



APPENDIX A

Bridge Inspection Reports

I00015279+09761

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00015**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **SUN RIVER**

Kilometer Post, Mile Post : **450.57 km 279.97**

Structure on the State Highway System : Latitude : **47°29'58"**

Structure on the National Highway System : Longitude : **111°20'34"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **I 15-5(22)273**

Construction Station Number : **589+50.00**

Construction Drawing Number : **6903**

Construction Year : **1966**

Reconstruction Year :

Traffic Data

Current ADT : **9,150** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	33.5 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	58.32		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **147.83 m**
 Deck Area : **1,442.00 m sq**
 Deck Roadway Width : **8.53 m**
 Approach Roadway Width : **11.28 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **N Feature not hwy or RR**
 Vertical Clearance Under the Structure : **0.00 m**
 Reference Feature for Lateral Underclearance : **N Feature not hwy or RR**
 Minimum Lateral Under Clearance Right : **0.00 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **5**
 Material Type Code, Description : **5 Prestressed concrete**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **3 Latex Concrete or similar additive**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
Route On Structure	I00015	N/A			North	99.99 m	8.53 m
I-15 NB							

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Inspection Data

Sufficiency Rating : **78.5**
Structure Status : **Func Obs - Elg Rehab**

Inspection Due Date : **19 December 2014**
(91) Inspection Frequency (months) : **24**

Next Under Water Insp : **15 Nov 2016**
Under Water Insp Type : **Type II**

NBI Inspection Data

(90) Date of Last Inspection : 19 December 2012
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 7	(68) Deck Geometry : 3	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 7	(67) Structure Rating : 6	(36B) Transition Rating : 1	(61) Channel Rating : 6
(60) Substructure Rating : 6	(69) Under Clearance : N	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : 8
(72) App Rdwy Align : 7	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : 5

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 1.00 in

Inspection Hours

Crew Hours for inspection : 2
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : N
Snooper Hours for inspection : 0
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						

Late Reason:
Inspection Date: 12/19/2012

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Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 22 - P Conc Deck/Rigid Ov										
	1	3	1441	sq.m.	X	100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Random, tight cracks in all of the Spans. Minor studded tire wear in the wheel paths.										UZGZ
12/27/2010 - 9.75 * 147.83 = 1441.34 Deck had 1" milled off and then placed 2" of silica fume concrete in 2010. Deck looks Good today. Some cracking near Abutment 1 that were sealed during construction.										ZBDZ
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	739	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Good condition. Spall is unchanged in Span 5 and no new hits were observed.										UZGZ
12/27/2010 - Good condition. Small spall on the Right girder in Span 5 has not changed.										ZBDZ
12/02/2008 - Good Condition. Same on the Right most girder in Span 5.										DZGZ
11/02/2006 - Right girder in Span 5 has been hit by overheight equipment and caused a small spalled area. No cracking or visible strands in this area.										CKDP
10/18/2002 - 147.83 * 5 = 739.15m No change.										VZJZ
Inspection Notes:										
Element 210 - R/Conc Pier Wall Piers 2 thru 5										
	1	3	41	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Some tight vertical cracking. Small spalls along the backside of the ice breakers. Small delamination on the face of Pier 4 near the waterline. Some surface scale on the Pierwalls near the waterline.										UZGZ
12/27/2010 - Tight mapping cracks in the Pierwall faces. Some small spalls along the ice breakers. Some small delaminated areas observed during last snooper inspection in the worst cracked areas.										ZBDZ
There are no additional comments from the underwater inspection by Infrastructure Engineers on 11/15/2011. CRH										
12/02/2008 - Small spalls, Condition State 2, and some small delaminations, Condition State 3.										DZGZ
11/02/2006 - Minor concrete spall at the waterline near the Pier noses. Several areas of tight mapping cracks in all (4) Pier walls. Ice breakers painted this past summer.										CKDP
Per Infrastructure Engineers August 22, 2006 underwater inspection, the substructure units are in good condition. There are no significant structural defects below the high waterline. There are vertical cracks up to 1/16" wide with light efflorescence on both the north face and south face of pier 3 starting at the waterline and extending up 10 feet.										
10/18/2002 - 10.14 * 4 = 40.56m Same as snooper inspection of 05-29-2001.										VZJZ
04/13/1998 - Snooper Inspection of 5-29-2001: Some minor section loss at the water line from debris and ice. Some drift at the nose of the pier shafts. Ice breakers could be painted.										RHGY
02/01/1994 - None										REFI
Inspection Notes:										

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***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 6										
	1	1	27	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Left corner of Abutment 6 is delaminated. Small spalls at the backwall to cap area.										UZGZ
12/27/2010 - Delaminations on Left end of Abutment 6's cap. A couple of small surface spalls in the backwalls near girder embeddings. Tight shrinkage cracks in both backwalls.										ZBDZ
12/02/2008 - Abutment 6 has a small delminaiton on the Left end of the cap; Condition State 3. Tight cracks in both backwalls; Condition State 2. None are a problem.										DZGZ
11/02/2006 - Minor and tight cracks in both Abutments. Both backwalls have a couple of small spalls near the bearings where girder are embedded.										CKDP
10/18/2002 - (10.14 * 2) (4 * 17.75) = 27.28m ok										VZJZ
Inspection Notes:										
Element 234 - R/Conc Cap Piers 2 thru 5										
	1	1	41	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Small delamination on the Right end and Span 4 side of Pier 5's cap. Small spalls in random areas along the edges of the caps; none are a problem. Bird debris on tops of the caps.										UZGZ
12/27/2010 - Small delamination on the Span 4 side of Bent 5's cap. Some minor spalls. Bird debris on the caps.										ZBDZ
12/02/2008 - Small spalls and some cracks; Condition State 2. A couple of small delaminations; Condition State 3.										DZGZ
11/02/2006 - Staining from past leaking joints. Some small areas where there is shallow and rusty tie wire which is causing some small surface spalling.										CKDP
10/18/2002 - Change Env. State to a "1" as the leaky joints have been removed. Rest is the same as last several reports.										VZJZ
Inspection Notes:										
Element 303 - Assembly Joint/Seal Pier 2 and 5 - New in 2010										
	1	3	20	m.		100	0	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Sanding material is packed in the joint glands. Steel sound solid when tapped on.										UZGZ
12/27/2010 - All of the steel looks Good. Ends of the joints area at the curb shows sloppy workmanship pathces.										ZBDZ
12/02/2008 - Steel sounds solid when tapped on. Some small spalls along the stell. Gland is full of sanding material. No leakage observed.										DZGZ
11/02/2006 - Joint area is packed full of sanding material. Some spalling along the joint steel. Steel sounds soild when tapped on. No leaking is apparent from either joint.										CKDP
10/18/2002 - 10.14 * 2 = 20.28m Replaced all (4) sliding plates with 303's. Full of sanding material.										VZJZ
Inspection Notes:										

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***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing										
	1	2	25	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Alignment is ok. Spot rust, paint loss, and faded paint.										UZGZ
12/27/2010 - Spot rust, paint loss, and bird debris.										ZBDZ
12/02/2008 - Some spot rust and bird debris.										DZGZ
11/02/2006 - Blown off and overcoat painted in 2006.										CKDP
10/18/2002 - No change.										VZJZ
04/13/1998 - Snooper inspection of 5-29-2001: Some rust, pitting, and minor paint loss; mostly on the north most pier.										RHGY
02/01/1994 - None										REFI
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	2	25	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Spot rust, paint loss, and faded paint.										UZGZ
12/27/2010 - Spot rust and paint loss. Bird debris.										ZBDZ
12/02/2008 - Some spot rust and bird debris.										DZGZ
11/02/2006 - Blown off and overcoat painted in 2006.										CKDP
10/18/2002 - No change from last report.										VZJZ
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	296	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Generally in Good ocndition. Random shrinkage cracks. Spalling on the backside of the barrier where the W-Beam bolts up.										UZGZ
12/27/2010 - Unchanged from previous inspections.										ZBDZ
12/02/2008 - Same as past inspections and add that the ends have been upgraded to new rail shoes since the last inspection. Curbs under the barrier are in Good condition with surface spall near the deckline.										DZGZ
11/02/2006 - Minor and random vertical cracks along the front face and some cracks also along the rebar in random spots on the backside of the rail. Some rubs and scrapes to the rail.										CKDP
10/18/2002 - 147.83 * 2 = 295.63m Minor, vertical cracks and scrapes. Rail was placed in front of the metal bridge rail in 1999.										VZJZ
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

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Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 334 - Metal Rail Coated Steel Posts and Top Round Pipe --- Now behind the Concrete Rail										
	1	3	296	m.		90	10	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Rusty spots, paint loss, and scale on the rail posts and top pipe tube.										UZGZ
12/27/2010 - Removed W-Beam in 2010. Rust spots, minor surface pitting, and paint loss on the posts and top rail.										ZBDZ
12/02/2008 - Rust, paint peel, some surface pitting, and exposed base coat.										DZGZ
11/02/2006 - Rusty, pitting, faded paint, peeling paint, and some prime coat visible on the rail psots and top rail pipe. W-beam has rusty spots throughout.										CKDP
10/18/2002 - 147.83 * 2 = 295.63m Rust, pitting, and paint loss throughout.										VZJZ
04/13/1998 - None										RHGY
02/01/1994 - None										REFI
Inspection Notes:										
Element 358 - Deck Cracking SmFlag										
X	1	3	1	ea.	X	100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Some reflective cracking was visible today.										UZGZ
12/27/2010 - Milled off 1" and replaced with 2" of new silica fume concrete.										ZBDZ
12/02/2008 - Due to quantity and need to start tracking.										DZGZ
Inspection Notes:										

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Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00015**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **SUN RIVER**

Kilometer Post, Mile Post : **450.57 km 279.97**

Structure on the State Highway System : Latitude : **47°29'58"**

Structure on the National Highway System : Longitude : **111°20'35"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **I 15-5(22)273**

Construction Station Number : **589+50.00**

Construction Drawing Number : **6903**

Construction Year : **1966**

Reconstruction Year : **1977**

Traffic Data

Current ADT : **9,150** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	33.5 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	58.32		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **147.83 m**
 Deck Area : **1,442.00 m sq**
 Deck Roadway Width : **8.53 m**
 Approach Roadway Width : **11.28 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **N Feature not hwy or RR**
 Vertical Clearance Under the Structure : **0.00 m**
 Reference Feature for Lateral Underclearance : **N Feature not hwy or RR**
 Minimum Lateral Under Clearance Right : **0.00 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **5**
 Material Type Code, Description : **5 Prestressed concrete**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **3 Latex Concrete or similar additive**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
Route On Structure	I00015	South	99.99 m	8.53 m	N/A		
I-15 SB							

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Inspection Data

Sufficiency Rating : **78.5**
Structure Status : **Func Obs - Elg Rehab**

Inspection Due Date : **19 December 2014**
(91) Inspection Frequency (months) : **24**

Next Under Water Insp : **17 Nov 2016**
Under Water Insp Type : **Type II**

NBI Inspection Data

(90) Date of Last Inspection : 19 December 2012
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 7	(68) Deck Geometry : 3	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 7	(67) Structure Rating : 6	(36B) Transition Rating : 1	(61) Channel Rating : 6
(60) Substructure Rating : 6	(69) Under Clearance : N	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : 8
(72) App Rdwy Align : 7	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : 5

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 1.00 in

Inspection Hours

Crew Hours for inspection : 2
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : N
Snooper Hours for inspection : 0
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2007-000037	26 December 2006	Approved	High	M Main	334 Metal Rail Coated	Repl Paint	
Clean and paint the rail and posts.							
Approved. DRC							
D31-FY2013-000018	20 December 2012	Not Approved	Medium	M Main	210 R/Conc Pier Wall	Min Repair	
Remove the drift at the nose of Pier 3.							

Late Reason:
Inspection Date: 12/19/2012

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Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 22 - P Conc Deck/Rigid Ov Silica Fume Concrete oOverlay in 2010										
	1	3	1441	sq.m.	X	100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Some minor studded tire wear in the wheel paths. Some reflective cracking.										UZGZ
12/27/2010 - 9.75 * 147.83 = 1441.34 Deck had 1" milled off and then placed 2" of silica fume concrete in 2010. Deck looks Good today. Some cracking near Abutment 1 that were sealed during construction.										ZIDZ
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	739	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Good condition.										UZGZ
12/27/2010 - Good condition.										ZIDZ
12/02/2008 - Good condition. Same on the scrapes in Span 5.										DZGZ
11/02/2006 - No problems observed. A couple of the girders in Span 5 have scrapes on their bottoms from overheight equipment.										CZDP
10/18/2002 - 5 * 147.83 = 739.15m										VCKA
Inspection Notes:										
Element 210 - R/Conc Pier Wall Piers 2 thru 5										
	1	3	42	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Small spalls behind the ice breakers. Pier 4 has a small delaminated area in the underwater inspection; photo. Tight cracks in the Pierwalls.										UZGZ
12/27/2010 - Unchanged from previous inspections.										ZIDZ
The 11/15/2011 underwater inspection by Infrastructure Engineers shows that this element is in the same condition with the same minor defects noted in the 2006 inspection. CRH										
12/02/2008 - Condition State 3 for shallow surface delaminations and Condition State 2 for minor spalls and cracking. Wear at the waterline.										DZGZ
11/02/2006 - Minor wear/scaling of the concrete at the waterline and behind the ice breakers. Some areas of tight mapping cracks in the Pier walls sides. Patched areas appear to be holding up well, but some delamination also noted. Ice breakers overcoat painted in 2006. Per Infrastructure Engineers August 22, 2006 underwater inspection, the substructure units are in good condition. There are no significant structural defects below the high waterline. Pier 3 and 4 have light concrete scale up to 1/32" deep and light algae growth.										CZDP
10/18/2002 - 4 * 10.14 = 40.56m Same as previous reports.										VCKA
04/13/1998 - Snooper Inspection of 5-29-2001: Some of the repaired areas are ok, some are questionable in their attachment to the existing concrete. Some wear and minor deterioration at the water line. Some drift at the nose of the pier shafts.										RHGN
02/01/1994 - None										REFI
Inspection Notes:										

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Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 6										
	1	1	27	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Small spalls by some of the girder embedments and along the cap to backwall area.										UZGZ
12/27/2010 - Small spalls near girder embedments. Abutment 1 has some plywood on the chamfered area from past construction.										ZIDZ
12/02/2008 - Some tight cracks in both backwalls and small spalls near the girder embedments.										DZGZ
11/02/2006 - Both backwalls have a small spall near the bearings where the ends of the girders are embedded. Both caps have a couple of tight cracks that are not a problem.										CZDP
10/18/2002 - 10.14 * 2) (4 * 1.75) = 27.28										VCKA
Inspection Notes:										
Element 234 - R/Conc Cap Piers 2 thru 5										
	1	1	41	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Small spall on the Left end of Pier 2's cap. Some staining from past joint leakage. Some bird nests/debris on top of the caps. Small spall on the caps of Pier 3 and 5.										UZGZ
12/27/2010 - Unchanged from previous inspections. Pier 2 and 5 were cleaned off this past summer.										ZIDZ
12/02/2008 - Cap at Bent 2 has a small spall and delaminated area. Some cracks; none are a problem.										DZGZ
11/02/2006 - Stained from prior leaky joints. Some tight cracking under the girders and a couple of shallow tie wires are visible. Some delaminated patched areas also found.										CZDP
10/18/2002 - Dropped Env. State as no longer un leaky joints; YET. 4 * 10.14 = 40.56m No change from previous reports.										VCKA
Inspection Notes:										
Element 303 - Assembly Joint/Seal Pier 2 and 4 - New in 2010										
	1	3	20	m.		100	0	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Joint is packed with sanding material today. No apparent leakage. Steel is solid when tapped on.										UZGZ
12/27/2010 - Underside of deck at curbs shows poor workmanship in construction patches.										ZIDZ
12/02/2008 - Steel sounds solid when tapped on. Small spalls along the joint edge. Full of sanding material. No leaking observed.										DZGZ
11/02/2006 - Joint gland is full of sanding material. No apparent leaking. Joint steel sounds solid when tapped on. Some spalling and delamination concrete along the joint steel.										CZDP
10/18/2002 - 2 * 10.14 = 20.28m Mostly full of sanding material.										VCKA
Inspection Notes:										

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Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing										
	1	1	25	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Alignment is Good. Paint loss, spot rust, and bird debris.										UZGZ
12/27/2010 - Spot rust, paint loss, and bird debris.										ZIDZ
12/02/2008 - Spot rust and bird debris.										DZGZ
11/02/2006 - Blown off and overcoat painted in 2006.										CZDP
10/18/2002 - Moved to Env. State 2 as no longer under a leaky joint; YET. Rest is the same as the last several reports.										VCKA
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	25	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Paint loss, spot rust, and birde debris.										UZGZ
12/27/2010 - Spot rust, paint loss, and bird debris.										ZIDZ
12/02/2008 - Spot rust and bird debris.										DZGZ
11/02/2006 - Blown off and overcoat painted in 2006.										CZDP
10/18/2002 - Dropped Env. State as no lnger under a leaky joint; YET. Rest is the same as previous reports.										VCKA
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	296	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Patch on the Right barrier at Abutment 6 looks Good and is holding up well. Some random shrinkage cracks. Spalls at the W-Beam to barrier connection.										UZGZ
12/27/2010 - Unchanged from previous inspections.										ZIDZ
12/02/2008 - Same as past inspections on the tight cracks. Ends have been updated since the past inspections for new guardrail. Both curbs look Good with small surface spall near the declline.										DZGZ
11/02/2006 - Minor dings and scrapes. Random vertical cracking on both sides with the backside at some of the rebar locations.										CZDP
10/18/2002 - 147.83 * 2 = 295.66m Some dings and scrapes with some vertical shrinkage cracks throughout.										VCKA
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00015279+09762
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 334 - Metal Rail Coated Steel Posts w\ Round Top Rail behind the Concrete Rail										
	1	3	296	m.		90	10	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Rusty spots, paint loss, and some scale on the posts and top pipe rail.										UZGZ
12/27/2010 - Rusty spots, paint loss, and some minor surface pitting on the rail posts and top pipe. W-Beam removed in 2010.										ZIDZ
12/02/2008 - Rusty spots, peeling paint, fading paint, and minor surface pitting.										DZGZ
11/02/2006 - Rusty, pitted, paint loss, faded paint, and prime coat visible on the rail posts and top pipe rail. W-Beam has rusty spots.										CZDP
10/18/2002 - 147.83 * 2 = 295.66m More rust, pitting, and paint loss.										VCKA
04/13/1998 - Snooper inspection of 5-29-2001: in the 2nd from the last span, the 5th post on the right, back from the pier has spalled concrete at it's attachment point to the deck. It is behind barrier rail now.										RHGN
02/01/1994 - None										REFI
Inspection Notes:										
Element 358 - Deck Cracking SmFlag										
X	1	3	1	ea.	X	100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Some reflective cracking throughout the overlay in all the Spans.										UZGZ
12/27/2010 - Milled off 1" and overlayed with 2" of silica fume concrete in 2010.										ZIDZ
12/02/2008 - Due to density and size of the cracks; especially in the areas where the delaminations are starting to spall.										DZGZ
Inspection Notes:										

I00015280+00941

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00015**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **SEP 5TH AVE SW**

Kilometer Post, Mile Post : **450.76 km 280.09**

Structure on the State Highway System : Latitude : **47°30'04"**

Structure on the National Highway System : Longitude : **111°20'34"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IG 15-5(27)274**

Construction Station Number : **595+55.00**

Construction Drawing Number : **7092**

Construction Year : **1967**

Reconstruction Year :

Traffic Data

Current ADT : **9,150** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	36.2 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	83.84		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **38.10 m**
 Deck Area : **455.00 m sq**
 Deck Roadway Width : **11.35 m**
 Approach Roadway Width : **11.89 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **H Hwy beneath struct**
 Vertical Clearance Under the Structure : **4.60 m**
 Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
 Minimum Lateral Under Clearance Right : **3.66 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **3**
 Material Type Code, Description : **5 Prestressed concrete**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **3 Latex Concrete or similar additive**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under 5TH AVE. SW	L07544	Both	4.60 m	10.36 m	N/A		
Route On Structure I - 15 NB	I00015	N/A			North	99.99 m	11.35 m

I00015280+00941
Continue

Inspection Data

Sufficiency Rating : **96.6**
Structure Status : **Not Deficient**

Inspection Due Date : **15 October 2014**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 15 October 2012
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 7	(68) Deck Geometry : 5	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 7	(67) Structure Rating : 7	(36B) Transition Rating : 1	(61) Channel Rating : N
(60) Substructure Rating : 7	(69) Under Clearance : 6	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : N
(72) App Rdwy Align : 8	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : N

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 1.00 in

Inspection Hours

Crew Hours for inspection : 2
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : N
Snooper Hours for inspection : 0
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2004-000064	28 January 2004	Approved	Medium	All Spans	Bridge	Spot Paint (flex)	
Clean around bearings and repaint.							
Approved. DRC							

Late Reason:
Inspection Date: 10/15/2012

I00015280+00941
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 22 - P Conc Deck/Rigid Ov										
	1	3	455	sq.m.	X	100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Minor wear in the wheel paths. Tight transverse cracks over both Bent 2 and 3. Random cracking in Span 1.										QZHZ
10/18/2010 - 11.95 * 38.10 = 455.30 1" milled off, A and B repairs done, and 2" overlay then placed. Good condition today.										SODZ
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	191	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Unchanged from past inspections and generally in Good condition.										QZHZ
10/18/2010 - Generally Good condition. Minor rubs from overheight loads and some minor cracking on ends of the girders noted at Bents 2 and 3.										SODZ
10/15/2008 - Good condition. Some minor rubs and scrapes from overheight loads.										QZGZ
10/24/2006 - Good condition. Minor cracks from backside of the embedded bearing plate to the ends of several of the girders.										ZZGZ
10/08/2002 - 38.10 * 5 = 190.5m										IZDK
Inspection Notes:										
Element 205 - R/Conc Column Bent 2 and 3										
	1	1	4	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - All (4) are generally in Good condition with a small spall on the Right column of Bent 3.										QZHZ
10/18/2010 - Good condition. Minor and tight surface shrinkage cracks.										SODZ
10/15/2008 - Generally Good condition. Some tight surface shrinkage cracks.										QZGZ
10/24/2006 - Tight surface shrinkage cracks.										ZZGZ
10/08/2002 - ok										IZDK
Inspection Notes:										

I00015280+00941
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 4										
	1	2	30	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Tight cracks in both of the backwalls and caps. Small spalls on the cap to backwall connection area and a couple of the embedded bearings.										QZHZ
10/18/2010 - Minor and tight cracks in both backwalls. Small spalls near a couple of the girder embedded bearings.										SODZ
10/15/2008 - Small spall near the bearings in the backwalls. Tight cracks in both of the backwalls and caps.										QZGZ
10/24/2006 - Damp at the backwall to cap joint and around the bearings. A couple of small spalls where the girders are embedded in the backwalls.										ZZGZ
10/08/2002 - (11.95 1.50 1.50) * 2 = 29.90m Minor, tight cracks in backwalls. Env. State 2 due to wet soil in median near the bridge ends.										IZDK
04/13/1998 - None										RHGR
02/01/1994 - None										REFI
Inspection Notes:										
Element 234 - R/Conc Cap Bent 2 and 3										
	1	1	24	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Small delaminations on the Right ends of both of the Bent caps. Minor surface spalls on the underside of both caps from rebar chair feet. Stains from past joint leakage.										QZHZ
10/18/2010 - Same comments as past inspections. Small delamination on Right ends of Bent 2 and 3's caps. Very minor surface distress in these areas.										SODZ
10/15/2008 - Left end of the cap at Bent 2 has a small delaminated area, 6" x 14"; Condition State 3. Tight cracks at the steps. Small surface spall on the underside of the caps from exposed rebar chair feet.										QZGZ
10/24/2006 - Minor surface spalls on the underside of the caps from exposed/rusty rebar chairs.										ZZGZ
10/08/2002 - 11.95 * 2 = 23.90m Minor stains from exposed rebar chairs. Underside of left end of cap at Bent 3 has minor popouts along rebar chairs.										IZDK
Inspection Notes:										
Element 313 - Fixed Bearing Bent 2 and 3										
	1	1	20	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Spot rust, paint loss, and some debris.										QZHZ
10/18/2010 - Spot rust and paint loss.										SODZ
10/15/2008 - Spot rust and paint loss.										QZGZ
10/24/2006 - Spot rust throughout. Bents 2 and 3's have pigeon debris around them.										ZZGZ
10/08/2002 - Rusty spots throughout.										IZDK
Inspection Notes:										

I00015280+00942

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00015**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **SEP 5TH AVE SW**

Kilometer Post, Mile Post : **450.76 km 280.09**

Structure on the State Highway System : Latitude : **47°30'04"**

Structure on the National Highway System : Longitude : **111°20'35"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IG 15-5(27)274**

Construction Station Number : **595+55.00**

Construction Drawing Number : **7092**

Construction Year : **1967**

Reconstruction Year :

Traffic Data

Current ADT : **9,150** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	34.4 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	83.84		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **38.10 m**
 Deck Area : **455.00 m sq**
 Deck Roadway Width : **11.35 m**
 Approach Roadway Width : **11.89 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **H Hwy beneath struct**
 Vertical Clearance Under the Structure : **4.57 m**
 Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
 Minimum Lateral Under Clearance Right : **3.66 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **3**
 Material Type Code, Description : **5 Prestressed concrete**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **3 Latex Concrete or similar additive**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	L07544	Both	4.57 m	10.36 m	N/A		
5TH AVE. SW							
Route On Structure	I00015	South	99.99 m	11.35 m	N/A		
I - 15 SB							

I00015280+00942
Continue

Inspection Data

Sufficiency Rating : **96.6**
Structure Status : **Not Deficient**

Inspection Due Date : **15 October 2014**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 15 October 2012
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 7	(68) Deck Geometry : 5	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 7	(67) Structure Rating : 7	(36B) Transition Rating : 1	(61) Channel Rating : N
(60) Substructure Rating : 7	(69) Under Clearance : 6	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : N
(72) App Rdwy Align : 8	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : N

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 1.00 in

Inspection Hours

Crew Hours for inspection : 2
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : **N**
Snooper Hours for inspection : 0
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2004-000065	28 January 2004	Approved	Medium	All Spans	Bridge	Spot Paint (flex)	
Clean around bearings and repaint.							
Approved. DRC							

Late Reason:
Inspection Date: 10/15/2012

I00015280+00942
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 22 - P Conc Deck/Rigid Ov										
	1	3	455	sq.m.	X	100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Minor wear in the hwheel paths. Random cracking on the Left side of the deck near Abutment 4 in Span 3.										QZHZ
10/18/2010 - 11.95 * 38.10 = 455.30 Milled off 1", Class A and B repair, and then placed a 2" Silica Fume Concrete overlay in 2010. Good condition today.										SZDZ
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	191	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Unchanged from past inspections and in Good condition.										QZHZ
10/18/2010 - Gernally Good condition. Minor scrapes and rubs from overheight loads on the bottom of the girders. Tight cracks on the ends of the girders at Bent 2 and 3.										SZDZ
10/15/2008 - Generally in Good condition. Minor scrapes to the Left two girders from overheight loads.										QZGZ
10/24/2006 - Minor scrape to the Left girder in Span 2 from overheight load. Several of the girders have minor cracks from the backside of the embedded bearing plate to the ends of the girders.										ZCGZ
10/08/2002 - 38.10 * 5 = 190.5m										ISDL
Inspection Notes:										
Element 205 - R/Conc Column Bent 2 and 3										
	1	1	4	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - All are generally in Good condition with small spalls on (2) columns from construction activity.										QZHZ
10/18/2010 - Good condition.										SZDZ
10/15/2008 - Good condition. Small scrape on the Left column of Bent 2.										QZGZ
10/24/2006 - No major probelms noted with minor and tight surface shrinkage cracks.										ZCGZ
10/08/2002 - Minor, tight shrinkage cracks.										ISDL
Inspection Notes:										

