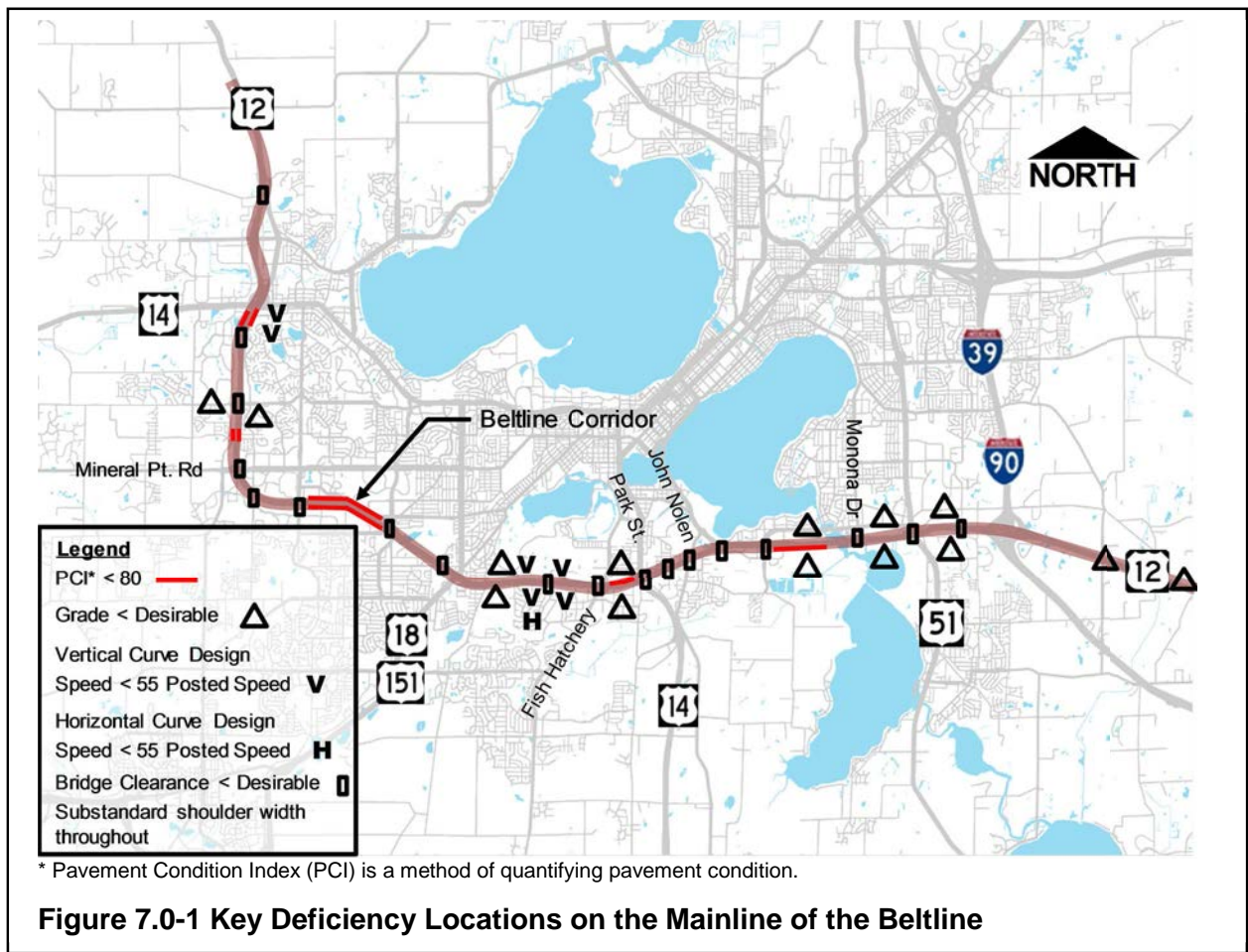


7.0 SUMMARY OF GEOMETRIC CONDITIONS

This section broadly describes the existing geometric conditions of the Beltline, focusing on the sections of the Beltline that do not meet current design standards as established in the WisDOT Facilities Development Manual (FDM) as of April 2014 and AASHTO’s 2001 *A Policy on Geometric Design of Highways and Streets*. This section also describes currently programmed projects that resolve some of the substandard areas of the Beltline.

Some of the information for this section was obtained from the January 2008 Madison Beltline Operational Needs Assessment Project Report. This report identified features of the Beltline, as of 2008, that did not meet design standards. The report also identified solutions to resolve some of these substandard areas. WisDOT’s meta manager, Highway Structures Information (HSI) database, and record drawings were also used in the evaluation of the existing geometry for this chapter. Survey and/or field measurements were not obtained for this analysis and, therefore, the actual field conditions may vary from what is discussed in this section. As projects are programmed to address these areas, detailed review and evaluation of substandard geometry should be performed.

Figure 7.0-1 summarizes some of the key pavement, grade, profile, and bridge clearance deficiencies throughout the Beltline mainline.



7.1 BACKGROUND AND EXISTING MAINLINE GEOMETRY

The WisDOT FDM as of April 2014 was used to evaluate the existing geometry of the Beltline. When topics were not addressed in the Facilities Development Manual (FDM), the 2001 AASHTO *Policy on Geometric Design of Highways and Streets* was used. WisDOT’s meta manager, Highway Structures Information (HSI) database, and as-builts were also used in the evaluation of the existing geometry of the Beltline for this chapter.

FDM standards developed in 1984 or earlier were used to design most of the Beltline. Because of highway safety research, and changes in vehicle characteristics; design policies and standards have changed over the past few decades. Many of the revised policies and standards are reflected in the 2001 AASHTO Policy on the *Geometric Design of Highways*.

For this section of the report, the existing Beltline and its geometry are evaluated against several criteria including design speed, pavement condition ratings, grades, sight distance, widths (including clear zone, shoulders and travel lanes), structure clearances and condition and interchange and access spacing. A primary factor in evaluating several of these criteria is the design speed of the Beltline that is 60 mph (posted speed plus 5 mph). For those criteria that are design speed dependent they are listed as meeting 60 mph design speed, does not meet 60 mph design speed but meets 55 mph posted speed, or does not meet minimum 55 mph posted speed. Other non-design speed dependent criteria (pavement condition, structure clearances and condition and access spacing) are evaluated based on FDM guidance or standard rating indices (such as pavement condition and structure condition).

A. Physical Conditions

The pavement condition was evaluated based on the Pavement Condition Index (PCI) and WisDOT metadata. The PCI is a numerical index between 0 and 100 that indicates the general condition of a pavement where 0 is considered poor pavement condition and 100 is considered excellent pavement condition. The majority of the Beltline mainline (about

	PCI 100-80 (Miles)	PCI 80-60 (Miles)	PCI 60-0 (Miles)	Total
Eastbound	19.64	0.46	2.83	22.93
Westbound	20.28	0.76	1.64	22.68
Total	39.92	1.22	4.47	

Table 7.1-1 PCI Summary

88 percent) has a PCI greater than 80. However, the base concrete pavement structure from Mineral Point Road to Fish Hatchery Road is over 50 years old which has been overlaid. Table 7.1-1 summarizes the total length of pavement in miles that has a PCI between 80 and 100, a PCI between 60 and 80, and a PCI less than 60.

The metadata is composed of sections that do not necessarily have limits that start and stop exactly at interchanges. However, for this report the data was organized into sections of pavement from interchange to interchange (as closely as possible). These sections along with the pavement condition, age, and type for the eastbound and westbound sections of the Beltline can be seen in Table 7.1-2. The age of pavement in the table refers to the year of last rehabilitation.

Beltline Segment	Eastbound Beltline Section			Westbound Beltline Section		
	PCI in 2013	Pavement Age in 2013	Pavement Type	PCI in 2013	Pavement Age in 2013	Pavement Type
CTH K to Airport Rd	88-97	8	Jointed Plain (nonreinforced) concrete pavement with dowels	95-97	8	Jointed Plain (nonreinforced) concrete pavement with dowels
Airport Rd to Hwy 14	97	8	Jointed Plain (nonreinforced) concrete pavement with dowels	97	8	Jointed Plain (nonreinforced) concrete pavement with dowels
Hwy 14 (University Ave) to Greenway Blvd	31-85	24	Jointed Plain (nonreinforced) concrete pavement without dowels	69-85	24	Jointed Plain (nonreinforced) concrete pavement without dowels
Greenway Blvd to Old Sauk Rd	85	24	Jointed Plain (nonreinforced) concrete pavement without dowels	85	24	Jointed Plain (nonreinforced) concrete pavement without dowels
Old Sauk Road to Mineral Point Road	50-85	24	Jointed Plain (nonreinforced) concrete pavement without dowels	21-85	24	Asphaltic overlay of Rigid pavement
Mineral Point Road to S. Gammon Rd	80	5	Asphaltic overlay of Flexible pavement	80	5	Asphaltic overlay of rubblized plain concrete pavement
S. Gammon Road to Whitney Way	55	8	Asphaltic overlay of Flexible pavement	56	8	Asphaltic overlay of rubblized plain concrete pavement
Whitney Way to Verona Rd	38	21	Asphaltic overlay of Rigid pavement	55	21	Asphaltic overlay of Rigid pavement
Verona Rd to Seminole Hwy*	100	0	Jointed Plain (nonreinforced) concrete pavement with dowels	100	0	Jointed Plain (nonreinforced) concrete pavement with dowels
Seminole Hwy to Todd Dr	100	6	Asphaltic overlay of Rigid pavement	100	6	Asphaltic overlay of Rigid pavement
Todd Dr to Fish Hatchery Rd	100	6	Asphaltic overlay of Rigid pavement	100	6	Asphaltic overlay of Rigid pavement
Fish Hatchery Rd to Park St	75-100	6-24	Asphaltic overlay of Rigid pavement	74	6-24	Asphaltic overlay of Rigid pavement
Park St to Rimrock	95	24	Jointed Plain (nonreinforced) concrete pavement with dowels	100	24	Asphaltic overlay of Rigid pavement
Rimrock to John Nolen	95	24	Jointed Plain (nonreinforced) concrete pavement with dowels	97	24	Jointed Plain (nonreinforced) concrete pavement with dowels
John Nolen to South Towne	90	24	Jointed Plain (nonreinforced) concrete pavement with dowels	97	24	Jointed Plain (nonreinforced) concrete pavement with dowels
South Towne to Monona Dr	56-85	25	Jointed Plain (nonreinforced) concrete pavement with dowels	95	25	Jointed Plain (nonreinforced) concrete pavement with dowels
Monona Dr to Stoughton Rd	97	25	Jointed Plain (nonreinforced) concrete pavement with dowels	93-97	25	Jointed Plain (nonreinforced) concrete pavement with dowels
Stoughton Road to I-90	82-97	15-25	Jointed Plain (nonreinforced) concrete pavement with dowels	96-97	15-25	Jointed Plain (nonreinforced) concrete pavement with dowels
I-90 to Hwy N	100	15	Jointed Plain (nonreinforced) concrete pavement with dowels	82-100	15	Jointed Plain (nonreinforced) concrete pavement with dowels

Flexible Pavement–A pavement structure that maintains intimate contact with and distributes loads to the subgrade and depends upon aggregate interlock, particle friction, and cohesion for stability.

Rigid Pavement–A pavement structure having a Portland cement concrete slab as the surface course.

*to be completed in 2015-2016

Table 7.1-2 Existing Pavement Condition, Type, and Age

In 2014, WisDOT constructed three separate projects on the Beltline:

- a. Pavement rehabilitation (University Avenue to Mineral Point Road).
- b. Pavement Repairs (Fish Hatchery Road to I-39/90).
- c. Verona Road interchange project, year 1 of 3 (Seminole Highway to Whitney Way).

It is anticipated these projects will improve the PCI of most of the Beltline to serviceable levels (PCI of 80 or above). However, the pavement age continues to be a concern.

B. Mainline Geometric Deficiencies

1. Horizontal Alignment

A primary factor controlling the horizontal alignment or curvature of a roadway is design speed. National and state standards require that a roadway provide adequate sight distance to be able to stop before colliding with something in the roadway such as a stopped vehicle or road debris. The desirable design speed of a higher volume, higher speed roadway is typically 5 mph greater than the posted speed. The standards for critical geometric features such as horizontal and vertical curvatures, sight distance, clear zone to fixed objects on the side of the roadway, and other geometric and cross-sectional features for a roadway are dependent upon the design speed. Geometric features that do not meet design speed standards can lead to operational and safety issues. In general, for horizontal alignment, the sharper or tighter the curve, the lower its design speed.

The Beltline has a posted speed of 55 mph and a design speed of 60 mph. The Beltline horizontal geometry meets a design speed of 60 mph with two exceptions:

- a. The horizontal curve on the Beltline near the Todd Drive eastbound off-ramp meets a 50 mph design speed based on its existing superelevation cross slope.
- b. The horizontal curves on the Beltline (in both directions) at John Nolen Drive and at US 51 do not meet the 60 mph design speed but meet the 55 mph posted speed based on their existing superelevation cross slope.

2. Profile Grades

Acceptable profile grades are typically dependent upon on the design speed and classification of a roadway and directly impact drainage. Flat grades (less than 0.5 percent) while generally good for sight distance can be problematic for drainage where an urban section is present and/or concrete barrier wall. Conversely, steep grades (typically greater than 4 percent) while generally good for drainage can have negative impacts on operating speeds, especially for heavy vehicles such as large trucks.

Standards for vertical geometry are met for the majority of the mainline of the Beltline. The standard desirable minimum grade is 0.5 percent and the minimum is 0.3 percent for areas with an urban

Eastbound Lanes	Grade %	Length
Old Sauk Rd.	3.01 - 3.05	1100'
Just east of Seminole Hwy.	0.49 - 3.85	1600'
Fish Hatchery Road to Park St.	0.05 - 0.30	2000'
South Towne Dr. to just west of Monona Dr.	0.36 - 0.43	6100'
Just east of Monona Dr. to just west of Stoughton Rd.	0.40 - 0.41	2000'
Just east of Stoughton Rd. to I-90	0.0 - 0.29	2500'
Westbound Lanes		
Just east of Old Sauk Rd.	3.08	800'
Just east of Seminole Hwy.	3.85	1200'
Fish Hatchery Rd. to Park St.	0.0 - 0.33	3100'
South Towne Dr. to just west of Monona Dr.	0.36 - 0.43	6100'
Just east of Monona Dr. to just west of Stoughton Rd.	0.40 - 0.41	2000'
Just east of Stoughton Rd. to I-90	0.0 - 0.29	2500'

Table 7.1-3 Areas of Substandard Grade

section (curb and gutter and/or concrete barrier wall). The minimum grade for rural cross sections is 0.0 percent assuming that the ditch grades convey stormwater. Grades less than 0.5 percent make pavement drainage difficult in urban areas with curbs or barrier walls controlling drainage. There are about 0.96 miles westbound and 0.76 miles eastbound of Beltline roadway that are less than 0.3 percent. There are 1.71 miles westbound and 1.76 miles eastbound of Beltline roadway that are greater than 0.3 percent but less than 0.5 percent. There are about 0.44 miles westbound and 0.52 miles eastbound of Beltline roadway that are greater than 3 percent. See Table 7.1-3 for the areas of substandard grades on the Beltline.

3. Vertical Curves

The length of vertical curves is an important geometric feature of a roadway. Vertical curves with lengths below standards for a given design speed can negatively impact a driver’s sight distance and comfort. Vertical curves are classified as sag (going downhill to uphill) or crest (going uphill to downhill). In general, the sharper the vertical curve, the lower design speed it will have.

WisDOT has two classes of standards for vertical alignment. They provide a desirable design speed and a minimum design speed for vertical curve. The desirable design speed should be met, unless geometric constraints make it difficult or cost prohibitive. Vertical curves on the Beltline are considered to meet standards if they meet a 60 mph design speed. Requirements for vertical curve lengths are based on three categories (Category 1, 2, or 3) that are dependent on such factors as the proximity of freeway ramps, lane drops/exit only lanes, and railroad crossings.

Vertical curves were reviewed based on the appropriate category (1, 2, or 3) and the design speed they meet under that category. Category 1 is based on the time a driver needs to come to a stop if there is an object in the roadway. Vertical curves not proximate to interchanges typically fall within Category 1. Category 2 and 3 are typically located in more complex locations requiring greater time to make driving decisions. Typically, the mainline approaches to entrance or exit ramps are Category 2 or 3. Because there are numerous interchanges along the corridor, the majority of Beltline vertical curves are classified as Category 2 or 3.

Substandard Vertical Curves	Eastbound Lanes	Type	Desirable Design Speed Met	Minimum Design Speed Met
	600' West of Todd Drive	Sag	50 mph	50 mph
800' East of Todd Drive	Sag	50 mph	50 mph	
Westbound Lanes				
Terrace Avenue Bridge	Crest	35 mph	50 mph	
200' East of Terrace Avenue Bridge	Crest	40 mph	50 mph	
2500' East of Seminole Highway	Sag	45 mph	45 mph	
800' East of Todd Drive	Sag	50 mph	50 mph	

Table 7.1-4 Substandard Vertical Curve Locations

There are a combined 83 sag curves and 73 crest curves for the eastbound and westbound Beltline. The six vertical curves that do not fully meet the minimum standards for the posted speed of 55 mph are listed in Table 7.1-4. There are other curves that do not meet desirable minimum standards. The vertical curves are summarized as follows.

a. Sag vertical curves

- (1) 19 westbound and 14 eastbound (40 percent) do not meet desirable standards for 60 mph.
- (2) 13 westbound and 9 eastbound (26 percent) sag curves do meet the minimum but not desirable standards for 60 mph.
- (3) 4 westbound and 3 eastbound (8 percent) sag curves do not meet desirable or minimum standards for 60 mph but meet minimum standards for the posted 55 mph.
- (4) 2 westbound and 2 eastbound (5 percent) sag curves do not meet the minimum standards for the posted 55 mph.

b. Crest vertical curves

- (1) 21 westbound and 17 eastbound (52 percent) do not meet desirable standards for 60 mph.
- (2) 12 westbound and 15 eastbound (37 percent) crest curves meet the minimum but not desirable standards for 60 mph.
- (3) 7 westbound and 2 eastbound (12 percent) crest curves do not meet desirable or minimum standards for 60 mph but meet minimum standards for the posted 55 mph.
- (4) 2 (3 percent) westbound crest curves do not meet the minimum standards for the posted 55 mph.

4. Cross Section

A controlling element in highway safety is the roadway cross section. The clear zone is an area beyond the edge of the travel lane that is free of obstructions and has shallow grades so that an errant vehicle can recover. It typically includes the roadway shoulder as well as the slopes beyond the shoulder. For freeways, the clear zone is typically 30 feet unless roadside barrier is provided.

Based on record drawings, the Beltline meets minimum design standards for cross slope and travel lane widths. However, shoulder widths are substandard in most locations. Because the Beltline experiences heavy truck traffic and a high degree of congestion and incidents, the design criteria for shoulder widths is 12 feet paved according to FDM 11-15 Attachment 1.1. Table 7.1-5 shows shoulder width varying from 2 to 14 feet. The table also shows the Beltline travel lane widths meet design criteria; 24 feet for 2 lanes and 36 feet for 3 lanes. Beltline median widths typically meet standards, with widths less than 50 feet typically having guardrail or concrete barrier wall protection.

Beltline Segment	Eastbound Beltline Section					Westbound Beltline Section					Median type	Median width (ft)
	Number of lanes	Travel way width (ft)	Right shoulder paved/total width (ft)	Right lane aux lane width (ft)	Left shoulder pavement width (ft)	Number of lanes	Travel way width (ft)	Right shoulder paved/total width (ft)	Right lane aux lane width (ft)	Left shoulder pavement width (ft)		
CTH K to Airport Rd	2	24	8/12	--	3	2	24	10/12	--	3	Clear grass with occasional shrubs	60
Airport Rd to Hwy 14	2	24	10/10	15	3	2	24	10/10	15	3	Clear grass with occasional shrubs	60
Hwy 14 (University Ave) to Greenway Blvd	2	24	8-10/10	12-15	3-8	2	24	8/8	15	3-8	Concrete Barrier -s/f=<42" high	18
Greenway Blvd to Old Sauk Rd	2	24	7-8/8-10	--	3	2	24	5/8	--	3	Clear grass with occasional shrubs	50
Old Sauk Rd to Mineral Point Rd	2	24	10/14	--	3-22	2	24	4/4	--	3	Clear grass with occasional shrubs	60
Mineral Point Rd to S. Gammon Rd	2	24	5/9	--	3	2	24	8/11	--	3	Clear grass with occasional shrubs	60
S. Gammon Rd to Whitney Way	2	24	7/10	--	3	2	24	8/8	--	3	Clear grass with occasional shrubs	60
Whitney Way to Verona Rd	2	24	7/7	15	5	2	24	8/8	15	4	Concrete Barrier/Asphalt/clear grass	48
Verona Road to Seminole Hwy	3	36	2-10/2-10	--	7	3	36	8/8	15	10	Concrete Barrier -d/f=< 42" high	2-15
Seminole Hwy to Todd Dr	3	36	10/10	--	7	3	36	8/11	15	7	Concrete Barrier -d/f=< 42" high	2-4
Todd Dr to Fish Hatchery Rd	3	36	10/10	--	7	3	36	8/11	15	7	Concrete Barrier -d/f=< 42" high	2-4
Fish Hatchery Rd to Park St	3	36	2-8/2-11	15	7	3	36	0-8/0-11	15	7	Concrete Barrier -s/f=<42" high	24
Park St to Rimrock	3	36	10/10	15	7	3	36	10/10	15	7	Concrete Barrier -s/f=<42" high	24
Rimrock to John Nolan Dr	3	36	10/10	15	7	3	36	10/10	15	7	Concrete Barrier -s/f=<42" high	24
John Nolan Dr to South Towne	3	36	10/10	12	10	3	36	10/10	12	10	Concrete Barrier -s/f=<42" high	24
South Towne to Monona Dr	3	36	2-10/2-10	--	10	3	36	0-10/0-10	--	10	Concrete Barrier -s/f=<42" high	24
Monona Dr to Stoughton Rd	3	36	10/10	12	10	3	36	10/10	12	10	Concrete Barrier -s/f=<42" high	24
Stoughton Rd to I-90	3	36	8/11	--	3	3	36	8/11	12	3	Clear grass with occasional shrubs	50
I-90 to County N	2	24	8/11	--	3	2	24	8/11	--	3	Clear grass with occasional shrubs	50

Table 7.1-5 Existing Beltline Cross-Sectional Information

7.2 STRUCTURES

Table 7.2-2 and Table 7.2-3 summarize the Beltline structures over a crossroad and crossroad structures over the Beltline.

A. Clearance

Bridge vertical clearances are based on national and state standards and are the basis for large vehicle heights (such as cranes or trucks carrying large equipment such as backhoes) as well as the routing of oversize loads. The desirable vertical clearance for a bridge over the Beltline or for a Beltline bridge over a crossroad at an interchange is 16 feet 9 inches. The desirable vertical clearance for a Beltline bridge over a crossroad at a grade separation is 15 feet 3 inches. The desirable vertical clearance for a pedestrian structure over the Beltline is 17 feet 9 inches. The minimum vertical clearance for an existing structure varies based on FDM 11-35 Attachment 1.9 which can be seen in Table 7.2-1. The Beltline has 26 instances of substandard vertical clearances. There are 23 instances where the vertical clearance does not meet desirable but does meet minimum vertical clearance standards. There are four instances where the vertical clearance does not meet minimum vertical clearance standards. Substandard locations are shown in Table 7.2-2 and Table 7.2-3. The vertical clearance at Seminole Highway was partially corrected during the 2013 bridge reconstruction. The Verona Road vertical

clearances will be corrected during a 2015/2016 reconstruction project when the Beltline will be raised. It is anticipated the Seminole Highway vertical clearance will exceed clearance standards after the Beltline is lowered. The pedestrian bridge crossing the Beltline between Verona Road and Seminole Highway will be replaced in 2015.

