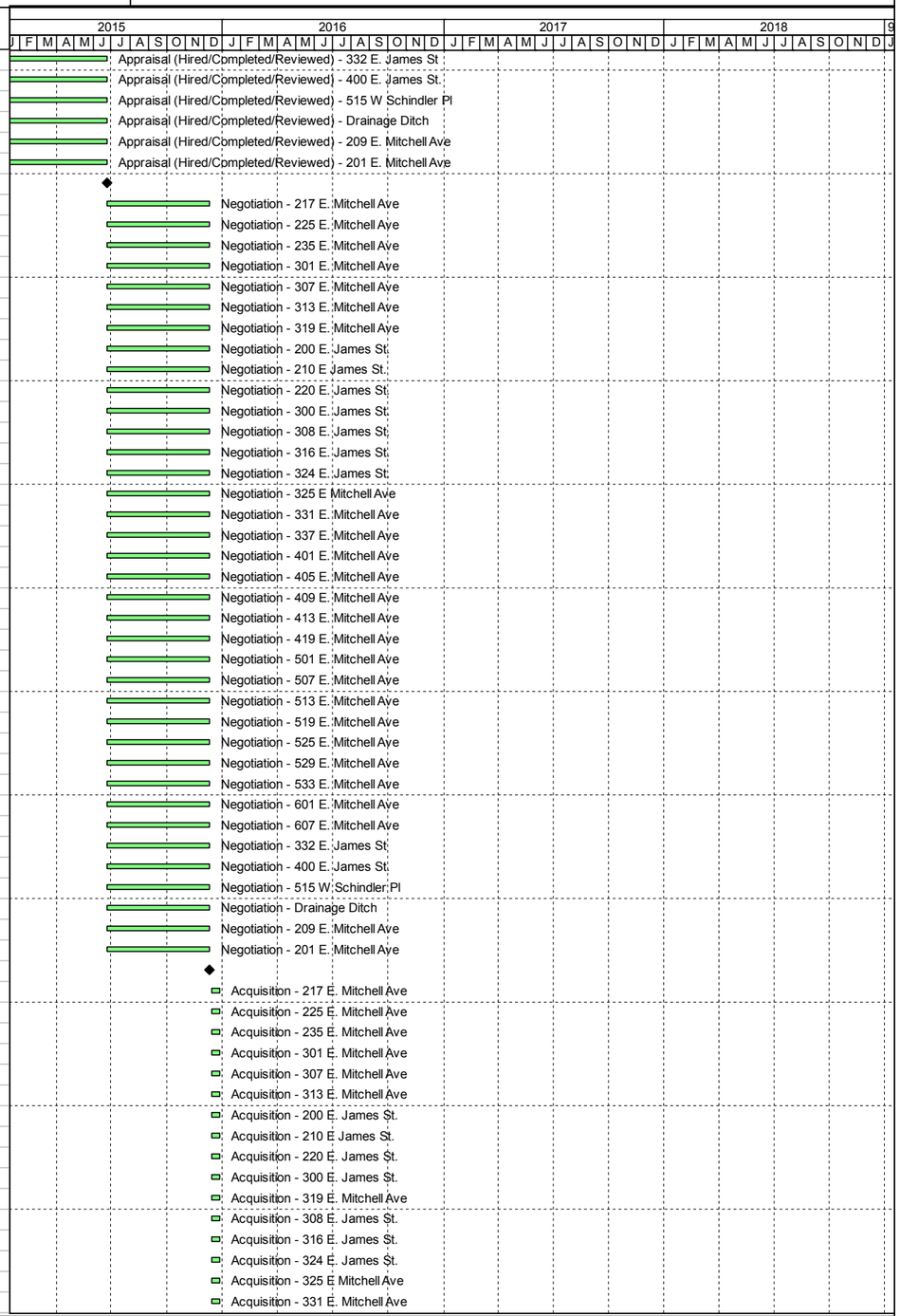
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3468445	DNR Concurrence Received - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	21-Oct-16	21-Oct-16	31-Jan-17	31-Jan-17	70	VRAN	5/9/17	7/10/18
TMP - Tasks		423	05-Jan-15	29-Aug-16	29-Aug-16	19-Jul-18	484			
C03E-3465000	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	14-Sep-16	14-Sep-16	434	VRAN	5/9/17	7/10/18
C03E-3469955	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	VRAN	5/9/17	7/10/18
C03E-3468180	TMP - Document Approved - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	29-Aug-16*	29-Aug-16	29-Aug-16	29-Aug-16	0	VRAN	5/9/17	7/10/18
Utilities		419	20-Nov-13 A	09-Sep-15	31-Aug-16	09-May-17	425			
C03E-3445430	Work Plan Review & Revisions - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	120	20-Nov-13 A	05-Jan-15	31-Aug-16	31-Aug-16	425	VRAN	5/9/17	7/10/18
C03E-3445455	Work Plan Acceptance Sent to Utilities - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	1	05-Jan-15	05-Jan-15	01-Sep-16	01-Sep-16	425	VRAN	5/9/17	7/10/18
C03E-3445460	Review & Approve Utility Agreements - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	50	06-Jan-15	16-Mar-15	10-Oct-16	20-Dec-16	450	VRAN	5/9/17	7/10/18
C03E-3445395	Start Work Notice Sent To Utilities - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	5	17-Mar-15	23-Mar-15	21-Dec-16	27-Dec-16	450	VRAN	5/9/17	7/10/18
C03E-3445400	Apply For Utility Work Permits - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	65	06-Jan-15	06-Apr-15	02-Sep-16	06-Dec-16	425	VRAN	5/9/17	7/10/18
C03E-3445465	Approve Utility Work Permits - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	15	07-Apr-15	27-Apr-15	07-Dec-16	27-Dec-16	425	VRAN	5/9/17	7/10/18
C03E-3445390	Relocate Utilities - US 10/WIS 441 Mainline (Racine Rd - Appleton Rd)	95	28-Apr-15	09-Sep-15*	28-Dec-16	09-May-17	425	VRAN	5/9/17	7/10/18
Workshops, Local Agency, PIM & General Meetings		384	25-Mar-15	23-Sep-16	25-Mar-15	19-Jul-18	466			
C03E-3459765	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	VRAN	5/9/17	7/10/18
C03E-3460555	Landscaping Outreach Meeting	1	31-May-16*	31-May-16	28-Mar-18	28-Mar-18	466	VRAN	5/9/17	7/10/18
C03E-3460560	Landscaping Outreach Meeting - Final Comments	1	23-Sep-16	23-Sep-16	19-Jul-18	19-Jul-18	466	VRAN	5/9/17	7/10/18
1517-75-74 WIS 441 Mainline (Appleton Rd - Project Limits)		634	22-Oct-13 A	19-Apr-16	05-Jan-15	19-Jul-18	576			
Design Development		174	05-Jan-15	04-Sep-15	05-Jan-15	14-Sep-15	5			
C03E-3467150	Signing & Pavement Markings - Initiate Discussion	20	06-Jan-15*	02-Feb-15	06-Jan-15	02-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3467220	Fencing Plans - Coordinate with Traffic	35	12-Jan-15*	27-Feb-15	12-Jan-15	27-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3467100	Final Storm Sewer - Preliminary Sheets	41	05-Jan-15*	02-Mar-15	05-Jan-15	02-Mar-15	0	VRAN	5/10/16	7/10/18
C03E-3467075	Staged Construction/Traffic Control - Preliminary Draft Sheets	40	12-Jan-15*	06-Mar-15	20-Mar-15	14-May-15	49	VRAN	5/10/16	7/10/18
C03E-3467085	Cross Section Staging - Preliminary Staged Construction Cross Sections	46	06-Jan-15*	10-Mar-15	20-May-15	23-Jul-15	96	VRAN	5/10/16	7/10/18
C03E-3467185	Signal Plans - Coordinate with Traffic	45	12-Jan-15*	13-Mar-15	12-Jan-15	13-Mar-15	0	VRAN	5/10/16	7/10/18
C03E-3467225	Fencing Plans - Preliminary Plans	22	02-Mar-15	31-Mar-15	14-Apr-15	13-May-15	31	VRAN	5/10/16	7/10/18
C03E-3467090	Cross Section Staging - Team Cross Section Review	1	01-Apr-15*	01-Apr-15	24-Jul-15	24-Jul-15	81	VRAN	5/10/16	7/10/18
C03E-3467105	Final Storm Sewer - Team Review	1	01-Apr-15*	01-Apr-15	01-Apr-15	01-Apr-15	0	VRAN	5/10/16	7/10/18
C03E-3467080	Staged Construction/Traffic Control - Updated Preliminary Sheets	40	09-Mar-15	01-May-15	20-Jul-15	14-Sep-15	94	VRAN	5/10/16	7/10/18
C03E-3467155	Signing & Pavement Markings Meeting - Preliminary Sheets Ready	66	03-Feb-15	05-May-15	06-Apr-15	07-Jul-15	44	VRAN	5/10/16	7/10/18
C03E-3467135	Construction Details	73	02-Feb-15*	13-May-15	02-Feb-15	13-May-15	0	VRAN	5/10/16	7/10/18
C03E-3467120	Plan Details	73	03-Feb-15*	14-May-15	03-Feb-15	14-May-15	0	VRAN	5/10/16	7/10/18
C03E-3467140	Construction Details Review Meeting	1	14-May-15	14-May-15	29-Jun-15	29-Jun-15	31	VRAN	5/10/16	7/10/18
C03E-3467200	Removal Plans - Preliminary Plans	75	02-Feb-15*	15-May-15	02-Feb-15	15-May-15	0	VRAN	5/10/16	7/10/18
C03E-3467210	Paving Grades - Preliminary Plans	75	02-Feb-15*	15-May-15	02-Feb-15	15-May-15	0	VRAN	5/10/16	7/10/18
C03E-3467125	Plan Details Review Meeting	1	15-May-15	15-May-15	29-Jun-15	29-Jun-15	30	VRAN	5/10/16	7/10/18
C03E-3467095	Cross Section Staging - Final Cross Section Edits	35	02-Apr-15	20-May-15	27-Jul-15	14-Sep-15	81	VRAN	5/10/16	7/10/18
C03E-3467190	Signal Plans - Preliminary Plans	55	16-Mar-15	01-Jun-15	28-Apr-15	14-Jul-15	31	VRAN	5/10/16	7/10/18
C03E-3467110	Final Storm Sewer	54	02-Apr-15	17-Jun-15	30-Jun-15	14-Sep-15	62	VRAN	5/10/16	7/10/18
C03E-3467165	Erosion Control Plan - Draft/Preliminary	43	04-May-15*	02-Jul-15	04-May-15	02-Jul-15	0	VRAN	5/10/16	7/10/18
C03E-3467170	Erosion Control Plan - Review Meeting	1	08-Jul-15*	08-Jul-15	08-Jul-15	08-Jul-15	0	VRAN	5/10/16	7/10/18
C03E-3467160	Signing & Pavement Markings - Final Sheets Ready	48	06-May-15	13-Jul-15	08-Jul-15	14-Sep-15	44	VRAN	5/10/16	7/10/18
C03E-3467205	Removal Plans - Final Plans	43	18-May-15	16-Jul-15	15-Jul-15	14-Sep-15	41	VRAN	5/10/16	7/10/18
C03E-3467215	Paving Grades - Final Plans	43	18-May-15	16-Jul-15	15-Jul-15	14-Sep-15	41	VRAN	5/10/16	7/10/18
C03E-3467235	Plan/Profile - Final Design Plan Profile	148	05-Jan-15*	30-Jul-15	17-Feb-15	14-Sep-15	31	VRAN	5/10/16	7/10/18
C03E-3467230	Fencing Plans - Final Plans	86	01-Apr-15	30-Jul-15	14-May-15	14-Sep-15	31	VRAN	5/10/16	7/10/18
C03E-3467145	Construction Details - Final	54	15-May-15	30-Jul-15	30-Jun-15	14-Sep-15	31	VRAN	5/10/16	7/10/18
C03E-3467195	Signal Plans - Final Plans	43	02-Jun-15	30-Jul-15	15-Jul-15	14-Sep-15	31	VRAN	5/10/16	7/10/18
C03E-3467240	Earthwork Quantity	34	15-Jun-15*	30-Jul-15	28-Jul-15	14-Sep-15	31	VRAN	5/10/16	7/10/18
C03E-3467180	Miscellaneous Quantities (MQ's)	87	01-Apr-15*	31-Jul-15	01-Apr-15	31-Jul-15	0	VRAN	5/10/16	7/10/18
C03E-3467130	Plan Details - Final	54	18-May-15	31-Jul-15	30-Jun-15	14-Sep-15	30	VRAN	5/10/16	7/10/18
C03E-3467175	Erosion Control Plan - Final Sheets	18	09-Jul-15	03-Aug-15	19-Aug-15	14-Sep-15	29	VRAN	5/10/16	7/10/18
C03E-3467245	Special Provisions	82	13-Apr-15*	05-Aug-15	20-Apr-15	12-Aug-15	5	VRAN	5/10/16	7/10/18
C03E-3467250	Special Provisions - Review Meeting	1	06-Aug-15	06-Aug-15	13-Aug-15	13-Aug-15	5	VRAN	5/10/16	7/10/18
C03E-3467115	Detour Plans - Coordinate with Traffic (P.F. O'Connor)	64	18-May-15	14-Aug-15	16-Jun-15	14-Sep-15	20	VRAN	5/10/16	7/10/18
C03E-3467320	Title Sheets - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467260	General Notes/Utility Contacts - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467265	Project Overview - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467270	Typical Cross Sections - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467275	Wetland Details - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18



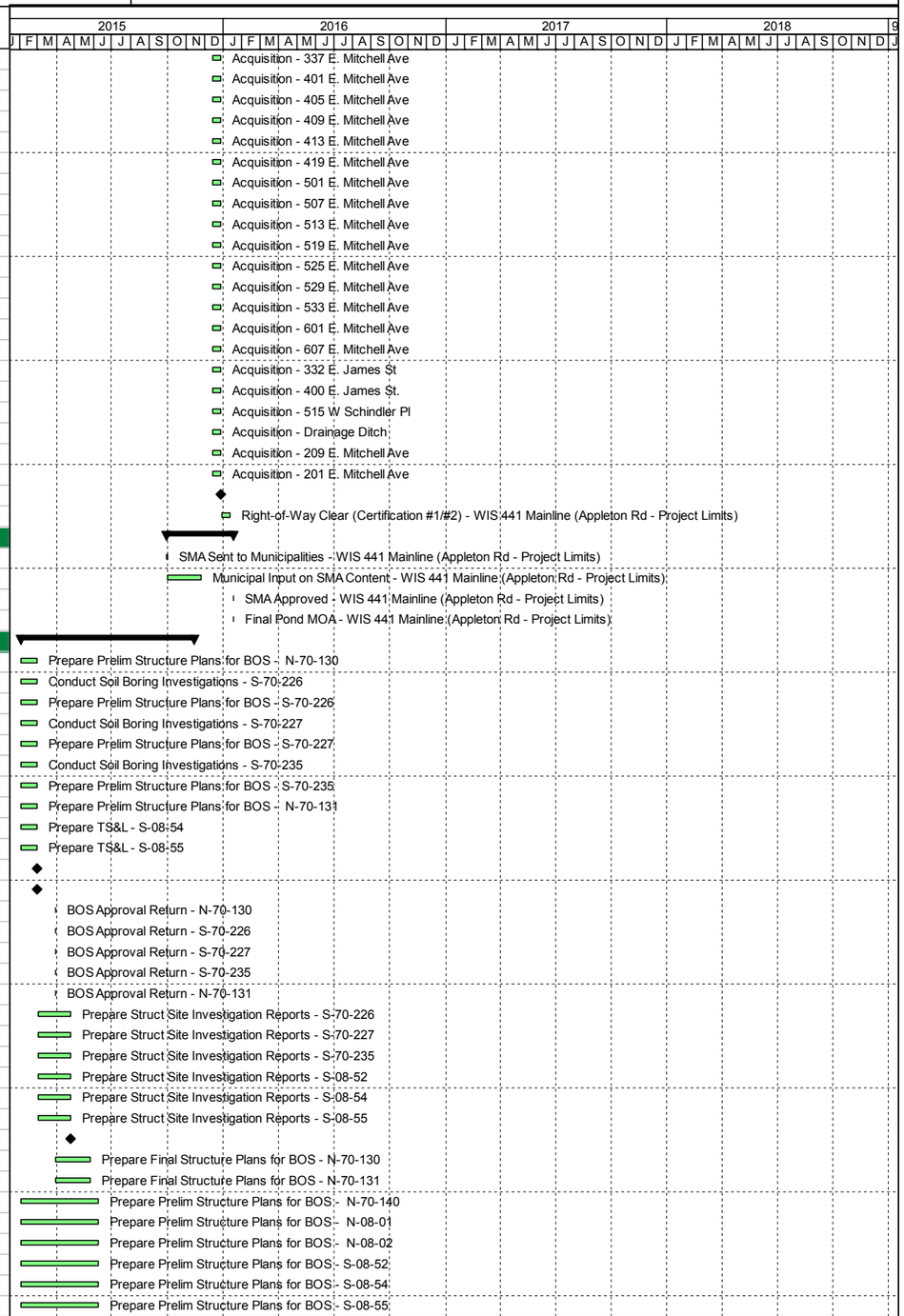
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3467280	Invasive Species - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467285	Landscaping by Others - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467290	Pond Details by Others - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467295	Irrigation - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467300	ITS - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467305	Lighting - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467310	Wavetronix - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467315	Alignment Plan - Drafted and Ready for Final Revisions	0		17-Aug-15*		14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3467255	Special Provisions - 90% Specials Ready	21	07-Aug-15	04-Sep-15	14-Aug-15	14-Sep-15	5	VRAN	5/10/16	7/10/18
Design - General, 30%, 60%, 75%, 90%, PS&E		236	15-May-15	18-Apr-16	15-May-15	10-May-16	16			
C03E-3446000	75% Constructability Review Meeting / staging plans due - WIS 441 Mainline (Appleton Rd - Project Lir	1	15-May-15*	15-May-15	15-May-15	15-May-15	0	VRAN	5/10/16	7/10/18
C03E-3470235	Consultant Designed Item - Preliminary Plans, Estimates & Documentation to WisDOT	1	14-Aug-15*	14-Aug-15	14-Aug-15	14-Aug-15	0	VRAN	5/10/16	7/10/18
C03E-3445980	Submit 90% Plan to DOT - WIS 441 Mainline (Appleton Rd - Project Limits)	1	15-Sep-15	15-Sep-15*	15-Sep-15	15-Sep-15	0	VRAN	5/10/16	7/10/18
C03E-3445960	90% Plan Review Mtg Complete - WIS 441 Mainline (Appleton Rd - Project Limits)	1	14-Oct-15	14-Oct-15	14-Oct-15	14-Oct-15	0	VRAN	5/10/16	7/10/18
C03E-3468245	Estimate Documentation to PM - WIS 441 Mainline (Appleton Rd - Project Limits)	23	15-Oct-15	16-Nov-15	15-Oct-15	16-Nov-15	0	VRAN	5/10/16	7/10/18
C03E-3469355	Submit Documentation for PIF, Salvage & State Furnished Items - WIS 441 Mainline (Appleton Rd - Pr	23	15-Oct-15	16-Nov-15	29-Dec-15	29-Jan-16	50	VRAN	5/10/16	7/10/18
C03E-3468250	Submit Estimate Documentation Materials to QA/QC - WIS 441 Mainline (Appleton Rd - Project Limits)	1	17-Nov-15*	17-Nov-15	17-Nov-15	17-Nov-15	0	VRAN	5/10/16	7/10/18
C03E-3458800	Submit Draft or Shelf PS&E to Central Office - WIS 441 Mainline (Appleton Rd - Project Limits)	1	01-Dec-15*	01-Dec-15	01-Dec-15	01-Dec-15	0	VRAN	5/10/16	7/10/18
C03E-3470240	Consultant Designed Item - Final Plans, Estimates & Documentation to WisDOT	1	04-Jan-16*	04-Jan-16	04-Jan-16	04-Jan-16	0	VRAN	5/10/16	7/10/18
C03E-3468235	Pink Sheets and Estimate to Fiips Coordinator - WIS 441 Mainline (Appleton Rd - Project Limits)	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	VRAN	5/10/16	7/10/18
C03E-3445970	Draft or Shelf PS&E Central Office Review - WIS 441 Mainline (Appleton Rd - Project Limits)	42	01-Dec-15	29-Jan-16	01-Dec-15	29-Jan-16	0	VRAN	5/10/16	7/10/18
C03E-3445965	Submit PS&E to Central Office - WIS 441 Mainline (Appleton Rd - Project Limits)	1	01-Feb-16*	01-Feb-16	01-Feb-16	01-Feb-16	0	VRAN	5/10/16	7/10/18
C03E-3445975	Central Office PS&E Review - WIS 441 Mainline (Appleton Rd - Project Limits)	46	01-Feb-16*	04-Apr-16	01-Feb-16	04-Apr-16	0	VRAN	5/10/16	7/10/18
C03E-3447305	Meta Data Ready for Submittal to Awarded Contractor - WIS 441 Mainline (Appleton Rd - Project Limits	10	05-Apr-16	18-Apr-16*	27-Apr-16	10-May-16	16	VRAN	5/10/16	7/10/18
Environmental		1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222			
C03E-3454085	Noise Analysis - Final	1	18-Nov-13 A	16-Jan-15	13-Nov-15	30-Nov-15	222	VRAN	5/10/16	7/10/18
Plats & Real Estate		484	20-Jan-14 A	12-Jan-16	22-Jan-15	19-Jul-18	646			
C03E-3445905	Record Plat and Write Legal Document - WIS 441 Mainline (Appleton Rd - Project Limits)	5	20-Jan-14 A	05-Jan-15	22-Jan-15	22-Jan-15	14	VRAN	5/10/16	7/10/18
C03E-3445770	Relocation Order Approved - WIS 441 Mainline (Appleton Rd - Project Limits)	20	20-Jan-14 A	05-Jan-15	19-Jul-18	19-Jul-18	907	VRAN	5/10/16	7/10/18
C03E-3445780	RW Plat To RE - WIS 441 Mainline (Appleton Rd - Project Limits)	1	05-Jan-15	05-Jan-15	23-Jan-15	23-Jan-15	14	VRAN	5/10/16	7/10/18
C03E-3455280	Appraisal (Hired/Completed/Reviewed) - 217 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455295	Appraisal (Hired/Completed/Reviewed) - 225 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455310	Appraisal (Hired/Completed/Reviewed) - 235 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455325	Appraisal (Hired/Completed/Reviewed) - 301 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455340	Appraisal (Hired/Completed/Reviewed) - 307 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455355	Appraisal (Hired/Completed/Reviewed) - 313 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455370	Appraisal (Hired/Completed/Reviewed) - 319 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455100	Appraisal (Hired/Completed/Reviewed) - 200 E. James St.	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455115	Appraisal (Hired/Completed/Reviewed) - 210 E James St.	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455130	Appraisal (Hired/Completed/Reviewed) - 220 E. James St.	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455145	Appraisal (Hired/Completed/Reviewed) - 300 E. James St.	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455160	Appraisal (Hired/Completed/Reviewed) - 308 E. James St.	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455175	Appraisal (Hired/Completed/Reviewed) - 316 E. James St.	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455190	Appraisal (Hired/Completed/Reviewed) - 324 E. James St.	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455955	Appraisal (Hired/Completed/Reviewed) - 325 E Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455970	Appraisal (Hired/Completed/Reviewed) - 331 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455985	Appraisal (Hired/Completed/Reviewed) - 337 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456000	Appraisal (Hired/Completed/Reviewed) - 401 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456015	Appraisal (Hired/Completed/Reviewed) - 405 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456030	Appraisal (Hired/Completed/Reviewed) - 409 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456045	Appraisal (Hired/Completed/Reviewed) - 413 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456060	Appraisal (Hired/Completed/Reviewed) - 419 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456075	Appraisal (Hired/Completed/Reviewed) - 501 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456090	Appraisal (Hired/Completed/Reviewed) - 507 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456105	Appraisal (Hired/Completed/Reviewed) - 513 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456120	Appraisal (Hired/Completed/Reviewed) - 519 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456135	Appraisal (Hired/Completed/Reviewed) - 525 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456150	Appraisal (Hired/Completed/Reviewed) - 529 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456165	Appraisal (Hired/Completed/Reviewed) - 533 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456180	Appraisal (Hired/Completed/Reviewed) - 601 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456195	Appraisal (Hired/Completed/Reviewed) - 607 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18



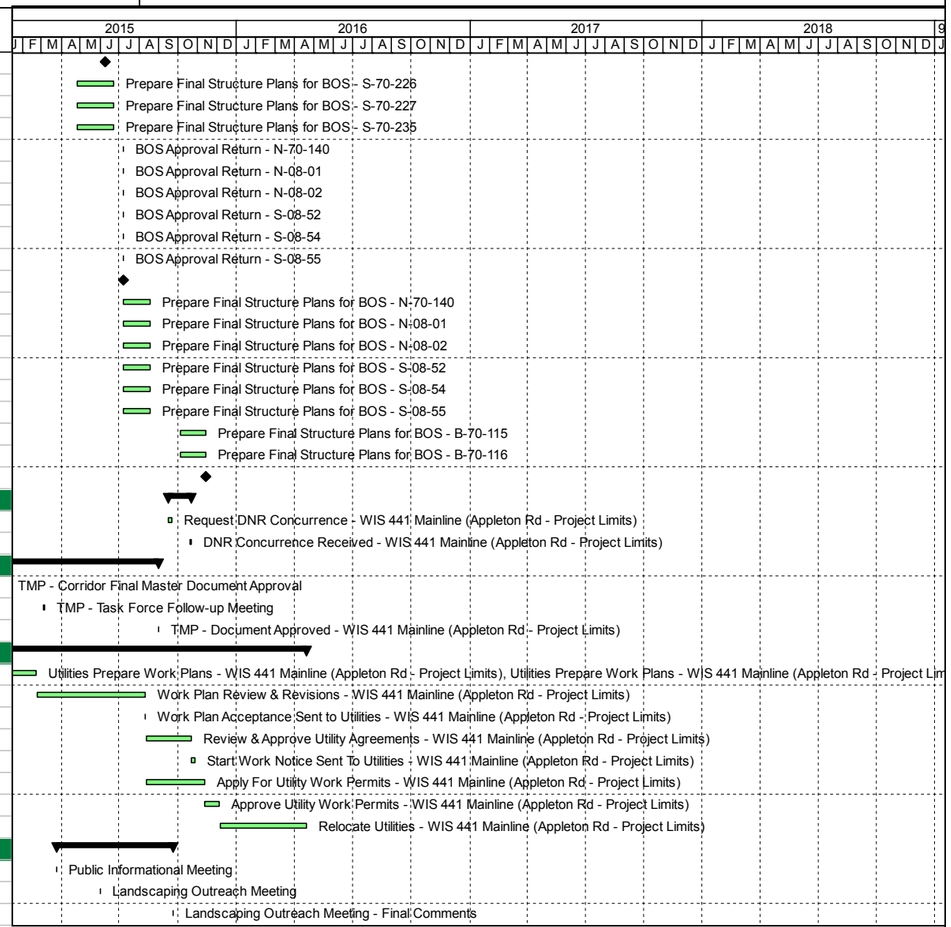
Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3456315	Appraisal (Hired/Completed/Reviewed) - 332 E. James St	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456330	Appraisal (Hired/Completed/Reviewed) - 400 E. James St.	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3456570	Appraisal (Hired/Completed/Reviewed) - 515 W Schindler Pl	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3458085	Appraisal (Hired/Completed/Reviewed) - Drainage Ditch	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3465880	Appraisal (Hired/Completed/Reviewed) - 209 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3465895	Appraisal (Hired/Completed/Reviewed) - 201 E. Mitchell Ave	120	06-Jan-15*	23-Jun-15	26-Jan-15	13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3445850	Complete Appraisal of All Parcels & Easements - WIS 441 Mainline (Appleton Rd - Project Limits)	0		23-Jun-15*		13-Jul-15	14	VRAN	5/10/16	7/10/18
C03E-3455275	Negotiation - 217 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455290	Negotiation - 225 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455305	Negotiation - 235 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455320	Negotiation - 301 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455335	Negotiation - 307 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455350	Negotiation - 313 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455365	Negotiation - 319 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455095	Negotiation - 200 E. James St.	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455110	Negotiation - 210 E James St.	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455125	Negotiation - 220 E. James St.	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455140	Negotiation - 300 E. James St.	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455155	Negotiation - 308 E. James St.	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455170	Negotiation - 316 E. James St.	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455185	Negotiation - 324 E. James St.	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455950	Negotiation - 325 E Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455965	Negotiation - 331 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455980	Negotiation - 337 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455995	Negotiation - 401 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456010	Negotiation - 405 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456025	Negotiation - 409 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456040	Negotiation - 413 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456055	Negotiation - 419 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456070	Negotiation - 501 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456085	Negotiation - 507 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456100	Negotiation - 513 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456115	Negotiation - 519 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456130	Negotiation - 525 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456145	Negotiation - 529 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456160	Negotiation - 533 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456175	Negotiation - 601 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456190	Negotiation - 607 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456310	Negotiation - 332 E. James St	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456325	Negotiation - 400 E. James St.	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456565	Negotiation - 515 W Schindler Pl	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3458080	Negotiation - Drainage Ditch	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3465885	Negotiation - 209 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3465900	Negotiation - 201 E. Mitchell Ave	120	24-Jun-15	11-Dec-15	14-Jul-15	04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3445765	Negotiate Acquisition of All Parcels & Easements - WIS 441 Mainline (Appleton Rd - Project Limits)	0		11-Dec-15*		04-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455285	Acquisition - 217 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455300	Acquisition - 225 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455315	Acquisition - 235 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455330	Acquisition - 301 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455345	Acquisition - 307 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455360	Acquisition - 313 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455105	Acquisition - 200 E. James St.	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455120	Acquisition - 210 E James St.	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455135	Acquisition - 220 E. James St.	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455150	Acquisition - 300 E. James St.	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455375	Acquisition - 319 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455165	Acquisition - 308 E. James St.	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455180	Acquisition - 316 E. James St.	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455195	Acquisition - 324 E. James St.	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455960	Acquisition - 325 E Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3455975	Acquisition - 331 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18



Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3455990	Acquisition - 337 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456005	Acquisition - 401 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456020	Acquisition - 405 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456035	Acquisition - 409 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456050	Acquisition - 413 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456065	Acquisition - 419 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456080	Acquisition - 501 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456095	Acquisition - 507 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456110	Acquisition - 513 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456125	Acquisition - 519 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456140	Acquisition - 525 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456155	Acquisition - 529 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456170	Acquisition - 533 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456185	Acquisition - 601 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456200	Acquisition - 607 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456320	Acquisition - 332 E. James St	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456335	Acquisition - 400 E. James St.	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3456575	Acquisition - 515 W Schindler Pl	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3458090	Acquisition - Drainage Ditch	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3465890	Acquisition - 209 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3465905	Acquisition - 201 E. Mitchell Ave	10	14-Dec-15	28-Dec-15	05-Jan-16	18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3445935	Acquire Parcels & Easements - WIS 441 Mainline (Appleton Rd - Project Limits)	0		28-Dec-15*		18-Jan-16	14	VRAN	5/10/16	7/10/18
C03E-3445910	Right-of-Way Clear (Certification #1/#2) - WIS 441 Mainline (Appleton Rd - Project Limits)	10	29-Dec-15	12-Jan-16*	19-Jan-16	01-Feb-16	14	VRAN	5/10/16	7/10/18
State/Municipal Agreement		75	30-Sep-15	18-Jan-16	01-Oct-15	18-Jan-16	0			
C03E-3466285	SMA Sent to Municipalities - WIS 441 Mainline (Appleton Rd - Project Limits)	1	30-Sep-15*	30-Sep-15	01-Oct-15	01-Oct-15	1	VRAN	5/10/16	7/10/18
C03E-3468295	Municipal Input on SMA Content - WIS 441 Mainline (Appleton Rd - Project Limits)	40	01-Oct-15	25-Nov-15	02-Oct-15	30-Nov-15	1	VRAN	5/10/16	7/10/18
C03E-3466290	SMA Approved - WIS 441 Mainline (Appleton Rd - Project Limits)	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	VRAN	5/10/16	7/10/18
C03E-3470255	Final Pond MOA - WIS 441 Mainline (Appleton Rd - Project Limits)	1	18-Jan-16*	18-Jan-16	18-Jan-16	18-Jan-16	0	VRAN	5/10/16	7/10/18
Geo-Tech & Structures		203	02-Feb-15	13-Nov-15	02-Feb-15	13-Nov-15	0			
C03E-3449100	Prepare Prelim Structure Plans for BOS - N-70-130	20	02-Feb-15*	27-Feb-15	23-Jul-15	19-Aug-15	122	VRAN	5/10/16	7/10/18
C03E-3463445	Conduct Soil Boring Investigations - S-70-226	20	02-Feb-15	27-Feb-15	16-Feb-15	13-Mar-15	10	VRAN	5/10/16	7/10/18
C03E-3463455	Prepare Prelim Structure Plans for BOS - S-70-226	20	02-Feb-15*	27-Feb-15	16-Feb-15	13-Mar-15	10	VRAN	5/10/16	7/10/18
C03E-3463480	Conduct Soil Boring Investigations - S-70-227	20	02-Feb-15	27-Feb-15	16-Feb-15	13-Mar-15	10	VRAN	5/10/16	7/10/18
C03E-3463490	Prepare Prelim Structure Plans for BOS - S-70-227	20	02-Feb-15*	27-Feb-15	16-Feb-15	13-Mar-15	10	VRAN	5/10/16	7/10/18
C03E-3463760	Conduct Soil Boring Investigations - S-70-235	20	02-Feb-15	27-Feb-15	16-Feb-15	13-Mar-15	10	VRAN	5/10/16	7/10/18
C03E-3463770	Prepare Prelim Structure Plans for BOS - S-70-235	20	02-Feb-15*	27-Feb-15	16-Feb-15	13-Mar-15	10	VRAN	5/10/16	7/10/18
C03E-3464885	Prepare Prelim Structure Plans for BOS - N-70-131	20	02-Feb-15*	27-Feb-15	23-Jul-15	19-Aug-15	122	VRAN	5/10/16	7/10/18
C03E-3465525	Prepare TS&L - S-08-54	20	02-Feb-15*	27-Feb-15	02-Feb-15	27-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3465560	Prepare TS&L - S-08-55	20	02-Feb-15*	27-Feb-15	02-Feb-15	27-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3445815	Conduct Soil Boring Investigations - WIS 441 Mainline (Appleton Rd - Project Limits)	0		27-Feb-15*		13-Mar-15	10	VRAN	5/10/16	7/10/18
C03E-3445820	Prepare TS&L - WIS 441 Mainline (Appleton Rd - Project Limits)	0		27-Feb-15*		27-Feb-15	0	VRAN	5/10/16	7/10/18
C03E-3449110	BOS Approval Return - N-70-130	1	30-Mar-15	30-Mar-15	18-Sep-15	18-Sep-15	122	VRAN	5/10/16	7/10/18
C03E-3463465	BOS Approval Return - S-70-226	1	30-Mar-15	30-Mar-15	18-Sep-15	18-Sep-15	122	VRAN	5/10/16	7/10/18
C03E-3463500	BOS Approval Return - S-70-227	1	30-Mar-15	30-Mar-15	18-Sep-15	18-Sep-15	122	VRAN	5/10/16	7/10/18
C03E-3463780	BOS Approval Return - S-70-235	1	30-Mar-15	30-Mar-15	18-Sep-15	18-Sep-15	122	VRAN	5/10/16	7/10/18
C03E-3464895	BOS Approval Return - N-70-131	1	30-Mar-15	30-Mar-15	18-Sep-15	18-Sep-15	122	VRAN	5/10/16	7/10/18
C03E-3463475	Prepare Struct Site Investigation Reports - S-70-226	40	02-Mar-15	24-Apr-15	20-Jul-15	14-Sep-15	99	VRAN	5/10/16	7/10/18
C03E-3463510	Prepare Struct Site Investigation Reports - S-70-227	40	02-Mar-15	24-Apr-15	20-Jul-15	14-Sep-15	99	VRAN	5/10/16	7/10/18
C03E-3463790	Prepare Struct Site Investigation Reports - S-70-235	40	02-Mar-15	24-Apr-15	20-Jul-15	14-Sep-15	99	VRAN	5/10/16	7/10/18
C03E-3462415	Prepare Struct Site Investigation Reports - S-08-52	40	02-Mar-15	24-Apr-15	20-Jul-15	14-Sep-15	99	VRAN	5/10/16	7/10/18
C03E-3465550	Prepare Struct Site Investigation Reports - S-08-54	40	02-Mar-15	24-Apr-15	20-Jul-15	14-Sep-15	99	VRAN	5/10/16	7/10/18
C03E-3465585	Prepare Struct Site Investigation Reports - S-08-55	40	02-Mar-15	24-Apr-15	20-Jul-15	14-Sep-15	99	VRAN	5/10/16	7/10/18
C03E-3445855	Prepare Struct Site Investigation Reports - WIS 441 Mainline (Appleton Rd - Project Limits)	0		24-Apr-15*		14-Sep-15	99	VRAN	5/10/16	7/10/18
C03E-3449105	Prepare Final Structure Plans for BOS - N-70-130	40	31-Mar-15	26-May-15	21-Sep-15	13-Nov-15	122	VRAN	5/10/16	7/10/18
C03E-3464910	Prepare Final Structure Plans for BOS - N-70-131	40	31-Mar-15	26-May-15	21-Sep-15	13-Nov-15	122	VRAN	5/10/16	7/10/18
C03E-3449130	Prepare Prelim Structure Plans for BOS - N-70-140	90	02-Feb-15*	08-Jun-15	02-Feb-15	08-Jun-15	0	VRAN	5/10/16	7/10/18
C03E-3461870	Prepare Prelim Structure Plans for BOS - N-08-01	90	02-Feb-15*	08-Jun-15	02-Feb-15	08-Jun-15	0	VRAN	5/10/16	7/10/18
C03E-3461905	Prepare Prelim Structure Plans for BOS - N-08-02	90	02-Feb-15*	08-Jun-15	02-Feb-15	08-Jun-15	0	VRAN	5/10/16	7/10/18
C03E-3462410	Prepare Prelim Structure Plans for BOS - S-08-52	90	02-Feb-15*	08-Jun-15	02-Feb-15	08-Jun-15	0	VRAN	5/10/16	7/10/18
C03E-3465530	Prepare Prelim Structure Plans for BOS - S-08-54	90	02-Feb-15*	08-Jun-15	02-Feb-15	08-Jun-15	0	VRAN	5/10/16	7/10/18
C03E-3465565	Prepare Prelim Structure Plans for BOS - S-08-55	90	02-Feb-15	08-Jun-15	29-Apr-15	02-Sep-15	62	VRAN	5/10/16	7/10/18

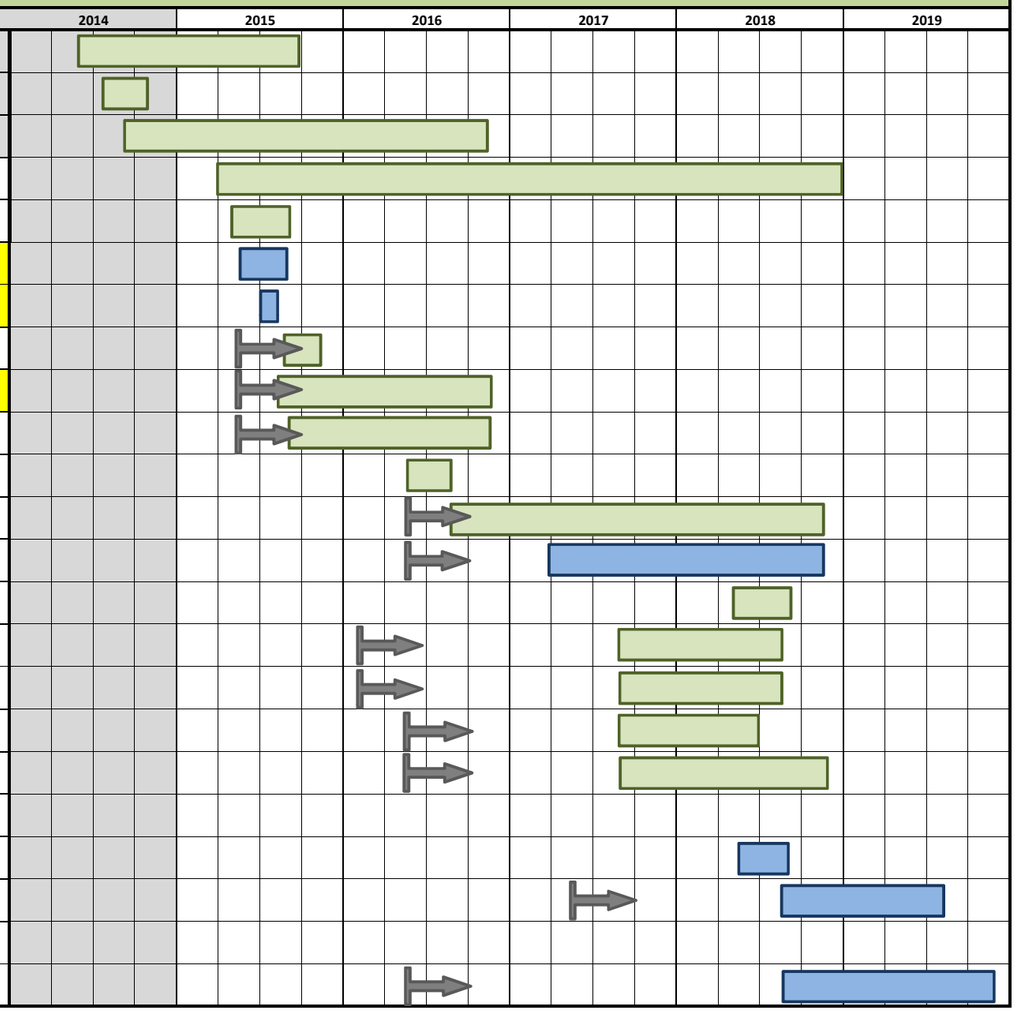


Activity ID	Activity Name	Original Duration	Start	Finish	Late Start	Late Finish	Total Float	WISDOT PM	E - LET	P - LET
C03E-3445825	Prepare Prelim Structure Plans for BOS - WIS 441 Mainline (Appleton Rd - Project Limits)	0		08-Jun-15*		02-Sep-15	62	VRAN	5/10/16	7/10/18
C03E-3463460	Prepare Final Structure Plans for BOS - S-70-226	40	27-Apr-15	22-Jun-15	21-Sep-15	13-Nov-15	103	VRAN	5/10/16	7/10/18
C03E-3463495	Prepare Final Structure Plans for BOS - S-70-227	40	27-Apr-15	22-Jun-15	21-Sep-15	13-Nov-15	103	VRAN	5/10/16	7/10/18
C03E-3463775	Prepare Final Structure Plans for BOS - S-70-235	40	27-Apr-15	22-Jun-15	21-Sep-15	13-Nov-15	103	VRAN	5/10/16	7/10/18
C03E-3449140	BOS Approval Return - N-70-140	1	07-Jul-15	07-Jul-15	02-Oct-15	02-Oct-15	62	VRAN	5/10/16	7/10/18
C03E-3461880	BOS Approval Return - N-08-01	1	07-Jul-15	07-Jul-15	02-Oct-15	02-Oct-15	62	VRAN	5/10/16	7/10/18
C03E-3461915	BOS Approval Return - N-08-02	1	07-Jul-15	07-Jul-15	02-Oct-15	02-Oct-15	62	VRAN	5/10/16	7/10/18
C03E-3462395	BOS Approval Return - S-08-52	1	07-Jul-15	07-Jul-15	02-Oct-15	02-Oct-15	62	VRAN	5/10/16	7/10/18
C03E-3465540	BOS Approval Return - S-08-54	1	07-Jul-15	07-Jul-15	02-Oct-15	02-Oct-15	62	VRAN	5/10/16	7/10/18
C03E-3465575	BOS Approval Return - S-08-55	1	07-Jul-15	07-Jul-15	02-Oct-15	02-Oct-15	62	VRAN	5/10/16	7/10/18
C03E-3445985	BOS Approval Return - WIS 441 Mainline (Appleton Rd - Project Limits)	0		07-Jul-15*		02-Oct-15	62	VRAN	5/10/16	7/10/18
C03E-3449135	Prepare Final Structure Plans for BOS - N-70-140	30	08-Jul-15	18-Aug-15	05-Oct-15	13-Nov-15	62	VRAN	5/10/16	7/10/18
C03E-3461875	Prepare Final Structure Plans for BOS - N-08-01	30	08-Jul-15	18-Aug-15	05-Oct-15	13-Nov-15	62	VRAN	5/10/16	7/10/18
C03E-3461910	Prepare Final Structure Plans for BOS - N-08-02	30	08-Jul-15	18-Aug-15	05-Oct-15	13-Nov-15	62	VRAN	5/10/16	7/10/18
C03E-3462405	Prepare Final Structure Plans for BOS - S-08-52	30	08-Jul-15	18-Aug-15	05-Oct-15	13-Nov-15	62	VRAN	5/10/16	7/10/18
C03E-3465555	Prepare Final Structure Plans for BOS - S-08-54	30	08-Jul-15	18-Aug-15	05-Oct-15	13-Nov-15	62	VRAN	5/10/16	7/10/18
C03E-3465590	Prepare Final Structure Plans for BOS - S-08-55	30	08-Jul-15	18-Aug-15	05-Oct-15	13-Nov-15	62	VRAN	5/10/16	7/10/18
C03E-3448175	Prepare Final Structure Plans for BOS - B-70-115	30	05-Oct-15*	13-Nov-15	05-Oct-15	13-Nov-15	0	VRAN	5/10/16	7/10/18
C03E-3448205	Prepare Final Structure Plans for BOS - B-70-116	30	05-Oct-15*	13-Nov-15	05-Oct-15	13-Nov-15	0	VRAN	5/10/16	7/10/18
C03E-3445830	Prepare Final Structure Plans for BOS - WIS 441 Mainline (Appleton Rd - Project Limits)	0		13-Nov-15*		13-Nov-15	0	VRAN	5/10/16	7/10/18
Stormwater Corridor Management Plan and 401/404 Permits		26	16-Sep-15	21-Oct-15	23-Dec-15	29-Jan-16	68			
C03E-3468470	Request DNR Concurrence - WIS 441 Mainline (Appleton Rd - Project Limits)	5	16-Sep-15	22-Sep-15	23-Dec-15	30-Dec-15	68	VRAN	5/10/16	7/10/18
C03E-3468475	DNR Concurrence Received - WIS 441 Mainline (Appleton Rd - Project Limits)	1	21-Oct-15	21-Oct-15	29-Jan-16	29-Jan-16	68	VRAN	5/10/16	7/10/18
TMP - Tasks		170	05-Jan-15	31-Aug-15	31-Aug-15	19-Jul-18	737			
C03E-3465015	TMP - Corridor Final Master Document Approval	0	05-Jan-15	05-Jan-15	14-Sep-15	14-Sep-15	179	VRAN	5/10/16	7/10/18
C03E-3469965	TMP - Task Force Follow-up Meeting	1	05-Mar-15*	05-Mar-15	19-Jul-18	19-Jul-18	863	VRAN	5/10/16	7/10/18
C03E-3468240	TMP - Document Approved - WIS 441 Mainline (Appleton Rd - Project Limits)	1	31-Aug-15*	31-Aug-15	31-Aug-15	31-Aug-15	0	VRAN	5/10/16	7/10/18
Utilities		634	22-Oct-13 A	19-Apr-16	26-Jan-15	10-May-16	15			
C03E-3445840	Utilities Prepare Work Plans - WIS 441 Mainline (Appleton Rd - Project Limits)	120	22-Oct-13 A	20-Feb-15	26-Jan-15	13-Mar-15	15	VRAN	5/10/16	7/10/18
C03E-3445920	Work Plan Review & Revisions - WIS 441 Mainline (Appleton Rd - Project Limits)	120	23-Feb-15	10-Aug-15	16-Mar-15	31-Aug-15	15	VRAN	5/10/16	7/10/18
C03E-3445945	Work Plan Acceptance Sent to Utilities - WIS 441 Mainline (Appleton Rd - Project Limits)	1	11-Aug-15	11-Aug-15	01-Sep-15	01-Sep-15	15	VRAN	5/10/16	7/10/18
C03E-3445950	Review & Approve Utility Agreements - WIS 441 Mainline (Appleton Rd - Project Limits)	50	12-Aug-15	21-Oct-15	08-Oct-15	18-Dec-15	40	VRAN	5/10/16	7/10/18
C03E-3445885	Start Work Notice Sent To Utilities - WIS 441 Mainline (Appleton Rd - Project Limits)	5	22-Oct-15	28-Oct-15	21-Dec-15	28-Dec-15	40	VRAN	5/10/16	7/10/18
C03E-3445890	Apply For Utility Work Permits - WIS 441 Mainline (Appleton Rd - Project Limits)	65	12-Aug-15	11-Nov-15	02-Sep-15	04-Dec-15	15	VRAN	5/10/16	7/10/18
C03E-3445955	Approve Utility Work Permits - WIS 441 Mainline (Appleton Rd - Project Limits)	15	12-Nov-15	04-Dec-15	07-Dec-15	28-Dec-15	15	VRAN	5/10/16	7/10/18
C03E-3445880	Relocate Utilities - WIS 441 Mainline (Appleton Rd - Project Limits)	95	07-Dec-15	19-Apr-16*	29-Dec-15	10-May-16	15	VRAN	5/10/16	7/10/18
Workshops, Local Agency, PIM & General Meetings		129	25-Mar-15	23-Sep-15	25-Mar-15	19-Jul-18	721			
C03E-3459780	Public Informational Meeting	1	25-Mar-15*	25-Mar-15	25-Mar-15	25-Mar-15	0	VRAN	5/10/16	7/10/18
C03E-3460585	Landscaping Outreach Meeting	1	01-Jun-15*	01-Jun-15	28-Mar-18	28-Mar-18	721	VRAN	5/10/16	7/10/18
C03E-3460590	Landscaping Outreach Meeting - Final Comments	1	23-Sep-15	23-Sep-15	19-Jul-18	19-Jul-18	721	VRAN	5/10/16	7/10/18



WIS 441 Design Delivery Schedule
Revised 12/23/14

Project ID	Description	Draft PS&E (Shelf Date)	Earliest PS&E	PS&E Final	Earliest Let	Program Let	Construction Start	Construction Finish
1517-07-72	US 41 Interchange Grading	12/2/2013		2/1/2014		5/13/2014	6/23/2014	9/22/2015
1517-07-82	Rubbert Wetland Mitigation Site Phase 3	12/2/2013		2/1/2014		5/13/2014	7/21/2014	10/3/2014
1517-07-76	Little Lake Butte des Morts Bridge B-70-403	3/1/2014		5/1/2014		8/12/2014	9/22/2014	11/1/2016
1517-75-82	Midway Rd TMP			8/1/2014		2/10/2015	4/1/2015	12/31/2018
1517-75-71	Racine Rd Interchange Early Fill	9/1/2014		11/1/2014		3/10/2015	4/16/2015	8/31/2015
1517-75-78	Appleton Rd (STH 47) Intchg	9/1/2014		11/1/2014		3/10/2015	4/20/2015	7/21/2015
1517-75-81	Vermillion Street	9/1/2014		11/1/2014		3/10/2015	6/1/2015	6/30/2015
1517-07-83	Neenah Wetland Mitigation Site	12/1/2014	2/1/2015	2/1/2015	5/12/2015	7/14/2015	9/1/2015	10/15/2015
1517-75-75	Racine Rd (CTH P) Intchg	12/1/2014	2/1/2015	2/1/2015	5/12/2015	7/14/2015	8/23/2015	11/7/2016
1517-07-79	US 41 Interchange B-70-400 & US 10 EB Grading/Paving	12/1/2014	2/1/2015	2/1/2015	5/12/2015	7/14/2015	9/9/2015	11/1/2016
1517-75-76	Racine Rd (CTH P)	9/1/2015		11/1/2015		3/8/2016	5/1/2016	8/15/2016
1517-07-77	US 41 Interchange Bridges and LLBDM B-70-61 Redecking	12/1/2015	2/1/2016	2/1/2016	5/10/2016	7/12/2016	8/23/2016	11/15/2018
1517-75-79	Oneida St (US 10) Intchg	12/1/2015	2/1/2016	8/1/2016	5/10/2016	2/14/2017	3/28/2017	11/15/2018
1517-07-78	US 10/STH 441 Mainline (LLBDM - Tayco St)	12/1/2016		2/1/2017		5/9/2017	4/15/2018	9/1/2018
1517-07-74	US 41 SB (STH 441 - CTH II)	6/1/2015	8/1/2015	2/1/2017	2/9/2016	7/11/2017	8/22/2017	8/22/2018
1517-07-75	US 41 NB (STH 441 - CTH II)	6/1/2015	8/1/2015	2/1/2017	2/9/2016	7/11/2017	8/22/2017	8/22/2018
1517-07-71	US 10 Mainline (Coldspring Rd - US 41)	12/1/2015	2/1/2016	2/1/2017	5/10/2016	7/11/2017	8/22/2017	7/1/2018
1517-07-80	US 41 Interchange Ramps	12/1/2015	2/1/2016	2/1/2017	5/10/2016	7/11/2017	8/22/2017	11/15/2018
1517-75-80	TMP Projects and Local Haul Road Repair	12/1/2016		2/1/2017		7/11/2017		
1517-75-77	Midway Rd (CTH AP) Intchg	6/1/2017		8/1/2017		2/13/2018	5/1/2018	8/22/2018
1517-75-72	US 10/STH 441 Mainline (Racine Rd - Appleton Rd)	12/1/2016	2/1/2017	2/1/2018	5/9/2017	7/10/2018	8/21/2018	8/22/2019
~~1517-75-73~~	~~US 10/STH 441 Mainline (Appleton Rd - Oneida St)~~	~~12/1/2015~~	~~2/1/2016~~	~~2/1/2018~~	~~5/10/2016~~	~~7/10/2018~~	~~8/21/2018~~	~~11/15/2019~~
1517-75-74	STH 441 Mainline (Appleton Rd - Project Limits)	12/1/2015	2/1/2016	2/1/2018	5/10/2016	7/10/2018	8/21/2018	11/15/2019



This report is intended for INTERNAL WisDOT USE ONLY as a source of information on the progress and workings of the WIS 441 Project.
**Changes shown may not coincide with existing DOT tracking databases as a result of the dynamic nature of this report.

Red indicates project deliverable dates that have advanced since 10/02/14
Orange indicates changes modified more than once since 10/02/14
Yellow indicates all other changes that have occurred since 10/02/14
Grey indicates projects that have been Let
WisDOT Design
Tri-County Partners (Consultant) Design

Possible Early Construction

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Conceptual packaging options

Funding	Option [1]	Scope	Estimated cost				Risks	Benefits	Highest Priority
			Roadway Construction [2]	Utilities	Real Estate	Total			
$25 Million	A	Racine Road connects to existing ramps (includes temporary Racine Road to build roundabout) Racine Road at Midway Road Valley Road at Oneida Street	$7.0 Million	$1.5 Million	$1.1 Million	$9.6 Million	ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates	Could be constructed with Appleton Road Interchange and mainline Will help congestion when mainline or interchanges are constructed	4
	B	WIS 441 mainline Appleton - Oneida Appleton Road Interchange	$18.0 Million	$0.2 Million	$0.2 Million	$18.4 Million	Geotech evaluation in progress ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates	Could be constructed with Racine Road reconstruction Least amount of ROW of interchanges Will help congestion when Oneida Street is constructed	5
	C	System Interchange early structure / early fill (including B-70-402/406/407/409,C-70-42/43/54, retaining walls)	$13.5 Million	$1.0 Million	$0.0 Million	$14.5 Million	Railroad coordination not complete Geotech not complete Minor utility relocates	Allows more time for soil settlement. Allows construction outside of traffic areas, reducing overall disruption to traffic during full system reconstruct. Can be broken into smaller packages	2
	D	Oneida Street at Midway Road	$1.0 Million	$0.1 Million	$0.5 Million	$1.6 Million	ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates	Will help congestion when mainline or interchanges are constructed	
	E	Racine Road interchange early structure, early fill	$6.0 Million	$0.1 Million	$10.0 Million	$16.1 Million	ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates	Allows time for settlement	3
	F	Widening of US 10 structure over Cold Spring Road.; building temporary cross-over	$2.5 Million	$0.1 Million	$0.1 Million	$2.7 Million	ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates	Provides for advanced preparation of west end of project for system interchange construction	
	G	US 41 and US 10/WIS 441 system ramp east to north movement ditch and ramp along railroad US 41 Aux lane north of US 10/WIS 441 system ramp east to north movement	$2.0 Million	$0.1 Million	$0.1 Million	$2.2 Million	Railroad coordination not complete Utilities require relocation/minor Utility relocates	Allows ditch construction to improve drainage for future phases Drainage complete for NE quad of system interchange	
$50 Million	H	WIS 441 mainline Racine - Appleton Midway Road Interchange	$30.5 Million	$1.0 Million	$27.5 Million	$59.0 Million	Geotech evaluation in progress ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates		
	I	Remaining Tayco -Racine Road & Racine Rd Interchange	$24.0 Million	$1.0 Million	$10.0 Million	$35.0 Million	Geotech evaluation in progress ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates		
	J	WIS 441 mainline Oneida - project limits Oneida Street Interchange	$37.0 Million	$1.5 Million	$11.0 Million	$49.5 Million	Geotech evaluation in progress ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates		
	K	New eastbound LLBDM and as much of the abutment fills as possible	$55.0 Million	$0.0 Million	$0.0 Million	$55.0 Million	Geotech evaluation in progress	**CRITICAL PATH ITEM FOR CORRIDOR** Adjacent stages can start sooner due to structure being complete, Allows time for soil settlement	1
	L	Rehabilitation of existing LLBDM bridge	$40.0 Million	$0.0 Million	$0.0 Million	$40.0 Million	Geotech evaluation in progress		
$75 Million	M	Combines options B & K	$75.0 Million	$0.2 Million	$0.2 Million	$75.4 Million	Geotech evaluation in progress	Completes the critical path item and also completes the interchange with the least conflicts. Also completing the Appleton Interchange allows the Oneida Interchange to be constructed as it cannot be completed until Appleton is done.	
	N	Remaining System Interchange work	$60.6 Million	$0.7 Million	$4.6 Million	$65.9 Million	Geotech evaluation in progress ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates		
$100 Million	O	Includes option J plus Racine Road Interchange WIS 441 mainline LLBDM - Racine Road	$85.0 Million	$0.1 Million	$10.0 Million	$95.1 Million	Geotech evaluation in progress ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates	Connectivity makes a lot of sense	
	P	Combines options C, E & K	$74.5 Million	$1.1 Million	$10.0 Million	$85.6 Million	Geotech evaluation in progress ROW clear/strip acquisitions taking required Utilities require relocation/minor utility relocates	Allows time for soil settlement	

[1] Many of the small projects can be combined to form larger contract packages

[2] Does not include delivery costs

WIS 441 Tri-County Project Corridor Manual

Section 2b: NER and Consultant Contact List

Chapter Contact: Mike Beurket

Issued: February 14, 2012
Revised: March 8, 2012
April 2, 2012
May 15, 2012
June 15, 2012
July 13, 2012
August 15, 2012
October 19, 2012
December 17, 2012
July 15, 2013

Scope/Purpose

This chapter section provides the Master Contact List for WIS 441 Tri-County Project. The attached list is subject to change. Please see the FTP site for the most current version.

ftp://ftp5.graef-usa.com/WIS441PROJECT/PROGRAMCONTROLS/ADMINISTRATION/

Attachments

- Master Contact List WI 441 (Dated 06-28-13)

First Name	Last Name	Address	Phone Number	Cell Phone	Email	Primary Role	Segment
Becher Hoppe							
Dan	Gerling	330 Fourth Street PO Box 8000 Wausau, WI 54402 -8000	715-845-8000		dgerling@becherhoppe.com	Utility Coordination	WIS 441
Josh	Gerritts	330 Fourth Street PO Box 8000 Wausau, WI 54402 -8000	715-845-8000 ext. 308		jgerritts@becherhoppe.com	Utility Coordination	WIS 441
Michael	Kowal	330 Fourth Street PO Box 8000 Wausau, WI 54402 -8000	715-845-8000		mkowal@becherhoppe.com	Utility Coordination	WIS 441
Todd	McDonald	330 Fourth Street PO Box 8000 Wausau, WI 54402 -8000	715-845-8000		tmcdonald@becherhoppe.com	Utility Coordination	WIS 441
COE							
Ann	Nye	Old Fort Square 211 N. Broadway, Suite 221 Green Bay, WI 54303	920-448-2824		ann.m.nye@usace.army.mil	US Army COE Project Manager	WIS 441
Helen Dixon & Company, Inc.							
Ashley	Dercks	1940 West Mason Street Green Bay, WI 54303	920-492-2202		ashley.dercks@dixonandcompanyinc.com	Public Outreach	WIS 441
Melissa	Kok	1940 West Mason Street Green Bay, WI 54303	920-492-2237		melissa.kok@dixonandcompanyinc.com	Public Outreach	WIS 441
DNR							
Bobbi Jo	Fischer	427 East Tower Drive, Suite 100 Wautoma, WI	920-787-4686		bobbi.fischer@wisconsin.gov	Environmental Analysis & Review Specialist	All
Julie	Widholm	DNR Service Center 141 NW Barstow Room 180 Waukesha, WI 53188	262-574-2112		julie.widholm@wisconsin.gov	WNDR Transportation Liason	WIS 441
Edwards Engineering Consultants							
Marc	Hilliard	7665 N. Port Washington Road Suite 103 Milwaukee, WI 53217-3175	414-228-8998		mhilliard@eecllc.com		All
Darius	Wright	7665 N. Port Washington Road Suite 103 Milwaukee, WI 53217-3175	414-228-8998	414-324-8027	dwright@eecllc.com		All
FHWA							
Tracey	Blankenship	City Center West 525 Junction Road, Ste. 8000 Madison, WI 53718	608-829-7510	608-695-1734	tracey.blankenship@dot.gov	Federal Oversight	All
GESTRA							
M. Masud	Alam	1626 W. Fond du Lac Avenue Milwaukee, WI 53205	414-933-7444		malam@gestrainc.com	Geotechnical	WIS 441
Doug	Bath	1626 W. Fond du Lac Avenue Milwaukee, WI 53205	414-933-7444		dbath@gestrainc.com	Geotechnical	WIS 441
Douglas	Dettmers	1626 W. Fond du Lac Avenue Milwaukee, WI 53205	414-933-7444 x-13		douglas.dettmers@gestrainc.com	Geotechnical	ALL
HNTB							
Mark	Becherer	11414 W. Park Place, Suite 300 Milwaukee, WI 53224	414-410-6772	414-559-8900	mbecherer@hntb.com		WIS 441
Adam	Clayton	1940 West Mason Street Green Bay, WI 54303	920-492-7374	608-512-9983	aclayton@hntb.com		WIS 441
TJ	Dougherty	11414 W. Park Place, Suite 300 Milwaukee, WI 53224	414-359-2300		tjdougherty@hntb.com	Project Manager	WIS 441
Brian	Foley	11414 W. Park Place, Suite 300 Milwaukee, WI 53224	414-410-6751	414-758-1481	Bfoley@HNTB.com	Public Involvement	WIS 441
John	Jaeckel	11415 W. Park Place, Suite 300 Milwaukee, WI 53224	414-410-6837		jjackel@hntb.com	Noisewalls	WIS 441
Thomas	Kindschi	11414 W. Park Place, Suite 300 Milwaukee, WI 53224	414-410-6728		tkindschi@hntb.com	CSD	All
Todd	Sanders	1940 West Mason Street Green Bay, WI 54303	920-492-2238		todd.sanders@dot.wi.gov		WIS 441

First Name	Last Name	Address	Phone Number	Cell Phone	Email	Primary Role	Segment
Jerry	Shadewald	10 West Mifflin Street, Suite 300 Madison, WI 53703	608-294-5009		jshadewald@HNTB.com	TMP/Traffic	WIS 441
Carolyn	Stuessy	11415 W. Park Place, Suite 300 Milwaukee, WI 53224	414-410-6771		cstuessy@hntb.com	CSD	ALL
Anna	Varney	11414 W. Park Place, Suite 300 Milwaukee, WI 53224	414-410-6856		Avarney@HNTB.com	Sr. Project Manager, Corridor	WIS 441
HVS Advertising and Marketing							
Sam	Hutchison	2021 S. Webster Avenue Green Bay, WI 54301-2257	920-430-5131 x 224		sam@hvsproductions.com	Public Outreach	All
Lisa	Magnin	2021 S. Webster Avenue Green Bay, WI 54301-2257	920-430-5131 x 222	920-660-9391	lisa@hvsproductions.com	Public Outreach	All
JT Engineering							
Andy	Block	1880 Velp Avenue Green Bay, WI 54303	920-468-4771	920-606-6642	andyblock@jt-engineering.com	Road Designer	All
Kapur							
Justin	Arndt	7711 N. Port Washington Road Milwaukee, WI 53217	414-751-7233		jarndt@kapur-assoc.com	Project Engineer	WIS 441
Shannon	Connolly	7711 N. Port Washington Road Milwaukee, WI 53217	414-751-7239		sconnolly@kapur-assoc.com	Road Designer	Wis 441
Prasad	Narayan	7711 N. Port Washington Road Milwaukee, WI 53217	414-751-7228	414-254-5653	prasad@kapur-assoc.com	Project Manager	Wis 441
K Singh and Associates							
Mac	Malas	3636 North 124th Street Wauwatosa, WI 53222	262-821-1171 x119	414-350-7646	mmalas@ksaconsultants.com	Landscape Design/ Structures and Rodway Design Support	WIS 441
Tony	Castle	3636 North 124th Street Wauwatosa, WI 53222	262-821-1171 x116		tcastle@ksaconsultants.com	Landscape Design/ Structures and Rodway Design Support	WIS 441
Nick	Decent	3636 North 124th Street Wauwatosa, WI 53222	262-821-1171 x122		ndecent@ksaconsultants.com	Landscape Design/ Structures and Rodway Design Support	WIS 441
KW2							
Jack	Ferreri	5201 Old Middleton Road Madison, WI 53705	608-232-2300		jferreri@kw2ideas.com	Public Communication	All
Lakeside Engineering							
Bao	Tran	16745 W. Bluemound Road Suite 140 Brookfield, WI 53005	262-789-8200	(262) 395-3615	Bao.tran@lakesideengineers.com	Traffic/Roadway Design Support	All
NCG							
Paul	Silvestri	635 Chaparral Circle PO Box 2890 Napa, CA 94558-0537			jpaulsilvestri@aol.com		WIS 441
Bill	Womack	158 Main Street Medway, MA 02053	508-295-1718	508-380-5049	bwocons@aol.com		WIS 441
Ourston							
Kevin	Kuhlow	5325 Wall Street, Suite 2305 Madison, WI 53718	608-249-1056 x208		kkuhlow@ourston.com	Roundabout Designer	WIS 441
Mark	Lenters	5325 Wall Street, Suite 2305 Madison, WI 53718	608-249-4545	608-886-6747	mlenters@ourston.com		WIS 441
Patrick Engineering							
Rowland	Hoslet	480 Pilgrim Way, Suite 1250 Ashwaubenon, WI 54304	920-321-2350	920-857-6304	rhoslet@patrickco.com	Utility Coordination	WIS 441

First Name	Last Name	Address	Phone Number	Cell Phone	Email	Primary Role	Segment
Bryan	Swanson	480 Pilgrim Way, Suite 1250 Ashwaubenon, WI 54304	920-321-2365		bswanson@patrickco.com	Utility Coordination	WIS 441
Spann and Associates							
Bruce	Spann	W175 N11086 Stonewood Drive Suite B Germantown, WI 53022-6509	262-255-8190		bspann@spannllc.com		All
Soil & Engineering Services, Inc.							
Duane E.	Reichel, P.E.	1102 Stewart Street Madison, WI 53713-4648	(608) 274-7600		duane@soils.ws	Geotechnical	WIS 441
URS							
Mike	Arnold	6737 W. Washington Street, Ste 2265 Milwaukee, WI 53214	414-831-4179		mike.arnold@urs.com	Structure Designer	WIS 441
Nick	Becker	6737 W. Washington Street, Ste 2265 Milwaukee, WI 53214	414-831-4122		nick.becker@urs.com	Lead Roadway Designer	WIS 441
Michael	Beurket	1940 West Mason Street Green Bay, WI 54303	920-492-2216		michael.beurket@dot.wi.gov	Program Controls	WIS 441
Jeff	Dohlby	6737 W. Washington Street, Ste 2265 Milwaukee, WI 53214	414-227-1702	414-234-9620	jeff.dohlby@urs.com	Program CM Leader	All
Robert	Fieldbinder	6737 W. Washington Street, Ste 2265 Milwaukee, WI 53214	414-831-4129	414-306-4597	robert.fieldbinder@urs.com	Program Manager	WIS 441
Matthew	Letourneau	100 South Wacker Drive, Ste 500 Chicago, IL 60606-4014	312-577-6489	773-209-7173	matthew.letourneau@urs.com	ITS	WIS 441
Kim	McCosky	1940 West Mason Street Green Bay, WI 54303	920-492-4179		kim.mccosky@dot.wi.gov	Program Scheduler	All
Amanda	McNichols	1940 West Mason Street Green Bay, WI 54303	920-492-2257		amanda.mcnichols@dot.wi.gov	FIIPS Coordinator	WIS 441
Lynn	Warpinski	1940 West Mason Street Green Bay, WI 54303	920-492-2256		lynn.warpinski@dot.wi.gov	Program Controls Administrator	All
Donald	Yetter	6737 W. Washington Street, Ste 2265 Milwaukee, WI 53214	414-831-4198		donald.yetter@urs.com	Lead Structure Designer	WIS 441
Aaron	Zillmer	1940 West Mason Street Green Bay, WI 54303	920-492-7379		aaron.zillmer@dot.wi.gov	Program Controls Engineer	All
WisDOT - Central Office							
Aaron	Bonk	4802 Sheboygan Avenue 601 Madison, WI 53705	608-261-0261		aaron.bonk@dot.wi.gov	BOS	All
Jeff	Horsfall	3502 Kinsman Boulevard Madison, WI 53704	608-243-5993		jeff.horsfall@dot.wi.gov	Geotechnical - CO	All
Laura	Shadewald	4802 Sheboygan Avenue 601 Madison, WI 53705	608-267-9592		Laura.Shadewald@dot.wi.gov	BOS	All
Brian	Revello	4802 SHEBOYGAN AVE 651 MADISON WI 53705	608-266-2782		brian.revello@dot.wi.gov	Project Oversight - NE	All
Jay	Waldschmidt	4802 Sheboygan Avenue 601 Madison, WI 53705	608-267-9806		jay.waldschmidt@dot.wi.gov	Noise and Air Quality	All
US Coast Guard							
Blair	Stanifer	Ninth Coast Guard District 1240 E 9th St Cleveland, OH 44199-2060	216-902-6086		william.b.stanifer@uscg.mil	Bridge Management Specialist	All
WisDOT - NE Region							
Randy	Asman	944 Vanderperren Way Green Bay, WI 54304	920-492-7719	920-360-3107	randy.asman@dot.wi.gov	ITS	All
Tony	Allard	944 Vanderperren Way Green Bay, WI 54304	920-492-3510		anthony.allard@dot.wi.gov	Pavements	
Kathleen	Slattery	1940 West Mason Street Green Bay, WI 54303	920-492-2234		kathleen.slattery@dot.wi.gov	CSS Manager	WIS 441
Tom	Buchholz	1940 West Mason Street Green Bay, WI 54303	920-492-2221		tom.buchholz@dot.wi.gov		

First Name	Last Name	Address	Phone Number	Cell Phone	Email	Primary Role	Segment
Chad	DeGrave	1940 West Mason Street Green Bay, WI 54303	920-492-2235		chad.degrave@dot.wi.gov	US 41/WIS 441 Projects Group Design Supervisor	All
Andy	Devos	944 Vanderperren Way Green Bay, WI 54304	920-492-5995		andy.devos@dot.wi.gov	Utilities	All
Scott	Ebel	1940 West Mason Street Green Bay, WI 54303	920-492-2240		scott.ebel@dot.wi.gov	Project Manager	WIS 441
Mike	Frewerd	944 Vanderperren Way Green Bay, WI 54304	920-4925653		michael.frewerd@dot.wi.gov	Signing	All
Mike	Helmrick	944 Vanderperren Way Green Bay, WI 54304	920-492-7738	920-362-0721	michael.helmrick@dot.wi.gov	Environmental	All
Mark	Higley	1940 West Mason Street Green Bay, WI 54303	920-492-2220	920-366-8064	mark.higley@dot.wi.gov	Program and Policy - Advanced	All
Mike	King	1940 West Mason Street Green Bay, WI 54303	920-492-2244	920-366-1624	michael.king@dot.wi.gov	Construction Supervisor	All
Jared	Kinziger	944 Vanderperren Way Green Bay, WI 54304	920-492-7713		jared.kinziger@dot.wi.gov	Railroad	All
Tom	Kobus	944 Vanderperren Way Green Bay, WI 54304	920-492-0143		thomas.kobus@dot.wi.gov	Environmental-Stormwater	
Jennifer	McCartney-Grube	1940 West Mason Street Green Bay, WI 54303	920-492-2208	920-366-4750	jennifer.mccartneygrube@dot.wi.gov	Materials	All
Neil	Michaelson	944 Vanderperren Way Green Bay, WI 54304	920-492-7170		neil.michaelson@dot.wi.gov	Geotechnical	All
PF	O'Connor	944 Vanderperren Way Green Bay, WI 54304	920-492-5641		PF.oconnor@dot.wi.gov	Traffic Control	
Bruce	Enke	944 Vanderperren Way Green Bay, WI 54304	620-492-5659		bruce.enke@dot.wi.gov	Acting Real Estate Supervisor	
Barry	Paye	944 Vanderperren Way Green Bay, WI 54304	920-492-4116		barry.paye@dot.wi.gov	TSS Supervisor	All
Teresa	Rademacher	1940 West Mason Street Green Bay, WI 54303	920-492-2226	920-360-6273	teresa.rademacher@dot.wi.gov	Program Labor Compliance Officer	All
Marc	Roesler	1940 West Mason Street Green Bay, WI 54303	920-492-2252		marc.roesler@dot.wi.gov	Assistant Deputy Project Manager	All
Brian	Roper	1940 West Mason Street Green Bay, WI 54303	920-492-2255	920-369-8892	brian.roper@dot.wi.gov	Program Manager	All
Carolyn	Sampson	944 Vanderperren Way Green Bay, WI 54304	920-492-5695		carolyn.sampson@dot.wi.gov	Plats Coordinator	
Eric	Sikorski	1940 West Mason Street Green Bay, WI 54303	920-492-2236		Eric.sikorski@dot.wi.gov	Deputy Project Manager	WIS 441
Kim	Rudat	944 Vanderperren Way Green Bay, WI 54304	920-492-5743		kim.rudat@dot.wi.gov	Public Involvement/Public Relations	All
Bob	Schuurmans	944 Vanderperren Way Green Bay, WI 54304	920-492-5710	920-360-4749	robert.schuurmans@dot.wi.gov	Lighting	All
Curt	Van Erem	944 Vanderperren Way Green Bay, WI 54304	920-492-5742		curtis.vanerem@dot.wi.gov	Real Estate Coordinator	
Geoff	Williams	1940 West Mason Street Green Bay, WI 54303	920-492-7377		geoffrey.williams@dot.wi.gov	Program Cost Controls Engineer	All
US Fish and Wildlife Service							
Pete	Fasbender	2661 Scott Tower Drive New Franken, WI 54229	(920) 866-1725		Peter_fasbender@fws.gov	Field Supervisor	All

WIS 441 Tri-County Project Corridor Manual

Section 2c: SPV Naming/Numbering

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: July 15, 2014

Scope/Purpose

This chapter section provides the Category and SPV naming/numbering convention to be used for the WIS 441 Tri-County Project.

Attachments

- WIS 441 Category and SPV Assignment (Dated 7-15-14)

PROJECT CATEGORY LIST

PROJECT CATEGORY NO.	CATEGORY DESCRIPTION	DESCRIPTION FOR INFORMATION ONLY	TYPICAL FUNDING (TO BE CONFIRMED FOR EACH PROJECT)
1000	ROADWAY ITEMS	General Freeway and Roadway Items	80% Federal/20% State
1010 - 1090	***Reserved for future use***	These are reserved for roadway type items that may have varying cost share or different funding sources (examples: barrier funded with HSIP funding, new sidewalk at a cost share of 80/20, etc…)	TBD
1100 - 1190	LIGHTING		80% Federal/20% State
1200 - 1290	FTMS/ITS		80% Federal/20% State
1300 - 1390	TRAFFIC SIGNALS		80% Federal/20% State (DOT Signals); Local Signals may be placed in 1600 if 100% local cost
1400 - 1490	COMMUNITY SENSITVE DESIGN	Roundabout Plantings, etc.	80% Federal/20% State
1500 - 1590	IRRIGATION	Roundabout irrigation or other locations as identified	100% State, capped at $5,000
1600 - 1690	LOCAL/NON-PARTICIPATING	These are for an items which are paid for at 100% Local	100% Local
1700 - 1790	UTILITIES	These are for any utilities which may require cost share of 90/10, etc.	90% Federal/10% Local
1800 - 1890	100% STATE FUNDED ITEMS	Speed trailer items or other items which must be funded with 100% State funds	100% State
1900 - 1990	***Reserved for future use***		
2000 - 2990	STRUCTURES - BRIDGES		80% Federal/20% State
3000 - 3990	STRUCTURES - BOX CULVERTS		80% Federal/20% State
4000 - 4990	STRUCTURES - RETAINING WALLS		80% Federal/20% State
5000 - 5990	STRUCTURES - NOISE BARRIERS		80% Federal/20% State
6000 - 6990	STRUCTURES - SIGN BRIDGES		80% Federal/20% State
7000 - 7990	***Reserved for future use***		
8000 - 8990	***Reserved for future use***		
9000 - 9990	***Reserved for future use***		

NOTES:

CATEGORY NUMBERING SHALL INCREMENT BY 10 IF POSSIBLE

CONFIRM FUNDING PERCENTAGES WITH THE REGION PM PRIOR TO ENTERING INTO TRANSPORT

SPV ASSIGNMENTS

SPV Number Ranges by Work Type

ITEM DESCRIPTION		FROM		TO
Roadway	SPV.XXX	0.001	-	0.099
Storm Sewer	SPV.XXX	0.100	-	0.149
Erosion Control	SPV.XXX	0.150	-	0.199
Traffic Control	SPV.XXX	0.200	-	0.249
Permanent Signing	SPV.XXX	0.250	-	0.299
Permanent Marking	SPV.XXX	0.300	-	0.349
Lighting	SPV.XXX	0.350	-	0.399
ITS/FTMS	SPV.XXX	0.400	-	0.449
Traffic Signals	SPV.XXX	0.450	-	0.499
CSD	SPV.XXX	0.500	-	0.549
Irrigation	SPV.XXX	0.550	-	0.599
Local/Non-Participating	SPV.XXX	0.600	-	0.649
Utilities	SPV.XXX	0.650	-	0.699
Bridges	SPV.XXX	0.700	-	0.799
Box Culverts	SPV.XXX	0.800	-	0.849
Retaining Walls	SPV.XXX	0.850	-	0.899
Noise Barriers	SPV.XXX	0.900	-	0.949
Sign Bridges	SPV.XXX	0.950	-	0.999

NOTES:

a) like bid items should have same name and supplemental description number

b) supplemental description numbers cannot overlap when PSE includes more than one plan set.

Trans*Port Nonstandard Item Numbers

SPV.0005	ACRE	Acre
SPV.0010	AD	Arrow Day
SPV.0015	BBL	Barrel
SPV.0000	BD	Board Day
SPV.0025	CF	Cubic Foot
SPV.0030	CWT	Hundredweight
SPV.0035	CY	Cubic Yard
SPV.0040	CYMI	Cubic Yard Mile
SPV.0045	DAY	Day
SPV.0050	DD	Drum Day
SPV.0055	DOL	Dollar
SPV.0060	EACH	Each
SPV.0065	FA	Fuel Cost Adjustment
SPV.0070	GAL	Gallon
SPV.0075	HRS	Hours
SPV.0080	ID	Inch Diameter
SPV.0085	LB	Pound
SPV.0090	LF	Linear Foot
SPV.0095	LM	Linear Mile
SPV.0100	LOT	Lot
SPV.0105	LS	Lump Sum

SPV.0110	MBM	1000 Foot Board Measure
SPV.0120	MGAL	1000 Gallon Unit
SPV.0125	MI	Mile
SPV.0130	MKFT	Board Foot
SPV.0135	MON	Month
SPV.0140	NONE	None
SPV.0145	OZ	Ounce
SPV.0150	PD	Person Day
SPV.0155	SACK	Sack
SPV.0160	SD	Sign Day
SPV.0165	SF	Square Foot
SPV.0170	STA	Station
SPV.0175	STYD	Station Yard
SPV.0180	SY	Square Yard
SPV.0185	TD	Ton Day
SPV.0190	TM	Ton Mile
SPV.0195	TON	Ton
SPV.0200	VF	Vertical Feet
SPV.0205	WD	Working Day
SPV.0210	WEEK	Week
SPV.0215	YDMI	Yard Mile

WIS 441 Tri-County Project Corridor Manual
Section 2d: Project Limits/IDs

Chapter Contact: Mike Beurket

Issued: February 14, 2012
Revised:

Scope/Purpose
This chapter section provides a Project ID list and Project Overview map for the WIS 441 Tri-County Project. The attached list and map are subject to change. Please see the FTP site for the most current versions.

Add link for location on FTP site

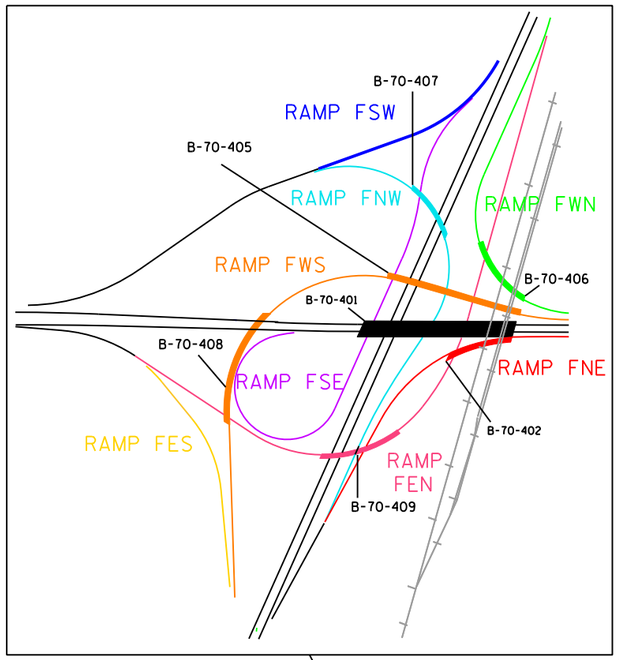
Attachments
- Tri-County Project ID list (Dated 7-15-11)
- WIS441 Project Overview map (Dated 2-02-12)

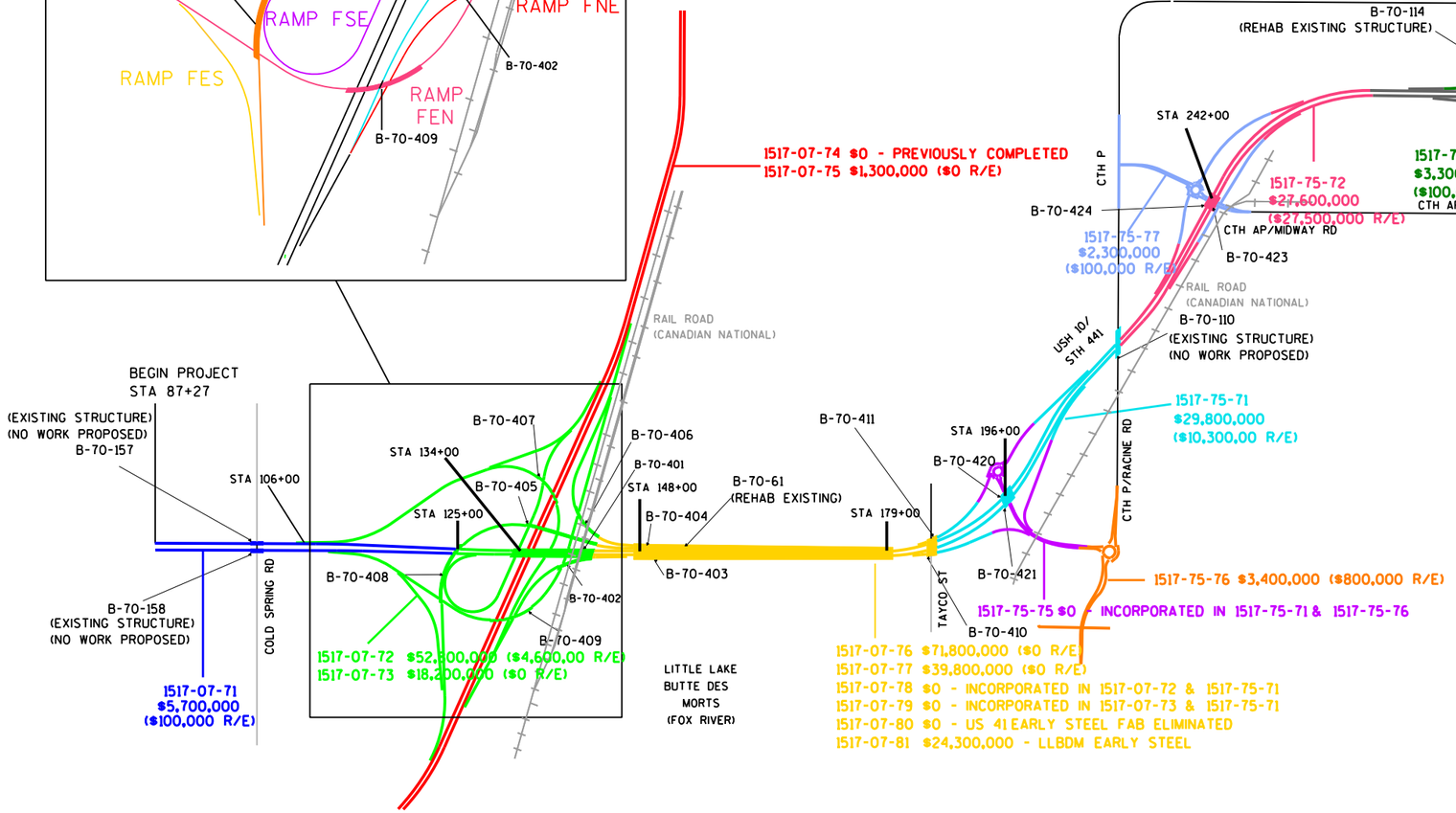
TRI-COUNTY PROJECT IDS

Project ID	Project Title
1517-07-00	USH 10 - USH 41 - STH 441 Interchange
1517-07-01	CTH CB - STH 441/Oneida St
1517-07-02	CTH CB - STH 441/Oneida St Intch & Ramp
1517-07-04	USH 41 - Oneida St Design
1517-07-10	USH 41 - Oneida St Construction Corridor Tasks
1517-07-21	US 10/STH 441 Real Estate
1517-07-22	US 10/STH 441 Early Acquisitions
1517-07-40	US 10/STH 441 UTL Placeholder
1517-07-41	US 10/STH 441 UTL Placeholder
1517-07-71	US 10 Mainline (Coldspring Rd - US 41)
1517-07-72	US 41 Interchange Phase 1
1517-07-73	US 41 Interchange Phase 2
1517-07-74	US 41 Mainline Phase 1
1517-07-75	US 41 Mainline Phase 2
1517-07-76	Little Lake Butte des Morts Structure Phase 1
1517-07-77	Little Lake Butte des Morts Structure Phase 2
1517-07-78	US 10/STH 441 Mainline (LLBDM - Tayco St) Phase 1
1517-07-79	US 10/STH 441 Mainline (LLBDM - Tayco St) Phase 2
1517-07-80	US 41 Interchange Early Steel Fabrication
1517-07-81	Little Lake Butte des Morts Early Steel Fabrication
1517-07-90	Law Enforcement Mitigation
1517-07-91	Law Enforcement Mitigation
1517-75-71	US 10/STH 441 Mainline (Tayco St - Racine Rd)
1517-75-72	US 10/STH 441 Mainline (Racine Rd - Appleton Rd)
1517-75-73	US 10/STH 441 Mainline (Appleton Rd - Oneida St)
1517-75-74	STH 441 Mainline (Oneida St - Project Limits)
1517-75-75	Racine Rd (CTH P) Intchg
1517-75-76	Racine Rd Reconstruction
1517-75-77	Midway Rd (CTH AP) Intchg
1517-75-78	Appleton Rd (STH 47) Intchg
1517-75-79	Oneida St (US 10) Intchg

KEY

1517-07-04	Initialized Project or "Pending"
1517-07-00	Open - Authorized for Charges
1517-07-01	Closed Except for Journal Voucher or "Inactive"





WIS 441 PROJECT OVERVIEW

WIS 441 Tri-County Project Corridor Manual

Section 2e: Public Interest Findings

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: September 16, 2013

Scope/Purpose

The following is a draft list of potential Public Interest Finding items needed for 10/441:

1. Municipal controlled lighting
2. Irrigation items for roundabouts
3. SCI crash cushions
4. Specific municipal utility items that may be constructed as part of the project

This chapter section documents the following Public Interest Findings which have been approved for the WIS 441 Tri-County Project and are included as attachments:

- Vacant

Attachments

- Vacant

WIS 441 Tri-County Project Corridor Manual
Section 2f: Fencing

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: December 16, 2013

Scope/Purpose
This chapter section documents the fencing policy established for the WIS 441 Tri-County Project.

General
Fencing plans for the first System Interchange projects will be part of the 1517-07-76 contract package (11/16/13 Design/Corridor Meeting)

Attachments
- Vacant

WIS 441 Tri-County Project Corridor Manual
Section 2g: Signing

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised:

Scope/Purpose
This chapter section documents the signing policy established for the WIS 441 Tri-County Project.

Attachments
- Vacant

WIS 441 Tri-County Project Corridor Manual
Section 2h: Maintenance Crossovers

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised:

Scope/Purpose
This chapter section documents the maintenance crossovers established for the WIS 441 Tri-County Project.

Attachments
- Vacant

WIS 441 Tri-County Project Corridor Manual

Section 2i: Crash Investigation Sites

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: January 15, 2013

Scope/Purpose

This chapter section documents the crash investigation site locations for the WIS 441 Tri-County Project.

General

Crash investigation site locations have been determined according to the attachment WIS 441 ITS Crash Investigation Sites (Dated 1/7/13) (Scott Ebel/Randy Asman concurrence e-mail of 1/8/13).

Attachments

- WIS 441 ITS Crash Investigation Sites (Dated 1/7/13)

Technical Memorandum

Date: January 7, 2013

To: Scott Ebel, PE – WisDOT Northeast Region
Randy Asman, PE – WisDOT Northeast Region

From: Nicholas Becker, PE – URS

Project ID: **1517-07-04**

Project: **WIS 441 Tri-County Expansion**
Winnebago County

Subject: **Crash Investigation Sites**

Purpose

This memorandum summarizes the potential for crash investigation sites (CIS) along the US 41/WIS 441 corridor. A summary for each location is provided below with recommendations.

County II Interchange

NB Exit Ramp – No proposed improvements are planned for this ramp; however, a CIS could be included at this location with minimal impact (grading & guardrail). Current Northeast region preference is to not add a CIS at this time. Therefore, a CIS will not be included in plans. If the CIS was built, it would cost approximately $30,000.

SB Exit Ramp – A CIS is not desirable at this location due to a significant retaining wall required, fee taking and utility relocations. Therefore, a CIS will not be included in plans.

Racine Rd Interchange

NB Exit Ramp – a CIS on the right side of the ramp is not desirable considering the limited sight distance to the railroad crossing and the proximity to a storm water pond; however, a CIS could be added to the left between the ramp and mainline WIS 441. A **CIS will be included in plans**. Due to the reconstruction of the ramps, the addition of a CIS will cost approximately $28,350.

SB Exit Ramp – a CIS on the right side of the ramp is not desirable due to a storm water pond; however, a CIS could be added to the left between the ramp and mainline WIS 441. **A CIS will be included in plans**. Due to the reconstruction of the ramps, the addition of a CIS will cost approximately $28,350.

Midway Rd Interchange

NB Exit Ramp – Real estate constraints with the location of the railroad tracks on the outside of the ramp and limited space on the inside of the ramp adjacent to the WIS 441 mainline preclude providing a CIS at this location. Therefore, a CIS will not be included in the plans. In addition, with the proposed CIS locations at Racine Road Interchange and Appleton Road Interchange, enough CIS coverage is provided within the projects limits.

SB Exit Ramp – a CIS on the onside of the ramp adjacent to the storm water management pond without impacting it is possible; however, with the proposed CIS locations at Racine Road Interchange and Appleton Road Interchange, enough CIS coverage is provided within the projects limits.

Appleton Rd Interchange

NB Exit Ramp – With minimal impacts such as grading and guardrail a CIS could be included at this location. **A CIS will be included in plans**. Due to the reconstruction of the ramps, the addition of a CIS will cost approximately $30,000.

SB Exit Ramp – With minimal impacts such as grading and guardrail a CIS could be included at this location. **A CIS will be included in plans**. Due to the reconstruction of the ramps, the addition of a CIS will cost approximately $29,000.

Oneida St Interchange

NB Exit Ramp – Real estate constraints with the location of existing noise walls required possible parcel strip acquisition, significant noise wall reconstruction, retaining wall construction and drainage impacts make an CIS undesirable at this location. Therefore, a CIS will not be included in plans.

SB Exit Ramp – Real estate constraints with the location of existing noise walls required possible parcel strip acquisition, significant noise wall reconstruction, retaining wall construction and drainage impacts make an CIS undesirable at this location. Therefore, a CIS will not be included in plans.

WIS 441 Tri-County Project Corridor Manual
Section 2j: Law Enforcement Pads

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: August 15, 2013
October 15, 2013

Scope/Purpose
This chapter section documents the law enforcement pad locations for the WIS 441 Tri-County Project.

Attachments
- Tech Memo #2 (Stage 2) Law Enforcement Pads (Dated 10-03-13)

KAPUR & ASSOCIATES, INC.
CONSULTING ENGINEERS

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Technical Memorandum

Date:	**August 12, 2013**
	Updated September 6, 2013
	Updated October 3, 2013
To:	**Scott Ebel, PE, Project Manager, WisDOT NER**
	Randy Asman, PE, WisDOT NER
From:	**Justin Arndt – Kapur & Associates**
Project ID:	**1517-07-04 (Stage 2)**
Project:	**WIS 441**
	Winnebago County
Subject:	**WIS 441 Law Enforcement Ride-Along Summary**
	Technical Memorandum 2

On May 9, 2013, Scott Ebel and Randy Asman did a ride-along with Sgt. Tim McGrath, Lt. Tim Seaver & Lt. Steve Diedrich of the Wisconsin State Patrol. During the ride-along, Several requests were made to enhance law enforcement opportunities on the WIS 441 Tri-county Freeway Project. Below is a list of the requests, and an explanation of feasibility to accommodate the request. Numbers correspond to the map graphics in the original request and is located at the end of this memo.

#1 – Law Enforcement Pads

State Patrol currently uses the downstream side of outside concrete barrier as a discrete location to do enforcement. Investigate all areas of outside concrete barrier to determine the feasibility of installing a 40' long by 25' wide asphaltic pad on the downstream end.

Location 1 – USH 41 NB @ Station 1306NB+50

Location is along outside shoulder of USH 41 NB, just north of the Jacobsen Road overpass. There would be space to construct, but this location is undesirable due to the start of the USH 41 NB exit ramps (FNE & FNW ramps). Law enforcement would not have appropriate distance to merge/cross ramp traffic to continue on USH 41 NB.

Location 2 – USH 41 NB @ Station 1348NB+00

Location is along the outside shoulder of USH 41 NB, adjacent to FWN Ramp. The space between the two roadways is not wide enough to accommodate a law enforcement pad.

Location 3 – USH 10 EB/STH 441 NB @ Station 243EB+50

Location is along the outside shoulder of USH 10 EB/WIS 441 NB to the east/north of the Midway structure. There would be room to construct a law enforcement pad. However, it is not recommended since it is in an area that the shoulder is being widened to achieve sight distance through the curve.

Location 4 – USH 10 EB/STH 441NB @ Station 261EB+00

Location is along the outside shoulder of USH 10 EB/WIS 441 NB to the east/north of the Midway on-ramp merge. Right-of-way restrictions would add additional costs to the law enforcement pad. A law enforcement pad at this location is not desirable.

Location 5 – STH 441 NB @ Station 399EB+00

Location is along the outside shoulder of STH 441 NB. A law enforcement pad could be accommodated here. However, this location is 800' from the requested law enforcement pad on the north/east side of the Telulah Avenue overpass and is not recommended.

#2 – Crash Investigation Sites @ CTH II SB Exit

Numerous crashes occur on USH 41 Southbound between the System Interchange and CTH II. Currently, a makeshift CIS is located in the school parking lot in the SW quadrant of the CTH II Interchange. State Patrol would like to add a CIS at the CTH II SB exit ramp.

As noted in section "2i" of the Corridor Manual, we are not providing a CIS at this location. It was determined to be cost prohibitive due to addition retaining wall, fee taking and utility relocations needed for the site.

#3 – Maintenance Cross-over on USH 10 between CTH CB and Cold Spring

State Patrol would like to maintain this existing maintenance cross-over.

The existing maintenance cross-over will be removed during the construction of USH 10 to accommodate traffic staging needs. The cross-over will be replaced at the end of the project.

#4 – Law Enforcement Pad on USH 41 SB

State Patrol would like to add a law enforcement pad on USH 41 SB on the outside shoulder south of a proposed structure pier.

There are two possible locations inside the System Interchange in which a law enforcement pad could be added after a pier along USH 41 SB. The first location would be immediately south of Structure B-70-407(FNW ramp). The second location would be immediately south of Structure B-70-405 (FWS Ramp). The locations are feasible because they occur after guard rail ends, and near a ditch highpoint. South of Structure B-70-405 is the preferred law enforcement pad location.

#5 – Law Enforcement Pad on the FWN Ramp

State Patrol would like to add a law enforcement pad on the left shoulder of the FWN Ramp north of the proposed Structure B-70-406.

Immediately north of Structure B-70-406, the FWN ramp is approximately 20' higher than the adjacent USH 41 NB roadway, creating an extremely large fill. A proposed retaining wall (R-70-121) starts approximately 130' north of Structure B-70-406. This retaining wall acts as a grade separation structure between the FWN Ramp and USH 41 NB for approximately 500'. At the north end of the retaining wall, there is only 10' of separation between the shoulder of the FWN Ramp and the back of USH 41 NB concrete barrier. A law enforcement pad on the FWN Ramp is not feasible.

#6 – Law Enforcement Pad on USH 41 NB

State Patrol would like to add a law enforcement pad on USH 41 NB on the outside shoulder north of a proposed structure pier.

There is only one possible locations inside the System Interchange in which a law enforcement pad could be added after a pier along USH 41 NB. The law enforcement pad could be placed immediately north of Structure B-70-409 (FEN Ramp). This location is feasible because it occurs after guard rail ends, and near a ditch highpoint. Due to FDM clear zone requirements, either guard rail or concrete barrier is required to protect roadway traffic from bridge piers or substandard slopes north of this location.

#7 – Law Enforcement Pad on the FWS Ramp

State Patrol would like to add a law enforcement pad on the left shoulder of the FWS Ramp south of the proposed Structure B-70-405.

A law enforcement pad at this location is not desirable. The pad would be placed on the inside of a curve. In addition, the widening of the inside shoulder would reduce the capacity of the proposed storm water pond needed for storm water quantity and storm water quality requirements.

#8 – Law Enforcement Pad on USH 10 WB/STH 441 SB at Racine Road Overpass

State Patrol would like to add a law enforcement pad on USH 10 WB/STH 441 SB on the outside shoulder south of the existing Racine Road overpass.

A law enforcement pad in this location cannot be accommodated on USH 10 WB/STH 441 SB near the Racine Road overpass. The proposed roadway uses concrete barrier along the roadway and retaining wall along right-of-way to reduce impacts to adjacent properties.

#9 – Law Enforcement Pad on USH 10 EB/STH 441 NB at Racine Road Overpass

State Patrol would like to add a law enforcement pad on USH 10 EB/STH 441 NB on the outside shoulder north of the existing Racine Road overpass.

A law enforcement pad in this location can be accommodated on USH 10 EB/STH 441 NB near the Racine Road overpass.

#10 – Law Enforcement Pad on STH 441 SB at Telulah Avenue Overpass

State Patrol would like to add a law enforcement pad on STH 441 SB on the outside shoulder on the south/west side of the existing Telulah Avenue overpass.

A law enforcement pad in this location can be accommodated on STH 441 SB near the Telulah Avenue overpass. This law enforcement pad may be constructed under Project ID 4685-19-30.

#11 – Law Enforcement Pad on STH 441 NB at Telulah Avenue Overpass

State Patrol would like to add a law enforcement pad on STH 441 NB on the outside shoulder on the north/east side of the existing Telulah Avenue overpass.

A law enforcement pad in this location can be accommodated on STH 441 NB near the Telulah Avenue overpass. This law enforcement pad may be constructed under Project ID 4685-19-30.

#12 – Law Enforcement Pad on USH 10 WB/STH 441 SB at Station 273WB+00 Sign Structure

Randy Asman requested investigation of possible law enforcement pad behind a proposed sign structure at Station 273WB+00.

A law enforcement pad in this location can be accommodated. Potential geometric and safety concerns with this location were deemed insignificant .



WIS 441 LAW ENFORCEMENT RIDE-ALONG SUMMARY

MAY 9, 2013

Attendees:

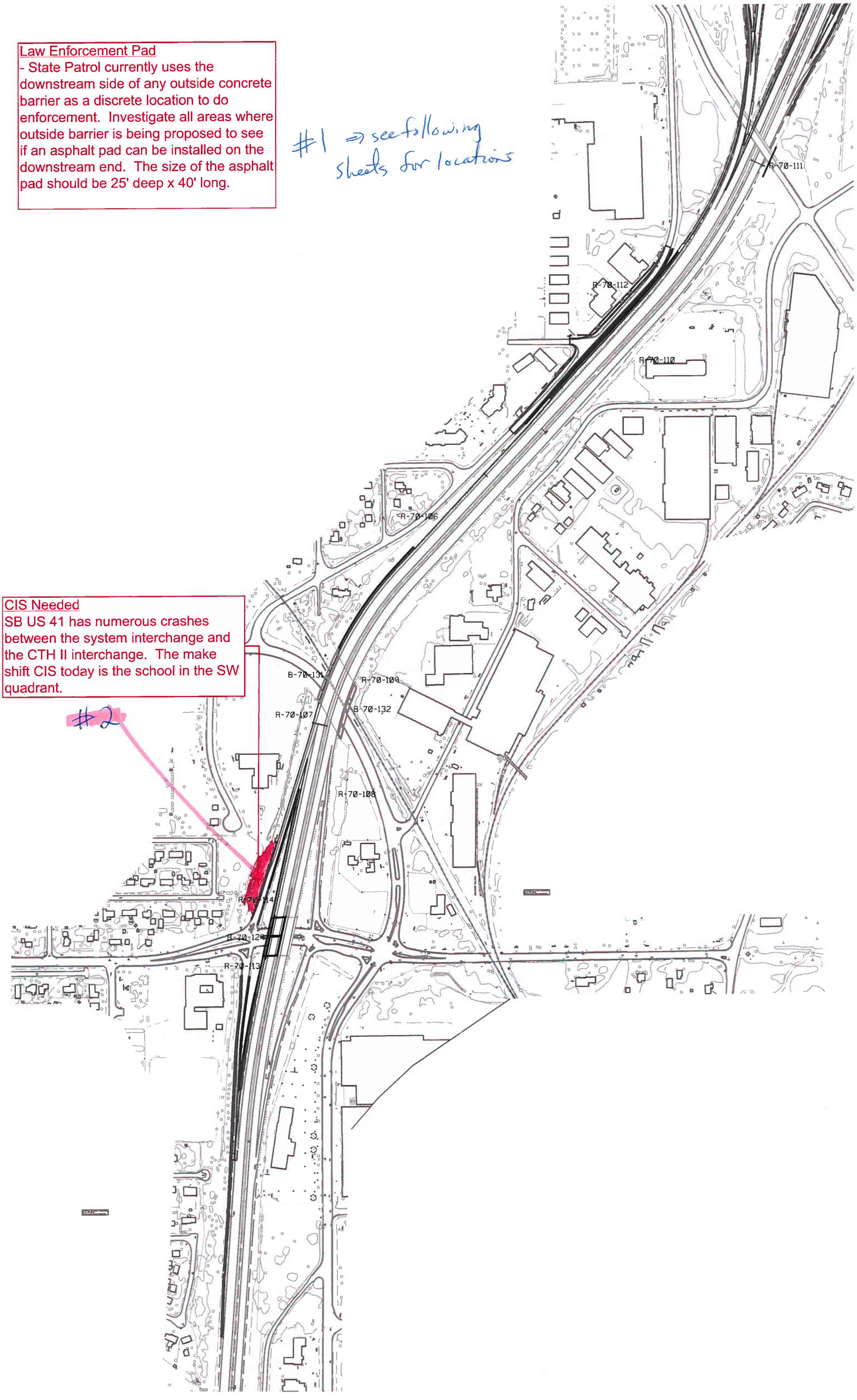
Randy Asman, Scott Ebel, Lt. Tim Seaver, Lt. Steve Diedrich, Sgt. Tim McGrath

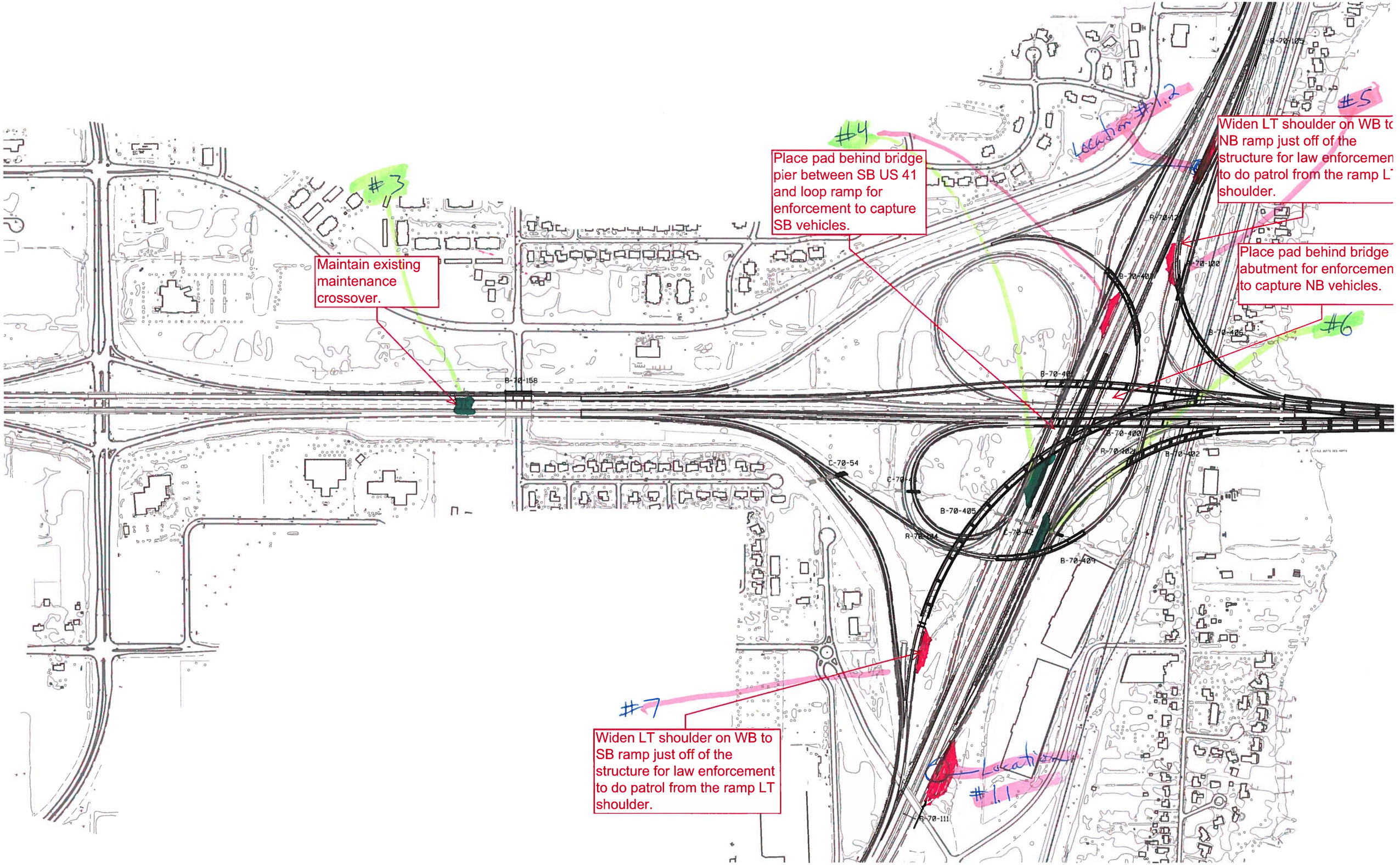
Law Enforcement Pad
- State Patrol currently uses the downstream side of any outside concrete barrier as a discrete location to do enforcement. Investigate all areas where outside barrier is being proposed to see if an asphalt pad can be installed on the downstream end. The size of the asphalt pad should be 25' deep x 40' long.

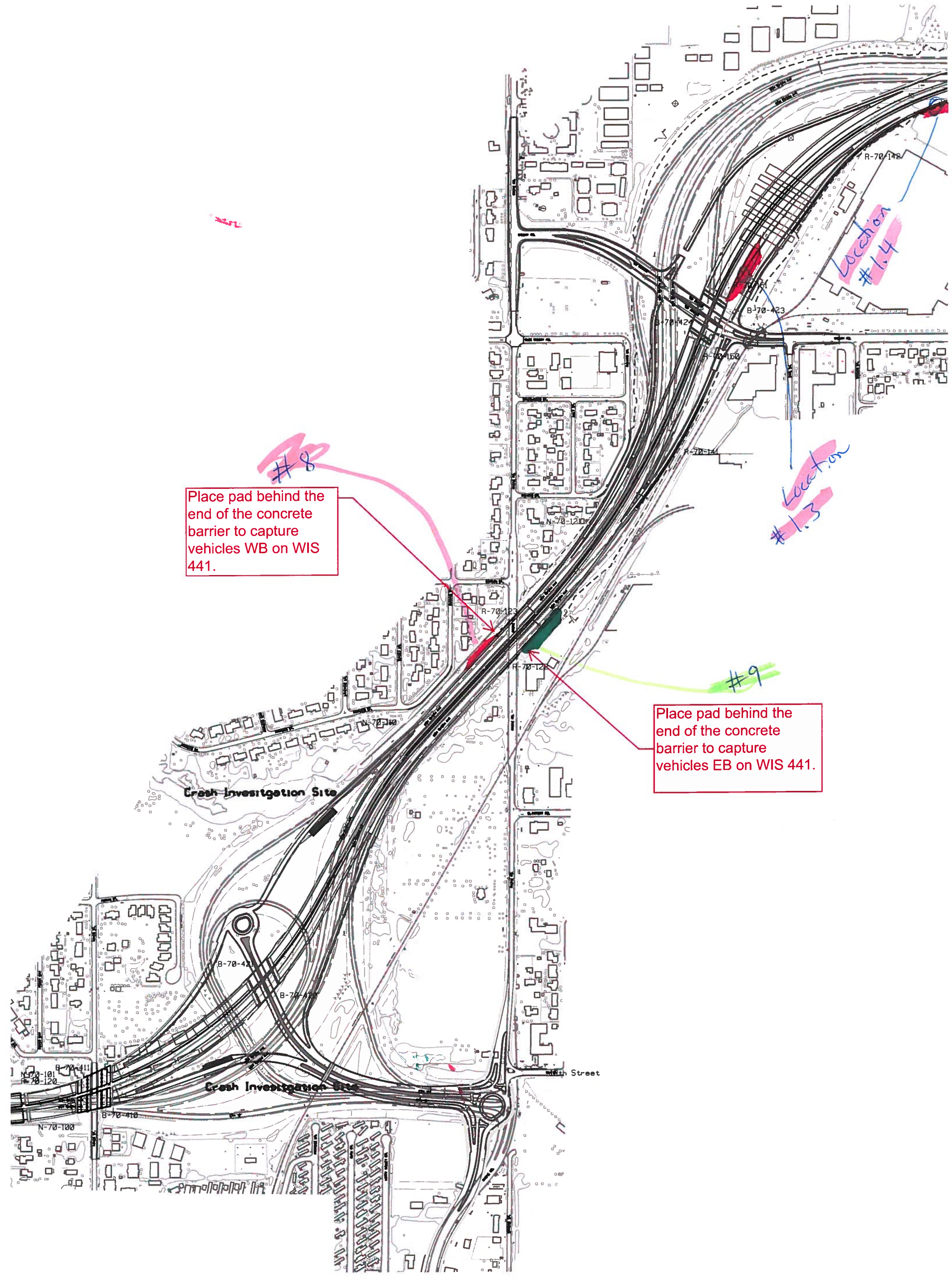
#1 ⇒ see following sheets for locations

CIS Needed
SB US 41 has numerous crashes between the system interchange and the CTH II interchange. The make shift CIS today is the school in the SW quadrant.

#2




#3
Maintain existing maintenance crossover.
#4
Place pad behind bridge pier between SB US 41 and loop ramp for enforcement to capture SB vehicles.
#5
Widen LT shoulder on WB to NB ramp just off of the structure for law enforcemen to do patrol from the ramp L shoulder.
#6
Place pad behind bridge abutment for enforcemen to capture NB vehicles.
#7
Widen LT shoulder on WB to SB ramp just off of the structure for law enforcement to do patrol from the ramp LT shoulder.
B-70-158
C-70-54
B-70-405
B-70-409
B-70-400
B-70-402
B-70-100
B-70-105
B-70-111


#8
Place pad behind the end of the concrete barrier to capture vehicles WB on WIS 441.
#9
Place pad behind the end of the concrete barrier to capture vehicles EB on WIS 441.
Location #1.4
Location #1.3
Crash Investigation Site
Crash Investigation Site
R-70-148
R-70-144
R-70-123
R-70-122
B-70-423
B-70-424
B-70-421
B-70-411
B-70-410
N-70-101
N-70-120
N-70-100
Street

#12 e sign structure

Crash Investigation Site

Crash Investigation Site

B-70-1

70-113

B-70-428

B-70-4

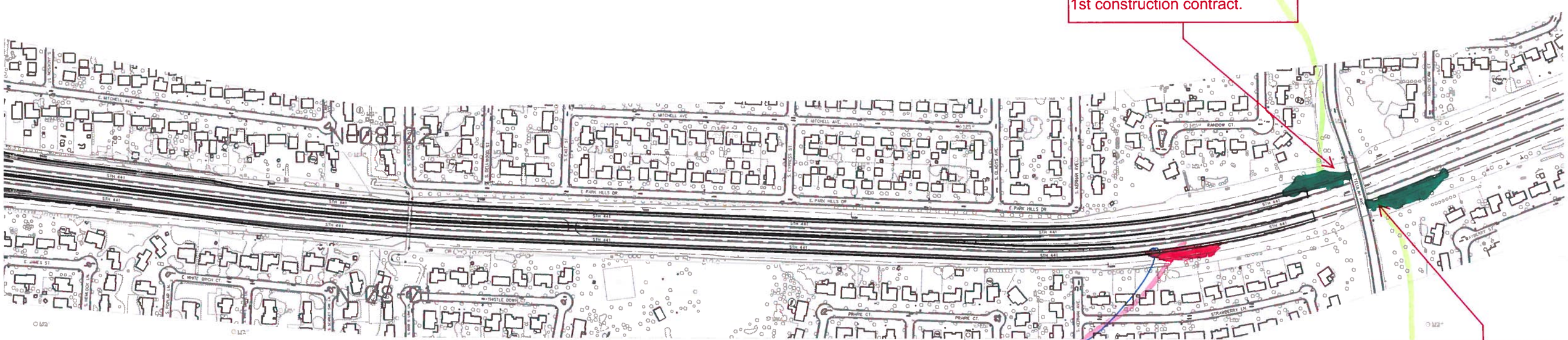
N-70-130
E = 15 FT
20,000 SF

N-70-131
E = 15 FT
20,000 SF

N-70-140
H = 15 FT
A = 20,000 SF

#10

Place pad behind Telulah bridge abutment for WB 441 vehicles. This pad should be placed with 1st construction contract.



Location #1.5

Place pad behind Telulah bridge abutment for EB 441 vehicles. This pad should be placed with 1st construction contract.

#11

WIS 441 Tri-County Project
Corridor Manual
Section 2k: Bike/Pedestrian Accommodations

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: May 15, 2012

Scope/Purpose
This chapter section documents the bike/pedestrian accommodations to be used for the WIS 441 Tri-County Project. Additional information can be found in Chapter 11 – Transportation Management Plan (TMP).

Attachments
- WIS 441 Complete Streets Screening – Tech Memo 1 (Dated 11-10-11)
- Appleton Bike Routes (Dated May 2010)

Technical Memorandum

Date: November 10 , 2011

To: Scott Ebel, PE, Project Manager, WisDOT Northeast Region
Kurt Peters, PE, Project Manager, WisDOT Northeast Region
Andy Fulcer, Deputy Project Manager, WisDOT Northeast Region
Natasha Gwidt, Design Supervisor, WisDOT Northeast Region
Brian Roper, PE, Corridor Manager, WisDOT Northeast Region

From: Nathan Guequierre, Sr. Planner, URS
James Hannig, EIT, Transportation Engineer, URS

Project ID: **1517-07-04**

Project: **WIS 441 Project**
Winnebago County

Subject: **WIS 441 Complete streets screening**
Technical Memorandum #1

Introduction

The functional plans for improvements to the WIS 441 corridor were completed prior to the Wisconsin legislature's adoption of the "Complete Streets" legislation in July 2010, and prior to the publication of TRANS 75 rules for implementing the legislation in January 2011. On October 5, 2011, WisDOT published an update to the Facilities Development Manual that details the application of the TRANS 75 rules. FDM section 11-46 contains information on TRANS 75 applicability, definitions, and standards for pedestrian and bicycle facility design along with the processes necessary to apply for exceptions to the rules.

This memorandum reports on the evaluation of the WIS 441 functional plans for their ability to meet the requirements of TRANS 75 and FDM section 11-46. It identifies:

- Applicability of TRANS 75
- Required facilities for pedestrians and bicycles
- Gap between functional plans and required facilities
- Potential environmental constraints affecting ability to meet TRANS 75 requirements

Screening Methodology

TRANS 75 requires that all federal- and state-funded roadway projects involving new construction or reconstruction include facilities for pedestrians and bicycles. In its most general interpretation, sidewalks and bicycle lanes must be included within the right of way on all urban projects. FDM 11-46 details the application of the rules for urban and rural roadways, with sections on accommodating non-motorized transportation through roundabouts, across freeways and other barriers, on bridges and in other specific settings. It also recognizes the constraints that may prevent the most desirable application of the design standards, and outlines a hierarchy of facilities to be provided, from most to least desirable, as well as detailing allowed exceptions to implementing Complete Streets.

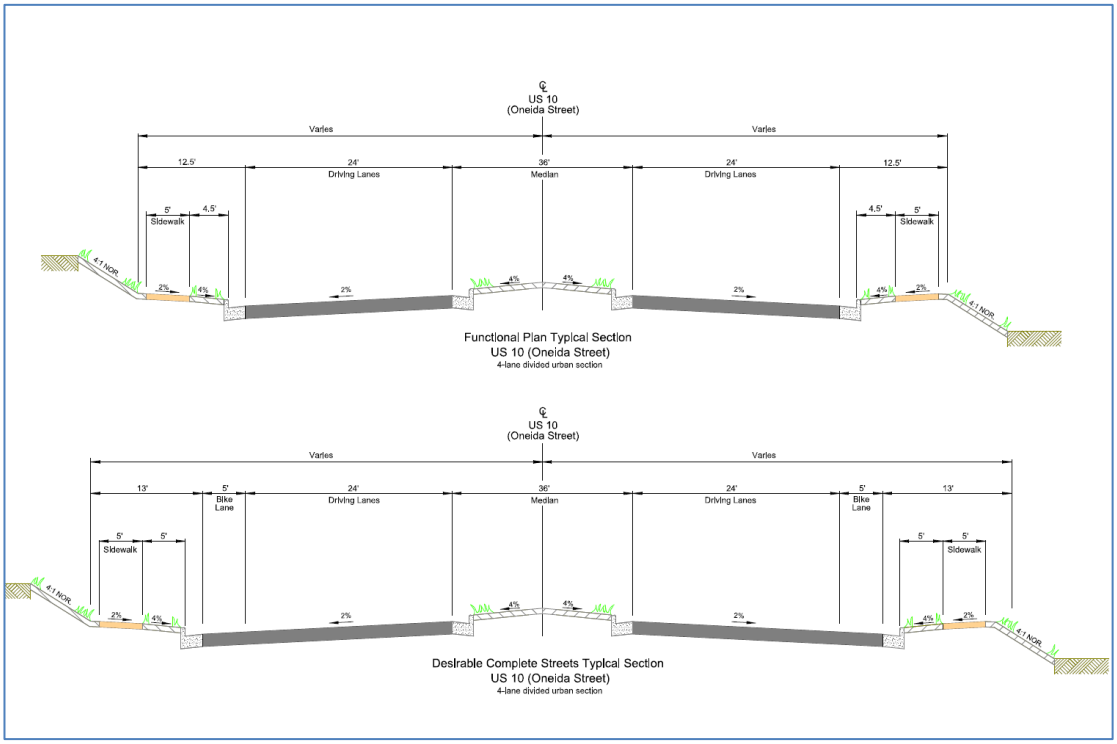
For the WIS 441 corridor, functional plans produced during the corridor planning process were compared to existing conditions and the requirements of FDM 11-46 to identify gaps in the functional design for four roadways to be reconstructed as part of the project. Then potential environmental constraints were identified that may compromise the ability of designers to meet the most desirable outcomes for accommodating pedestrians and cyclists on each roadway. Finally, other factors were identified that may affect the implementation of Complete Streets, such as compatibility with local pedestrian and bicycle plans, the presence of transit routes, and existing land uses that generate non-motorized transportation activity.

Screening Scope

The WIS 441 Corridor Project involves the reconstruction of four service interchanges east of US 41 as well as added facilities to mainline WIS 441. No further screening for Complete Streets applicability is required along WIS 441 as bicyclists and pedestrians are prohibited by law from using the roadway. At each interchange, the local roadways will be reconstructed within the following limits:

- County P / Racine Road between 9th Street and 12th Street
- County AP / Midway Road between Racine Road and Earl Street
- WIS 47 / Appleton Road between Valley Road and Midway Road
- US 10 / Oneida Street between Valley Road and Midway Road
- Tayco Street and Cold Spring Road beneath the WIS 441 overpasses

Proposed improvements for each segment include one or more roundabouts. The functional plan for each segment was evaluated for its ability to meet Complete Streets Standards. **In this document, the term "lower tier" accommodation is used to refer to any combination of bicycle and pedestrian facilities other than the most desirable facilities specified in FDM 11-46.** Such facilities may be provided by showing the necessity to avoid or minimize impacts in constrained environments. A typical section with desirable accommodations is shown in the figure below. This memorandum includes an attachment showing alternative typical sections for these roadways. Existing conditions summaries are drawn from available data and actual conditions may vary in some locations.



Functional Plan section compared to Complete Streets Section, Oneida Street

Applicability of TRANS 75

The requirements of TRANS 75 apply to projects that have approval for their environmental document on or after January 1, 2011. The WIS 441 Environmental Assessment was determined to have a Finding of No Significant Impact on May 19, 2010. Therefore the WIS 441 project is not required to adhere to the principles

of Complete Streets. However, as this major project presents an opportunity to refine the interchange designs, the WisDOT Northeast Region desires to meet the requirements of FDM 11-46 and TRANS 75, and is therefore undertaking this screening.

Complete Streets Screening Results

County P / Racine Road

Racine Road between 9th Street and 12th Street is a five lane divided roadway with three northbound lanes (one through lane and two left turn lanes) and two southbound lanes. Land use to the west of Racine Road is dominated by transportation right of way and a handful of residences, and with commercial and recreational uses on the east side of the road. No facilities for pedestrians or bicycles are present along the existing segment.



Racine Road at 10th Street, looking north

Short segments of 9th Street and 12th Street will also be reconstructed with their intersections with Racine Road. The segment of 9th Street to be reconstructed currently features one lane in each direction with a left turn lane at the intersection. There is a sidewalk on the south side of 9th Street. Twelfth Street is a residential roadway with one travel lane in each direction, with on-street parking allowed and sidewalk on the south side.

The following table compares the proposed cross section from the functional plans for this to the desired cross section to meet the requirements of FDM 11-46.

County P / Racine Road				
	Existing	**Functional Plans**	**Desirable for Complete Streets**	**Plan Satisfies Complete Streets Requirements**
Roadway				
Median Width	8’ at County P Trunk Road intersection	36’ (varies) north of roundabout; 9’ (varies) south of roundabout	36’ (varies) north of roundabout; 9’ (varies) south of roundabout	●
Vehicular Lanes	2 – 11’ (north) 2 – 12’ (south)	4 – 12’	4 – 12’	●
Bikeway	None	None	2 – 5’ bike lanes	
Roadway Edge	6’ shoulder (north) 30” C&G (south)	30” C&G	30” C&G	●
Terrace	None (north) 2 – 4.5’ (south)	N/A	2 – 5’	
Pedestrian Way	None (north) 2 – 5’ sidewalks (south of 9th Street)	None	2 – 5’ sidewalks	
Other	Turn lanes			

	Existing	Functional Plans	Desirable for Complete Streets	Plan Satisfies Complete Streets Requirements
Roundabouts				
Median Width	N/A	Varies	Varies	●
Vehicular Lanes	N/A	2 – Varies	2 – Varies	●
Bikeway	N/A	None	2 – 10’ shared-use paths	
Roadway Edge	N/A	30” C&G	30” C&G	●
Terrace	N/A	N/A	2 – 5’ (required separation)	
Pedestrian Way	N/A	None	See “Bikeway”	
Other	Additional NB lane 11’ lanes at 9th St & north limits			

Notes on Racine Road

- When designing pedestrian accommodations on west side of Racine Road, consider safety concerns for crossing interchange service road.
- Consider incorporating a shared-Use Path along east side of Racine Road; the stadium and park on the east side of the road likely generate considerable non-motorized traffic.
- Additional ROW would be required to meet desirable Complete Streets requirements; may be able to reduce impacts with “lower tier” accommodations.
- While the proposed typical section of County P Trunk Road between the roundabouts resembles that of an urban roadway, the functionality of the roadway more closely resembles that of freeway ramps. County P Trunk Road does not provide access to any local destinations and only supplements interchange movements. Therefore, the interpretation of Complete Streets guidance at this location would classify this roadway as prohibitive of bicycles and pedestrians.

Ninth Street				
	Existing	**Functional Plans**	**Desirable for Complete Streets**	**Satisfies Complete Streets Requirements**
Roadway				
Median Width	N/A	N/A	N/A	●
Vehicular Lanes	2 – 20’ (with parking)	2 – 12’	2 – 12’	●
Bikeway	None	2 – 4’ bikeways	2 – 5’ bike lanes	●
Roadway Edge	30” C&G	30” C&G	30” C&G	●
Terrace	1 – 9’ (north, varies) 1 – 7’ (south)	1 – 4.5’ (varies) (south side)	2 – 5’	
Pedestrian Way	1 – 5’ sidewalk	1 – 5’ sidewalk (south side)	2 – 5’ sidewalks	
Other	Turn lanes			

Notes on Ninth Street

- Sidewalk and terrace should be considered on north side of 9th Street.
- Additional ROW would be required to meet desirable Complete Streets requirements; may be able to reduce impacts with “lower tier” accommodations.

Twelfth Street				
	Existing	**Functional Plans**	**Desirable Complete Streets**	**Satisfies Complete Streets Requirements**
Roadway				
Median Width	N/A	N/A	N/A	●
Vehicular Lanes	2 – 16’	2 – 12’	2 – 12’	●
Bikeway	None	2 – 4’ bikeways	2 – 5’ bike lanes	●
Roadway Edge	30” C&G	30” C&G	30” C&G	●
Terrace	N/A	N/A	2 – 5’	
Pedestrian Way	1 – 6’ sidewalk (south)	1 – 5’ sidewalk (south side)	2 – 5’ sidewalks	

Notes on Twelfth Street

- Terrace on south side and sidewalk and terrace on north side should be considered.
- Additional ROW would be required to meet desirable Complete Streets requirements; may be able to reduce impacts with “lower tier” accommodations.

WIS 441 Complete Streets Screening



Racine Road (County P) Interchange

County AP / Midway Road

Midway Road between Racine Road and Earl Street is a four lane divided roadway connecting with a diamond interchange to US 10/WIS 441; Midway Road travels beneath the freeway. Land use to the north of Midway Road is residential to the west of US 10/WIS 441, and industrial to the east. South of Midway, land use is institutional (cemetery) on the west side of the freeway and industrial on the east side. A Wisconsin Central Ltd. railway line crosses Midway Road just east of the existing east-bound interchange ramps. No facilities for pedestrians or bicycles are present along the existing segment.

A short segment of Racine Road will also be reconstructed at Midway Road. The segment to be reconstructed currently has one vehicle lane in each direction, and a narrow paved shoulder. No sidewalks or bicycle facilities are present.



Midway Road at Racine Road, looking east

The following table compares the proposed cross section from the functional plans for these segments to the desired cross sections to meet the requirements of FDM 11-46

County AP / Midway Road				
	Existing	**Functional Plans**	**Desirable Complete Streets**	**Satisfies Complete Streets Requirements**
Roadway				
Median Width	9'-38' (west, varies) N/A (east)	22' (varies)	22' (varies)	●
Vehicular Lanes	4 – 12' (normal)	4 – 12'	4 – 12'	●
Bikeway	None	None	2 – 5' bike lanes	
Roadway Edge	30" C&G	30" C&G	30" C&G	●
Terrace	N/A	N/A	2 – 5'	
Pedestrian Way	None	None	2 – 5' sidewalks	
Other	Turn lanes			

	Existing	Functional Plans	Desirable Complete Streets	Satisfies Complete Streets Requirements
Roundabouts				
Median Width	N/A	Varies	Varies	●
Vehicular Lanes	N/A	4 – Varies	4 – Varies	●
Bikeway	N/A	None	2 – 10’ shared-use paths	
Roadway Edge	N/A	30” C&G	30” C&G	●
Terrace	N/A	N/A	2 – 5’ (required separation)	
Pedestrian Way	N/A	None	See “Bikeway”	
Other				
Under Structure				
Median Width	14’-22’ (varies)	Varies	Varies	●
Vehicular Lanes	6 – 12’	4 – 12’ (plus 1 – 12’ left turn lane)	4 – 12’ (plus 1 – 12’ left turn lane)	●
Bikeway	None	None	2 – 10’ shared-use paths	
Roadway Edge	30” C&G	30” C&G	30” C&G	●
Terrace	N/A	N/A	2 – 5’ (required separation)	
Pedestrian Way	None	None	See “Bikeway”	

Notes on County AP / Midway Road

- Proposed bikeway requires crossing railroad tracks at 90 degrees.
- Location of bike lane-to-shared-use path transition should be considered.
- Additional ROW would be required to meet desirable Complete Streets requirements from County P to the roundabout; may be able to reduce impacts with “lower tier” accommodations.
- Proposed ROW should provide adequate room to accommodate Complete Streets requirements eastward from the roundabout to the east construction limits.
- Menasha bike plan calls for future on-street bicycle route on Midway Road.

County P / Racine Road at County AP				
	Existing	**Functional Plans**	**Desirable Complete Streets**	**Satisfies Complete Streets Requirements**
Roadway				
Median Width	N/A	N/A	N/A	●
Vehicular Lanes	2 – 11’	2 – 12’	2 – 12’	●
Bikeway	None	2 – 4’ bikeways	2 – 5’ bike lanes	●
Roadway Edge	6’ shoulder	30” C&G	30” C&G	●
Terrace	N/A	N/A	2 – 5’	
Pedestrian Way	None	None	2 – 5’ sidewalks	
Other	Turn lanes			

Notes on Racine Road at County AP

- Additional ROW would be required to meet desirable Complete Streets requirements; may be able to reduce impacts with “lower tier” accommodations.
- ROW from the cemetery may be required to accommodate desirable Compete Streets requirements on east side of County P / Racine Road.
- Partial Complete Streets compliance may be necessary adjacent to the cemetery; Exception 3 – Constrained Environment may be acceptable.

WIS 441 Complete Streets Screening



Midway Road (County AP) Interchange

WIS 47 / Appleton Road

Appleton Road between Valley Road and Midway Road is a four lane divided roadway with a diamond interchange to US 10/WIS 441. Appleton Road travels beneath the freeway. Both sides of the roadway are lined with high intensity commercial land uses. Sidewalks are present on both sides of Appleton Road, with a gap of approximately one-quarter mile on the east side of the road, between Drum Corps Drive and the US 10/WIS 441 west-bound off ramp terminal. South of Midway Road, there are no sidewalks on WIS 47.

The following table compares the proposed cross section from the functional plans for this segment to the desired cross sections to meet the requirements of FDM 11-46.



Appleton Road at Midway Road, looking north

WIS 47 / Appleton Road				
	Existing	**Functional Plans**	**Desirable Complete Streets**	**Satisfies Complete Streets Requirements**
Roadway				
Median Width	20’ (varies)	20’ (varies)	20’ (varies)	●
Vehicular Lanes	4 – 12’	4 – 12’	4 – 12’	●
Bikeway	None	None	2 – 5’ bike lanes	
Roadway Edge	30” C&G	30” C&G	30” C&G	●
Terrace	1 – 8’ (southbound)	N/A	2 – 5’	Partial
Pedestrian Way	1 – 5’ norm (southbound, varies)	Varies	2 – 5’ sidewalks	
Other	Turn lanes (including new right turn lanes)			
Roundabouts				
Median Width	N/A	Varies	Varies	●
Vehicular Lanes	N/A	4 – Varies	4 – Varies	●
Bikeway	N/A	1 – 9.5’ shared-use path 1 – 10’ shared-use path	2 – 10’ shared-use paths	Partial
Roadway Edge	N/A	30” C&G	30” C&G	●
Terrace	N/A	N/A	2 – 5’ (required separation)	
Pedestrian Way	N/A	See “Bikeway”	See “Bikeway”	Partial
Other	Bypass ramp lanes			

	Existing	Functional Plans	Desirable Complete Streets	Satisfies Complete Streets Requirements
Under Structure				
Median Width	15’	12’ (varies)	12’ (varies)	●
Vehicular Lanes	5 – 12’	4 – 12’	4 – 12’	●
Bikeway	None	1 – 9.5’ shared-use path 1 – 10’ shared-use path	2 – 10’ shared-use paths	Partial
Roadway Edge	18” C&G (inside) 30” C&G (outside)	30” C&G	30” C&G	●
Terrace	1 – 4’ southbound	N/A	2 – 5’ (required separation)	
Pedestrian Way	1 – 5’ sidewalk (southbound)	See “Bikeway”	See “Bikeway”	Partial

Notes on WIS 47

- Full Complete Streets accommodations for WIS 47 from County AP (Midway Road) to County P (Valley Drive) should be considered.
- Reconstruction of concrete sloped paving or construction of retaining walls would be required to meet desirable Complete Streets requirements under structures B-70-113 & B-70-114; may be able to reduce impacts with “lower tier” accommodations.
- Sidewalk curb ramp treatments at Drum Corps Drive and Tuckaway Lane should be reconsidered; they currently force pedestrians into vehicle lanes.
- Several major social service organizations are located along Appleton Road; these uses serve low income and disabled clients, and likely generate relatively high rates of non-motorized travel.
- Two bus routes travel along Appleton Road, generating pedestrian travel.

WIS 441 Complete Streets Screening



Appleton Road (WIS 47) Interchange

US 10 / Oneida Street

Oneida Street between Valley Road and Midway Road is a four lane divided roadway with a diamond interchange to WIS 441. Oneida Street travels beneath the freeway. Land use around the road segment is mixed, including single-family and multi-family housing, commercial and utility uses. A major electrical substation is located east of Oneida Street to the south of Valley Road (called Roeland Road east of Oneida). Sidewalks are present on the east side of Oneida only south of the interchange and on both sides of Oneida north of the interchange.



Oneida Road at WIS 441, looking south

Short segments of Valley Road and Midway Road will also be reconstructed with their intersections with Oneida Road. The segment of Midway Road to be reconstructed currently features two lanes in each direction and sidewalks on both sides of the road east of Oneida, and on the south side of the road west of Oneida. The portion of Valley Road to be reconstructed has two travel lanes in each direction and sidewalks on both sides of the road.

The following table compares the proposed cross section from the functional plans for this segment to the desired cross sections to meet the requirements of FDM 11-46.

US 10 / Oneida Street				
	Existing	**Functional Plans**	**Desirable Complete Streets**	**Satisfies Complete Streets Requirements**
Roadway				
Median Width	20’ (varies)	8’ (varies)	8’ (varies)	●
Vehicular Lanes	4 – 11’	4 – 12’	4 – 12’	●
Bikeway	None	None	2 – 5’ bike lanes	
Roadway Edge	30” C&G	30” C&G	30” C&G	●
Terrace	Varies	2 – 4.5’ (varies)	2 – 5’	●
Pedestrian Way	1 – 5’ sidewalk (northbound) 1 – 5’ sidewalk (southbound Valley Rd to interchange)	2 – 5’ sidewalks (with SB omissions)	2 – 5’ sidewalks	Partial
Other	Turn lanes			

	Existing	Functional Plans	Desirable Complete Streets	Satisfies Complete Streets Requirements
Roundabouts				
Median Width	N/A	Varies	Varies	●
Vehicular Lanes	N/A	6 – Varies	6 – Varies	●
Bikeway	N/A	2 – 10’ shared-use path	2 – 10’ shared-use paths	●
Roadway Edge	N/A	30” C&G	30” C&G	●
Terrace	N/A	N/A	2 – 5’ (required separation)	
Pedestrian Way	N/A	See “Bikeway”	See “Bikeway”	●
Other	Bypass ramp lanes			
Under Structure				
Median Width	17’	9’ (varies)	9’ (varies)	●
Vehicular Lanes	4 – 11’ 2 – 10’ (turn lanes)	6 – 12’	6 – 12’	●
Bikeway	None	2 – 10’ shared-use path	2 – 10’ shared-use paths	●
Roadway Edge	18” C&G (inside) 30” C&G (outside)	30” C&G	30” C&G	●
Terrace	N/A	N/A	2 – 5’ (required separation)	
Pedestrian Way	2 – 9.5’ sidewalks	See “Bikeway”	See “Bikeway”	●

Notes on Oneida Street

- Utility towers associated with the electrical substation are located immediately at the edge of the proposed ROW in the southwest quadrant of Oneida and Valley Road.
- Partial Complete Streets compliance may be necessary adjacent to the utility towers; Exception 3 – Constrained Environment may be acceptable.
- Full Complete Streets accommodations for US 10 (Oneida Street) from County AP (Midway Road) to County P (Valley Drive/Roeland Avenue) should be considered.
- Additional ROW would be required to meet desirable Complete Streets requirements from the south construction limits to the south roundabout on west side of US 10 (Oneida Street); may be able to lessen effects with “lower tier” accommodations.
- A bus route travels on Oneida Street.

County AP / Midway Road				
	Existing	**Functional Plans**	**Desirable Complete Streets**	**Satisfies Complete Streets Requirements**
Roadway				
Median Width	N/A	N/A	N/A	●
Vehicular Lanes	4 – 12’	4 – 12’	4 – 12’	●
Bikeway	None	2 – 4’ bikeways	2 – 5’ bike lanes	●
Roadway Edge	30” C&G	30” C&G	30” C&G	●
Terrace	Varies	Varies (with WB omissions)	2 – 5’	Partial
Pedestrian Way	2 – 5’ sidewalks (with westbound omissions west of intersection)	2 – 5’ sidewalks (with WB omissions)	2 – 5’ sidewalks	Partial
Other	11’ lanes at intersection			

Notes on Midway Road

- Additional ROW would be required to meet desirable Complete Streets requirements from the west construction limits to Oneida Street on north side of County AP (Midway Road); may be able to reduce impacts with “lower tier” accommodations.
- The City of Menasha Bike Plan calls for a future on-street bike route on Midway west of Oneida, and for an off-street side path on Midway east of Oneida. Special attention to cyclists and pedestrian crossing Oneida Street at Midway may be merited.
- A technical college is located on Midway Road west of Oneida Street; this land use likely generates considerable non-motorized traffic.

County P / Valley Road & Roeland Avenue				
	Existing	**Functional Plans**	**Desirable Complete Streets**	**Satisfies Complete Streets Requirements**
Roadway				
Median Width	N/A	N/A	N/A	●
Vehicular Lanes	4 – 12’	4 – 12’	4 – 12’	●
Bikeway	None	2 – 4’ bikeways	2 – 5’ bike lanes	●
Roadway Edge	30” C&G	30” C&G	30” C&G	●
Terrace	Varies	Varies	2 – 5’	●
Pedestrian Way	2 – 5’ sidewalks	2 – 5’ sidewalks	2 – 5’ sidewalks	●

Notes on Valley Road

- This segment meets Complete Streets requirements as proposed in the functional plans.

WIS 441 Complete Streets Screening



Onelda Street (US 10) Interchange

Tayco Street

The WIS 441 bridge over Tayco Street is scheduled for rehabilitation as part of this project. Tayco Street is a rural two-lane roadway beneath the bridge. If a segment of this roadway requires reconstruction due to damage incurred during bridge work, it may be required to meet TRANS 75 standards. In an urban design, this would include five-foot sidewalks on both sides of the roadway, five foot terraces, and five-foot on-street bicycle lanes. In a rural design, the typical section would include four-foot paved shoulders marked as a bike lanes. Further coordination with the municipalities is required to determine preference of the future typical section (i.e. rural or urban).



Figure 1: Tayco Street at WIS 441, looking South

Tayco Street			
	Existing	**Desirable Complete Streets Option 1**	**Desirable Complete Streets Option 2**
Under Structure			
Median Width	N/A	N/A	N/A
Vehicular Lanes	2 – 12’	2 – 12’	2 – 12’
Bikeway	None	2 – 5’ bike lanes	2 – 4’ bike lanes
Roadway Edge	3’ shoulder	30” C&G	4’ shoulder
Terrace	N/A	2 – 5’	N/A
Pedestrian Way	None	2 – 5’ sidewalks	N/A

Notes on Tayco Street

- Meeting Complete Streets requirements would likely require additional right of way. Impacts could potentially be reduced by providing “lower tier” accommodations.
- There appear to be no environmental constraints on this segment, with the possible exception of potential wetlands in the drainage ditch on the east side of Tayco Street beneath the bridge.

Cold Spring Road

WIS 441 bridge over Cold Spring Road is scheduled for rehabilitation as part of this project. Cold Spring Road is a two-lane roadway beneath the bridge. The road has a sidepath on the west side of the road, and also carries a bus route. If a segment of this roadway requires reconstruction due to damage incurred during bridge work, it may be required to meet TRANS 75 standards. This would include five-foot sidewalks on both sides of the roadway, five foot terraces, and five-foot on-street bicycle lanes. The accommodations would likely require additional right of way. Impacts could potentially be reduced by providing “lower tier” accommodations. There appear to be no environmental constraints on this segment.

Conclusions and Recommendations

Because the functional plans for the WIS 441 project were completed prior to the introduction of TRANS 75 and FDM 11-46, in most cases the functional plans do not provide sufficient accommodations to satisfy the Complete Streets statutes. Meeting the requirements will in many cases require additional right-of-way to account for the additional width necessary to include bicycle lanes and sidewalks.

The project is exempt from meeting the requirements of TRANS 75, as the environmental document was approved before January 1, 2011. Therefore, if the Department chooses on some segments of the reconstructed highways to provide "lower tier" accommodations, it is likely not necessary to undertake the full process of seeking an exception. However, this is a high-profile project, and it may be desirable to follow the processes outlined in FDM 11-46 to determine the appropriate and acceptable level of accommodation for non-motorized transportation on each segment.

Some incidental roadway segments will be reconstructed as part of the WIS 441 project due to the reconstruction of an intersection. These include short segments of:

- 9th Street and 12th Street at Racine Road
- Earl Street at Midway Road
- W. Valley Road and Midway Road at Appleton Road
- W. Valley Road, E. Roeland Avenue and Midway Road at Oneida Street

It is recommended that these short segments be reconstructed to meet existing conditions at this time. Coordination with the cities of Appleton and Menasha or Winnebago County will be required to determine if they would like these short segments to meet Complete Streets standards in addition to determining the feasibility of widening the roadway to meet complete streets.. The City of Menasha bicycle plan calls for on-street bicycle lanes on Midway Road, and the city may therefore desire these accommodations to be constructed at the intersections of Appleton Road and Oneida Street in order to comply with their plan.

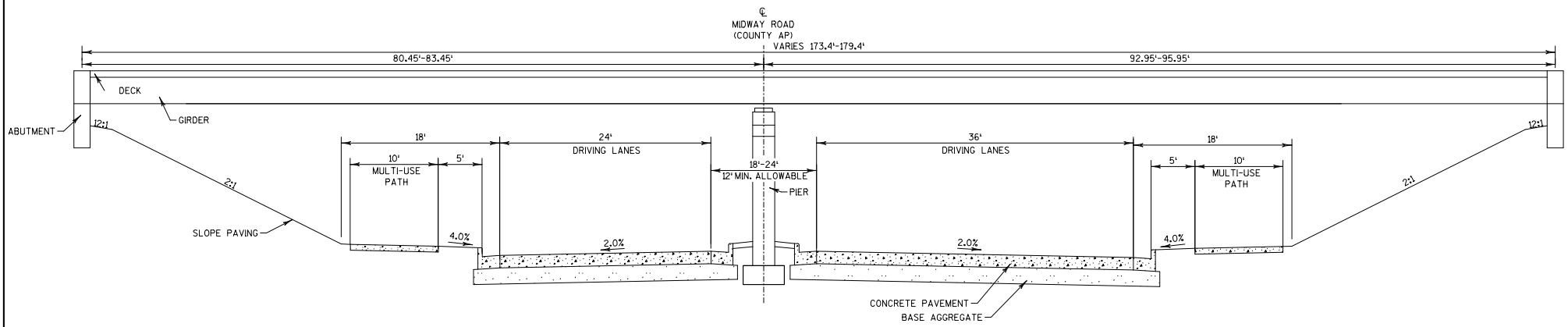
Finally, FDM 11-46 includes a Complete Streets Compliance Checksheet. It is recommended that the Checksheet is completed for each road segment to identify potentially acceptable facilities in developing an understanding of the exceptions that are allowable under TRANS 75.

Attachments: Alternative Typical Sections

cc: URS File

ATTACHMENT 1

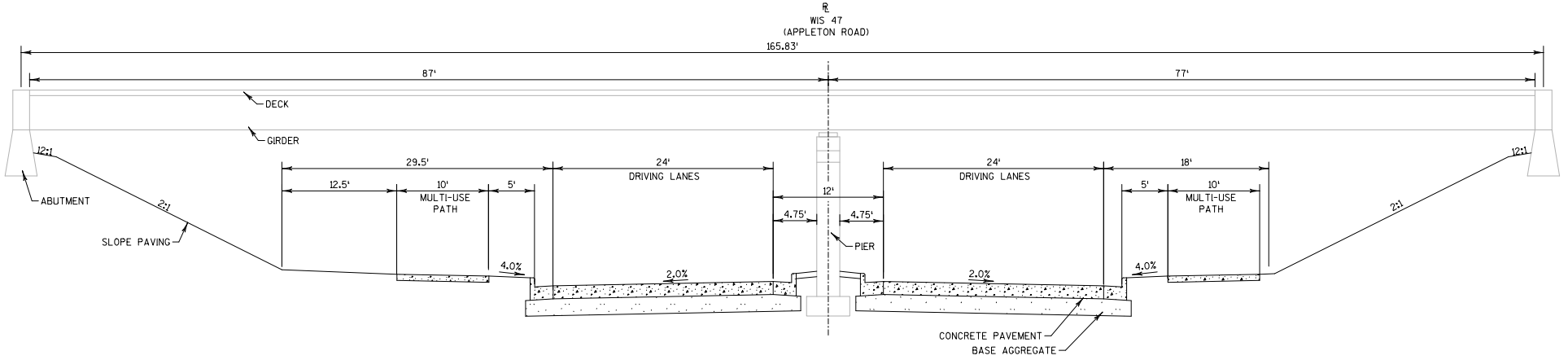
Alternative Sections



PROPOSED TYPICAL SECTION WITH NEW STRUCTURE
MIDWAY ROAD (COUNTY AP)
16'-9" CLEARANCE (AS SPECIFIED IN THE FDM)

MIDWAY ROAD (COUNTY AP) ALTERNATIVES

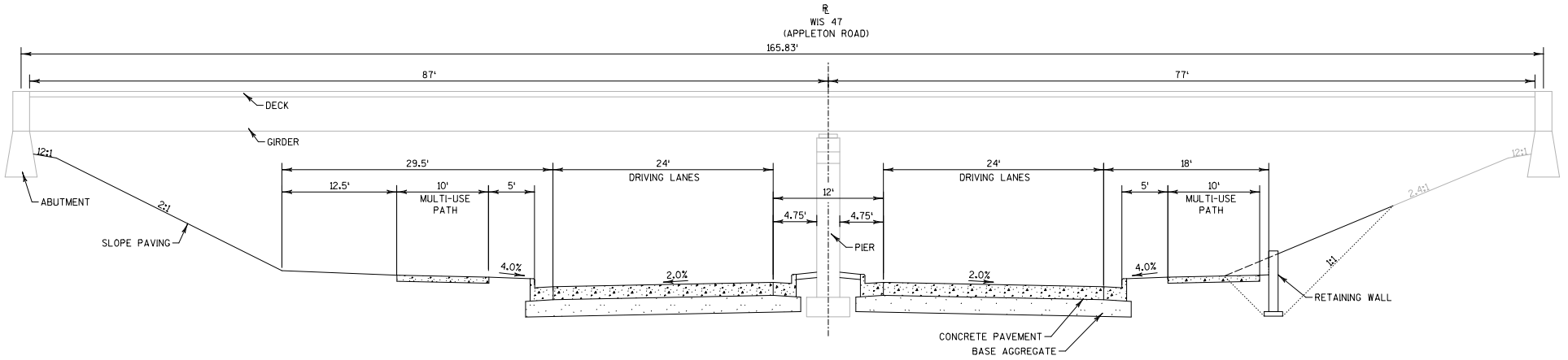
NOTE: MEETS DESIRABLE
COMPLETE STREETS CRITERIA.



PROPOSED TYPICAL SECTION WITH EXISTING STRUCTURE WITHOUT WALL
APPLETON ROAD (WIS 47)

16'-5" CLEARANCE (AS SHOWN IN FUNCTIONAL PLANS)

NOTE:
NEEDS TO BE VERIFIED BY SURVEY. IF SLPOE PAVING
SLOPE CAN BE STEEPENED, THIS IS PREFERRED.

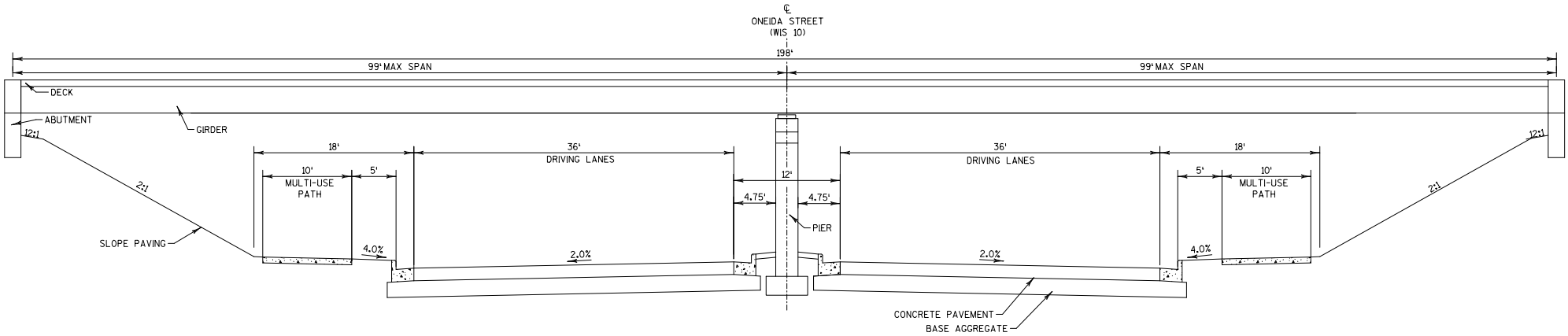


PROPOSED TYPICAL SECTION WITH EXISTING STRUCTURE WITH WALL
APPLETON ROAD (WIS 47)

16'-5" CLEARANCE (AS SHOWN IN FUNCTIONAL PLANS)

APPLETON ROAD (WIS 47) ALTERNATIVES

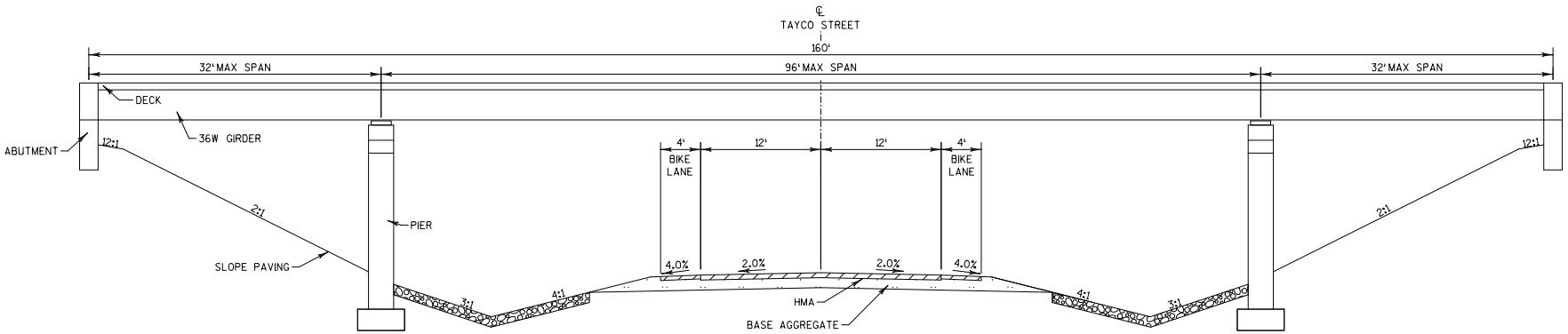
NOTE:
1. MEETS DESIRABLE COMPLETE STREETS CRITERIA.
2. SLOPE PAVING NEEDS TO BE REPLACED.