I00015280+00942
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 4										
	1	2	30	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Tight cracks in both of the backwalls and caps. Small spalls near the cap to backwall connections and at a couple of the embedded bearings.										QZHZ
10/18/2010 - Generally Good condition. Tight cracks in both backwalls.										SZDZ
10/15/2008 - Same as prior inspection and add some tight cracks in both caps and backwalls of the Abutments.										QZGZ
10/24/2006 - Minor seepage at the bearings and along the cap to backwall joint. A couple of small spalls where the girders are embedded in the backwalls.										ZCGZ
10/08/2002 - (11.95 1.50 1.50) * 2 = 29.90m Env. State 2 as some moisture coming from between the backwall to cap connection on this date and wet soil in median area.										ISDL
03/13/1998 - None										RHGT
02/01/1994 - None										REFI
Inspection Notes:										
Element 234 - R/Conc Cap Bent 2 and 3										
	1	1	24	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Minor surface spalls on the underside of both caps from rebar chair feet. Right end of Bent 3's cap has a small surface delamination and both caps show tight cracking on their ends. Spall with exposed rebar on the Left end of Bent 2's cap.										QZHZ
10/18/2010 - Minor surface spalls on the underside of both caps. Spall with exposed rebar ends on the Left end of Bent 2's cap.										SZDZ
10/15/2008 - Surface spalls on the underside of both caps. Tight cracks on the ends of both caps.										QZGZ
10/24/2006 - Minor and small surface spalls where rebar chairs are exposed on the underside of the caps. Staining from leakage in the past.										ZCGZ
10/08/2002 - 2 * 11.95 = 23.90m Minor staining from areas where the rebar chairs are exposed.										ISDL
Inspection Notes:										
Element 313 - Fixed Bearing Bent 2 and 3										
	1	1	20	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
10/15/2012 - Spot rust, paint loss, and some debris.										QZHZ
10/18/2010 - Spot rust and paint loss.										SZDZ
10/15/2008 - Spot rust and paint loss.										QZGZ
10/24/2006 - Spot rust on the bearings. Pigeon debris on the bearings at Bents 2 and 3.										ZCGZ
10/08/2002 - Rusty spots throughout.										ISDL
Inspection Notes:										

I00015282+05471

Location : 1M N GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00015**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **INT EMERSON, BNSF RR**

Kilometer Post, Mile Post : **454.70 km 282.54**

Structure on the State Highway System : Latitude : **47°31'17"**

Structure on the National Highway System : Longitude : **111°22'45"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IG 15-5(27)274**

Construction Station Number : **724+45.00**

Construction Drawing Number : **7104**

Construction Year : **1967**

Reconstruction Year :

Traffic Data

Current ADT : **9,280** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	34.4 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	63.18		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **107.90 m**
 Deck Area : **1,052.00 m sq**
 Deck Roadway Width : **8.55 m**
 Approach Roadway Width : **11.58 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **H Hwy beneath struct**
 Vertical Clearance Under the Structure : **6.76 m**
 Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
 Minimum Lateral Under Clearance Right : **2.75 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **6**
 Material Type Code, Description : **5 Prestressed concrete**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **3 Latex Concrete or similar additive**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	N00123	Both	6.76 m	9.14 m	N/A		
VAUGHN ROAD							
Route On Structure	I00015	N/A			North	99.99 m	8.55 m
I-15 NB / EMERSON JCT							

I00015282+05471
Continue

Inspection Data

Sufficiency Rating : **76.4**
Structure Status : **Func Obs - Elg Rehab**

Inspection Due Date : **19 December 2014**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 19 December 2012
(90) Inspection Date :
Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : <input type="text" value="6"/>	(68) Deck Geometry : <input type="text" value="3"/>	(36A) Bridge Rail Rating : <input type="text" value="1"/>	(62) Culvert Rating : <input type="text" value="N"/>
(59) Superstructure Rating : <input type="text" value="7"/>	(67) Structure Rating : <input type="text" value="7"/>	(36B) Transition Rating : <input type="text" value="1"/>	(61) Channel Rating : <input type="text" value="N"/>
(60) Substructure Rating : <input type="text" value="7"/>	(69) Under Clearance : <input type="text" value="4"/>	(36C) Approach Rail Rating : <input type="text" value="1"/>	(71) Waterway Adequacy : <input type="text" value="N"/>
(72) App Rdwy Align : <input type="text" value="7"/>	(41) Posting Status : <input type="text" value="A"/>	(36D) End Rail Rating : <input type="text" value="1"/>	(113) Scour Critical : <input type="text" value="N"/>

Unrepaired Spalls : Deck Surfacing Depth :

Inspection Hours

Crew Hours for inspection : <input type="text" value="2"/>	Snooper Required : <input type="text" value="N"/>
Helper Hours : <input type="text" value="0"/>	Snooper Hours for inspection : <input type="text" value="0"/>
Special Crew Hours : <input type="text" value="0"/>	Flagger Hours : <input type="text" value="0"/>
Special Equipment Hours : <input type="text" value="0"/>	

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2007-000030	27 November 2006	Approved	Medium	M Main	Bridge	Spot Paint (flex)	
Clean and spot paint bearings.							
Approved. DRC							
D31-FY2007-000029	27 November 2006	Approved	High	M Main	300 Strip Seal Exp Joint	Min Repair	
Clean sanding material from joints.							
Approved. DRC							
D31-FY2011-000025	11 January 2011	Not Approved	Low	M Main	334 Metal Rail Coated	Repl Paint	
Clean and spot paint rail.							

Late Reason:
Inspection Date: 12/19/2012

I00015282+05471
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	1052	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Wider and open cracks over the un-jointed Bents. Random and mapping cracks in all of the Spans. Small surface spalls and delaminations along the edges of the joint steel.										UZGZ
12/27/2010 - Small surface spalls and delaminations along joint steel. Wear in the wheel paths and mapping cracks in all Spans. Wider transverse cracks over Bent that are without joints.										ZZDZ
11/19/2008 - Placed into Condition State 2 as a couple of small delaminations were observed with chain drag near the joints/guard angles. Wear in the wheel paths. Wider transverse cracks over the unjointed Bents. Some mapping cracks also.										TZDT
11/02/2006 - Open transverse cracks over the Bents without joints. Minor wear in the wheel paths. Some very minor flaking of latex concrete paste at the joint steel, but none delaminated or spalling.										CODN
10/07/2002 - 107.90 * 9.75 = 1052.03 Deck was hydromilled and the removed material was replaced with latex concrete. The deck has some transverse cracks over the Bents that do not have expansion joints.										IZHP
04/14/1998 - None										RHHP
02/01/1994 - None										REFI
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	519	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - No problems observed.										UZGZ
12/27/2010 - Good condition.										ZZDZ
11/19/2008 - Generally Good condition.										TZDT
11/02/2006 - Minor tight cracks from the backside of the embedded bearing plate to the ends of the girders on several of the girders; none are a problem.										CODN
10/07/2002 - (6 * 19.8) (4 * 40.8) (5 * 47.3) = 518.5m Minor cracking of the concrete near the beam seat on a couple of girders; not a problem.										IZHP
Inspection Notes:										
Element 205 - R/Conc Column 2 thru 6										
	1	1	10	ea.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Small surface delaminations near the ground on the construction joints. Shallow surface spalls on a couple of the columns. Generally in Good condition.										UZGZ
12/27/2010 - Some small delaminated sack patches at construction joints near groundline on a couple of the columns. Small surface spalls along shallow tie wire.										ZZDZ
11/19/2008 - Condition State 2 due to shallow tie wire and surface spalls. Condition State 3 for delaminations that have not popped off. Some cracks and small delaminations on the webwalls.										TZDT
11/02/2006 - Tight surface shrinkage cracks. Some areas where shallow tie wire is on the surface. Wire is rusty and causing small surface spalls.										CODN
10/07/2002 - Minor, tight random cracks on several coulmns.										IZHP
Inspection Notes:										

I00015282+05471
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 7										
	1	1	29	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Good condition. Small spalls along the cap to backwall area. Erosion at the corners of the wingwalls. Some missing fill under Abutment 1's cap. Tight surface shrinkage cracks.										UZGZ
12/27/2010 - Small spalls along a couple of the embedded bearings. Minor and tight cracks under G2 and G3 in Abutment 1's cap.										ZZDZ
11/19/2008 - Same as last comments.										TZDT
11/02/2006 - Both caps have minor and tight cracks. A couple of small spalls where girders ends are embedded in the backwall.										CODN
10/07/2002 - (11.48 1.40 1.40) * 2 = 28.56m Minor cracking in Abutment backwalls. Minor erosion at wingwalls.										IZHP
Inspection Notes:										
Element 234 - R/Conc Cap Bents 2 thru 6										
	1	1	57	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Bent 4's cap has a small delamination under G4 on the Span 3 side. Shallow surface spalls and delaminations on the underside of the caps from rebar chair feet.										UZGZ
12/27/2010 - Small delamination under G4 on the Span 3 face of Bent 4's cap. Mostly in Good condtion. Some staining. Shallow surface spalls on under of caps from rebar chair feet.										ZZDZ
11/19/2008 - Condition State 3 for surface delaminations and Condition State 2 for cracks and small surface spalls. Staining form past joint leakage.										TZDT
11/02/2006 - Most all of the undersides of the Bent caps have small surface spalls with rust staining from shallow rebar chairs.										CODN
10/07/2002 - 5 * 11.48 = 57.40m Bottom side of cap at Bent 3-Right has some minor spalling concrete around exposed rebar chairs.										IZHP
Inspection Notes:										
Element 300 - Strip Seal Exp Joint										
	1	3	23	m.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Lots of sanding material is packed into the gland area. No obvious leaking. Steel portions sound solid when tapped on. Small surface spalls and paste delaminations along the joint steel.										UZGZ
12/27/2010 - Steel sounds solid when tapped on. Small surface spalls and delaminations along edges of the steel. Both joints are full of sanding material. No leakage observed.										ZZDZ
11/19/2008 - Steel sounds solid when tapped on. Small spalls and delamianations along the joint edges. Gland is pushed down from debris, but no tears or leakage was observed.										TZDT
11/02/2006 - Joint steel is solid when tapped on. Joints are full of debris/sanding material which is pushing on the gland. No apparent leaking observed.										CODN
10/07/2002 - 11.48 * 2 = 22.96m Joints are filled with sanding material/debris. Gland is in Good condition with no tears or leaking evident.										IZHP
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00015282+05471
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing										
	1	1	25	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Spot rust, scale, faded paint, and some paste from the hydo-demolition. Alignment is ok.										UZGZ
12/27/2010 - Spot rust, paint loss, and some scale.										ZZDZ
11/19/2008 - Spots of rust, paint loss, and some concrete paste from past hydromilling.										TZDT
11/02/2006 - Rusty spots, paint loss, and fading of the paint system.										CODN
10/07/2002 - Rusty spots with some pitting.										IZHP
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	29	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Spot rust, paint loss, and faded paint.										UZGZ
12/27/2010 - Spot rust and paint loss.										ZZDZ
11/19/2008 - Spots of rust, paint loss, and some concrete paste from past hydromilling.										TZDT
11/02/2006 - Minor spot rust.										CODN
10/07/2002 - Minor rusty spots with pitting.										IZHP
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	216	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Random shrinkage cracks. Minor surface spalls near the deck line. Spalls on the backside of the W-Beam bolt-up.										UZGZ
12/27/2010 - Unchanged from past inspections.										ZZDZ
11/19/2008 - Same comments as the past inspections and add some surfce spalls of the original curb near the deck line.										TZDT
11/02/2006 - Minor cracks along the rebar lines in a couple of the areas. Some minor and random vertical cracking.										CODN
10/07/2002 - 107.9 * 2 = 215.80m Minor, vertical cracks throughout. During a rehab project a barrier rail was biult on top of the curb.										IZHP
Inspection Notes:										

I00015282+05471
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 334 - Metal Rail Coated Single W-Beam and Steel Round Handrail w\ Steel Posts										
	1	3	216	m.		85	10	5	0	0
						%	%	%	%	%

Previous Inspection Notes :

12/19/2012 - Rusty spots, paint loss, fading of the paint, and minor surface pitting to the posts near the curb line. UZGZ

12/27/2010 - Rusty spots, paint loss, and scale on the W-Beam and posts. Some sanding material starting to build up on top of the curb against the rail posts. ZZDZ

11/19/2008 - No change. TZDT

11/02/2006 - W-beam, steel posts, and handrail are rusted and pitted. Some paint is peeling also. All componenets are behind the concrete rail. CODN

10/07/2002 - 107.90 * 2 = 215.80m Rusty and pitting throughout the rail and posts. The metal rail is behind the concrete barrier now. IZHP

Inspection Notes:

Element 358 - Deck Cracking SmFlag										
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%

Previous Inspection Notes :

12/19/2012 - Unchanged from past inspections. UZGZ

12/27/2010 - Wide and open cracks over the Bents that don't have joints. Some wider mapping cracks in all Spans. ZZDZ

11/19/2008 - Open cracks over the unjointed Bents and need to start tracking it. TZDT

Inspection Notes:

General Inspection Notes

12/19/2012 - Fair markers at the Abutment 1 corners. UZGZ

12/27/2010 - Fair markers on the Right and Left side of Abutment 1. ZZDZ

Erosion on all (4) corners with the NE corner being the worse.

11/19/2008 - NBI 58, deck, rated a "6" due to small delaminations and cracking in the deck surface. TZDT

Markers on the Right and Left sides of Abutment 1 and in Fair condition.

11/02/2006 - Minor bumps on and off of the structure. Markers on the approach end of the bridge and in Fair condition. CODN

10/07/2002 - Markers on both side of the approach of the bridge and in Good condition. IZHP

04/14/1998 - None RHHP

02/01/1994 - Sufficiency Rating Calculation Accepted by ops\$u5963 at 3/11/97 10:44:29 REFI

Sufficiency Rating Calculation Accepted by ops\$u9004 at 2/19/97 14:15:06

01/01/1992 - Updated with tape 1994 NB94

03/01/1990 - Updated with tape 1991 NB91

02/01/1988 - Updated with tape 1989 NB89

02/01/1986 - Updated with tape 1988 NB88

01/01/1984 - Updated with tape 1985 NB85

08/01/1981 - Updated with tape 1984 NB84

03/01/1979 - Updated with tape 1980 NB80

I00015282+05472

Location : 1M N GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00015**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **INT EMERSON, BNSF RR**

Kilometer Post, Mile Post : **454.70 km 282.54**

Structure on the State Highway System : Latitude : **47°31'17"**

Structure on the National Highway System : Longitude : **111°22'47"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IG 15-5(27)274**

Construction Station Number : **724+45.00**

Construction Drawing Number : **7104**

Construction Year : **1967**

Reconstruction Year :

Traffic Data

Current ADT : **9,280** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	34.4 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	63.18		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **109.42 m**
 Deck Area : **1,067.00 m sq**
 Deck Roadway Width : **8.55 m**
 Approach Roadway Width : **11.58 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **H Hwy beneath struct**
 Vertical Clearance Under the Structure : **6.76 m**
 Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
 Minimum Lateral Under Clearance Right : **2.75 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

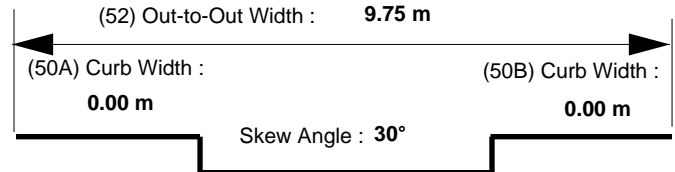
Main Span

Number Spans : **6**
 Material Type Code, Description : **5 Prestressed concrete**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **3 Latex Concrete or similar additive**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	N00123	Both	6.76 m	9.14 m	N/A		
VAUGHN ROAD							
Route On Structure	I00015	South	99.99 m	8.55 m	N/A		
I-15 SB / EMERSON JCT							

I00015282+05472
Continue

Inspection Data

Sufficiency Rating : **76.4**
Structure Status : **Func Obs - Elg Rehab**

Inspection Due Date : **19 December 2014**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 19 December 2012
(90) Inspection Date :
Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : <input type="text" value="6"/>	(68) Deck Geometry : <input type="text" value="3"/>	(36A) Bridge Rail Rating : <input type="text" value="1"/>	(62) Culvert Rating : <input type="text" value="N"/>
(59) Superstructure Rating : <input type="text" value="7"/>	(67) Structure Rating : <input type="text" value="7"/>	(36B) Transition Rating : <input type="text" value="1"/>	(61) Channel Rating : <input type="text" value="N"/>
(60) Substructure Rating : <input type="text" value="7"/>	(69) Under Clearance : <input type="text" value="4"/>	(36C) Approach Rail Rating : <input type="text" value="1"/>	(71) Waterway Adequacy : <input type="text" value="N"/>
(72) App Rdwy Align : <input type="text" value="7"/>	(41) Posting Status : <input type="text" value="A"/>	(36D) End Rail Rating : <input type="text" value="1"/>	(113) Scour Critical : <input type="text" value="N"/>

Unrepaired Spalls : Deck Surfacing Depth :

Inspection Hours

Crew Hours for inspection : <input type="text" value="2"/>	Snooper Required : <input type="text" value="N"/>
Helper Hours : <input type="text" value="0"/>	Snooper Hours for inspection : <input type="text" value="0"/>
Special Crew Hours : <input type="text" value="0"/>	Flagger Hours : <input type="text" value="0"/>
Special Equipment Hours : <input type="text" value="0"/>	

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2007-000032	27 November 2006	Approved	Medium	M Main	Bridge	Spot Paint (flex)	
Paint the rail. Approved. DRC							
D31-FY2007-000031	27 November 2006	Approved	Medium	M Main	300 Strip Seal Exp Joint	Min Repair	
Clean debris/sanding material from the joints. 11-19-2008 Full. Approved. DRC							
D31-FY2011-000026	11 January 2011	Not Approved	Low	M Main	Bridge	Spot Paint (flex)	
Paint the bearings.							

Late Reason:
Inspection Date: 12/19/2012

I00015282+05472
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	1067	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Open cracks over the un-jointed Bents. Minor studded tire wear in the wheel paths. Small surface spalls and delaminations along the edges of the joint's steel. Random and mapping cracks in all of the Spans.										UIGZ
12/27/2010 - A couple of small surface delaminations along the joint steel. Minor wear in the wheel paths. Open cracks over the Bents without a joint. Wider mapping cracks in all Spans.										ZWDZ
11/19/2008 - A couple of small delaminations near the joints. Wear in the wheel paths. Wide transverse cracks over the unjointed Bents. Mapping cracks in most of the Spans.										TEDU
11/02/2006 - Transverse cracks over the Bents without joints. Wear in the wheel paths. Minor scale/flaking of latex paste at the joint steel, but no delaminations or spalling observed.										CXDN
10/07/2002 - 109.42 * 9.76 = 1066.85 Deck was hydromilled and the removed material was replaced with latex concrete. The deck has transverse cracks over all the Bents that don't have expansion joints.										IZHQ
04/14/1998 - None										RHHJ
02/01/1994 - None										REFI
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	526	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Good condition.										UIGZ
12/27/2010 - Good condition.										ZWDZ
11/19/2008 - No problems observed.										TEDU
11/02/2006 - Girders are in Good condition. Some minor cracks from the backside of the embedded bearing plate to the ends of the several of the girders; not a problem.										CXDN
10/07/2002 - (4 * 40.8) (6 * 19.8) (5 * 48.8) = 526.0m Some girders have minor cracks near beam seats.										IZHQ
Inspection Notes:										
Element 205 - R/Conc Column 2 thru 6										
	1	1	10	ea.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Small areas of surface delaminations near the groundline at the cold joints. Right column of Bent 5 has a small spalled area.										UIGZ
12/27/2010 - Small delaminations to sack patches at construction joint near groundline with the Left column of Bent 4 being the worse. Some small scrapes and surface spalls on the web ties from construction.										ZWDZ
11/19/2008 - Condition State 3 for small delamiantions observed in the Left column at Bent 4. Some small scrapes/spalls from construction activities and the webwalls for Bents 3 and 4 show some cracks and delaminations.										TEDU
11/02/2006 - Tight surface shrinkage cracks. Several small areas where tie wire is exposed and rusting. Some small surface spalling along the exposed tie wire.										CXDN
10/07/2002 - Minor, tight cracks on several columns.										IZHQ
Inspection Notes:										

I00015282+05472
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 7										
	1	1	29	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Small spalls along the cap to backwall area. Tight vertical crack under G2 at Abutment 1 and under G2 and G3 at Abutment 7. Erosion at all (4) wingwalls.										UIGZ
12/27/2010 - Small spalls near a couple of the girders in the backwalls. Vertical crack under G2 at Abutment 1 and G2 and G3 at Abutment 7 in their caps.										ZWDZ
11/19/2008 - Unchanged from past inspections.										TEDU
11/02/2006 - Tight vertical cracks in both caps with Abutment 1's being the worse. A couple of small spalls along the ends of the girders where they are embedded in the backwalls.										CXDN
10/07/2002 - (11.48 1.40 1.40) * 2 = 28.56m Minor, vertical cracks under girders at Abutment 1. Erosion at all (4) wingwalls.										IZHQ
Inspection Notes:										
Element 234 - R/Conc Cap 2 thru 6										
	1	1	57	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Small surface spalls on the faces of (3) caps near the outer anchors. Small delaminations on Span 4 face of Bent 4 under G5. Small surface spalls and delaminations on the underside of the caps from rebar chair feet.										UIGZ
12/27/2010 - Unchanged for small delamination under G5 on Span 4 side of Bent 4's cap. Several small surface spalls on the cap faces near outer most anchors. Some shallow surface spalls on underside of the caps.										ZWDZ
11/19/2008 - Condition State 3 for small surface delaminations and Condition State 2 for cracks and minor spalling. Small spall on Bent 4's cap under G5 on the Span 4 side.										TEDU
11/02/2006 - Underside of the caps show surface spalling from exposed and rusty rebar chairs. Also some staining around the chairs.										CXDN
10/07/2002 - 5 * 11.48 = 57.40m Minor stains where construction rebar chairs are exposed. Minor, tight cracks on most caps.										IZHQ
Inspection Notes:										
Element 300 - Strip Seal Exp Joint										
	1	3	23	m.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Joints are packed full of sanding material today. No apparent leakage. Steel portions sound solid when tapped on and there are small spalls/delaminations along the edges of the joint's steel.										UIGZ
12/27/2010 - Full of sanding material today. Steel portions of the joints sound solid when tapped but do have some shallow spalls and surface delaminations along their edges.										ZWDZ
11/19/2008 - Steel sounds solid when tapped on. A couple of small spalls and delaminations along the steel edges. Gland is pushed down from debris with no obvious tears or leakage.										TEDU
11/02/2006 - Joint steel sounds solid when tapped on. Joint area is full of debris/sanding material which is pushing down on the gland. No leaking was noted.										CXDN
10/07/2002 - 11.48 * 2 = 22.96m Joints are full of sanding material. Gland doesn't appear to be torn anyplace and not leaking.										IZHQ
Inspection Notes:										

I00015282+05472
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing										
	1	1	25	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Spot rust, concrete paste, scale, and faded paint. Alignment is ok.										UIGZ
12/27/2010 - Paint loss, spot rust, and minor scale.										ZWDZ
11/19/2008 - Spot rust, paint loss, and some concrete paste from past hydromilling operations.										TEDU
11/02/2006 - Spot rust, paint loss, and some dirt/debris.										CXDN
10/07/2002 - Minor rust spots with minor pitting.										IZHQ
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	33	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Paint loss, spot rust, and faded paint.										UIGZ
12/27/2010 - Paint loss and spot rust. Some bird debris.										ZWDZ
11/19/2008 - Spot rust, paint loss, and some concrete paste from past hydromilling operations.										TEDU
11/02/2006 - Spot rust, paint loss, and some debris.										CXDN
10/07/2002 - Minor rust spots and minor pitting.										IZHQ
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	219	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/19/2012 - Random surface shrinkage cracks. Spalls on the backside of the barriers at the rail bolt-ups. Small surface spalls and deterioration along the deck line.										UIGZ
12/27/2010 - Vertical cracking throughout. A couple of small scrapes.										ZWDZ
11/19/2008 - Unchanged. Small areas of surface deterioration on the original curbs near the deck line.										TEDU
11/02/2006 - Minor cracks along the rebar lines on the backside. Random vertical cracks.										CXDN
10/07/2002 - 109.42 * 2 = 218.84m Minor, vertical cracks throughout. During a rehab project a barrier was added on top of the existing curbs,										IZHQ
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00015282+05472
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 334 - Metal Rail Coated Singe W-Beam with Round Steel Handrail w\ Steel Posts										
	1	3	219	m.		85	10	5	0	0
						%	%	%	%	%

Previous Inspection Notes :

12/19/2012 - Faded paint, spot rust, and paint loss. Minor surface pitting on the rail posts near the curb line. UIGZ

12/27/2010 - Paint loss, minor surface pitting, and scale on the W-Beam and posts. Sanding material starting to build up behind the barrier on the top of the curb and against the rail posts. ZWDZ

11/19/2008 - No significant change. TEDU

11/02/2006 - Rust, pitting, paint peel, and exposed prime coat on the rail posts and top handrail pipe. W-Beam has some rusty spots throughout. CXDN

10/07/2002 - 109.42 * 2 = 218.84m Rusty spots with pitting throughout rail and posts. The metal rail and posts are now behind a concrete barrier rail. IZHQ

04/14/1998 - None RHHJ

02/01/1994 - None REFI

Inspection Notes:

Element 358 - Deck Cracking SmFlag										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%

Previous Inspection Notes :

12/19/2012 - Unchanged from previous inspections. UIGZ

12/27/2010 - Wide cracks over un-jointed Bents. Some wider mapping cracks in all Spans. ZWDZ

11/19/2008 - Condition State 2 due to size of the cracks and nearing the density limit also. TEDU

Inspection Notes:

I00015284+00001

Location : 1M N EMERSON JCT Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **00000 RURAL AREA**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00015**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **DRAINAGE**

Kilometer Post, Mile Post : **457.10 km 284.03**

Structure on the State Highway System : Latitude : **47°31'54"**

Structure on the National Highway System : Longitude : **111°24'06"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **I 15-5(9)275**

Construction Station Number : **862+50.00**

Construction Drawing Number :

Construction Year : **1960**

Reconstruction Year :

Traffic Data

Current ADT : **9,280** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	B ASD Assigned
Operating Load, Design :	32.6 mton	B ASD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	48.6		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **3.86 m**
Deck Area : **0.00 m sq**
Deck Roadway Width : **0.00 m**
Approach Roadway Width : **23.16 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **N Feature not hwy or RR**
Vertical Clearance Under the Structure : **0.00 m**
Reference Feature for Lateral Underclearance : **N Feature not hwy or RR**
Minimum Lateral Under Clearance Right : **0.00 m**
Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **1**
Material Type Code, Description : **3 Steel**
Span Design Code, Description : **19 Culvert (includes frame culverts)**

Deck

Deck Structure Type : **N Not applicable**
Deck Surfacing Type : **N Not Applicable (applies only to strutures with no dec**
Deck Protection Type : **N Not applicable (applies only to structures with no de**
Deck Membrain Type : **N Not applicable (applies only to structures with no de**

Approach Span

Number of Spans : **0**
Material Type Code, Description :
Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
Route On Structure	I00015	Both	99.99 m	12.10 m	N/A		
I - 15							

I00015284+00001
Continue

Inspection Data

Sufficiency Rating : **80**
Structure Status : **Not Deficient**

Inspection Due Date : **28 April 2016**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 28 April 2014
(90) Inspection Date :
Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N		(68) Deck Geometry : <table border="1"><tr><td>9</td><td></td></tr></table>	9		(36A) Bridge Rail Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N		(62) Culvert Rating : <table border="1"><tr><td>6</td><td></td></tr></table>	6	
N											
9											
N											
6											
(59) Superstructure Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N		(67) Structure Rating : <table border="1"><tr><td>6</td><td></td></tr></table>	6		(36B) Transition Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N		(61) Channel Rating : <table border="1"><tr><td>7</td><td></td></tr></table>	7	
N											
6											
N											
7											
(60) Substructure Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N		(69) Under Clearance : <table border="1"><tr><td>N</td><td></td></tr></table>	N		(36C) Approach Rail Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N		(71) Waterway Adequacy : <table border="1"><tr><td>8</td><td></td></tr></table>	8	
N											
N											
N											
8											
(72) App Rdwy Align : <table border="1"><tr><td>8</td><td></td></tr></table>	8		(41) Posting Status : <table border="1"><tr><td>A</td><td></td></tr></table>	A		(36D) End Rail Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N		(113) Scour Critical : <table border="1"><tr><td>8</td><td></td></tr></table>	8	
8											
A											
N											
8											

Unrepaired Spalls : Deck Surfacing Depth :

Inspection Hours

Crew Hours for inspection : <input type="text" value="1"/>	Snooper Required : <input type="checkbox"/>
Helper Hours : <input type="text" value="0"/>	Snooper Hours for inspection : <input type="text" value="0"/>
Special Crew Hours : <input type="text" value="0"/>	Flagger Hours : <input type="text" value="0"/>
Special Equipment Hours : <input type="text" value="0"/>	

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2006-000196	03 May 2006	Approved	High	M Main	240 Steel Culvert	Rehab Elem	
Clean debris from inlet and outlet of the pipe and back to R/W. Also complete the outlet drainage ditch so as to drain the standing water in the pipe.							
05-03-2010 Lots of tumbleweeds at both ends today.							
05-07-2012 Pipe was clean today. Ditch needs to be taken past R/W to get rid of standing water.							
04-28-2014 Inlet is full of tumbleweeds today and outlet needs to be cleaned up.							
Approved. DRC							

Late Reason:
Inspection Date: 04/28/2014

I00015284+00001
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 240 - Steel Culvert										
	1	3	65	m.		85	10	5	0	
						%	%	%	%	%

Previous Inspection Notes :

04/28/2014 - Area under SB lanes has rust, scale, and pin holes in the roof area in random spots. Concrete in the invert looks Good. (2) small holes in the roof about 30' in from the inlet. ZEDZ

05/07/2012 - Pipe was clean today with knee deep water standing in the outlet. Rust, scale, and surface pitting on the invert. Some small pin holes in the invert. Holes 30 ft. in from the inlet end are unchanged. IZGZ

A concrete liner was placed in this pipe during 2013 construction project. This took care of the problems on the invert of the pipe.