FDM 11-35 Attachment 1.9 Minimum Vertical Clearance for Bridges to Remain

Minimum Vertical Clearance for Existing Bridges which are not Being Replaced and for Existing Bridges on which the Superstructure is not Being Replaced^{1, 2}

Overpass Facility →	Freeway, Expressway, or STH		Railroad ⁵ , CTH, Town Road, Local Road, or Street	Pedestrian or Shared-use Structures	Sign Structures ⁶	
Underpass Facility ↓	Interchange	Grade Separation				
Non-arterial either STH, CTH, Town Road, Local Road, or Street	15'-3" min. or ES ³	If existing is < 14'-0" then increase to 14'-0" min. or ES ³	16'-3" min. or ES ³			
		If existing is ≥ 14'-0", but < 14'-6" then maintain existing min. or ES ³				
		If existing is ≥ 14'-6" then 14'-6" min. or ES ³				
Arterial either CTH, Town Road, Local Road, or Street (excludes freeway and expressway; also excludes arterial STH)	If existing is < 15'-3" then increase to 15'-3" min. or ES ³ If existing is ≥ 15'-3", but < 16'-0" then maintain existing min. or ES ³ If existing is ≥ 16' 0" then 16' 0" min. or ES ³	If existing is < 14'-0" then increase to 14'-0" min. or ES ³ If existing is ≥ 14'-0", but < 14'-6" then maintain existing min. or ES ³ If existing is ≥ 14'-6" then 14'-6" min. or ES ³	17'-0" min. or ES ³		18'-0" min. or ES ³ for existing sign structures on new construction projects or reconstruction projects;	
Arterial STH (excludes freeway and expressway)	If existing is < 15'-3" then increase to 15'-3" min. or ES ³ If existing is ≥ 15'-3", but < 16'-0" then maintain existing min. or ES ³ If existing is ≥ 16' 0" then 16' 0" min. or ES ³	If existing is < 14'-0" then increase to 14'-0" min. or ES ³ If existing is ≥ 14'-0", but < 16'-0" then maintain existing min. or ES ³ If existing is ≥ 16' 0" then 16' 0" min. or ES ³	17'-0" min. or ES ³		17'-0" or ES ³ for existing sign structures on 3R projects	
Freeway ⁴ or Expressway	16'-0" min. or ES ³					
Railroad ⁵	Maintain existing vertical clearance - if existing clearance is < 23'-0" then confer with BTLR Railroads and Harbors Section to determine the adequacy of the existing clearance.					

General notes:

- Vertical clearance is needed for the entire roadway width (critical point; to include traveled way, auxiliary lanes, turn lanes, and shoulders), according to the above table. Provide greater than minimum clearance if evaluation shows that greater clearance is needed because bridge superstructure is susceptible to being hit by under-passing vehicles.
Vertical clearance for railroads is measured from the top of rail and is required over an area 8 feet 6 inches from the track centerline on each side of a railroad track.
- Include a low clearance sign (W12-2), on structures if its use is in accordance with WisDOT MUTCD 2C.22.
- ES = approved Exceptions To Standards Report required (see [FDM 11-1-2](#) and [FDM 11-1-4](#)).
- See [FDM 11-44-1](#) for vertical clearance guidance specific to Interstate freeways.
- Consult with the Region Railroad Coordinator if the over-passing or under-passing facility is either a railroad or a "rails-to-trails" trail; or if a structure is owned by a railroad company.
- See LRFD Bridge Manual Chapter 39 for design considerations for vertical clearance on Sign Structures (http://on.dot.wi.gov/dtdid_bos/extranet/structures/LRFD/LRFDManualIndex.htm).

Table 7.2-1 Minimum Vertical Clearance Standards for Bridges to Remain

B. Condition

WisDOT maintains a database on the structure condition of bridges, retaining walls, and other structures. Each structure is given a sufficiency rating from 0 to 100. Generally a score less than 50 warrants improvement/replacement.

Table 7.2-2 and Table 7.2-3 include the existing rate score, deck condition (in end year 2013), bridge age (in 2013), deck age (in 2013), and bridge road width. Bridges with a rating of less than 80 are eligible for federal rehabilitation funding and bridges with a rating of less than 50 are eligible for federal replacement funding. A bridge becomes structurally deficient when the deck condition, superstructure, or substructure is rated 4 or less. When the deck condition is less than or equal to 4, a deck rehabilitation may be considered that can consist of a deck overlay or deck replacement. Three Beltline bridges have deck scores less than or equal to 4.

Bridge ID	Structure		Rate Score	Deck Condition End Year (2015)	Bridge Age in 2013	Deck Age in 2013	Bridge Road Width (ft)	Structure Length	Desirable Vertical Clearance	Minimum Vertical Clearance	Vertical Clearance East/North	Vertical Clearance West/South	Vertical Clearance Comments
	Under	Over											
B130529	Pleasant Creek Bike Path	Beltline	99.6	6.4	8	8	52	138.8	-	-	-	-	
B130531	Discovery Drive	Beltline	99.6	6.4	8	8	63	122	15.25	14.50	15.42	15.42	
B130553	University Ave	Beltline	94.9	5.6	9	9	63	162.7	16.75	16.00	17.91	16.75	
B130554	University Ave	Beltline	97.2	6.4	8	8	100	162.7	16.75	16.00	17.66	16.48	Does Not Meet Desirable but Meets Minimum
B130228	WSO RR @ Terrace Ave	Beltline	94.8	4.7	25	25	52	270	23.29	23.00	23.83	-	
B130014	WSO RR @ Terrace Ave	Beltline	93.9	2.8	64	33	52	270	23.29	23.00	23.83	-	
B130229	Greenway Blvd	Beltline	97.5	6.3	25	25	40	162.7	16.75	16.00	17.67	16.35	Does Not Meet Desirable but Meets Minimum
B130230	Greenway Blvd	Beltline	91.3	6.3	24	24	40	162.7	16.75	16.00	17.46	16.43	Does Not Meet Desirable but Meets Minimum
B130226	Old Sauk	Beltline	99.8	6.3	26	26	40	177.8	16.75	16.00	16.50	16.92	Does Not Meet Desirable but Meets Minimum
B130227	Old Sauk	Beltline	95	6.3	26	26	40	177.8	16.75	16.00	16.50	16.92	Does Not Meet Desirable but Meets Minimum
B130221	Mineral Point Road	Beltline	97.5	6.8	45	13	56	171.7	16.75	15.25	15.88	15.19	Does Not Meet Minimum
B130222	Mineral Point Road	Beltline	97.3	5.6	45	13	56	171.6	16.75	15.25	15.42	15.06	Does Not Meet Minimum
B130239	Garnmon Road	Beltline	95	5.8	45	13	56	168.5	16.75	15.25	15.49	16.40	Does Not Meet Desirable but Meets Minimum
B130219	Garnmon Road	Beltline	97.5	5.8	45	13	56	168.5	16.75	15.25	15.26	16.27	Does Not Meet Desirable but Meets Minimum
B130214	Whitney Way	Beltline							16.75	15.25	15.12	15.03	Does Not Meet Minimum
B130213	Whitney Way	Beltline	95	5.8	48	13	56	194.4	16.75	16.00	16.27	16.21	Does Not Meet Desirable but Meets Minimum
B130651	Verona Rd/Midvale	Beltline	-	-	-	-	-	-	16.75	16.33	18.04	-	Constructed in 2015
B130652	Verona Rd/Midvale	Beltline	-	-	-	-	-	-	16.75	16.33	16.95	-	Constructed in 2015
B130263	Todd Drive	Beltline	89	5.8	42	6	114	173.9	16.75	15.25	15.38	15.40	Does Not Meet Desirable but Meets Minimum
B130016	Park Street	Beltline	92.9	6.6	62	24	69	158.2	16.75	16.00	16.04	16.40	Does Not Meet Desirable but Meets Minimum
B130191	Park Street	Beltline	85.6	6.8	52	24	68.5	158.2	16.75	16.00	16.40	16.60	Does Not Meet Desirable but Meets Minimum
B130017	CNW RR	Beltline	90.8	4.8	61	3	81.5	95.5	23.29	23.00	23.30	-	
B130192	CNW RR	Beltline	93.3	5.4	52	3	68.5	94.2	23.29	23.00	23.38	-	
B130195	John Nolen Drive	Beltline	92.2	5.4	51	24	68	155.5	16.75	16.00	16.10	16.86	Does Not Meet Desirable but Meets Minimum
B130037	John Nolen Drive	Beltline	88.8	4.4	61	24	68	144.5	16.75	16.00	16.02	16.90	Does Not Meet Desirable but Meets Minimum
B130280	Capital City Trail	Beltline	88.8	7	38	38	136	221.9	23.29	23.00	24.00	-	
B130315	Marsh	Beltline	95	4	25	25	50	2605.1	-	-	-	-	
B130317	Monona Drive	Beltline	97.6	5	25	25	53	137.5	16.75	16.00	16.50	16.79	Does Not Meet Desirable but Meets Minimum
B130318	Monona Drive	Beltline	97.6	5	25	25	52	137.5	16.75	16.00	16.58	16.71	Does Not Meet Desirable but Meets Minimum
B130320	STH 51/Stoughton	Beltline	97.1	4.4	25	25	56.5	192.6	16.75	16.00	16.71	16.29	Does Not Meet Desirable but Meets Minimum

Table 7.2-2 Beltline Over Structure Data

Bridge ID	Structure		Rate Score	Deck Condition End Year (2013)	Bridge Age in 2013	Deck Age in 2013	Bridge Road Width (ft)	Structure Length	Desirable Vertical Clearance	Minimum Vertical Clearance	Vertical Clearance East/North	Vertical Clearance West/South	Vertical Clearance Comments
	Under	Over											
B130223	Beltline	High Point Road	91.1	7.4	45	3	30	230.2	16.75	16.00	14.61	14.95	Does Not Meet Minimum
B130497	Beltline	Southwest Commuter Path (Bike/Ped)	-	6.6	15	15	12	503.1	17.75	17.00	17.44	17.82	Does Not Meet Desirable but Meets Minimum
B130653	Beltline	Bike/Ped Overpass (at Whenona Dr.)	-	-	-	-	-	-	17.75	17.00	17.75	18.00	Constructed in 2015
B130664	Beltline	Seminole Highway	100	6.8	0	0	48	166.2	16.75	16.00	16.42	16.16	Does Not Meet Desirable but Meets Minimum
B130083	Beltline	Fish Hatchery	100	6.4	54	25	120	227	16.75	16.00	16.96	16.55	Does Not Meet Desirable but Meets Minimum
B130616	Beltline	Bike/Ped Overpass (East of Park St.)	89.2	-	3	3	14	380.5	17.75	17.00	17.67	18.19	Does Not Meet Desirable but Meets Minimum
B130310	Beltline	CTH MM/Rimrock Road	93.8	3.7	25	25	58	250.8	16.75	16.00	16.90	16.50	Does Not Meet Desirable but Meets Minimum
B130311	Beltline	South Towne Drive	87.6	3.3	25	25	100	195.1	16.75	16.00	16.25	17.00	Does Not Meet Desirable but Meets Minimum
B130538	Beltline	Agriculture Drive	93.6	5.4	8	8	36	243.1	16.75	16.00	16.50	16.50	Does Not Meet Desirable but Meets Minimum

Table 7.2-3 Crossroad Over Structure Data

There are no rate scores below 87. From an evaluation of the bridges completed for the 2008 Needs Assessment Report, five bridges were identified in need of maintenance before 2025. The Seminole bridge is one of the five bridges identified and this bridge was replaced in 2013. The other four are the eastbound and westbound Beltline bridges over Park Street, the High Point Road bridge over the Beltline, and the Whenona Drive pedestrian bridge over the Beltline. There are current plans to replace the High Point Road bridge and the Whenona Drive pedestrian bridge is being replaced in 2015 as part of the Verona Road project.

7.3 INTERCHANGES

There are 18 interchanges between US 14 (University Avenue) on the west end of the Beltline to County N on the east end. Many of the loop ramps, horizontal curves, and vertical curves at the interchanges are substandard. The location and criteria of the ramps are described in the following paragraphs. Figure 7.3-1 shows the interchange names and locations in the PEL study limits.

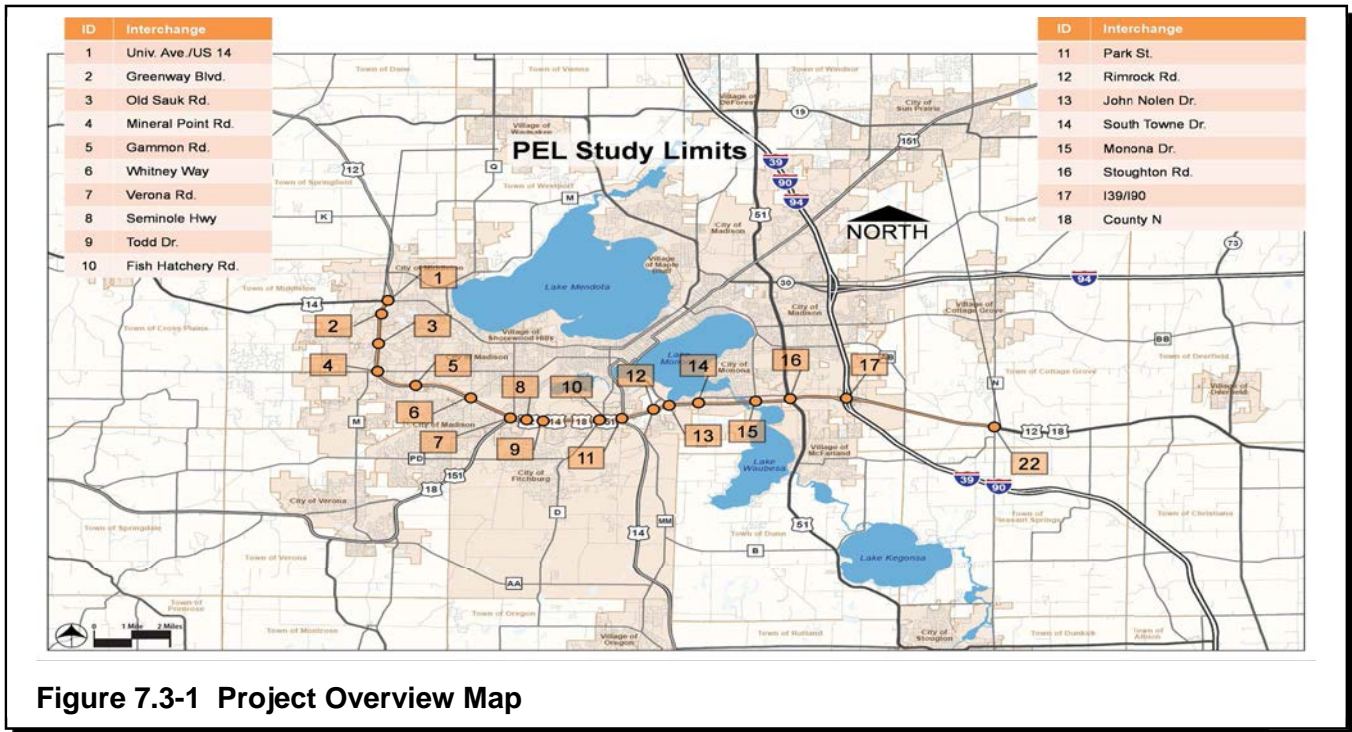


Figure 7.3-1 Project Overview Map

A. Ramps

1. Horizontal Alignment

There are a total of 66 ramps along the corridor from US 14 (University Avenue) to US 51 (Stoughton Road). The minimum design speed is 30 mph for loop ramps and 50 mph for service ramps.

The required design speed of an on-ramp is determined based on the available acceleration distance from the controlling geometric feature of the ramp. This controlling feature is typically a horizontal curve (such as a loop-ramp) or the location of a stop-bar if the ramp is metered. For off-ramps, the design speed is determined based on the available deceleration distance to the controlling geometric feature of the ramp. This controlling feature for an off-ramp is typically a horizontal curve (such as a loop-ramp) or the distance to the stop-bar or back of queue at the ramp terminal intersection.

Overall, 19 (29 percent) of the interchange ramps include horizontal curves with a substandard combination of radii and superelevation for the ramp design speed. Of these, 13 (20 percent) do not meet the required design speed but are 5 mph below the design speed. There are also six

Ramp location	Design Speed	Speed Met
Whitney Way Westbound Off	50	35
Todd Drive Eastbound on	50	35
Todd Drive Westbound Off	50	35
Fish Hatchery Eastbound Off (Eastbound to Southbound Ramp)	50	30
Park Street Eastbound On	50	40
John Nolen Drive Eastbound Off	30	20

Table 7.3-1 Ramps Where Minimum Design Speed is Not Met

ramps (9 percent) that do not meet 5 mph below the required design speed. These ramps are listed in Table 7.3-1. In addition, the standard maximum superelevation rate is 6 percent. There are 25 ramps (38 percent) that contain superelevation rates greater than 6 percent.

2. Stopping Sight Distance

Stopping sight distance is the distance needed for drivers to see an object on the roadway ahead and bring their vehicles to a safe stop before colliding with something in the roadway such as a stopped vehicle or road debris. It is interrelated with previously discussed design speed and roadway alignment. Stopping sight distance is not met at three ramps because curves, in combination with barrier wall, obstruct the sight distance needed to come to a stop. The ramp locations and type of obstruction are listed in Table 7.3-2. The Whitney Way westbound off-ramp will be reconstructed in 2016 as part of the Verona Road project at which time the stopping sight distance will meet standards.

Substandard SSD	Ramp Location	Obstruction	Desirable Design Speed/SSD	Actual Speed Met/SSD
	Whitney Way westbound off-ramp	Concrete Barrier Wall	50 mph/425'	25 mph/187'
	John Nolen Dr. eastbound off-ramp	Concrete Barrier Wall	30 mph/200'	20 mph/150'
	John Nolen Dr. eastbound on-ramp	Concrete Barrier Wall	30 mph/200'	20 mph/135'

Table 7.3-2 Substandard Stopping Sight Distances

3. Vertical Alignment

WisDOT has two classes of standards for vertical alignment. They provide a desirable design speed and a minimum design speed for vertical curves. The desirable design speed should be met, unless geometric constraints make it difficult or cost prohibitive. Design speed is 50 mph for directional and service ramps and 30 mph for a loop ramp. Design

Ramp Location	Vertical Curve	Design Speed (mph)	Actual Minimum Design Speed Met (mph)	Actual Desirable Design Speed Met (mph)
University Ave. WB on	Sag	50	35	35
Greenway Blvd. EB on	Crest	50	45	40
Old Sauk Rd. WB on	Crest	50	45	40
Mineral Point WB off	Crest	50	45	40
Mineral Point EB off	Crest	50	40	35
Mineral Point EB on	Crest	50	45	35
Whitney Way WB on	Crest	50	40	35
Whitney Way EB off	Crest	50	40	30
Park St. WB off	Sag	50	35	35
Park St. WB ondirect	Crest	50	45	40
Rimrock Rd. EB off	Sag	50	45	45
Rimrock Rd. EB on	Sag	50	30	30
Rimrock Rd. WB off	Sag	50	40	40
John Nolen Dr. WB off	Crest	50	40	35
John Nolen Dr. WB on	Crest	50	40	35
South Towne Dr. EB on	Sag	50	45	45

Table 7.3-3 Ramp Locations With Substandard Vertical Curves

speeds generally decrease near the ramp terminals. Of the 66 interchange ramps, 26 (39 percent) contain a vertical curve that does not meet desirable standards. Ten (15 percent) of the ramps meet minimum but not desirable standards for their respective design speed. In addition, 16 vertical curves (24 percent) do not meet the desirable or minimum standards for their respective design speed. These curves can be seen in Table 7.3-3.

The FDM states that grades on ramps should not exceed 5 percent and the maximum acceptable grade is 8 percent provided it is of relatively short length. Nine ramps contain grades that exceed 5 percent. These ramp locations can be seen in Table 7.3-4.

Ramp Location	Grade (%)	Ramp Location	Grade (%)
Greenway Blvd. WB off	6.0	Rimrock Rd. WB on	5.43
Greenway Blvd. EB on	7.0	John Nolen Dr. EB off	5.58
Mineral Point Rd. EB on	5.07	John Nolen Dr. WB off	5.5
Seminole Hwy. WB off	6.08	South Towne Dr. WB off	5.04
Rimrock Rd. EB on	6.3		

Table 7.3-4 Ramp Locations With Grades Exceeding 5 Percent

4. Cross Section

For ramps servicing the interchanges along the Beltline, typically a low-speed urban section with curb and gutter and no shoulders are used in proximity to the ramp terminal intersections to save space where operating speeds are typically 40 mph or less (low-speed urban design). The transition from a low-speed urban section along a ramp to a high-speed section with shoulders is typically determined based on acceleration and deceleration distances found in AASHTO’s “A Policy on Geometric Design of Highways and Streets”. Using this criteria, there are 12 ramps that contain substandard sections because low-speed urban sections with reduced or no-shoulder width in combination with 6-inch barrier curbs are present along portions of ramps where anticipated operating speeds are typically anticipated to be in excess of 40 mph.

5. Ramp Design

Ramps not meeting standards include those with insufficient lengths and inadequate designs with left-side exits or entrances. Insufficient ramp lengths may not provide enough room for vehicle deceleration. Left-side exits are contrary to driver expectations and can lead to abrupt weaving for unfamiliar drivers. Ramps not meeting standards because of insufficient length for deceleration and left-side exit or entrance are shown in Table 7.3-5.

deceleration length < minimum	Ramp
	I-90 southbound to westbound off-ramp
	I-90 northbound to eastbound off-ramp
	I-90 northbound to westbound off-ramp
	I-90 southbound to eastbound off-ramp
left-side exit or entrance	I-90 northbound to westbound off-ramp
	I-90 northbound to westbound on-ramp
	I-90 eastbound to northbound off-ramp

Table 7.3-5 Ramps Not Meeting Standards

Several ramps do not meet design criteria because their ramp taper styles do not conform to current design criteria. Additionally, there are several braided ramps on the Beltline at the Todd Drive, Seminole Highway, and Whitney Way interchanges. Braided ramps are not desirable because they merge ramp traffic directly onto a two-way, parallel frontage roadway. Typically sight lines are not ideal for either the ramp traffic or the frontage road traffic, and queuing can occur as drivers try to judge gaps.

Overall, 14 ramps (21 percent) meet design criteria (horizontal geometry, vertical geometry, grade, sight distance, and cross-sectional features).

Several ramps have intersections very close to the ramp terminal. When intersections are too close to the ramp terminal, they may interfere with the operation of the interchange which can lead to queuing on the Beltline. The desirable WisDOT standard for spacing between a ramp and an adjacent intersection is 1,320 feet. The minimum spacing is 1,000 feet (1,200 feet if the location is/ or is likely to be signalized). Table 7.3-6 lists interchanges with intersections that do not meet desirable spacing.

Interchange and Cross Road	Approx Intersection Distance (feet)
Airport Rd. Interchange and Tribeca Dr.	570
University Ave. Interchange and Parmenter St.	710
Greenway Blvd. Interchange and N. High Point Rd	160
Old Sauk Rd. Interchange and N. High Point Rd	630
Mineral Point Rd. Interchange and Big Sky Dr.	530
Gammon Rd. Interchange and Seybold Rd.	290
Whitney Way Interchange and Schroeder Rd.	0*
Verona Rd. Interchange and Nakoma Rd.	750
Seminole Highway and Frontage Rd.	0*
Todd Dr. Interchange and Frontage Rd.	0*
Fish Hatchery Rd. Interchange and Ann St.	330
Park St. Interchange and Badger Road	280
Rimrock Rd. Interchange and Rusk Rd.	500
John Nolen Dr. Interchange and Rimrock Rd.	1350
South Towne Dr. Interchange and Royal Ave.	340
Monona Dr. Interchange and Broadway	870
Stoughton Rd. Interchange and Broadway	520

*Braided Ramp

Table 7.3-6 Adjacent Intersection Spacing

B. Other Geometric Conditions

Other geometric conditions such as lane balance, freeway guide signing, and interchange spacing were reviewed.

1. Lane Balance

Lane balance is the appropriate coordination of the basic number of lanes and auxiliary lanes before and after an interchange to optimize traffic flow and minimize weaving movements. AASHTO has developed schematic equations that describe appropriate and inappropriate lane balance. The westbound Beltline at the Verona Road interchange has a lane balance deficiency. The outside lane of the three westbound lanes drops into an exit only to Verona Road. For the lane balance to be acceptable, the outside lane would need to be extended through the interchange and then dropped. This deficiency will be corrected during the reconstruction of the interchange in 2016 with the extension of the third mainline lane to the west. However, the extended third lane will drop as an exit only at Gammon Road so the unacceptable lane balance will not be corrected, just shifted two interchanges to the west.

2. Freeway Guide Signing

Freeway guide signing on the Beltline was reviewed as part of the 2008 Madison Beltline Operational Needs Assessment Project Report. The report indicated that there were a few poor locations with inconsistent messages on the freeway guide signs. For example, the “Fitchburg Exits” signs showed the county highway destination for the interchanges while the other signs used the local street names and Verona Road and I-39/90 interchanges had distances rounded to 1/3 mile instead of 1/4 mile as specified in the Manual on Uniform Traffic Control Devices. It appears that these locations have since been addressed through updated signing. Because of the closely spaced interchanges along the corridor the majority of signs did not have the required 800 feet of spacing between them.

The 2008 Madison Beltline Operational Needs Assessment Project Report did not review items such as Type I ground mounted signs within clear zone or locations of signs in relation to interchanges/ramps.

3. Interchange Spacing

In an urban area, it is desirable that interchanges be spaced one mile or more apart. Closer interchange spacing concentrates merging, weaving, and diverging movements into short sections of highway that can lead to abrupt speed changes and congestion. The majority of the interchanges along the Beltline do not meet the minimum interchange spacing of one mile (ramp gore to ramp gore) in urban areas in accordance with FDM 11-30-1.2. The distances from ramp gore to ramp gore are listed in Table 7.3-7.