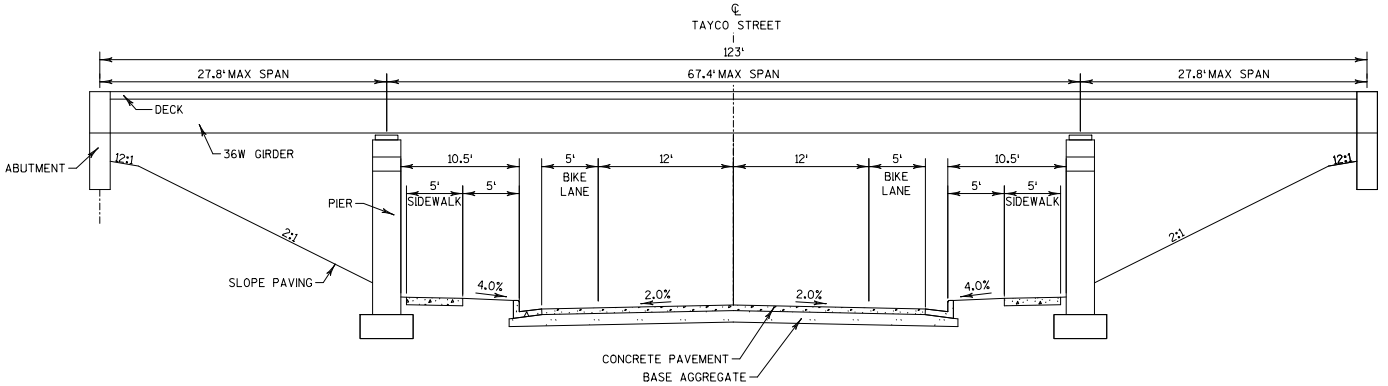
PROPOSED TYPICAL SECTION WITH NEW STRUCTURE
ONEIDA STREET (WIS 10)
16'-9" CLEARANCE (AS SPECIFIED IN THE FDM)

ONEIDA STREET (WIS 10) ALTERNATIVES

NOTE:
1. MEETS DESIRABLE COMPLETE STREETS CRITERIA.
2. FUNCTIONAL PLANS SPECIFY A 9' MEDIAN. THIS DOES NOT MEET LATERAL CLEARANCE REQUIREMENTS AND WOULD REQUIRE AN EXCEPTION TO STANDARDS.



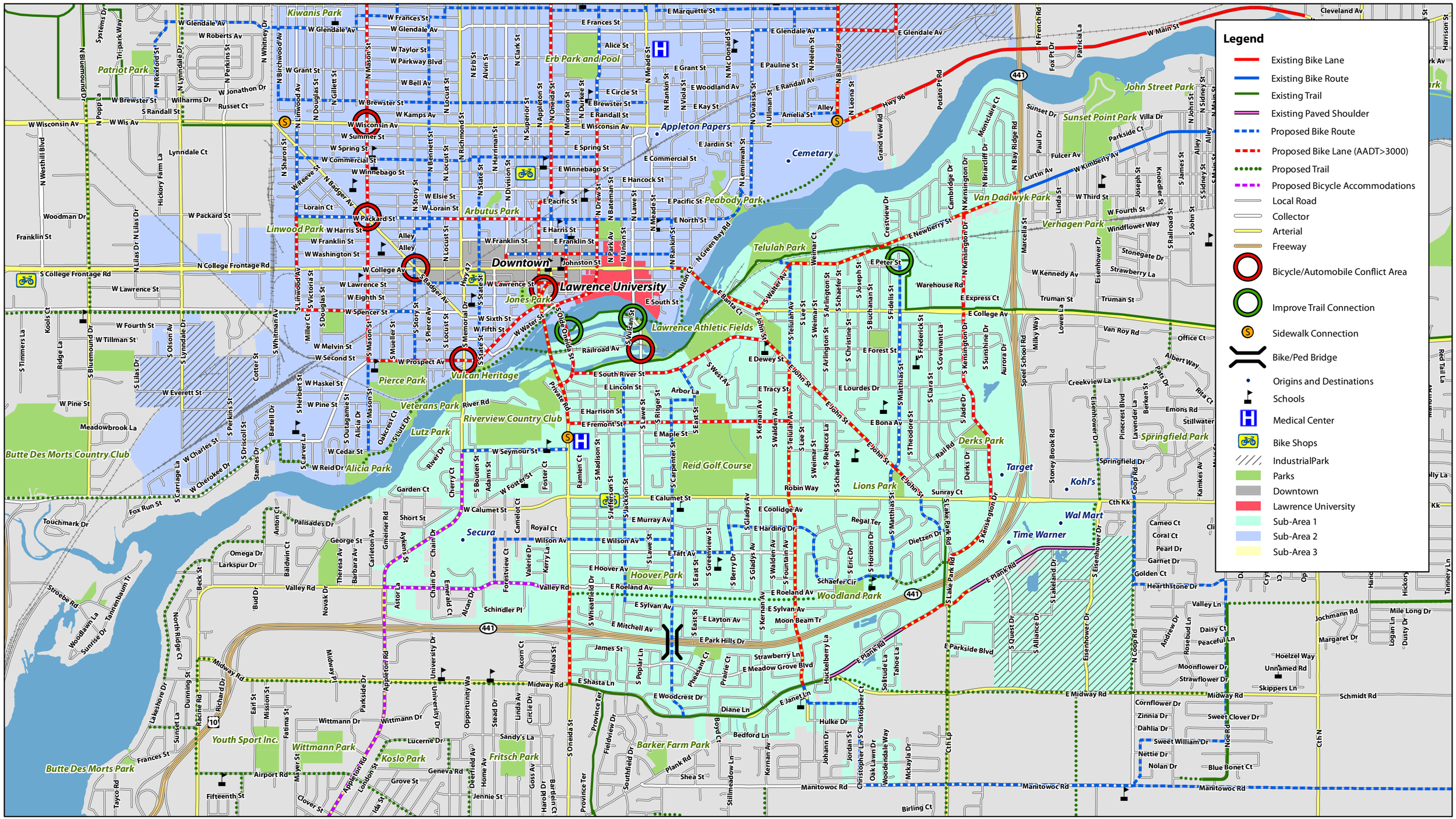
PROPOSED TYPICAL SECTION WITH NEW STRUCTURE
TAYCO STREET
15'-3" DESIRABLE CLEARANCE (AS SPECIFIED IN THE FDM)



PROPOSED TYPICAL SECTION WITH NEW STRUCTURE
TAYCO STREET
15'-3" DESIRABLE CLEARANCE (AS SPECIFIED IN THE FDM)

TAYCO STREET ALTERNATIVES

NOTE:
1. MEETS DESIRABLE COMPLETE STREETS CRITERIA.
2. FUNCTIONAL PLANS SHOW 14'-5" MIN. CLEARANCE. AN EXCEPTION TO STANDARDS IS REQUIRED FOR CLEARANCE LESS THAN 14'-9".


Legend
Existing Bike Lane
Existing Bike Route
Existing Trail
Existing Paved Shoulder
Proposed Bike Route
Proposed Bike Lane (AADT>3000)
Proposed Trail
Proposed Bicycle Accommodations
Local Road
Collector
Arterial
Freeway
Bicycle/Automobile Conflict Area
Improve Trail Connection
Sidewalk Connection
Bike/Ped Bridge
Origins and Destinations
Schools
Medical Center
Bike Shops
IndustrialPark
Parks
Downtown
Lawrence University
Sub-Area 1
Sub-Area 2
Sub-Area 3
Kiwanis Park
Patriot Park
Erb Park and Pool
Appleton Papers
Cemetary
Peabody Park
Arbutus Park
Linwood Park
Downtown
Lawrence University
Jones Park
Telulah Park
Lawrence Athletic Fields
Vulcan Heritage
Pierce Park
Veterans Park
Riverview Country Club
Lutz Park
Butte Des Morts Country Club
Alicia Park
Reid Golf Course
Lions Park
John Street Park
Sunset Point Park
Van Dadlwyk Park
Verhagen Park
Springfield Park
Derks Park
Target
Kohl's
Wal Mart
Time Warner
Secura
Hoover Park
Woodland Park
Barker Farm Park
Youth Sport Inc.
Wittmann Park
Koslo Park
Fritsch Park
Butte Des Morts Park
Hwy 96
441
10
W Main St
E Glendale Av
W Glendale Av
E Marquette St
E Frances St
W Frances St
Alice St
W Taylor St
W Parkway Blvd
E Grant St
W Grant St
E Pauline St
W Bell Av
E Circle St
E Woodland Av
E Randall Av
W Brewster St
E Brewster St
E Kay St
Alley
W Kamps Av
E Randall St
Amelia St
W Wisconsin Av
E Wisconsin Av
W Summer St
W Spring St
E Spring St
E Jardin St
W Commercial St
E Commercial St
W Winnebago St
E Winnebago St
E Hancock St
W Elsie St
W Lorain St
E Pacific St
W Packard St
E North St
W Harris St
E Harris St
W Franklin St
E Franklin St
Alley
W Washington St
N College Frontage Rd
W College Av
Johnston St
W Lawrence St
E South St
W Eighth St
W Spencer St
W Sixth St
W Fifth St
W Water St
Railroad Av
E South River St
E Lincoln St
Arbor La
E Tracy St
E Lourdes Dr
E Harrison St
E Fremont St
E Maple St
W Seymour St
W Cedar St
W Reid Dr
E Dewey St
E Forest St
E Bona Av
E Calumet St
W Calumet St
E Murray Av
E Coolidge Av
E Harding Dr
E Wilson Av
Wilson Av
E Taft Av
E Hoover Av
E Roeland Av
E Sylvan Av
E Layton Av
E Mitchell Av
E Park Hills Dr
James St
Strawberry Ln
E Meadow Grove Blvd
E Shasta Ln
E Woodcrest Dr
Diane Ln
E Janet Ln
Hulke Dr
Bedford Ln
Plank Rd
Shea St
Manitowoc Rd
Birling Ct
Robin Way
Sunray Ct
Regal Ter
Dietzen Dr
Schaefer Cir
E Plank Rd
E Parkside Blvd
E Newberry St
E Peter St
Warehouse Rd
E Express Ct
E College Av
W Kennedy Av
Truman St
Van Roy Rd
Office Ct
Albert Way
Creekview La
Emons Rd
Stillwater
Cth KK
Cth LP
Cth N
Cameo Ct
Coral Ct
Pearl Dr
Garnet Dr
Golden Ct
Hearthstone Dr
Valley Ln
Daisy Ct
Peaceful Ln
Moonflower Dr
Strawflower Dr
Cornflower Dr
Zinnia Dr
Dahlia Dr
Sweet William Dr
Nettie Dr
Nolan Dr
Blue Bonet Ct
Sweet Clover Dr
Hoelzel Way
Unnamed Rd
Skippers Ln
Schmidt Rd
Mile Long Dr
Margaret Dr
Jochmann Rd
Logan Ln
Dusty Dr
Tamarack Ln
Hickory Ln
Cleveland Av
Harrison St
Fox Pt Dr
Patricia La
N French Rd
Sunset Dr
Paul Dr
Fulcer Av
Curtin Av
W Kimberly Av
Parkside Ct
Villa Dr
W Third St
W Fourth St
Windflower Way
Stonegate Dr
Strawberry La
Eisenhower Dr
Linda St
Joseph St
Knoedler St
S James St
S Sidney St
S John St
S Railroad St
Marcella St
Lowes La
Milky Way
Speel School Rd
Aurora Dr
Rita Ct
Pats Dr
Berken St
Pinecrest Blvd
Lavender La
Eisenhower Ct
Springfield Dr
Coop Rd
Stoney Brook Rd
Kankes Av
Potato Pt Rd
Grand View Rd
Bay Ridge Rd
Montclaire Ct
Briarcliff Dr
Cambridge Dr
Crestview Dr
Weimar Ct
Arbor Ct
Green Bay Rd
Oneida St
Division St
Harriman St
Bennett St
Story St
Locust St
Mason St
Gillett St
Douglas St
Linwood Av
Birchwood Av
Whitney Dr
Systems Dr
Tri-park Way
Bluemound Dr
Rexford St
Lyndale Dr
Perkins St
Jonathon Dr
Wilharms Dr
Russet Ct
Popp La
Westhill Blvd
Hickory Farm La
Lyndale Ct
Woodman Dr
Franklin St
Lilas Dr
College Frontage Rd
Lawrence St
Kools Ct
Timmers La
Ridge La
Bluemound Dr
Olson Av
Lyndale Dr
Tillman St
Fourth St
Whitman Av
Miller Ct
Victoria St
Eighth St
Spencer St
Melvin St
Second St
Prospect Av
Haskel St
Everett St
Pine St
Meadowbrook La
Herbert St
Perkins St
Driscoll St
Barteil Dr
Carver La
Outagamie St
Alicia Dr
Oakcrest Ct
Stiles Dr
River Dr
Cherry Ct
Garden Ct
Foster Ct
Ramlen Ct
Madison St
Jefferson St
Jackson St
Lawe St
Riger St
East St
Carpenter St
Gladys Av
Walden Av
Fountain Av
Berry Dr
Erie Dr
Horizon Dr
Kenan Av
Teluiah Av
Lee St
Weimar St
Rebecca La
Schaefer St
Theodore St
Matthias St
Clara St
Jade Dr
Sunshine Dr
Kensington Dr
Covenant La
Frederick St
Christine St
Arlington St
Schaefer St
Joseph St
Buchanan St
Fidelis St
Walter Av
Olde Oneida St
Vulcan St
Private Rd
Rail Rd
Theodore Ln
Mckayla Dr
Oak Lawn Dr
Woodendale Way
Stillmeadow Ln
Christopher Ln
Christopher Ct
Boyd Ct
Johann Dr
Jordan St
Southfield Dr
Fieldview Dr
Province Ter
Kensington Dr
Lake Park Rd
Quest Dr
Alliance Dr
Lakeland Dr
Eisenhower Dr
Soltude La
Tahoe La
Huckelberry La
Pleasant Ct
Prairie Ct
Poplar Ln
Wheatfield Dr
Kerman Av
Mitchell Av
Sylvan Av
Roeland Av
Woodcrest Dr
Shasta Ln
Meadow Grove Blvd
Moon Beam Tr
Janet Ln
Hulke Dr
Bedford Ln
Plank Rd
Shea St
Manitowoc Rd
Birling Ct
Robin Way
Sunray Ct
Regal Ter
Dietzen Dr
Schaefer Cir
Lake Park Rd
Kensington Dr

WIS 441 Tri-County Project Corridor Manual

Section 2l: FIIPS and PS&E Coordination

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: December 16, 2013

Scope/Purpose

This chapter section documents the process for design team coordination with FIIPS and PS&E Coordinators as outlined in the attached January 19, 2011 e-mail from Sandra Carpenter and the FIIPS PS&E Data Sheet revised 1/20/11 for use on the WIS 441 Tri-County Project.

Plan Letter

In the Plan Letter for WIS 441 projects under the Plans and Proposals heading, request 50 plans and proposals for large mainline projects and 25 plans and proposals for small projects (i.e Racine Road) (12/16/13 Scott Ebel e-mail)

Contract Time Chart

A P6 Contract Time Chart will be part of the contract Special Provisions for critical/complex projects including System Interchange, LLBDM structures, Racine Interchange, Midway Interchange, Appleton Interchange and Oneida Interchange (11/5/13 Design/Structure Meeting)

Attachments

- Sandra Carpenter e-mail (Dated 1-9-11)
- FIIPS PS&E Data Sheet (Dated 1-20-11)

From: Carpenter, Sandra - DOT
Sent: Wednesday, January 19, 2011 7:39 AM
To: DOT DL DTSD NE PDS
Cc: Cavanaugh, Jeanette - DOT; Calliari, Carol - DOT
Subject: PS&E Submittals

Good Morning

As discussed at last week's PDS Staff Meeting, the FIIPS and PS&E Coordinators need to perform many checks and input information into FIIPS prior to the quarterly PS&E date. A notification needs to be sent to FHWA on the PS&E date as well. The information noted on the "pink sheet" is the basis for this review and therefore that information MUST be correct. In addition to the "pink sheet" information, the FIIPS Coordinator inputs the project estimate categories as shown in Trns*port into FIIPS. The FIIPS Coordinator is also responsible for entering funding type, allocations percentages and caps and ensuring that this matches any SMA on file. This is just some of the critical information FHWA is reviewing during the audits. The Department will feel repercussions from FHWA if this information is incorrect.

Based on this information, here is how we can work with Programming to ensure the FIIPS and PS&E Coordinators receive the information in a timely manner.

WISDOT DESIGNED PROJECTS:

- 7 days prior to PS&E date estimate must be **substantially** completed with funding information in Trns*port
- 7 days prior to PS&E date Project Manager sends PS&E Coordinator the following:

    - Completed Pink Sheet
    - Plan Title Sheet (pdf)
    - Confirmation that estimate is in Trns*port

CONSULTANT DESIGNED PROJECTS:

- 10 days prior to PS&E date, construction cost estimate must be **substantially** completed with funding information in Trns*port
- 10 days prior to PS&E date, Consultant submits to Project Manager plan title sheet (pdf), "pink sheet" and pdf of Trns*port estimate for review
- 7 days prior to PS&E Project Manager sends PS&E Coordinator the following:

    - Completed Pink Sheet
    - Plan Title Sheet (pdf)
    - Confirmation that estimate is in Trns*port

Once PS&E Coordinator receives the above information here is the process:

PS&E Coordinator will give the information to FIIPS coordinator for use/review.
<u>If there are no errors / revisions needing to be addressed:</u>

- The FIIPS coordinator will notify the PS&E Coordinator that everything is good.

- The PS&E Coordinator will notify the Project Manager (and Consultant if applicable) that the PS&E package may be eSubmitted.
- **Do not eSubmit a PS&E package until you receive notification from the PS&E Coordinator.**

If there ARE errors / revisions needing to be addressed:

- The FIIPS Coordinator and PS&E Coordinator will work with the Project Manager to correct the errors.
- The PM will notify the PS&E Coordinator when the necessary revisions have been completed.
- The PS&E Coordinator will verify information is correct
- The PS&E Coordinator will notify the Project Manager (and Consultant if applicable) that the PS&E package may be eSubmitted.
- **Do not eSubmit a PS&E package until you receive notification from PS&E Coordinator.**

IF A PS&E IS NOT SUBMITTED ON THE ASSIGNED QUARTERLY DUE DATE IT WILL BE CONSIDERED A LATE PS&E!

PS&E SUBMITTAL
As part of the FHWA audit process, a PDF of the estimate in Trns*port MUST be submitted with the PS&E package. Use the field "OTHER" in the eSubmit application to submit the PDF of the estimate.

"PINK SHEET"
The "pink sheet" has been minimally revised and renamed **FIIPS PS&E Data Sheet** (see attached). Please use this file from this point forward.

NEGOTIATING CONSULTANT DESIGN CONTRACTS

- The Project Managers should include the 10 day prior to PS&E submittal requirement directly into the Consultant Design Contract. We will work with the Consultant Unit group to develop standard language to be included in Consultant contracts. Consultants will be receiving an email outlining the above process.

Please let me know if you have any questions.

Thank you in advance for your cooperation and efforts.

Sandy
Sandra D. Carpenter, P.E.
Program Controls / Design QA Engineer
WisDOT NE Region
Phone: 920-492-5681

COMPLETE and SUBMIT this Document to FIIPS COORDINATOR

7 days prior to PS&E

♦SUBMIT ONE PS&E DATA SHEET PER PROJECT♦

*ATTACH A COPY OF: TITLE SHEET & FINAL COMPLETE TRNS*PORT ESTIMATE*

Project Number: **Letting Date:** **County:**

Nearest Intersection on both ends:

Type of Highway: (Must check 1 in EACH Column)

- ☐ Freeway
- ☐ Expressway
- ☐ Divided Highway
- ☐ Undivided Highway
- ☐ Principal Arterial
- ☐ Minor Arterial
- ☐ Major Collector
- ☐ Minor Collector
- ☐ Local

Type of Work:

- ☐ Base Course
- ☐ Bridge Maintenance
  - ☐ Painting
  - ☐ Removal
  - ☐ Replacement
  - ☐ Deck Overlay
  - ☐ Deck Replacement
- ☐ Culvert
- ☐ Grading/Earthwork
- ☐ Guard Rails
- ☐ Landscaping
- ☐ Park & Ride Lot
- ☐ Pavement Marking
- ☐ Reconstruct Add Lanes
- ☐ Reconstruct NO Add Lanes
- ☐ Surface
  - ☐ Asphalt
  - ☐ Other
  - ☐ PCC
- ☐ Railroad Work

Railroad Work ID

Old Structure # **New Structure #**

Project net centerline miles:

Project length of mainline pavement miles:

Environmental Type:

☐ EIS — FHWA Number: Date:

- ☐ ER Date:
- ☐ pER Date:
- ☐ Type IV Date:
- ☐ FONSI Date:

WisDOT Project Manager (Contact Person):

Consultant Project Manager (Contact Person):

Date Submitted to FIIPS Coordinator:

WIS 441 Tri-County Project
Corridor Manual
Section 2m: State Municipal Agreements (SMAs)

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: August 15, 2012

Scope/Purpose
This chapter section documents the State Municipal Agreements (SMAs) for the WIS 441 Tri-County Project. The attached WIS 441 Cost Share Policy are subject to change. Please see the FTP site for the most current version.

The attached WIS 441 Cost Share Policy can also be found on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/PROGRAMCONTROLS/SMAs/

Attachments
- WIS 441 Cost Share Policy (Dated 7-17-12)

Item	State Standard Cost Share (%)		WIS 441 WIS 441 Cost Share (%)		Comments
	State/Fed	Local	State/Fed	Local	
Sidewalks					
Existing impacted by project	100	0	100	0	
New w/in project limits	80	20	100	0	
New outside project limits	0	100	0	100	
RAB/ & Between	80	20	100	0	
Ramp Terminal	80	20	100	0	
Lighting*					
Standard	100	0	100	0	
Ornamental***	0	100	0	100	
Decorative	0	100	100	0	New policy covers standard black poles and luminairs
Irrigation					
Roundabout	0	100	0	100	
Community Sensitive Design					
Additional aesthetics	0	100	0	100	CSD %/budget needs to be established. Cost over the % established would be 100% municipal cost
Sign Structures					
Standard	100	0	100	0	
Utility (Freeway Construction)					
Municipal	90	10	90	10	
Roadway					
Joint Sealing	0	100	0	100	

*Cost share is assuming existing system is in place. New standard lighting would be 50-50 cost

**State funded $5,000 allowance per RAB

***Above Standard cost share.

WIS 441 Tri-County Project Corridor Manual
Section 2n: Document Control

Chapter Contact: Mike Beurket

Issued: February 14, 2012
Revised: February 16, 2012

Scope/Purpose
This chapter section is provided to ensure proper document control procedures are being followed for the WIS 441 Tri-County Project. See attached Tri-County Project Mailbox direction reminder. More detailed guidance is found at the following locations:

S:\us41\US_41_Capacity_Expansion_Projects\WIS 441\PROGRAM CONTROLS\DOCUMENT CONTROL

ftp://ftp5.graef-usa.com/WIS441PROJECT/PROGRAMCONTROLS/DOCUMENTCONTROL/

Attachments
- Tri-County Project Mailbox (Dated 2-16-12)

WIS 441 Mailbox

With the WIS 441 Project beginning, there are requirements for implementing project-tracking procedures. One of these requirements is to submit project related documents, communications, and meetings for inclusion in the project files.

To assist in collecting project information an Outlook mailbox has been created for the WIS 441 Project. When communicating information or scheduling meetings pertaining to the WIS 441 Project, please copy the project mailbox or include as an attendee. This mailbox is for submitting documents only; questions should be directed to a specific project team member.

Outlook Contact: DOT DTSD NE Region WIS 441 File

OR

E-mail address: WIS441@dot.wi.gov

To help ensure that the documents are logged into the appropriate projects, please include the project number and if possible the file code for the information being submitted. When scheduling meetings, please include the file code that pertains to the purpose of the meeting.

What to submit:

Documents that would provide support for project decisions.
Documents providing proof that information was sent to specific person(s).
Documents that satisfy project milestones.
Meetings scheduled to discuss the project.

Providing this information on a timely and consistent basis will allow for the timely and sequential logging of information the project file. These efforts will result in quick and easier retrieval of project information when needed. In addition, taking this one small step today could possibly prevent you from painstakingly having to search your own files to retrieve this information later.

WIS 441 Tri-County Project Corridor Manual
Section 2o: Railroad Coordination

Chapter Contact: Don Yetter

Issued: March 15, 2012
Revised: September 14, 2012
December 17, 2012
July 15, 2013
February 17, 2014

Scope/Purpose
This chapter section is provided to document railroad coordination issues for the WIS 441 Tri-County Project.

General
WIS 441 project references (base mapping, exhibits, etc.) to the railroad shall refer to "Wisconsin Central Ltd", rather than "Canadian National Railway".

The Racine Road Ramp Connector railroad crossing will not include an advanced warning system (8/14/12 Design/Structures meeting).

For the US 41 northbound structure (B-70-132) over the Wisconsin Central Limited Railroad and Green Bay Road, ~~a 22'-6" substandard vertical clearance will be acceptable vs. the 23' minimum (8/28/12 Design/Corridor Meeting).~~ the existing vertical clearance of 22'-9.5" will be maintained with the use of shallower girders (01/14/14 Scott Ebel e-mail)

Drainage
An evaluation was completed for the drainage impact of the shared ditch between the Wisconsin Central Limited Railroad (WCLR) and USH 41 in regards to the effects of the increased USH 41 footprint and the addition of impervious area. The ditch is located north of the USH 41/USH 10/WIS 441 System Interchange on the east side of USH 41 and drains into the Menasha Creek. The evaluation and results are found in the attached Tech Memo #1 (Stage 2) USH 41-WCLR Ditch.

Attachments
- Tech Memo #1 (Stage 2) USH 41-WCLR Ditch (Dated 05-1-13)

KAPUR & ASSOCIATES, INC.
CONSULTING ENGINEERS

7711 N. Port Washington Road
Milwaukee, WI 53217
Ph: (414) 351-7200
Fax: (414) 351-4117

Technical Memorandum

Date:	**May 1, 2013**
To:	**Scott Ebel, PE, Project Manager, WisDOT NER**
	Tom Buchholz, PE, Project Manager, WisDOT NER
	Eric Sikorski, Deputy Project Manager, WisDOT NER
	Chad DeGrave, PE, Design Supervisor, WisDOT NER
	Brian Roper, PE, Corridor Manager, WisDOT NER
From:	**Brad Kwaterski/Justin Arndt – Kapur & Associates**
Project ID:	**1517-07-04 (Stage 2)**
Project:	**WIS 441**
	Winnebago County
Subject:	**WIS 441 – Drainage Ditch Parallel with Wisconsin Central Limited Railroad & USH 41 NB**
	Technical Memorandum 1

Project Description

The USH 41/USH 10/WIS 441 System Interchange is being reconstructed as part of a larger expansion project of USH 10/WIS 441 from CTH CB to Oneida Street. The reconstruction of the interchange adds the missing system movements of USH 10 EB to USH 41 NB and USH 41 NB to USH 10 WB. The new USH 10 EB to USH 41 NB ramp widens the USH 41 footprint toward the Wisconsin Central Limited Railroad (WCLR).

Purpose

The purpose of this memorandum is to evaluate the drainage impact of the shared ditch between the Wisconsin Central Limited Railroad (WCLR) and USH 41. The ditch is located north of the USH 41/USH 10/WIS 441 System Interchange on the east side of USH 41 and drains into the Menasha Creek. The existing and proposed flow conditions and ditch capacities are analyzed to evaluate the effects of the increased USH 41 footprint and the addition of impervious area.

Design Data

Design Storm

The design storm is defined as a storm event of a particular frequency and duration that contributes runoff for which drainage facilities are designed to handle. In accordance with WisDOT Facilities Development Manual (FDM), freeway ditches are designed for a 25-year, 24-hour storm event with a Manning's roughness coefficient of 0.1 to 0.2 and a minimum longitudinal slope of 0.005 ft/ft. A 50-year, 24-hour storm event will be used to check that the flow will be contained in the ditch.

Rainfall

Rainfall intensity is defined as the rate of rainfall accumulated for a selected frequency. Per FDM Chapter 13 the rainfall intensity is determined by a Type-II rainfall distribution. The Type-II intensity curve is built into HydroCAD version 10 which determines the rainfall intensity based upon the total rainfall. "Bulletin 71 – Rainfall Frequency Atlas of the United States" (see Attachment 1) indicated a 50-year storm would produce 5.32" of rain in a 24-hour period.

Design Discharge

The hydrologic and hydraulic analyses follow procedures and methodologies presented in the WisDOT FDM Chapter 13. The hydrologic data for this study was developed using HydroCAD version 10, based on the NRCS TR-55 method. The ditch capacities were calculated using Bentley's Flow Master V8i Select Series 1 utilizing the Manning's Formula.

Existing Drainage and Conveyance Measures

In the existing condition, two ditches, carrying runoff north, run parallel between USH 41 and WCLR from USH 10 toward Menasha Creek, as shown on Attachment 2. The west ditch carries USH 41 drainage, while the east ditch carries WCLR drainage. The two ditches combine approximately 750' south of Menasha Creek and flow into it.

The following drainage areas contribute to the USH 41/WCLR shared ditch (see Attachment 2):

Area EE

- Wooded wetland area inside the existing USH 10 WB to USH 41 SB Loop Ramp, and the triangular basin between existing USH 10 WB to USH 41 SB ramp, USH 41 SB to USH 10 WB ramp, and USH 41 SB to USH 10 EB ramp.
- Drainage area: 21.7 acres

Area EF = Area EF1 and Area EF2

- Grassy ditch north of USH 10, between USH 41 SB and the USH 41 SB to USH 10 EB ramp, and USH 41 pavement and median.
- Drainage area: 7.2 acres

Area EG = Area EG3 + Area EG4 + Area EG5 + Area EG6 + Area EG7

- Encompasses 5 sub areas of USH 41 pavement and median that outfall into a shared ditch that flows to Menasha Creek.
- Drainage area: 3.5 acres

Area EH= Area EH1 + Area EH2

- Grassy ditch north of USH 10, between USH 41 NB and USH 10 WB to USH 41NB ramp, and USH 41 pavement and median.
- Drainage area: 6.1 acres

Area EI = Area EI2 + Area EI3 +Area EI4

- Grassy ditch north of USH 10 between the USH10 WB to USH 41 NB Ramp and the high point between the east and west ditch along the Wisconsin Central Limited Railroad.
- Drainage area: 6.2 acres

Area EJ = Area EJ1 + Area EJ2 + Area EJ3

- USH 10 WB and USH 10 WB to USH 41 NB Ramp structures over WCLR and the areas around the east ditch along the Wisconsin Central Limited Railroad.
- Drainage area: 6.0 acres

Flows from Area EE and Area EF cross USH 41 approximately 2000' south of Menasha Creek. Area EH joins the EE/EF flow before it outfalls into Area EI and flows north in the west ditch. Area EJ incorporates interchange structure runoff and runoff along the east ditch. Area EG encompasses USH 41 pavement and median flows that outfall into Area EI at four locations.

Three critical analysis locations were evaluated for flow, capacity, and water surface elevation for a 50-year storm event. Existing ditch capacity was determined using the estimated bottom of ballast. Results for the existing conditions can be found in Attachment 3.

- 1275' south of Menasha creek
  The east ditch and west ditch are separate (see attachment 2). The east ditch can carry 114.6 cfs while the west ditch can convey 33.9 cfs for a combined capacity of 148.5cfs. During a 50-year storm event, areas flowing to the east ditch contribute 16.3 cfs while areas flowing to the west ditch contribute 99.0 cfs. This means that during the 50-year storm event, the west ditch overflows so that the two ditches share the combined flow of 115.3 cfs, creating a water surface elevation of 745.7.

- 660' south of Menasha Creek
  At this location, the east and west ditches have combined to form a shared ditch. The capacity of the shared ditch is 145.2 cfs and the 50-year storm flow is 127.8 cfs with a water surface elevation of 746.3.

- 300' south of Menasha Creek
  The shared ditch has a capacity of 369.8 cfs and the 50-year runoff is 140.4 cfs with a water surface elevation of 745.1.

Proposed Condition

The widening of USH 41 footprint and the addition of the USH 10 EB to USH 41 NB ramp will increase impervious area and impacts the capacity of the USH 41/WCLR shared ditch. Proposed drainage areas can be found in Attachment 4. To reduce flow in the shared ditch, Area EE and a portion of Area EF (see comparison of areas between Attachment 2 and Attachment 4) are diverted to a proposed stormsewer system to be constructed along the west side of USH 41.

Immediately north of USH 10, the new FEN Ramp and WCLR have separate ditches to carry stormwater runoff. These two ditches combine as they travel north. Capacity analysis of the new USH 41/WCLR shared ditch was completed at the three critical locations evaluated during existing conditions. A proposed cross section for each location is shown in Attachment 5.

The following drainage areas contribute to the USH 41/WCLR shared ditch (see Attachment 4):

Area 1- Orange
- Contribution area to 1870' south of Menasha Creek. USH 41 NB pavement and median, grass ditch and fill slope between ramps and USH 41 NB, ramp pavement and the USH 10 WB to USH 41 NB ramp structure and the USH 10 WB structure.
- Drainage area: 15.4 acres

Area 2 - Green
- Grassy ditch that runs along WCLR from USH 10 to analysis point 1275' south of Menasha Creek
- Drainage area: 2.0 acres

Area 3 - Red
- USH 41 pavement and median, grassy areas between USH 41 and ramps, and grass ditch
- Drainage area: 3.8 acres

Area 4 - Pink
- USH 41 pavement and median and shared grass ditch with the WCLR.
- Drainage area: 2.0 acres

Area 5 - Blue
- USH 41 pavement and median and shared grass ditch with the WCLR.
- Drainage area: 3.5 acres

Significant flow to the new USH 10 EB to USH 41 NB Ramp ditch begins approximately 1870' south of Menasha Creek. Drainage Area 1, shown in orange, contributes 55.1 cfs of runoff during a 50-year storm event to a ditch with an adequate capacity of 166.4 cfs. Runoff from Area 1 will remain in the USH 10 EB to USH 41 NB Ramp ditch until it combines with the WCLR ditch at 1275' south of Menasha Creek. The three critical analysis locations were analyzed for flow, capacity, and water surface elevation for a 50-year storm event. Ditch capacity was determined using the estimated bottom of ballast. Results for the proposed conditions can be found in Attachment 6.

- 1275' south of Menasha Creek
  The USH 10 EB to USH 41 NB Ramp ditch combines with the WCLR ditch (Area 2). The shared ditch has a capacity of 229.6 cfs. The proposed 50-year runoff is 71.1 cfs, of which 8.1 cfs from the WCLR ditch and 63.0 cfs from the ramp ditch. The water surface elevation is 744.8.

- 660' south of Menasha Creek
  The shared ditch has a capacity of 616.9 cfs and the 50-year storm flow is 84.9 cfs. The shared ditch bottom has been lowered in order to maintain a 0.2% slope from USH 10. With a lowered flat-bottom ditch (see Attachments 5), the proposed water surface elevation (743.8) is lower than the existing condition (746.3).

- 300' south of Menasha Creek
  The shared ditch has a capacity of 645.3 cfs and the 50-year storm flow is 107.0 cfs. The shared ditch bottom has been lowered in order to maintain a 0.2% slope from USH 10. With a lowered flat-bottom ditch, the proposed water surface elevation of 743.2 is 1.9' lower than the existing condition.

Conclusion

USH 41 and Wisconsin Central Limited Railroad share a common ditch south of Menasha Creek. In the existing condition, the shared ditch carries 140.4 cfs during a 50-year storm event. The widening of USH 41 will add impervious area and affect the cross-sectional area of the shared ditch. Through redirecting stormwater runoff west of USH 41, the proposed runoff in the shared ditch is reduced to 107.0 cfs, 33.4 cfs less than the existing condition. In addition, the existing ditch experiences a lower water surface elevation during a 50-year storm event.

Bulletin 71
(MCC Research Report 92-03)

RAINFALL FREQUENCY ATLAS OF THE MIDWEST

by Floyd A. Huff and James R. Angel

Title: Rainfall Frequency Atlas of the Midwest.

Abstract: This report presents the results and methodology of an intense study of rainfall frequency relationships throughout the Midwest (Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin). Using primarily 275 long-term daily reporting stations from the National Weather Service (NWS) cooperative network supplemented by 134 daily reporting stations with shatter records, rainfall amounts have been determined for recurrence intervals from 2 months to 100 years and for durations of 5 minutes to 10 days. The results are presented as maps and as climate division averages in tabular form. Several special raingage networks were used to develop relationships between amounts for 24 hours and less. This report also examines the time distributions of heavy rainfall over time, and other storm characteristics such as storm orientation and movement. The assumption of spatially independent observations between stations is also discussed.

Reference: Huff, Floyd A., and James R. Angel. Rainfall Frequency Atlas of the Midwest. Illinois State Water Survey, Champaign, Bulletin 71, 1992.

Indexing Terms: Climatology, heavy rainfall, hydroclimatology, hydrometeorology, Midwest, extreme value distributions, climate change.

The Midwestern Climate Center (MCC) is funded by a grant from the Climate Analysis Center, National Weather Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

(MCC) with Stanley Changnon and Peter J. Lamb as the co-principal investigators. The work was continued and completed under the general direction of Kenneth Kunkel, present MCC Director.

Special appreciation goes to Stan Changnon for his foresight, guidance, and encouragement in establishing and accomplishing the program objectives. He and Ken Kunkel reviewed the report and made useful comments and suggestions. Special thanks go to Richard Katz, National Center for Atmospheric Research; Tibor Farago, Hungarian Meteorological Service; and J.R.M. Hosking, IBM Research Division, for providing software for some of the extreme rainfall analyses. Fred Nurnberger, Michigan State Climatologist, provided valuable long-term precipitation data for his state as well as comments on the manuscript. We also thank the following state climatologists for their review and comments on this project: Wayne Wendland, Illinois; Ken Scheeringa, Indiana; Harry Hillaker, Iowa; Glen Conner, Kentucky; Jim Zandlo, Minnesota; Wayne Decker, Missouri; Jeff Rogers, Ohio; and Pam Naber-Knox, Wisconsin.

John Brother and Linda Hascall supervised the extensive drafting work required for the report. Jean Dennison typed and assembled the report, which Eva Kingston edited and formatted.

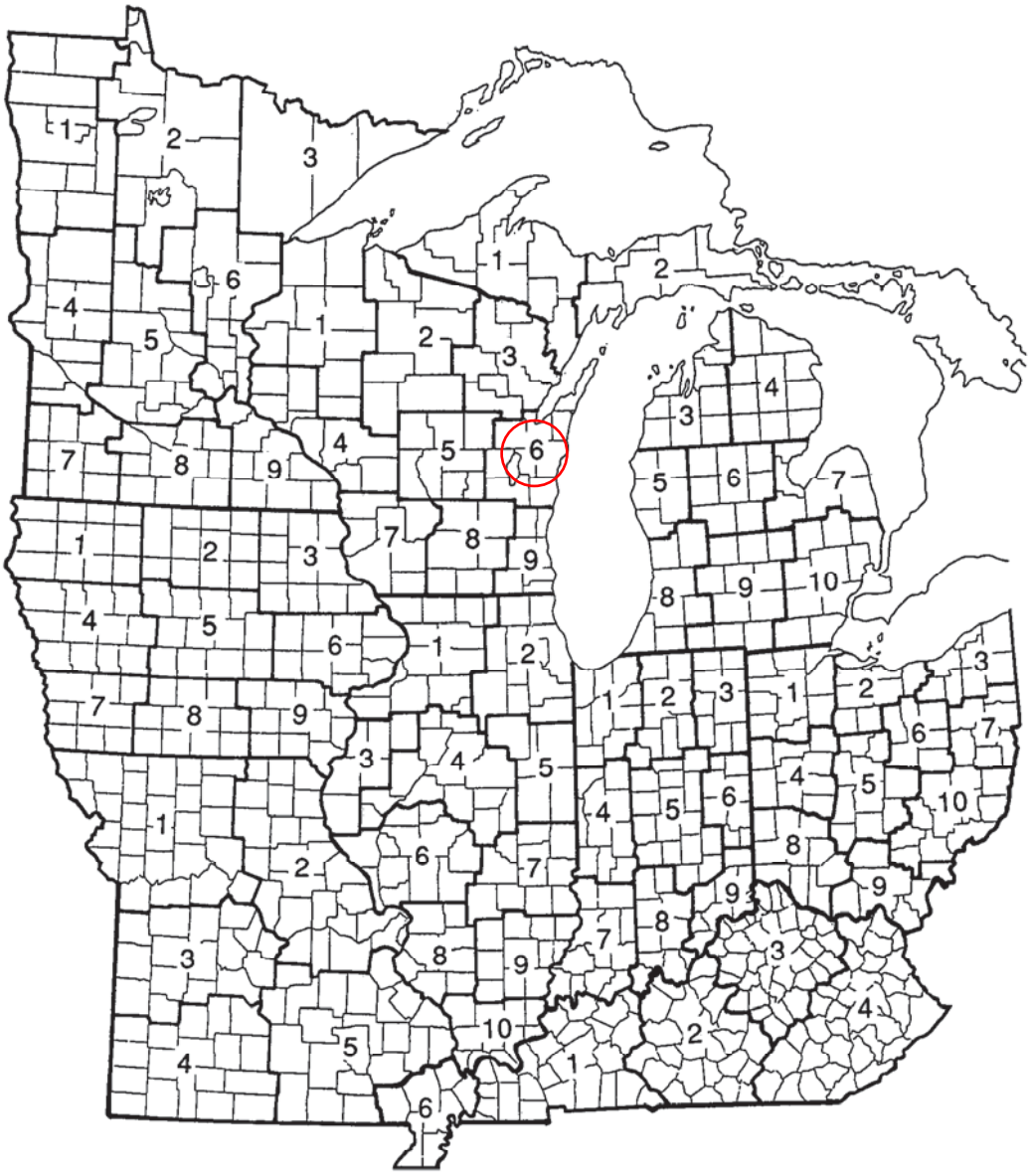


Figure 1. Climatic sections for the Midwest

Table 9. Continued

Rainfall (inches) for given recurrence interval

Section	*Duration*	*2-month*	*3-month*	*4-month*	*6-month*	*9-month*	*1-year*	*2-year*	*5-year*	*10-year*	*25-year*	*50-year*	*100-year*
04	10-day	1.83	2.21	2.54	2.99	3.44	3.74	4.78	5.94	6.76	7.95	8.96	9.92
04	5-day	1.57	1.87	2.12	2.46	2.82	3.07	3.88	4.88	5.69	6.85	7.80	8.85
04	72-hr	1.40	1.64	1.86	2.15	2.47	2.69	3.43	4.36	5.17	6.24	7.07	8.06
04	48-hr	1.29	1.51	1.68	1.95	2.24	2.44	3.12	3.98	4.66	5.60	6.43	7.33
04	24-hr	1.23	1.43	1.56	1.81	2.05	2.23	2.92	3.72	4.40	5.28	6.02	6.88
04	18-hr	1.15	1.34	1.47	1.70	1.93	2.10	2.74	3.50	4.14	4.96	5.66	6.47
04	12-hr	1.07	1.24	1.36	1.57	1.78	1.94	2.54	3.24	3.83	4.59	5.24	5.99
04	6-hr	0.92	1.07	1.17	1.35	1.54	1.67	2.19	2.79	3.30	3.96	4.51	5.16
04	3-hr	0.79	0.92	1.00	1.16	1.32	1.43	1.87	2.38	2.82	3.38	3.85	4.40
04	2-hr	0.71	0.83	0.90	1.04	1.19	1.29	1.69	2.16	2.55	3.06	3.49	3.99
04	1-hr	0.58	0.67	0.73	0.85	0.97	1.05	1.37	1.75	2.07	2.48	2.83	3.23
04	30-min	0.46	0.53	0.58	0.67	0.76	0.83	1.08	1.38	1.63	1.95	2.23	2.55
04	15-min	0.33	0.38	0.42	0.49	0.55	0.60	0.79	1.00	1.19	1.43	1.63	1.86
04	10-min	0.26	0.30	0.33	0.38	0.43	0.47	0.61	0.78	0.92	1.11	1.26	1.44
04	5-min	0.15	0.17	0.19	0.22	0.25	0.27	0.35	0.45	0.53	0.63	0.72	0.83
05	10-day	1.90	2.29	2.64	3.10	3.57	3.88	4.77	5.81	6.53	7.59	8.50	9.52
05	5-day	1.54	1.84	2.08	2.41	2.77	3.01	3.69	4.49	5.14	6.09	6.94	7.87
05	72-hr	1.35	1.59	1.79	2.08	2.39	2.60	3.18	3.89	4.49	5.36	6.09	6.90
05	48-hr	1.25	1.46	1.63	1.89	2.17	2.36	2.90	3.58	4.11	4.87	5.48	6.17
05	24-hr	1.18	1.38	1.50	1.74	1.98	2.15	2.65	3.25	3.71	4.38	4.93	5.52
05	18-hr	1.11	1.29	1.41	1.64	1.86	2.02	2.49	3.06	3.49	4.12	4.63	5.19
05	12-hr	1.03	1.20	1.31	1.51	1.72	1.87	2.31	2.83	3.23	3.81	4.29	4.80
05	6-hr	0.89	1.03	1.13	1.30	1.48	1.61	1.99	2.44	2.78	3.29	3.70	4.14
05	3-hr	0.76	0.88	0.97	1.12	1.27	1.38	1.70	2.08	2.37	2.80	3.16	3.53
05	2-hr	0.69	0.80	0.88	1.01	1.15	1.25	1.54	1.88	2.15	2.54	2.86	3.20
05	1-hr	0.56	0.65	0.71	0.82	0.93	1.01	1.25	1.53	1.74	2.06	2.32	2.59
05	30-min	0.44	0.51	0.56	0.65	0.74	0.80	0.98	1.20	1.37	1.62	1.82	2.04
05	15-min	0.32	0.37	0.41	0.47	0.53	0.58	0.72	0.88	1.00	1.18	1.33	1.49
05	10-min	0.25	0.29	0.31	0.36	0.41	0.45	0.56	0.68	0.78	0.92	1.04	1.16
05	5-min	0.14	0.17	0.18	0.21	0.24	0.26	0.32	0.39	0.45	0.53	0.59	0.66
06	10-day	1.70	2.05	2.36	2.78	3.19	3.47	4.28	5.29	6.11	7.36	8.51	9.85
06	5-day	1.34	1.60	1.81	2.10	2.42	2.63	3.22	4.01	4.74	5.91	6.98	8.28
06	72-hr	1.21	1.42	1.61	1.66	2.14	2.33	2.83	3.55	4.20	5.25	6.23	7.42
06	48-hr	1.13	1.32	1.47	1.70	1.96	2.13	2.61	3.26	3.87	4.86	5.77	6.88
06	24-hr	1.08	1.25	1.37	1.59	1.80	1.96	2.40	3.00	3.56	4.46	5.32	6.35
06	18-hr	1.01	1.18	1.29	1.49	1.69	1.84	2.26	2.82	3.35	4.19	5.00	5.97
06	12-hr	0.94	1.09	1.20	1.39	1.57	1.71	2.09	2.61	3.10	3.88	4.63	5.52
06	6-hr	0.81	0.94	1.03	1.19	1.35	1.47	1.80	2.25	2.67	3.35	3.99	4.76
06	3-hr	0.69	0.80	0.88	1.01	1.15	1.25	1.54	1.92	2.28	2.85	3.40	4.06
06	2-hr	0.63	0.73	0.80	0.92	1.05	1.14	1.39	1.74	2.06	2.59	3.09	3.68
06	1-hr	0.51	0.59	0.64	0.75	0.85	0.92	1.13	1.41	1.67	2.10	2.50	2.98
06	30-min	0.40	0.47	0.51	0.59	0.67	0.73	0.89	1.11	1.32	1.65	1.97	2.35
06	15-min	0.29	0.34	0.37	0.43	0.49	0.53	0.65	0.81	0.96	1.20	1.44	1.71
06	10-min	0.23	0.26	0.29	0.33	0.38	0.41	0.50	0.63	0.75	0.94	1.12	1.33
06	5-min	0.13	0.15	0.17	0.19	0.22	0.24	0.29	0.36	0.43	0.54	0.64	0.76

PROJECT 1517-07-04
US 10 / WIS 441
EXISTING DRAINAGE
WINNEBAGO COUNTY
ATTACHMENT 2

N

0 100 200 300

SCALE IN FEET

AREA EE

AREA EF2

AREA EH2

AREA EF1

AREA EH1

AREA EJ3

AREA EI2

AREA EG3

AREA EG4

AREA EG5

AREA EG6

AREA EG7

AREA EI3

AREA EI4

AREA EI5

AREA EJ1

AREA EJ2

WEST DITCH

WISCONSIN CENTRAL LTD RR

EAST DITCH

ANALYSIS LOCATION
1275' SOUTH
COMBINED FLOW 115.3 CFS
COMBINED CAPACITY 148.5 CFS

ANALYSIS LOCATION
660' SOUTH
FLOW 127.8 CFS
CAPACITY 145.2 CFS

SHARED DITCH BEGINS

ANALYSIS LOCATION
300' SOUTH
FLOW 140.4 CFS
CAPACITY 369.8 CFS

LITTLE LAKE BUTTE DE MORTS

AMERICAN DRIVE

MENASHA CREEK

USH 41

BUTTE DES MORRIS BEACH RD.

LAKE ST.

MILL POND LN.

OLD BRIDGE DR.

W. AMERICAN DR.

TREYBURN CT.

LA QUINTA CT.

AMERICAN DR.

AMERICAN CT.

SUNDT LN.

GAS RD.

KICK CT.

CANADIAN NATIONAL RAILROAD

Worksheet for 1275' S (W. Exist Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Normal Depth	1.60	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	10.00	ft/ft (H:V)
Bottom Width	0.00	ft

Results

Discharge	33.93	ft^3/s
Flow Area	17.92	ft^2
Wetted Perimeter	22.68	ft
Hydraulic Radius	0.79	ft
Top Width	22.40	ft
Critical Depth	1.08	ft
Critical Slope	0.01638	ft/ft
Velocity	1.89	ft/s
Velocity Head	0.06	ft
Specific Energy	1.66	ft
Froude Number	0.37	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.60	ft
Critical Depth	1.08	ft
Channel Slope	0.00200	ft/ft

Worksheet for 1275' S (E. Exist Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Normal Depth	1.60	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	21.00	ft

Results

Discharge	114.61	ft^3/s
Flow Area	43.84	ft^2
Wetted Perimeter	34.19	ft
Hydraulic Radius	1.28	ft
Top Width	33.80	ft
Critical Depth	0.92	ft
Critical Slope	0.01429	ft/ft
Velocity	2.61	ft/s
Velocity Head	0.11	ft
Specific Energy	1.71	ft
Froude Number	0.40	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.60	ft
Critical Depth	0.92	ft
Channel Slope	0.00200	ft/ft

Worksheet for 1275' S (E. Exist Flow Elev. w/overflow)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	21.00	ft
Discharge	81.40	ft³/s

Results

Normal Depth	1.32	ft
Flow Area	34.72	ft²
Wetted Perimeter	31.89	ft
Hydraulic Radius	1.09	ft
Top Width	31.57	ft
Critical Depth	0.74	ft
Critical Slope	0.01522	ft/ft
Velocity	2.34	ft/s
Velocity Head	0.09	ft
Specific Energy	1.41	ft
Froude Number	0.39	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.32	ft
Critical Depth	0.74	ft
Channel Slope	0.00200	ft/ft

Worksheet for 660' S (Existing Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Normal Depth	2.76	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	10.00	ft/ft (H:V)
Bottom Width	0.00	ft

Results

Discharge	145.21	ft^3/s
Flow Area	53.32	ft^2
Wetted Perimeter	39.12	ft
Hydraulic Radius	1.36	ft
Top Width	38.64	ft
Critical Depth	1.93	ft
Critical Slope	0.01349	ft/ft
Velocity	2.72	ft/s
Velocity Head	0.12	ft
Specific Energy	2.88	ft
Froude Number	0.41	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.76	ft
Critical Depth	1.93	ft
Channel Slope	0.00200	ft/ft

Worksheet for 660' S (Existing Flow Elev.)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	10.00	ft/ft (H:V)
Bottom Width	0.00	ft
Discharge	127.80	ft³/s

Results

Normal Depth	2.63	ft
Flow Area	48.45	ft²
Wetted Perimeter	37.29	ft
Hydraulic Radius	1.30	ft
Top Width	36.83	ft
Critical Depth	1.83	ft
Critical Slope	0.01372	ft/ft
Velocity	2.64	ft/s
Velocity Head	0.11	ft
Specific Energy	2.74	ft
Froude Number	0.41	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.63	ft
Critical Depth	1.83	ft
Channel Slope	0.00200	ft/ft

Worksheet for 300' S (Existing Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00300	ft/ft
Normal Depth	4.50	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	0.00	ft

Results

Discharge	369.77	ft^3/s
Flow Area	81.00	ft^2
Wetted Perimeter	37.11	ft
Hydraulic Radius	2.18	ft
Top Width	36.00	ft
Critical Depth	3.51	ft
Critical Slope	0.01132	ft/ft
Velocity	4.57	ft/s
Velocity Head	0.32	ft
Specific Energy	4.82	ft
Froude Number	0.54	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.50	ft
Critical Depth	3.51	ft
Channel Slope	0.00300	ft/ft

Worksheet for 300' S (Existing Flow Elev.)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00300	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	0.00	ft
Discharge	140.40	ft³/s

Results

Normal Depth	3.13	ft
Flow Area	39.18	ft²
Wetted Perimeter	25.81	ft
Hydraulic Radius	1.52	ft
Top Width	25.04	ft
Critical Depth	2.38	ft
Critical Slope	0.01288	ft/ft
Velocity	3.58	ft/s
Velocity Head	0.20	ft
Specific Energy	3.33	ft
Froude Number	0.51	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.13	ft
Critical Depth	2.38	ft
Channel Slope	0.00300	ft/ft

PROJECT 1517-07-04
US 10 / WIS 441
PROPOSED DRAINAGE
WINNEBAGO COUNTY
ATTACHMENT 4

N

0 100 200 300

SCALE IN FEET

AMERICAN DRIVE

MENASHA CREEK

USH 41

AREA 1

AREA 2

AREA 3

AREA 4

AREA 5

WISCONSIN CENTRAL LTD RR

1870' SOUTH

ANALYSIS LOCATION
1275' SOUTH
FLOW 71.1 CFS
CAPACITY 229.6 CFS

ANALYSIS LOCATION
660' SOUTH
FLOW 84.9 CFS
CAPACITY 616.9 CFS

ANALYSIS LOCATION
300' SOUTH
FLOW 107.0 CFS
CAPACITY 645.3 CFS

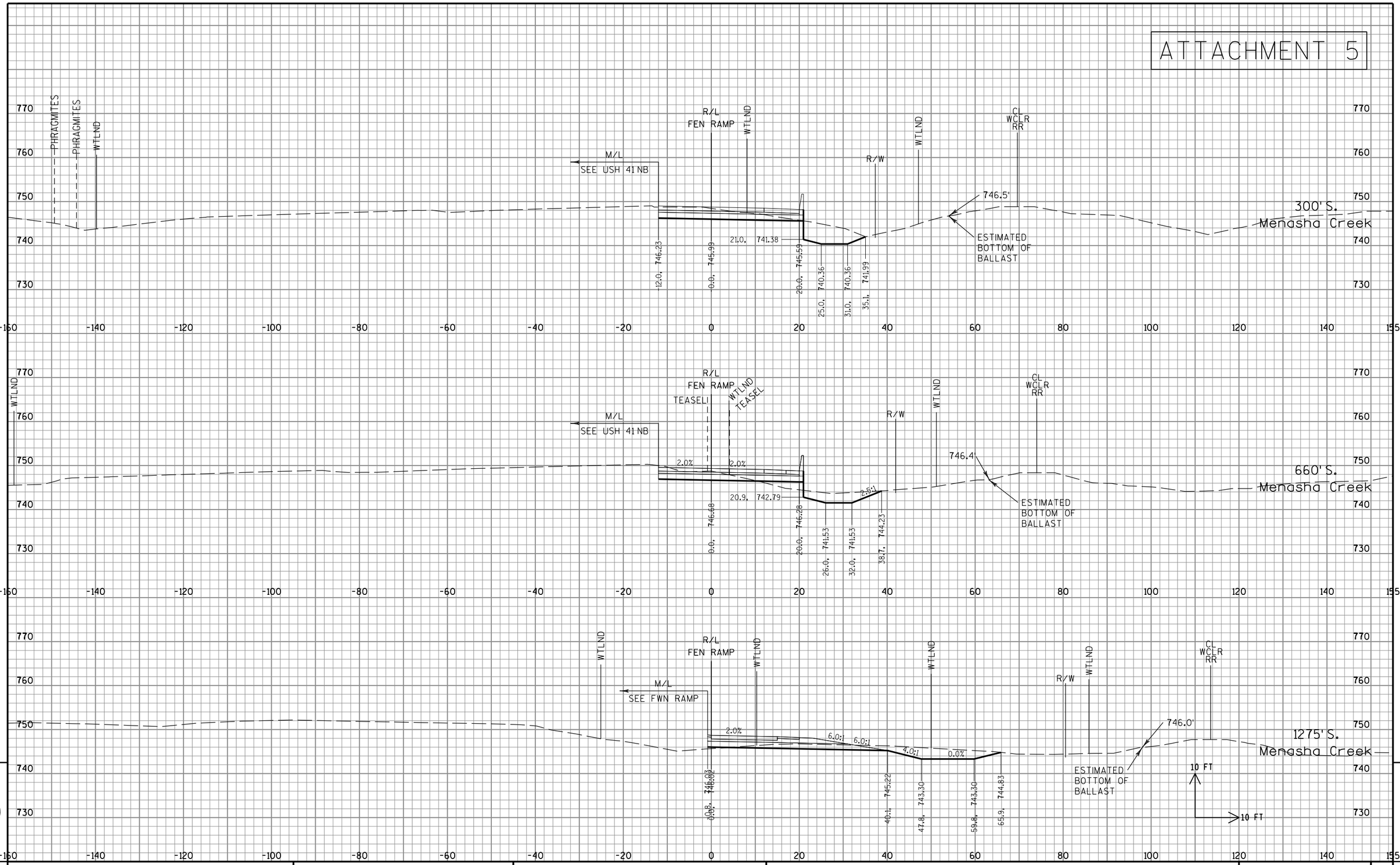
USH 10 WB

USH 10 WB TO USH 41 NB

USH 10 EB TO USH 41 NB

LITTLE LAKE BUTTE DE MORTS

ATTACHMENT 5



9

9

STATE PROJECT NO: 1517-07-04	HWY: USH 10	COUNTY: WINNEBAGO	CROSS SECTIONS: USH 41 / WCLR SHARED DITCH	SHEET NO: .	E

FILE NAME : S:\DOT\DOT_NE\120012-Tri County Freeway\Working\Brad\Drainage\Proposed RR Ditch_XS.dgn PLOT DATE : 5/1/2013 PLOT BY : bkwaterski PLOT NAME : PLOT SCALE : 1:20

Worksheet for 1870' S (Proposed Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Normal Depth	2.76	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	8.00	ft

Results

Discharge	166.35	ft^3/s
Flow Area	52.55	ft^2
Wetted Perimeter	30.76	ft
Hydraulic Radius	1.71	ft
Top Width	30.08	ft
Critical Depth	1.77	ft
Critical Slope	0.01265	ft/ft
Velocity	3.17	ft/s
Velocity Head	0.16	ft
Specific Energy	2.92	ft
Froude Number	0.42	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.76	ft
Critical Depth	1.77	ft
Channel Slope	0.00200	ft/ft

Worksheet for 1870' S (Proposed Flow Elev.)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	8.00	ft
Discharge	55.10	ft³/s

Results

Normal Depth	1.62	ft
Flow Area	23.39	ft²
Wetted Perimeter	21.33	ft
Hydraulic Radius	1.10	ft
Top Width	20.94	ft
Critical Depth	0.96	ft
Critical Slope	0.01488	ft/ft
Velocity	2.36	ft/s
Velocity Head	0.09	ft
Specific Energy	1.70	ft
Froude Number	0.39	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.62	ft
Critical Depth	0.96	ft
Channel Slope	0.00200	ft/ft

Worksheet for 1275' S (FEN Proposed Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Normal Depth	1.53	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	12.00	ft

Results

Discharge	66.47	ft^3/s
Flow Area	27.72	ft^2
Wetted Perimeter	24.62	ft
Hydraulic Radius	1.13	ft
Top Width	24.24	ft
Critical Depth	0.89	ft
Critical Slope	0.01484	ft/ft
Velocity	2.40	ft/s
Velocity Head	0.09	ft
Specific Energy	1.62	ft
Froude Number	0.40	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.53	ft
Critical Depth	0.89	ft
Channel Slope	0.00200	ft/ft

Worksheet for 1275' S (E. Ditch Proposed 744.83)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Normal Depth	0.43	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	21.00	ft

Results

Discharge	11.71	ft^3/s
Flow Area	9.77	ft^2
Wetted Perimeter	24.55	ft
Hydraulic Radius	0.40	ft
Top Width	24.44	ft
Critical Depth	0.21	ft
Critical Slope	0.02241	ft/ft
Velocity	1.20	ft/s
Velocity Head	0.02	ft
Specific Energy	0.45	ft
Froude Number	0.33	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.43	ft
Critical Depth	0.21	ft
Channel Slope	0.00200	ft/ft

Worksheet for 1275' S (Shared Proposed Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Normal Depth	1.17	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	51.00	ft

Results

Discharge	151.35	ft^3/s
Flow Area	65.15	ft^2
Wetted Perimeter	60.65	ft
Hydraulic Radius	1.07	ft
Top Width	60.36	ft
Critical Depth	0.64	ft
Critical Slope	0.01553	ft/ft
Velocity	2.32	ft/s
Velocity Head	0.08	ft
Specific Energy	1.25	ft
Froude Number	0.39	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.17	ft
Critical Depth	0.64	ft
Channel Slope	0.00200	ft/ft

Worksheet for 1275' S (W. Proposed Flow Elev.)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	12.00	ft
Discharge	63.00	ft³/s

Results

Normal Depth	1.49	ft
Flow Area	26.69	ft²
Wetted Perimeter	24.26	ft
Hydraulic Radius	1.10	ft
Top Width	23.90	ft
Critical Depth	0.86	ft
Critical Slope	0.01497	ft/ft
Velocity	2.36	ft/s
Velocity Head	0.09	ft
Specific Energy	1.57	ft
Froude Number	0.39	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.49	ft
Critical Depth	0.86	ft
Channel Slope	0.00200	ft/ft

Worksheet for 1275' S (E. Proposed Flow Elev.)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	21.00	ft
Discharge	8.10	ft³/s

Results

Normal Depth	0.35	ft
Flow Area	7.74	ft²
Wetted Perimeter	23.85	ft
Hydraulic Radius	0.32	ft
Top Width	23.77	ft
Critical Depth	0.16	ft
Critical Slope	0.02421	ft/ft
Velocity	1.05	ft/s
Velocity Head	0.02	ft
Specific Energy	0.36	ft
Froude Number	0.32	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.35	ft
Critical Depth	0.16	ft
Channel Slope	0.00200	ft/ft

Worksheet for 660' S (Proposed Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Normal Depth	2.70	ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	2.50	ft/ft (H:V)
Bottom Width	6.00	ft

Results

Discharge	122.63	ft^3/s
Flow Area	39.89	ft^2
Wetted Perimeter	24.40	ft
Hydraulic Radius	1.63	ft
Top Width	23.55	ft
Critical Depth	1.73	ft
Critical Slope	0.01300	ft/ft
Velocity	3.07	ft/s
Velocity Head	0.15	ft
Specific Energy	2.85	ft
Froude Number	0.42	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.70	ft
Critical Depth	1.73	ft
Channel Slope	0.00200	ft/ft

Worksheet for 660' S (Additional Proposed Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.02000	ft/ft
Normal Depth	2.17	ft
Left Side Slope	0.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	18.70	ft

Results

Discharge	494.29	ft³/s
Flow Area	50.00	ft²
Wetted Perimeter	29.82	ft
Hydraulic Radius	1.68	ft
Top Width	27.38	ft
Critical Depth	2.54	ft
Critical Slope	0.01163	ft/ft
Velocity	9.89	ft/s
Velocity Head	1.52	ft
Specific Energy	3.69	ft
Froude Number	1.29	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.17	ft
Critical Depth	2.54	ft
Channel Slope	0.02000	ft/ft

Worksheet for 660' S (Proposed Flow Elev.)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00200	ft/ft
Left Side Slope	4.00	ft/ft (H:V)
Right Side Slope	2.50	ft/ft (H:V)
Bottom Width	6.00	ft
Discharge	84.90	ft³/s

Results

Normal Depth	2.27	ft
Flow Area	30.40	ft²
Wetted Perimeter	21.48	ft
Hydraulic Radius	1.42	ft
Top Width	20.77	ft
Critical Depth	1.42	ft
Critical Slope	0.01368	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	2.39	ft
Froude Number	0.41	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.27	ft
Critical Depth	1.42	ft
Channel Slope	0.00200	ft/ft

Worksheet for 300' S (Proposed Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00300	ft/ft
Normal Depth	1.63	ft
Left Side Slope	2.50	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	6.00	ft

Results

Discharge	52.47	ft^3/s
Flow Area	18.41	ft^2
Wetted Perimeter	17.11	ft
Hydraulic Radius	1.08	ft
Top Width	16.60	ft
Critical Depth	1.09	ft
Critical Slope	0.01466	ft/ft
Velocity	2.85	ft/s
Velocity Head	0.13	ft
Specific Energy	1.76	ft
Froude Number	0.48	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.63	ft
Critical Depth	1.09	ft
Channel Slope	0.00300	ft/ft

Worksheet for 300' S (Additional Proposed Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00300	ft/ft
Normal Depth	4.51	ft
Left Side Slope	0.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	15.10	ft

Results

Discharge	592.85	ft^3/s
Flow Area	108.78	ft^2
Wetted Perimeter	38.21	ft
Hydraulic Radius	2.85	ft
Top Width	33.14	ft
Critical Depth	3.14	ft
Critical Slope	0.01145	ft/ft
Velocity	5.45	ft/s
Velocity Head	0.46	ft
Specific Energy	4.97	ft
Froude Number	0.53	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.51	ft
Critical Depth	3.14	ft
Channel Slope	0.00300	ft/ft

Worksheet for 300' S (Proposed Flow Elev.)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00300	ft/ft
Left Side Slope	0.00	ft/ft (H:V)
Right Side Slope	4.00	ft/ft (H:V)
Bottom Width	15.10	ft
Discharge	54.50	ft³/s

Results

Normal Depth	1.17	ft
Flow Area	20.50	ft²
Wetted Perimeter	21.12	ft
Hydraulic Radius	0.97	ft
Top Width	19.80	ft
Critical Depth	0.72	ft
Critical Slope	0.01598	ft/ft
Velocity	2.66	ft/s
Velocity Head	0.11	ft
Specific Energy	1.28	ft
Froude Number	0.46	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.17	ft
Critical Depth	0.72	ft
Channel Slope	0.00300	ft/ft

WIS 441 Tri-County Project Corridor Manual
Chapter 3: Cost Estimating

Chapter Contact: Todd Sanders

Issued: February 14, 2012
Revised: March 8, 2012
April 16, 2012
June 15, 2012

Scope/Purpose
This chapter establishes a procedure for the development of complete and consistent cost estimates at post 30%, 60%, 90% (Draft) PS&E, and Final PS&E design level, including guidance on:

- estimate format and content
- unit prices
- contingency percentages
- mobilization costs/percentages
- cost categories
- flexible estimating approaches that will allow the development breakout packages and/or combining IDs into bid packages

Reference Documents
None.

Cost Estimating
All cost estimating for WIS 441 corridor shall be performed in accordance with the guidance in this chapter as outlined below:

- Provide a procedure for the development of **complete** cost estimates that include all anticipated project costs so that appropriate project funding can be programmed.
- Provide a procedure for the development of **consistent** cost estimates with guidance on the estimate format and content for all members of the Department and Consultant design staff to follow.
- Provide guidance on the **required cost component output** in a format that is easily used for budgeting and programming purposes as well as for input in design reports.
- Provide guidance on a **flexible estimating approach** that will allow the development of future estimates for portions of a project segment that may be separated into bid packages.

Methodology

Cost Contingencies
Cost contingencies are included in the estimating process to account for the variables, risks and unknowns within the project corridor. The ultimate cost of the project is dependent on many variables that cannot all be known ahead of time. The cost estimate represents only one possible outcome of many variables. These variables are not directly controllable or absolutely quantifiable.

Cost contingencies are addressed in two separate ways:

- **Committed** - Cost contingencies for specific elements of work. These cost contingencies are built into the estimates for project development, construction, real estate acquisition and compensable utilities. These contingencies primarily address the uncertainty of the total scope of

these work items especially in the early stages of project development as well as the variability in the exact quantity and cost of the work that can be affected by many variables such as:

1) Soil conditions and subgrade improvement requirements are unknown
2) Changes to design criteria can impact the project scope
3) Real estate impacts and costs are difficult to determine and estimate in the early stages of design
4) Compensable utility costs are difficult to determine and estimate in the early stages of design
5) Community involvement and local concerns and requirements are difficult to determine and estimate in the early stages of design
6) Community Sensitive Design (CSD)/Aesthetics scope and impact remains to be determined
7) Incomplete National Environmental Protection Agency (NEPA) process and environmental document may identify additional scope and mitigation impacts.

- **Uncommitted** - Program level cost contingencies. This cost contingency is not tied to any specific element of work but provides a funding resource to address corridor program changes to scope or schedule resulting from unknown, unanticipated risks. A 5% program reserve will be used for programming purposes. Variables, risks and unknowns at the corridor level include:

1) Construction sequence and schedule
2) Contract packaging (contract too large results in reduced number of bidders and potential higher costs & contracts too small results in less efficient and potential for longer schedule and increased coordination costs)
3) Schedule impacts from changes in (or balancing) Departmental priorities within the Major Projects Program
4) Inflation rates in excess of the assumed escalation rates
5) Environmental mitigation (hazardous material clean-up, wetlands, Threatened & Endangered species, secondary impacts) and schedule impacts resulting from challenges and/or delays in completing the NEPA process
6) Funding availability (Major Projects Program) to meet desired construction schedule.

The following is a summary of the project contingencies that will be used:

Level of Plan Completion	Project Level Contingency (Committed)		Program Level Reserve (Uncommitted)
	Construction Design	Construction Change Order/Claim	
30% or less	30%	8%	5%
>30% to 60%	15%	8%	5%
>60% to Draft PS&E	5%	8%	5%
Final PS&E	0%	8%	5%
Construction	0%	8%	5%

Cost Escalation

Escalation of construction costs for inflation from the time of the estimate to the construction year will be done at the program level. An inflation rate of 2.5% annually will be used for programming purposes. This rate will be used to compute the estimated project costs for the anticipated construction year.

Escalation of real estate costs for inflation from the time of the estimate to the year of acquisition will be done at the program level. An inflation rate of 5% annually will be used for programming purposes. This rate will be used to compute the estimated real estate costs for the anticipated year of acquisition.

Escalation of utility costs for inflation from the time of the estimate to the year of acquisition will be done at the program level. An inflation rate of 2.5% annually will be used for programming purposes. This rate will be used to compute the estimated utility costs for the anticipated year of acquisition.

Unique Construction Elements
Although the purposes of this chapter and the associated spreadsheet templates are to provide complete and consistent cost estimates with output in a consistent format, it is impossible to predict and account for all of the unique aspects of a given project or project segment. The framework provided in the estimate templates will address most construction elements and likely all for the less complex project segments. Each segment designer will need to be aware of unique construction elements that may not be covered by the standard estimate framework and provide the input accordingly. It is recommended that this be accomplished by adding each unique construction element as a line item in the spreadsheet template. A description of each special line item shall be included.

Cost Estimate Updates
The design project teams will submit estimate updates at all project milestones such as 30%, 60% and Draft PS&E submittals. Estimate updates should be made following any significant development such as a significant change in project scope or schedule. Estimate updates will be provided on at least a semiannual basis.

Preliminary Cost Estimate Guidance
Application: Based on 30% to 60% Plan.

As plans are developed from 30% to 60%, provide quantities for the items identified in the attached Preliminary Cost Estimate Template 60%. An excel workbook will be used to summarize the quantities and will be broken down by project ID and contract package.

Summary Worksheet

- **Unit Prices**: It is recommended that the unit prices as provided in the estimate template are evaluated on a case by case basis for all estimates in the corridor. A designated member of the NE Region team will review the unit prices based on quantities of scale in the estimate. If determined necessary based on current bid tabs, Unit Prices for the specific items detailed in the Cost Estimate for each specific project will be provided by the WIS 441 Program Controls Team for development of the 30%, 60%, 90%, and final estimate.

Final Cost Estimate Guidance
The final cost estimate should follow FDM Chapter 19 Section 5.

When final estimates are being entered into TRNSPORT, they are to be coordinated with any State-Municipal Agreements (SMAs) that are applicable to the specific project. A list of the IDs that are expected to include an SMA is included in the following folder location:

Add FTP location when available…

Attachments
WIS 441 Tri-County Project 30% Estimate (Dated 02-08-12)
WIS 441 60% Cost Estimate Template (Dated 06-15-12)
Road Builder Quantities Template (Dated 2-14-12)

WIS 441 TRI-COUNTY PROJECT

CTH CB TO ONEIDA STREET

US 41 & US 10/WIS 441

WINNEBAGO COUNTY

ROADWAY

Number	Item Name	Unit	Quantity	Price	Cost
204.0100	REMOVING PAVEMENT	SY	324,850	$2.50	$812,125
205.0100	EXCAVATION COMMON	CY	986,950	$6.00	$5,921,700
208.0100	BORROW	CY	1,460,000	$6.00	$8,760,000
	BASE AGGREGATE DENSE	TON	423,800	$11.50	$4,873,700
311.0110	BREAKER RUN	TON	510,750	$9.00	$4,596,750
315.0100	ASPHALTIC BASE	TON	-	$80.00	$0
415.0100	CONCRETE PAVEMENT 10-INCH	SY	516,500	$32.00	$16,528,000
455.0105	ASPHALTIC MATERIAL PG58-28	TON	2,015	$500.00	$1,007,500
455.0605	TACK COAT	GAL	3,010	$3.75	$11,288
460.1100	HMA PAVEMENT TYPE E-10	TON	59,850	$70.00	$4,189,500
	CONCRETE CURB & GUTTER	LF	72,125	$12.00	$865,500
602.0410	CONCRETE SIDEWALK 5-INCH	SF	206,700	$3.25	$671,775
	CONCRETE BARRIER 56-INCH	LF	49,550	$75.00	$3,716,250
15.00%	INCIDENTALS (15% OF ALL ROADWAY ITEMS)	LS	1	$7,793,113	$7,793,113
ROADWAY SUBTOTAL					$59,747,201

STRUCTURE SUBTOTAL					$118,106,127

PROJECT ITEMS

8.0%	DRAINAGE (8% OF ROADWAY & STRUCTURE TOTALS)	LS	1	$14,228,266	$14,228,266
9.0%	TC/SIGNING/MARKING (9% OF ROADWAY & STRUCTURE TOTALS)	LS	1	$16,006,800	$16,006,800
4.5%	EC/LANDSCAPING (4.5% OF ROADWAY & STRUCTURE TOTALS)	LS	1	$8,003,400	$8,003,400
5.0%	ITS/LIGHTING (5% OF ROADWAY & STRUCTURE TOTALS)	LS	1	$8,892,666	$8,892,666
5.0%	MOBILIZATION (5% OF ALL ABOVE ITEMS)	EACH	1	$11,249,223	$11,249,223
25.0%	CONTINGENCY (25% OF ALL ABOVE ITEMS)	LS	1	$59,058,421	$59,058,421
PROJECT CONSTRUCTION TOTAL (ROADWAY, STRUCTURES & PROJECT ITEMS)					$295,292,103

REAL ESTATE	$54,100,000
SALT SHED	$750,000
WETLAND MITIGATION	$2,500,000
UTILITES	$9,100,000
WIS 441 TRI-COUNTY PROJECT CORRIDOR TOTAL	**$361,742,103**

TRI-COUNTY PROJECT
USH 10 - USH 10/STH 441
COUNTY CB - ONEIDA STREET
WINNEBAGO COUNTY

60% Estimate

Project Summary

ROADWAY

Number	Item Name	Unit	Quantity	Price	Cost
203.0200	REMOVING OLD STRUCTURE	LS	-		$0
204.0100	REMOVING PAVEMENT	SY	-	$2.50	$0
205.0100	EXCAVATION COMMON	CY	-	$6.00	$0
	EXCAVATION COMMON (POND)	CY	-	$6.00	$0
	EXCAVATION MARSH/EBS	CY	-	$6.00	$0
208.0100	BORROW	CY	-	$6.00	$0
	BORROW (POND)	CY	-	$6.00	$0
	BASE AGGREGATE DENSE	TON	-	$11.50	$0
311.0110	BREAKER RUN	TON	-	$9.00	$0
320.0105	CONCRETE BASE 4-INCH	SY	-	$20.00	$0
320.0145	CONCRETE BASE 8-INCH	SY	-	$30.00	$0
415.0100	CONCRETE PAVEMENT 10-INCH	SY	-	$28.00	$0
415.0410	CONCRETE PAVEMENT APPROACH SLAB	SY	-	$115.00	$0
455.0105	ASPHALTIC MATERIAL PG58-28	TON	-	$500.00	$0
455.0605	TACK COAT	GAL	-	$3.75	$0
460.1100	HMA PAVEMENT TYPE E-10	TON	-	$60.00	$0
465.0105	ASPHALTIC SURFACE	TON	-	$100.00	$0
	CULVERT PIPE REINFORCED CONCRETE CLASS III	LF	-	$150.00	$0
	CONCRETE CURB & GUTTER	LF	-	$12.00	$0
602.0410	CONCRETE SIDEWALK 5-INCH	SF	-	$3.25	$0
	CONCRETE BARRIER 32-INCH	LF	-	$35.00	$0
	CONCRETE BARRIER 42-INCH	LF	-	$40.00	$0
	CONCRETE BARRIER 56-INCH	LF	-	$60.00	$0
	CONCRETE BARRIER TEMPORARY PRECAST	LF	-	$25.00	$0
	STORM SEWER PIPE REINFORCED CONCRETE CLASS III	LF	-	$150.00	$0
	STORM SEWER PIPE REINFORCED CONCRETE HE	LF	-	$300.00	$0
	STORM SEWER PIPE REINFORCED CONCRETE HE (LARGE)	LF	-	$900.00	$0
	MANHOLE/INLET	EACH	-	$1,500.00	$0
	MANHOLE/INLET (LARGE)	EACH	-	$7,500.00	$0
15.00%	INCIDENTALS (15% OF ALL ROADWAY ITEMS)	LS	1	$0	$0
ROADWAY SUBTOTAL					$0

STRUCTURE SUBTOTAL					$0

PROJECT ITEMS

4.00%	DRAINAGE (4% OF ROADWAY & STRUCTURE TOTALS)	LS	1	$0	$0
7.00%	TC/SIGNING/MARKING (7% OF ROADWAY & STRUCTURE TOTALS)	LS	1	$0	$0
4.00%	EC/LANDSCAPING (4% OF ROADWAY & STRUCTURE TOTALS)	LS	1	$0	$0
2.00%	ITS/LIGHTING (2% OF ROADWAY & STRUCTURE TOTALS)	LS	1	$0	$0
8.00%	MOBILIZATION (8% OF ALL ABOVE ITEMS)	EACH	1	$0	$0
15.00%	CONTINGENCY (15% OF ALL ABOVE ITEMS)	LS	1	$0	$0
PROJECT CONSTRUCTION TOTAL (ROADWAY, STRUCTURES & PROJECT ITEMS)					$0

REAL ESTATE	$0
SALT SHED	$0
WETLAND MITIGATION	$0
UTILITES	$0
TRI-COUNTY PROJECT TOTAL	**$0**

WIS 441 Tri-County Project Road Builder Quantities

Project ID	WIS 441 Project name	Percent Complete	Let Value (no delivery)	Asphalt (TONS)	Concrete Pavement (SY)	Excavation (CY)	Base/Breaker (TONS)	Bridge (SF)	Milling (SY)	grinding (SY)	striping (LF)	rubblizing (SY)
1517-07-71	US 10 Mainline (Coldspring Road – US 41)											
1517-07-72	US 41 Interchange Phase 1											
1517-07-73	US 41 Interchange Phase 2											
1517-07-74	US 41 Mainline Phase 1											
1517-07-75	US 41 Mainline Phase 2											
1517-07-76	Little Lake Butte des Morts Structure Phase 1											
1517-07-77	Little Lake Butte des Morts Structure Phase 2											
1517-07-78	US 10 / WIS 441 Mainline (LLBDM - Tayco Street) Phase 1											
1517-07-79	US 10 / WIS 441 Mainline (LLBDM - Tayco Street) Phase 2											
1517-07-80	US 41 Interchange Early Steel Fabrication											
1517-07-81	Little Lake Butte des Morts Early Steel Fabrication											
1517-75-71	US 10 / WIS 441 Mainline (Tayco Street - Racine Road)											
1517-75-72	US 10 / WIS 441 Mainline (Racine Road - Appleton Road)											
1517-75-73	US 10 / WIS 441 Mainline (Appleton Road - Oneida Street)											
1517-75-74	WIS 441 Mainline (Oneida Street - Project Limits)											
1517-75-75	Racine Road (CTH P) Interchange											
1517-75-76	Racine Road (CTH P) Interchange											
1517-75-77	Midway Road (CTH AP) Interchange											
1517-75-78	Appleton Road (WIS 47) Interchange											
1517-75-79	Oneida Street (US 10) Interchange											

WIS 441 Tri-County Project Corridor Manual
Chapter 4: CSS and Landscaping

Chapter Contact: Tom Kindschi

Issued: February 14, 2012
Revised: April 13, 2012
February 15, 2013
August 15, 2013
July 15, 2014

Scope/Purpose
This chapter defines the criteria for landscape planting design, aesthetic enhancements and CSS.

General
Current CSS efforts include development of preliminary concepts for piers, retaining walls and noise barriers. The concepts being developed have aesthetic enhancements but are designed to minimize special costly forming, staining and maintenance.

The CSS designs are different than Winnebago or Brown Counties, but their appearance will relate to both projects.

The WIS 441 CSS Design Memo documents the CSS and Landscaping design process and elements to be incorporated into the corridor design. This is a working memo and will be updated as the design continues to progress. See attached WIS 441 CSS Design Memo.

There will be no plantings within 50-feet of the yield lines at roundabouts and intersections (6/3/14 Design/Corridor Meeting)

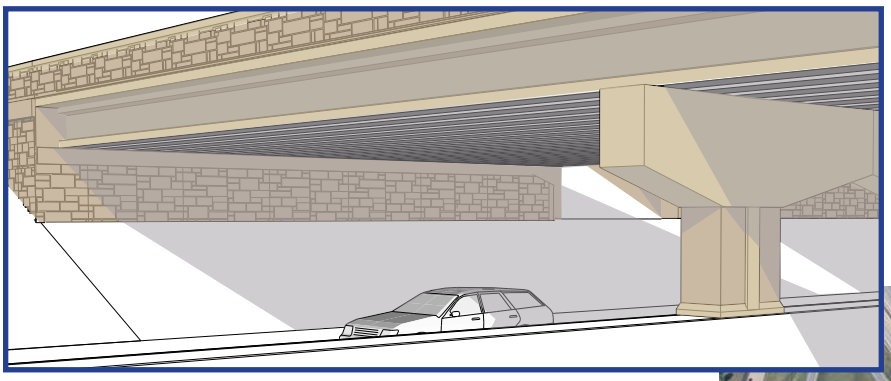
Architectural Surface Treatment
Ashlar stone will be the CSS treatment on the WIS 441 corridor (1/29/13 Design/Structures meeting)

Reference Documents
- FDM Chapter 27, Planting and Aesthetic Design
- FDM Chapter 11, Design; Section 3, Community Sensitive Design
- FDM Chapter 11, Design; Section 26, Roundabouts; Subsection 40, Illumination, Landscaping and Maintenance

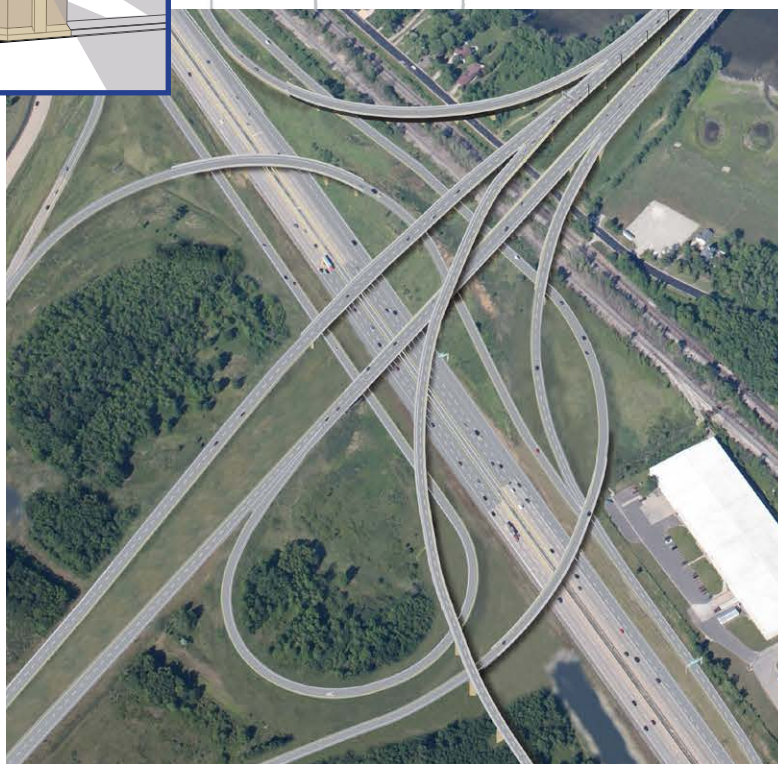
Attachments
WIS 441 CSS Design Memo (Dated 08-05-13)

Community Sensitive Solutions (CSS)
Wis 441 Tri - County Project









Community Sensitive Solutions (CSS) Process & Design Memo

August 2013

TRI-COUNTY EXPANSION

Wisconsin Department of Transportation

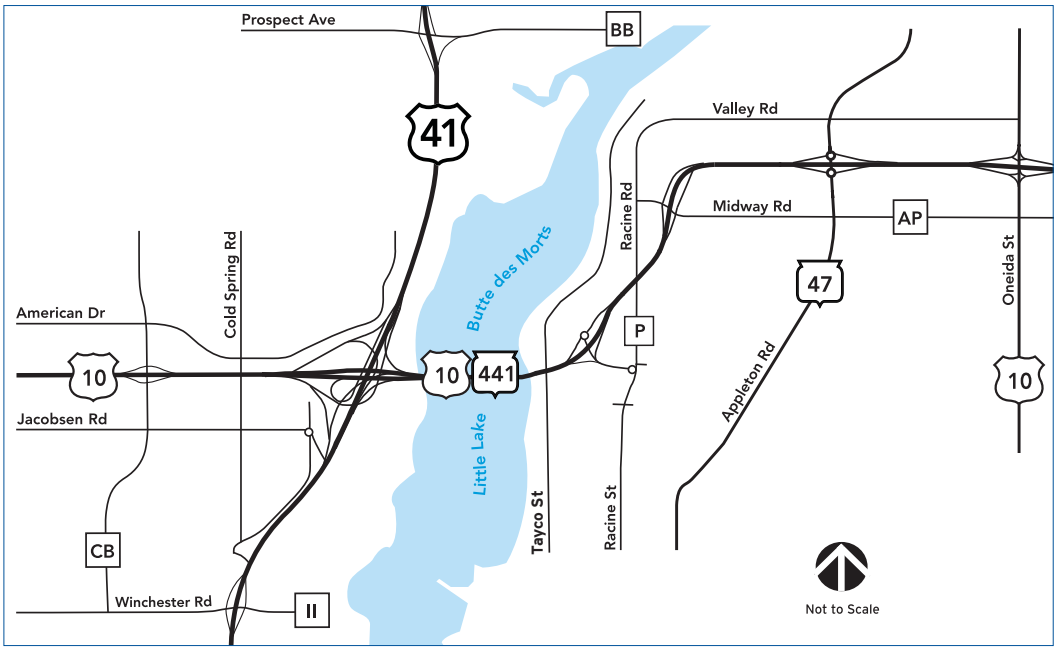
U.S. Department of Transportation
Federal Highway Administration

TRI-COUNTY EXPANSION

Community Sensitive Solutions (CSS)







PROJECT SCHEDULE (SUBJECT TO CHANGE)

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Design									
Real Estate Acquisition									
Utilities									
Construction									

INTRODUCTION

The Wisconsin Department of Transportation (WisDOT) began design for the reconstruction of 6 miles of US 10/ Wis 441 in 2011, including five interchanges and the Little Lake Butte-des-Morts Bridge. The Tri-County Project runs through Winnebago, Calumet and Outagamie Counties.

The structural elements of the project offered the design team opportunities to develop special aesthetic detailing as part of the Community Sensitive Solutions (CSS). The CSS process invited the communities to work closely with the project designers. The exchange of ideas not only improved the overall project design but created a sense of community image and ownership. The ownership will carry over to future maintenance of the CSS elements, including landscape and pedestrian and bike paths.



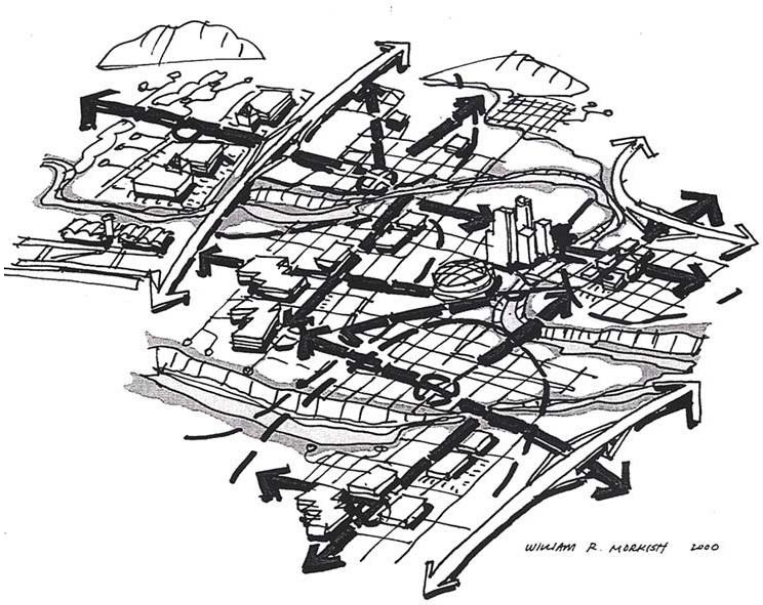
GOALS

The Tri-County Project CSS process was developed in accordance with FHWA and WisDOT policies and principles. Both FHWA and WisDOT identify CSS as one of the "qualities of excellence in transportation design." Specifically, FHWA states "The project is in harmony with the community and it preserves environmental, scenic, aesthetic, historic and natural resource values of the area."

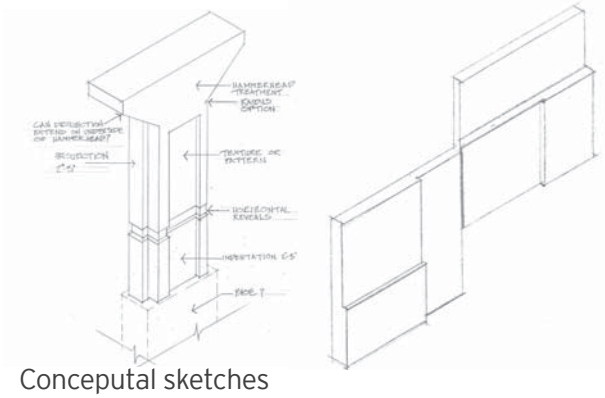
The CSS process engaged communities by identifying the distinctive qualities of their particular area. Then, the design team drew upon selected community qualities and incorporated certain elements. The overall design will create a visual continuity and a positive experience when traveling the corridor.

A successful project CSS program supports the following goals:

- Construct a quality, safe project
- Build public support, trust and confidence
- Create economic, social and cultural opportunity
- Incorporate aesthetics that enhance the corridor's special qualities







Conceptual sketches

CSS PROCESS

The CSS process involved the synthesis of design ideas, community characteristics, values and ideas. This synthesis was incorporated into the transportation project. Community leaders provided input representing their individual community. Meetings and exploration of design alternatives resulted in a recommended design for structure aesthetics and landscape.

The Tri-County Project utilized an interdisciplinary approach including early community involvement to ensure the design provides safety and mobility and is in harmony with the corridors setting. A five step CSS process was implemented to arrive at a recommended design to be carried through final design.

The process consisted of:

- Conduct a Site Analysis and Visual Assessment of the corridor, identifying design opportunities
- Develop conceptual aesthetic alternatives for, east of Little Lake Butte des Morts (LLBDM), System Interchange and the LLBDM bridge
- Hold two informational meetings where alternatives were presented to local officials, plus a Public Information Meeting to present the recommended concepts
- Assess comments and refine a Design Recommendations
- Incorporate Design Recommendations into final project design

SITE ANALYSIS / VISUAL ASSESSMENT / OPPORTUNITIES

The CSS process started with an assessment of the corridor's characteristics. The design team's analysis of the 10/441 corridor identified a number of possible "themes" offering potential design ideas. Those features were identified as:

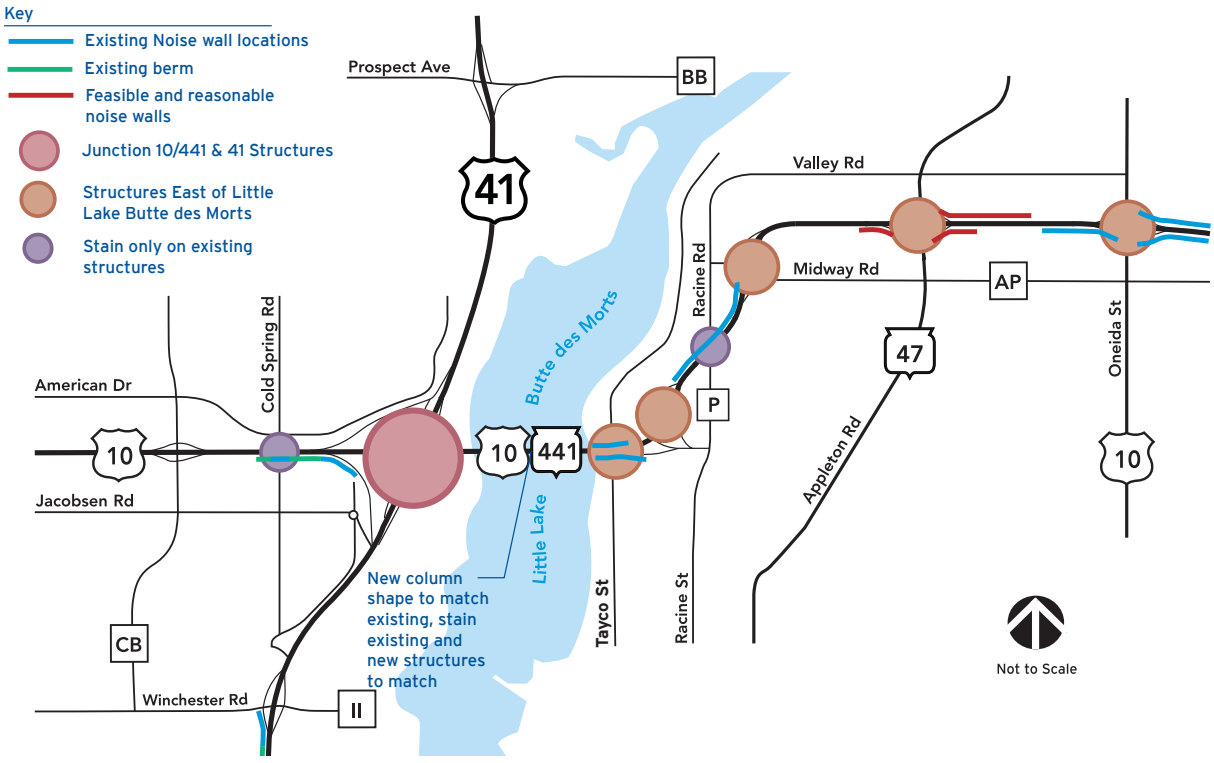
- The existing corridor right-of-way (R/W) is open and vegetated with uncut bluegrass and scattered naturalized perennials. Although the R/W does not contain native prairie plants, its visual image suggests the open character of a Wisconsin prairie.
- Early French explorers used the Fox River as their "highway" and are an integral part of the rich history of the area.
- Native American tribes that settled along the Fox are a significant part of the cultural and historical make-up of the area.
- Little Lake Butte des Morts (LLBDM) is a significant scenic and natural feature that contributes to the natural visual quality.
- The LLBDM Bridge is a significant architectural landmark. The bridge spans create a strong horizontal presence for the bridge as well as a sculptural quality of the bridge piers. The strong horizontal lines separate the horizon from the broad expanse of the lake. The lake reflecting the shades of the sky create a complimentary palette of colors ranging from grey to deep blue.
- The geologic make-up of the area is predominantly Limestone, a component of the area's natural resource base.

After completion of the analysis and visual assessment, the design team explored conceptual aesthetic alternatives that incorporated visual / historical elements into the overall aesthetics of the corridor. The aesthetics of the corridor's varied structures were a primary consideration with the landscape designed to complement the structural character and open space.









CONCEPTUAL AESTHETIC ALTERNATIVES

The setting of the Fox River and LLBDM suggested a natural aesthetic such as the use of a native limestone that is a major component of the areas geologic make-up. The natural colors of sandstone and limestone suggest a color palette comprised of shades ranging from light grey to tan and blue. That color palette compliments the natural colors in the area. An important design consideration was creating a complimentary aesthetic treatment for the corridor. Although the Tri-County corridor aesthetics proposed some aesthetic treatments similar to US 41 in Brown and Winnebago counties, this project blends with those counties while resulting in overall discernible character for the corridor.

Color was a primary recommendation to blend new structures with remaining structures. The alternative color palettes, textures and shapes were developed to provide a distinct corridor image.

The strong horizontal lines of the LLBDM Bridge and varying colors of the sky and reflections of the LLBDM Bridge, suggested that reinforcing the horizontal aesthetic would create a powerful visual image over the lake. Bridge piers continued the color scheme utilized on the land side structural elements. The beams (girders) were recommended to be a deep blue. The contrast between the beams and the lighter buff color of the parapets emphasized the horizontal nature of the bridge and complemented the sky and water.



Bike Trail along Fox River



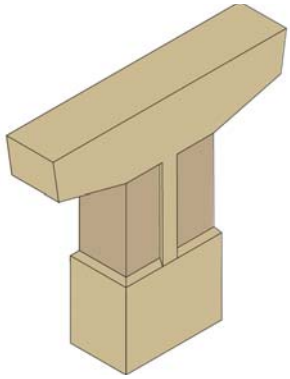
Native limestone

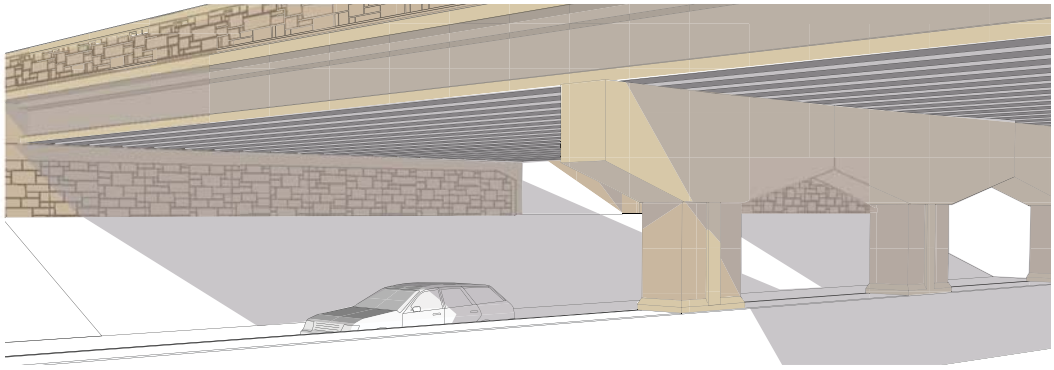


Existing Little Lake Butte des Morts bridge (looking Northwest)



New and Existing Little Lake Butte des Morts bridge (looking Northwest)





Selected design & staining for Junction 10/441 & 41 Structures

PUBLIC INFORMATION

Design alternatives were developed for piers, retaining walls and parapets. Those concepts were presented to community officials from 20 municipal jurisdictions in December of 2012. A discussion of design alternatives and their relation to the corridor characteristics and values, defined a direction for the design team to develop a recommended aesthetic for the corridor. Aesthetic recommendations of the CSS were selected to provide maximum visual interest while minimizing the costs of forming, staining and maintenance.

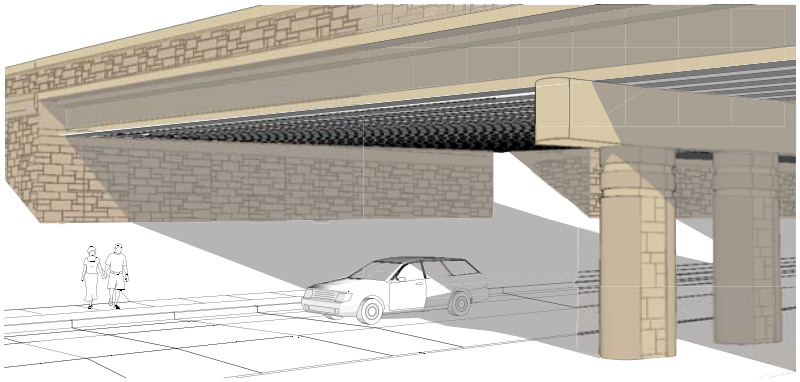
A second meeting was held in February 2013, with the same group officials to present the recommended design based upon the decisions reached at the first meeting. The second meeting also included the discussion and selection of colors to be used on structural elements along the corridor.

Final design recommendations for the project were presented to the public at an information meeting held June 2013. Interested parties had the opportunity to view the recommendations and speak with the design team.

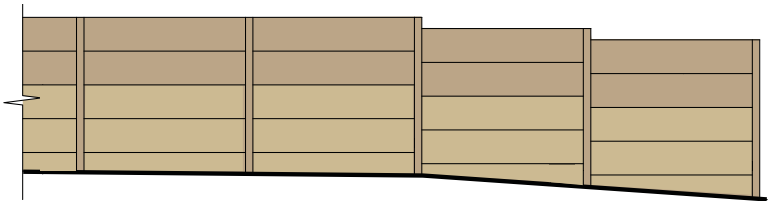
This document is now the design guidance for the final design on the Tri-County Project. Conceptual alternative design ideas and final recommendations are included in the Appendix.

Final designs for project are underway; the engineers and urban designers are collaborating on the final design details, modifying as necessary to complete construction documents.

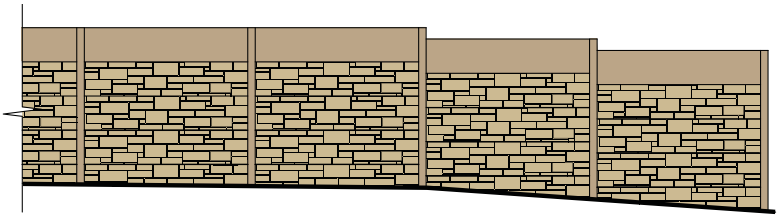




Structures East of Little Lake Butte des Morts (LLBDM)



Selected Noise Barrier facing highway



Selected Noise Barrier facing residential

THE FUTURE

Once completed, the Tri-County project will serve the area for the next 75 years. Implementing both the CSS process and aesthetic recommendations has a minimal impact on total project cost but provides a great benefit for the corridor image. A project of this quality reflects positively on the communities that it serves. The Tri-County Expansion will define the area's image and features, encourage quality development and enhance the economic future of the corridor.



Existing US 41 / US 10 / Wis 441 System Interchange



Proposed US 41 / US 10 / Wis 441 System Interchange

APPENDIX A - MEETING NOTES & MATERIALS

WIS 441 Project ID 1517-07-04
3/14/2012 CSD Meeting

Meeting Notes

Meeting Title:
CSD Meeting

Prepared by:
Scott Ebel (WisDOT)

Date:
March 14th 2012

Purpose of Meeting
1. General Concepts of Community Sensitive Design

Location:
US 41 Brown County Office
1940 West Mason Street
Green Bay, WI 54303

Participants:
See attached sign In sheet

Time:
12:30pm – 2:30pm

I. Overview of Project

General concepts of Community Sensitive Design and aesthetics approach were discussed, including constructability of structures. Team will be working with local municipalities for bicycle and pedestrian accommodations throughout the corridor; there are no plans for bicycle or pedestrian crossing on the LLBDM Bridge because of the existing bridge to the south.

II. Discussion of CSS Process for this Project

The plan is for the project team and WisDOT to develop the CSD concepts and then present and work with local officials on a few pre-determined designs. Public information meeting to be held on May 10th, but no CSS specifics will be discussed. The team will limit the number of people/officials involved with CSS to expedite the process. Once two CSD concepts are chosen, they will be presented to the public at the second PIM. One CSD concept will be applied to the entire corridor.The cost of CSS is to remain low - around .75% to 1% of the total project cost. Staining and form liners are standard, and anything else would incur an additional cost. Rehabilitation of existing bridges would involve staining of concrete piers to match new construction.

III. Schedule for CSS Decisions

Meetings and milestones will be set up to keep the CSD process on schedule, however the team does not want to get too far ahead of schedule to avoid any issues with turnover from any of the other involved parties. April 16th will be the next internal CSD meeting. The local officials meeting to present some CSD ideas will be held around May 24th. July 15th is the due date to decide the final concept for structure aesthetics.

IV. Review Concept Sketches and Discuss Pier Options

Goal is to include individual community involvement with aesthetics, lights, pedestrian paths etc. Keeping all elements consistent and simple is a priority. Guidelines of acceptability will be set, and then the community can choose what they prefer. The settling of walls and panels should be considered and a pattern that doesn't exaggerate inconsistencies would be most effective.
See sketches distributed as hand-outs at the meeting. Option D is the design team's preferred CSD approach. No formliners will be used on the LLBDM bridge piers, but the piers will be stained.

V. Pier/Hammerhead Rough Dimensions

VI. Design Options

a. Keep very simple. The concepts will work for single or double hammerhead piers.

b. Simple natural theme incorporating a stone form liner base on all options.

c. Visual tie to both Winnebago Co and Brown Co projects. The Stone relates to Winnebago County while the simple reveals and vertical elements relate to Brown County.

d. For simplicity, none of the "hammer head" piers have rustications. On option D the hammerhead extends 2-4" beyond the surface of the column. This is the preferred approach for constructability of the pier cap.

e. Double or single piers (each side of roadway). This is a site specific determination. Both cases exist.

f. With a variable height of piers there are two options: The stone base of the piers can be a set elevation off the water or land, or the base height can be a set distance below the hammer head making the stone base variable. This is to be determined on a case by case basis once pier elevation drawings are completed.

g. Piers can be left as plain concrete finish or have a simple stain which masks any pour lines. Concrete staining is the preferred approach.

h. Pier cross section will be a rectangular cross section. This is the agreed approach

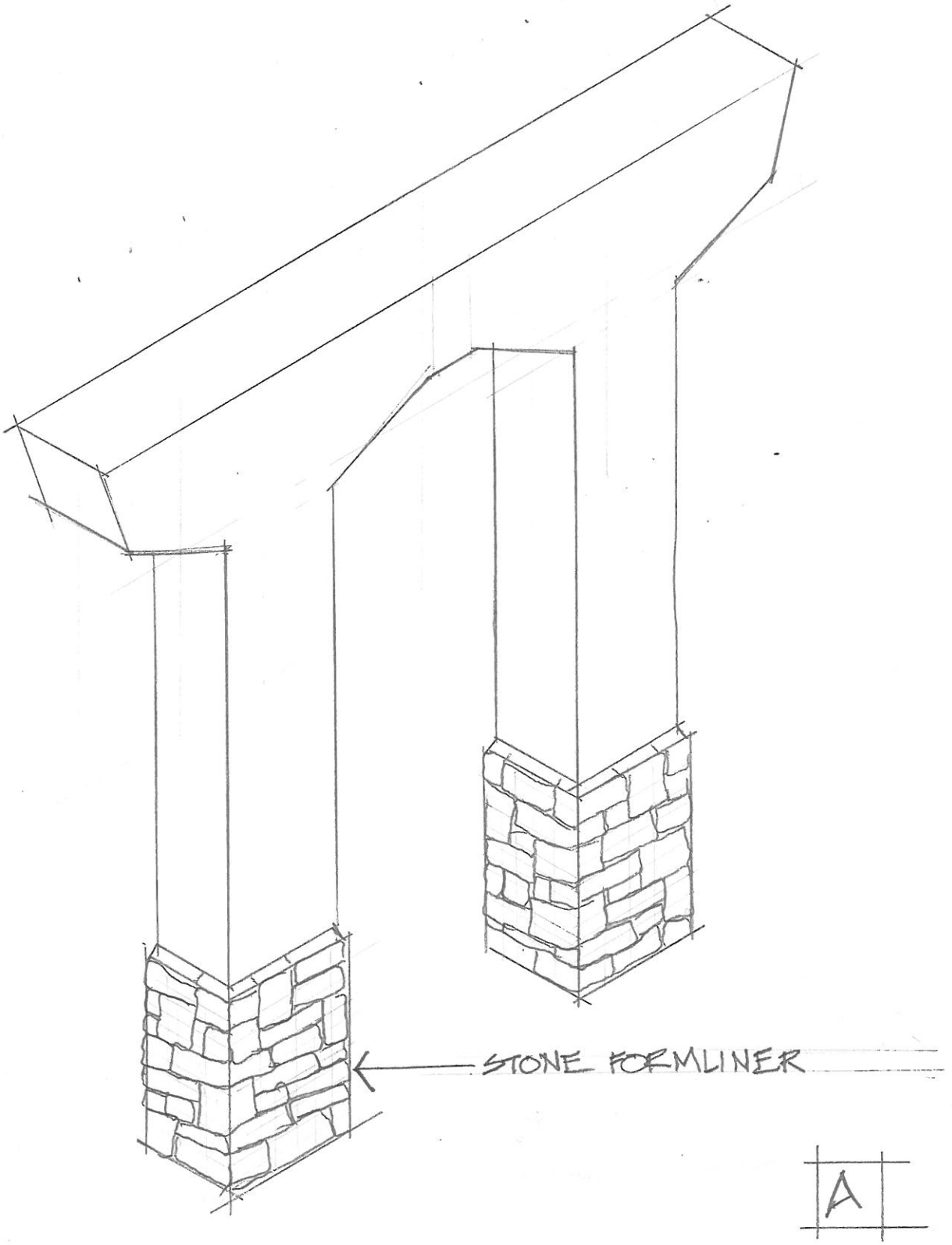
i. Rustications – stone, small reveals and projections. These will be incorporated but on a limited scale.

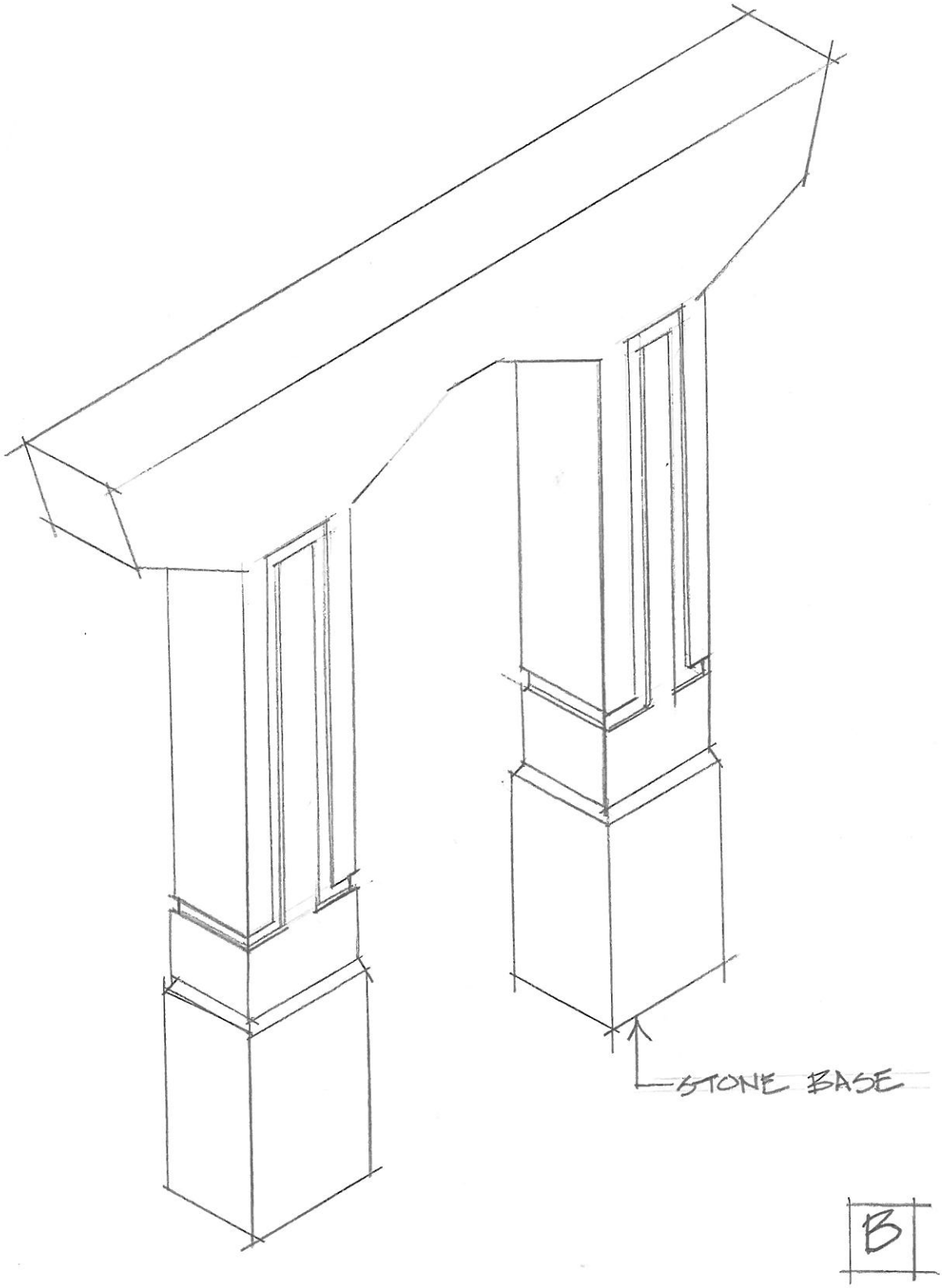
VII. Other

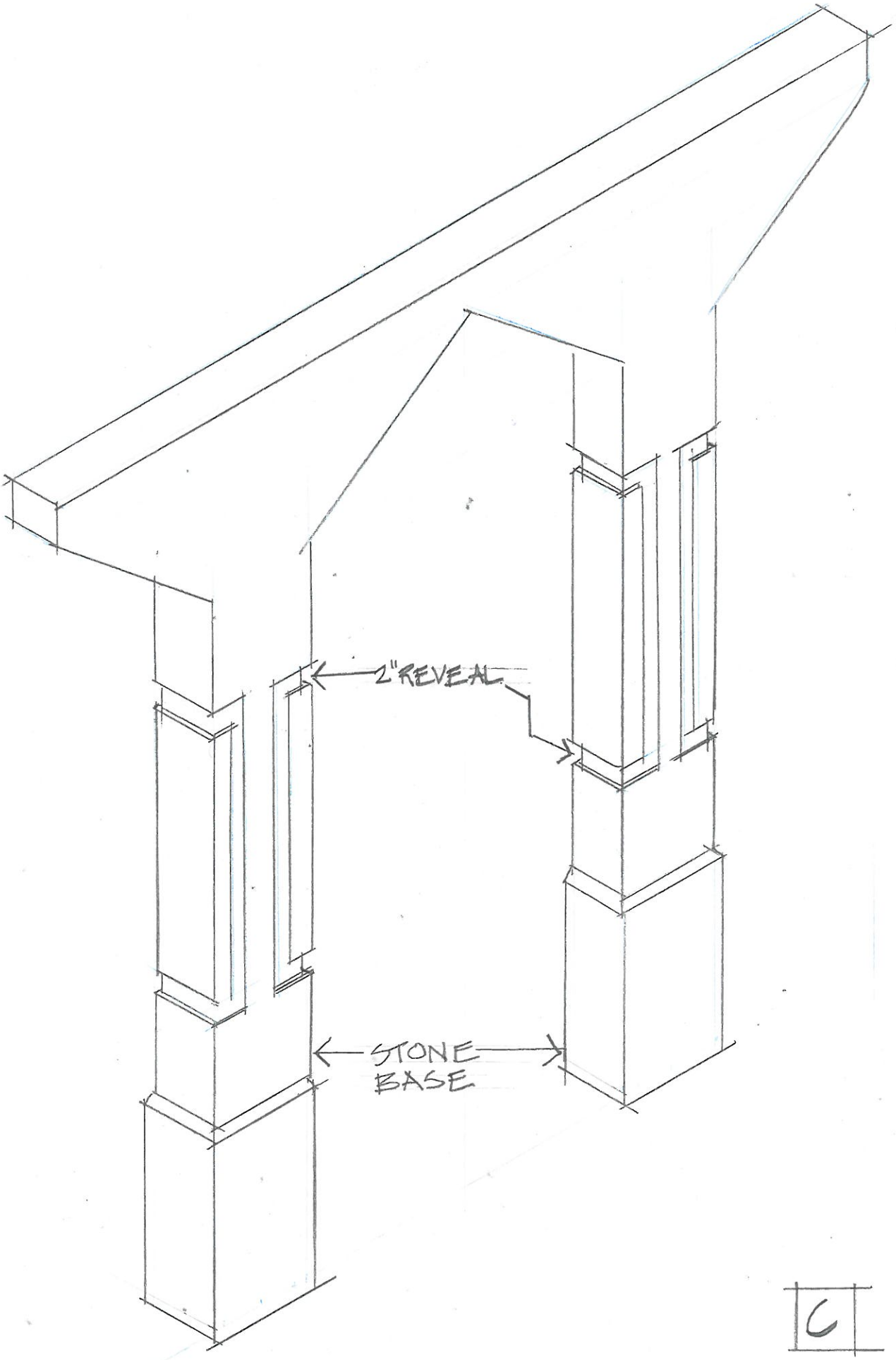
Overhead sign structures will not have concrete bases. The team will offer black poles to municipalities. The standard sign structure design will be followed on WIS 441 mainline. Landscaping at roundabouts will be maintenance free unless the local municipalities elect to maintain them, or elect to pay for irrigation.

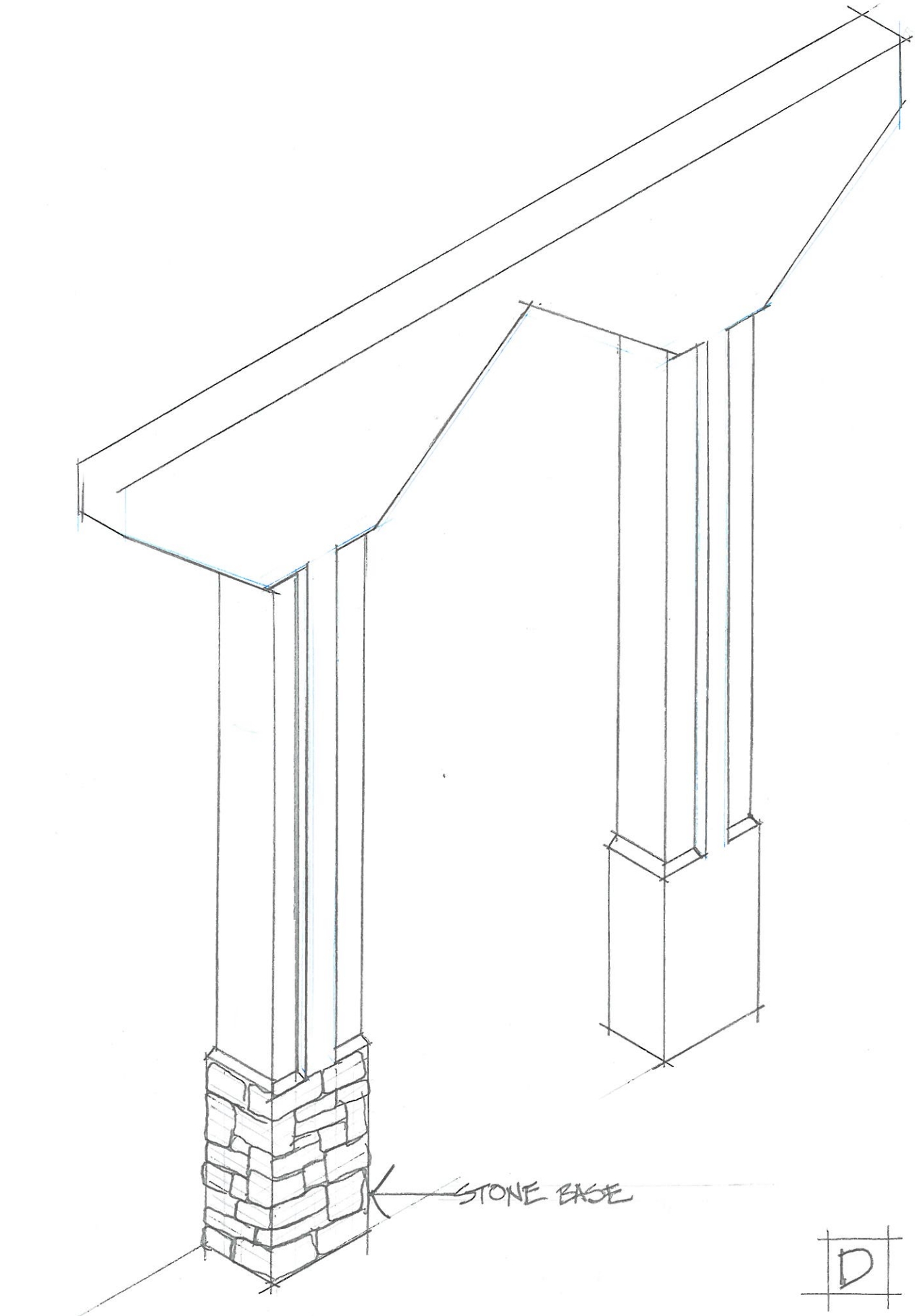
VIII. Action Items

1. The next CSD Meeting will be April 15th
2. The local officials meeting to present CSD concepts will be held sometime around May 24th
3. Produce corridor map showing locations of noise and barrier walls, including approximate heights and square footage. To be shown at next CSD Meeting.
4. MSE wall panel sketches to be provided at the next internal CSD meeting.


STONE FORMLINER
A


STONE BASE
B


2" REVEAL
STONE BASE
C


STONE BASE
D

WIS 441 Project ID 1517-07-04
4/12/2012 CSD Meeting

Meeting Notes

Meeting Title:
CSD Meeting

Date:
April 12th 2012

Location:
US 41 Brown County Office
1940 West Mason Street
Green Bay, WI 54303

Time:
1:00pm – 3:00pm

Prepared by:
Scott Ebel (WisDOT)

Purpose of Meeting
1. General Concepts of Community Sensitive Design

Participants:
See attached sign In sheet

I. Introductions

The Design Team discussed the various options for character and style on the project structures including the LLBDM piers, noise walls and retaining walls. The Design Team desires a similar look to what has been done on US 41 in Green Bay and Winnebago County.

II. Locations for CSS opportunities

The opportunities include the LLBDM Bridge, roundabouts, sidewalks, bike paths, noise walls and retaining walls.

CTH P/Racine Road, STH 47/Appleton Rd and Oneida St will have sidewalk areas for improvement; CTH AP/Midway Road does not, however connectivity throughout the area is desired.

The US 41, WIS 441 and US 10 interchange also has opportunities similar to what was done in Wausau with higher elevation one and two lane ramps.

III. Review pier CSD concepts (refined concept D)

Pier Concept D with more definition and less required formwork was chosen as the most desirable. It provides a similar look to US 41 in Green Bay and Winnebago County. At this point there are no dimensions on the drawings yet, but similar proportions will be maintained throughout the WIS 441 Project.

The Design Team discussed the need for the piers to have a "clean" edge and avoid the stone edge going all the way up to the reveal, which would cause irregularities along the edge. BOS prefers that there not be a "gap" between the stone edge and the chamfer. The chamfer on the piers would be a standard lumber size for ease of construction; additionally the availability of ready cut forms was also discussed.

A Pier cap above what is normally required for the piers is not desirable.

LLBDM piers will be getting a vertical band down the column; there will be no stone patterns on the piers in the water or on existing piers of the LLBDM Bridge.

The Design Team also discussed how to tie in the current color of the steel on the LLBDM Bridge and what design look to use, the options were: 1. Weathered steel 2. Painted steel. This will be further discussed at the next CSD Meeting. The new steel girders for the widening may be painted to match the new concrete bridge; the fascia girders of the existing bridge could be re-painted to match.

IV. Review of retaining wall patterns

The Design Team will choose a pattern that breaks up the surface of the wall; Four options were discussed: 1. Plain panel with light texture 2. Split edge ashlar stone 3. Layered Non-Directional (Tom K. design) 4. Split Edge Rustic Ashlar.
The design options all have ½" to 1" of relief to avoid any snagging issues, and have enough variations to avoid seeing joint imperfections. Scott Ebel (WisDOT) suggested we provide a slightly different option (the 4. Split Edge Rustic Ashlar) to avoid too similar of choices.
The current designs would avoid the "heavy" look and minimize joints.
Future panel design sketches will be larger scale to give The Design Team a better idea of what the 4 options will look like upon completion. No band of smooth or patterned wall panels will be used due to construction difficulty.

V. Noise barrier aesthetic options

The Design Team discussed the options with the noise barriers of keeping a similar look and texture to what is in place or working with a different design. The current design uses a 3 color panel design. One of the different options would use 3' high panels with a random stone textured face to break up the surface. The majority of the barriers are on a level stretch; this would avoid any sloping issues. CTH P/Racine Road to CTH AP/Midway Road will have larger retaining walls and noise barriers potentially with different designs facing the road and residential areas.
Consideration was also given to what noise barriers on top of retaining walls would look like in some areas. A different surface design would be used for the MSE wall and noise wall.
Colors will be kept simple and to a minimum, with one main color and an accent color. Staining is typically done on location to keep consistency throughout; 30 days after casting is when staining can begin. Areas with a higher visibility to the public would be given special consideration with staining and design. Additional field work is required for the walls to determine what will be appropriate at each location. It is possible to stain existing noise walls to match new ones.

VI. Topics for next meeting

The Design Team set a date for the next CSD Meeting of 5/1/12 and a number of topics to be discussed are in place. Pedestrian concerns for sidewalks, roundabouts and having pedestrian areas clearly defined. Also a sketch of the roundabouts will be provided. The Design team will have to consider the local municipality's level of maintenance with regards to roundabout landscaping.
The options for the noise barriers and retaining walls will be covered; as well as getting information from local stakeholders.
Consideration also will be given to the updated traffic numbers and if the current noise barriers are sufficient or if additional walls will be required.

VII. New Action Items

181. Tom Kindschi (HNTB) will provide photos of roundabouts for PIM Meeting and outline maintenance options for the different kind of roundabouts. Due 5/1/12
182. Tom Kindschi (HNTB) and Mike Arnold (URS) will provide a sketch of pier designs for LLBDM crossing with staining/concrete design strips. Due 5/1/12
183. Mike Arnold will revise 3 color pier sketch display for PIM Meeting to show offset piers at LLBDM. Due 5/1/12

WIS 441 Project
CSD Tasks Meeting
April 12th, 2012
Sign In Sheet

TRI-COUNTY EXPANSION

Attended	Company Name	First Name	Last Name	E-mail Address	Phone Number
	HNTB Corp.	Adam	Clayton	aclayton@hntb.com	
	Wisconsin DOT	Barry	Paye	Barry.Paye@dot.wi.gov	
	Wisconsin DOT	Bruce	Enke	Bruce.Enke@dot.wi.gov	
	Wisconsin DOT	Carolyn	Sampson	Carolyn.Sampson@dot.wi.gov	
	Wisconsin DOT	Curt	VanErem	Curtis.VanErem@dot.wi.gov	
	URS Corp	Donald	Yetter	Donald.Yetter@urs.com	
	URS Corp	Heather	Wech	Heather.Wech@dot.wi.gov	
	Wisconsin DOT	Jared	Kinziger	Jared.Kinziger@dot.wi.gov	
	Wisconsin DOT	John	Mahlik	John.Mahlik@dot.wi.gov	
X	Wisconsin DOT	Kurt	Peters	Kurt.Peters@dot.wi.gov	
	Becher-Hoppe Associates	Michael	Kowal	mkowal@becherhoppe.com	
	Wisconsin DOT	Mike	Helmrick	Michael.Helmrick@dot.wi.gov	
	Kapur & Associates	Prasad	Narayan	prasad@kapur-assoc.com	
	URS Corp	Robert	Fieldbinder	robert.fieldbinder@urs.com	
	Becher-Hoppe Associates	Todd	McDonald	tmcdonald@becherhoppe.com	
X	URS Corp	Mike	Arnold	mike.arnold@urs.com	
	Becher-Hoppe Associates	Dan	Gerling	dgerling@becherhoppe.com	
	Wisconsin DOT	Andy	Fulcer	andrew.fulcer@dot.wi.gov	
	URS Corp	Nick	Becker	Nick.Becker@urs.com	
	Wisconsin DOT	Chad	De Grave	chad.degrave@dot.wi.gov	
	URS Corp	Mike	Beurket	michael.beurket@dot.wi.gov	
X	Siker Inc	Quinn	Schultz	quinn.schultz@dot.wi.gov	
X	HNTB Corp.	Tom	Kindschi	tkindschi@hntb.com	
	Wisconsin DOT	Aaron	Bonk	aaron.bonk@dot.wi.gov	
	Wisconsin DOT	Mark	Higley	mark.higley@dot.wi.gov	
X	Wisconsin DOT	Scott	Ebel	scott.ebel@dot.wi.gov	
	Kapur & Associates	Justin	Arndt	jarndt@kapur.assoc.com	
	Wisconsin DOT	Bob	Schuurmans	robert.schuurmans@dot.wi.gov	
X	HNTB	Carolyn	Stressig	cstressig@hntb.com	
X	WisDOT	Matt	Halada	matthew.halada@dot.wi.gov	



441

TRI-COUNTY
EXPANSION





WIS 441 Tri-County Project

Community Sensitive Solutions (CSS)

April 12, 2012

Meeting Agenda

- Discuss CSS opportunity locations
- Review pier concepts (Refined concept “D”)
- Discussion of retaining wall patterns
- Noise barrier treatment
- Future meetings

Corridor Character











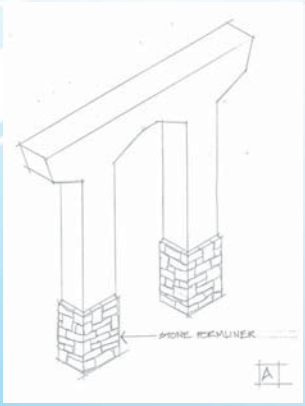


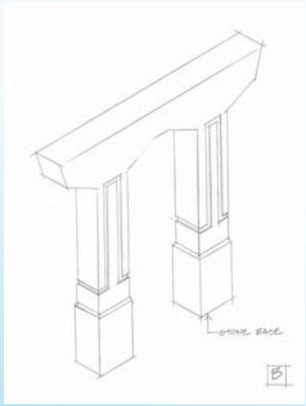


CSS Opportunities

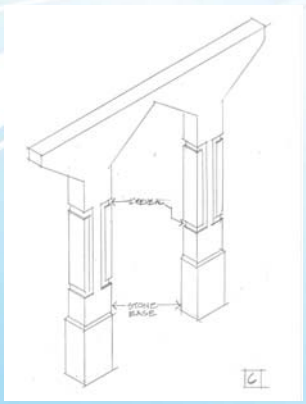


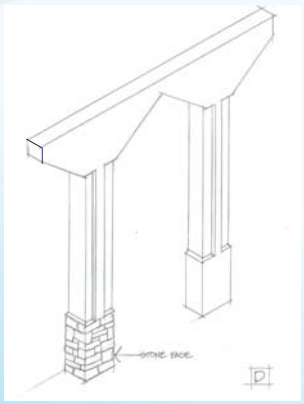
Conceptual Pier Design





Conceptual Pier Design



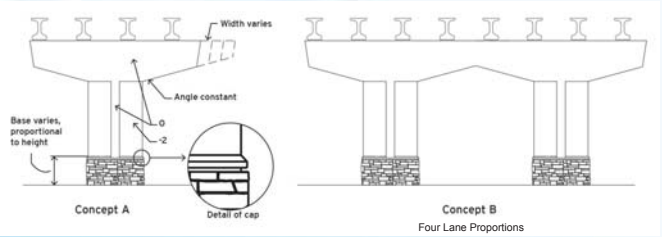


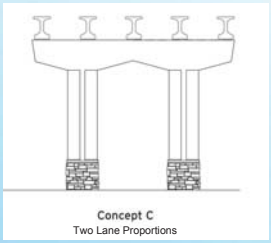
Recommended concept
for further development

TRI-COUNTY EXPANSION

Federal Highway Administration

Conceptual Pier Design



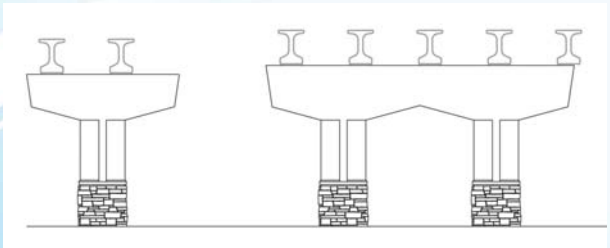


Concept C
Two Lane Proportions

TRI-COUNTY EXPANSION

Federal Highway Administration

Conceptual Pier Design



Concept D

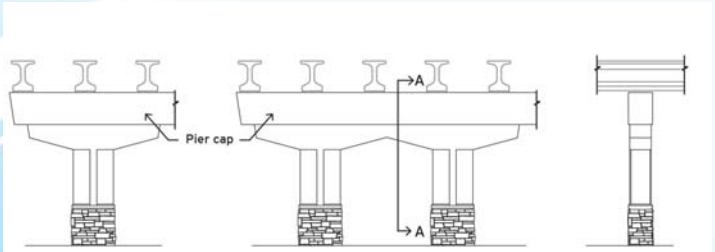
Concept E

Note: Height and width varies by location

TRI-COUNTY EXPANSION

Federal Highway Administration

Conceptual Pier Design



Concept F

Concept G

Section A-A

TRI-COUNTY EXPANSION

Federal Highway Administration

Wall Patterns



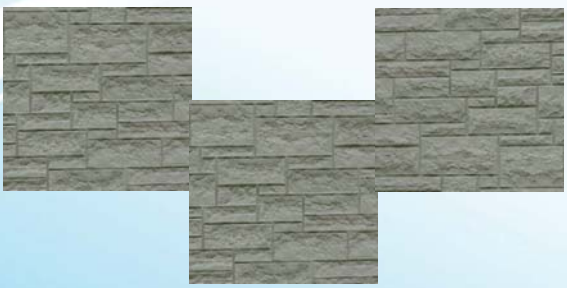


Winnebago Co.

TRI-COUNTY EXPANSION

Federal Highway Administration

Wall Patterns



Split Edge / Face Ashler Limestone

TRI-COUNTY EXPANSION

Federal Highway Administration

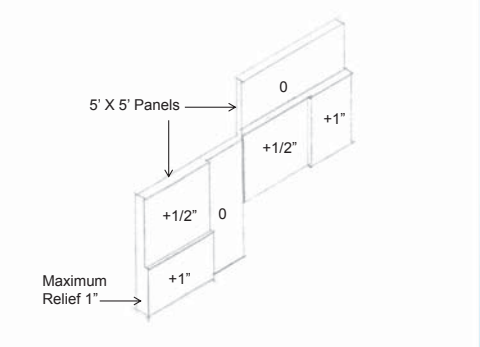
Wall Patterns



Cut Edge / Smooth Face Ashler Limestone

TRI-COUNTY EXPANSION

Wall Patterns



Layered Non-Directional
(possible surface texture)

TRI-COUNTY EXPANSION

Next steps

- Consideration of bicycle and pedestrian accommodations
- Prepare preliminary recommendations for structural element CSS concepts
- Meet and present preliminary recommendations to local officials
- Refine CSS recommendations
- Final recommendations presented

TRI-COUNTY EXPANSION

Meeting Notes

Meeting Title:
CSS Meeting

Prepared by:
Scott Ebel (WisDOT)

Date:
May 1st 2012

Purpose of Meeting
1. General Concepts of Community Sensitive Design

Location:
US 41 Brown County Office
1940 West Mason Street
Green Bay, WI 54303

Time:
1:00pm – 3:00pm

Participants:
See attached sign In sheet
Teleconference Number 888-557-8511
Access 8978271 / Host 3137

I. Introductions

Danielle Block (WisDOT) will be taking on the role of CSS coordination.. Chad DeGrave (WisDOT) will be sending out an update soon.

II. Pedestrian Concerns

- Sidewalks

  The Team discussed how the pedestrian walkways tie into the roundabouts and match the surroundings. The Team will be looking for opportunities with both sidewalks and roundabouts to tie in the local aesthetics.

- Roundabouts

  3 levels of roundabouts were presented with varying levels of landscaping.
  Level 1 was the most basic featuring a standard truck apron, mowed grass, ornamental trees and colored concrete in the crosswalk and islands.
  Level 2 featured all the same amenities as level 1 but also included perennial plantings. These types of perennials are very easy to maintain and provide a high visual impact. They are native to Wisconsin and require very little attention.
  Level 3 includes some additional planting and maintenance, but it is very minimal due to the use of native species. The City of Appleton currently utilizes this type planting and may have interest in keeping a similar look.
  The use of trees surrounding the roundabout raised questions about the ability for snow and ice to melt, due to the shade from the trees.

III. Sketch of Roundabout options

See handout provided

IV. Local Municipalities Level of Maintenance

The amount of irrigation, pruning and upkeep increase with each landscaping level of the roundabout and the local municipalities will have to decide how much maintenance they are comfortable with.

2 types of irrigation systems were discussed: Manual irrigation system which utilizes a hose bib and an Automatic irrigation system which uses pop up heads and drip lines.
The landscaping treatments are reimbursed to $5000 by WisDOT; any additional cost is borne by the municipality.

V. Review pier CSD concepts (refined concept D) and color options

The Team reviewed 3 possible color options from the handout, unfinished concrete, basket beige and latte. Of the 3, 2 choices will be presented to the locals. The color options are similar to what was used in Brown and Winnebago Counties. The Ashlar patterns utilized in the piers, retaining walls and noise walls can be sprayed with stain which is quick and non-labor intensive. The sprayed on stain is expected to last 75 years or more; some fading will occur over time but it is not noticeable. The piers in the water will only be stained to match, no patterns will be used. The staining will go at least 1 foot below the waterline on these piers.
The number of combinations of patterns and colors to be presented was discussed. The team decided to present the general patterns to the locals first, then have a color chosen.
Concealing downspouts on piers will be done at certain locations and is not an issue. Pier columns which will be concealed by barriers will not utilize form liners. Plain forms (no patterns) for piers and walls will be used in the system interchange. Only local interchanges and walls will use the form liners.
The three wall options to be advanced are the cut ashlar, the geometric pattern by Tom Kindschi, and the plain panel.

VI. Review retaining wall patterns and color options

Several options were shown in the handout.
Tom Kindschi's (HNTB) design was most desirable; it uses 5 x 10 panels which are interchangeable to avoid patterns. The Team wanted to avoid horizontal lines where possible due to possible shifting of the panels impacting the alignment of the lines; vertical lines are not impacted by the panels shifting.
The last 2 patterns featured a lot of texture which makes it look very busy. The possibility of using a plain wall panel with a texture applied was discussed.

VII. Review noise barrier patterns and color options

4 possible examples were shown in the handout.
Currently a plain panel design with alternating colors, similar to example 4 in the handout, is being used in some areas of WIS 441.
It is still being investigated as to which noise walls are staying and which are being taken down; the timber noise walls will definitely be replaced.
The noise walls can have different designs on either side depending on what the locals would prefer.
The use of steel instead of concrete for the vertical columns on the noise walls was discussed; steel is more cost effective and easier to work with than concrete and is the preferred material for the columns, especially at bridge connections. The different types of stone/flat concrete patterns will have no effect on the level of sound dampening.
The Team would involve the locals similar to the way it was done on US 41, but in a more streamlined manner. The piers, noise walls and retaining walls will be shown as a family with the different design patterns. The different color options on those designs would be chosen separately after a pattern is decided on.

VIII. Next Steps

- Determine how much input local officials want to give on designs
- Once a pattern is chosen, public will then select colors to use.
- Determine how much maintenance local municipalities are willing to put in on roundabout and sidewalk areas.

WIS 441 Project
CSS Tasks Meeting
May 1st, 2012
Sign In Sheet

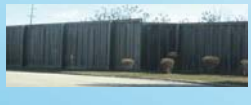
TRI-COUNTY EXPANSION

Attended	Company Name	First Name	Last Name	E-mail Address	Phone Number
	HNTB Corp.	Adam	Clayton	aclayton@hntb.com	
	Wisconsin DOT	Barry	Paye	Barry.Paye@dot.wi.gov	
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	Wisconsin DOT	Carolyn	Sampson	Carolyn.Sampson@dot.wi.gov	
	Wisconsin DOT	Curt	VanErem	Curtis.VanErem@dot.wi.gov	
	URS Corp	Donald	Yetter	Donald.Yetter@urs.com	
	URS Corp	Heather	Wech	Heather.Wech@dot.wi.gov	
	Wisconsin DOT	Jared	Kinziger	Jared.Kinziger@dot.wi.gov	
	Wisconsin DOT	John	Mahlik	John.Mahlik@dot.wi.gov	
X	Wisconsin DOT	Kurt	Peters	Kurt.Peters@dot.wi.gov	
	Becher-Hoppe Associates	Michael	Kowal	mkowal@becherhoppe.com	
	Wisconsin DOT	Mike	Helmrick	Michael.Helmrick@dot.wi.gov	
	Kapur & Associates	Prasad	Narayan	prasad@kapur-assoc.com	
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	Becher-Hoppe Associates	Todd	McDonald	tmcdonald@becherhoppe.com	
X	URS Corp	Mike	Arnold	mike.arnold@urs.com	
	Becher-Hoppe Associates	Dan	Gerling	dgerling@becherhoppe.com	
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	URS Corp	Nick	Becker	Nick.Becker@urs.com	
Y	Wisconsin DOT	Chad	De Grave	chad.degrave@dot.wi.gov	
	URS Corp	Mike	Beurket	michael.beurket@dot.wi.gov	
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X	HNTB Corp.	Tom	Kindschi	tkindschi@hntb.com	
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	Wisconsin DOT	Mark	Higley	mark.higley@dot.wi.gov	
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X	HNTB Corp.	Carolyn	Stuessy	cstuessy@hntb.com	
X	Wisconsin DOT	Matt	Halada	matt.halada@dot.wi.gov	



441

TRI-COUNTY EXPANSION





Federal Highway Administration

WIS 441 Tri-County Project

Community Sensitive Solutions (CSS)

May 1, 2012

TRI-COUNTY EXPANSION

Federal Highway Administration

Meeting agenda

- Pedestrian concerns
  - Sidewalks
  - Roundabouts
- Sketch of roundabout options
- Local municipalities level of maintenance
- Review pier concepts (Refined concept “D”) and color options
- Review retaining wall patterns and color options
- Review noise barrier patterns and color options
- Review action items & new action items

TRI-COUNTY EXPANSION

Federal Highway Administration

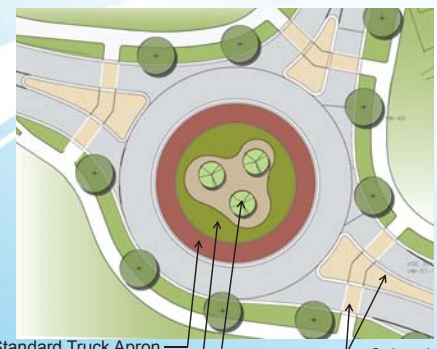
CSS opportunities

Roundabouts



Federal Highway Administration

Level 1 roundabout





Standard Truck Apron
Mowed Grass
Ornamental Trees

Colored Concrete in crosswalk & islands

Federal Highway Administration

Level 2 roundabout





Standard Truck Apron
Mowed Grass
Ornamental Trees
Perennial plantings

Colored Concrete in crosswalk & islands

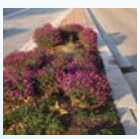
Federal Highway Administration

Level 3 roundabout











Standard Truck Apron
Mowed Grass
Shrubs
Ornamental Trees
Perennial plantings
Colored Concrete in crosswalk & islands

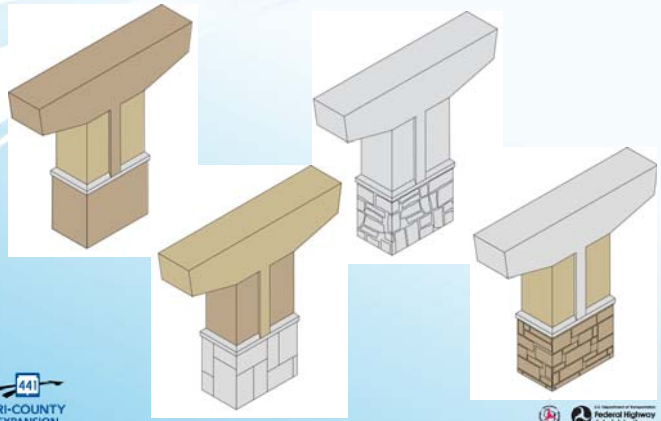
Irrigation options

- Manual irrigation system
  - Hose bib
- Automatic Irrigation
  - Drip
  - Pop up heads
- WisDOT contribution

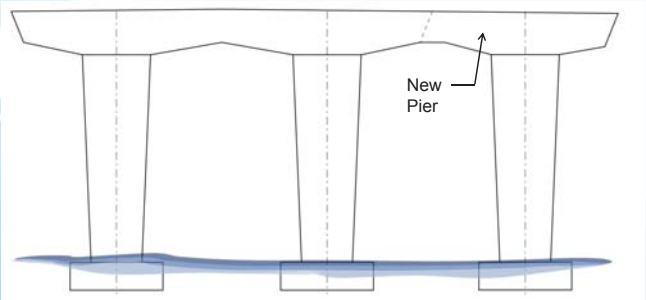
Color options

Unfinished concrete	Basket Beige	Latte

Pier concepts

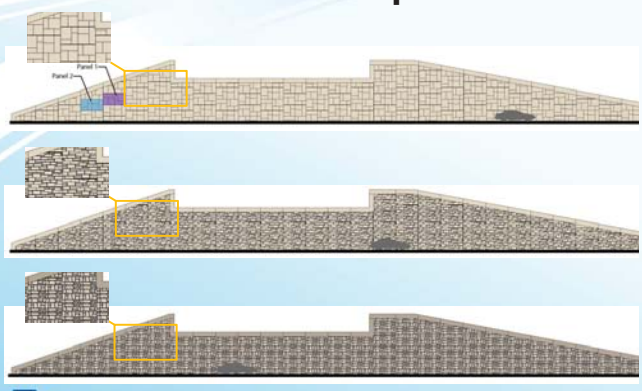


LLBDM pier concepts

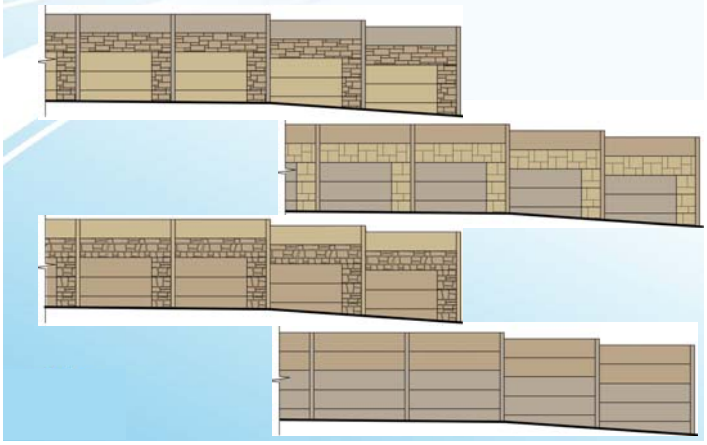


Main Bridge (Looking westbound)

Wall concepts



Noise barrier concepts



Noise barrier on retaining wall





TRI-COUNTY EXPANSION

Federal Highway Administration

Next steps

- Consideration of bicycle and pedestrian accommodations
- Prepare recommendations for structural elements
- Meet and present preliminary recommendations to local officials
- Refine CSS recommendations
- Final recommendations presented

TRI-COUNTY EXPANSION

Federal Highway Administration

WIS 441 Project ID 1517-07-04
6/07/2012 CSS Meeting

Meeting Notes

Meeting Title:
CSS Meeting

Prepared by:
Quinn Schultz (Siker Inc)

Date:
June 7th 2012

Purpose of Meeting
1. General Concepts of Community Sensitive Design

Location:
US 41 Brown County Office
1940 West Mason Street
Green Bay, WI 54303

Time:
1:00pm – 3:00pm

Participants:
See attached sign In sheet
Teleconference Number 888-557-8511
Access 6381165 / Host 9066

I. Introductions

Danielle Block (WisDOT) started off with self introductions and the purpose of the meeting.

II. Review CSD Concept illustrations combining piers and retaining walls

Tom Kindschi (HNTB) presented the 3 different color choices available: Latte, Basket Beige and Unfinished Concrete. It was noted by Aaron Bonk (WisDOT) that the current presentation shows an "extra" cap on the piers which will not be in the actual design; Tom Kindschi (HNTB) acknowledged this and will make changes for the future presentations.

The illustrations from the power point presentation were referenced to give a better idea of what the different color options will look like on the available pier and retaining wall designs. The Cut Ashlar, Stylized Stone and Plain designs were presented and discussed. All of the piers, retaining walls and noise barriers for the local officials meeting will initially be presented with design options without staining. Once a design is agreed upon they will be presented staining options for a color scheme to be selected. This is the proposed method for focusing the corridor aesthetic decision making process by the local officials. Existing structures such as Appleton Rd, Oneida St, if not reconstructed, and Racine Rd, will be stained to match the new construction. The exception to this is the stretch of noise barrier that extends from USH 10/Oneida St to the east. This will be reviewed further.

The Design Team brought up several questions which will be answered as the design nears 60%, such as: will names of roads/street be put on the new or existing structures crossing WIS 441; will bicycle and pedestrian rehabilitation become part of the new construction; and will slope paving on existing structures be replaced to match new construction, done as a result of necessary road widening. Another question regarding slope paving was the use of epoxy and river rock, as opposed to plain concrete, or concrete patterned with a standard form liner. The method using epoxy and river rock has been used at other locations throughout the state, and will be considered by the Design Team. (Follow-up from Aaron Bonk (BOS) indicates that the preferred approach by BOS is to use concrete slope paving in urban areas. The epoxy covered stone slope paving does require additional maintenance. The final decision will come from the Region.)

Immediate additional challenges were discussed. CTH AP/Midway Rd structure is going to be reconstructed at a new location; it is a unique situation because to achieve the desired overhead clearance, wrap around abutments will be used. This creates concern with matching the structure to the others in the

area. Design models at the next meeting will include round piers that will match those used at the existing structures that will not be replaced. Existing structures will be stained to match new construction. The piers and retaining wall designs at the System Interchange will be consistent with the rest of the US 41 project.

Examples of Slate Texture form liner were presented; this product comes in plastic sheets with a ¾" elevation change. This product can only be used on new construction, and could be used on piers or slopes.

Budget considerations will be addressed as the different design options are vetted, the team did not foresee any issues with the current design options running over budget. (3/4% to 1% of total project budget)

III. Review Noise Barrier Patterns and Color Options

Tom Kindschi (HNTB) presented 3 possible examples of noise barrier designs. Example 1 is currently in use throughout WIS 441. Examples 2 and 3 utilize the Simulated Stylized Stone with 2 colors and sectional paneling. The existing noise barriers can be stained to match the new construction. The same approach to present the piers and barrier walls to the local officials will be used with these designs; a design option is chosen, and then officials will be presented with the color options. The team discussed having the estimated cost of staining existing noise barriers and justification for areas receiving new noise barriers available to talk about further at the next CSS Meeting, in preparation for the local officials meeting.

An opportunity to expedite the process of local officials choosing a design was to implement one design encompassing the entire corridor for noise barriers, based on their decision for the piers and barrier walls.

The noise barriers can be made with different designs on each side if desired. STH 47/Appleton Rd to US 10/Oneida St has the largest noise barrier construction with UW-Fox Valley to the south and a large apartment complex to the north.

Noise barriers will be mounted behind bridge parapets where needed, as this was discussed at a previous Design Meeting.