05/03/2010 - Same comments as the last inspections. Lots of tumbleweeds in the inlet and outlet of the pipe today. EZGY

04/24/2008 - No change on the 4" x 4" holes, 30 ft in from the inlet. 5 percent in Condition State 3 as a couple of small holes in the invert and because of loss of shape. Rusty spots, scale, and pitting on the bottom 1 ft of the pipe. Outlet is bouncy as hollow under the last 10 ft of the pipe. YZDZ

04/18/2006 - 64.62 * 1 = 64.62m Plans say it is a 13'-0" SSPP but field measurements show it to be 12'-8"(S) x 13'-9"(R). Concrete slope protection and cutoff wall added on the Right-Inlet end after initial construction. Pipe is dry at the inlet, 1' deep standing water at outlet and 2' of standing water under the SB Inae. Pipe has some rust spots and light scale on the invert. Hollow under the first 6 ft of the outlet of the pipe with no cut off wall or slope protection in place. Pipe end bounces when jumped on. About 30 ft in from the inlet is a 4" x 4" hole in the top-Left portion of the pipe. This hole does not appear to be a problem. DQCV

Inspection Notes:

General Inspection Notes

04/28/2014 - Outlet ditch needs to be worked on as still about 1-1/2' of water backed up in the inlet of the pipe for about 40'. ZEDZ

05/07/2012 - Outlet end of the pipe is hollow under the pipe; back 15 ft. IZGZ

Pipe's shape is Fair with some egg shape to it from construction activity.

05/03/2010 - Hollow area under outlet is unchanged. Mid-thigh deep at outlet today to ankle deep at inlet. EZGY

04/24/2008 - Scour hole at outlet and shallow stream bed 50 ft from the pipe has water standing 2 ft deep back into the pipe. YZDZ

04/18/2006 - Cutoff wall and slope protection on Right end added in a construction project that also cleaned out the pipe. Guardrail for I-15 at the pipe due to slope steepness and is up to current standards. DQCV

I00015284+02351

Location : 6M S VAUGHN Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **00000 RURAL AREA**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00015**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **JR GRADE SEP**

Kilometer Post, Mile Post : **457.42 km 284.23**

Structure on the State Highway System : Latitude : **47°31'60"**

Structure on the National Highway System : Longitude : **111°24'23"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **I 15-5(9)275**

Construction Station Number : **0+00.00**

Construction Drawing Number : **4209**

Construction Year : **1960**

Reconstruction Year : **1974**

Traffic Data

Current ADT : **9,280** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	B ASD Assigned
Operating Load, Design :	54.4 mton	B ASD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	120.29		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **5.49 m**
 Deck Area : **210.00 m sq**
 Deck Roadway Width : **38.30 m**
 Approach Roadway Width : **22.00 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **N Feature not hwy or RR**
 Vertical Clearance Under the Structure : **3.58 m**
 Reference Feature for Lateral Underclearance : **N Feature not hwy or RR**
 Minimum Lateral Under Clearance Right : **0.00 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

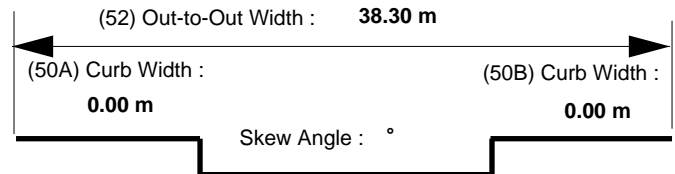
Number Spans : **1**
 Material Type Code, Description : **1 Concrete**
 Span Design Code, Description : **1 Slab**

Deck

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **6 Bituminous**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
Route On Structure	I00015	South	99.99 m	11.00 m	North	99.99 m	11.00 m
I - 15 --- NB AND SB							

I00015284+02351
Continue

Inspection Data

Sufficiency Rating : **96.6**
Structure Status : **Not Deficient**

Inspection Due Date : **06 August 2014**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 06 August 2012
(90) Inspection Date :
Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : <input type="text" value="7"/>	(68) Deck Geometry : <input type="text" value="9"/>	(36A) Bridge Rail Rating : <input type="text" value="1"/>	(62) Culvert Rating : <input type="text" value="N"/>
(59) Superstructure Rating : <input type="text" value="7"/>	(67) Structure Rating : <input type="text" value="6"/>	(36B) Transition Rating : <input type="text" value="0"/>	(61) Channel Rating : <input type="text" value="N"/>
(60) Substructure Rating : <input type="text" value="6"/>	(69) Under Clearance : <input type="text" value="N"/>	(36C) Approach Rail Rating : <input type="text" value="1"/>	(71) Waterway Adequacy : <input type="text" value="N"/>
(72) App Rdwy Align : <input type="text" value="8"/>	(41) Posting Status : <input type="text" value="A"/>	(36D) End Rail Rating : <input type="text" value="0"/>	(113) Scour Critical : <input type="text" value="N"/>

Unrepaired Spalls : Deck Surfacing Depth :

Inspection Hours

Crew Hours for inspection : <input type="text" value="1"/>	Snooper Required : <input type="text" value="N"/>
Helper Hours : <input type="text" value="0"/>	Snooper Hours for inspection : <input type="text" value="0"/>
Special Crew Hours : <input type="text" value="0"/>	Flagger Hours : <input type="text" value="0"/>
Special Equipment Hours : <input type="text" value="0"/>	

Inspection Work Candidates		Status	Priority	Effectuated Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2004-000066	28 January 2004	Approved	Low	M Main	215 R/Conc Abutment	Min Repair	
Clean material away from the backwall drains.							
Approved. DRC							
D31-FY2005-000030	07 October 2004	Approved	Low	M Main	39 Unp Conc Slab/AC Ovl	Min Repair	
Seal cracks between the deck slabs and the median slab. Also between the slab and asphalt surfacing. Some done, 8-6-2012.							
Approved. DRC							

Late Reason:
Inspection Date: 08/06/2012

I00015284+02351
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 39 - Unp Conc Slab/AC Ovl										
	1	3	210	sq.m.	X	100	0	0	0	0
						%	%	%	%	%

Previous Inspection Notes :

08/06/2012 - Minor rutting in wheel paths. Roadway is smooth over structure. HZGZ

08/09/2010 - No change from the previous inspections. JZDZ

07/10/2008 - Chip seal in the past years. Minor ruts in the wheel paths, but surfacing is generally Good. Small section of exposed rebar on the underside of the slab at the Right edge of Abutment 1. KZCJ

06/08/2006 - Crack at centerline under the NB lanes that has efflorescence. Minor rutting in the asphalt surfacing. IZDU

09/21/2004 - Same as previous report. Joints at the median slabs to NB and SM slabs are leaking. VULZ

10/07/2002 - Mapping cracks on slab over the median with efflorescence on most cracks. IFHR

08/02/2000 - $38.30 * 5.49 = 210.27$ GHJY

Seperation at the joints.

04/14/1998 - None RHHO

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 215 - R/Conc Abutment										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	2	101	m.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :

08/06/2012 - Some small delaminated areas near cracks with efflorescence. Still partially buried backwall drains. On both abutments worse cracks are from corners of spalls under traveled lanes. HZGZ

08/09/2010 - No change from the previous inspections. JZDZ

07/10/2008 - 5 percent in Condition State 3 for a small delmainated areas. 5 percent in Condition State 2 for cracks with efflorescence. Left wingwall at Abutment 1 has a slight seperation from the backwall. Some backwall drains are partially buried. KZCJ

06/08/2006 - Same as previously reported plus some spalled patch, 4" x 10", on the Right end of Abutment 1 just under the deck. IZDU

09/21/2004 - Cracking from the corners of lane slabs with efflorescence on the cracks. Wingwalls are tight to the backwalls. VULZ

10/07/2002 - Same as previous report. Add weep drains along both backwalls are either buried or partially covered. IFHR

08/02/2000 - $(38.3 * 2) + (4 * 6.10) = 101.00m$ GHJY

Cracks with some water marking at the joints of the median section to the sections under the roadway. Slight seperation on the left end at the wingwalls to the backwall joint.

04/14/1998 - None RHHO

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

I00315000+00001

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00315**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **INT I-15**

Kilometer Post, Mile Post : **0.02 km 0.01**

Structure on the State Highway System : Latitude : **47°29'06"**

Structure on the National Highway System : Longitude : **111°20'42"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **I 15-5(26)271**

Construction Station Number : **536+44.00**

Construction Drawing Number : **6792**

Construction Year : **1967**

Reconstruction Year :

Traffic Data

Current ADT : **15,040** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	36.2 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	72.91		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **89.61 m**
 Deck Area : **1,475.00 m sq**
 Deck Roadway Width : **13.72 m**
 Approach Roadway Width : **15.00 m**
 Median Code, Description : **2 Closed median (no barrier)**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **H Hwy beneath struct**
 Vertical Clearance Under the Structure : **5.48 m**
 Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
 Minimum Lateral Under Clearance Right : **3.55 m**
 Minimum Lateral Under Clearance Left : **6.70 m**

Span Data

Main Span

Number Spans : **5**
 Material Type Code, Description : **5 Prestressed concrete**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**

Deck Surfacing Type : **5 Epoxy Overlay**

Deck Protection Type : **0 None**

Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	I00015	South	6.75 m	11.58 m	North	5.48 m	11.58 m
I-15 NB AND SB							
Route On Structure	I00315	West	99.99 m	8.53 m	East	99.99 m	4.88 m
10TH AVE. SOUTH INT.							

I00315000+00001
Continue

Inspection Data

Sufficiency Rating : **88.4**
Structure Status : **Not Deficient**

Inspection Due Date : **05 December 2014**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 05 December 2012
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 6	(68) Deck Geometry : 4	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 7	(67) Structure Rating : 6	(36B) Transition Rating : 1	(61) Channel Rating : N
(60) Substructure Rating : 6	(69) Under Clearance : 5	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : N
(72) App Rdwy Align : 7	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : N

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 1.50 in

Inspection Hours

Crew Hours for inspection : 2
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : N
Snooper Hours for inspection : 0
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2003-000158	13 November 2002	Approved	High	All Spans	300 Strip Seal Exp Joint	Min Repair	
Clean the sanding material out of the rubber gland.							
Approved. DRC							
D31-FY2004-000074	28 January 2004	Approved	Low	All Spans	Bridge	Spot Paint (flex)	
Clean and paint bearings.							
Approved. DRC							
D31-FY2011-000022	28 December 2010	Not Approved	Low	M Main	205 R/Conc Column	Min Repair	
Repair spalling / delaminations on the Right column of Bent 4.							

Late Reason:
Inspection Date: 12/05/2012

I00315000+00001
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 22 - P Conc Deck/Rigid Ov										
	1	3	1475	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Mapping cracks in all Spans. Surface delaminations along the guard angles and joint steel. Studded tire wear in the wheel paths.										GZfZ
12/06/2010 - Mapping cracks in most of the Spans with 4 and 5 being the worse. Wear in the wheel paths. Small delaminations along the joint steel.										GAEZ
11/17/2008 - Wear in the wheel paths. Transverse cracks over the Bents w/o joints. EB lane has mapping cracks in all of the Spans.										RZDZ
11/02/2006 - Small delaminations along the joint over Bent 4. Wear in the wheel paths. Transverse cracking over the unjointed Bents.										CXDO
10/16/2002 - 16.46 * 89.61 = 1474.98 Same on cracks with some delamination and transverse cracking also; quick chain drag.										QZCJ
06/03/1998 - Numerous small, tight mapping cracks throughout the wear surface of the new overlay. A seal coat was applied in 1995 after the 1-1/2" rigid overlay. 19.19 * 89.61										QFBC
02/01/1994 - None										REFI
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	781	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Girders are in Good condition.										GZfZ
12/06/2010 - Good conditions with no hits observed.										GAEZ
11/17/2008 - Generally in Good condition.										RZDZ
11/02/2006 - Generally in Good condition. Some minor cracks from the back of the embedded bearing plate to the ends of the girders on several of the girders. None of these are a problem.										CXDO
10/16/2002 - (7 * 28.12) (10 * 43.5864) (8 * 18.5166)										QZCJ
Inspection Notes:										
Element 205 - R/Conc Column Bent 2, 3, 4, and 5										
	1	2	8	ea.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Right column of Bent 4 shows spalls, delaminations, and deteriorated concrete on its' SE corners; photo. Tight surface shrinkage cracks. Columns of Bent 4 have some staining from joint leakage.										GZfZ
12/06/2010 - All look Good except the Right column at Bent 4 which has delaminations and spalling that is getting worse; photo.										GAEZ
11/17/2008 - Right column at Bent 4 has delaminations and spalling for Condition State 3 and 2 respectively; photo. Tight surface shrinkage cracks throughout.										RZDZ
11/02/2006 - Very minor spalling on a couple of the columns and none are a problem. A couple of the tie wires are exposed, but not a problem.										CXDO
10/16/2002 - Most noticeable on the south column at Bent 4.										QZCJ
06/03/1998 - Some spalling of concrete on a couple of the columns.										QFBC
02/01/1994 - None										REFI
Inspection Notes:										

I00315000+00001

Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 6										
	1	1	45	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Abutments are generally in Good condition. Small spalls along the cap to backwall area and (2) small spalls in Abutment 4's backwall by G3 and G6.										GZfZ
12/06/2010 - Generally Good condition. (1) small spall in Abutment 1's backwall at girder embedment.										GAeZ
11/17/2008 - (1) small spall in Abutment 1's backwall near a girder embedment.										RZDZ
11/02/2006 - Minor and tight shrinkage cracks on both caps. (1) small spall along the girder embedment at Abutment 1. Erosion on the Right side of Abutment 1, SW corner.										CXDO
10/16/2002 - (19.19 1.65 1.45) * 2										QZCJ
Inspection Notes:										
Element 234 - R/Conc Cap Bent 2, 3, 4, and 5										
	1	1	77	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Spall on the Left end of Bent 3's cap had not changed. Bent 4's cap is stained and has surface spalls and delaminations on its' bottom at rebar chair feet.										GZfZ
12/06/2010 - Spall on the Left end of Bent 3's cap on the Span 2 side; photo. Delaminations on the Right end of Bent 4's cap. Some small spalls on the surface of the cap bottoms from shallow rebar chair feet.										GAeZ
11/17/2008 - Spall on Bent 3's cap has not gotten any worse. Surface delaminations and spalls on the underside of the caps from shallow tie wire and exposed rebar chair feet.										RZDZ
11/02/2006 - Underside of the caps have small surface spalls where rusty rebar chairs are exposed. Also staining around the spalls. Left end of the cap at Bent 3 has a spall under the Span 2 side bearing; see photo.										CXDO
10/16/2002 - 19.19 * 4 = 76.76m										QZCJ
Inspection Notes:										
Element 300 - Strip Seal Exp Joint										
	1	3	19	m.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Joint is packed with sanding material today. Steel sounds solid when tapped on. Small delaminations in header concrete along the joint's steel.										GZfZ
12/06/2010 - Lots of dirt and ice in the joint today. Joint is leaking on its' Right end today. Steel all sounds solid when tapped on.										GAeZ
11/17/2008 - Full of dirt. No obvious leaking observed. Steel sounds solid when tapped on. Some small spalls/delaminations along the steel.										RZDZ
11/02/2006 - Joint steel sounds solid when tapped on. Packed with dirt/sanding material. No apparent areas of leakage. Some minor delaminations along the joint steel.										CXDO
10/16/2002 - Full of sanding material.										QZCJ
06/03/1998 - Need to clean out the sanding material that is in the joint.										QFBC
19.19 * 1										
02/01/1994 - None										REFI
Inspection Notes:										

I00315000+00001
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing Bent 4										
	1	2	20	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Alignment is Good. Rust, paint loss, staining, and bird debris.										GZfZ
12/06/2010 - Alignment is Good. Rust, dirt, paint loss, and bird debris.										GAEZ
11/17/2008 - Rusty, paint loss, and debris. Also staining from prior joint.										RZDZ
11/02/2006 - Rusty, paint loss, dirt, and bird debris.										CXDO
10/16/2002 - Add and some paint loss.										QZCJ
06/03/1998 - Some rust & pitting.										QFBC
02/01/1994 - None										REFI
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	64	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Bent 2, 3, and 5 show faded paint and spot rust. Abutment bearings have paint loss, rust, minor surface pitting, and debris. Outer bearings at the Abutments are the worst.										GZfZ
12/06/2010 - Rust, dirt, paint loss, and bird debris.										GAEZ
11/17/2008 - Spot rust on the Bent bearings with paint loss and surface pitting on some of the Abutment bearings.										RZDZ
11/02/2006 - Some minor spot rust and bird debris.										CXDO
10/16/2002 - No change.										QZCJ
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	180	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Rubs on both barriers. Spalls at the bolt holes on the backside of the barriers. Some shrinkage cracks. Generally in Good condition.										GZfZ
12/06/2010 - Generally Good condition. Rubs and scrapes on both. Backside of the barrier has spalls near the ends around bolt holes.										GAEZ
11/17/2008 - Unchanged with some rubs and scrapes noted.										RZDZ
11/02/2006 - Numerous vertical cracks and some cracks along the rebar line. Backside of the rail at the bolt up areas shows minor spalls from drilling/construction activity.										CXDO
10/16/2002 - ok										QZCJ
06/03/1998 - New Cast-in-Place concrete barrier rail in 1995.										QFBC
02/01/1994 - None										REFI
Inspection Notes:										

I00315000+00001
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 358 - Deck Cracking SmFlag										
X	1	1	1	ea.	X	0	100	0	0	
						%	%	%	%	%

Previous Inspection Notes :

12/05/2012 - Due to size and quantity. Spans 4 and 5 are the worst. Little to no sealer left.	GZfZ
12/06/2010 - Lots of mapping cracks, especially in Spans 4 and 5.	GAEZ
11/17/2008 - Condition State 2 due to density of cracks in the EB lane. Underside of the deck looks ok.	RZDZ
11/02/2006 - Cracking very visible today from coating of de-icer. No spalled areas. In Condition State 1 as sealed in 1995.	CXDO
10/16/2002 - No change.	QZCJ
06/03/1998 - Small, tight mapping cracks throughout the new rigid overlay. Sealed with a sealer during 1995 also.	QFBC

Inspection Notes:

General Inspection Notes

12/05/2012 - End shoes at Abutment 6 are lapped against traffic.	GZfZ
Rail terminal section at Abutment 1-Left, NW corner, has (3) broken rail posts; photo.	
Slope protection concrete has slid downhill into the columns at Bent 2 and is causing some cracking and spalling in the slope protection concrete, photo.	
12/06/2010 - End shoes still lapped against traffic on the NE and SE corners.	GAEZ
11/17/2008 - Approaches overlaid in 2007.	RZDZ
NE and SE rail end shoes are lapped against traffic.	
11/02/2006 - Slope protection at the Abutment fills shows some minor settlement and cracking.	CXDO
10/16/2002 - None	QZCJ
06/03/1998 - None	QFBC
02/01/1994 - Sufficiency Rating Calculation Accepted by ops\$u5963 at 3/11/97 10:45:03	REFI
Sufficiency Rating Calculation Accepted by ops\$u9004 at 2/19/97 14:15:32	
01/01/1992 - Updated with tape 1994	NB94
03/01/1990 - Updated with tape 1991	NB91
02/01/1988 - Updated with tape 1989	NB89
02/01/1986 - Updated with tape 1987	NB87

I00315000+03421

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00315**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **FAU 5225-14TH STREET SW**

Kilometer Post, Mile Post : **0.55 km 0.34**

Structure on the State Highway System : Latitude : **47°29'13"**

Structure on the National Highway System : Longitude : **111°20'17"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IG 315-5(3)272**

Construction Station Number : **21+65.00**

Construction Drawing Number : **6813**

Construction Year : **1967**

Reconstruction Year : **1995**

Traffic Data

Current ADT : **25,500** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	35.3 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	83.84		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **45.72 m**
 Deck Area : **546.00 m sq**
 Deck Roadway Width : **10.96 m**
 Approach Roadway Width : **10.96 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **H Hwy beneath struct**
 Vertical Clearance Under the Structure : **5.26 m**
 Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
 Minimum Lateral Under Clearance Right : **1.70 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **3**
 Material Type Code, Description : **5 Prestressed concrete**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **1 Monolithic concrete (concurrently placed with struct**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
 Material Type Code, Description :
 Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	U05225	Both	5.26 m	9.14 m	N/A		
14TH STREET SW							
Route On Structure	I00315	N/A			North	99.99 m	10.96 m
I - 315 EB							

I00315000+03421
Continue

Inspection Data

Sufficiency Rating : **93**
Structure Status : **Not Deficient**

Inspection Due Date : **05 December 2014**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 05 December 2012
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 5	(68) Deck Geometry : 4	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 8	(67) Structure Rating : 7	(36B) Transition Rating : 1	(61) Channel Rating : N
(60) Substructure Rating : 7	(69) Under Clearance : 4	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : N
(72) App Rdwy Align : 8	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : N

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 0.00 in

Inspection Hours

Crew Hours for inspection : 2
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : **N**
Snooper Hours for inspection : 0
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2004-000075	28 January 2004	Approved	Low	All Spans	Bridge	Spot Paint (flex)	
Clean and paint bearings.							
Approved. DRC							
D31-FY2007-000039	26 December 2006	Approved	Medium	M Main	12 Bare Concrete Deck	Min Repair	
Patch any spalled areas in the surfacing.							
Approved. DRC							

Late Reason:
Inspection Date: 12/05/2012

I00315000+03421

Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	546	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Transverse cracks with some spalls and delaminations over Bents 2 and 3. Small delaminations along the guard angles. Wear from studded tires in the wheel paths.										GIFZ
12/06/2010 - Spalls, delaminations, and transverse cracks over Bent 2 and 3. Wear in the wheel paths. 2 percent or less delaminations in the deck surface.										GZEV
11/17/2008 - Open transverse cracks over Bent 2 and 3. Some delaminations in all (3) Spans with an estimated 2 percent or less from a quick chain drag. Wear in the wheel paths.										RCDZ
11/02/2006 - Wear in the wheel paths. Transverse cracks over Bent 2 and 3 with some spalls over Bent 3 also noted.										CZDO
10/10/2002 - 11.95 * 45.72 = 546.35 Add slightly open cracks over both Bents. Some minor cracking throughout.										KLKZ
06/03/1998 - 13.15 * 45.72= Studded tires have left an almost exposed aggregate finish in both traffic lanes.										QFKU
02/01/1994 - None										REFI
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	229	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Good condition.										GIFZ
12/06/2010 - Good condition.										GZEV
11/17/2008 - Same as prior and in Good condition.										RCDZ
11/02/2006 - No problems observed. Some girders have minor cracks from the backside of the embedded bearing plate to the ends of the girders.										CZDO
10/10/2002 - 5 * 45.72 = 228.60m										KLKZ
Inspection Notes:										
Element 205 - R/Conc Column Bent 2 and 3										
	1	1	4	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - (2) small spall on the Right column of Bent 3. Tight surface shrinkage cracks in all (4) columns. Columns are in Good condition.										GIFZ
12/06/2010 - Tight surface shrinkage cracks in all (4) columns. (2) small spalls on the Right column of Bent 3; patch has popped off. Generally in Good condition.										GZEV
11/17/2008 - Generally in Good condition. Small delaminated patch on the Right column of Bent 3 for Condition State 3 and a small spall near the sidewalk line on the same column for Condition State 2.										RCDZ
11/02/2006 - Tight surface shrinkage cracks. Right/South Column at Bent 3 has a small chipped area near the sidewalk and some delaminated areas of the patch at its construction joint to the cap.										CZDO
10/10/2002 - Some minor wear, weathering, and shrinkage cracks.										KLKZ
Inspection Notes:										

I00315000+03421
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment										
	1	2	33	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Small spalls along the cap to backwall area and (1) small spall at the G3 embedment in Abutment 1's backwall.										GIFZ
12/06/2010 - Small spall at (1) bearing in Abutment 1's backwall. Tight surface shrinkage cracks.										GZEV
11/17/2008 - Unchanged. Graffiti has been painted over.										RCDZ
11/02/2006 - Tight surface shrinkage cracks in both caps and some small spalls where the girders are embedded in the backwalls.										CZDO
10/10/2002 - Add some erosion at the corners.										KLKZ
06/03/1998 - (13.15 * 2) 1.80 1.60 1.50 1.70 Some small, tight cracks with minor water staining.										QFKU
02/01/1994 - None										REFI
Inspection Notes:										
Element 234 - R/Conc Cap Bent 2 and 3										
	1	1	26	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Good condition. Lots of pigeon debris on top of the caps.										GIFZ
12/06/2010 - Good condition. Some staining from bird debris.										GZEV
11/17/2008 - Good condition. Same on staining and tight cracks.										RCDZ
11/02/2006 - Some tight cracks at the steps in the caps. Lots of staining from pigeon debris on tops of the caps.										CZDO
10/10/2002 - 13.15 * 2 = 26.30m										KLKZ
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	30	ea.		85	15	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/05/2012 - Faded paint and debris on the bearings at Bents 2 and 3. Bearings at both of the Abutments have paint loss, minor pitting, and heavy rust.										GIFZ
12/06/2010 - Rusty spots, paint loss, and bird debris.										GZEV
11/17/2008 - Rust, paint loss, and bird debris.										RCDZ
11/02/2006 - Spot rust and paint loss. Lots of piegeon debris on the bearings at Bents 2 and 3.										CZDO
10/10/2002 - Add some paint loss and bird debris.										KLKZ
Inspection Notes:										

I00315000+03421
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 331 - Conc Bridge Railing										
	1	3	91	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

12/05/2012 - Some tight shrinkage cracks. Cracks on the backside of the barrier show efflorescence in areas. Ends shoe at Abutment 1 are lapped against traffic. GIFZ

12/06/2010 - Scrapes and dings to both barriers. Vertical shrinkage cracks for the length of the rails. End shoes at Abutment 1 are lapped against traffic flow. GZEV

11/17/2008 - Some scrapes and dings on both rails. Tight vertical cracking, random, throughout. RCDZ

11/02/2006 - Unchanged from previous reports. CZDO

10/10/2002 - 45.72 * 2 = 91.44m Minor dings, scrapes, and vertical cracking. KLKZ

06/03/1998 - New Cast-in-Place concrete rail in 1995. QFKU

02/01/1994 - None REFI

Inspection Notes:

Element 358 - Deck Cracking SmFlag										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
X	1	3	1	ea.	X	0	0	100	0	
						%	%	%	%	%

Previous Inspection Notes :

12/05/2012 - Widest and densest areas of cracking are over the Bents with spalling and delaminations in the cracked areas. GIFZ

12/06/2010 - Some cracked areas show spaling starting and small delaminations. GZEV

11/17/2008 - Wide cracks with spalling over Bents 2 and 3. RCDZ

Inspection Notes:

General Inspection Notes

12/05/2012 - Light on face of Bent 2's cap was not working today. Minor bumps on and off of the structure. GIFZ

12/06/2010 - Very minor bumps on and off of the bridge. GZEV

11/17/2008 - New approach overlay in 2007. RCDZ

Both of the rail end shoes at Approach 1 are lapped against the traffic flow.