Interchange Segment	Interchange Spacing (Miles)	
	Eastbound	Westbound
Airport Rd. to US 14 (University Ave.)	0.28	0.60
US 14 (University Ave.) to Greenway Blvd.	0.29	0.17
Greenway Blvd. to Old Sauk Rd.	0.49	0.52
Old Sauk Rd. to Mineral Point Rd.	0.54	0.55
Mineral Point Rd. to Gammon Rd.	0.79	0.79
Gammon Rd. to Whitney Way	1.12	1.20
Whitney Way to US 18/151 (Verona Rd.)	0.62	0.69
US 18/151 (Verona Rd.) to Seminole Highway	0.54	---
Seminole Highway to Todd Dr.	0.31	0.68
Todd Dr. to Fish Hatchery Rd.	0.29	0.28
Fish Hatchery Rd. to US 14/151 (Park St.)	0.25	0.35
US 14/151 (Park St.) to Rimrock Rd.	0.39	0.45
Rimrock Rd. to John Nolen Dr.	0.37	0.18
John Nolen Dr. to South Towne Dr.	0.39	0.46
South Towne Dr. to Monona Dr.	1.15	1.11
Monona Dr. to US 51 (Stoughton Rd.)	0.41	0.39
US 51 (Stoughton Rd.) to I-39/90/94	0.74	0.89

Table 7.3-7 Beltline Gore-to-Gore Interchange Spacing

7.4 DATA AND ANALYSIS

Tables 7.4-1 to 7.4-8 provide the baseline data that was the foundation for this section.

Table 7.4-1 Horizontal Alignment

Curve #	From (Sta)	To (Sta)	Alignment Feature	Design Speed (MPH)	Compound Curve Radii Ratio	Mainline Inflection Angle	Curve Radius	SE Req'd	Existing SE	Equivalent V using emax 6%	OA Rating	Comments	Plan ID
1	50+50.00	59+23.43	Curve	60			3274.05	4.1	4.6	65	Good	Excessive SE	53030072
2	67+52.62	75+90.56	Curve	60			3274.05	4.1	4.6	65	Good	Excessive SE	53030072
3	116+23.71	127+67.67	Curve	60			22918.31	NC	NC	70	Good		53030071
4	157+89.87	178+06.99	Curve	60	1.50		4911.07	3.1	3.2	60	Good	Excessive SE	53010271
5	178+06.99	188+26.05	Curve	60	0.86		3274.05	4.1	4.9	65	Good	Excessive SE	53010271
6	188+40.67	224+69.13	Curve	60			3819.72	3.7	4.2	65	Good	Excessive SE	53010271
7	261+17.82	294+17.82	Curve	60			5729.58	2.7	2.8	60	Good	Excessive SE	53010271
8	1064+00.55	1073+00.09	Curve	60			22918.32	NC	NC	70	Good		12060784
9	1081+62.13	1090+66.91	Curve	60			7710	2.1	2.1	60	Good		12060784
10	1090+66.91	1100+45.21	Curve	60			12,452.00	NC	NC	60	Good		12060784
11	1123+66.14	1129+36.83	Curve	60			11,124.00	NC	NC	60	Good		12060784
12	1129+36.83	1140+41.22	Curve	60			12,030.00	NC	NC	60	Good		12060784
13	1150+39.00	1166+27.44	Curve	60			2325	5.1	5.1	60	Good		12060784
14	446+39.51	453+69.90	Curve	60			5,729.58	2.7	2.0	50	Doesn't Meet 60 mph Design Speed	Doesn't Meet 55 mph Posted Speed	12060181
15	503+99.59	503+99.59	PI	60		0.59	-	-	-	65	Good		12060181
16	525+23.19	540+49.64	Curve	60			3,831.72	3.7	3.7	60	Good		12060374
17	581+50.09	589+72.62	Curve	60			11,471.16	NC	2.0	70	Good	Excessive SE	12060374
18	609+04.78	615+39.19	Curve	60			22,918.31	NC	NC	70	Good		12060374
19	617+70.75	625+91.40	Curve	60			2,193.42	5.2	5.1	55	Doesn't Meet 60 mph Design Speed	Meets 55 mph Posted Speed	12060374
20	25+00.10	25+00.10	PI	60		0.245	-	-	-	65	Good		12060274
21	33+29.82	44+96.00	Curve	60			17,188.73	NC	NC	70	Good		12060274
22	86+04.11	97+05.50	Curve	60			13,750.99	NC	NC	65	Good		12060279
23	131+06.42	135+95.44	Curve	60			17188.73	NC	NC	70	Good		12060279
24	168+37.16	176+24.46	Curve	60			3274.04	4.1	4.0	55	Doesn't Meet 60 mph Design Speed	Meets 55 mph Posted Speed	12060279
25	195+05.40	206+76.49	Curve	60			3437.75	4.0	4.0	60	Good		12060279

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
WB	1931+79	1937+44	Grade	-	-	2.49	-	-	-	-	-	-	60	-	Good		5300-03-76	-	
WB	1937+44	1938+69	Sag	3	1938+07	-	-	125	245.10	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		5300-03-76	-
WB	1938+69	1938+81	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		5300-03-76	-	
WB	45+14	49+04	Crest	3	47+09	-	-	390	156.00	50	35	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	53030072	1988
WB	49+04	49+04	Grade	-	-	0.50	-	-	-	-	-	-	60	-	Good		53030072	1988	
WB	49+04	55+04	Crest	3	52+04	-	-	600	174.42	50	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	53030072	1988
WB	55+04	56+01	Grade	-	-	-2.94	-	-	-	-	-	-	60	-	Good		53030072	1988	
WB	56+01	63+51	Sag	2	59+76	-	-	750	130.66	-	-	55	35	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	53030072	1988
WB	63+51	67+13	Grade	-	-	2.80	-	-	-	-	-	-	60	-	Good		53030072	1988	
WB	67+13	87+43	Crest	3	77+43	-	-	2000	990.10	70+	70+	-	-	60	-	Good		53030072	1988
WB	87+43	96+25	Grade	-	-	0.78	-	-	-	-	-	-	60	-	Good		53030072	1988	
WB	96+25	109+75	Sag	3	103+00	-	-	1350	513.31	-	-	70+	70+	60	-	Good		5303-00-71	1988
WB	109+75	111+73	Grade	-	-	3.41	-	-	-	-	-	-	60	-	Grade > 3%		5303-00-71	1988	
WB	111+73	121+73	Crest	3	116+73	-	-	1000	253.81	60	45	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		5303-00-71	1988
WB	121+73	130+29	Grade	-	-	-0.53	-	-	-	-	-	-	60	-	Good		5303-00-71	1988	
WB	130+29	136+29	Sag	3	133+29	-	-	600	166.20	-	-	65	45	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		5303-00-71	1988
WB	136+29	144+35	Grade	-	-	3.08	144+35	-	-	-	-	-	60	-	Grade > 3%		5303-00-71	1988	
WB	143+95	146+30	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	146+30	158+30	Crest	3	152+30	-	-	1200	315.79	65	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	158+30	164+45	Grade	-	-	-0.80	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	164+45	170+45	Sag	3	167+45	-	-	600	176.99	-	-	65	45	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	170+45	170+60	Grade	-	-	2.59	170+60	-	-	-	-	-	60	-	Good		53030076	2000	
WB	15+00	16+30	Grade	-	-	2.60	-	-	-	-	-	-	60	-	Good		53030076	2000	
WB	16+30	23+70	Crest	3	20+00	-	-	740	231.25	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	53030076	2000
WB	23+70	24+20	Grade	-	-	-0.60	-	-	-	-	-	-	60	-	Good		53030076	2000	
WB	24+20	27+00	Sag	1	25+60	-	-	280	186.00	-	-	70+	70+	60	-	Good		53030076	2000
WB	27+00	27+00	Grade	1	-	1.28	27+00	-	-	-	-	-	60	-	Good		53030076	2000	
WB	182+60	185+45	Sag	1	182+95	-	-	285	200.00	-	-	70+	70+	60	-	Good		53030076	2000
WB	185+45	188+79	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53030076	2000	
WB	188+79	202+99	Crest	3	195+89	-	-	1420	258.18	60	45	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	202+99	205+00	Grade	-	-	-2.50	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	205+00	214+00	Sag	1	209+50	-	-	900	169.81	-	-	65	65	60	-	Good		53010271	-
WB	214+00	215+50	Grade	-	-	2.80	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	215+50	226+28	Crest	3	220+90	-	-	1080	263.41	60	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	226+28	226+50	Grade	-	-	-1.30	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	226+50	230+50	Sag	3	228+50	-	-	400	207.25	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	230+50	231+75	Grade	-	-	0.63	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	231+75	233+85	Crest	3	238+00	-	-	210	344.35	65	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	14+25	15+95	Grade	-	-	0.00	-	-	-	-	-	-	60	-	Grade < 0.3%		53030076	2000	
WB	15+95	22+95	Crest	3	19+45	-	-	700	233.33	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	53030076	2000
WB	22+95	24+50	Grade	-	-	-3.00	24+50	-	-	-	-	-	60	-	Good		53030076	2000	
WB	244+10	255+50	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	255+50	262+50	Sag	3	259+00	-	-	700	184.21	-	-	70+	45	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	262+50	265+00	Grade	-	-	0.80	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	265+00	273+00	Sag	1	269+00	-	-	800	470.59	-	-	70+	70+	60	-	Good		53010271	-
WB	273+00	274+30	Grade	-	-	2.50	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	274+30	285+30	Crest	1	279+80	-	-	1100	275.00	70+	60	-	-	60	-	Good		53010271	-
WB	285+30	294+90	Grade	-	-	-1.50	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	294+90	301+90	Crest	1	298+40	-	-	700	466.67	70+	70+	-	-	60	-	Good		53010271	-
WB	301+90	310+00	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		F 04-2(36)	1964	
WB	310+00	318+00	Sag	3	314+00	-	-	800	186.05	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		F 04-2(36)	1964
WB	318+00	319+10	Grade	-	-	1.30	319+10	-	-	-	-	-	60	-	Good		F 04-2(36)	1964	
WB	17+12	17+95	Grade	-	-	1.32	-	-	-	-	-	-	60	-	Good		53030076	2000	
WB	17+95	27+95	Crest	3	22+95	-	-	1001	230.11	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	53030076	2000
WB	27+95	27+95	Grade	-	-	-3.03	27+95	-	-	-	-	-	60	-	Grade > 3%		53030076	2000	
WB	27+95	28+90	Grade	-	-	-3.04	28+90	-	-	-	-	-	60	-	Grade > 3%		53030076	2000	
WB	1084+58	1085+55	Grade	-	-	-2.98	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1085+55	1087+05	Sag	1	1086+30	-	-	150	164.84	-	-	65	65	60	-	Good		12060784	2015
WB	1087+05	1087+05	Grade	-	-	-2.07	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1087+05	1100+35	Sag	3	1093+70	-	-	1330	262.33	-	-	70+	60	60	-	Good		12060784	2015
WB	1100+35	1103+10	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1103+10	1109+50	Crest	1	1106+30	-	-	640	259.11	70+	60	-	-	60	-	Good		12060784	2015
WB	1109+50	1111+95	Grade	-	-	0.53	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1111+95	1120+85	Crest	1	1116+40	-	-	890	252.12	70+	60	-	-	60	-	Good		12060784	2015

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
WB	1120+85	1122+26	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1122+26	1127+02	Sag	2	1124+64	-	-	476	136.00	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
WB	1127+02	1130+30	Grade	-	-	0.50	-	-	-	-	-	-	-	60	-	Good		12060784	2015
WB	1130+30	1136+80	Sag	2	1133+55	-	-	650	260.00	-	-	70+	60	60	-	Good		12060784	2015
WB	1136+80	1140+20	Grade	-	-	3.00	-	-	-	-	-	-	-	60	-	Good		12060784	2015
WB	1140+20	1149+30	Crest	1	1144+75	-	-	910	151.67	60	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
WB	1149+30	1149+30	Grade	-	-	-3.00	-	-	-	-	-	-	-	60	-	Good		12060784	2015
WB	1149+30	1155+20	Sag	1	1152+25	-	-	590	255.41	-	-	70+	70+	60	-	Good		12060784	2015
WB	1155+20	1160+80	Grade	-	-	-0.69	-	-	-	-	-	-	-	60	-	Good		12060784	2015
WB	1160+80	1168+20	Crest	3	1164+50	-	-	740	459.63	70+	60	-	-	60	-	Good		12060784	2015
WB	1168+20	1168+50	Grade	-	-	-2.30	-	-	-	-	-	-	-	60	-	Good		12060784	2015
WB	1168+50	1171+00	Sag	3	1169+75	-	-	250	138.89	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
WB	1171+00	1172+30	Grade	-	-	-0.50	-	-	-	-	-	-	-	60	-	Good		12060784	2015
WB	1172+30	1177+20	Crest	1	1176+40	-	-	490	246.25	65	60	-	-	60	-	Good		12060784	2015
WB	1177+20	1177+20	Grade	-	-	-2.49	1177+20	-	-	-	-	-	-	60	-	Good		12060784	2015
WB	423+55	425+90	Crest	1	423+00	-	-	235	203.39	65	55	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
WB	425+90	438+00	Grade	-	-	-3.85	-	-	-	-	-	-	-	60	-	Grade > 3%		12060181	1972
WB	438+00	442+00	Sag	1	440+00	-	-	400	89.69	-	-	45	45	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	12060181	1972
WB	443+00	447+50	Grade	-	-	0.61	-	-	-	-	-	-	-	60	-	Good		12060181	1972
WB	447+50	452+50	Crest	1	450+00	-	-	500	189.39	60	55	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972
WB	452+50	464+14	Grade	-	-	-2.03	-	-	-	-	-	-	-	60	-	Good		12060181	1972
WB	464+14	468+80	Sag	3	466+47	-	-	466	117.68	-	-	55	30	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060181	1972
WB	468+80	468+80	Grade	-	-	1.93	-	-	-	-	-	-	-	60	-	Good		12060181	1972
WB	468+80	478+70	Crest	3	473+75	-	-	990	205.39	55	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	12060181	1972
WB	478+70	479+50	Grade	-	-	-2.89	-	-	-	-	-	-	-	60	-	Good		12060181	1972
WB	479+50	483+50	Sag	1	481+50	-	-	400	107.24	-	-	50	50	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	12060181	1972
WB	483+50	487+50	Grade	-	-	0.84	487+50	-	-	-	-	-	-	60	-	Good		12060181	1972
WB	487+50	491+78	Grade	-	-	1.00	-	-	-	-	-	-	-	60	-	Good		12060675	2007
WB	491+78	492+78	Crest	1	482+28	-	-	100	476.19	70+	70+	-	-	60	-	Good		12060675	2007
WB	492+78	496+00	Grade	-	-	0.79	496+00	-	-	-	-	-	-	60	-	Good		12060675	2007
WB	496+00	497+00	Grade	-	-	0.96	-	-	-	-	-	-	-	60	-	Good		12060181	1972
WB	497+00	507+00	Crest	3	502+00	-	-	1000	485.44	70+	60	-	-	60	-	Good		12060181	1972
WB	507+00	514+50	Grade	-	-	-1.10	-	-	-	-	-	-	-	60	-	Good		12060181	1972
WB	514+50	517+50	Sag	2	516+00	-	-	300	229.01	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972
WB	517+50	521+00	Grade	-	-	0.21	521+00	-	-	-	-	-	-	60	-	Grade < 0.3%		12060181	1972
WB	521+00	525+62	Grade	-	-	0.33	-	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060374	1989
WB	525+62	526+62	Crest	3	526+12	-	-	100	250.00	60	45	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060374	1989
WB	526+62	528+62	Grade	-	-	-0.07	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989
WB	528+62	529+62	Crest	3	529+12	-	-	100	1250.00	70+	70+	-	-	60	-	Good		12060374	1989
WB	529+62	533+50	Grade	-	-	-0.15	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989
WB	533+50	534+50	Sag	3	534+00	-	-	100	3333.33	-	-	70+	70+	60	-	Good		12060374	1989
WB	534+50	536+50	Grade	-	-	-0.12	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989
WB	536+50	537+50	Sag	3	537+00	-	-	100	769.23	-	-	70+	70+	60	-	Good		12060374	1989
WB	537+50	546+88	Grade	-	-	0.01	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989
WB	546+88	548+88	Sag	3	547+88	-	-	100	344.83	-	-	70+	70+	60	-	Good		12060374	1989
WB	548+88	554+32	Grade	-	-	0.30	-	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060377	-
WB	554+32	558+32	Sag	2	556+32	-	-	400	148.15	-	-	60	40	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060377	-
WB	558+32	565+48	Grade	-	-	3.00	-	-	-	-	-	-	-	60	-	Good		12060377	-
WB	565+48	576+83	Crest	3	571+15	-	-	1135	190.44	55	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	12060374	1989
WB	576+83	578+40	Grade	-	-	-2.96	-	-	-	-	-	-	-	60	-	Good		12060374	1989
WB	578+40	580+40	Sag	1	579+40	-	-	200	714.29	-	-	70+	70+	60	-	Good		12060374	1989
WB	580+40	585+50	Grade	-	-	-2.68	-	-	-	-	-	-	-	60	-	Good		12060374	1989
WB	585+50	586+50	Sag	1	586+00	-	-	100	769.23	-	-	70+	70+	60	-	Good		12060374	1989
WB	586+50	588+00	Grade	-	-	-2.55	-	-	-	-	-	-	-	60	-	Good		12060374	1989
WB	588+00	589+00	Crest	2	588+50	-	-	100	333.33	70+	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060374	1989
WB	589+00	590+87	Grade	-	-	-2.85	-	-	-	-	-	-	-	60	-	Good		12060374	1989
WB	590+87	591+87	Sag	2	591+37	-	-	100	454.55	-	-	70+	70+	60	-	Good		12060374	1989
WB	591+87	595+75	Grade	-	-	-2.63	-	-	-	-	-	-	-	60	-	Good		12060374	1989
WB	595+75	614+25	Sag	3	605+00	-	-	1850.24	396.20	-	-	70+	70+	60	-	Good		12060374	1989
WB	614+25	614+50	Grade	-	-	2.04	-	-	-	-	-	-	-	60	-	Good		12060374	1989
WB	614+50	617+51	Crest	3	616+01	-	-	300	681.82	70+	70+	-	-	60	-	Good		12060374	1989
WB	617+51	623+81	Grade	-	-	1.60	-	-	-	-	-	-	-	60	-	Good		12060374	1989
WB	623+81	20+23	Crest	3	626+73	-	-	600	327.87	65	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060374	1989
WB	20+23	23+00	Grade	-	-	-0.23	23+00	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year	
										Minimum	Desirable	Minimum	Desirable							
WB	23+00	26+00	Grade	-	-	-0.58	-	-	-	-	-	-	60	-	Good		12060374	1989		
WB	26+00	28+50	Sag	3	27+25	-	-	250	206.61	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060374	1989	
BOTH	28+50	39+10	Grade	-	-	0.63	-	-	-	-	-	-	60	-	Good		12060274	1989		
BOTH	39+10	46+90	Crest	2	43+00	-	-	780	216.07	65	45	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060274	1989	
BOTH	46+90	49+10	Grade	-	-	-2.98	-	-	-	-	-	-	60	-	Good		12060274	1989		
BOTH	49+10	52+50	Sag	2	50+80	-	-	340	142.86	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060274	1989	
BOTH	52+50	54+01	Grade	-	-	-0.60	-	-	-	-	-	-	60	-	Good		12060274	1989		
BOTH	54+01	55+31	Sag	1	54+66	-	-	130	541.67	-	-	70+	70+	60	-	Good		12060274	1989	
BOTH	55+31	88+98	Grade	-	-	-0.36	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989		
BOTH	88+98	92+98	Sag	1	90+98	-	-	400	506.33	-	-	70+	70+	60	-	Good		12060279	1989	
BOTH	92+98	116+00	Grade	-	-	0.43	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12030276	1988		
BOTH	116+00	120+00	Crest	3	118+00	-	-	400	481.93	70+	60	-	-	60	-	Good		12060276	1988	
BOTH	120+00	124+00	Grade	-	-	-0.40	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060276	1988		
BOTH	124+00	127+50	Sag	3	125+75	-	-	350	116.28	-	-	55	30	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060276	1988	
BOTH	127+50	127+50	Grade	-	-	2.61	-	-	-	-	-	-	60	-	Good		12060279	1989		
BOTH	127+50	137+20	Crest	3	132+35	-	-	970	190.20	55	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	12060279	1989	
BOTH	137+20	139+00	Grade	-	-	-2.49	-	-	-	-	-	-	60	-	Good		12060279	1989		
BOTH	139+00	143+00	Sag	1	141+00	-	-	400	191.39	-	-	70+	70+	60	-	Good		12060279	1989	
BOTH	143+00	151+50	Grade	-	-	-0.40	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989		
BOTH	151+50	153+50	Sag	3	152+50	-	-	200	246.91	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060279	1989	
BOTH	153+50	164+50	Grade	-	-	0.41	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989		
BOTH	164+50	170+50	Sag	2	167+50	-	-	600	260.87	-	-	70+	60	60	-	Good		12060279	1989	
BOTH	170+50	172+40	Grade	-	-	2.71	-	-	-	-	-	-	60	-	Good		12060279	1989		
BOTH	172+40	182+60	Crest	3	177+50	-	-	1020	192.09	55	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	12060279	1989	
BOTH	182+60	185+12	Grade	-	-	-2.60	-	-	-	-	-	-	60	-	Good		12060279	1989		
BOTH	185+12	188+12	Sag	1	186+62	-	-	300	127.66	-	-	55	55	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060279	1989	
BOTH	188+12	192+49	Grade	-	-	-0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989		
BOTH	192+49	196+49	Sag	3	194+49	-	-	400	800.00	-	-	70+	70+	60	-	Good		12060279	1989	
BOTH	196+49	200+00	Grade	-	-	0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989		
BOTH	200+00	202+00	Sag	3	201+00	-	-	200	363.64	-	-	70+	70+	60	-	Good		12060279	1989	
BOTH	202+00	202+50	Grade	-	-	0.80	-	-	-	-	-	-	60	-	Good		12060279	1989		
BOTH	202+50	49+23	Crest	3	205+00	-	-	500	458.72	70+	60	-	-	60	-	Good		12060279	1989	
BOTH	49+23	49+23	Grade	-	-	-0.29	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989		
BOTH	49+23	52+23	Sag	1	50+73	-	-	300	555.56	-	-	70+	70+	60	-	Good		12060279	1989	
BOTH	52+23	62+20	Grade	-	-	0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989		
BOTH	62+20	68+20	Crest	1	65+20	-	-	600	2400.00	70+	70+	-	-	60	-	Good		12060279	1989	
BOTH	68+20	75+83	Grade	-	-	0.00	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989		
Good																				total
EB	1931+70	1937+00	Grade	-	-	2.54	-	-	-	-	-	-	60	-	Good		5300-03-76	-		
EB	1937+00	1939+00	Crest	-	1938+00	-	-	200	512.82	-	-	-	-	60	-	Good		5300-03-76	-	
EB	1939+00	1939+06	Grade	-	-	2.15	-	-	-	-	-	-	60	-	Good		5300-03-76	-		
EB	45+70	53+55	Crest	3	48+50	-	-	785	231.12	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	5303-00-72	1988	
EB	53+55	55+50	Grade	-	-	-1.88	-	-	-	-	-	-	60	-	Good		5303-00-72	1988		
EB	55+50	66+50	Sag	3	61+00	-	-	1100	225.41	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		5303-00-72	1988	
EB	66+50	68+06	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		5303-00-72	1988		
EB	68+06	86+15	Crest	3	77+15	-	-	1800	476.19	70+	60	-	-	60	-	Good		5303-00-72	1988	
EB	86+15	95+80	Grade	-	-	-0.78	-	-	-	-	-	-	60	-	Good		5303-00-72	1988		
EB	95+80	108+80	Sag	3	102+30	-	-	1300	339.43	-	-	70+	70+	60	-	Good		5303-00-71	1988	
EB	108+80	112+80	Grade	-	-	3.05	-	-	-	-	-	-	60	-	Grade > 3%		5303-00-71	1988		
EB	112+80	122+80	Crest	1	117+80	-	-	1000	257.73	70+	60	-	-	60	-	Good		5303-00-71	1988	
EB	122+80	126+60	Grade	-	-	-0.83	-	-	-	-	-	-	60	-	Good		5303-00-71	1988		
EB	126+60	137+60	Sag	3	132+10	-	-	1100	286.46	-	-	70+	65	60	-	Good		5303-00-71	1988	
EB	137+60	145+00	Grade	-	-	3.01	145+00	-	-	-	-	-	60	-	Grade > 3%		5303-00-71	1988		
EB	144+60	146+54	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53010271	-		
EB	146+54	156+54	Crest	1	151+54	-	-	1000	285.71	70+	60	-	-	60	-	Good		53010271	-	
EB	156+54	164+62	Grade	-	-	-0.50	-	-	-	-	-	-	60	-	Good		53010271	-		
EB	164+62	170+62	Sag	3	167+62	-	-	600	228.14	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-	
EB	15+00	15+00	Grade	-	-	2.13	15+00	-	-	-	-	-	60	-	Good		53010271	-		
EB	15+00	17+75	Grade	-	-	2.20	-	-	-	-	-	-	60	-	Good		53030076	2000		
EB	17+75	24+25	Crest	3	21+00	-	-	650	232.97	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	53030076	2000	
EB	24+25	24+25	Grade	-	-	-0.59	24+25	-	-	-	-	-	60	-	Good		53030076	2000		
EB	24+25	26+75	Sag	3	25+50	-	-	250	130.89	-	-	55	35	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	53030076	2000	