IV. Steps from Last Meeting (progress)

- Solicit design input from local officials (pattern and color)

  The Design Team will present the local officials with the design options on a comment form, the bridge pier design will then be determined. This design will be used throughout the project for noise barriers as well. The communities involved in the project are geographically close to one another, so there will be a single series of meetings for the whole corridor. The Design Team is estimating that 4 meetings with the local officials will be needed for a design and color to be selected. The goal with the local officials meeting is to streamline the process with limited choices to focus the decision making process.

- Determine acceptable level of roundabout landscape maintenance from local municipalities

  Roundabout landscaping will be discussed at a later date as it is a low schedule priority at this point; intersection types will be determined before any discussion of roundabouts takes place. Some intersections originally thought to be receiving roundabouts may now be constructed with signalized intersections, pending intersection control evaluation results.

V. Additional Project Information

Any design issues at Jacobson Rd will need to be addressed the same way as the other structures on the WIS 441 project. CTH II will not have any significant changes. The existing noise barrier that starts at Oneida St and continues north for nearly 2 miles will not be stained or modified because of it's length and because it extends beyond the limits of the WIS 441 project.

VI. Goals for next CSS Meeting (June 28th)

The next CSS Meeting will include a rehearsal for the local officials meeting; in addition to the topics above, it will include discussion on aesthetics. Tom Kindschi (HNTB) will update the slides in his presentation with images of reconstructed round piers, and new construction which meets the current designs east and west of LLBDM. The images on the presentation will be created in layers which can be turned on or off; this allows the different color options and designs to be shown immediately. .

Danielle Block (WisDOT) requested a general layout of proposed new and old structures and noise barriers throughout the corridor for the next meeting, however at this point nothing is solid and locations could change. Scott Ebel (WisDOT) presented and explained on the Smartboard several areas where noise barriers are currently in use and the tentative locations of proposed noise walls.

WIS 441 Project
CSS Tasks Meeting
June 7th, 2012
Sign In Sheet

TRI-COUNTY EXPANSION

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	Wisconsin DOT	Carolyn	Sampson	Carolyn.Sampson@dot.wi.gov	
	Wisconsin DOT	Curt	VanErem	Curtis.VanErem@dot.wi.gov	
	URS Corp	Donald	Yetter	Donald.Yetter@urs.com	
	URS Corp	Heather	Wech	Heather.Wech@dot.wi.gov	
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	Wisconsin DOT	John	Mahlik	John.Mahlik@dot.wi.gov	
	Wisconsin DOT	Kurt	Peters	Kurt.Peters@dot.wi.gov	
	Becher-Hoppe Associates	Michael	Kowal	mkowal@becherhoppe.com	
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	Kapur & Associates	Prasad	Narayan	prasad@kapur-assoc.com	
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	Becher-Hoppe Associates	Dan	Gerling	dgerling@becherhoppe.com	
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	URS Corp	Nick	Becker	Nick.Becker@urs.com	
	Wisconsin DOT	Chad	De Grave	chad.degrave@dot.wi.gov	
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X	Siker Inc	Quinn	Schultz	quinn.schultz@dot.wi.gov	
X	HNTB Corp.	Tom	Kindschi	tkindschi@hntb.com	
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X	Wisconsin DOT	Mark	Higley	mark.higley@dot.wi.gov	
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	Kapur & Associates	Justin	Arndt	jarndt@kapur.assoc.com	
	Wisconsin DOT	Bob	Schuurmans	robert.schuurmans@dot.wi.gov	
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X	Wisconsin DOT	Danielle	Block	danielle.block@dot.wi.gov	
X	HNTB	TJ	Dougherty	tjdougherty@hntb.com	



TRI-COUNTY
EXPANSION





WIS 441 Tri-County Project

Community Sensitive Solutions (CSS)

June 7, 2012

Meeting agenda

- Review structure and retaining wall concepts. Use of color and texture.
  - Cut Ashler
  - Modified stone
  - Plain
- Noise barrier concepts & mounting options
- Review previous action items & new action items

Selected Color options

Unfinished concrete

Basket Beige

Latte

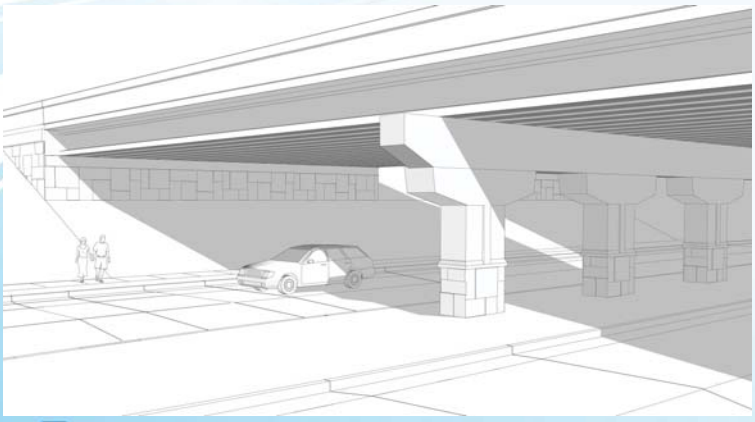
Structure concept – Cut Ashler



Structure concept – Cut Ashler



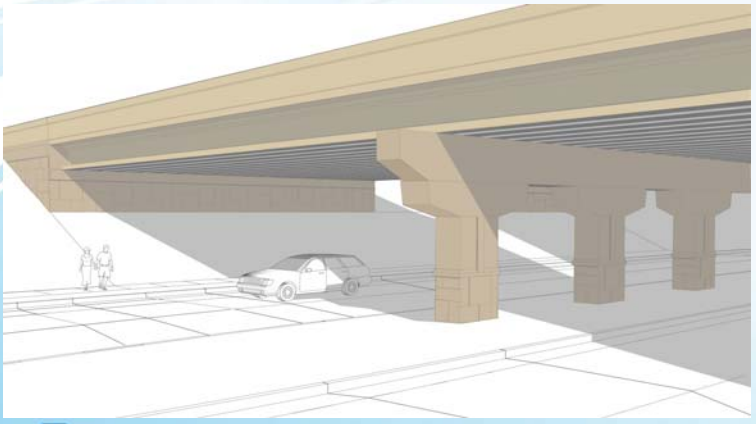
Structure concept – Stylized Stone



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Federal Highway Administration

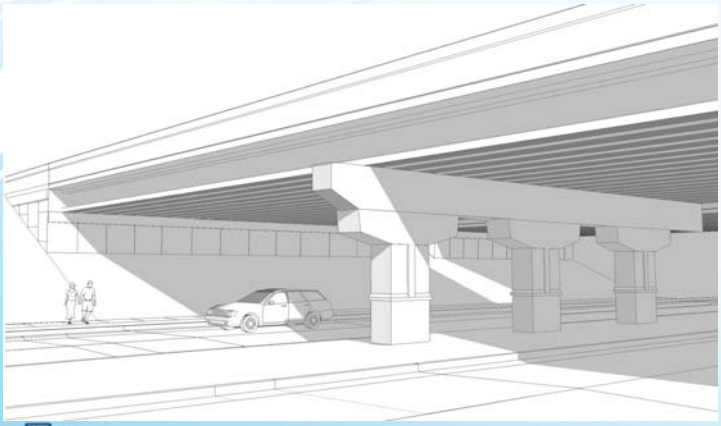
Structure concept – Stylized Stone



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Federal Highway Administration

Structure concept - Plain



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Federal Highway Administration

Structure concept - Plain



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Federal Highway Administration

"Slate" Texture Formliner

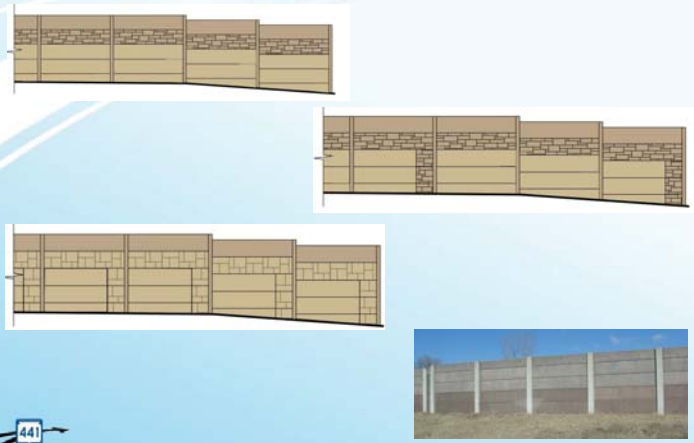
Possible use on large smooth surfaces



TRI-COUNTY EXPANSION

Federal Highway Administration

Noise barrier concepts



TRI-COUNTY EXPANSION

Federal Highway Administration

Noise barrier construction



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Federal Highway Administration

Noise barrier mounting options





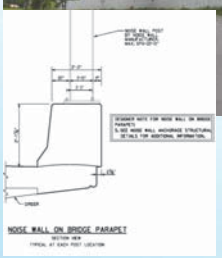
TRI-COUNTY EXPANSION

Federal Highway Administration

Noise barrier mounting options



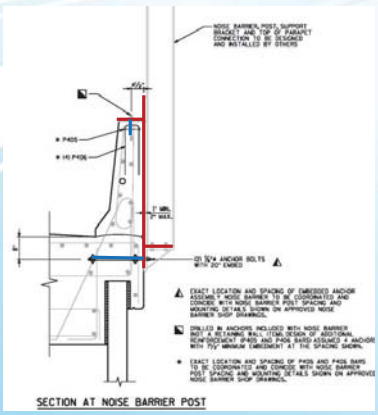


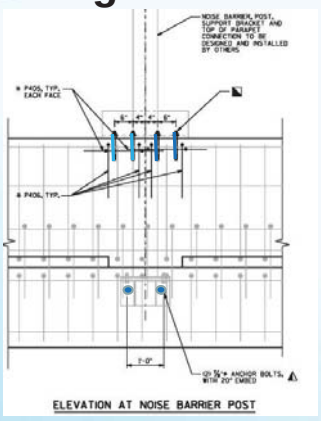


TRI-COUNTY EXPANSION

Federal Highway Administration

Noise barrier mounting details





TRI-COUNTY EXPANSION

Federal Highway Administration

Next steps

- Meet and present preliminary recommendations to local officials
- Refine CSS recommendations
- Final recommendations presented to public

TRI-COUNTY EXPANSION

Federal Highway Administration

WIS 441 Project ID 1517-07-04
7/10/2012 CSS Meeting

Meeting Notes

Meeting Title:
CSS Meeting

Date:
July 10th 2012

Location:
US 41 Brown County Office
1940 West Mason Street
Green Bay, WI 54303

Time:
9:00am – 11:00am

Prepared by:
Quinn Schultz/Siker Inc.

Purpose of Meeting
1. General Concepts of Community Sensitive Design
2. Prepare for Meeting with Local Officials

Participants:
See attached sign In sheet
Teleconference Number 888-557-8511
Access 6381165 / Host 9066

I. Review corridor map identifying locations for CSS (as discussed last meeting)

The map provided in the handout was discussed, and Tom Kindschi (HNTB) began by clarifying exactly what was shown on the map. Mike Arnold (URS) added that the noise barrier locations noted on the map only showed new noise barriers and replacement noise barriers , but it did not show existing noise barriers walls. Many of the changes for the noise barriers depend on the ramp terminal intersection types that are yet to be determined, as well as drainage and other factors. The goal for the aesthetics on this project is overall continuity with all of the piers, bridges, barrier and noise walls. Bridge rehabilitation/replacement at Oneida St, Racine Rd and other locations have yet to be confirmed and will be discussed at future meetings.

II. Select Noise Barrier Patterns and Color Options

The Team discussed the various examples provided in the handout, simplifying the noise barriers and possibly introducing textured inserts, while retaining a look similar to what is currently in use. The example on the top of the handout is closest to what is in use; it was determined to be the desired choice. Tom Kindschi (HNTB) brought up reusing the panels from the current noise barriers for new construction if possible. This has been done for other projects and could be a cost savings. Some concern over damaging the panels in the process was discussed and John Jaeckel (HNTB) will be able to provide some direction on this process. The color options will be kept as close to the original as possible, but will also blend in with the rest of the project structures. The group agreed that introducing vertical aesthetic elements in the noise barrier wall would be inconsistent.

III. Select CSD Concepts for piers and retaining walls

The Team discussed various new construction options for the piers' reveals, form liners, vertical reveals and pier caps for the new piers. Tom Kindschi (HNTB) stated that form liners cannot be used on round pier supports (columns); form liners can only be used on rectangular and/or oval shaped pier supports. Examples of each are provided in the handout. The rehabilitation that will be done on several structures is limiting what the Team can do with CSS design since the existing bridges use round piers which need to be matched. The group agreed that a simpler approach would be best. Existing structures which are widened will use round piers and be stained to match new construction throughout the project. Aaron Bonk (WisDOT BOS) noted that the load capacity on the beams of the existing structures would have to be confirmed before any aesthetic additions can be made that increase the dead load. Also, Aaron Bonk noted

current standards requiring round piers used in new construction to be roughly 4' in diameter, while rectangular and oval piers needed to be the equivalent area of roughly 3' x 5'. This, along with Tom Kindschi's statement about form liners and round piers, were factors in the Team's decision to prefer the oval piers east of LLBDM and rectangular piers west of LLBDM for the project's newly constructed bridges. Aaron Bonk is to confirm the information about pier support minimum dimensions. The different aesthetics to be used east and west of LLBDM were reviewed; they will tie into their respective areas and be continuous throughout different elements, but the 2 areas will share enough common features to blend in with one another. The Winchester Road (CTH II) interchange is outside of the main corridor, and any CSD treatment there will have to be discussed further. Jacobson Road will blend-in with the rest of the project. The preferred pier design for the System Interchange is rectangular piers and footings, with staining to match the rest of the corridor. A more basic design was agreed to be preferred. The group discussed design options that would be less difficult for contractors to build, thus saving money on the project. This topic will continue to be considered as CSS moves forward.

IV. Public Officials Meeting (progress)

The Public Officials will be presented with options regarding the rectangular and oval piers with a maximum of 3 types of aesthetic treatment for each. Structure designs will be shown as line drawings with colors to follow. Examples 2 and 6 from the handout will be used as choices for the piers; with 6 being a simpler design and 2 being similar to 1 and 3, with the exception of stain colors/design. There will be no slope pavement options presented, with plain, non-textured concrete being the preferred option. The concrete will not be stained and will not be replaced at areas set for rehabilitation unless the project team determines that the slope paving is deteriorated enough. The System Interchange will use crushed aggregate for slope paving, in accordance with NE region standard details. There will be no parapet options for existing structures at this point, with Aaron Bonk (HNTB) to confirm dead load capacities on the structures to remain. Individual areas of the project, as well as whole structures will be displayed at the public meeting in line drawing form; handouts with comment areas will be also be distributed. Color options will be presented later. Brian Roper (WisDOT) and Colleen Harris (WisDOT) will be presented with a draft presentation of the options by 7/24 and will make recommendations for the public meeting to be held in late fall of this year.

V. New Action Items

1. Mike Arnold (URS) and Aaron Bonk (HNTB) to check if bridges to remain can handle additional dead load of the new/added aesthetics. Due 7/24
2. Mike Arnold (URS) to confirm median width. Due 7/24
3. Aaron Bonk (HNTB) to confirm minimum size/dimensions required for pier supports. Due 7/24
4. Danielle Block (WisDOT) and Tom Kindschi (HNTB)will provide the following items for the public meeting: the 2 desired square and oval pier type options as line drawings with colors to follow, display of individual areas of structure as well as structure as a whole, provide handouts, comment cards, display boards and roll plots for public meeting. Due 11/15
5. Tom Kindschi (HNTB) and Carolyn Stuessy (HNTB) will have a draft of a presentation for Brian Roper and Colleen Harris to review for presenting to public. Due 7/24

WIS 441 Project
CSS Tasks Meeting
July 10th, 2012
Sign In Sheet

TRI-COUNTY EXPANSION

Attended	Company Name	First Name	Last Name	E-mail Address	Phone Number
	HNTB Corp.	Adam	Clayton	aclayton@hntb.com	
	Wisconsin DOT	Barry	Paye	Barry.Paye@dot.wi.gov	
	Wisconsin DOT	Bruce	Enke	Bruce.Enke@dot.wi.gov	
	Wisconsin DOT	Carolyn	Sampson	Carolyn.Sampson@dot.wi.gov	
	Wisconsin DOT	Curt	VanErem	Curtis.VanErem@dot.wi.gov	
	URS Corp	Donald	Yetter	Donald.Yetter@urs.com	
	URS Corp	Heather	Wech	Heather.Wech@dot.wi.gov	
	Wisconsin DOT	Jared	Kinziger	Jared.Kinziger@dot.wi.gov	
	Wisconsin DOT	John	Mahlik	John.Mahlik@dot.wi.gov	
	Wisconsin DOT	Kurt	Peters	Kurt.Peters@dot.wi.gov	
	Becher-Hoppe Associates	Michael	Kowal	mkowal@becherhoppe.com	
	Wisconsin DOT	Mike	Helmrick	Michael.Helmrick@dot.wi.gov	
	Kapur & Associates	Prasad	Narayan	prasad@kapur-assoc.com	
X	URS Corp	Robert	Fieldbinder	robert.fieldbinder@urs.com	
	Becher-Hoppe Associates	Todd	McDonald	tmcdonald@becherhoppe.com	
	URS Corp	Mike	Arnold	mike.arnold@urs.com	
	Becher-Hoppe Associates	Dan	Gerling	dgerling@becherhoppe.com	
	Wisconsin DOT	Andy	Fulcer	andrew.fulcer@dot.wi.gov	
	URS Corp	Nick	Becker	Nick.Becker@urs.com	
X	Wisconsin DOT	Chad	De Grave	chad.degrave@dot.wi.gov	
X	URS Corp	Mike	Beurket	michael.beurket@dot.wi.gov	
X	Siker Inc	Quinn	Schultz	quinn.schultz@dot.wi.gov	
X	HNTB Corp.	Tom	Kindschi	tkindschi@hntb.com	
X	Wisconsin DOT	Aaron	Bonk	aaron.bonk@dot.wi.gov	
X	Wisconsin DOT	Mark	Higley	mark.higley@dot.wi.gov	
X	Wisconsin DOT	Scott	Ebel	scott.ebel@dot.wi.gov	
	Kapur & Associates	Justin	Arndt	jarndt@kapur.assoc.com	
	Wisconsin DOT	Bob	Schuurmans	robert.schuurmans@dot.wi.gov	
X	HNTB Corp.	Carolyn	Stuessy	cstuessy@hntb.com	
X	Wisconsin DOT	Matt	Halada	matt.halada@dot.wi.gov	
X	Wisconsin DOT	Danielle	Block	danielle.block@dot.wi.gov	
	HNTB Corp.	TJ	Dougherty	tjdougherty@hntb.com	
X	Wisconsin DOT	Eric	Sikorski	eric.sikorsky@dot.wi.gov	



441

TRI-COUNTY EXPANSION





TRI-COUNTY EXPANSION

Federal Highway Administration

WIS 441 Tri-County Project

Community Sensitive Solutions (CSS)

July 10, 2012

TRI-COUNTY EXPANSION

Federal Highway Administration

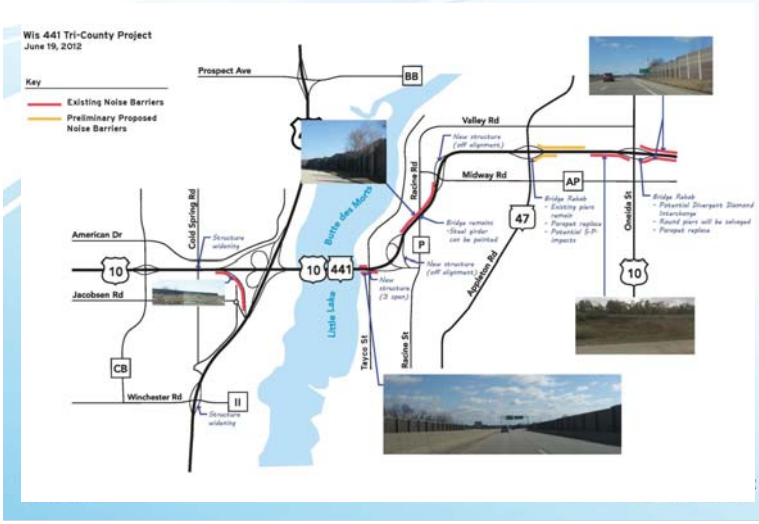
Meeting agenda

- Corridor features map
- Noise barriers
- Pier concepts
- Public officials meeting
- New action items

TRI-COUNTY EXPANSION

Federal Highway Administration

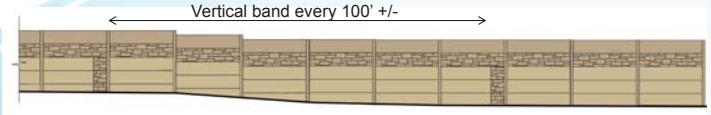
Corridor Features



Noise barrier concepts



Vertical band every 100' +/-



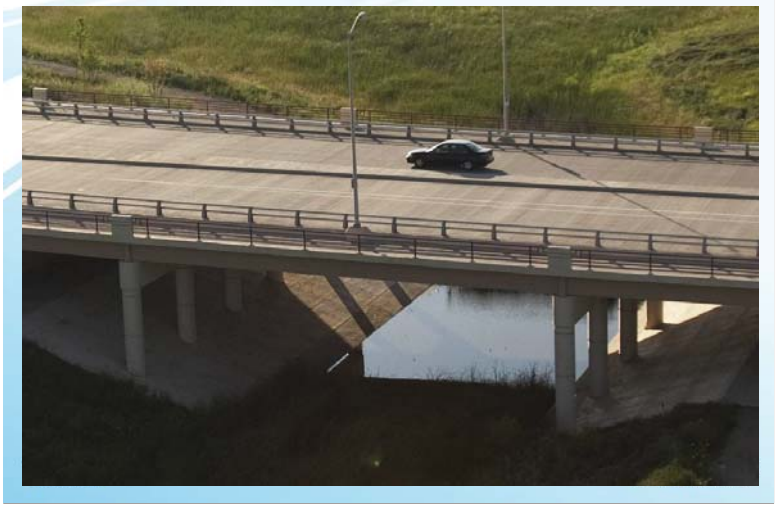




TRI-COUNTY EXPANSION

Federal Highway Administration

Round piers



Round piers



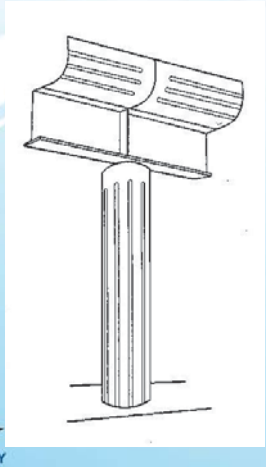




TRI-COUNTY EXPANSION

Federal Highway Administration

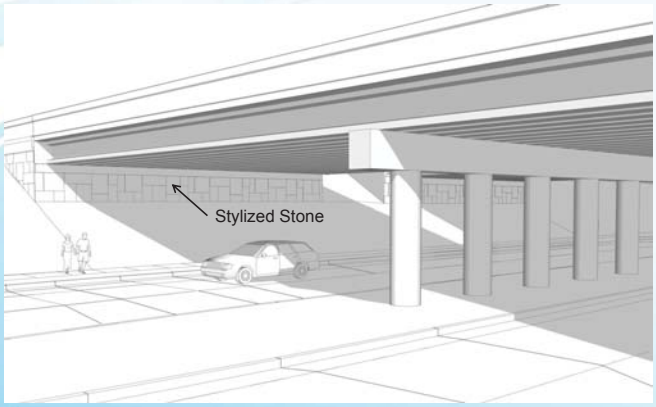
Round piers



TRI-COUNTY EXPANSION

Federal Highway Administration

Round piers –plain parapet



TRI-COUNTY EXPANSION

Federal Highway Administration

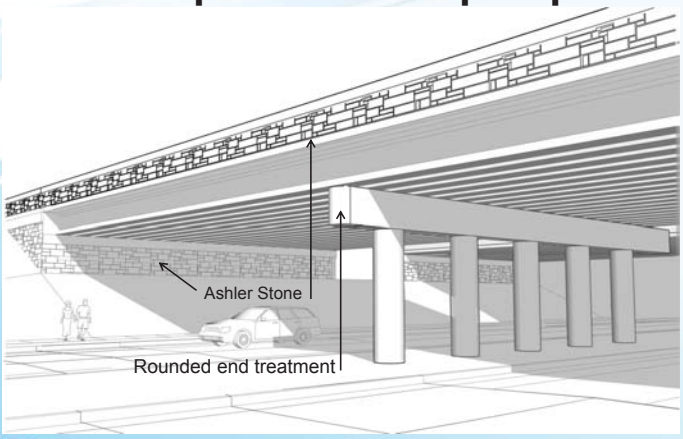
Round piers –plain parapet



TRI-COUNTY EXPANSION

Federal Highway Administration

Round piers - stone parapets



TRI-COUNTY EXPANSION

Federal Highway Administration

Oval piers (Oshkosh/Racine)

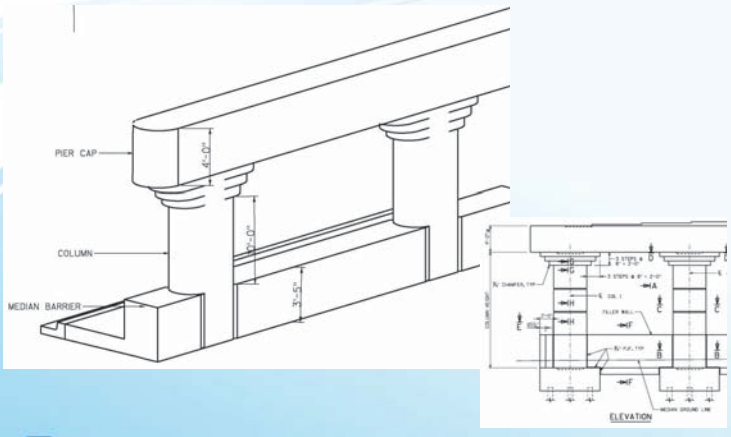




TRI-COUNTY EXPANSION

Federal Highway Administration

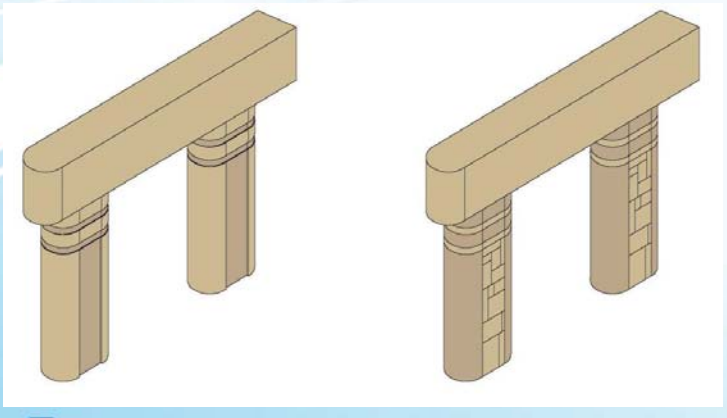
Oval piers



441 TRI-COUNTY EXPANSION

Federal Highway Administration

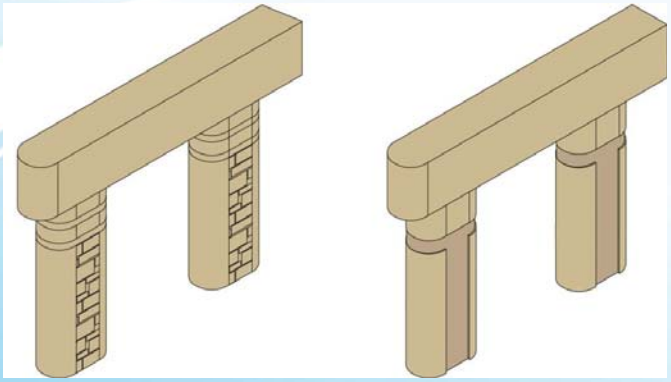
Oval pier option



441 TRI-COUNTY EXPANSION

Federal Highway Administration

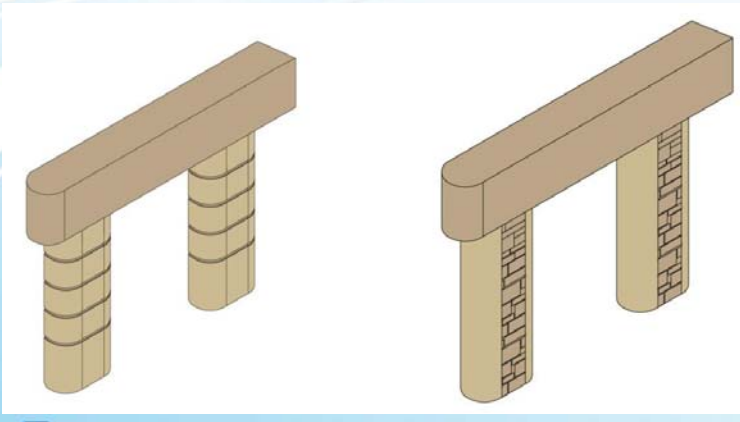
Oval pier option



441 TRI-COUNTY EXPANSION

Federal Highway Administration

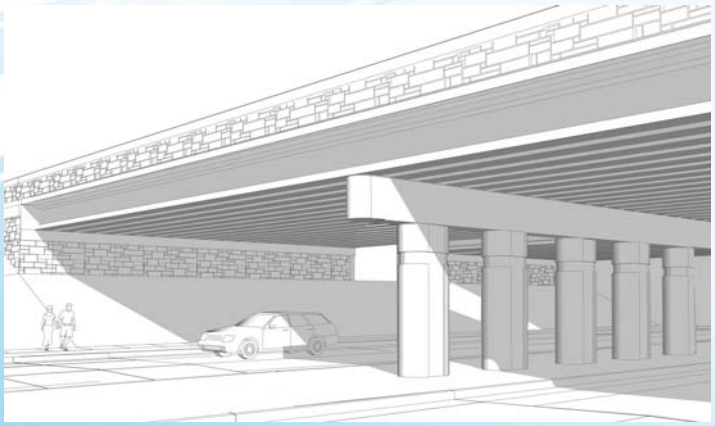
Oval pier option



441 TRI-COUNTY EXPANSION

Federal Highway Administration

Oval piers –stone parapet



441 TRI-COUNTY EXPANSION

Federal Highway Administration

Oval piers –stone parapet



441 TRI-COUNTY EXPANSION

Federal Highway Administration

Slope Pavement









TRI-COUNTY EXPANSION

Next steps

- Meet and present preliminary recommendations to local officials
- Refine CSS recommendations based on community input
- Present final recommendations to public

TRI-COUNTY EXPANSION

WIS 441 Project ID 1517-07-04
8/07/2012 CSS Meeting

Meeting Notes

Meeting Title:
CSS Meeting

Date:
August 7thth 2012

Location:
US 41 Brown County Office
1940 West Mason Street
Green Bay, WI 54303

Time:
8:00am – 9:00am

Prepared by:
Quinn Schultz/Siker Inc.

Purpose of Meeting
1. Cost Adjusting of Community Sensitive Design
2. Prepare for Meeting with Management

Participants:
See attached sign In sheet

I. Cost Adjustments

- Tom Kindschi (HNTB) discussed some of the cost changes to the current spreadsheet for the various CSS items. The Team discussed the costs and ways to lower them, as well as how they should be presented to management and the public. Costs were reduced for staining, form liner installation, parapet forming, and retaining wall and noise barrier construction. In addition the LLBDM Bridge will be separated from the CSS costs listed on Tom's spreadsheet. Tom noted than Fin Hubbard (HNTB) looked over Tom's number and said they were consistent with what had been done on previous projects.
- Danielle Block (WisDOT) noted that in the past the public has asked what specific aesthetics cost, such as stonework on a bridge. Danielle added it may be helpful to have several areas broken down individually to assist in answering these questions.
- Aaron Bonk (BOS) and Mike Arnold (URS) agreed that the size of the LLBDM piers will mean a lower overall cost of aesthetics for the bridge.
- Mike Arnold (URS) noted that the cost of the noise barriers would have to be doubled due to both sides requiring treatment. Todd Sanders (HNTB) added that mobilization and survey work are included in the noise barrier costs; this will be updated to the spreadsheet.
- Roundabout costs were discussed and the WisDOT standard is $2,500-$3,000 each. These will be looked at on an individual basis and utilize separate tabs on the spreadsheet, as some areas may have greater public visibility than others.
- The team was able to find enough savings; even with the increase in noise barriers to keep the overall CSS cost less than 1% of the total budget.

II. Action Items

1. Mike Arnold (URS) and Tom Kindschi (HNTB) will update all the costs on the spreadsheet as well as separating LLBDM costs.
2. Danielle Block (WisDOT) will provide landscaping costs from US 41 Brown County as a reference.
3. Tom Kindschi will update the roundabout cost by acre to help simplify the overall picture.
4. Carolyn Stuessy (HNTB) will add color to the models for the next CSS meeting and provide a swatch of the stain colors to be used.

WIS 441 Project
CSS Tasks Meeting
August 7th, 2012
Sign In Sheet

TRI-COUNTY EXPANSION

Attended	Company Name	First Name	Last Name	E-mail Address	Phone Number
	HNTB Corp.	Adam	Clayton	aclayton@hntb.com	
	Wisconsin DOT	Barry	Paye	Barry.Paye@dot.wi.gov	
	Wisconsin DOT	Bruce	Enke	Bruce.Enke@dot.wi.gov	
	Wisconsin DOT	Carolyn	Sampson	Carolyn.Sampson@dot.wi.gov	
	Wisconsin DOT	Curt	VanErem	Curtis.VanErem@dot.wi.gov	
	URS Corp	Donald	Yetter	Donald.Yetter@urs.com	
	URS Corp	Heather	Wech	Heather.Wech@dot.wi.gov	
	Wisconsin DOT	Jared	Kinziger	Jared.Kinziger@dot.wi.gov	
	Wisconsin DOT	John	Mahlik	John.Mahlik@dot.wi.gov	
	Wisconsin DOT	Kurt	Peters	Kurt.Peters@dot.wi.gov	
	Becher-Hoppe Associates	Michael	Kowal	mkowal@becherhoppe.com	
	Wisconsin DOT	Mike	Helmrick	Michael.Helmrick@dot.wi.gov	
	Kapur & Associates	Prasad	Narayan	prasad@kapur-assoc.com	
	URS Corp	Robert	Fieldbinder	robert.fieldbinder@urs.com	
	Becher-Hoppe Associates	Todd	McDonald	tmcdonald@becherhoppe.com	
X	URS Corp	Mike	Arnold	mike.arnold@urs.com	
	Becher-Hoppe Associates	Dan	Gerling	dgerling@becherhoppe.com	
	URS Corp	Nick	Becker	Nick.Becker@urs.com	
X	Wisconsin DOT	Chad	De Grave	chad.degrave@dot.wi.gov	
X	URS Corp	Mike	Beurket	michael.beurket@dot.wi.gov	
X	Siker Inc	Quinn	Schultz	quinn.schultz@dot.wi.gov	
X	HNTB Corp.	Tom	Kindschi	tkindschi@hntb.com	
X	Wisconsin DOT	Aaron	Bonk	aaron.bonk@dot.wi.gov	
	Wisconsin DOT	Mark	Higley	mark.higley@dot.wi.gov	
X	Wisconsin DOT	Scott	Ebel	scott.ebel@dot.wi.gov	
	Kapur & Associates	Justin	Arndt	jarndt@kapur.assoc.com	
	Wisconsin DOT	Bob	Schuurmans	robert.schuurmans@dot.wi.gov	
X	HNTB Corp.	Carolyn	Stuessy	cstuessy@hntb.com	
	Wisconsin DOT	Matt	Halada	matt.halada@dot.wi.gov	
X	Wisconsin DOT	Danielle	Block	danielle.block@dot.wi.gov	
	HNTB Corp.	TJ	Dougherty	tjdougherty@hntb.com	
X	Wisconsin DOT	Eric	Sikorski	eric.sikorsky@dot.wi.gov	

Wis 10-441 CSS Budget **8/9/2012**

Meeting on 8/7/12 to set the working WIS 10/441 CSS Budget. The CSS budget will be based off of the 30% construction cost estimate of $295,292,103 and the associated scope.

The cost of the structure formliner, staining ,and noise walls has been estimated at $1,562,450. See the "Structure" tab for a cost breakdown. These costs will not be tracked in the project estimate and PS&E packages under the CSS category, but have been accounted for in the overall reporting of the CSS project costs. These costs account for approximately 0.53% of the overall construction costs.

The remaining 0.22% or $649,643, of the CSS budget will be divided up between the maintaining municipalities. Much of the 0.22% will go toward landscape opportunities at the interchanges. For a typical roadway project WisDOT would install minimal landscaping, considering no to low maintenance. Within the "Landscape" tab these standard landscape costs have been estimated at approximately $164,700. These additional dollars will be taken into consideration to increase the remaining CSS dollars. A total CSS budget of $750,000 available to the municipalities, which is approximately 0.25% of the overall construction cost.

$750,000 (available to muncipalities) plus $1,562,450 (the cost of CSS treatments at structures, retaining walls, and noise walls) brings the overall CSS budget for the WIS 10-441 Corridor to $2,312,450 ,or 0.78% of the 30% Construction Cost Estimate. See the below table for a breakdown of the CSS Budget.

DLB

	ITEM	COST	DATE	STANDARD COST	CSS INCREASE	COMMENTS
1	30% Construction Cost Estimate	$295,292,103	8/7/2012	$295,292,103	N/A	Assumes 30% scope
2	**3/4% CSS Goal**	**$2,214,691**	**8/7/2012**	**N/A**	**$2,214,691**	**0.75% - Public Project Goal**
2.1	*Structure*	*$41,226,350*	*8/7/2012*	*$39,663,900*	*$1,562,450*	*Includes parapet/pier/noise wall formliner and staining*
2.2	*Landscape/Municipal CSS Dollars*	*$750,000*	*8/7/2012*	*N/A*	*$750,000*	*Includes standard WisDOT landscape and additional dollars for municipal CSS options*
			Total		**$2,312,450**	**0.78% - CSS Working Budget**
3	**1% CSS Budget**	**$2,952,921**	**8/7/2012**	**$0**	**$2,952,921**	**1% - WisDOT Internal Budget**

APPENDIX B - PUBLIC INFORMATION EXHIBITS

Wis 441 Tri-County Project Map

TRI-COUNTY EXPANSION

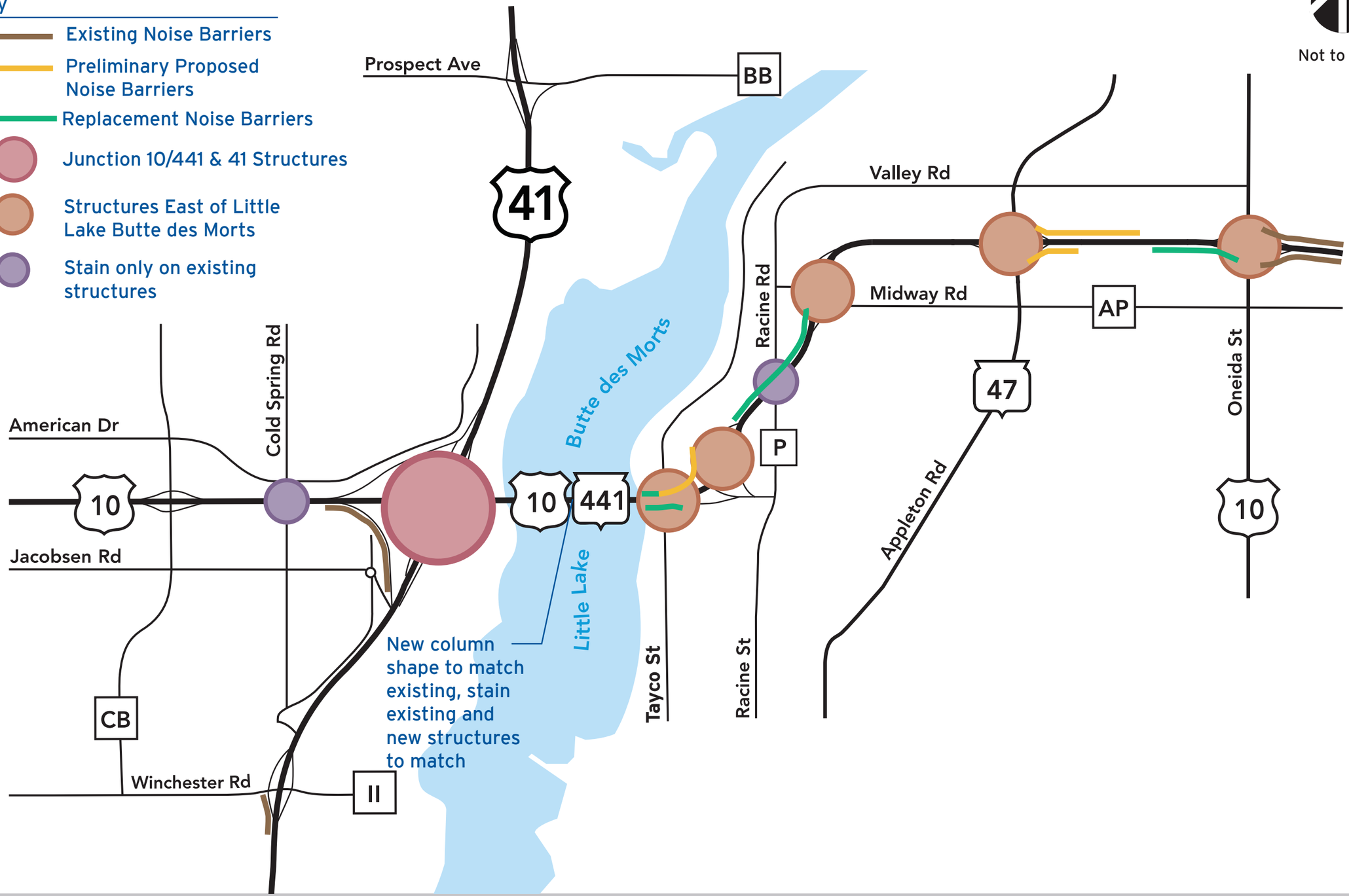
December 2012

DRAFT

Key

- Existing Noise Barriers
- Preliminary Proposed Noise Barriers
- Replacement Noise Barriers
- Junction 10/441 & 41 Structures
- Structures East of Little Lake Butte des Morts
- Stain only on existing structures

Not to Scale



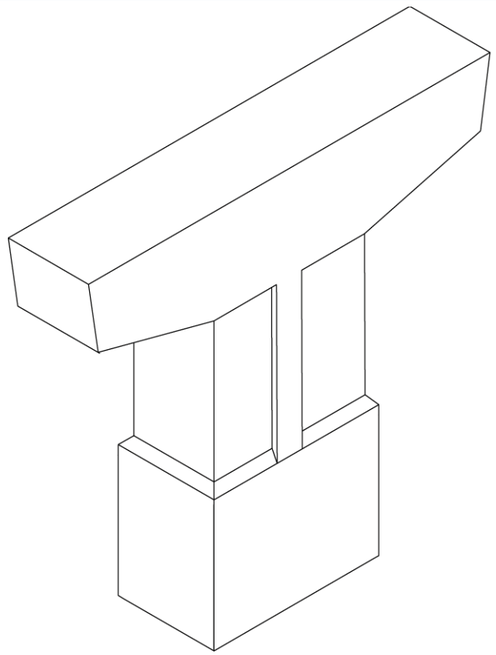
Junction 10/441 & 41 Structures

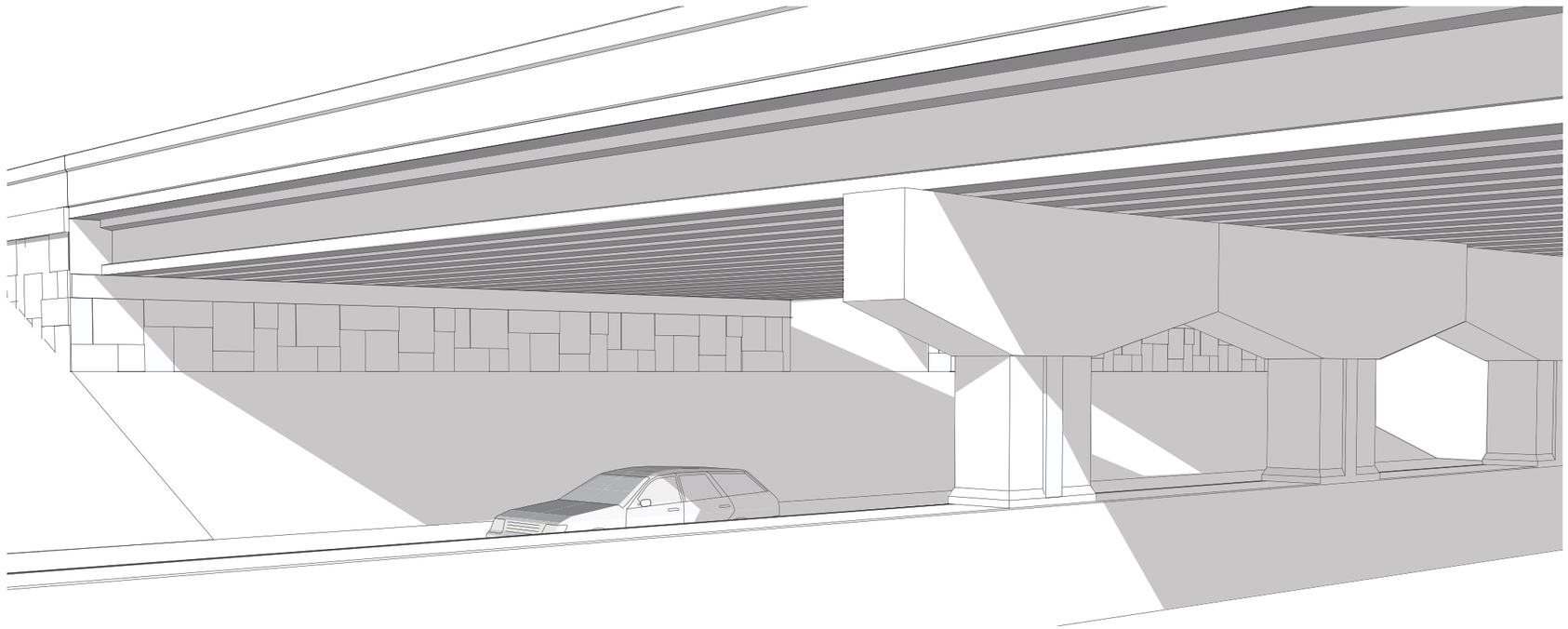
TRI-COUNTY EXPANSION

December 2012

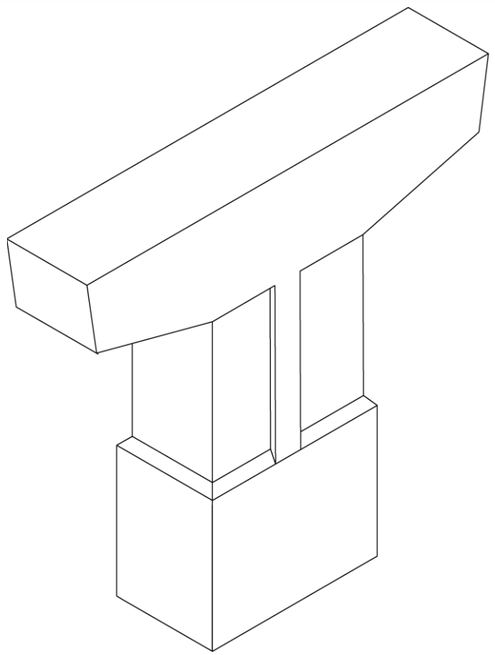
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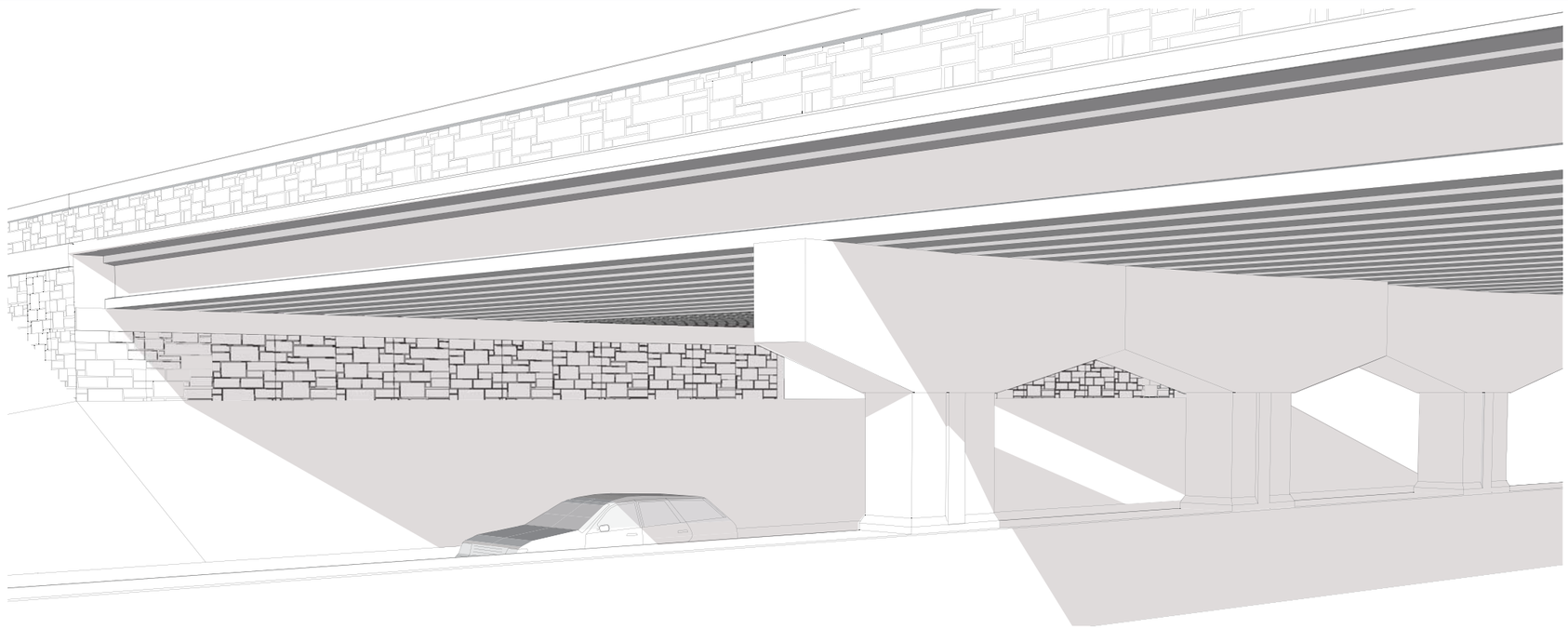
Stylized Stone concept





Ashlar Stone concept





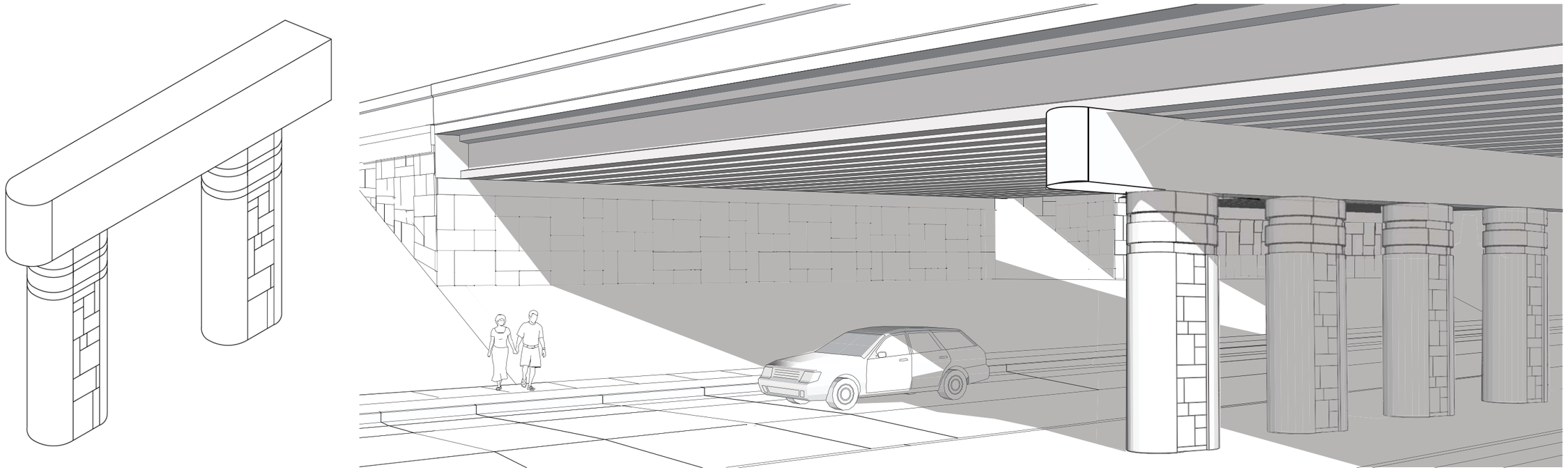
Structures East of Little Lake Butte des Morts

TRI-COUNTY EXPANSION

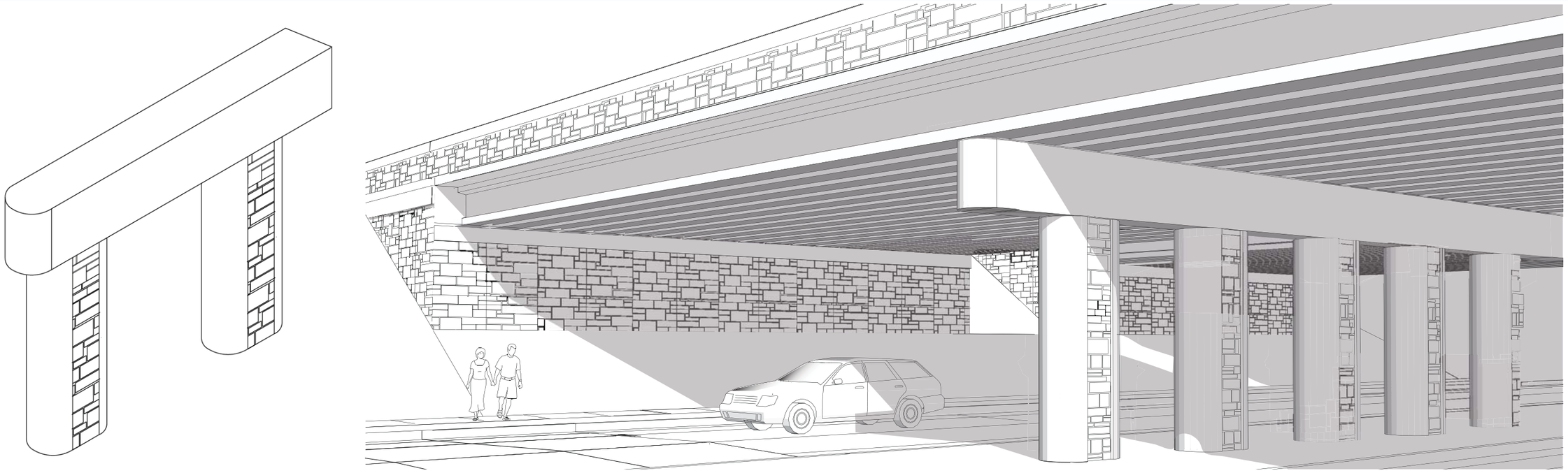
December 2012

DRAFT

Stylized Stone concept



Ashlar Stone concept

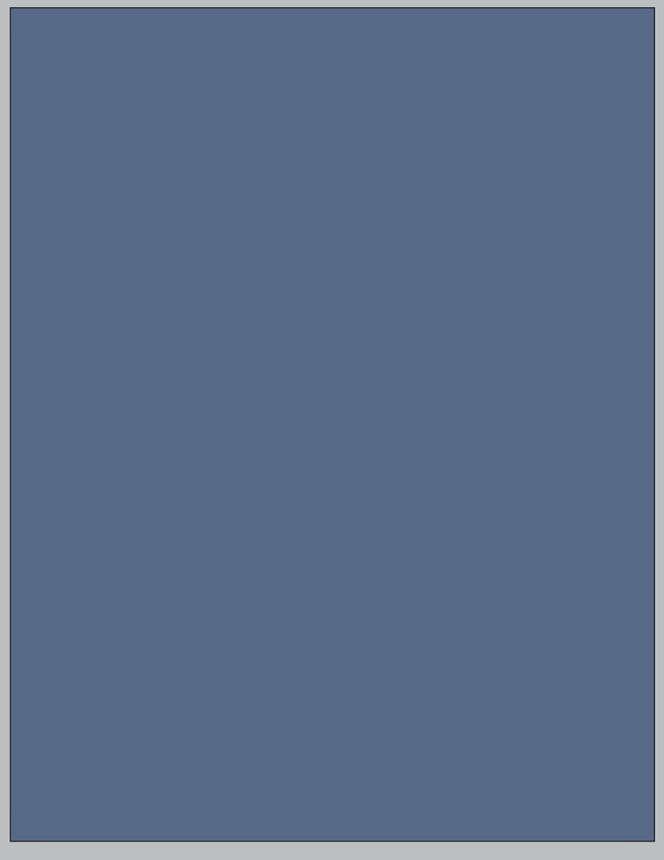


Structure Color Selections

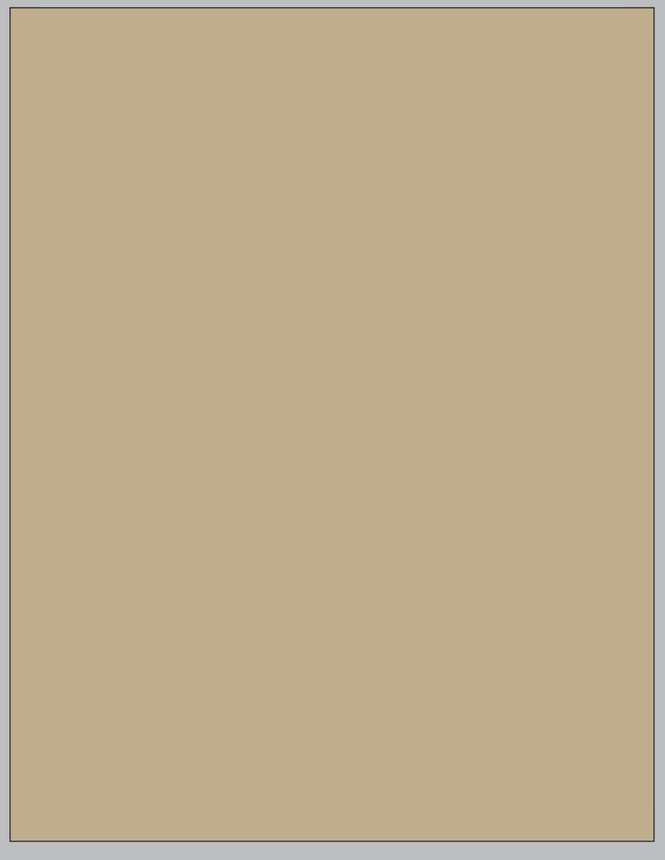
TRI-COUNTY EXPANSION

February 2013

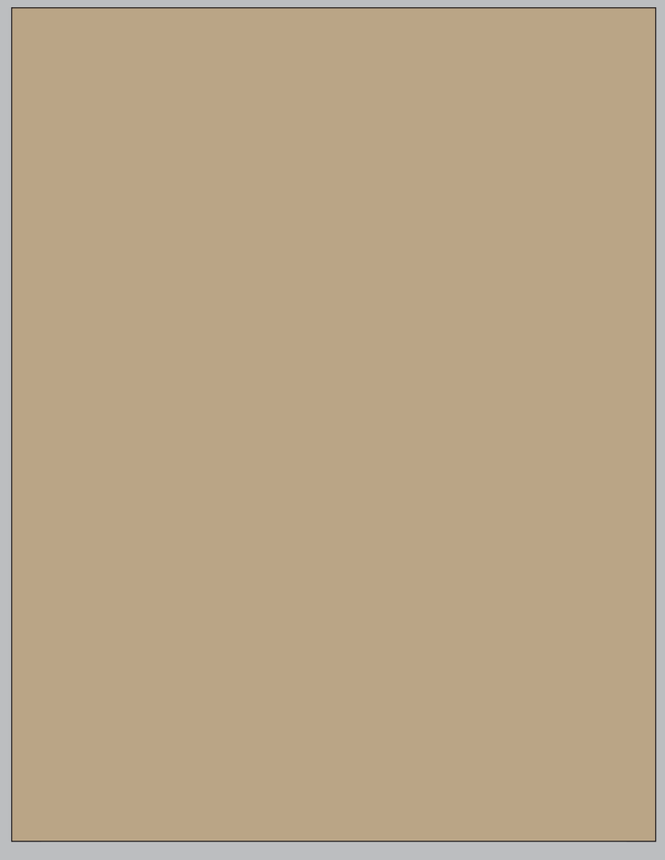
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Denim



Basket Beige



Latte

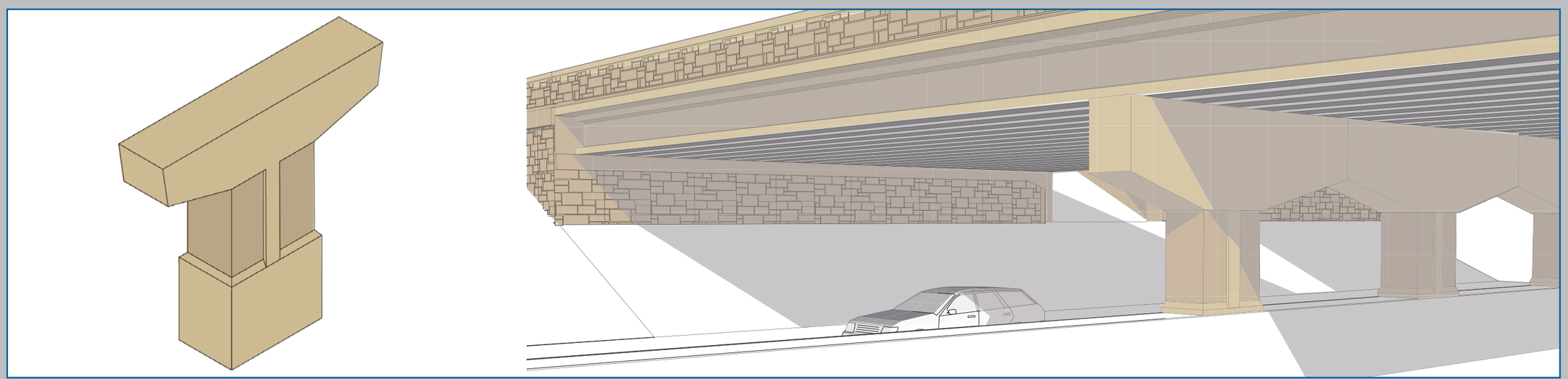
Staining Junction 10/441 & 41 Structures

TRI-COUNTY EXPANSION

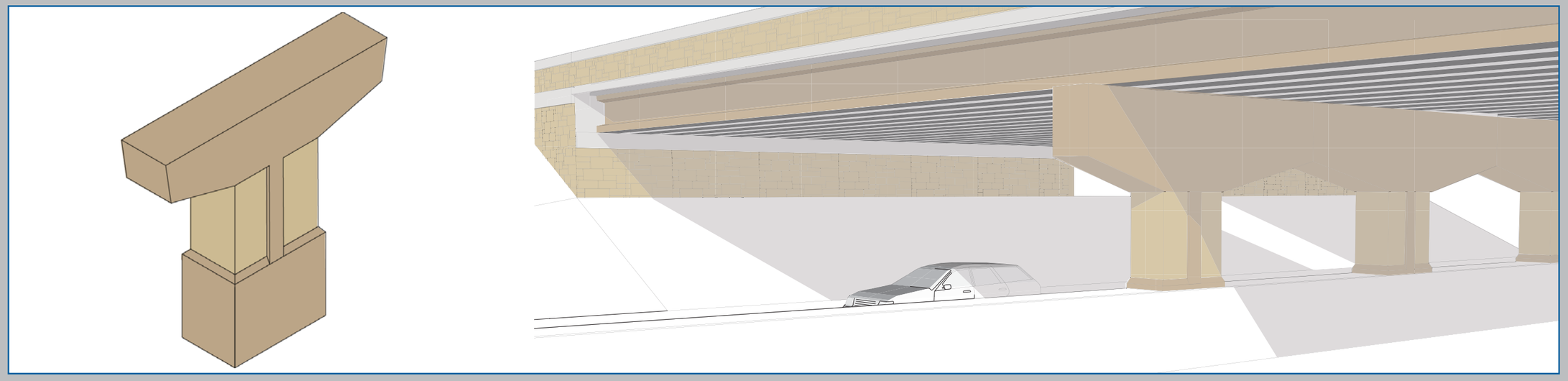
February 2013

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Ashlar Stone Concept A



Ashlar Stone Concept B



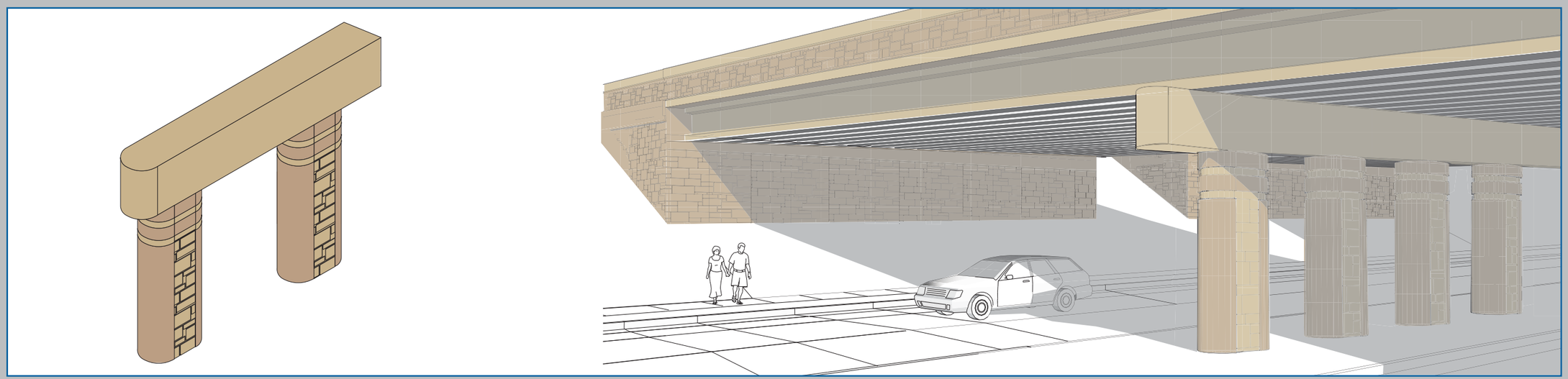
Staining Structures East of LLBDM

TRI-COUNTY EXPANSION

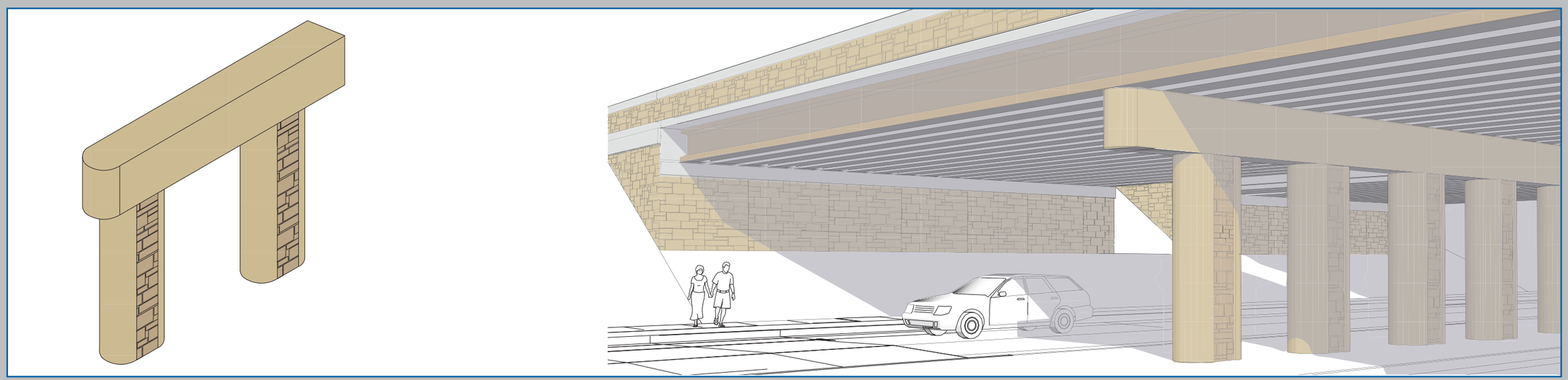
February 2013

DRAFT

Ashlar Stone Concept A



Ashlar Stone Concept B

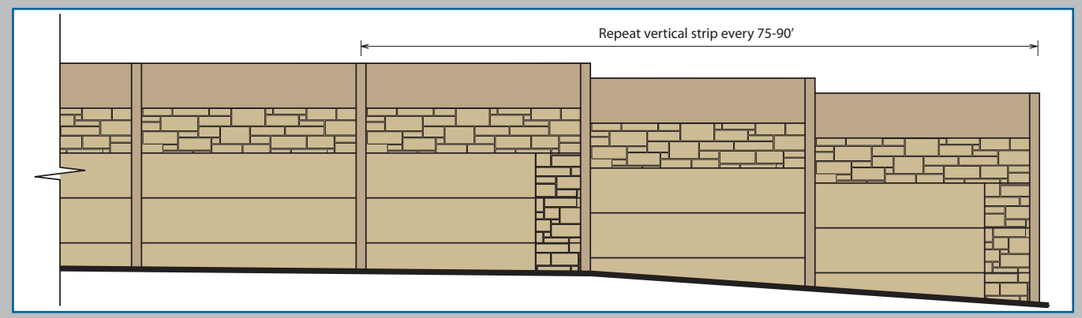


Noise Barrier Concepts

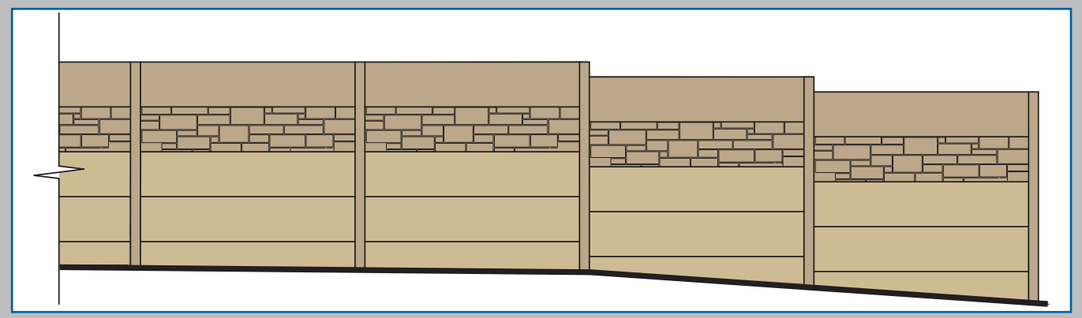
TRI-COUNTY EXPANSION

February 2013

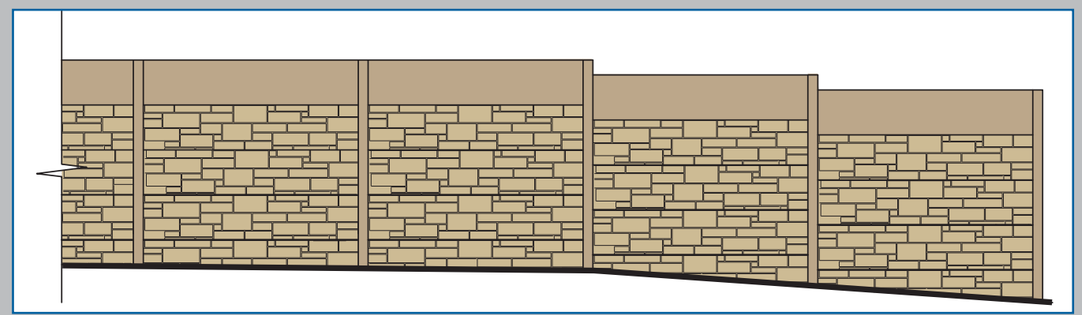
DRAFT



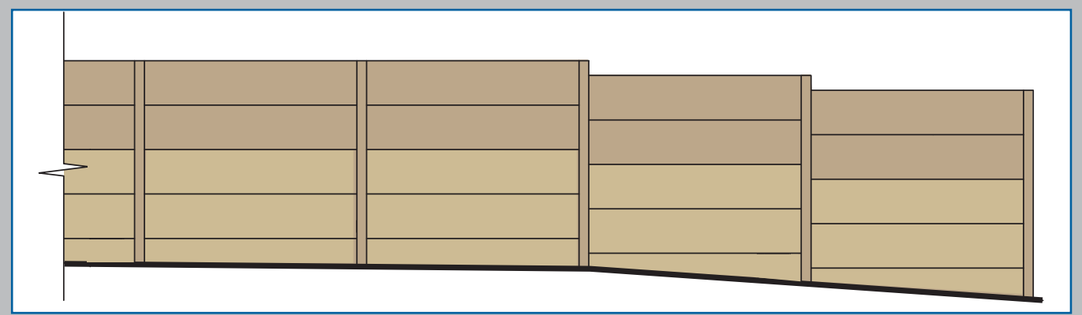
Ashlar Stone Concept A



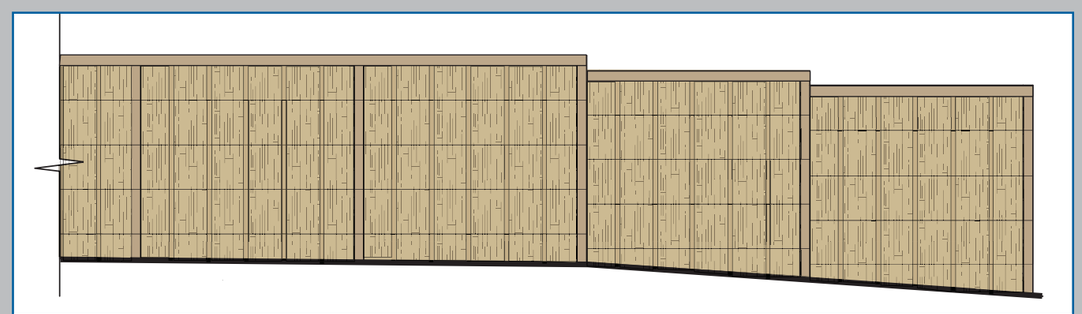
Highway Concept 1



Ashlar Stone Concept B



Highway Concept 2



Wood Concept C

Little Lake Butte Des Morts Bridge

TRI-COUNTY EXPANSION

February 2013

DRAFT

Existing Bridge (looking Northwest)



New Bridge and Existing Bridge (looking Northwest)



Existing US41/US10/WIS441 System Interchange

TRI-COUNTY EXPANSION
June 2013



Proposed US41/US10/WIS441 System Interchange

TRI-COUNTY EXPANSION

June 2013



Little Lake Butte Des Morts Bridge

TRI-COUNTY EXPANSION

June 2013

Existing Bridge (looking Northwest)



New Bridge and Existing Bridge (looking Northwest)



WIS 441 Tri-County Project Corridor Manual
Chapter 5: Design

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Scope/Purpose
This chapter establishes the controlling design criteria for WIS 441 corridor.

Reference Documents
- WisDOT Facilities Development Manual (FDM)
- AASHTO Green Book – A Policy on Geometric Design of Highways and Streets (GDHS)
- Wisconsin Bridge Manual
- AASHTO Roadside Design Guide
- WisDOT Intelligent Transportation System IITS) Design Manual
- Manual of Uniform Traffic Control Devices (MUTCD)

Design Documentation
The **Tri-County Freeway Environmental Assessment Re-Evaluation** was approved by FHWA on 1/16/14 and can be found on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Reports/EAReeval/

The original Design Study Report (DSR) was completed for WIS 441 on 4/8/11 and Exception to Standards on 1/21/11. The approved original documents are found at the following location on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDORTASKS/REFERENCEMATERIALS/DSR/

The **Exception to Standards Report (ESR)** was approved by FHWA on 12/5/13 and can be found on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Reports/ExceptiontoStandards/FinalESRNovember2013/

The **Design Study Reports** for all corridor segments/projects can be found on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Reports/DSR/

A functional plan geometry review was completed and the results are found in the attached **Functional Plan Geometry Review – Tech Memo 4**.

A **Road Safety Audit (RSA)** was conducted for the project on April 25-26, 2012. The results of the RSA can be found on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Reports/RSA/

A **Value Engineering Study** was conducted for the project on May 14-18, 2012. The results of the study can be found on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/VEStudies/Report/

A **Risk Assessment Workshop** was conducted for the project on August 16-17, 2012. The results of the workshop and on-going progress can be found on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/PROGRAMCONTROLS/MEETINGS/CorridorTasks/RiskAssessmentWorkshop/

The **FHWA Cost Estimate Review Workshop** was conducted for the project on September 25–27, 2012 at the WisDOT Mason Street office in Green Bay. Meeting agenda, attendees list, and revised close-out presentation are available on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/PROGRAMCONTROLS/MEETINGS/CorridorTasks/FHWACostEstimateReview/
Discussion at the workshop included review of cost risk items and assigning dollar values to those risks while reducing project general contingencies and confirming the overall project cost. In the closing presentation, FHWA concluded that the project was being managed and developed appropriately with inclusion of risk management. FHWA will produce a report documenting the results of the workshop.

The **Interstate Access Justification Report (IAJR)** was approved by FHWA on 10/17/13 and can be found on the corridor FTP site:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Reports/IAJR/

Intersection Control Evaluation (ICE)

The 10/01/12 version of the ICE Report was finalized per the 6/18/13 Design/Corridor Meeting. The final ICE Report can be found on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Reports/IntersectionControlEvaluation/2012-10-01Final/

Controlling Design Criteria

See attached Design Criteria - Tech Memo 2.

WIS 441 Barrier Geometry

A decision on single or dual barrier for the WIS 441 Project will be made at a later date, pending bid price history on the US 41 Project.

See attached Single vs. Dual Barrier – Tech Memo 3.

Barrier wall locations and sizes are documented for the corridor in the attached WIS 441 Barrier Wall Exhibit.

In the median of WIS 441 mainline where minimum stopping sight distance (SSD) for 70 mph design speed cannot be met with 42-inch or 56-inch barrier, 32-inch barrier can be utilized (where the opposing direction has 56-inch barrier) to achieve minimum SSD for a 70 mph design speed (4/18/12 Scott Ebel/Brian Revello e-mail).

Because of sight distance restrictions, 32-inch parapet will be used on the WIS 441 eastbound bridge over Midway, followed by 32-inch roadway barrier off the bridge approach (2/26/13 Design/Structure Meeting)

WIS 441 Mainline

Super elevations in off-alignment section – rotation point will move from crown point to reference line (1/25/12 HNTB Internal Design Meeting)

Shift the eastbound (new) LLBDM structure 4-feet south of the 30% design alignment to accommodate a future standard shoulder width for future replacement of the existing bridge (2/28/12 Design/Structures Meeting).

The WIS 441 mainline alignment by Midway was shifted from the 30% plans, to be as far west as possible to minimize impacts to RR Donnelly and Wisconsin Central Railroad on the east without impacting Richard Drive on the west. See attached Midway Alignment Tech Memo.

Where possible to accommodate drainage design, leave existing noise walls in place east of Oneida interchange. Existing noise wall height and footings are adequate (5/8/12 Design/Corridor Meeting)

WIS 441 mainline typical section criteria is outlined in the attached Typical Section Tech Memo 11.

In order to minimize impacts to the existing pier footings and provide desirable vertical clearance at the Racine Road overpass, shift mainline tangents (eastbound and westbound) 2.5-feet outward (5/29/12 Scott Ebel e-mail)

At all structure approaches, the concrete shoulders shall be paid for under the Concrete Pavement Approach Slab bid item. (7/3/12 Design/Corridor Meeting)

WIS 441 westbound design immediately east of Tayco Street will not include a retaining wall. The Kearn parcel will be a full buy out (8/23/12 Eric Sikorski e-mail)

WIS 441 westbound design immediately east of the Racine Road overpass will include a retaining barrier as an extension of the retaining wall under Racine Road. The Houlihan parcel will not be a full buy out (9/12/12 Scott Ebel e-mail)

Proceed with the post 60% revised mainline profiles for the off-alignment section. From LLBDM to Racine overpass, the eastbound profile was raised to bring the difference in back of EB and WB barrier to 2.2' or less. The revised profile for the EB off ramp at Racine was designed with a maximum grade of 4%. From Racine overpass to Midway, the westbound profile was raised to bring the difference in back of EB and WB barrier to 1.1' or less. (2/20/13 Scott Ebel e-mail and 2/26/13 Design/Structure Meeting)

A noise barrier/retaining wall combination will be used between the MSW Ramp and Richard Road and will follow the wall alignment for noise barrier in the 60% plans (4/25/13 Geotechnical Meeting)

Standard retaining barrier will be used along the RSE Ramp by the cemetery. Even with the close proximity of the existing sanitary manhole at 210RSE+41, no embedment of the wall is needed. (4/25/13 Geotechnical Meeting)

The super-elevation transition for WB mainline by the RNE ramp will be adjusted to keep the maximum rollover between mainline and the ramp to 5% or less (5/7/13 Design/Corridor Meeting)

Proceed with Alternative 1 for the Oneida WB on ramp (7/29/13 Scott Ebel and Randy Asman e-mail and 7/30/13 Design/Corridor Meeting). This is the design alternative in the 60% plan submittal.

Proceed with revised mainline east project limit, moving limit from 405EB+20 to 396EB+00. This reduces the lane drop distance from Oneida TSE to median through lane drop from 2,150 ft to 1,825 ft. (11/4/13 Scott Ebel e-mail)

System Interchange

System Ramps – assume 22-foot clear zone for 30% plans (11/22/11 Design/Corridor Meeting)

Proceed with the System Interchange design found in the attached WIS 441 System Configuration memo (9/18/12 Scott Ebel e-mail)

On USH 41 southbound between Green Bay Road and CTH II there is currently a 20-foot high retaining wall. With the design refinements on the South Leg of the System Interchange, a second wall is needed

closer to the roadway to accommodate the additional USH 41 southbound lane. A 2.5H:1V slope design can be used between the two walls (12/5/12 Eric Sikorski/Doug Wiegand e-mail).

On USH 41 northbound south of Jacobson Road adjacent to R-70-110, the new storm sewer trunk line will be located in the center of the auxiliary lane with bolted down manhole covers. This will provide enough clearance for MSE wall straps on R-70-110. (3/25/13 Design/Structure Meeting)

The retaining wall under Jacobsen Road can be eliminated by using standard 42" retaining barrier and drainage swale (4/22/13 Design/Structure Meeting)

In widening areas where the existing typical section has concrete pavement over open graded base over dense graded base with underdrain and the new pavement section has concrete pavement over dense graded base over breaker run, remove the existing underdrain and place the new pavement section adjacent to the existing pavement section to allow the water to seep out through the breaker run layer. (1/13/14 Scott Ebel e-mail)

Rumble strip placement in the System Interchange (4/7/14 Scott Ebel e-mail)

- Place rumble strips on all ramps (both single-lane and multi-lane)
- Place rumble strips on both sides of the ramp (stays consistent with existing conditions)

Use 56-inch barrier transition for sign supports to be located within the existing 32-inch median barrier along USH 41 (4/9/14 Scott Ebel e-mail and 4/8/14 Design/Corridor Meeting)

Appleton Road (WIS 47)

During design development, consider bump-outs for buses.

Proceed with Ourston/30% design for RABs at WIS 47 (4/17/12 Traffic Meeting)

Proceed with roundabouts for the ramp terminal intersection design for 60% plans, per ICE recommendation (10/10/12 Scott Ebel e-mail)

Pedestrian crossing locations at Appleton ramp terminals will be north of the north roundabout and south of the south roundabout (2/26/13 Design/Structures Meeting)

Midway

Proceed with single lane roadway between RABs at Midway/AP interchange with median width that accommodates future 2nd lane. Include two lane entry for EB into west RAB with right lane as exclusive to EB on-ramp. Alternative 1 of Ourston drawing represents future design. Railroad crossing, structure, and real estate should account for future design. (4/17/12 Traffic Meeting)

Proceed with stop-control for the ramp terminal intersection design for 60% plans, per ICE recommendation (10/10/12 Scott Ebel e-mail)

Oneida Street

Proceed with RABs for ramp terminals at Oneida interchange (4/17/12 Traffic Meeting)

Complete Diverging Diamond design to approximately 30% or enough to provide a model for completion of the noise analysis (2/26/13 Design/Structures Meeting)

Proceed with department's preferred option of the Diverging Diamond Interchange for 60% and 1078 plans (5/18/13 Scott Ebel e-mail)

Racine Road

Shift RAB west +/- 20 feet to accommodate staging for Racine Road and complete streets (11/22/11 Design/Corridor Meeting)

Proceed with 12th Street as a right-in/out, located north of the RAB, in essentially the same general

location as the functional plans and include a pork chop island (4/17/12 Traffic Meeting)

Proceed with Ourston layout for Racine Road RAB, but include staging for future third lane on southeast leg (4/17/12 Traffic Meeting)

Proceed with updated Racine Road/9th Street signalized intersection as shown on Ourston drawing (4/17/12 Traffic Meeting)

Proceed with Ourston alternative 1 design for the eastbound off-ramp/Racine Connector Road splitter island design (4/17/12 Traffic Meeting)

Use four 11-foot lanes for Racine Road south of 9th Street (5/8/12 Design/Corridor Meeting)

Proceed with roundabouts for the ramp terminal intersection design and Racine Road/Racine Connector Road intersection design for 60% plans, per ICE recommendation (10/10/12 Scott Ebel e-mail)

Proceed with revised single lane for southbound traffic at Racine Road/Racine Connector Road roundabout (1/29/13 Design/Structures meeting)

Proceed with roundabout for westbound ramp terminal per ICE recommendation (6/18/13 Design/Corridor Meeting)

Proceed with shared pond design at Tayco (8/26/14 Design/Corridor Meeting)

Tayco Street

Tayco Street clearance – Use urban section (12/6/11 Design/Structures Meeting)

American Drive

Proceed with the American Drive alignment recommended in the 41/441 Planning Study (2/11/13 Design/Corridor Meeting)

Other Design Decisions

At-grade RR crossing – provide 10-foot level area at approaches (11/22/11 Design/Corridor Meeting)

Racine Road spur – overhead clearance 16'-9" and 30 mph design speed (12/6/11 Design/Structures Meeting)

To avoid strap/wall conflicts during staging, assume 1:1 slopes to be conservative (2/21/12 30% Plan Review Meeting)

Provide a 3-foot offset for the paving machine on typical sections for integral curb and gutter (12/18/12 Design/Corridor Meeting).

Proceed with integral curb on all local roadways in areas with bike lanes to have 6-feet clear from edge of traveled way to face of curb (2/6/13 Bike/Pedestrian/Transit Discussion). See Chapter 18 Construction Details for Concrete Curb and Gutter 78-inch Type A Special.

Do not use superelevation on local roadways with design speed of 40 mph or less (2/26/13 Design/Structure meeting). Exception documentation may be needed.

Use 40 scale plan/profile sheets for urban/local roadways (3/4/13 Scott Ebel e-mail)

For soil mitigation areas in the 1078 plans show station limits in plan view, with a single typical section and depth. If remove and replace is option, show that as the worst case scenario, otherwise wick drains. (6/4/13 Design/Corridor Meeting)

Use a minimum 5-foot and 10-foot desirable offset from back of noise barrier to right-of-way (6/18/13 Design/Corridor Meeting and 1/14/14 Doug Wiegand e-mail)

Proceed with the Vermillion design option with the larger impact for the DT1078 plans (8/13/13 Design/Structures Meeting)

Use polymer modified soil stabilizer (628.6510 Soil Stabilizer Type B) for areas to be seeded late in the construction season (3/25/14 and 4/22/14 Design/Structures Meeting)

For radii points on plan sheets, provide both station/offset and coordinates (4/22/14 Design/Structure Meeting)

For all Town of Menasha driveways, provide for Concrete Driveway 6-inch over Base Aggregate Dense ¾-Inch to follow Town of Menasha standards (4/22/14 Design/Structure Meeting)

Use epoxy pavement markings in the interim conditions instead of grooved wet reflective contrast tape in areas affected by staging of traffic (4/22/14 Design/Structure Meeting)

Provide a quantity in plans for temporary crash cushion pinning and temporary barrier pinning (5/6/14 Design/Corridor Meeting)

Use roadway barrier to protect MSE walls adjacent to parking lots (7/2/14 Design/Corridor Meeting)

A 25’ wide bench is necessary to accommodate equipment for wick drain installation. Include benching in cross sections and clearly show existing ground and grading needed to obtain 1% minimum slope on the drainage blanket. Account for all earthwork pay items needed for benching, excluding the drainage blanket from embankment. (07/15/14 Design/Structure Meeting)

Minimum desirable offset for overhead sign structure bases is 4’. Evaluate increasing this offset to a range of 6’ to 8’, as design considerations allow. Non mountable curb should also be extended 50’ beyond the sign structure support. (07/15/14 Design/Structure Meeting)

Seeding is preferred over sodding. Include provisions for one month of watering (07/29/14 Design/Corridor Meeting)

Rust is the preferred color for detectable warning field (07/29/14 Design/Corridor Meeting)

Attachments

- Design Criteria – Tech Memo 2 (Dated 04-26-13)
- Single vs. Dual Barrier – Tech Memo 3 (Dated 11-11-11)
- Functional Plan Geometry Review – Tech Memo 4 (Dated 11-29-11)
- 30% Design Issues and Plan Review – Tech Memo 6 (Dated 02-02-12)
- Midway Alignment – Tech Memo 14 (Dated 03-16-12)
- WIS 441 Barrier Wall Exhibit (Dated 03-27-12)
- WIS 441 Typical Section – Tech Memo 11 (Dated 03-06-13)
- WIS 441 System Interchange Configuration (Dated 09-18-12)

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Technical Memorandum

Date: ~~November 29, 2011; Revised March 8, 2012; Revised April 8, 2012; Revised April 12, 2013;~~ Revised April 26, 2013

To: Scott Ebel, PE, Project Manager, WisDOT NER
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From: Prasad Narayan/Brian Adams – Kapur & Associates

Project ID: 1517-07-04

Project: WIS 441
Winnebago County

Subject: WIS 441 Project Design Criteria
Technical Memorandum 2

This technical memorandum documents the design criteria recommended for use in evaluating functional plans, developing preliminary and final plans. Roadways included in this memorandum are US 10/WIS 441 from CTH EB interchange to Oneida Interchange, US 41/US 10/WIS 441 system interchange, various system interchange ramps, and cross roads within the project corridor. US 10/WIS 441 and US 41 routes within the project have a functional classification of Principal Arterial. All of these routes are on the National Highway System (NHS) and are Long Truck Routes.

The primary design criteria are summarized in the Design Criteria Table that is attached to this memo. Reference for this table include Wisconsin Facilities Development Manual (FDM) Chapter 11, Wisconsin Bridge Manual and AASHTO GDHS

Design Speed
Design speed is a selected speed that, once established, serves to influence many of the other design parameters.

There are 13 controlling criteria (FDM 11-1, Table 2.1) of which six is speed related and they are

design speed, horizontal alignment, superelevation, vertical alignment, grades, and stopping sight distance. The goal is to provide appropriate design speed for all roadway segments so that driver expectancy is consistent. Typically, the selected design speed will be 5 mph over the posted speed of continuous roadways, as noted in FDM Procedure 11-10-1.

The section of US 10/WIS 441 and US 41 within the system interchange (excluding system ramps) will be posted at 65 mph and will employ a 70 mph design speed.

Ramps are roadways that are designed to accommodate speed transitions; therefore, their design speeds are broken into 10 to 15 mph increments along the ramp, with ramp segment lengths that meet or exceed deceleration and acceleration lengths noted in the 2001 GDHS, including adjustments for grade. The design speed for service and system interchange ramps at the entrance and exit ramp pavement gore will include a design speed that is 10 mph lower than the adjoining mainline design speed.

Lane Width

The minimum traffic lane width is 12-foot for all roadways within the project limits. Single lane ramps will be 15-foot wide. Multi-lane ramps will typically include 12-foot lanes but should be checked for tracking, based on pp. 212-220 in the 2001 GDHS. The total roadway width for turning roadways should be based on Exhibit 10-67 (p. 843) in the 2001 GDHS, with further recommendation for utilization of "Design Traffic Condition" B. Lane widths for multi-lane cross roads are 12-feet. Lane widths on single lane cross roads are striped 14 feet typical and striped 12 feet when adjacent to a right turn lane.

Shoulder Width

Shoulder width is defined as the area between the traveled way and face of sloped curb, concrete barrier, filler walls, or retaining walls. FDM Procedure 11-15-1 Attachment 1.1 states: "Use 12 ft paved shoulders (left and right) if truck traffic > 250 DHV or if the facility experiences a high degree of congestion and incidents". Due to anticipated truck traffic, this criterion shall apply to US 10/WIS 441/US 41 section within the project limits.

Mainline with truck volume over 250 per hour 3 1anes 12 ft left and right; single lane ramps 8 ft right and 4 ft left; two lane ramps 10 ft right & 6 ft left.

Bridge Width

All bridges shall accommodate full lane and shoulder width of approaching roadway widths. This includes 12-foot shoulders on US 10/WIS 441 and their connecting system ramps as truck volumes are expected to exceed 250 DHV.

Horizontal Alignment

This criterion is dependent upon roadway segment design speed. The FDM addresses guidelines for angle breaks, curve radii, compound curves and taper rates. Also speed transition curves should be considered at loop ramps for deceleration and acceleration. Compound curves refer to radii changes on successive curves that do not meet the definition for speed transition curve segments.

Superelevation

The emax = 6% superelevation as shown in FDM 11-10 Exhibit 5.1 table will be used for all roadways. Roads with an urban section and a selected design speed of 40 mph or less will maintain normal crown. Transition lengths can be adjusted as much as 10%, or move their location in relation to the PC or PT by as much as 25 feet, but not both, to avoid structures or provide best-fit geometry.

Vertical Alignment

This criterion is dependent upon roadway segment design speed and stopping sight distance (SSD). For crest vertical curves, the desired K-values should meet or exceed the values presented under "Desirable" on the attached design criteria table. The final vertical alignment shall include considerations for minimizing embankment and structure costs. If costs or right of way impacts are excessive, then a recommended profile may include a crest K-value that is between "Desirable" and "Minimum". Use of a crest K-value within this range shall be documented in the supplemental DSR. For sag curves, minimum K-values are noted in FDM Procedure 11-10, Attachment 5.6. That is, selected K-values will be based on the SSD as determined by the critical roadway condition for decision sight distance (DSD). The minimum SSD may be based on a 6-inch or a 24-inch height, depending on roadway criteria for DSD.

Grades

This criterion is from FDM Procedure 11-10 Attachment 5.3, with level Terrain. Maximum grade for Freeway mainline 3%, Ramps 5%. Minimum grade for all roadways shall be 0.3%.

Stopping Sight Distance

This criterion is dependent upon roadway segment design speed. The discussion for minimum SSD in this report will be limited to sight lines for horizontal SSD as HSSD on vertical curves are addressed in Vertical Alignment.

Pavement Cross Slope

All roadway cross slopes are 2%, except on curves or superelevation (SE) transitions. All shoulder cross slopes are 4%, except on curves or superelevation transitions. All roadways with three or more continuous lanes will include a high-side shoulder slope down and away from the superelevated pavement. The maximum rollover between shoulder and pavement slope on curves is 8%. Therefore, a three lane roadway with 6% SE will include a 2% shoulder slope on the high side; and a

5% SE will include a 3% shoulder slope. Low side shoulder slope will match pavement SE (4% minimum). Bridge decks will typically include same shoulder slope as adjacent traveled way. Paved ramp gores are considered shoulders and have a maximum rollover with adjacent lanes of 8%.

Vertical Clearance

Desirable vertical clearance of 16'-9" (minimum 16'-4") will be provided for the interchange bridges per FDM 11-35 Attachment 1. 8. A minimum railroad clearance of 23'-0" will be provided at freeway structures over the railroad. Provide desirable vertical clearance of 15'-3" (minimum 14'-9") at the Tayco Street and the Cold Spring Road overpass facility. Provide minimum longitudinal slopes of 0.5% on bridge.

Horizontal Clearance

The horizontal clearance refers to the clear lateral dimension between the traveled way and any obstruction along the traveled way, including barriers. For roadways with rural sections, it is defined by FDM Procedure 11-15, especially Table 1.1 and Attachment 1.9. For roads with urban sections (without shoulders), the horizontal clearance will be the lateral clearance or the urban safety section, as defined in FDM Procedure 11-20, Table 1.5.

Structural Capacity

This criterion is in the WisDOT Bridge Manual, Chapter 3.0 Design Criteria, Section 3.2 Geometries and Loading. An HL 93 design load is required for new bridge construction.

Clear Zone

The clear zone is defined as the unobstructed area outside the edge of travel lane that is used for vehicle recovery, including any available shoulders or parallel auxiliary lanes. Issues with the clear zones, involve design speed, magnitude of traffic volumes, steepness of fill/cut slopes, ditch slopes and distance to fixed objects such as bridges, piers, sign supports, culvert headwalls etc.

All project roadways and ramps will be designed to meet clear zone criteria as recommended in FDM Procedure 11-15, Attachment 1.9 (and 11-35, Attachment 1.5 for rural roadways under bridges and Attachment 1.6), commensurate with selected design speeds, traffic volumes, horizontal alignment, and roadside section shape. If recovery slopes or cut slopes exceed minimum criteria, or if obstructions are found within the clear zone, then FDM Procedure and AASHTO Roadside Design Guide will be utilized so that hazards will be shielded, reduced through mitigative design features, or removed. The recovery area beyond the toe of fill slopes should include a 10-foot lateral dimension.

Roadway Barriers

New median barriers shall be 56-inch single slope concrete barrier. New outside barrier shall be 42-inch single slope concrete barrier. In locations where minimum stopping sight distance cannot be

achieved, 32-inch single slope concrete barrier may be used on the inside of a horizontal curve to avoid a design exception.

Additional Design Criteria as it relates to Freeways and Ramps

The ramp terminal design for system ramps and service ramps will utilize parallel entrance ramps. The auxiliary lane length should include a merge service level or overall traffic operations performance that is consistent with proposed downstream mainline operations. At exits within system interchanges, auxiliary lanes should lead to the exit. This auxiliary lane length should also be checked for appropriate signing needs.

The right-side shoulder width along exit and entrance ramps for service interchanges with parallel-type auxiliary lanes is 8-foot, of which 5 feet are paved. Where auxiliary lanes fully connect successive interchange ramps, then this shoulder is 12 foot paved, with an additional 1-foot clear dimension to allow lateral support and rounding for adjacent base course.

All entrance ramps shall be graded for future metering needs. Provide ramp gates at all on service interchange ramps. General design guidelines for the metered ramp can be found in the WisDOT Intelligent Transportation System (ITS) Design Manual, Chapter 3.

All ramp lengths will be satisfied for expected speed change conditions, including considerations for ramp metering. Design speeds on ramp segments should be prorated in 10 to 15-mph increments. The equivalent design speed for a ramp segment vertical alignment, or K-value, should always meet or exceed the selected design speed for the horizontal curve.

Additional Design Criteria as it Relates to Cross Roads

Intersection sight distance: refer to FDM 11-10, Page 9. Decision Sight Distances (DSD) and Intersection Sight Distances (ISD) shall be provided as appropriate.

Curb styles shall follow FDM Procedure 11-20. Vertical curbs are used along urban low speed roadways (40 mph or less).

There are 3 categories of truck routes on WIS 441 (FDM 11-25 1.1.1)

- Designated long truck routes (no overall length limitation; Max 53’ trailer with 43’ king pin to rear axle, max 28’-6” trailers on double bottom
- 75’ restricted truck routes (75’ overall length limitation; max 53’ trailer, 43’ king pin to rear axle; no double bottoms)
- 65’ restricted truck routes (65’ overall length limitation, max 48’ trailer, no double bottom)

All federally designated truck routes in Wisconsin are “Designated long truck routes”.

Use WB 67 as the design vehicle at intersection with all ramp terminals and at major intersections along cross roads that are designated as long haul truck routes. Other intersections along cross roads should be designed for the WB 50 vehicle; however, the WB 67 is appropriate where substantial commercial and industrial development is anticipated near or beyond the intersection. The design vehicle for minor side road intersections is the SU, with a check of the WB 50. In the cases of the "check" WB 50, minor lane encroachments of approximately 2 to 3 feet may be acceptable, depending upon the expected traffic mix and volume of the travel path.

The Oversize over weight (OSOW) network is a subset of designated long truck routes (FDM 11-25, page 2). Check intersection layout for OSOW designated routes. WisDOT inventory of OSOW vehicles are shown in FDM 11-25, Attachment 1.3.

See FDM Procedure 11-25-15 for Turning Roadways (channelized right); Procedure 11-25-20 for Median Openings; and, Procedure 11-25-25 for Channelization.

Per the FDM, the desirable left turn taper rate is 15:1 and the minimum rate is 10:1.

Per the FDM, right turn lane tapers are 150 feet in length, or a 12.5:1 taper rate for a 12- foot lane width.

Follow FDM 11-26 procedure for Roundabout design. Evaluate roundabout geometry for OSOW vehicle.

WIS 441 DESIGN CRITERIA

ROAD NAME	FUNC. CLASS	DESIGN CLASS	DESIGN SPEED mph	POSTED SPEED mph	DESIGN ADT (2038)	NO OF LANES	INTER. TYPE	MAXIMUM SUPER ELEVATION	MIN HORIZ. CURVE (FT RADIUS)	MAX DEFLECTION ANGLE W/O CURVE	MAX GRADE %	MIN GRADE %	MIN VC=3 * DESIGN SPEED	MIN % CHANGE IN GRADE WITHOUT A CURVE	SAG VERTICAL CURVES						
															DESIRABLE				MINIMUM		
															STOPPING SSD	DECISION SIGHT DISTANCE	K_{SAG}	K_{SAG}	STOPPING SSD	DECISION SIGHT DISTANCE	K_{SAG}
															CAT. 1	CAT 2 & 3	CAT 1	CAT 2 & 3	CAT. 1	CAT 2 & 3	CAT 1, 2 & 3
													(FT)		(FT)	(FT)			(FT)	(FT)	
US 10/STH 441	Principal Arterial	A3	70	65	41,000-88,000	3 (1) -12'	NA	6%	2040	0^{O} 45'	3.0	0.3	210	0.20	730	1105	181	287	730	730	181
US 41	Principal Arterial	A3	70	65	101,000-113,800	3 (1) -12'	NA	6%	2040	0^{O} 45'	3.0	0.3	210	0.20	730	1105	181	287	730	730	181
SYSTEM INTERCHANGE RAMPS																					
US 41 SB to US 10 WB	System Ramp	NA	55	50	5,800	1-15'	NA	6%	1060	1^{O} 00'	5.0	0.3	165	0.50	495	865	115	219	495	495	115
US 10/STH 441 WB to US 41 NB	System Ramp	NA	50	45	12,000	1-15'	NA	6%	833	1^{O} 15'	5.0	0.3	150	0.60	425	750	96	186	425	425	96
US 41 NB to US 10/STH 441 EB	System Ramp	NA	55	50	19,300	2-12'	NA	6%	1060	1^{O} 00'	5.0	0.3	165	0.50	495	865	115	219	495	495	115
US 10 EB to US 41 SB	System Ramp	NA	50	45	3,500	1-15'	NA	6%	833	1^{O} 15'	5.0	0.3	150	0.60	425	750	96	186	425	425	96
US 41 SB to US 10/STH 441 EB	System Ramp	NA	30	25	10,300	1-15'	NA	6%	231	3^{O} 45'	5.0	0.3	90	1.00	200	450	37	103	200	200	37
US 10/STH 441 WB to US 41 SB	System Ramp	NA	65	65	19,000	2-12'	NA	6%	1660	0^{O} 45'	3.0	0.3	195	0.30	645	1050	157	271	645	645	157
US 41 NB to US 10 WB	System Ramp	NA	45	40	1,700	1-15'	NA	6%	643	1^{O} 45'	5.0	0.3	135	0.70	360	675	79	165	360	360	79
US 10 EB to US 41 NB	System Ramp	NA	50	45	2,600	1-15'	NA	6%	833	1^{O} 15'	5.0	0.3	150	0.60	425	750	96	186	425	425	96
Cold Spring Rd, LBM Beach Rd, Tayco Street, CTH P/Racine Rd, Jacobson Rd, Green Bay Rd, & CTH II	Local	U1b	30	25	840	2-12'	Grade seperated	4%	230'	3O 45'	8	0.3	90'	1.00	200	450	37	103	200	200	37

WIS 441 DESIGN CRITERIA

ROAD NAME	FUNC. CLASS	DESIGN CLASS	DESIGN SPEED mph	POSTED SPEED mph	DESIGN ADT (2038)	NO OF LANES	INTER. TYPE	MAXIMUM SUPER ELEVATION	MIN HORIZ. CURVE (FT RADIUS)	MAX DEFLECTION ANGLE W/O CURVE	MAX GRADE %	MIN GRADE %	MIN VC=3 * DESIGN SPEED	MIN % CHANGE IN GRADE WITHOUT A CURVE	SAG VERTICAL CURVES						
															DESIRABLE				MINIMUM		
															STOPPING SSD	DECISION SIGHT DISTANCE	K_{SAG}	K_{SAG}	STOPPING SSD	DECISION SIGHT DISTANCE	K_{SAG}
															CAT. 1	CAT 2 & 3	CAT 1	CAT 2 & 3	CAT. 1	CAT 2 & 3	CAT 1, 2 & 3
													(FT)		(FT)	(FT)			(FT)	(FT)	
SERVICE INTERCHANGES/LOCAL ROADS																					
CTH P/Racine Road (North)	Minor Arterial	U4	40	35	7,000-8,100	4-12'		NC	760	2^{O} 15'	8.0	0.3	120	0.90	305	600	64	144	305	305	64
CTH P/Racine Road (South Section, North of 9th Street)	Principal Arterial	U4	40	35	21,000	4-12'		NC	760	2^{O} 15'	8.0	0.3	120	0.90	305	600	64	144	305	305	64
CTH P/Racine Road (South Section, South of 9th of Street)	Principal Arterial	U4	30	25		4-12'		NC	330	3^{O} 45'	8.0	0.3	90	1.00	200	450	37	103	200	200	37
Racine Connector Road	Ramp	NA	35	NA	23,700	VARIES		4%	371	2^{O} 45'	8.0	0.3	105	0.90	350	525	49	124	250	250	49
CTH P - EB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	10,600	2-12'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
CTH P - EB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	3,100	1-15'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
CTH P - WB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	3,100	1-15'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
CTH P - WB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	10,500	1-15'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
9th Street			30	25	6,450-7,125	2-12'	Signal	NC	330		8.0	0.3									
CTH AP/Midway Road (North and South)	Minor Arterial	U3	40	35	5,800-19,500	4-12'		NC	760	2^{O} 15'	8.0	0.3	120	0.90	305	600	64	144	305	305	64
CTH AP - EB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	5,300	1-15'		6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
CTH AP - EB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	2,000	1-15'		6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE

WIS 441 DESIGN CRITERIA

ROAD NAME	FUNC. CLASS	DESIGN CLASS	DESIGN SPEED mph	POSTED SPEED mph	DESIGN ADT (2038)	NO OF LANES	INTER. TYPE	MAXIMUM SUPER ELEVATION	MIN HORIZ. CURVE (FT RADIUS)	MAX DEFLECTION ANGLE W/O CURVE	MAX GRADE %	MIN GRADE %	MIN VC=3 * DESIGN SPEED	MIN % CHANGE IN GRADE WITHOUT A CURVE	SAG VERTICAL CURVES						
															DESIRABLE				MINIMUM		
															STOPPING SSD	DECISION SIGHT DISTANCE	K_{SAG}	K_{SAG}	STOPPING SSD	DECISION SIGHT DISTANCE	K_{SAG}
															CAT. 1	CAT 2 & 3	CAT 1	CAT 2 & 3	CAT. 1	CAT 2 & 3	CAT 1, 2 & 3
													(FT)		(FT)	(FT)			(FT)	(FT)	
CTH AP - WB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	2,200	1-15'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
CTH AP - WB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	5,100	1-15'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
STH 47/Appleton Road(North and South)	Principal Arterial	U4	40	35	17,500-21,200	2-12'		NC	760	2^{O} 15'	8.0	0.3	120	0.90	305	600	64	144	305	305	64
STH 47 - EB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	5,000	2-12'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
STH 47 - EB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	5,400	1-15'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
STH 47 - WB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	5,000	2-12'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
STH 47 - WB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	6,400	1-15'	RAB	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
Oneida Street/USH 10 (North)	Principal Arterial	U4	40	30	22,400-25,800	4-12'		NC	760	2^{O} 15'	8.0	0.3	120	1.00	305	600	64	144	305	305	64
Oneida Street/USH 10 (South)	Principal Arterial	U4	40	35	19,700-33,400	4-12'		NC	760	2^{O} 15'	8.0	0.3	120	0.90	305	600	64	144	305	305	64
Oneida Street - EB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	11,700	2-12'	DDI	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
Oneida Street - EB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	8,500	1-15'	DDI	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
Oneida Streeet - WB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	7,900	1-15'	DDI	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
Oneida Street - WB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	15,600	1-15'	DDI	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE

WIS 441 DESIGN CRITERIA

ROAD NAME	FUNC. CLASS	DESIGN CLASS	DESIGN SPEED mph	POSTED SPEED mph	DESIGN ADT (2038)	NO OF LANES	INTER. TYPE	MAXIMUM SUPER ELEVATION	MIN HORIZ. CURVE (FT RADIUS)	MAX DEFLECTION ANGLE W/O CURVE	MAX GRADE %	MIN GRADE %	MIN VC=3 * DESIGN SPEED	MIN % CHANGE IN GRADE WITHOUT A CURVE	SAG VERTICAL CURVES						
															DESIRABLE				MINIMUM		
															STOPPING SSD	DECISION SIGHT DISTANCE	K_{SAG}	K_{SAG}	STOPPING SSD	DECISION SIGHT DISTANCE	K_{SAG}
															CAT. 1	CAT 2 & 3	CAT 1	CAT 2 & 3	CAT. 1	CAT 2 & 3	CAT 1, 2 & 3
													(FT)		(FT)	(FT)			(FT)	(FT)	
Meadow Grove Road	Local	U2a	Varies	Varies	3,200	2-12'		NC	760	2^{O} 15'	8.0	0.3	120	1.00	305	600	64	144	305	305	64
Valley Road	Local	U2b	Varies	Varies	3,950	2-12'		NC	760	2^{O} 15'	8.0	0.3	120	1.00	305	600	64	144	305	305	64
Roeland Road	Local	U1b	30	25	2,900	2-12'		4%	230'	3O 45'	8.0	0.3	90'	1.00	200	450	37	103	200	200	37
CTH II - SB off Ramp	Exit Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	4,500	2-12'	Signal	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
CTH II - SB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	5,100	1-15'	Signal	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
CTH II - NB on Ramp	Entrance Ramp	NA	45 IN MIDDLE/60 AT GORE	NA	9,000	2-12'	Signal	6%	643' in Middle, 1330' at Gore	NA	5.0	0.3	135 IN MIDDLE, 180 AT GORE	0.7 MIDDLE, 0.4 IN GORE	675 IN MIDDLE, 990 AT GORE		136 MIN AT GORE		360 IN MIDDLE, 570 AT GORE		136 MIN AT GORE
American Drive	Local	U1b	30	25	840	2-12'		4%	230'	3^{O} 45'	8.0	0.3	90'	1.00	200	450	37	103	200	200	37

Revised 4/15/2013

WIS 441 DESIGN CRITERIA

ROAD NAME	CREST VERTICAL CURVES										STRUCTURE CLEARANCE				TERRACE WIDTH (FEET)	SHOULDER WIDTH	PAVED SHOULDER	CLEAR ZONE/ LAT. CLEAR.	MEDIAN WIDTH	CLEAR RDWY WIDTH	PARKING LANE	SIDEWALK	BIKE/PED PATH
	DESIRABLE				MINIMUM				PASSING SIGHT DISTANCE		AT STRUCTURE (R0ADWAY)		RAILROAD										
	STOPPING SSD	DECISION SIGHT DISTANCE	K_{CREST}	K_{CREST}	STOPPING SSD	DECISION SIGHT DISTANCE	K_{CREST}	K_{CREST}	AASHTO	MINI K_{CREST} for PSD	MINIMUM	DESIRABLE	MINIMUM	MIN. AT SIGN BRIDGE									
	CAT. 1	CAT 2 & 3	CAT 1	CAT 2 & 3	CAT. 1	CAT 2 & 3	CAT 1 & 2	CAT 3								INSIDE/OUTSIDE(FT)	INSIDE/OUTSIDE(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)
	(FT)	(FT)			(FT)	(FT)			(FT)	(FT)	(FT)	(FT)		(FT)									
US 10/STH 441	730	1105	401	566	730	730	247	401	2480	2197	16'-4"	16'-9"	23.00'	18'-3"		6/10 (W. of USH41) 12/12	4/10 (W. of USH 41) 12/12	34	24-64		NA	NA	NA
US 41	730	1105	401	566	730	730	247	401	2480	2197	16'-4"	16'-9"	NA	18'-3"		10	10	34	50		NA	NA	NA
SYSTEM INTERCHANGE RAMPS																							
US 41 SB to US 10 WB	495	865	185	347	495	495	114	185	1985	1407	16'-4"	16'-9"	NA	18'-3"		8 (outside), 4 (inside)	5 (outside), 3 (inside)	22	NA		NA	NA	NA
US 10/STH 441 WB to US 41 NB	425	750	136	261	425	425	84	136	1835	1203	16'-4"	16'-9"	23.00'	18'-3"		8 (outside), 4 (inside)	5 (outside), 3 (inside)	22	NA		NA	NA	NA
US 41 NB to US 10/STH 441 EB	495	865	185	347	495	495	114	185	1985	1407	16'-4"	16'-9"	23.00'	18'-3"		10 (outside), 6 (inside)	6 (outside), 4 (inside)	24	NA		NA	NA	NA
US 10 EB to US 41 SB	425	750	136	261	425	425	84	136	1835	1203	16'-4"	16'-9"	NA	18'-3"		8 (outside), 4 (inside)	5 (outside), 3 (inside)	22	NA		NA	NA	NA
US 41 SB to US 10/STH 441 EB	200	450	31	94	200	200	19	31	1090	424	16'-4"	16'-9"	NA	18'-3"		8 (outside), 4 (inside)	5 (outside), 3 (inside)	16	NA		NA	NA	NA
US 10/STH 441 WB to US 41 SB	645	1050	314	511	645	645	193	314	2285	1865	16'-4"	16'-9"	23.00'	18'-3"		12 (outside), 6 (inside)	10 (outside), 4 (inside)	34	NA		NA	NA	NA
US 41 NB to US 10 WB	360	675	98	212	360	360	61	98	1625	943	16'-4"	16'-9"	NA	18'-3"		8 (outside), 4 (inside)	5 (outside), 3 (inside)	22	NA		NA	NA	NA
US 10 EB to US 41 NB	425	750	136	261	425	425	84	136	1835	1203	16'-4"	16'-9"	NA	18'-3"		8 (outside), 4 (inside)	5 (outside), 3 (inside)	22	NA		NA	NA	NA
Cold Spring Rd, LBM Beach Rd, Tayco Street, CTH P/Racine Rd, Jacobson Rd, Green Bay Rd, & CTH II	200	450	31	94	200	200	19	31			NA	NA	NA	NA	NA	3	3	4	NA				

WIS 441 DESIGN CRITERIA

ROAD NAME	CREST VERTICAL CURVES										STRUCTURE CLEARANCE				TERRACE WIDTH (FEET)	SHOULDER WIDTH	PAVED SHOULDER	CLEAR ZONE/ LAT. CLEAR.	MEDIAN WIDTH	CLEAR RDWY WIDTH	PARKING LANE	SIDEWALK	BIKE/PED PATH
	DESIRABLE				MINIMUM				PASSING SIGHT DISTANCE		AT STRUCTURE (R0ADWAY)		RAILROAD										
	STOPPING SSD	DECISION SIGHT DISTANCE	K_{CREST}	K_{CREST}	STOPPING SSD	DECISION SIGHT DISTANCE	K_{CREST}	K_{CREST}	AASHTO	MINI K_{CREST} for PSD	MINIMUM	DESIRABLE	MINIMUM	MIN. AT SIGN BRIDGE									
	CAT. 1	CAT 2 & 3	CAT 1	CAT 2 & 3	CAT. 1	CAT 2 & 3	CAT 1 & 2	CAT 3								INSIDE/OUTSIDE(FT)	INSIDE/OUTSIDE(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)
	(FT)	(FT)			(FT)	(FT)			(FT)	(FT)	(FT)	(FT)		(FT)									
SERVICE INTERCHANGES/LOCAL ROADS																							
CTH P/Racine Road (North)	305	600	70	167	305	305	44	70	1470	772	16'-4"	16'-9"	NA	18'-3"	5'	NA	NA	4' (urban safety section)	32		NA	5'	2'-5'
CTH P/Racine Road (South Section, North of 9th Street)	305	600	70	167	305	305	44	70	1470	772	16'-4"	16'-9"	NA	18'-3"	5'	NA	NA	4' (urban safety section)	36'		NA	5'	2'-5'
CTH P/Racine Road (South Section, South of 9th of Street)	200	450	31	94	200	200	19	31	1090	424	16'-4"	16'-9"	NA	18'-3"	5'	NA	NA	4' (urban safety section)	36'		NA	5'	2'-5'
Racine Connector Road	250	525	49	128	250	250	29	48	1280	585	16'-4"	16'-9"	NA	18'-3"	NA	NA	NA	4' (urban safety section)	VARIES		NA	NA	NA
CTH P - EB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						10 (outside), 6 (inside)	6 (outside), 4 (inside)	32	NA		NA	NA	NA
CTH P - EB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	30	NA		NA	NA	NA
CTH P - WB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	30	NA		NA	NA	NA
CTH P - WB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	32	NA		NA	NA	NA
9th Street															5'	NA	NA	4' (urban safety section)	NA		NA	5'	5'
CTH AP/Midway Road (North and South)	305	600	70	167	305	305	44	70	1470	772	16'-4"	16'-9"	NA	18'-3"	5'	NA	NA	4' (urban safety section)	36		NA	5'	5'
CTH AP - EB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	30	NA		NA	NA	NA
CTH AP - EB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	30	NA		NA	NA	NA

WIS 441 DESIGN CRITERIA

ROAD NAME	CREST VERTICAL CURVES										STRUCTURE CLEARANCE				TERRACE WIDTH (FEET)	SHOULDER WIDTH	PAVED SHOULDER	CLEAR ZONE/ LAT. CLEAR.	MEDIAN WIDTH	CLEAR RDWY WIDTH	PARKING LANE	SIDEWALK	BIKE/PED PATH
	DESIRABLE				MINIMUM				PASSING SIGHT DISTANCE		AT STRUCTURE (R0ADWAY)		RAILROAD										
	STOPPING SSD	DECISION SIGHT DISTANCE	K_{CREST}	K_{CREST}	STOPPING SSD	DECISION SIGHT DISTANCE	K_{CREST}	K_{CREST}	AASHTO	MINI K_{CREST} for PSD	MINIMUM	DESIRABLE	MINIMUM	MIN. AT SIGN BRIDGE									
	CAT. 1	CAT 2 & 3	CAT 1	CAT 2 & 3	CAT. 1	CAT 2 & 3	CAT 1 & 2	CAT 3								INSIDE/OUTSIDE(FT)	INSIDE/OUTSIDE(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)
	(FT)	(FT)			(FT)	(FT)			(FT)	(FT)	(FT)	(FT)		(FT)									
CTH AP - WB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	30	NA		NA	NA	NA
CTH AP - WB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	30	NA		NA	NA	NA
STH 47/Appleton Road(North and South)	305	600	70	167	305	305	44	70	1470	772	16'-4"	16'-9"		18'-3"	5'	NA	NA	4' (urban safety section)	24		NA	5'	5'
STH 47 - EB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						10 (outside), 6 (inside)	8 (outside), 4 (inside)	30	NA		NA	NA	NA
STH 47 - EB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	30	NA		NA	NA	NA
STH 47 - WB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						10 (outside), 6 (inside)	8 (outside), 4 (inside)	30	NA		NA	NA	NA
STH 47 - WB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	32	NA		NA	NA	NA
Oneida Street/USH 10 (North)	305	600	70	167	305	305	44	70	1470	772	16'-4"	16'-9"		18'-3"	5'	NA	NA	4' (urban safety section)	46		NA	5'	5'
Oneida Street/USH 10 (South)	305	600	70	167	305	305	44	70	1470	772	16'-4"	16'-9"		18'-3"	5'	NA	NA	4' (urban safety section)	46		NA	5'	5'
Oneida Street - EB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						10 (outside), 6 (inside)	8 (outside), 4 (inside)	32	NA		NA	NA	NA
Oneida Street - EB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	32	NA		NA	NA	NA
Oneida Streeet - WB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	32	NA		NA	NA	NA
Oneida Street - WB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	32	NA		NA	NA	NA

WIS 441 DESIGN CRITERIA

ROAD NAME	CREST VERTICAL CURVES										STRUCTURE CLEARANCE				TERRACE WIDTH (FEET)	SHOULDER WIDTH	PAVED SHOULDER	CLEAR ZONE/ LAT. CLEAR.	MEDIAN WIDTH	CLEAR RDWY WIDTH	PARKING LANE	SIDEWALK	BIKE/PED PATH
	DESIRABLE				MINIMUM				PASSING SIGHT DISTANCE		AT STRUCTURE (R0ADWAY)		RAILROAD										
	STOPPING SSD	DECISION SIGHT DISTANCE	K_{CREST}	K_{CREST}	STOPPING SSD	DECISION SIGHT DISTANCE	K_{CREST}	K_{CREST}	AASHTO	MINI K_{CREST} for PSD	MINIMUM	DESIRABLE	MINIMUM	MIN. AT SIGN BRIDGE									
	CAT. 1	CAT 2 & 3	CAT 1	CAT 2 & 3	CAT. 1	CAT 2 & 3	CAT 1 & 2	CAT 3								INSIDE/OUTSIDE(FT)	INSIDE/OUTSIDE(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)
	(FT)	(FT)			(FT)	(FT)			(FT)	(FT)	(FT)	(FT)		(FT)									
Meadow Grove Road	305	600	70	167	305	305	44	70	1470	772	16'-4"	16'-9"		18'-3"	6'	NA	NA	4' (urban safety section)	20		NA	5'	6'
Valley Road	305	600	70	167	305	305	44	70	1470	772	16'-4"	16'-9"		18'-3"	6'	NA	NA	4' (urban safety section)	20		NA	5'	6'
Roeland Road	200	450	31	94	200	200	19	31			NA	NA	NA	NA	NA	3	3	4	NA		NA	NA	NA
CTH II - SB off Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						10 (outside), 6 (inside)	6 (outside), 4 (inside)	30	NA		NA	NA	NA
CTH II - SB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						8 (outside), 4 (inside)	5 (outside), 3 (inside)	30	NA		NA	NA	NA
CTH II - NB on Ramp	675 IN MIDDLE, 990 AT GORE		98 IN MIDDLE, 245 AT GORE		360 IN MIDDLE, 570 AT GORE		98 IN MIDDLE, 245 AT GORE		2135 AT GORE	1628 AT GORE						10 (outside), 6 (inside)	6 (outside), 4 (inside)	32	NA		NA	NA	NA
American Drive	200	450	31	94	200	200	19	31			NA	NA	NA	NA	NA	3	3	4	NA		NA	NA	NA

Revised 4/15/2013

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Technical Memorandum

Date: **November 11, 2011**

To: **Scott Ebel, PE, Project Manager, WisDOT NER**

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Natasha Gwidt, Design Supervisor, WisDOT NER

Brian Roper, Corridor Manager, WisDOT NER

From: **Brian Adams/Justin Arndt/Prasad Narayan – Kapur & Associates**

Project ID: **1517-07-04**

Project: **WIS 441**

Winnebago County

Subject: **WIS 441 Tangent Section - Single vs. Dual Barrier**

Technical Memorandum 3

WIS 441 East of the CTH AP interchange has a 64-foot median in the tangent section. Functional plans prepared for the section of the Tri-County Freeway Expansion between STH 47 and Oneida Street show two separate single barriers. Function plan call for construction adjacent to the existing two thru lanes. On the median side, a new 12-foot lane, a new 12-foot shoulder, and a median barrier would be constructed in both the EB and WB directions of WIS 441. Also, new auxiliary lanes and outside shoulders would be constructed between interchanges. The functional plans also show the replacement of the structures over Oneida Street, and the widening of the structures over STH 47.

This memorandum examines constructing two standard 56-inch median barriers versus constructing one 56-inch median barrier with a 36-inch base. See Exhibit 1 for single and double barrier details. Construction staging will need to be considered with the single or dual barrier selection, but is not necessarily the deciding factor.

I. Dual Barrier

1. Design Options and Construction Staging.

For the placement of dual median barriers, there are two possible design options. In design option 1, the existing two mainline travel lanes will remain and new lanes and shoulders are constructed adjacent to them. The second design option under consideration is a total pavement reconstruction. Under a total pavement reconstruction, all lanes, shoulders and barriers would be shifted toward the median by 4.5 feet. At the request of the NE Region, both options will require bridges over STH 47 to be widened and redecked. The bridges over Oneida Street will be completely reconstructed.

The likely construction staging of each option is highlighted below:

Pavement widening with existing mainline pavement to remain (See Exhibit 2)

Stage 1

During non-peak hours and/or night time operations, strengthen the outside shoulders. In addition the existing structures at Oneida Street and STH 47 would be widened to the outside.

Stage 2

Shift two lanes of EB and WB traffic to the outside lane and shoulder in their respective direction. Traffic lanes will be 11 feet wide with 1-foot shy distance to inside temporary barrier and 1-foot shy to the outside structure parapet. Construct the new inside lane, median shoulder, and median barrier in each direction. Construct the same at the structures over STH 47. At the structures over Oneida Street, construct the inside two lanes, median shoulder and median parapet.

Stage 3

Shift two lanes of traffic in each direction on to the new inside lane and existing inside lane. Traffic lanes will be 12 feet wide with a minimum of a 2-foot shy distance to the median barrier and outside temporary barrier. Construct the new auxiliary lane and outside shoulder. Construct the outside lane and outside shoulder and parapet at the structures over Oneida Street and STH 47.

Total pavement reconstruction (See Exhibit 3)

Stage 1

During non-peak hours and/or night time operations, widen the outside shoulders. Widen the existing structures at Oneida Street and STH 47 to the outside.

Stage 2
Shift two lanes of EB and WB traffic to the outside lane and shoulder in their respective direction. Traffic lanes will be 11 feet wide with 1-foot shy distance to inside temporary barrier and 1-foot shy to the outside structure parapet. Construct the new inside 2 lanes, median shoulder, and median barrier. At the structures over Oneida Street and STH 47, construct the inside 2 lanes, median shoulder and median parapet.

Stage 3
Shift two lanes of traffic on to the new median shoulder and new inside 2 lanes in their respective direction. Traffic lanes will be 12 feet wide with a minimum of a 2-foot shy distance to the median barrier and outside temporary barrier. Construct the new outside lane, auxiliary lane, and outside shoulder. Construct the outside lane, outside shoulder and parapet at the structures over Oneida Street and STH 47.

2. Advantages/Disadvantages
Constructing dual median barriers has the advantage of maintaining a standard 12-foot shoulder width in both the pavement widening and full pavement reconstruction options. Also, sign structures, structure piers and lighting can be accommodated between the barriers (12' back-to-back under the pavement widening scenario; 3' back-to-back under the reconstruction scenario). The space between the barriers also provides an opportunity for snow storage. A cost comparison of the four design options shows that pavement widening with dual median barriers is the least expensive as shown on page 8.

A disadvantage of dual median barriers is the temporary widening of the structures over Oneida Street and STH 47 is required for both design options. The 22' from the crown point to outside parapet is not adequate to accommodate two lanes of traffic during construction. The full pavement reconstruction option would also require temporary widening of the outside shoulder by 8 feet as well. A cost comparison of the four design options shows that total pavement reconstruction with dual median barriers is the most expensive as shown on page 8.

II. <u>Single Barrier</u>

1. Design Options and Construction Staging.
For the placement of one median barrier, there are two possible design option. In design option 1, the existing two mainline travel lanes will remain and new lanes and shoulders are constructed adjacent to them. The second design option under consideration is a total pavement reconstruction. Under a total pavement reconstruction, all lanes, shoulders and barriers would be shifted toward the median by 6.5 feet. At the request of the NE

Region, both options will require bridges over STH 47 to be widened and redecked. The bridges over Oneida Street will be completely reconstructed.

The likely construction staging of each option is highlighted below:

Pavement widening with existing mainline pavement (See Exhibit 4)

Stage 1

During non-peak hours and/or night time operations, strengthen the outside shoulders.

Stage 2:

Shift two lanes of EB and WB traffic to the outside lane and shoulder in their respective direction. Traffic lanes will be 11 feet wide with 1-foot shy distance to inside temporary barrier and 1-foot shy to the outside structure parapet. Construct the new inside lane and median concrete shoulder in each direction, and the single median barrier. At the structures over Oneida Street and STH 47, construct the new inside lane, median shoulder, and median parapet in each direction.

Stage 3

Shift two lanes of traffic in each direction on to the new inside lane and existing inside lane. Traffic is to be shifted to the new inside lane and new inside shoulder at the structures over Oneida Street and STH 47. At the structures, traffic lanes will be 11 feet wide with 1-foot shy distance to the median barrier and outside temporary barrier. Construct the new auxiliary lane and outside shoulder. At the structures over Oneida Street and STH 47, construct the outside two lanes, outside shoulder, and outside parapet.

Total pavement reconstruction (See Exhibit 5)

Stage 1

During non-peak hours and/or night time operations, widen the outside shoulders. Widen the existing structures at Oneida Street and STH 47 to the outside.

Stage 2

Shift two lanes of EB and WB traffic to the outside lane and shoulder in their respective directions. Traffic lanes will be 11 feet wide with 1-foot shy distance to inside temporary barrier and 1-foot shy to the outside structure parapet. Construct the new inside 2 lanes and median concrete shoulder in each direction, and the single median barrier. At the structures construct the inside 2 lanes, median shoulder and median parapet in each direction.

Stage 3

Shift two lanes of traffic on to the new median shoulder and new inside 2 lanes in their respective direction. Traffic lanes will be 12 feet wide with a minimum of a 2-foot shy

distance to the median barrier and the outside temporary barrier. Construct the new outside lane 3, outside shoulder and auxiliary lane. At the structures over Oneida Street and STH 47, construct the outside lane, outside shoulder, and outside parapet.

2. Advantages/Disadvantages

The primary advantage of a single median barrier is the elimination of one run of barrier. In the pavement widening with single barrier design option, pavement widths are wide enough that traffic is contained within the median shoulder and the inside lane while the outside construction is completed. There is no need to widen the existing structures at Oneida Street and STH 47 or widen the existing outside shoulder for the pavement widening with single barrier design option. The wider inside shoulder from maintaining a 64 feet median in the pavement widening with single barrier design option allows for additional recovery area for errant vehicles and can provide additional snow storage.

Disadvantages of a single median barrier include the need to transition the barrier at all structures. This is a considerable task for construction to perform. A disadvantage of total pavement reconstruction with a single median barrier is the temporary widening of the structures over Oneida Street and STH 47 is required. A disadvantage of pavement widening with single median barrier is that motorists may look to use the median shoulder as a traffic lane post-construction. Also, additional drainage structures are required for the pavement widening with single median barrier as compared to the other three design options due to the additional shoulder area.

Cost Comparison

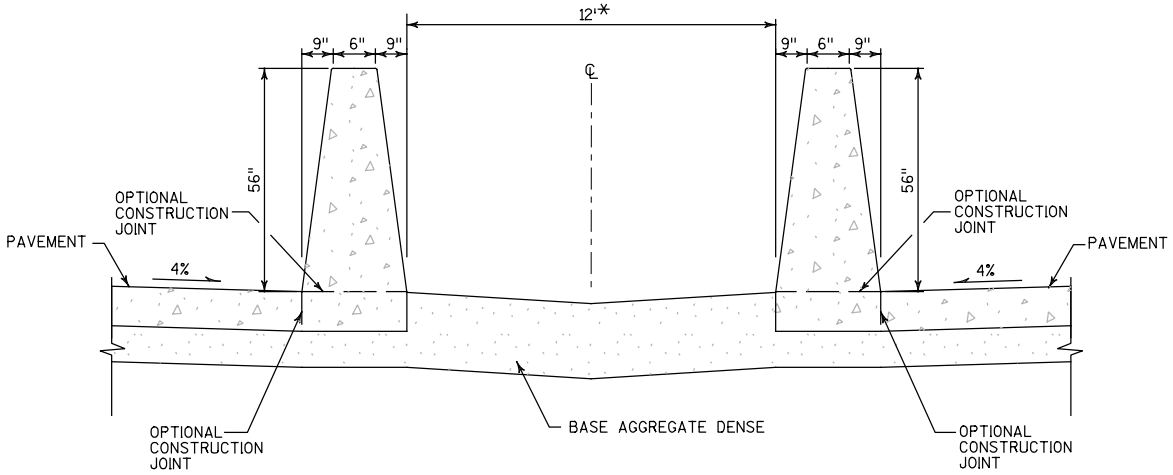
	Summary of Unit Prices			
	Dual 56" Barriers	**Dual 56" Barriers**	**Single 56" Barrier**	**Single 56" Barrier**
	Widening	**Total Reconstruct**	**Widening**	**Total Reconstruct**
	Unit Cost	Unit Cost	Unit Cost	Unit Cost
Concrete Barrier Single Slope	$40/LF	$40/LF	$55/LF	$55/LF
Additional Concrete Pavement (Shoulder)	None required	None required	$46/SY ($32/SY concrete pavement)	None required
Barrier Type S56A at off-set profiles	None required	None required	$20 above standard 56"	$20 above standard 56"
Transitions at Sign Structures	None required	None required	$200/LF transition to vertical face	$200/LF transition to vertical face
Transitions single to two barriers	None required	None required	$200/LF	$200/LF
Existing bridge widening	$100/SF	$100/SF	None required	$100/SF
Additional new bridge area	None required	None required	$110/SF	None required
Drainage Structures, Permanent	$1200/Each	$1200/Each	$1200/Each	$1200/Each
Conduit	$2/LF	$2/LF	$3/LF	$3/LF
Temporary Widening (5" HMA over 12" CABC)	None required	$32/SY ($60/ton HMA, $10/ton CABC)	None required	$32/SY ($60/ton HMA, $10/ton CABC)

	Basis of Estimate			
	Dual 56" Barriers	**Dual 56" Barriers**	**Single 56" Barrier**	**Single 56" Barrier**
	Widening	**Total Reconstruct**	**Widening**	**Total Reconstruct**
Concrete Barrier Single Slope	20,800 LF (22,200 LF total with bridges, transitions)	20,800 LF (22,200 LF total with bridges, transitions)	10,400 LF (11,100 LF total with bridges, transitions)	10,400 LF (11,100 LF total with bridges, transitions)
Additional Concrete Pavement (Shoulder)	None required	None required	13 feet additional width	None required
Barrier Type S56A at off-set profiles	None required	None required	None required, existing profiles are even	None required, existing profiles are even
Transitions at Sign Structures	None required	None required	10 LF transition to vertical face (7 structures)	10 LF transition to vertical face (7 structures)
Transitions single to two barriers	None required	None required	10 LF at 6 locations	10 LF at 6 locations
Existing bridge widening	6000 SF	6000 SF	None required	6000 SF
Additional bridge area	None required	None required	4550 SF	None required
Drainage Structures, Permanent	20 inlets	20 inlets	32 inlets	20 inlets
Conduit	Placed between barriers	Placed between barriers	Installed in barrier	Installed in barrier
Temporary Widening (5" HMA over 12" CABC)	Only at Structures	8 feet width	None required	8 feet width

	Cost Comparison			
	Dual 56" Barriers	**Dual 56" Barriers**	**Single 56" Barrier**	**Single 56" Barrier**
	Widening	**Total Reconstruct**	**Widening**	**Total Reconstruct**
Concrete Barrier Single Slope	$832,000	$832,000	$572,000	$572,000
Additional Concrete Pavement (Shoulder)	$0	$0	$738,000	$0
Barrier Type S56A at off-set profiles	$0	$0	$0	$0
Transitions at Sign Structures	$0	$0	$28,000	$28,000
Transitions single to two barriers	$0	$0	$12,000	$12,000
Existing bridge widening	$600,000	$600,000	$0	$600,000
Additional bridge area	$0	$0	$457,600	$0
Drainage Structures, Permanent	$24,000	$24,000	$38,400	$24,000
Conduit	$44,400	$44,400	$66,600	$66,600
Temporary Widening (5" HMA over 12" CABC)	$30,000	$712,500	$0	$712,500
	$1,530,400	**$2,212,900**	**$1,912,600**	**$2,015,100**

III. Conclusion

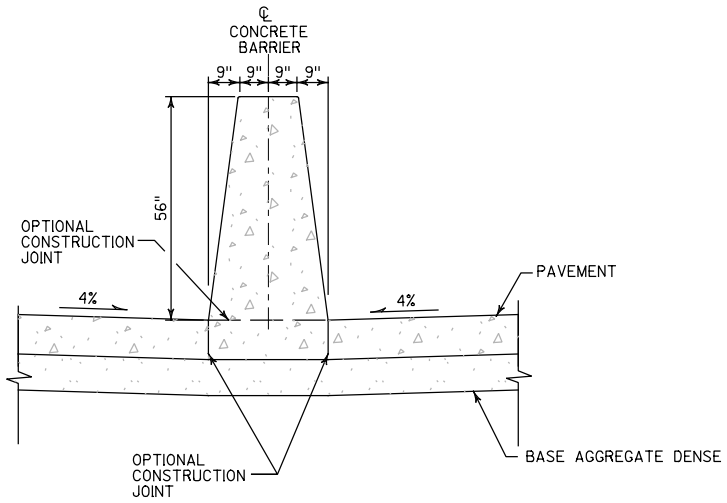
A single 56-inch barrier with a 36-inch wide base and dual barriers (one on each side of median) both have their own advantages and disadvantages. Of the four design options, pavement widening with dual median barriers has the lowest implementation cost; the pavement widening with single barrier has the most simple construction staging and least throw-away cost.



DUAL CONCRETE BARRIER TYPE S56

(BETWEEN ADJACENT ROADWAYS)

* 3' FOR RECONSTRUCTED PAVEMENT SECTION



CONCRETE BARRIER TYPE S56
(36-INCH WIDE BASE)

(BETWEEN ADJACENT ROADWAYS)

EXHIBIT 1

LEGEND

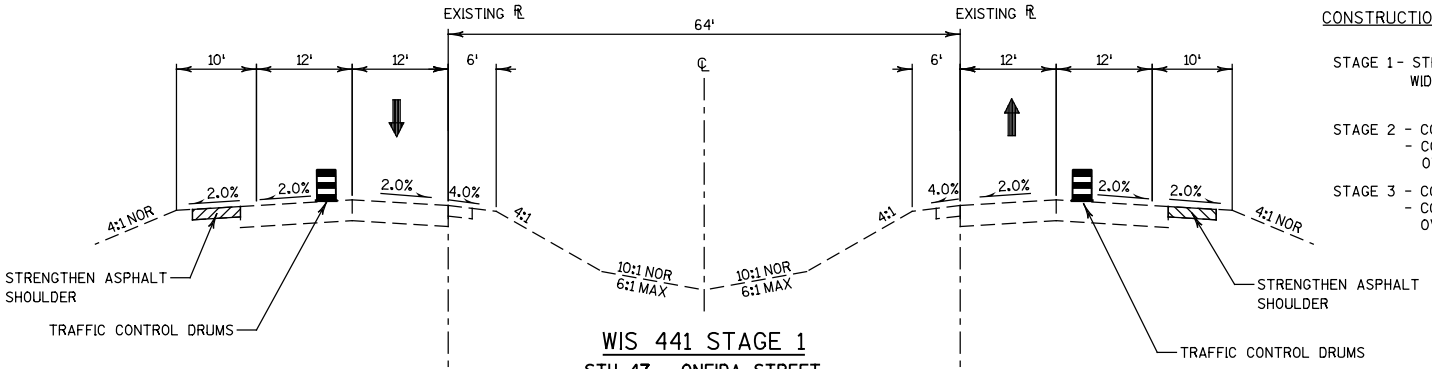
CONSTRUCTION ZONE

CONSTRUCTION STAGING NOTES:

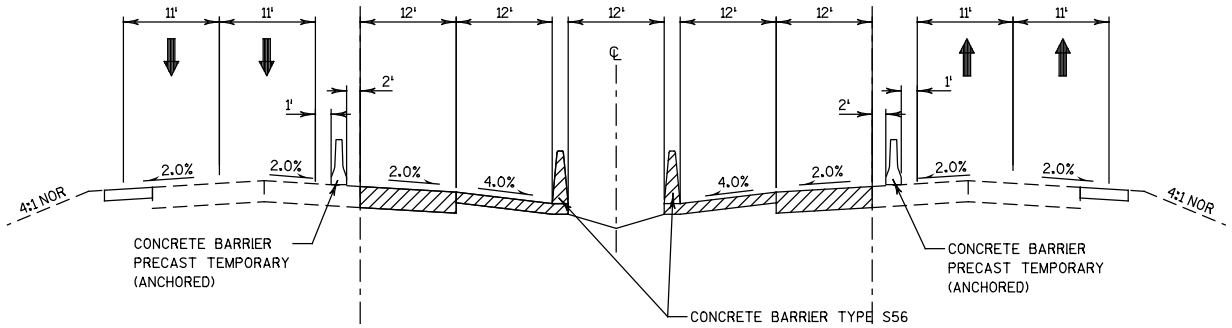
STAGE 1 - STRENGTHEN OUTSIDE SHOULDERS.
WIDEN EXISTING STRUCTURES OVER ONEIDA STREET AND STH 47

STAGE 2 - CONSTRUCT INSIDE LANE, SHOULDER, AND BARRIER.
- CONSTRUCT INSIDE 2 LANES, SHOULDER, AND PARAPET OVER ONEIDA STREET AND STH 47.

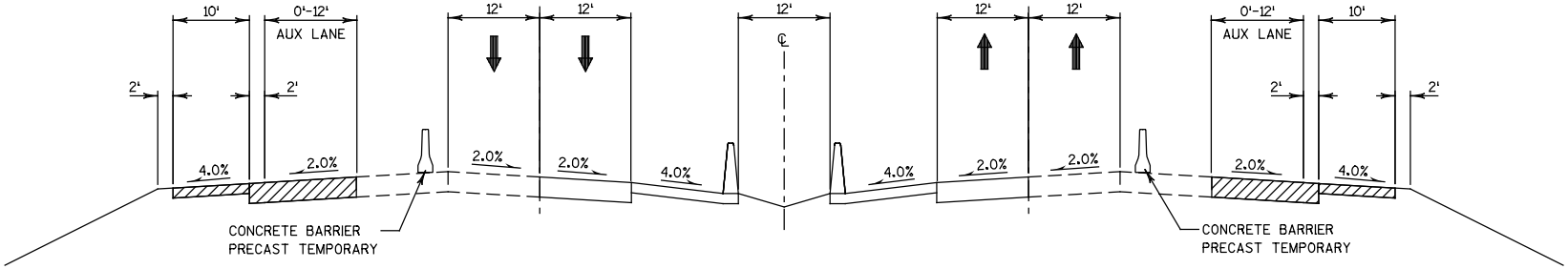
STAGE 3 - CONSTRUCT AUXILIARY LANE AND OUTSIDE SHOULDER.
- CONSTRUCT OUTSIDE LANE, SHOULDER, AND PARAPET OVER ONEIDA STREET AND STH 47.



WIS 441 STAGE 1
STH 47 - ONEIDA STREET



WIS 441 STAGE 2
STH 47 - ONEIDA STREET



WIS 441 STAGE 3
STH 47 - ONEIDA STREET

DUAL BARRIER WITH PAVEMENT WIDENING

EXHIBIT 2

LEGEND

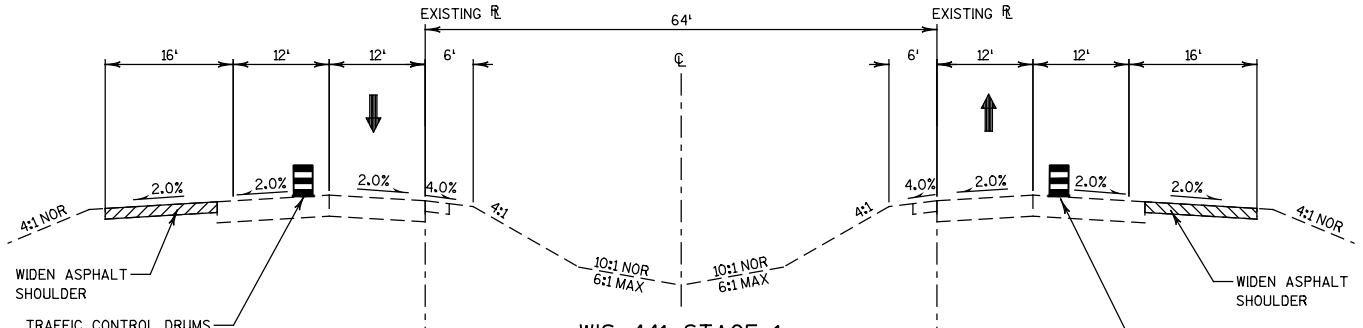
CONSTRUCTION ZONE

CONSTRUCTION STAGING NOTES:

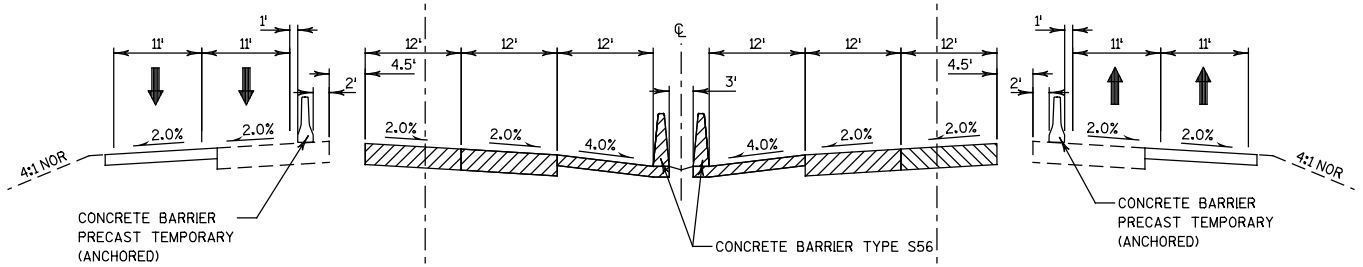
STAGE 1 - WIDEN OUTSIDE SHOULDERS.
- WIDEN EXISTING STRUCTURES OVER ONEIDA STREET AND STH 47.

STAGE 2 - CONSTRUCT INSIDE 2 LANES, SHOULDER, AND MEDIAN BARRIER.
- CONSTRUCT INSIDE TWO LANES, SHOULDER, AND PARAPET OVER ONEIDA STREET AND STH 47.

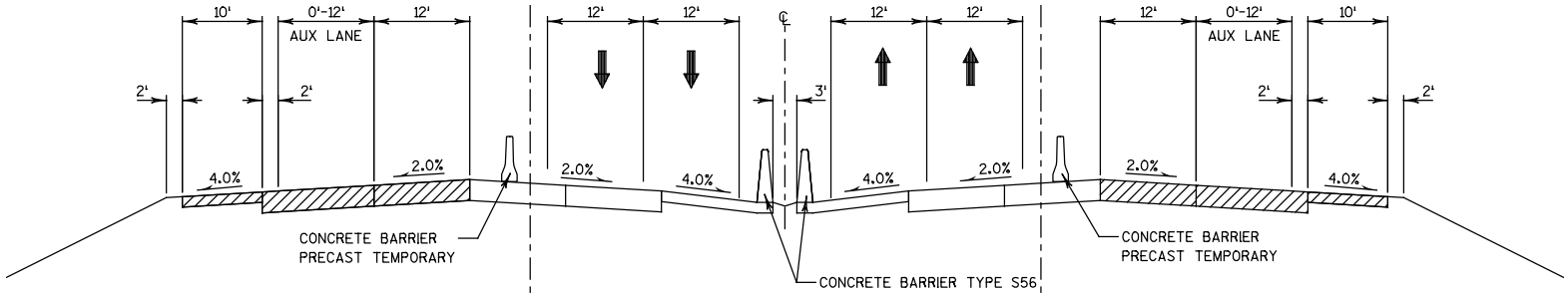
STAGE 3 - CONSTRUCT OUTSIDE LANE, AUXILIARY LANE, AND OUTSIDE SHOULDER.
- CONSTRUCT OUTSIDE LANE, OUTSIDE SHOULDER AND PARAPET OVER ONEIDA STREET AND STH 47.



WIS 441 STAGE 1
STH 47 - ONEIDA STREET



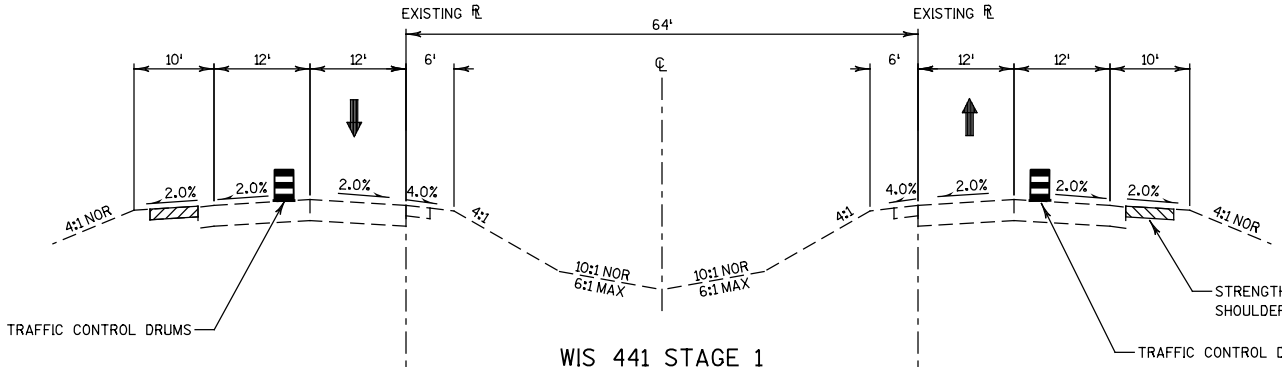
WIS 441 STAGE 2
STH 47 - ONEIDA STREET



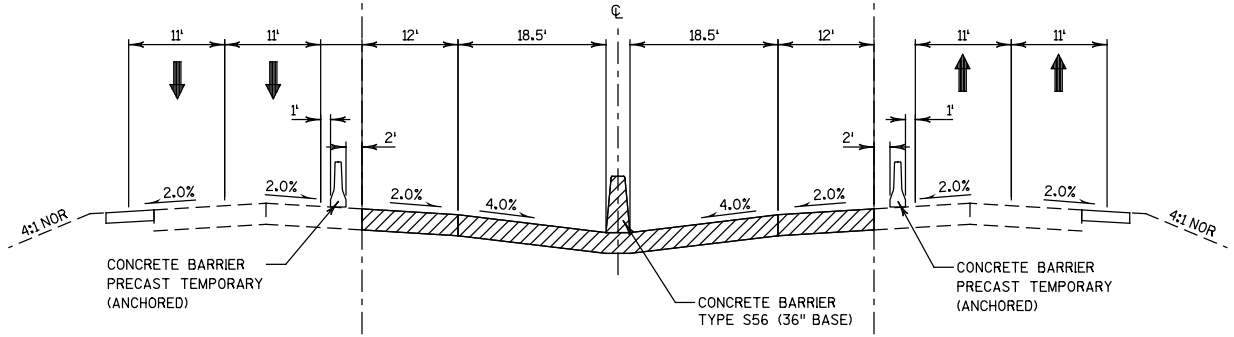
WIS 441 STAGE 3
STH 47 - ONEIDA STREET

DUAL BARRIER WITH TOTAL RECONSTRUCTION

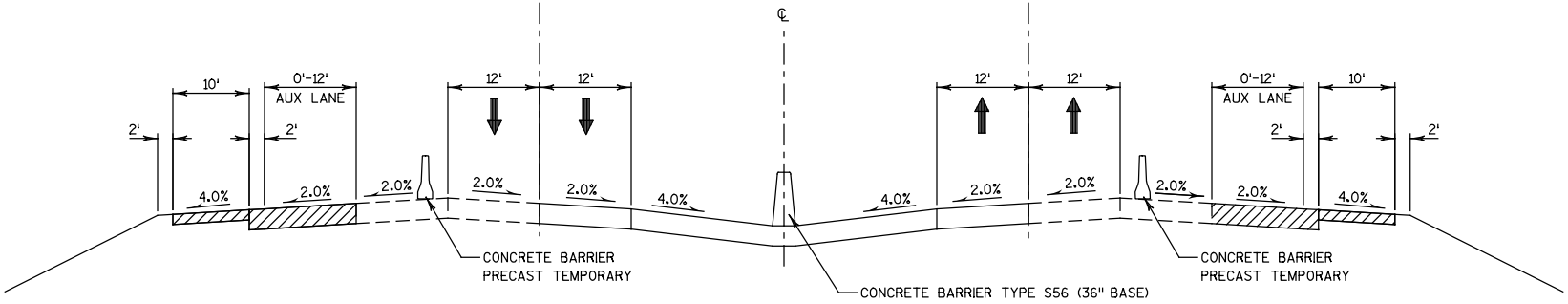
EXHIBIT 3



WIS 441 STAGE 1
STH 47 - ONEIDA STREET



WIS 441 STAGE 2
STH 47 - ONEIDA STREET



WIS 441 STAGE 3
STH 47 - ONEIDA STREET

LEGEND

CONSTRUCTION ZONE

CONSTRUCTION STAGING NOTES:

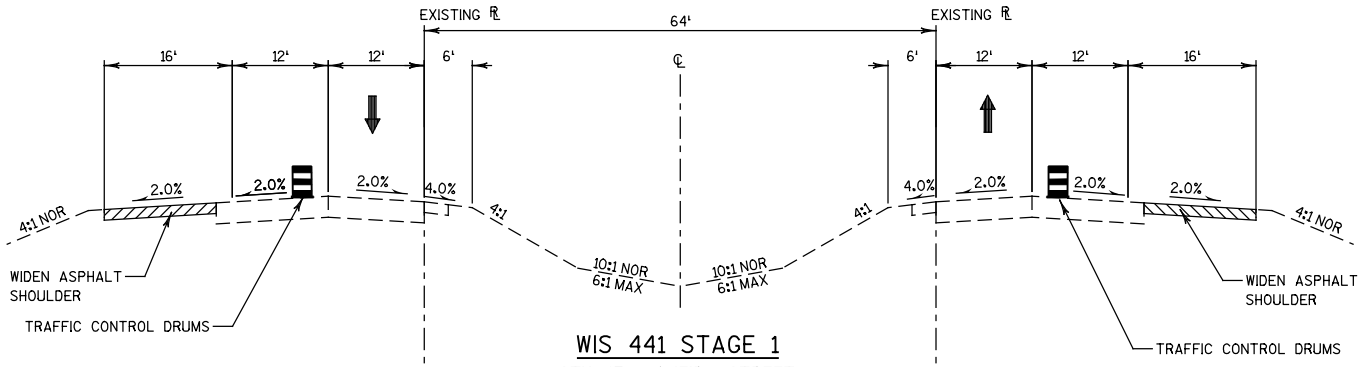
STAGE 1 - STRENGTHEN OUTSIDE SHOULDERS.