11/02/2006 - Recent patches to the roadway approaches. Still minor bumps on and off of the structure. CZDO

10/10/2002 - ok KLKZ

06/03/1998 - None QFKU

02/01/1994 - Sufficiency Rating Calculation Accepted by ops\$u5963 at 3/11/97 10:45:04 REFI
Sufficiency Rating Calculation Accepted by ops\$u9004 at 2/19/97 14:15:33

01/01/1992 - Updated with tape 1994 NB94

01/01/1990 - Updated with tape 1991 NB91

02/01/1988 - Updated with tape 1989 NB89

02/01/1986 - Updated with tape 1988 NB88

I00315000+03422

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00315**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **FAU 5225-14TH STREET SW**

Kilometer Post, Mile Post : **0.55 km 0.34**

Structure on the State Highway System : Latitude : **47°29'13"**

Structure on the National Highway System : Longitude : **111°20'18"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IG 315-5(3)272**

Construction Station Number : **21+65.00**

Construction Drawing Number : **6813**

Construction Year : **1967**

Reconstruction Year : **1995**

Traffic Data

Current ADT : **25,500** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	35.3 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	83.84		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **44.20 m**
Deck Area : **639.00 m sq**
Deck Roadway Width : **13.65 m**
Approach Roadway Width : **14.00 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **H Hwy beneath struct**
Vertical Clearance Under the Structure : **5.20 m**
Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
Minimum Lateral Under Clearance Right : **1.70 m**
Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **3**
Material Type Code, Description : **5 Prestressed concrete**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
Deck Surfacing Type : **1 Monolithic concrete (concurrently placed with struct**
Deck Protection Type : **0 None**
Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
Material Type Code, Description :
Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	U05225	Both	5.20 m	9.14 m	N/A		
14TH STREET SW							
Route On Structure	I00315	West	99.99 m	13.65 m	N/A		
I - 315 WB							

I00315000+03422
Continue

Inspection Data

Sufficiency Rating : **96**
Structure Status : **Not Deficient**

Inspection Due Date : **06 December 2014**
(91) Inspection Frequency (months) : **48**

NBI Inspection Data

(90) Date of Last Inspection : 06 December 2010
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 6	(68) Deck Geometry : 9	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 8	(67) Structure Rating : 7	(36B) Transition Rating : 1	(61) Channel Rating : N
(60) Substructure Rating : 7	(69) Under Clearance : 4	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : N
(72) App Rdwy Align : 8	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : N

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 0.00 in

Inspection Hours

Crew Hours for inspection : 2
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : **N**
Snooper Hours for inspection : 0
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2004-000076	28 January 2004	Approved	Low	All Spans	Bridge	Spot Paint (flex)	
Clean and paint bearings.							
Approved. DRC							
D31-FY2007-000041	26 December 2006	Approved	Medium	M Main	12 Bare Concrete Deck	Min Repair	
Patch any spalled areas in the deck, very small at this time.							
Approved. DRC							

Late Reason:
Inspection Date: 12/06/2010

I00315000+03422
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	639	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
12/06/2010 - Wear in the wheel paths. Tight cracks over Bents 2 and 3. Some random cracking in all (3) Spans.										GZEW
11/02/2006 - Wear in the wheel paths. Cracking does not appear to be any worse or opening up. Put into Condition State 2 as there was (1) small, 1" x 2", area of delamination near Abutment 4 in the Left lane of traffic.										CZDO
10/10/2002 - 14.46 * 44.20 = 639.13 Numerous, small and tight, transverse and mapping cracks throughout; very noticeable of the repaired areas. Maybe a smart flag for deck cracking the next report.										KYKZ
06/03/1998 - 44.20 * 16.35 Deck was repaired, sealed only and widened in 1995.										QFIX
02/01/1994 - None										REFI
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	265	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/06/2010 - Good condition.										GZEW
11/02/2006 - Good condition. A couple of the girders have tight cracks from the backside of the embedded bearing plates to the ends of the girders.										CZDO
10/10/2002 - Some scrapes to the bottom flange, but no dings or spalled concrete.										KYKZ
Inspection Notes:										
Element 205 - R/Conc Column Bent 2 and 3										
	1	1	6	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/06/2010 - Surface shrinkage cracks. Generally in Good condition.										GZEW
11/02/2006 - Tight surface shrinkage cracks. Left two(2) columns on the newer portion of the bridge have some loose/spalled patches over the construction joint to the cap.										CZDO
10/10/2002 - Some wear, weathering, shrinkage cracks.										KYKZ
Inspection Notes:										
Element 215 - R/Conc Abutment 1 and 4										
	1	1	39	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/06/2010 - (1) small spall near girder embedment at Abutment 4. Some tight shrinkage cracks.										GZEW
11/02/2006 - Minor and tight cracks in both caps with one small spalled area in the backwall where the girders are embedded.										CZDO
10/10/2002 - A little more erosion and weathering of the concrete.										KYKZ
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315000+03422
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 234 - R/Conc Cap Bent 2 and 3										
	1	1	33	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/06/2010 - Some tight surface shrinkage cracks. Rebar chair feet show some rust on the underside of both caps. Minor staining from bird debris.										GZEW
11/02/2006 - Staining from pigeon debris. Some tight cracks at the steps in the caps and none are a problem.										CZDO
10/10/2002 - 16.35 * 2 = 32.70m										KYKZ
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	36	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
12/06/2010 - Rust spots, paint loss, and bird debris.										GZEW
11/02/2006 - Rusty spots and paint loss. Lots of pigeon debris on both of the Bent caps.										CZDO
10/10/2002 - Add some paint loss and bird debris.										KYKZ
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	88	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/06/2010 - Same as past inspections.										GZEW
11/02/2006 - Left/North rail has a couple of patches areas on its backside. Not a problem, only an aesthetic thing.										CZDO
10/10/2002 - Some dings, scrapes, and vertical cracking.										KYKZ
06/03/1998 - New in 1995 and was Cast-in-Place.										QFIX
44.20 * 2.										
02/01/1994 - None										REFI
Inspection Notes:										
Element 358 - Deck Cracking SmFlag										
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
12/06/2010 - Condition State 2 due to amount of tight mapping cracks noted; especially when the surface is damp.										GZEW
Inspection Notes:										

I00315000+03423

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **8 8 Other (incl toll rds)**

Signed Route Number : **00315**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **FAU 5225-14TH STREET SW**

Kilometer Post, Mile Post : **0.55 km 0.34**

Structure on the State Highway System : Latitude : **47°29'12"**

Structure on the National Highway System : Longitude : **111°20'17"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IR 315-5(12)1F**

Construction Station Number : **5+63.00**

Construction Drawing Number : **15883**

Construction Year : **1997**

Reconstruction Year :

Traffic Data

Current ADT : **25,500** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	34.6 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	48.6		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **41.45 m**
Deck Area : **333.00 m sq**
Deck Roadway Width : **7.11 m**
Approach Roadway Width : **7.32 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **H Hwy beneath struct**
Vertical Clearance Under the Structure : **5.71 m**
Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
Minimum Lateral Under Clearance Right : **1.90 m**
Minimum Lateral Under Clearance Left : **0.50 m**

Span Data

Main Span

Number Spans : **3**
Material Type Code, Description : **5 Prestressed concrete**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
Deck Surfacing Type : **1 Monolithic concrete (concurrently placed with struct**
Deck Protection Type : **1 Epoxy Coated Reinforcing**
Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
Material Type Code, Description :
Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	U05225	Both	5.71 m	9.14 m	N/A		
14TH ST SW/BRIDGE ST							
Route On Structure	I00315	N/A			East	99.99 m	7.11 m
I-315 EB OFF RAMP							

I00315000+03423
Continue

Inspection Data

Sufficiency Rating : **96**
Structure Status : **Not Deficient**

Inspection Due Date : **16 June 2015**
(91) Inspection Frequency (months) : **48**

NBI Inspection Data

(90) Date of Last Inspection : 16 June 2011
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 7	(68) Deck Geometry : 6	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 7	(67) Structure Rating : 7	(36B) Transition Rating : 1	(61) Channel Rating : N
(60) Substructure Rating : 7	(69) Under Clearance : 4	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : N
(72) App Rdwy Align : 7	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : N

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 0.00 in

Inspection Hours

Crew Hours for inspection : 2
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : N
Snooper Hours for inspection : 0
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2007-000143	02 July 2007	Approved	Medium	M Main	313 Fixed Bearing	Rehab Elem	
Clean and spot paint the bearings.							
Approved. DRC							

Late Reason:
Inspection Date: 06/16/2011

I00315000+03423
Continue

Element Inspection Data

***** Span : Main-0 --1 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 26 - Conc Deck/Coatd Bars										
	1	3	333	sq.m.	X	100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Transverse and mapping cracks over both Bents. Minor wear in the wheel paths from studded tire wear										RZGB
05/31/2007 - Minor wear from studded tires. Transverse cracking over Bents 2 and 3 with the worse area at Bent 2. Not enough for a smart flag yet.										EZH Z
05/04/2005 - Some wear in the wheel paths. Transverse cracking over both of the Bents. (8.03 * 40.93 (brg to brg) = 328.67m NMS)										EIFR
04/30/2003 - Deck has tight mapping cracks throughout the driving surface. Studded tire wear in the wheel paths with some exposed aggregate.										BPHZ
08/27/2001 - 8.03 * 41.45 = 332.8										NHCO
Slightly open cracks at the two bents. Numerous small, tight tansverse &/or mapping cracks throughout the driving surface.										
12/23/1998 - None										KBGR
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	166	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Generally in Good condition. Small nick on bottom of G1S1 has not changed.										RZGB
05/31/2007 - Small nick on the Left side of the Bottom flange of G1 in Span 1, but not a problem.										EZH Z
05/04/2005 - Unchanged from previous reports. (4 * 40.93 = 163.72 NMS)										EIFR
04/30/2003 - There is a small nick in the outside-left girder near Abutment 1. No problem with the nick or with any of the other girders noted. Graffiti painted on girders near the Abutments.										BPHZ
08/27/2001 - 4 * 41.45 = 165.8m										NHCO
12/23/1998 - None										KBGR
Inspection Notes:										
Element 205 - R/Conc Column Bents 2 and 3										
	1	1	4	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Generally in Good condition with some small area where small sacked patches are peeling off. Small spall on the Right column of Bent 3 from construction.										RZGB
05/31/2007 - Placed 5 percent into Condition State 2 as sacked patches are loose and peeling off of the columns. None of these areas are a problem.										EZH Z
05/04/2005 - Same on the small popouts.										EIFR
04/30/2003 - No problems noted. A couple of small popouts in areas that were sacked during construction.										BPHZ
08/27/2001 - None										NHCO
12/23/1998 - _										KBGR
Inspection Notes:										

I00315000+03423
Continue

***** Span : Main-0 - -1 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 4										
	1	1	20	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Generally in Good condition. Small spall on construction joint of backwall to cap area of Abutment 1.										RZGB
05/31/2007 - Minor spall at the cap to backwall construction joint at Abutment 1. Generally in Good condition.										EZHZ
05/04/2005 - Minor and tight cracks in both of the backwalls. Erosion at the NW corners is worse. (Bent 1 = 9.62m Bent 4 = 10.67) = 20.29m										EIFR
04/30/2003 - Abutments are in Good condition other than the erosion on the NW corner of the structure. Can't rate the element done due to erosion problems, so raised to all in State 1.										BPHZ
08/27/2001 - Erosion at the left wingwall of Abutment #1.										NHCO
12/23/1998 - _										KBGR
Inspection Notes:										
Element 234 - R/Conc Cap Bents 2 and 3										
	1	1	16	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Good condition.										RZGB
05/31/2007 - Tight surface shrinkage cracks. Some loose sacked patches at the connections to the columns.										EZHZ
05/04/2005 - No problems noted other than tight surface shrinkage cracks. (7.92 * 2 = 15.84m NMS)										EIFR
04/30/2003 - Surface shrinkage cracking; no problems noted.										BPHZ
08/27/2001 - 8.03 * 2 = 16.06m										NHCO
12/23/1998 - None										KBGR
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	16	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Dirt and bird debris on bearings of both Bents 2 and 3 with some spot rust.										RZGB
05/31/2007 - Removed the Abutment bearings as they are not visible back to the anchor bolts . Bent bearings have spot rust and lots of debris on them.										EZHZ
05/04/2005 - Same as last report. Bearings at Bents 2 and 3 are now covered by nesting pigeons. (4 8 8 4 = 24 NMS)										EIFR
04/30/2003 - Rusty spots throughout the bearings. Pigeon debris on Bent 2 and 3's bearings. Left bearing at Abutment 1 is covered by dirt from erosion at the NW wingwall.										BPHZ
08/27/2001 - Some debris and pigeon droppings.										NHCO
12/23/1998 - _										KBGR
Inspection Notes:										

I00315000+03423
Continue

***** Span : Main-0 --1 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 331 - Conc Bridge Railing										
	1	3	83	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

06/16/2011 - Generally in Good condition with some tight shrinkage cracks. Small chips on the Right barrier in Span 3. RZGB

05/31/2007 - Rest of the comments from prior reports still apply. EZHZ

05/04/2005 - Same as last report and add some small nicks out of the top of the barrier in Span 3 - Right side. (40.93 * 2 = 81.86 NMS) EIFR

04/30/2003 - Vertical cracking, mostly tight, throughout both barriers. A couple of small popouts in concrete surface of the barriers. BPHZ

08/27/2001 - 41.45 * 2 = 82.90m NHCO

12/23/1998 - None KBGR

Inspection Notes:

Element 358 - Deck Cracking SmFlag										
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%

Previous Inspection Notes :

06/16/2011 - Added as cracking seemed excessive over the Bents and some of the cracks are a little bigger, 0.5 to 0.7mm in size. Mostly to start a closer monitoring of the cracks. RZGB

Inspection Notes:

General Inspection Notes

06/16/2011 - NBI 72, roadway alignmnet, rated a "7" as deck is slightly narrower than the approach roadway and it is on a curve. RZGB

05/31/2007 - NBI 59, superstructure, rated a "7" due to nick in G1S1 on the girders' bottom flange. EZHZ

NBI 60, substructure, rated a "7" due to small delaminations in the patches on the columns and caps. Erosion has been repaired on the Left side of Abutment 1.

05/04/2005 - Erosion at the NW corner of the structure is worse with some erosion to the fill under the wingwall. This could become a problem if flow gets under the concrete slope protection underneath the structure. EIFR

04/30/2003 - Same comments as 08-2001 report. Blocking on approach sections of the guardrail are loose and need to be tightened down and toe-nailes. BPHZ

08/27/2001 - Guardrail underneath the structure to protect the bents. On the west(back on line) side it is barrier rail at the Bent with W-beam rail approach sections. End anchors do not meet current standards. Righth (east) side has impact attunators for end anchors and do meet current standards. NHCO

12/23/1998 - None KBGR

I00315001+00691

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00315**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **BNSF RAILROAD**

Kilometer Post, Mile Post : **1.71 km 1.06**

Structure on the State Highway System : Latitude : **47°29'16"**

Structure on the National Highway System : Longitude : **111°20'07"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IR 315-5(12)1F**

Construction Station Number : **29+60.00**

Construction Drawing Number : **1852**

Construction Year : **1946**

Reconstruction Year : **1996**

Traffic Data

Current ADT : **25,500** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	B ASD Assigned
Operating Load, Design :	52.6 mton	B ASD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	120.29		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **54.21 m**
Deck Area : **786.00 m sq**
Deck Roadway Width : **13.59 m**
Approach Roadway Width : **13.59 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **R Railroad beneath struc**
Vertical Clearance Under the Structure : **6.63 m**
Reference Feature for Lateral Underclearance : **R Railroad beneath struc**
Minimum Lateral Under Clearance Right : **3.96 m**
Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **3**
Material Type Code, Description : **4 Steel continuous**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
Deck Surfacing Type : **1 Monolithic concrete (concurrently placed with struct**
Deck Protection Type : **0 None**
Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
Material Type Code, Description :
Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
Route On Structure	I00315	N/A			East	99.99 m	13.59 m
I-315 - EXIT 0 - EB							

I00315001+00691
Continue

Inspection Data

Sufficiency Rating : **75.4**
Structure Status : **Func Obs - Elg Rehab**

Inspection Due Date : **28 June 2014**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 28 June 2012
(90) Inspection Date :
Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : <input type="text" value="5"/>	(68) Deck Geometry : <input type="text" value="2"/>	(36A) Bridge Rail Rating : <input type="text" value="1"/>	(62) Culvert Rating : <input type="text" value="N"/>
(59) Superstructure Rating : <input type="text" value="7"/>	(67) Structure Rating : <input type="text" value="7"/>	(36B) Transition Rating : <input type="text" value="1"/>	(61) Channel Rating : <input type="text" value="N"/>
(60) Substructure Rating : <input type="text" value="7"/>	(69) Under Clearance : <input type="text" value="5"/>	(36C) Approach Rail Rating : <input type="text" value="1"/>	(71) Waterway Adequacy : <input type="text" value="N"/>
(72) App Rdwy Align : <input type="text" value="8"/>	(41) Posting Status : <input type="text" value="A"/>	(36D) End Rail Rating : <input type="text" value="1"/>	(113) Scour Critical : <input type="text" value="N"/>

Unrepaired Spalls : Deck Surfacing Depth :

Inspection Hours

Crew Hours for inspection : <input type="text" value="5"/>	Snooper Required : <input type="text" value="Y"/>
Helper Hours : <input type="text" value="0"/>	Snooper Hours for inspection : <input type="text" value="3"/>
Special Crew Hours : <input type="text" value="0"/>	Flagger Hours : <input type="text" value="0"/>
Special Equipment Hours : <input type="text" value="0"/>	

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2004-000080	28 January 2004	Approved	Medium	All Spans	215 R/Conc Abutment	Min Repair	
repair the erosion at the NE corner of the structure. 06-28-2012 Partially repaired with asphalt. Approved. DRC							
D31-FY2005-000241	13 July 2005	Approved	Low	M Main	234 R/Conc Cap	Min Repair	
Fix/repair the small delaminated area on the Span 2 of Bent 2's cap. 06-28-2012 Also (1) on the Span 1 side of Bent 2's and on (1) on the Span 3 side of Bent 3's. Approved. DRC							

Late Reason:
Inspection Date: 06/28/2012

I00315001+00691
Continue

Element Inspection Data

***** Span : Main-0 - *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	787	sq.m.	X	0	0	100	0	0
						%	%	%	%	%

Previous Inspection Notes :

06/28/2012 - Spalling and delaminations in all (3) Spans. Lots of cracking in all of the Spans. Poor skid resistance on the older portion of the deck. ZRGZ

05/07/2010 - No change from the previous inspections. HZMS

06/16/2008 - Delaminations/spalls in all (3) spans, but mostly in the newer portion of the deck. About 1/3 of 1 lane is mostly delaminated as found in a quick chain drag. Old deck surface has little skid resistance remaining. RZDZ

05/31/2007 - None EVHZ

05/04/2005 - Wear in the wheel paths. Some cracking throughout. Newer portion appears to be cracking over the rebar, transverse, on 6" to 8" centers. Placed in Condition State 2 as there are a couple of delaminated areas. Same on the low skid resistance. FZDZ

04/30/2003 - Minor areas of efflorescence on the underside of the deck. Tight transverse cracks throughout the deck; more evident over Bents 2 and 3. Wear in the wheel paths with exposed aggregate. Very low skid resistance. ZHEB

08/06/2001 - 54.25 * 14.50 = 786.63 NHGN

Studded tire wear in the wheel paths.

01/14/1999 - Small tight transverse cracks in deck surface. Minor efflorescence on underside of deck. UAIV

04/01/1996 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 107 - Paint Stl Opn Girder										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	1	380	m.		85	10	5	0	0
						%	%	%	%	%

Previous Inspection Notes :

06/28/2012 - Some fading of the paint on the newer girders and the Right side of the Left most older girder. Some rust, scale, and surface pitting of the older girders. ZRGZ

05/07/2010 - No change from the previous inspections. HZMS

06/16/2008 - Newer girders show minor fading of the coating system on the Outer-Right side of the Right most girder. Older portion of the structure's girders has some rusty spots, scale, and surface pitting; especially under open joints. Numerous broken welds on the attached blast plate. RZDZ

05/31/2007 - None EVHZ

05/04/2005 - Rusty spots, scale, minor paint loss, and smoke on the lower flange and lower portions of the web area on the older girders. New girders have no problems noted as of now. FZDZ

04/30/2003 - Some spot rust on the original girders. Worse rust spots are under leaking joints. No paint on the back side of bolts used for connecting diaphragms to old girders and they are rusted. Some pack rust noted in the bottom flange area over both Bents. ZHEB

08/06/2001 - 7 * 54.25 = 379.75m NHGN

01/14/1999 - Very minor rust on original painted steel beams. UAIV

04/01/1996 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00691
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 205 - R/Conc Column Bent 2 and 3										
	1	1	8	ea.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/28/2012 - (1) small delamination on Bent 3's - 2nd from the Left column. Spall on the Left column at Bent 2.										ZRGZ
05/07/2010 - No change from the previous inspections and in mostly Good condition.										HZMS
06/16/2008 - Left column at Bent 2 has a small surface spall from exposed rebar chair; Condition State 2.										RZDZ
05/31/2007 - None										EVHZ
05/04/2005 - Minor and tight shrinkage cracks. Tight cracks at the cap to column construction joint.										FZDZ
04/30/2003 - Some surface shrinkage cracks.										ZHEB
08/06/2001 - None										NHGN
01/14/1999 -										UAIV
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										
Element 215 - R/Conc Abutment 1 and 4										
	1	1	35	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/28/2012 - Tight cracks in both backwalls. The worse areas are on the older portion of the bridge. Spall on the Left wingwall of Abutment 1.										ZRGZ
05/07/2010 - No change from the previous inspections and in mostly Good condition.										HZMS
06/16/2008 - Same on tight cracks. Left end of Abutment 1 has a small spalled area at the wingwall.										RZDZ
05/31/2007 - None										EVHZ
05/04/2005 - Both of the backwalls have cracks.										FZDZ
04/30/2003 - Minor and tight cracks in areas where girder ends are embedded in the Abutment backwalls. Some erosion at the NE corner.										ZHEB
08/06/2001 - $(14.50 * 2) + (4 * 1.60) = 35.40m$										NHGN
01/14/1999 - None										UAIV
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

I00315001+00691
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 234 - R/Conc Cap Bent 2 and 3										
	1	1	29	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/28/2012 - Bent 3's cap has a delaminated area under G2 on the Span 3 face and Bent 2's has a small delamination on the Span 2 face along with a small spalled area.										ZRGZ
05/07/2010 - No change from the previous inspections and in mostly Good condition.										HZMS
06/16/2008 - Small delaminated area on the Span 2 side of Bent 2's cap. Underside of the caps show some minor surface spalls from exposed and rusty rebar chair feet.										RZDZ
05/31/2007 - None										EVHZ
05/04/2005 - Same on the old to new construction joint. Small delaminated area on the Span 2 side of Bent 2's cap.										FZDZ
04/30/2003 - Minor and tight cracks with some minor concrete popouts where old portion and newer portion of the caps are joined together.										ZHEB
08/06/2001 - 2 * 14.50 = 29.00m										NHGN
01/14/1999 - None										UAIV
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										
Element 301 - Pourable Joint Seal Bents 2 and 3										
	1	3	20	m.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/28/2012 - Joint steel in the older portion of the deck only. Steel is solid when tapped on. Delaminations and spalls along the edge of the steel. No sealant in the joints.										ZRGZ
05/07/2010 - No change from the previous inspections and in mostly Good condition.										HZMS
06/16/2008 - Joints leak. Spalls along the steel guard angles. The steel sounds solid when tapped on.										RZDZ
05/31/2007 - None										EVHZ
05/04/2005 - 10.21 * 2 = 20.42m Double guard angle type joints in the older portions of the deck. When newer deck was added, there was no continuation of the joints.										FZDZ
Inspection Notes:										
Element 310 - Elastomeric Bearing New girders at Bent 2 and 3										
	1	1	4	ea.		100	0	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/28/2012 - Rubber portion is Good. Spot rust on the steel portion of the bearings.										ZRGZ
05/07/2010 - No change from the previous inspections and in Good condition.										HZMS
06/16/2008 - Unchanged. Spot rust on the steel portions and bird debris starting to build up.										RZDZ
05/31/2007 - None										EVHZ
05/04/2005 - Spot rust on the steel portions of the bearings.										FZDZ
04/30/2003 - Some minor spot rust forming on the steel portion of the bearings.										ZHEB
08/06/2001 - Bent #2 & #3 under the new girders.										NHGN
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00691
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing Bent 2 and 3 under Older Girders										
	1	1	10	ea.		90	10	0		
						%	%	%	%	%

Previous Inspection Notes :

06/28/2012 - Alignment was Good today. Some rust, paint loss, and debris. ZRGZ

05/07/2010 - No change from the previous inspections and in mostly Good condition. HZMS

06/16/2008 - Spot rust from leakage. Alignment is Good. RZDZ

05/31/2007 - None EVHZ

05/04/2005 - Some rusty spots and scale. FZDZ

04/30/2003 - Rusty spots as these joints are leaking some. Also dirt and pack rust between bottom of the rocker and bottom plate of the bearings. ZHEB

08/06/2001 - Bent #2 & #3 under the original girders. Some rust and pitting. NHGN

01/14/1999 - None UAIV

04/01/1996 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 331 - Conc Bridge Railing										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	108	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

06/28/2012 - Right barrier has a spalled section in Span 2. Retro-fitted barrier on the Left curb is in Good condition with some shrinkage cracks. ZRGZ

05/07/2010 - No change from the previous inspections and in mostly Good condition. HZMS

06/16/2008 - Minor and tight surface shrinkage cracks. Left rail sets on top of older curb. RZDZ

05/31/2007 - None EVHZ

05/04/2005 - Same as previously reported. FZDZ

04/30/2003 - Vertical cracks throughout both rails. Some minor scrapes to rails and a few small popouts of the rail concrete. ZHEB

08/06/2001 - $54.25 * 2 = 108.50m$ NHGN

01/14/1999 - None UAIV

04/01/1996 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00691
Continue

***** Span : Main-0 - (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 358 - Deck Cracking SmFlag										
X	1	1	1	ea.	X	0	0	100	0	
						%	%	%	%	%

Previous Inspection Notes :

06/28/2012 - The worse areas of cracking are showing lots of spalling and delaminated areas.	ZRGZ
05/07/2010 - No change.	HZMS
06/16/2008 - Many of the cracks are wider, 0.5 to 1.0mm, and are open. Some of the cracks have scaling along their edges.	RZDZ
05/31/2007 - None	EVHZ
05/04/2005 - Add some cracking over the rebar in Span 2 to the previous reports.	FZDZ
04/30/2003 - Tight transverse and mapping cracks throughout. Mostly on the older portion of the deck.	ZHEB
08/06/2001 - No change.	NHGN
01/14/1999 - Small, tight tranverse cracking throughout the deck.	UAIV

Inspection Notes:

General Inspection Notes

06/28/2012 - Access is tough at this bridge due to erosion and fences.	ZRGZ
05/07/2010 - None	HZMS
06/16/2008 - Deck is getting worse. Some asphalt placed in the erosion at the NE corner of the bridge.	RZDZ
05/31/2007 - None	EVHZ
05/04/2005 - NBI 58, deck, rated at a "6" due to delaminations and minor spalling.	FZDZ
04/30/2003 - NBI 60, substructure, rated at a "7" due to some cracking in the substructure concrete.	ZHEB
08/06/2001 - None	NHGN
01/14/1999 - None	UAIV
04/01/1996 - Sufficiency Rating Calculation Accepted by ops\$u5963 at 3/11/97 10:45:05 Sufficiency Rating Calculation Accepted by ops\$u9004 at 2/19/97 14:15:35	YDNF
02/01/1994 -	REFI
08/01/1992 - Updated with tape 1994	NB94
01/01/1991 - Updated with tape 1992	NB92
03/01/1989 - Updated with tape 1991	NB91
04/01/1987 - Updated with tape 1989	NB89
09/01/1984 - Updated with tape 1986	NB86