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
EB	26+75	27+00	Grade	-	-	1.32	-	-	-	-	-	-	60	-	Good		53030076	2000	
EB	182+50	187+90	Sag	3	183+15	-	-	540	321.43	-	-	70+	70+	60	-	Good		53010271	-
EB	187+90	188+05	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	188+05	203+66	Crest	3	195+88	-	-	1536	279.27	60	50	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-	
EB	203+66	205+70	Grade	-	-	-2.50	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	205+70	213+70	Sag	1	209+70	-	-	800	145.45	-	-	60	60	60	-	Good		53010271	-
EB	213+70	214+12	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	214+12	225+10	Crest	3	219+62	-	-	1100	289.47	60	50	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-	
EB	225+10	227+75	Grade	-	-	-0.80	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	227+75	232+25	Sag	3	230+00	-	-	450	264.71	-	-	70+	60	60	-	Good		53010271	-
EB	232+25	233+10	Grade	-	-	0.90	233+10	-	-	-	-	-	60	-	Good		53010271	-	
EB	13+50	14+30	Grade	-	-	0.56	-	-	-	-	-	-	60	-	Good		53030076	2000	
EB	14+30	22+70	Crest	1	18+50	-	-	840.00	230.14	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53030076	2000	
EB	22+70	27+00	Grade	-	-	-3.09	27+00	-	-	-	-	-	60	-	Grade > 3%		53010271	-	
EB	246+60	255+75	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	255+75	261+75	Sag	3	258+75	-	-	600	157.89	-	-	65	40	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
EB	261+75	264+75	Grade	-	-	0.80	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	264+75	272+75	Sag	3	268+75	-	-	800	470.59	-	-	70+	70+	60	-	Good		53010271	-
EB	272+75	274+40	Grade	-	-	2.50	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	274+40	285+40	Crest	3	279+90	-	-	1100	275.00	60	50	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-	
EB	285+40	293+60	Grade	-	-	-1.50	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	293+60	300+60	Crest	1	297+10	-	-	700	482.76	70+	70+	-	60	-	Good		53010271	-	
EB	300+60	302+95	Grade	-	-	-2.95	302+95	-	-	-	-	-	60	-	Good		53010271	-	
EB	302+95	309+90	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	309+90	317+89	Sag	3	313+90	-	-	800	186.05	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed	F 04-2(36)	1964	
EB	317+89	318+50	Grade	-	-	1.30	318+50	-	-	-	-	-	60	-	Good	F 04-2(36)	1964		
EB	16+50	18+00	Grade	-	-	1.34	-	-	-	-	-	-	60	-	Good		53030076	2000	
EB	18+00	28+00	Crest	1	23+00	-	-	1000	229.89	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53030076	2000	
EB	28+00	28+70	Grade	-	-	-3.01	28+70	-	-	-	-	-	60	-	Grade > 3%		53030076	2000	
EB	1084+38	1085+95	Grade	-	-	-2.63	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1085+95	1100+25	Sag	2	1093+10	-	-	1430	256.27	-	-	70+	60	60	-	Good		12060784	2015
EB	1100+25	1103+05	Grade	-	-	2.95	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1103+05	1109+45	Crest	1	1106+25	-	-	640	289.59	70+	60	-	60	-	Good		12060784	2015	
EB	1009+45	1111+65	Grade	-	-	0.74	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1111+65	1114+95	Crest	1	1113+30	-	-	330	259.84	70+	60	-	60	-	Good		12060784	2015	
EB	1114+95	1114+95	Grade	-	-	-0.53	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1114+95	1121+05	Crest	3	1118+00	-	-	610	246.96	60	45	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015	
EB	1121+05	1123+35	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1123+35	1128+55	Sag	3	1125+95	-	-	520	136.48	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
EB	1128+55	1130+70	Grade	-	-	0.81	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1130+70	1136+30	Sag	1	1133+50	-	-	560	255.71	-	-	70+	70+	60	-	Good		12060784	2015
EB	1136+36	1140+20	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1140+20	1149+30	Crest	1	1144+75	-	-	910	151.67	60	50	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015	
EB	1149+30	1150+70	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1150+70	1157+10	Sag	2	1153+90	-	-	640	256.00	-	-	70+	60	60	-	Good		12060784	2015
EB	1157+10	1161+75	Grade	-	-	-0.50	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1161+75	1168+25	Crest	1	1165+00	-	-	650	457.75	70+	70+	-	60	-	Good		12060784	2015	
EB	1168+25	1169+25	Grade	-	-	-1.92	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1169+25	1171+25	Sag	1	1170+25	-	-	200	140.85	-	-	60	60	60	-	Good		12060784	2015
EB	1171+25	1172+30	Grade	-	-	-0.50	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1172+30	1177+20	Crest	2	1176+50	-	-	490	248.00	70+	45	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015	
EB	1177+20	1177+20	Grade	-	-	-2.48	1177+20	-	-	-	-	-	60	-	Good		12060784	2015	
EB	423+55	425+90	Crest	2	422+90	-	-	235	203.39	65	40	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015	
EB	425+90	437+00	Grade	-	-	-3.85	-	-	-	-	-	-	60	-	Grade > 3%		12060181	1972	
EB	437+00	443+00	Sag	3	440+00	-	-	600	138.25	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972
EB	443+00	448+00	Grade	-	-	0.49	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060181	1972	
EB	448+00	453+00	Crest	1	450+50	-	-	500	204.08	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972	
EB	453+00	464+80	Grade	-	-	-1.96	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	464+80	468+80	Sag	1	466+80	-	-	400	102.83	-	-	50	50	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	12060181	1972
EB	468+80	468+80	Grade	-	-	1.93	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	468+80	478+70	Crest	1	473+75	-	-	990	205.39	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972	
EB	478+70	479+50	Grade	-	-	-2.89	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	479+50	483+50	Sag	1	481+50	-	-	400	104.17	-	-	50	50	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	12060181	1972
EB	483+50	487+00	Grade	-	-	0.95	487+00	-	-	-	-	-	60	-	> 0.4%		12060181	1972	

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan
										Minimum	Desirable	Minimum	Desirable						
EB	487+00	489+01	Grade	-	-	1.52	-	-	-	-	-	-	60	-	Good		12060675	2007	
EB	489+01	491+61	Crest	1	490+31	-	-	260	282.61	70+	60	-	60	-	Good		12060675	2007	
EB	491+61	496+00	Grade	-	-	0.60	496+00	-	-	-	-	-	60	-	Good		12060675	2007	
EB	496+00	497+00	Grade	-	-	0.85	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	497+00	507+00	Crest	3	502+00	-	-	1000	512.82	70+	65	-	60	-	Good		12060181	1972	
EB	507+00	514+50	Grade	-	-	-1.10	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	514+50	517+50	Sag	3	516+00	-	-	300	234.38	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972
EB	517+50	521+00	Grade	-	-	0.18	521+00	-	-	-	-	-	60	-	Grade < 0.3%		12060181	1972	
EB	521+00	525+00	Grade	-	-	0.05	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
EB	525+00	531+12	Crest	1	528+12	-	-	600	3157.89	70+	70+	-	60	-	Good		12060374	1989	
EB	531+12	535+62	Grade	-	-	-0.14	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
EB	535+62	546+62	Sag	3	541+12	-	-	1100	2500.00	-	-	70+	70+	60	-	Good		12060374	1989
EB	546+62	554+32	Grade	-	-	0.30	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060377	-	
EB	554+32	558+32	Sag	2	556+31.66	-	-	400	148.15	-	-	60	40	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060377	-
EB	558+32	564+91	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		12060377	-	
EB	564+91	575+71	Crest	1	570+31	-	-	1080	196.01	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060377	-	
EB	575+71	576+00	Grade	-	-	-2.51	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	576+00	577+00	Crest	1	576+50	-	-	100	476.19	70+	70+	-	60	-	Good		12060374	1989	
EB	577+00	578+00	Grade	-	-	-2.72	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	578+00	580+00	Sag	3	579+00	-	-	200	1818.18	-	-	70+	70+	60	-	Good		12060374	1989
EB	580+00	586+00	Grade	-	-	-2.61	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	586+00	588+00	Sag	3	587+00	-	-	200	5000.00	-	-	70+	70+	60	-	Good		12060374	1989
EB	588+00	595+55	Grade	-	-	-2.57	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	595+55	614+26	Sag	2	604+99	-	-	1888.4	400.08	-	-	70+	70+	60	-	Good		12060374	1989
EB	614+26	615+50	Grade	-	-	2.15	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	615+50	618+50	Crest	3	617+00	-	-	300	545.45	70+	65	-	60	-	Good		12060374	1989	
EB	618+50	621+30	Grade	-	-	1.60	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	621+30	20+61	Crest	2	625+70	-	-	880	465.61	70+	60	-	60	-	Good		12060374	1989	
EB	20+61	23+00	Grade	-	-	-0.29	23+00	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
EB	23+00	26+00	Grade	-	-	-0.58	-	-	-	-	-	-	60	-	Good		12060274	1989	
EB	26+00	28+50	Sag	1	27+25	-	-	250	206.61	-	-	70+	70+	60	-	Good		12060274	1989
BOTH	28+50	39+10	Grade	-	-	0.63	-	-	-	-	-	-	60	-	Good		12060274	1989	
BOTH	39+10	46+90	Crest	1	43+00	-	-	780	216.07	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060274	1989	
BOTH	46+90	49+10	Grade	-	-	-2.98	-	-	-	-	-	-	60	-	Good		12060274	1989	
BOTH	49+10	52+50	Sag	1	50+80	-	-	340	142.86	-	-	60	60	60	-	Good		12060274	1989
BOTH	52+50	54+01	Grade	-	-	-0.60	-	-	-	-	-	-	60	-	Good		12060274	1989	
BOTH	54+01	55+31	Sag	3	54+66	-	-	130	541.67	-	-	70+	70+	60	-	Good		12060274	1989
BOTH	55+31	88+98	Grade	-	-	-0.36	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989	
BOTH	88+98	92+98	Sag	1	90+98	-	-	400	506.33	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	92+98	116+00	Grade	-	-	0.43	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060276	1988	
BOTH	116+00	120+00	Crest	3	118+00	-	-	400	481.93	70+	60	-	60	-	Good		12060276	1988	
BOTH	120+00	124+00	Grade	-	-	-0.40	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060276	1988	
BOTH	124+00	127+50	Sag	1	125+75	-	-	350	116.28	-	-	55	55	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060276	1988
BOTH	127+50	127+50	Grade	-	-	2.61	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	127+50	137+20	Crest	2	132+35	-	-	970	190.20	60	40	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060279	1989	
BOTH	137+20	139+00	Grade	-	-	-2.49	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	139+00	143+00	Sag	2	141+00	-	-	400	191.39	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060279	1989
BOTH	143+00	151+50	Grade	-	-	-0.40	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989	
BOTH	151+50	153+50	Sag	1	152+50	-	-	200	246.91	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	153+50	164+50	Grade	-	-	0.41	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989	
BOTH	164+50	170+50	Sag	3	167+50	-	-	600	260.87	-	-	70+	60	60	-	Good		12060279	1989
BOTH	170+50	172+40	Grade	-	-	2.71	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	172+40	182+60	Crest	1	177+50	-	-	1020	192.09	60	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060279	1989	
BOTH	182+60	185+12	Grade	-	-	-2.60	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	185+12	188+12	Sag	1	186+62	-	-	300	127.66	-	-	55	55	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060279	1989
BOTH	188+12	192+49	Grade	-	-	-0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989	
BOTH	192+49	196+49	Sag	3	194+49	-	-	400	800.00	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	196+49	200+00	Grade	-	-	0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989	
BOTH	200+00	202+00	Sag	3	201+00	-	-	200	363.64	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	202+00	202+50	Grade	-	-	0.80	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	202+50	49+23	Crest	3	205+00	-	-	500	458.72	70+	60	-	60	-	Good		12060279	1989	
BOTH	49+23	49+23	Grade	-	-	-0.29	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989	
BOTH	49+23	52+23	Sag	1	50+73	-	-	300	555.56	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	52+23	62+20	Grade	-	-	0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989	

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
BOTH	62+20	68+20	Crest	1	65+20	-	-	600	2400.00	70+	70+	-	-	60	-	Good		12060279	1989
BOTH	68+20	75+83	Grade	-	-	0.00	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989
Good																			

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
WB	1931+79	1937+44	Grade	-	-	2.49	-	-	-	-	-	-	60	-	Good		5300-03-76	-	
WB	1937+44	1938+69	Sag	3	1938+07	-	-	125	245.10	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		5300-03-76	-
WB	1938+69	1938+81	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		5300-03-76	-	
WB	45+14	49+04	Crest	3	47+09	-	-	390	156.00	50	35	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	53030072	1988
WB	49+04	49+04	Grade	-	-	0.50	-	-	-	-	-	-	60	-	Good		53030072	1988	
WB	49+04	55+04	Crest	3	52+04	-	-	600	174.42	50	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	53030072	1988
WB	55+04	56+01	Grade	-	-	-2.94	-	-	-	-	-	-	60	-	Good		53030072	1988	
WB	56+01	63+51	Sag	2	59+76	-	-	750	130.66	-	-	55	35	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	53030072	1988
WB	63+51	67+13	Grade	-	-	2.80	-	-	-	-	-	-	60	-	Good		53030072	1988	
WB	67+13	87+43	Crest	3	77+43	-	-	2000	990.10	70+	70+	-	-	60	-	Good		53030072	1988
WB	87+43	96+25	Grade	-	-	0.78	-	-	-	-	-	-	60	-	Good		53030072	1988	
WB	96+25	109+75	Sag	3	103+00	-	-	1350	513.31	-	-	70+	70+	60	-	Good		5303-00-71	1988
WB	109+75	111+73	Grade	-	-	3.41	-	-	-	-	-	-	60	-	Grade > 3%		5303-00-71	1988	
WB	111+73	121+73	Crest	3	116+73	-	-	1000	253.81	60	45	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		5303-00-71	1988
WB	121+73	130+29	Grade	-	-	-0.53	-	-	-	-	-	-	60	-	Good		5303-00-71	1988	
WB	130+29	136+29	Sag	3	133+29	-	-	600	166.20	-	-	65	45	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		5303-00-71	1988
WB	136+29	144+35	Grade	-	-	3.08	144+35	-	-	-	-	-	60	-	Grade > 3%		5303-00-71	1988	
WB	143+95	146+30	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	146+30	158+30	Crest	3	152+30	-	-	1200	315.79	65	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	158+30	164+45	Grade	-	-	-0.80	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	164+45	170+45	Sag	3	167+45	-	-	600	176.99	-	-	65	45	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	170+45	170+60	Grade	-	-	2.59	170+60	-	-	-	-	-	60	-	Good		53030076	2000	
WB	15+00	16+30	Grade	-	-	2.60	-	-	-	-	-	-	60	-	Good		53030076	2000	
WB	16+30	23+70	Crest	3	20+00	-	-	740	231.25	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	53030076	2000
WB	23+70	24+20	Grade	-	-	-0.60	-	-	-	-	-	-	60	-	Good		53030076	2000	
WB	24+20	27+00	Sag	1	25+60	-	-	280	186.00	-	-	70+	70+	60	-	Good		53030076	2000
WB	27+00	27+00	Grade	1	-	1.28	27+00	-	-	-	-	-	60	-	Good		53030076	2000	
WB	182+60	185+45	Sag	1	182+95	-	-	285	200.00	-	-	70+	70+	60	-	Good		53030076	2000
WB	185+45	188+79	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53030076	2000	
WB	188+79	202+99	Crest	3	195+89	-	-	1420	258.18	60	45	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	202+99	205+00	Grade	-	-	-2.50	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	205+00	214+00	Sag	1	209+50	-	-	900	169.81	-	-	65	65	60	-	Good		53010271	-
WB	214+00	215+50	Grade	-	-	2.80	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	215+50	226+28	Crest	3	220+90	-	-	1080	263.41	60	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	226+28	226+50	Grade	-	-	-1.30	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	226+50	230+50	Sag	3	228+50	-	-	400	207.25	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	230+50	231+75	Grade	-	-	0.63	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	231+75	233+85	Crest	3	238+00	-	-	210	344.35	65	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	14+25	15+95	Grade	-	-	0.00	-	-	-	-	-	-	60	-	Grade < 0.3%		53030076	2000	
WB	15+95	22+95	Crest	3	19+45	-	-	700	233.33	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	53030076	2000
WB	22+95	24+50	Grade	-	-	-3.00	24+50	-	-	-	-	-	60	-	Good		53030076	2000	
WB	244+10	255+50	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	255+50	262+50	Sag	3	259+00	-	-	700	184.21	-	-	70+	45	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
WB	262+50	265+00	Grade	-	-	0.80	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	265+00	273+00	Sag	1	269+00	-	-	800	470.59	-	-	70+	70+	60	-	Good		53010271	-
WB	273+00	274+30	Grade	-	-	2.50	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	274+30	285+30	Crest	1	279+80	-	-	1100	275.00	70+	60	-	-	60	-	Good		53010271	-
WB	285+30	294+90	Grade	-	-	-1.50	-	-	-	-	-	-	60	-	Good		53010271	-	
WB	294+90	301+90	Crest	1	298+40	-	-	700	466.67	70+	70+	-	-	60	-	Good		53010271	-
WB	301+90	310+00	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		F 04-2(36)	1964	
WB	310+00	318+00	Sag	3	314+00	-	-	800	186.05	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		F 04-2(36)	1964
WB	318+00	319+10	Grade	-	-	1.30	319+10	-	-	-	-	-	60	-	Good		F 04-2(36)	1964	
WB	17+12	17+95	Grade	-	-	1.32	-	-	-	-	-	-	60	-	Good		53030076	2000	
WB	17+95	27+95	Crest	3	22+95	-	-	1001	230.11	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	53030076	2000
WB	27+95	27+95	Grade	-	-	-3.03	27+95	-	-	-	-	-	60	-	Grade > 3%		53030076	2000	
WB	27+95	28+90	Grade	-	-	-3.04	28+90	-	-	-	-	-	60	-	Grade > 3%		53030076	2000	
WB	1084+58	1085+55	Grade	-	-	-2.98	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1085+55	1087+05	Sag	1	1086+30	-	-	150	164.84	-	-	65	65	60	-	Good		12060784	2015
WB	1087+05	1087+05	Grade	-	-	-2.07	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1087+05	1100+35	Sag	3	1093+70	-	-	1330	262.33	-	-	70+	60	60	-	Good		12060784	2015
WB	1100+35	1103+10	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1103+10	1109+50	Crest	1	1106+30	-	-	640	259.11	70+	60	-	-	60	-	Good		12060784	2015
WB	1109+50	1111+95	Grade	-	-	0.53	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1111+95	1120+85	Crest	1	1116+40	-	-	890	252.12	70+	60	-	-	60	-	Good		12060784	2015