STAGE 2 - CONSTRUCT INSIDE LANE, SHOULDER, AND BARRIER.
- CONSTRUCT INSIDE LANE, SHOULDER, AND PARAPET OVER ONEIDA STREET AND STH 47.

STAGE 3 - CONSTRUCT AUXILIARY LANE AND SHOULDER.
- CONSTRUCT OUTSIDE SHOULDER AND PARAPET OVER STH 47.
- CONSTRUCT LANES 2 AND 3, OUTSIDE SHOULDER, AND PARAPET OVER ONEIDA STREET AND STH 47

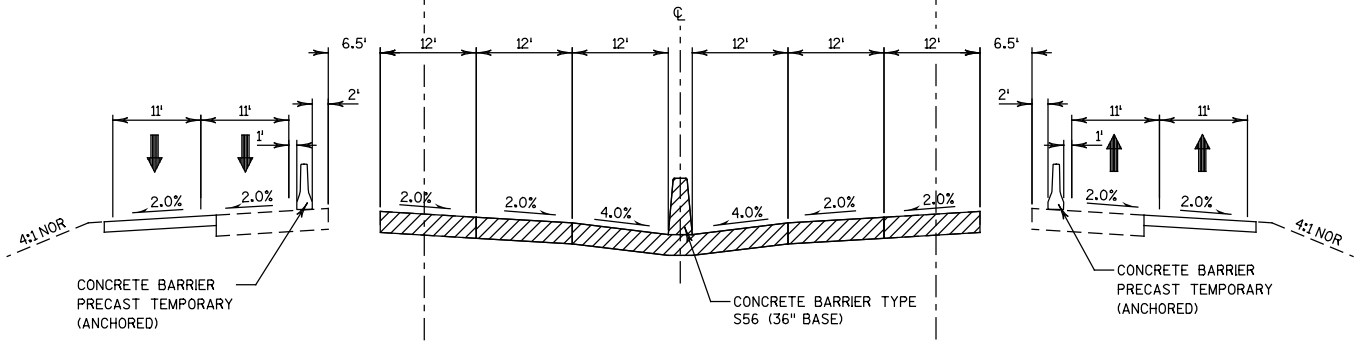
SINGLE BARRIER WITH PAVEMENT WIDENING

EXHIBIT 4



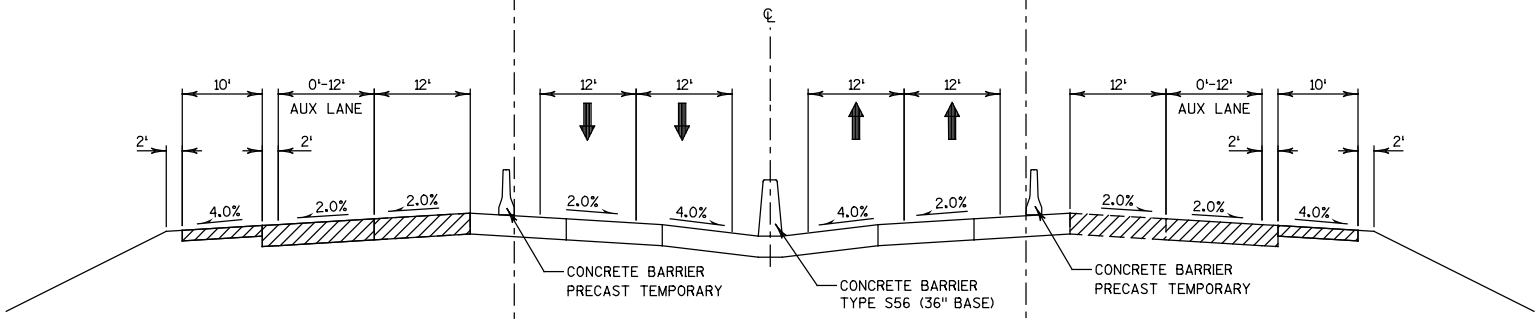
WIS 441 STAGE 1

STH 47 - ONEIDA STREET



WIS 441 STAGE 2

STH 47 - ONEIDA STREET



WIS 441 STAGE 3

STH 47 - ONEIDA STREET

LEGEND

CONSTRUCTION ZONE

CONSTRUCTION STAGING NOTES:

STAGE 1 - WIDEN OUTSIDE SHOULDERS.
- WIDEN EXISTING STRUCTURES OVER ONEIDA STREET AND STH 47.

STAGE 2 - CONSTRUCT INSIDE 2 LANES, SHOULDER AND MEDIAN BARRIER.
- CONSTRUCT INSIDE 2 LANES, SHOULDER, AND PARAPET OVER ONEIDA STREET AND STH 47

STAGE 3 - CONSTRUCT OUTSIDE LANE, AUXILIARY LANE AND OUTSIDE SHOULDER.
- CONSTRUCT OUTSIDE LANE, OUTSIDE SHOULDER, AND PARAPET OVER ONEIDA STREET AND STH 47.

SINGLE BARRIER WITH TOTAL RECONSTRUCTION EXHIBIT 5

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Technical Memorandum

Date: **November 29, 2011**

To: **Scott Ebel, PE, Project Manager, WisDOT NER**

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From: **Brian Adams /Prasad Narayan – Kapur & Associates**

Project ID: **1517-07-04**

Project: **WIS 441**

Winnebago County

Subject: **WIS 441 Functional Plan Geometry Review**

Technical Memorandum 4

The purpose of this memorandum is to summarize potential problems uncovered in our review of functional plan geometry for the WIS 441 project. For purposes of this memorandum plan geometry is defined as the horizontal and vertical alignments of the various roads and ramps in this area of the project.

The following items were reviewed:

Horizontal Alignment:

- Note curve radii and Design Speed accommodated assuming e-max of 6%
- Appropriate distance between curves
- Check if standard taper rates were used for on/off ramps

Vertical Alignment

- Range of grades including minimum grade
- K values
- Ramp profile ties to mainline profile (limited look)
- Check minimum grades on structures

The following are potential problems organized by each roadway/ramp that should be discussed with WisDOT and may require modification/updating. Horizontal and vertical curves are referred to by their PI stations.

US 10/WIS 441 Mainline (design speed 70 mph)

- Crest curve at 164+45 WB has a K value of 266.67, less than Category 3 minimum of 401.
- Crest curve at 132+03 EB has a K value of 529.20, meets minimum but less than Category 2 desirable of 566.
- Crest curve at 164+46 EB has a K value of 270.13, meets minimum but less than Category 1 desirable of 401.
- Sag curve at 174+75 EB has a K value of 227.07, meets minimum but less than Category 2 desirable of 287.
- Sag curve at 182+50 EB has a K value of 228.40, meets minimum but less than Category 3 desirable of 287.
- Crest curve at 192+00 EB has a K value of 547.65, meets minimum but less than Category 2 desirable of 566.
- Sag curve at 206+50 EB has a K value of 184.37, meets minimum but less than Category 2 desirable of 287.
- Crest curve at 211+50 EB has a K value of 299.65, meets minimum but less than Category 1 desirable of 401.
- Sag curve at 222+50 EB has a K value of 183.33, meets minimum but less than Category 3 desirable of 287.
- Crest curve at 241+00 EB has a K value of 531.08, meets minimum but less than Category 2 desirable of 566.
- Crest curve at 192+00 WB has a K value of 552.38, meets minimum but less than Category 2 desirable of 566.
- Crest curve at 203+25 WB has a K value of 299.96, meets minimum but less than Category 1 desirable of 401.
- Sag curve at 223+15 WB has a K value of 183.05, meets minimum but less than Category 3 desirable of 287.
- Crest curve at 241+75 WB has a K value of 535.08, meets minimum but less than Category 2 desirable of 566.

- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades.

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
132+03	-	143+00	USH 10/STH 441 (EB)		0.30	STRUCTURE, STA. 131+88 TO STA. 142+15
143+00	-	147+23	USH 10/STH 441 (EB)		0.36	
132+02	-	143+00	USH 10/STH 441 (WB)		0.30	STRUCTURE, STA. 132+09 TO STA. 142+28
181+00	-	192+00	USH 10/STH 441 (WB)		0.45	STRUCTURE, STA. 184+12 TO STA. 185+44

Ramp US 41 SB to US 10 WB (Ramp A – Design Speed 55 mph)

No issues

Ramp US 10/WIS 441 WB to US 41 NB (Ramp B - Design Speed 50 mph)

- Sag curve at 127+00 has a K value of 177.81, meets minimum but less than Category 2 desirable of 186.
- Crest curve at 137+00 has a K value of 136.65, meets minimum but less than Category 1 desirable of 261.
- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
113+33	-	118+00	USH 10/STH 441 & USH 41 (RAMP B)		0.35	
137+00	-	146+50	USH 10/STH 441 & USH 41 (RAMP B)		0.30	STRUCTURES, STA. 138+37 TO STA. 142+67, STA. 146+19 TO STA. 147+99
146+50	-	147+99	USH 10/STH 441 & USH 41 (RAMP B)		0.46	STRUCTURE, STA. 146+19 TO STA. 147+99

Ramp US 41 NB to US 10/WIS 441 EB (Ramp C - Design Speed 55 mph)

- R1 ramp radius provided is 1065'. The standard is 1095'. The acceleration length provided is 200', standard is 300'. The ramp taper provided is 300', standard is 360'

- Sag curve at 324+50 has a K value of 114.24, less than Category 1 minimum of 115.
- Crest curve at 331+00 has a K value of 142.47, meets minimum but less than Category 2 desirable of 347.
- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
310+27	-	315+50	USH 10/STH 441 & USH 41 (RAMP C)		-0.46	
331+00	-	337+75	USH 10/STH 441 & USH 41 (RAMP C)		0.30	STRUCTURE, STA. 331+91 TO STA. 336+25
337+75	-	340+60	USH 10/STH 441 & USH 41 (RAMP C)		0.36	

Ramp US 10 EB to US 41 SB (Ramp D- Design Speed 50 mph)

- Exit ramp R1 radius provided is 835', standard is 850'.
- Crest curve at 128+25 has a K value of 103.87', meets minimum but less than Category 1 desirable of 136'.
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
118+21	-	121+75	USH 10/STH 441 & USH 41 (RAMP D)		0.44	

Ramp US 41 SB to US 10/WIS 441 EB (Ramp E- Design Speed 30 mph)

- Entrance ramp R1 radius provided is 700', standard is 850'.

Ramp US 10/WIS 441 WB to US 41 SB (Ramp F - Design Speed 50 mph)

- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
98+96	-	101+96	USH 10/STH 441 & USH 41 (RAMP F)	-0.17		

Ramp US 41 NB to US 10 WB (Ramp G - Design Speed 45 mph)

- Crest curve at 339+50 has a K value of 89.98, meets minimum but less than Category 1 desirable of 98.

Ramp US 10 EB to US 41 NB (Ramp H - Design Speed 40 mph)

- Tangent length provided is 489', standard is 530'
- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
111+60	-	121+50	USH 10/STH 441 & USH 41 (RAMP H)	-0.20		
144+50	-	153+00	USH 10/STH 441 & USH 41 (RAMP H)		0.31	
161+00	-	166+45	USH 10/STH 441 & USH 41 (RAMP H)	-0.16		

CTH P/Racine Road (Design Speed 40 mph)

- Horizontal curve 20+70.14 NB has a radius of 352 ft. This meets a 35 mph design speed (not 40 mph).
- Sag curve at 17+79 NB has a length of 100 ft., less than the minimum of 120 ft.
- Crest curve at 26+68 NB has a length of 100 ft., less than the minimum of 120 ft.
- Crest curve at 26+38 SB has a length of 100 ft., less than the minimum of 120 ft.
- Crest curve at 23+00 Trunk Line WB has a K value of 109.71, meets minimum but less than Category 2 desirable of 167.
- Crest curve at 23+75 Trunk Line EB has a K value of 123.63, meets minimum but less than Category 3 desirable of 167.
- Sag curve at 11+00 NB has a K value of 116.50, meets minimum but less than Category 2 desirable of 144.
- Crest curve at 22+43 SB has a K value of 127.64, meets minimum but less than Category 2 desirable of 167.

- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
11+00	-	12+50	CTH P INTERCHANGE (NB)		0.30	
12+50	-	17+79	CTH P INTERCHANGE (NB)		-0.30	
17+79	-	19+07	CTH P INTERCHANGE (NB)		0.36	
19+07	-	22+97	CTH P INTERCHANGE (NB)		-0.43	
23+95	-	26+68	CTH P INTERCHANGE (NB)	0.13		ROUNDABOUT, STA. 23+95 TO STA. 26+00
26+68	-	29+42	CTH P INTERCHANGE (NB)		-0.43	
32+42	-	33+73	CTH P INTERCHANGE (NB)		-0.32	
11+00	-	12+50	CTH P INTERCHANGE (SB)		0.30	
12+50	-	20+62	CTH P INTERCHANGE (SB)		-0.37	
20+62	-	22+43	CTH P INTERCHANGE (SB)		0.32	
23+72	-	26+38	CTH P INTERCHANGE (SB)	0.16		ROUNDABOUT, STA. 24+20 TO STA. 25+90
26+38	-	29+16	CTH P INTERCHANGE (SB)		-0.43	
32+16	-	33+47	CTH P INTERCHANGE (SB)		-0.32	

CTH P - WB off Ramp (Ramp A – Design speed 60 mph at gore, 45 mph in middle)

- Sag curve at 200+50 has a K value of 79.17, meets minimum but less than Category 3 desirable of 165.
- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
199+48	-	200+50	CTH P INTERCHANGE (RAMP A)	-0.20		ROUNDABOUT ENDS AT STA. 199+48
205+60	-	212+48	CTH P INTERCHANGE (RAMP A)		-0.46	

CTH P - EB on Ramp (Ramp B – Design speed 60 mph at gore, 45 mph in middle)

- Horizontal curve 195+08.86 has a radius of 244 ft. This meets a 30 mph design speed.

CTH P - EB off Ramp (Ramp C – Design speed 60 mph at gore, 45 mph in middle)

- Tangent length provided is 334', standard is 530'

- Sag curve at 196+66 has a K value of 37.05, less than Category 2 minimum of 79.
- Crest curve at 187+28 has a K value of 85.53, meets minimum but less than Category 1 desirable of 98.
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
182+17	-	183+28	CTH P INTERCHANGE (RAMP C)	-0.04		

CTH P - WB on Ramp (Ramp D – Design speed 60 mph at gore, 45 mph in middle)

- Sag curve at 195+52 has a K value of 44.94, less than Category 1 minimum of 79.
- Crest curve at 188+57 has a K value of 167.29, meets minimum but less than Category 2 desirable of 212.
- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
182+98	-	188+57	CTH P INTERCHANGE (RAMP D)	-0.08		STRUCTURE, STA. 184+15 TO STA. 185+57
195+52	-	196+42	CTH P INTERCHANGE (RAMP D)		-0.33	ROUNDABOUT STARTS AT STA. 196+42

CTH AP/Midway Road (design speed 40 mph)

- PT and PC at 25+65.26 EB should be one PCC.
- Horizontal curve 26+27.12 has a radius of 476 ft. This meets a 35 mph design speed (not 40 mph).
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
25+00	-	28+22	CTH AP INTERCHANGE (WB)		-0.39	

CTH AP – WB off Ramp (Ramp A – Design speed 60 mph at gore, 45 mph in middle)

- Tangent length provided is 437', standard is 530'
- Sag curve at 243+50 has a K value of 87.52, meets minimum but less than Category 3 desirable of 165.
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
241+92	-	243+50	CTH AP INTERCHANGE (RAMP A)	0.11		ROUNDABOUT ENDS AT STA. 241+92

CTH AP – EB on Ramp (Ramp B– Design speed 60 mph at gore, 45 mph in middle)

- Sag curve at 244+00 has a K value of 79.02, meets minimum but less than Category 2 desirable of 165.
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
242+47	-	244+00	CTH AP INTERCHANGE (RAMP B)	0.08		

CTH AP – EB off Ramp (Ramp C– Design speed 60 mph at gore, 45 mph in middle)

- Crest curve at 234+00 has a K value of 182.26, meets minimum but less than Category 3 desirable of 212.

CTH AP – WB on Ramp (Ramp D– Design speed 60 mph at gore, 45 mph in middle)

- Crest curve at 234+00 has a K value of 181.79, meets minimum but less than Category 2 desirable of 212.
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
240+50	-	241+60	CTH AP INTERCHANGE (RAMP D)	-0.18		ROUNDABOUT STARTS AT STA. 241+60

WIS 47/Appleton Road (Design Speed 40 mph)

- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
113+24	-	118+34	STH 47 INTERCHANGE (NB)		0.49	ROUNDABOUT, STA. 116+64 TO STA. 118+34
114+30	-	116+80	STH 47 INTERCHANGE (SB)	0.24		ROUNDABOUT, STA. 116+80 TO STA. 118+45

WIS 47 - WB off Ramp (Ramp A– Design speed 60 mph at gore, 45 mph in middle)

- Sag curve at 298+10 has a K value of 58.90, less than Category 3 minimum of 79.
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
303+88	-	309+01	STH 47 INTERCHANGE (RAMP A)		0.37	

WIS 47 - EB on Ramp (Ramp B– Design speed 60 mph at gore, 45 mph in middle)

- Sag curve at 297+45 has a K value of 55.29, less than Category 2 minimum of 79.
- Crest curve at 304+12 has a K value of 157.94, meets minimum but less than Category 2 desirable of 212.
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
296+20	-	297+45	STH 47 INTERCHANGE (RAMB B)		-0.33	ROUNDABOUT ENDS AT STA. 296+20
304+12	-	311+72	STH 47 INTERCHANGE (RAMP B)	0.12		

WIS 47 - EB off Ramp (Ramp C– Design speed 60 mph at gore, 45 mph in middle)

- Sag curve at 283+98 has a length of 100 ft., less than the minimum of 120 ft.
- Sag curve at 293+91 has a K value of 83.65, meets minimum but less than Category 3 desirable of 165.
- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
293+91	-	294+95	STH 47 INTERCHANGE (RAMP C)		0.39	ROUNDABOUT STARTS AT STA. 294+95

WIS 47 - WB on Ramp (Ramp D– Design speed 60 mph at gore, 45 mph in middle)

- Vertical curve not meeting 0.3% minimum and/or 0.5% desirable grade

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
293+56	-	295+34	STH 47 INTERCHANGE (RAMP D)		0.40	ROUNDABOUT STARTS AT STA. 295+34

Oneida Street/US 10 (Design speed 40 mph)

- Crest curve at 51+50 NB has a K value of 123.31, meets minimum but less than Category 3 desirable of 167.
- Sag curve at 57+75 NB has a K value of 118.29, meets minimum but less than Category 3 desirable of 144.
- Crest curve at 64+00 NB has a K value of 108.09, meets minimum but less than Category 3 desirable of 167.
- Crest curve at 51+50 SB has a K value of 115.25, meets minimum but less than Category 3 desirable of 167.
- Sag curve at 57+00 SB has a K value of 127.34, meets minimum but less than Category 3 desirable of 144.
- Crest curve at 64+00 SB has a K value of 140.91, meets minimum but less than Category 3 desirable of 167.

- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
38+77	-	44+00	USH 10 INTERCHANGE (NB)		0.45	
67+50	-	72+00	USH 10 INTERCHANGE (NB)		-0.34	
72+00	-	73+35	USH 10 INTERCHANGE (NB)	0.01		
38+76	-	44+00	USH 10 INTERCHANGE (SB)		0.44	
68+00	-	72+00	USH 10 INTERCHANGE (SB)		-0.34	
72+00	-	73+35	USH 10 INTERCHANGE (SB)	0.01		

Oneida Street - WB off Ramp (Ramp A– Design speed 60 mph at gore, 45 mph in middle)

- Tangent length provided is 425', standard is 530'
- Sag curve at 349+48 has a K value of 47.67, less than Category 3 minimum of 79.
- Crest curve at 355+00 has a K value of 113.97, meets minimum but less than Category 3 desirable of 212.
- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
348+48	-	349+48	USH 10 INTERCHANGE (RAMP A)		-0.49	ROUNDABOUT ENDS AT STA. 348+48

Oneida Street - EB on Ramp (Ramp B– Design speed 60 mph at gore, 45 mph in middle)

- Sag curve at 350+48 has a K value of 48.50, less than Category 1 minimum of 79.
- Crest curve at 353+73 has a K value of 157.22, meets minimum but less than Category 2 desirable of 212.
- Crest curve at 356+98 has a K value of 101.41, meets minimum but less than Category 2 desirable of 212.

Oneida Street - EB off Ramp (Ramp C– Design speed 60 mph at gore, 45 mph in middle)

- Tangent length provided is 476', standard is 530'

- Sag curve at 346+31 has a K value of 104.13, meets minimum but less than Category 3 desirable of 165.
- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
334+64	-	336+73	USH 10 INTERCHANGE (RAMP C)		0.43	
346+31	-	347+31	USH 10 INTERCHANGE (RAMP C)		0.33	ROUNDABOUT STARTS AT STA. 347+31

Oneida Street - WB on Ramp (Ramp D– Design speed 60 mph at gore, 45 mph in middle)

- Sag curve at 345+62 has a K value of 111.22, meets minimum but less than Category 2 desirable of 165.
- Vertical curves not meeting 0.3% minimum and/or 0.5% desirable grades

STATION RANGE			DESCRIPTION	DOES NOT MEET 0.3% MIN. GRADE	DOES NOT MEET DESIRABLE 0.5% GRADE	REMARKS
322+51	-	326+46	USH 10 INTERCHANGE (RAMP D)	-0.22		
326+46	-	333+96	USH 10 INTERCHANGE (RAMP D)	0.06		

Summary

Redesign all geometric elements identified in this memorandum to meet desirable standards provided there are no major impacts to utilities, real estate and the environment. If desirable standards cannot be achievable, then the geometric elements will be designed to less than desirable or minimum standards. An exception to standards may be necessary if minimum standards are not practical.

All interchange cross roads are urban sections and drainage is a major concern for longitudinal slope less than 0.3%. Vertical profile will be adjusted to provide a positive drainage with 0.3% minimum slope.

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Technical Memorandum

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From: **Brian Adams/Justin Arndt – Kapur & Associates**
Nick Becker/Mike Arnold – URS
T.J. Dougherty – HNTB

Project ID: **1517-07-04**

Project: **WIS 441 Tri-County Project**
Winnebago County

Subject: **WIS 441 Potential Design Issues & Function Plan to 30% Plan Geometry Review**
Technical Memorandum 6

The purpose of this memorandum is to summarize the potential design issues that the Tri-County Partners see as the team moves forward with preliminary design of the WIS 441 Freeway project. This memo also includes a detailed comparison of changes made between the Function Plan and the recently submitted 30% Plan. The previously submitted WIS 441 Functional Plan Geometry Review – Technical Memorandum 4 was used as a basis for the Functional Plan to 30% Plan review. Technical Memorandum 4 reviewed the horizontal and vertical alignment of the Functional Plan.

The Functional Plan comments regarding vertical curves and profile grades have been combined with this 30% Plan design memorandum and the tables are made a part of this memo by attachment. Other geometry issues remaining from Technical Memorandum 4 are shown in *italics* with the response given below it. Horizontal and vertical curves are referenced by the point-of-intersection (PI) station. The vertical curve comparisons are included in Attachment 1, while the profile grade comparisons are included in Attachment 2.

Note – letters in [ ] are ramp designations in the Function Plan.

A. US 10/WIS 441 Mainline (Design Speed 70 mph)

1. The radius of the horizontal curves at 111EB+60.10 and 110WB+12.45 were increased from 14,000' to 14,100' to eliminate the need for superelevation.

2. The roadway crown point shifts outward one lane as the roadways transition from two lanes inside the system interchange to four or more lanes east of the system interchange. This move helps accommodate the reconstruction of the existing LLBDM structure and the Appleton Road structures. The EB transition occurs at 129EB+00 and the WB transition occurs at 143WB+25.

3. Profile grades from 132EB+03 – 147EB+23 and 132WB+02 – 143WB+00 are kept minimal to maintain clearance over railroads, ramps, and US 41 as well as to match into existing LLBDM structure.

4. Horizontal curves from 179EB+00 – 268EB+00 and 178WB+00 – 268WB+00 were shifted to accommodate stopping sight distance through the horizontal curves.
    a. The location of the PC at 178WB+00 was shifted onto the existing Little Lake Butte Des Morts bridge due to proximity of the St. Mary's Cemetery.

5. Horizontal PI points were added near the CTH P existing overpass structure to shift the median barrier closer to the existing piers to follow standard detail drawing 14B32 Sheet B - Concrete Barrier Fixed Object Protect.

6. The median barrier was updated to show two barriers with a minimum distance of 3' from back of barrier to back of barrier from 180+00 – 272+00.

7. The width between edge of lane and visual obstruction through the curves between stations 187EB+70 – 201EB+02 and 244WB+00 – 261WB+00+00 was increased to help accommodate stopping sight distance.

8. The 32-Inch barrier was required on inside portion of curve to reduce necessary shoulder width for sight distance.

9. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

10. In the Tangent Section, the Function Plan called for adding a new median lane and outside auxiliary lane to the existing WIS 441 pavement. The 30% Plan shows the tangent section of WIS 441 being completely reconstructed.
    a. A dual median barrier design has been implemented
    b. The proposed roadway typical section pulls both EB and WB toward the median by 4.5'.
    c. The ramps at Appleton Road and Oneida Street have been redesigned to match into the narrower WIS 441 layout.

d. The functional plan did not have profiles for this section.

11. All existing noise walls east of Oneida Street will need to be removed and replaced with new noise walls. The construction of the proposed noise walls will impact the existing right-of-way.
    a. The Functional plan design showed the fill slopes of the proposed widening matching at the existing roadway ditch. The additional 9.5' of additional pavement (2' wider shoulder and 7.5' of additional lane width) pushes the edge of pavement outside the existing roadway ditch
    b. On the south-side of WIS 441 (along EB), noise walls will have an average encroachment into existing right-of-way of 5 feet. Some parcels will have larger impacts, with the noise walls encroaching 17 to 21 feet into existing right-of-way.
    c. On the north-side of WIS 441 (along WB), noise walls will have an average encroachment into existing right-of-way of 6 feet. Some parcels will have larger impacts, with the noise walls encroaching 20 to 32 feet into existing right-of-way.
    d. The pedestrian overpass, noise wall and right-of-way impacts east of the overpass can be minimized through the use of elements such as barrier or beam guard.

B. <u>US 10/WIS 441/US 41 System Interchange</u>

1. The required clearzone for all system interchange ramps were reduced from 32' to 22'

2. The shoulders on two-lane ramps were increased to 10' outside shoulders and 6' inside shoulders. These ramps are being designed as a two-lane road instead of a ramp.

<u>Ramp US 41 SB to US 10 WB – Ramp FSW [A] (Design Speed 55 mph)</u>

3. The geometric configuration of US 41 SB to US 10/WIS 441 EB ramp (Ramp FSE) at its exit from US 41 SB to US 10/WIS 441 WB ramp (Ramp FSW) does not meet standards.
    a. From US 41 SB, Ramp FSE and Ramp FSW exit US 41 SB as a single-lane ramp, with Ramp FSE exiting from Ramp FSW 800' from the US 41/SB Ramp (pavement marking) gore. Traffic volumes are nearly twice as great on Ramp FSE and should be the primary exit ramp alignment.
    b. The parallel exit length is less than standard for Ramp FSE ramps. (170' parallel length before the Ramp FSE exit)
    c. There is insufficient tangent length between the two horizontal curves on Ramp FSE just south of its exit from Ramp FSW in order to reach full superelevation on these curves. The superelevation meets the Ramp FSE design speed of 30 mph; however, the geometry does not meet the standards for 10 mph less than the Ramp FSW design speed of 55 mph.

d. The direction for the 30% Plan was to not reconstruction the ramp exits. Alternatives to improve this geometry have been prepared by the design team and further discussion needs to be coordinated with WisDOT.

Ramp US 10/WIS 441 WB to US 41 NB – Ramp FWN [B] (Design Speed 50 mph)

4. This ramp has been completely redesigned vertically and horizontally to meet 50 mph design standards. The previous ramp layout only met 45 mph standards.

5. A retaining wall has been added along the West side of the ramp to allow for future expansion of US 41 NB.

6. The ramp profile is constrained by 41 NB and Ramp FEN at the beginning of the sag curve at STA 127+95 and then must quickly rise to provide sufficient clearance over Ramp FEN and the railroads before meeting up with the existing LLBDM structure.

7. *Profile grades not meeting 0.5% desirable.*
    a. The ramp has a profile grade of 0.44% where it meets up with a sag curve on 41 NB. Increasing the slope would create a substandard slope in the gore between the ramp and 41 NB.

Ramp US 41 NB to US 10/WIS 441 EB – Ramp FNE [C] (Design Speed 55 mph)

8. *R1 ramp radius provided is 1065'. The standard is 1095'. The acceleration length provided is 200', standard is 300'. The ramp taper provided is 300', standard is 360'.*
    a. The entrance radius meets the superelevation maximum radius to the reference line. The entrance ramp detail however calls for 1095' to the inside of travelled lanes. This will be reviewed.
    b. The ramp taper should be 360', and will be corrected post-30% plans.
    c. The acceleration length is greater than 300'.

9. In order to maintain minimum clearance over the railroads, the exit slope is minimized and the vertical curve at 1331+26 is brought below desirable standards.

10. *Profile grades not meeting 0.5% desirable.*
    a. Ramp FNE then matches into 441 EB near STA 1336+00 and is constrained by the 0.30% grade on the 441 EB profile, which results in the 0.31% and 0.45% profile grades from 1331+26 – 1340+60.

Ramp US 10 EB to US 41 SB – Ramp FES [D] (Design Speed 50 mph)

11. The profile was lowered at the gore with Ramp FWS to facilitate better drainage across the gore. The required extending the ramp approximately 250'.

12. *Exit ramp R1 radius provided is 835', standard is 850'.*
    a. The exit radius meets the superelevation maximum radius to the reference line. The exit ramp detail however calls for 850' to the inside of travelled lanes. The radius does match in to the existing Ramp FES past the end of construction. Per discussions of WIS 441 team with Brian Revello, this has been approved.

Ramp US 41 SB to US 10/WIS 441 EB – Ramp FSE [E] (Design Speed 30 mph)

13. *Entrance ramp R1 radius provided is 700', standard is 850'.*
    a. This radius and taper angle will be revised post-30% plan by the design team with input from the NE Region.

Ramp US 10/WIS 441 WB to US 41 SB – Ramp FWS [F] (Design Speed 50 mph)

14. The curve radius at 153+19.41 was increased from 14,000 to 14,100. This eliminated the need for superelevation being placed on the existing LLBDM structure.

15. The alignment was also shifted south 6' closer to WIS 441WB mainline. This was done to reduce the extension of structure needed and assisted the feasibility of the 833' curve of the FWN ramp. The functional plan curve at STA 141+26 was shifted east to STA 141+70 to keep the same radius of 1,700' and connect into the 6' shifted tangent section over LLBDM.

16. The vertical curve at STA 115+50 was lengthened to reduce the over 20' vertical clearance over WIS 441. The lengthening lowered the profile by 1.5', moved the profile highpoint off of the proposed structure and reduced the amount of fill needed. This change necessitated portions of the remaining profile to be modified as well in order to keep desirable K-values of the curves over the FNW ramp and the railroad.

17. *Profile grades not meeting 0.5% desirable.*
    a. The tangent on existing roadway that forms the curve at the beginning of the alignment is less than the desirable 0.5%.

Ramp US 41 NB to US 10 WB – Ramp FNW [G] (Design Speed 45 mph)

18. The vertical curve at 1339+99 is now above the desirable K value of 98.

19. The profile was raised over Ramp FSE to maintain desirable clearance.

Ramp US 10 EB to US 41 NB – Ramp FEN [H] (Design Speed 40 mph)

20. *Tangent length provided is 489', standard is 530'.*
    a. The taper closely matches in to Ramp FEN, and the taper angle is per standard.

21. *Profile grades not meeting 0.3% minimum and/or 0.5% desirable grades.*
    a. Ramp FEN grade at the exit to Ramp FES is controlled by the need of the Ramp FES vertical alignment to match into existing ground. Between stations 144+72 and 153+22 Ramp FEN must maintain clearance under 5 structures which results in not meeting desirable slope. At the end of the alignment the ramp must match into Ramp FWN at the peak of a crest curve resulting in a below minimum slope of 0.09%.

22. The PCC at STA 139+24 was moved to 139+68 in order to extend the curve and shift the ramp west away from the existing railroad.

23. The close proximity of the US 10 EB to US 41NB ramp (Ramp FEN) and US 41 NB auxiliary lane to the CN Railroad does not allow for adequate ditching. The majority of the interchange area north of US 10 / WIS 441 flows into this ditch, and heads north to Menasha Creek. Achieving adequate ditch capacity is a concern. Regardless of its size, the ditch will encroach on railroad right-of-way.

C. CTH P [Racine Road] Interchange

CTH P [Racine Road] (Design Speed 40 mph)

Items below were not in the Functional Plans but are included in the 30% plans:

1. Profiles were not provided for the following roadways:
   a. 12th Street
   b. 9th Street

2. Bike lanes and sidewalks were added to Racine Road to comply with Complete Streets.
   a. Bike lanes added to Racine Road on both the east and west sides, outside of the roundabout: 16RNB+25 to 24RNB+57.82, 29RNB+43.63 to 35RNB+06.34, 16RSB+25 to 24RSB+57.82, 30RSB+58.62 to 35RNB+13.51

b. Sidewalks are added to both the east and west side of Racine Road between 9th ST and the northern project limits.
c. Sidewalks are widened to 10' to serve as multiuse trail to allow bicycles to have the option to circumvent the roundabout.
d. Pedestrian crossings are provided across the north and west legs of the roundabout. Provided a crossing of the south leg of the roundabout is under discussion.

3. Roundabout at intersection of Racine Road and Racine Road Connector NB&SB moved approximately 30' to the west. This provides space for the multiuse trail on the east side of the roundabout without encroaching on Calder Stadium property, the Menasha School District's athletic facility.

4. Access points added
   a. 9th Street
      i. 13NS+00 LT, Happy Valley Road
      ii. 14NS+20 RT, business
      iii. 16NS+80 LT, business
      iv. 18NS+30 LT, business
   b. 12th Street
      i. 11TWS+50 LT, business
   c. Racine Road
      i. 13RNB+75 RT, residence (to be added)
      ii. 17RNB+25 RT, business
      iii. 17RSB+20 LT, business
      iv. 18RNB+50 RT, business
      v. 21RNB+00 RT, business
      vi. 21RSB+75 LT, private road
      vii. 31RNB+25 RT, business
      viii. 31RNB+70 RT, residence
      ix. 33RNB+50 RT, residence
      x. 34RNB+00 RT, residence

5. Access to 12th Street from Racine Road is now limited to Right in Right out

CTH P WB off Ramp – Ramp RNE [A] (Design Speed 30-60 mph)

6. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

CTH P EB on Ramp – Ramp RSE [B] (Design Speed 25-60 mph)

7. A retaining wall was added to 212+00-213+25 to avoid impacting the St. Mary's Cemetery
8. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

CTH P EB off Ramp – Ramp RSW [C] (Design Speed 30-60 mph)

9. The location of the gore was shifted approximately 300' to the east to minimize the structure width over Tayco St and remove the need for a retaining wall east of the structure.
10. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

CTH P WB on Ramp – Ramp RNW [D] (Design Speed 30-60 mph)

11. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

Tayco Street (Design speed 30 mph)

12. Reconstruction of Tayco Street was added to meet vertical clearance requirements under USH 10/WIS 441.

D. CTH AP [Midway Road] Interchange

CTH AP [Midway Road] (Design Speed 40 mph)

1. The limits on Racine Street have been extended past the functional plan limits by 165' to the north and shortened by 18' to the south because of the required change in tapers to meet standards.
    a. Turn bay tapers were increased to a 12.5:1 slope based on the Facilities Development Manual (FDM) requirements. Previous tapers were roughly 10:1, which is substandard.
    b. Shifting tapers were corrected for the posted speed of 35 mph a the project limits.
2. Complete Streets accommodations were added through the design of 4' bicycle lanes on Racine Street and 5' bicycle lanes and sidewalks on County AP (Midway Road) or a 10' shared-use path on County AP (Midway Road).

3. Due to the redesign of the turn bays and tapers and the subsequent change in limits, additional parcels will be affected and additional right of way acquisitions will be required. These parcels and associated information were sent to the NE Region on December 22, 2011.

4. Racine Rd (County P) will need to be an urban section to avoid greater real estate impacts due to ditch sections.

5. Current design impacts the cemetery located along Racine Street and will require a temporary limited easement (TLE) to complete the roadway work and slope grading. The typical section will need to be verified with the City and Town of Menasha before further evaluation can continue.

6. If the parcel in the southeast corner of County AP and County P (Owned by Timothy Goss, ID 008005602) is not owned by the cemetery, the potential increase in right of way could lead the intersection to be converted from the current signalized intersection design to a roundabout to be consistent with the roundabout on County AP.

7. A roundabout could be designed for the intersection meeting the eastbound ramps with the railroad running through the center if decided necessary after traffic analysis is completed. Additional ROW will be required and realignment of the railroad tracks north of AP would be required.

8. From the functional plans, the southeast ramp has a dual left turn lane and requires signals. Traffic analysis is needed to finalize this design. The ramp maybe too close to the roundabout at the west ramps for signals due to queuing.

9. Existing box culvert crosses the road at roughly station 12+85 on Racine Street south of Midway Road. Further investigation on drainage is required to determine what will be done with the design. Final decision will be made once a determination if a TLE will be allowed on St John's cemetery in February.

CTH AP WB off Ramp – Ramp MNW [A] (Design Speed 30-60 mph)

10. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

CTH AP EB on Ramp – Ramp MNE [B] (Design Speed 30-60 mph)

11. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

CTH AP EB off Ramp – Ramp MSE [C] (Design Speed 30-60 mph)

12. A retaining wall was added to avoid railroad R/W. Further discussion is needed regarding shared ditching.

13. Further design refinements are necessary to meet minimum/desirable K-values.

14. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

CTH AP WB on Ramp – Ramp MSW [D] (Design Speed 30-60 mph)

15. Detailed profile changes between the functional plans and the 30% plans are found in the attached exhibits.

16. Further design refinements are necessary to meet minimum/desirable K-values.

E. WIS 47 [Appleton Road] Interchange

1. All WIS 441 mainline ditching in the vicinity of WIS 47 flows to the existing WIS 47 storm sewer system. The additional flow from new pavement on WIS 441 and WIS 47 may exceed the capacity of the storm sewer trunkline as it heads south on WIS 47.

WIS 47 [Appleton Road] (Design Speed 40 mph)

2. *Profile grades not meeting 0.5% desirable.*
    a. The grades at the south limits exceed desirable on the WIS 47 NB, and are improved to minimum on WIS 47 SB. The WIS 47 SB profile across the south roundabout is greater than minimum but less than desirable.

3. Pipe underdrain currently runs along both sides of WIS 47. Pavement design needs to consider need for future underdrain

4. Future geometry id dependant on final decisions on bike/pedestrian accommodations and the need for protected bus stop (bus stop bump-outs)

WIS 47 WB off Ramp – Ramp ANE [A] (Design Speed 60 mph at gore, 45 mph in middle, 30 mph at roundabout)

5. All ramps in the WIS 47 and Oneida Street interchanges have sag vertical curves adjacent to the roundabouts at the ramp termini. The profiles for these ramps meet minimum but not desirable K values for sag vertical curves. Given anticipated real traffic speeds and drainage, minimum K values are preferred in the identified locations.

   Real-world traffic speeds at roundabout approaches and exits are expected to be less than the 30 mph used for 30 percent design of the interchange ramps. The 30 mph speed used in the 30 percent plan is conservative to ensure that coordination between ramp and mainline geometry at higher design speeds will not be adversely affected by any changes to the ramp-roundabout geometry. For all eight ramps, changes to the roundabout design speed or elimination of the vertical curves will result in a reduction in the absolute gradient change ("A" value) for the 45 mph crest vertical curves adjacent to mainline. In addition, any changes in geometry or design speed for the low-speed portions of the ramps will not encroach into the length needed for higher-speed curves.

   Because roundabout approaches and exits have curb and gutter—identified as a potential problem area in FDM 11-10-5.4—and do not have shoulders, lower K-values for the sag are preferred to facilitate positive drainage and reduce channel spread into driving pavement surfaces.

WIS 47 EB on Ramp – Ramp ASE [B] (Design Speed 60 mph at gore, 45 mph in middle, 30 mph at roundabout)

6. The crest curve at 1296+50 now has a K value that exceeds the desirable 212.

7. See earlier discussion regarding sag curves at roundabouts.

WIS 47 EB off Ramp – Ramp ASW [C] (Design Speed 60 mph at gore, 45 mph in middle, 30 mph at roundabout)

8. See earlier discussion regarding sag curves at roundabouts.

WIS 47 WB on Ramp – Ramp SNW [D] (Design Speed 60 mph at gore, 45 mph in middle, 30 mph at roundabout)

9. See earlier discussion regarding sag curves at roundabouts.

F. Oneida Street [US 10] Interchange

1. The existing storm sewer trunkline that runs along the median of WIS 441 from the east project limits west to Oneida Street is undersized for future conditions. From Oneida Street, a 54" storm sewer flows along WIS 441 to the west. Existing conditions and additional pavement will make the downstream 54" storm sewer's capacity inadequate.
    a. The existing WIS 441 freeway trunkline maintains a nearly flat slope due to the minimal elevation difference between the east project limits and Oneida Street.
    b. Approximately 1200 feet west of Oneida Street, a 42" storm sewer from the City of Appleton joins the mainline trunkline from the north.
    c. Existing conditions have field inlets behind the noise walls that pull water into the mainline trunkline. These inlets will need to be maintained behind the new, further out noise wall.
    d. The existing trunkline uses matching pipe inverts along the whole length, even when increasing in pipe size.
    e. Additional flow from new pavement on WIS 441 and Oneida Street will further reduce efficiency of a near capacity system.

2. To help reduce the increased drainage flow in this area, a detention pond north of WIS 441 and west of Oneida Street is being proposed. The new pond would help control the flow entering the 54"storm sewer system. This new pond would be built outside of current DOT right-of-way.

Oneida Street [US 10] (Design Speed 40 mph)

3. The limits on Oneida Street were extended by 55' to the south and 163' to the north because of the required change to meet standard tapers.
    a. Turn bay tapers were increased to a 12.5:1 slope based on the FDM requirements at the intersection of Oneida Street. Previous tapers were roughly 9:1, which is substandard.
    b. Shifting tapers were corrected for the posted speed of 35 mph at the project limits.
    c. Due to the project limit extensions, additional parcels will be affected and will require additional right of way acquisitions. These were submitted to WisDOT in December 2011.
    d. To the east of Oneida Street, Province Terrace may be included as well as the CVS Pharmacy, however further evaluation will be required. This cannot be confirmed due to the lack of survey at this location. Not only will these be included within the construction limits, access will be changed due to the extended median. A right-in right-out movement will only be allowed at this location.

4. W Valley Road will be extended 165’ west and E Roeland Avenue will be extended 52’ east of the current functional plan limits because of the required change in tapers to meet standards.
    a. Turn bay tapers were increased to a 12.5:1 slope based on the FDM requirements at the intersection with Oneida Street. Previous tapers were roughly 7:1, which is substandard.
    b. Shifting tapers were corrected for the posted speed of 35 mph at the project limits.
    c. Due to the limit extensions, additional parcels will be affected and will require additional right of way acquisitions. These parcels and associated information were submitted to NE Region on December 22, 2011. Further evaluation is required to determine the exact locations and impacts of acquisition.
    d. The limits of W. Valley Drive were extended and the driveway just east of S. Kerny Lane may be affected by this change. The Community First Credit Union drive-thru on E. Roeland Avenue may also be affected by the eastern extension as well as the driveway to the north of the intersection. Further evaluation and additional survey will be required.

5. E Meadow Grove Boulevard will be extended 5’ east.
    a. The limits on E Meadow Grove Boulevard were extended and the driveways for the Ultimate Rides car lot and the duplex across the street will be altered to run parallel to Oneida Street.

6. County AP (Midway Road) will be extended 146’ west and 161’ east from the current limits because of the required change in tapers to meet standards.
    a. Turn bay tapers were increased to a 12.5:1 slope based on the FDM requirements. Previous tapers were roughly 5:1, which is substandard.
    b. Shifting tapers were corrected for the posted speed of 35 mph at the project limits.
    c. Due to the limit extensions, additional parcels will be affected and will require additional right of way acquisitions – the parcels surrounding Maloa Street in the NE quadrant (Parcel ID 83081) and to the south (Parcel ID 84056, 84055, 84054) and to the east of Oneida Street on the south side of CTH AP (Parcel ID 770005004). Further evaluation and additional survey will be required.
    d. Limits extended on CTH AP will now incorporate Maloa Street and the duplex driveway to the south of the intersection on the west side of Oneida Street.
    e. E Roeland Avenue was designed in the functional plans to match existing widths with four 11’ lanes, it has been redesigned to drop down to two lanes at 12’ to match existing.
    f. On-street bicycle lanes were added along Oneida Street and all side roads to accommodate the Complete Streets requirements.

g. A shared use path was also included to connect Oneida Street and Acorn Street just south of the southwest ramp.

7. The transmission towers just south of the W Valley Road/E Roeland Avenue intersection will be removed to accommodate the proposed roadway width. Coordination with local utility companies is necessary for this design modification.

8. Due to the increased width, the propane tank at the southwest corner of the Midway Road intersection will need to be relocated. Coordination will be required.

9. The Wendy's drive-thru, as well as the Community First Credit Union parking lot, will need to be modified and reconstructed to accommodate the proposed roadway width at those locations.

Oneida Street WB off Ramp – Ramp TNE [A] (Design Speed 60 mph at gore, 45 mph in middle, 30 mph at roundabout)

10. Tangent length provided is 425', standard is 530'.
   a. Now a parallel exit ramp with proper taper and tangent lengths.

11. The crest vertical curves on all four Oneida Street ramps bring the profiles tangent to mainline quickly to minimize right-of-way impacts.

12. See earlier discussion regarding sag curves at roundabouts.

Oneida Street EB on Ramp – Ramp TSE [B] (Design Speed 60 mph at gore, 45 mph in middle, 30 mph at roundabout)

13. The crest vertical curves on the Oneida Street ramps bring the profiles tangent to mainline quickly to minimize right-of-way impacts.

14. See earlier discussion regarding sag curves at roundabouts.

Oneida Street EB off Ramp – Ramp TSW (Design Speed 60 mph at gore, 45 mph in middle, 30 mph at roundabout)

15. The crest vertical curves on the Oneida Street ramps bring the profiles tangent to mainline quickly to minimize right-of-way impacts.

16. Mainline EB has been raised to achieve proper K values. The increased difference in elevation from the roundabout has decreased the K value in the crest curve at the top of this ramp.

17. See earlier discussion regarding sag curves at roundabouts.

Oneida Street WB on Ramp – Ramp TNW [D] (Design Speed 60 mph at gore, 45 mph in middle, 30 mph at roundabout)

18. The crest vertical curves on the Oneida Street ramps bring the profiles tangent to mainline quickly to minimize right-of-way impacts.

19. Mainline WB has been raised to achieve proper K values. The increased difference in elevation from the roundabout has decreased the K value in the crest curve at the top of this ramp.

20. See earlier discussion regarding sag curves at roundabouts.

G. Structures

1. Permanent structure widening on outside of B-70-158 to remain the same as shown in functional plan. Temporary widening was added to median side of structure to accommodate traffic crossover.

2. B-70-400 (US 10/WIS 441 EB) was shown as 70" AASHTO girders in the functional plan. The revised span layout uses 45W" girders for the west half and 72W" girders for the east half of the bridge. The last span of this bridge is a continuation from B-70-402 (Ramp FNE).

3. B-70-402 (Ramp FNE) shown as four spans of 54" AASHTO girders in functional plans. Proposed plan uses a three-span bridge with 45W" girders. The fourth span is part of B-70-400.

4. B-70-405 (Ramp FWS) shown as seven spans of 70" AASHTO girders in functional plan. Revised to 7-span 72W" girders.

5. B-70-406 (Ramp FWN) shown as a four-span 50" steel plate girder structure in the functional plans. The proposed bridge is a 6-span bridge with 45W" girders.

6. B-70-407 (Ramp FNW) shown as four-span 45” AASHTO girders in functional plan. Revised to five-span 54” curved steel plate girders to accommodate future US 41 widening.

7. B-70-408 (Ramp FWS): In the functional plans, this structure is an 8-span 45” AASHTO girder bridge spanning over 10/441 mainline and Ramp FEN, with several hundred feet of structure between these under passing roadways. The proposed structure arrangement is B-70-408 as a two-span 45W” girder bridge over 10/441 mainline with fill under the road until it reaches Ramp FEN. At this location, B-70-404 is a single span 54W” girder bridge spanning Ramp FEN. The roadway fill in between the structures will require a retaining wall on the east side due to Ramp FSE looping near to it.

8. B-70-404 (Ramp FWS): This structure spans Ramp FEN as described above (54W” girders, single span).

9. B-70-409 (Ramp FEN): Shown as four spans of 45” AASHTO girders in functional plan. Revised to six-span 45W” girders.

10. B-70-401 (10/441 WB): This structure was shown as 70” AASHTO girders in the functional plans. The revised span layout uses 45W” girders for the west half and 72W” girders for the east half of the bridge.

11. B-70-403 (EB LLBDM): Shown as 18-span 100” steel plate girders in functional plan. Proposed structure type to be determined but likely will be 72W” concrete girders. The east and west ends of the structure have one additional span from what is shown in the functional plan regardless of structure type. This is to decrease the slope angle in front of the abutments which helps alleviate the risk of poor soil settlement and failure.

12. B-70-61 (WB LLBDM): Functional plan shows 100” steel plate girders. Structure type to remain as steel girders with re-deck. B-70-404 identified as the widened portion of B-70-61 in the functional plan/scoping documents; structure number to remain B-70-61 for entire widened bridge and B-70-404 number was reassigned. Additional widening of the structure is required at the east end of the bridge on the north side of the deck to accommodate the curvature of the roadway. This was not identified in the functional plan.

13. B-70-410 (10/441 EB over Tayco Rd.): Functional plans show 3-span 45” AASHTO girder bridge. Proposed bridge is three spans with 36” AASHTO girders.

14. B-70-411 (10/441 WB over Tayco Rd.): Functional plans show 3-span 45” AASHTO girder bridge. Proposed bridge is three spans with 36” AASHTO girders.

15. B-70-420 (10/441 EB over CTH P Ramp-Racine Rd.): Functional plans show 2-span 54" AASHTO girder bridge. Proposed bridge is two spans with 36W" girders.

16. B-70-421 (10/441 WB over CTH P Ramp-Racine Rd.): Functional plans show 2-span 54" AASHTO girder bridge. Proposed bridge is two spans with 36W" girders.

17. B-70-423 (10/441 EB over CTH AP-Midway Rd.): Functional plans show 2-span 54" AASHTO girder bridge. Proposed bridge is three spans with 54W" main span and 28" AASHTO girders on end spans.

18. B-70-424 (10/441 WB over CTH AP-Midway Rd.): Functional plans show widening of 2-span 45" AASHTO girder bridge. Proposed bridge is three spans with 54W" main span and 28" AASHTO girders on end spans.

19. B-70-113 and 114 are the same as functional plans: inside widening of two-span 45" AASHTO girder bridge.

20. B-70-427 (441 NB over US 10/Oneida St.): Functional plans show two-span 45" AASHTO girder bridge. Proposed bridge is two spans with 45W" girders.

21. B-70-427 (441 NB over US 10/Oneida St.): Functional plans show two-span 45" AASHTO girder bridge. Proposed bridge is two spans with 45W" girders.

Attachment 1 - Function Plan to 30% Plan - Vertical Curve Comparison

Road Name	Functional Plan VPI Station	Curve Type	Category	Design Speed (mph)	Functional Plan K value	Minimum K value	Desirable K value	Functional Plan Meets Min/Des	30 Percent Plan VPI Station	30 Percent Curve Type	30 Percent Category	30 Percent Design Speed (mph)	30 Percent Plan K value	30 Percent Minimum K value	30 Percent Desirable K value	30 Percent Plan Meets Min/Des	Remarks
US 10/WIS 441 MAINLINE																	
US 10/WIS 441 EB	132+03	Crest	2	70	529.20	247	566	Minimum	132+25	Crest	2	70	528.11	247	566	Minimum	
US 10/WIS 441 EB	182+50	Sag	3	70	228.40	181	287	Minimum	187+25	Sag	1	70	182	181	181	Desirable	
US 10/WIS 441 EB	192+00	Crest	1	70	547.65	247	401	Desirable	197+35	Crest	2	70	402	247	566	Minimum	
US 10/WIS 441 EB	206+50	Sag	2	70	184.37	181	287	Minimum	--	--	--	70	--				Vertical curve removed.
US 10/WIS 441 EB	211+50	Crest	2	70	299.65	247	566	Minimum	210+00	Sag	2	70	287	181	287	Desirable	
US 10/WIS 441 EB	222+50	Sag	3	70	183.33	181	287	Minimum	222+40	Sag	3	70	300	181	287	Desirable	
US 10/WIS 441 EB	241+00	Crest	2	70	531.08	247	566	Minimum	244+00	Crest	2	70	566	247	566	Desirable	
US 10/WIS 441 WB	181+00	Sag	1	70	296.79	181	181	Desirable	184+28	Sag	2	70	181	181	287	Minimum	
US 10/WIS 441 WB	192+00	Crest	2	70	552.38	247	566	Minimum	197+10	Crest	2	70	566	247	566	Desirable	
US 10/WIS 441 WB	203+25	Crest	1	70	299.96	247	401	Minimum	--	--	--	70	--	--	--	--	Vertical curve removed.
US 10/WIS 441 WB	223+15	Sag	3	70	183.05	181	287	Minimum	223+70	Sag	3	70	287	181	287	Desirable	
US 10/WIS 441 WB	241+75	Crest	2	70	535.08	247	566	Minimum	243+75	Crest	2	70	566	247	566	Desirable	
US 10/STH 441/US 41 SYSTEM INTERCHANGE																	
SYSTEM RAMP FWN	127+00	Sag	2	50	177.81	96	186	Minimum	127+95	Sag	2	50	177.04	96	186	Minimum	
SYSTEM RAMP FWN	137+00	Crest	1	50	136.65	84	136	Desirable	137+23	Crest	1	50	157.29	84	136	Desirable	Correction. Functional and 30 Percent meet desirable.
SYSTEM RAMP FNE	324+50	Sag	1	55	114.24	115	115	Neither	1324+50	Sag	1	55	115.34	115	115	Desirable	
SYSTEM RAMP FNE	331+00	Crest	2	55	142.47	114	347	Minimum	1331+26	Crest	2	55	117.22	114	347	Minimum	
SYSTEM RAMP FES	128+25	Crest	1	50	103.87	84	136	Minimum	128+50	Crest	1	50	99.68	84	136	Minimum	
SYSTEM RAMP FNW	339+50	Crest	1	45	89.98	61	98	Minimum	1339+99	Crest	1	45	98.00	61	98	Desirable	
RACINE ROAD EXISTING CONDITION																	
CTH P/RACINE ROAD NB	11+00	Sag	2	40	116.50	64	144	Minimum	CHANGES BETWEEN FUNCTIONAL PLAN AND 30% ARE NOT COMPATIBLE FOR SIDE BY SIDE EVALUATION								
CTH P/RACINE ROAD SB	22+43	Crest	2	40	127.64	44	167	Minimum									
CTH P (TRUNK ROAD) EB	23+75	Crest	3	40	123.63	70	167	Minimum									
CTH P (TRUNK ROAD) WB	23+00	Crest	2	40	109.71	44	167	Minimum									
RACINE ROAD PROPOSED CONDITION																	
CTH P/RACINE ROAD NB	CHANGES BETWEEN FUNCTIONAL PLAN AND 30% ARE NOT COMPATIBLE FOR SIDE BY SIDE EVALUATION								11+60	Crest	2	40	700.00	44	167	Desirable	
CTH P/RACINE ROAD NB									14+15	Sag	2	40	70.00	64	144	Minimum	
CTH P/RACINE ROAD NB									15+93	Crest	2	40	51.00	44	167	Minimum	
CTH P/RACINE ROAD NB									20+50	Sag	2	40	80.00	64	144	Minimum	
CTH P/RACINE ROAD NB									22+35	Crest	2	40	120.00	44	167	Minimum	
CTH P/RACINE ROAD NB									24+23	Sag	2	40	99.00	64	144	Minimum	
CTH P/RACINE ROAD NB									30+38	Sag	2	40	93.00	64	144	Minimum	
CTH P/RACINE ROAD NB									34+63.58	Crest	2	40	181.00	44	167	Desirable	
CTH P/RACINE ROAD SB									20+72	Sag	2	40	84.00	64	144	Minimum	
CTH P/RACINE ROAD SB									22+26	Crest	2	40	120.00	44	167	Minimum	
CTH P/RACINE ROAD SB									24+58.54	Sag	2	40	100.00	64	144	Minimum	
CTH P/RACINE ROAD SB									29+97	Sag	2	40	92.00	64	144	Minimum	
NINTH STREET									13+87.50	Sag	2	25	34.00	26	83	Minimum	
NINTH STREET									14+84	Crest	2	25	40.00	12	66	Minimum	
NINTH STREET									16+72	Sag	2	25	50.00	26	83	Minimum	
TWELFTH STREET									10+74.89	Sag	2	25	37.00	26	83	Minimum	
TWELFTH STREET									11+74.89	Crest	2	25	19.00	12	66	Minimum	
RACINE ROAD RAMP CONNECTOR NB									237+75.96	Sag	2	30	73.00	37	103	Minimum	
RACINE ROAD RAMP CONNECTOR NB									243+00	Crest	2	30	44.00	19	94	Minimum	
RACINE ROAD RAMP CONNECTOR NB									245+20	Sag	2	30	37.00	37	103	Minimum	
RACINE ROAD RAMP CONNECTOR NB									247+50	Crest	2	30	35.00	19	94	Minimum	
RACINE ROAD RAMP CONNECTOR NB									250+55	Sag	2	30	39.00	37	103	Minimum	
RACINE ROAD RAMP CONNECTOR SB									237+70	Sag	2	30	73.00	37	103	Minimum	
RACINE ROAD RAMP CONNECTOR SB									243+07.40	Crest	2	30	54.00	19	94	Minimum	
RACINE ROAD RAMP CONNECTOR SB									244+95	Sag	2	30	37.00	37	103	Minimum	
RACINE ROAD RAMP CONNECTOR SB									247+80.82	Crest	2	30	46.00	19	94	Minimum	
RACINE ROAD RAMP CONNECTOR SB									250+50	Sag	2	30	45.00	37	103	Minimum	

Attachment 1 - Function Plan to 30% Plan - Vertical Curve Comparison

Road Name	Functional Plan VPI Station	Curve Type	Category	Design Speed (mph)	Functional Plan K value	Minimum K value	Desirable K value	Functional Plan Meets Min/Des	30 Percent Plan VPI Station	30 Percent Curve Type	30 Percent Category	30 Percent Design Speed (mph)	30 Percent Plan K value	30 Percent Minimum K value	30 Percent Desirable K value	30 Percent Plan Meets Min/Des	Remarks
CTH P INTERCHANGE																	
CTH P WB OFF RAMP	200+50	Sag	2	30	79.17	37	103	Minimum	200+75	Sag	2	30	54	37	103	Minimum	
CTH P WB OFF RAMP	205+60	Crest	2	50	423.16	84	261	Desirable	206+50	Crest	2	50	136	84	261	Minimum	
CTH P WB OFF RAMP	212+48	Crest	3	60	301.97	245	455	Minimum	211+40	Sag	3	60	136	136	254	Minimum	
CTH P EB ON RAMP	203+80	Crest	2	60	600.41	151	455	Desirable	203+85	Crest	2	60	246	151	455	Minimum	
CTH P EB ON RAMP	208+70	Sag	3	60	281.37	134	254	Desirable	211+95	Sag	3	60	182	136	254	Minimum	
CTH P EB ON RAMP	211+90	Crest	3	60	287.53	245	455	Minimum	--	--	--	--	--	--	--	--	Vertical curve removed.
CTH P EB OFF RAMP	183+28	Sag	3	60	126.24	136	254	Neither	191+00	Crest	3	60	263	245	455	Minimum	
CTH P EB OFF RAMP	187+28	Crest	2	60	85.53	151	455	Neither	197+18	Sag	2	30	38	37	103	Minimum	
CTH P EB OFF RAMP	196+66	Sag	2	30	37.05	37	103	Minimum	--	--	--	--	--	--	--	--	Vertical curve removed.
CTH P WB ON RAMP	188+57	Crest	3	60	167.29	245	455	Neither	191+15	Crest	3	60	248	245	455	Minimum	
CTH P WB ON RAMP	195+52	Sag	2	30	44.94	37	103	Minimum	196+35	Sag	2	30	38	37	103	Minimum	
CTH AP INTERCHANGE																	
CTH AP WB OFF RAMP	243+50	Sag	2	30	87.52	37	103	Minimum	243+50	Sag	2	30	39	37	103	Minimum	
CTH AP WB OFF RAMP	254+00	Crest	3	60	311.76	245	455	Minimum	254+84	Crest	3	60	246	245	455	Minimum	
CTP AP EB ON RAMP	244+00	Sag	2	30	79.02	37	103	Minimum	243+75	Sag	2	30	37	37	103	Minimum	
CTP AP EB ON RAMP	251+00	Crest	3	60	385.03	245	455	Minimum	251+10	Crest	2	50	311	84	261	Desirable	
CTP AP EB ON RAMP	--	--	--	--	--	--	--	--	260+73	Sag	3	60	453	136	254	Desirable	Vertical curve added.
CTH AP EB OFF RAMP	234+00	Crest	3	60	182.26	245	455	Neither	235+25	Crest	3	60	156	245	455	Neither	
CTH AP EB OFF RAMP	240+00	Crest	2	40	987.80	44	167	Minimum	--	--	--	--	--	--	--	--	Vertical curve removed.
CTH AP WB ON RAMP	234+00	Crest	3	60	181.79	245	455	Neither	234+25	Crest	3	60	153	245	455	Neither	
CTH AP WB ON RAMP	244+50	Sag	2	30	114.97	37	103	Desirable	240+75	Sag	2	30	39	37	103	Minimum	
WIS 47 INTERCHANGE																	
WIS 47 WB OFF RAMP	298+10	Sag	3	45/30	58.90	79/37	165/103	Neither	1290+75	Sag	3	45/30	39.32	79/37	165/103	Minimum	
WIS 47 EB ON RAMP	297+45	Sag	2	45/30	55.29	79/37	165/103	Neither	1290+13	Sag	2	45/30	39.30	79/37	165/103	Minimum	
WIS 47 EB ON RAMP	304+12	Crest	2	45	157.94	61	212	Minimum	1296+50	Crest	2	45	253.73	61	212	Desirable	
WIS 47 EB OFF RAMP	293+91	Sag	3	45/30	83.65	79/37	165/103	Minimum	1286+50	Sag	3	45/30	51.25	79/37	165/103	Minimum	
WIS 47 WB ON RAMP	--	Sag	2	45/30	--	79/37	165/103	--	1287+00	Sag	2	45/30	42.85	79/37	165/103	Minimum	Vertical curve added.
ONEIDA STREET INTERCHANGE																	
ONEIDA STREET/US 10 NB	51+50	Crest	3	40	123.31	70	167	Minimum	51+81	Crest	3	40	115.00	70	167	Minimum	
ONEIDA STREET/US 10 NB	57+75	Sag	3	40	118.29	64	144	Minimum	58+85	Sag	3	40	115.00	64	144	Minimum	
ONEIDA STREET/US 10 NB	64+00	Crest	3	40	108.09	70	167	Minimum	63+92	Crest	3	40	163.00	70	167	Minimum	
ONEIDA STREET/US 10 SB	51+50	Crest	3	40	115.25	70	167	Minimum	51+85	Crest	3	40	128.00	70	167	Minimum	
ONEIDA STREET/US 10 SB	57+00	Sag	3	40	127.34	64	144	Minimum	57+75	Sag	3	40	114.00	64	144	Minimum	
ONEIDA STREET/US 10 SB	64+00	Crest	3	40	140.91	70	167	Minimum	64+00	Crest	3	40	163.00	70	167	Minimum	
ONEIDA STREET WB OFF RAMP	349+48	Sag	3	45/30	47.67	79/37	165/103	Minimum	342+85	Sag	3	45/30	44.13	79/37	165/103	Minimum	
ONEIDA STREET WB OFF RAMP	355+00	Crest	3	45	113.97	98	212	Minimum	349+00	Crest	3	45	114.95	98	212	Minimum	
ONEIDA STREET EB ON RAMP	350+47	Sag	1	45/30	48.50	79/37	79/37	Minimum	345+55	Sag	1	45/30	42.92	79/37	79/37	Minimum	
ONEIDA STREET EB ON RAMP	353+73	Crest	2	45	157.22	61	212	Minimum	--	Crest	2	45	--	61	212	--	Vertical curve removed.
ONEIDA STREET EB ON RAMP	356+98	Crest	2	45	101.41	61	212	Minimum	349+50	Crest	2	45	106.04	61	212	Minimum	
ONEIDA STREET EB OFF RAMP	--	Crest	3	45	201.90	98	212	Minimum	333+75	Crest	3	45	201.90	98	212	Minimum	Vertical curve added.
ONEIDA STREET EB OFF RAMP	346+31	Sag	3	45/30	104.13	79/37	165/103	Minimum	338+80	Sag	3	45/30	45.02	79/37	165/103	Minimum	
ONEIDA STREET WB ON RAMP	--	Crest	3	45	171.97	98	212	Minimum	333+00	Crest	3	45	171.97	98	212	Minimum	Vertical curve added.
ONEIDA STREET WB ON RAMP	345+62	Sag	2	45/30	111.22	79/37	165/103	Minimum	338+65	Sag	2	45/30	43.82	79/37	165/103	Minimum	

Attachment 2 - Function Plan to 30% Plan - Profile Grade Comparison

FUNCTIONAL PLAN STATION RANGE			DESCRIPTION	FUNCTIONAL PLAN PROFILE GRADE	30 PERCENT PLAN STATION RANGE			30 PERCENT PLAN PROFILE GRADE	REMARKS
US 10/WIS 441 MAINLINE									
106+00	-	110+16	USH 10/STH 441 (EB)	-2.00	106+00	-	110+38	-1.97	
110+16	-	122+03	USH 10/STH 441 (EB)	-0.70	110+38	-	122+86	-0.56	
122+03	-	132+03	USH 10/STH 441 (EB)	2.19	122+86	-	132+25	2.19	Unchanged from functional plan.
132+03	-	143+00	USH 10/STH 441 (EB)	0.30	132+25	-	143+23	0.30	Unchanged from functional plan.
143+00	-	147+23	USH 10/STH 441 (EB)	0.36	143+23	-	147+45	0.36	Unchanged from functional plan.
182+50	-	192+00	USH 10/STH 441 (EB)	0.47	179+00	-	187+25	-0.50	Now meets desirable.
192+00	-	206+50	USH 10/STH 441 (EB)	-2.32	187+25	-	197+35	1.15	
206+50	-	211+50	USH 10/STH 441 (EB)	0.67	197+35	-	210+00	-2.59	
211+50	-	222+50	USH 10/STH 441 (EB)	-0.50	210+00	-	222+40	-0.71	
222+50	-	241+00	USH 10/STH 441 (EB)	2.50	222+40	-	244+00	2.51	
241+00	-	260+50	USH 10/STH 441 (EB)	-0.75	244+00	-	261+25	-1.19	
260+50	-	276+80	USH 10/STH 441 (EB)	0.81	261+25	-	278+50	0.81	Functional plans stationing includes a station equation; 267EB+41.72 BK = 274EB+84.89 AH
There was no profile recommended for this portion in the functional plan			USH 10/STH 441 (EB)	-	278+50	-	285+00	1.77	
			USH 10/STH 441 (EB)	-	285+00	-	288+50	0.97	
			USH 10/STH 441 (EB)	-	292+50	-	298+00	-0.69	
			USH 10/STH 441 (EB)	-	298+00	-	305+00	0.40	Mimics existing grade
			USH 10/STH 441 (EB)	-	305+00	-	318+50	-0.45	Mimics existing grade
			USH 10/STH 441 (EB)	-	318+50	-	328+00	0.36	Mimics existing grade
			USH 10/STH 441 (EB)	-	328+00	-	336+50	1.83	
			USH 10/STH 441 (EB)	-	336+50	-	347+00	0.61	
			USH 10/STH 441 (EB)	-	347+00	-	359+00	-1.62	
			USH 10/STH 441 (EB)	-	359+00	-	390+00	0.34	Mimics existing grade
106+00	-	110+16	USH 10/STH 441 (WB)	-2.00	106+00	-	110+38	-1.97	
110+16	-	122+03	USH 10/STH 441 (WB)	-0.70	110+38	-	122+86	-0.56	
122+03	-	132+02	USH 10/STH 441 (WB)	2.13	122+86	-	132+24	2.13	Functional plans stationing includes a station equation; 131WB+72.57 BK = 131+71.63 AH; 30% plans station includes a station equation; 131+96.96 BK = 131+96.02 AH
132+02	-	143+00	USH 10/STH 441 (WB)	0.30	132+24	-	143+22	0.30	Unchanged from functional plan.
143+00	-	147+22	USH 10/STH 441 (WB)	0.50	143+22	-	147+44	0.50	Unchanged from functional plan.
147+22	-	164+45	USH 10/STH 441 (WB)	0.75	147+44	-	164+67	0.75	Unchanged from functional plan.
164+45	-	174+74	USH 10/STH 441 (WB)	-2.25	-	-	-	-	
174+74	-	181+00	USH 10/STH 441 (WB)	-0.57	-	-	-	-	
181+00	-	192+00	USH 10/STH 441 (WB)	0.45	178+00	-	184+28	-0.45	
192+00	-	206+50	USH 10/STH 441 (WB)	-2.32	184+28	-	197+10	1.25	Still meets desirable, changed from functional plan
206+50	-	203+25	USH 10/STH 441 (WB)	0.67	197+10	-	212+00	-2.67	Functional plans stationing includes a station equation; 210WB+55.89 BK = 202WB+30.69 AH
203+25	-	223+15	USH 10/STH 441 (WB)	-0.50	212+00	-	223+70	-0.55	Functional plans stationing includes a station equation; 204WB+07.64 BK = 212WB+95.01 AH

Attachment 2 - Function Plan to 30% Plan - Profile Grade Comparison

FUNCTIONAL PLAN STATION RANGE			DESCRIPTION	FUNCTIONAL PLAN PROFILE GRADE	30 PERCENT PLAN STATION RANGE			30 PERCENT PLAN PROFILE GRADE	REMARKS
223+15	-	241+75	USH 10/STH 441 (WB)	2.51	223+70	-	243+75	2.76	Functional plans stationing includes a station equation; 232WB+65.13 BK = 232WB+79.33 AH
241+75	-	261+25	USH 10/STH 441 (WB)	-0.73	243+75	-	261+25	-1.30	
261+25	-	276+80	USH 10/STH 441 (WB)	0.78	261+25	-	272+53	0.78	Functional plans stationing includes a station equation; 268WB+15.41 BK = 274WB+4.89 AH; 30% plans station includes a station equation; 267WB+47.44 BK = 267WB+00.38 AH
There was no profile recommended for this portion in the functional plan					278+00	-	284+50	1.89	
					284+50	-	288+75	1.05	
					291+50	-	298+50	-0.55	
					298+50	-	305+00	0.40	Mimics existing grade
					305+00	-	318+50	-0.45	Mimics existing grade
					318+50	-	328+00	0.36	Mimics existing grade
					328+00	-	337+00	1.70	
					337+00	-	347+00	0.69	
					347+00	-	359+00	-1.63	30% plans station includes a station equation; 347WB+26.30 BK = 347WB+20.24 AH
					359+00	-	390+00	0.34	Mimics existing grade
FEN Ramp (Ramp H)									
108+88	-	111+60	SYSTEM RAMP FEN	-1.67	108+86	-	111+83	-1.64	
111+60	-	121+50	SYSTEM RAMP FEN	-0.20	111+83	-	121+73	-0.20	Unchanged from functional plan.
121+50	-	132+50	SYSTEM RAMP FEN	2.03	121+73	-	132+73	2.03	
132+50	-	144+50	SYSTEM RAMP FEN	-3.25	132+73	-	144+73	-3.25	
144+50	-	153+00	SYSTEM RAMP FEN	0.31	144+73	-	153+23	0.31	Unchanged from functional plan.
153+00	-	161+00	SYSTEM RAMP FEN	-0.78	153+23	-	161+23	-0.78	
161+00	-	166+45	SYSTEM RAMP FEN	-0.16	161+23	-	169+34	0.09	Does not meet minimum, decreased from functional plan.
FES Ramp (Ramp D)									
118+20	-	121+75	SYSTEM RAMP FES	0.44	118+41	-	121+96	0.59	Now meets desirable
121+75	-	128+25	SYSTEM RAMP FES	4.39	121+96	-	128+50	4.48	
128+25	-	134+63	SYSTEM RAMP FES	-3.32	128+50	-	135+00	-3.55	
128+25	-	134+63	SYSTEM RAMP FES	-3.32	135+00	-	136+50	-3.22	
			SYSTEM RAMP FES		136+50	-	137+25	-1.85	
FWN Ramp (Ramp B)									
113+33	-	118+00	SYSTEM RAMP FWN	0.35	114+46	-	118+95	0.44	Still meets minimum, increased from functional plan
118+00	-	127+00	SYSTEM RAMP FWN	-0.54	118+95	-	127+95	-0.54	
127+00	-	137+00	SYSTEM RAMP FWN	3.98	127+95	-	137+23	3.98	
137+00	-	146+50	SYSTEM RAMP FWN	0.30	137+23	-	147+69	0.80	Now meets desirable
146+50	-	147+99	SYSTEM RAMP FWN	0.46	137+23	-	147+69	0.80	Now meets desirable
FWS Ramp (Ramp F)									
96+79	-	101+96	SYSTEM RAMP FWS	-0.17	96+92	-	101+88	-0.34	Now meets minimum
101+96	-	115+50	SYSTEM RAMP FWS	2.80	101+88	-	107+57	2.81	
101+96	-	115+50	SYSTEM RAMP FWS	2.80	107+57	-	115+50	2.76	

Attachment 2 - Function Plan to 30% Plan - Profile Grade Comparison

FUNCTIONAL PLAN STATION RANGE			DESCRIPTION	FUNCTIONAL PLAN PROFILE GRADE	30 PERCENT PLAN STATION RANGE			30 PERCENT PLAN PROFILE GRADE	REMARKS
115+50	-	132+00	SYSTEM RAMP FWS	-1.10	115+50	-	132+11	-1.02	
132+00	-	137+50	SYSTEM RAMP FWS	1.79	132+11	-	137+63	1.57	
137+50	-	143+00	SYSTEM RAMP FWS	-1.62	137+63	-	143+45	-1.52	
143+00	-	150+41	SYSTEM RAMP FWS	0.50	143+45	-	148+44	0.65	
150+41	-	159+91	SYSTEM RAMP FWS	0.91	148+44	-	152+40	0.75	
FNE Ramp (Ramp C)									
310+27	-	315+50	SYSTEM RAMP FNE	-0.46	1310+06	-	1315+50	-0.52	Now meets desirable.
315+50	-	324+50	SYSTEM RAMP FNE	-0.80	1315+50	-	1324+50	-0.80	
324+50	-	331+00	SYSTEM RAMP FNE	4.51	1324+50	-	1331+26	4.40	
331+00	-	337+75	SYSTEM RAMP FNE	0.30	1331+26	-	1339+05	0.31	Still meets minimum, increased from functional plan.
337+75	-	340+60	SYSTEM RAMP FNE	0.36	1339+05	-	1340+60	0.45	Still meets minimum, increased from functional plan.
FNW Ramp (Ramp G)									
317+70	-	322+00	SYSTEM RAMP FNW	-0.62	1317+70	-	1322+00	-0.62	
322+00	-	332+50	SYSTEM RAMP FNW	-0.52	1322+00	-	1332+50	-0.52	
332+50	-	339+50	SYSTEM RAMP FNW	4.76	1332+50	-	1339+99	4.76	
339+50	-	354+00	SYSTEM RAMP FNW	-1.91	1339+99	-	1348+50	-2.30	
339+50	-	354+00	SYSTEM RAMP FNW	-1.91	1348+50	-	1354+00	-1.90	
354+00	-	371+50	SYSTEM RAMP FNW	0.75	1354+00	-	1371+46	0.78	
371+50	-	375+94	SYSTEM RAMP FNW	2.05	1371+46	-	1375+50	1.90	
371+50	-	375+94	SYSTEM RAMP FNW	2.05	1375+50	-	1375+94	2.05	PI added to match into existing.
FSE Ramp (Ramp E)									
308+99	-	314+07	SYSTEM RAMP FSE	-2.74	1308+98	-	1314+08	-2.73	
314+07	-	321+57	SYSTEM RAMP FSE	1.15	1314+08	-	1320+50	1.15	
321+57	-	336+18	SYSTEM RAMP FSE	-1.40	1320+50	-	1330+00	-1.11	
321+57	-	336+18	SYSTEM RAMP FSE	-1.40	1330+00	-	1337+09	-0.50	
336+18	-	343+35	SYSTEM RAMP FSE	2.93	1337+09	-	1343+40	2.50	
343+35	-	347+42	SYSTEM RAMP FSE	-3.30	1343+40	-	1346+74	-3.53	
FSW Ramp (Ramp A)									
336+05	-	341+11	SYSTEM RAMP FSW	2.01	1336+33	-	1341+11	1.96	
341+11	-	348+51	SYSTEM RAMP FSW	-3.71	1341+11	-	1348+51	-3.71	
348+51	-	354+43	SYSTEM RAMP FSW	-0.63	1348+51	-	1354+59	-0.70	
CTH P INTERCHANGE									
11+00	-	12+50	CTH P/RACINE ROAD NB	0.30	12+20	-	13+50	-0.52	Now meets desirable.
12+50	-	17+79	CTH P/RACINE ROAD NB	-0.30	--	-	--	--	Added vertical curves, eliminated tangent
17+79	-	19+07	CTH P/RACINE ROAD NB	0.36	16+53	-	19+90	-0.01	Now meets desirable.
19+07	-	22+97	CTH P/RACINE ROAD NB	-0.43	21+10	-	20+75	0.50	Now meets desirable.
23+95	-	26+68	CTH P/RACINE ROAD NB	0.13	--	-	--	--	ROUNDABOUT, STA. 23+95 TO STA. 26+00
26+68	-	29+42	CTH P/RACINE ROAD NB	-0.43	27+53.46	-	29+78	-0.70	Now meets desirable.
32+42	-	33+73	CTH P/RACINE ROAD NB	-0.32	30+98	-	34+03.58	0.60	Now meets desirable.
11+00	-	12+50	CTH P/RACINE ROAD SB	0.30	--	-	--	--	Modified start station of SB alignment
12+50	-	20+62	CTH P/RACINE ROAD SB	-0.37	16+19.48	-	20+12	-0.93	Now meets desirable.

Attachment 2 - Function Plan to 30% Plan - Profile Grade Comparison

FUNCTIONAL PLAN STATION RANGE			DESCRIPTION	FUNCTIONAL PLAN PROFILE GRADE	30 PERCENT PLAN STATION RANGE			30 PERCENT PLAN PROFILE GRADE	REMARKS
20+62	-	22+43	CTH P/RACINE ROAD SB	0.32	22+86	-	23+98.54	-0.50	Now meets desirable.
23+72	-	26+38	CTH P/RACINE ROAD SB	0.16	--	-	--	--	ROUNDABOUT, STA. 24+20 TO STA. 25+90
26+38	-	29+16	CTH P/RACINE ROAD SB	-0.43	27+70.62	-	29+37	-0.70	Now meets desirable.
32+16	-	33+47	CTH P/RACINE ROAD SB	-0.32	30+57	-	32+68.92	0.60	Now meets desirable.
CHANGES BETWEEN FUNCTIONAL PLAN AND 30% ARE NOT COMPATIBLE FOR SIDE BY SIDE EVALUATION			NINTH STREET		12+00	-	13+50	0.68	
			NINTH STREET		14+25	-	14+46.50	2.89	
			NINTH STREET		15+21.50	-	15+27.56	1.00	
			NINTH STREET		15+93.63	-	16+34.50	-1.00	
			NINTH STREET		17+09.50	-	19+15.74	0.50	
			RACINE ROAD RAMP CONNECTOR NB		235+87.12	-	237+15.96	-0.80	
			RACINE ROAD RAMP CONNECTOR NB		238+35.96	-	242+40	0.84	
			RACINE ROAD RAMP CONNECTOR NB		243+60	-	244+21	-1.88	
			RACINE ROAD RAMP CONNECTOR NB		246+19	-	246+45	3.45	
			RACINE ROAD RAMP CONNECTOR NB		248+55	-	249+80	-2.52	
			RACINE ROAD RAMP CONNECTOR NB		251+30	-	253+13.02	1.36	
			RACINE ROAD RAMP CONNECTOR SB		235+93.84	-	237+10	-0.90	
			RACINE ROAD RAMP CONNECTOR SB		238+30	-	242+37.40	0.74	
			RACINE ROAD RAMP CONNECTOR SB		243+77.40	-	244+19	-1.87	
			RACINE ROAD RAMP CONNECTOR SB		245+71	-	246+82.62	2.22	
			RACINE ROAD RAMP CONNECTOR SB		248+79.02	-	249+75	-2.08	
			RACINE ROAD RAMP CONNECTOR SB		251+25	-	253+28.69	1.26	
199+48	-	200+50	CTH P WB OFF RAMP	-0.20	199+33	-	200+75	-1.00	ROUNDABOUT ENDS AT STA. 199+48, now meets desirable
200+50	-	205+60	CTH P WB OFF RAMP	1.57	200+75	-	206+50	1.60	
205+60	-	212+48	CTH P WB OFF RAMP	-0.46	206+50	-	211+40	-3.02	Now meets desirable.
212+48	-	215+36	CTH P WB OFF RAMP	-1.12	211+40	-	212+95	-0.77	
193+26	-	196+00	CTH P EB ON RAMP	-1.68	196+13	-	196+67	1.45	
196+00	-	203+80	CTH P EB ON RAMP	0.54	196+67	-	203+85	2.58	
203+80	-	208+70	CTH P EB ON RAMP	-0.54	203+85	-	211+95	-2.79	
208+70	-	211+90	CTH P EB ON RAMP	0.53	211+95	-	213+41	-1.21	
211+90	-	213+65	CTH P EB ON RAMP	-0.52	--	-	--	--	
182+17	-	183+28	CTH P EB OFF RAMP	-0.04	185+67	-	191+00	0.30	Now meets minimum.
183+28	-	187+28	CTH P EB OFF RAMP	1.15	191+00	-	197+18	-3.60	
187+28	-	196+66	CTH P EB OFF RAMP	-3.53	197+18	-	197+79	-1.25	
196+66	-	197+56	CTH P EB OFF RAMP	0.79	--	-	--	--	
182+98	-	188+57	CTH P WB ON RAMP	-0.08	186+71	-	191+15	0.30	STRUCTURE, STA 184+15 TO STA. 185+57, now meets minimum.
188+57	-	195+52	CTH P WB ON RAMP	-3.67	191+15	-	196+35	-3.21	
195+52	-	196+42	CTH P WB ON RAMP	-0.33	196+35	-	197+12	0.70	ROUNDABOUT STARTS AT STA. 196+42, now meets desirable
CTH AP INTERCHANGE									
25+00	-	28+22	CTH AP/MIDWAY ROAD WB	-0.39	26+00		27+95	-0.77	
260+50	-	262+00	CTH P AT CTH AP	0.30	12+75	-	17+50	1.34	

Attachment 2 - Function Plan to 30% Plan - Profile Grade Comparison

FUNCTIONAL PLAN STATION RANGE			DESCRIPTION	FUNCTIONAL PLAN PROFILE GRADE	30 PERCENT PLAN STATION RANGE			30 PERCENT PLAN PROFILE GRADE	REMARKS
241+92	-	243+50	CTH AP WB OFF RAMP	0.11	242+64	-	243+50	-2.01	ROUNDABOUT ENDS AT STA. 242+64, now meets desirable
243+50	-	254+00	CTH AP WB OFF RAMP	2.39	243+50	-	254+84	2.39	
254+00	-	259+35	CTH AP WB OFF RAMP	-0.82	254+84	-	259+65	-0.76	
242+47	-	244+00	CTH AP EB ON RAMP	0.08	242+66	-	243+75	-2.00	Now meets desirable.
244+00	-	251+00	CTH AP EB ON RAMP	2.60	243+75	-	251+10	2.83	
251+00	-	257+95	CTH AP EB ON RAMP	-0.51	251+10	-	260+73	-0.70	
--		--	CTH AP EB ON RAMP		260+73	-	264+58	0.73	
229+72	-	234+00	CTH AP EB OFF RAMP	2.57	231+00	-	235+25	2.42	
234+00	-	240+00	CTH AP EB OFF RAMP	-1.82	235+25	-	241+75	-2.00	
240+00	-	241+81	CTH AP EB OFF RAMP	-1.52	--	-	--	--	
228+11	-	234+00	CTH AP WB ON RAMP	2.48	230+12	-	234+25	2.80	
234+00	-	240+50	CTH AP WB ON RAMP	-1.92	234+25	-	240+75	-2.10	
240+50	-	241+60	CTH AP WB ON RAMP	-0.18	240+75	-	241+64	2.00	ROUNDABOUT STARTS AT STA. 241+64, now meets desirable
WIS 47 INTERCHANGE									
113+24	-	118+34	WIS 47/APPLETON ROAD NB	0.49	113+24	-	116+26	0.54	
113+24	-	118+34	WIS 47/APPLETON ROAD NB	0.49	116+35	-	118+54	0.43	ROUNDABOUT, STA. 116+64 TO STA. 118+34
114+30	-	116+80	WIS 47/APPLETON ROAD SB	0.24	114+51	-	116+59	0.38	ROUNDABOUT, STA. 116+80 TO STA. 118+45
			WIS 47/APPLETON ROAD SB		118+61	-	119+10	0.45	
303+88	-	309+01	WIS 47 WB OFF RAMP	0.37	1301+00	-	1302+72	0.56	Now meets desirable.
296+20	-	297+45	WIS 47 EB ON RAMP	-0.33	1288+97	-	1289+25	-1.18	Now meets desirable.
304+12	-	311+72	WIS 47 EB ON RAMP	0.12	1300+00	-	1301+08	0.52	Now meets desirable.
293+91	-	294+95	WIS 47 EB OFF RAMP	0.39	1287+25	-	1287+73	1.30	Now meets desirable.
293+56	-	295+34	WIS 47 WB ON RAMP	0.40	1287+75	-	1288+13	2.21	Now meets desirable.
ONEIDA STREET INTERCHANGE									
38+77	-	44+00	ONEIDA STREET/US 10 NB	0.45	38+22	-	39+50	0.92	
67+50	-	72+00	ONEIDA STREET/US 10 NB	-0.34	69+85	-	72+05	-0.50	
72+00	-	73+35	ONEIDA STREET/US 10 NB	0.01	74+40	-	74+99	0.30	
38+76	-	44+00	ONEIDA STREET/US 10 SB	0.44	38+22	-	39+50	0.92	Profile same as US NB
68+00	-	72+00	ONEIDA STREET/US 10 SB	-0.34	69+85	-	72+05	-0.50	Profile same as US NB
72+00	-	73+35	ONEIDA STREET/US 10 SB	0.01	74+40	-	74+99	0.30	Profile same as US NB
348+48	-	349+48	ONEIDA STREET WB OFF RAMP	-0.49	341+28	-	341+60	-2.00	Now meets desirable.
334+64	-	336+73	ONEIDA STREET EB OFF RAMP	0.43	327+23	-	330+50	0.78	Now meets desirable.
346+31	-	347+31	ONEIDA STREET EB OFF RAMP	0.33	339+80	-	340+10	2.00	Now meets desirable.
322+51	-	326+46	ONEIDA STREET WB ON RAMP	-0.22	--	-	--	--	Profile portion now part of mainline.
326+46	-	333+96	ONEIDA STREET WB ON RAMP	0.06	--	-	--	--	Profile portion now part of mainline.

Technical Memorandum

Date: March 16, 2012

To: Scott Ebel, P.E. - WisDOT Northeast Region
Kurt Peters, P.E. - WisDOT Northeast Region
Andy Fulcer, P.E. - WisDOT Northeast Region
Chad DeGrave, P.E. - WisDOT Northeast Region
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From: Nick Becker, P.E. – URS
Lauren Zidek, EIT – HNTB Corporation

Project ID: **1517-07-04**

Project: **WIS 441 Tri-County Expansion**
Winnebago County

Subject: **Tech Memo #14 – Midway Alignment**

Purpose

This memorandum summarizes the advantages and disadvantages of revising the horizontal geometry of USH 10/WIS 441 and Midway Road (County AP) at the Midway Road Interchange, as compared to the 30% plans. Geometric changes have been made to accommodate different mainline and side road alignments, and intersection configurations. The alternatives proposed have various combinations of intersection and ramp elements to minimize impacts to neighboring businesses and railroad right of way.

The need to revise the alignment is desirable to provide more distance between the USH10/WIS 441 alignment and the Wisconsin Central Limited rail spur as well as the RR Donnelly building on the George Banta Company property. The additional space between the rail spur and mainline alignment allows additional alternatives to be considered beyond the functional plan recommendations for Midway Road (County AP).

USH 10/WIS 441 Mainline

Exhibit 1 shows the plan and profile plan sheets for USH 10/WIS 441 from the 30% plans. The revised horizontal geometry is shown in Exhibit 2 and shifts USH 10/WIS 441 as far west as possible to get as much distance from the Wisconsin Central Railroad and the RR Donnelly building on the George Banta Company property while not infringing on Richard Drive (adjacent to the SW Ramp). Exhibit 3 shows the comparison between the horizontal alignment for USH 10/WIS 441—from the 30% plans—and the revised horizontal geometry. The horizontal alignment can be located anywhere between the alignments shown in Exhibit 3, but its location is dependent on the type of interchange at Midway Road (County AP).

Advantages

The revised horizontal geometry does not impact the USH 10/WIS 441 mainline east of Racine Road overpass or near the Appleton Road Interchange as the bearings on the tangent portion—under the existing Racine Road Bridge, and the tangent portion going into the Appleton Road Interchange—did not change from the 30% plans. The radius of the USH 10/WIS 441 reverse curves on either side of Midway Road are the same as in the 30% plans.

The revised vertical profile for USH 10/WIS 441 does not impact the interchanges, as previously mentioned, on either side of Midway Road (County AP) interchange; the elevation and grade under the existing Racine Road Bridge and match point for the Appleton Road Interchange has not changed from the 30% plans.

The revised horizontal geometry shifts the proposed roadway further from the building on George Banta Company property. The 30% plans showed a minimum distance of 30 feet between the building and the proposed roadway. The revised horizontal geometry has minimum distance of 100 feet between the building and the proposed roadway.

The revised horizontal geometry still meets category 1 sight distance for the westbound critical movement.

The revised horizontal geometry also has fewer impacts to the George Banta Company parcel in the NE quadrant of the WIS 441 and Midway interchange. The cost summary is below.

Alternative	Est. parcel impact cost
Functional Plan/30% Plans	$3,000,000.00
Revised horizontal geometry	$600,000.00
Difference	$2,400,000.00

Disadvantages

The revised horizontal geometry will require a longer retaining wall on USH 10/WIS 441 along Richard Drive from approximately 230WB+50 to 235WB+50. Retaining barrier will be needed on USH 10/WIS 441 from approximately 220WB+00 to 230WB+50.

The 30% plans do not show any work on Richard Drive; however, there will need to be modifications to the existing storm sewer, and barrier along Richard Drive will be needed to protect the proposed retaining wall.

The preliminary location for a future pond, located north of the Midway Road interchange, may be impacted by the revised horizontal geometry.

Midway Road (County AP) Alternatives

Three (3) alternatives for the Midway Road (County AP) Interchange reconstruction are considered as a result of having additional space between the rail spur and mainline. Exhibits 4, 5, and 6 show a plan view of the proposed Alternatives 1, 2, and 3 respectively.

- Alternative 1 incorporates roundabouts at each ramp intersection allowing free flow traffic through the interchange.
- There are two signalized intersections designed in Alternative 2 aiding in the conservation of right-of-way immediately at the intersections.
- Alternative 3 is a combination of the previous two, with a single lane roundabout west of WIS 441 and a signalized intersection to the east near the railroad crossing. This is similar to what was shown in the functional plans

The below sections outline these alternatives and their respective advantages and disadvantages. Reducing the impacts to the railroad crossing on the east end of the project was a significant consideration in developing these alternatives. A main concern with the design of the Midway Road (County AP) interchange was the proximity of the USH 10/WIS 441 eastbound ramp termini to the existing railroad switch north of the railroad crossing (the switch must be entirely outside of both the roadway and sidewalk footprint). New railroad signals and gates will need to be installed for all the alternatives. Gates will be added at each exit ramp onto Midway Road (County AP) and signals will have the same configuration in each alternative with slight adjustments in location.

Traffic Data

Turning movement data was taken from the 2010 and 2035 regional traffic demand model and PM peak hour volumes were determined. The counts were conducted on November 8 and 9, 2011. All movements were analyzed in Paramics and were found to have an acceptable level of service in 2035. The table below shows the PM peak hour operational analysis.

Exhibit 7 (see attachments) shows the AM and PM peak traffic at each proposed roundabout intersection. Exhibit 8 shows the RODEL output at both 50% and 85% confidence levels for the roundabouts in Alternative 1 and 3.

Table 1 – PM Peak Hour Traffic Data

Intersection	Movement	AM Peak	PM Peak
SB 441/AP	EBT	113	439
	EBR	142	99
	WBL	358	505
	WBT	150	256
	SBL	35	89
	SBR	71	65
NB 441/AP	EBL	54	48
	EBT	131	480
	NBL	59	135
	NBR	401	430
	WBT	449	626
	WBR	71	110

Alternative 1 – Double Roundabout Interchange

Advantages

While single-lane roundabouts would be adequate to accommodate projected traffic, dual-lane roundabouts help to preserve lane continuity and increase safety at the westbound railroad crossing. The dual-lane roundabout configuration reduces queuing by allowing more traffic through the roundabout and provides two lanes for vehicles to queue; therefore, reducing the total queue length.

When a roundabout is placed in proximity to a rail crossing, traffic must be able to clear the rail crossing area as quickly as possible. By maintaining two traffic lanes for westbound Midway Road (County AP) traffic through both roundabouts, combined with the shorter queue lengths of the dual-lane entry and having the greatest distance away from the crossing compare to Alternatives 2 and 3, it is designed that the rail crossing can be safely and quickly cleared in case of a train crossing. Traffic flow through the USH 10/WIS 441 westbound ramp termini roundabout may continue unabated until traffic from the rail crossing backs up into the roundabout. This alternative has the largest distance between the railroad point of switch on the George Banta Company property and the roadway.

Having a roundabout at each ramp termini allows traffic to flow freely when compared to the other alternatives with signalized intersections, which can have queuing issues. In addition, this alternative creates corridor consistency since the other adjacent Interchanges have proposed roundabouts at ramp termini.

By having the eastbound Midway Road (County AP) traffic use a single lane roundabout configuration, opposed to a dual lane configuration, decreases the footprint of the interchange because of the smaller inscribed

diameters at the roundabouts. Since the roadway footprint is smaller with a single lane roundabout configuration on the eastbound side of Midway Road (County AP), the span of the structure for USH 10/WIS 441 traffic can be reduced. If the eastbound Midway Road (County AP) traffic had a dual lane configuration at the USH 10/WIS 441 eastbound ramp termini a larger inscribed diameter would be needed; however, the roundabout would be pushed closer to the rail crossing, reducing the available queue length between the rail crossing and the roundabout.

Alternative 1 will aid in decreasing right of way issues and overall cost. Lower maintenance costs will also be associated with the dual roundabouts compared to a signalized intersection. Because the median on Midway Road (County AP), under the USH 10/WIS 441 structure, is wide enough in this alternative to accommodate a structure pier, a 2-span structure can be used. This will minimize the cost of the USH 10/WIS 441 structure as it will require fewer piers and thereby save on material costs.

By having a roundabout at each ramp terminal, the adjacent roadways can be narrower because fewer lanes are required when approaching the roundabouts when compared to the lane configuration for a signalized intersection. Also, bicycle traffic is diverted off of the roadway through the intersection when a roundabout is used compared to a signalized intersection. Ramps on the approach of the roundabouts allow for bicycles to exit the roadway and move onto the shared used path where exposure to vehicles will be reduced.

In addition, roundabouts present less traffic delay than signalized intersections. Queuing is less frequent for roundabouts as there is no timed device restricting flow. The volume of traffic at a roundabout dictates delay instead of timed signals.

Disadvantages
Roundabouts have a larger footprint than signalized intersections, which is a concern with the proximity of the railroad.

As there are no signals to be overridden during a train crossing, clear-out of the rail crossing is entirely dependent upon roundabout geometrics and traffic flow. This can be a safety concern at peak hours when traffic volumes are increased. Vehicles will then be able to queue through the roundabout as opposed to the signals where through traffic will be stopped west of the adjacent interchange ramps.

Alternative 2 – Signalized Interchange
Advantages
Signalized intersections have a smaller footprint compared to a roundabout design. Signals can also be programmed and overridden while a train is crossing to aid in traffic management and will increase safety of motorists.

This alternative would have continuous 5’ wide sidewalk and a 5’ bike lane, unlike a roundabout which has a shared use path at the roundabout where motorists need to worry about the bicycle traffic continually entering and exiting the roadway.

Having a much similar alignment to the existing roadway, the new facility can be constructed in the same location as existing with the exception of the widening on the east end. This may minimize the grading needed at the overpass location.

Disadvantages
To accommodate traffic projections, duel turn lanes are needed, which requires a wide median between Racine Road and Earl Street. Also, the eastbound side of Midway Road (County AP) has a dual lane configuration, unlike the single lane needed with roundabout configuration. The lane configuration will have greater right of way impacts upon adjacent properties outside the ramp terminals when compared to a roundabout. This also requires a longer railroad crossing due to the widened cross section.

Overall traffic delay may be longer when signals are used because the motorists will queue at the signal waiting for traffic to clear rather than the free flow configuration of a roundabout.

The median on Midway Road (County AP), under the USH 10/WIS 441 structure is not wide enough to accommodate a bridge pier; therefore, a 3-span structure over Midway Road (County AP) is required, which increases the cost of the project.

Having signalized intersections would create a discontinuity within the corridor because all other interchanges solely have roundabouts at each ramp terminal.

Maintenance of signals is also more costly compared to a roundabout. Upkeep of the electronic equipment, poles, and lights will require more funding in the long term analysis than possible seeding and plantings in the roundabout inner circle.

Alternative 3 – Roundabout – Signal Interchange

Advantages

Signals can be programmed and overridden while a train is crossing to aid in traffic management and will increase the safety of motorists. Having a signalized intersection at the USH 10/WIS 441 eastbound ramp terminal will allow a safer distance from the railroad crossing and has a smaller footprint than a roundabout., Having a roundabout at the USH 10/WIS 441 westbound ramp terminal will allow for a slightly decreased impact to right of way because of the lane configuration approaching the roundabout.

Disadvantages

Having a signalized intersection at the USH 10/WIS 441 eastbound ramp terminal would require acquiring more property to the south of Midway Road (County AP) because of the required lane configuration. The roadway would also be closer to the buildings along Earl Street, which is not desirable. Also, the required lane configuration for a signalized intersection at the USH 10/WIS 441 eastbound ramp terminal, a longer railroad crossing is required. In addition, the median on Midway Road (County AP), under the USH 10/WIS 441 structure is not wide enough to accommodate a bridge pier; therefore, a 3-span structure over Midway Road (County AP) is required, which increases the cost of the project. Lastly, having signalized intersections would create a discontinuity within the corridor because all other interchanges solely have roundabouts at each ramp terminal.

Having a roundabout at the USH 10/WIS 441 westbound ramp terminal has a larger footprint when compared to a signalized intersection. Also, the location of the roundabout would shift the horizontal alignment to the north and may require some additional grading.

Having a signalized intersection at the USH 10/WIS 441 eastbound ramp terminal and a roundabout at the USH 10/WIS 441 westbound ramp terminal may cause queuing issues because of the proximity to each other. Eastbound traffic may back-up into the roundabout during peak hours, disrupting traffic flow in the roundabout. Also, there is less continuity for bicyclist traveling through the interchange.

Cost Analysis

A preliminary cost estimate was completed to compare the three alternatives for the Midway Road (County AP) Interchange reconstruction. The total roadway costs considered in the cost analysis included pavement removal, new concrete pavement, base aggregate, breaker run, earthwork, sidewalk and curb & gutter. All other roadway costs are included under the Miscellaneous/Quantified cost, which is 35% of the total roadway cost. Table 2 compares the cost of the three alternatives. A more detailed estimate can be found in Exhibit 9.

Table 2 - Cost Comparison

Alternative	1	2	3
Total Roadway Costs	$871,925.00	$1,043,005.00	$867,870.00
Miscellaneous/Quantified Costs	$305,173.75	$365,051.75	$303,754.50
Construction Engineering & Contingencies	$87,192.50	$104,300.50	$86,787.00
Structure Cost	$2,500,000.00	$3,000,000.00	$2,550,000.00
Total Project Construction Cost	$3,764,291.25	$4,512,357.25	$3,808,411.50
Say	$3.8 Million	$4.5 Million	$3.8 Million

Alternative 2 has a significantly larger quantity of new concrete pavement, base aggregate dense and breaker run; therefore, a higher total project construction cost when compared to Alternatives 1 and 3. Alternative 1 has a lower structure cost because it can be constructed as a 2-span structure; on the contrary, Alternative 2 and 3 require a 3-span structure. Maintenance of the roadway is also a consideration, as roundabouts are less expensive to maintain than traffic signal equipment.

Recommendations

Based on the advantages, disadvantages, and cost comparisons; the revised mainline geometry and Alternative 1 at the Midway Interchange is the preferred alternative. The roundabouts located at each ramp terminal allows for traffic to move freely without major queuing along the roadway or on ramps. This alternative has less of an impact on the railroad right of way due to the shorter crossing. Due to the proximity of the railroad crossing, regardless of the alternative chosen, additional analysis is needed to determine impacts the railroad will have on traffic movements.

List of Attachments

Exhibit 1 – USH 10/WIS 441 30% Plans

Exhibit 2 – USH 10/WIS 441 Alignment Shift West

Exhibit 3 – USH 10/WIS 441 30% Plans vs. Revised Geometry

Exhibit 4 – Midway Road Alternative 1

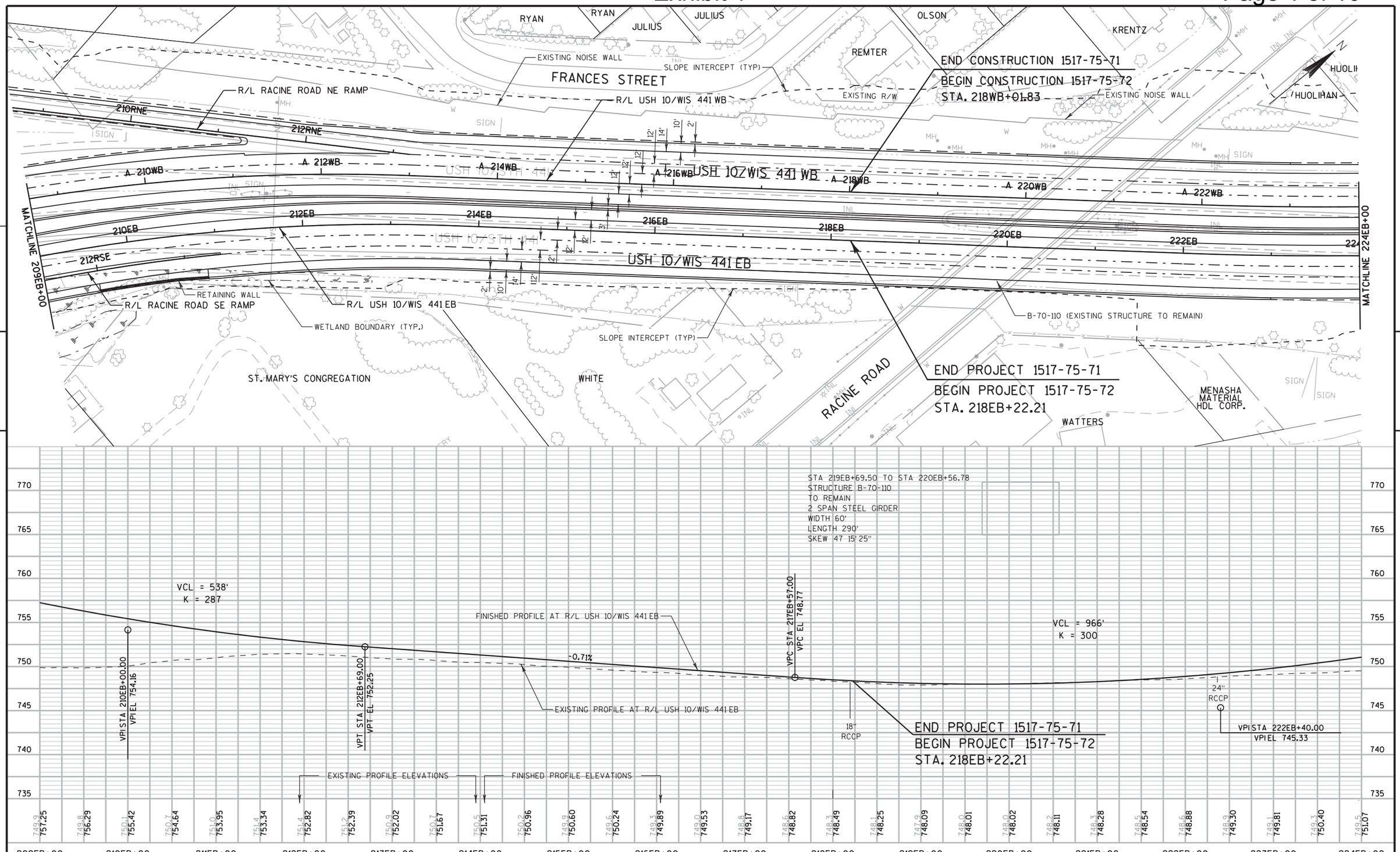
Exhibit 5 – Midway Road Alternative 2

Exhibit 6 – Midway Road Alternative 3

Exhibit 7 – AM & PM Peak Traffic Data

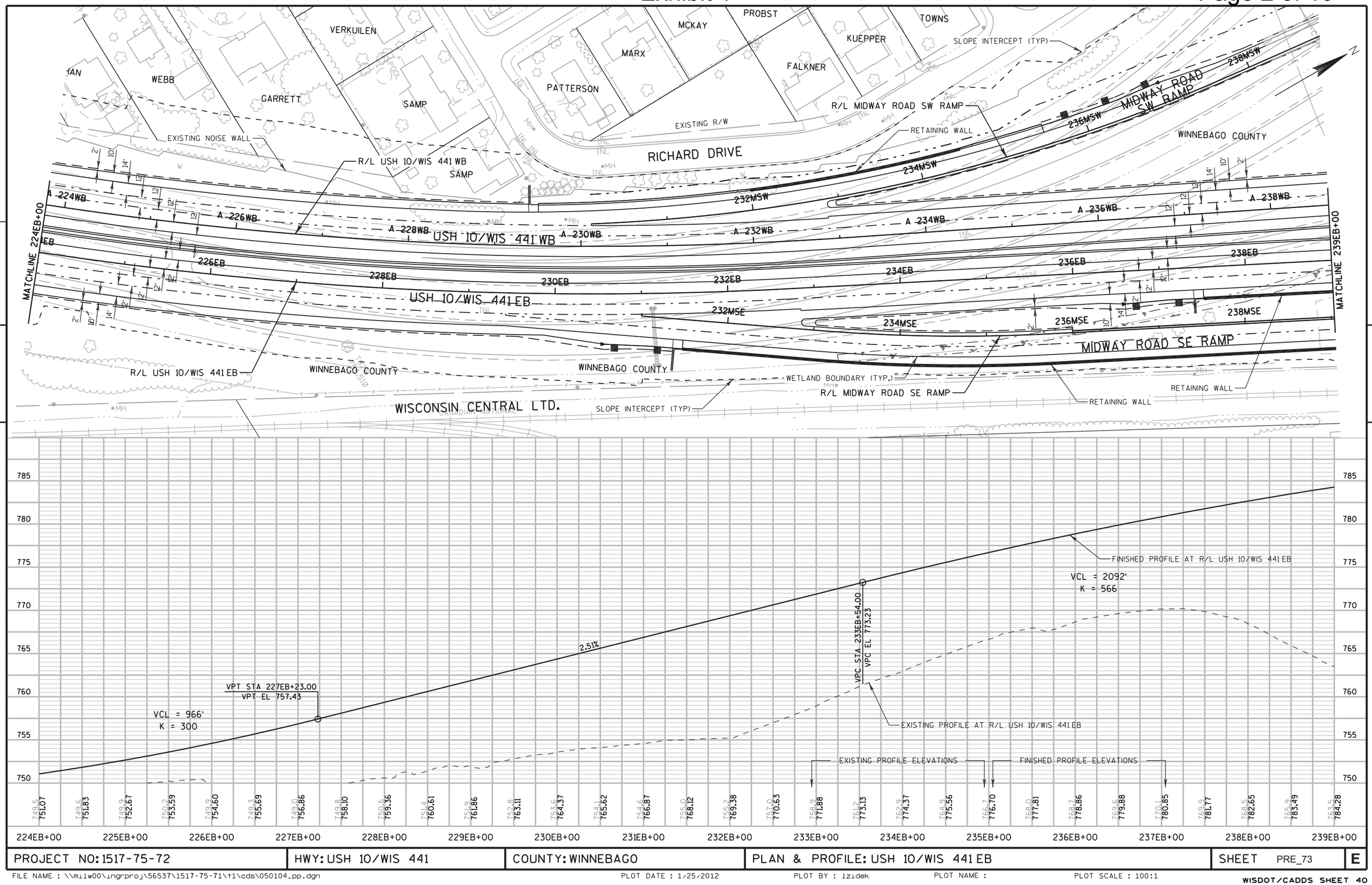
Exhibit 8 – RODEL Output Data

Exhibit 9 – Cost Analysis



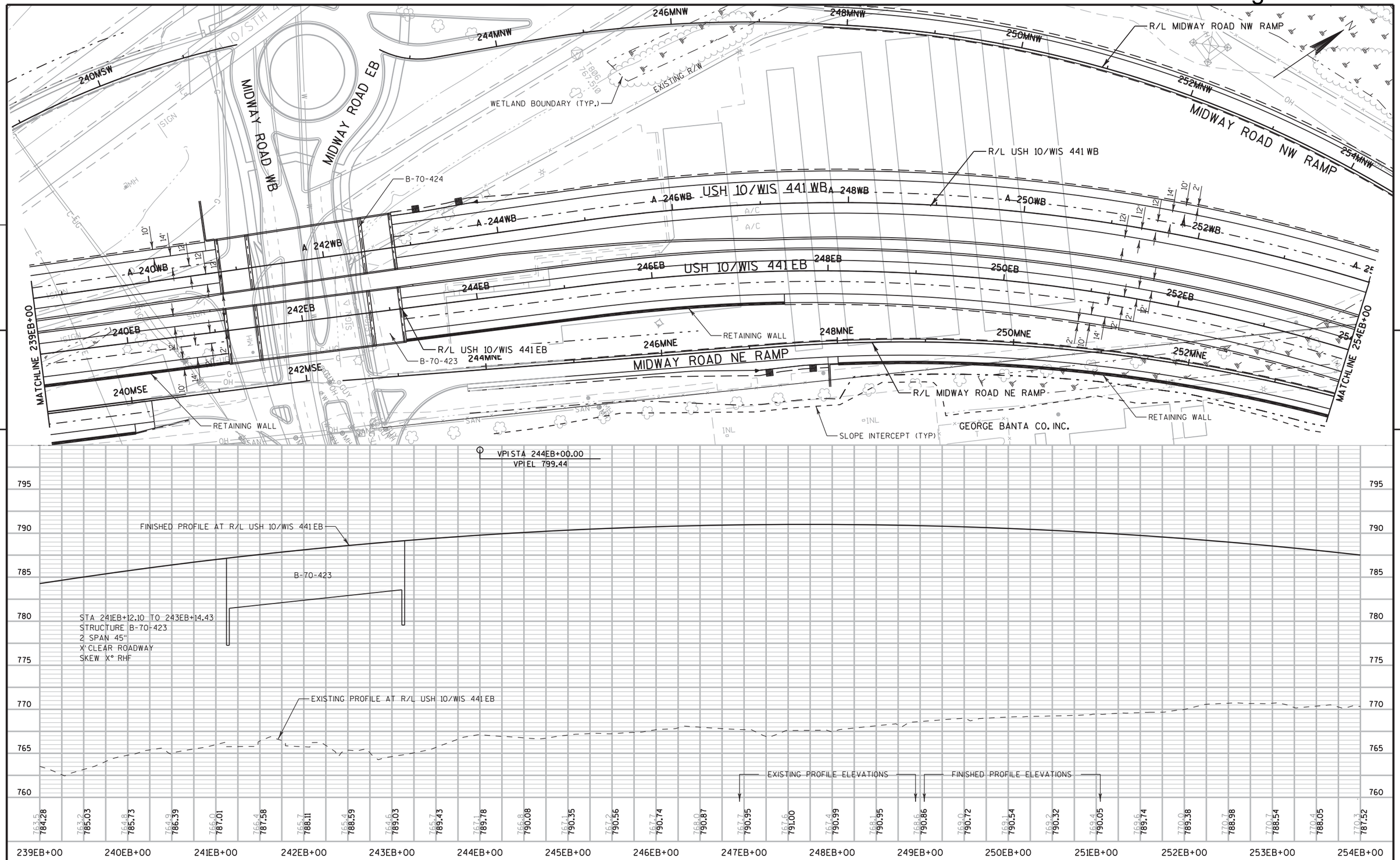
PROJECT NO: 1517-75-71/72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 EB	SHEET PRE_72	E

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PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 EB	SHEET PRE_73	E

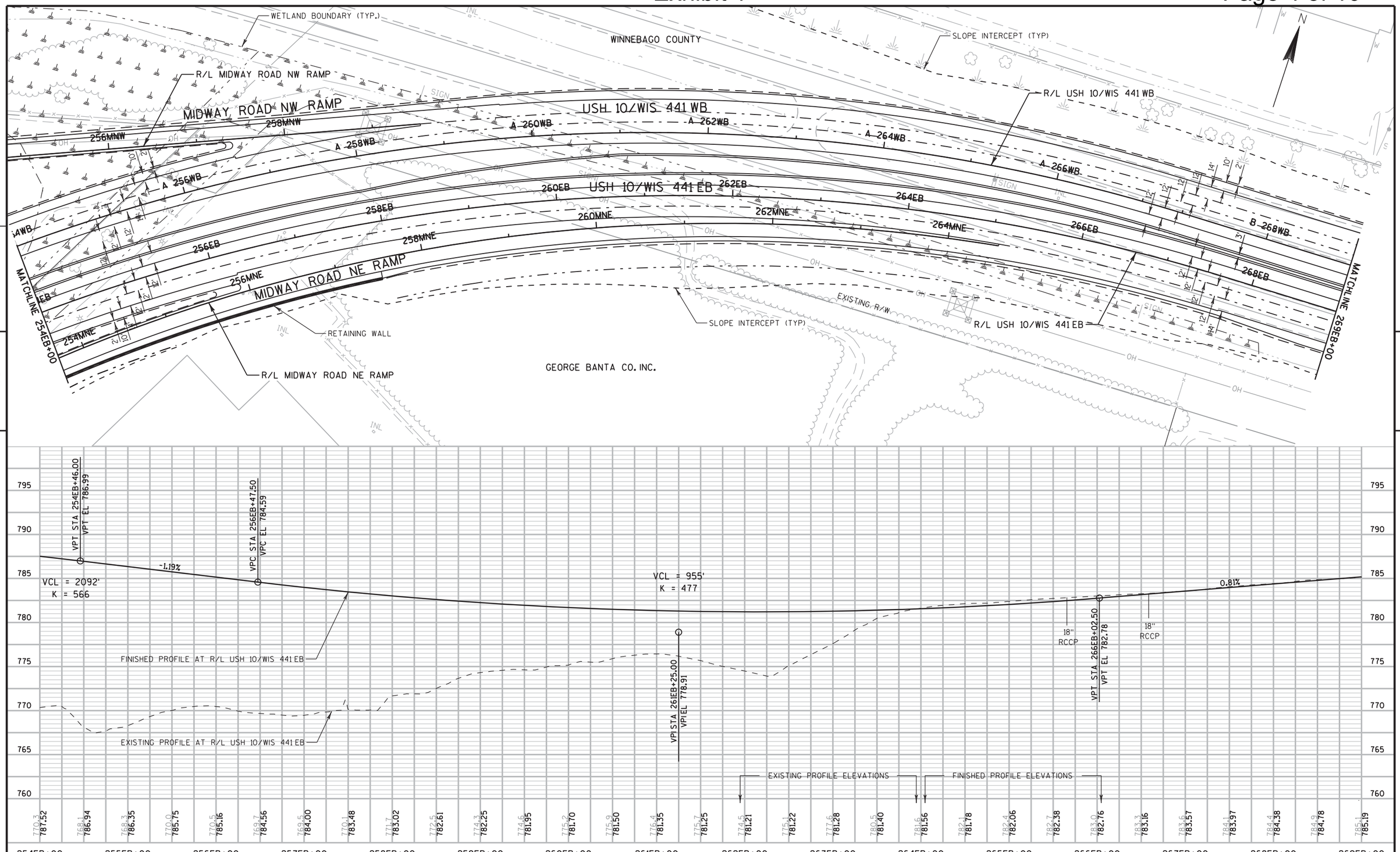
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PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 EB	SHEET PRE_74	E

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WISDOT/CADDS SHEET 40



PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 EB	SHEET PRE_75	E

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WISDOT/CADDS SHEET 40

A & K LAMERS PROPERTIES LLP

END CONSTRUCTION 1517-75-72
STA. 272WB+00.00

EXISTING R/W

SLOPE INTERCEPT (TYP)

R/L USH 10/WIS 441 WB

USH 10/WIS 441 WB

B 270WB | B 272WB | B 274WB | B 276WB | B 278WB | B 280WB | B 282WB | B 284WB

MATCHLINE 269EB+00

270EB | 272EB | 274EB | 276EB | 278EB | 280EB | 282EB | 284EB

USH 10/WIS 441 EB

R/L USH 10/WIS 441 EB

END PROJECT 1517-75-72
STA. 272EB+00.00

SLOPE INTERCEPT (TYP)

WINNEBAGO COUNTY

WETLAND BOUNDARY (TYP.)

LA SALLE CLINIC OF WISCONSIN

BACH & HILLER MANAGEMENT

VPI STA 273EB+00.00
VPI EL 788.43

0.81%

WORK DONE BY OTHERS

END PROJECT 1517-75-72
STA. 272EB+00.00

18"
RCCP

FINISHED PROFILE AT R/L USH 10/WIS 441 EB

EXISTING PROFILE AT R/L USH 10/WIS 441 EB

FINISHED PROFILE ELEVATIONS

EXISTING PROFILE ELEVATIONS

805 | 800 | 795 | 790 | 785 | 780 | 775 | 770

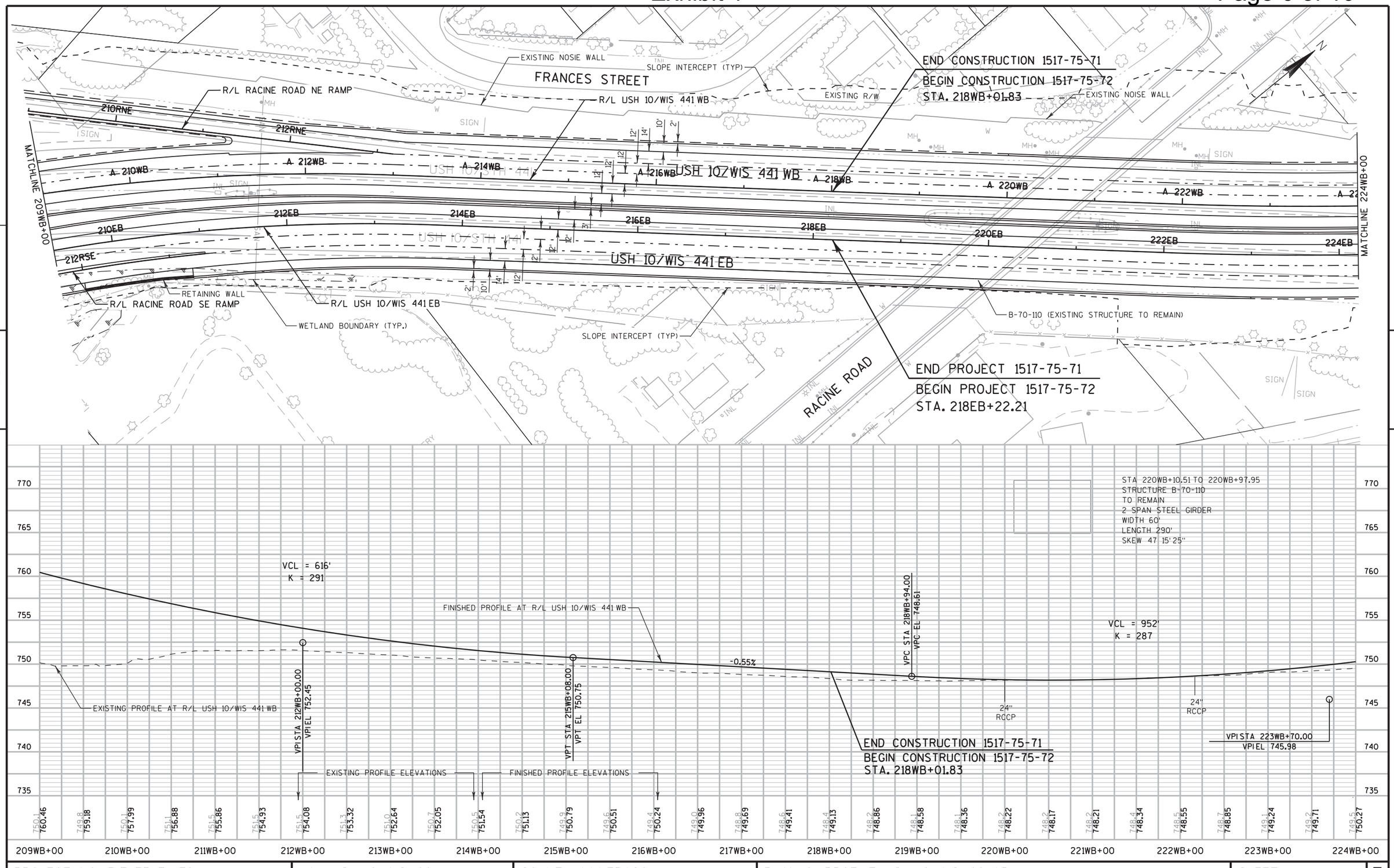
785.19 | 785.59 | 786.00 | 786.40 | 786.81 | 787.21 | 787.62 | 788.02 | 788.43 | 789.1 | 789.6 | 789.9 | 790.4 | 790.8 | 791.4 | 791.7 | 792.0 | 792.8 | 793.2 | 793.5 | 793.8 | 794.7 | 794.9 | 795.7 | 796.4 | 796.9 | 797.5 | 798.5 | 799.2 | 800.2 | 801.2

269EB+00 | 270EB+00 | 271EB+00 | 272EB+00 | 273EB+00 | 274EB+00 | 275EB+00 | 276EB+00 | 277EB+00 | 278EB+00 | 279EB+00 | 280EB+00 | 281EB+00 | 282EB+00 | 283EB+00 | 284EB+00

PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 EB	SHEET PRE_76	E

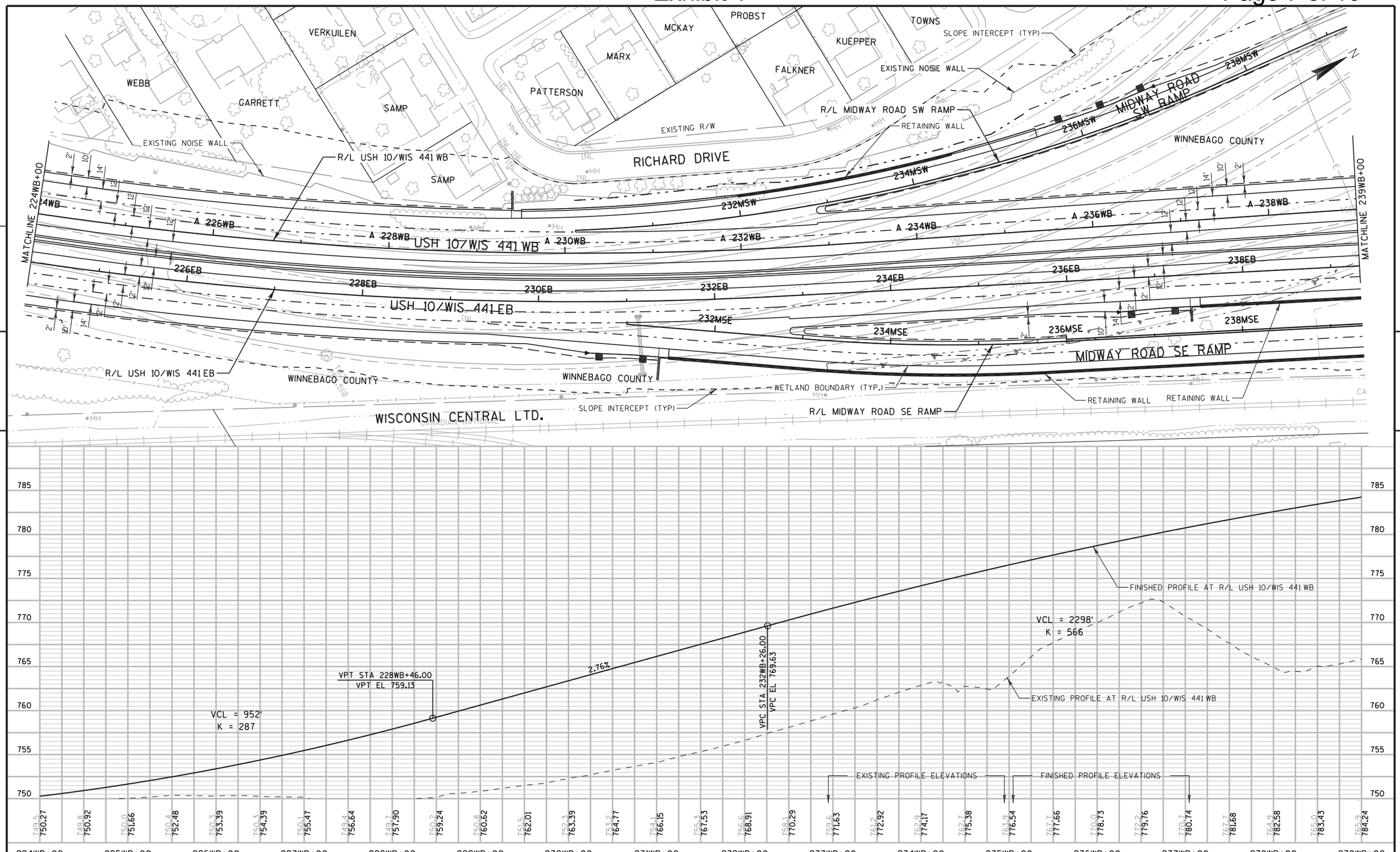
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WISDOT/CADDS SHEET 40



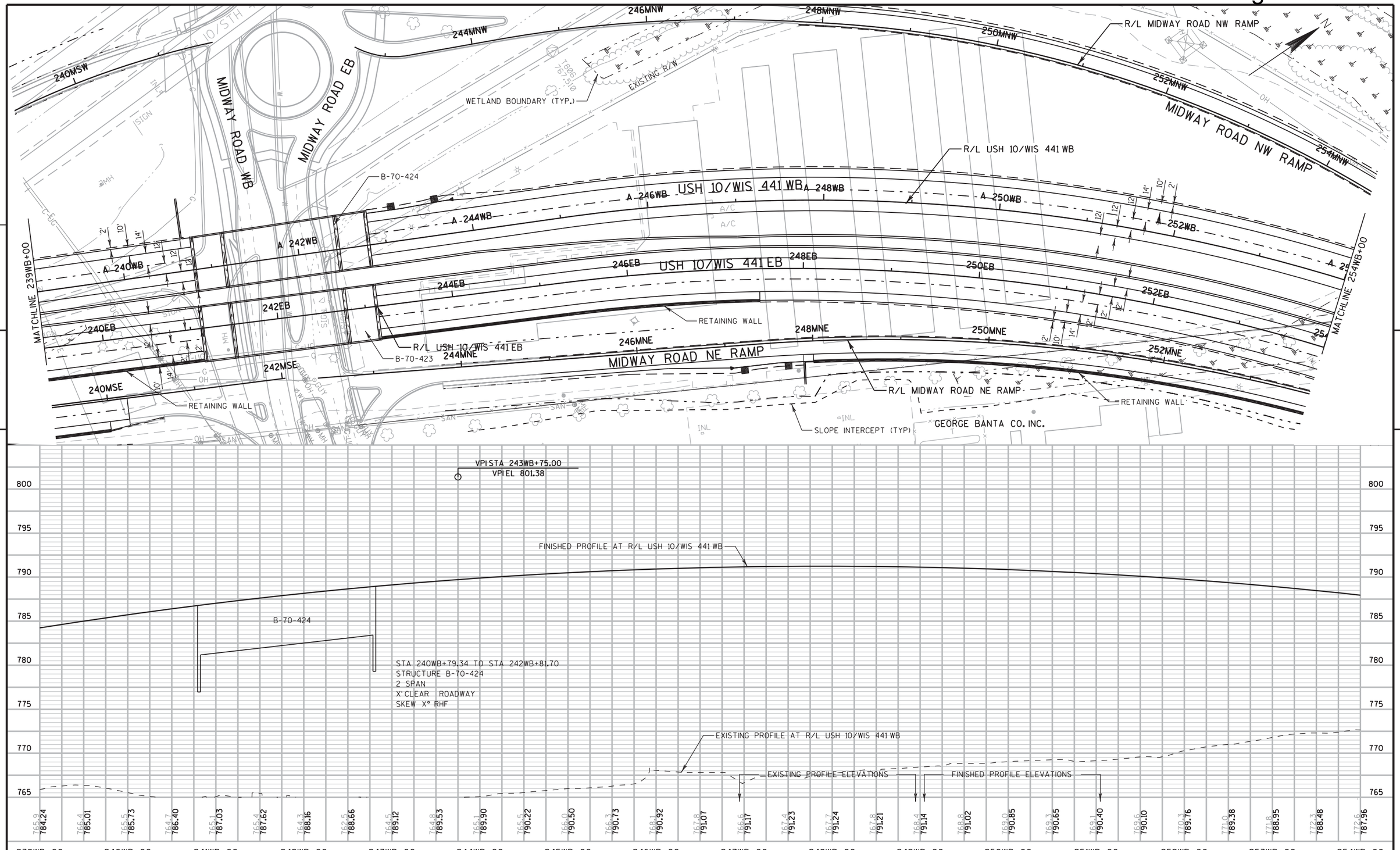
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PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 WB	SHEET PRE_80	E

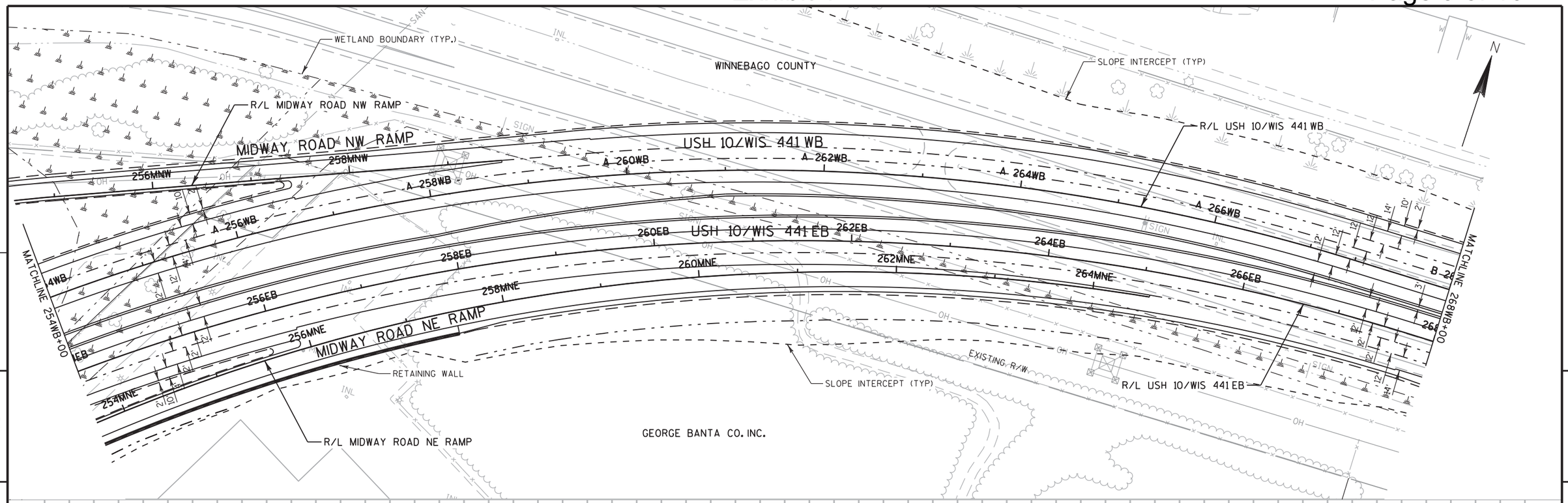
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PROJECT NO: 1517-75-71	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 WB	SHEET PRE_81	E

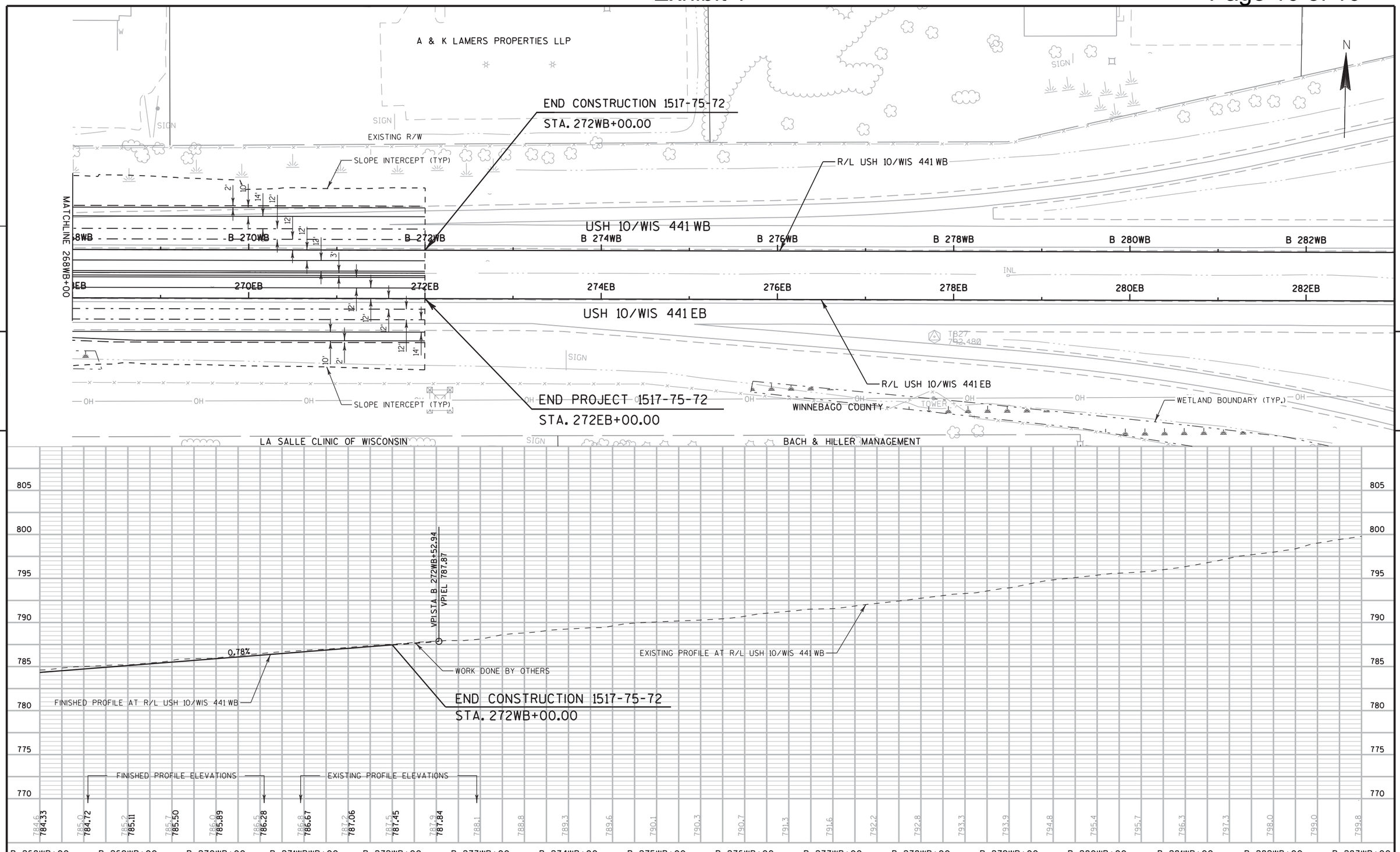
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WISDOT/CADDS SHEET 40



PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 WB	SHEET PRE_82	E

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PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN & PROFILE: USH 10/WIS 441 WB	SHEET PRE_83	E

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WISDOT/CADDS SHEET 40

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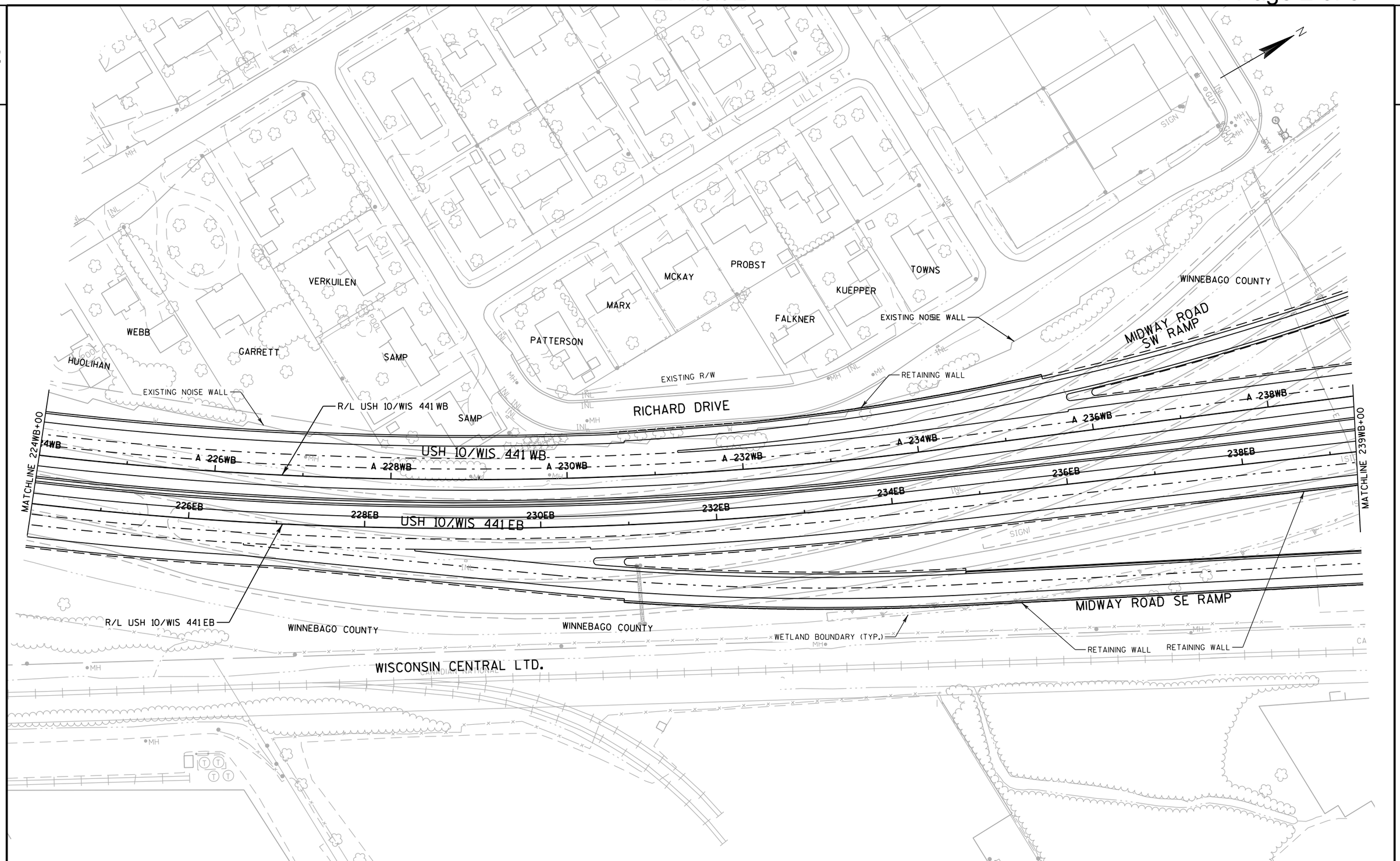
RYAN
RYAN
JULIUS
JULIUS
OLSON
KRENTZ
REMTER
HUOLIHAN
HUOLIHAN
EXISTING NOSIE WALL
FRANCES STREET
R/L USH 10/WIS 441 WB
EXISTING R/W
EXISTING NOISE WALL
MATCHLINE 209WB+00
A 210WB
A 212WB
A 214WB
A 216WB
USH 10/WIS 441 WB
A 218WB
A 220WB
A 222WB
MATCHLINE 224WB+00
210EB
212EB
214EB
216EB
218EB
220EB
222EB
224EB
USH 10/STH 441
USH 10/WIS 441 EB
RETAINING WALL
R/L USH 10/WIS 441 EB
WETLAND BOUNDARY (TYP.)
B-70-110 (EXISTING STRUCTURE TO REMAIN)
ST. MARY'S CONGREGATION
CEMETERY
WHITE
RACINE ROAD
MENASHA MATERIAL HDL CORP.
WATTERS

PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN SHEET - USH 10/WIS 441	SHEET	E

FILE NAME : \\milw00\ingrproj\56537\AllContracts\t1\Exhibits\Midway Road Revised Geomery\050200_pn.dgn PLOT DATE : 3/8/2012 PLOT BY : lzidek PLOT NAME : PLOT SCALE : 100:1

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2



PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN SHEET - USH 10/WIS 441	SHEET	E

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WISDOT/CADDS SHEET 42

2

2

USH 10/STH 441

USH 10/STH 441

WETLAND BOUNDARY (TYP.)

EXISTING R/W

MIDWAY ROAD NW RAMP

R/L USH 10/WIS 441 WB

USH 10/WIS 441 WB

A 240WB

A 242WB

A 244WB

A 246WB

A 248WB

A 250WB

A 252WB

A 254WB

USH 10/WIS 441 EB

240EB

242EB

244EB

246EB

248EB

250EB

252EB

254EB

MATCHLINE 239WB+00

MATCHLINE 254WB+00

RETAINING WALL

R/L USH 10/WIS 441 EB

RETAINING WALL

MIDWAY ROAD

MIDWAY ROAD NE RAMP

RETAINING WALL

GEORGE BANTA CO. INC.

NADIAN NATIONAL

PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN SHEET - USH 10/WIS 441	SHEET	E

2

2

N

WETLAND BOUNDARY (TYP.)

WINNEBAGO COUNTY

MIDWAY ROAD NW RAMP

A 258WB

A 260WB

USH 10/WIS 441 WB

A 262WB

A 264WB

R/L USH 10/WIS 441 WB

A 256WB

A 266WB

B 266WB

260EB

262EB

258EB

USH 10/WIS 441 EB

264EB

266EB

256EB

MATCHLINE 254WB+00

RETAINING WALL

MIDWAY ROAD NE RAMP

MATCHLINE 268WB+00

268EB

EXISTING R/W

R/L USH 10/WIS 441 EB

GEORGE BANTA CO. INC.

PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	PLAN SHEET - USH 10/WIS 441	SHEET	E

FILE NAME : \\milw00\ingrproj\56537\AllContracts\t1\Exhibits\Midway Road Revised Geomery\050203_pn.dgn PLOT DATE : 3/8/2012 PLOT BY : lzidek PLOT NAME : PLOT SCALE : 100:1

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N

A & K LAMERS PROPERTIES LLP

EXISTING R/W

R/L USH 10/WIS 441 WB

USH 10/WIS 441 WB

MATCHLINE 268WB+00

B 270WB B 272WB B 274WB B 276WB B 278WB B 280WB B 282WB

270EB 272EB 274EB 276EB 278EB 280EB 282EB

R/L USH 10/WIS 441 EB

USH 10/WIS 441 EB

WINNEBAGO COUNTY

WETLAND BOUNDARY (TYP.)