I00315001+00692

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **1 1 Interstate Hwy**

Signed Route Number : **00315**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **BNSF RAILROAD**

Kilometer Post, Mile Post : **1.71 km 1.06**

Structure on the State Highway System : Latitude : **47°29'17"**

Structure on the National Highway System : Longitude : **111°20'07"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IR 315-5(12)1F**

Construction Station Number : **29+98.00**

Construction Drawing Number : **6825**

Construction Year : **1967**

Reconstruction Year : **1996**

Traffic Data

Current ADT : **25,500** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	B ASD Assigned
Operating Load, Design :	33.5 mton	B ASD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	78.98		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **63.40 m**
Deck Area : **767.00 m sq**
Deck Roadway Width : **11.18 m**
Approach Roadway Width : **11.18 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **R Railroad beneath struc**
Vertical Clearance Under the Structure : **6.93 m**
Reference Feature for Lateral Underclearance : **R Railroad beneath struc**
Minimum Lateral Under Clearance Right : **3.96 m**
Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **1**
Material Type Code, Description : **3 Steel**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
Deck Surfacing Type : **1 Monolithic concrete (concurrently placed with struct**
Deck Protection Type : **0 None**
Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **4**
Material Type Code, Description : **5 Prestressed concrete**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder**



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
Route On Structure	I00315	West	99.99 m	11.18 m	N/A		
I-315 AT EXIT 0 - WB							

I00315001+00692
Continue

Inspection Data

Sufficiency Rating : **93.8**
Structure Status : **Not Deficient**

Inspection Due Date : **16 June 2015**
(91) Inspection Frequency (months) : **24**

NBI Inspection Data

(90) Date of Last Inspection : 17 June 2013
(90) Inspection Date :
Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : <input type="text" value="5"/>	(68) Deck Geometry : <input type="text" value="5"/>	(36A) Bridge Rail Rating : <input type="text" value="1"/>	(62) Culvert Rating : <input type="text" value="N"/>
(59) Superstructure Rating : <input type="text" value="7"/>	(67) Structure Rating : <input type="text" value="6"/>	(36B) Transition Rating : <input type="text" value="1"/>	(61) Channel Rating : <input type="text" value="N"/>
(60) Substructure Rating : <input type="text" value="6"/>	(69) Under Clearance : <input type="text" value="5"/>	(36C) Approach Rail Rating : <input type="text" value="1"/>	(71) Waterway Adequacy : <input type="text" value="N"/>
(72) App Rdwy Align : <input type="text" value="8"/>	(41) Posting Status : <input type="text" value="A"/>	(36D) End Rail Rating : <input type="text" value="1"/>	(113) Scour Critical : <input type="text" value="N"/>

Unrepaired Spalls : Deck Surfacing Depth :

Inspection Hours

Crew Hours for inspection : <input type="text" value="4"/>	Snooper Required : <input checked="" type="checkbox"/>
Helper Hours : <input type="text" value="0"/>	Snooper Hours for inspection : <input type="text" value="2"/>
Special Crew Hours : <input type="text" value="0"/>	Flagger Hours : <input type="text" value="0"/>
Special Equipment Hours : <input type="text" value="0"/>	

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2003-000437	27 June 2003	Approved	High	All Spans	301 Pourable Joint Seal	Min Repair	
Seal leaking joints. Approved. DRC							
D31-FY2003-000436	27 June 2003	Approved	Low	A Approach	12 Bare Concrete Deck	Min Repair	
Repair pot hole starting in the deck near centerline over Bent 4. 05/31/2007 Add repairs to the spalls and delamiantions also. 06/15/2011 More starting to spall. Approved. DRC							
D31-FY2004-000081	28 January 2004	Approved	Low	All Spans	Bridge	Spot Paint (flex)	
Clean pigeon debris from caps. Re-paint steel as needed. 05/31/2007 Some done with during snooper inspection. Approved. DRC							
D31-FY2006-000003	18 October 2005	Approved	Low	A Approach	109 P/S Conc Open Girder	Min Repair	
Clean dirt/debris from along the Right girder in Span 5. 06/15/2011 Some work has been done. Approved. DRC							

Late Reason:
Inspection Date: 06/17/2013

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Continue

Element Inspection Data

***** Span : Main-0 - STEEL WF - SPAN 3 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	190	sq.m.	X	0	0	100	0	0
						%	%	%	%	%

Previous Inspection Notes :

06/17/2013 - Cracking with delaminations and spalling in this Span. Some patching done, but the patches are starting to fail. RZEV

10-2013 deck sourvy found 7.2 percetn spalls/delaminations.

06/16/2011 - More of the delaminations are starting to spall and leaving potholes. Some patching has been done since the last inspection. RMGH

06/30/2009 - Wear in wheel paths to the aggregate. Poor skid resistance. Spalls throught span and estimate greater than 3 percent delamination. ZZDZ

05/31/2007 - Wear to the concrete surface. Left in Condition State 2 as estimated less than 2 percent of the surface showing spalls/distress. EZHZ

Some asphalt patching done on the spalls, but blowing out again.

05/04/2005 - Tight mapping cracks in the deck surface. 1 m2 delamination and spall near centerline at Bent 4. Wear in the wheel paths from studded tires. (12.09 * 15.70 = 189.81) Nate. FZMK

04/30/2003 - Tight cracking throughout the deck. Studded tire wear in the wheel paths with exposed aggregate. There is a section of delamination and a pothole on the centerline near Bent 4, 1 sq m. ZZEB

08/06/2001 - 12.09 * 15.85 = 191.62 NHGO

Some small, tight transverse cracking throughout. No brooming left for low skid resistance. Exposed aggregate surface in the wheel paths from studded tire wear.

01/14/1999 - None DCHF

04/01/1996 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 107 - Paint Stl Opn Girder										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	1	79	m.		85	10	5	0	0
						%	%	%	%	%

Previous Inspection Notes :

06/17/2013 - Rust blisters with minor surface pitting under the worst rust blisters. Girders are dirty and grimey where de-icer has sat on them. Faded paint and peeling paint in the rust blister areas where mositure can collect. RZEV

06/16/2011 - Rust, scale, and surface pitting to girders under areas that leak. Rust blisters on the lower flanges where water can collect. Paint is faded. RMGH

06/30/2009 - Same comments as past inspection and add rust blisters under areas that leak and minor surface pitting under the rust blisters. Some spot painting done during snooper inspection. ZZDZ

05/31/2007 - Areas on the ends of the girders under joints show the worse rusty spots and loss of paint system. Ends at Bent 3 show pitting and are rusty with paint system failure. The diaphragm vertical stiffener from the new girder, G1, to the older girder is welded solid across the top of the bottom flange; no problems observed and G2 has a hole where added diaphragm bracket was mis-drilled; photos. EZHZ

05/04/2005 - Minor rust and paint loss. Mostly near the leaking joints and the original girders. (5 * 15.70 = 78.50) Nate. FZMK

04/30/2003 - Minor spot rust with some paint loss; especially under leaking joint areas and where there is pigeon debris. ZZEB

08/06/2001 - 5 * 15.85 = 79.25m No change from the last report. NHGO

01/14/1999 - Minor rust on the surface. DCHF

04/01/1996 - MINOR SURFACE RUST ON ORIGINAL BEAMS YDNF

02/01/1994 - None REFI

Inspection Notes:

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00692
Continue

***** Span : Main-0 - STEEL WF - SPAN 3 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 205 - R/Conc Column Bents 3 and 4										
	1	1	6	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Some tight surface shrinkage cracks and a couple have small spalls on the corners from construction activity.										RZEV
06/16/2011 - Generally in Good condition. Small spall on a couple of the columns.										RMGH
06/30/2009 - Tight surface shrinkage cracks. Some staining of the concrete from leakage and bird debris.										ZZDZ
05/31/2007 - Right column at Bent 3 has a small surface spall at a rebar chair foot. Tight surface shrinkage cracks noted.										EZHZ
05/04/2005 - A couple of the columns have tight cracks at the connection area with the cap.										FZMK
04/30/2003 - Surface shrinkage cracks.										ZZEB
08/06/2001 - None										NHGO
01/14/1999 - None										DCHF
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										
Element 234 - R/Conc Cap Bents 3 and 4										
	1	1	24	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Small delamination on the Span 3 face of Bent 4's cap. Lots of staining from joint leakage. Small surface spalls in the underside of the cap from rebar chair feet.										RZEV
06/16/2011 - Photo of delaminations on Bent 4's cap. Staining from leakage. Some tight shrinkage cracks. Small spall on the surface near the rebar chair feet.										RMGH
06/30/2009 - 5 percent in stste 3 for small delaminationon bent 4 cap. Staining from bird debris and leakage on cap. Several small surface spalls near exposed reinforcing chair feet.										ZZDZ
05/31/2007 - Same as past inspections and add minor surface spalls on the underside of the older portion of the caps from rebar chair feet. Bent 4's cap has (2) spalls/delaminated areas on the Span 4 edge at the top.										EZHZ
05/04/2005 - Tight surface shrinkage cracks. Construction joint between the new to old cap has some minor cracking with minor loose areas along the crack edge; very minor.										FZMK
04/30/2003 - Tight surface shrinkage cracks. Staining of concrete due to leaking joints.										ZZEB
08/06/2001 - 12.09 * 2 = 24.19m										NHGO
01/14/1999 - None										DCHF
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00692
Continue

***** Span : Main-0 - STEEL WF - SPAN 3 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 301 - Pourable Joint Seal Bents 3 and 4										
	1	3	24	m.		60	20	20		
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Sealant is pulling loose and/or is missing in some areas along the joint; photo. Spalling along the joint edges. Material that makes up the headers appears to be sound.										RZEV
06/16/2011 - Loose and missing sealant. Header material of the joints is in Good condition. Deck spalls just off of the joint headers.										RMGH
06/30/2009 - More small spalls along joint edges. Some sealant is loose with lakage evident at both bents.										ZZDZ
05/31/2007 - Joint is sound except where gland is torn or missing. Minor spall along the edges of the joint over Bent 4.										EZHZ
05/04/2005 - Spalls along both sides of the joint at Bent 4. Some areas where the sealant has failed and leaking is evident. Most of the sanding material is cleaned out in the traffic lanes.										FZMK
04/30/2003 - Both joints are leaking with the gland falling out. Concrete along the joints is mostly sound except near centerline of Bent 4 where there is some spalling.										ZZEB
08/06/2001 - 2 * 12.09 = 24.18m										NHGO
01/14/1999 - None										DCHF
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										
Element 310 - Elastomeric Bearing Under New Girders										
	1	1	2	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Rubber portion of the bearings is in Good condition with some tight surface rust and faded paint on the steel portions.										RZEV
06/16/2011 - Spot rust on the steel portions of the bearings. Rubber areas are Good.										RMGH
06/30/2009 - Unchanged from prior reports. Some spot rust on steel portions with spot painting done during snooper inspection.										ZZDZ
05/31/2007 - Minor spot rust and faded paint on the steel portions. A minor tear in the rubber of the bearing at Bent 3; see photo.										EZHZ
05/04/2005 - Some spot rust and minor paint loss.										FZMK
04/30/2003 - One slotted and one fixed(Bent 4). Some spot rust on steel portions of the bearings.										ZZEB
08/06/2001 - Under the new girder; left most.										NHGO
01/14/1999 - None										DCHF
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00692
Continue

***** Span : Main-0 - STEEL WF - SPAN 3 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing Bent 3										
	1	3	4	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Bearing alignment was Good as mostly plumb; 70F. Staining from joint leakage with rust, scale, and paint loss also.										RZEV
06/16/2011 - Good alignment of the bearings. Some paint loss and debris at the bearings.										RMGH
06/30/2009 - Some debris and spot rust. Alignment is good. Blew off and spot painted during snooper inspection.										ZZDZ
05/31/2007 - Alignment looks Good. Rust, debris, and staining. Blew off and spot overcoat painted.										EZHZ
05/04/2005 - Rusty spots, scale, and some debris at the bearings with minor paint loss.										FZMK
04/30/2003 - Rusty spots with some debris around the bearings. Moved to Env. State 3 due to leaking joint.										ZZEB
Inspection Notes:										
Element 313 - Fixed Bearing Bent 4										
	1	1	4	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Rust, scale, debris, peeling paint, and faded paint.										RZEV
06/16/2011 - Spot rust, some debris, and scale on the bearings.										RMGH
06/30/2009 - Rusty areas, dirt, debris, and scale on steel portions. Some spot painting done.										ZZDZ
05/31/2007 - Unchanged with lots of new nests. Some areas blew off and spot overcoat painted.										EZHZ
05/04/2005 - Spot rust, minor paint loss, and bird debris at the bearings.										FZMK
04/30/2003 - Some rust and paint loss.										ZZEB
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	31	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Generally in Good condition. Left side has a small spall on its' backside. Random shrinkage cracks.										RZEV
06/16/2011 - Generally in Good condition with some random vertical cracking throughout.										RMGH
06/30/2009 - Generally good condition. Some cracking between chamfered areas on both side of structure.										ZZDZ
05/31/2007 - Minor popouts and tight surface shrinkage cracks.										EZHZ
05/04/2005 - No change from previous reports. (15.70 * 2 = 31.40) Nate.										FZMK
04/30/2003 - Vertical cracks throughout both rails. Some minor popouts in the concrete of the rails.										ZZEB
08/06/2001 - 15.85 * 2 = 31.70m										NHGO
01/14/1999 - None										DCHF
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00692
Continue

***** Span : Main-0 - STEEL WF - SPAN 3 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 358 - Deck Cracking SmFlag										
X	1	3	1	ea.	X	0	0	100	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Unchanged from previous report.										RZEV
06/16/2011 - Numerous cracks in the delaminated areas with spalling at the wider cracks.										RMGH
Inspection Notes:										

***** Span : Appr-1 - P/S CONC SPANS - 1,2,4,and 5 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	569	sq.m.	X	0	0	100	0	0
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Mapping cracks, wear, delaminations, and spalling in some spots. Some exposed rebar in the deepest spalls.										RZEV
06/16/2011 - Wear from studded tires. Some of the delaminated areas are starting to spall and need patching.										RMGH
06/30/2009 - Wear in the wheel paths. Poor skid resistance. Small spalls and delaminations in all spans. Tight transverse cracking over unjointed bents. Estimate 3 percent delamination.										ZZDZ
05/31/2007 - Poor skid resistance. Studded tire wear with exposed aggregate look on the surface. Left in Condition State 2 as estimated at 2 percent or less distressed/delaminated areas.										EZHZ
05/04/2005 - Tight mapping cracks throughout. Small delaminated area is starting to spall near Centerline of Bent 4. Very little skid resistance remains. (47.09 * 12.09 = 569.32) Nate.										FZMK
04/30/2003 - Tight cracking throughout the deck. Studded tire wear in the wheel paths with exposed aggregate. Very little skid resistance left. Small pothole and delamination near centerline at Bent 4.										ZZEB
08/06/2001 - 47.55 * 12.09 = 574.88										NHGO
Small & tight transverse cracking throughout. No broom marks left for poor skid resistance. Studded tire wear in the wheel paths.										
01/14/1999 - Spans #1, 2, 4, & 5										DCHF
04/01/1996 - _										YDNF
Inspection Notes:										

I00315001+00692
Continue

***** Span : Appr-1 - P/S CONC SPANS - 1,2,4,and 5 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 109 - P/S Conc Open Girder										
	1	1	235	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

06/17/2013 - Generally in Good condition. Diagonal crack/spall on G2 and G3 at Bent 3 has not changed. RZEV

06/16/2011 - G2 at Bent 3 has a diagonal crack from the bearing and has not changed since the last inspection. Spall on G3 has also not changed. RMGH

06/30/2009 - Same comments as past inspections. ZZDZ

05/31/2007 - Unchanged and add that G2 bearing area at Bent 3 has a diagonal crack at 45 degrees in the direction of shear at the Span side of the sole plate; photo to Helena-D. Crumley. G3 at Bent 3 is spalled on the Span side behind the sole Plate; photos to Helena-D. Crumley. EZHZ

05/04/2005 - Minor and tight cracks on the ends of the girders near both Abutments; girders are embedded in the backwalls. 2nd girder from the Right in Span 1 has several small hits on its' lower flange with small areas of section loss; probably from construction activities when the structure was widened. No cracks visible in the hit areas and no exposed tendons. (47.09 * 5 = 235.45) FZMK

04/30/2003 - Some minor cracking on the ends of the girders. Graffiti on girders near the Abutments. ZZEB

08/06/2001 - 47.55 * 5 = 237.75m NHGO

01/14/1999 - None DCHF

04/01/1996 - INCLUDES SPANS 1,2,4,5 YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 205 - R/Conc Column Bents 2 and 5										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	1	6	ea.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

06/17/2013 - Generally in Good condition. Some tight shrinkage cracks and some small spalls along the scrapes. Bent 2's middle column has a 6" x 6" spall on the back-Left corner. RZEV

06/16/2011 - Generally in Good condition. Same on small spall on center column at Bent 2. RMGH

06/30/2009 - Generally good condition. One small spall on center column at bent 2. ZZDZ

05/31/2007 - Same as past inspections and a couple of small surface spall from rebar chair feet. EZHZ

05/04/2005 - Tight surface shrinkage cracks on all of the columns. Some wider but still tight cracks at the cap to column construction joint area. FZMK

04/30/2003 - Tight surface shrinkage cracks. ZZEB

08/06/2001 - Bent #2 & 5. NHGO

01/14/1999 - None DCHF

04/01/1996 - _ YDNF

Inspection Notes:

I00315001+00692
Continue

***** Span : Appr-1 - P/S CONC SPANS - 1,2,4,and 5 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 6										
	1	1	35	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Generally in Good condition. Some small spalls at the backwall to cap connection area.										RZEV
06/16/2011 - Same comments as the previous inspections.										RMGH
06/30/2009 - Good condition. Small spalls along backwall/cap connection area. Tight cracking in both abutment caps.										ZZDZ
05/31/2007 - Tight surface shrinkage cracks, but in generally Good condition.										EZHZ
05/04/2005 - Both backwalls have tight cracks. Same on the erosion near the SE corner of Abutment 1.										FZMK
04/30/2003 - Some minor and tight cracks in the backwalls. Very minor erosion near the SE corner that is allowing dirt/debris to get on the girder near the Abutment.										ZZEB
08/06/2001 - $(12.09 * 2) + (2.60 * 4) = 34.58m$										NHGO
01/14/1999 - None										DCHF
04/01/1996 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										
Element 234 - R/Conc Cap Bents 2 and 5										
	1	1	24	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Bird nests and debris on the tops of the caps. Small delamination on Bent 5's cap near the connections to the columns. Small surface spalls on the bottoms of the caps from rebar chair feet.										RZEV
06/16/2011 - Unchanged and more bird debris on the caps.										RMGH
06/30/2009 - 5 percent into state 3 for small delamination on bent 5 cap and along construction joints at columns. Several small surface spalls on exposed rusty rebar chair feet. Bird nests and debris on all caps.										ZZDZ
05/31/2007 - Minor delamination on the Span 5 side of Bent 5's cap. Also some minor surface spalls on the bottom side of the older portion of the cap from exposed rebar chair feet.										EZHZ
05/04/2005 - Unchanged from the last reports.										FZMK
04/30/2003 - Tight crack at the new to old connection in the caps. Surface shrinkage cracks throughout. Some delamination noted at Bent 5 on the Span 5 side of it.										ZZEB
08/06/2001 - $12.09 * 2 = 24.18m$										NHGO
01/14/1999 - _										DCHF
Inspection Notes:										
Element 310 - Elastomeric Bearing Bent 3 and 5 - Under Newer Girder										
	1	1	2	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Good condition. Rubber is Good. Spot rust on the steel portions of the bearings with faded paint.										RZEV
06/16/2011 - Spot rust on the steel portions. Rubber portions are Good.										RMGH
06/30/2009 - Spot rust and staining on steel portions. Small tear on pad is unchanged and not a problem.										ZZDZ
05/31/2007 - Spot rust on the steel portions. Minor tear on the outer edge of the pads as noted in last snooper inspection, but not a problem. Tears are minor and have not gotten any worse.										EZHZ
05/04/2005 - Minor rust and paint loss with minor tears starting on a couple of the elastomeric pads. Lots of pigeon debris around them also.										FZMK
04/30/2003 - Some rust and pitting with minor paint loss.										ZZEB
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00692
Continue

***** Span : Appr-1 - P/S CONC SPANS - 1,2,4,and 5 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 313 - Fixed Bearing										
	1	1	38	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Rust, scale, debris, and paint loss.										RZEV
06/16/2011 - Rust, paint loss, scale, and debris.										RMGH
06/30/2009 - Spot rust, paint fade, and some debris. The worst paint loss is on abutment bearings.										ZZDZ
05/31/2007 - Spot rust, paint loss, and pigeon debris on the bearings. Left Abutment bearings in the quantity as (1) anchor bolt per bearing is visible. Blown off and spot overcoat painted if they were dry.										EZHZ
05/04/2005 - Minor rust, paint loss, and pigeon debris.										FZMK
04/30/2003 - Spot rust on the bearings. Some debris from birds, etc.										ZZEB
08/06/2001 - Minor rust and pitting.										NHGO
01/14/1999 - None										DCHF
04/01/1996 - _										YDNF
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	94	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/17/2013 - Generally in Good condition. Small spalls on the backside of the barrier at bolt-ups to the W-Beam. Random shrinkage cracking.										RZEV
06/16/2011 - Generally in Good condition. Random vertical cracks throughout.										RMGH
06/30/2009 - Tight surface shrinkage cracks throughout. Small surface popouts and vertical cracking in all spans. Generally good condition.										ZZDZ
05/31/2007 - Minor popouts and tight shrinkage cracks.										EZHZ
05/04/2005 - Same as previous reports. (47.09 * 2 = 94.18) Nate.										FZMK
04/30/2003 - Vertical cracks throughout both rails with some minor concrete popouts.										ZZEB
08/06/2001 - 47.55 * 2 = 95.10m										NHGO
01/14/1999 - None										DCHF
04/01/1996 - _										YDNF
Inspection Notes:										

I00315001+00693

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **00000 RURAL AREA**

Kind fo Hwy Code, Description : **8 8 Other (incl toll rds)**

Signed Route Number : **00315**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **BNSF RAILROAD**

Kilometer Post, Mile Post : **1.71 km 1.06**

Structure on the State Highway System : Latitude : **47°29'18"**

Structure on the National Highway System : Longitude : **111°20'06"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IR 315-5(12)1F**

Construction Station Number : **6+55.00**

Construction Drawing Number : **15924**

Construction Year : **1996**

Reconstruction Year :

Traffic Data

Current ADT : **25,500** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	A LFD Assigned
Operating Load, Design :	32.6 mton	A LFD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	48.6		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **56.69 m**
Deck Area : **456.00 m sq**
Deck Roadway Width : **7.11 m**
Approach Roadway Width : **7.20 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **R Railroad beneath struc**
Vertical Clearance Under the Structure : **6.98 m**
Reference Feature for Lateral Underclearance : **R Railroad beneath struc**
Minimum Lateral Under Clearance Right : **1.70 m**
Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **5**
Material Type Code, Description : **5 Prestressed concrete**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
Deck Surfacing Type : **1 Monolithic concrete (concurrently placed with struct**
Deck Protection Type : **1 Epoxy Coated Reinforcing**
Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **0**
Material Type Code, Description :
Span Design Code, Description :



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
Route On Structure	I00315	West	99.99 m	7.11 m	N/A		
-315 AT EXIT 0-WB OFF RAM							

I00315001+00693
Continue

Inspection Data

Sufficiency Rating : **94**
Structure Status : **Functionally Obsolete**

Inspection Due Date : **16 June 2015**
(91) Inspection Frequency (months) : **48**

NBI Inspection Data

(90) Date of Last Inspection : **16 June 2011**
(90) Inspection Date :

Last Inspected By : **Charles Pepos - 107**
Inspected By :

(58) Deck Rating : <table border="1"><tr><td>7</td><td></td></tr></table>	7		(68) Deck Geometry : <table border="1"><tr><td>6</td><td></td></tr></table>	6		(36A) Bridge Rail Rating : <table border="1"><tr><td>1</td><td></td></tr></table>	1		(62) Culvert Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N	
7											
6											
1											
N											
(59) Superstructure Rating : <table border="1"><tr><td>8</td><td></td></tr></table>	8		(67) Structure Rating : <table border="1"><tr><td>7</td><td></td></tr></table>	7		(36B) Transition Rating : <table border="1"><tr><td>1</td><td></td></tr></table>	1		(61) Channel Rating : <table border="1"><tr><td>N</td><td></td></tr></table>	N	
8											
7											
1											
N											
(60) Substructure Rating : <table border="1"><tr><td>7</td><td></td></tr></table>	7		(69) Under Clearance : <table border="1"><tr><td>3</td><td></td></tr></table>	3		(36C) Approach Rail Rating : <table border="1"><tr><td>1</td><td></td></tr></table>	1		(71) Waterway Adequacy : <table border="1"><tr><td>N</td><td></td></tr></table>	N	
7											
3											
1											
N											
(72) App Rdwy Align : <table border="1"><tr><td>7</td><td></td></tr></table>	7		(41) Posting Status : <table border="1"><tr><td>A</td><td></td></tr></table>	A		(36D) End Rail Rating : <table border="1"><tr><td>1</td><td></td></tr></table>	1		(113) Scour Critical : <table border="1"><tr><td>N</td><td></td></tr></table>	N	
7											
A											
1											
N											

Unrepaired Spalls : **0 m sq**

Deck Surfacing Depth : **0.00 in**

Inspection Hours

Crew Hours for inspection :

2

 Helper Hours :

0

 Special Crew Hours :

0

 Special Equipment Hours :

0

Snooper Required :
 Snooper Hours for inspection :

0

 Flagger Hours :

0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States				
Candidate ID	Date Requested						X	X	X	X	X
D31-FY2003-000401	09 May 2003	Approved	High	M Main	300 Strip Seal Exp Joint	Min Repair	X	X	X	X	X
Clean dirt and debris out of the joint at Abutment 1. 06/16/2011 Full of sanding material today.											
Approved. DRC											

Late Reason:
Inspection Date: 06/16/2011

I00315001+00693
Continue

Element Inspection Data

***** Span : Main-0 - Spans 1,2,3,4,&5 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 26 - Conc Deck/Coatd Bars										
	1	3	456	sq.m.	X	100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Wear in the wheel paths from studded tires. Small and shallow surface spalls in the concrete past the edge of the joint steel.										RZGM
05/31/2007 - Minor studded tire wear. Good skid resistance. Wider cracks over the Bents; 0.5mm										EZH Z
05/04/2005 - Studded tire wear in the wheel paths. Small loose concrete along portions of the joint at Abutment 1. Wider cracks over all of the Bents.										EZFQ
04/30/2003 - Same comments as previous report and add studded tire wear in the wheel paths with exposed aggregate.										BDHZ
08/06/2001 - Transverse cracks at all (4) bents. Transverse cracks, mostly small & tight, in the west half with some minor efflorescence underneath.										NHGO
12/23/1998 - 56.69 * 8.05 = 456.35										AHBS
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	227	m.		100	0	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Good condition.										RZGM
05/31/2007 - No problems observed.										EZH Z
05/04/2005 - No problems noted. (55.40 * 4 = 221.60 NMS)										EZFQ
04/30/2003 - No problems noted. Some graffiti on girders near the Abutments.										BDHZ
08/06/2001 - None										NHGO
12/23/1998 - 56.69 * 4 = 226.76m										AHBS
Inspection Notes:										
Element 205 - R/Conc Column Bents 2, 3, 4, and 5										
	1	1	8	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - One small spall on the Left column at Bent 3 for Condition State 2. Several peeling sack patches at the construction joints.										RZGM
05/31/2007 - Tight surface shrinkage cracks. Placed 5 percent into Condition State 2 as sacked patches are delaminated or peeling where installed. None are a problem.										EZH Z
05/04/2005 - Minor surface shrinkage cracks.										EZFQ
04/30/2003 - Minor surface shrinkage cracks. No problems noted.										BDHZ
08/06/2001 - None										NHGO
12/23/1998 - None										AHBS
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00693
Continue