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
WB	1120+85	1122+26	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1122+26	1127+02	Sag	2	1124+64	-	-	476	136.00	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
WB	1127+02	1130+30	Grade	-	-	0.50	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1130+30	1136+80	Sag	2	1133+55	-	-	650	260.00	-	-	70+	60	60	-	Good		12060784	2015
WB	1136+80	1140+20	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1140+20	1149+30	Crest	1	1144+75	-	-	910	151.67	60	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
WB	1149+30	1149+30	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1149+30	1155+20	Sag	1	1152+25	-	-	590	255.41	-	-	70+	70+	60	-	Good		12060784	2015
WB	1155+20	1160+80	Grade	-	-	-0.69	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1160+80	1168+20	Crest	3	1164+50	-	-	740	459.63	70+	60	-	-	60	-	Good		12060784	2015
WB	1168+20	1168+50	Grade	-	-	-2.30	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1168+50	1171+00	Sag	3	1169+75	-	-	250	138.89	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
WB	1171+00	1172+30	Grade	-	-	-0.50	-	-	-	-	-	-	60	-	Good		12060784	2015	
WB	1172+30	1177+20	Crest	1	1176+40	-	-	490	246.25	65	60	-	-	60	-	Good		12060784	2015
WB	1177+20	1177+20	Grade	-	-	-2.49	1177+20	-	-	-	-	-	60	-	Good		12060784	2015	
WB	423+55	425+90	Crest	1	423+00	-	-	235	203.39	65	55	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
WB	425+90	438+00	Grade	-	-	-3.85	-	-	-	-	-	-	60	-	Grade > 3%		12060181	1972	
WB	438+00	442+00	Sag	1	440+00	-	-	400	89.69	-	-	45	45	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	12060181	1972
WB	443+00	447+50	Grade	-	-	0.61	-	-	-	-	-	-	60	-	Good		12060181	1972	
WB	447+50	452+50	Crest	1	450+00	-	-	500	189.39	60	55	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972
WB	452+50	464+14	Grade	-	-	-2.03	-	-	-	-	-	-	60	-	Good		12060181	1972	
WB	464+14	468+80	Sag	3	466+47	-	-	466	117.68	-	-	55	30	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060181	1972
WB	468+80	468+80	Grade	-	-	1.93	-	-	-	-	-	-	60	-	Good		12060181	1972	
WB	468+80	478+70	Crest	3	473+75	-	-	990	205.39	55	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	12060181	1972
WB	478+70	479+50	Grade	-	-	-2.89	-	-	-	-	-	-	60	-	Good		12060181	1972	
WB	479+50	483+50	Sag	1	481+50	-	-	400	107.24	-	-	50	50	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	12060181	1972
WB	483+50	487+50	Grade	-	-	0.84	487+50	-	-	-	-	-	60	-	Good		12060181	1972	
WB	487+50	491+78	Grade	-	-	1.00	-	-	-	-	-	-	60	-	Good		12060675	2007	
WB	491+78	492+78	Crest	1	482+28	-	-	100	476.19	70+	70+	-	-	60	-	Good		12060675	2007
WB	492+78	496+00	Grade	-	-	0.79	496+00	-	-	-	-	-	60	-	Good		12060675	2007	
WB	496+00	497+00	Grade	-	-	0.96	-	-	-	-	-	-	60	-	Good		12060181	1972	
WB	497+00	507+00	Crest	3	502+00	-	-	1000	485.44	70+	60	-	-	60	-	Good		12060181	1972
WB	507+00	514+50	Grade	-	-	-1.10	-	-	-	-	-	-	60	-	Good		12060181	1972	
WB	514+50	517+50	Sag	2	516+00	-	-	300	229.01	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972
WB	517+50	521+00	Grade	-	-	0.21	521+00	-	-	-	-	-	60	-	Grade < 0.3%		12060181	1972	
WB	521+00	525+62	Grade	-	-	0.33	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060374	1989	
WB	525+62	526+62	Crest	3	526+12	-	-	100	250.00	60	45	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060374	1989
WB	526+62	528+62	Grade	-	-	-0.07	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
WB	528+62	529+62	Crest	3	529+12	-	-	100	1250.00	70+	70+	-	-	60	-	Good		12060374	1989
WB	529+62	533+50	Grade	-	-	-0.15	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
WB	533+50	534+50	Sag	3	534+00	-	-	100	3333.33	-	-	70+	70+	60	-	Good		12060374	1989
WB	534+50	536+50	Grade	-	-	-0.12	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
WB	536+50	537+50	Sag	3	537+00	-	-	100	769.23	-	-	70+	70+	60	-	Good		12060374	1989
WB	537+50	546+88	Grade	-	-	0.01	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
WB	546+88	548+88	Sag	3	547+88	-	-	100	344.83	-	-	70+	70+	60	-	Good		12060374	1989
WB	548+88	554+32	Grade	-	-	0.30	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060377	-	
WB	554+32	558+32	Sag	2	556+32	-	-	400	148.15	-	-	60	40	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060377	-
WB	558+32	565+48	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		12060377	-	
WB	565+48	576+83	Crest	3	571+15	-	-	1135	190.44	55	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	12060374	1989
WB	576+83	578+40	Grade	-	-	-2.96	-	-	-	-	-	-	60	-	Good		12060374	1989	
WB	578+40	580+40	Sag	1	579+40	-	-	200	714.29	-	-	70+	70+	60	-	Good		12060374	1989
WB	580+40	585+50	Grade	-	-	-2.68	-	-	-	-	-	-	60	-	Good		12060374	1989	
WB	585+50	586+50	Sag	1	586+00	-	-	100	769.23	-	-	70+	70+	60	-	Good		12060374	1989
WB	586+50	588+00	Grade	-	-	-2.55	-	-	-	-	-	-	60	-	Good		12060374	1989	
WB	588+00	589+00	Crest	2	588+50	-	-	100	333.33	70+	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060374	1989
WB	589+00	590+87	Grade	-	-	-2.85	-	-	-	-	-	-	60	-	Good		12060374	1989	
WB	590+87	591+87	Sag	2	591+37	-	-	100	454.55	-	-	70+	70+	60	-	Good		12060374	1989
WB	591+87	595+75	Grade	-	-	-2.63	-	-	-	-	-	-	60	-	Good		12060374	1989	
WB	595+75	614+25	Sag	3	605+00	-	-	1850.24	396.20	-	-	70+	70+	60	-	Good		12060374	1989
WB	614+25	614+50	Grade	-	-	2.04	-	-	-	-	-	-	60	-	Good		12060374	1989	
WB	614+50	617+51	Crest	3	616+01	-	-	300	681.82	70+	70+	-	-	60	-	Good		12060374	1989
WB	617+51	623+81	Grade	-	-	1.60	-	-	-	-	-	-	60	-	Good		12060374	1989	
WB	623+81	20+23	Crest	3	626+73	-	-	600	327.87	65	50	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060374	1989
WB	20+23	23+00	Grade	-	-	-0.23	23+00	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
WB	23+00	26+00	Grade	-	-	-0.58	-	-	-	-	-	-	60	-	Good		12060374	1989	
WB	26+00	28+50	Sag	3	27+25	-	-	250	206.61	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060374	1989
BOTH	28+50	39+10	Grade	-	-	0.63	-	-	-	-	-	-	-	60	-	Good		12060274	1989
BOTH	39+10	46+90	Crest	2	43+00	-	-	780	216.07	65	45	-	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060274	1989
BOTH	46+90	49+10	Grade	-	-	-2.98	-	-	-	-	-	-	-	60	-	Good		12060274	1989
BOTH	49+10	52+50	Sag	2	50+80	-	-	340	142.86	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060274	1989
BOTH	52+50	54+01	Grade	-	-	-0.60	-	-	-	-	-	-	-	60	-	Good		12060274	1989
BOTH	54+01	55+31	Sag	1	54+66	-	-	130	541.67	-	-	70+	70+	60	-	Good		12060274	1989
BOTH	55+31	88+98	Grade	-	-	-0.36	-	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989
BOTH	88+98	92+98	Sag	1	90+98	-	-	400	506.33	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	92+98	116+00	Grade	-	-	0.43	-	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12030276	1988
BOTH	116+00	120+00	Crest	3	118+00	-	-	400	481.93	70+	60	-	-	60	-	Good		12060276	1988
BOTH	120+00	124+00	Grade	-	-	-0.40	-	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060276	1988
BOTH	124+00	127+50	Sag	3	125+75	-	-	350	116.28	-	-	55	30	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060276	1988
BOTH	127+50	127+50	Grade	-	-	2.61	-	-	-	-	-	-	-	60	-	Good		12060279	1989
BOTH	127+50	137+20	Crest	3	132+35	-	-	970	190.20	55	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	12060279	1989
BOTH	137+20	139+00	Grade	-	-	-2.49	-	-	-	-	-	-	-	60	-	Good		12060279	1989
BOTH	139+00	143+00	Sag	1	141+00	-	-	400	191.39	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	143+00	151+50	Grade	-	-	-0.40	-	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989
BOTH	151+50	153+50	Sag	3	152+50	-	-	200	246.91	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060279	1989
BOTH	153+50	164+50	Grade	-	-	0.41	-	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989
BOTH	164+50	170+50	Sag	2	167+50	-	-	600	260.87	-	-	70+	60	60	-	Good		12060279	1989
BOTH	170+50	172+40	Grade	-	-	2.71	-	-	-	-	-	-	-	60	-	Good		12060279	1989
BOTH	172+40	182+60	Crest	3	177+50	-	-	1020	192.09	55	40	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	12060279	1989
BOTH	182+60	185+12	Grade	-	-	-2.60	-	-	-	-	-	-	-	60	-	Good		12060279	1989
BOTH	185+12	188+12	Sag	1	186+62	-	-	300	127.66	-	-	55	55	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060279	1989
BOTH	188+12	192+49	Grade	-	-	-0.25	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989
BOTH	192+49	196+49	Sag	3	194+49	-	-	400	800.00	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	196+49	200+00	Grade	-	-	0.25	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989
BOTH	200+00	202+00	Sag	3	201+00	-	-	200	363.64	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	202+00	202+50	Grade	-	-	0.80	-	-	-	-	-	-	-	60	-	Good		12060279	1989
BOTH	202+50	49+23	Crest	3	205+00	-	-	500	458.72	70+	60	-	-	60	-	Good		12060279	1989
BOTH	49+23	49+23	Grade	-	-	-0.29	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989
BOTH	49+23	52+23	Sag	1	50+73	-	-	300	555.56	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	52+23	62+20	Grade	-	-	0.25	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989
BOTH	62+20	68+20	Crest	1	65+20	-	-	600	2400.00	70+	70+	-	-	60	-	Good		12060279	1989
BOTH	68+20	75+83	Grade	-	-	0.00	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989
																Good			total
EB	1931+70	1937+00	Grade	-	-	2.54	-	-	-	-	-	-	-	60	-	Good		5300-03-76	-
EB	1937+00	1939+00	Crest	-	1938+00	-	-	200	512.82	-	-	-	-	60	-	Good		5300-03-76	-
EB	1939+00	1939+06	Grade	-	-	2.15	-	-	-	-	-	-	-	60	-	Good		5300-03-76	-
EB	45+70	53+55	Crest	3	48+50	-	-	785	231.12	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	5303-00-72	1988
EB	53+55	55+50	Grade	-	-	-1.88	-	-	-	-	-	-	-	60	-	Good		5303-00-72	1988
EB	55+50	66+50	Sag	3	61+00	-	-	1100	225.41	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		5303-00-72	1988
EB	66+50	68+06	Grade	-	-	3.00	-	-	-	-	-	-	-	60	-	Good		5303-00-72	1988
EB	68+06	86+15	Crest	3	77+15	-	-	1800	476.19	70+	60	-	-	60	-	Good		5303-00-72	1988
EB	86+15	95+80	Grade	-	-	-0.78	-	-	-	-	-	-	-	60	-	Good		5303-00-72	1988
EB	95+80	108+80	Sag	3	102+30	-	-	1300	339.43	-	-	70+	70+	60	-	Good		5303-00-71	1988
EB	108+80	112+80	Grade	-	-	3.05	-	-	-	-	-	-	-	60	-	Grade > 3%		5303-00-71	1988
EB	112+80	122+80	Crest	1	117+80	-	-	1000	257.73	70+	60	-	-	60	-	Good		5303-00-71	1988
EB	122+80	126+60	Grade	-	-	-0.83	-	-	-	-	-	-	-	60	-	Good		5303-00-71	1988
EB	126+60	137+60	Sag	3	132+10	-	-	1100	286.46	-	-	70+	65	60	-	Good		5303-00-71	1988
EB	137+60	145+00	Grade	-	-	3.01	145+00	-	-	-	-	-	-	60	-	Grade > 3%		5303-00-71	1988
EB	144+60	146+54	Grade	-	-	3.00	-	-	-	-	-	-	-	60	-	Good		53010271	-
EB	146+54	156+54	Crest	1	151+54	-	-	1000	285.71	70+	60	-	-	60	-	Good		53010271	-
EB	156+54	164+62	Grade	-	-	-0.50	-	-	-	-	-	-	-	60	-	Good		53010271	-
EB	164+62	170+62	Sag	3	167+62	-	-	600	228.14	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
EB	15+00	15+00	Grade	-	-	2.13	15+00	-	-	-	-	-	-	60	-	Good		53010271	-
EB	15+00	17+75	Grade	-	-	2.20	-	-	-	-	-	-	-	60	-	Good		53030076	2000
EB	17+75	24+25	Crest	3	21+00	-	-	650	232.97	55	45	-	-	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for posted Speed of 55	53030076	2000
EB	24+25	24+25	Grade	-	-	-0.59	24+25	-	-	-	-	-	-	60	-	Good		53030076	2000
EB	24+25	26+75	Sag	3	25+50	-	-	250	130.89	-	-	55	35	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	53030076	2000

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
EB	26+75	27+00	Grade	-	-	1.32	-	-	-	-	-	-	60	-	Good		53030076	2000	
EB	182+50	187+90	Sag	3	183+15	-	-	540	321.43	-	-	70+	70+	60	-	Good		53010271	-
EB	187+90	188+05	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	188+05	203+66	Crest	3	195+88	-	-	1536	279.27	60	50	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-	
EB	203+66	205+70	Grade	-	-	-2.50	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	205+70	213+70	Sag	1	209+70	-	-	800	145.45	-	-	60	60	60	-	Good		53010271	-
EB	213+70	214+12	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	214+12	225+10	Crest	3	219+62	-	-	1100	289.47	60	50	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-	
EB	225+10	227+75	Grade	-	-	-0.80	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	227+75	232+25	Sag	3	230+00	-	-	450	264.71	-	-	70+	60	60	-	Good		53010271	-
EB	232+25	233+10	Grade	-	-	0.90	233+10	-	-	-	-	-	60	-	Good		53010271	-	
EB	13+50	14+30	Grade	-	-	0.56	-	-	-	-	-	-	60	-	Good		53030076	2000	
EB	14+30	22+70	Crest	1	18+50	-	-	840.00	230.14	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53030076	2000	
EB	22+70	27+00	Grade	-	-	-3.09	27+00	-	-	-	-	-	60	-	Grade > 3%		53010271	-	
EB	246+60	255+75	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	255+75	261+75	Sag	3	258+75	-	-	600	157.89	-	-	65	40	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-
EB	261+75	264+75	Grade	-	-	0.80	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	264+75	272+75	Sag	3	268+75	-	-	800	470.59	-	-	70+	70+	60	-	Good		53010271	-
EB	272+75	274+40	Grade	-	-	2.50	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	274+40	285+40	Crest	3	279+90	-	-	1100	275.00	60	50	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53010271	-	
EB	285+40	293+60	Grade	-	-	-1.50	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	293+60	300+60	Crest	1	297+10	-	-	700	482.76	70+	70+	-	60	-	Good		53010271	-	
EB	300+60	302+95	Grade	-	-	-2.95	302+95	-	-	-	-	-	60	-	Good		53010271	-	
EB	302+95	309+90	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		53010271	-	
EB	309+90	317+89	Sag	3	313+90	-	-	800	186.05	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed	F 04-2(36)	1964	
EB	317+89	318+50	Grade	-	-	1.30	318+50	-	-	-	-	-	60	-	Good	F 04-2(36)	1964		
EB	16+50	18+00	Grade	-	-	1.34	-	-	-	-	-	-	60	-	Good		53030076	2000	
EB	18+00	28+00	Crest	1	23+00	-	-	1000	229.89	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		53030076	2000	
EB	28+00	28+70	Grade	-	-	-3.01	28+70	-	-	-	-	-	60	-	Grade > 3%		53030076	2000	
EB	1084+38	1085+95	Grade	-	-	-2.63	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1085+95	1100+25	Sag	2	1093+10	-	-	1430	256.27	-	-	70+	60	60	-	Good		12060784	2015
EB	1100+25	1103+05	Grade	-	-	2.95	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1103+05	1109+45	Crest	1	1106+25	-	-	640	289.59	70+	60	-	60	-	Good		12060784	2015	
EB	1009+45	1111+65	Grade	-	-	0.74	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1111+65	1114+95	Crest	1	1113+30	-	-	330	259.84	70+	60	-	60	-	Good		12060784	2015	
EB	1114+95	1114+95	Grade	-	-	-0.53	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1114+95	1121+05	Crest	3	1118+00	-	-	610	246.96	60	45	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015	
EB	1121+05	1123+35	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1123+35	1128+55	Sag	3	1125+95	-	-	520	136.48	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015
EB	1128+55	1130+70	Grade	-	-	0.81	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1130+70	1136+30	Sag	1	1133+50	-	-	560	255.71	-	-	70+	70+	60	-	Good		12060784	2015
EB	1136+36	1140+20	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1140+20	1149+30	Crest	1	1144+75	-	-	910	151.67	60	50	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015	
EB	1149+30	1150+70	Grade	-	-	-3.00	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1150+70	1157+10	Sag	2	1153+90	-	-	640	256.00	-	-	70+	60	60	-	Good		12060784	2015
EB	1157+10	1161+75	Grade	-	-	-0.50	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1161+75	1168+25	Crest	1	1165+00	-	-	650	457.75	70+	70+	-	60	-	Good		12060784	2015	
EB	1168+25	1169+25	Grade	-	-	-1.92	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1169+25	1171+25	Sag	1	1170+25	-	-	200	140.85	-	-	60	60	60	-	Good		12060784	2015
EB	1171+25	1172+30	Grade	-	-	-0.50	-	-	-	-	-	-	60	-	Good		12060784	2015	
EB	1172+30	1177+20	Crest	2	1176+50	-	-	490	248.00	70+	45	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015	
EB	1177+20	1177+20	Grade	-	-	-2.48	1177+20	-	-	-	-	-	60	-	Good		12060784	2015	
EB	423+55	425+90	Crest	2	422+90	-	-	235	203.39	65	40	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060784	2015	
EB	425+90	437+00	Grade	-	-	-3.85	-	-	-	-	-	-	60	-	Grade > 3%		12060181	1972	
EB	437+00	443+00	Sag	3	440+00	-	-	600	138.25	-	-	60	35	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972
EB	443+00	448+00	Grade	-	-	0.49	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060181	1972	
EB	448+00	453+00	Crest	1	450+50	-	-	500	204.08	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972	
EB	453+00	464+80	Grade	-	-	-1.96	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	464+80	468+80	Sag	1	466+80	-	-	400	102.83	-	-	50	50	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	12060181	1972
EB	468+80	468+80	Grade	-	-	1.93	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	468+80	478+70	Crest	1	473+75	-	-	990	205.39	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972	
EB	478+70	479+50	Grade	-	-	-2.89	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	479+50	483+50	Sag	1	481+50	-	-	400	104.17	-	-	50	50	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Doesn't Meet Minimum for Posted Speed of 55	12060181	1972
EB	483+50	487+00	Grade	-	-	0.95	487+00	-	-	-	-	-	60	-	> 0.4%		12060181	1972	

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan
										Minimum	Desirable	Minimum	Desirable						
EB	487+00	489+01	Grade	-	-	1.52	-	-	-	-	-	-	60	-	Good		12060675	2007	
EB	489+01	491+61	Crest	1	490+31	-	-	260	282.61	70+	60	-	60	-	Good		12060675	2007	
EB	491+61	496+00	Grade	-	-	0.60	496+00	-	-	-	-	-	60	-	Good		12060675	2007	
EB	496+00	497+00	Grade	-	-	0.85	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	497+00	507+00	Crest	3	502+00	-	-	1000	512.82	70+	65	-	60	-	Good		12060181	1972	
EB	507+00	514+50	Grade	-	-	-1.10	-	-	-	-	-	-	60	-	Good		12060181	1972	
EB	514+50	517+50	Sag	3	516+00	-	-	300	234.38	-	-	70+	55	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060181	1972
EB	517+50	521+00	Grade	-	-	0.18	521+00	-	-	-	-	-	60	-	Grade < 0.3%		12060181	1972	
EB	521+00	525+00	Grade	-	-	0.05	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
EB	525+00	531+12	Crest	1	528+12	-	-	600	3157.89	70+	70+	-	60	-	Good		12060374	1989	
EB	531+12	535+62	Grade	-	-	-0.14	-	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
EB	535+62	546+62	Sag	3	541+12	-	-	1100	2500.00	-	-	70+	70+	60	-	Good		12060374	1989
EB	546+62	554+32	Grade	-	-	0.30	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060377	-	
EB	554+32	558+32	Sag	2	556+31.66	-	-	400	148.15	-	-	60	40	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060377	-
EB	558+32	564+91	Grade	-	-	3.00	-	-	-	-	-	-	60	-	Good		12060377	-	
EB	564+91	575+71	Crest	1	570+31	-	-	1080	196.01	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060377	-	
EB	575+71	576+00	Grade	-	-	-2.51	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	576+00	577+00	Crest	1	576+50	-	-	100	476.19	70+	70+	-	60	-	Good		12060374	1989	
EB	577+00	578+00	Grade	-	-	-2.72	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	578+00	580+00	Sag	3	579+00	-	-	200	1818.18	-	-	70+	70+	60	-	Good		12060374	1989
EB	580+00	586+00	Grade	-	-	-2.61	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	586+00	588+00	Sag	3	587+00	-	-	200	5000.00	-	-	70+	70+	60	-	Good		12060374	1989
EB	588+00	595+55	Grade	-	-	-2.57	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	595+55	614+26	Sag	2	604+99	-	-	1888.4	400.08	-	-	70+	70+	60	-	Good		12060374	1989
EB	614+26	615+50	Grade	-	-	2.15	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	615+50	618+50	Crest	3	617+00	-	-	300	545.45	70+	65	-	60	-	Good		12060374	1989	
EB	618+50	621+30	Grade	-	-	1.60	-	-	-	-	-	-	60	-	Good		12060374	1989	
EB	621+30	20+61	Crest	2	625+70	-	-	880	465.61	70+	60	-	60	-	Good		12060374	1989	
EB	20+61	23+00	Grade	-	-	-0.29	23+00	-	-	-	-	-	60	-	Grade < 0.3%		12060374	1989	
EB	23+00	26+00	Grade	-	-	-0.58	-	-	-	-	-	-	60	-	Good		12060274	1989	
EB	26+00	28+50	Sag	1	27+25	-	-	250	206.61	-	-	70+	70+	60	-	Good		12060274	1989
BOTH	28+50	39+10	Grade	-	-	0.63	-	-	-	-	-	-	60	-	Good		12060274	1989	
BOTH	39+10	46+90	Crest	1	43+00	-	-	780	216.07	65	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060274	1989	
BOTH	46+90	49+10	Grade	-	-	-2.98	-	-	-	-	-	-	60	-	Good		12060274	1989	
BOTH	49+10	52+50	Sag	1	50+80	-	-	340	142.86	-	-	60	60	60	-	Good		12060274	1989
BOTH	52+50	54+01	Grade	-	-	-0.60	-	-	-	-	-	-	60	-	Good		12060274	1989	
BOTH	54+01	55+31	Sag	3	54+66	-	-	130	541.67	-	-	70+	70+	60	-	Good		12060274	1989
BOTH	55+31	88+98	Grade	-	-	-0.36	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989	
BOTH	88+98	92+98	Sag	1	90+98	-	-	400	506.33	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	92+98	116+00	Grade	-	-	0.43	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060276	1988	
BOTH	116+00	120+00	Crest	3	118+00	-	-	400	481.93	70+	60	-	60	-	Good		12060276	1988	
BOTH	120+00	124+00	Grade	-	-	-0.40	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060276	1988	
BOTH	124+00	127+50	Sag	1	125+75	-	-	350	116.28	-	-	55	55	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060276	1988
BOTH	127+50	127+50	Grade	-	-	2.61	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	127+50	137+20	Crest	2	132+35	-	-	970	190.20	60	40	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060279	1989	
BOTH	137+20	139+00	Grade	-	-	-2.49	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	139+00	143+00	Sag	2	141+00	-	-	400	191.39	-	-	70+	50	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060279	1989
BOTH	143+00	151+50	Grade	-	-	-0.40	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989	
BOTH	151+50	153+50	Sag	1	152+50	-	-	200	246.91	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	153+50	164+50	Grade	-	-	0.41	-	-	-	-	-	-	60	-	.3% < Grade < .5 %		12060279	1989	
BOTH	164+50	170+50	Sag	3	167+50	-	-	600	260.87	-	-	70+	60	60	-	Good		12060279	1989
BOTH	170+50	172+40	Grade	-	-	2.71	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	172+40	182+60	Crest	1	177+50	-	-	1020	192.09	60	55	-	60	-	Meets Minimum but Not Desirable for 60 mph Design Speed		12060279	1989	
BOTH	182+60	185+12	Grade	-	-	-2.60	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	185+12	188+12	Sag	1	186+62	-	-	300	127.66	-	-	55	55	60	-	Doesn't Meet Desirable or Minimum for 60 mph Design Speed	Meets Minimum for Posted Speed of 55	12060279	1989
BOTH	188+12	192+49	Grade	-	-	-0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989	
BOTH	192+49	196+49	Sag	3	194+49	-	-	400	800.00	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	196+49	200+00	Grade	-	-	0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989	
BOTH	200+00	202+00	Sag	3	201+00	-	-	200	363.64	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	202+00	202+50	Grade	-	-	0.80	-	-	-	-	-	-	60	-	Good		12060279	1989	
BOTH	202+50	49+23	Crest	3	205+00	-	-	500	458.72	70+	60	-	60	-	Good		12060279	1989	
BOTH	49+23	49+23	Grade	-	-	-0.29	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989	
BOTH	49+23	52+23	Sag	1	50+73	-	-	300	555.56	-	-	70+	70+	60	-	Good		12060279	1989
BOTH	52+23	62+20	Grade	-	-	0.25	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989	

Table 7.4-2 Vertical Alignment

Direction	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Station of Vertical Curve	Profile Grade (%)	Grade Change or VPCC	Curve Length	K-Value	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed (MPH)	Max Δ Grade 0.40%	OA Rating	Comments	Plan ID	Construction Year or Plan Year
										Minimum	Desirable	Minimum	Desirable						
BOTH	62+20	68+20	Crest	1	65+20	-	-	600	2400.00	70+	70+	-	-	60	-	Good		12060279	1989
BOTH	68+20	75+83	Grade	-	-	0.00	-	-	-	-	-	-	-	60	-	Grade < 0.3%		12060279	1989
Good																			

Table 7.4-3 Structures

Bridge ID	Structure		Rate Score	Deck Condition End Year (2013)	Bridge Age in 2013	Deck Age in 2013	Bridge Road Width (ft)	Structure Length	Desirable Vertical Clearance	Minimum Vertical Clearance	Vertical Clearance East/ North	Vertical Clearance West/ South	Vertical Clearance Comments
	Under	Over											
B130529	Pheasant Creek Bike Path	Beltline	99.6	6.4	8	8	52	138.8	-	-	-	-	
B130531	Discovery Drive	Beltline	99.6	6.4	8	8	63	122	15.25	14.50	15.42	15.42	
B130553	University Ave	Beltline	94.9	5.6	9	9	63	162.7	16.75	16.00	17.91	16.75	
B130554	University Ave	Beltline	97.2	6.4	8	8	100	162.7	16.75	16.00	17.66	16.48	Does Not Meet Desirable but Meets Minimum
B130228	WSO RR @ Terrace Ave	Beltline	94.8	4.7	25	25	52	270	23.29	23.00	23.83	-	
B130014	WSO RR @ Terrace Ave	Beltline	93.9	2.8	64	33	52	270	23.29	23.00	23.83	-	
B130229	Greenway Blvd	Beltline	97.5	6.3	25	25	40	162.7	16.75	16.00	17.67	16.35	Does Not Meet Desirable but Meets Minimum
B130230	Greenway Blvd	Beltline	91.3	6.3	24	24	40	162.7	16.75	16.00	17.46	16.43	Does Not Meet Desirable but Meets Minimum
B130226	Old Sauk	Beltline	99.8	6.3	26	26	40	177.8	16.75	16.00	16.50	16.92	Does Not Meet Desirable but Meets Minimum
B130227	Old Sauk	Beltline	95	6.3	26	26	40	177.8	16.75	16.00	16.50	16.92	Does Not Meet Desirable but Meets Minimum
B130221	Mineral Point Road	Beltline	97.5	6.8	45	13	56	171.7	16.75	15.25	15.88	15.19	Does Not Meet Minimum
B130222	Mineral Point Road	Beltline	97.3	5.6	45	13	56	171.6	16.75	15.25	15.42	15.06	Does Not Meet Minimum
B130239	Gammon Road	Beltline	95	5.8	45	13	56	168.5	16.75	15.25	15.49	16.40	Does Not Meet Desirable but Meets Minimum
B130219	Gammon Road	Beltline	97.5	5.8	45	13	56	168.5	16.75	15.25	15.26	16.27	Does Not Meet Desirable but Meets Minimum
B130214	Whitney Way	Beltline							16.75	15.25	15.12	15.03	Does Not Meet Minimum
B130213	Whitney Way	Beltline	95	5.8	48	13	56	194.4	16.75	16.00	16.27	16.21	Does Not Meet Desirable but Meets Minimum
B130651	Verona Rd/Midvale	Beltline	-	-	-	-	-	-	16.75	16.33	18.04	-	Constructed in 2015
B130652	Verona Rd/Midvale	Beltline	-	-	-	-	-	-	16.75	16.33	16.95	-	Constructed in 2015
B130263	Todd Drive	Beltline	89	5.8	42	6	114	173.9	16.75	15.25	15.38	15.40	Does Not Meet Desirable but Meets Minimum
B130016	Park Street	Beltline	92.9	6.6	62	24	69	158.2	16.75	16.00	16.04	16.40	Does Not Meet Desirable but Meets Minimum
B130191	Park Street	Beltline	85.6	6.8	52	24	68.5	158.2	16.75	16.00	16.40	16.60	Does Not Meet Desirable but Meets Minimum
B130017	CNW RR	Beltline	90.8	4.8	61	3	81.5	95.5	23.29	23.00	23.30	-	
B130192	CNW RR	Beltline	93.3	5.4	52	3	68.5	94.2	23.29	23.00	23.38	-	
B130195	John Nolen Drive	Beltline	92.2	5.4	51	24	68	155.5	16.75	16.00	16.10	16.86	Does Not Meet Desirable but Meets Minimum
B130037	John Nolen Drive	Beltline	88.8	4.4	61	24	68	144.5	16.75	16.00	16.02	16.90	Does Not Meet Desirable but Meets Minimum
B130280	Capital City Trail	Beltline	88.8	7	38	38	136	221.9	23.29	23.00	24.00	-	
B130315	Marsh	Beltline	95	4	25	25	50	2605.1	-	-	-	-	-
B130317	Monona Drive	Beltline	97.6	5	25	25	53	137.5	16.75	16.00	16.50	16.79	Does Not Meet Desirable but Meets Minimum
B130318	Monona Drive	Beltline	97.6	5	25	25	52	137.5	16.75	16.00	16.58	16.71	Does Not Meet Desirable but Meets Minimum
B130320	51/Stoughton Road	Beltline	97.1	4.4	25	25	56.5	192.6	16.75	16.00	16.71	16.29	Does Not Meet Desirable but Meets Minimum
B130321	51/Stoughton Road	Beltline	99.6	5.4	25	25	57	192.6	16.75	16.00	17.04	16.79	