LA SALLE CLINIC OF WISCONSIN

BACH & HILLER MANAGEMENT

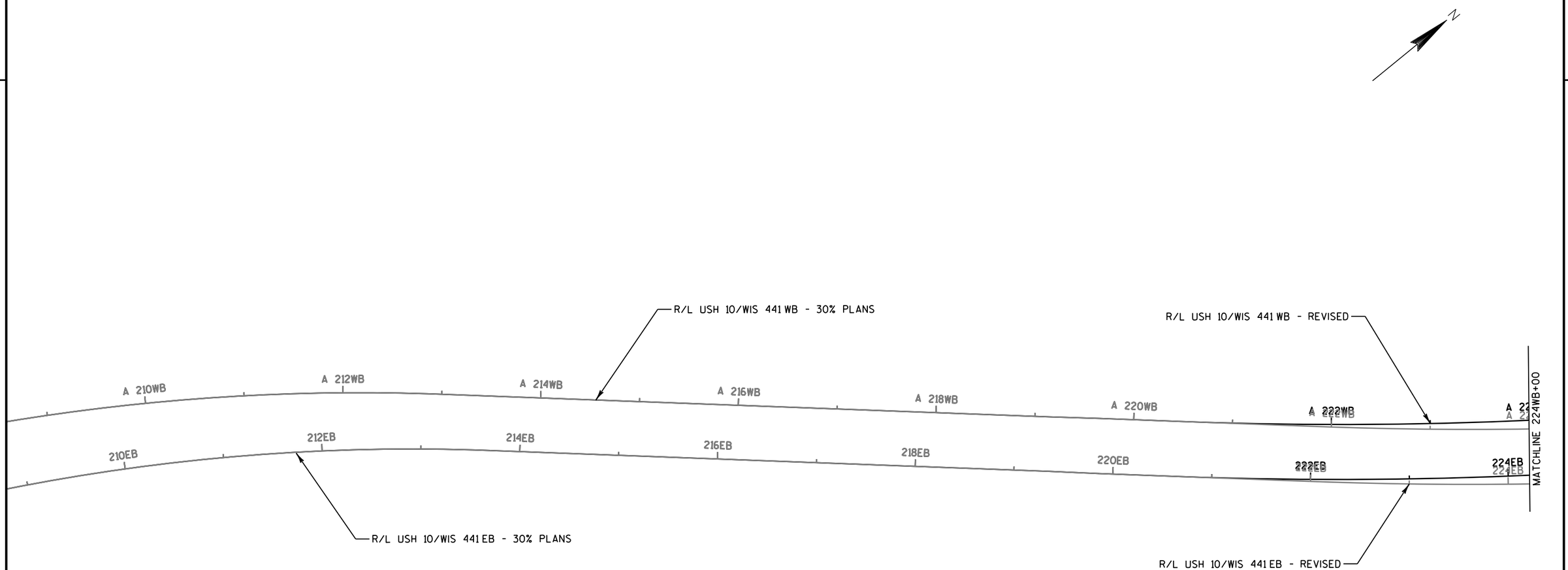
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WISDOT/CADDS SHEET 42

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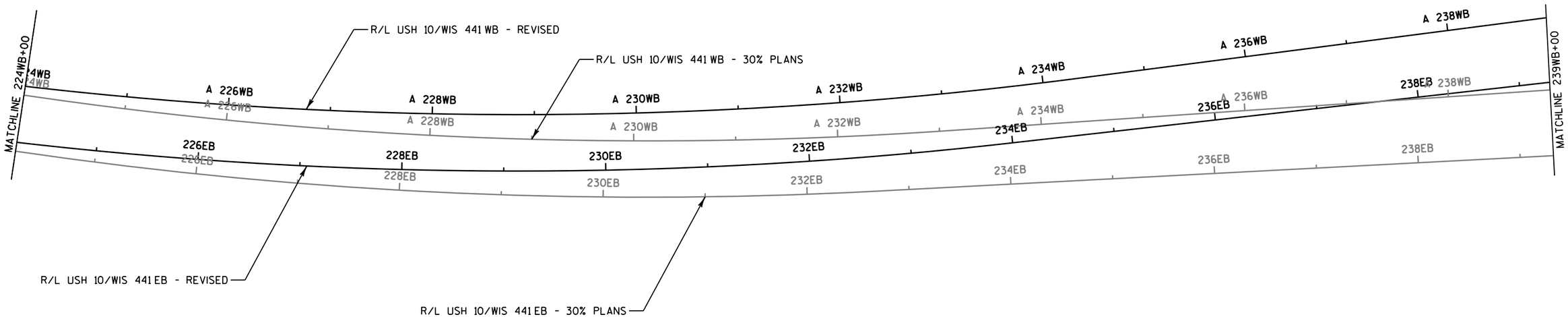
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WISDOT/CADDS SHEET 42

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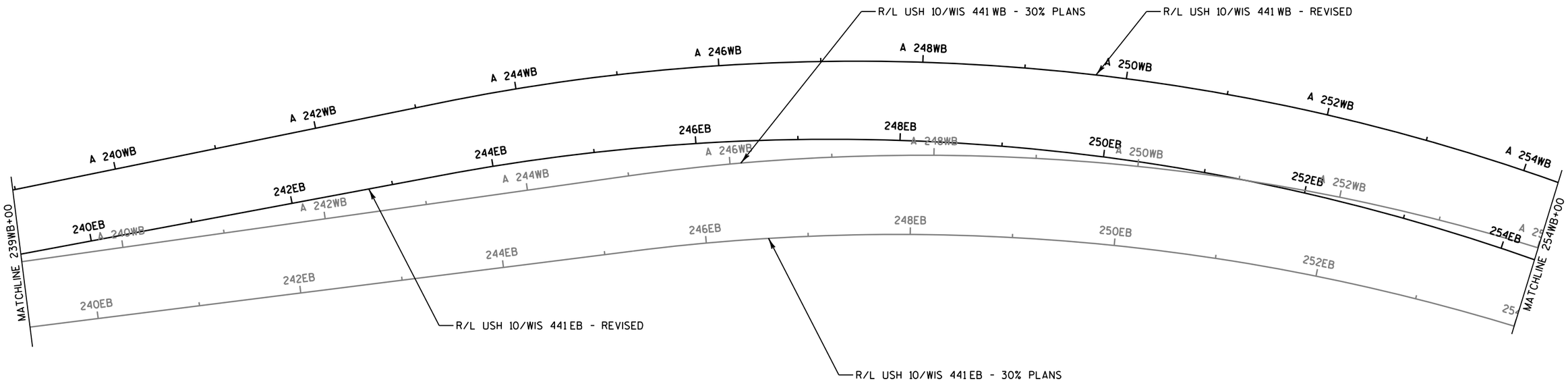
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WISDOT/CADDS SHEET 42

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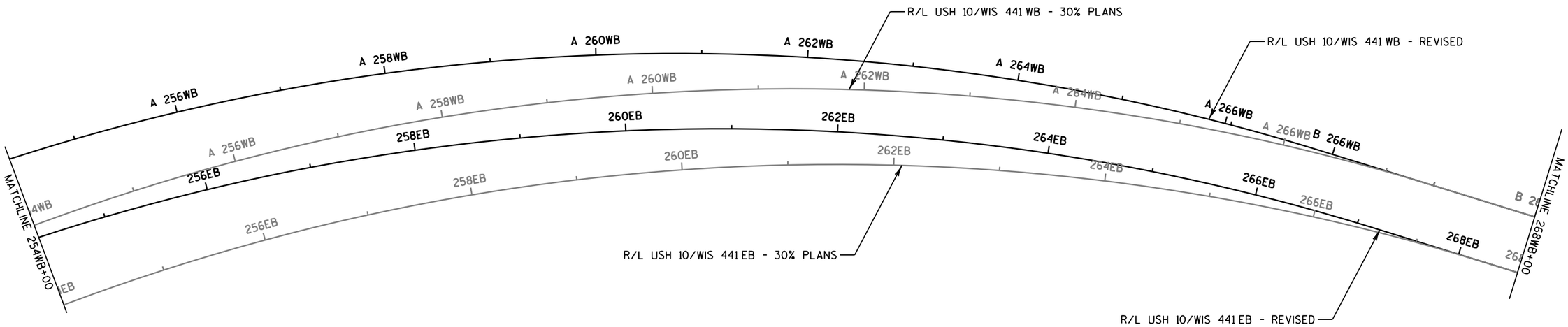
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WISDOT/CADDS SHEET 42

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PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	30% PLANS VS REVISED GEOMETRY	SHEET	E

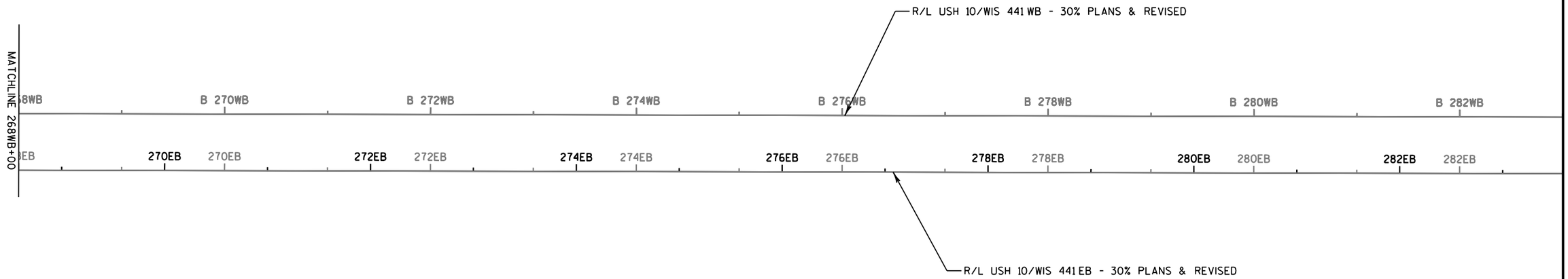
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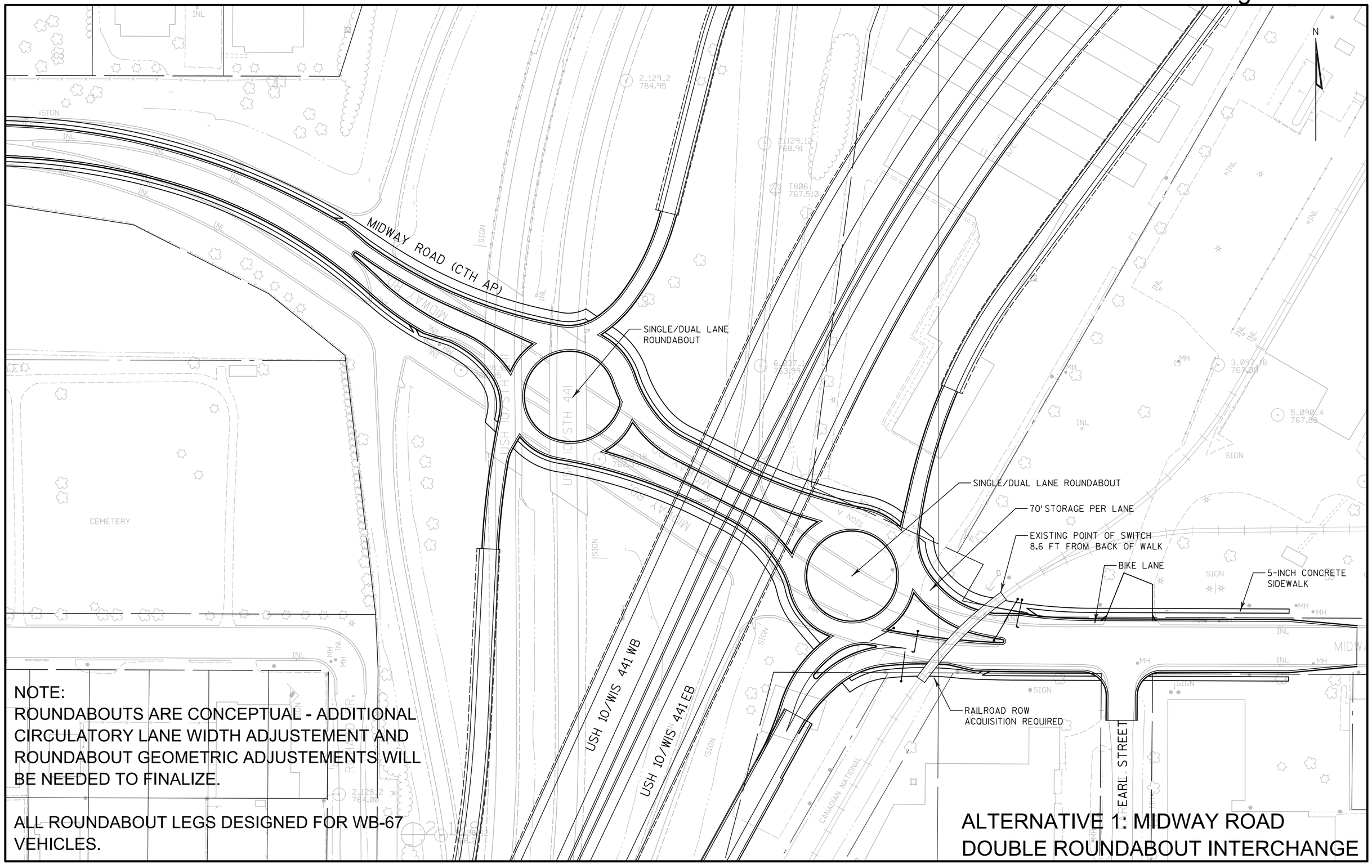
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PROJECT NO: 1517-75-72	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	30% PLANS VS REVISED GEOMETRY	SHEET	E

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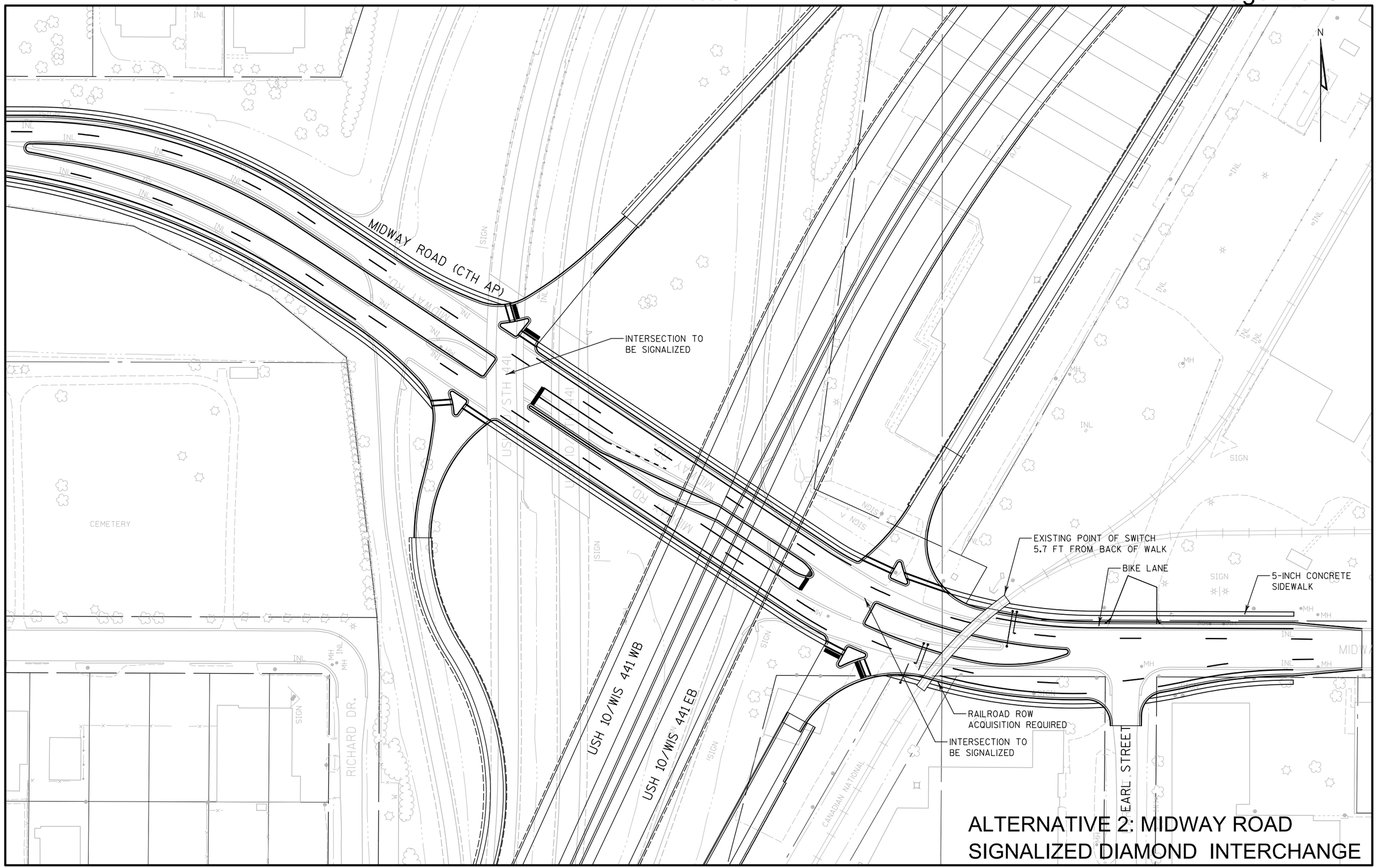
WISDOT/CADDS SHEET 42



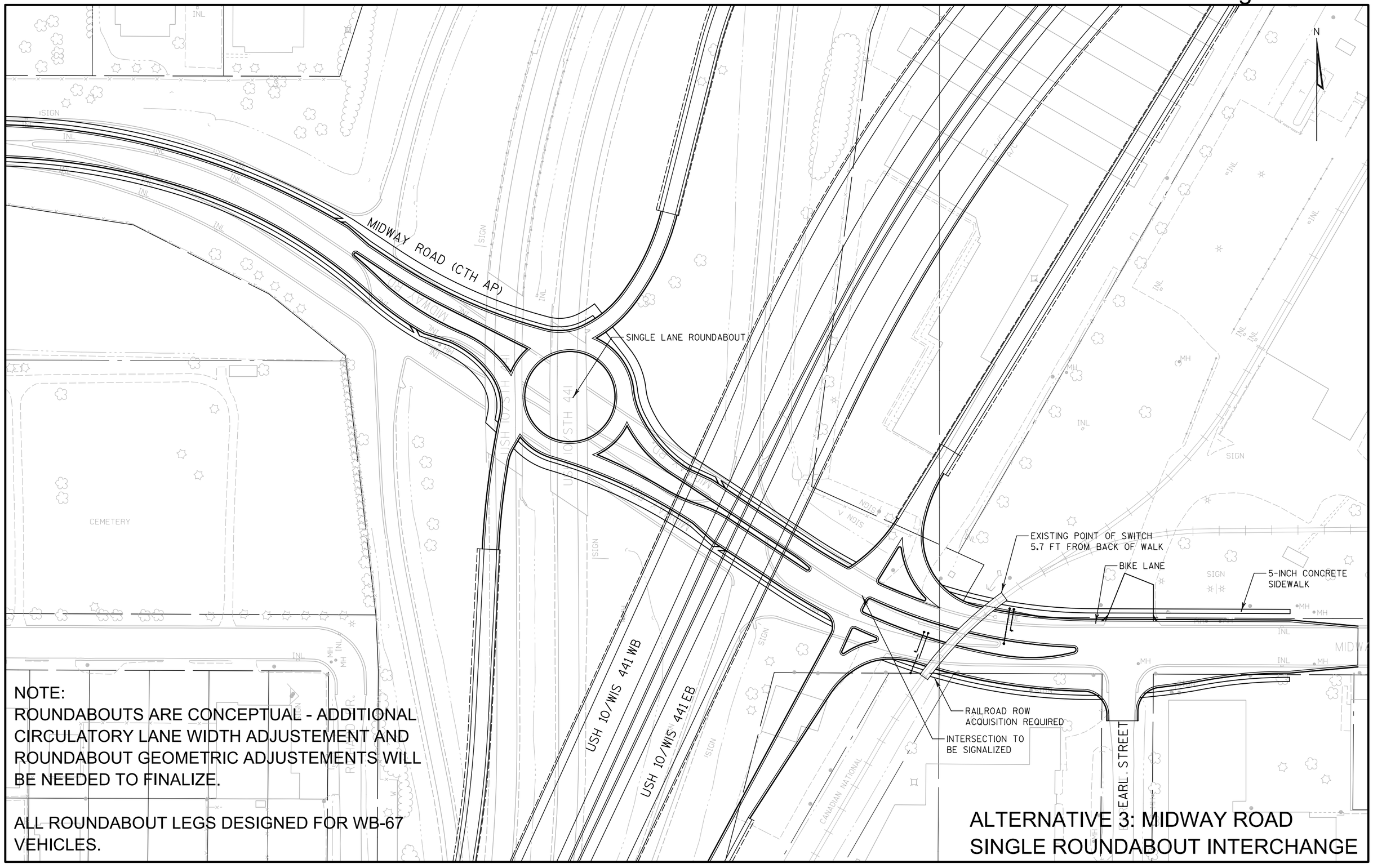
NOTE:
ROUNDABOUTS ARE CONCEPTUAL - ADDITIONAL CIRCULATORY LANE WIDTH ADJUSTEMENT AND ROUNDABOUT GEOMETRIC ADJUSTEMENTS WILL BE NEEDED TO FINALIZE.

ALL ROUNDABOUT LEGS DESIGNED FOR WB-67 VEHICLES.

ALTERNATIVE 1: MIDWAY ROAD DOUBLE ROUNDABOUT INTERCHANGE



ALTERNATIVE 2: MIDWAY ROAD SIGNALIZED DIAMOND INTERCHANGE



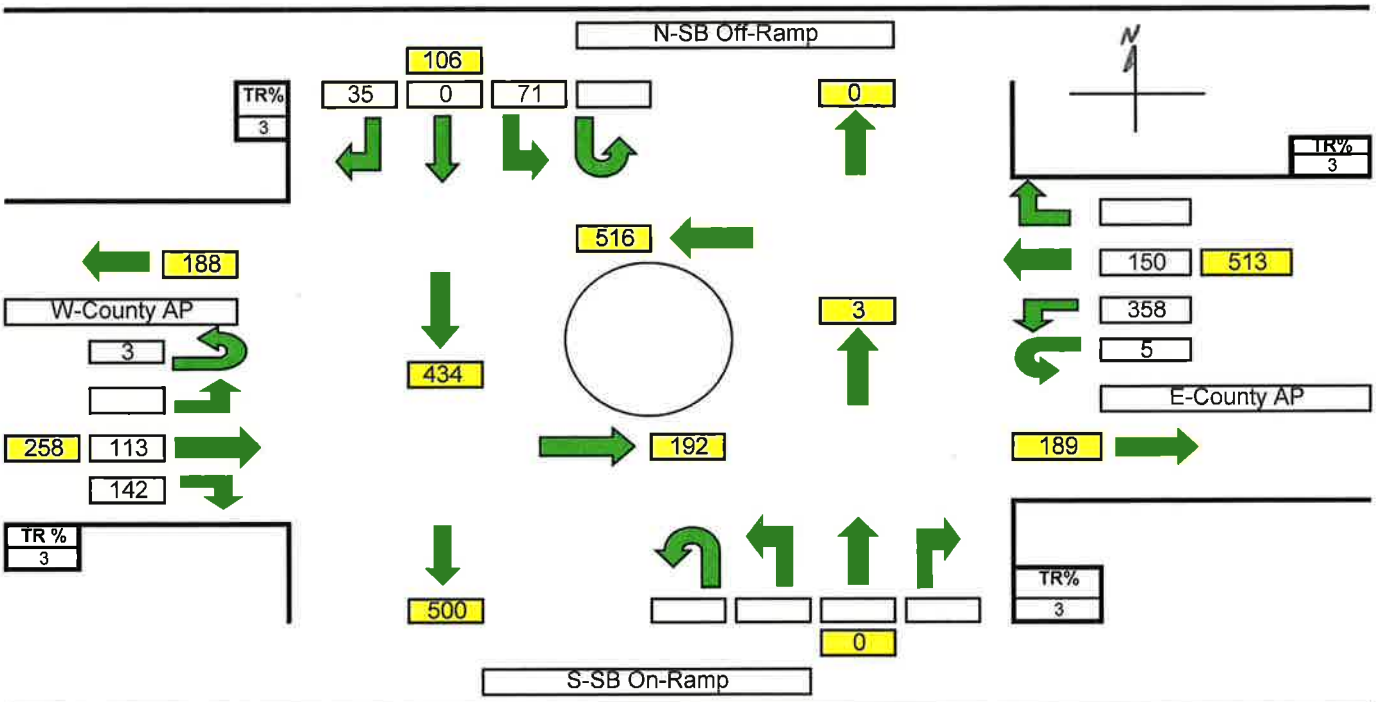
NOTE:
ROUNDABOUTS ARE CONCEPTUAL - ADDITIONAL CIRCULATORY LANE WIDTH ADJUSTEMENT AND ROUNDABOUT GEOMETRIC ADJUSTEMENTS WILL BE NEEDED TO FINALIZE.

ALL ROUNDABOUT LEGS DESIGNED FOR WB-67 VEHICLES.

ALTERNATIVE 3: MIDWAY ROAD SINGLE ROUNDABOUT INTERCHANGE

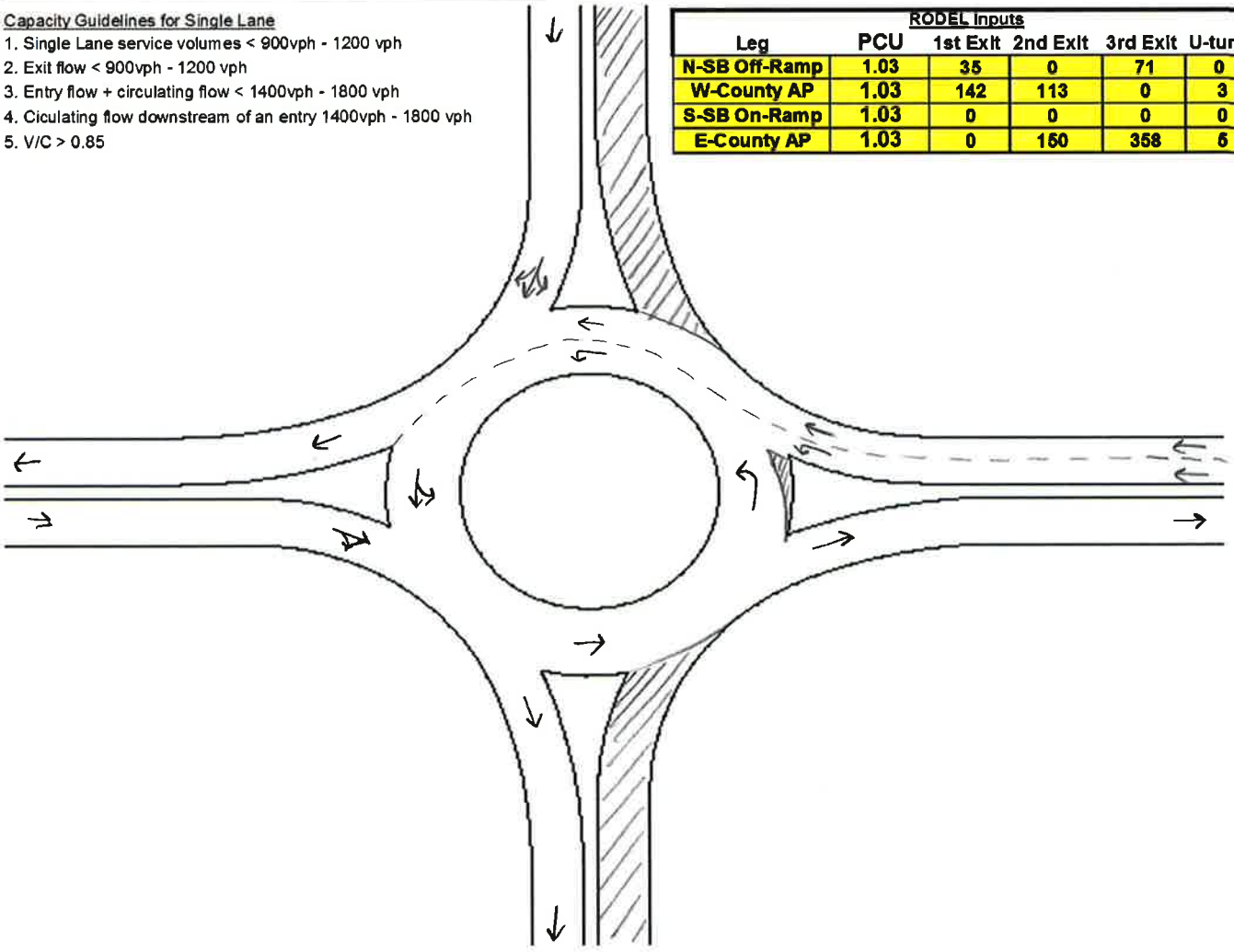
Exhibit 7 - AM & PM Peak Traffic Data

Project: US 10/WIS 441 **Drawn By:** MCG
Project No.: 1517-75-77 **Sheet** 1 of 4
Intersection: County AP & SB Ramps
Time Period: 2038 - AM

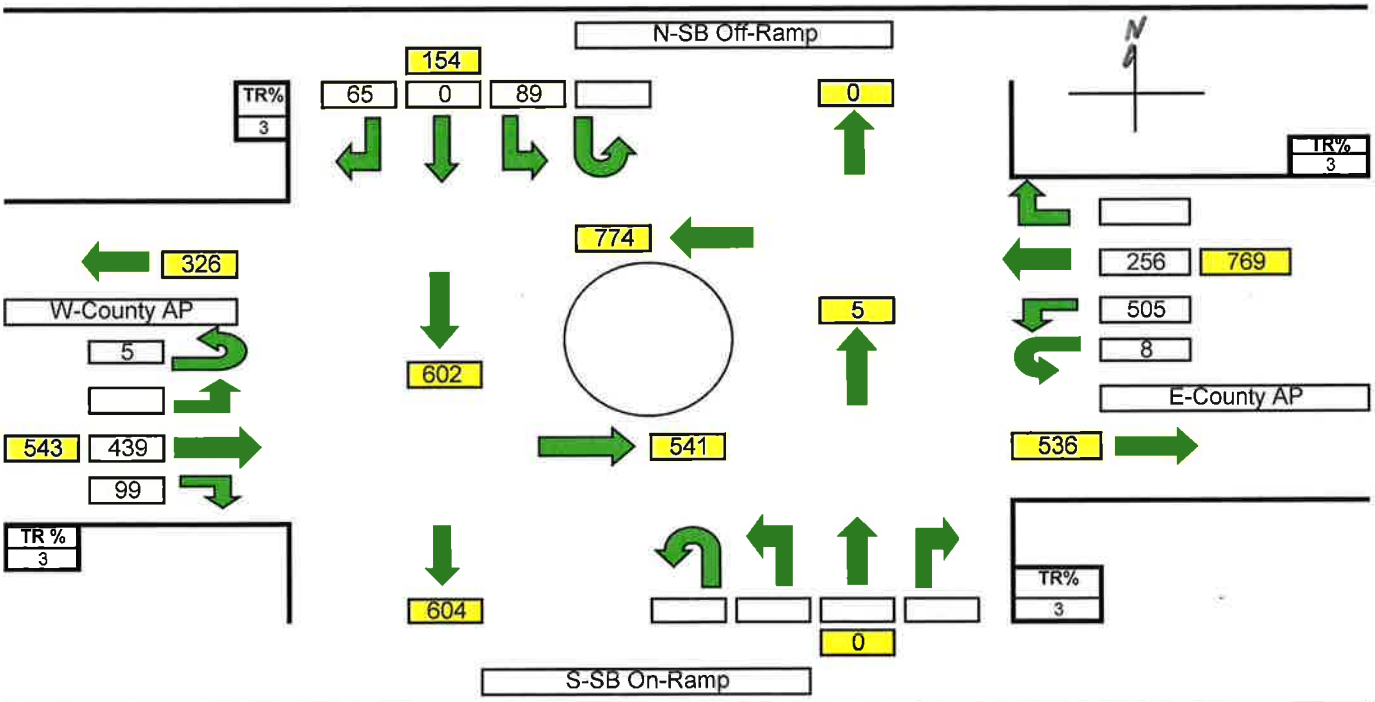


Capacity Guidelines for Single Lane
1. Single Lane service volumes < 900vph - 1200 vph
2. Exit flow < 900vph - 1200 vph
3. Entry flow + circulating flow < 1400vph - 1800 vph
4. Ciculating flow downstream of an entry 1400vph - 1800 vph
5. V/C > 0.85

RODEL Inputs					
Leg	PCU	1st Exit	2nd Exit	3rd Exit	U-turn
N-SB Off-Ramp	1.03	35	0	71	0
W-County AP	1.03	142	113	0	3
S-SB On-Ramp	1.03	0	0	0	0
E-County AP	1.03	0	150	358	5

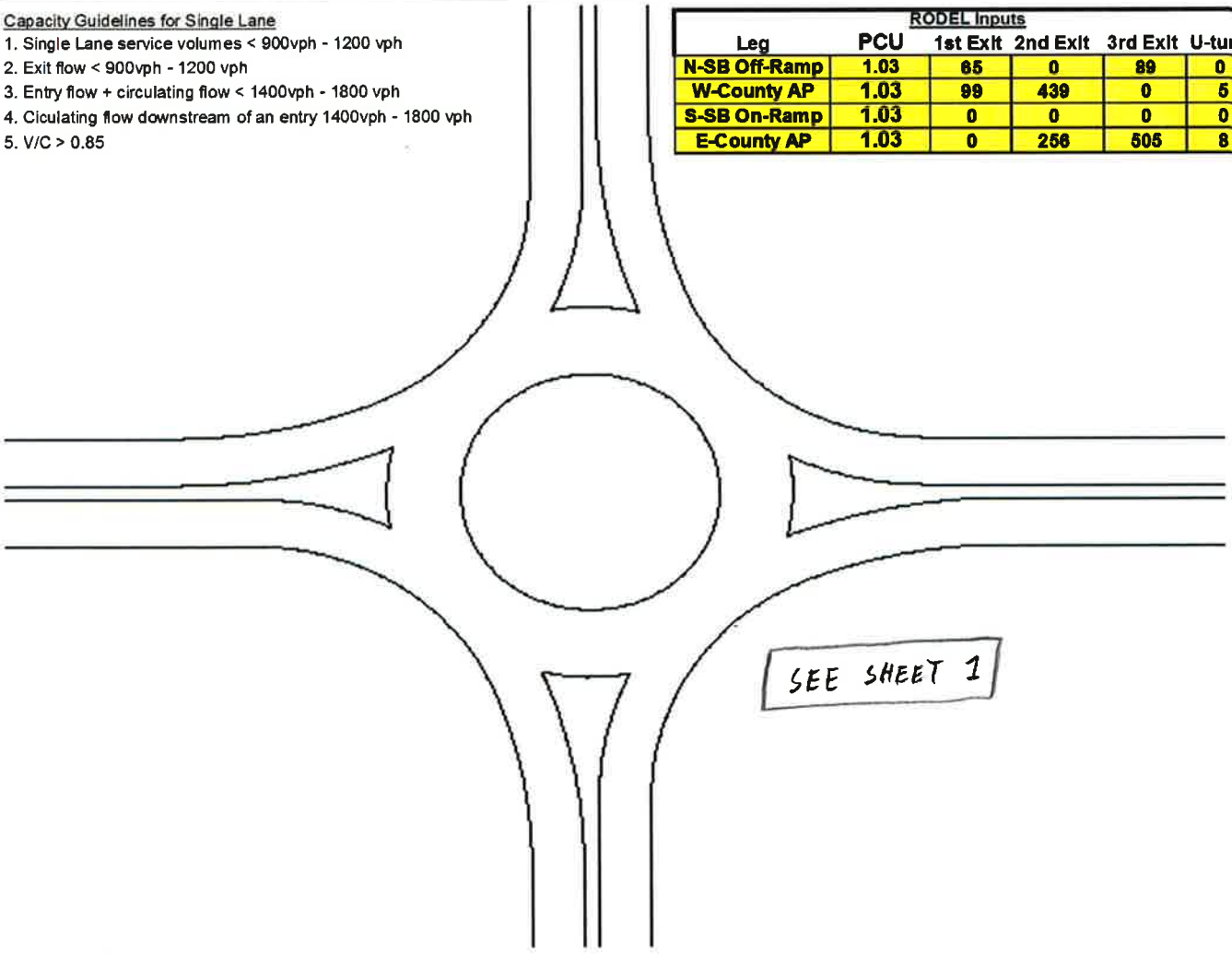


Project: US 10/WIS 441 **Drawn By:** MCG
Project No.: 1517-75-77 **Sheet** 2 **of** 4
Intersection: County AP & SB Ramps
Time Period: 2038 - PM

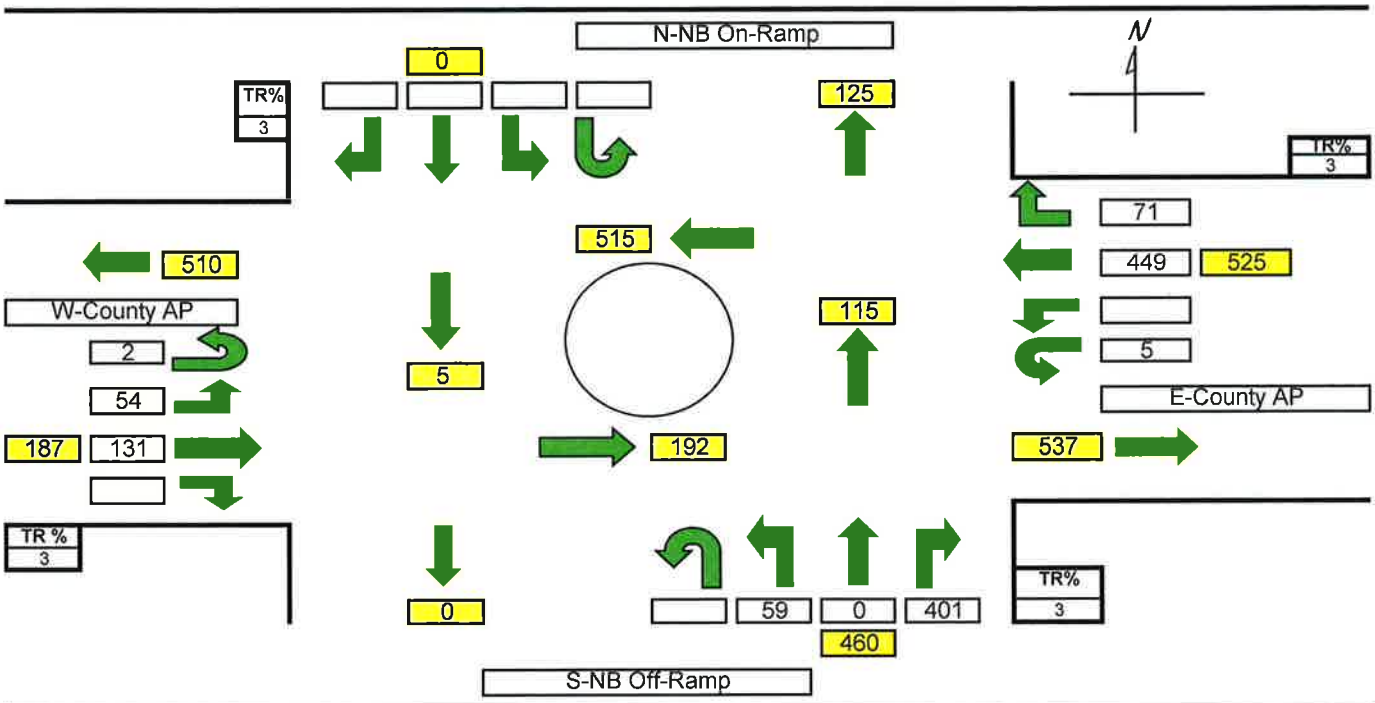


Capacity Guidelines for Single Lane
1. Single Lane service volumes < 900vph - 1200 vph
2. Exit flow < 900vph - 1200 vph
3. Entry flow + circulating flow < 1400vph - 1800 vph
4. Ciculating flow downstream of an entry 1400vph - 1800 vph
5. V/C > 0.85

RODEL Inputs					
Leg	PCU	1st Exit	2nd Exit	3rd Exit	U-turn
N-SB Off-Ramp	1.03	65	0	89	0
W-County AP	1.03	99	439	0	5
S-SB On-Ramp	1.03	0	0	0	0
E-County AP	1.03	0	256	505	8

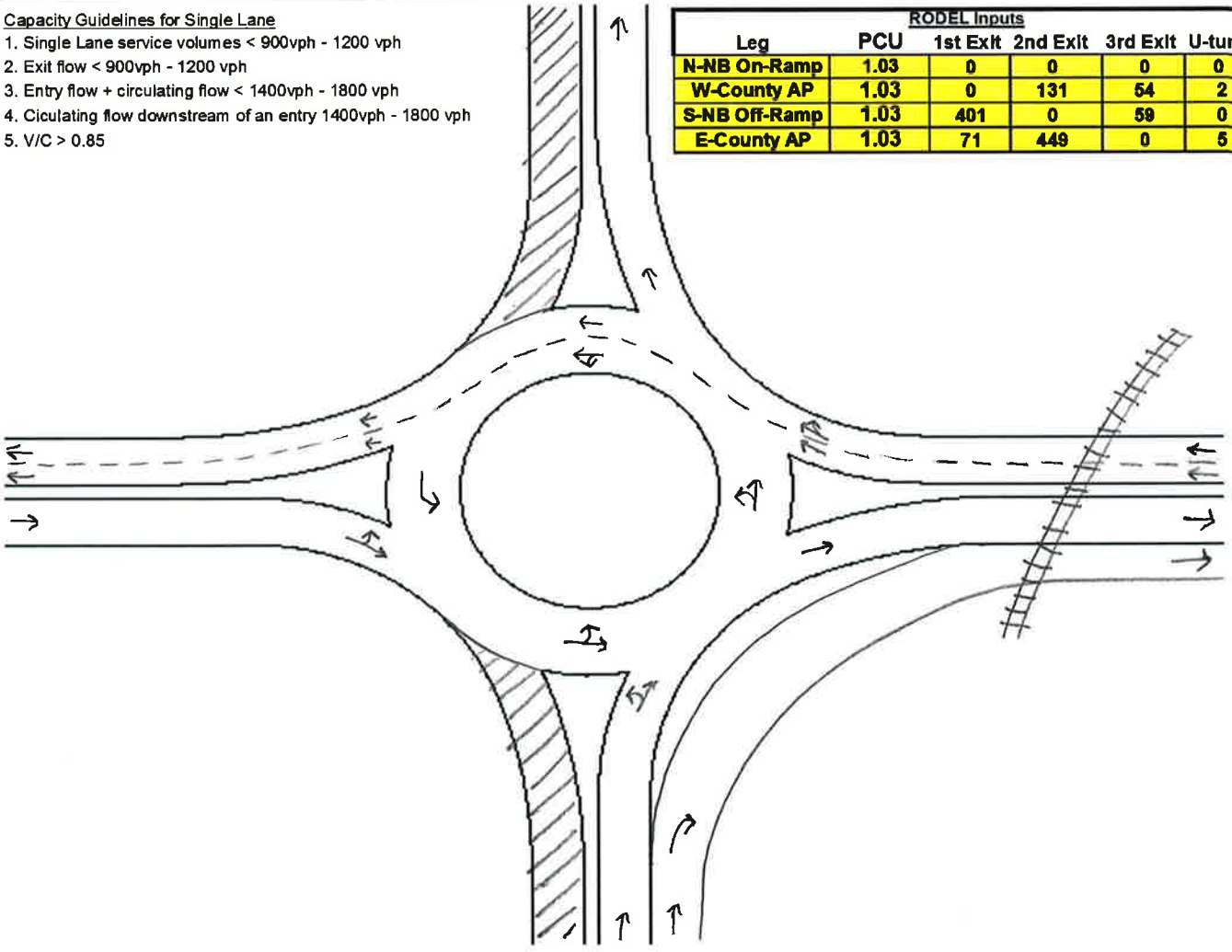


Project: US 10/WIS 441 **Drawn By:** MCG
Project No.: 1517-75-77 **Sheet** 3 **of** 4
Intersection: County AP & NB Ramps
Time Period: 2038 - AM

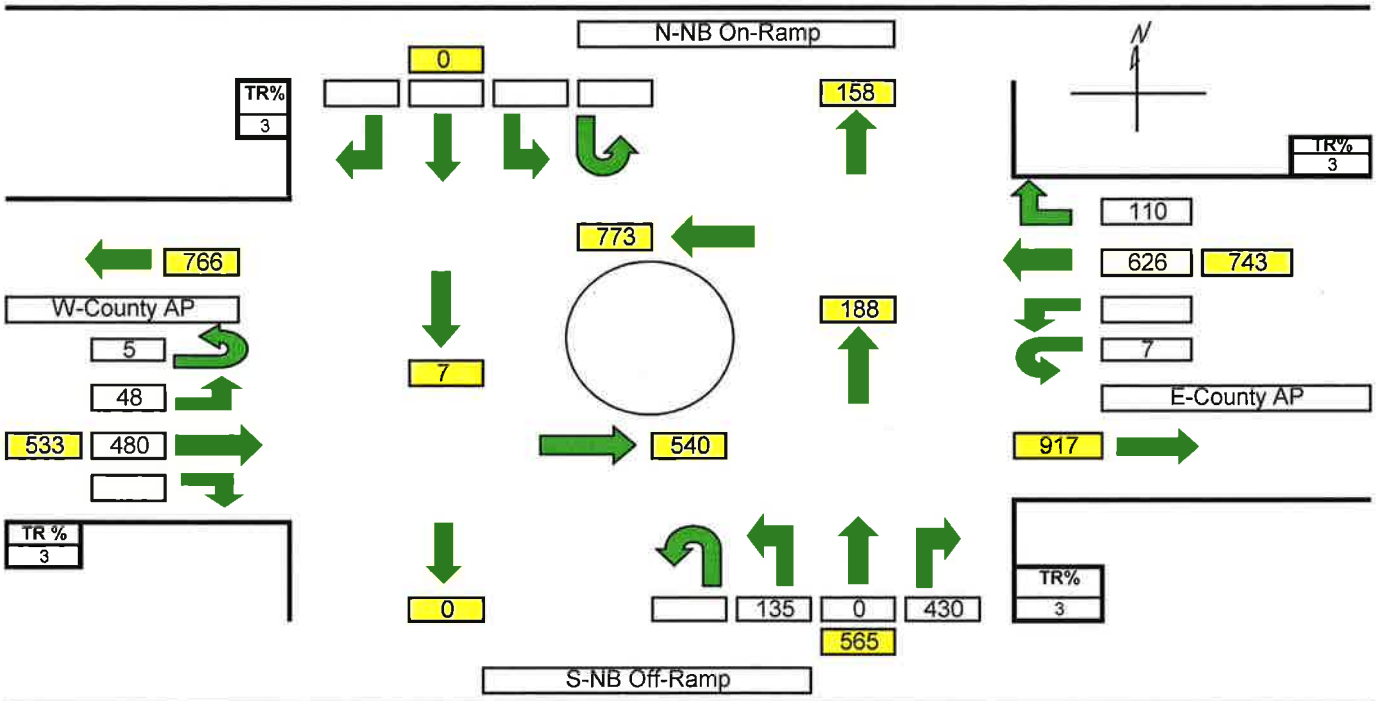


Capacity Guidelines for Single Lane
1. Single Lane service volumes < 900vph - 1200 vph
2. Exit flow < 900vph - 1200 vph
3. Entry flow + circulating flow < 1400vph - 1800 vph
4. Ciculating flow downstream of an entry 1400vph - 1800 vph
5. V/C > 0.85

RODEL Inputs					
Leg	PCU	1st Exit	2nd Exit	3rd Exit	U-turn
N-NB On-Ramp	1.03	0	0	0	0
W-County AP	1.03	0	131	54	2
S-NB Off-Ramp	1.03	401	0	59	0
E-County AP	1.03	71	449	0	5

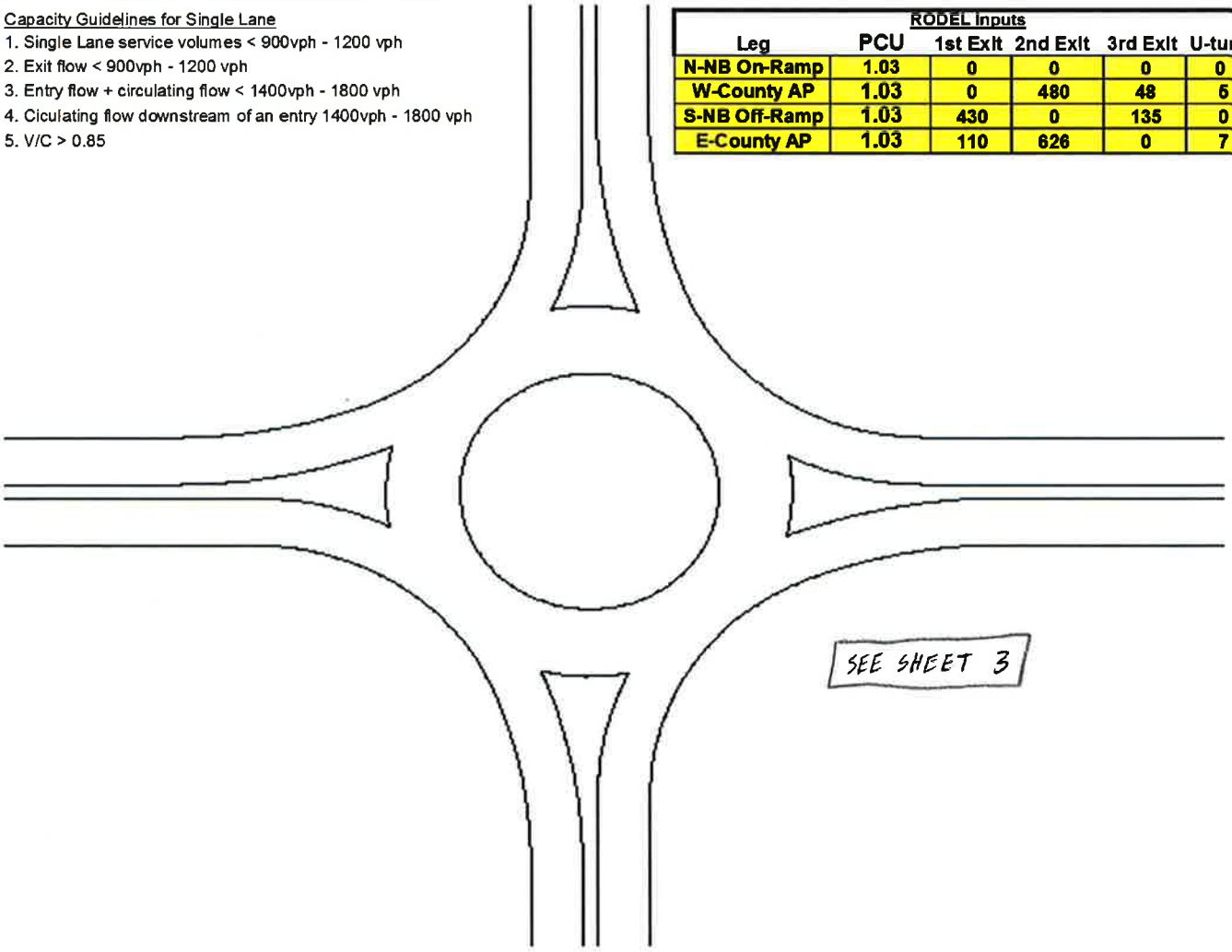


Project: US 10/WIS 441 **Drawn By:** MCG
Project No.: 1517-75-77 **Sheet** 4 **of** 4
Intersection: County AP & NB Ramps
Time Period: 2038 - PM



Capacity Guidelines for Single Lane
1. Single Lane service volumes < 900vph - 1200 vph
2. Exit flow < 900vph - 1200 vph
3. Entry flow + circulating flow < 1400vph - 1800 vph
4. Ciculating flow downstream of an entry 1400vph - 1800 vph
5. V/C > 0.85

RODEL Inputs					
Leg	PCU	1st Exit	2nd Exit	3rd Exit	U-turn
N-NB On-Ramp	1.03	0	0	0	0
W-County AP	1.03	0	480	48	5
S-NB Off-Ramp	1.03	430	0	135	0
E-County AP	1.03	110	626	0	7



SEE SHEET 3

Exhibit 8 – Rodel output

Alternative 1

SB Ramps – AM, 50% CL

```
      2:4:12            Alt 1 - County AP and Southbound Ramps                 37
 E    (m)    4.30   4.30   4.30   8.00            TIME PERIOD     min    90
 L'   (m)    3.62  12.30  10.00   0.00            TIME SLICE      min    15
 V    (m)    4.30   3.66   3.66   7.32            RESULTS PERIOD  min 15 75
 RAD  (m)   18.29  18.29  20.00  29.57            TIME COST      $/hr 15.00
 PHI  (d)   19.69  20.16  30.00  34.12            FLOW PERIOD     min 15 75
 DIA  (m)   49.38  45.72  45.72  49.38            FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0            FLOW PEAK  am/op/pm    AM
 ---------------------------------------------------------------------------
 LEG NAME |PCU |VEH TURNS (1st exit, 2nd..U)|FLOF|CL|   FLOW RATIO    |FLOW TIME
N-Off-Ramp|1.03|   35    0   71  0          |1.00|50|0.75 1.125 0.75|15 45 75
W-CTH AP  |1.03|  142  113    0  3          |1.00|50|0.75 1.125 0.75|15 45 75
S-On-Ramp |1.03|    0    0    0  0          |1.00|50|0.75 1.125 0.75|15 45 75
E-CTH AP  |1.03|    0  150  358  5          |1.00|50|0.75 1.125 0.75|15 45 75
          |    |                           |    |  |               |
                              L'< 5   PHI outside 20-80
 FLOW        veh     106    258      0    513              AVEDEL  s   3.0
 CAPACITY    veh    1019   1032   1129   2155              LOS   SIG     A
 AVE DELAY  mins    0.06   0.08   0.00   0.04              LOS UNSIG     A
 MAX DELAY  mins    0.08   0.10   0.00   0.05
 AVE QUEUE   veh       0      0      0      0              VEHIC HRS   0.7
 MAX QUEUE   veh       0      0      0      0              COST    $    11
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

SB Ramps – AM, 85% CL

```
      2:4:12            Alt 1 - County AP and Southbound Ramps                 38
 E    (m)    4.30   4.30   4.30   8.00            TIME PERIOD     min    90
 L'   (m)    3.62  12.30  10.00   0.00            TIME SLICE      min    15
 V    (m)    4.30   3.66   3.66   7.32            RESULTS PERIOD  min 15 75
 RAD  (m)   18.29  18.29  20.00  29.57            TIME COST      $/hr 15.00
 PHI  (d)   19.69  20.16  30.00  34.12            FLOW PERIOD     min 15 75
 DIA  (m)   49.38  45.72  45.72  49.38            FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0            FLOW PEAK  am/op/pm    AM
 ---------------------------------------------------------------------------
 LEG NAME |PCU |VEH TURNS (1st exit, 2nd..U)|FLOF|CL|   FLOW RATIO    |FLOW TIME
N-Off-Ramp|1.03|   35    0   71  0          |1.00|85|0.75 1.125 0.75|15 45 75
W-CTH AP  |1.03|  142  113    0  3          |1.00|85|0.75 1.125 0.75|15 45 75
S-On-Ramp |1.03|    0    0    0  0          |1.00|85|0.75 1.125 0.75|15 45 75
E-CTH AP  |1.03|    0  150  358  5          |1.00|85|0.75 1.125 0.75|15 45 75
          |    |                           |    |  |               |
                              L'< 5   PHI outside 20-80
 FLOW        veh     106    258      0    513              AVEDEL  s   3.8
 CAPACITY    veh     818    831    928   1954              LOS   SIG     A
 AVE DELAY  mins    0.08   0.10   0.00   0.04              LOS UNSIG     A
 MAX DELAY  mins    0.11   0.14   0.00   0.05
 AVE QUEUE   veh       0      0      0      0              VEHIC HRS   0.9
 MAX QUEUE   veh       0      1      0      0              COST    $    14
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

SB Ramps – PM, 50% CL

```
      2:4:12          Alt 1 - County AP and Southbound Ramps                39
 E    (m)    4.30   4.30   4.30   8.00          TIME PERIOD     min    90
 L'   (m)    3.62  12.30  10.00   0.00          TIME SLICE      min    15
 V    (m)    4.30   3.66   3.66   7.32          RESULTS PERIOD  min 15 75
 RAD  (m)   18.29  18.29  20.00  29.57          TIME COST      $/hr 15.00
 PHI  (d)   19.69  20.16  30.00  34.12          FLOW PERIOD     min 15 75
 DIA  (m)   49.38  45.72  45.72  49.38          FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          FLOW PEAK  am/op/pm    PM
-------------------------------------------------------------------------
 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-Off-Ramp 1.03    65    0   89  0            1.00 50 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03    99  439    0  5            1.00 50 0.75 1.125 0.75 15 45 75
S-On-Ramp  1.03     0    0    0  0            1.00 50 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03     0  256  505  8            1.00 50 0.75 1.125 0.75 15 45 75

                          L'< 5   PHI outside 20-80
 FLOW        veh     154    543      0    769              AVEDEL  s   5.3
 CAPACITY    veh     877    938    940   2154              LOS   SIG     A
 AVE DELAY  mins    0.08   0.16   0.00   0.04              LOS UNSIG     A
 MAX DELAY  mins    0.11   0.23   0.00   0.06
 AVE QUEUE   veh       0      1      0      1              VEHIC HRS   2.2
 MAX QUEUE   veh       0      2      0      1              COST    $    32
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

SB Ramps – PM, 85% CL

```
      2:4:12          Alt 1 - County AP and Southbound Ramps                40
 E    (m)    4.30   4.30   4.30   8.00          TIME PERIOD     min    90
 L'   (m)    3.62  12.30  10.00   0.00          TIME SLICE      min    15
 V    (m)    4.30   3.66   3.66   7.32          RESULTS PERIOD  min 15 75
 RAD  (m)   18.29  18.29  20.00  29.57          TIME COST      $/hr 15.00
 PHI  (d)   19.69  20.16  30.00  34.12          FLOW PERIOD     min 15 75
 DIA  (m)   49.38  45.72  45.72  49.38          FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          FLOW PEAK  am/op/pm    PM
-------------------------------------------------------------------------
 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-Off-Ramp 1.03    65    0   89  0            1.00 85 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03    99  439    0  5            1.00 85 0.75 1.125 0.75 15 45 75
S-On-Ramp  1.03     0    0    0  0            1.00 85 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03     0  256  505  8            1.00 85 0.75 1.125 0.75 15 45 75

                          L'< 5   PHI outside 20-80
 FLOW        veh     154    543      0    769              AVEDEL  s  10.1
 CAPACITY    veh     676    737    739   1953              LOS   SIG     B
 AVE DELAY  mins    0.11   0.35   0.00   0.05              LOS UNSIG     B
 MAX DELAY  mins    0.16   0.61   0.00   0.07
 AVE QUEUE   veh       0      3      0      1              VEHIC HRS   4.1
 MAX QUEUE   veh       0      5      0      1              COST    $    62
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

NB Ramps – AM, 50% CL

```
      2:4:12          Alt 1 - County AP and Northbound Ramps                40
 E    (m)    4.30   4.30   4.30   8.00          TIME PERIOD     min    90
 L'   (m)   10.00  15.08  16.19   0.00          TIME SLICE      min    15
 V    (m)    3.66   3.66   4.30   7.32          RESULTS PERIOD  min 15 75
 RAD  (m)   20.00  27.43  16.76  29.57          TIME COST      $/hr 15.00
 PHI  (d)   20.00  26.69  20.16  20.00          FLOW PERIOD     min 15 75
 DIA  (m)   49.38  45.72  45.72  49.38          FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          FLOW PEAK  am/op/pm    AM
-------------------------------------------------------------------------
 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-On-Ramp  1.03     0    0    0  0            1.00 50 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03     0  131   54  2            1.00 50 0.75 1.125 0.75 15 45 75
S-Off-Ramp 1.03   000    0   59  0            1.00 50 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03    71  449    0  5            1.00 50 0.75 1.125 0.75 15 45 75

                                L'< 5
 FLOW         veh        0    187     59    525              AVEDEL  s   2.5
 CAPACITY     veh      994   1270   1188   2177              LOS   SIG     A
 AVE DELAY    mins    0.00   0.05   0.05   0.04              LOS UNSIG     A
 MAX DELAY    mins    0.00   0.07   0.07   0.05
 AVE QUEUE    veh        0      0      0      0              VEHIC HRS   0.5
 MAX QUEUE    veh        0      0      0      0              COST    $     8
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

NB Ramps – AM, 85% CL

```
      2:4:12          Alt 1 - County AP and Northbound Ramps                41
 E    (m)    4.30   4.30   4.30   8.00          TIME PERIOD     min    90
 L'   (m)   10.00  15.08  16.19   0.00          TIME SLICE      min    15
 V    (m)    3.66   3.66   4.30   7.32          RESULTS PERIOD  min 15 75
 RAD  (m)   20.00  27.43  16.76  29.57          TIME COST      $/hr 15.00
 PHI  (d)   20.00  26.69  20.16  20.00          FLOW PERIOD     min 15 75
 DIA  (m)   49.38  45.72  45.72  49.38          FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          FLOW PEAK  am/op/pm    AM
-------------------------------------------------------------------------
 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-On-Ramp  1.03     0    0    0  0            1.00 85 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03     0  131   54  2            1.00 85 0.75 1.125 0.75 15 45 75
S-Off-Ramp 1.03   000    0   59  0            1.00 85 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03    71  449    0  5            1.00 85 0.75 1.125 0.75 15 45 75

                                L'< 5
 FLOW         veh        0    187     59    525              AVEDEL  s   2.9
 CAPACITY     veh      793   1069    987   1976              LOS   SIG     A
 AVE DELAY    mins    0.00   0.07   0.06   0.04              LOS UNSIG     A
 MAX DELAY    mins    0.00   0.08   0.08   0.05
 AVE QUEUE    veh        0      0      0      0              VEHIC HRS   0.6
 MAX QUEUE    veh        0      0      0      0              COST    $     9
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

NB Ramps – PM, 50% CL

```
      2:4:12          Alt 1 - County AP and Northbound Ramps                42
 E    (m)    4.30   4.30   4.30   8.00          | TIME PERIOD     min    90
 L'   (m)   10.00  15.08  16.19   0.00          | TIME SLICE      min    15
 V    (m)    3.66   3.66   4.30   7.32          | RESULTS PERIOD  min 15 75
 RAD  (m)   20.00  27.43  16.76  29.57          | TIME COST      $/hr 15.00
 PHI  (d)   20.00  26.69  20.16  20.00          | FLOW PERIOD     min 15 75
 DIA  (m)   49.38  45.72  45.72  49.38          | FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          | FLOW PEAK  am/op/pm    PM
-------------------------------------------------------------------------------
 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-On-Ramp  1.03     0    0    0  0            1.00 50 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03     0  480   48  5            1.00 50 0.75 1.125 0.75 15 45 75
S-Off-Ramp 1.03   000    0  135  0            1.00 50 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03   110  626    0  7            1.00 50 0.75 1.125 0.75 15 45 75

                                L'< 5
 FLOW        veh       0    533    135    743              | AVEDEL  s   3.6
 CAPACITY    veh     852   1269    993   2123              | LOS   SIG     A
 AVE DELAY  mins    0.00   0.08   0.07   0.04              | LOS UNSIG     A
 MAX DELAY  mins    0.00   0.11   0.09   0.06              |
 AVE QUEUE   veh       0      1      0      1              | VEHIC HRS   1.4
 MAX QUEUE   veh       0      1      0      1              | COST    $    21
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

NB Ramps – PM, 85% CL

```
      2:4:12          Alt 1 - County AP and Northbound Ramps                43
 E    (m)    4.30   4.30   4.30   8.00          | TIME PERIOD     min    90
 L'   (m)   10.00  15.08  16.19   0.00          | TIME SLICE      min    15
 V    (m)    3.66   3.66   4.30   7.32          | RESULTS PERIOD  min 15 75
 RAD  (m)   20.00  27.43  16.76  29.57          | TIME COST      $/hr 15.00
 PHI  (d)   20.00  26.69  20.16  20.00          | FLOW PERIOD     min 15 75
 DIA  (m)   49.38  45.72  45.72  49.38          | FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          | FLOW PEAK  am/op/pm    PM
-------------------------------------------------------------------------------
 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-On-Ramp  1.03     0    0    0  0            1.00 85 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03     0  480   48  5            1.00 85 0.75 1.125 0.75 15 45 75
S-Off-Ramp 1.03   000    0  135  0            1.00 85 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03   110  626    0  7            1.00 85 0.75 1.125 0.75 15 45 75

                                L'< 5
 FLOW        veh       0    533    135    743              | AVEDEL  s   4.6
 CAPACITY    veh     651   1068    792   1922              | LOS   SIG     A
 AVE DELAY  mins    0.00   0.11   0.09   0.05              | LOS UNSIG     A
 MAX DELAY  mins    0.00   0.15   0.12   0.07              |
 AVE QUEUE   veh       0      1      0      1              | VEHIC HRS   1.8
 MAX QUEUE   veh       0      1      0      1              | COST    $    27
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

Alternative 3 – WB Ramps – AM, 50% CL

```
    13:3:12          Alt 3 - County AP and Southbound Ramps                30
 E    (m)    4.30   4.30   4.30   4.30          TIME PERIOD     min    90
 L'   (m)   10.00  10.00  10.00  10.00          TIME SLICE      min    15
 V    (m)    3.66   3.66   3.66   3.66          RESULTS PERIOD  min 15 75
 RAD  (m)   20.00  20.00  20.00  25.00          TIME COST      $/hr 15.00
 PHI  (d)   20.00  20.00  30.00  26.00          FLOW PERIOD     min 15 75
 DIA  (m)   45.72  45.72  45.72  45.72          FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          FLOW PEAK  am/op/pm    AM

 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-Off-Ramp 1.03   172    0   68  0            1.00 50 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03   131  127    0  3            1.00 50 0.75 1.125 0.75 15 45 75
S-On-Ramp  1.03     0    0    0  0            1.00 50 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03     0  131  361  5            1.00 50 0.75 1.125 0.75 15 45 75

                              MODE 2
 FLOW         veh     240    261      0    497              AVEDEL  s   4.6
 CAPACITY     veh     995   1032   1123   1260              LOS   SIG     A
 AVE DELAY   mins    0.08   0.08   0.00   0.08              LOS UNSIG     A
 MAX DELAY   mins    0.10   0.10   0.00   0.10
 AVE QUEUE    veh       0      0      0      1              VEHIC HRS   1.3
 MAX QUEUE    veh       0      0      0      1              COST    $    19
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

Alternative 3 – WB Ramps – AM, 85% CL

```
    13:3:12          Alt 3 - County AP and Southbound Ramps                31
 E    (m)    4.30   4.30   4.30   4.30          TIME PERIOD     min    90
 L'   (m)   10.00  10.00  10.00  10.00          TIME SLICE      min    15
 V    (m)    3.66   3.66   3.66   3.66          RESULTS PERIOD  min 15 75
 RAD  (m)   20.00  20.00  20.00  25.00          TIME COST      $/hr 15.00
 PHI  (d)   20.00  20.00  30.00  26.00          FLOW PERIOD     min 15 75
 DIA  (m)   45.72  45.72  45.72  45.72          FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          FLOW PEAK  am/op/pm    AM

 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-Off-Ramp 1.03   172    0   68  0            1.00 85 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03   131  127    0  3            1.00 85 0.75 1.125 0.75 15 45 75
S-On-Ramp  1.03     0    0    0  0            1.00 85 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03     0  131  361  5            1.00 85 0.75 1.125 0.75 15 45 75

                              MODE 2
 FLOW         veh     240    261      0    497              AVEDEL  s   6.3
 CAPACITY     veh     795    832    922   1059              LOS   SIG     A
 AVE DELAY   mins    0.11   0.10   0.00   0.10              LOS UNSIG     A
 MAX DELAY   mins    0.15   0.14   0.00   0.14
 AVE QUEUE    veh       0      0      0      1              VEHIC HRS   1.7
 MAX QUEUE    veh       1      1      0      1              COST    $    26
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

Alternative 3 – WB Ramps – PM, 50% CL

```
      13:3:12          Alt 3 - County AP and Southbound Ramps                32
 E    (m)    4.30   4.30   4.30   4.30          TIME PERIOD     min    90
 L'   (m)   10.00  10.00  10.00  10.00          TIME SLICE      min    15
 V    (m)    3.66   3.66   3.66   3.66          RESULTS PERIOD  min 15 75
 RAD  (m)   20.00  20.00  20.00  25.00          TIME COST      $/hr 15.00
 PHI  (d)   20.00  20.00  30.00  26.00          FLOW PERIOD     min 15 75
 DIA  (m)   45.72  45.72  45.72  45.72          FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          FLOW PEAK  am/op/pm    PM

 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-Off-Ramp 1.03   129    0   48  0            1.00 50 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03    78  322    0  4            1.00 50 0.75 1.125 0.75 15 45 75
S-On-Ramp  1.03     0    0    0  0            1.00 50 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03     0  194  428  6            1.00 50 0.75 1.125 0.75 15 45 75

                              MODE 2
 FLOW        veh     177    404      0    628              AVEDEL  s   5.6
 CAPACITY    veh     921   1006   1027   1260              LOS   SIG     A
 AVE DELAY  mins    0.08   0.10   0.00   0.09              LOS UNSIG     A
 MAX DELAY  mins    0.11   0.14   0.00   0.13
 AVE QUEUE   veh       0      1      0      1              VEHIC HRS   1.9
 MAX QUEUE   veh       0      1      0      1              COST    $    28
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

Alternative 3 – WB Ramps – PM, 85% CL

```
      13:3:12          Alt 3 - County AP and Southbound Ramps                33
 E    (m)    4.30   4.30   4.30   4.30          TIME PERIOD     min    90
 L'   (m)   10.00  10.00  10.00  10.00          TIME SLICE      min    15
 V    (m)    3.66   3.66   3.66   3.66          RESULTS PERIOD  min 15 75
 RAD  (m)   20.00  20.00  20.00  25.00          TIME COST      $/hr 15.00
 PHI  (d)   20.00  20.00  30.00  26.00          FLOW PERIOD     min 15 75
 DIA  (m)   45.72  45.72  45.72  45.72          FLOW TYPE   pcu/veh   VEH
 GRAD SEP       0      0      0      0          FLOW PEAK  am/op/pm    PM

 LEG NAME  PCU  VEH TURNS (1st exit, 2nd..U)  FLOF CL   FLOW RATIO    FLOW TIME
N-Off-Ramp 1.03   129    0   48  0            1.00 85 0.75 1.125 0.75 15 45 75
W-CTH AP   1.03    78  322    0  4            1.00 85 0.75 1.125 0.75 15 45 75
S-On-Ramp  1.03     0    0    0  0            1.00 85 0.75 1.125 0.75 15 45 75
E-CTH AP   1.03     0  194  428  6            1.00 85 0.75 1.125 0.75 15 45 75