***** Span : Main-0 - Spans 1,2,3,4,&5 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment 1 and 6										
	1	1	24	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Generally in Good condition. Some tight cracking in both Backwalls and one small spall on Abutment 1's backwall.										RZGM
05/31/2007 - Same as prior inspection reports.										EZH Z
05/04/2005 - Tight cracks in both of the backwalls. Worse crack is on the Right end of Abutment 1. Minor erosion and mostly on the Right side of Abutment 6.										EZFQ
04/30/2003 - Some tight cracks in both Abutment backwalls. Still some minor erosion at the wingwalls.										BDHZ
08/06/2001 - No change from the last report.										NHGO
12/23/1998 - $11.58 + 12.34 = 23.92m$										AHBS
Some erosion around three(3) of the wingwalls.										
Inspection Notes:										
Element 234 - R/Conc Cap Bents 2, 3, 4, and 5										
	1	1	37	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Generally in Good condition. One small spall in sack patch at Bent 4. Some tight vertical cracks at steps in the caps.										RZGM
05/31/2007 - Minor and tight cracks at the construction joint to the column. Placed 5 percent into Condition State 2 due to sacked patches showing minor delaminations and/or peeling. None are a problem.										EZH Z
05/04/2005 - Minor and tight cracks at the cap to column connections.										EZFQ
04/30/2003 - Minor surface shrinkage cracks. No problems noted.										BDHZ
08/06/2001 - Dropped caps at the abutments. $9.14 * 4 = 36.56m$										NHGO
12/23/1998 - $(9.14 * 4) + (2 * 8.69) = 53.94m$										AHBS
Inspection Notes:										
Element 300 - Strip Seal Exp Joint										
	1	3	8	m.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Joint steel sounded solid when tapped on. Rubber gland is full of sanding material. Wet spot from apparent leaking near centerline.										RZGM
05/31/2007 - Full of debris today. Damp near centerline on the cap, so may have a slight leak there. Steel portions sound solid when tapped on.										EZH Z
05/04/2005 - Same as previously reported. Full of sanding material today.										EZFQ
04/30/2003 - Full of dirt/sanding material/ May be a small tear near centerline. Added cleaning as a work element.										BDHZ
08/06/2001 - Full of dirt and sanding material.										NHGO
12/23/1998 - $8.05 * 1 = 8.05m$										AHBS
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

I00315001+00693
Continue

***** Span : Main-0 - Spans 1,2,3,4,&5 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 310 - Elastomeric Bearing										
	1	1	4	ea.		100	0	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Good condition. Some fading of the paint on the steel portions.										RZGM
05/31/2007 - No problems observed.										EZHZ
05/04/2005 - Same as last report.										EZFQ
04/30/2003 - Minor spot rust forming on painted surfaces. Spots rub off with some effort. Not a problem as of yet.										BDHZ
08/06/2001 - At Abutment #6.										NHGO
12/23/1998 - None										AHBS
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	36	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Spot rust and some bird debris.										RZGM
05/31/2007 - Minor spot rust on the bearings and bird nests/debris starting to build up.										EZHZ
05/04/2005 - Minor spot rust and some bird nests/debris.										EZFQ
04/30/2003 - Minor spot rust forming on painted surfaces.										BDHZ
08/06/2001 - None										NHGO
12/23/1998 - None										AHBS
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	113	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
06/16/2011 - Minor popouts and scrapes on both barriers. Random vertical cracking throughout.										RZGM
05/31/2007 - Minor popouts and tight surface shrinkage cracks.										EZHZ
05/04/2005 - Same as last report.										EZFQ
04/30/2003 - Vertical cracking throughout; mostly very tight. Some minor popouts on rails concrete surfaces.										BDHZ
08/06/2001 - None										NHGO
12/23/1998 - 56.69 * 2 = 113.38m										AHBS
Inspection Notes:										

U05210000+01601

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **2 2 U.S. Numbered Hwy**

Signed Route Number : **00103**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **CITY ST, BNSF RAILROAD**

Kilometer Post, Mile Post : **0.26 km 0.16**

Structure on the State Highway System : Latitude : **47°30'28"**

Structure on the National Highway System : Longitude : **111°20'26"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IG 15-5(28)274**

Construction Station Number : **21+54.00**

Construction Drawing Number : **7789**

Construction Year : **1967**

Reconstruction Year :

Traffic Data

Current ADT : **11,330** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	B ASD Assigned
Operating Load, Design :	32.6 mton	B ASD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	85		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **167.94 m**
 Deck Area : **2,684.00 m sq**
 Deck Roadway Width : **8.32 m**
 Approach Roadway Width : **8.32 m**
 Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
 Reference Feature for Vertical Clearance : **R Railroad beneath struc**
 Vertical Clearance Under the Structure : **5.16 m**
 Reference Feature for Lateral Underclearance : **R Railroad beneath struc**
 Minimum Lateral Under Clearance Right : **1.52 m**
 Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **4**
 Material Type Code, Description : **4 Steel continuous**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
 Deck Surfacing Type : **3 Latex Concrete or similar additive**
 Deck Protection Type : **0 None**
 Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **2**
 Material Type Code, Description : **3 Steel**
 Span Design Code, Description : **2 Stringer/Multi-beam or Girder**



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	-1	Both	5.16 m	7.32 m	N/A		
GAULT AVE.							
Route On Structure	N00103	N/A			East	99.99 m	8.32 m
CENTRAL AVE WEST - EB							

U05210000+01601
Continue

Inspection Data

Sufficiency Rating : **91.4**
Structure Status : **Functionally Obsolete**

Inspection Due Date : **12 September 2014**
(91) Inspection Frequency (months) : **24**

Next Other Insp Due Date : **23 Aug 2016**
Other Insp Type : **Pin and Hanger**

NBI Inspection Data

(90) Date of Last Inspection : 12 September 2012
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 6	(68) Deck Geometry : 3	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 6	(67) Structure Rating : 6	(36B) Transition Rating : 1	(61) Channel Rating : N
(60) Substructure Rating : 6	(69) Under Clearance : 3	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : N
(72) App Rdwy Align : 7	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : N

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 0.00 in

Inspection Hours

Crew Hours for inspection : 7
Helper Hours : 0
Special Crew Hours : 16
Special Equipment Hours : 16

Snooper Required : Y
Snooper Hours for inspection : 5
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2005-000060	15 October 2004	Approved	Low	All Spans	Bridge	Spot Paint (flex)	
Clean and paint bearings. 10-12-2006: Some spot overcoat painting of the bearings. Approved. DRC							
D31-FY2005-000061	15 October 2004	Approved	High	All Spans	301 Pourable Joint Seal	Min Repair	
Reseal the joints. Approved. DRC							
D31-FY2011-000150	07 February 2011	Not Approved	Medium	All Spans	107 Paint Stl Opn Girder	Min Repair	
Clean and paint girders. 10-12-2006: Some spot overcoat painting of the girders.							
D31-FY2011-000151	07 February 2011	Not Approved	Medium	All Spans	334 Metal Rail Coated	Repl Paint	
Clean and paint rail.							
D31-FY2012-000086	13 September 2012	Not Approved	Medium	All Spans	234 R/Conc Cap	Rehab Elem	
Repair spalls/delaminated areas on caps and columns, especially those on Bent 3.							

Late Reason:
Inspection Date: 09/12/2012

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Continue

Element Inspection Data

***** Span : Main-0 - Steel Girder over RR - Spans 3 thru 6 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck Latex Surface										
	1	3	2293	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Wear in wheel paths from studded tires. Cracking in all spans. Small delaminations and spalls along edges of joint steel.										MWHP
09/20/2010 - Wear in the wheel paths has reduced depth of traction grooves to "0" in areas. Small surface delaminations and small spalls along joint steel. Lots of cracking in all Spans.										WZBZ
09/24/2008 - Wear in the wheel paths. Small spalls and delaminations along edges of the joint steel. Transverse and mapping cracks in all of the Spans.										YQCZ
07/25/2006 - Wear in the wheel paths. Small delamiantions along the expansion joint steel. Some mapping cracks in the latex in all of the spans.										NZDN
09/29/2004 - Put deck into Condition State 2 due to small delaminations along the joints.										ZZIO
10/21/2002 - (79.40 * 15.98) [(15.98 18.40)/2 * 32.8] (18.40 * 25.0) = 2292.6 Put deck back to a "12" as hydromilled and replace material with Latex concrete to original deck elevations. Also Class B repairs. Transverse cracking in all spans. May need to address the cracking on next inspection.										VIKC
08/30/2000 - (79.40* 15.98) [(15.98 18.40) / 2 * 32.8])18.40 * 25.0) = 2292.6										FILQ
Repair of delaminated areas in 1999 with hydrodemolition. Replaced with latex concrete and an overlay of the entire structure with latex concrete/										XKGY
06/03/1998 - Numerous small, tight transverse cracking throughout the deck with some small areas of delamination when it was checked several years ago. Studded tires have left a fairly smooth wear surface.										
12/01/1995 - None										YDNF
Inspection Notes:										
Element 107 - Paint Stl Opn Girder										
	1	2	607	m.		85	10	5	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Lower flange tops in areas that collect water are rusted and some surface pitting under rust blisters. Faded and chalking paint. diagonal bracing between G2 and G3 where removed in 2012 and intersecting welds drilled in reversal areas. Girders are dirty from train exhaust.										MWHP
09/20/2010 - Crack on G3S4L Gusset is unchanged. Lots of debris and grime on the girders. Rust blisters with minor surface pitting. Lots of pigeon nests along the girder connections.										WZBZ
09/24/2008 - G3S4L near pin connection has a crack on the gusset weld for the diagonal brace. Rusty spots, scale, paint loss, and minor surface pitting in areas where water can sit on the girders.										YQCZ
07/25/2006 - Rust spots, pitting, some pack rust, and paint loss; especially under the joints. Left two(2) girders have some missing bolts in the bearings to girders connection. Outer girders have rust blisters on the lower flange tops and lower portion of the webs and near leaky joints. Bolts on a diagonal bracing was missing and replaced during snoopier inspection.										NZDN
09/29/2004 - Some rust spots, peeling paint and pitting of the girders, especially under the joints and on the lower portions of the web/lower flange. 2nd girder from the right in Span 3 is very rusty with paint peeling for 20 feet.										ZZIO
10/21/2002 - Minor rusty spots under leaking joints and along the bottom flange/web area.										VIKC
08/30/2000 - (4 * 137.20) + 32.8 + 25.0 = 606.6m										FILQ
Some rust and pitting.										
06/03/1998 - Some early signs of rust & pitting.										XKGY
12/01/1995 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

U05210000+01601
Continue

***** Span : Main-0 - Steel Girder over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 161 - Paint Stl Pin/Hanger (4) Pin and Hanger Assemblies plus (4) End Girder Connection Pins										
	1	3	8	ea.		95	5	0	0	0
						%	%	%	%	%

Previous Inspection Notes :

09/12/2012 - Pins and hangers where UT tested in August 2012. No serious problems observed (see Collins Engineering report). MWHP

09/20/2010 - Still Good paint where re-painted by UT inspectors. Refer to report by Collins Engineering. No "noteables" were found in the UT inspection with little to no wear also noted. WZBZ

09/24/2008 - Will be UT'd this Fall. Some minor rust on the pins and hangers. YQCZ

07/25/2006 - Some spot rust showing through areas that were tested and re-painted. Testing in 2005 showed no significant wear or problems. NZDN

09/29/2004 - Ends of the pins, nuts, and hangers showing some minor rust where they were cleaned in 2001 for UT testing. ZZIO

10/21/2002 - See 2001 NDT report. Some minor wear of several pins. VIKC

08/30/2000 - Some minor rust and pitting. FILQ

06/03/1998 - Some minor rust & pitting. Eight(8) sets of the pins have been UDT'ed and were ok. XKGJ

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 205 - R/Conc Column (2) at Bent 3, 4, 5, and (3) at 6										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	1	9	ea.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/12/2012 - Right column at Bent 5 has vertical cracking along corners and areas are delaminated. Some spall/scrapes on columns. Shallow tie wire has caused surface spalls and rust on some columns. MWHP

09/20/2010 - Bent 3's Right column has a delaminated edge and cracking; photo. Some tight cracks and small surface spalls from shallow tie wire. WZBZ

09/24/2008 - Some tight cracks and small spalls. Condition State 3 for delaminations on edges. Some painted areas to cover graffiti. YQCZ

07/25/2006 - Same as past inspections with some small areas of delamination on the edges of the columns where cracked. Middle column at Bent 6 has some spalls from being hot from campfires. NZDN

09/29/2004 - Much graffiti painted on the columns and smoke/soot from camp fires. Mapping surface shrinkage cracks. Vertical cracking on the Right column at Bent 3. Tight cracking at the construction joint to the cap. ZZIO

10/21/2002 - Small, tight shrinkage cracks. Graffiti and smoke from fires started by homeless people under the structure. VIKC

08/30/2000 - No change. FILQ

06/03/1998 - Some hairline, tight cracks in the concrete. XKGJ

Inspection Notes:

U05210000+01601
Continue

***** Span : Main-0 - Steel Girder over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment East - Abutment 7										
	1	1	26	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/12/2012 - Most of area was stacked full of homeless people's belongings. Today some tight cracks observed. Small spall near G3 embedment. Lots of soot from homeless campfires. MWHP

09/20/2010 - Unchanged from prior inspections. Lots of soot and graffiti by homeless people. Some tight cracks under a couple of the bearings. WZBZ

09/24/2008 - Tight cracks in backwall between girders as a couple of small spalls along the edges of the embedded girders. Tight cracks under a couple of the girders in the Abutment cap. YQCZ

07/25/2006 - Same on tight cracks. There is one small spall where girders is embedded on the backwall. NZDN

09/29/2004 - Tight cracks in the backwall concrete. Minor erosion on the right wingwall. ZZIO

10/21/2002 - Minor, tight cracks in backwall concrete. VIKC

08/30/2000 - 14.60 + 1.55 + 9.70 = 25.80 East abutment only. FILQ

No change.

06/03/1998 - Some minor erosion @ the wingwalls. XKGJ

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 234 - R/Conc Cap Bents 3 thru 6										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	1	61	m.		85	10	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/12/2012 - Undersides show surface spalls, staining, and exposed rusty chair feet. Face of Bent 3 cap on span 2 side has large delamination and spalls (photo). Those under leaky areas show staining. MWHP

09/20/2010 - Delaminated areas. Cracking and minor spalls; photo of Bent 3's cap. Surface spalls and delaminations due to rebar chair feet. WZBZ

Some staining from leaky joints.

09/24/2008 - Unchanged. Some of the delaminations started to spall on the shallow tie wire and exposed rebar chair feet. YQCZ

07/25/2006 - Surface spalls on the underside of the caps from shallow rebar chairs. Bent 3's cap has some spalls on the Right half on Span 2 side with some staining in the area. NZDN

09/29/2004 - Minor rusty spots with small spalls from exposed and rusty rebar chairs on the bottom of the caps. Staining from leaking joints. ZZIO

Some pigeon debris/nests.

10/21/2002 - Same as previous report. Add some staining of the concrete under leaking joints. VIKC

08/30/2000 - (3 * 14.60)+ 17.19 = 60.99m FILQ

No change plus also noted some rusty resteel chairs at a couple of spots.

06/03/1998 - Some sanding material on some of the caps. XKGJ

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

U05210000+01601
Continue

***** Span : Main-0 - Steel Girder over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 301 - Pourable Joint Seal										
	1	3	29	m.		60	25	15		
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Steel portion sounds solid when tapped on. More sealant has pulled out and failed.										MWHP
09/20/2010 - Some missing sealant, some loose sealant, and steel portion sounds solid when tapped on.										WZBZ
09/24/2008 - Steel portions are sound. Sealant has lost bond in several areas and debris is pushing sealant down.										YQCZ
07/25/2006 - Unchanged from previous reports.										NZDN
09/29/2004 - Several areas where the joint sealant has lost adhesion and is pulling away from the guard angles. Dirt/debris in portions of the joint.										ZZIO
10/21/2002 - Dirt and debris in joints. Some material has been pushed out by the dirt and debris. Joints leaking in these areas.										VIKC
08/30/2000 - 2 * 14.60 = 29.20 "Dow corning" sytle. Some material is missing.										FILQ
06/03/1998 - _										XKGJ
Inspection Notes:										
Element 305 - Assm Jt w/o Seal										
	1	3	32	m.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Some spalling on underside of deck at joints. Top portions sound solid when tapped on. Finger alignment is good with some fingers touching slightly.										MWHP
09/20/2010 - Good finger alignment and prior inspection comments on underside of the deck in this area still apply.										WZBZ
09/24/2008 - Finger alignment is mostly Good with some edges slightly touching. Some spalling of the header concrete on the underside of the joint. Rusty and scale on the lower portions of the joint's steel.										YQCZ
07/25/2006 - Finger alignment is Good. Steel sounds solid when tapped on. A couple of small delaminations/spalls along the joint's edge.										NZDN
09/29/2004 - Joints are solid when tapped on. A couple of very small delaminated areas on the joint edges. Finger joint is in Good alignment.										ZZIO
10/21/2002 - Rusty spots. Both joints leak as this is the nature of these types of joints.										VIKC
08/30/2000 - 14.60 + 17.19 = 31.79m One finger and one(1) sliding plate joints. Some rust and pitting and also leaking onto the girders and steel below them.										FILQ
06/03/1998 - Some rust & pitting. One(1) finger & (1) Sliding Plate joint.										XKGJ
12/01/1995 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

U05210000+01601
Continue

***** Span : Main-0 - Steel Girder over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing										
	1	3	14	ea.		85	15	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Bearings are towards expansion at 75 degrees F and tolerable. Lots of debris and spot rust on bearings.										MWHP
09/20/2010 - Bearings are towards expansion today; 55F. Debris, rust, and paint loss.										WZBZ
09/24/2008 - Some slight alignment towards expansion today; 40F. Some dirt and debris. Some overcoat painting done.										YQCZ
07/25/2006 - Rusty spots, debris, scale and paint loss. Alignment is tolerable today. Blew off and spot overcoat painted during snooper inspection.										NZDN
09/29/2004 - Rusty spots, scale, paint peel, and pitting on those under the leaking joints. Some pigeon debris/nests near some of the bearings.										ZZIO
10/21/2002 - Rusty and pitting as these are under the leaking joints.										VIKC
08/30/2000 - No change.										FILQ
06/03/1998 - Some rust & pitting.										XKGJ
12/01/1995 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	2	14	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Dirt, debris, and spot rust on bearings.										MWHP
09/20/2010 - Debris, dirt, spot rust, and faded paint.										WZBZ
09/24/2008 - Some cleaning and overcoat painting done. Lots of debris and dirt. Rusty spots and paint loss.										YQCZ
07/25/2006 - Same as past inspections and blew off/spot overcoat painted during snooper inspection.										NZDN
09/29/2004 - Spot rust, paint loss, and minor pitting. Some pigeon debris near some of the bearings.										ZZIO
10/21/2002 - Minor rust and pitting.										VIKC
08/30/2000 - No change.										FILQ
06/03/1998 - Some rust & pitting.										XKGJ
12/01/1995 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

U05210000+01601
Continue

***** Span : Main-0 - Steel Girder over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 331 - Conc Bridge Railing										
	1	3	270	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/12/2012 - Vertical cracks and some mapping cracks on backs of barriers. Spalls where top hand rail was removed. MWHP

09/20/2010 - Unchanged from prior inspections comments. WZBZ

09/24/2008 - Vertical cracks in the relief cuts. Small spalls in some areas on the Right rail where the handrail on top was removed. YQCZ

07/25/2006 - Same as past inspections. NZDN

09/29/2004 - Vertical cracking between the relief cuts. Surface shrinkage cracks. A couple of small areas of fracture concrete along the tops of the barrier where the handrail was removed. ZZIO

10/21/2002 - Pedestrian hand rail removed my Maintenance. Minor, vertical cracks and shrinkage cracks throughout. VIKC

08/30/2000 - Replaced steel rail with concrete barrier rail in 1999. FILQ

06/03/1998 - Some rust & pitting of the rail and posts. XKGJ

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 334 - Metal Rail Coated W-Beam, Pipe Handrail, and Guard Fence w\ Steel Posts										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	137	m.		80	20	0	0	0
						%	%	%	%	%

Previous Inspection Notes :

09/12/2012 - Rust, scale, and paint loss on rail posts and pipes. Gaurd fence and fabric has a bend where a luminare pole fell into it. MWHP

09/20/2010 - Rust, scale, and paint loss to the posts and pipe. Guard fence posts and fabric are in Good condition. WZBZ

09/24/2008 - Some rust, scale, and paint loss on the rail posts and pipes. The guard fence is in Good condition. YQCZ

07/25/2006 - Same as past inspections. NZDN

09/29/2004 - Rusty spots on the rail posts and pipes. Guard fence is in Good condition. ZZIO

10/21/2002 - Rusty spots and pitting throughout. Guard fence is in Good condition. VIKC

08/30/2000 - 137.2x1=137.2 Sidewalk has existing metal rail and guard fence was added during 1999 construction. Minor rust on existing rail and posts. FILQ

Inspection Notes:

Element 357 - Sup Pack Rust SmFlag										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
X	1	2	1	ea.	X	0	100	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/12/2012 - Swelling and cracking of welds on diaphragms lower members where water can get to them. MWHP

09/20/2010 - Unchanged from prior inspections comments. WZBZ

09/24/2008 - Diaphragms under leaky joints show pack rust with swelling and cracking of welds. YQCZ

Inspection Notes:

U05210000+01601
Continue

******* Span : Main-0 - Steel Girder over RR - Spans 3 thru 6 (cont.) *******

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 358 - Deck Cracking SmFlag										
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Both size and density apply.										MWHP
09/20/2010 - Unchanged from prior inspections comments.										WZBZ
09/24/2008 - Lots of wider cracks, near 1.0mm, in all Spans and some areas were density comes into play.										YQCZ
Inspection Notes:										

******* Span : Appr-1 - Steel Girder - Spans 1 and 2 *******

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	491	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Studded tire wear in wheel paths. Spalls/delaminations along edges of joint steel. Random cracking in both spans.										MWHP
09/20/2010 - Transverse and mapping cracks. Wear in the wheel paths. Small surface spalls and delaminations along the joint steel.										WZBZ
09/24/2008 - Some transverse and mapping cracks. Small spalls and delaminations along the joint steel edges. Wear in the wheel paths.										YQCZ
07/25/2006 - Same as past inspections.										NZDN
09/29/2004 - Put into Condition State 2 due to small delaminations along the joints. Some mapping cracks in both spans.										ZZIO
10/21/2002 - 15.98 * 30.74 = 491.23 Changed element back to a "12", as Latex concrete was placed to the same elevation it was prior to hydromilling and class B repair. Numerous, transverse cracks that may need to be re-evaluated at the next inspection; smart flag.										VIKC
Inspection Notes:										

Element 107 - Paint Stl Opn Girder										
	1	2	123	m.		90	5	5	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Steel is in good condition. Some rust blisters with minor surface pitting on tops of bottom flange. Faded and chalky paint. Smoke on those near Abutment 1 from camp fires.										MWHP
09/20/2010 - Some rust blisters on tops of the bottom flanges where moisture can collect. Minor surface pitting under the blisters. Dirty and chalky paint with some spot rust on the majority of area.										WZBZ
09/24/2008 - Paint loss, rusty spots, surface pitting, and very dirty girders. Deicer drips in many areas.										YQCZ
07/25/2006 - Rusty spots, paint loss and pitting in areas under leaky joints. Water runs back towards Abutment 1 on the lower flange of the girders. Lots of dirt/grime on the girders. Lower flanges are sticky from de-icer.										NZDN
09/29/2004 - Lower flange/web portions show rusty spots, peeling paint, and pitting.										ZZIO
10/21/2002 - Rusty and pitting under leaking joints. Rusty spots along bottom flange/web area.										VIKC
08/30/2000 - 4 * 30.74 = 122.96										FILQ
Some areas of rust and pitting.										
06/03/1998 - Some areas of rust & pitting.										XKGJ
Inspection Notes:										

U05210000+01601
Continue

***** Span : Appr-1 - Steel Girder - Spans 1 and 2 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 161 - Paint Stl Pin/Hanger Bent 3 - End Girder Connection Pins										
	1	2	4	ea.		95	5	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Pins were UT tested in August 2012 and no significant problems were observed (see Collins Engineering report).										MWHP
09/20/2010 - Still Good paint where re-painted by UT inspectors. Refer to report by Collins Engineering. No "noteables" were found in the UT inspection with little to no wear also noted.										WZBZ
09/24/2008 - Ut'd recently. See report. Some minor rust showing.										YQCZ
07/25/2006 - No problems found in 2005 UT inspection. Spot rust on the ends of the pins. Wired brushed and re-painted.										NZDN
09/29/2004 - Paint is worn off the areas that were cleaned for UT inspections in 2001 with some surface rust.										ZZIO
10/21/2002 - See NDT report from 2001. No problems noted.										VIKC
Inspection Notes:										
Element 205 - R/Conc Column Bent 2										
	1	1	2	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Tight surface shrinkage cracks and small surface spall from tie wire.										MWHP
09/20/2010 - Tight surface shrinkage cracks. Some shallow surface staining and spalls from tie wire.										WZBZ
09/24/2008 - Tight shrinkage cracks in areas. Columns have been painted to cover graffiti.										YQCZ
07/25/2006 - Same on tight cracks. Graffiti has been painted over.										NZDN
09/29/2004 - Tight shrinkage surface cracks. Tight cracking on the construction joints.										ZZIO
10/21/2002 - Some tight, shrinkage cracks throughout.										VIKC
08/30/2000 - None										FILQ
06/03/1998 - _										XKGJ
Inspection Notes:										
Element 215 - R/Conc Abutment 1 - West										
	1	1	20	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Smokey and sooted from homeless campfires. Some tight cracks in backwall and a small spall near G2 embedded bearing.										MWHP
09/20/2010 - Some tight vertical cracks near centerline of roadway and a small spalled area near G2's bearing. One tent and campfire going today.										WZBZ
09/24/2008 - Same as past comments. Generally in Good condition.										YQCZ
07/25/2006 - Same with one small area spalled where G2 is embedded.										NZDN
09/29/2004 - Tight vertical cracks on the backwall concrete. Some cracks have minor efflorescence.										ZZIO
10/21/2002 - Tight, vertical cracks in the backwall concrete.										VIKC
08/30/2000 - 15.98 + 1.30 + 2.80 = 20.08m										FILQ
06/03/1998 - None										XKGJ
Inspection Notes:										

U05210000+01601
Continue

***** Span : Appr-1 - Steel Girder - Spans 1 and 2 (cont.) *****

Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
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Element 234 - R/Conc Cap Bent 2										
	1	1	16	m.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :										
09/12/2012 - Spalled areas with exposed rusty rebar and chair feet. Shallow surface delamination.										MWHP
09/20/2010 - Same as previous inspection comments.										WZBZ
09/24/2008 - Condition State 3 due to delaminations. Cracks at the steps and lots of dirt/debris.										YQCZ
07/25/2006 - Surface spalls where rebar chairs are exposed on the bottom of the caps.										NZDN
09/29/2004 - Minor rust stains with small spalled sections on the areas where the rebar chairs are exposed; mainly on the bottom of the caps.										ZZIO
10/21/2002 - ok										VIKC
08/30/2000 - 15.98 * 1 = 15.98m										FILQ
06/03/1998 - None										XKGJ

Inspection Notes:										

Element 305 - Assm Jt w/o Seal										
	1	3	16	m.		90	10	0		
						%	%	%	%	%

Previous Inspection Notes :										
09/12/2012 - Steel portions sound solid when tapped on. Minor spalling on underside of deck at joint. Small spalls/delaminations along joint steel.										MWHP
09/20/2010 - Steel sounds solid when tapped on. Some small spalls and delaminations in the concrete along the joint's edge. Minor spalling and staining of the header concrete on the underside of the deck.										WZBZ
09/24/2008 - Steel sounds solid when tapped on. Small spalls and delaminations along the joint edges. Some spalling and staining of the header concrete on the underside of the deck in the header area.										YQCZ
07/25/2006 - Steel sounds solid when tapped on. Small delamination spalled area along the joint.										NZDN
09/29/2004 - Joint leaks. Small piece of delamination along the joint edge.										ZZIO
10/21/2002 - Minor rust spots. Some leaking as this is the nature of these joints.										VIKC
08/30/2000 - 15.98 * 1 = 15.98m Sliding plate.										FILQ
Leaking.										
06/03/1998 - _										XKGJ

Inspection Notes:										

Element 311 - Moveable Bearing Bent 2 and 3										
	1	3	8	ea.		90	10	0		
						%	%	%	%	%