Table 4.4-3 Structures

Bridge ID	Structure		Rate Score	Deck Condition End Year (2013)	Bridge Age in 2013	Deck Age in 2013	Bridge Road Width (ft)	Structure Length	Desirable Vertical Clearance	Minimum Vertical Clearance	Vertical Clearance East/North	Vertical Clearance West/South	Vertical Clearance Comments
	Under	Over											
B130223	Beltline	High Point Road	91.1	7.4	45	3	30	230.2	16.75	16.00	14.61	14.95	Does Not Meet Minimum
B130497	Beltline	Southwest Commuter Path (Bike/Ped)	-	6.6	15	15	12	503.1	17.75	17.00	17.44	17.82	Does Not Meet Desirable but Meets Minimum
B130653	Beltline	Bike/Ped Overpass (at Whenona Dr.)	-	-	-	-	-	-	17.75	17.00	17.75	18.00	Constructed in 2015
B130664	Beltline	Seminole Highway	100	6.8	0	0	48	166.2	16.75	16.00	16.42	16.16	Does Not Meet Desirable but Meets Minimum
B130083	Beltline	Fish Hatchery	100	6.4	54	25	120	227	16.75	16.00	16.96	16.55	Does Not Meet Desirable but Meets Minimum
B130616	Beltline	Bike/Ped Overpass (East of Park St.)	89.2	--	3	3	14	380.5	17.75	17.00	17.67	18.19	Does Not Meet Desirable but Meets Minimum
B130310	Beltline	CTH MM/Rimrock Road	93.8	3.7	25	25	58	250.8	16.75	16.00	16.90	16.50	Does Not Meet Desirable but Meets Minimum
B130311	Beltline	South Towne Drive	87.6	3.3	25	25	100	195.1	16.75	16.00	16.25	17.00	Does Not Meet Desirable but Meets Minimum
B130538	Beltline	Agriculture Drive	93.6	5.4	8	8	36	243.1	16.75	16.00	16.50	16.50	Does Not Meet Desirable but Meets Minimum

Table 7.4-4 Pavement Condition

Beltline Segment	Distance (miles) Interchange to Interchange	Eastbound Beltline Section							Westbound Beltline Section					median type	median width (ft)	maintenance type	Eastbound Beltline Section		Westbound Beltline Section			
		number of lanes	Travel way width (ft)	Right shoulder paved/total width (ft)	Right shoulder paved width (ft)	right lane aux lane width (ft)	left shoulder paved width (ft)	left shoulder type	number of lanes	Travel way width (ft)	Right shoulder paved/total width (ft)	right lane aux lane width (ft)	left shoulder paved width (ft)				Pavement condition index in End year 2019	Pavement Age in 2013	Pavement Type	Pavement condition index in End year 2019	Pavement Age in 2013	Pavement Type
CTH K to Airport Road	2.06	2.00	24	8/12	8	0	3	Rumble strip-Bituminous	2	24	10/12	0	3	Clear grass with occasional shrubs	60	RU	88-97	8	Jointed Plain (non-reinforced) concrete pavement with dowels	95-97	8	Jointed Plain (non-reinforced) concrete pavement with dowels
Airport Road to Hwy 14	0.95	2.00	24	10/10	10	15	3	Rumble strip-Bituminous	2	24	10/10	15	3	Clear grass with occasional shrubs	60	RU	97	8	Jointed Plain (non-reinforced) concrete pavement with dowels	97	8	Jointed Plain (non-reinforced) concrete pavement with dowels
Hwy 14 (University Avenue) to Greenway Blvd	0.61	2.00	24	8-10/10	8-10	0-15	3-8	asphalt and rumble strip-bituminous	2	24	8/8	15	3-8	Concrete Barrier - s/f=<42" high	18	ME	31-85	24	Jointed Plain (Non-reinforced) concrete pavement without dowels	85	24	Asphaltic overlay of Ridgid pavement/ Jointed Plain (non-reinforced) concrete pavement without dowels
Greenway Blvd to Old Sauk Road	1.11	2	24	7-8/8-10	7-8	0	3	asphalt	2	24	5/8	0	3	Clear grass with occasional shrubs	50	ME	85	24	Jointed Plain (Non-reinforced) concrete pavement without dowels	69-85	24	Jointed Plain (Non-reinforced) concrete pavement without dowels
Old Sauk Road to Mineral Point Road	0.96	2	24	10/14	10	0	3-22	Rumble strip-Bituminous	2	24	4/4	0	3	Clear grass with occasional shrubs	60	ME	50-85	24	Jointed Plain (Non-reinforced) concrete pavement without dowels	21-85	24	Asphaltic overlay of Ridgid pavement
Mineral Point Road to S. Gammon Road	1.22	2	24	5/9	5	0	3	Rumble strip-Bituminous	2	24	8/11	0	3	Clear grass with occasional shrubs	60	ME	80	5	Asphaltic overlay of Flexible pavement	80	5	Asphaltic overlay of Flexible pavement
S. Gammon Road to Whitney Way	1.62	2	24	7/10	7	0	3	Rumble strip-Bituminous	2	24	8/8	0	3	Clear grass with occasional shrubs	60	ME	55	8	Asphaltic overlay of Flexible pavement	56	8	Asphaltic overlay of Flexible pavement
Whitney Way to Verona Road	1.41	2	24	7/7	7	15	5	Rumble strip-Bituminous	2	24	8/8	15	4	Clear grass with occasional shrubs	48	ME	100	21	Asphaltic overlay of Ridgid pavement	100	21	Asphaltic overlay of Ridgid pavement
Verona Road to Seminole Hwy	0.35	3	36	0/0	0	0	7	Rumble strip-Bituminous	3	36	8/8	15	10	Concrete Barrier - d/f=<42" high	1	ME	100	0	Jointed Plain (non-reinforced) concrete pavement with dowels	100	0	Jointed Plain (non-reinforced) concrete pavement with dowels
Seminole Hwy to Todd Drive	1.02	3	36	10/10	10	0	7	Rumble strip-Bituminous	3	36	8/11	15	7	Concrete Barrier - d/f=<42" high	1	RU	100	6	Asphaltic overlay of Ridgid pavement	100	6	Asphaltic overlay of Ridgid pavement
Todd Drive to Fish Hatchery Road	0.82	3	36	10/10	10	0	7	Rumble strip-Bituminous	3	36	8/11	15	7	Concrete Barrier - d/f=<42" high	1	RU	100	6	Asphaltic overlay of Ridgid pavement	100	6	Asphaltic overlay of Ridgid pavement
Fish Hatchery Road to Park Street	0.65	3	36	0-8/0-11	0-8	15	7	Rumble strip-Bituminous	3	36	0-8/0-11	15	7	Concrete Barrier - s/f=<42" high	24	ME	74-100	6-24	Asphaltic overlay of Ridgid pavement	74-100	6-24	Asphaltic overlay of Ridgid pavement
Park Street to Rimrock	0.89	3	36	10/10	10	15	7	Rumble strip-Bituminous	3	36	10/10	15	7	Concrete Barrier - s/f=<42" high	24	RU	95	24	Jointed Plain (non-reinforced) concrete pavement with dowels	97	24	Asphaltic overlay of Ridgid pavement
Rimrock to John Nolen	0.53	3	36	10/10	10	15	7	Rumble strip-Bituminous	3	36	10/10	15	7	Concrete Barrier - s/f=<42" high	24	ME-RU	95	24	Jointed Plain (non-reinforced) concrete pavement with dowels	97	24	Jointed Plain (non-reinforced) concrete pavement with dowels
John Nolen to South Towne	0.71	3	36	10/10	0	12	10	Asphalt	3	36	10/10	12	10	Concrete Barrier - s/f=<42" high	24	ME	90	24	Jointed Plain (non-reinforced) concrete pavement with dowels	95	24	Jointed Plain (non-reinforced) concrete pavement with dowels
South Towne to Monona Drive	1.54	3	36	0-10/0-10	0-10	0	10	Asphalt	3	36	0-10/0-10	0	10	Concrete Barrier - s/f=<42" high	24	ME	56-85	25	Jointed Plain (non-reinforced) concrete pavement with dowels	93-97	25	Jointed Plain (non-reinforced) concrete pavement with dowels
Monona Drive to Stoughton Road	0.88	3	36	10/10	10	12	10	Asphalt	3	36	10/10	12	10	Concrete Barrier - s/f=<42" high	24	ME	97	25	Jointed Plain (non-reinforced) concrete pavement with dowels	96	25	Jointed Plain (non-reinforced) concrete pavement with dowels
Stoughton Road to I90	1.93	3	36	8/11	8	0	3	Rumble strip-bituminous (and some curb and gutter)	3	36	8/11	12	3	Clear grass with occasional shrubs	50	ME/RU	82-97	15-25	Jointed Plain (non-reinforced) concrete pavement with dowels	97	15-25	Jointed Plain (non-reinforced) concrete pavement with dowels
I90 to Hwy N	3.67	2	24	8/11	8	0	3	Rumble strip-Bituminous	2	24	8/11	0	3	Clear grass with occasional shrubs	50	ME/RU	100	15	Jointed Plain (non-reinforced) concrete pavement with dowels	82-100	15	Jointed Plain (non-reinforced) concrete pavement with dowels

Table 7.4-5 General Ramp Design

Ramp Location	Ramp Description	Ramp Station (From)	Ramp Station (To)	Ramp Type	Exit/ Entrance Type	Speed change length after PT (Entrance)	Speed change length prior to PC (Exits)	Overall Length
University Ave	WB Off (W)	1920+25	127+00	loop	n/a		850	1000
University Ave	WB Off	1920+00	1935+05	direct	parallel		AUX	1650
University Ave	WB On	1915+00	1930+50	diamond	parallel	AUX		2200
University Ave	EB Off	1915+50	1935+73	diamond	parallel		AUX	2400
University Ave	EB On	1914+71	1929+00	loop	parallel	AUX		1850
Greenway Blvd	WB Off	67+20	80+00	diamond	parallel			1250
Greenway Blvd	WB On	57+00	66+72	diamond	parallel	AUX		1400
Greenway Blvd	EB Off	54+00	68+88	diamond	parallel	AUX		1450
Greenway Blvd	EB On	67+47	80+14	diamond	taper			1700
Old Sauk Rd	WB Off	122+57	134+50	diamond	taper			1350
Old Sauk Rd	WB On	110+00	122+99	diamond	taper	560		1600
Old Sauk Rd	EB Off	110+00	123+27	diamond	taper		100	1125
Old Sauk Rd	EB On	123+08	133+00	diamond	taper	590		1550
Mineral Point Rd	WB Off	10+00	20+00	diamond	parallel		900	810
Mineral Point Rd	WB On	0+00	9+14	diamond	parallel	740		1150
Mineral Point Rd	EB Off	1+00	10+00	diamond	parallel		1350	775
Mineral Point Rd	EB On	8+75	19+49	diamond	parallel	650		1350
Gammon Rd	WB Off	194+01	227+92	diamond	parallel		AUX	1050
Gammon Rd	WB On	30+00	39+71	diamond	parallel	640		1825
Gammon Rd	EB Off	100+00	109+49	diamond	parallel		1100	930
Gammon Rd	EB On	300+00	337+84	diamond	parallel	1725		1350
Whitney Way	WB Off	77+58	89+70	diamond	parallel		385	1390
Whitney Way	WB On	0+00	7+51	diamond	parallel	1100		1100
Whitney Way	EB Off	46+95	56+05	diamond	Taper		100	905
Whitney Way	EB On	326+56	343+50	diamond	parallel	AUX		1565
Verona Rd C	WB Off	145+48	157+82	SPUI	parallel		1481	1200
Verona Rd A	EB Off	128+92	144+08	SPUI	parallel		AUX	1390
Verona Rd D	WB On	127+51	144+25	SPUI	parallel	AUX		1565
Verona Rd B	EB On	146+37	158+02	SPUI	parallel	AUX		1250
Seminole Hwy	WB Off	17+29	26+50	diamond	Taper		300	920
Seminole Hwy	EB On	1176+00	1182+12	weave	parallel	785		480
Todd Drive	EB Off	452+50	461+62	weave	parallel		AUX	1325
Todd Drive	EB On	483+00	496+74	weave	parallel	AUX		1050
Todd Drive	WB Off	483+92	495+79	weave	parallel		AUX	1230
Todd Drive	WB On	461+65	471+00	diamond	parallel	600		950
Fish Hatchery Dr	EB Off	unknown	17+56	diamond	AUX		AUX	695
Fish Hatchery Dr	EB Off	5+57	21+47	loop	parallel		406	1075
Fish Hatchery Dr	EB On	16+37	29+65	diamond	parallel	AUX		1595
Fish Hatchery Dr	WB Off	642+27	654+00	diamond	parallel	AUX		1173
Fish Hatchery Dr	WB On	533+00	542+43	diamond	parallel	AUX		875
Park Street	EB Off	10+00	33+88	direct	parallel		AUX	1522
Park Street	EB Off	17+11	22+29	diamond	parallel			1009
Park Street	EB On	10+00	42+74	diamond	parallel	AUX		1390
Park Street	EB On	0+00	7+88	loop	parallel	AUX		787
Park Street	WB Off	0+50	13+24	diamond	parallel		AUX	1227
Park Street	WB On	0+00	12+62	dircect	parallel	290		896
Park Street	WB On	9+00	20+40	loop	parallel	AUX		1425
Rimrock Road	EB Off	587+50	594+70	diamond	parallel		AUX	825

Table 7.4-5 General Ramp Design

Ramp Location	Ramp Description	Ramp Station (From)	Ramp Station (To)	Ramp Type	Exit/ Entrance Type	Speed change length after PT (Entrance)	Speed change length prior to PC (Exits)	Overall Length
Rimrock Road	EB On	594+05	601+50	diamond	parallel	AUX		775
Rimrock Road	WB Off	598+50	608+49	diamond	parallel		AUX	810
Rimrock Road	WB On	586+45	598+28	diamond	parallel	AUX		1050
John Nolen Drive	EB Off	0+00	15+00	loop	parallel		AUX	1614
John Nolen Drive	EB On	0+00	20+00	direct	parallel	AUX		1783
John Nolen Drive	WB Off	80+00	106+50	direct	parallel		AUX	1027
John Nolen Drive	WB On	0+00	9+67	direct	parallel	AUX		826
South Towne Dr	EB Off	41+00	52+77	diamond	parallel	AUX		1220
South Towne Dr	EB On	52+88	61+00	diamond	taper		389	1103
South Towne Dr	WB Off	53+19	65+50	diamond	Taper		490	986
South Towne Dr	WB On	38+50	53+00	diamond	parallel	AUX		1195
Monona Dr. R	WB On	125+00	133+56	diamond	Taper	400		1168
Monona Dr. S	EB Off	124+50	132+72	diamond	taper		75	910
Monona Dr. T	WB Off	133+46	144+65	diamond	parallel		AUX	1025
Monona Dr. U	EB On	133+71	144+00	diamond	parallel	AUX		1075
USH 51 V	WB On	167+00	178+84	diamond	parallel	AUX		1305
USH 51 W	EB Off	165+50	180+64	diamond	parallel		AUX	1505
USH 51 X	WB Off	179+58	189+00	diamond	parallel		AUX	1185
USH 51 Y	EB On	180+58	195+50	diamond	Taper	125		1470

Table 4.7-6 Horizontal Ramp Design

Ramp Location	Ramp Description	Ramp Type	Ramp Station (From)	Ramp Station (To)	Curve Design Speed (MPH)	Curve Radius	SE Req'd	Existing SE	Equivalent V using emax 6%	SE Rating	SE Comments	General Comments	Plan ID	Const Year or Plan Year
University Ave	WB Off (W)	loop	1920+25	1924+00	25	200	5.7	6	25	Good		Ramp has 20 MPH advisory speed sign.		-
University Ave	WB Off (W)	loop	1924+00	1927+00	25	200	5.7	6	25	Good		Ramp has 20 MPH advisory speed sign.		-
University Ave	WB Off	direct	1930+28	1932+05	50	1350	5.3	5.3	50	Good				-
University Ave	WB On	diamond	1919+00	1921+85	50	1363	5.3	5.8	55	Good				-
University Ave	WB On	diamond	1927+40	1931+01	30	300	5.8	6	30	Good				-
University Ave	EB Off	diamond	1915+50	1924+74	50	854	6	6	50	Good		Ramp has 30 MPH advisory speed sign.		-
University Ave	EB Off	diamond	1927+71	1932+36	30	500	4.9	6	40	Good				-
University Ave	EB On	loop	1921+55	1925+00	25	250	5.3	6	30	Good		Ramp has 25 MPH advisory speed sign.		-
University Ave	EB On	loop	1925+00	1929+00	30	250	6	6	30	Good				-
Greenway Blvd	WB Off	diamond	74+40	80+00	50	2864	3.5	4.5	60	Good			53030072	1988
Greenway Blvd	WB On	diamond	57+00	58+20	50	1432	5.2	6.3	60	Good	e > 6% max		53030073	1988
Greenway Blvd	WB On	diamond	63+33	64+22	30	1432	2.9	3.1	45	Good			Based On AECOM's Previous Data	
Greenway Blvd	EB Off	diamond	59+00	61+14	50	764	>6	7.2	45	Does Not Meet Design but Meets Minium Speed	e > 6% max		Based On AECOM's Previous Data	
Greenway Blvd	EB Off	diamond	64+16	66+55	30	603	4.5	5.7	35	Good			Based On AECOM's Previous Data	
Greenway Blvd	EB On	diamond	74+75	80+14	50	2864	3.5	3.8	50	Good			Based On AECOM's Previous Data	
Old Sauk Rd	WB Off	diamond	29+53	31+64	50	1432	5.2	7	60	Good	e > 6% max		53000671	2009
Old Sauk Rd	WB On	diamond	112+00	114+39	50	1432	5.2	7	60	Good	e > 6% max		53030071	2009
Old Sauk Rd	EB Off	diamond	7+99	10+11	50	1432	5.2	7	60	Good	e > 6% max		53000671	2009
Old Sauk Rd	EB On	diamond	130+38	133+00	50	1432	5.2	7	60	Good	e > 6% max		53030071	2009
Mineral Point Rd	WB Off	diamond	16+13	19+67	50	1041	5.8	7	50	Good	e > 6% max		53000671/ F 04-2(39)	
Mineral Point Rd	WB On	diamond	0+00	3+87	50	1432	5.2	5.2	50	Good			53000671/ F 04-2(39)	
Mineral Point Rd	EB Off	diamond	1+45	3+20	50	1432	5.2	6.3	60	Good	e > 6% max		53000671/ F 04-2(39)	
Mineral Point Rd	EB Off	diamond	6+30	8+42	30	818	3.9	2.5	40	Good			53000671/ F 04-2(39)	
Mineral Point Rd	EB On	diamond	13+36	19+49	50	7639	2	2	55	Good			53000671/ F 04-2(39)	
Gammon Rd	WB Off	diamond	200+84	207+60	50	2800	3.6	4.1	55	Good			53000476	2011
Gammon Rd	WB On	diamond	30+35	32+73	50	1041	5.8	7	50	Good	e > 6% max		F 04-2(39)	
Gammon Rd	EB Off	diamond	100+00	102+33	50	1123	5.7	6	55	Good			53000476	2011
Gammon Rd	EB On	diamond	307+40	309+35	50	1042	5.8	5.8	50	Good			53000476	2011
Whitney Way	WB Off	diamond	323+67	326+04	25	229	5.5	5.9	25	Good			12060071	2003
Whitney Way	WB Off	diamond	330+09	333+02	50	750	>6	5.2	35	Does Not Meet Minium Design Speed		Ramp has 30 MPH advisory speed sign.	12060071	2003
Whitney Way	WB On	diamond	0+00	6+44	50	1145	5.7	7.1	55	Good	e > 6% max		F 04-2(36)	
Whitney Way	EB Off	diamond	0+00	1+01	50	1433	5.2	6.3	60	Good	e > 6% max		F 04-2(36)	
Whitney Way	EB Off	diamond	48+02	49+00	25	250	5.3	3.5	25	Good			53000175	-
Whitney Way	EB On	diamond	329+35	337+94	30	3850	NC	NC	40	Good			12060071	2003
Whitney Way	EB On	diamond	337+94	341+01	50	9297	NC	NC	50	Good			12060071	2003
Verona Rd C	WB Off	SPUI	145+48	148+30	30	376	5.4	2.0	30	Good			12060784	2015
Verona Rd C	WB Off	SPUI	150+93	157+82	50	2064	4.3	5.1	55	Good			12060784	2015
Verona Rd A	EB Off	SPUI	131+24	133+05	50	7870	NC	NC	50	Good			12060784	2015
Verona Rd A	EB Off	SPUI	133+05	137+81	50	11993	NC	NC	60	Good			12060784	2015
Verona Rd A	EB Off	SPUI	137+81	139+09	30	1388	3	2.0	45	Good			12060784	2015
Verona Rd D	WB On	SPUI	127+51	130+25	50	5715	2	2.0	50	Good			12060784	2015
Verona Rd D	WB On	SPUI	130+98	134+99	50	7870	NC	NC	50	Good			12060784	2015
Verona Rd D	WB On	SPUI	141+71	144+25	25	273	5.2	2.0	30	Good			12060784	2015
Verona Rd B	EB On	SPUI	152+42	155+33	50	1500	5.1	5.1	50	Good			12060784	2015
Verona Rd B	EB On	SPUI	155+33	158+02	50	3000	3.4	5.1	65	Good			12060784	2015
Seminole Hwy	WB Off	diamond	19+98	23+00	30	1910	2.3	2.5	30	Good			12060181	1972
Seminole Hwy	WB Off	diamond	23+01	26+50	50	1432	5.2	5.0	45	Does Not Meet Design but Meets Minium Speed			12060181	1972
Seminole Hwy	EB On	weave	1178+58	1178+98	25	170	6	2.0	25	Good			12060777	2013
Seminole Hwy	EB On	weave	1180+60	1182+12	25	865	3.2	3.7	25	Good			12060777	2013
Todd Drive	EB Off	weave	459+58	460+75	25	467	4.2	2.0	35	Good			12060674/12060680	
Todd Drive	EB Off	weave	460+75	461+96	25	195	5.8	2.0	25	Good			12060674/12060680	
Todd Drive	EB On	weave	483+02	484+97	30	572	4.6	2.0	35	Good			12060675	2006
Todd Drive	EB On	weave	487+39	489+27	50	1700	4.8	NC	50	Good			12060675	2006