                              MODE 2
 FLOW        veh     177    404      0    628              AVEDEL  s   8.3
 CAPACITY    veh     721    805    826   1059              LOS   SIG     A
 AVE DELAY  mins    0.11   0.15   0.00   0.14              LOS UNSIG     A
 MAX DELAY  mins    0.15   0.22   0.00   0.20
 AVE QUEUE   veh       0      1      0      1              VEHIC HRS   2.8
 MAX QUEUE   veh       0      1      0      2              COST    $    42
F1mode   F2direct  F3peak  CtrlF3rev  F4fact F6stats  F8econ  F9prnt  F10run Esc
```

Exhibit 9 – Cost Analysis

Alternative 1 – Double Roundabout, 2-Lane Interchange

Item	Item Description	Unit	Estimated Price	Estimated Quantity	Estimated Cost
204.0100	Removing Pavement	SY	$2.50	17,000.00	$42,500.00
205.0100	Excavation Common	CY	$8.00	27,000.00	$216,000.00
208.0100	Borrow	CY	$4.00	0.00	$0.00
305.0120	Base Aggregate Dense 1 1/4-Inch	TON	$8.00	6,150.00	$49,200.00
311.0110	Breaker Run	TON	$7.50	7,350.00	$55,125.00
415.0100	Concrete Pavement 10-Inch	SY	$30.00	12,100.00	$363,000.00
601.0409	Concrete Curb & Gutter 30-Inch Type A	LF	$9.00	7,500.00	$67,500.00
602.0405	Concrete Sidewalk 4-Inch	SF	$3.00	26,200.00	$78,600.00

Total Roadway Cost	**$ 871,925.00**
Miscellaneous/Unquantified (35%)	**$305,173.75**
Construction Engineering & Contingencies (10%)	$87,192.50
Structure Cost	$2,500,000.00
Total Project Construction Cost	**$3,764,291.25**

Alternative 2 – Signalized Interchange

Item	Item Description	Unit	Estimated Price	Estimated Quantity	Estimated Cost
204.0100	Removing Pavement	SY	$2.50	17,000.00	$42,500.00
205.0100	Excavation Common	CY	$8.00	27,000.00	$216,000.00
208.0100	Borrow	CY	$4.00	0.00	$0.00
305.0120	Base Aggregate Dense 1 1/4-Inch	TON	$8.00	8,260.00	$66,080.00
311.0110	Breaker Run	TON	$7.50	9,630.00	$72,225.00
415.0100	Concrete Pavement 10-Inch	SY	$30.00	17,600.00	$528,000.00
601.0409	Concrete Curb & Gutter 30-Inch Type A	LF	$9.00	7,600.00	$68,400.00
602.0405	Concrete Sidewalk 4-Inch	SF	$3.00	16,600.00	$49,800.00

Total Roadway Cost	**$ 1,043,005.00**
Miscellaneous/Unquantified (35%)	**$365,051.75**
Construction Engineering & Contingencies (10%)	$104,300.50
Structure Cost	$3,000,000.00
Total Project Construction Cost	**$4,512,357.25**

Alternative 3 – Roundabout –Signalized Interchange

Item	Item Description	Unit	Estimated Price	Estimated Quantity	Estimated Cost
204.0100	Removing Pavement	SY	$2.50	17,000.00	$42,500.00
205.0100	Excavation Common	CY	$8.00	27,000.00	$216,000.00
208.0100	Borrow	CY	$4.00	0.00	$0.00
305.0120	Base Aggregate Dense 1 1/4-Inch	TON	$8.00	6,590.00	$52,720.00
311.0110	Breaker Run	TON	$7.50	7,040.00	$52,800.00
415.0100	Concrete Pavement 10-Inch	SY	$30.00	12,300.00	$369,000.00
601.0409	Concrete Curb & Gutter 30-Inch Type A	LF	$9.00	7,650.00	$68,850.00
602.0405	Concrete Sidewalk 4-Inch	SF	$3.00	22,000.00	$66,000.00

Total Roadway Cost	**$ 867,870.00**
Miscellaneous/Unquantified (35%)	**$303,754.50**
Construction Engineering & Contingencies (10%)	$86,787.00
Structure Cost	$2,550,000.00
Total Project Construction Cost	**$3,808,411.50**

2

2

32-INCH BARRIER

42-INCH BARRIER

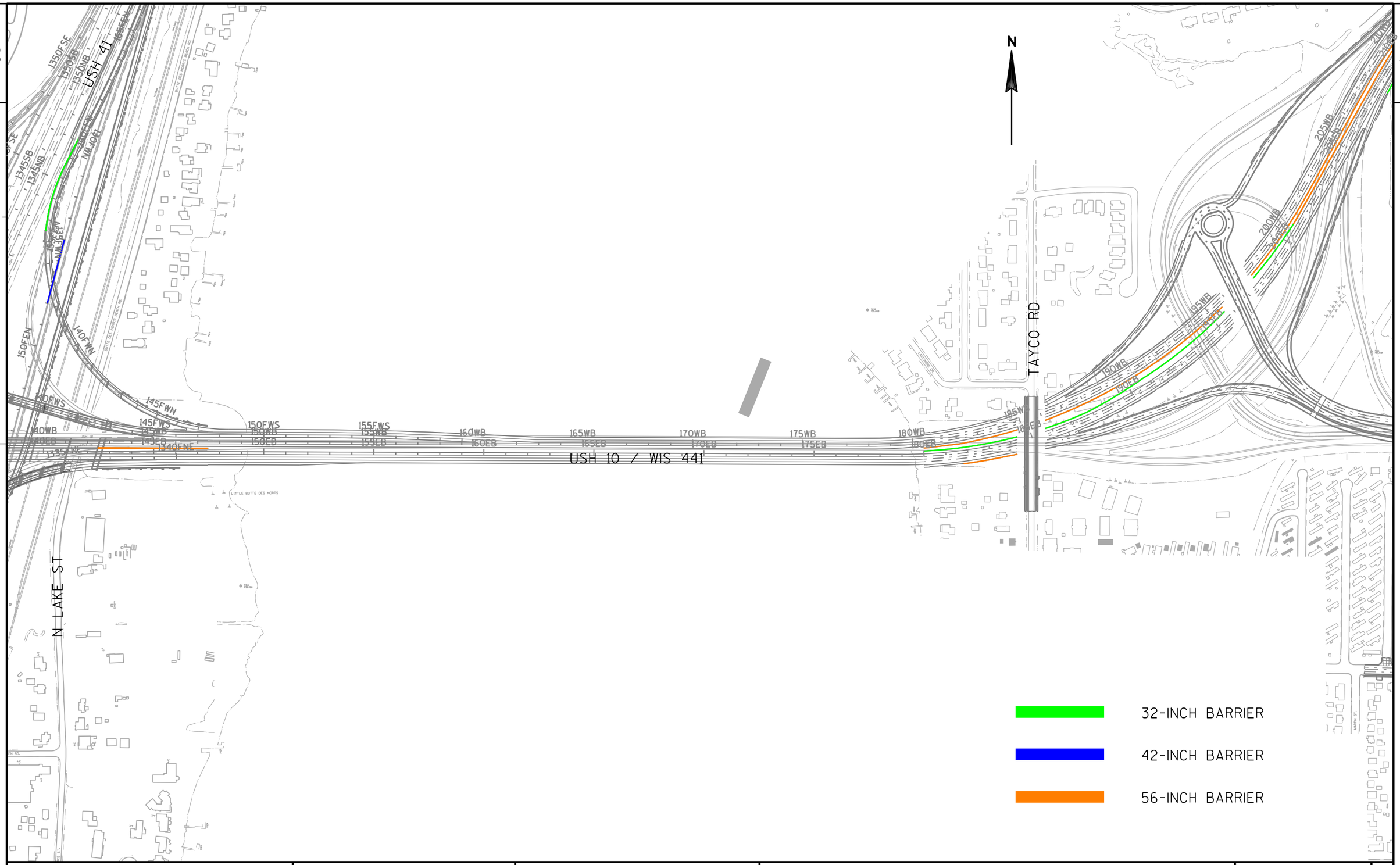
56-INCH BARRIER

N

USH 10

USH 41

PROJECT NO: 1517-75-71	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	FIGURE 1 - BARRIER WALL LOCATIONS	SHEET	E



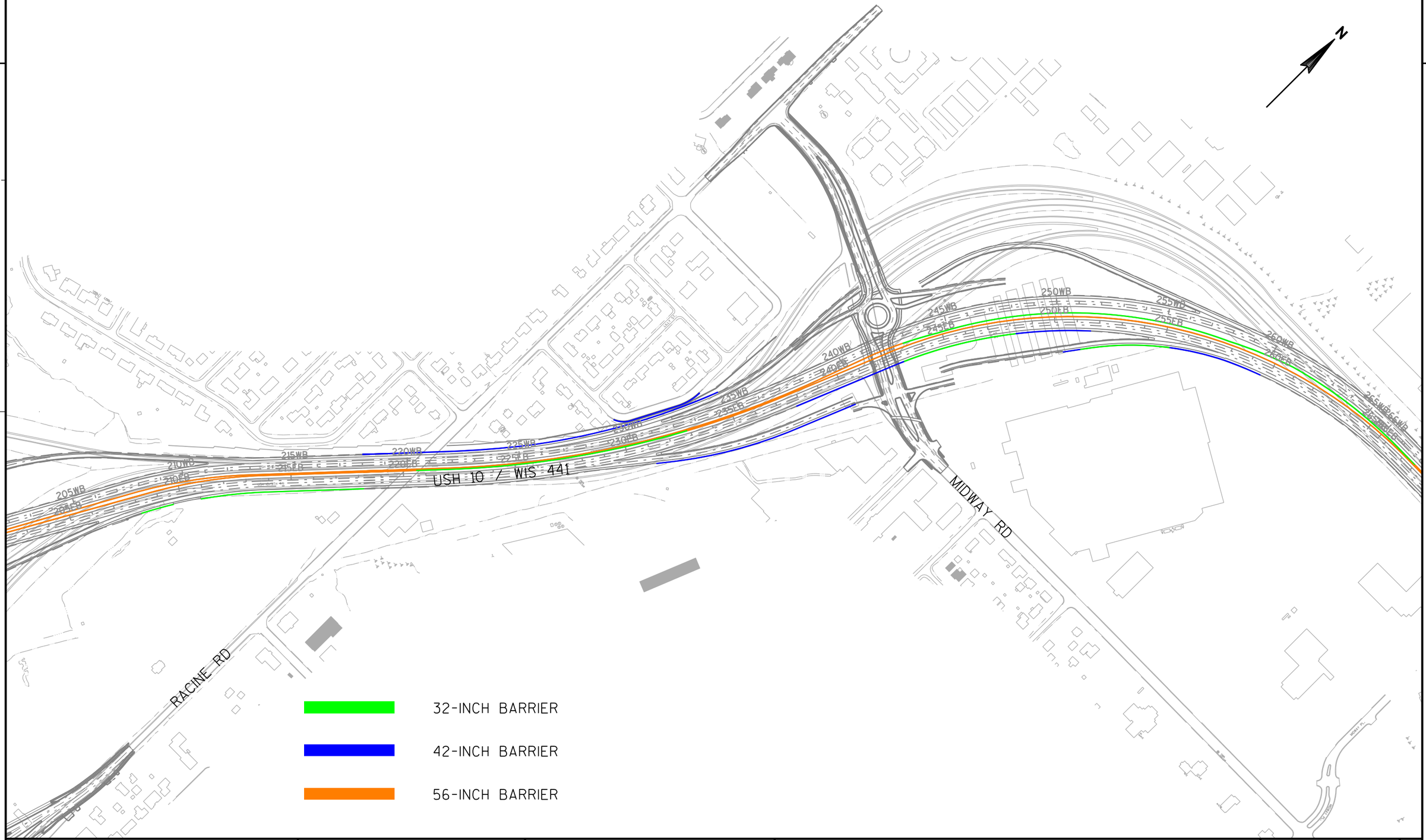
PROJECT NO: 1517-75-71	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	FIGURE 2 - BARRIER WALL LOCATIONS	SHEET	E

FILE NAME : I:\56537\1517-75-76\Exhibits\Barrier Wall\Barrier Wall Exhibit project wide.dgn PLOT DATE : 2:49:25 PM PLOT BY : nbennett PLOT NAME : PLOT SCALE : 400:1

WISDOT/CADDS SHEET 42

2

2



PROJECT NO: 1517-75-71	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	FIGURE 3 - BARRIER WALL LOCATIONS	SHEET	E

FILE NAME : I:\56537\1517-75-76\Exhibits\Barrier Wall\Barrier Wall Exhibit project wide.dgn PLOT DATE : 2:48:46 PM PLOT BY : nbennett PLOT NAME : PLOT SCALE : 400:1

WISDOT/CADDS SHEET 42

2

2

N

270WB
270EB
275WB
275EB
280WB
280EB
285WB
285EB
290WB
290EB
295WB
295EB
300WB
300EB
305WB
305EB
310WB
310EB
315WB
315EB
320WB
320EB
325WB
325EB

USH 10 / WIS 441

STH 47 / APPLETON RD

MIDWAY RD

W VALLEY RD.
TUCKAWAY LN.
STH 47/APPLETON RD.
DRUM CORPS DR.
ALCAN DR.
GARNET CT.
EMERALD CT.
S. SCHINDLER CT.
UNIVERSITY DR.
MIDWAY RD.
MIDWAY PL.
KENWOOD DR.
PARKSIDE DR.
ACORN CT.
LINDA AVE.

32-INCH BARRIER

42-INCH BARRIER

56-INCH BARRIER

PROJECT NO: 1517-75-71	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	FIGURE 4 - BARRIER WALL LOCATIONS	SHEET	E

FILE NAME : I:\56537\1517-75-76\Exhibits\Barrier Wall\Barrier Wall Exhibit project wide.dgn PLOT DATE : 3:00:50 PM PLOT BY : nbennett PLOT NAME : PLOT SCALE : 400:1

WISDOT/CADDS SHEET 42

2

N

330WB
330EB
335WB
335EB
340WB
340EB
345WB
345EB
350WB
350EB
355WB
355EB
360WB
360EB
365WB
365EB
370WB
370EB
375WB
375EB
380WB
380EB
385WB
385EB
390WB
390EB

W. VALLEY DR.
E. ROELAND AVE.
E. MITCHELL AVE.
E. JAMES ST.
E. WHITE BIRCH CT.
E. PARK HILLS DR.
THISTLE DOWN CT.
PRAIRIE CT.
ACORN CT.
OAKRIDGE CT.
ALCORN CT.
E. PINEROSE LN.
ESTATE DR.
CIRCLE
S. ONEIDA ST.
S. MALOA ST.
S. HACKBERRY LN.
S. CEDRUS LN.
S. BLACK SPRUCE LN.
S. MINK DOCK LN.
S. POPLAR LN.
S. SUMAC RAM LN.
S. CARPENTER ST.
S. DELLWOOD ST.
S. EAST ST.
S. CYPRESS ST.

WIS 441

USH 10 / ONEIDA ST

MIDWAY RD

32-INCH BARRIER

42-INCH BARRIER

56-INCH BARRIER

PROJECT NO: 1517-75-71	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO/CALUMET	FIGURE 5 - BARRIER WALL LOCATIONS	SHEET	E

FILE NAME : I:\56537\1517-75-76\Exhibits\Barrier Wall\Barrier Wall Exhibit project wide.dgn PLOT DATE : 3:17:04 PM PLOT BY : nbennett PLOT NAME : PLOT SCALE : 400:1

To	From
Scott Ebel, PE, Project Manager, WisDOT NER	Anna Varney, PE – HNTB Corporation
Kurt Peters, PE, Project Manager, WisDOT NER	**Date**
Andy Fulcer, PE, Deputy Project Manager, WisDOT NER	May 8, 2012 **(Revised 7/5/12, 3/6/13)**
Chad Degrave, PE, Design Supervisor, WisDOT NER	**Subject**
Brian Roper, PE, Corridor Manager, WisDOT NER	1517-07-04 WIS 441 Typical Section – Technical Memorandum #11
	HNTB Job Number
	56537

Technical Memorandum

This technical memorandum documents the typical section to be used on the WIS 441 Tri-County Project.

Issues documented include:

1. Shoulder area and slope treatment
2. Shoulder base aggregate type
3. Subgrade cross-slope and minimum base aggregate dense (BAD) depth
4. High-side super-elevation shoulder break point option
5. Treatment of median area between the concrete barrier
6. Super-elevation sections – hold subgrade shoulder width constant
7. Pavement section in gore areas
8. Minimum 'shelf' width beyond outside barrier
9. Width of concrete pavement where barrier is at edge of outside shoulder
10. Place crown point between lanes 2 and 3
11. Super-elevation rotation point moves from crown point to reference line in off-alignment section
12. 1-foot of BAD outside asphalt shoulder

Issues 1-5 were discussed at a WIS 441 meeting held on 3-12-12.

Attendees were:

Andy Fulcer - WisDOT	Eric Gwidt - WisDOT
Nick Becker - URS	Tony Allard - WisDOT
Mike Beurket - URS	Neil Michaelson - WisDOT
Tom Buchholz - WisDOT	Robert Fieldbinder - URS (phone)
Kurt Peters - WisDOT	Anna Varney - HNTB (phone)
Quinn Schultz - Siker	Justin Arndt - Kapur (phone)
Chad DeGrave - WisDOT	Prasad Narayan - Kapur (phone)
TJ Dougherty - HNTB	

1. ***Shoulder area and slope treatment***

   Six options were evaluated for the shoulder area and slope treatment. All options assume identical pavement structure inside the shoulder point. Therefore, to simplify comparisons of the options, only the area of differing material beyond the shoulder point is used in the analysis (See Figure #1).

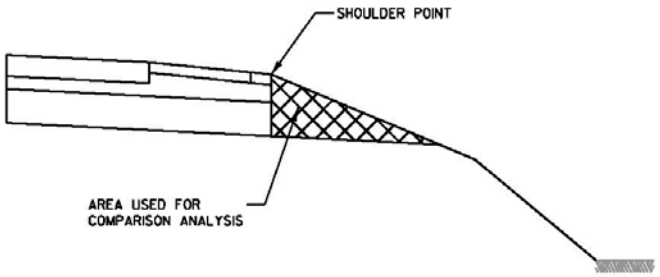


FIGURE #1: SHOULDER SLOPE COMPARISON

Option 1 (See Figure #2)

The breaker run ends with a vertical edge at the shoulder point. The area adjacent to the breaker run is normal fill material out to the fore-slope, with a breaker run relief trench assumed every 250 feet (Exhibit 1).

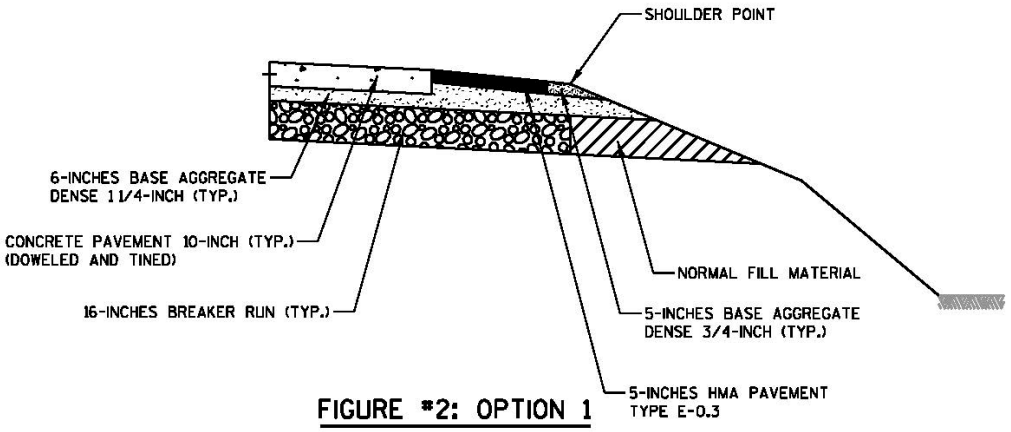


FIGURE #2: OPTION 1

Advantages

- Lower cost – breaker run not placed outside the shoulder point except at relief trench

Disadvantages

- More difficult to construct lower layer with differing materials
- Need to provide relief trench

Option 2 (See Figure #3)

The fore-slope is covered with 5-inches of BAD ¾-inch and the breaker run extends to this BAD fore-slope to a vertical edge, the remaining area adjacent to the breaker run extending to the fore-slope is BAD 1 ¼-inch. A breaker run relief trench is assumed every 250 feet (Exhibit 1).

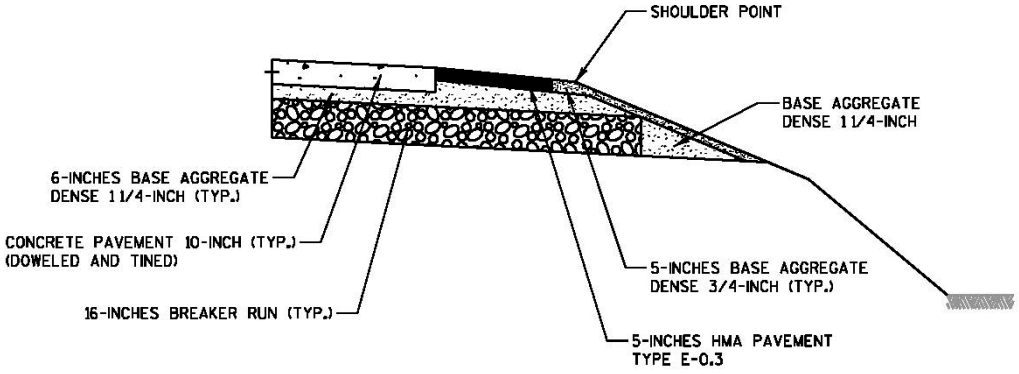


FIGURE #3: OPTION 2

Advantages

- None

Disadvantages

- More difficult to construct lower layer with differing materials
- Placing aggregate down fore-slope involves an additional operation for the contractor
- Need to provide relief trench
- Higher cost – breaker run and base aggregate placed outside shoulder point

Option 3 (See Figure #4)

The breaker run extends to the fore-slope to a vertical edge, the remaining area adjacent to the breaker run extending to the fore-slope is BAD 1 ¼-inch. A breaker run relief trench is assumed every 250 feet (Exhibit 1).

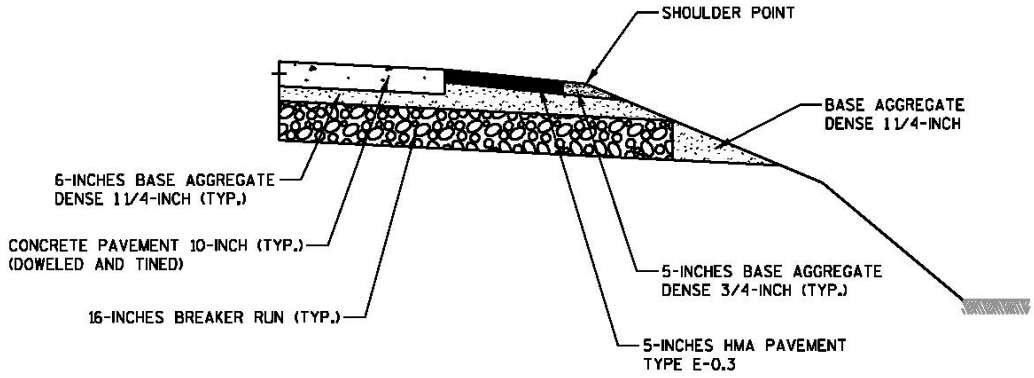


FIGURE #4: OPTION 3

Advantages

- None

Disadvantages

- More difficult to construct lower layer with differing materials
- Need to provide relief trench
- Higher cost – breaker run and base aggregate placed outside shoulder point

Option 4 (See Figure #5)

The breaker run ends at the shoulder point. The area adjacent to the breaker run and extending to the fore-slope is BAD 1 ¼-inch. A breaker run relief trench is assumed every 250 feet (Exhibit 1).

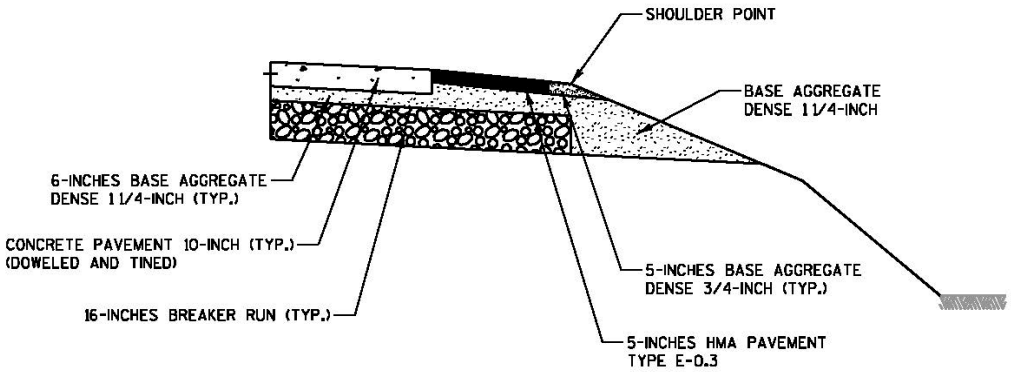


FIGURE #5: OPTION 4

Advantages:

- None

Disadvantages:

- More difficult to construct lower layer with differing materials
- Need to provide relief trench
- Higher cost – base aggregate placed outside shoulder point in lower layer

Option 5 (See Figure #6)

The breaker run extends all the way to match the fore-slope. A separate relief trench is not needed, since the whole section is acting as a relief trench.

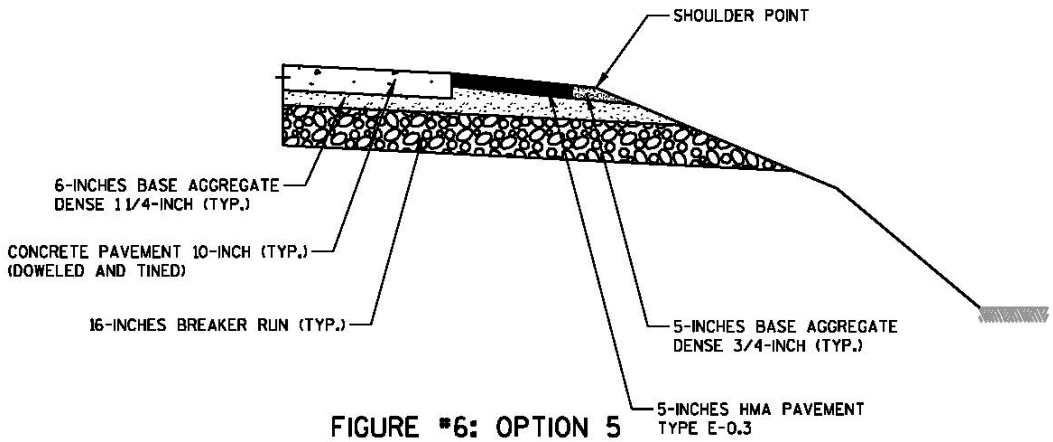


FIGURE #6: OPTION 5

Advantages:

- More easily constructed – do not have to bench in material since it is all placed in one uniform layer
- No relief trench required

Disadvantages:

- Higher cost – breaker run is placed outside the shoulder point in lower layer
- Exposed breaker run on a recoverable slope is a safety issue

Option 5R (See Figure #7)

The breaker run extends all the way to match the fore-slope, which is covered with 3-inches of BAD ¾-inch. A separate relief trench is not needed, since the whole section is acting as a relief trench.

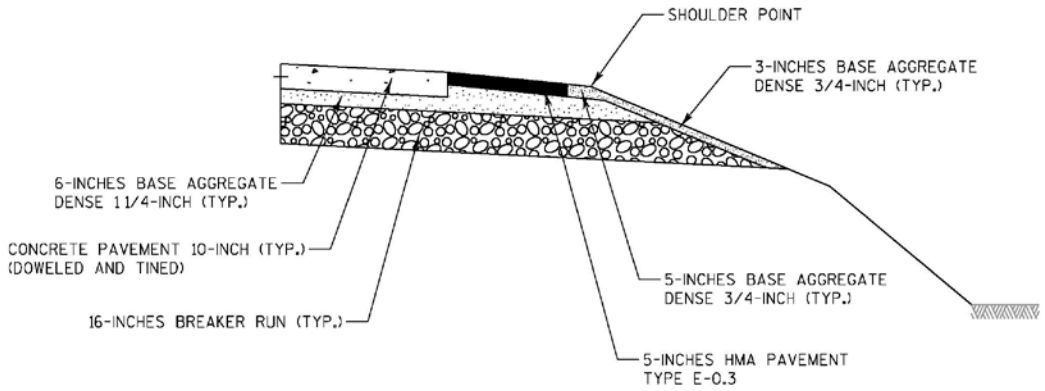


FIGURE #7: OPTION 5R

Advantages:

- More easily constructed – do not have to bench in material since it is all placed in one uniform layer
- ¾-inch base aggregate provides a safer recoverable slope for errant vehicles
- No relief trench required because breaker run is extended to fore-slope and capped by only 3-inches of BAD ¾-inch

Disadvantages:

- Placing aggregate down fore-slope involves an additional operation for the contractor
- Higher cost – breaker run is placed outside the shoulder point in lower layer and base aggregate is placed down the fore-slope

Cost Comparison

Summary of cost comparison

	Cost per station of comparison area materials only	Approximate total cost for WIS 441 Corridor
Option 1	$6,600	$328,000
Option 2	$12,400	$616,000
Option 3	$12,200	$606,000
Option 4	$13,500	$671,000
Option 5	$11,400	$566,000
Option 5R	$12,500	$621,000

Recommendation

Options 5 and 5R are the NER preferred options based on ease of constructability and safety. Option 5R will be used in all areas where a vehicle could travel off the roadway. The ¾-inch base aggregate lined slope provides a safer recoverable slope for an errant vehicle to traverse. For ease of constructability, Option 5R will be continuous through short distances of slopes protected by beam guard or concrete barrier (i.e. at sign structures). Option 5 will be used for slopes of a substantial length that are protected by concrete barrier or beam guard where a vehicle cannot travel off the roadway.

Note

The Northeast Region (NER) is addressing a safety issue with the breaker run slope, by recommending BAD ¾-inch be used on the fore-slope with Option 5R. Per Standard Specification 305.2.2.1 and FDM 14.5.1, BAD ¾-inch on the fore-slope is only necessary when BAD 3-inch is used for the lower layer of base. The assumed pavement structure for WIS 441 is concrete pavement over 6-inches of BAD 1 ¼-inch over 16-inches of breaker run. In this case, the breaker run is acting as the BAD 3-inch, so BAD ¾-inch will be used on all recoverable fore-slopes.

2. ***Shoulder base aggregate type*** (See Exhibit 2)
   BAD adjacent to concrete pavement and underlying shoulder shall be designated as ¾-inch or 1 ¼-inch per FDM 14.5.1. The contractor can place either size. The area shall be calculated as ¾-inch per FDM 14.5.1.

3. ***Subgrade cross-slope and minimum base aggregate dense depth*** (See Exhibits 2 and 3)
   In all cases, except super-elevation, hold the subgrade slope at 2%. The thickness of BAD will vary, but keep to a minimum of 4-inches by reducing the breaker run depth.

4. ***High side super-elevation shoulder break point*** (See Exhibit 2)
   Break the shoulder on the high side of the super (maximum rollover 8%).

5. ***Treatment of median area between the concrete barrier*** (See exhibit 2)
   Use 4-inch concrete base between median barriers.

Issues 6-9 are referenced from the US 41 Brown County Mainline Typical Section Geometry_8-11-2011 memo. (Found in US 41 Corridor Manual Chapter 4 - Design)

6. ***Super-elevation sections – hold subgrade shoulder width constant*** (See Exhibit 2)
   a. With barrier or beam guard, hold the width of the subgrade shoulder slope offset constant as long as the slope is not more than 3:1.
   b. If barrier or beam guard is not present, the width of the subgrade shoulder slope offset should be held constant as long as the slope is 4:1 or flatter. If the slope is steeper than 4:1, the subgrade shoulder slope offset width must change to be the width required to have a 4:1 slope in full super-elevation.
      i.e. At full super determine the subgrade shoulder slope. If the slope is flatter than 4:1, maintain subgrade shoulder slope offset width. If the slope is steeper than 4:1, determine subgrade shoulder slope offset width in full super-elevation and use this offset width from reverse crown to reverse crown.

7. ***Pavement section in gore areas*** (See Exhibit 2)
   Use 2-inch HMA over 8-inch (west of LLBDM) or 9-inch (east of LLBDM) concrete base over BAD. In gore areas where the adjoining shoulder on both the ramp and mainline is concrete, not HMA, also use 2-inch HMA over concrete base.

8. ***Minimum 'shelf' width beyond outside barrier*** (See Exhibit 2)
   Use a 2-foot 'shelf' sloped down at 4% before hinging to a 3:1 or 4:1 fill slope.

9. ***Width of concrete pavement where barrier is at edge of outside shoulder*** (See Exhibit 2)
   Stop pavement at outside edge of barrier. Use concrete shoulder where there is barrier on the outside.

Issue 10 was covered in the 12-13-11 e-mail from Scott Ebel to Justin Arndt

10. ***Place crown point between lanes 2 and 3*** (See Exhibit 2)

Issue 11 was discussed at the 1-25-12 HNTB internal design meeting

11. ***Super-elevation rotation point moves from crown point to reference line in off-alignment section***

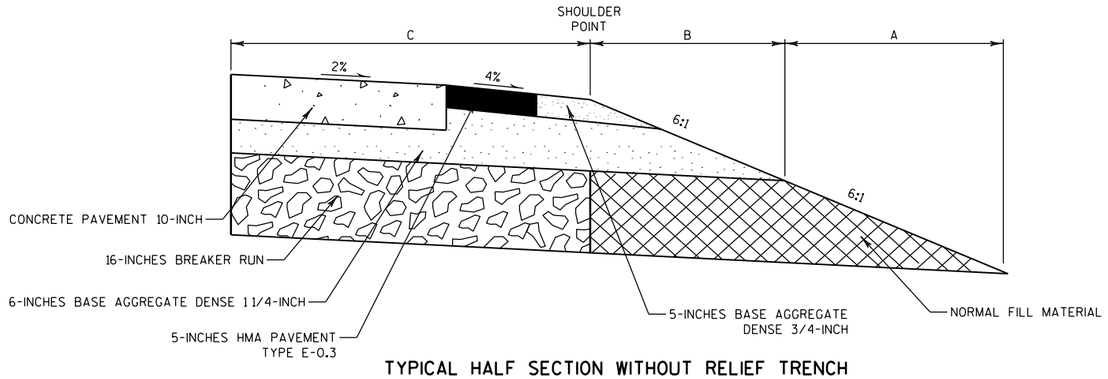
Issue 12 was a 30% review comment

12. 1-foot of BAD outside asphalt shoulder (See Exhibit 2)

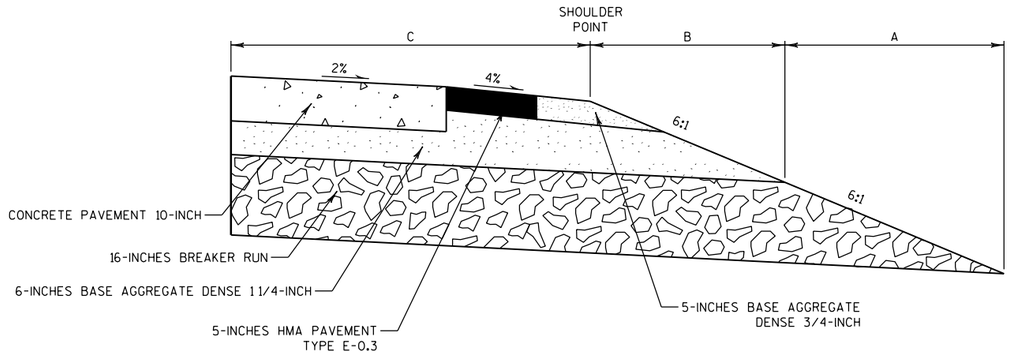
Summary of decisions

See Exhibit 2 for a typical WIS 441 section depicting above issues.

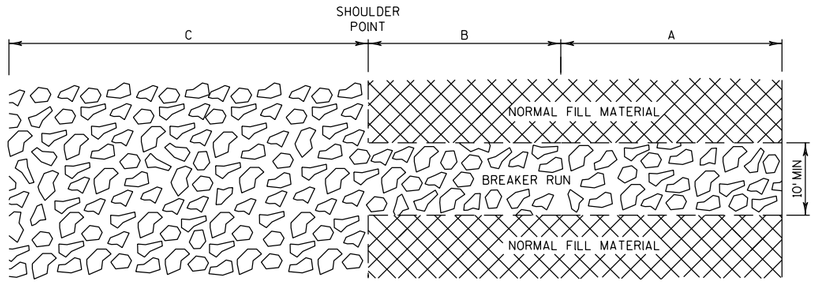
2



TYPICAL HALF SECTION WITHOUT RELIEF TRENCH



TYPICAL HALF SECTION WITH RELIEF TRENCH

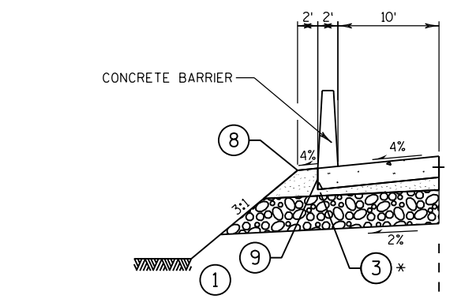


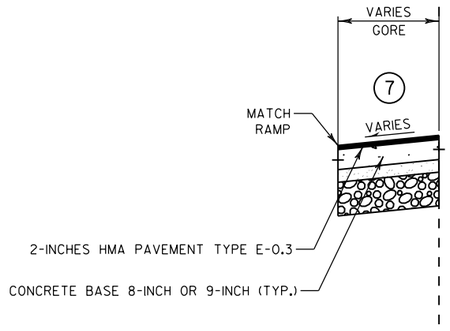
RELIEF TRENCH PLAN VIEW

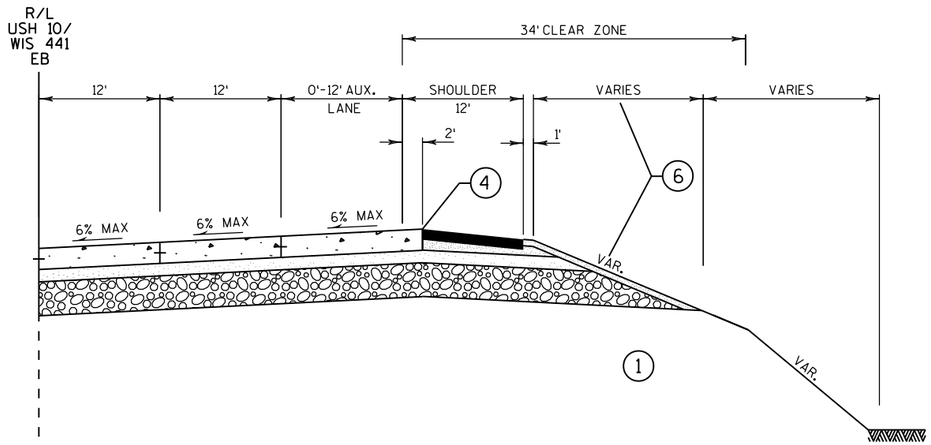
EXHIBIT 1: RELIEF TRENCH

PROVIDE RELIEF TRENCH EVERY 250 FEET AND AT LOW POINTS

PROJECT NO:	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	RELIEF TRENCH	SHEET	E







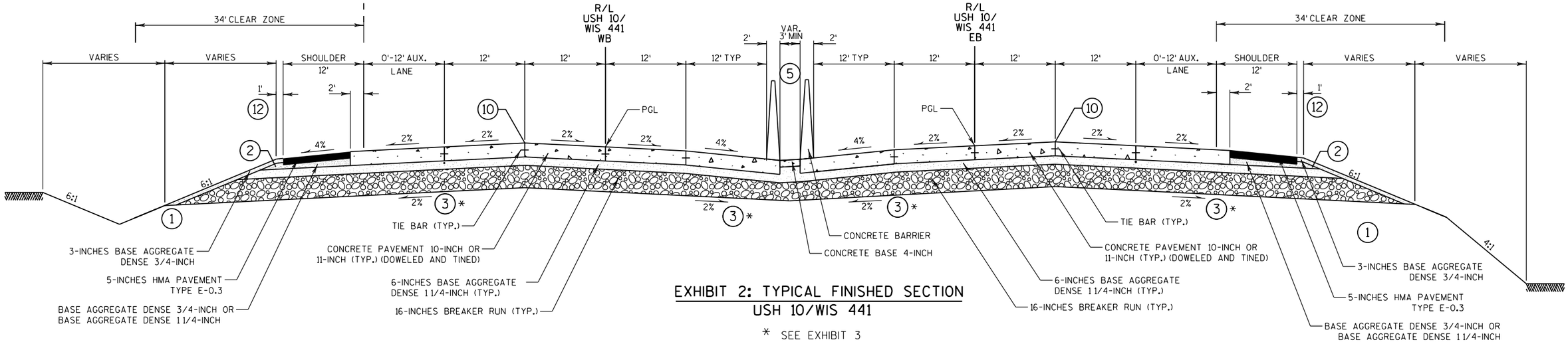


EXHIBIT 2: TYPICAL FINISHED SECTION
USH 10/WIS 441

* SEE EXHIBIT 3

PROJECT NO:	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	TYPICAL SECTIONS	SHEET	E

2

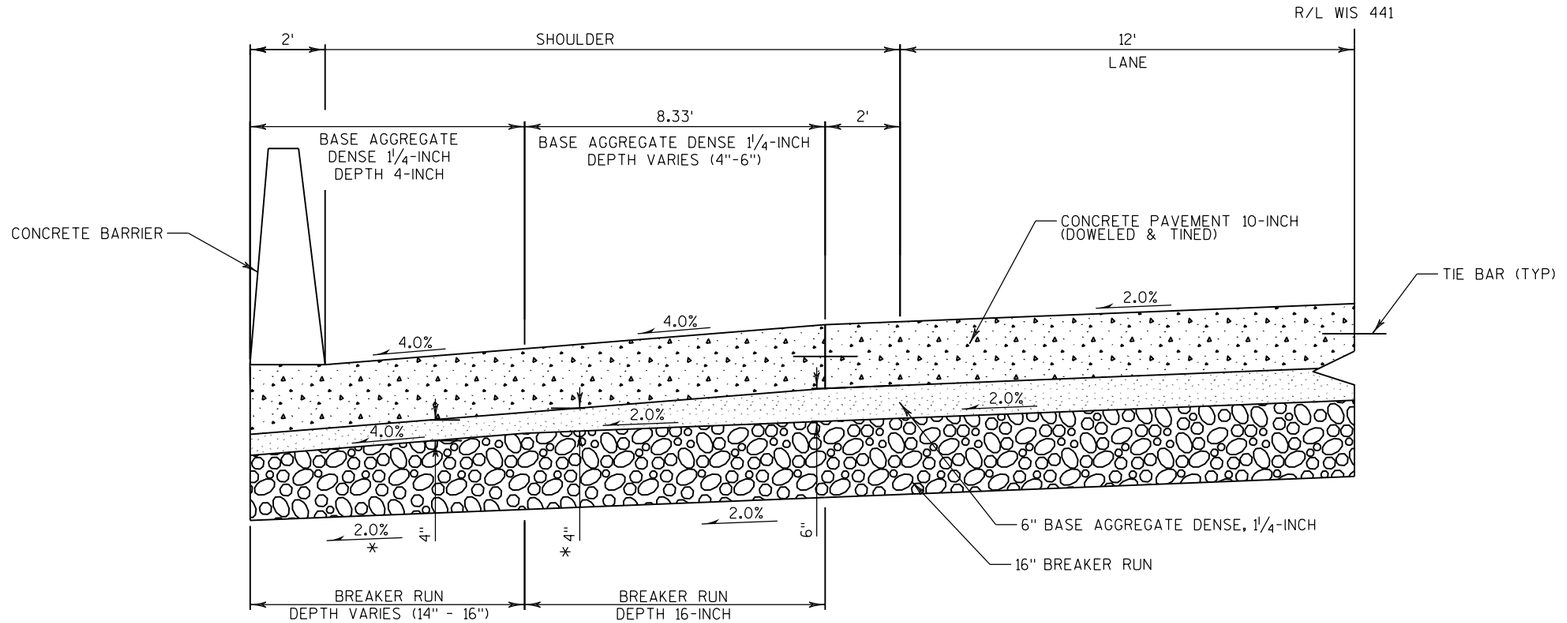


EXHIBIT 3: MINIMUM BASE AGGREGATE DENSE DEPTH

(NOT TO SCALE)

* MAINTAIN A MINIMUM THICKNESS OF 4" BASE AGGREGATE DENSE 1¼-INCH

PROJECT NO:	HWY: USH 10/WIS 441	COUNTY: WINNEBAGO	CONSTRUCTION DETAIL	SHEET	E

WIS 441 / US 41 Interchange Configuration

TRI-COUNTY EXPANSION

Issue

The WIS 441Project Team has been working to address operational issues identified at the US41/WIS441/US10 System interchange. Paramics traffic modeling indicates the 30% or functional plan configuration would operate at level of service (LOS) D or worse immediately following the 2018 construction year and would operate at LOS F at all locations below in the 2038 design year. Independent HCS modeling done by the Interstate Conversion team has also identified the same operational issues along US 41 and the results of an Origin Destination (OD) Study for the area support traffic behavior assumptions used in the modeling. Specific operational issues identified are:

US 10 Westbound to US 41 Southbound: Modeling indicates poor LOS along the LLBDM bridge between the Racine St and US 41 interchanges related to the limited distance between ramps and the large volume of traffic destined for US 41 SB instead of continuing on US 10 WB (over 50%).

US 41 Southbound Issues: Modeling indicates poor LOS along US 41 SB between the WIS 441 and CTH II interchanges related to the weaving of traffic continuing south on US 41 and traffic using the CTH II exit ramp. Operational issues were identified by both the WIS 441 Project and Interstate Conversion teams.

US 41 Northbound Issues: Modeling indicates poor LOS along US 41 between the CTH II interchange and the WIS 441 interchange related to the weaving of traffic continuing north on US 41 and traffic using the US10/WIS 441 exit ramp. Operational issues were identified by both the WIS 441 Project and Interstate Conversion teams.

Previously Considered Alternatives

Early modeling indicated a need for a collector-distributor or braided ramp configuration to address the operational issues along US 41. Refinement of the modeling and coordination with Bureau of Traffic Operations and the Statewide Traffic Operations Center indicate the issues can be addressed without the cost and real estate impacts a collector-distributor system would require so they are no longer being considered.

Recommendation

The project team is prepared to move forward with the recommendations below which provide a minimum level of service C at all locations for projected 2038 traffic volumes design with no additional real estate acquisitions and minimal impacts to adjacent frontage roads. **Total additional costs of improvements is estimated at $27.3M**

US 10 Westbound to US 41 Southbound: A major diverge or freeway split is proposed to accommodate the heavier volume making the US 41 southbound movement. The proposed design speed of this diverge movement is 65 mph which allows the Jacobsen Road overpass to remain in place. **The additional cost of this improvement is estimated at $5.7M**

US 41 Southbound: Extending an additional lane along US 41 SB from the WIS 441 interchange to just south of the CTH II interchange is proposed. This additional lane, a revised configuration of the US10/WIS441 entrance ramp and a two lane CTH II exit ramp will accommodate the heavy weaving volumes. **The additional cost of this improvement is estimated at $13.9M**

US 41 Northbound: Extend an additional lane along US 41 NB from the CTH II entrance to 2000’ north of the US10/WIS 441 exit point is proposed. This additional lane and a two lane CTH II entrance ramp will accommodate the heavy weaving volumes. **The additional cost of this improvement is estimated at $7.7M**

WIS 441 Tri-County Project Corridor Manual
Chapter 6: Drainage

Chapter Contact: Peter Shedivy

Issued: February 14, 2012
Revised: April 5, 2012
July 13, 2012
November 15, 2012
January 15, 2014
April 10, 2014
May 15, 2014
January 16, 2015

Scope/Purpose
This chapter establishes the design criteria to be used in hydraulic analysis of bridges, culverts and storm sewers.

Reference Documents
Provided below is a list of documents referenced in this chapter:

1. Wisconsin Department of Transportation Facilities Development Manual (FDM)
2. Wisconsin Department of Transportation Bridge Design Manual

Documentation of Hydrologic/Hydraulic Design
Each WisDOT project that has a stormwater component must have a completed Stormwater-Drainage-WQ Report spreadsheet found in FDM 13-1 Attachments 10.1 and 10.2. Inclusive of these spreadsheets and also required documentation for each WisDOT project are the Channel and Chute Design Spreadsheets.

Major Drainage Structures (Bridges, Box Culverts and Large Drainage Conduits)
- See Bridge Design Manual Chapter 8 and FDM procedure 13-1-20 Large Drainage Conduit (culverts greater than 84 inches in diameter).
- Limit 50-year headwater surface to subgrade shoulder point elevation or lower.
- Limit 100-year headwater surface to road surface inundation elevation or flood protection elevation, whichever is lower.
- Consider existing flooding problems at the waterway crossing that cause damage to the roadway or adjacent property when determining a flood protection elevation.
- The design peak flow used for the hydraulic design of the proposed structure must be the same peak flow used in determining the headwater elevation for the existing structure. Similarly, the same regulatory peak flow should be used in the hydraulic modeling of existing and proposed structures for the purpose of determining backwater impacts as required by NR 116.
- Extensions:
  - Check structure condition on WisDOT structure database for WIS 441.
  - Check existing structure design flow against updated regulatory design flows, if applicable.
  - Check capacity of existing structure and document methodology used.
  - See Hydrologic Analysis for Waterway Crossings below for computation of design flows.
- If existing structure is in good condition according to above referenced database, is expected to remain structurally sound for the roadway design life, and has capacity for the computed design flow, the structure may be extended with concurrence of the WisDOT PM and Central Office.
- Replacements (See FDM Procedure 13-10-1):
  - Design replacement structure to match existing headwater elevations.

    - See FDM section Hydrologic Analysis for Waterway Crossings for computation of design flows.
- If the proposed replacement structure causes an increase in the headwater elevation, affected upstream property owners and the municipality must be notified (see FDM Procedure 13-10-1 and NR 116).
- If the proposed opening area of a waterway crossing is greater than existing, downstream impacts must be evaluated.

Mainline Cross Drain and Side Road Culverts (Freeway, ramps, urban streets, STH, CTH, Frontage Roads)

- See FDM Section 13-15 Hydraulic Design of Culverts.
- Compute headwater elevations of all existing culverts.
- All existing corrugated metal pipes must be replaced. Confirm with WisDOT project manager.
- Use reinforced concrete pipe (RCP) for all culverts. Corrugated metal pipes may be used for driveways.
- Minimum pipe size for freeway, frontage roads, STH, and CTH is 24-inch; 30-inch for multi-lane roads with 10 feet or more of fill. The minimum pipe size for driveway and access road culverts is 18-inch. Use of smaller diameter, or number of, pipes may be acceptable if approved by WisDOT.
- Minimum cover is 12 inches from top of pipe to bottom of subgrade. If roadway profile cannot be adjusted to achieve minimum cover, designer must specify use of Class IV or V RCP pipe. Culverts with less than minimum cover should be identified in the miscellaneous quantities.
- Breaker run is not considered part of the subgrade.
- The design headwater elevation is the subgrade shoulder point elevation or the flood protection elevation for private property, whichever is lower. The design headwater elevation to diameter ratio (Hw/D) should be less than 1.5. Also, the design headwater elevation must be confined within adjacent ditches to prevent overflow of drainage divides.
- Use the 50-year design storm for mainline, STH and urban streets. Use the 25-year design storm for CTH, rural local roads, and frontage roads. Use the 50-year storm at frontage road culverts when computing the design tailwater elevation for upstream mainline culverts, or for frontage roads that have traffic volumes greater than 7,000 ADT. Driveways culverts may be designed for the 10-year design storm unless it would cause an undesirable backwater condition at other culverts designed for a more severe storm.
- Use normal depth for tailwater elevation unless downstream conditions warrant use of a higher tailwater elevation.
- Culverts should be sized to convey existing development conditions flows. After the culvert size is selected, it should be checked for capacity to convey 115% of existing development flow rates to account for future development. The WisDOT project manager must determine if a larger pipe size should be used.

Hydrologic Analysis for Waterway Crossings

See FDM procedure 13-10-1 for consideration of future development effects in the determination of design peak flows. For drainage basins over five square miles, which are predominantly rural, existing land use conditions should be used.

<u>Crossings with Regulatory Floodplains and Flood Flows</u>

- See FDM 13-10-1 and 13-10-5.
- Obtain regulatory flood flow and verify date developed and how it was computed. Check with WDNR, SEWRPC, MMSD, FEMA and local municipalities to determine if hydrologic and hydraulic studies of the watershed have been completed.
- Calculate design flood flow using updated methodologies as described in FDM chapter 13 and bridge design manual chapter 8. If design flow is significantly different than regulatory flow, then potential backwater impacts should be quantified using both design and regulatory flood flows.
- The appropriate level of hydraulic analysis for these crossings may vary depending on the changes proposed to the existing structure. The designer should first discuss the proposed structural changes with the WisDOT project manager. Further discussions with WisDOT region staff or WisDOT Central Office bridge staff may be required.

Other Waterway Crossings

- See FDM 13-10-5, Figure 1.
- Use Rational Method for predominantly rural drainage areas up to 200 acres, and for predominantly urban drainage areas up to 5 sq mi, or
- Use TR-55 for drainage areas up to 2000 acres. If TR-55 is used, time of concentration must also be calculated using TR-55 method, not Figure 3 in Procedure 13-10-5.
- Note that for culverts with large offsite areas the Tc calculated from Figure 3, Procedure 13-10-5 may be underestimated resulting in a larger culvert than is needed. In such cases, the designer must also calculate Tc using the TR-55 method, and calculate the peak flow using the higher Tc.

Encroachment of Proposed Roadway into Regulatory Floodplain

- The source for determination of existence, limits, and basis for regulated floodplain should be the floodplain zoning authorities for the Municipalities, Counties, Cities and Villages.
- Follow DOT/DNR Cooperative Agreement.
- A hydrologic/hydraulic analysis is required if the proposed roadway encroaches on the regulatory floodplain. Increases in regulatory elevations will be handled in accordance with the DOT/DNR Cooperative Agreement.

Pavement Drainage

Freeway and Ramps

- Reject curb is not permitted.
- Spread cannot exceed the width of the shoulder for the 25-year design storm.
- For roadways with low points, spread shall be checked for the 50-year storm. For roadways with low points at underpasses or sump locations where curb overtopping could result in flooding and catastrophic conditions at adjacent properties, spread shall be designed for the 50-year storm and checked for the 100-year. During the check storm, the ponding will be permitted to cover all but one through lane for multiple lane pavements. The depth of flow at the curb shall not exceed 1 inch below the top of the curb for the design discharge regardless of the type of highway. A maximum depth of 6 inches is permissible where a barrier shape is provided adjacent to the pavement.
- During construction on roadways with active traffic, spread will be checked with a 5-year design storm and evaluated on a case by case basis. Ride-ability and use of vane drains should be considered for temporary drainage designs. Vane drains shall be used in all temporary cross overs. (4/22/14 Design/Structure Meeting)
- Inlet covers along medians on grade shall be Type V. A single slotted vain drain Type A or double slotted vain drain Type B, may be added if necessary. Assume no clogging.
- Inlet covers along shoulders on grade shall be Type V. A single slotted vain drain Type A or double slotted vain drain Type B, may be added if necessary. Assume no clogging.
- For roadway low points, inlet covers shall be Type V. Use 25% clogging factor. Use flanking inlets with Type V. Assume no clogging. Exceptions should be discussed with WisDOT project manager.
- The following footnote must be included in the storm sewer Miscellaneous Quantity table if manhole structures with inlet covers are used: “Flat slab top with 21-inch x 24-inch rectangular opening required on all manholes with Type V inlet covers. Position slab opening directly above manhole steps.” The “Comments” column must reference the footnote for the affected structures. (i.e. “SEE NOTE X”).
- Discuss median drainage design with the WisDOT Project Manager.
- Manhole type shall be selected based on storm sewer sizes. Manhole covers shall be Type J in non-paved areas, and Type J-Special in paved areas. Exceptions should be discussed with the WisDOT Project Manager
- Manhole spacing shall be in accordance with FDM Section 13-25-15.
- Structure numbering shall increase in the direction of flow.
- Inlets shall not be spaced greater than 600 feet.

STH, CTH, Urban Streets, Frontage and Access Roads

- Reject curb is not permitted.

- For roadways on grade, spread cannot exceed the shoulder width plus half the adjacent travelled lane for a minimum 10-year storm. The WisDOT project manager may dictate use of a more severe storm.
- During construction on roadways with active traffic, spread will be checked with a 5-year design storm and evaluated on a case by case basis. Ride-ability and use of vane drains should be considered for temporary drainage designs. Vane drains shall be used in all temporary cross overs. (4/22/14 Design/Structure Meeting)
- For roadways with low points, spread shall be checked for the 25-year storm for multi-lane roadways. For roadways with low points at underpasses or sump locations where curb overtopping could result in flooding and catastrophic conditions at adjacent properties, spread shall be designed for the 50-year storm and checked for the 100-year. During the check storm, the ponding will be permitted to cover all but one through lane for multiple lane pavements (does not apply to 2-lane facilities). The depth of flow at the curb shall not exceed the top of the curb for the design discharge regardless of the type of highway. A maximum depth of 6 inches is permissible where a barrier shape is provided adjacent to the pavement.
- Inlet covers along medians and shoulders on grade shall be Type H. Assume no clogging.
- For roadway low points, inlet covers shall be Type HS. Use 25% clogging factor.
- For roadway low points, use flanking inlets with Type HS covers. Assume no clogging. Use of flanking inlets for roundabouts shall be determined on a case-by-case basis.
- Manhole type shall be selected based on storm sewer sizes. Manhole covers shall be Type J in non-paved areas, and Type J-Special in paved areas. Exceptions should be discussed with the WisDOT Project Manager.
- Manhole spacing shall be in accordance with FDM Section 13-25-15.
- Structure numbering along storm trunk lines shall increase in the direction of flow.
- Structure numbers shall be three digits.
- Structure numbering shall be unique for each section of roadway within a construction package.
- Inlets shall not be spaced greater than 600 feet.

Storm Sewers

Freeway and Ramps

- See FDM 13-25 Storm Sewer Design.
- Use IDF curves in FDM.
- Design pipes to flow full at the 25-year storm and check the 50-year storm. Increase pipe sizes as required preventing surface flooding at the 50-year storm frequency.
- For roadways with low points at underpasses or sump locations where curb overtopping could result in flooding and catastrophic conditions at adjacent properties, design pipes to flow full at the 50-year storm and check the 100-year storm. Increase pipe sizes as required preventing surface flooding at the 100-year storm frequency.
- Trunk storm sewer pipes must be a minimum of 24-inch diameter.
- Lateral storm sewer pipes must be a minimum of 12-inch diameter.
- Lateral storm sewer pipes directly connected to trunk pipes must be a minimum of 15-inch diameter.
- Maintain existing drainage patterns through the facility to the maximum extent practicable.

STH, CTH, Urban Streets, Frontage and Access Roads

- See FDM 13-25 Storm Sewer Design.
- Use IDF curves in FDM.
- Design pipes to flow full at the 10-year storm and check the 25-year storm. Increase pipe sizes as required preventing surface flooding at the 25-year storm frequency.
- For roadways with low points at underpasses or sump locations where curb overtopping could result in flooding and catastrophic conditions at adjacent properties, design pipes to flow full at the 50-year storm and check the 100-year storm. Increase pipe sizes as required preventing surface flooding at the 100-year storm frequency.
- Trunk storm sewer pipes must be a minimum of 24-inch diameter.
- Lateral storm sewer pipes must be a minimum of 12-inch diameter.
- Lateral storm sewer pipes directly connected to trunk pipes must be a minimum of 15-inch diameter.

- Maintain existing drainage patterns through the facility to the maximum extent practicable.
- A flowing full velocity of 10 to 15 fps is desirable for the design storm.

Roadside Ditches

- See FDM 13-30 Channels and Road Ditches.
- Follow the requirements of Trans 401 to the maximum extent practicable. Exceptions should be discussed with the WisDOT Project Manager.
- Use 25-year design storm frequency.
- Minimum longitudinal slope = 0.005 ft/ft.
- Design roughness coefficient = 0.07 (Manning's "n" for good stand of grass, 12"height, depth of flow 0.7' – 1.5')
- The maximum water elevation in ditches for the design storm is the subgrade shoulder point or flood protection elevation, whichever is lower.

Roadside ditches are a Best Management Practice (BMP) that will be used to achieve stormwater quality requirements for the corridor. Trans 401 requires a minimum ditch length of 200 feet and design velocity less than or equal to 1.5 ft/sec to provide 40%TSS removal or maximum extent practicable based on a 2-year, 24-hour, design storm, or on a 2-year design storm with a duration equal to the time of concentration. Storm sewers must be discharged to ditches as frequently as practicable for roadside ditches to meet the Trans 401 requirements.

Stormwater Management BMPs

- Follow requirements of Trans 401 and DOT/DNR Cooperative Agreement
- WIS 441 Drainage and Stormwater Report can be found on the FTP site: ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Reports/Stormwater/
- A TSS reduction of 40% Corridor wide per Trans 401 will be met without having to treat stormwater runoff generated by the Little Lake Butte des Morts structure.
- Wet detention basins shall be designed in accordance with WDNR technical standard 1001.
- BMPs for mainline and interchanges within 10,000 feet of airport air operation zones cannot contain permanent pools. Dry detention basins may be used in these areas for peak flow reduction.
- BMPs for TSS reduction include wet detention basins, grass swales, and grass slopes. Trapezoidal swales shall be used where there is sufficient space.
- Stormwater drainage systems shall be designed to maintain existing drainage patterns to the maximum extent practicable.
- NER preferred pond outlet structure is concrete with trash rack.
- NER pond grading detail to mitigate waterfowl shall be used for all wet detention ponds(located on project ftp site).

Inlets at Moment Slabs

Detailed interdisciplinary coordination is needed when storm sewer structures are located adjacent to retaining walls. The drainage designer should still do an initial layout of the storm sewer system based on drainage needs but must then review the layout with the retaining wall designer to identify modifications needed to accommodate wall construction. The following is a list of items that must be addressed. Additional items may be identified based on site specific needs.

- Inlet structures should be specified as rectangular when adjacent to a retaining wall (all types).
- Offsets vary based on type of retaining wall and size of storm sewer structure. 6" clearance required between face of wall and outside of structure.
- Manholes with inlet covers typically require additional offset to achieve required horizontal clearance and have inlet cover sit properly on manhole.
- Manholes adjacent to MSE walls require additional offset to clear wall straps. THIS MUST BE COORDINATED WITH THE STRUCTURAL DESIGNER.
- A detail is required to instruct the contractor how to offset the flow line (lateral and longitudinal limits). THIS DETAIL NEEDS TO BE COORDINATED WITH THE ROADWAY DESIGNER.
- Retaining walls with an anchor slab require additional adjustment/risers so the top of structure is below the slab.

- A minimum of 6” clearance (12” desired) is required between the bottom of the anchor slab and outside of storm sewer pipe.
- Inlets centered between expansion joints to the maximum extent.
- Need horizontal clearance between storm sewer structure and features mounted on top of retaining wall (e.g. lighting, noise wall). 5’ clearance typical but must be coordinated with structural engineer for wall-specific and road-specific considerations (low points can’t be moved).

Inlets at Barriers

Inlet grates shall be located one foot offset from the toe of barrier such that the distance between the edge of inlet grate and toe is one foot. Structure offset can vary depending on the type used. A construction detail is located in Chapter 18 of the Corridor Manual. See Inlet Placement at Retaining Wall detail for barrier inlets placed along retaining walls.

Other Drainage Design Criteria

- Pipe Grates
  - Use only on the inlet end of a culvert or storm sewer pipe 18” in diameter or larger. (Discuss the use of these with DOT PM - pipe grates increase clogging and limit pipe capacity if not manintained properly)
  - Use in areas outside of the fenced DOT R/W that could be accessed by a pedestrian.
- Beam Guard
  - Use beam guard where endwalls of pipes 30-inches and larger in diameter are located within the clear zone.
- Pipe Length
  - Add note to drainage table on how pipe length was calculated (i.e. center to center of structures, subtracting endwall from pipe length).
- Culvert markers at all endwalls, storm sewer and culverts. (Discuss with WisDOT PM)
- All inlets within live traffic lanes during staged construction shall have bolted or welded covers.
- Median Cross-over Drainage:
  - Analysis and special care is to be taken at areas of median cross-overs to reduce the flow within the cross-over area to the maximum extent practicable. This may include use of multiple standard inlets to intercept flow at the upstream ends of the cross-over or throughout the cross-over to reduce flow through the area, and/or use of longitudinal vane drains intermittently, or throughout the entire cross-over as location and drainage conditions warrant

WIS 441 Tri-County Project Corridor Manual
Chapter 7: ITS/FTMS

Chapter Contact: Randy Asman (WisDOT)
Matt Letourneau (URS)

Issued: February 14, 2012
Revised: March 15, 2012
April 16, 2012
January 15, 2013

Scope/Purpose
This chapter summarizes the key points that the roadway design teams will need to properly coordinate their designs with the ITS/FTMS work.

Reference Documents
- ITS Design and Operations Guide
- Statewide Ramp Control Plan
- Traffic Guidelines Manual (TGM)

ITS/FTMS
See attachment ITS North Extension – Tech Memo 18.

Ramp Metering
Design ramps for ramp metering where traffic volumes warrant.

Ramp metering locations have been determined according to the attachment WIS 441 ITS Ramp Metering (Dated 1/7/13) (Scott Ebel/Randy Asman concurrence e-mail of 1/8/13).

Road Weather Information System (RWIS)
Existing RWIS station at 41/441/10 will need to be replaced and coordinated through Mike Adams in Central Office (Randy Asman email of 1/27/2012).

Items Needed from Designers:
- 60% and 90% roadway plans (roadway designer)
- 60% and 90% drainage plan and profile (drainage designer)
- 60% and 90% structure plans (structure designer)
- Master dgn files (all designers)
- PS&E schedule updates (WisDOT)

Coordination Items (As Needed):
- Coordinate with roadway designer to place beam guard or concrete barrier to shield or protect ITS facilities
- Coordinate with roadway designer to place conduit beneath shoulders
- Coordinate with lighting designer to place electrical service
- Coordinate with lighting designer to share ramp closure gate/lighting facilities
- Coordinate with structural designer to place conduit within bridge parapets for ITS cable
- Coordinate with roadway designer to submit ITS plans, specifications, and estimate

Attachments

- ITS North Extension - Tech Memo 18 (Dated 3-21-12)
- WIS 441 ITS Ramp Metering (Dated 1/7/13)

Technical Memorandum

Date: March 21, 2012

To: Randy Asman, PE - WisDOT Northeast Region
Scott Ebel, PE - WisDOT Northeast Region
Kurt Peters, PE - WisDOT Northeast Region
Andy Fulcer, PE - WisDOT Northeast Region
Chad DeGrave, PE - WisDOT Northeast Region
Brian Roper - WisDOT Northeast Region

From: Matt Letourneau, P.E. – URS

Project ID: **1517-07-04**

Project: **WIS 441 Tri-County Expansion**
Winnebago County

Subject: **Tech Memo #18 – Proposed ITS North Extension**

Purpose

This memorandum provides support for expanding the ITS design element of the WIS 441 Tri-County Expansion Project to include traffic management and communications infrastructure 1) along WIS 441 between US 10 (Oneida Street) and the north US 41 interchange and 2) at the STH 15 (Northland Avenue) interchange on US 41.

Proposed ITS North Expansion

Current WIS 441 ITS Design Elements

At present, the proposed WIS 441 ITS design (Exhibit 1) includes interim and/or permanent traffic management devices (e.g., CCTV cameras, dynamic message signs (DMS), vehicle detectors) along US 41 from Breezewood Lane north to CTH BB (Prospect Avenue) and along US 10/WIS 441 from STH 76 east to Oneida Street. Fiber optic cable is included in the design along US 41 from Breezewood Lane north to the US 41/WIS 441 interchange, and then east along WIS 441 to Oneida Street. While this ITS infrastructure will provide the Department with effective tools for monitoring and informing motorists within the work zone, the boundaries of the design to the east will limit the effectiveness of the system.

Benefits of ITS Design Expansion

Adding ITS devices on WIS 441 east of Oneida Street and along other locations on US 41 would provide a number of benefits to the Department:

- Vehicle detection will help the Department to measure queue lengths and travel times on the westbound approach to the work zone, information that can be used by the local and statewide operations staff to better manage traffic.
- With this information, dynamic message signs and WisDOT's 511 system can be leveraged to make drivers more informed about current conditions on the east portion of WIS 441.
- Vehicle detection and CCTV cameras would improve incident detection and response along all sections of WIS 441 and US 41.
- Vehicle detection would provide traffic volume data that could be used to measure traffic patterns around the work zone.
- Combined with future projects on US 41 at STH 47 (Richmond Avenue) and CTH E (Ballard Road), communications infrastructure along the eastern section of WIS 441 could be used to build a complete loop between the two US 41/WIS 441 interchanges. This would greatly improve the reliability of the

network (since a disruption along one part of the loop would no longer cut off communications to downstream ITS devices).

Proposed ITS Design Elements

As documented in WisDOT's *Traffic Operations Infrastructure Plan*, the following design elements should be considered for inclusion in the WIS 441 ITS design (Exhibit 1):

- WIS 441 and CTH KK (Calumet Street) – CCTV camera and vehicle detection site
- WIS 441 and Creek View Lane – dynamic message sign (northbound)
- WIS 441 and CTH CE (College Avenue) – CCTV camera and vehicle detection site
- WIS 441 and CTH OO (Northland Avenue) – CCTV camera and vehicle detection site
- North US 41/WIS 441 interchange – CCTV camera site
- WIS 441, Oneida Street to the north US 41 interchange – fiber optic communications infrastructure
- US 41 and STH 15 (Northland Avenue) – CCTV camera and vehicle detection site (with wireless communications link)
- US 41 and CTH A (Lynndale Drive) – CCTV camera and vehicle detection site (with wireless communications link)

The overall deployment cost of these recommendations is estimated to be $1.27M (see table below).

Item Description	Unit	Quantity	Estimators Unit Price	Item Cost
CCTV Camera Site (Single)	EA	1	$26,000	$26,000
Dynamic Message Sign Site	EA	1	$210,000	$210,000
Permanent CCTV/Detection Site	EA	5	$60,000	$300,000
Power Site Links	EA	7	$8,300	$58,100
Fiber Optic Backbone	MI	5.0	$80,000	$400,000
Wireless Backhaul Links	EA	3	$10,000	$30,000
Fiber Optic Site Links	EA	5	$7,600	$38,000
			Subtotal:	$1,060,000
			With 20% Contingency:	**$1,270,000**

Recommendations

As documented in the *Traffic Operations Infrastructure Plan*, the Fox Valley area (including US 41 and WIS 441) has been identified as the #3 corridor in the state for the deployment of ITS devices, with anticipated benefits exceeding the expected costs by a ratio of more than 3:1. As shown in Exhibit 1, ITS devices currently included in Contract 1517-07-04 will address a number of key locations along US 41 and US 10/WIS 441. However, critical traffic monitoring gaps remain: US 41 between College Avenue and the north US 41/WIS 441 interchange and WIS 441 from Telulah Avenue to the east and north. These gaps will be particularly significant during the WIS 441 reconstruction work, as the probability of queues and incidents along these segments greatly increases.

With these considerations in mind, it is recommended that the proposed ITS devices listed above be installed along US 41 and WIS 441 in the gap areas, and that a combination of fiber optic backhaul and wireless communications hops be deployed to create a communications loop around the Appleton freeway network. Considering that these important ITS elements cannot be installed as a standalone project, it is further recommended that they be included in the WIS 441 Tri-County Expansion Project. Once operational, these tools

will improve WisDOT's traffic monitoring and management capabilities, improve driver safety and awareness, and enhance overall system reliability.

List of Attachments

Exhibit 1 – ITS Schematic for the WIS 441 Tri-County Expansion Project

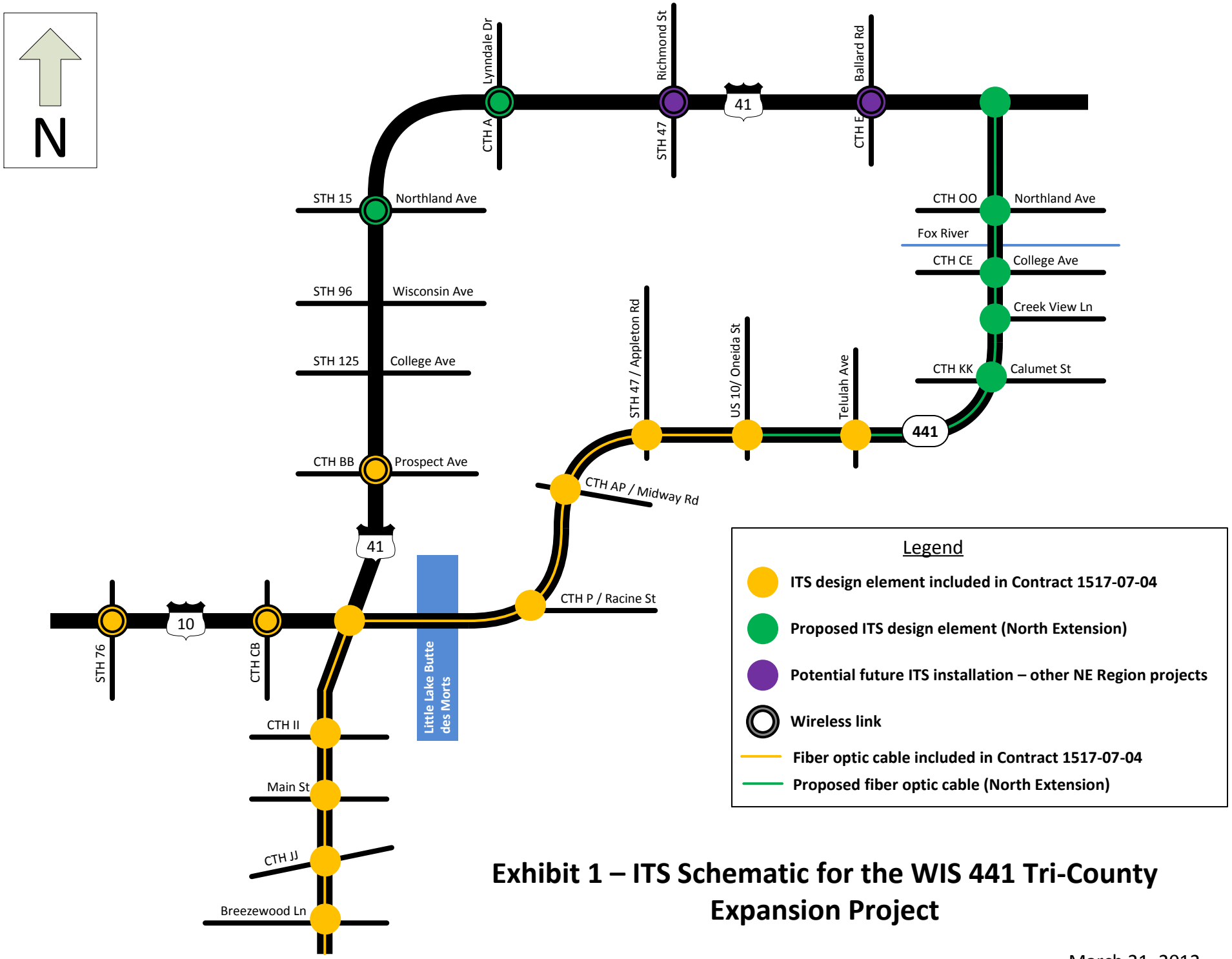


Exhibit 1 – ITS Schematic for the WIS 441 Tri-County Expansion Project

March 21, 2012

Technical Memorandum

Date: January 7, 2013

To: Scott Ebel, PE – WisDOT Northeast Region
Randy Asman, PE – WisDOT Northeast Region

From: Nicholas Becker, PE – URS

Project ID: **1517-07-04**

Project: **WIS 441 Tri-County Expansion**
Winnebago County

Subject: **Ramp Metering Summary**

Purpose

This memorandum summarizes the potential for providing grading and/or pavement for future ramp metering at entrance ramp locations along the US 41/WIS 441 corridor. A summary for each location is provided below with recommendations.

County II Interchange

NB Entrance Ramp – The proposed entrance ramp has two lanes for the entire ramp. No additional grading for ramp metering lanes will be included in the project.

SB Entrance Ramp – Spring Road Elementary School is adjacent to this entrance ramp. If an additional lane was added to accommodate ramp metering, the berm between the ramp and the school would be impacted. No additional grading will be included in the project.

Racine Rd Interchange

NB Entrance Ramp – There is limited room to accommodate additional ramp width due to the real estate conflict with the cemetery. The cemetery minimum offset location is only 290' after the physical gore, and the lane drop of the additional lane cannot occur until after the PC in the ramp. Metering could not be accommodated due to the cemetery conflict for an additional lane for storage. Ramp meter warrant analysis determined that ramp meters will not be needed by 2020, but would be warranted by 2038. No additional grading will be included in the project.

SB Entrance Ramp – Ramp metering conflicts arise with the need to extend the ramp storage to the proposed Tayco Street Structure carrying WB 441 traffic. When traffic reaches the stop bar for metering (50' prior to physical gore), the lane drop exiting the WB ramp terminal RBT has already been completed. The lane would need to extend through the Tayco Street structure. This will require additional structure width, as well as make the profile less desirable due to vertical clearance becoming an issue (low side of full super). An additional parcel would need to be purchased west of Tayco. Ramp meter warrant analysis determined that ramp meters will not be needed by 2020, but would be warranted by 2038. No additional grading will be included in the project.

Midway Rd Interchange

NB Entrance Ramp – WisDOT Real Estate asked that impacts are minimized to RR Donnelly during initial design with need to maintain delivery truck circulation around the building. With adding ramp metering, additional real estate impacts will be required to the RR Donnelly parcel. After shifting mainline to minimize impacts, proposing an additional lane here would be less than desirable and increase the right of way needed to be acquired from RR Donnelly. No additional grading/pavement will be included in the project.

SB Entrance Ramp – With the location of ramp metering starting at the gore point, the additional lane would require relocation of Richards Road. Current design is avoiding the use of any retaining walls at this location, and the additional 12' of pavement will require retaining walls to avoid buyouts. Ramp meter warrant analysis determined that ramp meters will not be needed by 2020, but would be warranted by 2038. No additional grading will be included in the project.

Appleton Rd Interchange

NB Entrance Ramp – Providing two lane ramps for future ramp metering will have additional property impacts. However, the impacts can be minimized with guardrail/barrier. **Provide grading for future ramp metering.**

SB Entrance Ramp – Providing two lane ramps for future ramp metering will have a small isolated wetland area impacted. Additional strip right of way will also be required. Ramp meter warrant analysis determined that ramp meters will not be needed by 2020, but would be warranted by 2038. **Provide grading for future ramp metering.**

Oneida St Interchange

NB Entrance Ramp – In this quadrant of the interchange, an existing noise wall is planned to be replaced as part of the interchange reconstruction. Extending two lane ramps to accommodate ramp metering will require noise wall with retaining barriers to minimize property impacts. **Provide grading for future ramp metering.**

SB Entrance Ramp – Current design of entrance ramp is a two lane ramp. Ramp metering has no additional impacts. Current design will allow for future ramp metering when required. No additional grading will be provided as the ramp is designed as two lanes.

WIS 441 Tri-County Project
Corridor Manual
Chapter 8: Geotechnical, Pavement & Materials

Chapter Contact: Rick Lyons

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September 16, 2013
October 15, 2013
November 15, 2013
February 17, 2014
July 15, 2014
August 19, 2014

Scope/Purpose

This chapter defines the investigative/design criteria for the purpose of providing consistency in the Geotechnical, Pavements, and Materials investigations, designs, and special provisions. It includes:

- Soil boring intervals/depths for both roadway and structures
- Laboratory testing
- Borrow sources
- Geotechnical subgrade guidance/locations where EBS is required
- Pavement typical sections
- Structures/foundation recommendations

Department Contacts

WisDOT will identify pavement, soils, and/or material issues for WIS 441. Contacts are:

- Geotechnical – Neil Michaelson
- Pavement – Anthony Allard
- Materials – Jennifer McCartney-Grube

Reference Documents

- WisDOT Facilities Development Manual (FDM)
- WisDOT Bridge Design Manual
- WisDOT Construction and Material Manual

Geotech/Soil Borings

Soil boring logs and other geotechnical information is located on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Geotechnical_HazMat/

Subsurface geotechnical reports are located on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Geotechnical_HazMat/SubsurfaceInvestigationReports/

Pavements

The NER Pavement Section, along with Maintenance and Construction, recommend pavement reconstruction in the STH 47 (Appleton Rd) to Oneida St (USH 10) segment of WIS 441. (Barry Paye and Scott Ebel e-mail of 11-21-11).

Preliminary pavement structure for 30% design is as follows (from 11/22/11 Design/Corridor task meeting):

Mainline/Ramps
10-inch Concrete Pavement
6-inch Base Aggregate Dense 1 ¼"
16-inch Breaker Run

Local Roads
10-inch Concrete Pavement
6-inch Base Aggregate Dense 1 ¼"
9-inch Breaker Run

Preliminary pavement structure for 60% design is as follows (8/30/12 Tony Allard and 9/5/12 Scott Ebel e-mails):

Mainline/Ramps west of LLBDM
10-inch Concrete Pavement
6-inch Base Aggregate Dense 1 ¼"
16-inch Breaker Run

Mainline/Ramps east of LLBDM
11-inch Concrete Pavement
6-inch Base Aggregate Dense 1 ¼"
16-inch Breaker Run

City of Appleton (9/17/12 Mark Lahay Assistant City Engineer e-mail)
8-inch Concrete Pavement
12-inch Base Aggregate Dense 1 ¼"
This includes Oneida Street, Valley Drive, Roeland Avenue and Midway (at Oneida)

At the 10/9/12 Geotechnical Coordination Meeting, it was confirmed that 16-inches of Breaker Run would remain in the assumed pavement structure on mainline and ramps. At the 11/6/12 Design/Structures Meeting, it was clarified that breaker run would not be included in the assumed pavement structure on local roads.

Final breaker run recommendations for mainline, ramps, roundabouts and local roads are found in the attached WIS 441 Pavement Soil Report.

WIS 441 Final Pavement Design Report can be found on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Reports/PavementTypeSelectionReport/

Temporary Pavement Structure for mainline crossovers is as follows (8/11/14 Tom Buchholz and Scott Ebel e-mail):

Mainline Crossovers
5-inch Asphaltic Surface
12-inch Base Aggregate Dense 1 ¼"
12-inch Breaker Run

Materials

The pond liner recommendation for ponds 2, 3, and 4 east of LLBDM is a Geosynthetic Clay Liner (GCL) topped with a 1-foot layer of uncompacted clay. (2/27/13 10/441 Weekly Geotechnical Meeting)

Structure Foundations

See Chapter 14 – Structures.

East to North system ramp near fill plug area – 30% design shown as fill but consider if structure is more appropriate during geotechnical considerations (geotechnical and structure coordination item).

The fill plug between structures B-70-406 (Ramp FWN) and B-70-601 (existing LLBDM) will be replaced with structure in order to minimize wetland impacts, allow better contractor staging access, and mitigate geotechnical risks due to the higher profile required by the system interchange revision. (3/11/13 Scott Ebel e-mail)

The fill plug between structures B-70-405 (ramp FWS) and B-70-601 (existing LLBDM) will be replaced with structure in order to mitigate geotechnical risks due to the higher profile required by the system interchange revision. (3/11/13 Scott Ebel e-mail)

Structure B-70-405 (ramp FWS) will be extended further to the south in order to substantially minimize wetland impacts, provide flexibility in final design of storm water pond 6, and mitigate some geotechnical risk due to the large fill height. (3/11/13 Scott Ebel e-mail)

Socket piles into rock to generate the uplift resistance for B-70-407 (8/29/13 10/441 Weekly Geotechnical Meeting)

Sign structures borings: If signs are located within an existing embankments use existing borings. If sign structure is a standard structure and not a sign bridge or cantilevered sign, then use the bridge design manual default design. Historically, issues with sign structures are often related to high groundwater or shallow rock. (8/22/13 10/441 Weekly Geotechnical Meeting)

Instrumentation will be used to determine when the tilt-up panels for walls can be placed (10/03/13 10/441 Weekly Geotechnical Coordination Meeting)

It is acceptable to use a resistance factor of 0.75 for final un-drained load cases at structures so long as monitoring is performed during construction. (10/03/13 10/441 Weekly Geotechnical Coordination Meeting)

For rock sockets, the preboring quantity should include the entire pile length and the unit price blended for "soft" and "hard" preboring. An estimated elevation of "Competent bedrock" should be shown on the bridge structures plans where piles will be socketed into bedrock. Competent Bedrock is defined by WisDOT for this project to be where auger refusal occurs and coring of bedrock begins. (1/23/14 10/441 Weekly Geotechnical Meeting)

Retaining Walls

The reinforced zone of MSE walls may be considered part of the drainage blanket for wick drains where geometry allows and the wicks will not interfere with MSE reinforcement. (10/03/13 10/441 Weekly Geotechnical Coordination Meeting)

Geotechnical Design Criteria

Design Criteria for bridges is found in the attached Design Criteria Report Rev 2013-02-01_WisDOT and on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Geotechnical_HazMat/Bridges/

Design Criteria for retaining walls is found in the attached Design Criteria Report v2.1 4-23-2013 and on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Geotechnical_HazMat/RetainingWalls/

Embankments

WisDOT's general order of preferred alternatives for embankments with slope instability issues are (5/9/13 10/441 Weekly Geotechnical Meeting):

- Over-excavate, if relatively shallow
- Flattening of slopes, stability berms, or toe trenches
- Wick drains and stage loading

WisDOT's general order of preferred alternatives for embankments with slope instability and settlement issues are (5/9/13 10/441 Weekly Geotechnical Meeting):

- Wick drains and staged construction
- Light-weight fill
- Rammed aggregate piers (geopiers)

The slope stability resistance factor (safety factor) for stage loading prior to final loading is a function of the strength used (i.e. lower bound versus average values). A lower safety factor on the order of 1.2 could be used with lower bound strength values and a higher safety factor on the order of 1.3 used with average values. A higher resistance factor (lower factor of safety) would also be more acceptable if monitoring is performed during construction. Monitoring of staged construction is planned. (8/8/13 10/441 Weekly Geotechnical Meeting)

It is assumed that at embankment sections where soil improvement is needed that the soil improvement will be done before piles are driven. One exception may be where an MSE wall wraps around the abutment. In that case, sleeved piles or incorporation of dragload may be needed. (8/8/13 10/441 Weekly Geotechnical Meeting)

For the tangent mainline section, up to five feet of fill will be placed in the median. A three-inch settlement of fill material is acceptable in this area (8/8/13 10/441 Weekly Geotechnical Meeting)

WisDOT typically concentrates wick drains below the pavement area where settlement is the only issue. Wick drains at the toes aren't typically used unless stability is also an issue (8/22/13 10/441 Weekly Geotechnical Meeting)

Use a 2-foot thick drainage blanket (8/29/13 10/441 Weekly Geotechnical Meeting)

In Zone 2 embankment area over existing mainline pavement north of Racine Interchange use a 3-foot wick spacing to achieve 90% consolidation in 30 days to help with staging concerns (10/31/13 10/441 Weekly Geotechnical Coordination Meeting)

The use of wick drains for WIS 441 will mitigate excessive settlement from primary consolidation and approach slabs are an appropriate design to accommodate estimated settlement from 20-yr secondary consolidation at abutments. (6/12/2014 Monthly Geotechnical Meeting)

Hazardous Materials

The hazardous materials site list recommendation spreadsheet is located on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Geotechnical_HazMat/HazMatPhase1/

Attachments

- Bridge Design Criteria Report Rev 2013-02-01_WisDOT
- WIS 441 Pavement Soil Report (Dated 2-28-13)
- Retaining Wall Design Criteria Report vs.1 4-23-2013

GEOTECHNICAL DESIGN CRITERIA AND METHODOLOGY

For

Bridges

Tri-County Freeway

PRELIMINARY & FINAL DESIGN

County CB to Oneida Street

US 10 / WIS 441

Winnebago County

WISDOT PROJECT NO: 1517-07-04

Prepared for:

Wisconsin Department of Transportation
Northeast Region
USH 41 Field Office
1940 West Mason Street
Green Bay, Wisconsin 54303

February 1, 2013

Prepared by:

HNTB Corporation
11414 West Park Place, Suite 300
Milwaukee, WI 53224

HNTB Project # 56537, 59243

GEOTECHNICAL DESIGN CRITERIA AND METHODOLOGY

For

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1.0 BACKGROUND INFORMATION

This report summarizes the design criteria utilized for the subsurface exploration program and geotechnical engineering analysis for proposed bridges as part of the Tri-County Freeway Preliminary and Final Design project for US 10 / WIS 441 from County Highway CB to Oneida Street. It is our understanding is that Tri-County Partners Joint Venture (TCP), comprised of URS, HNTB Corporation and Kapur, will use the criteria presented herein to develop the final design for the bridge foundations.

1.1 Site and Project Description

The Tri-County Freeway project is a transportation improvement project which includes the following bridge improvements:

- Constructing a new parallel bridge across Little Lake Butte des Morts (LLBDM);
- Widening the existing eastbound LLBDM bridge, existing USH 41 southbound (SB) over Cold Spring Road, existing SB and northbound (NB) US 41 over Green Bay Road, and existing NB US41 over Menasha Creek; and
- Reconstructing the Jacobson Road interchange, System interchange between US 41 and US 10/WIS 441, Tayco Street Interchange, Racine Street Interchange (County P), Midway Road (County AP) interchange, Appleton Road (WIS 47) Interchange, and Oneida Street (US 10) Interchange.

1.2 Scope and Purpose

The US 10 / WIS 441 design services include a field investigation, pertinent laboratory testing of recovered soil samples, engineering analysis, and preparation of reports summarizing the findings of the investigations and recommendations for bridge foundations.

The purpose of this report is to present and summarize the general design criteria, methodology, and other items pertaining to the recent subsurface exploration program and geotechnical engineering analysis conducted for the bridges within the project corridor. Items such as special design considerations, changes in criteria for specific structures, results of the geotechnical engineering analyses, recommendations, and construction recommendations are provided in the individual subsurface investigation reports. This report serves to supplement individual subsurface investigation reports that will be submitted using an abbreviated report

format requested by WisDOT. Unless noted otherwise, this report is considered incorporated into each subsurface investigation report for bridges.

Slope stability analyses for embankments are presented in separate embankment or roadway reports prepared by TCP.

2.0 SITE EXPLORATION CRITERIA AND METHODOLOGY

This section discusses the criteria used for the recent subsurface exploration conducted for the Tri-County Freeway Project. Items discussed in this section include site reconnaissance, boring layout, historical borings, survey procedures, drilling and sampling procedures, and general field and laboratory testing procedures. Specific subsurface investigation results and any changes to criteria for specific bridges are noted within individual subsurface investigation reports.

2.1 Site Reconnaissance

A site reconnaissance was performed by a representative from Gestra Engineering, Inc. (Gestra) of Kenosha Wisconsin or by Soils Engineering Services, Inc (SES) of Madison, WI, by visually inspecting their respective staked boring locations in the study area prior to drilling. The reconnaissance included evaluating the staked the boring locations in the field for utility locates and access.

2.2 Boring Layout and Survey Procedures

A total of eight-four (84) soil borings were proposed to be drilled by Gestra or SES for proposed bridges. The borings were designated as BXXX-GX, with the "XXX" as the proposed structure number at the time of drilling and the "GX" as the boring number for that structure. The number and proposed boring locations were agreed upon by WisDOT, HNTB, Gestra and SES based on the location of the proposed structure and piers prior to drilling, locations and quality of historical borings adjacent to a proposed structure, and accessibility.

Wisconsin Department of Transportation (WisDOT) has directed TCP to also use historical geotechnical information, primarily soil borings, to prepare geotechnical engineering reports for bridges, retaining walls, embankments, and other structures. Historical borings and information is defined as information performed by WisDOT and other consultants prior to the current 10/441 project exploration that began in August 2011. Because of factors such as lack

of documentation regarding procedures used for determining historical boring locations, elevations, and soil classifications; approximations required to incorporate the historical boring locations into the "new" project coordinate system; the historical borings were intended to be used for design of different structures and not for design of the proposed structures; and historical borings generally had less test data, the information provided on historical boring logs should not be assumed equivalent to information provided on boring logs developed as part of current design services. Also, subsurface conditions are subject to change over time because of natural occurrences or human activity at or near site. Therefore, subsurface conditions may not be the same as the conditions identified on the historical boring logs.

Individual soil boring locations, including historical, are provided in individual subsurface investigation reports. Typically, one boring is required by WisDOT to be performed within the approximate limits of each substructure unit; however, the exploration scope developed for the project, after input and direction from WisDOT, resulted in a reduced number of borings and new borings will not be drilled at each substructure. Additional borings were drilled for pavement, retaining walls, embankment, noise walls, ponds and sign structures and are incorporated into the bridge subsurface investigation reports where appropriate.

Proposed soil boring locations were staked by Kapur and Associates (Kapur). Northing, easting, and elevations of the ground at the stake were provided to the driller. The driller was responsible for requesting utility locates of the soil borings. Where the staked borings were offset during drilling resulting in significant changes in location and elevation, Kapur resurveyed the boring coordinates and elevations. Surveyed coordinates are according to the Wisconsin County Reference System of 2006 (WISCRS 2006). Surveyed elevations are according to the North American Vertical Datum of 1988 (NAVD 88). The ground surface elevations are included on the boring logs in individual subsurface investigation reports.

2.3 Drilling and Sampling Procedures

The soil borings were performed by Gestra and SES under subcontract to TCP. Information such as drilling method used, rig type, and crew chief are included on the boring logs.

The borings were proposed to be drilled to depths between 30 and 100 feet below the existing ground surface based on examination of historical boring information, for a total drilling footage of 4,780 lineal feet. The borings were planned to extend to sedimentary bedrock.

When borings have reached the specified depths without providing necessary data, the driller was authorized to continuing drilling to 120 percent of the planned depths.

Disturbed soil samples were to be obtained using a split-barrel (split-spoon) sampler driven during Standard Penetration Tests (SPT) in accordance with ASTM D1586, Standard Method of Penetration Test and Split Barrel Sampling of Soils. The standard split-spoon sampling was generally performed at approximately 2 ½-foot intervals up to 20 feet and 5-foot intervals thereafter typically using 3-1/4 hollow stem augers or mud rotary drilling techniques. Shelby tubes, 3-inch diameter and 24-inch long, were pushed according to ASTM 1587, Standard Method for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes. Tubes were to be collected in cohesive soils at selected locations.

Based on historical subsurface exploration sheets from existing structures and published data of the depth of bedrock in the project area, bedrock was anticipated to be encountered. Therefore, rock coring was planned..

Samples of the rock were obtained by core drilling with an NX- or NQ- size diamond bit core barrel at some locations. The core sample recovered wit this barrel is approximately 2 inches in diameter. Disturbed samples or cuttings of the bedrock were obtained at some locations using the split-barrel sampler or directly from the auger bits.

Field logs of each boring were prepared by the drill crew. These logs included visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples. Final boring logs included with this report represent an interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.

After groundwater levels were recorded, boreholes were to be abandoned to subgrade with chipped bentonite in accordance with Wisconsin Administrative Code, Section NR 141. Asphaltic pavement was resorted with a bituminous cold patch material.

2.4 Field and Laboratory Testing Procedures

Recovered Standard Penetration Test split-spoon samples were to be visually examined and identified in the field. After examination, representative sample material was to be placed in jars, which were then to be sealed and labeled.

Following field observation, soil samples were to be taken to the Gestra or SES laboratory for analysis. Split-spoon jar samples were visually classified in the lab by a Gestra or SES

geotechnical engineer to classify the soil, including moisture condition, color, and presence of lenses and seams. The soils were classified in general conformance with the Unified Soil Classification System, ASTM D 2487. The following laboratory tests were performed on selected samples:

- Water Content Determination (ASTM D2216);
- Atterberg Limits (ASTM D4318);
- Loss on Ignition (ASTM D2974);
- Particle Size Distribution Testing (ASTM D422);
- Dry Density (ASTM D7263);
- Unconfined Compression (ASTM D2166);
- Specific Gravity (ASTM D854);
- One-dimensional consolidation (ASTM D2435);
- Unconsolidated Undrained Triaxial Test (ASTM D2850), and
- Consolidated Undrained Triaxial Test (ASTM D4767);

Laboratory results are shown on the boring logs in the individual subsurface investigation reports.

Rock core samples were visually examined and classified. Percent recovery and rock quality designation (RQD) were calculated for these samples and are noted at their depths of occurrence on the boring logs. RQD is the percent of the total length cored consisting only of sound pieces at least 4 inches or more in length and is a measure of the integrity of the rock mass in-situ.

Classification and descriptions of rock core samples are based on visual and tactile observations. When coring was not performed, classification of rock was estimated from driller's notes including drilling characteristics and observation of cuttings, and/or disturbed samples obtained from the auger flights or split barrel sampler.

2.5 Subsurface Conditions

Soil and rock stratification boundaries shown on the boring logs represent the location of approximate changes in soil and/or rock types and were estimated based on the available data and experience. The actual in-situ changes between layers may be more gradual or otherwise differ from those depicted on the boring logs.

A generalized description of subsurface conditions is presented in the individual subsurface investigation reports. Refer to the boring logs and subsurface exploration sheets for specific conditions encountered at each boring location. Variations in soil conditions, including the presence of lenses, pockets, and other discontinuous soil layers should be expected between borings and between soil layers within the generalized soil profile developed for the site.

Groundwater observation wells were installed at a small number of locations for the pond borings. At other locations, groundwater levels noted on boring logs are based solely on observations made during and immediately after completion of drilling operations. Monitoring well construction details are provided on the Wisconsin Department of National Resources monitoring well construction forms.

Mud rotary wash boring procedures were used during coring and in some borings to maintain a stable borehole through the materials encountered. During mud rotary wash boring procedures, bentonite slurry is introduced into the borehole. Water levels recorded after completion of mud rotary wash borings should therefore not be considered representative of groundwater conditions at the boring location. At the mud rotary wash boring locations, the water levels recorded while drilling were recorded prior to the introduction of drilling fluid into the borehole.

Due to low permeability of cohesive soils encountered in the borings, short term observations and visual observation of samples may not provide a reliable indication of groundwater conditions. Fluctuation of groundwater levels can occur due to seasonal variations in the amount of rainfall, runoff, surface infiltration, and other factors not evident at the time the borings were performed. In addition perched water can occur at higher elevations following periods of heavy or prolonged precipitation. Long-term observations in cased holes or piezometers would be necessary to obtain more accurate water level data.

3.0 ANALYSIS AND FOUNDATION CRITERIA AND METHODOLOGY

All project design recommendations are based on the assumption that all construction work, including grading, subgrade preparation, fill placement, and pavement work will be performed in accordance with the appropriate sections of the *State of Wisconsin Standard Specifications for Highway and Structure Construction*, 2012 Edition and all supplemental specifications, and the recommendations contained in the Subsurface Investigation Report prepared for the specific structure. Bridge design will be based on WisDOT LRFD Bridge Manual (revised July 2012).

3.1 Recommended Parameters

A generalized soil profile for each structure is to be developed using the soil and groundwater information obtained. The field and laboratory test data will be used and supplemented by published information and values in literature that covers local geology and WisDOT Geotechnical Bulletin No.1. This information will be included in the individual subsurface investigation report.

For materials used in construction of new structures, the following values are to be used in Table 1:

Table 1: Properties of New Construction Materials

Soil Unit	Total Unit Weight, (pcf)	Undrained		Drained	
		Cohesion, c, psf	Friction Angle, ϕ, Deg	Cohesion, c, psf	Friction Angle, ϕ, deg
New Embankment Fill (Standard Specification Section 207)	130	2000	0	0	31
Structural Fill (Standard Specification Section 210)	132	0	32	0	32
Riprap	132	0	40	0	40
Water	62.4	0	0	0	0
Steel	490	NA	NA	NA	NA
Concrete	150	NA	NA	NA	NA

NA Not Applicable.
pcf Pounds per cubic foot.
psf Pounds per square foot.

It is assumed that new embankment and structural fill are to be compacted according to the recommendations of the individual subsurface investigation reports and according to the *State of Wisconsin Standard Specifications for Highway and Structure Construction*, 2012 Edition.

3.2 Foundation Type Recommendations

A preferred foundation type and size will be developed mutually between WisDOT and TCP after completion of borings, laboratory testing, and civil and structural information is available for geotechnical analysis. Deep foundations are anticipated for bridge support. The driven pile deep foundation is the preferred option based upon WisDOT input. It is anticipated that for this project, the preferred foundation type will consist of 10x42 H-piles, 12x53 H-piles, 14x73 H-piles, 12.75-inch and cast-in-place (CIPC) piles, or 14-inch diameter CIP piles. One foundation type is planned to be selected for each structure.

Foundation capacity and driveability analysis will be performed for the preferred driven pile foundation type and size, and driving hammer. Analysis iterations are excluded from the work scope.

3.3 Axial Compression Pile Resistance

The maximum factored axial compression resistance (P_r) to which a driven pile may be designed must be the lowest of the two strength limit state resistances: maximum structural axial compression resistance including downdrag if applicable and maximum geotechnical resistance given that the installed pile to the maximum driving resistance is not overstressed. The maximum structural resistance is a function of pile section and material strength. The maximum geotechnical resistance is dependent upon the resistance of the subsurface soils (shaft and tip resistance). Driveability is dependent upon interactive combination of the geotechnical resistance of the soils to penetrate to the length required and pile installation equipment. Evaluation of each of these limit states is discussed in the following subsections.

3.3.1 Structural Axial Compression Resistance

The maximum factored axial compression resistance of a pile section (P_r) is defined as:

For cast-in-place (CIP) pipe piles (per WisDOT LRFD Bridge Manual, Table 11.3-5):

$P_r = \phi \times P_n$

Where: $P_n = 0.68\ f'_c \times A_g$ and $\phi = 0.75$

Assuming concrete compressive strength (f'_c) of 3,500 psi (maximum allowed by WisDOT):

For a 12.75-inch-diameter pile ($A_g = 113.1\ in^2$), 0.375-inch wall: $P_r = 210$ kips

For a 14-inch-diameter pile ($A_g = 137.9 in^2$), 0.375-inch wall: $P_r = 240$ kips

Note: WisDOT does not include the steel shell when determining P_r

For HP-section piles (per WisDOT LRFD Bridge Manual, Table 11.3-5):

$P_r = \phi \times P_n$

Where: $P_n = 0.66\ f_y \times A_{ST}$ and $\phi = 0.5$

Assuming steel yield stress (f_y) of 50,000 psi (maximum allowed by the WisDOT):

For a HP 10x42 section ($A_{ST} = 12.4\ in^2$): $P_r = 180$ kips

For a HP 12x53 section ($A_{ST} = 15.5\ in^2$): $P_r = 220$ kips

For a HP 14x73 section ($A_{ST} = 21.4\ in^2$): $P_r = 250$ kips

Values used for analyses are presented in **Table 2**. Please note that maximum factored axial compression resistance given for the piles is, as per WisDOT direction, in accordance with the WisDOT Bridge Manual.

Table 2: Maximum Factored Axial Compression Resistances of Pile Sections

Pile Section	Maximum Factored Axial Compression Resistance (P_r) [1] (kips)
12.75-inch-diameter CIP	210
14-inch-diameter CIP	240
HP 10x42	180
HP 12x53	220
HP14x73	250

(1) As per WisDOT LRFD Bridge Manual (2011), Table 11.3-5

The values in Table 2 may need to be reduced if downdrag is anticipated as discussed per Section 3.3.2.

3.3.2 Negative Shaft Resistance (Downdrag)

Negative shaft resistance (downdrag) is to be considered when significant fill is anticipated at abutments and / or piers and must be accounted for by reducing the maximum structural axial compression resistance if deemed necessary by the design criteria. The weight of the fill can cause settlement of the underlying soil. Downdrag must be included in design when the differential movement between the soil and pile is at least 0.4 inches. Both soil settlement and pile settlement calculations are to be performed. The dragload developed from negative shaft resistance onto the installed piling is to be considered along the depth of the pile until the difference between the foundation soil and pile settlement is less than 0.4 inches.

Preliminary slope stability and settlement estimates of embankment fill will be part of the embankment evaluation to identify if additional means are necessary that may be required at abutments. The timeframe, sequencing of the embankment or fill construction, and additional measures are to be considered and/or assumed in downdrag calculations and when making foundation recommendations for the abutments. These considerations and assumptions will be discussed in the individual subsurface investigation reports.

Foundation soil settlement calculations will be made by hand or through spreadsheets using one-dimensional consolidation theory. Embankment loading will be applied, and stress distribution calculated by Boussinesq theory.

The pile settlement estimates includes the elastic deformation of the pile and individual post-construction pile settlement with the applied maximum axial compression load. The elastic deformation of the pile is calculated assuming the maximum factored axial compression resistance.

Post-construction will be considered negligible if the driven piles for the bridges are anticipated to bear on or very near apparent limestone bedrock or very dense material not underlain by a weak stratum. If driven piles are primarily derived from skin friction by more than 50% and/or the pile tip elevation is underlain by a weak stratum, post-construction pile settlement will be estimated generally in accordance with the WisDOT Bridge Manual and AASHTO.

Based on the July 2012 updated WisDOT Bridge Manual Section 11.3.1.17.1, the WisDOT Factored Axial Compression Resistances (Pr) shown in **Table 3** below for given H-pile sizes, include an allowable nominal dragload value as shown below:

Table 3: Allowable Nominal Downdrag Loads included in Factored Axial Compression Resistance of H-piles

Pile Type	Full Capacity Factored Axial Compression Resistance (Pn x 0.5)	Maximum Factored Axial Compression Resistance (Pr)	Allowable Nominal Dragload
HP 10X42	310 kips	180 kips	90 kips
HP 12X53	387.5 kips	220 kips	120 kips
HP 14x73	535 kips	250 kips	210 kips

The estimated factored dragload is computed by multiplying the estimated nominal drag load by load factor 1.4, as described in Table 3.4.1-2 of AASHTO LRFD Bridge Code. If the estimated nominal dragload exceeds the allowable nominal dragload values in **Table 3**, then the Factored Axial Compression Resistance, Pr, values must be reduced using the following equation:

Pr = 0.5 x Pn – (1.4 x estimated nominal dragload)

Table 4 provides an example of the format for presentation of estimated dragloads for abutment piles and corresponding factored axial compression resistance available for design.

Table 4: Dragloads and Available Factored Axial Compression Resistance

Pile Type	Insert Pile Size/Type		
Substructure	Estimated Nominal Dragload (kips)	Estimated Factored Dragload[A] (kips)	Max. Factored Axial Compression Resistance Available for Design [B] (kips)

A Load factor (γd) of 1.40 was applied, as per Table 3.4.1-2 of the AASHTO LRFD Bridge Code1
B Maximum Factored Axial Compression Resistance available for design is reduced only if estimated nominal drag load are above values shown in Table 3based on Section 11.31.1.17.1 of the WisDOT Bridge manual.

When the estimated nominal dragload shown in Table 4 is less than the allowable nominal Dragload shown in Table 3, no reduction of the factored axial compression resistance available for design is required for these pile sections. Dragloads will need to be re-evaluated if a different pile section is selected.

The above dragload analyses are made with the assumption that piles are spaced at 2.5-pile-diameters (center-to-center) or greater, and therefore, geotechnically, do not act as a group. If piles are proposed to be closer than 2.5 pile diameters (center-to-center), additional analyses need to be performed to determine if (1) group action is likely, and (2) what effect group action has on dragload calculations.

3.3.3 Geotechnical Resistance

Maximum factored geotechnical resistances (R_r) were, as per WisDOT direction, calculated only for the selected pile section using Modified Gates formula pile acceptance method. Pile tip elevations are determined where the maximum factored geotechnical resistance is equivalent to the maximum axial compression resistance (Pr) as shown in Table 2 unless noted differently in the individual bridge subsurface investigation reports. Structural engineers may elect to use the PDA acceptance method, which employs dynamic test data

[1] AASHTO LRFD Bridge Design Specifications, Fourth Edition, 2007.

with subsequent signal matching analyses (CAPWAP) (henceforth referred to in this report as the PDA method), to reduce the number of piles per substructure but not to reduce the pile length, per WisDOT direction. The equation used to calculate the maximum factored geotechnical resistances is:

$R_r = R_n \times \phi$

Where: R_n = nominal (ultimate) geotechnical resistance

ϕ = 0.50 for piles installed using the Gates method (Per WisDOT LRFD Manual, Section 11.3.1.14)

The nominal geotechnical resistances (R_n) were computed using the computer application DRIVEN[3], APILE, or spreadsheets given parameters for each structure, and the design soil parameters presented in the individual subsurface investigation report. For CIPC piles, the piles are considered closed-ended and therefore, the full cross-sectional area of the pipe including annulus is to be considered. For H-piles, the skin friction will utilize the box perimeter around the pile, and for end bearing, only the cross-section area of the steel is to be considered.

The embedded pile lengths necessary to meet WisDOT recommended maximum factored axial compression resistance (Pr) of each pile shown in **Table 2** were estimated based on the design soil parameters developed from the boring information, static analysis described in the preceding paragraph, and rounded up to the nearest 1-foot increment of length. These lengths provided in the example table, **Table 5**, are computed by subtracting the anticipated tip elevation minus the assumed bottom of footing elevation assuming no batter. Structural engineers are to compute actual pile length quantities based on the elevations in **Table 5.**

An example of the format for presenting pile length estimates that will be provided in the individual subsurface investigation report is provided in the following **Table 5**.

[3] DRIVEN computer application, Version 1.2, FHWA, 2001.

Table 5: Estimated Pile Tip Elevations using Modified Gates

Substructure Unit	Boring	Driving Elevation (feet)	Bottom of Pile Cap Elevation (feet)	Pile Type/Size		
				Maximum Factored Geotechnical Resistance (Rr, kips)	Estimated Pile Tip Elevation[B] (feet)	Estimated Pile Length from Bottom of Pile Cap (feet) [A,B]

A Pile lengths may be limited by driveability considerations (not addressed in this table).
B Depth below proposed pile cap elevation. Rounded up to the nearest foot.
C Given down drag potential, factored axial compression resistance available for design may be less than Pr. Refer to Table X in Section XXX.

Skin friction and bearing capacity will be neglected in areas where there is potential scour, excavation, pre-boring, or other conditions which reduce and or remove resistance from the soil. Methodology of addressing dragloads is addressed in Section 3.3.2 of this report.

Top of pile elevations, footing elevations, and top of the ground surface elevations at the time of driving will be provided to the TCP geotechnical engineer by the designer. This information along with estimated pile lengths and assumptions made when information was not available will be included for each substructure unit in the subsurface investigation report.

Please note that the pile tip elevations that are provided are for estimation purposes only, and the actual embedment depth will be dependent on a penetration-based criterion and therefore actual driven tip elevations will vary.

Axial uplift resistance values are to be calculated based on Section 3.7.

3.3.4 Maximum Driving Resistance (Driveability)

Pile driveability will be preliminarily evaluated to determine if a commonly available pile driving hammer is capable of mobilizing the available geotechnical resistance of the soil profile and is not anticipated to overstress the pile section. The driveability information will be presented in a format similar to example Table 6 below.

Table 6: Driveability Analysis Results using Modified Gates Formula

Sub-structure	Bridge	Input Values				Required Driving Resistance per WisDOT[B], kips	Output Results		
		Pile Section	Hammer	Manufacturer's Rated Energy (ft-kips)	Assumed Pile Length[A] (feet)		GRL Driving Resistance[C], kips	Max Stress[D], σ_{dr}, ksi	Max Blow Count[E] blows/foot
							Depth, feet	Depth, feet	Depth, feet

A Assumed pile length used as input for analysis is based on the length calculated for geotechnical resistance as noted in Table X.
B Required driving resistance is obtained from Table 11.3-5 in the WisDOT Bridge Manual. The driving resistance is a nominal value and should be multiplied by 0.5 if using Gates to compare to factored axial compression resistance.
C Driving resistance from GRL Weap at the reported depth along the pile. If refusal occurs (ie 120 bpf) prior to reaching the assumed pile length, the pile depth reported will be where pile refusal occurs.
D Maximum stress is the maximum stress from GRL Weap at the reported depth along the pile wherever it occurs. If refusal occurs (ie 120 bpf) prior to reaching the assumed pile length and the maximum stress occurs at this refusal depth, the depth reported will be where pile refusal occurs.
E Max Blow count is the maximum blow count from GRL Weap at the reported depth along the pile. If refusal occurs (ie 120 bpf), this will be the maximum blow count reported.

The pile driving analysis was performed using GRLWEAP computer program. The manufacturers' recommended driving system input data, including the cushion information and hammer parameters, were used in this preliminary analysis. Hammer cushion information will use the manufacturer's recommended parameters. Quake and damping values will use the recommendations of the software program for the given soil conditions for each structure. The soil input into GRLWeap are to consider the conditions assumed at the time of driving, and thus will not include reduction in capacity due to downdrag, scour or other items. The following hammers in **Table 7** were selected to be used for the given piles.

Table 7: Selected Hammers for Driveability Analysis

Pile Section	Selected Hammer for Analysis
HP10x42	Delmag D19
HP12x53 or 12 3/4" Pipe Pile	Delmag D25
HP14x73, HP14x83 or 14" Pipe Pile	Delmag D30

Practical refusal per WisDOT Standard Specifications is considered 120 blows per foot (bpf) or fractional equivalent. Minimum blow counts at the end of driving should not be less than 25 bpf. It is recommended that where the piles will be driven to practical refusal on bedrock the hammer blows be limited to 5 blows per 1/4-inch once the pile tip reaches bedrock.

In accordance with Section 10.7.8 of the AASHTO LRFD Bridge Code, steel stresses incurred during pile installation (σ_{dr}) cannot exceed 0.9 times the steel yield stress. Assuming a steel yield stress of 50 ksi for HP-piles, the maximum steel stress incurred during installation cannot exceed 0.9 times the yield stress or 45 ksi.

Unless noted otherwise in the subsurface investigation report, driveability analysis will take into account loss of soil strength during driving as recommended by WisDOT Bridge Manual Table 11.3-4.

If a different driving formula or method is used to determine the pile installation acceptance, then HNTB or GESTRA should be contacted for revised pile recommendations.

Borings drilled at the site to date indicate piles may extend to bedrock. For piles extending to bedrock or anticipated through dense material and/or boulders, unless noted otherwise in the individual subsurface investigation report, pile points are recommended to help get "bite" into the potentially variable bedrock surface elevation, reduce potential for pile damage during driving, and to help displace cobbles and/or boulders during driving.

3.3.5 Summary of Axial Pile Design

The maximum factored LRFD load to which piles can be designed is the lesser of the two strength limit state resistances:

1. P_r, maximum factored structural axial compression resistance including reduction in downdrag if applicable.

2. R_r, maximum factored geotechnical resistance.

The maximum factored LRFD load to which piles are installed should be:

1. R_{ndyn}, required driving resistance per Table 11.3-5 in WisDOT Bridge Manual

The most-economical pile foundations are those that utilize the maximum factored resistances. Other structural considerations (such as lateral, uplift, stability, and seismic), may dictate a minimum number of piles (which may have factored design loads less than the

potential maximum factored pile resistance). Consequently, it may be economical to design piles for lower resistances, which mirror the loading requirements. Capacity Curves included in the individual subsurface investigation reports can be used to estimate pile lengths needed to achieve lower factored resistances; however, the geotechnical engineer should be contacted to verify changes in the design are not affected by other factors.

3.4 Estimated Pile Settlement

The estimated pile settlement is discussed in **Section 3.3.2.** If reported, the structural engineers will be required to verify that the post-construction settlement is within tolerable limits.

3.5 Lateral Squeeze

WisDOT experience indicates that that lateral squeeze does not occur when the factor of safety (FoS) for global stability is greater than or equal to 1.2 and that further analysis is not required if this condition is satisfied. It is our opinion there is a potential for lateral squeeze if the vertical stress from weight of the new embankment fill exceeds the shear strength of the foundation soil by a factor of 3. TCP will recommend scope modification to allow evaluation of slope stability, and possibly other more rigorous analyses, if this stress ratio of 3 is exceeded.

If additional services are authorized by WisDOT to perform slope stability analysis for evaluation of lateral squeeze potential, Spencer's Method using SLOPE/W -GeoStudio 2007 software, or Bishop Method using GSTABL7 software will be utilized. Spencer's method is a limit equilibrium method using circular and non-circular searches as warranted for undrained and drained conditions. Spencer's Method considers both shear and normal interslice forces, satisfies both moment and force equilibrium, and assumes a constant interslice force function. The optimization feature of SLOPE-W is not utilized for this project analysis. Bishop's method is used to evaluate circular sliding surfaces, assumes zero interslice shear forces, and satisfies vertical force equilibrium for each slice and overall moment equilibrium about the center of the circular trial surface.

If more complex analysis using finite element methods is authorized, specific methodology will be discussed in a separate report if authorized.

The following general solutions can reduce potential for lateral squeeze:

1. Reduce driving forces by flattening embankment slopes, reducing unit weight of the fill, or other methods;

2. Increase resisting forces by revising grades in front of slopes, adding weight to soils in front of the slopes, strengthening the underlying soil by means of consolidation and/or in-situ methods, or other alternative methods; or

3. Design the installed foundations to account for the additional lateral driving force from the resulting instability in order to meet the required FoS.

3.6 Lateral Resistance

Lateral resistance can be provided by installing battered piles and/or calculating lateral resistance of vertical piles. L-Pile (Ensoft, Inc.) computer software can be utilized to evaluate lateral resistance of single piles. Parameters for L-pile analysis will be presented in the individual subsurface investigation reports.

L-Pile analysis or group analysis is not part of geotechnical scope. If L-Pile analysis is authorized, a fixed head condition will be assumed if pile embedment into the pile cap is 2 feet or greater. A free head condition will be assumed if pile embedment is less than two feet, but at least 6 inches. Medium dense granular fill will be assumed where the planned bottom of pile cap elevation is above the existing ground surface. Default P-y curves provided in LPile, based on general soil types, will be used for the analysis.

The nominal lateral resistance for each substructure unit is the lateral load that corresponds to a deflection of 1/2 inch at the top of the pile. The lateral analysis should be based on considerations and assumptions of how the piles are installed and constructed.

Use of battered piles in areas where downdrag is anticipated (e.g., abutments) should be used with caution, only after structural analyses are performed to ensure that the downdrag will not create excessive bending stresses in the pile.

3.7 Uplift Resistance

Uplift resistance will be calculated when requested by the structural engineer. Nominal and factored capacity charts or tables will then be provided to the structural engineer for design. The nominal uplift resistance is equal to the skin friction component of the geotechnical resistance in accordance with methodology in Section 3.3.3.

The factored uplift resistance for each substructure unit will be estimated using the nominal uplift resistance multiplied by uplift resistance factors from the WisDOT Bridge Manual. Uplift resistance factors of 0.25 in clay and 0.35 in sand are to be used.

3.8 Pile Group Spacing and Group Capacity

In accordance with Article 11.3.1.2 of the WisDOT (July 2012) bridge manual, a minimum pile spacing (center-to-center) of 2.5 feet or 2.5 pile diameters, whichever is greater, and a maximum pile spacing of 8 feet is proposed to be used. In accordance with WisDOT policy, reduction factors for non-redundant pile caps are not applied.

Group capacity is to be checked in cohesive soils using the equivalent pier for block failure if the nominal geotechnical resistance is comprised significantly of skin friction (>50%). If majority of the nominal geotechnical resistance is obtained from end bearing, group capacity is not anticipated to control based on engineering judgment. Group capacity is not required to be checked if the soil is primarily comprised of cohesionless soils per Section 11.3.1.15.3 of the WisDOT bridge manual (July 2012).

4.0 ADDITIONAL DESIGN AND CONSTRUCTION CONSIDERATIONS

The geotechnical construction considerations are discussed in this section. Items discussed include excavation safety, site drainage and dewatering, existing construction and utilities, and temporary shoring. If during construction, site conditions vary from those described in this report, the Geotechnical engineer should be contacted to determine the effect on the geotechnical recommendations for foundation design and construction considerations.

4.1 Pile Installation

The estimated pile lengths may be used for computing bid quantities. However, the subsoil conditions and bedrock elevations do vary; therefore, the actual pile embedment depths required may also vary. The potential for variation could be reduced with a well-conceived and implemented pile-testing program.

Only hammers that demonstrate effective pile driving can be used on the project. The Constructor should be required to submit information regarding proposed pile driving equipment in advance of mobilization for WisDOT approval. It is recommended the Constructor or the Constructor's engineer perform detailed driveability analyses to verify that the proposed equipment can adequately install the piling to develop the desired capacity without imparting excessive stresses or damage to the piles. Installation criteria should be developed using the constructor-proposed and engineer-accepted pile driving equipment. Please note that, given the variable energies imparted by open-ended diesel (OED) hammers, criteria should contain a minimum ram stroke and a required fuel setting in addition to a penetration resistance. Each pile should be driven continuously. When it is necessary to interrupt driving (such as required for splicing) for greater than one hour, the driving criteria should not be applied for five feet after resumption of driving. This is to reduce application of driving criteria to piles driven into soil that may have set-up during the interruption.

Observation and documentation of the pile installations by a qualified engineer experienced in pile driving is recommended and must include the pile section properties, hammer performance (e.g., stroke or energy), installation criteria application, blows per foot during drive, along with other pertinent information about the pile driving system and settings, should be recorded on pile driving logs and kept for future reference, as needed and other information. The engineer should be present at all times during pile driving operations to verify that all piles are driven to sufficient depths and that the driving criteria have been met

to achieve the design pile capacity. If used, pipe piles should be observed for damage, including water infiltration, immediately prior to concrete placement. All damage should be noted, and a reduced (or zero) capacity assigned by the engineer.

Cobbles and boulders have been encountered while drilling at some locations along the corridor and may be present elsewhere. Care must be taken during pile driving operations so that the piles are not damaged above or below the ground surface during driving. Where obstructions are encountered, it may be necessary to pre-drill or core through the obstruction, offset piles from their originally planned locations or drive additional piles.

Pile driving operations may cause ground vibrations that could affect nearby existing buildings, utilities, or other structures. It is recommended that vibrations caused by the pile driving operations be monitored to reduce the potential for damage to the existing construction. If the vibrations exceed specified levels, the driving operations should be adjusted to control potential damage. A maximum peak particle velocity of 2 inches per second is typically considered the threshold for building structural damage, but the human annoyance threshold is much less.

4.2 Excavation

Excavation safety is the responsibility of the Constructor. Excavation and safety measures should be in accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR part 1926, subpart P, Excavation and Trench Safety Standards and all other applicable local state and federal safety regulations.

Care must be exercised by the Constructor to prevent damage and injury from factors such as excavation instability, ground loss and undermining of existing or future utilities, structures or other construction.

4.3 Site Drainage and Dewatering

Surface water runoff due to precipitation should be properly diverted away from the project construction areas to reduce the potential for infiltration of water into excavations and the subsoil. The underlying native soils may experience a loss in strength if surface water is allowed to accumulate in the subgrade soils.

Excavations required for the piers may extend below the groundwater elevation and there is the potential for groundwater to enter the excavations for the pile caps. When the pile cap excavation extends entirely through cohesive soil, sump pit and pump methods can typically satisfactory for removing groundwater inflows.

4.4 Existing Construction and Utilities

Where underground utilities are located in the vicinity of bridges, it is recommended the utilities be relocated prior to bridge construction.

4.5 Temporary Shoring

Temporary shoring is expected to be needed for the bridge construction. It is the responsibility of the Constructor to retain a qualified professional engineer to perform stability analysis and meet minimum requirements for global stability and other related design criteria for any temporary shoring or other elements needed for construction.

5.0 GENERAL COMMENTS

This and other reports prepared for the Wisconsin Department of Transportation are for the specific project and use discussed herein. The specific project details are unique relative to the bridge locations, size, configuration and elevations. The project plans and specifications need to be submitted to TCP geotechnical engineers for review to verify that the conclusions and recommendations have been interpreted correctly.

Where specific information was not available, assumptions have been made, and are noted as such. These assumptions need to be reviewed by the engineer and other design professionals working on this project to confirm that these are correct for the planned use and project. If these assumptions are not correct, TCP geotechnical engineers should be informed and allowed to modify this report, its conclusions, and recommendations.

The accuracy and completeness of any documents or information provided by others as to project specifics or prior property uses have been reasonably relied on by TCP in providing its evaluation. In addition, if details of the planned construction change from those outlined in this report, TCP geotechnical engineers must be notified to determine if the changes affect the recommendations. Supplemental recommendations may then need to be made.

The analysis, conclusions, and recommendations in this report are based on the subsurface conditions present at the boring locations and the engineering characteristics of the soil as determined through field testing at this point in time, as defined in the current work scope. Subsurface conditions can change over time due to both natural and human forces, including changes in condition or use of adjacent properties.

Variations in soil conditions should be expected between or beyond the borings, or between sample intervals, the nature and extent of which might not become evident until construction is undertaken. It is recommended observation and testing of the construction be performed by the geotechnical engineer or WisDOT to determine if the subsurface conditions are as indicated by the borings and perform as anticipated.

If the conditions encountered during construction are different from those inferred by the borings or the project details and information changes, the geotechnical engineer must be contacted to determine if modification to the recommendations presented in this report are required. The recommendations found in this report are related and are not mutually

exclusive of each other. Therefore, no single portion of this report should be removed or be considered as a stand-alone recommendation. Boring logs must also remain with the report, as they are not to be interpreted on their own.

The geotechnical recommendations presented herein are an evaluation of subsoil performance based on the geotechnical engineers' experience and professional opinion. These services were performed with the degree of skill and care normally utilized by other members of the geotechnical engineering profession practicing at this location at this time. No warranty, either express or implied, is intended or made.

This report is intended for structure design and construction purposes only and does not document the presence or absence of any environmental impacts at the site. Environmental services were specifically beyond the authorized scope of services.

Any use or reuse of this report for any purpose other than as specifically intended hereunder without written verification by the geotechnical engineer shall be at the user's own risk.

CORRESPONDENCE/MEMORANDUM **State of Wisconsin**

Date: February 28, 2013

To: Chad DeGrave, P.E.
USH 41Project Supervisor

From: Neil Michaelson, P.E.
NE Region Soils Engineer

Subject: Soils Report
Project 1517-07-04
USH 10/USH 41/STH 441
Winnebago County

This memorandum is for pavement design purposes only. Any other soil reports necessary for the project including but not limited to structures, retaining walls and high fills and new embankment construction will be completed by consultant design staff.

GENERAL

This project is located along the USH10/USH 41/STH 441 Interchange, USH 10/STH 441 mainline from Cold Springs Road to Oneida Street, Appleton Road (STH 47), Racine Street (CTH P), Midway Road (CTH AP) and Oneida Street in Winnebago County. The proposed work includes the re-alignment and the reconstruction of mainline pavement and interchanges including ramps to improve safety and traffic flow.

DESIGN PARAMETERS

Use the following parameters in the design of this project:

Design Group Index (DGI)	14
Soil Support Value (SSV)	4.0
K-Value	125
Frost Group Index	F-3
Hydrologic Group	C

EXISTING CONDITIONS

The existing Tri-County Freeway was built in the late 1980's and early 1990's. The existing pavement structure consists of 10 inch non-reinforced concrete pavement over 4 inches of open graded crushed aggregate base course over 4-6 inches of crushed aggregate base course. The open graded base was drained to the ditch through a drain tile system.

SOILS

The Soil Conservations Service has mapped the soils of Winnebago County. The mapping shows the following soils along this route.

Soil Type	% of project	DGI	Water Table	Depth to Bedrock
Kewaunee Silt Loam (KnB)	14.3	12	2-5’	>6.5’
Korobago Silt Loam (KyA)	7.8	12	0-1’	>6.5’
Neenah Silty Clay Loam (NhA)	24.4	14	0-1’	>6.5’
Winneconne Silty Clay Loam (WnB)	44.7	14	2-3.33’	>6.5’
Minor Soils	8.8			
	100.0 %			

The soils within the project limits belong to the Kewaunee – Manawa - Hortonville Association. These are well to somewhat poorly drained, nearly level to gently sloping soils that have a loamy or clayey subsoil underlain by loamy or clayey glacial till. They have a seasonally high water table and slow permeability, moderate to high frost action and are considered poor for road construction.

DESIGN RECOMMENDATIONS

Due to the potential difficulty of working with these soils it is recommended the designer include breaker run for constructability. For mainline pavement, ramp terminals and roundabouts the recommended breaker run depth is 16 inches. For the reconstruction of local roads the recommended breaker run depth is 12 inches. Breaker run is not recommended on portions of local roads being reconditioned.

GEOTECHNICAL DESIGN CRITERIA AND METHODOLOGY

For

Retaining Walls

Tri-County Freeway

PRELIMINARY & FINAL DESIGN

County CB to Oneida Street

US 10 / WIS 441

Winnebago County

WISDOT PROJECT NO: 1517-07-04

Prepared for:

Wisconsin Department of Transportation

Northeast Region

USH 41 Field Office

1940 West Mason Street

Green Bay, Wisconsin 54303

April 23, 2013

Prepared by:

HNTB Corporation

GESTRA Engineering, Inc.

Milwaukee, WI

GEOTECHNICAL DESIGN CRITERIA AND METHODOLOGY

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HNTB GESTRA

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1.0 BACKGROUND INFORMATION

This report summarizes the design criteria utilized for the subsurface exploration program and geotechnical engineering analysis for proposed retaining walls as part of the Tri-County Freeway Preliminary and Final Design project for US 10 / WIS 441 from County Highway CB to Oneida Street. Tri-County Partners Joint Venture (TCP), comprised of URS, HNTB Corporation (HNTB) and Kapur & Associates (Kapur) will use the criteria presented herein for geotechnical engineering analysis of the proposed retaining walls.

1.1 Site and Project Description

The Tri-County Freeway project is a transportation improvement project which included, as of the date of this report, retaining walls at the following locations:

- System Interchange between US 41 and US 10/WIS 441;
- Little Lake Butte des Morts (LLBDM) bridge approaches;
- US 41 and CTH II Interchange;
- US 41 and Green Bay Road Interchange;
- US 41 Near Menasha Creek
- US 41 and Jacobson Road;
- US 10/ WIS 441 and Tayco Street;
- US 10/ WIS 441 and Racine Road (CTH P) Interchange; and
- US 10/WIS 441 and Midway Road Interchange.

1.2 Scope and Purpose

The US 10 / WIS 441 geotechnical engineering services include a field investigation, laboratory testing of select recovered soil samples, geotechnical engineering analysis, and preparation of geotechnical reports summarizing the findings of the subsurface investigations, laboratory testing and geotechnical engineering recommendations for the retaining walls design.

The purpose of this report is to present general design criteria to be followed by TCP for the geotechnical engineering analysis of the proposed retaining walls, and reduce the length of the reports for individual structures. This report includes the general analysis methodology,

and other items pertaining to the recent subsurface exploration program conducted for the retaining walls within the project corridor.

Items such as special design considerations, changes in criteria for specific structures, results of the geotechnical engineering analyses, recommendations, and construction considerations are provided in the individual subsurface investigation reports. This report serves as an extension of the individual subsurface investigation reports that will be submitted using an abbreviated report format requested by Wisconsin Department of Transportation (WisDOT). Unless noted otherwise, this report is considered a part of each subsurface investigation report for the retaining walls.

2.0 SITE EXPLORATION CRITERIA AND METHODOLOGY

The general criteria followed for the recent subsurface exploration conducted for the Tri-County Freeway Project is discussed in this section. Items discussed include site reconnaissance, boring layout, historical borings, survey procedures, drilling and sampling procedures, and general field and laboratory testing procedures. Exceptions to the criteria herein for specific retaining wall are noted in individual subsurface investigation reports.

2.1 Site Reconnaissance

A visual site reconnaissance was performed by a representative from GESTRA Engineering, Inc. (GESTRA) of Milwaukee, Wisconsin or by Soils Engineering Services, Inc (SES) of Madison, WI. The reconnaissance included observation of the staked boring locations prior to drilling to determine if potential access issues and/or utility conflicts exist.

2.2 Boring Layout and Survey Procedures

A total of Fifty-seven (57) soil boring locations for the proposed retaining walls are planned to be drilled by GESTRA or SES for proposed retaining walls. The borings were designated as RXXX-GX. The "XXX" denotes the proposed structure number at the time of drilling and "GX" the boring number for that structure. The number of borings and proposed boring locations were agreed upon by WisDOT, HNTB, GESTRA and SES based on the location of the proposed retaining wall location prior to drilling, locations and apparent quality of historical borings in the area of a proposed structure, and drill rig accessibility.

WisDOT recommended TCP use historical geotechnical information, primarily soil borings, to prepare geotechnical engineering reports for bridges, retaining walls, embankments, and other structures where applicable. Historical borings and information are defined as

information performed by WisDOT and other consultants prior to the current 10/441 project exploration that began in August 2011. Historical borings are considered for development of the soil profile and parameters where information is not available with recent borings, but the information provided on historical boring logs is not assumed equivalent to information provided on boring logs developed specifically for the current project. The historic borings have varying degrees of value and applicability to the proposed project because of factors such as lack of documentation regarding procedures used for determining historical boring locations, elevations, and soil classifications; approximations required to incorporate the historical boring locations into the "new" project coordinate system. The intent of the historical borings was for design of different structures and not for design of the proposed structures; and historical borings generally had less test data. Subsurface conditions are subject to change over time because of natural occurrences or human activity. Therefore, subsurface conditions reported at the time the historic borings were drilled may not be representative of the current conditions.

Individual soil boring locations, including historical, are provided in individual subsurface investigation reports. Typically, one boring is required for every 100 feet to 200 feet (Table 3, FHWA-IF-02-034) of the length for each retaining wall structure to be performed. The number of borings and new borings in the recommended subsurface exploration scope developed for the project by TCP was reduced, after input and direction from WisDOT. The direction from WisDOT was to plan on one retaining wall boring for every 200 to 300 lineal feet of retaining wall. Borings drilled for pavement, bridges, embankment, noise walls, ponds and sign structures will be incorporated into the retaining wall subsurface investigation reports where appropriate.

Proposed soil boring locations were staked by Kapur. Northing, easting, and elevations of the ground at the stake were provided to the driller. The driller was responsible for requesting utility locates of the soil boring locations. Where the as-drilled boring locations differed from the staked boring locations, Kapur may resurveye the boring coordinates and elevations, upon request from the driller. Typical guidelines for resurvey considerations are 1 foot elevation difference and/or 10 feet offset from staked location.

It is understood the surveyed coordinates are according to the Wisconsin County Reference System of 2006 (WISCRS 2006). It is also understood the surveyed elevations are according to the North American Vertical Datum of 1988 (NAVD 88). The ground surface elevations are included on the boring logs in individual subsurface investigation reports.

2.3 Drilling and Sampling Procedures

The soil borings were performed by GESTRA and SES under subcontract to TCP. Information such as drilling method used, rig type, and crew chief are included on the boring logs.

Soil samples were to be obtained using a split-barrel (split-spoon) sampler driven during Standard Penetration Tests (SPT) in accordance with ASTM D1586, Standard Method of Penetration Test and Split Barrel Sampling of Soils. The standard split-spoon sampling was generally performed at approximately 2 ½-foot intervals to a depth of 20 feet and 5-foot intervals thereafter typically using 3-1/4 inch hollow stem augers or mud rotary drilling techniques in soil. Shelby tubes, 3-inch diameter and 24-inch long, were pushed at select locations in cohesive soil according to ASTM 1587, Standard Method for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes.

Coring of bedrock was planned, based on historical subsurface exploration sheets from existing structures and published data on the depth of bedrock in the project area. Samples of the rock were obtained by coring with an NX- or NQ- size diamond bit core barrel at some locations. The core samples recovered with these barrels are approximately 2-1/8 and 1-7/8 inches in diameter, respectively. Disturbed samples or cuttings of the bedrock were recovered at some locations using the split-barrel sampler or from the auger bits.

Field logs of each boring were prepared by the drill crew. These logs included visual classifications of the materials recovered during drilling as well as the driller's interpretation of the subsurface conditions between sample intervals. Final boring logs included with this report represent an interpretation of the field logs and include modifications based on laboratory observation and test data.

After groundwater levels were recorded, boreholes were to be abandoned to subgrade with chipped bentonite in accordance with Wisconsin Administrative Code, Section NR 141. Asphaltic pavement was capped with a bituminous cold patch material.

In addition to drilling borings, twenty (20) cone penetrometer tests (CPT) are planned at select locations where additional information is needed to better assess groundwater, magnitude and time-rate of settlement, and stability of embankments/retaining walls. The program includes 1,200 lineal feet of CPT exploration (average of 60 feet per CPT), pore pressure dissipation measurements, and 3 data analysis.

2.4 Field and Laboratory Testing Procedures

Recovered Standard Penetration Test split-spoon samples were to be visually classified in the field. After visual classification, representative sample material was to be placed in jars, which were then to be sealed and labeled.

Following field observation, soil samples were to be taken to the GESTRA or SES laboratory for analysis. The jarred split-spoon samples were visually classified in the lab by a GESTRA or SES geotechnical engineer, which included relative moisture condition, color, and presence of lenses and seams. The soils were classified in general conformance with the Unified Soil Classification System, ASTM D 2487. The following laboratory tests were performed on selected samples:

- Water Content Determination (ASTM D2216);
- Atterberg Limits (ASTM D4318);
- Loss on Ignition (ASTM D2974);
- Particle Size Distribution Testing (ASTM D422);
- Dry Density (ASTM D7263);
- Unconfined Compression (ASTM D2166);
- Specific Gravity (ASTM D854);
- One-dimensional consolidation (ASTM D2435);
- Unconsolidated Undrained (UU) Triaxial Test (ASTM D2850), and
- Consolidated Undrained (CU) Triaxial Test (ASTM D4767);

Laboratory results are shown or referenced on the boring logs in the individual subsurface investigation reports. Typically, water content testing are performed on a majority of the cohesive samples, and Atterberg limits are assigned on representative cohesive samples in each boring to aid in classification as well as for samples where more sophisticated testing is performed (consolidations, UU and CU) to potentially determine correlation to index properties. Loss on ignition testing is conducted on select samples with potential of organic matter. Unconfined compression tests are assigned typically in stiff to very stiff lean clays as an alternative to UU tests to reduce cost and to verify pocket penetrometer readings. Consolidation tests are selected typically in the very soft to medium stiff clays or peats or in

strata which may be subjected to significant fills by the proposed alignments. UU and CU testing are typically conducted to verify pocket penetrometer results and in strata where global stability or foundation design would be required or critical to the design. Samples chosen are typically those of soft to medium stiff clays or peats, but other strata are selected to determine representative parameters across the corridor. When selecting samples for testing, adjacent borings within the area are reviewed to determine previously assigned testing in order to stay within the budgeted allowance.

Rock core samples were visually classified. Percent recovery and rock quality designation (RQD) were calculated for these samples and are noted at their depths of occurrence on the boring logs. RQD is the percentage of the total length cored consisting only of sound pieces at least 4 inches or more in length and is a measure of the integrity of the rock mass.

Classification and descriptions of rock core samples are based on visual and tactile observations. When coring was not performed, classification of rock was estimated from driller's notes including drilling characteristics and observation of cuttings, and/or disturbed samples obtained from the auger flights or split barrel sampler.

2.5 Subsurface Conditions

Soil and rock stratification boundaries shown on the boring logs represent the location of approximate changes in soil and/or rock types and were estimated based on the available data and experience. The actual in-situ changes between layers may be more gradual or otherwise differ from those depicted on the boring logs.

A generalized description of subsurface conditions is presented in the individual subsurface investigation reports. Refer to the boring logs and subsurface exploration sheets for more detailed conditions encountered at each boring location. Variations in soil conditions, including the presence of lenses, pockets, and other discontinuous soil layers should be expected between borings and between soil layers within the generalized soil profile developed for the site.

Groundwater observation wells were installed at a small number of locations for the pond borings and embankment borings. At other locations, groundwater levels noted on boring logs are based solely on observations made in the open portion of the boreholes during and immediately after completion of drilling operations. Monitoring well construction details are provided on the Wisconsin Department of National Resources (WDNR) monitoring well construction forms.

Mud rotary wash boring procedures were used in some borings in the soil to maintain a stable borehole through the materials encountered. During mud rotary wash boring procedures, bentonite slurry is introduced into the borehole. Water levels recorded after completion of mud rotary wash borings may not be representative of groundwater conditions at the boring location. At the mud rotary wash boring locations, the water levels recorded while drilling were recorded prior to the introduction of drilling fluid into the borehole.

Due to low permeability of cohesive soils encountered in the borings, short term observations and visual observation of samples may not provide a reliable indication of groundwater conditions. Fluctuation of groundwater levels can occur due to seasonal variations in the amount of rainfall, runoff, surface infiltration, and other factors not evident at the time the borings were performed. In addition perched water can occur at higher elevations following periods of heavy or prolonged precipitation. Long-term observations in cased holes or piezometers would be necessary to obtain more accurate water level data.

3.0 ANALYSIS AND FOUNDATION CRITERIA AND METHODOLOGY

All project design recommendations are based on the assumption that all construction work, including grading, subgrade preparation, fill placement, and pavement work will be performed in accordance with the appropriate sections of the *State of Wisconsin Standard Specifications for Highway and Structure Construction*, 2012 Edition and all supplemental specifications, and the recommendations contained in the Subsurface Investigation Report prepared for the specific structure. Retaining wall design will be based on WisDOT LRFD Bridge Manual - Chapter 14 (revised January 2013).

3.1 Recommended Parameters

A generalized soil profile for each structure is to be developed using the soil and groundwater information obtained. The field and laboratory test data will be used and supplemented by published information and values in literature that covers local geology and WisDOT Geotechnical Bulletin No.1. This information will be included in the individual subsurface investigation report. For materials used in construction of new structures, the following values in Table 1 are to be used:

Table 1: Properties of New Construction Materials

Soil Unit	Total Unit Weight, (pcf)	Total (Undrained) Parameters		Effective (Drained) Parameters	
		Cohesion, c, psf	Friction Angle, ϕ, Deg	Cohesion, c', psf	Friction Angle, ϕ', deg
New Embankment Fill[1] (Standard Specification Section 207)	130	2000	0	0	31
Structural Fill (Standard Specification Section 210)	132	NA	NA	0	32
Riprap	132	NA	NA	0	40
Water	62.4	0	0	0	0
Steel	490	NA	NA	NA	NA
Concrete	150	NA	NA	NA	NA

1. As directed by WisDOT
NA Not Applicable.
pcf Pounds per cubic foot.
psf Pounds per square foot.

It is assumed that new embankment and structural fill are to be compacted according to the recommendations of the individual subsurface investigation reports and according to the *State of Wisconsin Standard Specifications for Highway and Structure Construction*, 2012 Edition.

3.2 Retaining Wall Type Selection

The preferred retaining wall type will be mutually selected by WisDOT and TCP. The selection of wall type will be determined at a preliminary wall selection meeting and based on such things as; the proposed retaining wall general plan and geometry; available right-of-way; the known subsurface conditions; roadway plan, profile and cross sections with cut and fill considerations; utility or other conflict considerations; cost; and construction sequencing and feasibility. In general, mechanically stabilized earth (MSE) walls are the preferred wall type per discussions with WisDOT, but other wall types such as cast-in-place (CIP) cantilever walls, reverse CIP L-walls, soil nails, solider pile and lagging, sheet pile, secant/tangent pile, and diaphragm walls will be considered.

A soil improvement method, developed through mutual agreement with WisDOT and TCP, may be necessary if WisDOT criteria for service limit state are not met. The potential soil improvement methods anticipated for this project may include over excavation, trench excavation, high modulus geotextile fabric, early fill placement, staged construction with installation of prefabricated vertical drains (also known as wick drains), lightweight fill, and stone column installation. One improvement method (if required) will be selected and designed based on the concurrence from WisDOT and TCP for each retaining wall structure. The final retaining wall and soil improvement selection is noted in the individual subsurface investigation report for each wall.

3.3 Load Resistance Factor Design (LRFD) of Retaining Walls

Based on the WisDOT policy for retaining wall design in LRFD approach, wall stability will be checked as part of the design process for anticipated failure modes at specified limit states and the wall components will be sized accordingly [WisDOT LRFD Bridge Manual- Chapter 14 (Revised January 2013)] and AASHTO LRFD Bridge Design, 6th Edition, 2012. The retaining wall design criteria and analysis procedures discussed here-in are for MSE and CIP cantilever walls on shallow footing wall types. If other wall types are selected or deep foundations required, the design criteria will be discussed in their respective subsurface investigation report.

The limit states to evaluate will include (1) strength limit states, (2) service limit states, and (3) extreme event limit states. Strength limit state is applied to check that external stability and internal stability is adequate. External stability includes sliding along the wall base, eccentricity and bearing resistance failure. External stability will be evaluated by the geotechnical engineers of TCP. Internal stability required for MSE wall types will be completed by the MSE wall contractor.

Service limit state is applied to check overall or global stability, settlement and lateral deflections of the proposed structure. Checks on the lateral deflection of the proposed walls were not within the scope of geotechnical services for the retaining walls.

For the extreme event II limit states, such as vehicular collision forces, it is assumed that MSE walls are protected by a crash barrier and that the crash barrier prevents or significantly reduces the collision forces from being transferred to the wall system. Therefore, extreme event limit state is not required.

The following equation represents the principle of stability check for the retaining wall designed in accordance with LRFD approach [WisDOT LRFD Bridge Manual- Chapter 14 (Revised January 2013)].

$$Q = \Sigma\eta_i \, x \, \gamma_i \, x \, Q_i \leq \Sigma\phi \, x \, R_n = R_r$$

Where Q = factored load, η_i = load modifier (=1 for retaining walls), γ_i = load factor, Q_i = force effect or load, ϕ = resistance factor, R_n = nominal resistance and R_r = factored resistance. The capacity demand ratio (CDR) for external stability (sliding, overturning, bearing resistance) and global stability can be defined as R_r divided by Q. In addition to CDRs for the external stability, factored bearing capacities will also be estimated at the foundation elevation for the proposed retaining walls. Load combinations, load factors and resistance factors employed in the analysis of the proposed retaining wall structures are summarized in the Section 3.3.1 for MSE and CIP type walls. If another wall type is selected, the assumptions and methodology would be incorporated into that subsurface investigation report.

3.3.1 Design Loads on the Retaining Walls

The retaining walls shall be designed by the wall designer to withstand the applicable loads presented in Section 14.4.5 of WisDOT LRFD Bridge Manual- Chapter 14 (Revised January 2013). The retaining walls proposed at the bridge abutment locations will not be subjected to

the vertical loads from superstructure acting on the bridge abutment as these loads will be carried by the deep foundation system. However, the lateral load from retained soil behind the bridge abutments will be transferred to the retaining wall. The following design loads are to be considered:

- Dead loads (DC)

  Dead loads include weight of the structural components and non structural components, wearing surfaces, and utilities of the wall.

- Vertical Earth Pressure (EV)

  Loads from vertical earth pressure are due to retained soil behind the face of the wall.

- Lateral Earth Pressure (EH)

  The active earth pressure condition exists when a retaining wall is free to rotate away from the retained backfill. In the at-rest pressure condition, the top of the wall is not allowed to deflect or rotate; therefore, the wall is required to support the full pressure of the soil behind the wall. The development of passive earth pressure requires a retaining wall to move into or toward the soil. The retained soil is assumed to have adequate drainage to prevent the buildup of hydrostatic pressure.

  The passive resistance, as recommended by WisDOT, will be neglected in stability calculations above the base of the foundation.

- Surcharge Loads (LS & ES)

  Increased earth pressure on a wall occurs due to live load surcharges (LS), such as vehicular loading on top of the retained earth including operation of large or heavily-loaded cranes, or staged equipment, and earth surcharge loads (ES), such as soil stockpile or material storage.

  Earth pressure from live load surcharge shall be applied when a vehicular load is within one half of the wall height behind the back face of the wall or reinforced soil mass for MSE walls, in accordance with **LRFD [3.11.6.4].** It is assumed that the live load surcharges are 240 psf for vehicular loading and 100 psf for walls without traffic loading.

The effect of surcharges including uniform, strip and point loads will be estimated in accordance with AASHTO LRFD Section 3.11.6.1 and 3.11.6.2. Pressures from earth surcharges will be computed by multiplying the unit weight of the material by its height.

Table 2: Summarized Load Combinations and Load Factors

Direction of Load	Load Type		Load Factor		
			Strength Limit State		Service Limit State
			Maximum	Minimum	
Vertical	Dead Load of Structural Component and non-structural attachments (DC)		1.25	0.90	1.00
	Vertical Earth Load (EV)		1.35	1.00	1.00
	Live Load Surcharge (LS)		1.75	0.0	1.00
	Earth Surcharge (ES)		1.50	0.75	1.00
Horizontal	Horizontal Earth Pressure (EH)	Active	1.50	0.90	1.00
		At-Rest	1.35	0.90	1.00
		Passive	1.35	NA	1.00
	Live Load Surcharge (LS)		1.75	1.75	1.00
	Earth Surcharge (ES)		1.50	0.75	1.00

3.3.2 Strength Limit State Analysis (Bearing, Sliding, and Eccentricity)

Presented in **Table 3** are the resistance factors from WisDOT Chapter 14 for strength limit state analysis for MSE and CIP cantilever wall types.

Table 3: Summarized Strength Limit State Resistance Factors

Stability Mode	Resistance Factors	
	MSE wall base	Cast-in-place cantilever wall base
Sliding (Strength Ia Limit State)	1.00	1.00
Eccentricity (Strength Ia Limit State)	1.00	1.00
Bearing (Strength Ib Limit State)	0.65	0.55

3.3.3 Service Limit State Analysis (Global Stability and Settlement)

Global stability analysis of the retaining walls will be performed at the Service I limit state using applicable load combinations and resistance factors in accordance with the 2012 AASHTO LRFD Bridge Design Specifications 11.6.2.3. Short-term and long-term conditions will be evaluated for the critical section. The undrained parameters for cohesive materials and drained parameters for cohesionless materials will be used in the short-term condition. For the long-term condition, drained parameters will be utilized. The Spencer's Method using SLOPE/W -GeoStudio 2007 software, or the Modified Bishop Method using GSTABL7 software will be utilized for global stability analysis. Spencer's method is a limit equilibrium method using circular and non-circular searches as warranted for undrained and drained conditions. Spencer's Method considers both shear and normal interslice forces, satisfies both moment and force equilibrium, and assumes a constant interslice force function. The optimization feature of SLOPE/W is not utilized for this project analysis. The Modified Bishop's method is used to evaluate circular sliding surfaces, assumes zero interslice shear forces, and satisfies vertical force equilibrium for each slice and overall moment equilibrium about the center of the circular trial surface.

In general, the resistance factor, for global stability analysis may be taken as [WisDOT LRFD Bridge Manual- Chapter 14 (Revised January 2013)]:

- 0.75 - where the geotechnical parameters are well defined, and slope does not support or contain a structural element.
- 0.65 – where the geotechnical parameters are based on limited information or the slope contains or supports a structural element.

Excessive retaining wall foundation settlement may result in damage to the MSE wall facing, cantilever wall structure, coping, traffic barrier, bridge superstructure, bridge end panel, pavement, and/or other settlement sensitive elements supported on or near the wall. Design of the retaining walls must include the effects of total and differential foundation settlement at the Service I limit state, in accordance with AASHTO LRFD Bridge Design Specifications 11.5.2 and 11.2.

Techniques to reduce damage from post-construction settlements and deformations may include full-height vertical sliding joints through the rigid wall facing elements and appurtenances, and/or ground improvement or reinforcement techniques [WisDOT LRFD Bridge Manual- Chapter 14 (Revised January 2013)]. Allowable limits of the total and

differential settlement guidelines are provided in Section 14.4.7.2.1 of WisDOT LRFD Bridge Manual-Chapter 14 (Revised January 2013). Based on the available consolidation test results, a range total and differential settlement will be estimated. An estimated time range for 90 percent of the primary consolidation without any soil improvement will also be provided. If the time required for the 90 percent of primary consolidation does not fit within the constraints of the project schedule, soil improvement may be required. However, the details of soil improvement considerations will be analyzed and recommended with concurrence from WisDOT and TCP. Expected long term settlement of the retaining wall will also be estimated based on the available laboratory test data, such as consolidation test results. The actual settlement and rate will generally be a function of the soil types, layer thicknesses, depths relative to the load and natural drainage paths.

3.3.4 Critical Section Selection for Analysis

As dictated by the scope, only one critical cross section will be selected for preliminary analysis for every 300 to 400 feet of wall, typically based on a combination of the following three criteria: a) proposed maximum wall or fill / cut height, b) steeper slope angle and c) observed poor soil condition. The selected cross section (with plot date) for analysis will be presented with the analysis results. Additional cross sections, where recommended, will be selected with concurrence from WisDOT and TCP.

4.0 ADDITIONAL DESIGN AND CONSTRUCTION CONSIDERATIONS

The geotechnical construction considerations are discussed in this section. Items discussed include excavation, site drainage and dewatering, existing construction and utilities, temporary shoring, and stockpiling. If during construction, site conditions vary from those described in this report, the Geotechnical engineer should be contacted to determine the effect on the geotechnical recommendations for retaining wall design and construction considerations.

4.1 Excavation

Excavation safety is the responsibility of the Constructor. Excavation and safety measures should be in accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR part 1926, subpart P, Excavation and Trench Safety Standards and all other applicable

local state and federal safety regulations. Construction equipment, material stock piles and other loads should not be placed within a zone extending at 1H: 1V from the base of excavation, and possibly further away from the excavation depending on the details of the load and site conditions.

Care must be exercised by the Constructor to prevent damage and injury from factors such as excavation instability, ground loss and undermining of existing or future utilities, structures or other construction.

4.2 Site Drainage and Dewatering

Surface water runoff from precipitation or other sources should be properly diverted away from the project construction areas to reduce the potential for infiltration of water into excavations and the subsoil. The underlying soils may experience a loss in strength if surface water is allowed to accumulate in the subgrade soils.

Excavations required for the retaining wall foundation may extend below the groundwater elevation and there is the potential for groundwater to enter the excavations for the wall foundations. When the excavation is in cohesive soil, sump pit and pump methods are typically adequate for removing groundwater inflows unless otherwise noted in the individual subsurface investigation reports. For excavations extending into saturated granular soils, well points or other more extensive dewatering may be needed.

4.3 Existing Construction and Utilities

Where underground utilities are located in the vicinity of retaining walls, it is recommended the utilities be relocated prior to fill placement for the retaining wall construction as the preferred option. If utilities cannot be relocated and the estimated differential settlement is greater than the tolerable limits of the utility, potential settlement reduction measures should be discussed and mutually agreed upon between TCP and WisDOT and documented in the individual subsurface reports.

4.4 Temporary Shoring

Temporary shoring may be needed for the retaining wall foundation construction in some cases. It is the responsibility of the Contractor to retain a qualified professional engineer to perform stability analysis and meet minimum requirements for design, including but not limited to global stability, for any temporary shoring or other elements needed for construction.

4.5 Stockpiling

Stockpiling of soil or any type of construction material behind the high side of the wall should be kept a distance of at least 3 times the wall height from the face of the wall. Additional geotechnical analysis to check that surcharges other than those noted in Section 3.3.1 can be accommodated would be required.

5.0 GENERAL COMMENTS

This and other reports prepared for the Wisconsin Department of Transportation are for the specific project and use discussed herein. The specific project details are unique relative to the retaining wall locations, size, configuration and elevations. The project plans and specifications need to be submitted to TCP geotechnical engineers for review to verify that the conclusions and recommendations have been interpreted correctly.

Where specific information was not available, assumptions have been made, and are noted as such. These assumptions need to be reviewed by the engineer and other design professionals working on this project to confirm that these are correct for the planned use and project. If these assumptions are not correct, TCP geotechnical engineers should be informed and allowed to modify this report, its conclusions, and recommendations.

The accuracy and completeness of any documents or information provided by others as to project specifics or prior property uses have been reasonably relied on by TCP in providing its evaluation. In addition, if details of the planned construction change from those outlined in this report, TCP geotechnical engineers must be notified to determine if the changes affect the recommendations. Supplemental recommendations may then need to be made.

The analysis, conclusions, and recommendations in this report are based on the subsurface conditions present at the boring locations and the engineering characteristics of the soil as determined through field testing at this point in time, as defined in the current work scope. Subsurface conditions can change over time due to both natural and human forces, including changes in condition or use of adjacent properties.

Variations in soil conditions should be expected between or beyond the borings, or between sample intervals, the nature and extent of which might not become evident until construction is undertaken. It is recommended observation and testing of the construction be performed by the geotechnical engineer or WisDOT to determine if the subsurface conditions are as indicated by the borings and perform as anticipated.

If the conditions encountered during construction are different from those inferred by the borings or the project details and information changes, the geotechnical engineer must be contacted to determine if modification to the recommendations presented in this report are required. The recommendations found in this report are related and are not mutually exclusive of each other. Therefore, no single portion of this report should be removed or be considered as a stand-alone recommendation. Boring logs must also remain with the report, as they are not to be interpreted on their own.

The geotechnical recommendations presented herein are an evaluation of subsoil performance based on the geotechnical engineers' experience and professional opinion. These services were performed with the degree of skill and care normally utilized by other members of the geotechnical engineering profession practicing at this location at this time. No warranty, either express or implied, is intended or made.

This report is intended for structure design and construction purposes only and does not document the presence or absence of any environmental impacts at the site. Environmental services were specifically beyond the authorized scope of services.

Any use or reuse of this report for any purpose other than as specifically intended herein without written verification by the geotechnical engineer shall be at the user's own risk.

WIS 441 Tri-County Project
Corridor Manual
Chapter 9: Lighting

Chapter Contact: Bob Schuurmans (WisDOT)
Kapur

Issued: February 14, 2012
Revised: March 9, 2012
June 17, 2013

Scope/Purpose
This chapter summarizes key points for coordination between the roadway designer and lighting designer.

Reference Documents
- Traffic Guidelines Manual (TGM)

Lighting Systems
See attached Freeway Lighting Tech Memo considering operational and construction costs.

The following preliminary lighting recommendations were made in the 5/6/13 Tom Gonring e-mail:
- Continuous lighting of the LLBDM bridge
- Partial Interchange lighting , i.e. diverge ramps at the decision points, of the new 10/41/441 interchange
- Partial interchange lighting at USH 10/STH 441 and CTH AP/Midway Road
- Partial interchange lighting at USH 10/STH 441 and STH 47/Appleton Road
- Partial interchange lighting at USH 10/STH 441 and USH 10/Oneida Street

The following are supported:
- Continuous lighting from the LLBDM bridge to CTH P/Racine Street
- Installation of infrastructure to accommodate possible additional lighting along this corridor if future conditions warrant

Recommendations are illustrated in attachment WIS 441 Lighting Plan. Recommendations are highlighted in yellow, and the Region discretion area is highlighted in orange.

Attachments
Freeway Lighting - Tech Memo 5 (Dated 01/30/12)
WIS 441 Lighting Plan (Dated 5/6/13)

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Technical Memorandum

Date: **January 30, 2012**

To: **Scott Ebel, PE, Project Manager, WisDOT NER**
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From: **Dennis Fleischfresser – Kapur & Associates**

Project ID: **1517-07-04**

Project: **WIS 441**
Winnebago County

Subject: **WIS 441 Freeway Lighting Operational and Construction Costs**
Technical Memorandum 5

PURPOSE

The purpose of this memorandum is to assess the design criteria along with construction and operational costs and considerations associated with the lighting of portions of USH 10, USH 41, WIS 441 and associated interchanges and intersections.

DESIGN CRITERIA

For the purposes of this memorandum, USH 10, USH 41 and WIS 441 will be viewed as Class A freeways in accordance with IES publication RP-8-00 Roadway Lighting. In accordance with Table 2 Illuminance Method - Recommended Values, the design goal is 0.6 average maintained foot-candles. The roadway analysis also used the criteria that there be a minimum of 0.2 FC at any point on the roadway.

DOT utility type luminaires were used to determine typical spacing. Forty-foot poles were used on USH 10, USH 41 and WIS 441. Thirty-foot poles were utilized for all ramps.

For the purposes of this memorandum, the lighting requirements for USH 10/WIS 441 will be analyzed for the total length of new construction, basically from Station 88+00 (4600' West of USH 41) to station 399+00 which is 5800' East of USH10/Oneida Street. USH 41 will also be illuminated for the length of new construction, from Station 1310+00 near Jacobsen Road to Station 1390+00 which is 5800' North of USH 10.

LIGHTING QUANTITIES BY SEGMENT

The areas of lighting were also broken down into segments to determine the potential of partial lighting of the project. The areas of construction were broken down into the following segments (See Figure 1, Lighting Areas):

AREA 1: The area from just beyond the far western end of construction at CTH CB to the west gore of the USH 10/USH 41. This area extends from Station 80+00 to Station 108+00. The only ramps considered in this area are the EB On Ramp and the WB Off Ramp

AREA 2: This area includes the USH 10/USH 41 interchange. The USH 10 portion extends from Station 108+00 to Station 147+50. The coverage of USH 41 extends from Station 1310+00 to Station 1390+00. All ramps are considered for illumination.

AREA 3: This area is the Little Lake Butte Des Morts (LLBDM) Bridge from Station 147+50 to Station 180+00

AREA 4: This area extends from the eastern end of Station 180+00, on the East end of the LLBDM Bridge to Station 220+00 where CTH P/Racine Avenue crosses under the freeway. This area includes the CTH P/Racine Avenue interchange.

AREA 5: This area extends from Station 220+00 to Station 272+00 which is the start of the tangent section. The Midway Road/CTH AP intersection is included in this area.

AREA 6: This area runs from Station 272+00 to the eastern end of construction at Station 394+00. This area also includes Appleton Avenue/STH 47 interchange and the Oneida Street/ US 10 interchange.