Previous Inspection Notes :										
09/12/2012 - Bearings are towards expansion but tolerable 75 degrees F. Spot rust, stained, and debris.										MWHP
09/20/2010 - Bearings in slight to moderate expansion. Some spot rust, dirt, and debris on the bearings.										WZBZ
09/24/2008 - Slight rotation towards expansion; 55F when under the area. Some overcoat painting and cleaning done.										YQCZ
07/25/2006 - Same as past inspections and alignment is Good.										NZDN
09/29/2004 - Spot rust and pitting from leaking joint. Some pigeon debris/nests near bearings.										ZZIO
10/21/2002 - Rusty and pitting under leaking joints.										VIKC
08/30/2000 - Some rust and pitting.										FILQ
06/03/1998 - Some rust & pitting.										XKGJ

Inspection Notes:										

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Continue

***** Span : Appr-1 - Steel Girder - Spans 1 and 2 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 313 - Fixed Bearing Abutment 1										
	1	2	4	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Spot rust, staining, faded paint, and some debris.										MWHP
09/20/2010 - Spot rust, debris, and faded paint.										WZBZ
09/24/2008 - No change.										YQCZ
07/25/2006 - Same as past inspections.										NZDN
09/29/2004 - Spot rust and pitting on the bearings. Some pigeon debris/nests on and around the bearings.										ZZIO
10/21/2002 - Some rust and scale on Abutment bearings.										VIKC
08/30/2000 - Some rust and pitting.										FILQ
06/03/1998 - Some rust & pitting.										XKGJ
Inspection Notes:										
Element 321 - R/Conc Approach Slab										
	1	3	1	ea.		0	100	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Bump onto bridge from settlement in approach slab and roadway.										MWHP
09/20/2010 - Same as previous inspection comments.										WZBZ
09/24/2008 - Settlement of the slab is allowing a big bump onto the structure. Sealant in the joint between the slab and bridge end is leaking and loose in areas.										YQCZ
07/25/2006 - Put into condition State 2 due to settlement of the slab.										NZDN
09/29/2004 - Minor settlement. Joint between the slab and the structure is leaking as adhesion of the sealant is broken.										ZZIO
10/21/2002 - Minor settlement.										VIKC
08/30/2000 - None										FILQ
06/03/1998 - _										XKGJ
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	61	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/12/2012 - Vertical and mapping cracks. Spalls on tops of barrier where hand rail was removed.										MWHP
09/20/2010 - Same as previous inspection comments.										WZBZ
09/24/2008 - Vertical cracks at the relief cuts. Some spalls on the top where the Right handrail was removed.										YQCZ
07/25/2006 - Same as last inspection.										NZDN
09/29/2004 - Vertical cracking between the relief cuts. Some minor pieces of concrete were fractured from when the metal handrail was removed from the top of the barrier.										ZZIO
10/21/2002 - Vertical cracking and shrinkage cracks throughout.										VIKC
08/30/2000 - 30.74 * 2 = 61.48m New concrete rail in 1999.										FILQ
06/03/1998 - 30.74 * 2 = 61.48										XKGJ
Some rust & pitting of the rail posts and bridge rail.										
Inspection Notes:										

U05210000+01602

Location : GREAT FALLS Structure Name:

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **3 3 State Hwy**

Signed Route Number : **00103**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **CITY ST, BNSF RAILROAD**

Kilometer Post, Mile Post : **0.26 km 0.16**

Structure on the State Highway System : Latitude : **47°30'29"**

Structure on the National Highway System : Longitude : **111°20'27"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **IG 15-5(28)274**

Construction Station Number : **21+54.00**

Construction Drawing Number : **7789**

Construction Year : **1967**

Reconstruction Year :

Traffic Data

Current ADT : **11,330** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	B ASD Assigned
Operating Load, Design :	32.6 mton	B ASD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	85		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **167.94 m**
Deck Area : **1,781.00 m sq**
Deck Roadway Width : **8.32 m**
Approach Roadway Width : **9.14 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **R Railroad beneath struc**
Vertical Clearance Under the Structure : **5.11 m**
Reference Feature for Lateral Underclearance : **R Railroad beneath struc**
Minimum Lateral Under Clearance Right : **1.50 m**
Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

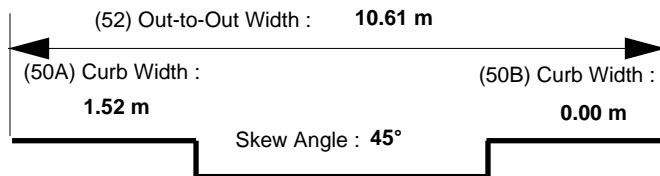
Main Span

Number Spans : **4**
Material Type Code, Description : **4 Steel continuous**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
Deck Surfacing Type : **3 Latex Concrete or similar additive**
Deck Protection Type : **0 None**
Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **2**
Material Type Code, Description : **3 Steel**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder**



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	-1	N/A	5.11 m	7.32 m	N/A		
GUALT AVE							
Route On Structure	N00103	Both	99.99 m	8.32 m	N/A		
CENTRAL AVE. WEST - WB							

U05210000+01602
Continue

Inspection Data

Sufficiency Rating : **76.3**
Structure Status : **Func Obs - Elg Rehab**

Inspection Due Date : **13 September 2014**
(91) Inspection Frequency (months) : **24**

Next Other Insp Due Date : **22 Aug 2016**
Other Insp Type : **Pin and Hanger**

NBI Inspection Data

(90) Date of Last Inspection : **13 September 2012**
(90) Inspection Date :

Last Inspected By : **Charles Pepos - 107**
Inspected By :

(58) Deck Rating : 6	(68) Deck Geometry : 3	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 6	(67) Structure Rating : 6	(36B) Transition Rating : 1	(61) Channel Rating : N
(60) Substructure Rating : 6	(69) Under Clearance : 3	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : N
(72) App Rdwy Align : 7	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : N

Unrepaired Spalls : **0 m sq**

Deck Surfacing Depth : **0.00 in**

Inspection Hours

Crew Hours for inspection : **7**
Helper Hours : **0**
Special Crew Hours : **13.5**
Special Equipment Hours : **13.5**

Snooper Required : **Y**
Snooper Hours for inspection : **5**
Flagger Hours : **0**

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2005-000058	15 October 2004	Approved	Low	All Spans	Bridge	Spot Paint (flex)	
Clean and paint Girders. 2006 - Some overcoat painting and cleaning done. Approved. DRC							
D31-FY2005-000059	15 October 2004	Approved	High	All Spans	301 Pourable Joint Seal	Min Repair	
Reaseal these joints. Approved. DRC							
D31-FY2011-000152	07 February 2011	Not Approved	Medium	All Spans	Bridge	Spot Paint (flex)	
Clean and paint Bearings. 2006 - Some overcoat painting and cleaning done.							
D31-FY2011-000153	07 February 2011	Not Approved	Low	All Spans	334 Metal Rail Coated	Repl Paint	
Clean and paint Rail Posts.							

Late Reason:
Inspection Date: 09/13/2012

U05210000+01602
Continue

Element Inspection Data

***** Span : Main-0 - Steel Girders over RR - Spans 3 thru 6 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	2003	sq.m.	X	0	100	0	0	0
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Studded tire wear in wheel paths. Spalls/Delaminations along edges of joint steel. Mapping cracks in all spans. NLGQ

09/21/2010 - Lots of tight mapping cracks. Wear in the wheel paths. Small spalls and delaminations along joint steel. WZBZ

09/23/2008 - Wear in the wheel paths. Transverse and mapping cracks in areas. Small spalls and surface delaminations along the joint edges. YZCZ

10/13/2006 - Wear in the wheel paths. Right lane has more mapping cracks in it. Spalls/Delaminations along the joint anchorage's steel. NADO

09/29/2004 - Put the deck into Condition State 2 as there are some small areas of delamination along the joint edges. ZAIP

10/21/2002 - 14.60 * 137.20 = 2003.12 Deck element changed to a "12" as the Latex concrete was placed back to the original depths after the 1999 hydromill and Class B repair operations. Cracks in latex where sealed in 1999 with HMWM. Many tight transverse deck cracks. MDT Maintenance is spraying the deck with freeze guard. Cracks are soaking ip the freeze guard. VZKC

08/30/2000 - New Latex concrete overlay in 1999 with some transverse cracking(small and tight). Cracks sealed with HMWM before construction was completed. Delaminated areas were removed by hydrodemolition and replaced with latex concrete. FIKL

06/03/1998 - 14.60 * 137.20 = 2003.12. Numerous small, tight transverse cracking throughout with small areas of delamination when it was checked several years ago. Studded tires have left a fairly smooth wear surface. MHIL

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 107 - Paint Stl Opn Girder										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	2	549	m.		80	15	5	0	0
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Rust blisters, minor surface pitting, and paint loss on tops of lower girder flanges where water and debris has collected. Diagonals between G2 and G3 were removed and intersecting welds in tension reversal zones were drilled early in 2012 under statewide steel rehab job. NLGQ

09/21/2010 - Dirty, grime, bird debris, and rust blisters on top of the bottom flanges. Some surface pitting under rust blisters. Faded and chalky paint. WZBZ

09/23/2008 - Rust, scale, paint loss, and some surface pitting under rust blisters. Outer girders and areas under leaky joints are the worse. Very dirty from diesel smoke, bird debris, and de-icer. YZCZ

10/13/2006 - Rust, scale, pitting and paint loss. Most notable under joints, outside girders, and where piegon nest/debris are built-up. Pulled most of this stuff off. NADO

09/29/2004 - Rusty, scale, peeling paint, and minor pitting; mostly under the joints and on the lower flange/web areas. ZAIP

10/21/2002 - Rusty spots throughout and some pitting. Mostly under leaking joints and on the bottom flange/lower web area. VZKC

08/30/2000 - No Change; mainly under the joints. FIKL

06/03/1998 - 4 * 137.20 = 548.80. Show some signs of early rust & pitting. MHIL

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

INITIAL ASSESSMENT FORM FOR STRUCTURE :

U05210000+01602
Continue

***** Span : Main-0 - Steel Girders over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 161 - Paint Stl Pin/Hanger (4) Pin and Hanger Assemblies plus (4) End Girder Connection Pins										
	1	3	12	ea.		95	5	0	0	0
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Pins and hangers were UT tested in August 2012 and no excessive wear was noted (see Collins Engineering reports).	NLGQ
09/21/2010 - Still Good paint where re-painted by UT inspectors. Refer to report by Collins Engineering. No "noteables" were found in the UT inspection with little to no wear also noted.	WZBZ
09/23/2008 - 2005 UT showed no problems. Some minor rust on the pins and hangers.	YZCZ
10/13/2006 - Showed ok in 2005 UT testing.	NADO
09/29/2004 - Ends of the pins, nuts, and hangers are showing some minor rust where the paint was removed for UT testing. No major wear or problems noted in UT inspection in 2001.	ZAIP
10/21/2002 - See Bills report from 2001.	VZKC
08/30/2000 - No Change; mainly under the joints.	FIKL
06/03/1998 - Some minor rusting and pitting. Eight(8) pins have been UDT'ed and are ok.	MHIL
12/01/1995 - None	YDNF
02/01/1994 - None	REFI

Inspection Notes:

Element 205 - R/Conc Column Bent 3, 4, 5, 6, and 7										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	1	8	ea.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Shallow surface delaminations near tie wire or reinforcing chair feet. Some columns have tight vertical cracks near their corners. Scrapes and shallow spalls on some.	NLGQ
09/21/2010 - Tight surface shrinkage cracks with some cracking on the edges. Some surface spalls from shallow tie wire.	WZBZ
09/23/2008 - Tight cracking in most of the columns. Some surface spalls and small delaminations from shallow tie wire or exposed feet of the rebar chairs. Right column at Bent 3 has not gotten any worse.	YZCZ
10/13/2006 - Same as past inspections with surface spalling where rebar chairs are exposed. Bent 3's Right column has a small spall on the edge with some staining. 5 percent in Condition State 3 is probably pushing it for the staining and spalls.	NADO
09/29/2004 - Tight cracks and shrinkage cracks on most of the columns. Tight cracks near construction joints to the caps. Some rust stains from exposed rebar chairs and/or wire.	ZAIP
10/21/2002 - Some tight cracks throughout. Graffiti and smoked areas from homeless people under the structure.	VZKC
08/30/2000 - No Change.	FIKL
06/03/1998 - Some hairline, tight cracking in the concrete.	MHIL
12/01/1995 - None	YDNF
02/01/1994 - None	REFI

Inspection Notes:

INITIAL ASSESSMENT FORM FOR STRUCTURE :

U05210000+01602
Continue

***** Span : Main-0 - Steel Girders over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment East Abutment (7)										
	1	2	26	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Some tight cracking in backwall and cap. Small spall near embedded bearings and along cap/backwall connection. Lots of belongings of homeless people stacked on backwalls. NLGQ

09/21/2010 - Tight cracks in the backwall and under G3. A couple of small spalls near bearing embedments. One camper between G2 and G3 today. WZBZ

09/23/2008 - Some tight cracks in the backwall and cap. Small spalls along the edges of the girders where they are embedded into the backwalls. YZCZ

10/13/2006 - Unchanged from previous inspections. NADO

09/29/2004 - Minor spalling and deteriorated concrete where the girders meet the backwalls. Minor erosion at the Left wingwall. ZAIP

10/21/2002 - (14.060 1.55 9.70 = 25.80m Minor erosion at wingwall. Some minor concrete deterioration where girders meet the backwalls. VZKC

Inspection Notes:

Element 234 - R/Conc Cap Bent 3, 4, 5, 6, and 7										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	2	58	m.		85	10	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Bent 3 cap has a delamination on Span 2 face along with some spalling (photo). Surface spalls/delaminations on underside of caps from reinforcing chair feet. NLGQ

09/21/2010 - Staining from mositure and rebar chair feet. Delaminated and cracked areas on most of the caps. Some surface spalls and delaminations from shallow tie wire. WZBZ

09/23/2008 - Spalls, cracking, and delaminations in most of the caps. Underside of the caps show surface spalls/delaminations from exposed rebar chair feet. Some staining on the Right end of Bent 3's cap at delamination under G4S2 side. YZCZ

10/13/2006 - Caps show surface spalls from shallow rebar chairs. Some minor staining in delaminated areas. 5 percent in Condition State 3 is maybe alittle strong. NADO

09/29/2004 - Some minor spalled areas on bottoms of the caps where rebar chairs are exposed and rusting. Some minor cracking under the beam seats. ZAIP

10/21/2002 - Same as previous report. Some staining in areas where joints leak. VZKC

08/30/2000 - 4 * 14.60 = 58.40m Env. #2 as some under leaking joints. FIKL

06/03/1998 - 5 * 14.60. Some sanding material on some of the caps. MHIL

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

U05210000+01602
Continue

***** Span : Main-0 - Steel Girders over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 301 - Pourable Joint Seal										
	1	3	29	m.		60	25	15		
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Steel portions sound solid when tapped on. Minor spalling and deterioration on underside of deck and joints. Sealant is loose, torn, and missing in joints. Small delaminations/spalls along edge of joint steel.										NLGQ
09/21/2010 - Several areas of loose and pushed down sealant. Some small areas of torn sealant.										WZBZ
09/23/2008 - Leaky, sanding material pushed in, and loose sealant along the joints edges. Some small surface mortar spalls/delaminations along the steel edges.										YZCZ
10/13/2006 - Unchanged from previous reports.										NADO
09/29/2004 - Several areas where the sealant has lost contact and is pulling away. Joints are leaking. Some debris/dirt in the joints and this is putting pressure on the sealant.										ZAIP
10/21/2002 - Sanding material and debris in joints. Some areas where Dow Corning has pulled away or been forced open from debris in the joints.										VZKC
08/30/2000 - 14.60 * 2 = 29.20m "Dow corning" Some missing material and sanding material in the joint.										FIKL
Inspection Notes:										
Element 305 - Assm Jt w/o Seal										
	1	3	29	m.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Steel sounds solid when tapped on and finger alignment is good. Small spalls/delaminations along edge of joint steel. Minor spalling and deterioration on underside of deck at joint area.										NLGQ
09/21/2010 - Good alignment on the fingers. Small spalls and surface delaminations along the joint edges. Steel sounds solid when tapped on. Minor deterioration and spalling of the deck concrete on the bottom side under the steel.										WZBZ
09/23/2008 - Steel sounds solid when tapped on. Finger alignment is Good. Some cracking and small spalls along the underside of the deck edges at the joints.										YZCZ
10/13/2006 - Steel portions of the joints sound solid when tapped on. Some delaminations/spalls along the steel. Finger alignment is Good this summer.										NADO
09/29/2004 - West most sliding plate has a small section of delamination on its' edge, 8 to 12". Finger joint alignment is Good.										ZAIP
10/21/2002 - Minor rusty spots. Joints are in good alignment.										VZKC
08/30/2000 - No Change.										FIKL
06/03/1998 - 14.60 * 2. Some rust and pitting. (1) Finger & (1) Sliding Plate Joints.										MHIL
12/01/1995 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

U05210000+01602
Continue

***** Span : Main-0 - Steel Girders over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing										
	1	3	12	ea.		85	10	5		
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Minor bend on anchor bolts at Bent 3. Bearings near maximum expansion (70 degrees F). Rusty spots, scale, paint loss, and debris at bearings.										NLGQ
09/21/2010 - Near maximum movement in expansion at Bent 3; 50F. Rusty spots, dirt, and some peeling paint. Lots of pigeons nesting near the bearings.										WZBZ
09/23/2008 - Rusty spots, debris, and paint loss. Some overcoat painting done. Alignment of the bearings at Bent 2 are in expansion and near maximum movement; 48F for Condition State 3.										YZCZ
10/13/2006 - Rust, scale, paint loss and debris. 5 percent in Condition State 3 for the alignment of rockers at Bent 3; still tolerable. Clean and overcoat painted.										NADO
09/29/2004 - Rusty spots. Some scale, peeling paint, and pitting. Pigeon nest and debris near the bearings.										ZAIP
10/21/2002 - Minor rusting spots and debris.										VZKC
08/30/2000 - No Change.										FIKL
06/03/1998 - Some rust & pitting.										MHIL
12/01/1995 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	3	12	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Spot rust and fading paint.										NLGQ
09/21/2010 - Some dirt and grime. Paint still looks Good with only some spot rust.										WZBZ
09/23/2008 - Some spot rust. Cleaned and overcoat spot painted.										YZCZ
10/13/2006 - Same as previous reports. Clean and overcoat painted.										NADO
09/29/2004 - Rust spots and pitting. Pigeon nest around some of the bearings.										ZAIP
10/21/2002 - Minor rusting spots and pits.										VZKC
08/30/2000 - No change.										FIKL
06/03/1998 - Some rust & pitting.										MHIL
12/01/1995 - None										YDNF
02/01/1994 - None										REFI
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

U05210000+01602
Continue

***** Span : Main-0 - Steel Girders over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 331 - Conc Bridge Railing										
	1	3	274	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Random shrinkage cracks. Top of barrier has some spalls where hand rail was removed. NLGQ

09/21/2010 - Unchanged from past inspection comments. WZBZ

09/23/2008 - Vertical cracks at relief cuts. Small surface spalls where hand rail was removed from the top of the Left rail. YZCZ

10/13/2006 - Same as past inspection reports. NADO

09/29/2004 - Minor vertical cracking between relief cuts. Some areas of fractured concrete where the hand rail was removed from the top of the barrier rail. ZAIP

10/21/2002 - Some vertical cracks and mapping/shrinkage cracks. VZKC

08/30/2000 - Changed from metal rail to concrete rail in 1999. FIKL

06/03/1998 - 137.20 * 2 = 274.4. Some rust & pting of the rail & rail posts. MHIL

12/01/1995 - None YDNF

02/01/1994 - None REFI

Inspection Notes:

Element 334 - Metal Rail Coated W-Beam and Round Steel Pipe w\ Guard Fence and Steel Posts										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	137	m.		80	20	0	0	0
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Rust, scale, paint loss, and peeling paint on posts and pipe rail. Gaurd fence and fabric in good condition. NLGQ

09/21/2010 - Spot rust, scale, peeling paint, and faded paint on the posts and pipe rail. Guard fence posts and fabric are in Good condition. WZBZ

09/23/2008 - Same comments as past inspections. YZCZ

10/13/2006 - Paint system is pitted, flaking, and rusty throughout. W-Beam has some spot rust. Guard fence is in Good condition. NADO

09/29/2004 - Rust spots on the rail posts and pipe. Some spot rust on the W-Beam rail. Guard fence is in Good condition. ZAIP

10/21/2002 - Rusty spots with some pitting. Guard fence is in Good condition. VZKC

08/30/2000 - Rail along sidewalk is metal rail and new guard fence added during 1999 construction. Some minor rust on posts and existing w-beam. FIKL

Inspection Notes:

Element 357 - Sup Pack Rust SmFlag										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
X	1	1	1	ea.	X	0	100	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Lower angles on diaphragms show spreading and cracked welds from pack rust. NLGQ

09/21/2010 - Unchanged from past inspection comments. WZBZ

09/23/2008 - Added due to pack rust at the diaphragms under leaky joints. Some swelling has cracked welds; photo. YZCZ

Inspection Notes:

INITIAL ASSESSMENT FORM FOR STRUCTURE :

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Continue

***** Span : Main-0 - Steel Girders over RR - Spans 3 thru 6 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 358 - Deck Cracking SmFlag										
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Due to size and density.										NLGQ
09/21/2010 - Unchanged from past inspection comments and not yet in Condition State 3.										WZBZ
09/23/2008 - Added due to the size of some of the cracks, 1.00mm, and density of the cracks in some areas.										YZCZ
Inspection Notes:										

***** Span : Appr-1 - Steel Girders - Span 1 and 2 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	449	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Studded tire wear in wheel paths. Mapping cracks in both spans. Shallow spalls/delaminations along joint steel.										NLGQ
09/21/2010 - Tight mapping cracks. Minor spalls and delaminations along joint edges. Wear in the wheel paths.										WZBZ
09/23/2008 - Wear in the wheel paths. Transverse and mapping cracks in areas. Small spalls/delaminations along the joint edges.										YZCZ
10/13/2006 - Same comments as past inspections.										NADO
09/29/2004 - Had to move to Condition State 2 due to small delaminations along the joints. Some mapping cracks in the spans.										ZAIP
10/21/2002 - 14.60 * 30.74 = 448.8 Changed Element to "12" as the Latex concrete was only placed to the existing levels after hydromilling and Class B repairs.										VZKC
Inspection Notes:										

Element 107 - Paint Stl Opn Girder										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	2	123	m.		90	5	5	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Rust blisters with some surface pitting on tops of bottom flange where moisture collects. Girders are dirty and have faded paint.										NLGQ
09/21/2010 - Dirty, grimey, and faded paint. Minor rust blisters with surface pitting.										WZBZ
09/23/2008 - Rust, scale, minor surface pitting, and paint loss; worse in areas that the deicer and water collects. Girders are dirty.										YZCZ
10/13/2006 - Rust, scale, peeling paint, paint loss, and pitting; mainly in areas under/near leaky joints.										NADO
09/29/2004 - Unchanged from previous reports.										ZAIP
10/21/2002 - Rusty spots with some minor pitting under joints and on the bottom flange/lower web area.										VZKC
08/30/2000 - No Change.										FIKL
06/03/1998 - 4 * 30.74 = 122.96. Some areas of rust & pitting.										MHIL
Inspection Notes:										

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Continue

***** Span : Appr-1 - Steel Girders - Span 1 and 2 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 161 - Paint Stl Pin/Hanger Bent 3 - Pins Only										
	1	3	4	ea.		100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Pins were UT tested in August 2012 and no significant wear was observed.										NLGQ
09/21/2010 - Still Good paint where re-painted by UT inspectors. Refer to report by Collins Engineering. No "noteables" were found in the UT inspection with little to no wear also noted.										WZBZ
09/23/2008 - Cleaned and re-painted after UT testing this summer. See report for findings.										YZCZ
10/13/2006 - UT testing in 2005 showed no problems.										NADO
09/29/2004 - Minor rust where paint has weathered off of the pins from where they were cleaned for UT inspection.										ZAIP
10/21/2002 - Girder to Girder connection. No problems noted when inspected/NDT'd in 2001.										VZKC
Inspection Notes:										
Element 205 - R/Conc Column Bent 2										
	1	1	2	ea.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Tight surface shrinkage cracks and a small shallow spall from tie wire.										NLGQ
09/21/2010 - Some tight surface shrinkage cracks. Left column has tight cracks on the Left-Back corners of the column.										WZBZ
09/23/2008 - Both columns show tight shrinkage cracks. Generally in Good condition.										YZCZ
10/13/2006 - No change except that the graffiti has been painted over.										NADO
09/29/2004 - Tight shrinkage cracks. Tight cracks at the construction joint near the caps. Graffiti on both columns.										ZAIP
10/21/2002 - Minor shrinkage cracks throughout. Some graffiti from homeless village/camp under the structure.										VZKC
08/30/2000 - None										FIKL
06/03/1998 - _										MHIL
Inspection Notes:										
Element 215 - R/Conc Abutment Abutment 1 - West										
	1	1	19	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Generally good condition. Some tight cracks and few small spalls near cap/backwall connection and near embedded bearings.										NLGQ
09/21/2010 - Unchanged from past inspection comments. Good condition. Fence on the Left end of the Abutment is broken over by homeless traffic.										WZBZ
09/23/2008 - Tight cracks in the backwall and under a couple of the girders in the cap. Small spalls at a couple of the girders edges where embedded in the backwall.										YZCZ
10/13/2006 - Minor delaminations where the girders are embedded in the backwalls. Some tight cracks between the girders. Still minor erosion at the corners.										NADO
09/29/2004 - Same as previous report.										ZAIP
10/21/2002 - Minor concrete popouts and deterioration where girders are embedded in backwall. Minor erosion at wingwall.										VZKC
08/30/2000 - No change.										FIKL
06/03/1998 - 14.60 + 1.30 + 2.80 = 18.7. Some erosion @ the wingwalls.										MHIL
Inspection Notes:										

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Continue

***** Span : Appr-1 - Steel Girders - Span 1 and 2 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 234 - R/Conc Cap Bent 2										
	1	1	15	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Spall with exposed rebar and some shallow surface delaminations.										NLGQ
09/21/2010 - Small delaminations and spalls on the cap. Surface spall from tie wire and rebar chair feet.										WZBZ
09/23/2008 - Shallow surface delaminations; Condition State 3. Some small surface spalls from shallow tie wire and rebar chair feet; Condition State 2.										YZCZ
10/13/2006 - Surface spalls on the underside of the cap from shallow rebar chairs. Cap is stained from leaky joint above.										NADO
09/29/2004 - Minor rust stains and spalling where chairs are exposed on the bottom side of the cap. Staining from leaking joint.										ZAIP
10/21/2002 - ok										VZKC
08/30/2000 - 14.60 * 1 = 14.60m										FIKL
06/03/1998 - 14.60 * 2 = 29.2										MHIL
Inspection Notes:										
Element 305 - Assm Jt w/o Seal										
	1	3	15	m.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Steel sounds solid when tapped on. Some delaminations/spalls along edges of joint steel.										NLGQ
09/21/2010 - Small spalls along the joint steel edge. Steel sounds solid when tapped on.										WZBZ
09/23/2008 - Steel sounds solid when tapped on. Some small surface spalls and delaminations along the joint edges.										YZCZ
10/13/2006 - Steel all sounds solid when tapped on. Small spots of delaminated concrete and small spalls in a couple of areas along the joint's anchorage.										NADO
09/29/2004 - Small spot of delamination on the joint edge, 4" . Leaky also.										ZAIP
10/21/2002 - Minor rusty spots. Leaking as normal for a sliding plate joint.										VZKC
08/30/2000 - Leaking.										FIKL
06/03/1998 - Sliding Plate.										MHIL
Inspection Notes:										
Element 311 - Moveable Bearing										
	1	3	8	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Bearings are towards slight expansion (65 degeers F). Paint is faded, dirty, and has spot rust.										NLGQ
09/21/2010 - Slight expansion; 50F. Some spot rust and debris.										WZBZ
09/23/2008 - Good to Fair alignment today as slightly in expansion; 48F. Some cleaning and overcoat painting done.										YZCZ
10/13/2006 - Rust, scale, and some paint loss. Alignment is Good.										NADO
09/29/2004 - Spot rust and pitting from leaking joint.										ZAIP
10/21/2002 - Minor rusty spots with some pitting under leaking joints.										VZKC
08/30/2000 - No change.										FIKL
06/03/1998 - Some rust & pitting.										MHIL
Inspection Notes:										