Table 4.7-6 Horizontal Ramp Design

Ramp Location	Ramp Description	Ramp Type	Ramp Station (From)	Ramp Station (To)	Curve Design Speed (MPH)	Curve Radius	SE Req'd	Existing SE	Equivalent V using emax 6%	SE Rating	SE Comments	General Comments	Plan ID	Const Year or Plan Year
Todd Drive	EB On	weave	490+99	493+01	50	3350	3.1	2.0	35	Does Not Meet Minium Design Speed			12060675	2006
Todd Drive	WB Off	weave	489+24	495+63	50	639	>6	NC	35	Does Not Meet Minium Design Speed			12060675	2006
Todd Drive	WB On	diamond	461+64	463+72	50	2546	3.8	4.3	55	Good			12060674/12060681	2006
Todd Drive	WB On	diamond	466+70	468+84	45	2083	3.8	3.8	45	Good			12060674/12060681	2006
Fish Hatchery Dr	EB Off	diamond	unknown	17+56	50	355	>6	5.5	30	Does Not Meet Minium Design Speed		Ramp has 30 MPH advisory speed sign.	12060181	1972
Fish Hatchery Dr	EB Off	loop	9+65	12+03	30	390	5.4	8.0	35	Good	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060184	2013
Fish Hatchery Dr	EB Off	loop	12+03	17+23	25	209	5.7	7.2	25	Good	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060184	2013
Fish Hatchery Dr	EB Off	loop	18+28	20+02	25	265	5.2	2.0	25	Good		Ramp has 25 MPH advisory speed sign.	12060184	2013
Fish Hatchery Dr	EB On	diamond	20+97	23+34	30	236	6	8.0	30	Good	e > 6% max		12060074	2010
Fish Hatchery Dr	EB On	diamond	25+87	29+65	30	378	5.4	8.0	35	Good	e > 6% max		12060374	1989
Fish Hatchery Dr	WB Off	diamond	647+34	350+95	50	1810	4.6	4.6	50	Good			12060184	2013
Fish Hatchery Dr	WB Off	diamond	650+95	654+00	50	3725	2.9	2.9	50	Good			12060184	2013
Fish Hatchery Dr	WB On	diamond	534+98	538+69	50	715	>6	4.0	45	Does Not Meet Design but Meets Minium Speed			12060184	2013
Fish Hatchery Dr	WB On	diamond	540+31	542+14	25	235	5.5	NC	25	Good			12060184	2013
Park Street ES	EB Off	direct	11+43	17+11	50	660	>6	6.0	45	Does Not Meet Design but Meets Minium Speed			12060073/79	2010
Park Street ES	EB Off	direct	23+91	26+70	50	12000	NC	NC	60	Good			12060073/79	2010
Park Street EN	EB Off	diamond	18+56	21+21	30	245	6	5.7	25	Does Not Meet Design but Meets Minium Speed			12060073/79	2010
Park Street	EB On	diamond	15+55	23+68	30	510	4.8	6.0	40	Good		Ramp has 40 MPH advisory speed sign.	12060073/79	2010
Park Street	EB On	diamond	24+00	30+22	50	1065	5.8	4.7	40	Speed		Ramp has 40 MPH advisory speed sign.	12060073/79	2010
Park Street	EB On	loop	0+00	0+79	30	300	5.8	8.0	30	Good	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060379	1990
Park Street	EB On	loop	0+79	4+00	30	150	>6	8.0	25	Does Not Meet Design but Meets Minium Speed	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060379	1990
Park Street	EB On	loop	4+00	7+02	30	150	>6	8.0	25	Does Not Meet Design but Meets Minium Speed	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060379	1990
Park Street	EB On	loop	7+02	7+88	30	300	5.8	8.0	30	Good	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060379	1990
Park Street	WB Off	diamond	3+28	4+57	30	251	6	8.0	30	Good	e > 6% max		12060379	1990
Park Street	WB Off	diamond	6+44	8+80	40	430	>6	8.0	35	Does Not Meet Design but Meets Minium Speed	e > 6% max		12060379	1990
Park Street	WB Off	diamond	8+80	10+80	50	760	>6	8.0	45	Does Not Meet Design but Meets Minium Speed	e > 6% max		12060379	1990
Park Street	WB On	direct	0+00	5+51	50	764	>6	6.0	45	Does Not Meet Design but Meets Minium Speed		Ramp has 25 MPH advisory speed sign.	12060379	1990
Park Street	WB On	direct	6+12	11+30	30	1124	3.4	6.0	30	Good		Ramp has 25 MPH advisory speed sign.	12060379	1990
Park Street	WB On	loop	0+00	4+02	30	204	>6	8.0	25	Does Not Meet Design but Meets Minium Speed	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060379	1990
Park Street	WB On	loop	4+02	7+01	30	180	>6	8.0	25	Does Not Meet Design but Meets Minium Speed	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060379	1990
Park Street	WB On	loop	7+01	9+13	30	375	5.4	8.0	35	Good	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060379	1990
Rimrock Road	EB Off	diamond	587+53	590+49	50	1637	4.9	6.6	65	Good	e > 6% max		12060274	1989
Rimrock Road	EB On	diamond	595+28	597+18	30	286	5.9	6.0	30	Good			12060274	1989
Rimrock Road	EB On	diamond	598+75	600+30	30	521	4.8	8.0	40	Good	e > 6% max		12060274	1989
Rimrock Road	EB On	diamond	600+30	601+80	50	764	>6	8.0	45	Does Not Meet Design but Meets Minium Speed	e > 6% max		12060274	1989
Rimrock Road	WB Off	diamond	601+08	606+86	50	1910	4.5	6.0	65	Good			12060274	1989
Rimrock Road	WB On	diamond	579+30	590+14	50	14323	NC	2.0	70	Good			12060372	1989
Rimrock Road	WB On	diamond	590+14	594+14	50	1042	5.8	7.8	50	Good	e > 6% max		12060372	1989
John Nolen Drive	EB Off	loop	0+00	2+90	30	100	>6	8.0	20	Does Not Meet Minium Design Speed	e > 6% max	Ramp has 20 MPH advisory speed sign.	12060374	1989
John Nolen Drive	EB Off	loop	2+90	8+20	30	293	5.9	8.0	30	Good	e > 6% max	Ramp has 20 MPH advisory speed sign.	12060374	1989
John Nolen Drive	EB Off	loop	9+72	14+89	30	739	4.1	6.0	45	Good			12060374	1989
John Nolen Drive	EB On	direct	0+19	5+70	30	819	3.9	6.0	45	Good			12060374	1989
John Nolen Drive	EB On	direct	7+19	14+68	30	327	5.7	8.0	30	Good	e > 6% max	Ramp has 25 MPH advisory speed sign.	12060374	1989
John Nolen Drive	EB On	direct	15+79	19+41	30	453	5.1	6.0	35	Good			12060374	1989

Table 4.7-6 Horizontal Ramp Design

Ramp Location	Ramp Description	Ramp Type	Ramp Station (From)	Ramp Station (To)	Curve Design Speed (MPH)	Curve Radius	SE Req'd	Existing SE	Equivalent V using emax 6%	SE Rating	SE Comments	General Comments	Plan ID	Const Year or Plan Year
John Nolen Drive	WB Off	direct	102+70	108+51	50	772	>6	6.0	45	Does Not Meet Design but Meets Minium Speed			12060374	1989
John Nolen Drive	WB On	direct	0+00	5+37	40	465	>6	6.0	35	Does Not Meet Design but Meets Minium Speed			12060374	1989
John Nolen Drive	WB On	direct	5+41	9+67	45	502	>6	6.0	40	Does Not Meet Design but Meets Minium Speed			12060374	1989
South Towne Dr	EB Off	diamond	41+00	44+75	50	2864	3.5	4.0	55	Good			12060279	1989
South Towne Dr	EB On	diamond	59+46	61+00	50	1042	5.8	8.0	50	Good	e > 6% max		12060279	1989
South Towne Dr	WB Off	diamond	57+16	58+71	30	2865	2	2.0	30	Good			12060279	1989
South Towne Dr	WB On	diamond	38+25	45+25	50	5730	2	2.0	50	Good			12060279	1989
Monona Dr. R	WB On	diamond	125+00	125+77	50	1042	5.8	6.0	50	Good			12060279	1989
Monona Dr. S	EB Off	diamond	124+50	126+24	50	1042	5.8	6.0	50	Good			12060279	1989
Monona Dr. S	EB Off	diamond	130+39	132+05	50	955	6	2.0	45	Does Not Meet Design but Meets Minium Speed			12060279	1989
Monona Dr. T	WB Off	diamond	142+75	144+65	50	2865	3.5	2.0	50	Good			12060279	1989
Monona Dr. U	EB On	diamond	142+94	144+00	50	1042	5.8	8.0	50	Good	e > 6% max		12060279	1989
USH 51 V	WB On	diamond	167+00	171+86	50	1637	4.9	6.6	60	Good	e > 6% max		12060279	1989
USH 51 W	EB Off	diamond	165+50	170+00	50	6875	2	2.0	55	Good			12060279	1989
USH 51 W	EB Off	diamond	174+55	178+55	30	1432	2.9	3.1	30	Good			12060279	1989
USH 51 W	EB Off	diamond	178+55	180+27	30	477	5	3.1	35	Good			12060279	1989
USH 51 X	WB Off	diamond	179+58	183+15	50	1160	5.7	2.0	50	Good			12060279	1989
USH 51 X	WB Off	diamond	186+03	189+00	50	1637	4.9	6.6	60	Good	e > 6% max		12060279	1989
USH 51 Y	EB On	diamond	190+77	195+50	50	4297	2.6	4.0	65	Good			12060279	1989

Table 7.4-7 Ramp Design Vertical Alignment

Ramp Location	Ramp Description	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Sta	Entrance Grade	Exit Grade	Critical Grade	ramp up or down	Vert. Curve Length	K Value (Calculated)	Distance from Gore to PVC		Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed Required	Rating	Comments	Plan ID	Construction Year or Plan Year
															Minimum	Desirable	Minimum	Desirable					
Old Sauk Rd	EB On	131+00	134+00	Sag	1	132+50	1.3	2.06	1.3	up	300	394.74	0	Critical	-	-	70+	70+	50	Good	-	53030071	2009
Mineral Point Rd	WB Off	10+85	13+15	Sag	1	12+00	-4.71	1.45	1.45	down	230	37.34	633	-	-	30	30	30	Good	-	53000672	2009	
Mineral Point Rd	WB Off	13+15	15+30	Grade	-		-4.71		4.71	down			1948	-	-	-	-	-	Good	-	53000672	2009	
Mineral Point Rd	WB Off	15+30	17+50	Crest	1	16+40	-2.06	-4.71	2.06	down	220	83.02			45	40	-	-	50	Doesn't Meet Desirable or Minimum for Design Speed	-	53000672	2009
Mineral Point Rd	WB Off	17+97	18+97	Sag	1	18+47	-3.13	-2.06	2.06	down	100	93.46	51	Critical	-	-	45	45	50	Doesn't Meet Desirable or Minimum for Design Speed	-		-
Mineral Point Rd	WB Off	18+97	19+48	Grade	-		-3.13		3.13	down			1948	-	-	-	-	-	Good	-	04-2(39)/530102	-	
Mineral Point Rd	WB On	0+00	0+02	Grade	-		-1.5		1.5	down				-	-	-	-	-	Good	-	04-2(39)/530102	-	
Mineral Point Rd	WB On	2+00	5+00	Crest	1	3+50	1.95	-1.5	1.5	up then down	300	86.96	400	Critical	50	40	-	-	50	Meets Minimum but Not Desirable for Design Speed	-	04-2(39)/530102	-
Mineral Point Rd	WB On	5+00	6+60	Grade	-		1.95		1.95	up				-	-	-	-	-	Good	-	04-2(39)/530102	-	
Mineral Point Rd	WB On	6+60	8+60	Sag	1	7+60	-1	1.95	1	down then up	200	67.80	860	-	-	40	40	30	Good	-	04-2(39)/530102	-	
Mineral Point Rd	EB Off	1+00	3+52	Grade	-		1		1	up				-	-	-	-	-	Good	-	53000671	2009	
Mineral Point Rd	EB Off	3+52	6+07	Crest	1	4+80	1	-3.19	1	up then down	255	60.86	252.5	Critical	40	35	-	-	50	Doesn't Meet Desirable or Minimum for Design Speed	-	53000671	2009
Mineral Point Rd	EB Off	6+07	7+30	Grade	-		-3.19		3.19	down				-	-	-	-	-	Good	-	53000671	2009	
Mineral Point Rd	EB Off	7+30	8+80	Sag	1	8+05	-3.19	0.75	0.75	down then up	150	38.07	630	-	-	30	30	30	Good	-	53000671	2009	
Mineral Point Rd	EB On	9+30	11+10	Sag	1	10+20	0.67	5.07	0.67	up	180	40.91	840	-	-	30	30	30	Good	-	04-2(39)/530102	-	
Mineral Point Rd	EB On	8+75	13+25	Grade	-		5.07		5.07	up				-	-	-	-	-	Good	Grade > 5%	04-2(39)/530102	-	
Mineral Point Rd	EB On	13+25	15+75	Crest	1	14+50	5.07	1.27	1.27	up	250	65.79	375	Critical	45	35	-	-	50	Doesn't Meet Desirable or Minimum for Design Speed	-	04-2(39)/530102	-
Mineral Point Rd	EB On	15+75	17+00	Grade	-		1.27		1.27	up				-	-	-	-	-	Good	-	04-2(39)/530102	-	
Gammon Rd	WB Off	194+01	196+01	Sag	1	195+01	-1.71	1	1	down then up	200	73.80	999	-	-	40	40	30	Good	-	04-2(39)/530102	-	
Gammon Rd	WB Off	196+01	197+31	Grade	-		-1.71		1.71	down				-	-	-	-	-	Good	-	04-2(39)/530102	-	
Gammon Rd	WB Off	197+31	200+00	Crest	1	198+81	0.57	-1.71	0.57	up then down	269	117.98	584.5	-	-	55	45	-	40	Good	-	04-2(39)/530102	-
Gammon Rd	WB Off	200+00	204+70	Crest	1	202+35	3	0.57	0.57	up	470	193.42	130	Critical	65	55	-	-	50	Good	-	53000476	2011
Gammon Rd	WB Off	204+70	220+70	Grade	-		3		3	up				-	-	-	-	-	Good	-	53000476	2011	
Gammon Rd	WB On	30+00	32+00	Grade	-		0.55		0.55	up				-	-	-	-	-	Good	-	04-2(39)/530102	-	
Gammon Rd	WB On	32+00	36+00	Crest	1	34+00	4.8	0.55	0.55	up	400	94.12	300	Critical	50	40	-	-	40	Good	-	04-2(39)/530102	-
Gammon Rd	WB On	36+00	38+30	Grade	-		4.8		4.8	up				-	-	-	-	-	Good	-	04-2(39)/530102	-	
Gammon Rd	WB On	38+30	39+30	Sag	1	36+80	-0.84	4.8	0.84	up	100	17.73	730	-	-	<25	<25	25	Good	-	04-2(39)/530102	-	
Gammon Rd	EB Off	100+00	100+55	Grade	-		-0.19		0.19	down				-	-	-	-	-	Good	Grade < 0.3%	53000476	2011	
Gammon Rd	EB Off	101+55	106+55	Crest	1	104+05	-0.19	-4.48	0.19	down	500	116.55	105	Critical	55	45	-	-	50	Meets Minimum but Not Desirable for Design Speed	Grade < 0.3%	53000476	2011
Gammon Rd	EB Off	106+55	107+70	Grade	-		-4.48		4.48	down				-	-	-	-	-	Good	-	53000476	2011	
Gammon Rd	EB Off	107+70	109+70	Sag	1	108+70	-4.48	-0.12	0.12	down	200	45.87	720	-	-	30	30	30	Good	Grade < 0.3%	53000476	2011	
Gammon Rd	EB On	301+55	303+50	Grade	-		0.5		0.5	up				-	-	-	-	-	Good	-	53000476	2011	
Gammon Rd	EB On	303+50	308+50	Crest	1	306+00	0.5	-2.8	0.5	up, then down	500	151.52	550	-	-	60	50	-	50	Good	-	53000476	2011
Gammon Rd	EB On	308+50	312+00	Grade	-		-2.8		2.8	down				-	-	-	-	-	Good	-	53000476	2011	
Gammon Rd	EB On	312+00	314+00	Crest	1	313+00	-2.8	-3	2.8	down	200	1000.00	0	Critical	70+	70+	-	-	50	Good	-	53000476	2011
Whitney Way	WB Off	77+58	82+50	Grade	-		-0.2		0.2	down				-	-	-	-	-	Good	Grade < 0.3%	12060071	2003	
Whitney Way	WB Off	82+50	85+47	Crest	1	84+00	2.04	-0.1	0.1	up then down	295	137.85	422.5	-	-	55	50	-	30	Good	Grade < 0.3%	12060784	2015
Whitney Way	WB Off	85+47	86+45	Grade	-		2.04		2.04	up				-	-	-	-	-	Good	-	12060784	2015	
Whitney Way	WB Off	86+45	86+95	Sag	1	86+70	1.73	2.04	1.73	up	50	161.29	275	-	-	65	65	50	Good	-	12060784	2015	
Whitney Way	WB Off	86+95	88+05	Grade	-		1.73		1.73	up				-	-	-	-	-	Good	-	12060784	2015	
Whitney Way	WB Off	88+05	89+70	Sag	1	88+85	1	1.73	1	up	160	219.18	5	Critical	-	-	70+	70+	50	Good	-	12060784	2015
Whitney Way	WB On	0+00	2+34	Grade	-		-0.5		0.5	down				-	-	0	-	-	Good	-	F 04-2(36)	1964	
Whitney Way	WB On	2+34	3+14	Crest	1	2+55	-0.5	2.5	0.5	up then down	180	60.00	165	Critical	40	35	-	-	50	Doesn't Meet Desirable or Minimum for Design Speed	-	F 04-2(36)	1964
Whitney Way	WB On	3+14	7+74	Grade	-		2.5		2.5	up				-	-	-	-	-	Good	-	F 04-2(36)	1964	
Whitney Way	WB On	7+74	9+24	Sag	1	6+60	-1	2.5	1	down then up	140	40.00	590	-	-	30	30	30	Good	-	F 04-2(36)	1964	
Whitney Way	EB Off	46+95	49+65	Grade	-		-0.37		0.37	down				-	-	-	-	-	Good	Grade < .5%	F 04-2(36)	1964	
Whitney Way	EB Off	49+65	50+85	Crest	1	50+15	-0.37	-3	0.37	down	120	45.63	260	Critical	40	30	-	-	50	Doesn't Meet Desirable or Minimum for Design Speed	Grade < .5%	F 04-2(36)	1964
Whitney Way	EB Off	50+85	53+80	Grade	-		-3		3	down				-	-	-	-	-	Good	-	F 04-2(36)	1964	
Whitney Way	EB Off	53+80	54+80	Sag	1	54+30	-3	1	1	down then up	100	25.00	685	-	-	<25	<25	25	Good	-	F 04-2(36)	1964	
Whitney Way	EB On	326+56	327+36	Grade	-		-0.5		0.5	down				-	-	-	-	-	Good	-	12060071	2003	

Table 7.4-7 Ramp Design Vertical Alignment

Ramp Location	Ramp Description	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Sta	Entrance Grade	Exit Grade	Critical Grade	ramp up or down	Vert. Curve Length	K Value (Calculated)	Distance from Gore to PVC	Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed Required	Rating	Comments	Plan ID	Construction Year or Plan Year	
														Minimum	Desirable	Minimum	Desirable						
Fish Hatchery Dr	EB Off	18+50	19+50	Sag	1	19+00	1.57	2.54	1.57	up	100	103.09	887	-	-	50	50	30	Good	-	12060074	2010	
Fish Hatchery Dr	EB Off	19+50	20+40	Grade	-		2.54		2.54	up				-	-	-	-	-	Good	-	12060074	2010	
Fish Hatchery Dr	EB On	19+80	22+80	Crest	1	21+30	0.78	-1.89	0.78	up then down	300	112.36	676	50	45	-	-	30	Good	-	12060671	1989	
Fish Hatchery Dr	EB On	22+80	24+25	Grade	-		-1.89		1.89	down				-	-	-	-	-	Good	-	12060671	1989	
Fish Hatchery Dr	EB On	24+25	25+75	Sag	1	25+00	-1.89	-0.74	0.74	down	150	130.43	381	Critical	-	-	55	55	50	Good	-	12060671	1989
Fish Hatchery Dr	EB On	25+75	25+87	Grade	-		-0.74		0.74	down				-	-	-	-	-	Good	-	12060671	1989	
Fish Hatchery Dr	EB On	25+87	28+50	Grade	-		-0.3		0.3	down				-	-	-	-	-	Good	Grade < .5%	12060671	1989	
Fish Hatchery Dr	WB Off	642+70	644+75	Grade	-		3.47		3.47	up				-	-	-	-	-	Good	-	12060184	2012	
Fish Hatchery Dr	WB Off	644+75	649+25	Sag	1	647+00	-0.5	3.47	0.5	down then up	450	113.35	325	Critical	-	-	50	50	50	Good	-	12060184	2012
Fish Hatchery Dr	WB Off	649+25	651+75	Grade	-		-0.5		0.5	down				-	-	-	-	-	Good	-	12060184	2012	
Fish Hatchery Dr	WB Off	651+75	653+33	Grade	-		-0.17		0.17	down				-	-	-	-	-	Good	Grade < 0.3%	12060184	2012	
Fish Hatchery Dr	WB On	534+50	535+25	Grade	-		1.31		1.31	up				-	-	-	-	-	Good	-	12060184	2012	
Fish Hatchery Dr	WB On	535+25	535+65	Grade	-		1.58		1.58	up				-	-	-	-	-	Good	-	12060184	2012	
Fish Hatchery Dr	WB On	535+65	540+85	Sag	1	538+25	-3.79	1.58	1.58	down then up	520	96.83	265	Critical	-	-	50	50	50	Good	-	12060184	2012
Fish Hatchery Dr	WB On	540+85	541+50	Grade	-		-3.79		3.79	down				-	-	-	-	-	Good	-	12060184	2012	
Park Street ES	EB Off	11+50	14+50	Crest	1	13+00	-0.42	-1.68	0.42	down	300	238.10	50	Critical	65	55	-	-	50	Good	Grade < .5%	12060073	2010
Park Street ES	EB Off	14+50	16+50	Grade	-		-1.68		1.68	down				-	-	-	-	-	Good	-	12060073	2010	
Park Street ES	EB Off	16+50	19+00	Crest	1	17+75	-1.68	-1.99	1.68	down	250	806.45	550		70+	70+	-	-	50	Good	-	12060073	2010
Park Street ES	EB Off	19+00	23+00	Sag	1	21+00	-1.99	0.14	0.14	down then up	400	187.79	800		-	-	70+	70+		Good	Grade < 0.3%	12060073	2010
Park Street EN	EB Off	17+15	17+75	Crest	1	17+45	-1.89	-2.57	1.89	down	60	88.24	615	Critical	50	40	-	-	30	Good	-	12060073	2010
Park Street EN	EB Off	17+75	18+45	Grade	-		-2.57		2.57	down				-	-	-	-	-	Good	-	12060073	2010	
Park Street EN	EB Off	18+45	19+45	Sag	1	18+95	-2.57	-1.12	1.12	down	100	68.97	745		-	-	40	40	30	Good	-	12060073	2010
Park Street EN	EB Off	19+45	21+09	Grade	-		-1.12		1.12	down				-	-	-	-	-	Good	-	12060073	2010	
Park Street	EB On	14+60	15+50	Grade	-		0.2		0.2	up				-	-	-	-	-	Good	Grade < 0.3%	12060073	2010	
Park Street	EB On	15+50	16+50	Sag	1	16+00	0.2	1.33	0.2	up	100	88.50	1650		-	-	45	45	40	Good	Grade < 0.3%	12060073	2010
Park Street	EB On	17+00	24+10	Sag	1	20+55	1.33	3.6	1.33	up	710	312.78	890		-	-	70+	70+	40	Good	-	12060073	2010
Park Street	EB On	17+10	32+75	Grade	-		3.6		3.6	up				-	-	-	-	-	Good	-	12060073	2010	
Park Street	EB On	32+75	38+75	Crest	1	35+75	3.6	-0.09	0.09	up then down	600	162.60	-575	Critical	60	50	-	-	50	Good	Grade < 0.3%	12060073	2010
Park Street	EB On	38+75	41+50	Grade	-		-0.09		0.09	down				-	-	-	-	-	Good	Grade < 0.3%	12060073	2010	
Park Street	EB On	1+11	3+11	Sag	1	226.39	0.41	4	0.41		230	64.07	358.61		-	-	40	40	30	Good	Grade < .5%	12060379	1990
Park Street	EB On	3+11	6+23	Grade	-		4		4					-	-	-	-	-	Good	-	12060379	1990	
Park Street	EB On	6+23	7+23	Crest	1		4	0.3	0.3		100			30	25	-	-	30	Meets Minimum but Not Desirable for Design Speed	Grade < .5%			
Park Street	WB Off	1+83	9+00	Grade	-		-2.82		2.82			27.03	650		-	-	-	-	Good	-	12060379	1990	
Park Street	WB Off	9+00	9+50	Sag	1	9+25	-3.73	-2.82	2.82		50	54.95	33		-	-	35	35	50	Doesn't Meet Desirable or Minimum for Design Speed	-	12060379	1990
Park Street	WB Off	9+50	9+83	Grade	-		-3.73		3.73					-	-	-	-	-	Good	-	12060379	1990	
Park Street	WB ON	0+00	3+82	Grade	-		3.12		3.12	up				-	-	-	-	-	Good	-	12060379	1990	
Park Street	WB ON	3+82	5+42	Crest	1	4+62	3.12	1.08	1.08	up	160	78.43	218		45	40	-	-	50	Doesn't Meet Desirable or Minimum for Design Speed	-	12060379	1990
Park Street	WB ON	5+42	7+60	Grade	-		1.08		1.08	up				-	-	-	-	-	Good	-	12060379	1990	
Park Street PE	WB On	2+50	4+50	Grade	-		1.22		1.22					-	-	-	-	-	Good	-	12060379	1990	
Park Street PE	WB On	4+50	7+00	Crest	1	5+75	2.92	1.22	1.22	up	250	147.06	-600	Critical	55	50	-	-	50	Good	-	12060379	1990
Park Street PE	WB On	7+00	7+58	Grade	-		2.92		2.92	up				-	-	-	-	-	Good	-	12060379	1990	
Park Street PE	WB On	7+38	8+88	Sag	1	8+13	-0.88	2.92	0.88	up	150	39.47	-788		-	-	30	30	30	Good	-	12060379	1990
Park Street PE	WB On	8+88	10+03	Grade	-		-0.88		0.88	down				Critical	-	-	-	-	-	Good	-	12060379	1990
Park Street PE	WB On	10+03	11+53	Crest	1	10+78	0	-0.88	0	down	150	170.45	-1053		60	50	-	-	30	Good	Grade < 0.3%	12060379	1990
Rimrock Road	EB Off	587+50	587+87	Grade	-		-3.34		3.34	down				-	-	-	-	-	Good	-	12060372	1989	
Rimrock Road	EB Off	587+87	591+87	Sag	1	589+87	-3.2	1.38	1.38	down then up	400	87.34	287	Critical	-	-	45	45	50	Doesn't Meet Desirable or Minimum for Design Speed	-	12060372	1989
Rimrock Road	EB Off	591+87	594+25	Grade	-		1.38		1.38	up				-	-	-	-	-	Good	-	12060372	1989	
Rimrock Road	EB On	594+40	596+40	Crest	1	595+40	-2.36	-6.3	2.36	down	200	50.76	560		40	35	-	-	30	Good	-	-	-
Rimrock Road	EB On	596+40	598+50	Grade	-		-6.3		6.3	down				-	-	-	-	-	Good	Grade > 5%	-	-	-
Rimrock Road	EB On	598+50	601+00	Sag	1	599+75	-6.3	-0.47	0.47	down	250	42.88	100	Critical	-	-	30	30	50	Doesn't Meet Desirable or Minimum for Design Speed	Grade < .5%	-	-
Rimrock Road	EB On	601+00	601+50	Grade	-		-0.47		0.47	down				-	-	-	-	-	Good	Grade < .5%	-	-	-
Rimrock Road	WB Off	598+50	599+50	Crest	1	599+50	4.69	1.15	1.15	up	200	56.50	550		40	35	-	-	30	Good	-	-	-
Rimrock Road	WB Off	599+50	602+00	Grade	-		4.69		4.69	up				-	-	-	-	-	Good	-	-	-	-
Rimrock Road	WB Off	602+00	605+50	Sag	1	603+75	-0.33	4.69	0.33	up	350	69.72	50	Critical	-	-	40	40	50	Doesn't Meet Desirable or Minimum for Design Speed	Grade < .5%	-	-