EXCLUDED ROADWAYS: Certain areas will be illuminated per DOT standards but are excluded from this report. Hence these roadways are not included in the construction and O&M costs. These areas include the roundabouts and local roads such as CTH P, Midway, STH 47/Appleton Avenue and Oneida Street.

ROADWAY QUANTITIES

The roadway was evaluated as being 1, 2, 3, 4 or 5 lane and further determined if the use of twin luminaires on a pole was suitable for the segment of roadway. The distances were further split up on if the roadway was the mainline (USH 10, USH 41, WIS 441), on ramps or off ramps. The roadway distances are illustrated in the following table.

Table 1 – Roadway Distance

SECTION	MAINLINE - FEET OF ROADWAY (USH 10, USH 41, WIS 441)								ON RAMPS - FEET OF ROADWAY		OFF RAMPS - FEET OF ROADWAY	
	1 LANE 30' POLE 150W	2 LANE 30' POLE 150W	3 LANE 40' POLE 400W	4 LANE 40' POLE 400W	2 LANE TWIN 30' POLE 150W	3 LANE TWIN 40' POLE 400W	4 LANE TWIN 40' POLE 400W	5 LANE TWIN 40' POLE 400W	1 LANE 30' POLE 150W	2 LANE 30' POLE 150W	1 LANE 30' POLE 150W	2 LANE 30' POLE 150W
SECTION 1	0	2600	4000	0	0	0	0	0	500	0	500	0
SECTION 2	0	0	3750	0	0	7100	0	2700	NOTE 1	NOTE 1	25,300	1300
SECTION 3	0	0	0	0	0	0	1800	1250	0	0	0	0
SECTION 4	500	2900	4200	0	0	1400	500	0	1900	800	3900	1500
SECTION 5	0	0	0	0	0	2700	1000	1100	3350	0	1400	2200
SECTION 6	0	0	11300	8600	0	2300	1000	0	3500	1200	0	5500
TOTALS	500	5500	23250	8600	0	13500	4300	5050	9250	2000	31100	10500

NOTES 1. THE SYSTEM RAMPS FOR USH 10/USH 41 INTERCHANGE TABULATED UNDER 'OFF RAMPS'

LIGHTING QUANTITIES

The lighting quantities are based upon the following spacing criteria:

1 lane	150W HPS at 175' OC on a 30' pole
2 lane	150W HPS at 150' OC on a 30' pole
3 lane	400W HPS at 275' OC on a 40' pole
4 lane	400W HPS at 265' OC on a 40' pole
5 lane	400W HPS at 250' OC on a 40' pole

Twin luminaires on a pole utilize the same spacing criteria.

TABLE 2 lists the number of poles and luminaires for each of the six sections along with those for the on and off ramps. The total for all mainline and interchanges comes to 395 of 150W HPS luminaires on 395 of 30’ poles plus 342 of 400W luminaires on 240 of 40’ poles.

Table 2 – Summary Luminaries and Poles

SECTION	MAINLINE - LUMINAIRES AND POLES				ON RAMPS - LUMINAIRES AND POLES		OFF RAMPS - LUMINAIRES AND POLES	
	150W	400W	30' POLE	40' POLE	150W	30' POLE	150W	30' POLE
SECTION 1	20	17	20	17	4	4	4	4
SECTION 2	0	97	0	57	0	0	162	162
SECTION 3	0	28	0	14	0	0	0	0
SECTION 4	26	38	26	28	20	20	38	38
SECTION 5	0	44	0	22	22	22	26	26
SECTION 6	0	118	0	102	32	32	41	41
TOTALS	46	342	46	240	78	78	271	271

NOTES 1. THE SYSTEM RAMPS FOR USH 10/USH 41 INTERCHANGE TABULATED UNDER 'OFF RAMPS'

It needs to be noted that the above quantities of poles and luminaires were not determined by a point-by-point photometric analysis. The photometric analysis utilized assumes the 'typical' road including median & terrace is straight and constant. During design, pole spacing can vary by 10-20% from the "typical" and will be included in the cost contingencies

CONSTRUCTION AND OPERATIONAL COST ESTIMATE

The estimated construction costs are based upon quotes from Milwaukee area vendors and MEANS Cost Estimating. Power costs are based upon an annual average 12 hour lighting period per day, $0.13/KWH and a 1.23 ballast factor for the luminaire. Maintenance is based upon an estimated $5/month/fixture.

TABLE 3 breaks down the construction, power and maintenance cost for each of the six sections based upon the mainline, on and off ramp roadway distances.

Table 3 – Individual Construction, Operation and Maintenance Costs

SECTION	MAINLINE - COSTS				ON RAMP - COSTS				OFF RAMP - COSTS			
	CONSTRUCTION COST	POWER KWH/YR	POWER $/YR	MAINTENANCE $/YR	CONSTRUCTION COST	POWER KWH/YR	POWER $/YR	MAINTENANCE $/YR	CONSTRUCTION COST	POWER KWH/YR	POWER $/YR	MAINTENANCE $/YR
SECTION 1	$698,912	52,797	$6,864	$2,220	$46,285	3,232	$420	$240	$46,285	3,232	$420	$240
SECTION 2	$1,360,424	209,031	$27,174	$5,820	$0	0	$0	$0	$2,352,812	130,914	$17,019	$9,720
SECTION 3	$397,189	60,339	$7,844	$1,680	$0	0	$0	$0	$0	0	$0	$0
SECTION 4	$986,165	102,899	$13,377	$3,840	$243,339	16,162	$2,101	$1,200	$478,428	30,708	$3,992	$2,280
SECTION 5	$567,436	94,818	$12,326	$2,640	$290,310	17,778	$2,311	$1,320	$321,702	21,011	$2,731	$1,560
SECTION 6	$2,237,524	254,285	$33,057	$7,080	$511,979	25,860	$3,362	$1,920	$596,760	33,133	$4,307	$2,460
TOTALS	$6,247,649	774,169	$100,642	$23,280	$1,091,913	63,033	$8,194	$4,680	$3,795,987	218,998	$28,470	$16,260

NOTES 1. THE SYSTEM RAMPS FOR USH 10/USH 41 INTERCHANGE TABULATED UNDER 'OFF RAMPS'

Table 4 summarizes the construction and O&M costs for the six sections based upon the mainline, mainline and off ramp and lastly the mainline plus full interchange lighting. The options for just illuminating section 2+4 (USH 10/USH 41 intersection for Section 2 and the CTH P/Racine Avenue interchange for Section 4); the option for Sections 2+3+4 (Section 3 being the Little Lake Butte Des Morts Bridge). The option for illuminating the off ramps only is covered in TABLE 3.

Table 4 – Summary – Construction, Operation and Maintenance Costs (Note 1)

SECTION	MAINLINE ONLY		MAINLINE + OFF-RAMPS ONLY		MAINLINE + INTERCHANGES	
	CONSTRUCTION COST	O&M COST	CONSTRUCTION COST	O&M COSTS	CONSTRUCTION COST	O&M COSTS
SECTION 1	$698,912	$9,084	$745,197	$9,744	$791,482	$10,404
SECTION 2	$1,360,424	$32,994	$3,713,236	$59,733	$3,713,236	$59,733
SECTION 3	$397,189	$9,524	$397,189	$9,524	$397,189	$9,524
SECTION 4	$986,165	$17,217	$1,464,593	$23,489	$1,707,932	$26,790
SECTION 5	$567,436	$14,966	$889,138	$19,258	$1,179,448	$22,889
SECTION 6	$2,237,524	$40,137	$2,834,284	$46,904	$3,346,263	$52,186
SECTIONS 1-6	$6,247,649	$123,922	$10,043,636	$168,652	$11,135,549	$181,526
SECTIONS 2+3+4	$2,743,777	$2,195,022	$5,575,017	$92,746	$5,818,356	$96,047
SECTIONS 2+4	$2,346,589	$50,211	$5,177,829	$83,222	$5,421,168	$86,523

NOTES

1. THE SYSTEM RAMPS FOR USH 10/USH 41 INTERCHANGE (SECTION 2) ARE TABULATED UNDER 'OFF RAMPS' AND THEREFORE THERE ARE NO ADDITIONAL ON-RAMPS.

The construction costs in TABLES 3 and 4 include a 25% contingency.

ACCIDENTS

A primary purpose of lighting a roadway at night is to increase the visibility of the roadway and its adjacent environment thereby permitting the driver to maneuver uncertainties such as inadequate visibility, merging and diverging patterns, and physical geometric conditions, etc.. The attached exhibit 1 shows a comparison of the 2006-2010 crash rates within the WIS 441 corridor, including a day and night comparison. The crash rates are higher at night throughout the entire project area and especially crash rates are double at night between the segment US 10/WIS 441 to CTH BB and CTH AP to USH 10 Oneida Street. The high crash rates may justify the need to light the project area.

SUMMARY

This technical lighting memorandum has reviewed the proposed construction, operation and maintenance costs for the proposed WIS 441 freeway and portions of US 10 and US 41. The adjoining roundabouts, although they will be illuminated per DOT standards, are not included as part of this memorandum. Depending upon the areas illuminated, the cost of construction could be as high as $11.1 million with an estimated annual operating cost of over $181,000 per year.

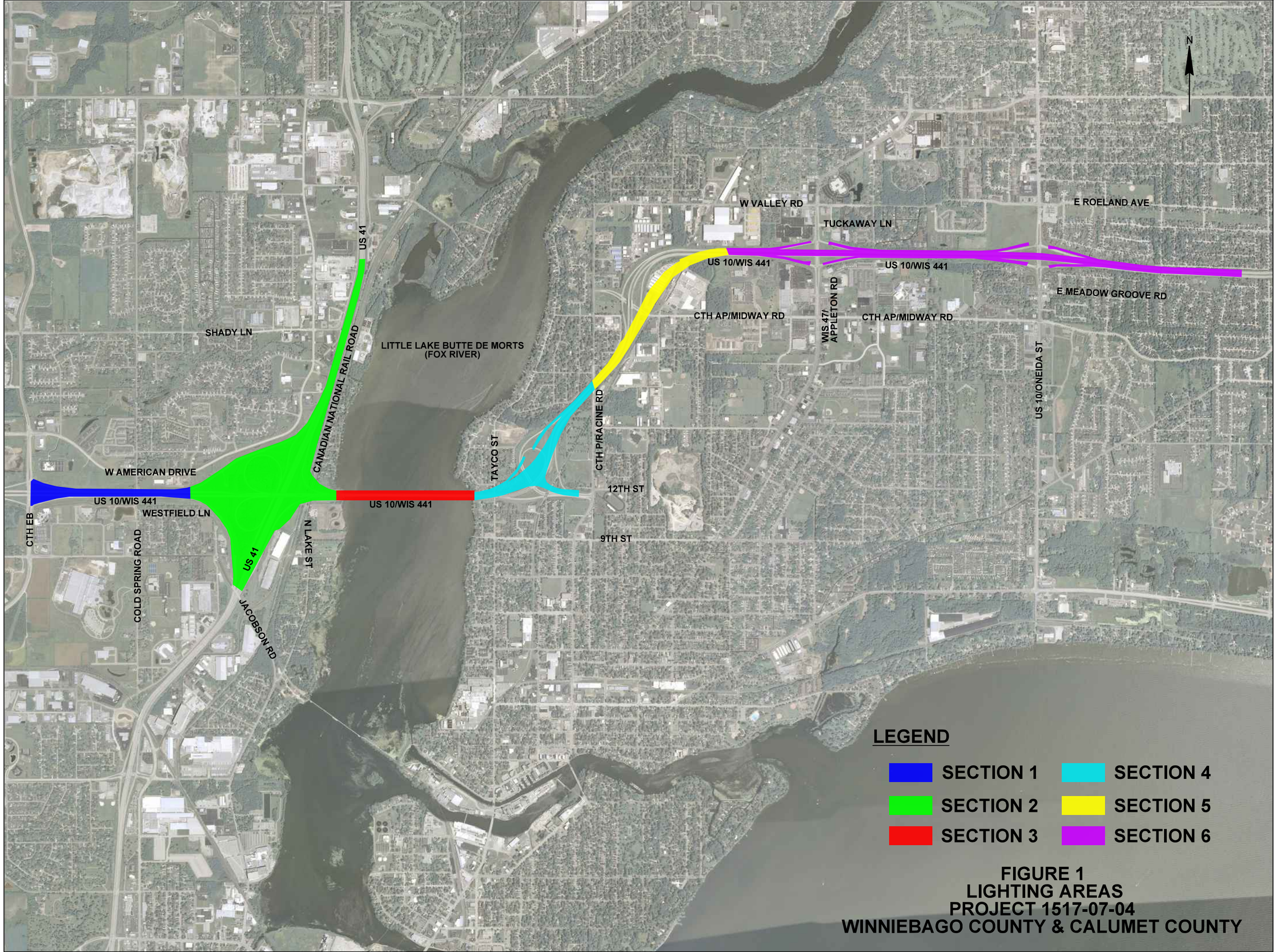


FIGURE 1
LIGHTING AREAS
PROJECT 1517-07-04
WINNIEBAGO COUNTY & CALUMET COUNTY

Exhibit 1: 2006-2010 Crash Analysis

Annual Crash Rate

STATEWIDE AVG = 85 (Urban Interstate)

	Crashes	AADT	AADTfac	Distance	HMVMT	Rate
CTH II (Winchester Road) to US 10/WIS 441	271	85100	1	1.46	2.721	99.4
US 10/WIS 441 to CTH BB (Prospect Avenue)	222	76000	1	1.86	3.096	71.5
CTH CB to South US 41 Interchange	100	20700	1	0.9	0.408	245.1
South US 41 Interchange to CTH P (Racine Street)	294	60500	1	1.17	1.550	189.7
CTH P (Racine Street) to CTH AP (Midway Road)	113	48600	1	0.96	1.022	110.6
CTH AP (Midway Road) to WIS 47 (Appleton Road)	68	42600	1	0.95	0.886	76.2
WIS 47 (Appleton Road) to Oneida Street	51	46100	1	1.01	1.020	50.0
Oneida Street to CTH KK (Calumet Street)	39	39400	1	2.7	2.330	16.7

HMVMT (Hundred Million Vehicle Miles Traveled) = (AADT * Distance between IC * 365 days * years of crash data)/ 100,000,000

Crash Rate = Total crashes / HMVMT

Annual Crash Rate
6 AM - 6 PM

	Crashes	AADT	AADTfac	Distance	HMVMT	Rate
CTH II (Winchester Road) to US 10/WIS 441	168	85100	0.76	1.46	2.068	81.2
US 10/WIS 441 to CTH BB (Prospect Avenue)	131	76000	0.76	1.86	2.353	55.7
CTH CB to South US 41 Interchange	74	20700	0.76	0.9	0.310	237.0
South US 41 Interchange to CTH P (Racine Street)	198	60500	0.76	1.17	1.178	167.6
CTH P (Racine Street) to CTH AP (Midway Road)	79	48600	0.76	0.96	0.777	101.7
CTH AP (Midway Road) to WIS 47 (Appleton Road)	32	42600	0.76	0.95	0.674	46.8
WIS 47 (Appleton Road) to Oneida Street	24	46100	0.76	1.01	0.775	31.0
Oneida Street to CTH KK (Calumet Street)	27	39400	0.76	2.7	1.771	15.0

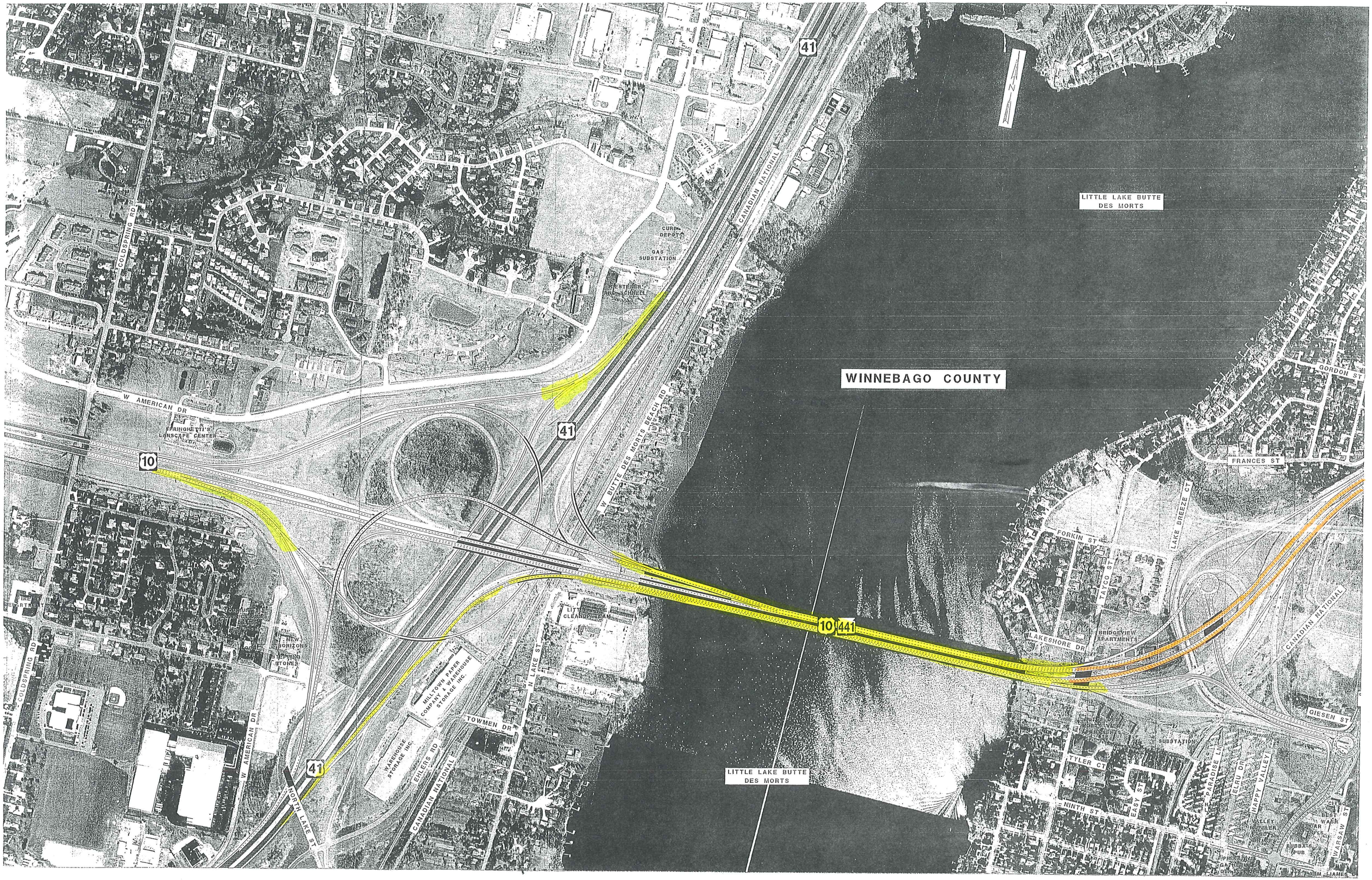
Annual Crash Rate
6 PM - 6 AM

	Crashes	AADT	AADTfac	Distance	HMVMT	Rate
CTH II (Winchester Road) to US 10/WIS 441	103	85100	0.24	1.46	0.653	157.0
US 10/WIS 441 to CTH BB (Prospect Avenue)	91	76000	0.24	1.86	0.743	121.8
CTH CB to South US 41 Interchange	26	20700	0.24	0.9	0.098	265.5
South US 41 Interchange to CTH P (Racine Street)	96	60500	0.24	1.17	0.372	258.0
CTH P (Racine Street) to CTH AP (Midway Road)	34	48600	0.24	0.96	0.245	138.6
CTH AP (Midway Road) to WIS 47 (Appleton Road)	36	42600	0.24	0.95	0.213	169.2
WIS 47 (Appleton Road) to Oneida Street	27	46100	0.24	1.01	0.245	110.3
Oneida Street to CTH KK (Calumet Street)	12	39400	0.24	2.7	0.559	21.5

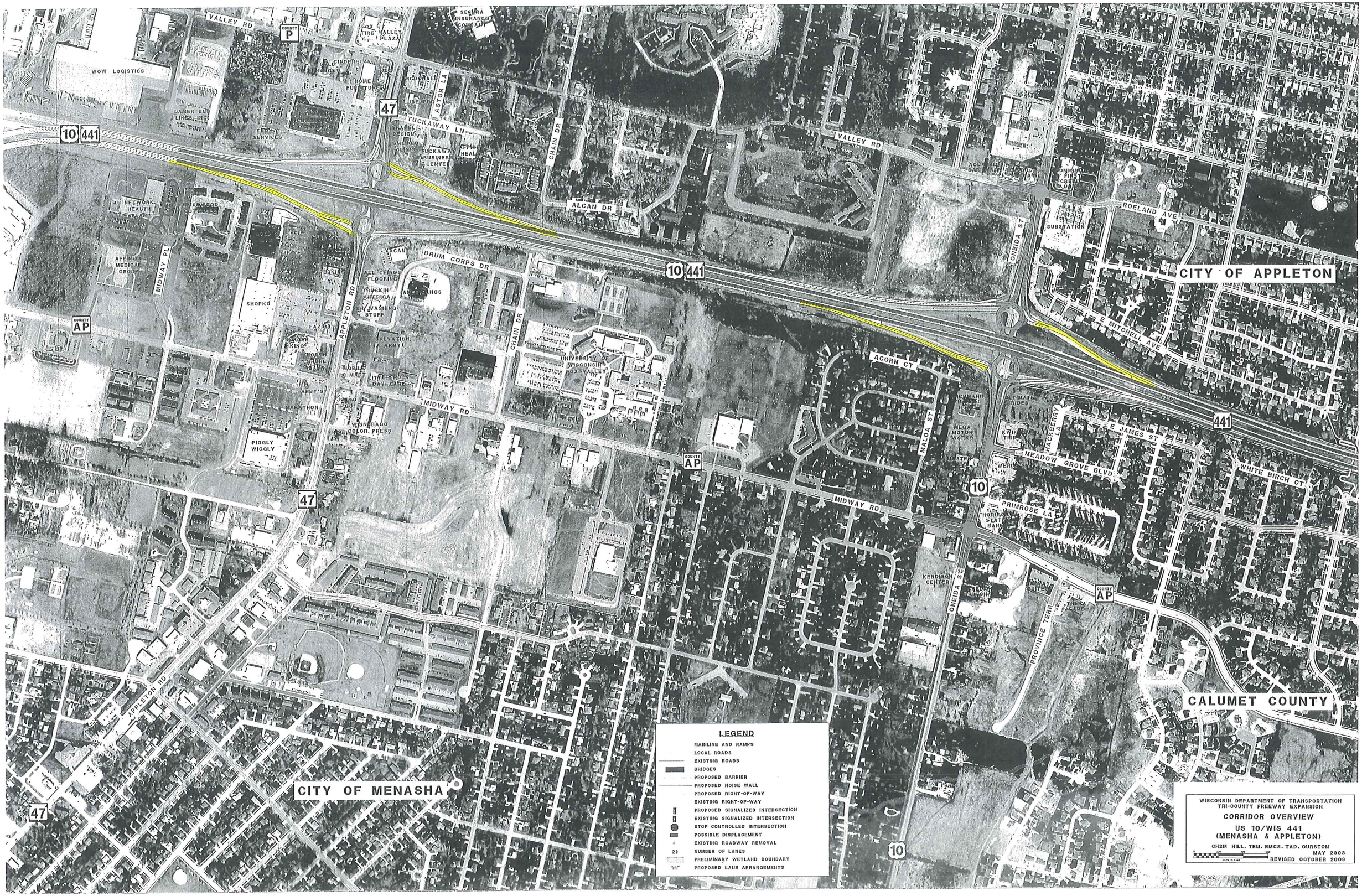
Crash rate higher at night

Crash rate double at night

AADTfac is the percent of the 24-hour traffic within the analysis period, and was calculated from 24-hour counts conducted within the corridor


41
CANADIAN NATIONAL
LITTLE LAKE BUTTE DES MORTS
WINNEBAGO COUNTY
GORDON ST
FRANCES ST
GOLDSPRING RD
W AMERICAN DR
SPRINGHETTI'S LANDSCAPE CENTER
10
CURB DEPOT
GAS SUBSTATION
W BUTTE DES MORTS BEACH RD
FORKIN ST
TAYCO ST
LAKE BREEZE CT
LAKESHORE DR
BRIDGEVIEW APARTMENTS
10 441
NEW HORIZONS
STEPPING STONES
MILLTOWN PAPER COMPANY & WAREHOUSE STORAGE INC.
WAREHOUSE STORAGE INC.
EHLERS RD
TOWMEN DR
N LAKE ST
NORTH LAKE ST
GIESEN ST
SUBSTATION
TYLER CT
NINTH ST
EASY ST
PARADISE LN
ELHU DR
HAPPY VALLEY
BUBBA'S PUB
WARSAW ST


LITTLE LAKE BUTTE DES MORTS
OLDE MIDWAY RD
GORDON ST
FRANCES ST
FORKIN ST
LAKESHORE DR
TYLER CT
NINTH ST
TAYCO ST
LAKE BREEZE CT
EASY ST
PARADISE LN
ELRU DR
HAPPY VALLEY
WARSAW ST
GIESEN ST
TWELFTH ST
AIRPORT ROAD
CENTURY OAKS DR
TREE AND STUMP REMOVAL
ASPHALT
CENTURY
WAY
GAMES
AMERICAN MINI STORAGE
RR DONNELLEY
SANDELWOOD ST
RACINE RD
LILLY ST
RICHARD DR
GOSS
GOSS AUTO BODY
THE CORNER SHOP
EARL ST
MISSION ST
MIDWAY RD
CANADIAN NATIONAL
CYCLING CENTER
SONOCO PRODUCTS COMPANY
SPECTRO PRINTING
ORBIS
ACTIVE LIVING
FOUR SEASONS GREENHOUSE
COMPUSERVE
PLUMBING
BRIDGEVIEW WOODCRAFT
BRIDGEVIEW APARTMENTS
SUBSTATION
BEST WASH
BAR
RUBBA'S PUB
VALLEY RD
WOW LOGISTICS
LAKER BOY LINES INC
FOX FIRE VALLEY PLAZA
HOME FURNITURE
FIRE SERVICES
SECURA INSURANCE
ASTOR LA
TUCKAWAY LN
CHAPEL DESIGN/VIS
OMC/RB CLINIC
TUCKAWAY BUSINESS CENTER
THINK HEALTH
CHAIN DR
ALCAN D
NETWORK HEALTH
AFFINITY MEDICAL GROUP
MIDWAY PL
SHOPKO
ALCAN
DRUM CORPS DR
ALL THINGS FLOORING
TRUCKIN AMERICA
WASHING STUFF
APPLETON RD
FAZOLI'S
SALVATION ARMY
UNIVERSITY OF WISCONSIN FOX VALLEY
MOBILE O-MART
LITTLE ROCK
ARBY'S
MARKTHON
WORLD MORE MART
PIGGLY WIGGLY
WINNEBAGO COLOR PRESS
CITY OF MENASHA
47
10
441
COUNTY P
COUNTY AP



WISCONSIN DEPARTMENT OF TRANSPORTATION
TRI-COUNTY FREEWAY EXPANSION

CORRIDOR OVERVIEW

US 10/WIS 441
(MENASHA & APPLETON)

CH2M HILL, TEM, EMCS, TAD, OURSTON

MAY 2003
REVISED OCTOBER 2009

WIS 441 Tri-County Project Corridor Manual
Chapter 10: Public Information

Chapter Contact: Kris Schuller (WisDOT)
Brian Foley (HNTB)

Issued: February 14, 2012
Revised: April 10, 2012

Scope/Purpose
This chapter summarizes the public involvement (PI) approach for the corridor and outlines how all team members can provide a consistent message and theme to multiple stakeholders regarding final facilities to be constructed, design and construction schedules, and detours and other traffic management approaches. The referenced PI Plan details the corridor-wide approach to outreach, as well as resources, strategies and schedule. It includes "traditional" outreach through newsletters, public information meetings and a project web site and nontraditional outreach such as small group meetings with business groups, minority groups, neighborhood groups and community advisory groups.

Reference Documents
Facilities Development Manual (FDM) Chapter 6

General
The attached WIS 441 Public Involvement Plan outlines the approach to PI for the corridor. All PI work on the corridor is to be performed in accordance with this plan.

To ensure a consistent message to stakeholders, designers should forward all PI inquires to Kris Schuller (WIS 441 Project Communications Manager) and Scott Ebel (WisDOT Design Project Manager). WisDOT will determine the type of PI required. Individual designers shall participate in and contribute to the PI process as WisDOT identifies needs. Designer participation in the PI process may include: reviewing PI materials, staffing for outreach meetings, and providing data and design information to be used for the development of PI materials.

Attachments
WIS441 Public Involvement Plan (Dated 04-10-12)

WIS 441 Tri-County Project

Public Involvement Plan

April 2012

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1.0 WIS 441 TRI COUNTY PROJECT - INTRODUCTION

The WIS 441 Public Involvement (PI) Plan will guide WisDOT's public outreach program during the design and construction phases of the WIS 441 Tri-County Project. The WIS 441 PI Plan is based on the US 41 PI Plan and will continue to call for a multi-faceted and flexible approach to meet the needs of the diverse range of issues, milestones and stakeholders.

1.1 PUBLIC INVOLVEMENT GOALS AND OBJECTIVES

The WIS 441 PI Plan seeks meaningful feedback from the public and businesses and to provide timely, accurate, and concise information to stakeholders. The Plan shares the same goals and objectives of the US 41 PI Plan (See Section 1.0 of US 41 Public Involvement Plan).

1.2 COORDINATION

The WIS 441 Tri-County Project PI effort will be coordinated similarly to the US 41 PI outreach effort (Section 1.0 US 41 Public Involvement Plan). The Project Corridor Management team (CMT) and the PI team will be jointly responsible for the implementation of the PI Plan for outreach covering the design and construction phases of the project. The CMT is made up of WisDOT staff overseeing the Project as shown in Table 1: WisDOT Corridor Management Team Staff and Roles. The WisDOT 441 PI Leadership Team is composed of members from the CMT and is summarized in Table 2: WisDOT PI Team Leaders.

There are also WisDOT staff that will be key to managing, supervising, and supporting PI efforts. These individuals are listed in Table 3. WisDOT has retained public involvement and communications consultants to support PI activities for the WIS 441 Tri-County Project. Consultant PI team members from HNTB, KW2, HVS, and Dixon & Co are listed in Table 4: Consultant PI Team

The CMT and the WisDOT PI team leads will work closely with the WisDOT US 41 / WIS 441 Projects Communication Manager, the Consultant PI team in Table 4: Consultant PI Team and consultant design teams to ensure all project staff members have opportunities to meet and communicate with the public in both large and small-scale meetings. The WisDOT PI team leaders will also work with WisDOT staff assigned to minority economic opportunities outreach and refer individuals interested in jobs and job training opportunities to the minority economic opportunities outreach staff. <<<<Mark Higley to advise>>>>

Table 1: WisDOT Corridor Management Team Staff and Roles

Name	Title
Will Dorsey	Northeast Region Director
Colleen Harris	Northeast Region Deputy Director
Brian Roper	US 41 / WIS 441 Projects Group Chief
Chad DeGrave	US 41 / WIS 441 Design Supervisor
Scott Ebel	WIS 441 Design Project Manager
Kurt Peters	WIS 441 Corridor Project Manager
Mark Higley	US 41 / WIS 441 Projects Program and Finance Supervisor
Kris Schuller	US 41 / WIS 441 Projects Communication Manager

Table 2: WisDOT PI Team Leaders

Name	Title
Brian Roper	US 41 / WIS 441 Projects Group Chief
Kris Schuller	US 41 / WIS 441 Projects Communication Manager
Mike King	US 41 / WIS 441 Construction Supervisor
Chad DeGrave	US 41 / WIS 441 Design Supervisor

Table 3: Key Public Involvement WisDOT Staff

Name	Title
Kris Schuller	US 41 / WIS 441 Projects Communication Manager
Scott Ebel	WIS 441 Design Project Manager
Kurt Peters	WIS 441 Corridor Project Manager
WisDOT staff	Outreach Coordinator/Tribal Liaison

Table 4: Consultant PI Team

Name	Title
Brian Foley	HNTB, Outreach Lead Consultant
Helen Dixon Ashley Dercks and Cynthia De Vor	Dixon and Co., Community outreach and education-based outreach advisor
Jack Ferreri	KW2, Public Relations Lead Consultant
Sam Hutchison	HVS, community outreach and communications support

1.3 INTERNAL COORDINATION

The public involvement program for the WIS 441 Tri-County Project will be implemented similarly to the US 41 PI program and will require close coordination among the WisDOT Corridor Management Team, the design team and the WisDOT PI team. Public involvement activities will be driven by project schedules or milestones, and project-related issues. Public

involvement activities will include informational outreach and outreach to solicit feedback / public input on the project design process.

The WisDOT PI team will lead the public involvement effort by identifying public involvement events and activities and defining the intended goal for each event. The overall intended goal will either be to inform the public or request public feedback.

Once the WisDOT PI team develops a strategy and schedule, it will coordinate with the WisDOT US 41 / WIS 441 Projects Communication Manager and Consultant PI leads to determine materials and data required for each activity. Meeting / outreach event logistics, coordination, database management and materials development will be handled similarly to the US 41 Project (See Section 2.0 of the US 41 Public Involvement Plan).

2.0 OUTREACH APPROACH

The WIS 441 Tri-County Project PI Plan communicates activities to the general public, targeted community groups, businesses, agencies, and local and elected officials. The project teams anticipate each of these audiences will have key interests in the project corridor related to design and construction activities.

2.1 GENERAL PUBLIC OUTREACH

Anticipated issues to be addressed for the general public include:

- Project schedules or milestones
- The interaction among the WIS 441 Tri-County Project, the US 41 Project, and other area construction projects
- CSD elements and process
- Traffic management plans (TMP)
- Freeway management systems/ITS
- TMP construction and work zone updates
- Awareness of roundabouts and benefits

The WisDOT PI team, working with the Consultant PI team, will lead general outreach efforts for the corridor. Examples of outreach include hosting public information meetings, preparing and distributing informational brochures, providing materials for the project website, distributing media announcements at milestones, e-mailing notifications to stakeholders, staffing informational kiosks at key public areas and events, and being available to meet with various groups throughout the area. General outreach will also include communicating project information to neighboring states and counties to inform the traveling public about construction and alternative routes.

2.2 COMMUNITY OUTREACH

Residents directly affected by the corridor project will have concerns related to specific impacts such as property acquisition, noise and noise barrier construction, general construction activities and CSD elements. Key concerns of unique groups such and low income, minority, disabled and senior populations will likely range from direct project impacts, providing input on CSD elements, navigating roundabouts and understanding how access to services and jobs will be maintained during construction.

Initially, it is anticipated that affected residents, Native American Tribes and unique groups and communities will be sufficiently informed through general public outreach activities conducted in the project area (see Section 5.0 Census). If needed, additional strategies to communicate milestones and discuss issues could include small-group meetings, meetings with community-based, faith-based and education-based organizations and literature drops.

2.3 BUSINESS OUTREACH

The business community will have a range of interests in the WIS 441 Tri-County Project, including access and traffic management plans during construction, accommodations for oversized and overweight trucking and navigating roundabouts. For business outreach, the WisDOT PI team will reach out to businesses on a regional, local, interchange and individual basis.

The PI team will be responsible for business involvement. This is the logistical execution of communicating with, and informing businesses about, the project at the "ground level." This includes the planning and execution of informational business meetings; mailing list acquisition and maintenance; mailings; venue location, and technical display and handout materials for the meetings.

2.3.1 Regional Business Groups

WisDOT will take the initial lead to communicate to regional and statewide business groups. This may include making presentations to organizations or displaying project information at events sponsored by business organizations.

2.3.2 Local Business Organizations

The PI team will keep local business organizations such as chambers of commerce informed of key project milestones. This will allow local business organizations to distribute information to their membership. It will also provide WisDOT with a means to advertise meetings that may be relevant to businesses.

2.3.3 Interchange business group

One interchange business group will be assembled to maintain communication between WisDOT and the business community throughout the duration of the project. The business group will be composed of businesses in the vicinity of interchanges and WisDOT project staff including the

project manager and US 41 / WIS 441 Projects Group Communications Manager. WisDOT will convene the interchange business group at project milestones to:

- Discuss upcoming project milestones and issues, including closures, alternate routes, program level changes, etc.
- Share business-related concerns regarding the project
- Work with WisDOT and project staff to mitigate adverse affects to local business, including making TMP and design changes when possible
- Disseminate important information to the smaller business districts as needed

Interchange business group meetings may be held at the following project milestones:

- Kick-off meetings
  - Introduce purpose
  - Anticipated schedule
  - Anticipated milestone meetings and agenda topics
  - Introduce US 41 / WIS 441 Tri-County Project website as an information resource
- Issue-specific meetings
- Design meetings
- Traffic management plan meetings (TMP)
- Pre-construction phase meetings
- Construction updates

2.3.4 Individual businesses

WIS 441 Tri-County Project staff are available to attend small group workshops with interested businesses. The meetings can be held at the business location or at the Project office (1940 West Mason, Green Bay). Workshops will focus on questions and concerns specific to the individual business. Interested business should schedule meetings with the US 41 / WIS 441 Projects Group Communication Manager.

2.4 INDUSTRY OUTREACH

The trucking industry and general WIS 441 users in the region and state will require ready access to updates of activities in the highway corridor, particularly construction schedules, and detour routes. Anticipated strategies include reaching out to professional organizations and advocacy groups for providing information on project schedules, traffic mitigation plans, roundabout education and directing users to the US 41 / WIS 441 Tri-County Project website. The WisDOT PI team will offer to meet and present to user groups. As directed, the public relations efforts to communicate project activities will support outreach efforts through communications that reach industry and the general media, such as the newsletter.

2.5 NATIVE AMERICAN OUTREACH

Key concerns of Native American Tribes will include identifying DBE/MBE/WBE contracting opportunities, direct project impacts, providing input on CSD elements, navigating roundabouts and understanding how access to services and jobs will be maintained during construction. Anticipated strategies to communicate milestones and discuss issues will be large format meetings general public information meeting unless the tribes request alternative strategies.

2.6 DBE/MBE/WBE OUTREACH

DBE/MBE/WBE firms will be primarily interested in identifying available contract opportunities. WisDOT staff will coordinate all DBE/MBE/WBE outreach efforts and the Consultant PI team will direct all inquiries to WisDOT.

2.7 AGENCY AND LOCAL OFFICIAL OUTREACH

There are a number of agencies and local officials in the region that will need to be informed of design and construction progress. These agencies include elected officials from local governments, MPOs, RPCs. Key concerns of local officials are expected to include:

- Project budget
- Project schedules or milestones
- Traffic management plans (TMP)
- Freeway management systems/ITS
- TMP construction and work zone updates
- Roundabout awareness (if applicable)
- Context Sensitive Design

The WisDOT PI team will coordinate directly with local officials and agencies to keep them informed of milestones and receive feedback on issues. Outreach strategies will include inviting officials to business and public information meetings to provide status updates (particularly on TMPs), distributing information via e-mail, and providing get-around guides for distribution.

If needed or requested, WisDOT will conduct additional meetings with local officials to provide project updates. Meetings with other agencies, interest groups, and with Native American Tribes will occur on an as needed basis (Table 5: Local Officials).

Table 5: Local Officials

Civil Division
Outagamie County
Winnebago County
Calumet County
Town of Harrison

City of Appleton
City of Menasha
Town of Menasha
East Central Wisconsin Regional Planning Commission

3.0 PI RESOURCES AND ACTIVITIES

The WisDOT PI team can use a range of resources, activities, advisory groups and media outreach to communicate and seek input at project milestones and on key issues. Specific information resources and outreach activities are described below.

3.1 INFORMATION RESOURCES

Table 6 shows a list of information resources that can be developed and utilized to inform the public about the WIS 441 Tri-County Project.

Table 6: Public Involvement Information Resources

Tool	Description	Use
Brochures	Brochures can be developed for distribution to the public, as well as for use at public meetings.	For general distribution, small and large meetings. Brochures can also be posted on the web.
Rack Cards/Construction Outlook Brochures	Periodic brochures can be produced as construction phases are implemented. The guides can provide information on project schedules, including anticipated closures, detours and alternate routes.	Guides can be used as part of door to door literature drops to inform residents and businesses. Guides can also be made available for distribution in public places such as grocery stores, banks, libraries and other places frequented by the public. These guides can be made web-ready and posted on the web.
Newsletters	Newsletters can be developed and distributed to coincide with pre-construction and construction milestones. Examples of topics and items for newsletters include: Updates on the study milestones, public input opportunities, schedule, and information contacts.	For general distribution and public information meetings (PIMs) and small-group meetings. The newsletters can be mailed and/or placed at grocery stores, banks and other venues frequented by the public. Newsletters can also be posted on the web.
Project Briefs	Project briefs (short write ups) could be developed about various aspects of the WIS 441 Tri-County Project. These could be used more frequently than newsletters as the project transitions into construction.	If developed, briefs could be posted on the web. If printed, they could be distributed at meetings to inform the public, public officials and businesses about the project.

Tool	Description	Use
Fact Sheets	As a way of communicating with specific neighborhoods, fact sheets could be prepared periodically to announce project milestones and provide information on specific neighborhood issues. Fact sheets could also be used as a way of alerting the public of design or pre-construction activities planned for certain areas or neighborhoods. Fact sheets could be updated frequently and be presented in a clear, concise and easily understood format.	Fact sheets could be distributed at any type of meeting or as part of door to door literature drops. If appropriate, fact sheets could also be made available for distribution in public places such as grocery stores, banks, libraries and other places frequented by the public.
Technical Presentations	Presentations could be developed to communicate updates on the study milestones, public involvement opportunities, schedule, and information contacts.	For use at PIMs and small-group meetings.
Web Page	The several web pages devoted to the WIS 441 Tri-County Project will be developed on the US41wisconsin.gov site. Materials from the current web page on the DOT site will be migrated over to the Project site. This material will provide information such as meeting dates, meeting summaries, fact sheets, text from newsletters, frequently asked questions, and CSD and other project materials	To publicize information about the project to a broad audience.
E-mail Distribution	Informational e-mails could be sent to stakeholders on the mailing list and elected officials as major project issues arise and as project milestones occur.	To distribute fact sheets, public information meeting dates and other information.
Project Displays and Kiosks	Project displays can consist of boards and kiosks depicting technical elements of the WIS 441 Tri-County Project corridor	The displays could be used, as appropriate, for PIMs, community events and small-group meetings.

3.2 PUBLIC OUTREACH ACTIVITIES

The following sections outline the public outreach activities that could be implemented for the WIS 441 Tri-County Project.

3.2.1 Local Events

Community events provide an excellent forum for providing information to the public about the WIS 441 Tri-County Project. The WisDOT PI team will seek out opportunities to set up kiosks at major fairs and public events to solicit public feedback and provide information about the Project.

3.2.2 Display Kiosks

If needed, community display kiosks could be displayed and staffed by the WisDOT PI team for public review and comment on various aspects of the WIS 441 Tri-County Project. Examples of locations include: municipal buildings, schools, libraries and YMCAs. The locations should:

- Be near, but not interfere, with pedestrian traffic
- Comfortably accommodate exhibits and easels
- Be easily identified to attract the public
- Should allow for easy viewing of exhibits.

3.2.3 Public Information Meetings

Large-scale general public information meetings will be conducted at key project milestones to inform the general public about the project's progress. These meetings will be coordinated with the design team. Meetings can be noticed in a number of ways, including newspaper (if appropriate), flyers via US mail, letters to local officials, and email notifications that could be sent to the project mailing list. Post card invitations could also be sent.

These meetings will be conducted as an open house with display easels or stations staffed by WisDOT, the WisDOT PI team, the Consultant PI team and the design team. Additional materials that could be developed and presented at the meeting include: PowerPoint presentation, meeting handouts, and other resources identified on Table 6: Public Involvement Information Resources.

3.2.4 Neighborhood Public Information Meetings

Smaller scale neighborhood public information meetings could be held at various locations throughout the WIS 441 Tri-County Project corridor to update residents, businesses and users of the corridor on particular elements of the project and anticipated construction schedule. As appropriate, invitations could be mailed to residents, notifications could be placed in the newspaper, flyers could be mailed to targeted stakeholders and flyers could also be posted at various community venues, churches and schools.

3.2.5 Outreach Activities

The WisDOT PI team and its Consultant PI team will be available to meet with representatives of business, community and faith-based organizations, neighborhood groups, city and county officials, elected officials, and other stakeholders to provide periodic project updates, if needed and as requested. The WisDOT PI team will also meet with minority, low-income, elderly and disabled populations, as requested.

3.2.5.1 Outreach to Native American Tribes

WisDOT's Northeast Region Tribal Liaison will be responsible for primary outreach to Native American Tribes. The Consultant PI team will support WisDOT's Tribal Liaison, as requested, to provide project information and attend meetings.

3.2.5.2 Outreach to Unique Groups and Communities

It is anticipated that outreach to the general public and distribution of newsletter materials will adequately inform minority, low income, senior and disabled populations within the project area. The WisDOT PI team will revisit this assumption if needed. If requested, the WisDOT PI team will meeting with groups and organizations that serve unique populations.

3.2.5.3 DBE/MBE/WBE Outreach

The WisDOT DBE/MBE/WBE Business and Labor Committees were formed to assist minorities obtain job training and contracting opportunities related to the project's design and construction. This task force will determine the appropriate level of DBE/MBE/WBE involvement and is currently developing a plan to achieve that level of involvement.

The WisDOT PI team will attend Business and Labor Committee meetings when appropriate and assist the Minority Economic Opportunities staff to ensure community awareness of these opportunities. The WisDOT PI team will refer DBE/MBE/WBE firms and individuals to WisDOT's DBE/MBE/WBE Program Manager. <<<<Mark Higley to advise>>>>

3.2.5.4 Elected Official Briefings and Updates

A key element for a successful project is keeping public officials well informed of the project milestones. Meetings with elected officials will generally be with one or two officials at one time rather than group meetings. WisDOT's Project Communication Manager will send periodic updates based on project milestones via e-mail to all elected officials involved or with an interest in the project. The purpose of these meetings and briefings is to continue fostering good working relationships with elected officials who represent various residents and businesses within the project area. In addition, it is desirable to keep elected officials informed of design activities and construction activities within their districts.

3.2.5.5 Roundabout Education

The PI team can conduct roundabout education sessions that focus on where roundabouts will be located, the benefits of roundabouts and how to drive roundabouts. Education sessions can be held prior to the construction of roundabouts and continue for a time period after roundabouts are in operation.

Education sessions can incorporate several roundabout tools, including:

- Presentations
- N scale vinyl roundabout displays and cars
- "All About Wisconsin Roundabouts" video
- Roundabout brochures
- Displays that demonstrate how to drive roundabouts
- Roundabout signs displays

The following bullets describe the different types of outreach options for roundabout education sessions:

- **Seniors** – The PI team can hold roundabout education meetings with organizations that represent senior citizens such as senior centers and assisted living facilities.
- **General public** – The PI team will hold public information meetings and will provide the general public with an opportunity to learn about navigating roundabouts.
- **Municipal outreach** – The PI team can contact local municipalities along the WIS 441 Tri-County Project corridor to determine their roundabout education needs. Education sessions with interested municipalities would likely focus on meeting with department heads and staff. This would help provide the public with a common message from a range of government agencies.
- **Law enforcement –** WisDOT staff can contact law enforcement agencies including Wisconsin State Patrol, county sheriff departments and local law enforcement agencies to determine their roundabout education needs. Meetings and education sessions can be scheduled with interested agencies.
- **Large employers** – The PI team can contact large employers near the WIS 441 Tri-County Project corridor and planned roundabouts to schedule educational sessions with interested employers.
- **Trucking and Busing companies** – The PI team can contact trucking and busing companies to schedule education sessions with interested groups.
- **Tribal and Environmental Justice Groups** – The PI team can contact Tribes and organizations that represent environmental justice populations to schedule roundabout education sessions with interested groups.
- **Community Organizations –** The PI team can identify outreach opportunities to interested community organizations such as rotary clubs, neighborhood associations, libraries, churches, etc.
- **Geographic Specific Outreach** – The PI team can organize roundabout education sessions in the months leading up to a roundabout opening. A mixture of tools and meeting types could be used including public information meetings, information kiosks at local stores or libraries, distribution of information flyers, meetings with businesses and employees in the area.

3.2.5.6 Transportation Management Outreach

WisDOT is developing transportation management plans for the WIS 441 Tri-County Project to manage construction impacts during construction. The WisDOT PI team will work closely with the Transportation Management team to determine outreach needs to affected residents and businesses along the corridor.

The transportation management planning (TMP) efforts will include meetings with the following to select a TMP scenario that is implemented:

- TMP Advisory Group – This is an oversight committee made up of representatives primarily from WisDOT. The Advisory Group approves initial construction staging scenarios based on constructability and funding and approves that final scenario after input from task forces, businesses and the public has been obtained.
- TMP task force meetings – Four task forces - Traffic Incident Management, Local Road Operations, Public Outreach/Multi-Modal and Public Institutions - are typically established to discuss the pros and cons of the TMP scenarios at a workshop meeting. The task forces are made up of public officials representing fire, police, school, bus, and traffic/roadway interests. Task force meetings are used to establish transportation issues and to identify the scenario that best mitigates mobility and access during construction.
- Business meetings – The TMP scenarios are presented to businesses and feedback is obtained.
- Public information meetings – Depending on complexity of TMP scenarios, the general public may also be given an opportunity to review and provide feedback for the TMP scenarios.

3.3 MEDIA OUTREACH PROGRAM

Local media outlets can be used to keep users of WIS 441 informed about the project.

3.3.1 News releases

Media participation and coverage of the public information meetings will be encouraged via press releases and through coordination with WisDOT's US 41/WIS 441 Projects Communication Manager. The WisDOT PI team will provide content, maps and graphics for news releases.

WisDOT will issue press releases to media outlets prior to public information meetings and other project milestones. Other media milestones will be used if available and appropriate.

3.3.2 Media Requests

At WisDOT's request, the WisDOT PI team will prepare responses to media inquiries.

3.3.3 Media Briefings

The WisDOT PI team will provide information to WisDOT, as needed for media briefings.

3.3.4 Public Meeting Notices

The WisDOT PI team and its consultants will prepare content, maps and graphics for public meeting notices or display ads for publication.

3.3.5 Multicultural Media Notices

The WisDOT PI team will prepare content, maps and graphics for inclusion in multicultural media outlets and brochures as requested.

3.4 STAKEHOLDER GROUPS

There are multiple groups, businesses and other outside organizations and agencies that have interest in the Wis 441 Tri-County Freeway project. The following tables break the project stakeholders into groups of common interest levels, and like needs for frequency of project communications. Table 7 - Local Officials identifies the local officials that need to be informed of certain project milestones and decisions. Table 8 - Utilities identifies the utilities that are known to own facilities within the project limits. Table 9 - Agencies recognizes the various agencies that may have jurisdiction within the project boundaries. Table 10 - Railroads, Other includes the railroads and other groups with interest or facilities within the neighborhood of the Wis 441 Tri-County Freeway Project. These tables may require updating as future stakeholders are identified through the different project phases.

Table 7 - Local Officials

Civil Division
Outagamie County
Winnebago County
Calumet County
Town of Harrison
City of Appleton
City of Menasha
Town of Menasha
East Central Wisconsin Regional Planning Commission

Table 8 - Utilities

American Transmission Company	Town of Menasha Street Department
Appleton Area School District	Menasha Utilities
City of Appleton Dept of Public Works	Town of Menasha Street Department
AT&T Legacy	Town of Menasha Utility District
AT&T Wisconsin	TDS Metrocom/Telecom
Grand Chute Menasha West Sewerage Commission	Time Warner Cable
Town of Grand Chute Sanitary District No. 1	TransCanada
Heart of the Valley Metro Sewerage Commission District	US Signal
McLeod USA	Waverly Sanitary District
City of Menasha	WE Energies
Menasha Utilities	Windstream

Table 9 - Agencies

Wisconsin Department of Natural Resources
United States Army Corps of Engineers

United States Coast Guard
State Historic Preservation Office
United States Fish & Wildlife Service
Environmental Protection Agency
Outagamie County Regional Airport

Table 10 - Railroads, Other

Wisconsin Central Railroad
Outagamie County Regional Airport
Canadian National Railroad
RR Donnelly, Inc.

4.0 WIS 441 - OUTREACH STRATEGIES

4.1 STRATEGIES FOR ANTICIPATED MILESTONES AND ISSUES

The various segments of the WIS 441 Tri-County Project will include a number of milestones that will need to be communicated throughout design and construction. As design and construction progress, there will be a range of issues such as traffic management, CSD and localized impacts that will require outreach and coordination/involvement with both the general public and affected groups.

Outreach strategies will be built around identifying a milestone or issue, the intended audience to whom information is communicated, and then selecting the tools and activities and resources needed to communicate information and/or receive feedback/input/involvement.

It is envisioned that initial issues will be sufficiently presented to the public, businesses and other stakeholders through the general public information meeting process and with materials posted on the web.

4.2 STRATEGIES FOR FUTURE ISSUES

As with all projects, there will be unanticipated issues that arise, which will require outreach to inform, involve or respond to the public. The WisDOT PI team will identify these issues through ongoing public involvement activities, coordination with Project management and through regularly scheduled PI/PR meetings.

4.3 SCHEDULE

As the project progresses detailed public outreach schedules will be created. The public outreach schedules will coincide with design and construction schedules to obtain feedback and provide the public with information in a timely manner.

Sufficient time must be worked into the outreach schedule to allow time for newsletter production, display materials, public notices and door to door notification of the meeting with local residents, businesses and unique community groups for all public information meetings.

The WisDOT PI team anticipates that most public involvement will entail numerous meetings with stakeholders throughout the corridor. In most cases, these meetings are scheduled to occur in a fairly quick fashion, using public information materials such as brochures, fact sheets, display boards and presentations prepared previously.

Public outreach schedules will be updated on a continuous basis and will be coordinated with all project team members.

5.0 CENSUS DATA

As noted above in Section 2.2 Community Outreach, initially, it is anticipated that affected residents, Native American Tribes, and unique groups and communities (including minority, elderly, renters, etc.) will be sufficiently informed through general public outreach activities conducted in the project area. As the project proceeds and as needed, additional strategies to communicate milestones and discuss issues could target the aforementioned populations and community-based, faith-based and education-based organizations with small-group meetings, literature drops or other appropriate outreach strategies. Figures 1 thru 5 and Table 11 summarize demographic data along the project corridor.

Figure 1: Age

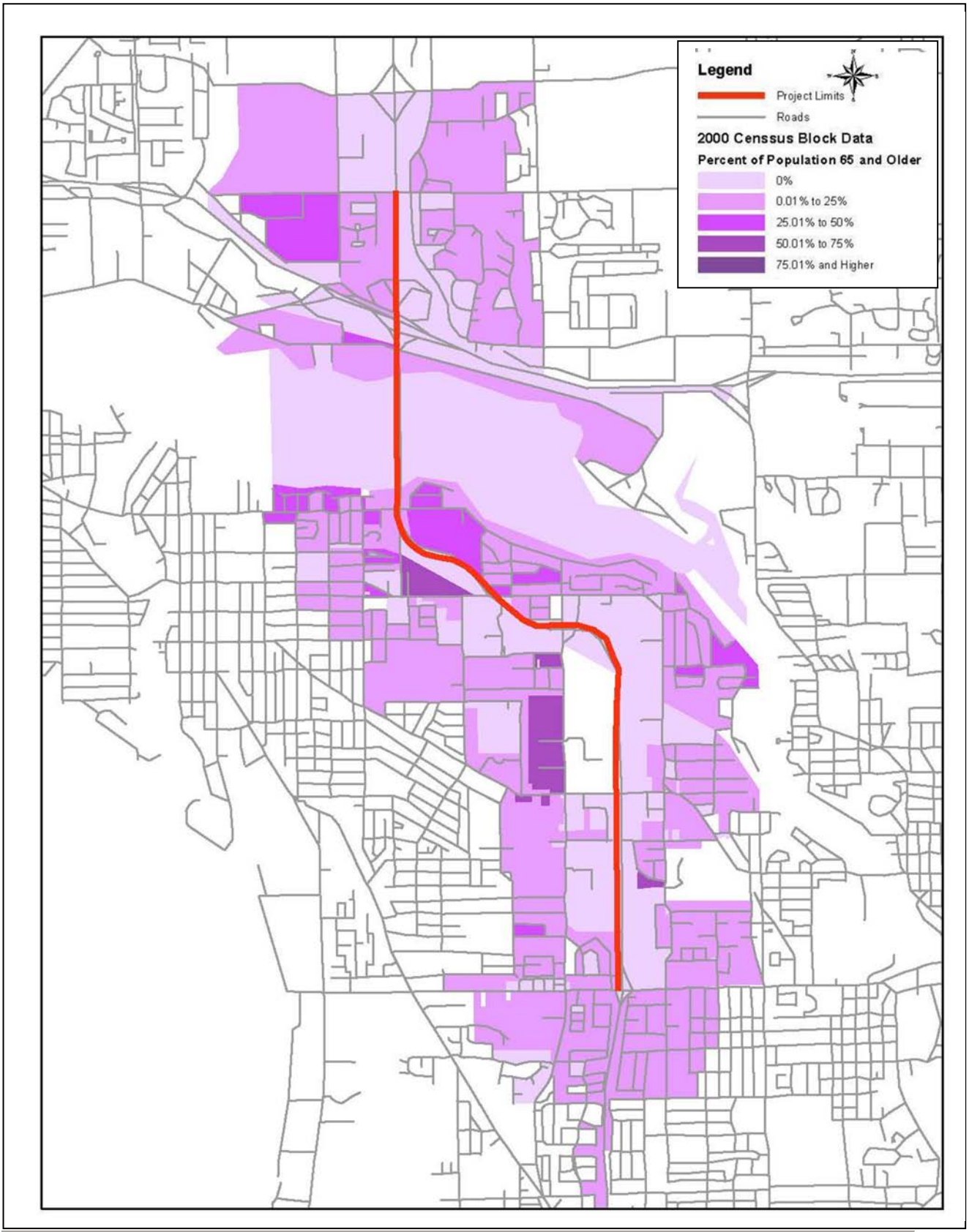

Legend
Project Limits
Roads
2000 Censsus Block Data
Percent of Population 65 and Older
0%
0.01% to 25%
25.01% to 50%
50.01% to 75%
75.01% and Higher

Figure 2: Income

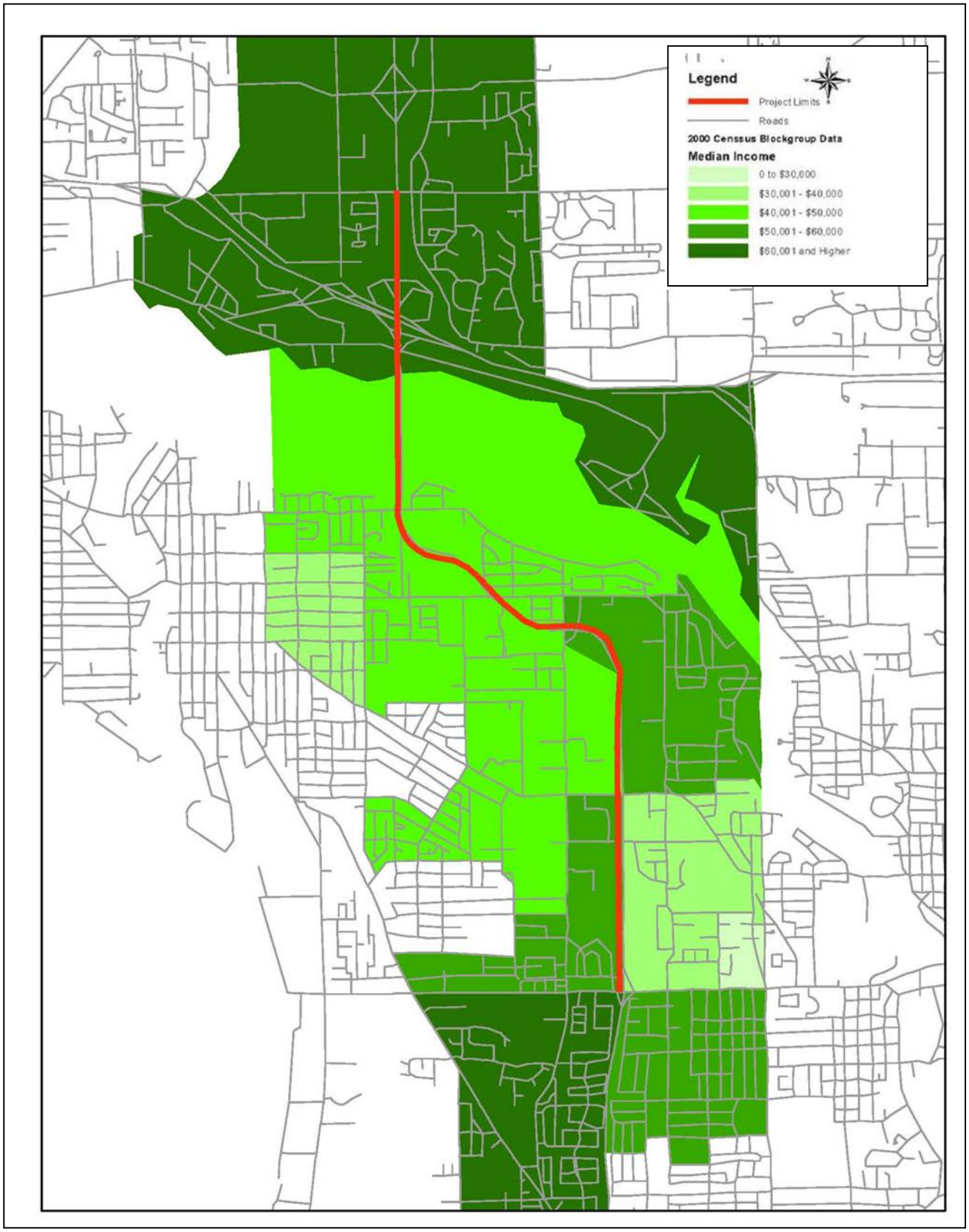


Figure 3: Minority

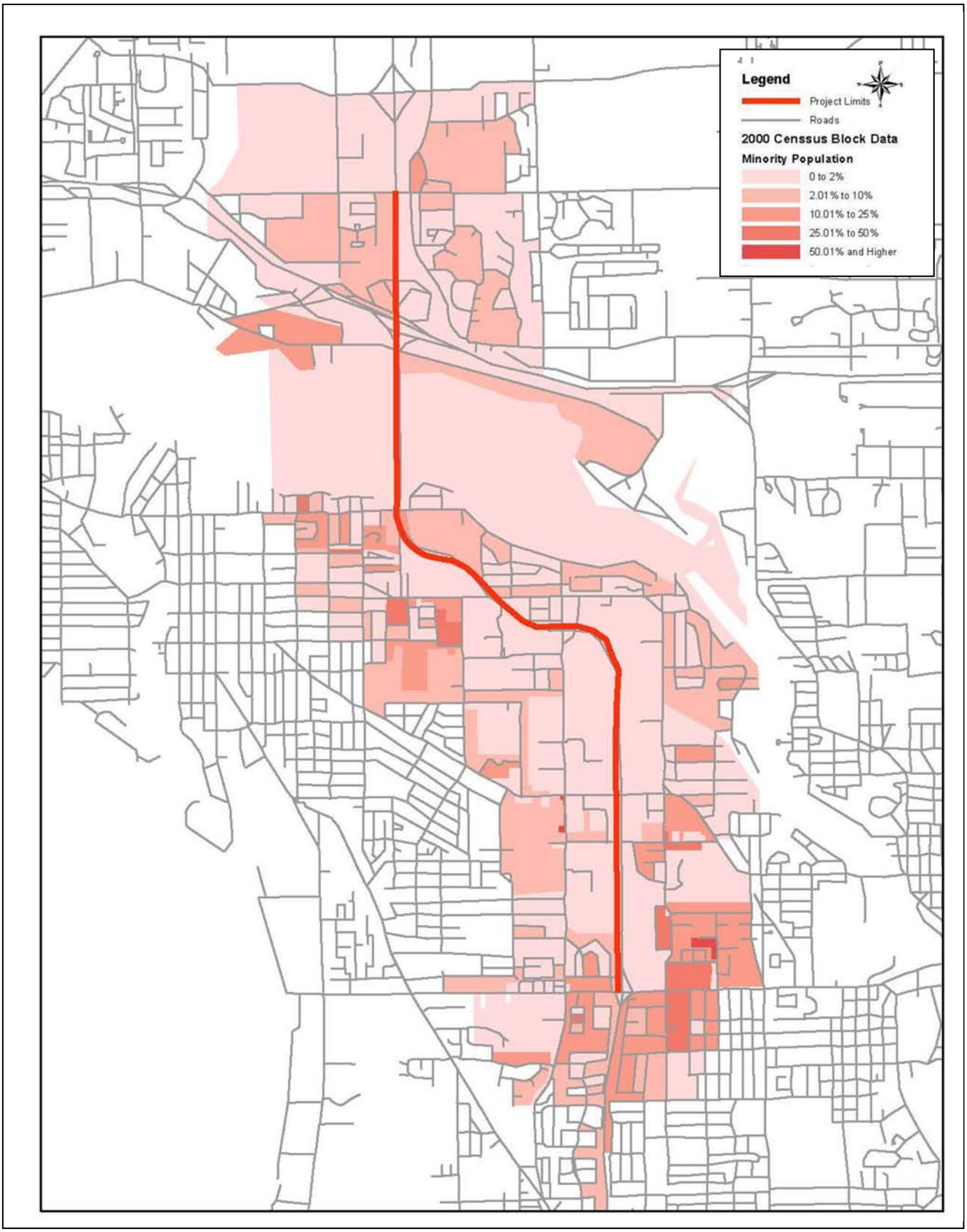


Figure 4: Poverty

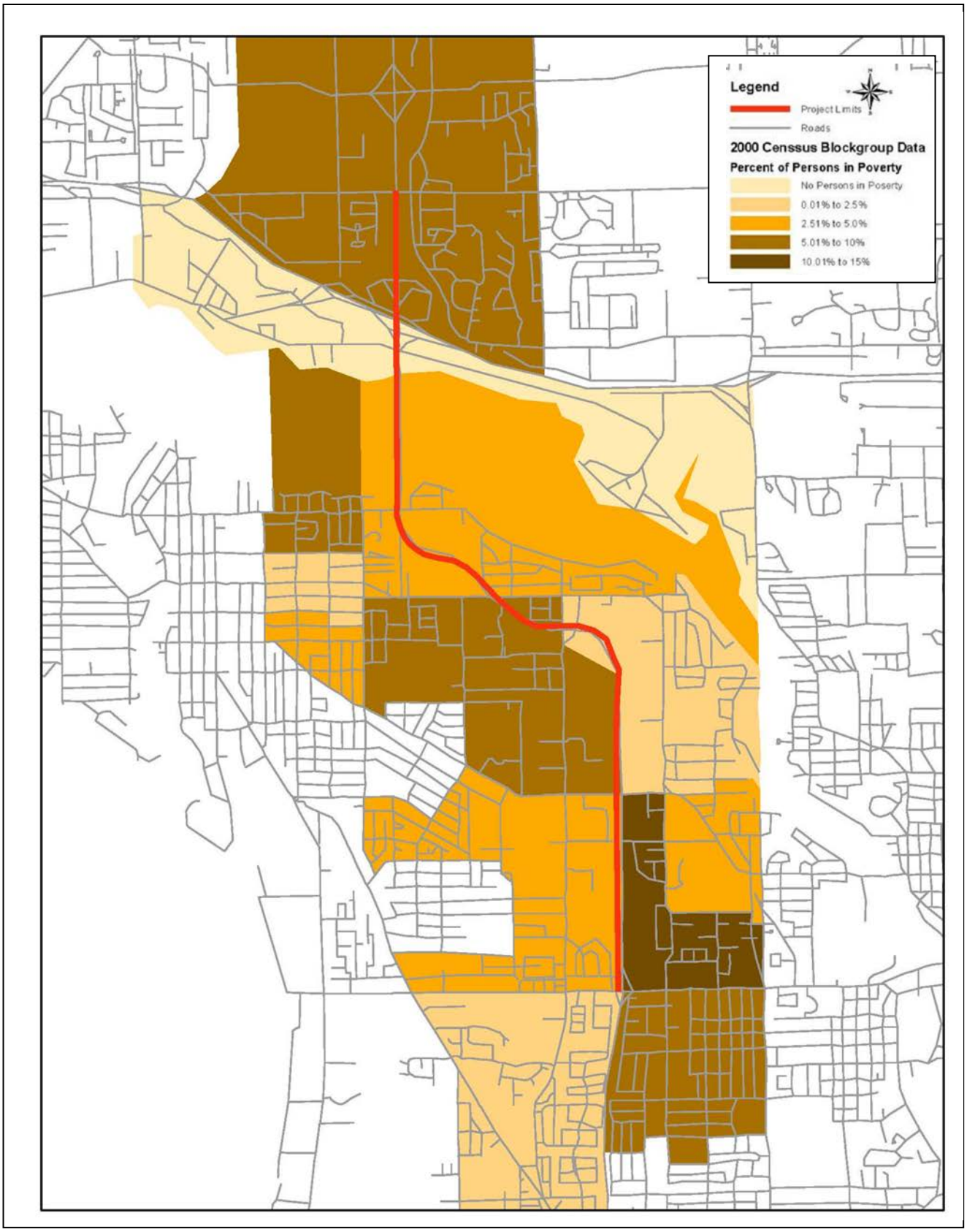


Figure 5: Owner-occupied

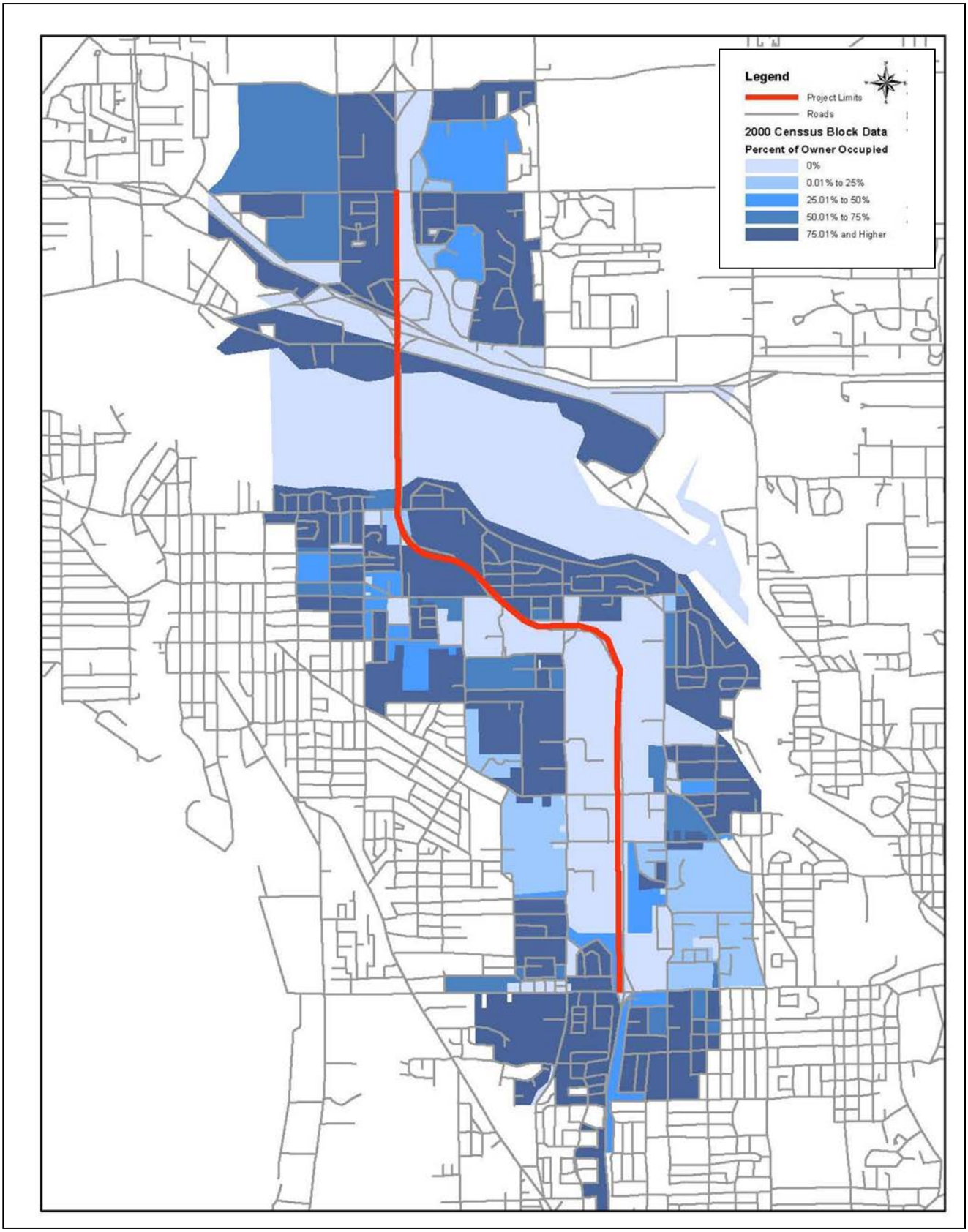


Table 11: Tabular data

2000 Census Block-Level Data (SF1 Table)	POP2000	WHITE	BLACK	AMERI_ES	ASIAN	HAWN_PI	OTHER	MULT_RACE	HISPANIC	MALES	FEMALES
Winnebago Summary	12,085	11,261	118	57	258	6	255	130	635	5,839	6,246
Winnebago Summary Percentages		1	0	0	0	0	0	0	0	1	1
Calumet Summary	2,184	1,955	11	12	137	1	36	32	62	1,064	1,120
Calument Summary Percentages		1	0	0	0	0	0	0	0	1	1
Project Limits Summary	14269	13216	129	69	395	7	291	162	697	6903	7366
Project Limits Percentages		**92.6%**	**0.9%**	**0.5%**	**2.8%**	**0.0%**	**2.0%**	**1.1%**	**4.9%**	**52.2%**	**51.6%**

2000 Census Block-Level Data (SF1 Table)	AGE_UNDER5	AGE_5_17	AGE_18_21	AGE_22_29	AGE_30_39	AGE_40_49	AGE_50_64	AGE_65_U	FHSE_UNITS	VACANT	OWNER_OCC	RENTER_OCC
Winnebago Summary	815	2,011	662	1,645	1,740	1,803	1,706	1,703	5,377	214	2,802	2,361
Winnebago Summary Percentages	0	0	0	0	0	0	0	0		0	1	0
Calumet Summary	180	555	100	193	407	405	255	89	754	10	634	110
Calument Summary Percentages	0	0	0	0	0	0	0	0		0	1	0
Project Limits Summary	995	2566	762	1838	2147	2208	1961	1792	6131	224	3436	2471
Project Limits Percentages	**7.0%**	**18.0%**	**5.3%**	**12.9%**	**15.0%**	**15.5%**	**13.7%**	**12.6%**		**3.7%**	**56.0%**	**40.3%**

2000 Census Blockgroup-Level Data (SF3 Table)	TOTAL HOUSEHOLDS : SAMPLE	1999 HOUSEHOLD MEDIAN INCOME	2000 POPULATION : SAMPLE	PERSONS IN POVERTY
Total Summary	9694	49766	23841	1091
Total Percentages				4.6%

WIS 441 Tri-County Project Corridor Manual

Chapter 11: Transportation Management Plan (TMP)

Chapter Contact: Jerry Shadewald/HNTB
Aimee Erickson/HNTB

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March 8, 2013
September 28, 2013
March 17, 2014
April 15, 2014
September 19, 2014
November 17, 2014

Scope/Purpose

The WIS 441 Tri-County Project (project) consists of reconstructing approximately five miles of US 10/WIS 441 in Winnebago County including replacing the bridge crossing Little Lake Butte des Morts. The project is complementary project to the US 41 reconstruction and follows the same Transportation Management Plan (TMP) process that is consistent with both Federal Highway Administration's Rule on Work Zone Safety and Mobility ('Rule') and Wisconsin Department of Transportation's Facilities Development Manual (FDM) Chapter 11-50.

The FDM dictates that Type 4 TMPs use the highest level of analysis, coordination, and participation required by WisDOT. For type 4 projects, a TMP includes a traffic control plan (TCP), transportation operations, incident management, and public involvement components.

The design teams for the various corridor segments are responsible for implementing TMP measures and working with local jurisdictions, stakeholders, and responders. This chapter in the Corridor Manual and the attachment file provide additional background to assist them with this task.

Reference Documents

- Federal Highway Administration's Rule of Work Zone Safety and Mobility
- FDM Chapter 11-50

Pending TMP Goal and Objectives

The goal of a TMP is to address the traffic-related impacts of the project in a cost-effective, timely manner with minimal interference to the traveling public using traditional and innovative traffic mitigation strategies.

To achieve this goal WisDOT will focus on implementing strategies to meet the following objectives:

- Minimize crashes
- Provide safety and mobility for project workers and the public
- Minimize work zone delays to an additional 15 minutes from existing delay levels
- Provide accurate, useable, and timely traveler information
- Define stakeholder responsibilities and respond to their needs
- Provide effective work zone safety and mobility evaluations using performance measures
- Always maintain two lanes each direction on US 10/WIS 441 during peak hours
- Avoid closing two consecutive interchanges

Transportation Management Team

According to the FDM, a type 4 TMP requires the development of a transportation management team. The transportation management team helps refine staging options, identify critical issues, potential mitigation solutions, and ultimately select the preferred construction staging and mitigation components.

TMP Advisory group

The project TMP advisory group serves as the oversight committee for the transportation management plan process along the corridor. Table 1 provides the advisory group members.

Table 1 – TMP Advisory Group Members

Name	Representing
Tom Buchholz	US 10/WIS 441 Corridor Program Manager
Tammy Rabe	US 10/WIS 441 Construction Supervisor
Kurt Peters	US 10/WIS 441 Construction Project Manager
???	US 10/WIS 441 Construction Traffic Management Engineer
Chad DeGrave	US 10/WIS 441 Design Project Supervisor
Scott Ebel	US 10/WIS 441 Design Project Manager
Mark Kantola	US 10/WIS 441 Project Communications Manager
P.F. O'Connor	Region Traffic Management Engineer
Robert Schuurmans	Region Traffic Engineer
Scott Nelson	Region Incident Management Engineer
Brian Revello	WisDOT Bureau of Highway Operations, Work Zone
Marie Treazise	WisDOT Bureau of Highway Operations
Peter Amakobe	WisDOT Bureau of Highway Operations
Brian DuPont	Statewide Traffic Operations Center
Andrew Brinkerhoff	Federal Highway Administration
Jeanette Diakoff	Winnebago County Planning
Ernie Winters	Winnebago County Highways
Patrick Brennand	Calumet County Planning
Mike Ottery	Calumet County Highways
Jerry Shadewald	TMP Consultant Lead

Upon finalization of the Advisory Committee the project team will create a US 10/WIS 441 distribution list for the advisory group and each task force created as part of the project. The Advisory Committee will meet on a monthly basis and task forces as needed. Each advisory group meeting presentation consists of, at a minimum:

- Construction schedule
- TMP schedule
- Construction staging and route diversions
- Potential issues and strategies

After the presentation, discussion on any identified issues and strategies is encouraged and the Meeting organizer provides meeting minutes to all meeting invitees within two weeks. Table 2 provides a listing of the project meetings held as of November 4, 2014 and Table 3 provides the anticipated schedule for the advisory committee meetings.

Table 2 – US 10/WIS 441Meeting History

Meeting and Location	Date	Minutes
Kick Off Meeting, Green Bay, WI	1/24/2012	
TMP Follow up Meeting	3/14/2013	
TMP Planning and Strategy Meeting	11/5/2013	
TMP Check-in Teleconference	6/14/2014	
TMP Check-in Teleconference	7/14/2014	
TMP Check-in Teleconference	8/11/2014	
TMP Check-in Teleconference	9/16/2014	

TMP Check-in Teleconference	10/6/2014	
TMP Check-in Teleconference	11/3/2014	

Table 3 – Anticipated Task Force Schedule

Two Week Period Ending:	2014																						
	Feb		Mar		Apr		May		Jun		Jul		Aug			Sep		Oct			Nov		Dec	
	14	28	14	28	11	25	9	23	6	20	4	18	1	15	29	12	26	3	17	31	14	28	5	19
Advisory Committee																								

TMP Task Forces

As a Type 4 TMP, the project team anticipates four task forces for the construction corridor, including:

- Traffic incident management
- Local road operations
- Public outreach/multi-modal
- Public institutions

Task Forces will respond to presentations on the construction staging options, including anticipated traffic diversion patterns, coordination with adjacent construction projects, and corresponding levels of roadway congestion. If needed, task forces have the opportunity to "break out" and discuss potential secondary impacts such as school bus routes, access to businesses, intersection specific traffic operations, truck routing, emergency response concerns, and other items described in FDM 11-50-10, Attachments 1 through 3.

Each task force meeting consists, at a minimum, of the following agenda:

- Presentation including the structure of the Advisory Group and Task Force
- Project overview
- Construction schedule
- Detailed construction staging and route diversions
- Potential diversion issues and strategies
- Breakout sessions

Task force meetings follow the same scheduling procedure as the advisory group meetings and will occur approximately 2 months apart and last 2 hours. Depending on the impacts, task forces had anywhere from 3 to more than 6 task force meetings. Table 4 provides a preliminary schedule of task force meetings.

Table 4 – Anticipated Task Force Schedule

Two Week Period Ending:	2014																							
	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug			Sep		Oct			Nov		Dec	
	17	31	14	28	14	28	11	25	9	23	6	20	4	18	1	15	29	12	26	3	17	31	14	28	5	19
Traffic incident management																										
Local road operations																										
Public outreach/ multi-modal																										
Public institutions																										

Two Week Period Ending:	2015																								
	Jan			Feb		Mar		Apr		May		Jun		Jul			Aug		Sep		Oct		Nov		Dec	
	2	16	30	13	27	13	27	10	24	8	22	5	19	3	17	31	14	28	11	25	9	23	6	20	4	18
Traffic incident management																										
Local road operations																										
Public outreach/ multi-modal																										
Public institutions																										

Impacted Resources

The project corridor will have potential impacts on many groups and coordination is necessary in order to minimize impacts. The following is a preliminary list of the major impacted groups.

- Incident responders
- Valley Transit, routes 1, 30,and 41
- Bike and pedestrian facilities (See Bicycle and Pedestrian Impacts attachment, to be included)
- Schools
    - City of Menasha - Butte des Morts Elementary, Gegan Elementary, Maplewood Middle, Menasha High, and University of Wisconsin-Fox Valley
    - City of Appleton – Berry Elementary, McKinley Elementary, Madison Middle, and Appleton East High
    - City of Neenah – Spring Road Elementary
- Hospitals
    - Menasha - St. Elizabeth's Affinity Health System, Fox Cities Community Clinic,
    - City of Neenah - Neuroscience Group)
- Business Groups
- Fox Cities Marathon

The project TMP process will utilize 4 techniques when working with area businesses.

- Task force involvement
- Corridor business meetings
- Face-to-Face
- Letters

Task force involvement is encouraged for businesses and the project team anticipates at least one corridor business meeting. Additional coordination is available by request. The project team plans to use the following strategies with local businesses:

- **Face-to-face coordination**- This strategy provides coordination with large businesses as an effort to keep employers informed and to give notice for internal transportation demand management strategies. Large employers in the US 10/WIS 441 corridor include Affinity Health Systems, University of Wisconsin-Fox Valley, and the Menasha Joint School District.
- **Letters** – This strategy responds to specific questions from businesses and follows the criteria established in the Corridor Manual Chapter 10 – Public Information.

TMP Analysis Overview

Existing Data

The design process for the project generates many data needs for the TMP process, such as conceptual roadway designs, existing and proposed intersection control, and existing and projected traffic volumes. However, many impacts of construction occur outside the limits of the design. Therefore, additional data collection was required to fully analyze the anticipated impacts of the construction projects, including:

- Turning movement count data at 21 additional sites

- County AP interchange (5 intersections)
  - Racine Rd with Olde Midway Rd
  - Racine Rd with Midway Rd (12 Hour)
  - Midway with 10/441 EB (12 Hour)
  - Midway with 10/441 WB (12 Hour)
  - Midway with Earl St (Include Earl St. Business Entrance)
- Oneida St Interchange (5 Intersections)
  - Oneida St with Meadow Grove Blvd
  - Oneida St with Valley Rd/Roeland Ave
  - Oneida St with Midway Rd (Bike/Ped Only)
  - Oneida St with 10/441 EB (12 Hour)
  - Oneida St with 10/441 WB (12 Hour)
- STH 47/Appleton Road Interchange (6 Intersections)
  - S. Appleton Road with W Valley Road
  - S. Appleton Road with Tuckaway Lane
  - Appleton Road with Drum Corps Drive
  - Appleton Road with Midway Road
  - STH 47 with 10/441 EB (12 Hour)
  - STH 47 with 10/441 WB (12 Hour)
- County P Interchange (3 intersections)
  - 9th & Racine
  - Racine & 12th/Geisen Street
  - 10/441 & Racine (Both Ramp Terminals) (12 Hour)
- Additional Intersections (2 intersections)
  - Racine & Airport
  - Appleton & Airport

- Existing roadway/intersection geometrics
- Speed/class counts
- Crash history for US 10/WIS 441 and US 41
- Signal timing and phasing data for intersections
- Traffic information from the Oneida Streetscape project

Traffic Forecasts

To determine traffic diversions under different construction scenarios the Northeast Region travel demand model (NERTDM) provides data consistent with the US 41 and other projects. Local model enhancements improve the capability to project likely traffic shifts resulting in construction related road closures using the regional modeling tool. Typical modifications may include disaggregating traffic analysis zones (TAZs) and adding local roadways to provide more refined local traffic assignments. The enhanced NERTDM provides traffic assignments under the different construction scenarios and stages using the updated inputs. The model generates traffic forecasts, anticipated shifts in traffic patterns and resulting levels of congestion on the surrounding roadway network.

In addition, NERTDM can provide intersection specific turning movement estimates to provide a basis for more detailed traffic operations analysis to identify needed improvements to maintain traffic flowing around the construction site. The NERTDM daily estimates of vehicle miles traveled and vehicle hours traveled assists in estimations for liquidated damages and incentives and disincentives for various contracts.

Traffic Operations

Estimated traffic volumes derived from the NERTDM determine likely traffic operational issues during each major construction phase.

- Synchro/SimTraffic analyzes stop control and signalized analysis.
- Roundabout analysis uses Rodel analyzes roundabouts, although in complex areas VISSIM and Paramics are available, either with a mix of intersection control types or with closely spaced roundabouts.
- Allowable Closures - The WIS 441 Tri-County Expansion project has the benefit of recent history to determine the per lane capacity for the Little Lake Butte des Morts Bridge. In

the 1990's, the NE Region Bridge Section performed two bridge inspections on eastbound WIS 441. As part of those inspections, the maximum per lane capacity during a lane closure on the bridge was determined to be1600 vph.

Using the 1600 vph historical per lane capacity and traffic counts, there is a prohibition on one lane operation from 6:00 AM to 8:00 AM and 2:00 PM to 8:00 PM.

TMP Design Standards

Synchro/SimTraffic analyzes forecasted traffic at stop controlled and signalized intersections.

- Temporary signals maintain acceptable levels of service and queue lengths at intersections that did not operate well with stop control. Temporary traffic signals are designed using FDM standards.
- Temporary signing and pavement marking were designed using FDM standards.

TMP Mitigation Summary

The TMP documents any changes that occur in the field, after the project letting. Modifications to the recommended TMP mitigation strategies may include temporary signals, construction staging, and schedule changes.

The TMP document contains all of the project information describing the existing conditions, a construction overview, concurrent projects, traffic diversions, data collection efforts, details of traffic operations, cost analysis, and a listing of management strategies discussed in task force meetings and approved by the advisory group, and intersection monitoring requirements. Appendices to this report include the program schedule, incident crisis and communication plan, concurrent projects map, travel demand model validation, meeting minutes, TMP task force summaries, technical memorandums, and traffic operations analysis.

TMP Monitoring

A component of the TMP task force and TMP advisory group meetings is the identification of monitoring requirements. Typically monitoring requirements included:

- Local road intersections that may experience unacceptable operations during construction,
- Vehicles queuing that may impact mainline operations,
- Increases in cut-through traffic

These intersections will create an intersection monitoring list for during construction and are kept in the TMP documentation.

Additional TMP Strategies

Additional documentation developed for this project will be used as part of the transportation management plan. This includes

- Work Zone Incident Management Plan (WZIMP)
- Incident Crisis and Communication Plan (ICCP)
- Traffic Operations Infrastructure Plan (TOIP)
- Public Involvement Plan (PIP)

Other TMP strategies to implement include

- Lessons learned from US 41 Winnebago and Brown Counties
- Use of ITS
- Potential for speed limit reductions on US 41 and WIS 441
- Individual, project specific, TMP's with traffic control plans will be developed and made available for review and approval during final design, but far in advance of 90% design.

Liquidated Damages and Incentives/Disincentives

Liquidated damages and incentives/disincentives will be determined based on the TMP analysis for each project. See Chapter 19 – Specifications, for guidance on this.

Utility Coordination

Becher Hoppe will complete the utility work plans for the utility relocation schedule versus potential impacts to the TMP mitigation strategies or diversion routes at the time of relocation.

TMP Documents

WIS 441 Corridor Wide TMP, project specific TMPs, TMP Form Tracking and other related documents are located on the FTP site at the following location:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/TMP/

The TMP Form Tracking can also be found in the attachment below – WIS 441 TMP Form Tracking.

Attachments

- WIS 441 Task Force Members and the TMP Strategies by Corridor (Dated ???)
- WIS 441 Bicycle and Pedestrian Impacts (Dated ???)
- WIS 441 Heavy Vehicle Percentage Summary (Dated May 2012)
- WIS 441 Traffic Summary (Dated 2-15-13)
- WIS 441 TMP Form Tracking (Dated 10-31-14)

WIS 441 Heavy Vehicle Percentage Summary Sheet - WIS 441

Racine and US 10/ WIS 441 Intersection

AM PHF: 0.895 PM PHF: 0.981

AM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
7:45 - 8:45	0	275	107	382	463	172	0	635	0	0	0	0	288	0	862	1150	1017	1150	2167
	0	8	0	8	0	14	13	27	0	0	0	0	26	0	4	30	35	30	65
Hvy Veh %	0.00%	2.91%	0.00%	2.09%	0.00%	8.14%	0.00%	4.25%	0.00%	0.00%	0.00%	0.00%	9.03%	0.00%	0.46%	2.61%	3.44%	2.61%	3.00%
PM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
4:30 - 5:30	0	237	102	339	616	238	0	854	0	0	0	0	253	0	759	1012	1193	1012	2205
	0	0	0	0	0	3	3	6	0	0	0	0	8	0	3	11	6	11	17
Hvy Veh %	0.00%	0.00%	0.00%	0.00%	0.00%	1.26%	0.00%	0.70%	0.00%	0.00%	0.00%	0.00%	3.16%	0.00%	0.40%	1.09%	0.50%	1.09%	0.77%

Racine and US 10/ WIS 441 Interchange

AM PHF: 0.943 PM PHF: 0.934

AM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
7:30 - 8:30	0	0	0	0	0	0	0	0	527	0	164	691	463	0	585	1048	0	1739	1739
	0	0	0	0	0	0	0	0	12	0	3	15	16	0	10	26	0	41	41
Hvy Veh %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.28%	0.00%	1.83%	2.17%	3.46%	0.00%	1.71%	2.48%	0.00%	2.36%	2.36%
PM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
4:30 - 5:30	0	0	0	0	0	0	0	0	481	0	237	718	204	0	808	1012	0	1730	1730
	0	0	0	0	0	0	0	0	3	0	2	5	10	0	1	11	0	16	16
Hvy Veh %	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.62%	0.00%	0.84%	0.70%	4.90%	0.00%	0.12%	1.09%	0.00%	0.92%	0.92%

Midway and US 10/ WIS 441 EB

AM PHF: 0.800 PM PHF: 0.843

AM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
7:30 - 8:30	0	0	0	0	56	0	327	383	0	230	33	263	21	114	0	135	383	398	781
	0	0	0	0	5	0	11	16	0	12	6	18	1	3	0	4	0	38	38
Hvy Veh %	0.00%	0.00%	0.00%	0.00%	8.93%	0.00%	3.36%	4.18%	0.00%	5.22%	18.18%	6.84%	4.76%	2.63%	0.00%	2.96%	0.00%	9.55%	4.87%
PM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
4:30 - 5:30	0	0	0	0	66	0	340	406	0	417	51	468	30	111	0	141	406	609	1015
	0	0	0	0	2	0	5	7	0	7	1	8	0	2	0	2	7	10	17
Hvy Veh %	0.00%	0.00%	0.00%	0.00%	3.03%	0.00%	1.47%	1.72%	0.00%	1.68%	1.96%	1.71%	0.00%	1.80%	0.00%	1.42%	1.72%	1.64%	1.67%

Midway and US 10/ WIS 441 WB

AM PHF: 0.924 PM PHF: 0.833

AM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
7:45 - 8:45	47	0	24	71	0	0	0	0	198	92	0	290	0	90	81	171	71	461	532
	2	0	0	2	0	0	0	0	9	10	0	19	0	2	3	5	2	24	26
Hvy Veh %	4.26%	0.00%	0.00%	2.82%	0.00%	0.00%	0.00%	0.00%	4.55%	10.87%	0.00%	6.55%	0.00%	2.22%	3.70%	2.92%	2.82%	5.21%	4.89%
PM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
4:45 - 5:45	31	0	38	69	0	0	0	0	307	160	0	467	0	119	55	174	69	641	710
	1	0	0	1	0	0	0	0	5	1	0	6	0	1	4	5	1	11	12
Hvy Veh %	3.23%	0.00%	0.00%	1.45%	0.00%	0.00%	0.00%	0.00%	1.63%	0.63%	0.00%	1.28%	0.00%	0.84%	7.27%	2.87%	1.45%	1.72%	1.69%

WIS 441 Heavy Vehicle Percentage Summary Sheet - WIS 441

Oneida and US 10/ WIS 441 EB

AM PHF: 0.917 PM PHF: 0.885

AM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
7:15 - 8:15	134	471	0	605	0	1126	199	1325	0	0	0	0	435	0	242	677	1930	677	2607
	1	11	0	12	0	33	4	37	0	0	0	0	4	0	31	35	49	35	84
Hvy Veh %	0.75%	2.34%	0.00%	1.98%	0.00%	2.93%	2.01%	2.79%	0.00%	0.00%	0.00%	0.00%	0.92%	0.00%	12.81%	5.17%	2.54%	5.17%	3.22%
PM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	**ALL**
4:45 - 5:45	154	897	0	1051	0	818	190	1008	0	0	0	0	481	0	621	1102	2059	1102	3161
	0	5	0	5	0	23	4	27	0	0	0	0	2	0	12	14	32	14	46
Hvy Veh %	0.00%	0.56%	0.00%	0.48%	0.00%	2.81%	2.11%	2.68%	0.00%	0.00%	0.00%	0.00%	0.42%	0.00%	1.93%	1.27%	1.55%	1.27%	1.46%

Oneida and US 10/ WIS 441 WB

AM PHF: 0.865 PM PHF: 0.963

AM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
7:30 - 8:30	0	395	378	773	495	973	0	1468	187	0	158	345	0	0	0	0	2241	345	2586
	0	8	5	13	22	8	0	30	5	0	0	5	0	0	0	0	43	5	48
Hvy Veh %	0.00%	2.03%	1.32%	1.68%	4.44%	0.82%	0.00%	2.04%	2.67%	0.00%	0.00%	1.45%	0.00%	0.00%	0.00%	0.00%	1.92%	1.45%	1.86%
PM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
4:30-5:30	0	783	280	1063	212	718	0	930	244	0	113	357	0	0	0	0	1993	357	2350
	0	3	4	7	20	2	0	22	4	0	2	6	0	0	0	0	29	6	35
Hvy Veh %	0.00%	0.38%	1.43%	0.66%	9.43%	0.28%	0.00%	2.37%	1.64%	0.00%	1.77%	1.68%	0.00%	0.00%	0.00%	0.00%	1.46%	1.68%	1.49%

Appleton and US 10/ WIS 441 EB

AM PHF: 0.94 PM PHF: 0.949

AM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
7:15 - 8:15	65	643	0	708	0	568	155	723	0	0	0	0	264	1	59	324	1431	324	1755
	8	17	0	25	0	16	6	22	0	0	0	0	8	0	1	9	47	9	56
Hvy Veh %	12.31%	2.64%	0.00%	3.53%	0.00%	2.82%	3.87%	3.04%	0.00%	0.00%	0.00%	0.00%	3.03%	0.00%	1.69%	2.78%	3.28%	2.78%	3.19%
PM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
4:30 - 5:30	171	1001	0	1172	0	758	316	1074	0	0	0	0	219	0	144	363	2246	363	2609
	1	6	0	7	0	8	3	11	0	0	0	0	0	0	4	4	18	4	22
Hvy Veh %	0.58%	0.60%	0.00%	0.60%	0.00%	1.06%	0.95%	1.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.78%	1.10%	0.80%	1.10%	0.84%

Appleton and US 10/ WIS 441 WB

AM PHF: 0.912 PM PHF: 0.92

AM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
7:15 - 8:15	0	474	206	680	84	768	0	852	251	0	206	547	0	0	0	0	1532	457	1989
	0	19	3	22	6	18	0	24	5	0	9	14	0	0	0	0	46	14	60
Hvy Veh %	0.00%	4.01%	1.46%	3.24%	7.14%	2.34%	0.00%	2.82%	1.99%	0.00%	4.37%	2.56%	0.00%	0.00%	0.00%	0.00%	3.00%	3.06%	3.02%
PM Peak	Southbound				Northbound				Westbound				Eastbound				TOTAL		
	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL
4:30 - 5:30	0	970	300	1270	104	929	0	1033	287	1	74	362	0	0	0	0	2303	362	2665
	0	9	1	10	1	7	0	8	0	0	6	6	0	0	0	0	18	6	24
Hvy Veh %	0.00%	0.93%	0.33%	0.79%	0.96%	0.75%	0.00%	0.77%	0.00%	0.00%	8.11%	1.66%	0.00%	0.00%	0.00%	0.00%	0.78%	1.66%	0.90%

WIS 441 Traffic Summary

2/15/2013

0.86

Roadway		Location	Counts	AADT		TAFIS WisDOT	Existing	DHV	DD	Calc'd	DHV (2038)	DDHV DIRECTIONAL	2038 Peaks (Highest Directional)		observed peak T%	Daily Truck %	WisDOT Truck %	Design Speed	ESALS
			2010	2020	2038	2038	K30-Factor	total		DHV	Used		AM	PM					
US 41	Main Lanes	CTH II - US 41/US 10/WIS 441	85100*	96100	113800		0.102	11610	51%	9,816	11,610	5,920	6,917	6,020		12.47%		70	22,125,000
		US 41/US 10/WIS 441 - CTH BB	76000	84100	101000		0.102	10300	51%	8,844	10,300	5,250	5,128	5,214				70	19,496,000
US 10	Main Lanes	CTH CB - US 41	25100^	31500	41000		0.108	4430	57%	4,100	4,430	2,530	2,291	2,370		11.00%		70	11,772,000
WIS 441	Main Lanes	US 41/US 10/WIS 441 - CTH P	60500	69200	88000		0.108	9500	57%	8,208	9,500	5,420	5,615	5,289		8.80%		70	11,858,000
		CTH P - CTH AP	48110^	55300	73100		0.108	7890	57%	6,905	7,890	4,500	4,732	4,492				70	9,665,000
		CTH AP - WIS 47	44090	51200	66900		0.108	7230	57%	6,363	7,230	4,120	4,338	4,085				70	8,895,000
		WIS 47 - US 10	44540^	49800	62200		0.108	6720	57%	5,953	6,720	3,830	4,448	4,056				70	8,457,000
		US 10 - CTH KK	37200	42700	57800		0.108	6240	57%	5,568	6,240	3,560	3,366	3,147				70	7,555,000
CTH P	Racine Road	South of 12th	7400	0	0	--			59%	516	520	310	1,105	1,470	2.1%	2.43%	3.70%	40	
		North of 12th	7400	7600	8100	8500			59%	1,224	1,220	720	518	632	2.1%	2.43%	3.70%	40	905,000
		Btwn Roundabout - 9th Street	18300	19200	21000	20900			59%	2,352	2,350	1,390	1,432	1,470	3.0%	3.47%	5.40%	40	3,528,000
		South of Midway	6200	6500	7100	7200			59%	1,137	1,140	670	314	544	4.8%	5.57%	3.80%	40	813,000
		North of Midway	5000	5600	7000	6400			59%	1,128	1,130	670	315	385	5.7%	6.66%	4.10%	40	809,000
	Racine Connector	Btwn Ramp Terminals	20600	21700	23700	--			59%	2,588	2,590	1,530	1,556	1,391	2.6%	3.03%	--	35	
9th Street	Racine Intersection	East of Racine	5200	5600	6450	6100			59%	1,080	1,080	640	591	531	1.2%	1.43%	4.00%	30	751,000
		West of Racine	5800	6200	7125	6750			59%	1,139	1,140	670	399	480	2.5%	2.94%	3.30%	30	695,000
12th Street	Racine Intersection	East of Racine	1500	1600	1700	--			59%	665	660	390	136	88	2.6%	2.98%	--		
CTH AP	Midway Interchange	West of Ramp Terminals	4400	4900	5800	5400			59%	1,023	1,020	600	255	538	3.0%	3.44%	4.20%	40	676,000
		East of Ramp Terminals	7900	8900	10900	11400			59%	1,469	1,470	870	530	910	6.8%	7.95%	3.70%	40	1,076,000
	Appleton Intersection	West of Appleton	7900	8900	10900	11400			59%	1,469	1,470	870	621	839	2.9%	3.34%	3.70%	40	
		East of Appleton	9200	10400	13100	13400			59%	1,661	1,660	980	743	820	2.7%	3.15%	3.60%	40	
	Oneida Intersection	West of Oneida	9400	10500	12900	13500			59%	1,644	1,640	970	723	773	0.0%	0.00%	3.60%	40	1,223,000
		East of Oneida	8700	11600	19500	20850			59%	2,221	2,220	1,310	920	736	0.0%	0.00%	3.60%	40	1,598,000
Earl	Midway Intersection	South of Midway	700	700	800	--			59%	586	590	350	76	100	26.9%	**31.28%**	--		
WIS 47	Appleton Interchange	North of Ramp Terminals	17700	18900	21200	23250			59%	2,369	2,370	1,400	1,206	1,712	3.2%	3.77%	5.40%	40	3,514,000
		South of Ramp Terminals	18000	18900	20700	21900			59%	2,325	2,330	1,370	941	1,506	3.0%	3.53%	5.40%	40	3,475,000
	Valley Intersection	North of Valley	16700	17600	19200	20300			59%	2,194	2,190	1,290	901	1,324	2.7%	3.10%	5.40%	40	3,230,000
		South of Valley	17700	18900	21200	23250			59%	2,369	2,370	1,400	1,205	1,712	3.9%	4.48%	5.40%	40	
	Midway Intersection	North of Midway	18000	18900	20700	21900			59%	2,325	2,330	1,370	747	1,294	1.9%	2.20%	5.40%	40	
		South of Midway	13900	15100	17500	19000			59%	2,046	2,050	1,210	573	1,133	3.4%	3.98%	5.50%	40	2,937,000
Drum Corp	Appleton Intersection	East of Appleton	1100	1200	1300	--			59%	630	630	370	70	129	8.8%	10.26%	--		
Tuckaway	Appleton Intersection	East of Appleton		#DIV/0!		--			59%	516	520	310	--	--	0.0%	0.00%	--		
Valley	Appleton Intersection	East of Appleton	4400	5200	6950	6400			59%	1,124	1,120	660	454	546	4.1%	4.80%	3.30%		
		West of Appleton	5100	5400	5900	5850			59%	1,032	1,030	610	437	709	2.3%	2.63%	4.10%		
	Oneida Intersection	East of Oneida	2500	2600	2900	2850			59%	770	770	450	445	395	0.7%	3.77%	3.30%		273,000
		West of Oneida	5100	5700	6950	6400			59%	1,124	1,120	660	404	493	2.3%	3.77%	3.30%		625,000
US 10 / Oneida	Oneida Interchange	North of Ramp Terminals	21100	22700	25800	25350			59%	2,771	2,770	1,630	1,684	1,532	1.6%	1.81%	5.40%	40	4,247,000
		South of Ramp Terminals	23400	26600	33400	31650			59%	3,435	3,440	2,030	2,095	1,906	2.4%	2.79%	5.40%	40	4,935,000
	Valley Intersection	North of Valley	18700	19900	22400	22900			59%	2,474	2,470	1,460	1,572	1,325	2.2%	2.58%	5.40%	40	3,706,000
	Midway Intersection	North of Midway	23400	26600	33400	31650			59%	3,435	3,440	2,030	1,926	1,722	2.4%	2.79%	5.40%	40	4,935,000
		South of Midway	15400	16800	19700	19200			59%	2,238	2,240	1,320	1,311	1,217	4.9%	5.67%	5.50%	40	3,286,000
Primrose	Oneida Intersection	East of Oneida	600	600	700	--			59%	577	580	340	31	36	--	--	--		
Meadow Grove	Oneida Intersection	East of Oneida	2800	2900	3200	--			59%	796	800	470	212	273	--	--	--		
Tayco	WIS 441	Underpass	3400	3500	3800	4000			59%	848	850	500	--	--	--	--	3.30%		276,000
Cold Spring	US 10	Underpass	4000	5100	8100	8900			59%	1,224	1,220	720	--	--	--	--	3.30%		
Lake Street	WIS 441	Underpass	3400	3700	4275	4650			59%	890	890	530	--	--	--	--	4.60%		
Jacobsen	US 41	Overpass	2500	2900	3700	4100			59%	840	840	500	--	--	--	--	5.30%		
Green Bay	US 41	Underpass	4700	6300	10500	10350			59%	1,434	1,430	840	--	--	--	--	3.30%		
American	West of US 41	South of Jacobsen	730	800	840	835			59%	590	590	350	--	--	--	--	3.30%		62,000

* Count Year 2007

^ Count Year 2011

Estimated Count

Information to include on Title Sheet

Based on WisDOT factors by facility type

US 10/WIS 441 CORRIDOR - TMP Form Status
10/31/2014

Project ID	Description	Earliest Let	Program Let	PSE Date	Region Approval	C/O Approval	FHWA Approval	Ammendment/Update				Comments
					Date	Date	Date	FHWA Reapproval Yes	FHWA Reapproval No	Status	Signature Date	
US 10/ WIS 441 TMP Tracking												
1517-07-72	US 41 Interchange Grading		5/13/2014	2/1/2014	2/7/2014	2/25/2014			x	signed by NE	8/11/2014	Racine TMP update
1517-07-82	Rubbert Wetland Mitigation Site Phase 3		5/13/2014	2/1/2014	1/22/2014	1/24/2014						
1517-07-76	Little Lake Butte des Morts Bridge B-70-403		8/12/2014	5/1/2014	5/1/2014	5/15/2014	5/16/2014					
1517-75-82	Midway Road TMP		2/10/2015	8/1/2014	7/30/2014	8/18/2014						
1517-75-71	Racine Rd Interchange Early Fill		3/10/2015	11/1/2014	7/31/2014	8/18/2014						
1517-75-78	Appleton Road (STH 47) Interchange		3/10/2015	11/1/2014	9/9/2014	9/16/2014						
1517-75-81	Vermillion Street		3/10/2015	11/1/2014	7/31/2014	8/18/2014						
1517-07-83	Neenah Wetland Mitigation Site	5/12/2015	7/14/2015	2/1/2015								submitted 10/24/2014
1517-75-75	Racine Road (CTH P) Interchange	5/12/2015	7/14/2015	2/1/2015								
1517-07-79	US 41 Interchange B-70-400	5/12/2015	7/14/2015	2/1/2015								
1517-75-76	Racine Road (CTH P)		1/12/2016	8/1/2015								
1517-07-77	Little Lake Butte des Morts Bridge B-70-61 Redecking	5/10/2016	7/12/2016	2/1/2016								
1517-75-79	Oneida Street (US 10) Interchange	5/10/2016	2/14/2017	8/1/2016								
1517-07-78	US 10/STH 441 Mainline (LLBDM - Tayco St)		5/9/2017	2/1/2017								
1517-07-74	US 41 SB (STH 441 - CTH II)	2/9/2016	7/11/2017	2/1/2017								
1517-07-75	US 41 NB (STH 441 - CTH II)	2/9/2016	7/11/2017	2/1/2017								
1517-07-71	US 10 Mainline (Coldspring Rd - US 41)	5/10/2016	7/11/2017	2/1/2017								
1517-07-80	US 41 Interchange Phase 3	5/10/2016	7/11/2017	2/1/2017								
1517-75-80	TMP Projects and Local Haul Road Repair		7/11/2017	2/1/2017								
1517-75-77	Midway Road (CTH AP) Interchange		2/13/2018	8/1/2017								
1517-75-72	US 10/STH 441 Mainline (Racine Rd - Appleton Rd)	5/9/2017	7/10/2018	2/1/2018								
1517-75-73	US 10/STH 441 Mainline (Appleton Rd - Oneida St)	5/10/2016	7/10/2018	2/1/2018								
1517-75-74	STH 441 Mainline (Oneida St - Project Limits)	5/10/2016	7/10/2018	2/1/2018								

WIS 441 Tri-County Project Corridor Manual

Chapter 12: Traffic/Traffic Control/Staging

Chapter Contact: PF O'Connor (WisDOT)

Issued: February 14, 2012
Revised: April 16, 2012
September 19, 2014

Scope/Purpose

This chapter provides general guidance regarding traffic control during construction, including:

- Providing construction access
- Single lane closures
- Construction staging and sequencing
- Minimum temporary lane widths

Reference Documents

- FDM Chapter 11.26.45 Work Zone Traffic Control
- FDM Chapter 11.44.1.5 Traffic Control Devices and Signing
- FDM Chapter 11.45.1 Traffic Barriers and Crash Cushions
- FDM Chapter 11.50 Traffic Control
- FDM Chapter 11.60 Detours
- FDM Chapter 15.1.20 Control/Stage Construction Detail Sheet
- Standard Specifications Section 603 Concrete Barrier
- Standard Specifications Section 614 Semi-rigid Barrier Systems and End Treatments
- Standard Specifications Section 643 Traffic Control
- Standard Specifications Section 649 Temporary Pavement Marking
- Wisconsin Manual on Uniform Traffic Control Devices (WMUTCD)
- Manual on Uniform Traffic Control Devices (MUTCD)

General

Corridor packaging and staging discussions are part of an on-going process. WIS 441 Corridor Packaging is attached. For the latest in packaging and staging exhibits, see the FTP site at:

ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Design/Staging_TrafficControl/StagingCoordination/

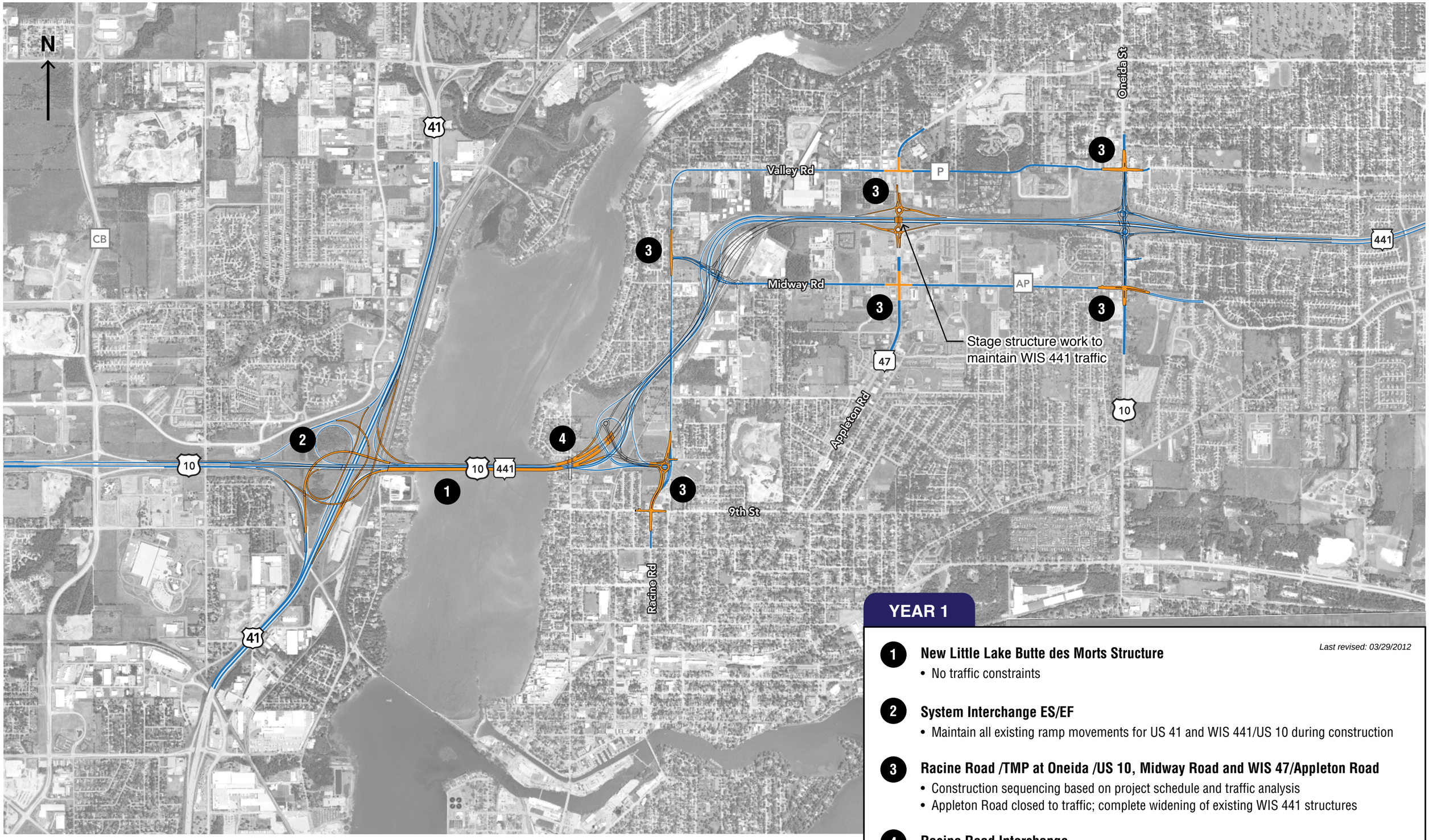
Construction Access

On Construction Access details use Fixed Message Signs (FMS) rather than Portable Changeable Message Signs (PCMS), as in most cases the access points are at long term locations. Typical messages to use are:

Trucks Entering Right (Left)
Traffic Stay Left (Right)

Attachments

- WIS 441 Corridor Packaging (Dated 04-03-12)



Existing roadway closed

Road/structure construction

Live traffic

New construction open to traffic

YEAR 1

Last revised: 03/29/2012

1 New Little Lake Butte des Morts Structure

- No traffic constraints

2 System Interchange ES/EF

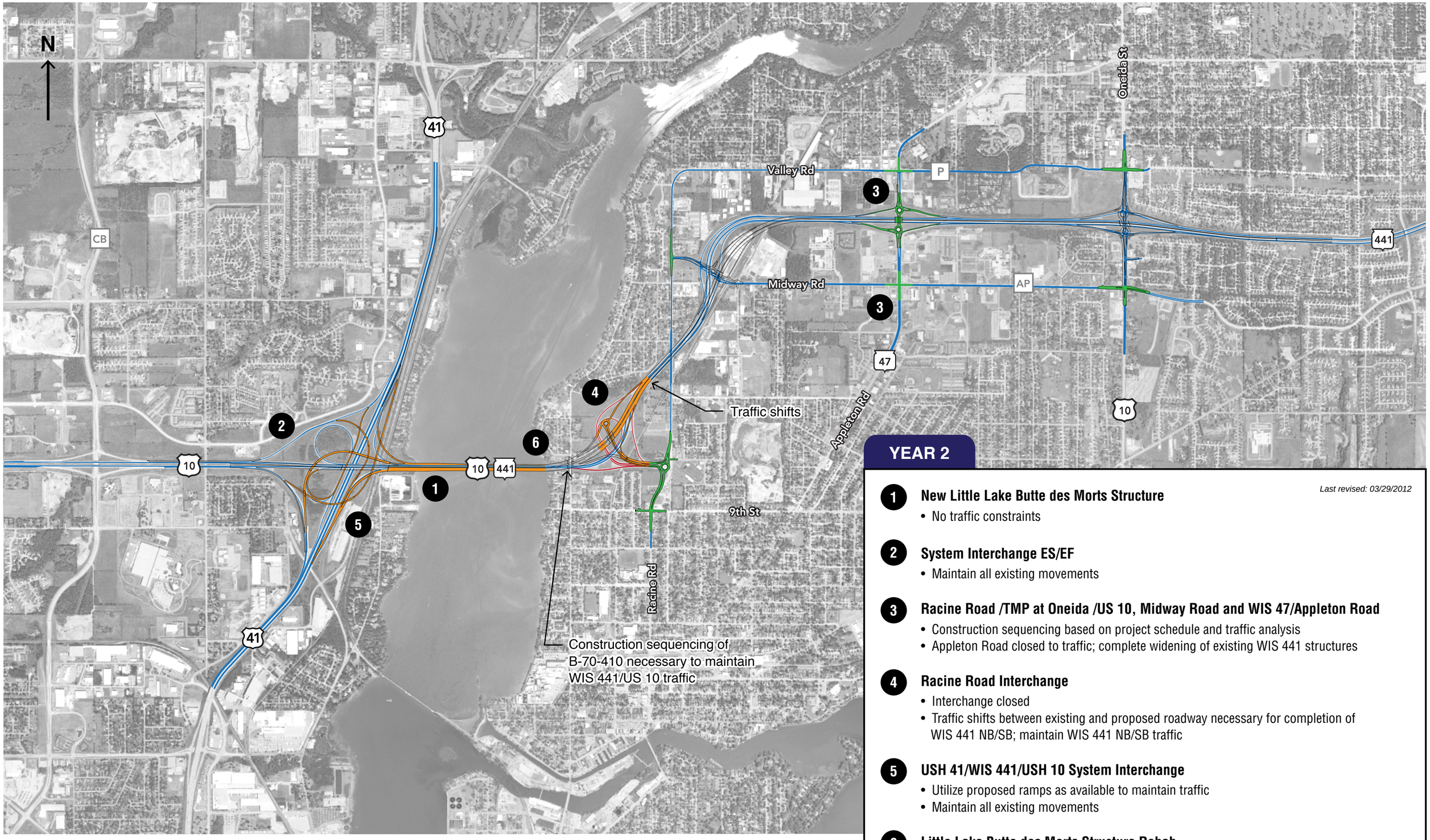
- Maintain all existing ramp movements for US 41 and WIS 441/US 10 during construction

3 Racine Road /TMP at Oneida /US 10, Midway Road and WIS 47/Appleton Road

- Construction sequencing based on project schedule and traffic analysis
- Appleton Road closed to traffic; complete widening of existing WIS 441 structures

4 Racine Road Interchange

- Maintain full operations while Racine Road under construction
- Provide temporary realignment of Racine Road to west of existing/proposed intersection



Existing roadway closed

Road/structure construction

Live traffic

New construction open to traffic

YEAR 2

Last revised: 03/29/2012

1 New Little Lake Butte des Morts Structure
- No traffic constraints

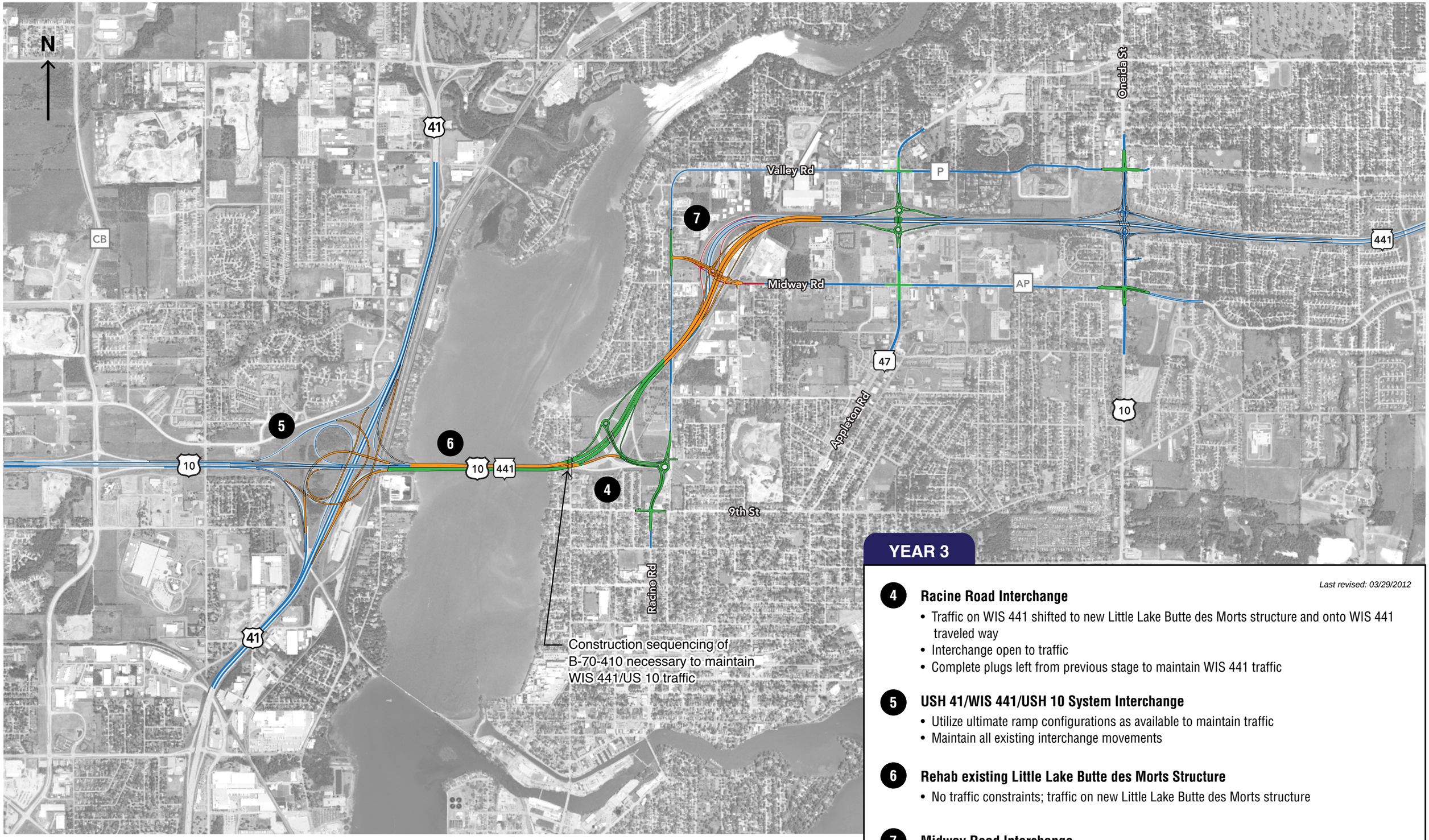
2 System Interchange ES/EF
- Maintain all existing movements

3 Racine Road /TMP at Oneida /US 10, Midway Road and WIS 47/Appleton Road
- Construction sequencing based on project schedule and traffic analysis
- Appleton Road closed to traffic; complete widening of existing WIS 441 structures

4 Racine Road Interchange
- Interchange closed
- Traffic shifts between existing and proposed roadway necessary for completion of WIS 441 NB/SB; maintain WIS 441 NB/SB traffic

5 USH 41/WIS 441/USH 10 System Interchange
- Utilize proposed ramps as available to maintain traffic
- Maintain all existing movements

6 Little Lake Butte des Morts Structure Rehab
- Maintain traffic on existing structure
- Sub structure work available



Existing roadway closed

Road/structure construction

Live traffic

New construction open to traffic

YEAR 3

Last revised: 03/29/2012

4 Racine Road Interchange

- Traffic on WIS 441 shifted to new Little Lake Butte des Morts structure and onto WIS 441 traveled way
- Interchange open to traffic
- Complete plugs left from previous stage to maintain WIS 441 traffic

5 USH 41/WIS 441/USH 10 System Interchange

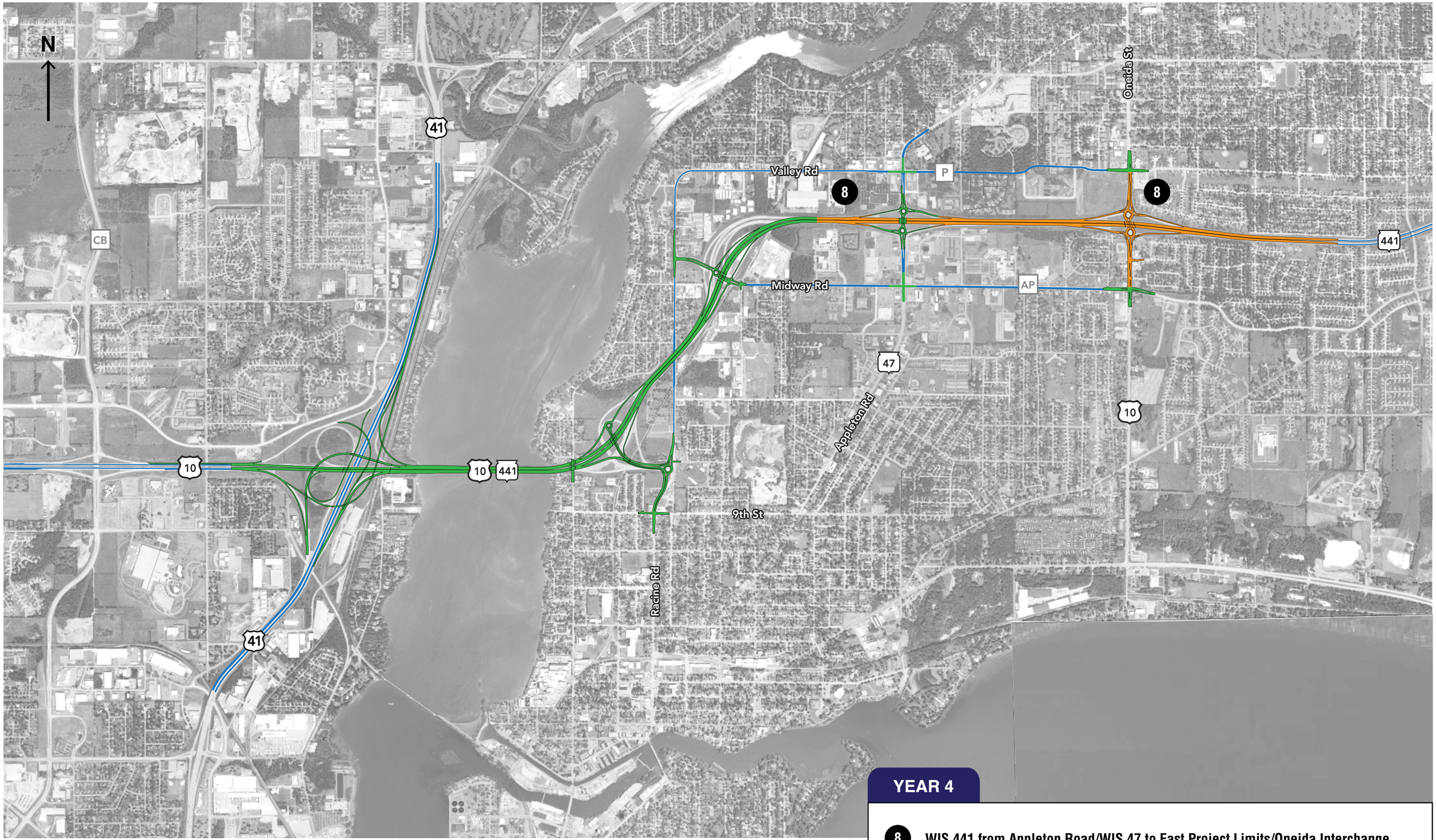
- Utilize ultimate ramp configurations as available to maintain traffic
- Maintain all existing interchange movements

6 Rehab existing Little Lake Butte des Morts Structure

- No traffic constraints; traffic on new Little Lake Butte des Morts structure

7 Midway Road Interchange

- Closed to traffic; cannot close until after the completion of the Racine Road interchange
- Maintain WIS 441 traffic through left/right side traffic staging



Existing roadway closed

Road/structure construction

Live traffic

New construction open to traffic

YEAR 4

8 **WIS 441 from Appleton Road/WIS 47 to East Project Limits/Oneida Interchange**

- Open to traffic in the ultimate configuration
- Oneida Interchange closed to traffic

Last revised: 03/29/2012

WIS 441 Tri-County Project Corridor Manual
Chapter 13: Quality Control

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: April 16, 2012
May 15, 2012
December 17, 2012
February 15, 2013
December 16, 2013
February 17, 2014
September 17, 2014

Scope/Purpose
This chapter establishes minimum criteria and processes for design team use of checklists, internal reviews and other quality related procedures and documentation.

Reference Documents
- FDM 3-20-44 and 19-21-1
- Bridge Manual, Chapter 6.0, Plan Preparation
- June 1, 2010 Memo to all Consultant Bridge Design Staff from William Dreher, Chief Structures Design Engineer, Bureau of Structures – subject: WisDOT Review of Consultant Prepared Structure Plans

General
All design work for WIS 441 Tri-County Project is to be performed in accordance with the WIS 441 Tri – County Project Quality Plan.

A WIS 441 Corridor Quality Process Log (see Appendix C of the Quality Plan for an example) and supporting documents will be kept by the Corridor Quality Manager for each project submittal. This log will document the quality process that has been followed by Tri County Partners. Project specific quality documentation will be located under each design project ID on the FTP site.

Communication
Communication is inherent to a quality product and will be vital for the WIS 441 Tri-County Project. See attached WIS 441 Communication Plan.

Attachments
- WIS441 Tri-County Project Quality Plan (Dated 12-17-12)
- Appendix A Northeast Region Design Review Process (Dated 11-12-08)
- Appendix B WIS441 Corridor Quality Process Log (Dated 2-14-12)
- Appendix C WIS441 Plan Review Checklist (Dated 2-14-12)
- Appendix D WIS441 Review Comment Form
- Appendix E WIS441 Review Hard Copy Distribution List (Dated 09-17-14)
- WIS 441 Communication Plan (Dated 5-8-12)

WIS 441 Tri-County Project

Quality Plan

December 17, 2012

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B WIS 441 Quality Process Log
C WIS 441 Plan Review Checklist
D WIS 441 Review Comment Form
E WIS 441 Review Hard Copy Distribution List

1. General

1.1 Project Definition

This project is defined as preliminary engineering through final PS&E for the WIS 441 Tri-County Project, County CB – Oneida Street, US 10 / WIS 441 in Winnebago County. The WIS 441 Tri-County Project includes adding mainline capacity to US 10 / WIS 441, constructing a new parallel bridge of Little Lake Butte des Morts (LLBDM), redecking and widening the existing eastbound LLBDM Bridge, reconstructing the system interchange between US 41 and US 10 / WIS 441, reconstructing the Racine Street (County P) Interchange, reconstructing the Midway Road (County AP) Interchange, reconstructing the Appleton Road (WIS 47) Interchange, reconstructing the Oneida Street (US 10) Interchange, constructing multi-lane roundabouts at ramp terminals, installing freeway lighting and intelligent transportation systems.

1.2 Commitment

1.2.1 Management Commitment

Management has established their commitment to quality on this and all projects. Quality is defined at WisDOT as "a principle that encourages excellence in everything – products, strategies, systems, processes, and people. It is defined by the customer – to meet or exceed customers' expectations."

Customer expectations are defined during the project planning stage and through continued public outreach. During design, ongoing public meetings and the review processes provide continuing feedback to the design teams.

This Quality Plan (QP) integrates the management philosophy of encouraging excellence in the project delivery. Quality assurance and quality control are based on standards of care for professional services. These focus on improving services and product, making acceptance decisions, and identifying process adjustments.

1.2.2 WisDOT Northeast Region Commitment

Every work unit within the Northeast (NE) Region or that provides a service for the WIS 441 Tri-County Project is required to make a commitment to the concept of quality assurance so that consistent, high quality work is performed.

1.2.3 Tri County Partners Commitment

Every consultant providing a service to the WIS 441 Tri-County Project will examine its role in supporting WisDOT's goal to efficiently manage the project and develop its own Quality Control/Quality Assurance Plan. All are expected to perform with a professional level of diligence and care in providing a service or performing their work. All will be required to make a commitment to the concept of quality assurance so that consistent, high quality work is performed.

1.2.4 Quality Plan Commitment

Each member of the WIS 441 Tri-County Project team is expected to read, understand and accomplish their work in accordance with this Quality Plan.

1.3 Communication

Open communication is encouraged, following project communication plan

Verbal communication protocol follows:

- All coordination issues requiring WisDOT input are routed to the project.
- If the issue is minor, it is discussed with the Project Manager and/or Project Supervisor.
- If the issue is major, it is elevated by the PM for discussion at the CMT meeting.

When necessary, communication will be formally documented.

1.4 Project Quality Plan

This QP contains general policies and specific procedures for design related activities for the WIS 441 Tri-County Project. Its purpose is to provide a consistent approach to quality activities throughout the WIS 441 corridor.

This QP meets WisDOT requirements for providing independent confirmation that project deliverables satisfy contract requirements.

1.4.1 Quality Goals

The Quality Plan spells out these goals for quality projects:

- Total delivery costs < 27% of construction cost (15% design, 12% construction)
- PS&E deliveries on time = 100%
- Design Quality Index > 3.0
- Construction Contract Change Orders < 5%
- Minimal Errors & Omissions

1.4.2 Updates

The Quality Plan will be maintained by the Project Team. It will be reviewed on a quarterly basis and updates and revisions will be made with the approval of the WIS 441 Corridor Management Team (CMT). However, this is a living document and subject to ongoing review and revision during the life of the project. Revisions to improve and better implement quality procedures and processes are expected.

1.4.3 Distribution

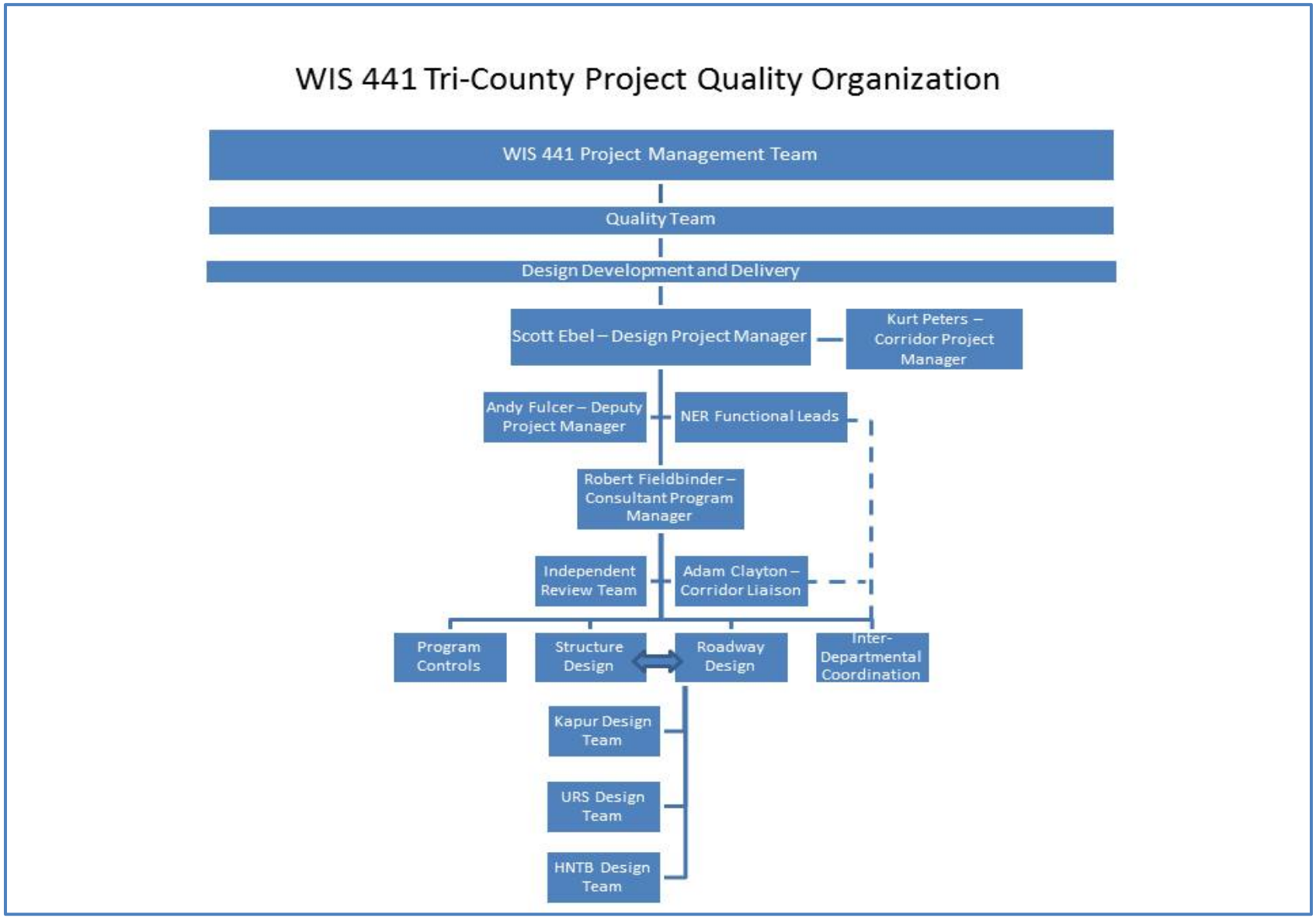
The Quality Plan will be distributed as part of the WIS 441 Corridor Manual. An electronic copy of the plan will be maintained in the WIS 441 Corridor Manual.

1.4.4 Terms and Definitions

This section provides standardized definitions for the terms and acronyms used in the Quality Plan.

Audit	A systematic, independent and documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that applicable elements of the Quality Plan, such as Design Quality Procedures, have been implemented. An audit differs from surveillance or inspection activities.
Biddability Review	Construction contract document review to identify errors, omissions, conflicts, ambiguities, inaccuracies, and deficiencies in the construction contract documents so that they can be corrected prior to bid.
Constructability Review	A supplemental and specialized review of construction plans and specifications to ensure that they are practical, cost effective, and build-able.
Corridor Quality Manager	A member of Tri County Partners who will assist WisDOT with the development, updating and implementation of the Quality Plan.
Customer	Any internal or external person that receives a product or service. Internal customers could include supervisors, team members, project managers or management. External customers could include FHWA, other agencies, political officials, communities or permitting agencies.
Functional lead reviews	Plan review by functional leads to ensure that the combined work elements are compatible and that the functional area plan elements meet WisDOT requirements.
FDM	Facilities Development Manual
NE Region	WisDOT Division of Transportation System Development Northeast Region
QA	Quality Assurance is the systematic monitoring and evaluation of various aspects of the project to ensure that the standards of quality are being met. Personnel independent of the design and construction activities typically conduct this.
QC	Quality Control is the monitoring of specific project results to determine if they meet quality standards and to identify corrective actions for items that do not meet the quality standards.
QM	The Quality Manager is the person responsible for implementing the Quality Plan.
QP	This Quality Plan - the document that contains the general policies and specific quality procedures for the WIS 441 Tri-County Project that are considered the minimum necessary to meet project needs and WisDOT expectations.
Quality Procedures	The written instructions for implementing various components of the Quality Plan.
Technical reviews	Plan review that focuses on completeness and accuracy of plans to uncover errors and omissions.
CEP	Corridor Expansion Project - WIS 441 Tri-County Project
CMT	The WIS 441 Corridor Management Team is the WisDOT NE Region WIS 441 Tri-County Project oversight team and is responsible for managing various projects and providing a line of communication to the customer.
VE	Value Engineering is an organized application of common sense and technical knowledge directed at finding and eliminating unnecessary costs, and providing the best overall project value for the taxpayer.
WisDOT	Wisconsin Department of Transportation

1.4.5 Organization and Responsibilities



1.4.6 Roles and Responsibilities

1.4.6.1 WIS 441 Project Management Team

The WIS 441 Project Management Team is the WisDOT Northeast Region WIS 441 Tri-County Project oversight team. The team is led by the Region Director and acts as the decision-making body at the Region level. The WIS 441 Project Management Team answers to the Secretary's Oversight Committee and the Major Project Peer Review Committee because the WIS 441 Tri-County Project is both a Federal Major Project/"Mega" Project and a State Major Project. WIS 441 Project Management team will be responsible for ensuring the Quality Plan is maintained and updated.

1.4.6.2 Quality Team

The Quality Team consists of staff from the NE Region and Tri County Partners, who are involved in ensuring that all design plans meet all quality expectations. Team members include the constructability, bidability and technical review staff, WIS 441 manager and supervisor, IAP staff, construction and design project managers and ad- hoc technical experts used for independent reviews of unique design and construction elements.

1.4.6.3 Design Project Managers

The Design Project Managers will implement and monitor the Design Quality Procedures including the Design Review Process, constructability review and bid ability review. The Design Project Manager is the person WisDOT and the Corridor Management Team will hold responsible for the quality of deliverable work products. Each Design Project Manager is expected to be supported in the achievement of quality efforts by a quality manager, task leads and designers and CAD techs.

1.4.6.5 Functional Leads

WisDOT project team members located within the NE Region and Central Office who have a responsible role for providing leadership and acting as a resource in their functional area of expertise. Functional Leads will help with plan reviews.

1.4.6.6 Consultants

Consultants are external project team members who have a responsible role in the WIS 441 Tri-County Project design. Every consultant providing a service to the project will examine its role in supporting WisDOT's goal to efficiently manage the WIS 441 Tri-County Project and develop its own Quality Control/Quality Assurance Plan

1.4.6.7 Checkers

Checkers are responsible for providing an independent, detailed (i.e., "line-by-line") check of all hand- or computer-generated design calculations, alternative layouts, functional plans, preliminary plans, construction cost estimates, and reports. Checkers are to document these activities by entering their initials and date on all design calculations and checklists used in the preparation of all deliverable products, as well as on a draft copy of the deliverable product.

1.4.6.8 Reviewers

Reviewers are required to fulfill the following review functions associated with the reviews described in Section 2 as applicable to each deliverable work product during the execution of the project:

The Reviewers' function is not to re-design the work. Their task is to identify errors and omissions or conflicts and to ask questions or raise issues regarding items or design features that may present a problem or significant risk to successful achievement of the project. A Reviewer is not expected to provide answers to the questions asked or to resolve the issues, although they may suggest solutions for designer consideration.

Many review comments may not note or correct errors in the strictest sense. Rather, Reviewer comments may present a "better" alternative (in the opinion of the Reviewer). Such comments should not necessarily be discouraged (indeed, these may form the basis for "lessons learned" and improvements for the next similar deliverable). However, Reviewers should bear in mind that the intent of the review process is to produce a good, workable product which contains as few errors and omissions as practicable.

Reviewers are expected to bring an objective viewpoint to their assignment by not having had an active role on this project, or at least not with respect to the specific item of work they are reviewing. The selection of Reviewers is subject to the approval of the Project Manager and the Corridor Quality Manager.

1.4.7 Roadway Design Teams

1.4.7.1 General Responsibilities

Each design team is fully responsible for the quality of the work produced by its staff and each individual is responsible for his/her own work. Review of the work, regardless of who (or which agency/firm) may perform the review, will not in any way relieve the originator of the work, or his/her agency/firm, of responsibility. *Put simply, the owning organization is to schedule the time, budget the cost and accomplish the quality steps included in this QP for the type of work being performed* ***before*** *the submittal is forwarded to WisDOT for formal ad-hoc deliverable reviews.* Each team member is responsible for producing quality work, and for helping to ensure that fellow team members also produce quality work.

Tri County Partners is performing all roadway and structure design for the project. Following is a summary of work being performed by each design firm:

Kapur and Associates

- US 10 / WIS 441 / US 41 System Interchange
- US 10 / WIS 441 mainline tangent section including
  - o Appleton Road Interchange
  - o Oneida Street ramps

HNTB Corporation

- USH 10 / WIS 441 mainline off-alignment section including
  - o Tayco Street
  - o Racine Road Interchange
  - o Midway Road ramps
- Racine Road

URS Corporation

- All structures, including LLBDM mainline section
- Midway Road and Racine Road
- Oneida Street

2. Design Quality Process

2.1 Built-In Quality

An overall program that establishes project-specific policies, standards, guidelines, and systems aimed at producing an acceptable level of quality in the design deliverables. Quality shall be "built into" the project through the establishment of, and strict adherence to, project-specific policies, standards, guidelines, and systems, and by having WisDOT and consultant senior staff involved early and often throughout the design process, not just for deliverable reviews.

2.2.1 Technical Risk Assessment and Cost Validation

Two Workshops will be conducted, one for Technical Risk Assessment and one for Cost Validation.

2.2 Review Process

The WIS 441 Project Team, independent Project Managers, and Functional Leads will review the key components of the plan for technical accuracy, functional area coordination, constructability, and bid-ability. A review comment procedure has been established so that issues can be resolved cooperatively. In addition to the reviews performed at the Region level, Central Office staff will review the plan for statewide consistency along with those items mentioned in this document.

Before a PS&E package (Plans, Special Provisions, and Estimates) is sent out for bidding, it will go through the NE Region Design Review Process (**Appendix A**). This process has been prepared by WisDOT NE Region and is based on AASHTO and FHWA guidelines, the WisDOT Facilities Development Manual, the WisDOT Bridge Manual, the WisDOT Standard Specifications for Highway and Structure Construction, and NE Region best practices to ensure the delivery of quality projects. Plans will be checked at 30%, 60% and 90% complete status using various checklists and as described in the NE Region Design Review Process. A hard copy plan set distribution list for each review phase is found in the WIS 441 Review Hard Copy Distribution List (**Appendix E**).

Design Consultants are to prepare their own Quality Assurance/Quality Control Plans. A copy of each plan will be located on the project FTP site. In addition to following quality processes outlined in their own plans, consultant plans will be checked at 30%, 60% and 90% as spelled out in the NE Region Design Review Process, as well as providing the quality documentation described in Section 2.3.

Additionally, a representative from the FHWA Division Office participates in bi-monthly Corridor Management Team meetings where design issues are discussed and decisions made. FHWA also participates in the review areas such as the 30%, 60%, 90% and draft PS&E review of plans, and must approve any deviation from design criteria and modification of access to interstate highways. The FHWA reviews and takes appropriate approval action of requests to use proprietary products, to determine material sources, to provide state furnished materials, and for government units to perform a portion of the construction work. Lastly, the FHWA ensures a quality product through the required Financial Plan for Federal Majors projects. The FHWA must be active in continuous financial stewardship including matching scope, schedule, and cost changes with financial resources.

All these reviews constitute a budgeted and planned process. The reviews are not intended to be a substitute for maintaining quality in ongoing performance of work. The WIS 441 Project

Team and Functional Leads are responsible for adherence to good practices of work documentation, ongoing review and consultation, and documentation of decisions to support continuous quality of deliverables.

2.2.1 Status Reviews

The purpose of Status Reviews are to address financial metrics, project progress, and ensure that planned Project Quality Plan activities are being conducted. Senior Management Staff from WisDOT and the WIS 441 Project Team will conduct the Status Reviews.

2.2.2 Management Reviews

Management Reviews are conducted by Senior Management Staff from WisDOT and the WIS 441 Project Team.

2.2.3 Technical Reviews

The Technical Reviews are to focus on completeness, consistency and accuracy of plans.

2.2.4 Constructability Reviews

A Constructability Review is a supplemental and specialized review of the preliminary plans to ensure that they are practical, cost effective, and build-able.

2.2.5 Biddability Reviews

The Biddability Review is a review of construction contract documents conducted prior to bidding, which seeks to identify errors, omissions, conflicts, ambiguities, inaccuracies, and deficiencies in the construction contract documents so that they can be corrected prior to bid.

2.2.6 Design/Plan Consistency Reviews

The Design/Plan Consistency Review seeks to confirm and document the required consistency between the three dimensional geometric elements created in the roadway design software and the corresponding information shown on the plans.

2.2.7 Field Reviews

Field Reviews involve visits to the project site to verify compatibility of the design with the field conditions to be encountered during construction.

2.2.8 Milestone Reviews

The Project Managers and other project staff, as needed, will conduct Milestone Reviews after each major submittal or completion of milestones. These reviews will address project execution and focus on schedule, budget, and quality.

2.2.9 Third Party Reviews

One or two Value Engineering (VE) Studies will be completed for the project.

Value Engineering (VE) is a function-oriented technique, which has proven to be an effective management tool for achieving improved design, construction, and cost effectiveness in various transportation program elements. It is an organized application of common sense and technical knowledge directed at finding and eliminating unnecessary costs, and providing the best overall project value for the taxpayer.

The goal of a VE study is to achieve design excellence. Its objectives are to improve quality, minimize total ownership costs, reduce construction time, make the project easier to construct, insure safe operations, and assure that environmental and ecological goals are met.

The VE team is looking for the optimum blend of scheduling, performance, constructability, maintainability, environmental awareness, community values, safety, and cost effectiveness.

2.2.10 Stakeholder Reviews

Occasionally, stakeholders such as municipalities, counties, and other agencies will be requested or encouraged to review and comment on design. These reviews will help ensure that the project meets their needs and requirements.

TABLE 1 – Review Elements – Frequency – Preliminary Engineering

Review Element	Frequency	Parties Involved
Continuous or "Built In" Quality	Continuous	Everyone working on the project
Status Reviews	Monthly	WisDOT & Consultant Principal Staff
Management Reviews	Quarterly	Senior WisDOT staff or Consultant Principal staff
Technical Reviews	Before each Preliminary Plan Submittal	Functional Leaders, Designers, Technical Reviewers
Field Review	Concurrent with WisDOT's Preliminary Plan Reviews (or sooner)	Functional Leaders, Designers, Reviewers, others as needed
Milestone Review	After each Preliminary Plan submittal	PM & Consultant Principle Staff
Third Party Reviews		Independent Experts

TABLE 2 – Review Elements – Frequency – Final Engineering

Review Element	Frequency	Parties Involved
Continuous or "Built In Quality	Continuous	Entire WisDOT or Consultant Team
Status Reviews	Monthly	WisDOT & Consultant Principal Staff
Management Reviews	Quarterly	Senior WisDOT Management or Consultant Principle Staff
Design/Plan Consistency Review	Concurrent with the Draft PS&E submittal	Project Manager, Consistency Reviewer
Technical Reviews	Concurrent with the Draft PS&E submittal	Project Manager, Consistency Reviewer
Constructability	Concurrent with WisDOT's Draft PS&E Review (or sooner)	Project Manager, Consistency Reviewer
Field Review	Concurrent with WisDOT's Draft PS&E Review (or sooner)	Designers, Others as needed
Biddability Review	Before each Final PS&E submittal	Project Manager, Biddability Reviewer
Milestone Review	After Each Preliminary Plan submittal	Project Manager & Consultant Principle Staff

2.3 Documentation of Quality Activities

2.3.1 Required Quality Documentation

All WisDOT and Consultant Team staff are responsible for adherence to good practices of work documentation, ongoing review and consultation, and documentation of decisions to support quality of deliverables. Appropriate documentation of quality efforts as described below are intended to ensure that these quality efforts are executed on an ongoing basis.

Quality documentation will be provided to the Corridor Quality Manager, to be recorded in Quality Process Log (example log is found in **Appendix B**) and placed on the project FTP site, for each submittal.

Additional documentation may be developed during the course of the project as a result of experience gained as the project progresses.

2.3.1.1 Evidence of design team internal quality reviews

Internal design team reviewers are expected to use the Review Comment Form (see 2.3.2). They may choose to also provide markups on plan sets. If design teams wish to use plan set markups but not Review Comment Forms they are to advise the Corridor Quality Manager and include an explanation of how the internal reviews will be conducted and documented. The Corridor Quality Manager may ask to see satisfactory evidence of design team internal quality reviews in order to complete the Quality Process Log.

2.3.1.2 Design Checklists

Design and plan preparation checklists shall be used to document the thoroughness of the production and review efforts and to reduce rework. A WIS 441 Project Plan Review Checklist has been developed for 30%, 60%, and draft submittals (**Appendix C**). Various checklists are available in the FDM and other WisDOT resources, and design teams may have their own checklists. The Corridor Quality Manager has checklists and suggested procedures for checking hand and computer generated calculations and design output. These are available to design teams upon request. Checklists are to be initialed and dated by the designer and the checker.

2.3.1.3 Meeting Notes from Plans-in-Hand Field Reviews

Conduct Plans-in-Hand Field Review and submit meeting notes of same to the Corridor Quality Manager prior to the 60 percent and Draft PS&E Plan Review Meetings.

2.3.1.4 Completed Review Comment Forms (Appendix D) for all external reviewers

All external reviewers (WisDOT ad-hocs, FHWA, stakeholders, specialty/3rd party reviewers, etc.) are to document their review comments using the Review Comment Form (see 2.3.2). Completed Review Comment Forms, including designer responses to reviewer comments with all comments adjudicated, will be provided to the WisDOT PM and Corridor Quality Manager to be recorded in the Quality Process Log and placed on the project FTP site for each submittal.

2.3.2 Review Comment Form (Appendix D)

WisDOT will provide a blank template of the Excel file of this form to the design team.

2.3.2.1 Project Engineer/Designer responsibilities

1. Save the Review Comment Form template document as a project-specific file renamed as "Review Comment Form – {*insert ID and/or plan name*} - (name).doc" with the following blocks filled out:

    - Design Organization Making Submittal
    - In the Project block, the ID number, project name, project limits and county
    - Submittal (30%, 60%, Draft PS&E or Final PS&E)
    - Design Project Manager (person's name and e-mail address)

2. Include the updated project specific Review Comment Form template with the electronic submittal (30%, 60%, Draft PS&E/90%).

3. Upon receipt of the reviewers Review Comment Forms, designers are to record their responses to the review comments on the electronic copy of the form. Responses are to be categorized by type as indicated on the form (i.e., Agree (A), Requires Further Study (RFS), Partially Agree (P), and Disagree (D)).

Issues categorized as RFS should be addressed as the project moves from preliminary engineering into final engineering and shall be resolved before the project is submitted for Draft PS&E.

Issues categorized as P or D should be resolved as soon as possible. In the case of internal design team comments the designer and reviewer should communicate in person to resolve the issue. In the case of external comments the designer should communicate with the WisDOT Project Manager, who will, as he or she deems appropriate, further communicate with the reviewer. The resultant agreed-upon disposition of the comment should be entered on the form. The final form is to be electronically signed by the designer and reviewer.

2.3.2.2 External Reviewer (WisDOT ad-hocs, FHWA, stakeholders, specialty/3rd party) responsibilities

1. Rename the project specific Review Comment Form by replacing (name) in the file name with your name.

2. Complete the form as follows:

    - Fill in Reviewer Name/Organization block
    - Complete the first three (Reviewer) columns as follows:
      First (Issue No.) column - number each comment
      a) Second (Location) column – enter the location of the feature you are commenting on by identifying the sheet number or sheet type, Special Provision reference, the road name if applicable, and/or the plan station.
      b) Third (Reviewer Comments) column - add the review comment... use of short hand, normal abbreviations, bullet items, etc. is OK... can combine multiple sheet or page numbers on one row if comment pertains to more than one sheet or page.
    - Fill in the date when the review is completed in the block at upper left part of form.

3. Email the completed form directly to the Design Project Manager identified on the form. Copy the WisDOT PM and the Corridor Quality Manager.

4. Attend the Plan Review Meeting prepared to discuss the more significant comments.

2.3.3 Additional Quality Documentation

Appendix B, the Quality Process Log, will be completed by the Corridor Quality Manager. This document summarizes the quality process for each submittal, identifying the designers, checkers and reviewers for the work, and will be posted to the project FTP site.

2.3.4 Recordkeeping/Maintenance of Quality Documentation

All quality-related hard copy/paper files shall be maintained as part of the project notebooks at the design team's project office.

All quality-related electronic files noted in 2.3 as required for quality documentation audit purposes shall be posted to the project FTP site.

All quality-related files will be archived as required by WisDOT policy at the end of the various design contracts.

2.4 Schedule Impacts

The implementation of the quality process as described in this QP will require all team members to, both at the outset of their work and on a continuing basis throughout the execution and completion of the work, ensure that adequate time is included in the design schedules to incorporate the various quality review processes without adversely affecting the final PS&E schedules for the program as they have been developed. It will also require all reviewers, both internal and external, to commit to performing their reviews within the agreed upon project schedules.

While each project will have its own specific design schedule, the following typical schedule shall be used for planning the time necessary to implement the formal review process at the major milestones of the project and complete the quality documentation as required:

- Maintain copies of design checklists as design progresses.
- Three to four weeks prior to formal submittals (preliminary engineering 30% and 60% and final engineering DraftPS&E/90%): design team completes all internal reviews and internal plan review meetings applicable to the project.
- During the four weeks between the internal design team review completion and formal submittal, review comments are addressed and the submittal is completed.
- Formal submittal for concurrent review by the WisDOT, FHWA, other stakeholders and specialty/3rd party reviewers).
- Conduct Plans-in-Hand Field Review and submit meeting notes of same prior to the 60 percent and Draft PS&E Plan Review Meetings.
- Attend Plan Review Meeting four (4) to six (6) weeks after sending in the formal submittal.
- Two (2) weeks prior to Final PS&E or NER Plans-on-Shelf PS&E submittal, submit completed Review Comments Forms, including designer responses to external reviewer comments with all comments adjudicated to the WisDOT PM and Corridor Quality Manager.
- Final PS&E submittal to Central Office and or NER Plans-on-Shelf PS&E submittal four (4) weeks after Plan Review Meeting. Submittal to include the completed Review Comment Forms with all comments adjudicated.

2.5 Stamping and Sealing of Documents

This does not apply to the Preliminary Engineering phase of the project.

2.5.1 Policy

No final document for this project shall be considered complete and released for bidding purposes until its contents have been reviewed and approved by the Person in Responsible Change. For the WIS 441 Tri-County Project it is anticipated that either the Design Project Manager or the Designer(s) is/are the Person(s) in Responsible Charge. This person is responsible and accountable for the adequacy, suitability, and quality of the professional work contained in the documents and they shall therefore be a Professional Engineer registered in the State of Wisconsin.

The responsible persons are the only persons permitted to place a stamp or certification on the plans. Stamping in absentia or certification without review shall not occur.

2.5.2 Stamping of Plans

For this project, the plans may bear the stamp of more than one registered professional, where more than one firm has been responsible for the work shown or contained. Only the first sheet in a series of given plan sheet types will be stamped. An acceptable alternative approach is to include all of the stamps applicable to the plan set on the title sheet along with notes identifying which sheets apply to each stamp.

Plan sheets provided by WisDOT do not need to be stamped.

3. Dispute Resolution Process

3.1 Purpose

3.2 Responsibility

The Project Manager is responsible for the implementation of the procedure throughout the project. The responsibilities of other individuals involved are described in the procedure.

3.3 Procedure

Disputes will be elevated through a controlled "dispute resolution ladder" to the appropriate level to establish a final course of action acceptable to all parties. The dispute ladder contains 5 levels as described as follows:

Dispute Resolution Ladder - Design

Resolution Level	Design-Builder Management Level	Design-Builder QA Level	WisDOT Oversight Level
Level I	Technician	Design Manager	Design Lead
Level II	Design Lead	Design Manager	Design Lead
Level III	Design Manager	Design QA Manager	Design Manager
Level IV	Project Manager	Design QA Manager	Project Manager
Level V	Executive Management Board	Design QA Manager	WisDOT Executive Management

Documentation may be in the form of a Nonconformance Report. A resolution will be formalized and submitted within 5 days.

3.4 Disposition

WisDOT and the Project Manager sign-off is required prior to final disposition on Nonconformance Reports

4. Errors & Omissions Process

4.1 Purpose

To establish a procedure to identify, investigate and document errors, omissions and deficiencies in consultant prepared construction plans and contract documents. The Construction Management Plan provides detail for the Errors & Omissions Process.

4.2 Responsibility

WisDOT should pursue the recovery of any premium costs that are the result of consultant errors and omissions. However, the extent of the Department's recovery effort should be guided by the anticipated recovery amount and the likelihood of a successful recovery effort. If at any point in the process, WisDOT decides not to pursue recovery, the PDL shall document the decision in the project file and notify the Designer, PCL, PM-CC and PDS.

The Consultant may have valid reasons to dispute WisDOT's assessment of Errors and Omissions issues. The dispute shall be resolved using the responsible parties, at appropriate levels, listed in the escalation process.

The Construction Management Plan provides detail for the responsibilities of the Errors & Omissions Process.

4.3 Procedure

Members of the WIS 441 Project Team will identify potential plan errors and omissions, and define their impacts on the project. Once an error is identified and defined, the PDL will initiate the resolution process following the DIN and E&O Steps.

The Construction Management Plan provides procedure details of the Errors & Omissions Process.

5. Unique Elements

This section describes unique project elements specific to an individual project; geographic area; medium or high-risk design feature; or a supplemental quality practice unique to WisDOT or a consultant.

5.1 Design Standards

5.1.1 Roundabout Design

The majority of interchanges impacted by the WIS 441 Projects will include multiple Roundabouts and due to specific interchange requirements each roundabout will require unique design features. To ensure as much consistency as possible a quality review process has been established for both design and construction phases.

Northeast Region Design Review Process

November 12, 2008

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General Procedures

Region management supports and expects the use of the NE Region Design Review Process with input and cooperation from all sections at each step on both in-house and consultant designed projects.

PDS, TSS, and SPO are expected to participate in all design review meetings. Section managers and supervisors helped put together the attendance list. "DOT DL DTSD NE 30-60-90 REVIEW" is a master distribution list, which includes multiple people that do the same work in different geographic areas (for example the PDS Supervisors). To use the distribution list effectively, the Project Designer should expand the list and delete the people that are not in the project area unless he/she wants to get additional input. Others can self-determine their participation by declining or accepting the invitation based on the project information provided in the project checklist.

If there are significant environmental impacts anticipated with the project, the appropriate DNR liaison can be invited to review meeting(s). If there is Federal Oversight on the project and/or it would be effective/efficient to invite the Region's Federal Highway Administration liaison to review meeting(s), particularly to encourage project familiarity and input in decision-making, the Designer may want to do so. The Central Office Design liaison can be invited to review meeting(s) if appropriate.

Commenting must be completed in a timely manner to be considered for inclusion in design process. Comments brought up after review meetings or late in the process may not be accommodated.

Project Designers will provide agendas, minutes and an outline of any follow-up actions that are generated from the design review meetings. Meeting attendees will look over the minutes for assignments for action items.

Meetings

The Design Review Process sets up the timeline and types of meetings that can be held for all projects. There are no hard and fast rules regarding how many meetings should be held. Each project is unique and warrants consideration of the number and type of meetings to be held. Designers should discuss this with their Project Manager and Supervisor. This is also an appropriate topic for the Kick-Off Meeting when all functional areas are represented.

The following table illustrates one school of thought regarding how many meetings should be held.

Project Type	Kick-Off	30%	60%	90%
Maintenance	X	O	O	*
Simple Resurface	X	O	O	*
Simple Bridge	X	O	O	*
Simple Recondition	X	O	O	*
Intersection Improvement	X	O	O	X
Medium Recondition	X	X	X	X
Complex Recondition	X	X	X	X
Rural Reconstruct	X	X	X	X
Urban Reconstruct	X	X	X	X
Major Reconstruct	X	X	X	X
Expansion	X	X	X	X
Complex Bridge	X	X	X	X
Other				

Notes:
O = It may be a good idea to hold an interim review meeting to provide an opportunity for other functional areas to give input.
* = Formal 90% meeting may not be needed. Plan review is required.

All meetings may not be held for fast track projects or projects on a tight time frame.

Intersection Improvement projects may be straightforward or may require additional meetings and review opportunities.

We want this process to work. We do not want it to collapse under the weight of demands placed on reviewers due to timing and number of meetings. We are all busy – let's respect each other's time by holding effective and meaningful meetings.

Northeast Region Design Review Process

Project Level Scoping – Design Kick-Off Meeting
Verify project scope.
Complete PMP scope, schedule, and budget

- PDS sets up meeting with all sections
- SPO meeting for Complex Major Projects and Corridor Studies.
- 4 weeks before – send out meeting notice
- 4 weeks before – make review documents available

Results in project phase move from LC11 to LC12.

↓

Preliminary Plan Review – 30% Review
Confirms scope, budget, and schedule.

- PDS sets up meeting with all sections
- 4 weeks before – send out meeting notice
- 4 weeks before – make review documents available
- 1 week before – review comments due
- SPO meeting for Complex Major Projects and Corridor Studies

↓

Pre-DSR – 60% Review
Reaffirms scope, schedule, and budget
Goal is to review project design and get DSR approval

- PDS sets up meeting with all sections
- 4 weeks before – send out meeting notice
- 4 weeks before – make review documents available
- 1 week before – review comments due
- PDS meeting for all projects.

Results in project phase move from LC12 to LC15.

↓

Pre-PS&E – 90% Review
Confirms constructability and biddability
Goal is to expedite PS&E review by providing a general overview of the contract and discussing major concerns involving more than one section.

- PDS sets up a meeting with all sections
- 4 weeks before – send out meeting notice
- 6 weeks before Bureau Review – meeting held
- 1 week after Pre- PS&E meeting – review comments due
- 4 weeks after Pre-PS&E meeting – PS&E is signed off on

Project Initiation Process

The project initiation process (PIP) is a series of steps to achieve an agreed upon concept and delivery plan for developing a highway improvement project. The steps include: needs identification, candidate project identification, program development and review, concept definition report (CDR) and authorization for charges, and project management plan (PMP) approval. The SPO Programming Unit identifies needs and candidate projects (Life Cycle 00).

Program Level Scoping

The SPO Programming Unit will schedule and lead the program level scoping effort. They will review the program, complete the CDR, and get the project authorized for charging Life Cycle 10 (LC 10). The program level scope will include the initial scoping, major bid item estimate, summary schedule, initial State/Municipal agreement (SMA), and non-let identification (if needed). If the project is on a connecting highway authorization for design will occur after the municipality signs the SMA. Program Level Scoping results in a project scope and the project phase being moved to LC 11.

(Note: Copies of subsequent SMA's and SMA revisions should be routed through the Programming Unit, Scott Simmons before Municipalities approve.)

At this time the initial scope information will be loaded into PMP by all functional areas. PDS is responsible for providing project information as part of the program level scoping process. The relevant functional leaders approve the PMP and then the Programming Engineer advances the project phase in PMP from "Program Level Scoping" to "PMP Approval".

On-line Review Documents

Review documents and exhibits are found at W:\Design\County\Project I.D. The project's Kick-Off, 30-, 60-, 90% review folders, where all the review documents are located, can be found under the Project I.D. Folders located under the Project I.D. are also used to store review comments by section. (See attached File Directory Structure example, Exhibit 1)

Project Level Scoping – Design Kick-Off Meeting –

This meeting functions as a combined PMP Approval Meeting and Operational Planning Meeting.

Participation is expected by: PDS, TSS, SPO

PDS will schedule and lead the Design Kick-Off Meeting.

The Design Kick-Off meeting is an early step in the project investigation phase. This meeting occurs after the Region Scoping Team has developed a program level scope and before the preliminary plan review meeting.

The project team will review the scope developed by the Region Scoping Team and obtain further project details from the meeting attendees. The budget and schedule will be reviewed and completed in PMP. The project management plan (PMP) for the project will be approved after the Design Kick-Off Meeting and the project manager will advance the project phase in PMP from "PMP Approval" to "Preliminary Plan Review". The life cycle can be moved to LC 12 once the PMP is approved.

Changes to the scope, schedule, or budget need to be addressed by the Region Scoping Team under the change management process.

Exhibits for the Project Scoping/Design Kick-Off Meeting will include:

- Program Level Scoping Document (located at W:/Planning/scoping/Scoping Documents/Design I.D.)
- Current PMP report (see Exhibit 3 for steps to export PMP Report to file)
- Visual exhibits of areas of concern
- General layout (mapping, mosaic, old plan, county map)

(Keep it simple – the project should not be designed at this point.)

The photolog should be accessible during the meeting so that participants can "tour" the existing facility.

Meeting Set Up

The Project Manager will send out an Outlook meeting invitation (Exhibit 2) for the Design Kick-Off Meeting a minimum of **four** weeks prior to the meeting. Include a project checklist, found in Excel under New, Design, 30-60-90Checklist.xls (Exhibit 4)

Invite the appropriate participants from the following list:

DOT DL DTSD NE 30-60-90 REVIEW (Exhibit 5)

Design consultant (for consultant design projects)

A copy of the exhibits will be available in the project's Kick-Off folder a minimum of **four** weeks prior to the meeting.

SPO Traffic and Maintenance Units will provide a list of Type 1 signs and culverts to be replaced at this step, as well as other issues or concerns.

Consultants will forward all review documents to the Project Manager for placement in the review folder.

A meeting agenda template can be found in Word under New, Design, Design Kick-Off Meeting Agenda.doc (Exhibit 6)

Meeting Results

- Project Manager will prepare and distribute minutes of the meeting to document project scope, estimate, and schedule within **one** week after the Kick-Off Meeting.
- Project Manager will enter additional information from the Kick-Off meeting in PMP and ensure that the scope, schedule and budget modules, including the delivery estimate calculator, are complete. (At this point, the Project Manager has the option of taking a LC 12 "snapshot" and saving it as a PDF file.)
- The SPO Programming Unit will revise the PMP project scope if change management limits are exceeded.
- The relevant functional leaders (listed on the PMP Team Member page) will approve the project PMP.
- The Project Manager will advance the PMP phase from "PMP Approval" to "Preliminary Plan Review" and submit a request to have the life cycle moved to LC 12 in Fiips.
- Number of additional review meetings will be determined.

- Project team is identified/updated.
- Project scope, detailed schedule, and delivery estimate are refined
- Agency coordination is planned
- Preparation of the appropriate environmental document is planned
- Information from previous public outreach is shared and public involvement plan preparation begins
- Traffic management planning begins
- Utility and railroad coordination is initiated

Production Meetings

PDS Supervisors and Project Managers will participate in Production Meetings on a quarterly basis. A purpose of the Production Meetings is to verify and update the project schedule. TSS leads Production Meetings and PDS, TSS, and SPO participate.

30% Review – Preliminary Plan Review

Participation is expected by: PDS, TSS, and SPO.

PDS will schedule and lead the 30% Review (also known as the Preliminary Plan Review).

The 30% review is to confirm scope, estimate, delivery budget, and schedule of the project and to identify any concerns that need to be addressed prior to the 60% review.

This review will be held after the project has progressed to 30% and the Designer has had some time to review questions from the Design Kick-Off Meeting, as-built plans, any existing soils information, traffic information, and any other existing information. At that time, a functional/"rough" plan and estimate is developed to ensure concepts agreed to in scope are included in the estimate. This estimate will be used to verify the scoping estimate. At the 30% review, participants should be prepared to discuss any possible changes to the scope of the project based upon review of available information, the preliminary estimate, delivery budget and draft milestone schedule.

Changes to the scope, schedule, or budget that exceed change management limits need to be addressed by the Region Scoping Team.

Exhibits for the 30% review will include the following:

- Minutes from the Design Kick-Off Meeting
- PMP Report including the scope, budget, schedule and team member modules
- Map/plan view of project limits
- 30% Plan including: (Note: The following list is not necessarily all-inclusive or all required – use judgment.)
    - Title Sheet (optional)
    - Project Overview (optional)
    - Existing/proposed Typical Sections (for mainline, ramps, side roads, trails)
    - Horizontal Alignments
    - Vertical Alignments
    - Existing terrain profile
    - Existing access points and access control
    - Approximate right-of-way/preliminary slope intercepts (will change)
    - Cross Sections – First Run
    - 30% Anticipated Road Builders Quantities
    - 30% Construction Estimate
- Drainage information
    - Structure locations
    - Preliminary ditch profiles and capacity
    - Hydraulics /pipe sizing complete
    - Median drainage (if appropriate)
    - Erosion issues

- Known utilities
- Known environmental/sensitive areas
- General geometric layouts of intersections, etc
- Discussion of plan and profile sheets and plat sheet plan scales
- Description of concept to base development of environmental document
- "Draft" TMP (identifies strategy for handling traffic - construction under traffic, staging, detour, etc.)

Meeting set up

The Designer will send out an Outlook meeting invitation and project checklist (found in Excel under New, Design, 30-60-90Checklist.xls) for the 30% Meeting a minimum of **four** weeks prior to the meeting. Invite the appropriate participants from the following list:

DOT DL DTSD NE 30-60-90 REVIEW

Design consultant (for consultant design projects)

A copy of the exhibits will be available in the project's 30% folder a minimum of **four** weeks prior to the meeting.

Project review comments are due a minimum of **one** week prior to the meeting. The Designer and Project Manager will review the comments and make a list of all comments for additional discussion at the meeting, including the comments he/she doesn't agree with. Making comments prior to the meeting does not replace the need to discuss the project review at the meeting.

Consultants will forward all review documents to the Project Manager for placement in the review folder.

A meeting agenda template can be found in Word under New, Design, 30% Review Meeting Agenda.doc (Exhibit 7)

Commenting

There are designated section folders within the project's Kick-Off, 30-, 60-, and 90% review folder to store review comments in. The reviewer may choose one of the following methods to record his/her comments.

1. All on-line review documents are .PDF files, so Adobe Acrobat can be used to comment electronically. Electronic comments should be saved to the reviewer's section's comment folder before the comment deadline.

2. Design Review Comments may be captured electronically on a comment sheet found in Word under New, Design, Design Review Comment

Form.doc (See Exhibit 8) and saved to the reviewer's section's comments folder before the comment deadline

3. The reviewer can print out the document to comment on and make his/her comments on the paper copy. Then the reviewer scans in the document with his/her comments and saves to the reviewer's section's comments folder before the comment deadline.

Designer will respond to comments "in kind". Verbal comments provided at meetings will be answered verbally. Response to written comments provided on the comment sheet will be made on the comment sheet and returned.

Meeting Results

- The Designer will prepare and distribute minutes of this meeting within **one** week after the 30% review meeting.
- The minutes will document agreed upon scope, estimate, delivery budget, schedule, and action items to be completed prior to 60% review.
- Relevant functional leaders (listed on the PMP Team Member page) will approve the project PMP.
- The Project Manager will move the project phase from "Preliminary Plan Review" to "Design Study Report" in PMP.
- Follow-up meetings to address questions from this review will be scheduled as necessary prior to 60% review.

60% Review - Pre-DSR Meeting

Participation is expected by: PDS, TSS, and SPO.

PDS will schedule and lead the 60% Review (also known as the Pre-DSR Meeting).

The objective of this review is to again confirm scope, estimate, delivery budget and schedule to be carried forward into final design. The completed preliminary plan is reviewed to gain acceptance of or receive comments on project concepts prior to submitting the DSR for approval/concurrence.

Changes to the scope, schedule, or budget need to be addressed following the change management process.

For this review, the Designer should have taken all of the input from the 30% review and complete an overall base (preliminary) design including culverts/storm sewer, slope intercepts, curb and gutter, lighting, erosion control and restoration. The final pavement design, all environmental documents and agency coordination should be complete and the public hearing or hearing opportunity should be complete. The estimate should be updated to reflect the

base design. The project cost to date should be compared to the delivery budget. Participants should be prepared to discuss contents of the draft Design Study Report and any necessary revisions to the milestone schedule. The Design Study Report will not be approved in the region until this review/scope and project concept verification has been completed.

Exhibits for the 60% review will include the following:

- Minutes from the 30% Review Meeting
- PMP Report including the scope, budget, schedule
- Draft DSR (FYI only)
- Environmental information, including document
- 60% Plan including: (Note: The following list is not necessarily all-inclusive or all required – use judgment.)
    - Title Sheet (Location sketch, project I.D./title, design designation, project limits)
    - Typical Section Sheet (Existing cross sections, proposed cross sections -complete with pavement type and thickness- for mainline, side roads, etc)
    - Detail Sheets (Include if applicable - project overview, contour maps with match lines, traffic control concept plan, signals, signing, lighting & construction staging, and/or intersection details if not standard)
    - List of Detail Drawings or drawings
    - Plan and Profile Sheets (Including existing topography or aerial photography, construction limits, mainline and side road alignments, horizontal and vertical, right of way and easements, drainage arrows, and/or drainage plan)
    - Major erosion control (R/W required, retention or sedimentation basins, etc)
    - Numbered structures (Including retaining walls and sign bridges)
    - Existing utilities
    - Railroads - planned work
    - Rock profiles and marsh profiles
    - Existing and proposed access points including type
    - Existing advertising signs
    - Maintenance crossovers on multi-lane highways
    - Cross Section Sheets (Including original ground, marsh and rock lines, proposed subgrade or finished grade, cross drains, sidewalk, curb and gutter, barrier wall, R/W or TLE, PLE, etc.)
    - Preliminary R/W Plat
    - Additional Exhibits (Including estimate -only as detailed as plan, preliminary earthwork balance, commitments or issues of concern which affected design
    - Marking and signing information
    - Preliminary erosion control plan
    - Preliminary work zone traffic control, staging plans

- 60% Anticipated Road Builders Quantities
- TMP

Meeting set up

The Designer will send out an Outlook meeting invitation and project checklist (found in Excel under New, Design, 30-60-90Checklist.xls) for the 60% Meeting a minimum of **four** weeks prior to the meeting. Invite the appropriate participants from the following list:

DOT DL DTSD NE 30-60-90 REVIEW

Design consultant (for consultant design projects)

A copy of the exhibits will be available in the project's 60% folder a minimum of **four** weeks prior to the meeting.

Project review comments are due a minimum of **one** week prior to the meeting. The Designer and Project Manager will review the comments and make a list of all comments for additional discussion at the meeting, including the comments he/she doesn't agree with. Making comments prior to the meeting does not replace the need to discuss the project review at the meeting.

Consultants will forward all review documents to the Project Manager for placement in the review folder.

A meeting agenda template can be found in Word under New, Design, 60% Review Meeting Agenda.doc (Exhibit 9)

Commenting

There are designated section folders within the project's Kick-Off, 30-, 60-, and 90% review folder to store review comments in. The reviewer may choose one of the following methods to record his/her comments.

1. All on-line review documents are .PDF files, so Adobe Acrobat can be used to comment electronically. Electronic comments should be saved to the reviewer's section's comment folder before the comment deadline.

2. Design Review Comments may be captured electronically on a on a comment sheet found in Word under New, Design, Design Review Comment Form.doc (See Exhibit 8) and saved to the reviewer's section's comments folder before the comment deadline

3. The reviewer can print out the document to comment on and make his/her comments on the paper copy. Then the reviewer scans in the document with his/her comments and saves to the reviewer's section's comments folder before the comment deadline.

Designer will respond to comments "in kind". Verbal comments provided at meetings will be answered verbally. Response to written comments provided on the comment sheet will be made on the comment sheet and returned.

Meeting Results

- The project Designer will prepare and distribute minutes of this meeting within **one** week after the 60% review meeting.
- The minutes will document agreed upon scope, estimate, delivery budget, schedule, and action items to be completed prior to PS&E.
- Follow-up meetings to address questions from this review will be scheduled as necessary prior to PS&E.
- The outcome of this meeting will be an agreed upon scope and content of the Design Study Report. The region project Supervisor will sign the Design Study Report and forward it on to Central Office for signature. A copy of the Design Study Report needs to be given to programming unit staff (Scott Simmons or Anne Ebent) so that the life cycle stage of the project can be moved to LC 15 in Fiips.
- The relevant functional leaders (listed on the PMP Team Member page) will approve the project PMP.
- The Project Manager will move the project phase from "Design Study Report" to "PS&E" in PMP.
- At this point a peer constructability review will be considered on mid-level to complex, major plans by a Project Manager not associated with the project or by a senior project Designer with relevant construction experience.

Plan-In-Hand Field Review

According to the FDM (15-10-1), a plan-in-hand field inspection of the project site must be made prior to the Pre-PS&E Meeting. Its purpose is to provide a final look at current existing field conditions (i.e. recent changes may have taken place in existing field conditions since design began) and a review of the adequacy of various plan details in meeting these conditions. It also provides an opportunity to discover if any work items, potential conflicts, or problem situations have been overlooked during the plan preparation process. A major focus of the field review is looking for plan omissions that may develop into problems during construction or future maintenance. Region staff involved in design should participate. (Maintenance and/or traffic personnel are optional.)

90% Review - Pre-PS&E Meeting

Participation is expected by: PDS, TSS, and SPO.

PDS will schedule and lead the 90% Review (also known as the Pre-PS&E Meeting).

The purpose of this meeting is to expedite PS&E review by providing a general overview of the contract and discuss major concerns involving any section. It is also an opportunity to review the plan for constructability and biddability, and to ensure that there are no problems with the plan that would prevent the plan from being successfully LET at the proposed scheduled letting.

Exhibits for this review will be handed out at the meeting and will include the following:

- Minutes from the 60% Review Meeting
- Approved DSR
- Environmental information (404 permit, mitigation site, haz mat information)
- Approved TMP (for types 3 & 4)
- Draft Plan
- Draft special provisions
- Time analysis
- Estimate (**Transport** version)

Meeting set up

The 90% Meeting should be held a minimum of 6 weeks prior to the Central Office Bureau submittal date.

The Designer will send out an Outlook meeting invitation and project checklist (found in Excel under New, Design, 30-60-90Checklist.xls) for the 90% Meeting a minimum of **four** weeks prior to the meeting. Invite the appropriate participants from the following list:

DOT DL DTSD NE 30-60-90 REVIEW

Design consultant (for consultant design projects)

A copy of the exhibits will be available in the project's 90% folder a minimum of **four** weeks prior to the meeting. A copy of the PS&E Sign Off sheet will be put in the folder as well.

A meeting agenda template can be found in Word under New, Design, 90% Review Meeting Agenda.doc (Exhibit 10)

Note: Plans on the shelf should also have 90% review meeting conducted prior to submitting the PS&E. Re-circulate plans on the shelf for review if the latest review was not within the past 6 months. (Updates may happen 2-3 times a year.) The purpose would be to ensure special provisions & standard details are up-to-date, **NOT** to revisit the scope of the project.

Commenting

Project review comments are due a maximum of **one** week after the meeting. This replaces the current plan pass-around process.

Consultants will forward all review documents to the Project Manager for placement in the review folder.

There are designated section folders within the project's Kick-Off, 30-, 60-, and 90% review folder to store review comments in. The reviewer may choose one of the following methods to record his/her comments.

1. All on-line review documents are .PDF files, so Adobe Acrobat can be used to comment electronically. Electronic comments should be saved to the reviewer's section's comment folder before the comment deadline.

2. Design Review Comments may be captured electronically on a on a comment sheet found in Word under New, Design, Design Review Comment Form.doc (See Exhibit 8) and saved to the reviewer's section's comments folder before the comment deadline

3. The reviewer can print out the document to comment on and make his/her comments on the paper copy. Then the reviewer scans in the document with his/her comments and saves to the reviewer's section's comments folder before the comment deadline

Designer will respond to comments "in kind". Verbal comments provided at meetings will be answered verbally. Response to written comments provided on the comment sheet will be made on the comment sheet and returned.

A constructability review is completed as part of the plan comment period.

The blue folder pass-around PS&E approval process will no longer be used.

PS&E reviewers with signatory authority - *EEO/Labor Compliance Coordinator, Railroad Coordinator, Utility Coordinator, Surveys Coordinator, Real Estate Supervisor, Environmental Coordinator, Erosion Control and Storm Water Quality Engineer, Materials Engineer, Roadway Maintenance Engineer, Traffic Engineer, Work Zone Traffic Engineer, and the Project Manager(s)* – will review and comment on the review documents located in the project's 90% folder.

The Designer will save the PS&E Sign Off form found in Word under, New, PS&E, PS&E Sign Off.doc (Exhibit 11) to the PS&E file folder under W:\County\Design\Project ID\30_60_90_Review\90_Review\PS&E. PS&E Reviewers will sign off on the PS&E Sign Off document within 4 weeks after the 90% review meeting and save it in the PS&E folder.

The goal is to have one document with all reviewers' signatures. The sign off document has lines for section signatures. One signature may be representative of several reviewers' concurrences. It is the responsibility of the signer to make sure all of his/her section reviewers have had an opportunity to review and comment on the plan prior to signing off.

Meeting Results

- The project Designer will prepare and distribute minutes of this meeting **two** weeks after the 90% review meeting.
- Designer should review comments with his/her Project Manager and supervisor
- Designer must address any review comments
- Follow-up meetings with reviewers and/or feedback will be given to the reviewer if the comment cannot be incorporated into the PS&E
- Designer will coordinate plan work with the appropriate Project Manager contact and Cadds Specialist as needed.
- Designer will finalize the plans (See Exhibit 12 for a list of submittals) and specifications and submit them for final formatting to Sheri Groll.
- The relevant functional leaders (listed on the PMP Team Member page) will approve the project PMP.
- Within **four** weeks after the 90% review meeting PS&E Reviewers will sign off.
- Completed PS&E Sign Off sheet will be submitted to Sheri Groll.

After the PS&E

- The Project Manager will move the project phase from "PS&E" to "Project Closeout" in PMP.
- The life cycle stage of the project will be moved to LC 20 in Fiips after the PS&E is complete.

Note: If more than one LET project exists for a design project ID, do not advance the PMP phase until the PS&E for the last associated project is complete. However, the life cycle needs to be changed for each construction project ID.

Bureau Review

During the final design phase, staff from various central office bureaus will review specific aspects of the project. Submit PS&E packages to Central Office two

months prior to PS&E date for Bureau Review. (See Exhibit 12 for list of submittals.)

Central Office Plan Review

Plans will be reviewed in central office. Central office plan examiners will coordinate changes with district staff that will submit revised sheets.

Best Practices (as recommended in the FDM 3-20-45, etc.)

After the project is constructed, the designer(s) should meet to review the project results and find ways to improve the design process and discuss lessons learned.

Design team members should visit the project while it is under construction to learn first-hand how well they communicated their design to the contractors and field personnel.

When staffing allows, it may be desirable to involve Designers in the construction of their own design to learn first-hand the project results.

Exhibit 1

File Directory Structure Example:

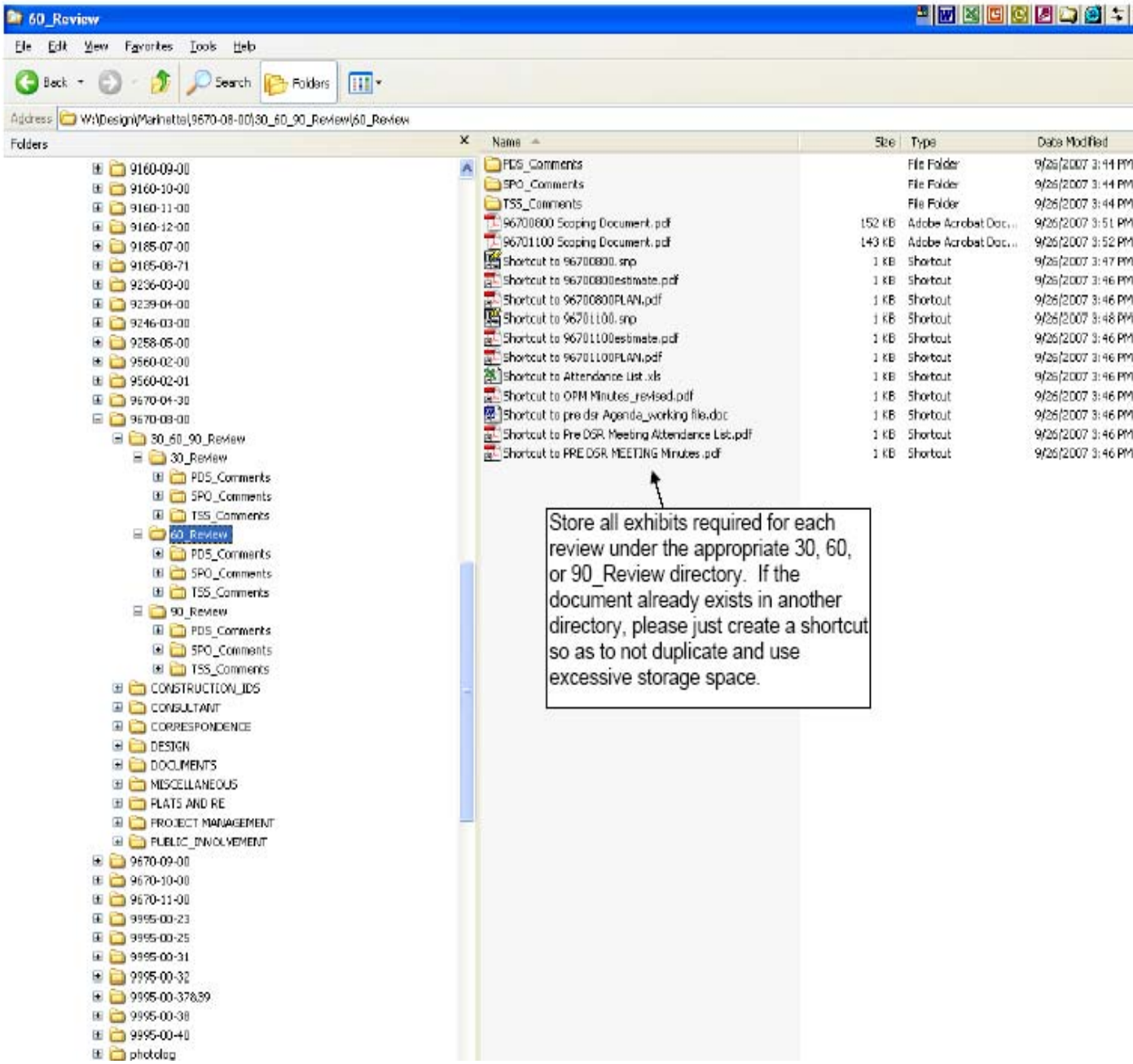


Exhibit 2

Example Outlook Meeting Invitation:

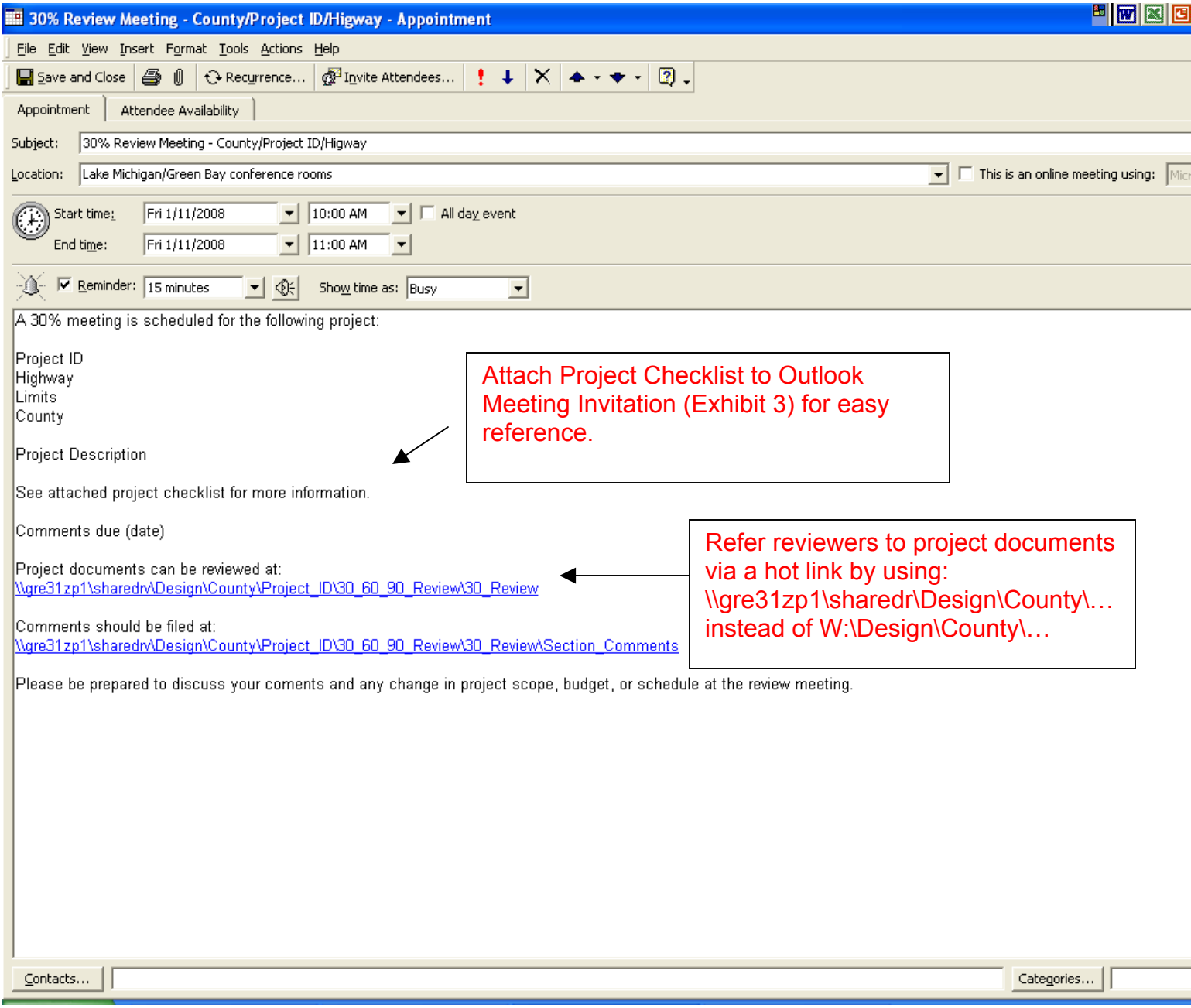


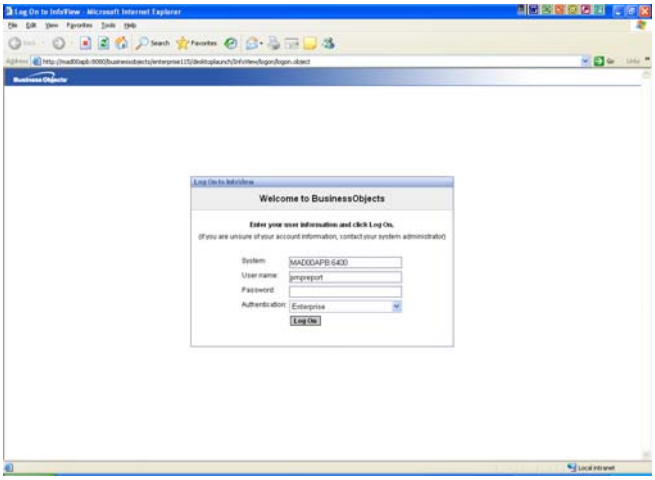
Exhibit 3

PMP Report Export Steps

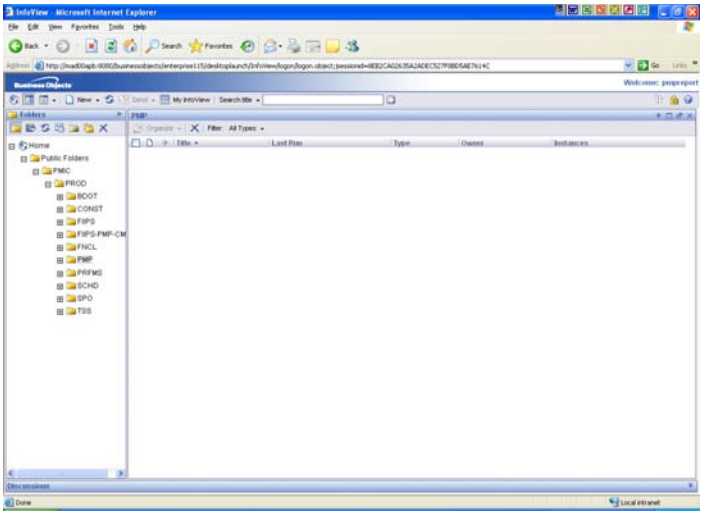
The PMP Report is the primary scoping document for the project and it is the format used to capture the data snapshots of the project. The REPORTS → PMP Report → Report Entry screen allows the user to enter information in the PMP Report.

Once a snapshot has been made of the project, the PMP Report can be viewed using the menu screen REPORTS → PMP Report → View Report.

A second browser window will open taking the user to Business Objects.



The user name and password are both: pmpreport (one word, small letters)



Once logged on, the user needs to expand the file folder tree:

Public Folders → PMIC → PROD → PMP →

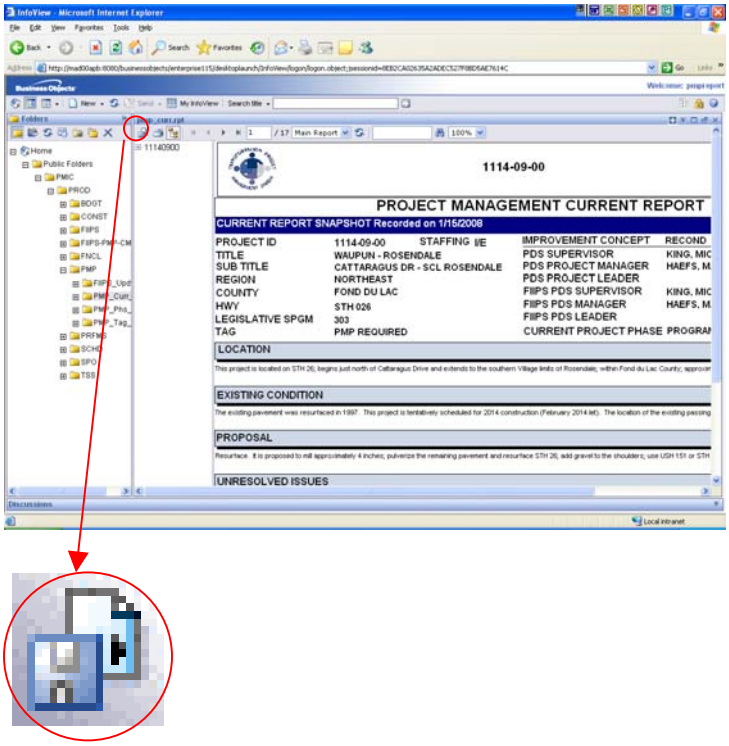
PMP_Curr_Rpt	Select to access current PMP Report
PMP_Phs_Rpt	Select to access historical snapshots of the PMP Report for project phases

To export the current PMP Report:

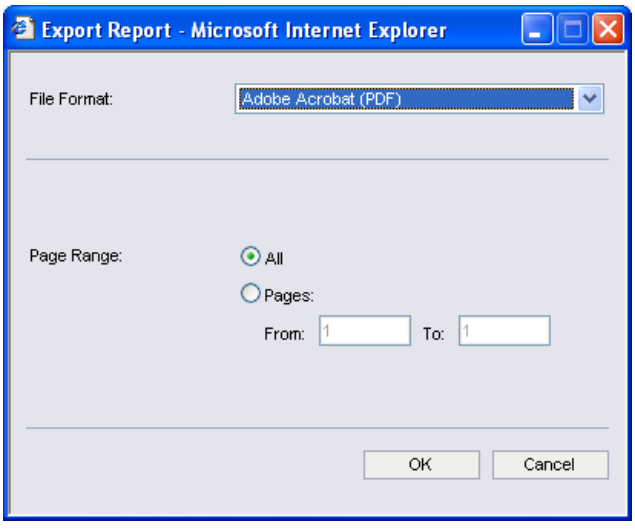
PMP_Curr_Rpt → pmp_curr.rpt

Enter Project I.D. with no dashes

Use shortcut icon to export PMP Report to a .pdf file



Make sure to change the file format to Adobe Acrobat (PDF) as shown below.



Save the .pdf file of the PMP Report to the correct folder in the project 30_60_90_Review directory.

Exhibit 4

Project Checklist

Project Checklist for: ---

Project ID: _____ PS&E Date: _____

Route: _____ Letting Date: _____

Limits: _____ Construction Year: _____

County: ---

Project Type: --- Other (please list) _____

FIIPS Construction Cost: _____

Environmental Document Type: ---

YES	NO	UNK	N/A	
☐	☐	☐	☐	NHS Designation
☐	☐	☐	☐	Federal Oversight
☐	☐	☐	☐	Capacity / System Needs
☐	☐	☐	☐	Tranportation Management Plan (TMP)Required
				If Requried, please specify: ---
☐	☐	☐	☐	Real Estate Impacts (including R/W)
☐	☐	☐	☐	Utility Impacts
☐	☐	☐	☐	Railroad within 1,000 ft of Project
☐	☐	☐	☐	Access Issues
☐	☐	☐	☐	Safety Concerns
☐	☐	☐	☐	Detour Needed
☐	☐	☐	☐	Stuctures Impacted
☐	☐	☐	☐	Archeological or Historical Impacts
☐	☐	☐	☐	Noise Impacts
☐	☐	☐	☐	Wetland Impacts
☐	☐	☐	☐	Hazardous Material Sites
☐	☐	☐	☐	Unsuitable Soils
☐	☐	☐	☐	Pavement Concerns
☐	☐	☐	☐	Bicycle/Pedestrian Facilities
☐	☐	☐	☐	Recreation Trails

Exhibit 5

Participants in the Design Review Process: **DOT DL DTSD NE 30-60-90 REVIEW**

Region Director
Region Communication Manager
All Section Managers
Applicable Project Development Supervisor
TSS Supervisors
Project Development Project Managers
Soils Engineer
Pavement Engineer
Planning Programming Supervisor
Planning Corridor Studies Supervisor
Maintenance Supervisor
Bridge Engineer (if applicable)
Bridge Maintenance Engineer (if applicable)
Applicable Real Estate Project Manager
Environmental Coordinators (if significant impacts)
Utility Coordinator (if significant impacts)
Railroad Coordinator (if significant impacts)
Access Engineer
6-Year Program Engineer
Scoping Engineer
6-Yr Program Technician
Appropriate Transportation Planner
Traffic Supervisor
Traffic Engineer
Work Zone Traffic Engineer
Roadway Maintenance Engineer
Plats Coordinator
Surveys
Labor Compliance Coordinator

Notes:

"DOT DL DTSD NE 30-60-90 REVIEW" is a master distribution list, which includes multiple people that do the same work in different geographic areas (for example the PDS Supervisors). To use the distribution list effectively, the Designer should expand the list and delete the people that are not in the project area unless he/she wants to get additional input. Others can self-determine their participation by declining or accepting the invitation.

The Central Office Design Liaison can be invited to review meeting(s) if appropriate. You will have to add the liaison to the meeting invitation list.

If there are significant environmental impacts anticipated with the project, the appropriate DNR liaison can be invited to review meeting(s). You will have to add the appropriate DNR person to the meeting invitation list.

If there is Federal Oversight on the project and/or it would be effective/efficient to invite our Federal Highway Administration liaison to a review meeting, particularly to encourage project familiarity and input in decision-making, you may want to do so. You will have to add the appropriate FHWA liaison to the meeting invitation list.

Be sure to invite the following to the 90% Review Meeting because they will need to review the plan for section sign-off: EEO/Labor Compliance Coordinator, Railroad Coordinator, Utility Coordinator, Surveys Coordinator, Real Estate Supervisor, Environmental Coordinator, Erosion Control and Storm Water Quality Engineer, Materials Engineer, Roadway Maintenance Engineer, Traffic Engineer, Work Zone Traffic Engineer, and the Project Manager(s) conducting the constructability review.

Exhibit 6

DESIGN KICK-OFF MEETING AGENDA

Date

Project I.D.
Title
Highway
County

- Introductions
  - ◊ Project Team Identified
- Project Location and Need
- Existing Facility Conditions – Photolog tour

◊ Cross section (typical)
◊ Pavement condition (IRI, PDI)
◊ Speed limit
◊ Traffic
◊ Crash history
◊ Other important information

- Program Level Scoping Summary
- Current PMP Report
  - ◊ Project Estimate
  - ◊ Project Schedule
  - ◊ Any PMP Scope module updates
  - ◊ PMP Approval Discussion
- Possible Alternatives Investigation
- General Project Concepts

◊ Alignment
◊ Typical cross section and clear zone
◊ Pavement concerns
◊ Soils concerns
◊ Culverts/Bridges (a)
◊ Signs (b)
◊ Park & Ride Lots
◊ Recreation concerns
◊ Side roads
◊ Bicycle/pedestrian concerns
◊ Detours
◊ Design speed
◊ Traffic projections
◊ Exceptions to standards
◊ Connecting Highway Changes

(a) Culvert/Bridge replacement list provided by Maintenance Unit
(b) Sign replacement list provided by Traffic Unit

- Right-of-Way Requirements
  - ◊ Timeline
  - ◊ Encroachments
  - ◊ Access control
- Environmental Process
  - ◊ Anticipated Environmental Impacts
  - ◊ Type of Environmental Document
  - ◊ Agency Coordination

- Public Involvement
    - ◊ Previous Public Outreach
    - ◊ Public Involvement Plan
- Anticipated Traffic Impacts
- Utility/Railroad Coordination
- Additional Comments/Concerns

Number and type of additional review meetings

Exhibit 7

30% REVIEW MEETING AGENDA

Date

Project I.D.
Title
Highway
County

- Introductions
- Project Location and Need
- Existing Facility Conditions
- Project Scope Review – Verify Project Scope
- Discuss Alternatives Studied
- General Project Concepts Overview

◊ Plan and profiles sheets
◊ Typical cross sections and clear zone
◊ Approximate right-of-way
◊ Pavement considerations
◊ Soils considerations
◊ Culvert/bridge types
◊ Drainage information
◊ Park & Ride Lots
◊ Recreation considerations
◊ Side roads
◊ Bicycle/pedestrian concerns
◊ Detours/traffic control
◊ Design speed
◊ Traffic projections
◊ Exception to standards
◊ Unique design requirements
◊ Connecting Highway Changes

- Traffic Management Plan (TMP)
  - ◊ TMP Type
  - ◊ Documentation
- Right-of-Way Requirements
  - ◊ Timeline
  - ◊ Encroachments
  - ◊ Access control
- Environmental Process
  - ◊ Impacts (wetlands, noise, air, cultural resources, etc)
  - ◊ Document update
- Public Involvement
- Utility/Railroad Coordination
- Project Estimate vs. Program Estimate – Verify Project Estimate
- Funding Participation
- Project Schedule – Verify Project Schedule
- Discuss Comments Made Prior to Meeting - with an emphasis on those that require further study or are disagreed with
- Additional Comments/Concerns

Exhibit 8

DESIGN REVIEW COMMENTS

__ 30% Design __ 60% Design – Pre-DSR __ 90% Design – Pre-PS&E

Date:	
Reviewer:	
Project:	
Designer:	

Reviewer			Designer		
Issue No.	Issue Location (a)	Reviewer Comments	Response (b)	Designer Response Narrative	Mark-up Done

(a) Issue Location = sheet number/type, road name, and/or station
(b) Response = Agree, Partially Agree, Disagree, or Requires Further Study

Exhibit 9

60% REVIEW MEETING AGENDA

Date

Project I.D.
Title
Highway
County

- Introductions
- Project Location and Need
- Existing Facility Conditions
- Project Scope Review – Verify Project Scope
- Discuss Alternatives and Reasons for Preferred Alternative
- General Project Concepts

◊ Overall geometric review
◊ Typical cross section and clear zone
◊ Plan and profile sheets
◊ Cross sections
◊ Pavement Design
◊ Soils Report
◊ Culvert/bridge types
◊ Drainage
◊ Side roads
◊ Bicycle/pedestrian accommodations
◊ Recreation issues
◊ Connecting Highway changes
◊ Park & Ride Lot
◊ Detours/traffic control
◊ Design speed
◊ Traffic projections
◊ Permanent signing and marking
◊ Preliminary erosion control plan
◊ Preliminary work zone traffic control/staging
◊ Unique design requirements
◊ Exceptions to standards
◊ Summary of concurrences

- Draft Design Study Report Discussion
- Traffic Management Plan
- Right-of-Way Requirements
  - ◊ Right-of-Way Plat
- Environmental Commitments (wetlands, noise, air, erosion, etc.)
  - ◊ Results of Public Hearing
  - ◊ Results of Agency Coordination
- Overview of Public Involvement
- Utility/Railroad Coordination Deadlines
- Project Estimate vs. Program Estimate – Verify Project Estimate
  - ◊ Separate projects, staging considerations
- Funding Participation
- Project Delivery Schedule (R/W, Utilities) – Verify Project Schedule
- New Local Road Change Resolutions (if necessary)
- Discuss Comments Made Prior to Meeting - with an emphasis on t hose that require further study or are disagreed with
- Additional Comments/Concerns

Exhibit 10

90% REVIEW MEETING AGENDA

Date

Project I.D.
Title
Highway
County

- Introductions
- Project Location and Need
- General Project Overview

◊ Typical cross section
◊ Pavement design
◊ Exception to standards
◊ Park & Ride Lot
◊ Detours/traffic control/staging
◊ Erosion control issues
◊ Unique design requirements
◊ Traffic projections
◊ Soils Report
◊ Bicycle/pedestrian accommodations
◊ Recreation facilities
◊ Access during construction
◊ Intersection concerns
◊ Local road change resolution

- TMP Status
- Right of Way Status
- Environmental – Haz Mat, Wetlands, 404 Permit
- Utility Coordination Status
- Special Provisions
- Project Estimate vs. Program
- Funding Participation
- Project Schedule
    - ◊ Letting Date
    - ◊ Project Type (working days vs. completion date)
    - ◊ Time Analysis
- Plan Review
- Plan-in-hand Field Review Results
- Discuss Comments Made Prior to Meeting *
- Additional Comments/Concerns *

Note: Review comments are due **one** week after the meeting. *

Exhibit 11

PS&E Sign-Off

PS&E Date _____ LET Date _____

DISTRICT INTERDEPARTMENTAL SERVICES REQUEST
BY THE PROJECT DEVELOPMENT SECTION

Project I.D.: Construction _____ Design: _____
Highway _____
Termini _____
County _____

Description of Work: _____

Please review this PS&E for the above project. Indicate your concurrence by attaching your electronic signature under the appropriate section. One signature may be used to indicate concurrence of the entire unit after all review. Any conflicts should be referred to the Project Designer or Project Manager.

Review completion date (for all sections) _____
(Sign-off due four weeks after 90% Review Meeting is held.)

Section	Signature	Date	Comments
EEO/Labor Compliance			
Railroads			
Utilities			TRANS 220 Provisions: ☐ Apply ☐ Do Not Apply
Surveys			
Real Estate *			
Environmental			
Erosion Control/Storm Water Quality			
Materials			
Maintenance			
Traffic			
Work Zone Traffic Control			
Constructability Review			

*Only if any real estate acquisition (fee, access rights, TLE's, PLE's, etc.)

Designer _____ Project Manager _____
PDS Supervisor _____

Exhibit 12

ALL LET CONTRACTS MUST INCLUDE:

- ☐ Plan *---------- Electronic & Hard Copy
- ☐ Engineer Estimate (19-5-5) * ---------- Hard Copy Only
- ☐ Plan Letter (19-10-15) * ---------- Electronic & Hard Copy
- ☐ Recommendation to Governor ---------- Electronic & Hard Copy
  (Do not fill out cross ratio) (19-10-20)
- ☐ Highway Work Proposal (19-10-20) ---------- Electronic & Hard Copy
- ☐ Contract Time Chart * ---------- Electronic & Hard Copy
  (Be sure dates are correct) (19-10-30)
- ☐ Certificate of Right-of-Way (19-10-40) ---------- Electronic & Hard Copy
- ☐ Utility Status Report (19-10-40)---------- Electronic & Hard Copy
- ☐ Digital Data Exchange and Project Data Archive (19-10-43)---------- Electronic Copy
- ☐ Special Provisions and STSP'S (19-15-1) * ---------- Electronic & Hard Copy
  Make sure you are using the most recent STSP'S
  (A list of ASP's including % DBE, check with District)
  (19-15-90)
- ☐ Completed News Release, LET PROJECTS ONLY ---------- Hard Copy Only
  (Include a location map)
- ☐ Work Zone Check List ---------- Hard Copy Only

*Needed for Bureau Review

In addition to the items on the submittal list above, Sheri Groll needs the following:
PS&E Submittal form, “Pink Sheet”, Quantities sheet to finalize the PS&E documents.



PS&E Submittal

Provide information for Bureau & PS&E Submittal

Comments _____

Let date _____

Construction ID _____

Additional Ids _____

Structures _____

Route Name _____

Project Name _____

District Design Contact / Phone _____

This Project Includes / Review Needed By (check all that apply)

- Electrical
- Pavement Marking
- Rails
- Structures
- Signing
- Traffic Control
- Traffic Signals

If Work Share state Region _____



COMPLETE and SUBMIT this FORM to FOS COORDINATOR (Dawn Sisel) @ PS&E Time

+SUBMIT ONE PINK SHEET PER PROJECT+

ATTACH A COPY OF: TITLE SHEET & FINAL COMPLETE TRANSPORT ESTIMATE

(The Folder DOES NOT need to go to Planning)

Project Number: _____ Letting Date: _____ County _____

Nearest Intersection on both ends: _____

Type of Highway: (Must check 1 in EACH Column)

__Freeway __Principal Arterial
__Expressway __Minor Arterial
__Divided Highway __Major Collector
__Undivided Highway __Minor Collector
__Local

Type of Work:

__ Base Course __ Culvert __ Reconstruct Add Lanes
__ Bridge Maintenance __ Grading/Earthwork __ Reconstruct NO Add Lanes
__ Painting __ Guard Rails __ Surface
__ Removal __ Landscaping __ Asphalt
__ Replacement __ Park & Ride Lot __ Other
__ Deck Overlay __ Pavement Marking __ PCC
__ Deck Replacement __ Railroad Work
Railroad Work ID_____

Old Structure # _____ New Structure # _____

Project net centerline miles: _____

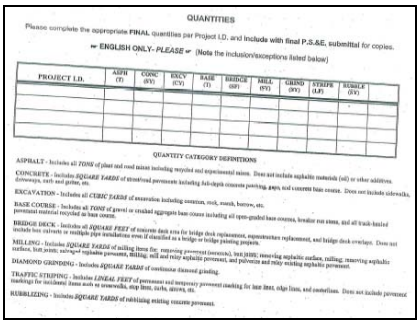
Project length of mainline pavement miles: _____

Environmental Type:

__ RR ..... Number:_____(mm/)_____(##) Date_____
__ ER..... Date: _____
__ PER... Date: _____
__ Type N.. Date: _____
__ FONSI... Date: _____

Project Manager (Contact Person): _____

Date Submitted to Planning (Today's date): _____



QUANTITIES

Please complete the appropriate FINAL quantities per Project I.D. and include with final P.S.&E. submittal for copies.

** ENGLISH ONLY- PLEASE ** (Note the inclusion/exceptions listed below)

PROJECT I.D.	ASPH (T)	CONC (SY)	EXCV (CY)	BASE (T)	BRIDGE (SF)	MILL (SY)	GRIND (SY)	STRIPE (LF)	RUBBLE (SY)

QUANTITY CATEGORY DEFINITIONS

ASPHALT - Includes all *TONS* of plant and road mixed including recycled and experimental mixes. Does not include asphaltic materials (oil) to other additives.

CONCRETE - Includes *SQUARE YARDS* of structural pavements including full-depth concrete patching, and concrete base course. Does not include sidewalks, driveways, curb and gutter, etc.

EXCAVATION - Includes all *CUBIC YARDS* of excavation including common, rock, muck, borrow, etc.

BASE COURSE - Includes all *TONS* of gravel or crushed aggregate base course including all open-graded base courses, leveling run stone, and all track-limited pavement material recycled in base course.

BRIDGE DECK - Includes all *SQUARE FEET* of concrete deck area for bridge deck replacement, superstructure replacement, and bridge deck overlays. Does not include box culverts or multiple pipe installations even if classified as a bridge or bridge painting projects.

MILLING - Includes *SQUARE YARDS* of milling items for: removing pavement (concrete), test HMI; removing asphaltic surface, rutting; removing asphalt surface, butt joints; salvaged reclaim pavement, milling; mill and resip asphaltic pavement, and pulverize and relay existing asphaltic pavement.

DIAMOND GRINDING - Includes *SQUARE YARDS* of continuous diamond grinding.

TRAFFIC STRIPING - Includes *LINEAL FEET* of permanent and temporary pavement marking for lane lines, edge lines, and centerlines. Does not include pavement markings for incidental items such as crosswalks, stop lines, turns, arrows, etc.

RUBBLIZING - Includes *SQUARE YARDS* of rubblizing existing concrete pavement.

Exhibit 12 - continued

ALL LFA CONTRACTS MUST INCLUDE: (FDM CHAPTER 19-25-3)

INCLUDE THE REQUIRED DOCUMENTS FROM ABOVE PLUS THE FOLLOWING:

- ☐ County Request to Negotiate
- ☐ Form EC-606, Contract by County Forces ---------- Hard Copy
  (ORIGINALS, two signed, one unsigned)
- ☐ Unit Cost Analysis ---------- Hard Copy
  (Including summary sheet signed by local official)
- ☐ Supplemental, Special, and Non-Discriminative Provisions ---------- Provided by CO
- ☐ Estimates (Negotiated prices and Let contract prices) ---------- Hard Copy

INFORMATION ON THE PREVIOUS ITEMS ARE SHOWN IN THE F ACILITIES DEVELOPMENT MANUAL CHPATER 19, AND SHOULD BE FOLLOWED.

ID 1517-07-04

WIS 441 Freeway
USH 10 / WIS 441
Winnebago County

Quality Control Log

Deliverable Products/ Milestones/Meetings	*Designer*	*Checker*	*Reviewer*	*Date*	*Review Comments Returned (if applicable)*	*Comments*
30% Plans						
30% Plans to WisDOT			WisDOT - NE Region			
30% Plan Review Meeting			WisDOT - NE Region			
Review Comment Forms Received						
60% Plans						
Pavement Design Report Approved	WisDOT - NE Region	WisDOT - NE Region	WisDOT - NE Region			
Design Study Report - Internal Review						
Design Study Report to WisDOT						
Received DSR Review Comments from CO						
DOT Approved DSR						
60% Plans: to WisDOT			WisDOT - NE Region			
Cost Estimate to DOT						
Geotech Reports to WisDOT						
Public Information Meeting						
60% Plan Review Meeting - at WisDOT						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
Received 60% Plan Review Comments from CO						
60% Bridge Plan Review comments received from CO						

Deliverable Products/ Milestones/Meetings	*Designer*	*Checker*	*Reviewer*	*Date*	*Review Comments Returned (if applicable)*	*Comments*
Geotech Reports - Review Meeting						
Real Estate Review Meeting						
Submit Revised Geotech Reports						
Encroachment Report						
Submit Encroachment Report						
Utility 1078 Form and Plans to Utilities						
Updated Plans to Utilities						
Utility Work Plans						
American Transmission Company: Received						
American Transmission Company: Approved						
AT&T Legacy: Received						
AT&T Legacy: Approved						
AT&T Wisconsin: Received						
AT&T Wisconsin: Approved						
GBMSD: Received						
GBMSD: Approved						
KDL: Received						
KDL: Approved						
Net-Lec LLC: Received						
Net-Lec LLC: Approved						
Time Warner: Received						
Time Warner: Approved						
Village of Howard: Received						
Village of Howard: Approved						
WPS Electric: Received						
WPS Electric: Approved						
WPS Electric: Received (Revised)						
WPS Electric: Approved						
WPS Gas: Received						
WPS Gas: Approved						

Deliverable Products/ Milestones/Meetings	*Designer*	*Checker*	*Reviewer*	*Date*	*Review Comments Returned (if applicable)*	*Comments*
Constructability Review & Meeting						
Contract ID						
In House 90% Design Review						
Contract ID						
Submit 90% PS&E			WisDOT - NE Region			
Contract ID						
Management Review Meeting						
Contract						
Draft 90% Plan Review Meeting						
Contract ID						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
Submit Draft PS&E to CO						
Contract ID						
Draft PS&E Plan Review Meeting						
Contract						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
Submit Final PS&E						
Contract ID						

Deliverable Products/ Milestones/Meetings	*Designer*	*Checker*	*Reviewer*	*Date*	*Review Comments Returned (if applicable)*	*Comments*
Final PS&E Plan Review Meeting						
Contract ID						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
- Review Comment Forms Received						
CO Review						
Addendum Submitted						
Addendum #1						
Addendum #2						
Addendum #3						
Post-Let Comments						
- Review Comment Forms Received						
- Review Comment Forms Received						

ID 1517-07-04

WIS 441 Freeway
USH 10 / WIS 441
Winnebago County

Structures Quality Control Log

Deliverable Products/ Milestones/Meetings	*Designer*	*Checker*	*Reviewer*	*Date*	*Review Comments Returned (if applicable)*	*Comments*
B-						
PRELIMINARY DESIGN						
BOS review						
FINAL DESIGN						
Final plans approval - BOS						
R-						
PRELIMINARY DESIGN						
BOS review						
FINAL DESIGN						
Final plans approval - BOS						
C-						
PRELIMINARY DESIGN						
BOS review						
FINAL DESIGN						
Final plans approval - BOS						
N-						
PRELIMINARY DESIGN						
BOS review						
FINAL DESIGN						
Final plans approval - BOS						

ID 1517-07-04

WIS 441 Tri-County Project

Plan Review Checklist

30%	**60%**	**Draft**	**ITEM**
X	**X**	**X**	**I. Title Sheet (FDM 15-1-10 – Review Current Standards)**
X	**X**	**X**	1. Location map with structures, stationing and town and range noted
X	**X**	**X**	2. Design Designation/Traffic information
	X	**X**	3. Updated Legend
	X	**X**	4. Correct signature block for project type
X	**X**	**X**	5. Title and I.D information – ensure information matches information in FIIPS/CDR
X	**X**	**X**	6. Project length – provide length to 0.001 decimal place
X	**X**	**X**	7. Horizontal Datum Note
X	**X**	**X**	8. Vertical Datum Note
	X	**X**	9. Add x, y coordinates, station equations, and exceptions to net centerline length
	X	**X**	10. Vertical note in left margin – I.D.'s, County, WITH
	X	**X**	11. Complete signature block
X	**X**	**X**	**II. General Notes (FDM 15-1-10 – Review Current Standards)**
X	**X**	**X**	1. General notes
	X	**X**	2. Standard abbreviations
	X	**X**	3. Standard detail drawing lists – check vs. FDM 15-10-10, Fig 1
X	**X**	**X**	4. Utilities contact list (including Digger's Hotline Logo – Do Not Resize – Do Not Overlap Electronic Footprint -414 number is retired)
X	**X**	**X**	5. DNR Liaison
		X	6. Index of 2.XX detail sheets
X	**X**	**X**	**III. Project Overview**
X	**X**	**X**	1. Reference lines and stationing
X	**X**	**X**	2. Road names
	X	**X**	3. Structure numbers
X	**X**	**X**	4. Jurisdiction limits
X	**X**	**X**	5. North arrow
	X	**X**	6. Environmentally sensitive areas
X	**X**	**X**	7. Begin and end project
			8.
			9.
X	**X**	**X**	**IV. Typical Section (FDM 15-1-15 – Review Current Standards)**
X	**X**	**X**	1. Existing sections – keep as simple and generic as possible – identify different material types
X	**X**	**X**	2. Finished sections – keep quantity to a minimum
	X	**X**	3. Pavement and side finish call-offs per actual DOT bid items in specs
	X	**X**	4. Title and station limits
	X	**X**	5. Conformance with approved Pavement Design Report

	X	X		6. Beam guard and/or retaining wall half section
X	X	X		7. Slope call-offs – FT/FT if English
	X	X	**V.**	**Construction Details**
	X	X		1. Engineer to coordinate (review CADD library)
X	X	X	**VI.**	**Paving/Intersection Details**
	X	X		1. North arrow, title block, road names
		X		2. Pavement elevations (Interval = 25' if concrete; 50' if asphalt)
		X		3. Pavement joints for non-standard areas (concrete pavement only)
	X	X		4. Pavement/shoulder dimensions
	X	X		5. Stationing including reference line designation
	X	X		6. Pavement/shoulder type call offs
	X	X		7. Radius call-offs
	X	X		8. Beam guard
	X	X		9. Curb ramps, maintenance ramps and flumes
	X	X		10. Storm sewer pipe and structures only. Do not show structure numbers or pipe sizes. (Trunk line only for 60% plan)
		X		11. Note referring to SDD's refer to the SDD name not the number
		X		12. Note areas with special pavement warping
		X	**VII.**	**Wetland Mitigation Plan**
		X		1. North arrow, title block, road names, reference lines with stationing
		X		2. Existing utilities and topo screened
		X		3. Wetlands
		X		4. Floodplain
		X		5. Legend and notes
		X		6. Contours and spot elevations
	X	X	**VIII.**	**Erosion Control**
	X	X		1. North arrow, title block, road names, reference lines with stationing
		X		2. Legend with actual bid items
	X	X		3. Culverts/storm sewer
	X	X		4. Flow arrows
	X	X		5. Existing topo screened
	X	X		6. Pavement edges and driveways
	X	X		7. Slope intercepts
	X	X		8. Runoff Coefficient Table with disturbed area quantity filled in
	X	X		9. Erosion control checklist (FDM 10-5-60)
	X	X	**IX.**	**Storm Sewer**
	X	X		1. Confirm that the plan format meets the requirements outlined in the FDM.
	X	X		2. Check consistency between storm sewer plan, p/p sheets, and misc. quantity sheet
	X	X		3. Adequate cover over pipe
	X	X		4. Minimum horizontal/vertical clearances to utilities
	X	X		5. Mainline sewer (plan only)
		X		6. Laterals/inlets within roadway and mainline (plan/profile)
		X		7. Specialty drains (yard drains, etc.)
	X	X		8. BMP's (conceptual only for 60%)
		X	**X.**	**Pavement Marking**
		X		1. North Arrow, title block, road names, reference lines with stationing
		X		2. Legend

		X		3. Pavement edges (rural) or curb faces (urban)
		X		4. Dimensioning
				5.
		X	**XI.**	**Permanent Signing**
		X		1. North Arrow, title block, road names, reference lines with stationing
		X		2. Legend
		X		3. Show all signs with proper post rotation, location and sign symbol
		X		4. Show numbering system circle, sign number, sign code and size code in ( )
		X		5. Notes
		X		6. Sign Structures
		X	**XII.**	**Detour**
		X		1. North Arrow, title block, road names
		X		2. Notes
		X		3. Location map and blow-ups
		X		4. Legend
				5.
	X	**X**	**XIII.**	**Traffic Control & Construction Staging**
	X	**X**		1. North Arrow, title block, road names, reference lines with stationing
	X	**X**		2. Existing utilities and topo screened
	X	**X**		3. Notes and legends on all sheets
		X		4. Address access to driveways and side roads during construction, note paving gap locations
		X		5. Address drainage during construction, culvert and SS crossings, temporary culverts
				6.
X	**X**	**X**	**XIV.**	**Alignment Plan**
X	**X**	**X**		1. North Arrow, title block, road names, reference lines with stationing and station equations
X	**X**	**X**		2. Curve data with number key and coordinates (coordinates to 4 decimal places)
	X	**X**		3. Section corners
X	**X**	**X**		4. Notes including R/L, C/L and distance between if parallel
	X	**X**		5. Superelevation Data Tables
		X		6. Horizontal Control Points
		X		7. Control Point Ties
		X		8. Additional R/L's required tying the plat to the plans
		X	**XV.**	**Miscellaneous Quantities (Excel spreadsheet format)**
		X		1. Correct item number and description used for column headings
		X		2. Underline every 5^{th} row for larger tables (> 10 rows)
		X		3. Drainage table consistency with storm sewer plan
		X		4. Show a grand total for items located in multiple tables (ie RCAEW's in the storm sewer and the culvert pipe tables)
		X		5. Show breakdown of items by category. If all items (unless otherwise noted) are in the same category note this in the lower right corner of the sheet.
	X	**X**	**XVI.**	**Right of Way Plat**
	X	**X**		1. Check for consistency between plat, p/p sheets, alignment plan and cross sections

X	**X**	**X**	**XVII. Plan/Profile Sheets (FDM 15-1-35)**
X	**X**	**X**	1. All existing topo screened and in proper layer
	X	**X**	2. All existing utilities, continuity of facilities, and "caution" symbols for combustible fluids
	X	**X**	a. Gas - main, laterals, valves – CAUTION SYMBOLS
	X	**X**	b. Water - main, laterals, hydrants, valves, stops, MH's
	X	**X**	c. Telephone – main, MH's, pedestals, poles
	X	**X**	d. Electric – main, MH's, pedestals, poles (power vs lighting), transformers
	X	**X**	e. Cable TV – main, pedestals
	X	**X**	f. Fiber Optic
	X	**X**	g. Storm Sewer – main, sump laterals, MH's, inlets, pipe sizes
	X	**X**	h. Sanitary Sewer – main, MH's, laterals
	X	**X**	i. Force Main – main, MH's
	X	**X**	j. Oil Pipeline – main, pipe size – CAUTION SYMBOLS
	X	**X**	k. Railroads – signals, controller
	X	**X**	l. Traffic Signal – bases, cable, pull boxes, controller
		X	3. Edges of new pavement and longitudinal joints if concrete pavement and outside edge of shoulder (do not show paved shoulder lines)
	X	**X**	4. Dimensions (Including side roads)
	X	**X**	a. Travel lane width
	X	**X**	b. Total shoulder width
	X	**X**	c. Radii dimensions to flange (only if no separate intersection pavement details)
	X	**X**	5. Existing R/W and proposed R/W (show both), PL's, TLE's and PLE's
X	**X**	**X**	6. Slope intercepts
	X	**X**	7. Culverts in plan and profile with size in profile (show existing in profile view only if to remain)
X	**X**	**X**	8. Road names in plan and profile view
X	**X**	**X**	9. Wetlands and other environmentally sensitive areas
	X	**X**	10. Property owners – last name or business name only; include house number if urban project; hatch any buildings to be relocated and add note for removal
X	**X**	**X**	11. North arrow, title block
X	**X**	**X**	12. Existing and finished profile lines
X	**X**	**X**	13. Finished profile grade slopes (.5% min.), elevations and vertical curve data including "K"
	X	**X**	14. Non typical ditch profiles (.3% min, desirable min. 1%) – *only if specifically requested*
		X	15. Marsh or rock in profile
X	**X**	**X**	16. Horizontal curve data (PI's, PC's, PT's) (if no alignment plan)
	X	**X**	17. Structure data
X	**X**	**X**	18. Stationing including reference line designation for mainline and side roads
	X	**X**	19. Ditch flow arrows in plan
	X	**X**	20. Existing pavement type and match points
	X	**X**	21. Drainage checked against cross sections
		X	22. Benchmarks

		X		23. Proposed driveway call-off in plan view … station, type, width; culvert size, length, type, end-wall; remove access noted for driveways to be removed
	X	X		24. Cross culvert call-offs in profile … station, size, length, type, end-wall
		X		25. Fence and R/W break station and offsets
X	X	X		26. Bearings on R/L (if no alignment plan)
	X	X		27. If there is a separate storm sewer plan show only the storm sewer line-work. If there is no separate storm sewer plan and only a drainage table then also show pipe sizes and structure numbers.
	X	X		28. Additional structure call-offs
X	X	X		29. Station equations
	X	X		30. Flumes (unless shown on intersection details and/or erosion control plan)
	X	X		31. Radius station and offsets (radius only if station offset shown on intersection details)
	X	X		32. Handicap ramps (unless shown on intersection details)
		X		33. Maintenance ramps (unless shown on intersection details)
		X		34. Notes referring to SDD's refer to the SDD name not the number
X	X	X		35. Overall constructability
X	X	X		36. Overall drainage concepts
X	X	X	**XVIII.**	**Earthwork Quantity (Excel spreadsheet)**
		X		1. Check shrinkage factors versus Soils Report
		X		2. First page summary of mainline and side roads
				3.
X	X	X	**XIX.**	**Cross Sections (FDM 15-1-45)**
X	X	X		1. Existing, subgrade and finished surfaces shown
	X	X		2. Marsh, rock or EBS surface on sections with appropriate call-off and hatching
	X	X		3. TLE's, PLE's, and ultimate R/W
	X	X		4. Utilities
	X	X		5. Match-lines
	X	X		6. Annotate subgrade elevations and offsets at PGL('s) and all subgrade breakpoints to the hundredth foot
	X	X		7. Extra section at cross culverts (if not at an even station interval) with pipe size
	X	X		8. Extra Section at bridge ends
	X	X		9. Ellipse for driveway culverts, note size and type
	X	X		10. Note location of bridges, walls, intersections, PE's, FE's
X	X	X		11. Annotate slopes

Date Review Completed:

Reviewer Name/Organization:

Design Organization Making Submittal:

Project: ID 1517-07-04
WIS 441

Project Engineer:

Designer:

Checker:

Submittal:
??% Plan
??% Estimate

Reviewer, *upon completion of form please:*
- Use form to document comments on plans, specs and estimate and supplement with redlined plan comments as necessary.
- Add your name to the file name. Return with comments to Designer
Project Engineer, *upon final resolution of all comments (Reviewer acceptance of Designer responses) please:*
- Compile all review forms into master document for the project and maintain this as the official record for quality audit purposes.
- Provide copy to WisDOT PM

**** Designer's Response Code:***
A Agree Completely; will revise (no written response required)
RFS Requires Further Study in next design phase; (no written response required)
P Agree Partially; will revise to some degree (see written response)
D Disagree; will not revise (see written response)

Designer to provide date markup is complete in right column.

Reviewer			Designer		
Issue No.	**Location (Sheet number/type, Special Provision, road name and/or station, etc.)**	**Review Comments**	*** Response Code**	**Response**	**Markup Complete**
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
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WIS 441 Tri-County Project

Communication Plan

May 2012

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1.0 WIS 441 TRI COUNTY PROJECT - INTRODUCTION

The WIS 441 Tri County Project improvement involves reconstruction and expansion from 4 to 6 lanes between Cold Spring Road and Oneida Street (roughly 5 miles), including auxiliary lanes between interchanges. The project team is made up of members of the Wisconsin Department of Transportation (WisDOT) and Tri-County Partners (TCP). The WIS 441 Project Communication (PC) Plan will serve as a guide for the project team to coordinate between all project stakeholders.

1.1 COMMUNICATION PLAN GOALS AND OBJECTIVES

The WIS 441 PC Plan seeks to establish effective tools for communication with the project team and project stakeholders. The Plan will identify responsibility for keeping the communication tools current and available to the project team. The Plan sets-up the means for using and distributing the communication tools. Naming specific key project team leaders, and determine all of the project stakeholders is a PC Plan objective. Another PC Plan objective is to create communication time-frames that are tailored specific to the needs of each team member or project stakeholder.

1.2 INTERNAL COMMUNICATIONS COORDINATION

Internal communication is between members of the project team. Coordinating internal communication will be the responsibility of the **WisDOT Design Project Manager** or the **TCP Program Manager**. The types and forms of communication between the team members are at the discretion of these communication team leaders.

1.3 EXTERNAL COMMUNICATIONS COORDINATION

Only members of WisDOT are authorized to communicate outside the project team. In certain circumstances, it may be necessary for the **WisDOT Design Project Manager** to authorize external communication by a TCP Team Member. Any external communications with the general public, media outlets, elected officials, etc. must be carried-out through the PR/PI Team *(refer toWIS 441 Public Involvement Plan found in Chapter 10 of the WIS 441 Corridor Manual).*

1.4 TYPES OF COMMUNICATION

The WisDOT Design Project Manager or the TCP Program Manager will authorize two (2) types of communication among project team members and project stakeholders. The first, and most common type is direct, or “green-light” communication. Direct communication is free to take place between team members or stakeholders at any time, and under any circumstance. This type of communication is vital for the day to day progression of the project. The second type is

managed communication, or "yellow-light" communication. Managed communication is generally used less frequently, and requires that team members request permission, or notify the WisDOT Design Project Manager or TCP Program Manager before the communication occurs. Managed communication will usually take place for resolution of very specific project issues, or technically intense project topics.

2.0 PROJECT TEAM STRUCTURE

The key project team leaders are identified in Table 1. Daily and informal direct communication (e-mail and "hall-way" conversations) will commonly occur between the team members included on this list. The key project team members will also communicate directly and frequently with certain departmental staff within their organization. Managed communications will also occur between the departments of the organizations as identified in Table 2:Inter-departmental Coordination. These tables may require updating as key project team members and departmental staff members change through the different project phases.

Table 1 - Key Project Team Members

Role	Name	Company
Design Project Manager	Scott Ebel	WisDOT
Corridor Project Manager	Kurt Peters	WisDOT
Deputy Project Manager	Andy Fulcer	WisDOT
Program Manager	Robert Fieldbinder	TCP
Project Manager – Roadway	Prasad Narayan	TCP
Project Manager – Structures	Don Yetter	TCP
Deputy PM - Structures	Mike Arnold	TCP
Deputy PM – Off Alignment	TJ Dougherty	TCP
Deputy PM – System Intchg	Justin Arndt	TCP
Deputy PM – Tangent Section	Prasad Narayan	TCP
Corridor Design Supervisor	Chad DeGrave	WisDOT
Program Manager	Brian Roper	WisDOT
Program Controls Coordinator	Mark Higley	WisDOT
Program Controls Cost Engineer	Geoff Williams	WisDOT
Program Controls Administrator	Lynn Warpinski	TCP
Corridor Standards/Management	Anna Varney	TCP
Program Scheduler	Heather Wech	TCP

Table 2 - Inter-Departmental Coordination

WisDOT Personnel			TCP Personnel	
Name	**Title**		**Name**	**Title**
Kris Schuller	Outreach Lead		Brian Foley	Public Outreach
Curt Van Erem	Real Estate Acquisitions		Gary Schneider	Real Estate
Andy Devos	Utility Relocations		Michael Kowal	Utility Relocations
Mike Helmrick	Agency Coordination		Caron Kloser	Agency Coordination
Randy Asman	ITS Coordination		Matt Letourneau	ITS Coordination
PF O'Connor	Traffic/TMP		Jerry Shadewald	TMP/Traffic
Jared Kinziger	Railroad Coordination		Don Yetter	Railroad Coordination
Aaron Bonk	WIS 441 Structures		Mike Arnold	WIS 441 Structures

3.0 PROJECT STAKEHOLDERS

There are multiple groups, businesses and other outside organizations and agencies that have interest in the WIS 441 Tri-County project. The following tables break the project stakeholders into groups of common interest levels, and like needs for frequency of project communications. Table 3 identifies the local officials that need to be informed of certain project milestones and decisions. Table 4 identifies the utilities that are known to own facilities within the project limits. Table 5 recognizes the various agencies that may have jurisdiction within the project boundaries. Table 6 includes the railroads and other groups with interest or facilities within the neighborhood of the WIS 441 Tri-County Project. These tables may require updating as future stakeholders are identified through the different project phases.

Table 3 - Local Officials

Civil Division
Outagamie County
Winnebago County
Calumet County
Town of Harrison
City of Appleton
City of Menasha
Town of Menasha
East Central Wisconsin Regional Planning Commission

Table 4 - Utilities

American Transmission Company	Town of Menasha Street Department
Appleton Area School District	Menasha Utilities
City of Appleton Dept of Public Works	Town of Menasha Street Department
AT&T Legacy	Town of Menasha Utility District
AT&T Wisconsin	TDS Metrocom/Telecom
Grand Chute Menasha West Sewerage Commission	Time Warner Cable
Town of Grand Chute Sanitary District No. 1	TransCanada
Heart of the Valley Metro Sewerage Commission District	US Signal
McLeod USA	Waverly Sanitary District
City of Menasha	WE Energies
Menasha Utilities	Windstream

Table 5 - Agencies

Wisconsin Department of Natural Resources
United States Army Corps of Engineers
United States Coast Guard
State Historic Preservation Office
United States Fish & Wildlife Service
Environmental Protection Agency
Federal Aviation Administration

Table 6 - Railroads, Other

Wisconsin Central Railroad
Outagamie County Regional Airport
WisDOT Bureau of Aeronautics

4.0 PROJECT COMMUNICATION METHODS

The project team and project stakeholders will communicate through many different forms, and should not be limited to only the suggestions in this section. However, this section suggests methods of communication that are available, and used currently to distribute information in regularly set time frames. Team members must familiarize themselves with the information that is contained in the regular communications. The project team is expected to document communications when the more informal methods of communication are used (ie. hallway and telephone conversations).

4.1 PROJECT COMMUNICATION TOOLBOX

The project communication toolbox contains the items that are distributed in scheduled intervals to keep team members and project stakeholders informed with current information. Recipients of the distributed information are matched with the frequency with which updates are required. See Table 7, Project Communication Toolbox.

Table 7: Project Communication Methods

Project Communication Toolbox

Document	Responsibilities	Frequency
E-mails/Hallway Conversations	Project Managers	Daily
FTP Site and S:\ Drive	Corridor Manager	Daily
Program Schedule	Program Scheduler	Daily
Project Milestone Schedule	Program Controls	Bi-Weekly
Corridor Manual Updates	Corridor Standards Manager	Monthly

Meeting Notes	Program Controls	Bi-Weekly
Action Items List	Program Controls	Bi-Weekly
Project Newsletter	PR/PI Team	> Monthly
Project Website	PR/PI Team	Monthly
Monthly Progress Report	Tri-County Partners	Monthly
Executive Summary Report	Program Controls	Monthly
Financial Summary Report	Program Controls	> Monthly
Project Briefs	PR/PI Team	Monthly or As Needed

4.2 SCHEDULED MEETINGS AND PARTICIPANTS

The Wis 441 Tri-County Project has many meetings scheduled regularly for keeping all project stakeholders and team members informed. See Table 8 Scheduled Meetings and Participants. Meetings on other topics are scheduled on an as-needed basis

Table 8: Project Communication Methods

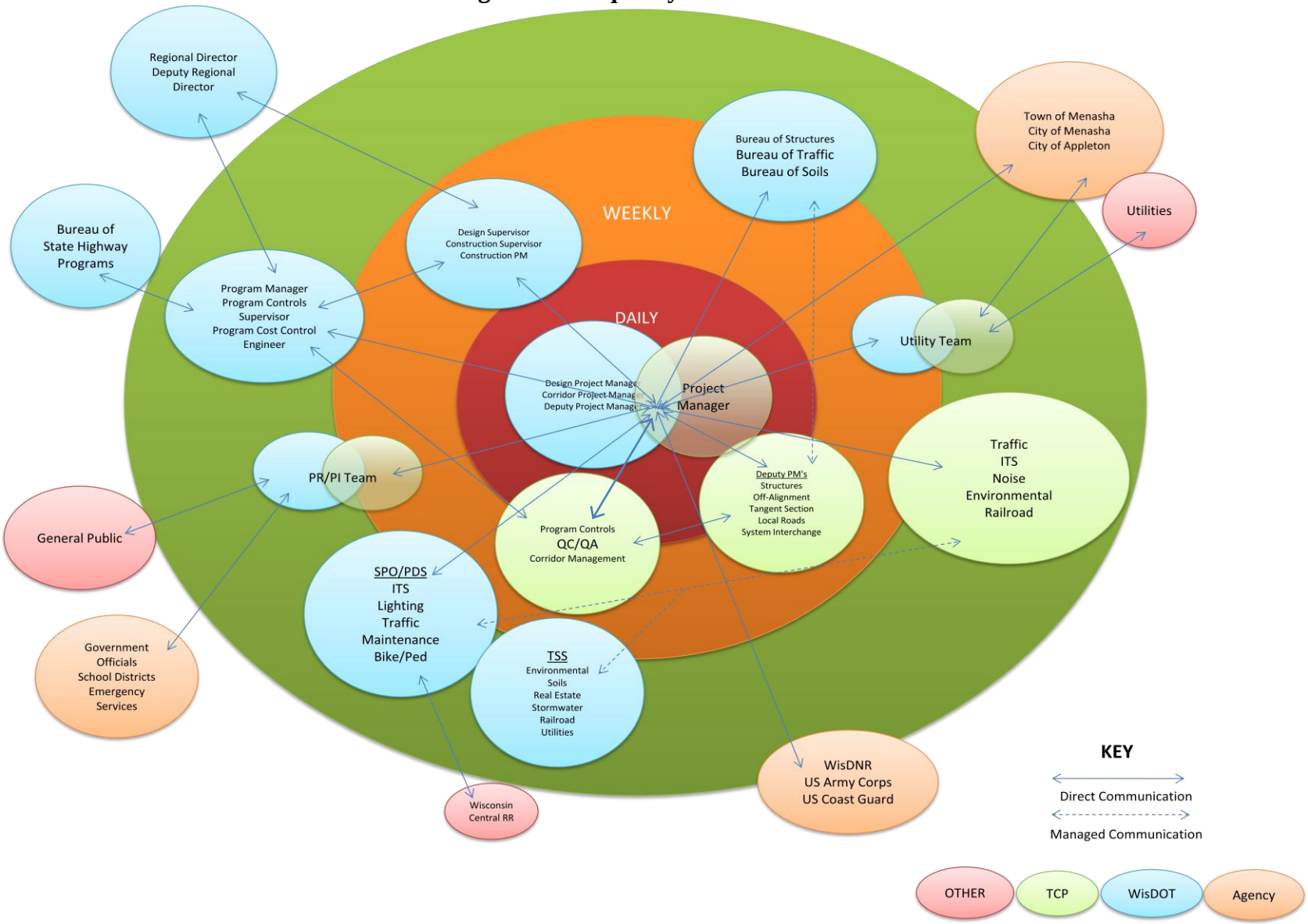
Scheduled Meetings and Participants

Meeting	Frequency	Core Meeting Participants
TSS	Monthly	PM's, TSS, Design Supervisor, QC/QA, Scheduler, PC
SPO/PDS	Monthly	PM's, SPO/PDS, Design Supervisor, QC/QA, Scheduler, PC
Design	Bi-Weekly	PM's, Design Supervisor, QC/QA, Corridor Mgr, Scheduler, PC
Corridor	Monthly	PM's, Design Supervisor, QC/QA, Corridor Mgr, PC
Structure	Monthly	PM's, Bureau of Structures, QC/QA Design Supervisor, PC
Geotechnical/Soils	> Monthly	PM's, Bureau of Soils, TSS, Design Supervisor
Real Estate/ROW	Monthly	PM's, Program Scheduler, TSS, Design Supervisor
Issue/Risk	Monthly	WisDOT PM's, Scheduler, Design Supervisor, Program Mgr, PC, PCC Engineer
Public Outreach	Monthly	PR/PI Team, PM's, Public, Design Supervisor, Program Mgr
Change Mngmnt	Monthly	WisDOT PM's, Scheduler, Design Supervisor, Program Mgr, PC, PCC Engineer
Financial Mngmnt	Bi-Weekly	Program Mgr, Program Controls Supervisor, PCC Engineer, PC
Design Review	Quarterly	PM's, TSS, SPO/PDS, Design Supervisor, QC/QA, PCC Engineer, PC, Corridor Mgr
Agency Coordination	As Needed	PM's, TSS, Design Supervisor, Corridor Mgr, Scheduler

5.0 COMMUNICATION PLAN PHASES

The frequency that communication occurs between project stakeholders and project team members is directly related to the project phase. This WIS 441 Tri-County Project communication plan is tailored to meet the specific communication project needs during the engineering phase. See Figure 1. As the project moves through different phases, project team members and project stakeholders may require more or less frequent communication or updates. The figure below will require frequent updating to match the current project communication needs, depending on the project phase.

Figure 1 - Frequency & Stakeholders



WIS 441 Tri-County Project Corridor Manual
Chapter 14: Structures

Chapter Contact: Mike Arnold

Issued: February 14, 2012
Revised: March 15, 2012
April 16, 2012
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June 17, 2013
July 15, 2013
October 15, 2013
April 15, 2014
May 15, 2014
August 19, 2014
September 18, 2014

Scope/Purpose
This chapter establishes the structural design criteria that will govern the design of all bridges, retaining walls, sign bridges, box culverts and miscellaneous structures along the WIS 441 corridor. It includes:

- Design specifications
- Required clearances
- Typical sections
- Design life
- Design loads
- Materials criteria
- Performance specifications for noise walls

Reference Documents
None.

General
All structural design for the WIS 441 corridor is to be performed in accordance with the referenced WIS 441 Structures Design Manual.

Structure Decisions
~~B-70-408 (Ramp FWS) is shown in the functional plans as one continuous structure over US 10/WIS 441 mainline and Ramp FEN which are separated by approximately 600 feet. NER and BOS recommend to use two separate bridges instead, one for each underpass feature, with fill in between the structures and an MSE retaining wall on the east side of the fill where the loop ramp FSE runs near Ramp FWS. (Scott Ebel and Aaron Bonk e-mail 11-30-11~~) ***This design decision is no longer valid (4/15/13)***

~~A 7'-6" high retaining wall with a sloped face consistent with the single slope concrete barrier will be used along both outside shoulders under the Racine Road overpass structure on mainline WIS 441 (8/14/12 Design/Structures meeting)~~. ***This design decision is no longer valid (4/15/13)***

A 56SS barrier will be used on wall R-70-110 along NB US 41 near Con-Way Trucking to provide protection to the business from road debris.

For staging at Tayco, a temporary bypass will be constructed to the south of STH 441, requiring a temporary wall as part of the design plans instead of contractor designed temporary shoring (5/30/13 10/441 Weekly Geotechnical Meeting). A temporary wall will be utilized on both sides of the crossing, rather than placing fill under the existing Tayco structure (6/17/13 Scott Ebel e-mail)

Attachments

WIS 441 Structures Design Manual (Dated 9-18-14)
Bridge Substructure Type Selection - Tech Memo 7 (Dated 02-05-12)
WIS 441 Structures Summary Spreadsheet (Dated 04-15-13)
WIS 441 LLBDM Life Cycle Cost Analysis Summary
LLBDM Life Cycle Cost Analysis - Tech Memo 9 (Dated 03-19-12)

WIS 441 Tri-County Project Structures Design Manual

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July 11, 2013
October 15, 2013
April 15, 2014
May 15, 2015
August 19, 2014
September 18, 2014

Contact: Mike Arnold
414-831-4179

Introduction

The following document defines the structural design criteria that will govern the design of all structures for the WIS 441 Corridor Project. It is intended to be a working document that will be periodically updated as the design progresses.

Bridges, retaining walls, noise walls and box culverts will be designed using the AASHTO LRFD design procedure. Sign structures within WIS 441 corridor will be designed in accordance with the Allowable Stress Design Specification. The project structure design criterion was written to fit this methodology.

	WIS 441 Corridor
Bridges	LRFD
Sign Structures	ASD
Culverts, Retaining Walls, Noise Walls	LRFD

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1 General

1.0 Design Specifications

AASHTO Load and Resistance Factor Design, 6th Edition, 2012, except as modified herein. (Used for all bridge structures and some non-bridge structures.)

AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges, 2003, except as it conflicts with "AASHTO LRFD Bridge Design" or as modified herein.

AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 2001, with 2002, 2003 and 2006 Interims.

Bridge Welding Code, D1.5-02, American Welding Society, 2002

AASHTO Guide Design Specifications for Bridge Temporary Works, 1995.

WisDOT Bridge Manual, except as modified herein.

WisDOT LRFD Bridge Manual, except as modified herein.

WisDOT Facilities Development Manual, except as modified herein.

Required Clearances

Vertical, Structure over Railroad:
Minimum design vertical clearance over railroads is 23'-0"
Maximum design vertical clearance over railroads is 23'-3.5"

These railroad clearances are subject to modification with an exception to standards as needed by the project. Structure B-70-132 (US 41 NB over Green Bay Rd and WCL RR) will utilize shallower than typical girders for the widening to maintain the existing vertical clearance.

Vertical, Structure over Roadway:
Minimum design vertical clearance over mainline interstate and STHs is 16'-9"
Minimum design vertical clearance over CTH or local streets at interchanges is 15'-3"
Interim clearances during the construction phasing shall be calculated and given to the WIS 441 Team by the structures designers. Interim clearances falling below the permanent clearances given above will need to be approved by the WIS 441 Team.

Interim clearances should be shown along with the permanent clearances on the preliminary and final structures plans.

Vertical, Bridges over Waterways:
Minimum 2′-0″ freeboard above design (100-year) high water elevation
Desired minimum vertical clearance of 5′-0″ over normal water elevation of navigable waterways.

Horizontal:

Both final and interim horizontal clearances should be shown on the Preliminary and Final Structures Plans. Interim clearances of less than 6 feet from the centerline of a traveled lane shall be brought to the WIS 441 Team for review and acceptance.

Minimum horizontal clearance from face of columns to edge of adjacent structures is 4′-0″. Additional clearance will be provided wherever possible.

1.1 Typical Section

Bridges carrying mainline WIS 441 over crossroads will generally be designed for 3 – 12 foot traffic lanes, 1 – 12 foot median shoulder and 1 – 12 foot outside shoulder plus additional width as required for parapets.

1.2 Future Widening

The required spans for WIS 441 mainline bridges over crossroads will be based on a typical section developed by roadway design that will not include a future lane of traffic. The required spans for WIS 441 mainline bridges over US 41 will be based on a typical section of US 41 that includes a future lane of traffic in each direction.

1.3 Construction Staging

WIS 441 east-west and US 41 north-south mainline traffic will be maintained during construction. All partial and complete roadway closures for the WIS 441 and US 41 mainline and all crossing roadways will be in accordance with the MOT requirements.

Special staging situations not meeting the above criteria will be addressed on a one on one basis with the NE Region Major Project Manager.

1.4 Design Life

All structures shall be designed for a minimum expected 75-year design life. The bridge decks on this project will covered with an epoxy overlay approximately one year after construction.

1.8 Structures Plans Submission to WisDOT

A separate plan set should be produced for each bridge, retaining wall, noise barrier and box culvert structure on the project and each plan set will be made as a separate submittal to WisDOT BOS. Sign structure plans will be combined according to construction contract and be submitted as one package to WisDOT BOS, with each sign structure number E-submitted separately as the bundled package. For structures being built in stages a letter (A or B) should be placed at the end of the structure number to show the difference from the other portion of the structure. (Example, B-05-100-A and B-05-100-B).

Bid Item numbers should be listed in the Bid Item Tables of the structure plans. The number should be listed in a column in front of the associated Bid Item name.

2 Materials

2.1 Concrete

Bridge Concrete: HPC, low permeability, 4 ksi minimum,

This includes super and substructure concrete

Bid Item: HPC Masonry Structures

Also: QMP Concrete Structures; Incentive Strength Concrete Structures

Box Culverts: 3.5 ksi minimum

Use standard box culvert concrete bid item

Also: QMP Concrete Structures; Incentive Strength Concrete Structures

Retaining Walls: 3.5 ksi minimum

Use standard retaining wall concrete bid item

Also: QMP Concrete Structures; Incentive Strength Concrete Structures

All other concrete: As given in Standard Specifications

Prestressed I-girders:

Desired: f'c = 8 ksi final; 6.8 ksi at release or as low as permitted per design.
Maximum: f'c = 10 ksi; release as low as permitted per design.
Designers will discuss and must obtain concurrence from the WisDOT Bureau of Structures on a case-by-case basis for the use of concrete girder strengths beyond 8 ksi.

The QMP Strength Incentive pay item is to be used for structures concrete on the WIS 441 project. No incentive pay will be included within this item. This item is not listed on the structures plan quantity table.

2.2 Reinforcing Steel

Decks and Parapets:	60 ksi steel, epoxy coated
Footings:	60 ksi uncoated
Abutments:	60 ksi, epoxy coat as given the WisDOT Bridge Standard detail drawings
All other:	60 ksi, epoxy coated

After consultation with contractors on previous mega projects, the use of Bar Series to detail reinforcement bars may be modified for the WIS 441 Project. If the difference in bar length between bars in a "series" is 1" or less and there are more than 10 bars in the series the bars may be grouped into sets of the same length with the length set at the longer bar in the series the set is replacing. This approach will lead to slightly longer than the minimum bar laps, but considerably simpler bar sets for the iron works to tie in the field. (This approach will not work in locations with tight clearance issues at the end of the bars or bars that do not involve a bar lap.) This approach may be detailed at the option of the structure designer.

2.3 Structural Steel

Straight and curved steel I-girders may be hybrid design.

Flanges- Grade 50 steel should be used for flanges of plate girders unless the flange size becomes excessive. Due consideration to the added cost and availability issues in the use of HPS-70W should be given before going to the higher strength material to reduce the size of the girder flanges.

Any grade 70 plate steel used on this project shall conform to the requirements of HPS-70WT (non-fracture critical) or HPS-70WF (fracture critical) as needed depending on the number of girders in the cross section.

Webs – Steel grade used in webs may differ from the steel grade used in the flanges.

Diaphragms and Cross Frames – Plate material shall be of the same material as the girder (i.e. if the girder is 70 ksi, then the plates are 70 ksi). All rolled shapes (beams, angles, channels, tees) are to be Grade 50, as HPS material is not available for rolled shapes.

Miscellaneous Metals – 36 ksi

Steel integral pier caps shall use HPS-70WF ksi material but shall be used only when absolutely necessary and only with approval from the Bureau of Structures.

Painting:	All steel to be painted unless galvanized, (Two coat polysiloxane system, except for galvanized surfaces)
	Galvanized surfaces of pedestrian fencing shall receive a special two-coat paint system. After the fence galvanized surface is thoroughly cleaned and given a brush blasting per SSPC-SP7 Specifications it will receive a tie coat of epoxy and a protective top coat of polyurethane per the Decorative Fencing Special Provision.

Connections: The preferred bolt size shall be 7/8″ diameter A325 bolts. Larger bolts (up to and including 1¼″) are permitted where a significant benefit may be obtained. A490 bolts shall not be used.

Shear connectors: All shear connectors shall be 7/8″ diameter.

3 Design Loads

Dead Loads and Unit Weights

Concrete:	150 lbs. / cu. ft.
Steel:	490 lbs. / cu. ft.

Utility Dead Load Allowance:

Structures shall be designed for the actual weight of any known utilities not embedded within the concrete cross-section.

3.1 Parapet Loads

Sloped Face Parapet 32SS: Area = 3.09 sq. ft.; Weight = 464 lbs. /ft.

Sloped Face Parapet 32SS Modified: Area = 3.44 sq. ft.; Weight = 516 lbs. /ft.

Sloped Face Parapet 36SS: Area = 3.36 sq. ft.; Weight = 504 lbs. /ft.

Sloped Face Parapet 36SS Modified: Area = 3.78 sq. ft.; Weight = 566 lbs. /ft.

Sloped Face Parapet 42SS: Area = 3.75 sq. ft.; Weight = 563 lbs. /ft.

Sloped Face Parapet 42SS Modified: Area = 4.26 sq. ft.; Weight = 639 lbs. /ft.

Sloped Face Parapet 56SS: Area = 5.16 sq. ft.; Weight = 774 lbs. /ft.

Sloped Face Parapet 56SS Modified: Area = 6.04 sq. ft.; Weight = 905 lbs. /ft.

Type 42SS parapet is the default outside parapet type for the WIS 441 project to meet FDM concrete barrier guidelines. Type 32SS parapets will be used on the inside of horizontally curved structures to provide adequate sight distance.

The 56SS Parapet will be used on the median side of bridges. The 56SS single slope barrier will not be used on bridge decks at the median since the project uses separate median barriers. 56SS parapet will not be used on the median side of mainline structures in the system interchange since no benefit (reduction in headlight glare or rubbernecking) is derived from its use. 42SS parapet will be used instead.

3.2 Live Load

For mainline interstate bridges and local road overpasses the load shall be HL 93 as given in the LRFD Specifications.

Design of cast-in-place decks on conventional structures shall conform to the deck tables for new deck construction in the WisDOT Bridge Manual, which is based on the HL 93 loading according to the AASHTO LRFD specification. The live load rating of bridge superstructures shall be based on the main longitudinal structural members supporting the slab.

3.3 Fatigue

Fatigue loading shall be calculated using the design truck loading as given in Section 3.6.1.4 of the LRFD Specifications.

The number of cycles applied shall be 2,000,000 cycles for multiple lane loading and *over* 2,000,000 cycles for single lane loading.

3.4 Vehicle Impact

Bridge piers shall be evaluated for vehicle impact loads. The columns shall be evaluated using the criteria as presented in the Wisconsin Bridge Manual Section 13.4.10 and the AASHTO LRFD code, Articles 2.3.2.2.1, 3.6.5.1, and 3.6.5.2, which provide as follows:

> *Unless a pier is protected, it should be designed for a static force of 600 kips applied at a distance of 4-feet above the roadway surface. Protection is defined as a crashworthy 54" high barrier within 10 ft of the pier, or a 42" high barrier at more than 10 ft from the pier.*

(Section 13.4.10 of the Wisconsin Bridge Manual gives further definition of how to analyze and reinforce pier columns for vehicular impact loads.)

Piers inside the clear zone shall be protected with a concrete crash barrier (not beam guard) for safety and durability. Piers outside the clear zone, but still close to the edge of clear zone, shall be protected by beam guard. This will be determined on a case-by-case basis.

3.5 H-Pile Downdrag Loads

Downdrag is a condition that occurs when pile supported abutments are constructed on new embankments and/or fill MSE walls over compressible soils. Typically, the piles are installed prior to the completion of the embankment and/or MSE wall and therefore are subject to subsurface soil consolidation. The skin friction that usually acts to resist downward loads from the structure is reversed, in both the zone of compressible soil, and the soil above it, as a result of the differential settlement between the pile and soil. In the case of consolidating soils, the skin friction actually causes an additional vertical load, instead of pile resistance. The AASHTO code applies a resistance factor of 0.4 (Tomlinson Method) to this load, but does not clearly distinguish between its application to friction and end bearing piles. The pile

designs and subsurface conditions on the WIS 441 project are rather unique when interpreting the AASHTO code concerning downdrag. Typically these structures are designed with H-piles driven to a competent bearing layer, where the majority of support is due to end bearing. When WisDOT developed Table 11.3-5 of the Bridge Manual, there were two key factors considered that influenced the determination of the table values. These included:

- The recommended values of "Required Driving Resistance" for H-piles were developed to help limit damage to the piles during installation.
- The actual structural capacity of the steel H-pile section is significantly higher than the capacity selected to prevent driving damage. (The required driving resistance values range from 45-50 percent of the structural pile capacities.).

When these factors are combined with the knowledge that the competent bearing layers on the WIS 441 project have more geotechnical resistance than required for pile structural capacity, a project-specific interpretation of the application of downdrag forces can be developed.

By assuming that driven pile installation results in essentially 'refusal', the full structural capacity of the piling can be used in design. Therefore, the WisDOT Factored Axial Compression Resistances (Pr) shown in the table below, can be used with the maximum computed nominal downdrag (DD) values, up to the limits also shown in this table:

Pile Type	Nominal Axial Compression Resistance (Pn)	Full Capacity Factored Axial Compression Resistance (Pr)	WisDOT Factored Axial Compression Resistance (Pr)	Nominal Downdrag (DD)
H 10 x 42	310.0 tons	155 tons	90 tons	45 tons
H 12 x 53	387.5 tons	194 tons	110 tons	60 tons
H 14 x 73	535.0 tons	267 tons	125 tons	105 tons

If the computed nominal downdrag exceeds these values, then the WisDOT Pr values must be reduced by the difference between the Full Capacity Pr minus the nominal downdrag times 1.4. For illustration the following example is provided:

For an H 12 x 53: The calculated nominal downdrag is 70 tons. Therefore, the WisDOT Pr value is as follows:

WisDOT Pr = Full Capacity Pr (194 tons) – (Nominal Downdrag DD (70 tons) x Load Factor (1.4)) = 96 tons

For cases where the down drag force exceeds the down drag value in the table above the plan note normally included in the plan concerning factored axial resistance will need to be modified as follows:

"The factored axial resistance of piles in compression used for design is the required driving resistance multiplied by a resistance factor of 0.5 (and further reduced by

down drag forces equal to XX) using modified Gates to determine driven pile capacity."

The XX number would be the down drag forces in excess of what is currently shown in the table above multiplied by 1.4. Following the example above the number would be 10 X 1.4 = 14 tons = XX. Hence, the substructure unit would be designed with a bearing value of 110 – 14 = 96 tons.

4 Bridges

4.1 Default Structure Type

Superstructure: For the WIS 441 mainline over crossroads at interchanges the desired default structure type is a 2-span precast, prestressed I-girder bridge with a cast-in-place deck. Prestressed girders sections utilized for the project will be the family of bulb-T girders consisting of the department's standard 82W (Currently not allowed for use), 72W, 54W, 45W and 36W sections.

Designs using the 45W are limited to a maximum of 40 - 0.6" diameter prestressing strands. For a maximum span configuration of 2-continuous spans at 120'-0", the required beam spacing is 5'-9" using the WIS 441 design criteria. For a beam spacing of 6'-0", the maximum continuous span length is 2-continuous spans at 118'-6".

For bridge widenings on the WIS 441 project, the new girders should be of the same type and shape as the existing (e.g. an existing bridge with 45" AASHTO girders should be widened with 45" AASHTO girders). The only exception to this is B-70-132 (NB US 41 over Green Bay Rd. and WCL RR) where a shallower steel girder will be used to maintain the existing vertical clearance over the railroad.

4.2 Deck Design and Construction

Conventional cast-in-place decks will be designed using normally reinforced, low permeability, HPC (High Performance Concrete). Stay–in-place precast/prestressed concrete deck panels will be an allowed construction option on all girder bridges. Panel details will NOT be shown on plans. All conventional bar steel reinforcement in decks and parapets will be epoxy coated.

All decks on mainline WIS 441 shall receive a polymer overlay. The 5 psf dead load for polymer overlay will be accounted for in the structure rating. The polymer overlay will be applied approximately one year after deck construction to allow cracking to develop. Preliminary bridge plans will include a bid item for polymer overlay. The final structure plans may or may not include a pay item for polymer overlay depending on what the construction contract schedule is. The polymer overlay may be applied in a separate contract.

The IRI ride testing specification will be utilized for both LLBDM bridges (B-70-403 and B-70-61).

4.3 Piers / Columns

All structures in the system interchange will use hammerhead piers. Use single or double shaft hammerhead piers for structures over railroads or follow the guidance as given in the WisDOT Bridge Manual Standard 38.01. The faces of pier columns adjacent to railroads will not receive CSD formliner treatment.

Bridges at local interchanges will use multi-column piers with a minimum of 3 columns for low level structures or as given in the CSD criteria.

WIS 441 specific CSD requirements should be considered as needed for all piers and columns.

When the pier cap steel is being detailed, the bridge designer should give due consideration to the layout of the cap steel and make sure it will properly thread through the vertical column steel. This will make the job of tying the bars steel straight forward for the ironworkers during the construction of the pier.

4.4 Foundations

Foundation types to be determined during preliminary design when possible. Based on current knowledge of the existing subsurface condition it is assumed that center piers and sill abutments will be supported on driven piles. Where full height abutments are required, the use of top down construction will be considered and evaluated in terms of construction schedule and estimated construction cost. For bridge widenings, the widened foundations are to match the existing foundations in type and driving resistance in the case of piles. Foundation design is to be per LRFD.

For driven pile foundations, designers will determine the most economical pile type for each structure based on required pile capacity, depth to capacity information provided in the geotechnical report, and the following estimated construction costs:

10.75" dia. CIP with standard (0.219") shell wall thickness - $27.00 per lineal foot
10.75" dia. CIP with ½" shell wall thickness - $40.00 per lineal foot

12" dia. CIP with standard shell wall thickness - $37.00 per lineal foot
12" dia. CIP with ½" shell wall thickness - $50.00 per lineal foot

HP 10X42 - $32.00 per lineal foot
HP 12 x 53 - $35.00 per lineal foot
HP 14 x 73 - $47.00 per lineal foot

The design structural capacity of steel piling will be based on Fy = 36 ksi . Pile stresses during driving will be evaluated to make certain that driving stress limits are not exceeded. Fy may be increased to 50 ksi if driving stress exceeds 36 ksi as 50 ksi material will be used for all piling. Pile lengths shall be shown to the nearest 5 foot on the structure plans.

Pile driving resistance shall be shown to the nearest 5 ton on the structure plans.

For twin bridges, if the median distance between bridges is 15 feet or less the bridge abutment bodies should be extended to meet each other and wings parallel to the road way will not be needed. If the gap between bridges is greater than 15 feet,

standard wings parallel to the roadway should be used. Contact the WisDOT Bureau of Structures for cases where this approach might need to be modified.

When the placement of the new bridge abutment would leave soil from the previous bridge in front of the new abutment, this soil should be removed under the bid item excavation for structures. A note to this effect should be placed on the cross section of the new bridge plans directing that this soil be removed under the Excavation for Structures Bid Item.

Pile Dynamic Analyzer (PDA) Testing

PDA testing will be utilized for structure B-70-403 (LLBDM Bridge) piling. This approach allows the use of a phi factor (resistance factor) = 0.65 in design for the axial capacity of the piles. The result is a reduction in the number of piles and size of footings required. The bid items for PDA testing and PDA restrikes will be included on the bridge plan.

Preboring

For bridges that have short pile lengths due to shallow bedrock and also experience uplift loads on the foundations, preboring 3' into bedrock and anchoring with concrete will be utilized to provide uplift resistance. In these cases skin friction does not provide enough uplift resistance. A bid item for pile preboring will be included on the plans.

4.5 Expansion Joints

Bridges will preferably be designed continuous end to end with integral or semi integral abutment diaphragms without deck expansion joints. Where needed, expansion joints between units will be located at abutments or in the case of longer, multi-unit structures, over piers. Cantilevered joints and suspended spans will not be used. Preferred expansion joint is strip seal and for longer structures modular expansion joints shall be used.

For mainline bridges on WIS 441, structural approach slabs will be used between the bridge abutments and the normal approach slab. These structural approach slabs consist of a 20-foot long concrete slab span between the bridge abutment and a sleeper slab that supports the apron and the normal concrete approach slab. The 20-foot length is measured along the roadway reference line. Depending on bridge length and the expected movements at the sleeper slab, a strip seal joints may be required at the sleeper slab. See US 41 Concrete Apron Standard details for additional information on the details and reinforcement of the concrete aprons.

4.6 Bearings

Conventional elastomeric bearings are to be used wherever possible. In highly skewed pier conditions, the non-laminated elastomeric bearing may be clipped to maintain the 3 inch minimum clearance from the edge of the pier cap. The remaining bearing area should be checked to make sure the bearing stresses are within the allowable range. If expansion bearings are required, laminated elastomeric bearings are preferred. For sliding bearings using TFE bearing surfaces, design coefficients of

friction will be in accordance with Chapter 15 of the AASHTO LFD specifications. Girders on bridge widenings will incorporate the same bearing type as on the existing structure.

4.7 Bridge Deck Drainage

Bridge deck drains will be avoided wherever possible. Downspouts, where necessary, may not be embedded in substructure units. Where possible locate deck drains near piers to eliminate long runs of drainpipes. If full height drain pipes are necessary, the pipes will be constructed of RTRP (fiberglass) and pigmented to match pier color. Pipes will be attached directly to the pier (no inset will be provided).

4.8 Fracture Critical Members and Redundancy

Fracture critical members (FCM) are to be avoided wherever practical. Fracture critical members will only be permitted where specifically approved by the WisDOT Bureau of Structures.

4.9 Bridge Load Ratings

The bridge designer shall fill out the "LRFD Input File" and "Load Rating Summary Form" for each bridge and submit them to the Bureau of Structures along with the final bridge plans. Both forms are available on the BOS web site under the LRFD heading, on the LRFD Plan Submittal page. (Note actual LRFR ratings **ARE** required on the final bridge plans)

4.10 Bridge Lighting

Bridge lighting on structures shall be as directed by the Region WIS 441 Team. CSD and tunneling effects of wide structures shall be considered for underside bridge lighting.

Where median lighting is required on the mainline, the conduits for electrical wiring shall be placed in the "northbound" structure parapets/barriers.

4.11 Temporary Support/Shoring

For staged removals of existing bridges, temporary support of the existing deck or piers may be required. The bridge designers shall review the deck and pier overhangs required during bridge removals to see if temporary support is required. If temporary support of the existing structures is required during the staged removal of the existing bridges the designer shall add the following note to the bridge plans:

> *Temporary support of the (deck/pier) is required. The contractor is to design a temporary support system for use during the staged removal (construction) of the bridge. The proposed support system shall be submitted to the Department for acceptance.*

Designers should also check the need for possible temporary support of the new structures if there are constructed in stages. If temporary supported is deemed necessary, a note as given above should be included in the contract plans.

Temporary Shoring when needed to support soil loads during staged construction should be shown on the structures plan. Removal of Temporary Shoring Left in Place from a previous contract should be noted as incidental to removing old bridge or another bid item if removing old bridge is not used. A special removing temporary shoring left in place bid item should NOT be used.

Large temporary shoring structures necessary for staged construction, especially in areas of poor soils, will be designed by the WIS 441 team and provided as part of the bid documents. The Department and the WIS 441 team will determine which walls should be approached in this fashion.

Cofferdams are expected for use in LLBDM for pier construction. 3' of distance will be provided between the edge of footing and the face of cofferdam to facilitate footing form construction and removal around the cofferdam rings.

4.12 Geotechnical Issues (Lateral Squeeze)

Lateral squeeze as described in Section 10.7.2.6 of the AASHTO code occurs when pile supported abutments are constructed on embankments and/or MSE walls over soft soils. Typically, the piles are installed prior to the completion of the embankment and/or MSE wall, and therefore are potentially subject to subsurface soil instability. If the embankment and/or MSE wall has a marginal factor of safety with regards to slope stability, then lateral squeeze has the potential to laterally deflect the piles and tilt the abutment. Typically, if the shear strength of the subsurface soil is less than the height of the embankment times the unit weight of the embankment divided by three, then damage from lateral squeeze could be expected.

If this is a potential problem, the following are the recommended solutions from the FHWA Design and Construction of Driven Piles Manual:

1. Delay installation of abutment piling until after settlement has stabilized (best solution).

2. Provide expansion shoes large enough to accommodate the movement.

3. Use steel H-piles to provide high tensile strength in flexure.

4. Use lightweight fill to reduce driving forces.

5 Retaining Walls

5.1 General

Retaining walls will be type selected and laid out during preliminary design to provide the most economical retaining wall structure considering wall costs, right-of-way limitations, subsurface soils, and constructability constraints for the expected loadings defined in the Geotechnical Report for the project, AASHTO Standard Specifications for Highway Bridges, and the WisDOT Bridge Manual.

Standard Walls are those wall types identified in the Wisconsin Bridge Manual. It is anticipated that the majority of required retaining walls will be standard wall types. Generally, the layout and design of standard wall types will be in accordance with the requirements and limitations set forth in Chapter 14 of the Wisconsin Bridge Manual.

Non-Standard Walls will be those wall types not included in the Wisconsin Bridge Manual as well as special designs and applications of standard wall types that may fall outside the constraints and limitations set forth in the Wisconsin Bridge Manual. Non-Standard wall types will be designed in accordance with AASHTO specifications and coordinated with the Wisconsin DOT Bureau of Structures and Bureau of Technical Services (Foundation and Pavement Unit) for additional requirements.

At locations where a retaining barrier is tall enough to retain fill, this will serve as the retaining wall. Modifications to the backfill slope and ditch detailing may be done to allow the use of the barrier, but a separate structural analysis should be performed to verify the use of the barrier as a gravity retaining wall. No wall number or wall plan is provided for such applications. The roadway construction details will include the necessary information for construction of the retaining barrier.

Constructability is expected to be a key factor in the selection of suitable wall types for the project. Both standard and non-standard retaining wall structures can be classified with respect to the manner in which they will be constructed as either "bottom up" or "top down" construction. Bottom up constructed walls would be used at locations where fill is necessary to construct the wall or where excavation for the wall construction would be minimal. Top down constructed walls would be used when the project width approaches the Right-of-Way limits and at locations where soil cutting and significant excavation in front of the wall is required.

The default wall type for the project is mechanically stabilized earth (MSE) walls. As part of preliminary design, wall type selection evaluations will be performed to determine a preferred wall type for each individual wall. Construction cost, constructibility, subsurface soil conditions and any special or unique details for a particular wall will be included in the wall type selection evaluation.

When permanent steel sheet pile walls are designed, the required minimum section modulus per foot for the steel sheet pile should be listed on the plan. (The steel sheet pile should NOT be listed as a PZ number (PZ 27 for example).)

Aesthetic details including color and texture will be determined through the Community Sensitive Design process. The mixing of cast-in-place and precast wall facings within one wall or where two walls abut each other, should be avoided.

The layout of the retaining walls should be shown along the front face of the wall at the base. The stationing of the wall should be given for the wall independent of the roadway stationing. Wall stationing should vary in stationing or designation from the roadway stationing so that it is clear that the stationing is for the wall. The offset from the wall reference line to the roadway reference line should be shown at key points along the wall (kinks and the start and end of horizontal curves for example).

The measured pay area of MSE walls is as given on the contract plans. That is, from a point indicating the top of the wall to the bottom of the wall 1'-6" below the ground line in front of the wall on the wall contract plan. (This area as defined is the pay area for the MSE wall.)

When retaining walls are built in stages only one structure number plaque is required for the completed wall. The location to mount the plaque can be obtained from the WIS 441 Team.

5.2 Design Loads

Dead and live design loads will be per the WisDOT Bridge Manual, the AASHTO specifications and the project geotechnical report for the structure in question.

5.3 Design

Design for external stability and maximum soil pressures will be in accordance with AASHTO LRFD method with required CDR (capacity to demand) ratios conforming to the WisDOT Bridge Manual (2013) or the AASHTO LRFD specifications (listed in order of precedence). Design for structural components will be in accordance with AASHTO Strength Design Method, Load Factor Design.

Drainage to relieve hydrostatic pressure from behind walls should be provided per requirements and details in the WisDOT Bridge Manual. Diaphragm type walls (walls designed to retain and hold back hydrostatic pressure) are not anticipated. Walls shall be designed for a minimum design life of 75-years.

Minimum reinforcing strap length shall be the greater of 8 feet, 0.7H or as given in the geotechnical report for the wall location. Some contractor designed MSE walls will have soil reinforcement longer that the minimum required on the plans. If utilities or obstructions would be encountered by longer soil reinforcement, a plan note shall be added to the wall plan stating that the soil reinforcement may not exceed a length avoiding the obstruction by a minimum of 2 feet. For permanent MSE walls, the minimum embedment is 1'-6". For additional details related to the use of MSE walls including how to handle obstructions within the reinforced wall see the Reinforced Earth Design Manual at the following internet location.
http://www.reinforcedearth.com/sites/default/files/Design_Manual_October_2005_0.pdf
Standard detailed drawings for the use of MSE walls can be found at the following internet location.
http://www.reinforcedearth.com/resources/66

The distance from the front face of an abutment to the front face of the MSE retaining wall shall be a minimum of 2 feet and a maximum of 4 feet. (See US 41 Project Specific Detail.) The structure designer on a case-by-case basis will determine this dimension. This offset area between the abutment face and the wall face should be covered with concrete slope paving to facilitate future bridge inspections.

When "one type" of retaining wall is being constructed under different contracts, "Stage Numbers" should be assigned to the various plans sets.
For Example:

R-05-01 (Stage 1) should appear in the title block

R-05-0001ST1 should be included in the .pdf title for e-submittals

These stage numbers will not be tracked by the Highway Structures Information System in Center Office, but will allow for the coordination of the plan sets during construction. If the wall type changes (MSE to cast-in-place for example) in one continuous retaining wall, a new wall numbers shall be assigned and shown on the plan sets of the different types.

5.4 Railings, Fences and Sidewalks

Traffic barriers, pedestrian rails and fencing shall be detailed on top of walls as appropriate. Walls must be designed for the dead and live load forces that may be transmitted to the walls from the barriers. Not all wall types may be able to easily accommodate top mounted barriers. Where used, barriers, rails and fences shall conform to applicable roadway design criteria for the roadway on which they are located, i.e. only crash tested barriers on Interstate, US and State highways. Wall mounted barriers, rails and fences must transition smoothly to bridge and wing wall mounted barriers. Depending on wall type detailed, barriers may be mounted on concrete moment slabs in accordance with details developed for the project and as given in the WisDOT Bridge Manual. An optional construction joint should be shown between the counter weight portion of the moment slab and the portion of the moment slab the parapet is mounted on. See the corridor standard posted on the ftp site for further definition.

If concrete moment slabs are used (MSE with traffic barrier on top for example):

-All joints to extend the full depth of the parapet and anchor slab and must line up with the MSE panel joint. Use 1" thick cork filler at cast-in-place moment slab joint.

-Use three ¾" diameter smooth dowel bars across anchor slab joints. Dowel bars shall be 1'-6" long and embedded 9" into each slab. Use de-bonder on half the bar length. Do not run other bar steel across joint. Space dowel bars at 24" centers starting 12" from the roadway side of moment slab. Cover joint with 18" wide rubberized membrane waterproofing from the bottom of the slab to the bottom of the parapet.

Simple three tube pipe rails may be used on top of retaining walls that have restricted public access (walls between the roadway and sound walls for example). The pipe railing shall be 42 inches tall, galvanized and painted with an approved

two-coat paint system designated for galvanized surfaces. These railing locations and colors shall be approved for the CSD concepts incorporated in the project.

6 Sign Bridges

6.1 Design

All sign bridges on this project will be designed using the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

Sign Bridge plans should show Bill Dreher (608-266-8489) as the Bridge Office contact.

Centerline of new footing shall be 6′ minimum and 8′ maximum from front of guardrail to allow for 3′-3″ deflection of guardrail and field condition tolerance.

18′-3″ minimum vertical clearance is required from high point of road for sign bridges.

Sign Bridges on mainline WIS 441 are NOT to be lit on this project per the new State policy. No catwalks are to be used (Except as given below for VMS bridges).

All VMS bridge trusses to have catwalks installed initially and these structures shall have a minimum clearance of 18′-3″.

Footing to extend approximately 3′ above grade

At locations where a sign structure base and retaining wall may interfere with each other, the sign structure base should be detailed separately and normally behind (not on) the retaining wall. Any exceptions to this approach should be brought to the attention of the WIS 441 Team for their consideration.

Provide removable dome cap at top of columns, not flat cap.

For cantilever trusses – provide for design of 12′ x 22′ sign size minimum, even if actual sign is smaller.

Mounting signs narrower than the standard sign design width of 22 ft on cantilever trusses; mount the narrower signs at the end of the cantilever structure with the actual sign width centered over the lane. (If a wider sign is used in the future, the sign will extend to the inside of the cantilever and will not be centered over the lane.) All sign bridges shall be designed and laid out in conformance with WisDOT Standards and policies.

Footing design:

Sign Bridges (Large Structures)

Footing design parameters should be evaluated at each site. A geotechnical engineer should make a value judgment/recommendation on what soil parameters to use based on local knowledge of the site or nearby structure borings. Boring needs will be determined by the geotechnical engineer.
When borings are preformed, the sign bridge foundations will be based on the geotechnical report generated for the sign structure.

The default foundation type for sign structures should be drilled shafts, which are typically 18-24 feet deep. If foundations go deeper, then the foundation type would go to driven piles. The 10/441 project will use the LRFD pile driving specification 550. A note will be provided on the plans stating the minimum driving resistance to be obtained.

Overhead Sign Supports (Small Structures)
Follow the Standard Detail Drawings (SDD) given in the Facilities Development Manual (if applicable) from WisDOT.

6.2 Materials
Aluminum will not be used to construct sign structures.

6.3 Aesthetics/CSD
Per the CSS Manual, sign bridge structures will not incorporates special aesthetics treatments. Sign bridges on mainline will have the standard galvanized steel finish. Sign bridges on local streets may have a black painted finish.

7 Box Culverts

7.1 General

Box Culverts will be cast-in-place unless economics or speed of construction would suggest the use of pre-cast concrete box culverts. A cast-in-place design shall be included with a note allowing the option of using a precast alternate where applicable.

7.2 Design loads

Design loads will be based on the HL-93 truck depending on design segment.

7.3 Design

Box Culverts will be designed using the LRFD Specification. The reinforcement bars contained within the top of the concrete box culvert extensions shall be uncoated (black) reinforcement.

8 Community Sensitive Solutions

Corridor wide aesthetic details for structures include the following design elements:

- Pier Shape
- Form Liner Treatments

- Retaining Wall Patterns or Textures
- Colors; Concrete Stain and/or Paint for Structural Steel
- Slope Paving

Aesthetic information given in this document is not meant to be all-inclusive, but only a brief explanation of a select few design items. See the WIS 441 Community Sensitive Solutions Manual for aesthetics treatments to be applied in Winnebago County.

On prestressed girder bridges the outside face AND bottom of outside girder shall be stained the base color as given in the corridor wide CSS Manual.

Parapets:

Parapets will have special formliner treatment, to be determined through the CSS process. Parapet aesthetic formliner, where used, should be detailed to show a 1'-1" smooth portion at the top of the parapet, with the remaining portion below the parapet using the formliner. This configuration generally allows for more efficient use of the 48" tall stock sections of formliner.

Parapets will not have noise walls mounted to the top, only to the outside face.

Slope Paving:

Urban settings (local interchanges): concrete slope paving will be used unless the CSS requirements call for select crushed material.

Rural settings (system interchange and Racine overpass over WIS 441): Select crushed material will be used (Bid Item 604.0600 Slope Paving Select Crushed Material).

9 Noise Barriers

Noise barriers will be used on the WIS 441 project as needed following the normal review and acceptance of acoustic data.

Noise barriers mounted onto the back of concrete parapet should be placed such that a 10" offset is provided between the top inside corner of the concrete barrier and the face of the noise wall (noise wall post face in most cases).

Noise walls mounted on bridge structures shall be mounted to the back side of a standard concrete bridge parapet. Noise walls mounted on retaining walls and approach apron parapets shall be attached to the back of the concrete parapet. Noise walls mounted on the ground shall be supported by a post in a drilled shaft foundation. Ground mounted posts should be 2 feet or more behind the roadway barrier. There may be some exceptions to these rules and these exceptions should be discussed and accepted by the WIS 441 Team.

Where noise walls are mounted to a concrete parapet, the parapet and supporting elements shall be designed for the loads from the noise barrier. Standard details for the needed reinforcement can be found on the WIS 441 FTP site for these conditions.

These structure anchorage noise wall details should be included in the structures plans and bid items.

Noise barriers may be used to retain soil fill to a depth of 3' with no special design of the barrier system. For retained soil depths greater than 3', a special panel and foundation design is required to accommodate the soil loading.

For noise walls that are one continuous wall when complete, but built under different contracts, individual "Unit Numbers" should be assigned to each contract segment of the wall as the manufacturer of the wall could vary from contract to contract. (Unit Numbers would look like N-05-01-01 for example.)

Noise barrier is planned for mounting on the EB/NB Tayco St. structure (B-70-410). No noise barrier will be mounted on the WB/SB Tayco structure (B-70-411). Noise barrier height will be 15' for the WB/SB noise barrier between LLBDM and Tayco.

No noise barrier will be mounted on the LLBDM structures (B-70-403 or B-70-61).

END

Technical Memorandum

Date: February 5, 2012

To: Scott Ebel, P.E. - WisDOT Northeast Region
Kurt Peters, P.E. - WisDOT Northeast Region
Andy Fulcer, P.E. - WisDOT Northeast Region

From: Mike Arnold, P.E. - URS

Project ID: **1517-07-04**

Project: **WIS 441 Tri-County Project**
Winnebago County

Subject: **Tech Memo #7 - Bridge Substructure Type Selection**

1. Introduction

This memo describes the different bridge substructure (pier and abutment) types considered for the WIS 441 project and provides recommended substructure types for each bridge. The recommended pier and abutment types are based on individual bridge site factors such as bridge height and width, proximity to railroad tracks, structure length, economics and aesthetics. The two pier types considered are hammerhead and multi-column pier. The abutment types considered are Type A1 (fixed and semi-expansion sill) and Type A3 (semi-retaining). Pier type recommendations made in this memo were preliminarily coordinated with WisDOT Bureau of Structures.

The substructure recommendations in this memo are based on preliminary engineering and assumptions and are subject to modification. WisDOT will be notified if a change in substructure type is recommended.

2. Pier Types Considered

Each of the proposed structures for the WIS 441 Project was evaluated for substructure type based on bridge height and width, proximity to railroad tracks, structure length, economics and aesthetics. Hammerhead and multi-column piers were considered. See Figures 1 through 3 for approximate pier shapes. Pile bents and pile-encased piers were not considered due to site constraints.

The list below provides a summary of the general considerations for the two pier types:

Hammerhead

- Economical for taller structures
- Crash wall not required for hammerhead piers adjacent to railroad
- Not suited to staged construction
- More opportunity for aesthetic treatment

Multi-column

- Economical, especially in shorter structures
- Crash wall required for multi-column piers adjacent to railroad
- Well-suited to staged construction
- Less opportunity for aesthetic treatment

3. Abutment Types Considered

The list below gives the general considerations for the abutment types considered for the bridges:

A1 (Sill)

- Economical
- Used for fixed or semi-expansion beam seats (girder ends cast-in monolithically with deck)

A3 (Semi-retaining)

- Used for expansion beam seats (requiring expansion bearings)

4. Recommendations

Table 1 - Bridge Substructure Summary below provides a summary of recommended substructure types for each bridge. The table does not include structure widenings which will utilize the existing substructure type.

Bridge	Abutment Type	Pier Type	Comments
System Interchange			
B-70-400	A3	Double shaft Hammerhead	Over RR tracks
B-70-401	A3	Double shaft Hammerhead	Over RR tracks
B-70-402	A1 (Semi-Exp)	Hammerhead	Over RR tracks
B-70-405	A3	Hammerhead	Over RR tracks
B-70-406	A3	Hammerhead	Over RR tracks
B-70-407	A3	Multi-column	
B-70-408	A1 (Semi-Exp)	Multi-column	
B-70-404	A1 (Fixed and Semi-Exp)	N/A	Single span
B-70-409	A3	Multi-column	
LLBDM			
B-70-403	A3	Two-column hammerhead variant	Same as B-70-61
Local Interchanges			
B-70-410	A1 (Semi-Exp)	Multi-column	
B-70-411	A1 (Semi-Exp)	Multi-column	
B-70-420	A1 (Semi-Exp)	Multi-column	
B-70-421	A1 (Semi-Exp)	Multi-column	
B-70-423	A1 (Semi-Exp)	Multi-column	
B-70-424	A1 (Semi-Exp)	Multi-column	
B-70-427	A1 (Semi-Exp)	Multi-column	
B-70-428	A1 (Semi-Exp)	Multi-column	

Table 1 - Bridge Substructure Summary

5. Aesthetic Considerations

Aesthetics for the WIS 441 project have not been established. Coordination will continue between Tri-County Partners, NE Region and Bureau of Structures, with additional input from local groups, to determine what aesthetic treatments will be applied to bridges. Multi-column and hammerhead piers both offer opportunities for aesthetic treatment.

List of Figures:

Figure 1A: Single Shaft Hammerhead Pier
Figure 1B: Double Shaft Hammerhead Pier
Figure 2: Multi-column Pier
Figure 3: LLBDM Pier

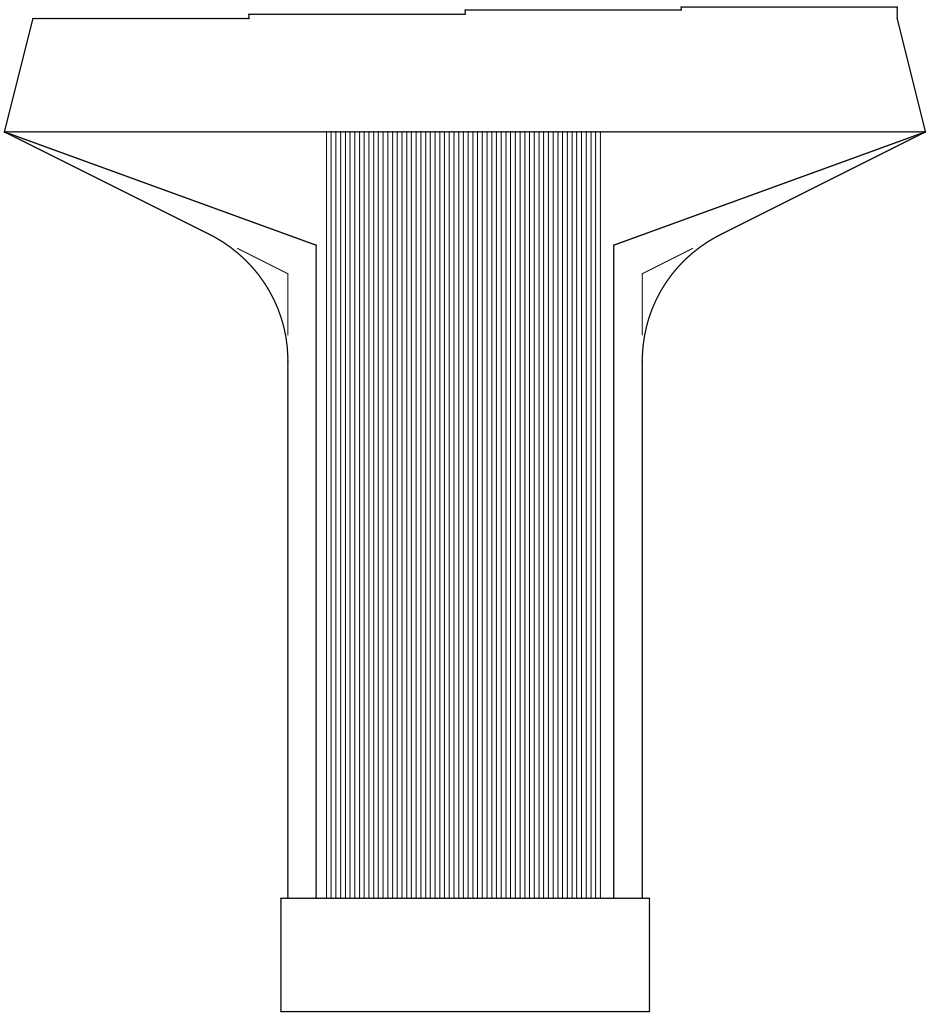


FIGURE 1A
SINGLE SHAFT HAMMERHEAD PIER

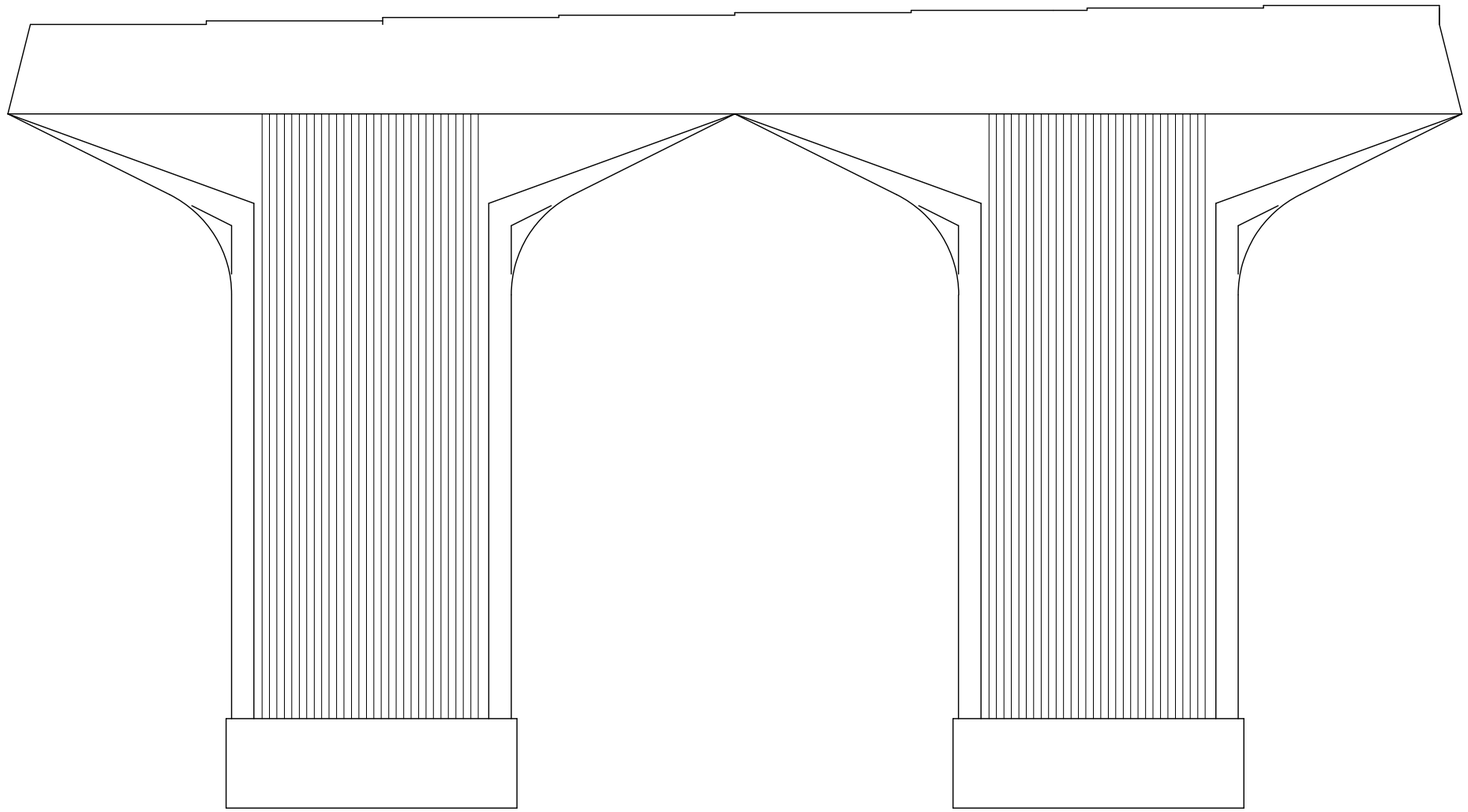


FIGURE 1B
DOUBLE SHAFT HAMMERHEAD PIER

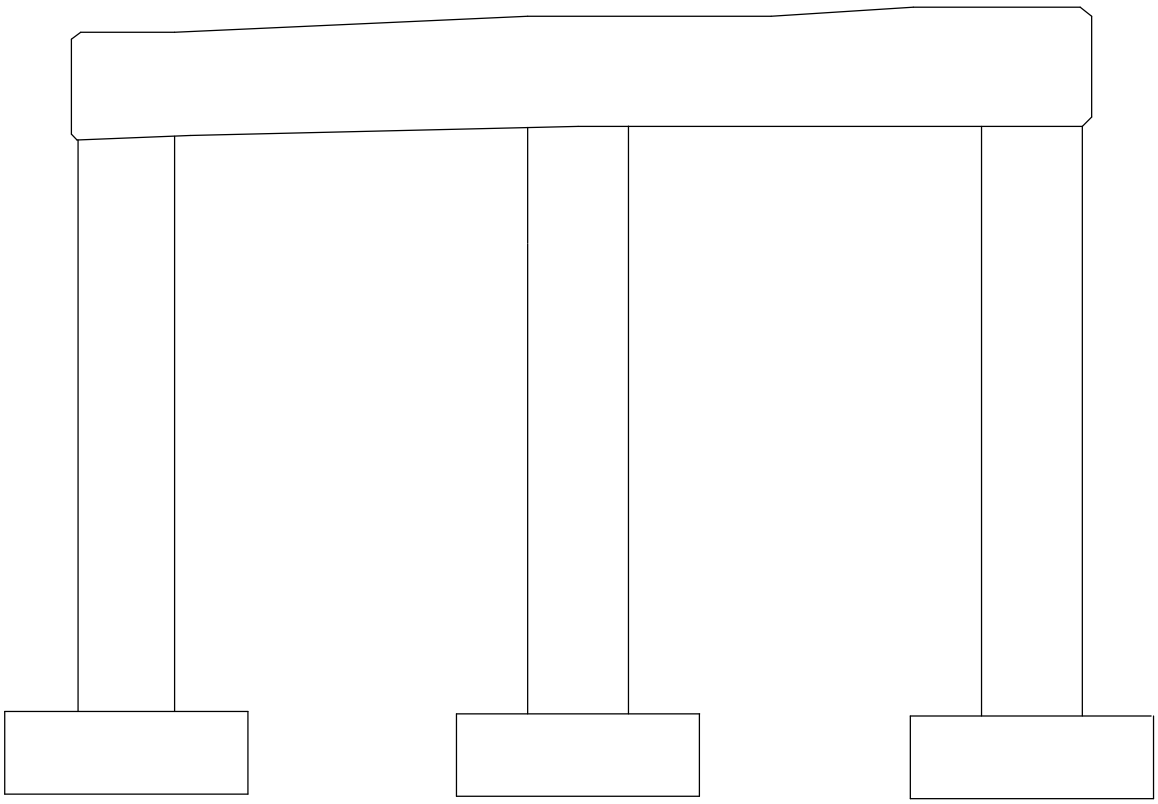


FIGURE 2
MULTI-COLUMN PIER

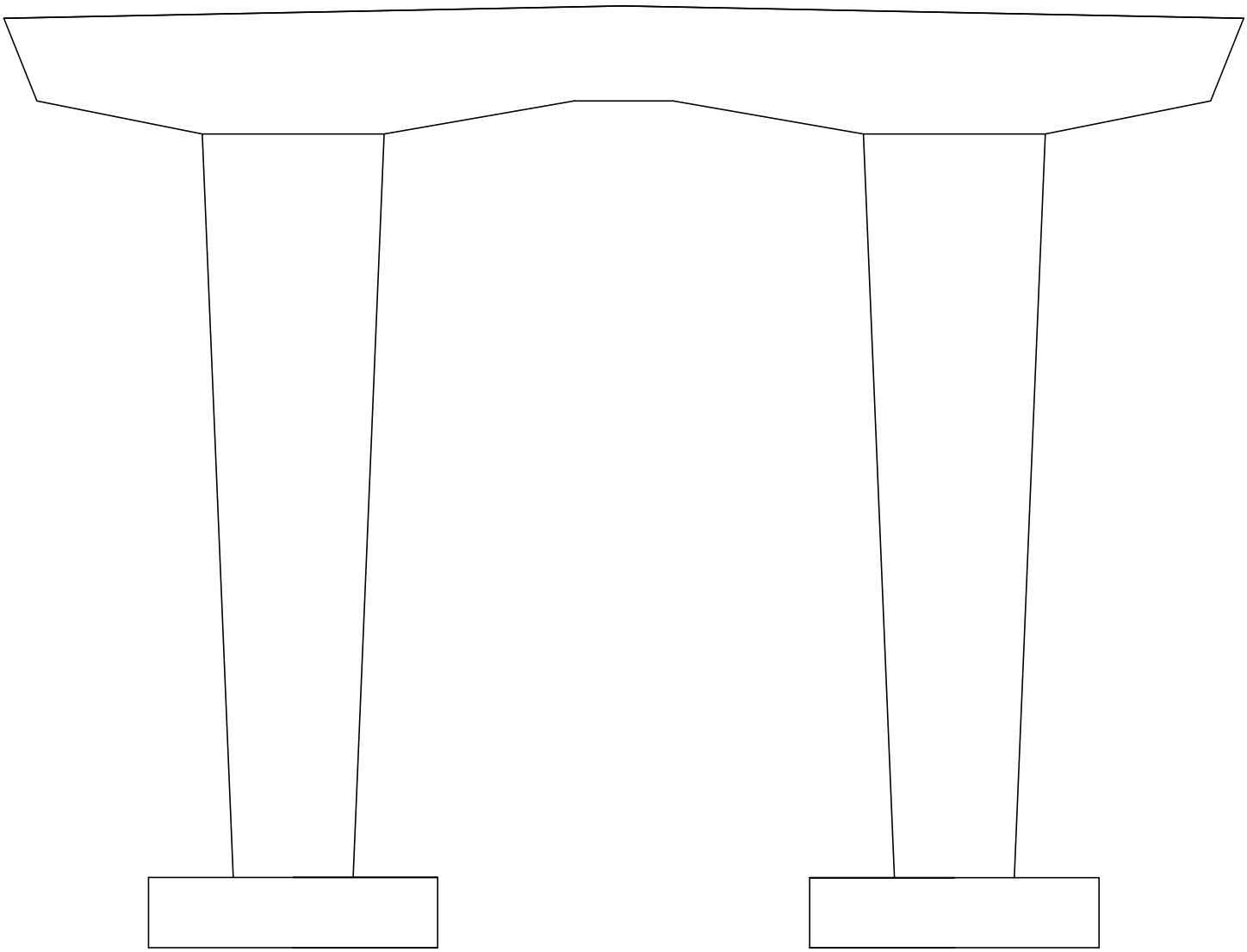


FIGURE 3
LLBDM PIER

WIS 441 - Structure Summary Spreadsheet
Updated 4/15/2013

Structure Number	Feature On	Feature Under	Superstructure Type	# of Spans	Span Lengths (FT)	Total Bridge Length (FT)	Proposed Deck Width FT	Square footage	Cost Estimate
West Leg (US 10) Mainline									
B-70-158	USH 10 WB	Cold Spring Rd	Cont. Concrete Haunched Slab	3	46, 66, 45	158	12.625	1994.75	$180,000
North Leg (US 41) Mainline									
B-70-134	USH 41 NB / Ramp FWN	Menasha Creek	28-inch prestressed concrete girders	1	42	42	16.33	685.86	$70,000
System Interchange									
B-70-400	USH 10 EB / STH 441 NB	N. Lake St., RR, USH 41	72W-Inch Cont. Prestressed Girder	8	118,120,106,136,128, 158, 158, 158	1082	61	66002	$6,600,000
B-70-401	USH 10 WB / STH 441 SB	N. Lake St., RR, USH 41	45W-Inch Cont. Prestressed Girder	10	65,93,115,96,115,115, 115,115,106,113	1048	51	53448	$5,340,000
B-70-402	Ramp FNE	N. Lake St., RR	45W-Inch Cont. Prestressed Girder	6	97,94,100, 100,106,70.5	568	43	24424	$2,440,000
B-70-405	Ramp FWS	N. Lake St., RR, USH 41	Steel Plate Girder	11	TBD	2025	51	103275	$13,430,000
B-70-406	Ramp FWN	N. Lake St., RR	45W-Inch Cont. Prestressed Girder	6	107, 104, 103, 105, 103, 80	602	29	17458	$1,750,000
B-70-407	Ramp FNW	Ramps FEN, FSE and US 41	Steel Plate Girder	4	90, 125, 135, 90	440	29.5	12980	$1,690,000
B-70-409	Ramp FEN	USH 41	72W-Inch Cont. Prestressed Girder	7	69,112,145,142, 115,115,82	780	34	26520	$2,650,000

WIS 441 - Structure Summary Spreadsheet
Updated 4/15/2013

Structure Number	Feature On	Feature Under	Superstructure Type	# of Spans	Span Lengths (FT)	Total Bridge Length (FT)	Proposed Deck Width FT	Square footage	Cost Estimate
South Leg (US 41 Mainline)									
B-70-131	USH 41 SB	Wis Central RR & Green Bay Rd	54" Steel Plate Girder	2	135.5, 140	282	20.25	5710.5	$740,000
B-70-132	USH 41 NB	Wis Central RR & Green Bay Rd	54" Steel Plate Girder	2	135.5, 140	282	20.25	5710.5	$740,000
B-70-129	USH 41 SB	CTH II	54-Inch Cont. Prestressed Girder	2	105, 100	209	19	3971	$400,000
Little Lake Butte des Morts Crossing									
B-70-61	USH 10 WB / STH 441 SB	Little Lake Butte des Morts	Continuous Steel Deck Girder and 72W prestressed girder	18	9 @ 178, 1 @ 225, 8 @ 178	3403	69	234807	$17,610,000
B-70-403	USH 10 EB / STH 441 NB	Little Lake Butte des Morts	72W-Inch Cont. Prestressed Girder	22	22 @ 158	3412	75	255900	$25,590,000
Local Interchanges									
B-70-410	USH 10 EB / STH 441 NB	Tayco Rd	36W-Inch Cont. Prestressed Girder	3	34, 84, 29	152	90	13680	$1,370,000
B-70-411	USH 10 WB / STH 441 SB	Tayco Rd	36W-Inch Cont. Prestressed Girder	3	34, 84, 29	152	87	13224	$1,320,000
B-70-420	USH 10 EB / STH 441 NB	NW Ramp CTH P Interchange	36W-Inch Cont. Prestressed Girder	2	73, 81	154	79	12166	$1,220,000
B-70-421	USH 10 WB / STH 441 SB	NW Ramp CTH P Interchange	36W-Inch Cont. Prestressed Girder	2	73, 81	156	64	9984	$1,000,000
B-70-423	USH 10 EB / STH 441 NB	CTH AP	45-Inch Cont. Prestressed Girder	2	104, 90	194	63	12222	$1,220,000
B-70-424	USH 10 WB / STH 441 SB	CTH AP	45-Inch Cont. Prestressed Girder	2	90, 90	180	63	11340	$1,130,000
B-70-113	USH 10 EB / STH 441 NB	STH 47	45-Inch Cont. Prestressed Girder	2	87, 77	166	64	10624	$1,060,000
B-70-114	USH 10 WB / STH 441 SB	STH 47	45-Inch Cont. Prestressed Girder	2	87, 77	166	64	10624	$1,060,000
B-70-427	STH 441 NB	Oneida St	45W-Inch Cont. Prestressed Girder	2	116, 107	223	63	14049	$1,400,000
B-70-428	STH 441 SB	Oneida St	45W-Inch Cont. Prestressed Girder	2	105, 104	209	63	13167	$1,320,000

WIS 441 - Structure Summary Spreadsheet
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Structure Number	Feature On	Feature Under	Culvert Type	Original Length (FT)	Extension Length (FT)	Cost Estimate	Comments
System Interchange							
C-70-42	US 41	Drainage	Single cell	383	23.167	$40,000	Extension
C-70-43	FSE	Drainage	Single cell	68	75	$130,000	Extension
C-70-54	FES and FEN	Drainage	Double cell	170	48.333	$90,000	Extension

WIS 441 - Structure Summary Spreadsheet
Updated 4/15/2013

RETAINING WALLS

Project Number	Proposed Structure Number	Type		Station	to	Station	Total Length FT	Max Ht FT	Area SF	Estimated Cost	Description
1517-07-72	R-70-100	MSE/Tilt-up panel		152+50	-	155+00	225	13	2981	$178,875	Ramp FEN, Left (W. Abut B-70-406)
1517-07-72	R-70-102	MSE/Tilt-up panel		142FEN+00	-	143FEN+00	170	12	2040	$122,400	Ramp FEN, Left (in front of B-70-402 W. abut.)
1517-07-72	R-70-105	MSE		167FEN+50	-	176FEN+50	915	10	9150	$549,000	Ramp FEN, Right (next to RR) south of B-70-134
1517-07-72	R-70-115	MSE		177FEN+00	-	1370NB+75	619	9	5571	$334,260	Ramp FEN/41 NB, Right (next to RR) north of B-70-134
1517-07-78	R-70-120	MSE/Tilt-up panel		181WB+04.02	-	184WB+85.72	382	16	6112	$366,720	US 10/WIS 441, Left
1517-07-72	R-70-121	MSE/Tilt-up panel		130+50	-	135+50	500	12	6000	$360,000	Ramp FWN, Right
1517-75-72	R-70-141	MSE/Tilt-up panel		230MSE+50.00	-	237MSE+50.00	700	8	5250	$315,000	CTH AP Interchange, Ramp C, Right
1517-75-72	R-70-150	MSE/Tilt-up panel		236+00	-	241+00	500	12	6000	$360,000	USH 10/WIS 441, Right
1517-75-72	R-70-151	MSE/Tilt-up panel		243+23	-	247+00	377	12	4524	$271,440	USH 10/WIS 441, Right
1517-75-72	R-70-142	MSE/Tilt-up panel		248MNE+50.00	-	261EB+00.00	1,248	12	14976	$898,560	CTH AP Interchange, Ramp B, Right
1517-75-72	R-70-122	Ret. barrier		218EB+50.00	-	220EB+10.00	160	9	1440	$86,400	10/441 EB Under Racine Rd. overpass
1517-75-72	R-70-123	Ret. barrier		220WB+00.00	-	221WB+75.00	175	10	1750	$105,000	10/441 WB Under Racine Rd. overpass
1517-07-74	R-70-106	MSE		1277+50	-	1288+00	1,050	13	13650	$819,000	US 41 SB along American Dr.
1517-07-74	R-70-107	MSE		1260+13	-	1268+00	787	9	7083	$424,980	US 41 SB south of B-70-131
1517-07-75	R-70-108	MSE		1260+00	-	1266+25	625	14	8750	$525,000	US 41 NB south of B-70-132
1517-07-75	R-70-109	MSE		1269+28	-	1270+50	122	13	1586	$95,160	US 41 NB north of B-70-132
1517-07-75	R-70-110	MSE		1289+63	-	1296+50	687	9	6183	$370,980	US 41 NB at Conway
1517-07-75	R-70-111	Ret. barrier		1304+35	-	1306+10	175	8	1400	$84,000	US 41 NB under Jacobsen Rd. Bridge
1517-07-75	R-70-113	MSE		1253+00		1254+00	105	8	840	$50,400	US 41 SB South of B-70-129
1517-07-75	R-70-114	MSE		1256+13		1262+25	612	9	5508	$330,480	US 41 SB North of B-70-129
1517-07-75	R-70-112	MSE		1294+50		1297+00	425	7	2975	$178,500	US 41 SB along American Dr.
R-70-100 to 159 reserved for project						Totals:	10,559	225	113,769	$6,826,155	

NOISE BARRIERS

Project Number	Proposed Structure Number	Type		Station	to	Station	Total Length FT	Avg Ht FT	Area SF	Estimated Cost	Description
1517-07-78	N-70-100	Noise Barrier					880	16	14080	$422,400	Tayco Street area, south of USH 10/441
1517-07-78	N-70-101	Noise Barrier					1,390	16	22240	$667,200	Tayco Street area, north of USH 10/441
1517-75-71	N-70-110	Noise Barrier					1,170	16	18720	$561,600	Frances St area, north of USH 10/441
1517-75-71	N-70-121	Noise Barrier					1,582	16	25312	$759,360	CTH P to CTH AP, north of USH 10/441
1517-75-73	N-70-130	Noise Barrier					1,132	16	18112	$543,360	East of Appleton Rd south of Ramp ASE
1517-75-73	N-70-131	Noise Barrier					1,980	16	31680	$950,400	East of Appleton Rd north of Ramp ANE and 10/441
1517-75-73	N-70-140	Noise Barrier					1,822	16	29152	$874,560	South of 10/441 and Ramp TSW at Oneida St.
1517-75-74	N-08-10	Noise Barrier					3,959	16	63344	$1,900,320	South of Ramp TSE at Oneida St. and 10/441
1517-75-74	N-08-11	Noise Barrier					4,056	16	64896	$1,946,880	North of Ramp TNE at Oneida St and 10/441
N-70-100 to 149 and N-08-10 to 20 reserved for project						Totals:	17,971	144	287,536	$8,626,080	

WIS 441 LLBDM Bridge Life Cycle Cost Analysis

Background The WIS 441 Tri-County Expansion Project includes widening and re-decking of B-70-61, the Roland Kampo Memorial Bridge, which currently carries US 10 / WIS 441 traffic across Little Lake Butte des Morts. The existing structure is 3,200 feet long and consists of steel girders. A new structure built directly south of B-70-61 is proposed to carry EB traffic over LLBDM while B-70-61 will carry WB traffic. The project team has coordinated with Bureau of Structures (BOS) to perform a life cycle cost analysis (LCCA) comparing the cost of the proposed re-decking and widening to the cost of complete bridge reconstruction.

Alternative 1: Re-deck and Overlay

Description of Work Required	Year
Deck replacement and widening	0
Concrete overlay and paint girders	25
New bridge	40
Concrete overlay	65
End of analysis period	75

Alternative 2: New Structure

Description of Work Required	Year
New bridge	0
Concrete overlay	25
Deck replacement	40
Concrete overlay	65
End of analysis period	75

LCCA Assumptions

- Routine maint. & inspection costs neglected
- User delay costs are neglected
- Design cost = 8% of construction cost
- Analysis period = 75 years

Comparison of LLBDM Construction Alternatives

Criteria	*Alternative 1: Re-deck and widen existing structure*	*Alternative 2: Reconstruct existing structure*
Life Cycle Costs (see note) [1] 2% discount rate [2] 3% discount rate [3] 4% discount rate	*$42,000,000[1]* *$38,200,000[2]* *$35,100,000[3]*	*$57,500,000[1]* *$56,200,000[2]* *$57,400,000[3]*
Design and Construction (1)	*Proposed roadway layout will require retrofits to existing structure. Some impacts to adjacent project features*	*New structure can be built to accommodate proposed roadway layout and provides more flexibility for adjacent project features*
Substandard Features	*The rehabilitated structure will have 8' and 10' shoulders*	*New structure will have 12' shoulders*
Girder Type	*Existing bridge is built with steel girders which will not match proposed B-70-403 LLBDM bridge*	*New bridge is built with concrete girders to match proposed B-70-403 LLBDM bridge*
Pier location; Agency and Public Concerns	*Pier locations will not match proposed B-70-403 bridge. Some agency & public coordination is expected*	*Pier locations will match the proposed B-70-403 bridge*
Funding	*Sufficiency rating is 66.1 which qualifies the bridge for Federal funding for a rehabilitation*	*Sufficiency rating must be less than 50 to qualify for Federal funding for a replacement*
Environmental Document	*This alternative is proposed in the approved Environmental Document*	*This alternative may require amendment or re-eval of the Environmental Document*

Note: Alternative 2 costs include the salvage cost for the existing bridge which affects sensitivity to discount rate.

Recommendation

Due to considerably lower life cycle costs, the project team recommends re-decking and widening the existing LLBDM Bridge as currently proposed.

Technical Memorandum

Date: March 19, 2012

To: Scott Ebel, P.E. - WisDOT Northeast Region
Kurt Peters, P.E. - WisDOT Northeast Region
Andy Fulcer, P.E. - WisDOT Northeast Region

From: Mike Arnold, P.E. - URS

Project ID: **1517-07-04**

Project: **WIS 441 Tri-County Expansion**
Winnebago County

Subject: **Tech Memo #9 – Little Lake Butte des Morts Bridge (B-70-61) Life Cycle Cost Analysis**

1. Introduction

This memo provides a life cycle cost analysis (LCCA) for B-70-61, the existing bridge over Little Lake Butte des Morts (LLBDM). B-70-61, which currently carries EB and WB US 10 / WIS 441 traffic over LLBDM, is a 3,200 foot long steel girder bridge and is proposed for re-decking and widening under the WIS 441 Tri-County Expansion project. The structure will then carry WB US 10 / SB WIS 441 over LLBDM; a new structure (B-70-403) built directly south of B-70-61 is proposed to carry EB traffic over LLBDM. The LCCA compares the cost of the currently proposed re-decking and widening of B-70-61 versus the cost of complete bridge reconstruction.

This memo includes several additional considerations regarding the options to rehabilitate or reconstruct B-70-61.

2. Life Cycle Cost Analysis (LCCA) Assumptions

- New structure design life and service life = 75 years
- Existing structure design life and service life = 75 years
- Bridge deck total service life = 40 years
- Bridge deck service life before major rehabilitation (overlay) = 25 years
- Steel girder paint service life = 30 years
- Routine maintenance and inspection costs are neglected
- User delay costs are neglected
- Design cost = 8% of construction cost
- Analysis period = 75 years
- Discount rate = 3.0%

3. LCCA methodology

The LCCA for the rehabilitate and replace alternatives for B-70-61 follows the guidance provided by Federal Highway Administration (FHWA) Technical Bulletin No. FHWA-SA-98-079 titled “Life Cycle Cost Analysis in Pavement Design: In Search of Better Investment Decisions.” The LCCA takes into account the initial capital cost of the given alternative in addition to the major rehabilitations or replacement required in the future within the analysis period.

a. Analysis Period

The analysis period chosen for the LCCA is 75 years because this is the design life of a new structure. Both alternatives use the same analysis period.

b. Service Life

The service lives assumed in *2a. LCCA Assumptions* describe the approximate time a given structure rehabilitation or new structure will last under normal operating circumstances before another rehabilitation or structure replacement is required. The service lives were confirmed with WisDOT NE Region Maintenance and Bureau of Structures as reasonable estimates.

c. Residual/Salvage Value

If the service life of a rehabilitation or a new structure extends beyond the end of the analysis period, a "residual value" or "salvage value" is included in the LCCA as a credit to the life cycle cost. The residual value assigned to a rehabilitation or new structure is assumed in this analysis as a pro-rated amount based on linear depreciation.

In Alternative 2 (Replace existing structure), a residual value is assigned to the existing structure since it has not reached its full service life. Likewise, in Alternative 1 (Re-deck and widen existing structure) a residual value is assigned to the new structure built in year 40 since it has not reached its design life of 75 years.

d. Discount Rate

The discount rate used for the LCCA represents the opportunity cost for the public and reduces future costs to their value in present dollars. Per FHWA recommendation, the discount rate is estimated from the US Government Treasury Bill. The *real* discount rate is used, which does not include an inflation premium and is used with non-inflated future costs.

e. Present Value

The LCCA compares all costs using the present value of money. The following formula calculates the present value of an expenditure:

$$PV = FVN / (1+DR)^N$$

Where:
PV = Present value of expenditure
FVN = Future value of expenditure made at time N
DR = Discount rate
N = Number of years between present and future times

4. LCCA Results

Figures 1 and 2 below summarize the results of the LCCA using a discount rate of 3.0%.

Figure 1 - Alternative 1: Re-deck and widen existing LLBDM structure

Description of Work Required	Year	Expenditure*	Present Value
Deck Replacement and Widening	0	$27,000,000	$27,000,000
Concrete overlay and paint girders	25	$2,721,600	$1,299,851
New Bridge	40	$38,448,000	$11,786,497
Concrete overlay	65	$1,944,000	$284,627
Salvage/Residual Value	75	($20,505,600)	($2,233,987)
		Total Present Value	$38,200,000

*Design cost included in expenditure

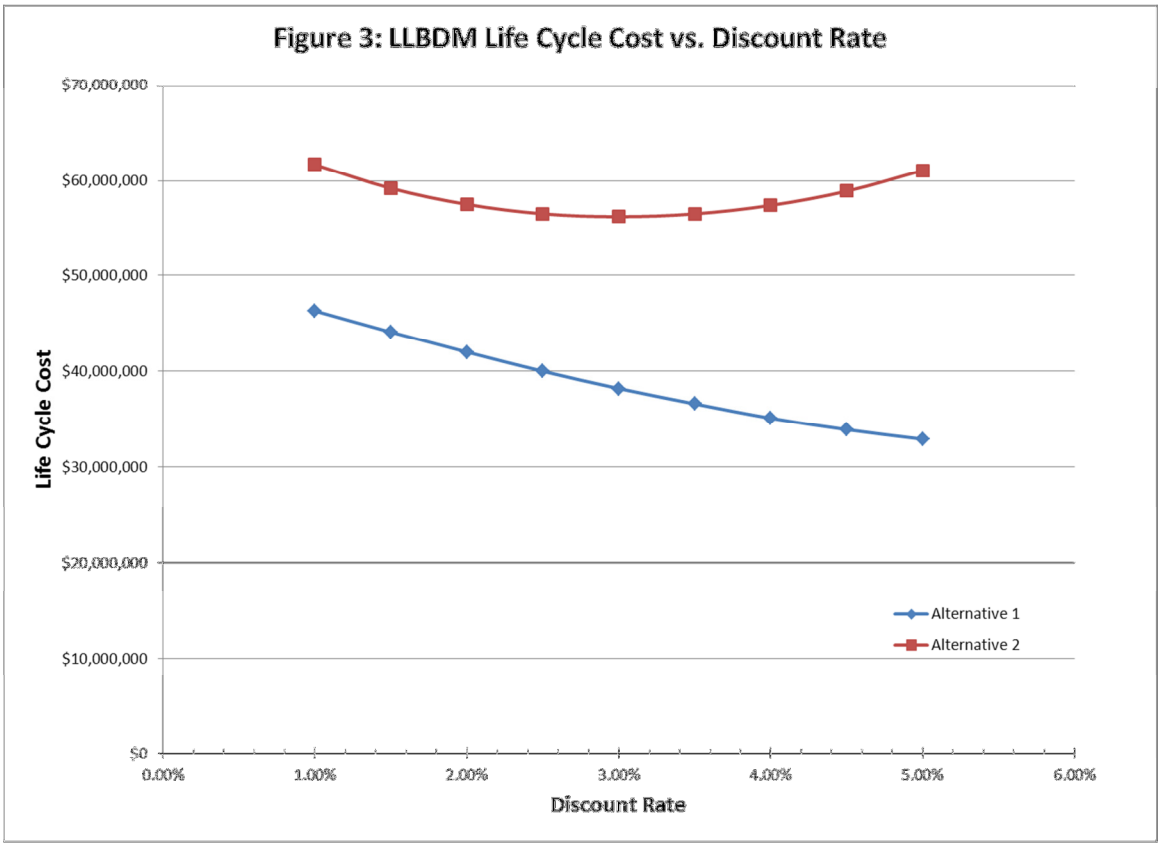
Figure 2 - Alternative 2: Reconstruct existing LLBDM structure

Description of Work Required	Year	Expenditure*	Present Value
Residual Value of Existing Bridge	-37	$5,999,400	$9,074,182
New Bridge	0	$38,448,000	$38,448,000
Concrete overlay	25	$1,944,000	$928,465
Deck Replacement	40	$24,192,000	$7,416,223
Concrete overlay	65	$1,944,000	$284,627
Salvage/Residual Value	75	$0	$0
		Total Present Value	$56,200,000

*Design cost included in expenditure

5. Sensitivity Analysis

A range of discount rates from 1.0% to 5.0% was used to assess the sensitivity of the life cycle cost for each alternative. Figure 3 below illustrates the range of life cycle costs given the discount rate used.



6. Additional Considerations

A number of factors in addition to cost influence the decision to rehabilitate or replace B-70-61.

a. Design and Construction

The design of both alternatives for the LLBDM bridge involves several complexities which require unique design details and construction methods and also affect the design of adjacent roadway and bridge features on the WIS 441 project.

Under Alternative 1, the proposed roadway configuration for B-70-61 requires extensive modification to the existing steel girder layout on the bridge, including removal and replacement of exterior girder lines at the two westernmost spans and all girder lines for the three easternmost spans. The introduction of a horizontal curve in the roadway at the east end of the bridge results in a high degree of incompatibility of the existing girders with the proposed superelevated deck configuration. These incompatibilities carry further down to the pier caps at the two easternmost piers and the east abutment, requiring demolition and reconstruction of the caps, including widening the pier caps and lowering or raising the

beam seats as required. The additional cost for the pier and abutment retrofits and the new girders is included in the LCCA.

The existing LLBDM bridge width is 65 feet from inside to inside of parapet for most of its length. This allows for four 12 foot lanes, an eight foot inside shoulder and a 10 foot outside shoulder under the re-decking alternative. The substandard eight foot shoulder width cannot be improved given the existing girder layout. Future construction of a new bridge with standard shoulder widths would not be compatible with the currently proposed system interchange alignments.

The LLBDM bridge profile has an influence on adjacent project features. To the east of LLBDM, B-70-411 carries WB 10/441 over Tayco Street. The desired vertical clearance of that structure over Tayco Street cannot be maintained without significantly affecting the drainage of Tayco Street. The existing 10/441 profile is too low to provide the desired clearance and avoid a sag in the Tayco Street profile under the bridge. Stormwater in this location would be handled with a sump system, adding cost and maintenance implications.

B-70-61 is a continuous steel girder structure with 178’ spans and a 225’ navigation span. The proposed B-70-403 structure to the south of B-70-61 is a concrete girder structure with 155’ spans across LLBDM. Under the current proposal, the two structures would not have piers which line up with one another. In addition, B-70-403 will have its abutments located approximately 125 feet beyond the B-70-61 abutments due to geotechnical considerations. Replacement of the existing LLBDM bridge would allow for alignment of all the substructures and provide visual consistency between the two LLBDM bridges.

b. Funding

The existing LLBDM bridge has a sufficiency rating of 66.1. A structure must have a sufficiency rating below 50 in order to qualify for Federal funding for full replacement. The sufficiency rating is less than 80, which does qualify the LLBDM bridge for Federal funding for a rehabilitation.

c. User Delay Costs

User delay costs are not included in the LCCA, but these costs are quite significant for rehabilitations and especially for replacement of a structure as large as B-70-61. The overall user delay costs for Alternative 1 (structure rehabilitation) are likely to be smaller since the future replacement will incur large user delay costs which are then discounted. Alternative 2 (structure replacement now) will incur a relatively higher user delay cost since there is no discounting of the costs. However, constructing a new bridge now may have a relatively smaller impact on the travelling public in the larger context of the WIS 441 construction project.

d. Environmental Document

The Environmental Document for the WIS 441 Tri-County Freeway Expansion did not include discussion of a structure replacement for B-70-61, only the widening and re-decking. The Environmental Document would need to be amended or a re-evaluation may be necessary if a structure replacement is proposed.

WIS 441 Tri-County Project Corridor Manual
Chapter 15: Survey

Chapter Contact: Kapur & Associates, Tri County Partners

Issued: February 14, 2012
Revised:

Scope/Purpose
Kapur & Associates (KNA) will perform supplemental field surveying and update mapping for the corridor. This chapter defines the Horizontal and Vertical Datums to be used for all corridor designs and construction. In addition such things as the process for individual survey requests, and guidance on the process and special provisions applicable to resetting of monuments during construction are included.

Reference Documents
- WisDOT FDM Chapter 9, Surveying
- WisDOT Standard Specifications for Construction, Section 650 - Construction Staking

Survey Request Form
Designers are to use the attached Survey Request Form to request additional spot/supplemental surveys. The form must be submitted 30 days prior to the date the survey data is needed by the design team. Submit the form to:

Prasad Narayan
Prasad@kapur-assoc.com
414-751-7228

After KNA completes the surveying they will provide electronic files to the designer. KNA will integrate the supplemental survey into the base mapping for the project.

Survey Data note: When reviewing survey data note that many times information is provided in both the "Point Description" as well as the "Comments" field. Also, storm sewer measure-downs and inlet elevation type data will often be found in the "Comments" field.

Plan Set Coordination
All plans for projects located in Winnebago County (Calumet?) are to include the following:

Title Page Notes: COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), WINNEBAGO COUNTY, NAD 83 (1991).

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD 88 (07).

Contacts: Winnebago County
Zoning Office
448 Algoma Blvd, 2nd Floor
(920) 236-4844
calvinsky@co.winnebago.wi.us

Peter Hatas, County Surveyor
Aero-Metric Inc 420
Technology Parkway

Sheboygan, WI 53082-0049
(920) 457-8194
phatas@aerometric.com

Misc Quantities: The SPV item for resetting section corners shall not be used. The Winnebago and Calumet County Survey Coordinator will reset all section corners.

Standard spec item 621.0100 Landmark Reference Monuments shall be used. Four landmark reference monuments shall be used per section corner to be reset by the ___ County Survey Coordinator. This item shall only be used on the final stage of a project. Include standard detail drawing # 16A1-6 for this item.

Directions for using the SPV item for project staking will come from the WIS 441 team. They will determine if the item covers each project ID separately or if the item covers the whole plan set, and how the item is to be shown in the misc quantities.

Plan & Profile: Benchmarks will be provided by WisDOT. These benchmarks are described in the following "Machine Control Monuments" segment and shall be listed in a chart on the appropriate plan sheet. Please note that a survey grade horizontal location was not derived for each benchmark. A written description was created for each benchmark and is expected to be used. In the following segment there is discussion of mapping being available showing the location of benchmarks. These symbols were derived from a hand held GPS and therefore are not accurate for plan purposes.

For the current benchmark summary please contact Andrew Fulcer, PE (Andrew.fulcer@dot.wi.gov), 920-492-2236.

Machine Control Monuments:

GPS machine control construction will be used exclusively for the WIS 441 project. To support this WisDOT has created a control network consisting of __ monuments strategically placed along the project. These monuments are to be specifically used as control for this project. There is to be no horizontal adjustment into any public land survey monuments for construction purposes.

These monuments are out of the footprint of the major construction but well within the range of any GPS base station that the contractors will utilize. WisDOT expects the contractors involved in the construction of this project and who use these monuments to respect properties adjacent to the monuments. Contractors shall not cause damage to the surrounding area and shall not impede traffic while they are engaged in any calibration sessions. WisDOT also expects the contractor to notify the NER Survey Coordinator if they feel the machine control monument is not accurate, was disturbed or is in peril.

Horizontal and vertical values for the monuments will be published and provided by the WisDOT NER. The monuments will be occupied each spring after the thaw to assign accurate values. When these values are assigned they will be provided to the contractors and the previous values are to be ignored. It will be the responsibility of the contractors to recalibrate their equipment to the current values for the construction season.

The format of the vertical and horizontal information will be as follows.

- A copy of the Machine Control Monuments that will show the horizontal and vertical datum's used for the project along with the results of the control survey. Included in this chapter will be a list of the __ monuments showing the adjusted values of the monuments along with a map showing the approximate location.
- A copy of a location sketch of the monument with ties showing a distance from reference points to the machine control monuments. Two photographs,

one showing a close up and a second showing a panoramic view of the location of each monument.

- A list of vertical benchmarks that were set by the WDOT. These benchmarks are tied into the network of machine control monuments and are to be used as a check to the machine control monuments. These benchmarks are described by a description along with a map showing their general location.

It shall be the contractor's responsibility to supply these control files to their contracted surveyors.

Attachments

Survey Request Form (Dated 02-01-12))
List of monuments and map (Dated ???)

SURVEY REQUEST

To: Prasad Narayan

From: _____ Approved: _____
Supervisor

By: _____

Date: _____

Reference: Survey Request
Preferred Completion Date: _____
Date Received: _____

PS&E Date Coordinate Data

Attached please find the needed items for:

I. Original Survey

1) Chargeable I.D. and _____
Project Description _____

2) Specific Scope of Work

- ☐ Resurface
- ☐ Reconstruction
- ☐ New or Relocation
- ☐ R/W
- ☐ New Replacement Structure
- ☐ Deck Overlay
- ☐ Deck Replacement
- ☐ Utilities

3) Specific Details of Request _____

_____

_____

_____

_____

_____

_____

II. To Be Furnished by Requester If Available.

1) Old Plans, Plats, Title Search
2) Previous Survey Information
3) Coordinate Alignments
4) Sketches: Detail Sheets
R/W Sheets (Alignments) (PRW Points)
Plan & Profile Sheets

COMMENTS: _____

_____

_____

WIS 441 Tri-County Project Corridor Manual
Chapter 16: Utilities

Chapter Contact: Andy Devos (WisDOT)
Michael Kowal (Becher Hoppe)

Issued: February 14, 2012
Revised: April 9, 2012
August 15, 2012
May 15, 2013
September 16, 2013
January 17, 2015

Scope/Purpose
Becher-Hoppe is performing all of the utility coordination for the corridor. They will submit the 1078 Forms using utility designs prepared by the various design teams. This chapter is not meant to be a tutorial on Utility Coordination. All of the design teams are understood to be familiar with the basic concepts of utility coordination as they are practiced on DEPARTMENT projects. This chapter enhances this knowledge by providing basic guidance specific to the WIS 441 Corridor to be used by the design teams. The goal is for those teams to provide consistent utility designs that will aid in the utility coordination process. This chapter is organized as follows:

- Expectations of WIS 441 Utility Coordinators
- Expectations of WIS 441 Design Team

Freeeway Designation
WIS 441 is designated as a freeway, so the 90/10 cost share for utilities will apply to this project (4/22/13 Chad DeGrave e-mail)

Reference Documents

On Line Manuals:

- Facilities Development Manual (FDM) – Chapter 18, Utilities
- WisDOT Guide to Utility Coordination – Chapters 1 thru 26

Hard Copy:

- Utility Accommodation Policy. The Utility Accommodation Policy is a comprehensive list of policies written in cooperation with representatives of the utility industry, district maintenance staff, and the Federal Highway Administration.

Diggers Hotline Logo:
New Diggers Hotline logo to be used starting with November 1, 2013 PS&E is located on the FTP site at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/Utilities/DiggersLogo/

Design Considerations
Utility relocations should be 15' from proposed noise barriers (12/2/14 Design/Structure meeting)

Expectations of WIS 441 Utility Coordinators

- Distribution of DT1077 to Utilities

- Maintenance and distribution of WIS 441 Corridor existing utility CAD file (UT File). This file is located on the project FTP site. Becher Hoppe will email designers when the file is updated. There is also a CAD resource file which will allow the designers to view the UT File as it meant to be. Call Tom Heath, Becher Hoppe, 715-845-8000 with any questions on the UT File. A file is also attached to provide guidance to designers on how to reference the UT File into the design firm's drawings.

- Updated utility contact lists for the project area at 60% Plans, Internal 90% Plan Review, Draft PS&E submittal, and Final PS&E submittal.

- Utility Status Report and Utility Special Provision at Internal 90% Review, Draft PS&E, and Final PS&E submittals.

- Attendance and participation at informational / progress / pre-construction / field construction meetings as necessary.

- Distribution of DT-1078 Package (following 60% plan review meeting and comment implementation). This package includes project plans, potential conflicts, and forms required for the utility to complete their work plan.

- Coordination of monthly segment Utility Coordination Meetings

- Coordination of Utility Coordination Meetings with individual utilities as necessary.

- Timely review of utility work plans and posting to project FTP site for designer review and comment.

- Utility coordination with TMP coordinators. Work plans will be forwarded to Jerry Shadewald (HNTB) for review of utility relocation schedule versus potential impacts to the TMP stages at the time of relocation. Mr. Shadewald and his team will forward any concerns to Becher Hoppe, or request additional information from the utility, for discussion and resolution between the TMP design and specific utility(s).

- Coordination of adjustments to relocation plans and communication of those to designers or construction personnel.

- Timely completion of utility compensable parcel negotiations (NER and Central Office).

- Resolution of problems with special provisions.

- Use relocation expertise to resolve project problems.

- Provide timely completion of plats and legal descriptions for scheduled relocation order approvals.

- Provide tracking of all Trans 220 projects.

- Provide education and training to project personnel on existing and / or new policies and procedures as necessary.

- Respond to individual requests for emergency assistance.

- Intercede as necessary to help resolve project disputes or conflicts between the utilities and the contractors, other utilities and adjacent property owners.

- Timely review and completion of utility construction permits (NER Utility Unit).

Expectations of WIS 441 Design Team

- Sufficient advanced notice of requests for utility survey, meeting requests, or due dates for Utility Status Report and Special Provisions.

- Submittal of a 60% or better complete plan set for each utility consisting of Title sheet, R/W Plat, Typical section (existing and proposed), 20-scale P&P (with utility lines bold and utilities labeled, Cross sections (with utility tick marks), Structures, Signals, temporary signals, landscaping, and Lighting plans. See FDM and WisDOT Guide to Utility Coordination for more details.

- Advise Becher Hoppe immediately of any plan or completion date changes. If there is a DT1078 plan update the utilities are notified as soon as possible so work plan development is as efficient as possible.

- Cooperation in attending meetings coordinated by WIS 441 Utility Coordination personnel (i.e. Segment Monthly Utility Coordination Meetings)

- Supply design information to plat unit One (1) year in advance of relocation order date; include slope intercepts, ties, survey and topographical information.

- Timely review of utility work plans (typically 2 weeks). Comments should be sent to Becher Hoppe for further utility coordination as needed.

- Coordinate with Real Estate Unit to provide deed and easement information to plat unit.

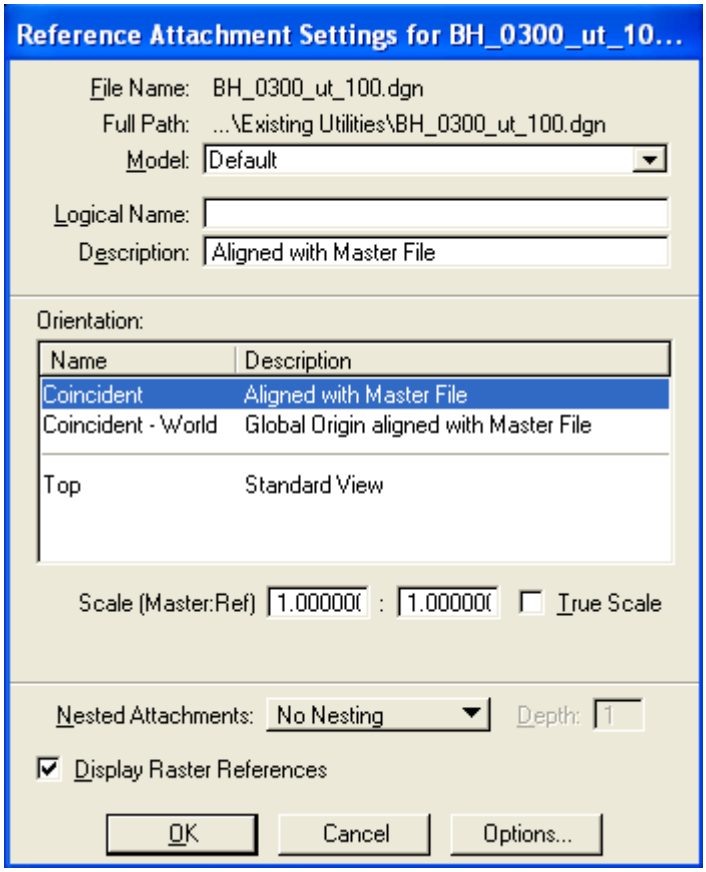
- Bring questions or problems to Becher Hoppe as soon as the problem is discovered.

Attachments

- File “TIP if having problems attaching UT file to design file.pdf”
- File “TIP for using DOT’s resource file to display the correct line type for communication facilities.pdf” (Dated 5-16-12)

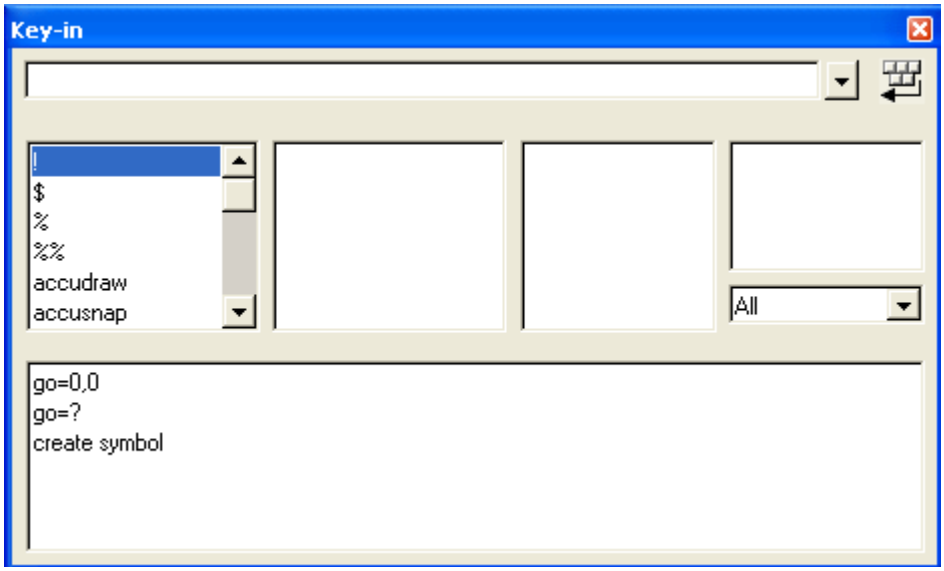
Tip if having problem attaching the UT file to design file

I. When attaching the UT file be sure the true scale box is unchecked as shown in the dialogue box below. If the true scale box is checked the UT file will come in at the wrong coordinates.



II. If the above does not correct the problem, it may be that the global origin in the design file does not match the global origin that the UT file is set to.

A. To check to see what the global origin is set to in your drawing go to the drop down menu – Utilities > Key-in. This will bring in the dialogue box shown below.



B. In the key-in area type in- go=?. The global origin of the current design file will be displayed at the bottom of the screen. The global origin for the UT file is set to 0,0 so if a different set of coordinates is shown this is the problem. The next set of steps will show you how to change the global origin of your design drawing.

1. Open the UT file and place an active point with a thick line weight and bright color at a known coordinate.

   a. Set the active symbology from the primary tool palette

   b. Select the Place Active Point tool

   c. Key in XY=0,0 (either 0,0 for the Global Origin, or the XY coordinate of an element location).

2. Open the design file and reference in the UT file

   a. Set the active symbology from the primary tool palette

   b. Select the Place Active Point tool

   c. Key in XY=<x value>, <y value> (using the same values you used in the UT file).

3. Notice that this point does not line up with the dot placed in the UT file at the same coordinate. This is because, even though the coordinates are the same, the reference point from which the coordinate is measured (Global Origin) is at a different location on each design plane.

4. You have to reset the global origin in your design file to match the UT file.

a. To change the global origin in your drawing go to the drop down menu – Utilities > Key-in. This will bring in the dialogue box shown above.

b. Key in GO=0,0 (the same value that is in the UT file).

c. When prompted for the monument point, choose the Active Point from the UT file.

5. Even though the same physical location on the design plane in both files, notice that the elements still do not line up.

6. The reference point (Global Origin) has moved, but the physical location of the elements on the design plane remains the same.

7. The elements have to be moved to their appropriate location in regard to the global origin.

   a. Select all elements (Edit>Select All)

   b. Select the move command

   c. When prompted for the first point, select the Active Point you placed in the design file.

   d. When prompted for the second point, select the Active Point you placed in the UT file.

C. The files should now be aligned.

UPDATED 5-16-2012

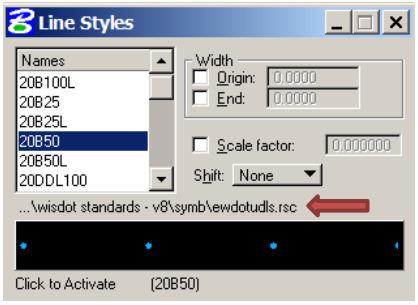
Using the DOT's resource file to display the correct line type for communication facilities

Once the UT File has been received and referenced into your drawing you may notice that the communication lines may be showing up as continuous lines. To rectify this so that the lines show either C or OH (communication underground or communication overhead) the DOT's resource file EWDOTUDLS.rsc has to be downloaded and installed. If you have the Becher Hoppe resource file loaded that will work ok also and will not need to download or load the DOT's resource file.

To locate the DOT resource file on the FTP site navigate to this location:

ftp://FTP5.GRAEF-USA.COM/WIS 441 PROJECT/CORRIDOR TASKS/Utilities/UT Files

Once in this folder download the .rsc file which is a resource file. After you have downloaded this file it needs to be placed in the same location where your current resource file is located. To find this location in Microstation, go to Element – Line Styles – Custom.



Once in that location click on any line style and it will display your current resource file location below the listed line styles (the red arrow shows the location of the file path in the text box). Take the downloaded .rsc file and place it in that location. Once the .rsc file is updated the communication lines will show up correctly after you exit out of Microstation and re-open the drawing again.

If this process does not work for you contact Tom Heath at Becher Hoppe at 715-845-8000 to discuss the problems you are experiencing.

WIS 441 Tri-County Project Corridor Manual
Chapter 17: Roundabouts

Chapter Contact: Kevin Kuhlow

Issued: February 14, 2012
Revised: March 14, 2012
April 15, 2013

Scope/Purpose
This chapter establishes the criteria to be used for roundabout designs on the corridor.

Reference Documents
FDM 11-26

Off Ramp Skewed Crosswalks
NE Region requested that skewed crosswalks be used at the off ramps and that they should be one car length (approximately 20 feet) back from the yield line through the left and right turn lanes. This introduces a longer crossing, but the Region feels that longer skewed crossings are safer than a crossing at a position two car lengths back of the yield line. The skewed crosswalks also provide a more direct travel route for pedestrians. See attached Exhibit 17-1.

Off Ramp Future Truck Hatching
At ramp terminals without truck hatching between the dual left turning lanes, initially construct the subgrade, retaining walls, sidewalks, overhead sign supports, etc… on off ramps wide enough to accommodate truck hatching if needed in the future. Construct the central island initially so that it accommodates the future truck hatching. See attached Exhibit 17-2.

Pavement Markings
The current roundabout pavement marking types, styles and thicknesses are shown in Exhibits 17-3.1 and 17-3.2.

Off Ramp Turn Lane Lengths
Using the 85% confidence level in RODEL, determine the predicted queue length for each lane on the off ramps and extend turn lanes beyond the adjacent lanes back of queue.

Oversized Overweight (OSOW) Vehicle Accommodations
USH 41, STH 172, STH 29 west of USH 41, and I-43 are all designated OSOW routes in Brown County. OSOW vehicles need to be accommodated to and from USH 41 to these designated routes.

There are discussions regarding accommodating OSOW vehicles up and down the service interchange ramps. ***Impacts to the roundabout designs for accommodating these vehicles are currently being investigated.***

Central Island Curb
There is a constructability issue with the central island curb in roundabouts. The current detail requires the use of a "L" tie bar to connect the central island curb head to the truck apron. The curb is getting damaged during the tie bar installation. The following is recommended for the NE Region (Sandra Carpenter e-mail 1-18-12):

- Replace the 6" concrete curb with the standard bid item of Concrete Curb & Gutter 18-Inch (Reverse slope)
- Change the minimum truck apron width from 12' to 11'

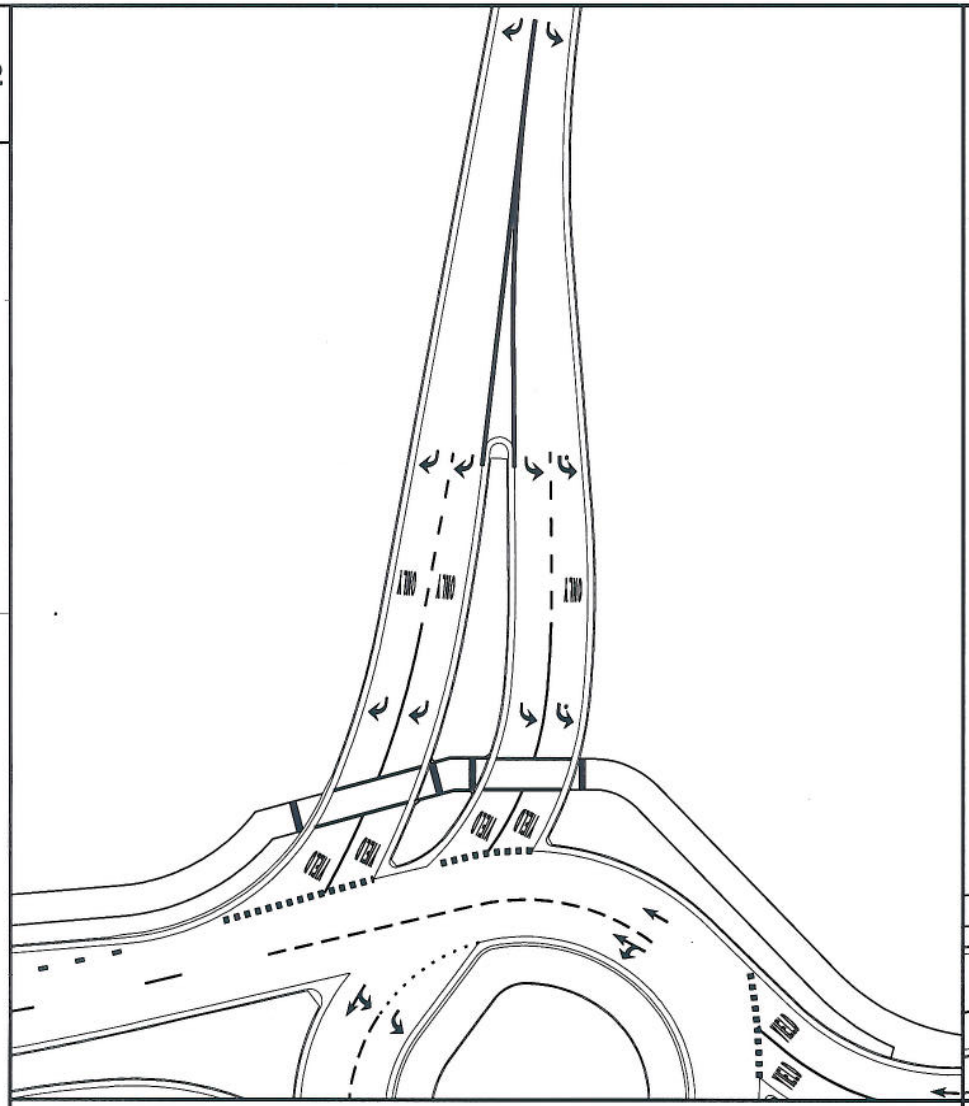
Typical Section

Use 1% cross slope for the truck apron. Subgrade cross slope should be parallel to finished surface cross slope. Underdrain required to drain low point in subgrade. (3/11/13 Kevin Kuhlow/TJ Dougherty e-mail)

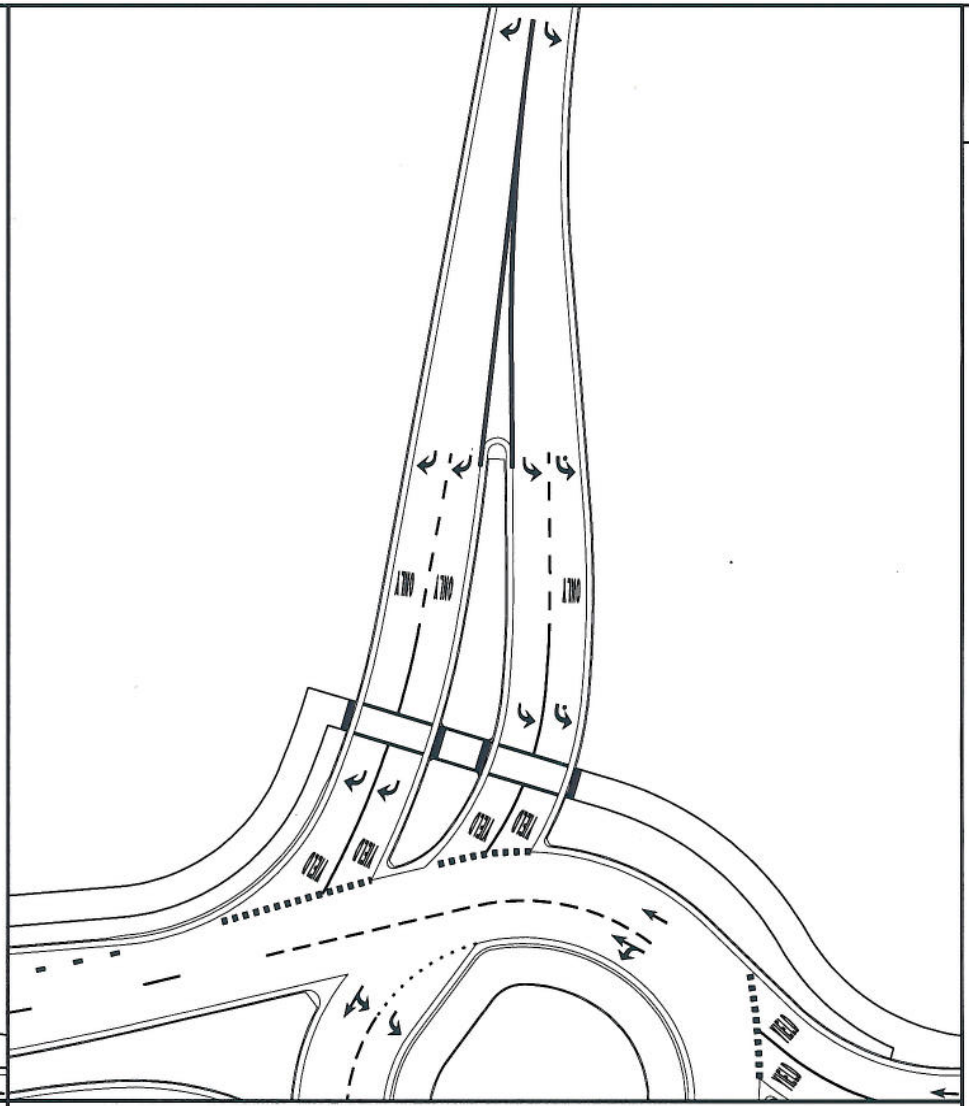
Attachments

Exhibit 17-1 – Off Ramp Skewed Crosswalks (Dated 10-15-10)
Exhibit 17-2 – Off Ramp Future Truck Hatching (Dated 10-15-10)
Exhibit 17-3.1 – Multi-Lane Roundabout Pavement Markings (Dated 10-15-10)
Exhibit 17-3.2 – Pavement Marking Example (Dated 10-15-10)

2



SKEWED CROSSWALK



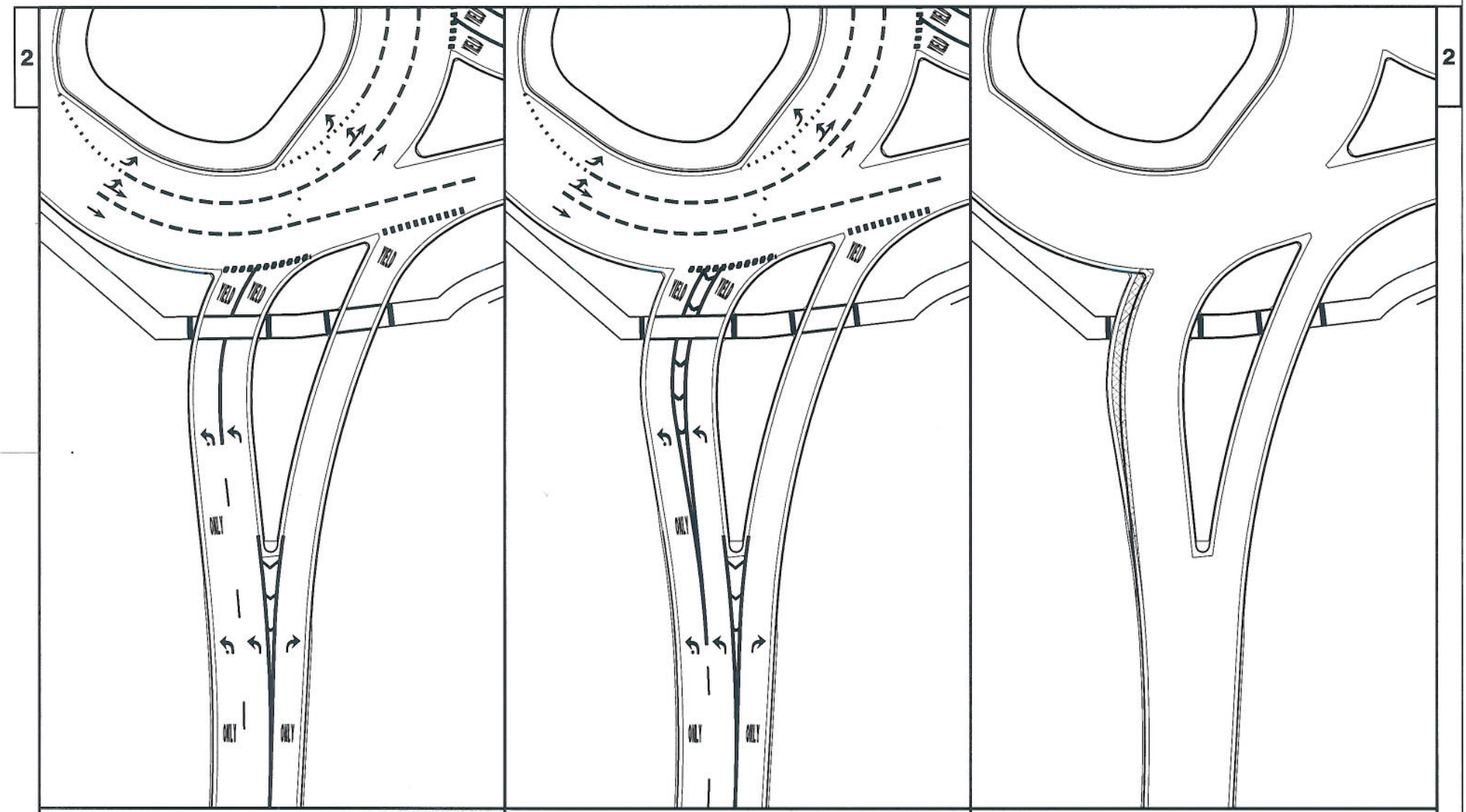
PERPENDICULAR CROSSWALK

PROJECT NO:	HWY: USH 41	COUNTY: BROWN	OFF RAMP SKEWED CROSSWALKS	EXHIBIT 17-1	E

FILE NAME : P:\2009\09 915 & 916 - USH 41 Winnebago & Brown Co WisDOT Public Consultation\Brown County Corridor Manual\Crosswalk Exhibit.dgn PLOT DATE : 8/30/2010 PLOT BY : O.R.E., Inc. PLOT NAME : PLOT SCALE : 61.8182 sf / IN.

WISDOT/CADDS SHEET 42

2



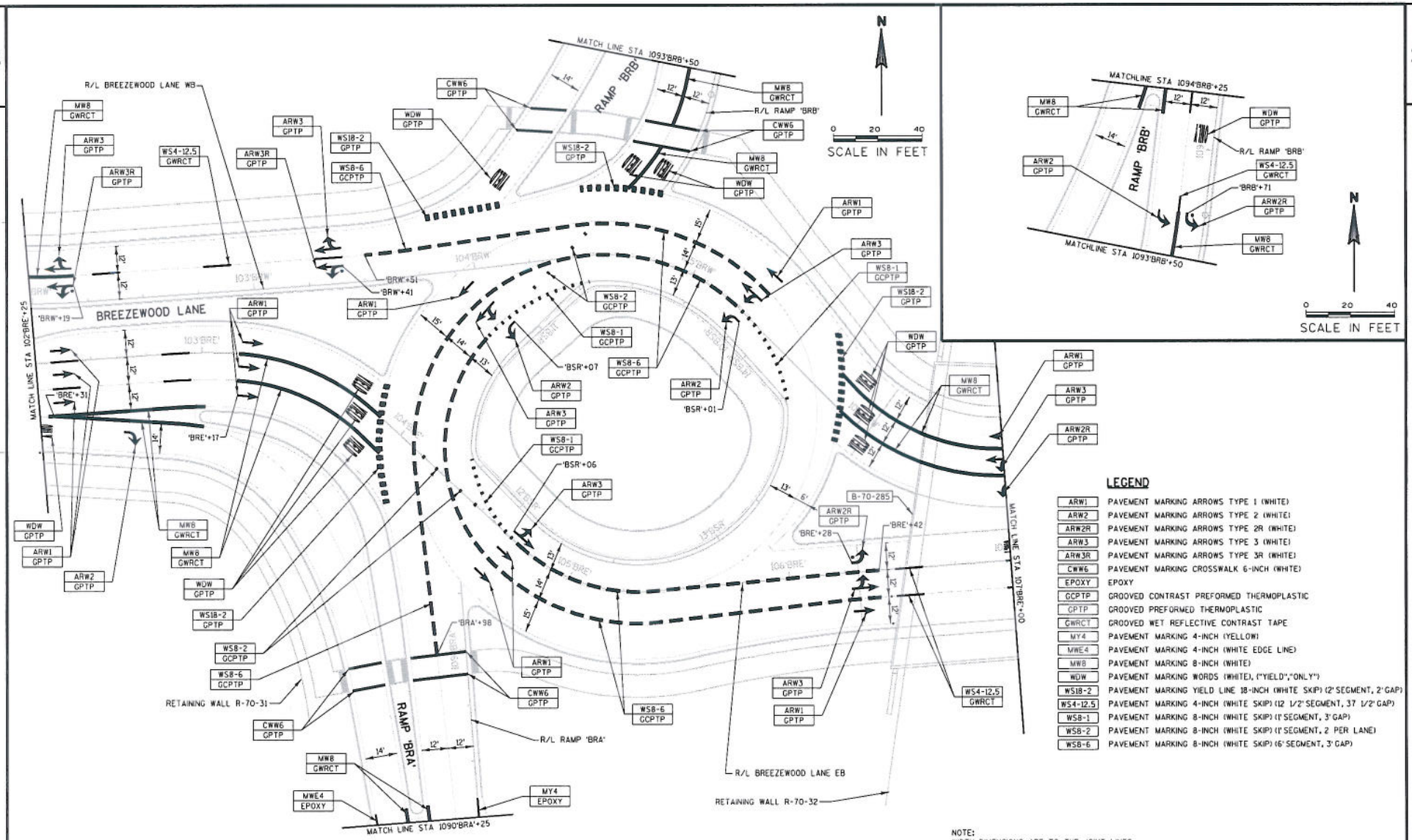
PROJECT NO:	HWY: USH 41	COUNTY: BROWN	OFF RAMP FUTURE TRUCK HATCHING	EXHIBIT 17-2	E

FILE NAME : P:\2009\09 915 & 916 - USH 41 Winnebago & Brown Co MisDOT Public Consultation\Brown County Corridor Manual\Truck Hatch EXHIBITS.dgn PLOT DATE : 8/30/2010 PLOT BY : O.A.E., Inc. PLOT NAME : PLOT SCALE : 61.8182 sf / IN.

WISDOT/CADDS SHEET 42

Multi-Lane Roundabout Pavement Markings

Marking Location	Bid Item Name	Pavement Type	Bid Item Number/Specification
Edgelines approaching RAB	Epoxy	(concrete or asphalt)	Various Standard Bid Items
Lane Lines approaching RAB (Varies by project)	Pavement Marking Grooved Wet Reflective Contrast Tape, 4-Inch	(concrete)	646.0841.S - See current STSPs
	Pavement Marking Grooved Wet Reflective Tape, 4-Inch	(asphalt)	646.0881.S - See current STSPs
	Epoxy	(concrete or asphalt)	Various Standard Bid Items
Lane Lines exiting RAB (Varies by project)	Pavement Marking Grooved Wet Reflective Contrast Tape, 4-Inch	(concrete)	646.0841.S - See current STSPs
	Pavement Marking Grooved Wet Reflective Tape, 4-Inch	(asphalt)	646.0881.S - See current STSPs
	Epoxy	(concrete or asphalt)	Various Standard Bid Items
Channelizing lines approaching RAB	Pavement Marking Grooved Wet Reflective Contrast Tape, 8-Inch	(concrete)	646.0843.S - See current STSPs
	Pavement Marking Grooved Wet Reflective Tape, 8-Inch	(asphalt)	646.0883.S - See current STSPs
Lane Lines within RAB	Pavement Marking Grooved Preformed Thermoplastic, 8-Inch	(concrete or asphalt)	SPV – See Corridor Manual Ch. 19
Arrows	Pavement Marking Grooved Preformed Thermoplastic Arrows	(concrete or asphalt)	SPV – See Corridor Manual Ch. 19
Words	Pavement Marking Grooved Preformed Thermoplastic Words	(concrete or asphalt)	SPV – See Corridor Manual Ch. 19
Crosswalks	Pavement Marking Grooved Preformed Thermoplastic Crosswalk	(concrete or asphalt)	SPV – See Corridor Manual Ch. 19
Yield Lines	Pavement Marking Grooved Preformed Thermoplastic Yield Line	(concrete or asphalt)	SPV – See Corridor Manual Ch. 19



NOTE:
WIDTH DIMENSIONS ARE TO THE JOINT LINES.
SEE CONSTRUCTION DETAIL FOR ROUNDABOUT PAVEMENT MARKINGS.

PROJECT NO:	HWY: USH 41	COUNTY: BROWN	PAVEMENT MARKING EXAMPLE	EXHIBIT 17-3.2	E

FILE NAME : P:\2009\09 915 & 916 - USH 41 Winnebago & Brown Co WisDOT Public Consultation\Brown County Corridor Manual\CH_0983_02450BL.DGN DATE : 8/31/2010 PLOT BY : O.R.E., Inc. PLOT NAME : PLOT SCALE : 61.8182 sf / IN. WISDOT/CADDS SHEET 42

WIS 441 Tri-County Project Corridor Manual
Chapter 18: Construction Details

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: March 8, 2012
June 15, 2012
December 17, 2012
January 15, 2013
March 15, 2013
May 15, 2013
September 19, 2014
January 16, 2015

Scope/Purpose
This chapter provides standard details to be used on the WIS 441 Corridor. The WIS 441 detail library is the primary location for corridor details for this project. The detail library for the US 41 Corridor and NER may be utilized when applicable.

Reference Documents
- FDM Chapter 16
- WisDOT Standard Specifications

General
WIS 441 construction details are located at:
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/CorridorManual/ConstructionDetails/

USH 41 constructions details are located at:
ftp://ftp5.graef-usa.com/CORRIDORTASKS/CorridorManual-US41/18-ConstructionDetails/

Attachments
WIS 441 Tri-County Project Construction Detail List (Dated 01-16-15)

WIS 441 Tri-County Project Construction Detail List

Construction details listed in alphabetical order

Updated 16 January 2015

1 Adjusting Manhole or Inlet Covers Embankment Section_120613
2 Adjusting Manhole or Inlet Covers Pavement Section_120613
3 Asphaltic Shoulder at Guardrail_120614
4 Concrete Collar Detail_120613
5 Concrete Curb and Gutter 78-Inch Type A Special_140919 UPDATED TOTAL CURB HEIGHT
6 Concrete Curb and Gutter 4-Inch Sloped 36-Inch Type R Full Depth_120614
7 Concrete Curb and Gutter 30-Inch Type A_121128
8 Culvert Backfill_120613
9 Culvert Pipe Checks_120614
10 Curb Transition_120614
11 Depressed Curb Head at Beam Guard Terminal_120614
12 Detail of Curb and Gutter at Inlets_130429
13 Drain Slotted Vane,Type A and B_121212
14 Drane Slotted Vane Longitudinal_120613
15 Driveway Entrance with Sidewalk, Curb and Gutter_130429
16 Earthwork Measurement_120614
17 Erosion Mat Treatment at Culverts_120614
18 Existing Storm Sewer Connection Detail_130429
19 Grooved Thermoplastic Marking_120614
20 Inlet Placement at Barrier_150116
21 Inlet Placement at Retaining Wall_130429
22 Inlet Type Tee Special_130226
23 Median Underdrain Trench_120614
24 Minimum Base Aggregate Dense Depth_121212
25 Outfall Discharge Under Retaining Wall_130226
26 Pipe Grate Detail_121212
27 Pond Section Detail_140919 NEW DETAIL
28 RipRap and Geotextile Fabric at Apron Endwalls_120614
29 RipRap and Geotextile Fabric at Pond Outfall Endwalls_120614
30 Rock Bag Placement_120614
31 Roundabout Pavement Marking_120614
32 Roundabout Yield Pavement Marking Location_120614
33 Rubber Ring Cutting Detail for Inlet Type 2_120613
34 Shoulder Underdrain Trench_120614
35 Sidewalk Connection to Bike Path_120614
36 Sod or Erosion Mat for Ditches_120614
37 Stepped Embankment_130103
38 Temporary Ditch Check_120614
39 Trench Backfill for Normal Depth Pipe Culverts and Storm Sewer Pipes_130103
40 Trench Backfill for Shallow Pipe Culverts_120613
41 Typical Silt Fence Detail at Pipe Inlet_120614
42 Underdrain Outfall at Inlet_121128
43 Underdrain Pipe_130429
44 Urban Driveway_130429

WIS 441 Tri- County Project Corridor Manual
Chapter 19: Specifications

Chapter Contact: Anna Varney

Issued: February 14, 2012
Revised: March 8, 2012
April 15, 2014
October 17, 2014
January 17, 2015

Scope/Purpose
This chapter provides specifications and guidance for specifications for the WIS 441 Corridor. The WIS 441 specifications library is the primary location for corridor specifications for this project. The specification library for the US 41 Corridor may be utilized when applicable.

Reference Documents
- FDM Chapter 19
- WisDOT Standard Specifications
- WisDOT STSPs

File Locations
The following are locations to find the latest specifications and guidance on developing specifications:

Standard Specifications
http://roadwaystandards.dot.wi.gov/standards/stndspec/index.htm

Statewide STSPs, Templates and Guidance
http://on.dot.wi.gov/consultants/stsp.shtm

WIS 441 Corridor Specifications and Corridor Specifications Log
ftp://ftp5.graef-usa.com/WIS441PROJECT/CORRIDOR_TASKS/CorridorManual/Specifications/

US 41 Corridor Specifications and Corridor Specifications Log
ftp://ftp5.graef-usa.com/CORRIDORTASKS/CorridorManual-US41/19-Specifications/

Liquidated Damages and Incentives/Disincentives
Guidance will need to be developed for WIS 441.

Pay Plan Quantity
See attachment WIS 441 Pay Plan Quantity.

Format
All specifications are to be developed in Word 2007 (current FDM guidance). All specs should be started with the WisDOT current template for special provision development (stsp-template.dotm).

The WIS 441 corridor is following a 19 section format for all projects. The article numbers shall be numbered by section (i.e. Section 1 articles are 1.1, 1.2, 1.3, etc; section 2 articles are 2.1, 2.2, 2.3, etc.). The section listing is shown in ***Table 1*** below:

TABLE 1: WIS 441 SPECIAL PROVISION SECTION FORMAT	
Special Provision Section #	**Section Name**
1	Administrative
2	Prosecution and Progress
3	Meetings
4	Alternative Dispute Resolution
5	Insurance
6	Environmental
7	Traffic and Restrictions to Work
8	Utilities and Railroads
9	Clear - Demolition - Removal
10	Earthwork
11	Bases, Subbases and Pavements
12	Bridges
13	Retaining Walls, Ground Support
14	Drainage and Erosion Control
15	Miscellaneous Concrete
16	Signing and Marking
17	Lighting/Electrical
18	Intelligent Transportation Systems (ITS)
19	Miscellaneous/Incidental Construction

The heading of the section shall be the “1 Heading 1” format as provided for in the in the WisDOT STSP template. The article numbers are formatted with the “2 Heading 2” format which is present within the articles posted within the spec library. The article title is indented from the section heading in both the table of contents and in the special provisions. This format can be propagated to your special provisions after you started a new file from the WisDOT STSP template by inserting a WIS 441 special provision from the library or using the format painter in Word.

Examples of special provision table of contents and special provision formatting are shown in ***Figure 1 and Figure 2*** below:

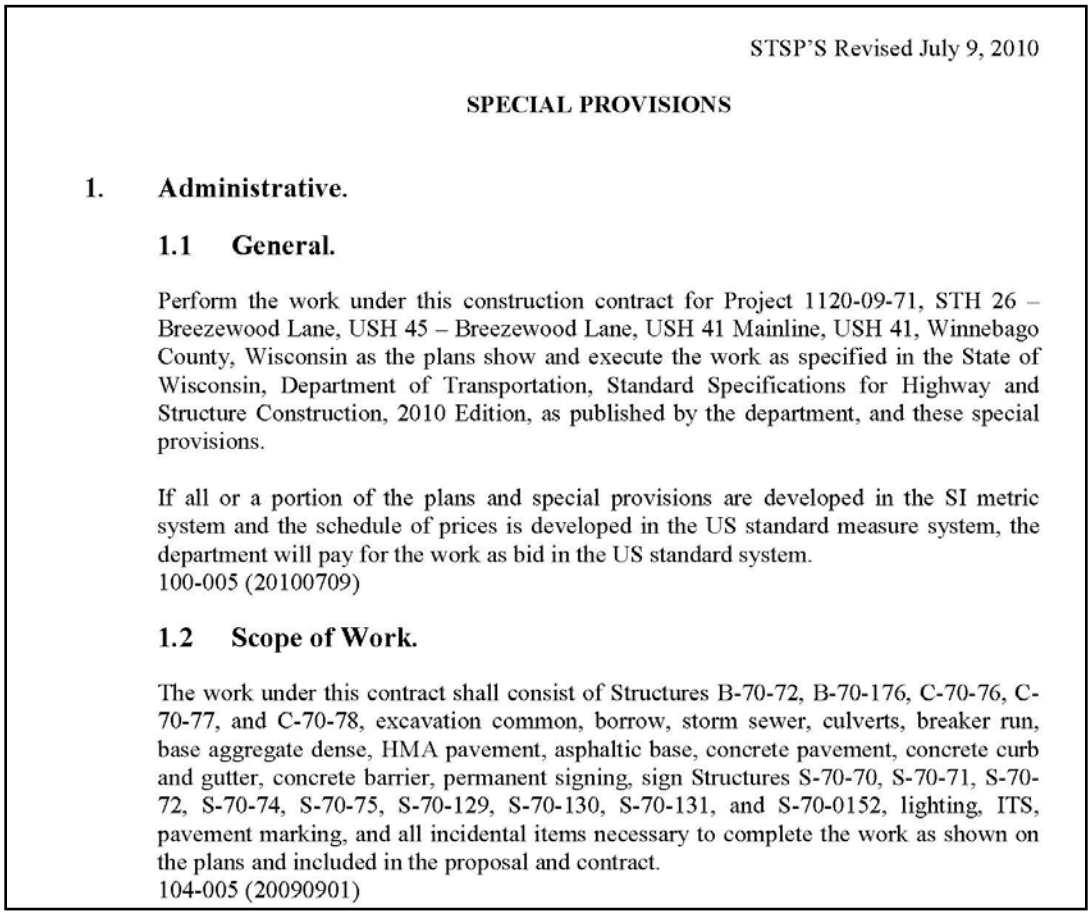
Figure 1: Example Table of Contents

Special Provisions

Table of Contents

Article		Description	Page #
1.		Administrative	5
	1.1	General.	5
	1.2	Scope of Work.	5
	1.3	Field Facilities.	5
	1.4	Other Contracts.	6
	1.5	Labor Compliance Reporting – Payroll Requirements.	7
	1.6	Native American Employment.	7
2.		Prosecution and Progress.	8
	2.1	Prosecution and Progress.	8
	2.2	CPM Progress Schedule, Item SPV.0060.0001; CPM Progress Schedule and Accepted Revisions, Item SPV.0060.0002.	13
	2.3	Incentive/Disincentive for Interim Completion of Work, Stage 2, Item 108.3100.S.01; Final Completion, Item 108.3100.S.02	20
3.		Meetings	22
	3.1	Mandatory Pre-Bid Meeting.	22
	3.2	Leadership Partnering Meetings.	22
	3.3	Traffic Meetings and Traffic Control Scheduling.	23
	3.4	Project Communication Enhancement Effort.	23

Figure 2 - Example Specification Layout



STSP'S Revised July 9, 2010

SPECIAL PROVISIONS

1. Administrative.

1.1 General.

Perform the work under this construction contract for Project 1120-09-71, STH 26 – Breezewood Lane, USH 45 – Breezewood Lane, USH 41 Mainline, USH 41, Winnebago County, Wisconsin as the plans show and execute the work as specified in the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2010 Edition, as published by the department, and these special provisions.

If all or a portion of the plans and special provisions are developed in the SI metric system and the schedule of prices is developed in the US standard measure system, the department will pay for the work as bid in the US standard system.
100-005 (20100709)

1.2 Scope of Work.

The work under this contract shall consist of Structures B-70-72, B-70-176, C-70-76, C-70-77, and C-70-78, excavation common, borrow, storm sewer, culverts, breaker run, base aggregate dense, HMA pavement, asphaltic base, concrete pavement, concrete curb and gutter, concrete barrier, permanent signing, sign Structures S-70-70, S-70-71, S-70-72, S-70-74, S-70-75, S-70-129, S-70-130, S-70-131, and S-70-0152, lighting, ITS, pavement marking, and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.
104-005 (20090901)

Attachments

WIS 441 Pay Plan Quantity (Dated 2-01-12)
WIS 441 Liquidated Damages, Incentive/Disincentive Tech Memo (Dated ???)
WIS 441 Interim Liquidated Damages Tech Memo (Dated ???)

Designer Notes

Apply Pay Plan Quantity to the following Standard Bid items and SPV items in similar categories:

201.0105 Clearing STA
201.0205 Grubbing STA
204.0100 Removing Pavement SY
204.0105 Removing Pavement Butt Joints SY
204.0110 Removing Asphaltic Surface SY
204.0115 Removing Asphaltic Surface Butt Joints SY
204.0120 Removing Asphaltic Surface Milling SY
204.0130 Removing Curb LF
204.0140 Removing Gutter LF
204.0150 Removing Curb & Gutter LF
204.0155 Removing Concrete Sidewalk SY
204.0157 Removing Concrete Barrier LF
204.0160 Removing Lip Curb LF
204.0165 Removing Guardrail LF
204.0170 Removing Fence LF
204.0185 Removing Masonry CY
204.0200 Removing Railroad Track LF
204.0245 Removing Storm Sewer (Size) LF
204.9090.S Removing Underdrain LF

(All earthwork items listed below decided on a project by project basis)
205.0100 Excavation Common CY
208.0100 Borrow CY
208.1100 Select Borrow CY

210.0100 Backfill Structure CY
211.0400 Prepare Foundation for Asphaltic Shoulders STA
211.0500 Prepare Foundation for Base Aggregate STA
214.0100 Obliterating Old Road STA
305.0500 Shaping Shoulders STA
320.0105 Concrete Base 4-Inch SY
320.0110 Concrete Base 4 1/2-Inch SY
320.0115 Concrete Base 5-Inch SY
320.0120 Concrete Base 5 1/2-Inch SY
320.0125 Concrete Base 6-Inch SY
320.0130 Concrete Base 6 1/2-Inch SY
320.0135 Concrete Base 7-Inch SY
320.0140 Concrete Base 7 1/2-Inch SY
320.0145 Concrete Base 8-Inch SY
320.0150 Concrete Base 8 1/2-Inch SY
320.0155 Concrete Base 9-Inch SY
320.0160 Concrete Base 9 1/2-Inch SY
320.0165 Concrete Base 10-Inch SY
320.0170 Concrete Base 10 1/2-Inch SY
320.0500 Concrete Base Widening SY
325.0100 Pulverize and Relay SY
330.0100 Mill and Relay SY
335.0100 Rubblizing SY
340.0100 Cracking and Seating SY
415.0060 Concrete Pavement 6-Inch SY
415.0065 Concrete Pavement 6 1/2-Inch SY
415.0070 Concrete Pavement 7-Inch SY
415.0075 Concrete Pavement 7 1/2-Inch SY
415.0080 Concrete Pavement 8-Inch SY
415.0085 Concrete Pavement 8 1/2-Inch SY
415.0090 Concrete Pavement 9-Inch SY
415.0095 Concrete Pavement 9 1/2-Inch SY
415.0100 Concrete Pavement 10-Inch SY
415.0105 Concrete Pavement 10 1/2-Inch SY
415.0110 Concrete Pavement 11-Inch SY
415.0115 Concrete Pavement 11 1/2-Inch SY
415.0120 Concrete Pavement 12-Inch SY
416.0050 Concrete Pavement Approach Slab SY
416.0060 Concrete Pavement Widening SY
416.0160 Concrete Driveway 6-Inch SY
416.0170 Concrete Driveway 7-Inch SY
416.0180 Concrete Driveway 8-Inch SY
416.0190 Concrete Driveway 9-Inch SY
416.0310 Concrete Alley SY
416.0410 Concrete Pavement Header SY
416.1010 Concrete Surface Drains CY
465.0315 Asphaltic Flumes SY
465.0400 Asphaltic Shoulder Rumble Strip LF
465.0450 Asphaltic Intersection Rumble Strip SY

502.0100 Concrete Masonry Bridges CY
502.0200 Concrete Masonry Bridges HES CY
502.1100 Concrete Masonry Seal CY
502.2000 Compression Joint Sealer Preformed Elastomeric (width) LF
502.3100 Expansion Device (structure) LS
502.3200 Protective Surface Treatment SY
502.5002 Masonry Anchors Type L No. 4 Bars EACH
502.5005 Masonry Anchors Type L No. 5 Bars EACH
502.5010 Masonry Anchors Type L No. 6 Bars EACH
502.5015 Masonry Anchors Type L No. 7 Bars EACH
502.5020 Masonry Anchors Type L No. 8 Bars EACH
502.5025 Masonry Anchors Type L No. 9 Bars EACH
502.6102 Masonry Anchors Type S 1/2-Inch EACH
502.6105 Masonry Anchors Type S 5/8-Inch EACH
502.6110 Masonry Anchors Type S 3/4-Inch EACH
502.6115 Masonry Anchors Type S 7/8-Inch EACH
502.6120 Masonry Anchors Type S 1-Inch EACH
502.6125 Masonry Anchors Type S 1 1/8-Inch EACH
502.6500 Protective Coating Clear GAL
503.0128 Prestressed Girder Type I 28-Inch LF
503.0136 Prestressed Girder Type I 36-Inch LF
503.0145 Prestressed Girder Type I 45-Inch LF
503.0146 Prestressed Girder Type I 45W-Inch LF
503.0154 Prestressed Girder Type I 54-Inch LF
503.0155 Prestressed Girder Type I 54W-Inch LF
503.0170 Prestressed Girder Type I 70-Inch LF
503.0172 Prestressed Girder Type I 72W-Inch LF
503.0182 Prestressed Girder Type I 82W-Inch LF
503.0217 Prestressed Girder Box Type 17-Inch LF
503.0221 Prestressed Girder Box Type 21-Inch LF
503.0227 Prestressed Girder Box Type 27-Inch LF
503.0233 Prestressed Girder Box Type 33-Inch LF
503.0242 Prestressed Girder Box Type 42-Inch LF
503.0312 Prestressed Girder Slab Type 12-Inch LF
504.0100 Concrete Masonry Culverts CY
504.0200 Concrete Masonry Culverts HES CY
504.0500 Concrete Masonry Retaining Walls CY
504.0600 Concrete Masonry Retaining Walls HES CY
504.0900 Concrete Masonry Endwalls CY
506.2105 Bearing Pads SF
506.2605 Bearing Pads Elastomeric Non-Laminated EACH
506.2610 Bearing Pads Elastomeric Laminated EACH
506.3005 Welded Stud Shear Connectors 7/8x4-Inch EACH
506.3010 Welded Stud Shear Connectors 7/8x5-Inch EACH
506.3015 Welded Stud Shear Connectors 7/8x6-Inch EACH
506.3020 Welded Stud Shear Connectors 7/8x7-Inch EACH
506.3025 Welded Stud Shear Connectors 7/8x8-Inch EACH
506.4000 Steel Diaphragms (structure) EACH
506.5000 Bearing Assemblies Fixed (structure) EACH
506.6000 Bearing Assemblies Expansion (structure) EACH
509.0200 Preparation Approaches SY

509.0301 Preparation Decks Type 1 SY
509.0302 Preparation Decks Type 2 SY
509.0500 Cleaning Decks SY
509.0600 Cleaning Approaches SY
509.2500 Concrete Masonry Overlay Decks CY
509.2600 Concrete Masonry Overlay Approaches CY
514.2625 Downspout 6-Inch LF
514.2608 Downspout 8-Inch LF
515.4000 Steel Grid Floor Open (inch) SF
515.5000 Steel Grid Floor Concrete Filled (inch) SF
516.0100 Dampproofing SY
516.0500 Rubberized Membrane Waterproofing SY
517.1010.S Concrete Staining Structure SF
517.1015.S Concrete Staining Multi-Color Structure SF
517.1050.S Architectural Surface Treatment Struct SF
532.0500.S Wall Concrete Panel Mechanically Stabilized Earth SF

601.0105 Concrete Curb Type A LF
601.0110 Concrete Curb Type D LF
601.0115 Concrete Curb Type G LF
601.0120 Concrete Curb Type J LF
601.0150 Concrete Curb Integral Type D LF
601.0155 Concrete Curb Integral Type J LF
601.0205 Concrete Gutter 24-Inch LF
601.0318 Concrete Curb & Gutter 18-Inch LF
601.0322 Concrete Curb & Gutter 22-Inch LF
601.0331 Concrete Curb & Gutter 31-Inch LF
601.0342 Concrete Curb & Gutter Integral 18-Inch LF
601.0344 Concrete Curb & Gutter Integral 36-Inch LF
601.0405 Concrete Curb & Gutter 18-Inch Type A LF
601.0407 Concrete Curb & Gutter 18-Inch Type D LF
601.0409 Concrete Curb & Gutter 30-Inch Type A LF
601.0411 Concrete Curb & Gutter 30-Inch Type D LF
601.0413 Concrete Curb & Gutter 30-Inch Type G LF
601.0415 Concrete Curb & Gutter 30-Inch Type J LF
601.0417 Concrete Curb & Gutter 30-Inch Type K LF
601.0419 Concrete Curb & Gutter 30-Inch Type L LF
601.0452 Concrete Curb & Gutter Integral 30-Inch Type D LF
601.0454 Concrete Curb & Gutter Integral 30-Inch Type J LF
601.0456 Concrete Curb & Gutter Integral 30-Inch Type L LF
601.0501 Concrete Curb & Gutter Integral 4-Inch Sloped 36-Inch LF
601.0511 Concrete Curb & Gutter Integral 6-Inch Sloped 36-Inch LF
601.0551 Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type A LF
601.0553 Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type D LF
601.0555 Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type A LF
601.0557 Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type D LF
601.0574 Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type G LF
601.0576 Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type J LF
601.0600 Concrete Curb Pedestrian LF
602.0405 Concrete Sidewalk 4-Inch SF
602.0410 Concrete Sidewalk 5-Inch SF
602.0415 Concrete Sidewalk 6-Inch SF
602.0420 Concrete Sidewalk 7-Inch SF
602.0505 Curb Ramp Detectable Warning Field Yellow SF
602.0510 Curb Ramp Detectable Warning Field White SF
602.1000 Concrete Loading Zone SF
603.0105 Concrete Barrier Single-Faced 32-Inch LF
603.1142 Concrete Barrier Type S42 LF
603.1156 Concrete Barrier Type S56 LF
603.1242 Concrete Barrier Type S42A LF
603.1256 Concrete Barrier Type S56A LF
603.1342 Concrete Barrier Type S42B LF
603.1356 Concrete Barrier Type S56B LF
603.1442 Concrete Barrier Type S42C LF
603.1456 Concrete Barrier Type S56C LF
604.0400 Slope Paving Concrete SY
604.0500 Slope Paving Crushed Aggregate SY
604.0600 Slope Paving Select Crushed Material SY
614.0200 Steel Thrie Beam Structure Approach LF
614.0305 Steel Plate Beam Guard Class A LF
614.0310 Steel Plate Beam Guard Class B LF
614.0340 Steel Plate Beam Guard Over Low-Fill Culverts Class A LF
614.0355 Steel Plate Beam Median Guard LF
620.0100 Concrete Corrugated Median SF
620.0200 Concrete Median Blunt Nose SF
620.0300 Concrete Median Sloped Nose SF

636.0100 Sign Supports Concrete Masonry CY

(All geotextile fabric items listed below decided on a project by project basis)
645.0105 Geotextile Fabric Type C SY
645.0111 Geotextile Fabric Type DF Schedule A SY
645.0112 Geotextile Fabric Type DF Schedule B SY
645.0113 Geotextile Fabric Type DF Schedule C SY
645.0115 Geotextile Fabric Type ES SY
645.0120 Geotextile Fabric Type HR SY
645.0125 Geotextile Fabric Type MS SY
645.0130 Geotextile Fabric Type R SY
645.0135 Geotextile Fabric Type SR SY
645.0140 Geotextile Fabric Type SAS SY

(All electrical items listed below decided on a project by project basis)
652.0105 – 652.0800 Conduit Items (Various Items)
655.0102 – 655.0105 Cable in Duct (Various Items)
655.0205 – 655.0290 Cable Traffic Signal (Various Items)
655.0505 – 655.0800 Electrical Wire (Various items)

SPV.0035.XXX HPC Masonry Structures
SPV.0090.XXX Concrete Shoulder Rumble Strip
SPV.0090.XXX Concrete Curb and Gutter (Any Size/Type)
SPV.0090.XXX Concrete Barrier (Any Size/Type)
SPV.0165.XXX Wall Concrete Panel Mechanically Stabilized Earth Special SF
SPV.0165.XXX Longitudinal Grooving Bridge Deck

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Scope/Purpose
This chapter is a place-holder for future construction/maintenance feedback.