Table 7.4-7 Ramp Design Vertical Alignment

Ramp Location	Ramp Description	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Sta	Entrance Grade	Exit Grade	Critical Grade	ramp up or down	Vert. Curve Length	K Value (Calculated)	Distance from Gore to PVC	Equivalent V (MPH in Crest)	Equivalent V (MPH in Sag)	Design Speed Required	Rating	Comments	Plan ID	Construction Year or Plan	
Rimrock Road	WB Off	605+50	606+00	Grade	-		-0.33		0.33	down		-		-	-		Good	Grade < .5%		-	
Rimrock Road	WB On	591+00	591+40	Grade	-		3.18		3.18	up		-		-	-		Good	-	12060372	1989	
Rimrock Road	WB On	591+40	596+40	Sag	1	593+90	-1.86	3.18	1.86	down then up	500	99.21	240	Critical	-	50	50	50	12060372	1989	
Rimrock Road	WB On	596+92	598+17	Crest	1	596+92	5.43	-1.86	1.86	up then down	125	17.15	729.5		25	<25	-	-	12060372	1989	
Rimrock Road	WB On	598+17	599+48	Grade	-		5.43		5.43	up		-		-	-		Good	Grade > 5%	12060372	1989	
John Nolen Drive	EB Off	0+50	4+50	Crest	1	2+50	-1.14	-5.58	1.14	down	400	90.09	50	Critical	50	40	-	-	30	12060374	1989
John Nolen Drive	EB Off	4+50	5+65	Grade	-		-5.58		5.58	down		-		-	-		Good	Grade > 5%	12060374	1989	
John Nolen Drive	EB Off	5+65	7+15	Sag	1	6+40	-5.58	-0.14	0.14	down	150	27.57	565		-	25	25	25	12060374	1989	
John Nolen Drive	EB Off	7+15	14+00	Grade	-		-0.14		0.14	down		-		-	-		Good	Grade < 0.3%	12060374	1989	
John Nolen Drive	EB On	0+00	8+70	Grade	-		0.29		0.29	up		-		-	-		Good	Grade < 0.3%	12060374	1989	
John Nolen Drive	EB On	8+70	10+70	Sag	1	9+70	0.29	5	0.29	up	200	42.46	830		-	30	30	30	12060374	1989	
John Nolen Drive	EB On	10+70	13+00	Grade	-		5		5	up		-		-	-		Good	Grade < 0.3%	12060374	1989	
John Nolen Drive	EB On	13+00	16+00	Crest	1	14+50	5	1.52	1.52	up	300	86.21	300	Critical	50	40	-	-	50	12060374	1989
John Nolen Drive	WB Off	97+00	98+75	Grade	-		-0.22		0.22	down		-		-	-		Good	Grade < 0.3%	12060374	1989	
John Nolen Drive	WB Off	98+75	100+75	Sag	1	99+75	-5.5	-0.22	0.22	down	200	37.88	725		-	30	30	30	12060374	1989	
John Nolen Drive	WB Off	100+75	103+50	Grade	-		-5.5		5.5	down		-		-	-		Good	Grade > 5%	12060374	1989	
John Nolen Drive	WB Off	103+50	106+50	Crest	1	105+00	-0.58	-5.5	0.58	down	300	60.98	150	Critical	40	35	-	-	50	12060374	1989
John Nolen Drive	WB On	0+00	2+25	Grade	-		-0.53		0.53	down		-		-	-		Good	-	12060374	1989	
John Nolen Drive	WB On	2+25	4+25	Sag	1	3+25	-0.53	5.31	0.53	down then up	200	34.25	475		-	0.53	25	25	25	12060374	1989
John Nolen Drive	WB On	4+75	8+25	Crest	1	6+50	5.31	-0.95	0.95	up then down	350	55.91	75	Critical	40	35	-	-	50	12060374	1989
South Towne Dr	EB Off	43+50	44+50	Grade	-		-1.36		1.36	down		-		-	-		Good	-	12060274	1989	
South Towne Dr	EB Off	44+50	47+50	Sag	1	46+00	-1.36	0.59	0.59	down then up	300	153.85	350	Critical	-	-	60	60	50	12060274	1989
South Towne Dr	EB Off	47+50	52+41	Grade	-		0.59		0.59	up		-		-	-		Good	-	12060274	1989	
South Towne Dr	EB On	53+25	54+00	Grade	-		-2.81		2.81	down		-		-	-		Good	-	12060274	1989	
South Towne Dr	EB On	54+00	55+00	Crest	1	54+50	-2.81	-4.86	2.81	down	100	48.78	700		40	35	-	-	30	12060274	1989
South Towne Dr	EB On	55+00	56+50	Grade	-		-4.86		4.86	down		-		-	-		Good	-	12060274	1989	
South Towne Dr	EB On	56+50	60+50	Sag	1	58+50	-4.86	-0.35	0.35	down	400	88.69	150	critical	-	-	45	45	50	12060274	1989
South Towne Dr	WB Off	53+55	54+25	Grade	-		2.41		2.41	up		-		-	-		Good	-	12060274	1989	
South Towne Dr	WB Off	54+25	55+75	Crest	1	55+00	5.04	2.41	2.41	up	150	57.03	725		40	35	-	-	30	12060274	1989
South Towne Dr	WB Off	55+75	57+00	Grade	-		5.04		5.04	up		-		-	-		Good	Grade > 5%	12060274	1989	
South Towne Dr	WB Off	57+00	62+00	Sag	1	59+50	0.2	5.04	0.2	up	500	103.31	100	Critical	-	-	50	50	50	12060274	1989
South Towne Dr	WB On	42+50	45+50	Sag	1	44+00	-0.54	1.23	0.54	down then up	300	169.49	150	Critical	-	-	65	65	50	12060274	1989
South Towne Dr	WB On	45+50	52+70	Grade	-		-0.54		0.54	down		-		-	-		Good	-	12060274	1989	
Monona Dr. R	WB On	126+00	129+00	Crest	1	127+50	-0.81	2	0.81	up then down	300	106.76	100	Critical	50	45	-	-	50	12060279	1989
Monona Dr. R	WB On	129+00	131+00	Crest	1	130+00	3.71	2	2	up	200	116.96	400		55	45	-	-	40	12060279	1989
Monona Dr. R	WB On	131+50	133+50	Sag	1	132+50	-4.22	3.71	3.71	down then up	200	25.22	650		-	-	<25	<25	25	12060279	1989
Monona Dr. R	WB On	133+50	134+00	Grade	-		-4.22		4.22	down		-		-	-		Good	-	12060279	1989	
Monona Dr. S	EB Off	126+00	129+00	Crest	1	127+50	0.4	-1.76	0.4	up then down	300	138.89	100	Critical	55	50	-	-	50	12060279	1989
Monona Dr. S	EB Off	129+00	130+00	Grade	-		-1.76		1.76	down		-		-	-		Good	-	12060279	1989	
Monona Dr. S	EB Off	130+00	132+00	Sag	1	131+00	-1.76	-1.3	1.3	down	200	434.78	500		-	-	70+	70+	30	12060279	1989
Monona Dr. T	WB Off	133+23	135+23	Sag	1	134+23	-2	4	2	down then up	200	33.33	942		-	-	25	25	25	12060279	1989
Monona Dr. T	WB Off	135+23	137+00	Grade	-		-2		2	down		-		-	-		Good	-	12060279	1989	
Monona Dr. T	WB Off	137+00	141+00	Crest	1	139+00	1.04	-2	1.04	up then down	400	131.58	365	Critical	55	45	-	-	50	12060279	1989
Monona Dr. T	WB Off	141+00	142+00	Grade	-		1.04		1.04	up		-		-	-		Good	-	12060279	1989	
Monona Dr. U	EB On	134+64	135+40	Grade	-		1.3		1.3	up		-		-	-		Good	-	12060279	1989	
Monona Dr. U	EB On	135+40	140+40	Crest	1	137+90	1.3	-0.64	0.64	up then down	500	257.73	360	Critical	70+	60	-	-	50	12060279	1989
Monona Dr. U	EB On	140+40	141+50	Grade	-		-0.64		0.64	down		-		-	-		Good	-	12060279	1989	
Monona Dr. U	EB On	141+50	142+50	Grade	-		-0.43		0.43	down		-		-	-		Good	Grade < .5%	12060279	1989	
USH 51 V	WB On	167+00	168+00	Grade	-		-0.14		0.14	down		-		-	-		Good	Grade < 0.3%	12060279	1989	
USH 51 V	WB On	168+00	171+00	Crest	1	169+50	0.89	-0.39	0.39	up then down	300	234.38	100	Critical	65	55	-	-	50	12060279	1989
USH 51 V	WB On	171+00	172+00	Grade	-		0.89		0.89	up		-		-	-		Good	-	12060279	1989	
USH 51 V	WB On	172+00	175+00	Sag	1	173+50	-0.88	0.89	0.88	down then up	300	169.49	500		-	-	65	65	50	12060279	1989
USH 51 V	WB On	175+00	177+52	Grade	-		-0.88		0.88	down		-		-	-		Good	-	12060279	1989	

Table 7.4-7 Ramp Design Vertical Alignment

Ramp Location	Ramp Description	From (Sta)	To (Sta)	Alignment Feature	Category	VPI Sta	Entrance Grade	Exit Grade	Critical Grade	ramp up or down	Vert. Curve Length	K Value (Calculated)	Distance from Gore to PVC		Equivalent V (MPH in Crest)		Equivalent V (MPH in Sag)		Design Speed Required	Rating	Comments	Plan ID	Construction Year or Plan Year
															Minimum	Desirable	Minimum	Desirable					
USH 51 W	EB Off	169+00	173+00	Crest	1	171+00	2.08	-1.25	1.25	up then down	400	120.12	350	Critical	55	45	-	-	50	Meets Minimum but Not Desirable for Design Speed	-	12060279	1989
USH 51 W	EB Off	173+00	180+64	Grade	-		-1.25		1.25	down		-			-	-	-	-		Good	-	12060279	1989
USH 51 X	WB Off	11+17	12+47	Sag	1	11+82	-1.44	2	1.44	down then up	130	37.79	803		-	-	30	30	30	Good	-	12000084	2008
USH 51 X	WB Off	12+47	14+80	Grade	-		-1.44		1.44	down		-			-	-	-	-		Good	-	12000084	2008
USH 51 X	WB Off	14+80	18+00	Crest	1	16+40	0.56	-1.44	0.56	up then down	320	160.00	250		60	50	-	-	50	Good	-	12000084	2008
USH 51 X	WB Off	18+00	18+55	Grade	-		0.56		0.56	up		-			-	-	-	-		Good	-	12000084	2008
USH 51 X	WB Off	18+55	19+95	Sag	1	19+25	-0.36	0.56	0.36	down then up	140	152.17	55	Critical	-	-	60	60	50	Good	Grade < .5%	12000084	2008
USH 51 Y	EB On	181+50	189+00	Grade	-		0.67		0.67	up		-			-	-	-	-		Good	-	12060279	1989

Table 7.4-8 Ramp Cross Section

Ramp Location	Ramp Description	Ramp Station (From)	Ramp Station (To)	Interchange Type	Number of Lanes	Design Speed (Req'd)	Lane Width	LT Shoulder Width	RT Shoulder Width	C&G Type	Barrier Wall Present
University Ave	WB Off (W)	1920+25	1927+50	loop	1	30	18	8	2	30-inch vertical	No
University Ave	WB Off	1920+00	1925+70	direct	1	50	15	4	8	n/a	No
University Ave	WB Off	1925+70	1928+30	direct	1-2	50	12-15	4	8	n/a	No
University Ave	WB Off	1928+30	1932+05	direct	2	50	12	4	8	n/a	No
University Ave	WB On	1915+00	1930+50	diamond	1	50	15	4	8	n/a	No
University Ave	EB Off	1915+50	1935+73	diamond	1	50	15	4	8	n/a	No
University Ave	EB On	1914+71	1921+50	loop	1	30	15	4	8	n/a	No
University Ave	EB On	1921+70	1929+00	loop	1	30	16	8	2	30-inch vertical	No
Greenway Blvd	WB Off	67+20	69+07	diamond	3	40	12	4	2	30-inch vertical	No
Greenway Blvd	WB Off	69+07	71+50	diamond	1-3	50	12-15	4	8	n/a	No
Greenway Blvd	WB Off	71+50	80+00	diamond	1	50	15	4	8	n/a	No
Greenway Blvd	WB On	57+00	61+00	diamond	1	50	15	4	8	n/a	No
Greenway Blvd	WB On	63+33	66+72	diamond	1	50	15	2	2	30-inch vertical	No
Greenway Blvd	EB Off	54+00	61+00	diamond	1	50	15	4	8	n/a	No
Greenway Blvd	EB Off	61+00	68+88	diamond	1-2	50	12-15	4	8	n/a	No
Greenway Blvd	EB On	67+47	80+14	diamond	1	50	15	4	8	n/a	No
Old Sauk Rd	WB Off	122+57	124+25	diamond	1-3	50	12-15	4	8	36-inch sloped	No
Old Sauk Rd	WB Off	127+20	130+10	diamond	1-3	50	12-15	4	8	n/a	No
Old Sauk Rd	WB Off	132+10	134+50	diamond	1	50	15	4	8	n/a	No
Old Sauk Rd	WB On	110+00	122+99	diamond	1	50	15	4	8	n/a	No
Old Sauk Rd	EB Off	110+00	123+27	diamond	1-3	50	12-15	4	8	n/a	No
Old Sauk Rd	EB On	123+08	133+00	diamond	1	50	15	4	8	n/a	No
Mineral Point Rd	WB Off	10+00	17+50	diamond	1-4	50	12-15	4	8	36-inch sloped	No
Mineral Point Rd	WB Off	17+97	20+00	diamond	1	50	15	4	8	n/a	No
Mineral Point Rd	WB On	0+00	9+14	diamond	1	50	15	4	8	n/a	No
Mineral Point Rd	EB Off	1+00	3+20	diamond	1	50	15	4	8	n/a	No
Mineral Point Rd	EB Off	3+52	6+07	diamond	1-4	50	12	4	8	n/a	No
Mineral Point Rd	EB Off	7+30	10+00	diamond	1-4	50	12	2-4	2-8	36-inch sloped	No
Mineral Point Rd	EB On	8+75	19+49	diamond	1	50	15	4	8	n/a	No
Gammon Rd	WB Off	194+01	200+00	diamond	2-4	50	12	4	8	30-inch vertical	No
Gammon Rd	WB Off	200+00	227+92	diamond	1-2	40	12	4	8	30-inch vertical	No
Gammon Rd	WB On	30+00	39+71	diamond	1	50	15	4	8	n/a	No
Gammon Rd	EB Off	100+00	106+55	diamond	1-4	50	12-15	4	8	n/a	No
Gammon Rd	EB Off	107+70	109+49	diamond	1-4	50	12	4	8	n/a	No
Gammon Rd	EB On	300+00	309+35	diamond	1-2	50	12-15	4	8	36-inch sloped	No
Gammon Rd	EB On	312+06	337+84	diamond	1	50	15	n/a	10	n/a	No
Whitney Way	WB Off	77+58	89+70	diamond	2	50	12	4	8	n/a	Yes
Whitney Way	WB On	0+00	7+51	diamond	1	50	15	4	8	36-inch sloped	No
Whitney Way	EB Off	46+95	56+05	diamond	1	50	15	4	8	n/a	No
Whitney Way	EB On	326+56	343+50	diamond	2	50	12	2	2	36-inch sloped	Yes
Verona Rd C	WB Off	145+48	157+82	SPUI	1-5	50	12	2	2-12	30-inch vertical	Yes
Verona Rd A	EB Off	128+92	144+08	SPUI	1-4	40	12-15	2	5-11	30-inch vertical	Yes
Verona Rd D	WB On	127+51	130+25	SPUI	2	50	12-15	4	8	n/a	Yes
Verona Rd D	WB On	130+98	134+99	SPUI	1	50	15	4	8	n/a	Yes
Verona Rd D	WB On	134+99	141+71	SPUI	1-2	50	12-15	4	8	n/a	Yes
Verona Rd D	WB On	141+71	144+25	SPUI	2	40	12-15	4	8	30-inch vertical	No
Verona Rd B	EB On	146+37	152+42	SPUI	2	40	12-15	2-4	2-5	30-inch vertical	Yes
Verona Rd B	EB On	152+42	158+02	SPUI	2	50	12-15	4	5	n/a	Yes
Seminole Hwy	WB Off	17+29	26+50	diamond		50	15	2	2	30-inch vertical	Yes
Seminole Hwy	EB On	1176+00	1180+60	weave	1	40	15	2	2	24-inch sloped	No
Seminole Hwy	EB On	1180+60	1182+12	weave	1	40	15	2	2-6	30-inch sloped	No

Table 7.4-8 Ramp Cross Section

Ramp Location	Ramp Description	Ramp Station (From)	Ramp Station (To)	Interchange Type	Number of Lanes	Design Speed (Req'd)	Lane Width	LT Shoulder Width	RT Shoulder Width	C&G Type	Barrier Wall Present
Todd Drive	EB Off	452+50	461+62	weave	1	50	15	4	8	n/a	Yes
Todd Drive	EB On	483+00	496+74	weave	1	50	15	2	2	36-inch sloped	No
Todd Drive	WB Off	483+92	495+79	weave	1	50	15	3	8	36-inch sloped	No
Todd Drive	WB On	461+65	469+00	diamond	1-2	50	12-15	3	3-6	n/a	Yes
Todd Drive	WB On	469+00	471+00	diamond	2	50	12	3	3	n/a	Yes
Fish Hatchery Dr	EB Off	unknown	17+56	diamond	1-2	50	18	8	2	30-inch vertical	No
Fish Hatchery Dr	EB Off	5+57	12+00	loop	1	30	18	8	2	30-inch vertical	No
Fish Hatchery Dr	EB Off	12+00	21+47	loop	1-4	30	18	8	2	30-inch vertical	No
Fish Hatchery Dr	EB On	16+37	29+65	diamond	1-2	50	18	2	2	30-inch vertical	No
Fish Hatchery Dr	WB Off	642+27	654+00	diamond	1-4	50	12	5	8	n/a	No
Fish Hatchery Dr	WB On	533+00	542+43	diamond	1-2	50	16	5	2	n/a	No
Park Street	EB Off	10+00	33+88	direct	1-2	50	12-15	4	8	n/a	Yes
Park Street	EB Off	17+11	22+29	diamond	1-2	50	12-15	4	8	n/a	Yes
Park Street	EB On	10+00	23+68	diamond	1-2	50	12-15	4	8	n/a	No
Park Street	EB On	23+68	42+74	diamond	2	50	12	4	8	n/a	No
Park Street	EB On	0+00	4+00	loop		30	18	2	2	30-inch vertical	No
Park Street	EB On	4+00	7+88	loop		30	18	5	2	n/a	Yes
Park Street	WB Off	0+50	13+24	diamond	1-3	50	12	4	8	n/a	No
Park Street	WB On	0+00	12+62	direct	1-2	50	12-15	4	8	n/a	Yes
Park Street	WB On	9+00	17+04	loop	1	30	16	2	2	n/a	Yes
Park Street	WB On	17+04	20+40	loop	1-2	30	12	2	2	n/a	Yes
Rimrock Road	EB Off	587+50	594+70	diamond	1-3	50	12-15	4	8	n/a	No
Rimrock Road	EB On	594+05	601+50	diamond	1	50	15	4	2	30-inch vertical	No
Rimrock Road	WB Off	598+50	608+49	diamond	1-3	50	12-15	5	8	n/a	No
Rimrock Road	WB On	586+45	598+28	diamond	1	50	15	2	4	30-inch vertical	No
John Nolen Drive	EB Off	0+00	15+00	loop	1	30	18	5	8	n/a	Yes
John Nolen Drive	EB On	0+00	14+49	direct	1	50	18	5	8	n/a	Yes
John Nolen Drive	EB On	15+78	20+00	direct	1	50	15	5	8	n/a	No
John Nolen Drive	WB Off	80+00	106+50	direct	2	50	12	5	8	n/a	No
John Nolen Drive	WB On	0+00	9+67	direct	1	50	18	4	8	n/a	No
South Towne Dr	EB Off	41+00	52+77	diamond	2-3	50	12	2	8	30-inch vertical	No
South Towne Dr	EB On	52+88	61+00	diamond	1	50	18	2	2	30-inch vertical	No
South Towne Dr	WB Off	53+19	56+50	diamond	1	50	18	2	2	30-inch vertical	Yes
South Towne Dr	WB Off	56+50	65+50	diamond	1	50	18	2	2	30-inch vertical	Yes
South Towne Dr	WB On	38+50	53+00	diamond	1-2	50	12-15	2	2	30-inch vertical	No
Monona Dr. R	WB On	125+00	133+56	diamond	1	50	18	2	2	30-inch vertical	No
Monona Dr. S	EB Off	124+50	132+72	diamond	1	50	15	4	8	n/a	No
Monona Dr. T	WB Off	133+46	144+65	diamond	1	50	18	2	2	30-inch vertical	No
Monona Dr. U	EB On	133+71	144+00	diamond	1	50	15	4	8	n/a	No
USH 51 V	WB On	167+00	178+84	diamond	1-2	50	12-15	4	8	n/a	No
USH 51 W	EB Off	165+50	173+00	diamond	2	50	12	4	8	n/a	No
USH 51 W	EB Off	173+00	180+64	diamond	2-5	50	12	4	8	30-inch sloped	No
USH 51 X	WB Off	179+58	183+50	diamond	2-4	50	12	4	8	30-inch sloped	No
USH 51 X	WB Off	183+50	189+00	diamond	1-2	50	12	4	8	n/a	No
USH 51 Y	EB On	180+58	195+50	diamond	1-2	50	12-15	4	8	n/a	No