U05210000+01602
Continue

***** Span : Appr-1 - Steel Girders - Span 1 and 2 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 313 - Fixed Bearing Abutment 1										
	1	2	4	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Spot rust and faded paint.										NLGQ
09/21/2010 - Spot rust and some soot from campfires on G1 and G2 bearing areas.										WZBZ
09/23/2008 - Some overcoat painting has been done.										YZCZ
10/13/2006 - Some rust, paint loss, amd flaking paint where visible.										NADO
09/29/2004 - Same as previous report.										ZAIP
10/21/2002 - Rusty spots where visible.										VZKC
08/30/2000 - No change.										FIKL
06/03/1998 - Some rust & pting.										MHIL
Inspection Notes:										
Element 321 - R/Conc Approach Slab West - Abutment 1										
	1	3	1	ea.		0	100	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Slab shows settlement and a bump. Sealant between slab and bridge end is torn most of length.										NLGQ
09/21/2010 - Torn and loose sealant in the joint between the slab and bridge end. Settlement in the slab and approach roadway.										WZBZ
09/23/2008 - Same as past inspections.										YZCZ
10/13/2006 - Put into Condition State 2 due to settlement. Joint between the slab and bridge is leaking into the approach fill.										NADO
09/29/2004 - Big bump for the off going traffic. Joint between the slab and bridge is leaking. Some of the sealant has lost its' bond to the guard angles.										ZAIP
10/21/2002 - Bump going off of the structure due to settlement of approach slab.										VZKC
08/30/2000 - None										FIKL
06/03/1998 - _										MHIL
Inspection Notes:										
Element 331 - Conc Bridge Railing										
	1	3	61	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/13/2012 - Tight shrinkage cracking. Small spalls where hand rail was removed.										NLGQ
09/21/2010 - Unchanged from past inspection comments.										WZBZ
09/23/2008 - Vertical cracking along the relief cuts. Small spalls where handrail was removed on the Left rail.										YZCZ
10/13/2006 - Same as past reports.										NADO
09/29/2004 - Vertical cracking between the relief cuts. Some fractured concrete where the hand rail was removed.										ZAIP
10/21/2002 - Minor vertical cracks and some shrinkage cracks throughout.										VZKC
08/30/2000 - Replaced matel rail with concrete barrier in 1999.										FIKL
06/03/1998 - 30.74 * 2 = 61.48. Some rust & pitting of the rail posts & bridge rail.										MHIL
Inspection Notes:										

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Continue

***** Span : Appr-1 - Steel Girders - Span 1 and 2 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 334 - Metal Rail Coated W-Beam and Round Steel Pipe w/ Guard Fence and Steel Posts										
	1	3	31	m.		80	20	0	0	0
						%	%	%	%	%

Previous Inspection Notes :

09/13/2012 - Rust, scale, and peeling paint on rail posts and pipes. Gaurd fence and fabric in good condition.	NLGQ
09/21/2010 - Spot rust, scale, and peeling paint on the posts and pipe. Guard fence posts and fabrics are in Good condition.	WZBZ
09/23/2008 - Unchanged.	YZCZ
10/13/2006 - Paint is pitted, flaking, and rusty spots throughout. Guard fence is in Good condition.	NADO
09/29/2004 - Minor rust spots on the rail posts and pipes. Guard fence is in Good condition.	ZAIP
10/21/2002 - Minor rusting and pitting throughout. The guard fence is in Good condition.	VZKC
08/30/2000 - 30.74x1=30.74 Rail along sidewalk is metal rail and new guard fence was added during 1999 construction. Minor rust on posts and existing w-beam.	FIKL

Inspection Notes:

General Inspection Notes

09/13/2012 - Big bump going off of bridge from approach slab settlement.	NLGQ
Non-destructive pin and hanger testing performed by Collins Engineers. CRH	
09/21/2010 - NBI 72, roadway alignmnet, rated a "7" as bridge is slightly narrower than the approach roadway. Several homeless people under the bridge today.	WZBZ
09/23/2008 - Lots of campers under the bridge today.	YZCZ
10/13/2006 - NBI 58, deck, rated a "6" due to wear and small delaminations along the joints. NBI 59, superstructure, rated a "6" due to rust, scale, and pitting of the girders. NBI 60, substructure, rated a "6" due to spalls and delaminations in the caps and columns.	NADO
09/29/2004 - Cleaning of the bearings and caps could be done with ladders and/or bucket truck from the underside of the structure. Cap on the electrical is loose and one is missing.	ZAIP
10/21/2002 - Some of the caps that the electrical pull boxes are missing on the sidewalk allowing wires to be exposed.	VZKC
08/30/2000 - Doubtful if the snoopor can be used anymore as new guard fence in 1999.	FIKL
02-28 and 03-01-2001: Cleaning, UT inspection, and mag. particle inspection of the (4) pin & hanger assemblies and the (8) pins on th is structure. Nothing foundwith mag. particle inspection of note. Some minor wear on a couple of the pins was found and noted in the proper report.	MHIL
06/03/1998 - .48m curb on the right and a 1.52m sidewalk on the left with inside of curb to inside of sidewal as 8.61m.	YDNF
12/01/1995 - Sufficiency Rating Calculation Accepted by ops\$u5963 at 3/11/97 10:45:45	
Sufficiency Rating Calculation Accepted by ops\$u9004 at 2/19/97 14:25:13	
02/01/1994 -	REFI
08/01/1992 - Updated with tape 1994	NB94
01/01/1991 - Updated with tape 1992	NB92
04/01/1989 - Updated with tape 1991	NB91
04/01/1987 - Updated with tape 1989	NB89
09/01/1984 - Updated with tape 1986	NB86
07/01/1981 - Updated with tape 1984	NB84

P00060094+08281

Location : GREAT FALLS Structure Name: GF Warden Br-WB

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **2 2 U.S. Numbered Hwy**

Signed Route Number : **00089**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **MISSOURI RV, U5205, BNSF**

Kilometer Post, Mile Post : **152.60 km 94.82**

Structure on the State Highway System : Latitude : **47°29'37"**

Structure on the National Highway System : Longitude : **111°18'41"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **F 60-2(5)92 1 2**

Construction Station Number : **46+06.00**

Construction Drawing Number : **12646**

Construction Year : **1983**

Reconstruction Year :

Traffic Data

Current ADT : **37,380** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	B ASD Assigned
Operating Load, Design :	32.6 mton	B ASD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	48.6		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **646.79 m**
Deck Area : **10,192.00 m sq**
Deck Roadway Width : **12.10 m**
Approach Roadway Width : **12.19 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **H Hwy beneath struct**
Vertical Clearance Under the Structure : **6.46 m**
Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
Minimum Lateral Under Clearance Right : **7.40 m**
Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **6**
Material Type Code, Description : **4 Steel continuous**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
Deck Surfacing Type : **1 Monolithic concrete (concurrently placed with struct**
Deck Protection Type : **0 None**
Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **14**
Material Type Code, Description : **5 Prestressed concrete**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder**



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under RIVER ROAD	U05205	Both	6.46 m	7.32 m	N/A		
Route On Structure 10TH AVE SOUTH WB	P00060	West	99.99 m	12.10 m	N/A		

P00060094+08281
Continue

Inspection Data

Sufficiency Rating : **96.3**
Structure Status : **Not Deficient**

Inspection Due Date : **19 September 2014**
(91) Inspection Frequency (months) : **24**

Next Under Water Insp : **15 Nov 2016**
Under Water Insp Type : **Type II**

NBI Inspection Data

(90) Date of Last Inspection : 19 September 2012
(90) Inspection Date :

Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 6	(68) Deck Geometry : 7	(36A) Bridge Rail Rating : 1	(62) Culvert Rating : N
(59) Superstructure Rating : 6	(67) Structure Rating : 6	(36B) Transition Rating : 1	(61) Channel Rating : 7
(60) Substructure Rating : 6	(69) Under Clearance : 7	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : 8
(72) App Rdwy Align : 8	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : 5

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 0.00 in

Inspection Hours

Crew Hours for inspection : 15
Helper Hours : 0
Special Crew Hours : 0
Special Equipment Hours : 0

Snooper Required : Y
Snooper Hours for inspection : 12
Flagger Hours : 0

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2004-000264	02 February 2004	Approved	Low	All Spans	Bridge	Spot Paint (flex)	
Clean and paint ice breakers. Approved. DRC							
D31-FY2004-000263	02 February 2004	Approved	Low	All Spans	12 Bare Concrete Deck	Min Repair	
Clean Drains throughout. 2003-08-05: Cleaned drains on the left roadway side. W.A.Lay Approved. DRC							
D31-FY2005-000076	18 October 2004	Approved	Low	All Spans	334 Metal Rail Coated	Rehab Elem	
Clean and spot paint the rail posts and rail tubes on the right barrier and Outside-Right edge of the structure. Approved. DRC							
D31-FY2008-000120	14 July 2008	Approved	Low	All Spans	12 Bare Concrete Deck	Min Repair	
Patch spalled areas. Approved. DRC							
D31-FY2011-000131	07 February 2011	Not Approved	Low	All Spans	12 Bare Concrete Deck	Min Repair	
Repair damaged downspouts.							
D31-FY2011-000132	07 February 2011	Not Approved	High	All Spans	305 Assm Jt w/o Seal	Rehab Elem	
Clean the finger joint troughs. 2003-08-05: Cleaned left half of the finger troughs today. W.A.Lay							



INITIAL ASSESSMENT FORM FOR STRUCTURE :

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Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2013-000004	02 October 2012	Not Approved	High	A Approach	305 Assm Jt w/o Seal	Rehab Elem	
Repair the loose finger joint at Bent 8 on the Left side of the bridge.							
D31-FY2013-000005	02 October 2012	Not Approved	High	All Spans	Bridge	Rehab (flex)	
Repair the spalls along all of the joints.							

Late Reason:

Inspection Date: 09/19/2012

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Continue

Element Inspection Data

***** Span : Main-0 - Steel Girder Spans 14 - 19 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	4618	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Random spalled areas in most of the Spans and delaminations along the joint edges. Some cracked areas with delaminations in Spans 15 thru 17. Some spalls have been patched with the velocity patcher.										ZZJO
09/27/2010 - Small spalls and delaminations along the joint edges. Steel sounds solid when tapped on.										EZJZ
06/20/2008 - Same as past inspections and add some spalling and delamiantions along the joint edges.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Transverse cracking throughout with some cracks that are wider and open. Spalling along joint edges. Some areas of mapping cracks, mostly in the Left lane. Some wear in the wheel paths.										GIDZ
10/21/2002 - Same as last report and add some minor delamination noted with a small spalled area at one joint.										IZHX
08/23/2000 - 293 * 15.76 = 4617.68										FIAS
No change from previous report plus some delaminations noted on spot checks near the joints.										
12/11/1997 - Deck has mapping cracks throughout.										FKAR
10/01/1995 - None										YDNF
09/01/1992 - None										REFI
Inspection Notes:										
Element 107 - Paint Stl Opn Girder										
	1	2	1465	m.		90	10	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Minor peeling paint in areas. Rust blisters with minor surface pitting near joints that leak. Faded and dirty paint throughout the girders.										ZZJO
09/27/2010 - Rust blisters, scale, and minor paint loss on tops of the lower flanges of the outer girders. Wose areas are where water can leak onto the girders from joints or drains.										EZJZ
06/20/2008 - Rust, scale, and paint loss on the lower web and bottom flanges; especially near leaky joints and downspouts.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Spot rust and some paint fade on the lower portions of the web and bottom flanges; especially near leaking joints.										GIDZ
10/21/2002 - Some paint loss along the under side of the girders near drains, more so on G5. Some speckled rust starting on the left side of the web and bottom flange of G1. A 4" x 1"(h) 1' back of Pier 19 for G1S18R.										IZHX
08/23/2000 - 293 * 5 = 1465.0m										FIAS
Some rust and pitting.										
12/11/1997 - None										FKAR
10/01/1995 - None										YDNF
09/01/1992 - None										REFI
Inspection Notes:										

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Continue

***** Span : Main-0 - Steel Girder Spans 14 - 19 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 205 - R/Conc Column Pier 14 thru 20										
	1	3	27	ea.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - Right column at Pier 16 has a small delaminated area. ZZJO

09/27/2010 - Tight surface shrinkage cracks. A small surface spall from exposed rebar feet. Rust on lower portions of the ice breakers. EZJZ

06/20/2008 - Same as past inspections, but Underwater II may be different. OZKZ

08/17/2006 - None TZCZ

10/06/2004 - Rust on the lower portion of the ice breakers. Tight shrinkage cracks on most columns. Minor spot rust stains from exposed rebar chair legs. Some scale below the normal waterline. GIDZ

10/21/2002 - Some minor and tight vertical shrinkage cracks throughout. Ice breakers need some paint. IZHX

08/23/2000 - Env. #3 as always wet. FIAS

12/11/1997 - (4) columns each at Piers 14 - 19 and (3) columns at Bent 20. FKAR

10/01/1995 - None YDNF

09/01/1992 - None REFI

Inspection Notes:

Element 220 - R/C Sub Pile Cap/Ftg Pier 15 thru 19										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	4	ea.		100	0	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - None ZZJO

09/27/2010 - Per the 2011 underwater inspection by Infrastructure Engineers there is no change to the condition of this element. CRH EZJZ

06/20/2008 - See latest Underwater II report. OZKZ

08/17/2006 - Per Infrastructure Engineers August 24, 2006 underwater inspection, the pier 4 subfooting is partially exposed at the upstream nose. The pier 3 subfooting is now covered by sand and river rock. The pier 4 subfooting is exposed 10 inches high at the upstream nose and is in good condition. Timber formwork is still attached to the west face of the pier 5 footing. TZCZ

10/06/2004 - Unchanged, but check the latest underwater report. GIDZ

10/21/2002 - None IZHX

08/23/2000 - LW -- underwater Inspection 7/15/98 (Guthrie Diving Co) -- All exposed footings in good condition. FIAS

Inspection Notes:

Element 227 - R/C Submerged Pile Pier 15 thru 19										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	20	ea.		90	10	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - None ZZJO

09/27/2010 - Per the 2011 underwater inspection by Infrastructure Engineers there is no change in the condition of this element. CRH EZJZ

06/20/2008 - See latest Underwater II report. OZKZ

08/17/2006 - Per Infrastructure Engineers August 24, 2006 underwater inspection, there is vertical cracking present on piers 4 thru 7. The vertical cracking is generally 1/32" to 1/16" wide and extends from the waterline to the cap. TZCZ

10/06/2004 - Unchanged, but check the latest underwater report. GIDZ

10/21/2002 - None IZHX

08/23/2000 - LW -- Underwater Inspection 7/15/98 (Guthrie Diving Co) -- All have light scaling below waterline. Piers have 1/32" vertical cracks. FIAS

No areas of significant deterioration or distress.

Inspection Notes:

P00060094+08281
Continue

***** Span : Main-0 - Steel Girder Spans 14 - 19 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 234 - R/Conc Cap Pier 14 thru 20										
	1	1	156	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Staining on the caps under leaking joints. Tight cracks at the steps in the caps. Shallow surface spalls and popouts from rebar chair feet on the underside of the caps. Caps at Pier 15 and 16 have small surface delaminations on their Right ends.										ZZJO
09/27/2010 - Staining on caps under leaky joints. Some small surface spalls on the underside of the caps from exposed/rusty rebar chair feet. Tight cracks at steps in the caps. Dirt and debris in areas.										EZJZ
06/20/2008 - Some dirt/debris on tops of the caps. Some tight vertical stress riser cracks at the steps in the caps. Underside of the caps show rusty rebar chair feet with minor surface spalls.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Dirt/debris on the caps. Bird nests on most of the caps on most of the caps. Stained concrete under leaky joints. Some tight vertical cracks under the bearings.										GIDZ
10/21/2002 - Some small and tight shrinkage cracks throughout. Dirt and debris on top of the cap at Pier 17 under the finger joint.										IZHX
08/23/2000 - 7 * 22.29 = 1563.03m										FIAS
12/11/1997 -										FKAR
10/01/1995 - None										YDNF
09/01/1992 - None										REFI
Inspection Notes:										
Element 305 - Assm Jt w/o Seal Finger Joint at Pier 17 and Sliding Plate at Bent 14 and Pier 20										
	1	3	60	m.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Spalling along the edges of the steel. Steel sounds solid when tapped on. Troughs under the joints are full of dirt and debris with some areas of the troughs showing damage.										ZZJO
09/27/2010 - Troughs are full of dirt/debris. Good alignment on fingers. Steel sounds solid when tapped on. Some small spalled areas along the joint edges.										EZJZ
06/20/2008 - Finger joint alignment at Pier 17 is Good. Steel sounds solid when tapped on. Trough under the joint is full of sanding material and the downspouts are plugged. Small spalls/delaminations along the joint edges.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Troughs under the joints are full of dirt and sanding material. Finger joint alignment is Good. Minor spalled spots along the joint edges.										GIDZ
10/21/2002 - No change but the finger joint is full of sanding material on both ends by the barrier rail.										IZHX
08/23/2000 - 15.76 + (2 * 22.28) = 60.32m										FIAS
12/11/1997 - Sliding plate joints at Pier 20 and Bent 14. Finger joint at Pier 17. The joints themselves are sound.										FKAR
10/01/1995 - None										YDNF
09/01/1992 - None										REFI
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

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Continue

***** Span : Main-0 - Steel Girder Spans 14 - 19 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing Pier 14, 15, 17(doubles), 18, and 20										
	1	2	30	ea.		85	10	5		
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Bearing for G4S17 for Span 17 has broken anchor bolts and is rocked over to its' limit; photo. Bearing anchor bolts for G5S17 are also broken. Spot rust, staining, and debris at the leaky joints.										ZZJO
09/27/2010 - Spot rust and debris on some of the bearings. Alignment is ok today. Same on previously reported broken anchor bolts.										EZJZ
06/20/2008 - Broken anchor bolts for both sides of G4S17 and G5S17 for Condition State 3; Bridge notified this date. Loose anchor bolts,, but still tight in their bearings as previously reported for Condition State 2. Some overcoat painting done, but still some rusty and paint loss on others.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Rust spots, pitting and some paint loss on the bearings. Unchanged from previous reports when viewed by binoculars.										GIDZ
10/21/2002 - Loose anchor bolts but tight in their holes at Pier 18 for G4L, G3L and R, and G2R. Some rust, pitting, minor paint loss and debris at all bearings.										IZHX
08/23/2000 - Env. #2 as under joints. Some rust and pitting.										FIAS
12/11/1997 - 5 shoes each at Pier 20, Pier 18, Pier 17 (two lines), Pier 15 and Bent 14										FKAR
10/01/1995 - None										YDNF
09/01/1992 - None										REFI
Inspection Notes:										
Element 313 - Fixed Bearing Pier 16 and 19										
	1	1	10	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Spot rust, paint loss, and some debris.										ZZJO
09/27/2010 - Spot rust with some dirt/debris.										EZJZ
06/20/2008 - Overcoat painted some, but still some rust and paint loss to others.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Some rust spots on several bearings. Unchanged from previous reports when viewed by binoculars.										GIDZ
10/21/2002 - Some rust, pitting, minor paint loss and debris at all bearings.										IZHX
08/23/2000 - Some rust and pitting.										FIAS
12/11/1997 - Fixed shoes at Piers 16 and 19.										FKAR
10/01/1995 - None										YDNF
09/01/1992 - None										REFI
Inspection Notes:										

P00060094+08281
Continue

***** Span : Main-0 - Steel Girder Spans 14 - 19 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 331 - Conc Bridge Railing										
	1	3	586	m.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - Small spalls, delaminations, and popouts throughout. Barrier has lots of surface shrinkage cracks. ZZJO

09/27/2010 - Some rubs and scrapes. Vertical cracking throughout with some small spalls and scaling along the cracks. Condition State 3 due to minor delaminations on barrier in spots. EZJZ

06/20/2008 - Same on cracks every 3 to 4 ft. Many of the cracks have small delaminated and some spalled areas. OZKZ

08/17/2006 - None TZCZ

10/06/2004 - Tight vertical cracks every 3 to 4 feet. GIDZ

10/21/2002 - Minor shrinkage cracks. IZHX

08/23/2000 - 293 * 2 = 586m FIAS

12/11/1997 - Traffic rail lt. and rt. ELEMENT WAS ADDED 6/16/2000. NEED TO VERIFY CONDITION STATE(S). FKAR

Inspection Notes:

Element 334 - Metal Rail Coated										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	293	m.		90	10	0	0	0
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - Spot rust, exposed base coat, and faded paint throughout. Chainlink fabric is in Good condition. ZZJO

09/27/2010 - Spot rust, exposed primer coat, and paint loss throughout. EZJZ

06/20/2008 - Rstuty spots, paint loss, and visible prime coat throughout. OZKZ

08/17/2006 - None TZCZ

10/06/2004 - Rusty spots on the rail posts and tubes. GIDZ

10/21/2002 - Add some scrapes and paint loss throughout. IZHX

08/23/2000 - Some rust and pitting. FIAS

12/11/1997 - Pedestrian rail on North side of bridge. FKAR

10/01/1995 - None YDNF

09/01/1992 - None REFI

Inspection Notes:

Element 358 - Deck Cracking SmFlag										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - Both size and density come into play. ZZJO

09/27/2010 - Lots of cracking with some small delaminations in the worse areas. EZJZ

06/20/2008 - Unchanged. OZKZ

08/17/2006 - None TZCZ

10/06/2004 - Numerous wider cracks in all spans. Cracks are mostly moderate in size, 0.50 to 1.00mm. There are a few cracks that are in the severe range of greater than 1.00mm. GIDZ

Inspection Notes:

***** Span : Appr-1 - P/S Concrete Spans 1 thru 13 and 20 *****

Element Description										
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INITIAL ASSESSMENT FORM FOR STRUCTURE :

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Continue

***** Span : Appr-1 - P/S Concrete Spans 1 thru 13 and 20 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	5576	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Spalls and delaminations along joint steel. Some random delaminations in most of the Spans with some potholes/spalls starting.										ZZJO
09/27/2010 - Small spalls and delaminations along the joint steel. Small delaminations in the worse cracked areas.										EZJZ
06/20/2008 - Wear is probably a little worse and the rest of the comments still apply.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Transverse cracking throphought with some of the cracks wider and open; see photos. Spalling along joint edges. Some areas of mapping cracks; mainly in the left lane. Minor wear in the wheel paths.										GIDZ
10/21/2002 - Minor delaminations and very small spalled areas at the joints; rest is unchanged from previous reports.										IZHX
08/23/2000 - No change.										FIAS
12/11/1997 - Deck has minor cracking throughout.										FKAR
10/01/1995 - None										YDNF
09/01/1992 - $353.79 * 15.76 = 5575.73$										REFI
Inspection Notes:										
Element 109 - P/S Conc Open Girder										
	1	1	2209	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Minor cracks and surface spalls on ends of several of the girders. Mostly on those that get moisture on them.										ZZJO
09/27/2010 - Generally Good condition. Some minor spalls and cracking on ends of several of the girders that have now exposed strands.										EZJZ
06/20/2008 - No change.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Same on the girder ends at Bent 11 and left end of the left girder at Bent 12. No other problems noted when viewed by binoculars.										GIDZ
10/21/2002 - End of G2S12L at Bent 12 and several girder ends at Bent 11 have spalled concrete on their ends with exposed and rusted strand showing.										IZHX
08/23/2000 - None										FIAS
12/11/1997 - None										FKAR
10/01/1995 - None										YDNF
09/01/1992 - $(6 * 321) (7 * 33) (3 * 17.25 \text{ Spans } 2 \text{ and } 3) = 2208.79\text{m}$										REFI
Inspection Notes:										

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Continue

***** Span : Appr-1 - P/S Concrete Spans 1 thru 13 and 20 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 205 - R/Conc Column Bents 2 thru 13										
	1	2	28	ea.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Staining from joint leakage on some. Cracks on the columns of Bent 2 and 3 with a small delaminated area. Tight surface shrinkage cracks.										ZZJO
09/27/2010 - Staining on those under leaky joints. Some small spalls and (1) delamination noted in the worse areas of cracking. Observed that most everything is superficial and probably caused by shallow rebar chairs.										EZJZ
06/20/2008 - Same as previous report comments.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Sides of several columns have small spalling section with either rebar chair feet or shallow rebar; causing some rust stains. Small popouts on several columns. Worse areas on the columns are under leaky joints.										GIDZ
10/21/2002 - Minor scrapes and spalled areas with some shrinkage cracks throughout.										IZHX
08/23/2000 - None										FIAS
12/11/1997 - None										FKAR
10/01/1995 - None										YDNF
09/01/1992 - (4) locations with 3 columns and (8) locations with 2 columns.										REFI
Inspection Notes:										
Element 215 - R/Conc Abutment Abutment 1 and 22										
	1	1	52	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/19/2012 - Abutment 1 has a crack between the Right most (2) girders. Small spalls at the cap/backwall area and near the embedded bearings. Steel portion of the bearings are rusty.										ZZJO
09/27/2010 - Generally Good condition. Same comments as previous inspections.										EZJZ
06/20/2008 - Same as past inspections. Crack at Abutment 1 between thr Right (2) girders was leaking water in 2006. Some rust and paint loss noted on the visible portion of the bearings.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Both Abutment caps have tight vertical cracks with efflorescence near the structure's centerline. Minor cracks where girders are embedded in backwall concrete. Minor erosion on the Right wingwalls.										GIDZ
10/21/2002 - ok										IZHX
08/23/2000 - None										FIAS
12/11/1997 - None										FKAR
10/01/1995 - None										YDNF
09/01/1992 - (22.92 2.05 1.65) = 51.98m										REFI
Inspection Notes:										

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Continue

***** Span : Appr-1 - P/S Concrete Spans 1 thru 13 and 20 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 234 - R/Conc Cap Bents 2 thru 13										
	1	1	215	m.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - Shallow surface spalls on the underside of the caps from rebar chair feet and the worse are those under leaky joints. Dirt and debris. Small delaminations on Bents 2, 3, and 8's caps. ZZJO

09/27/2010 - Tight cracks near steps on the caps. Lots of surface spalls on the underside of the caps from exposed rebar chair feet. Lots of pigeon nests and debris on tops of the caps. EZJZ

06/20/2008 - Tight vertical stress riser cracks at the steps in the caps. Undersides of the caps show surface spalls from exposed and rusty rebar chair feet. Worse rusty stains and spall are under the leaky joint caps. OZKZ

08/17/2006 - None TZCZ

10/06/2004 - Tight vertical cracks under several of the bearings. Pigeons and swallows are residing on the caps. Some staining under leaking joints. Undersides of several of the caps have spalled areas where rusty/exposed rebar chair legs are exposed. GIDZ

10/21/2002 - Some vertical shrinkage cracks throughout. Dirt on the caps at Bent 11 from G2 to G6 and burying the bearings. IZHX

08/23/2000 - None FIAS

12/11/1997 - None FKAR

10/01/1995 - None YDNF

09/01/1992 - (8 * 15.76) (4 * 22.29) = 215.24m REFI

Inspection Notes:

Element 305 - Assm Jt w/o Seal Finger Joints - 5, 8, and 11										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	67	m.		80	10	10		
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - Joint at Bent 8 has a loose section in the Left lane; photo. Spalling and delamiantions along the edges of the joints. ZZJO

09-26-2012. Fixed loose section of the joint at Bent 8 in the Left lane.

09/27/2010 - Full and some damage to the troughs. Good alignment on fingers. Steel sounds solid when tapped on and some small spalls/delaminations along the joint steel. EZJZ

06/20/2008 - Same as past inspection comments. OZKZ

08/17/2006 - None TZCZ

10/06/2004 - Minor spalling along the joint edges. Finger alignment is Good. Troughs are either plugged or missing on all of the joints. GIDZ

10/21/2002 - Also add that both ends are full of sanding material. IZHX

08/23/2000 - No change. FIAS

12/11/1997 - Finger joints at Bents 5, 8, and 11. The expansion joints are sound. The rubber trough is gone and allows sanding material debris onto the caps. See photos. FKAR

10/01/1995 - None YDNF

09/01/1992 - Bents 5, 8, and 11. 22.29 * 3 - 66.87m REFI

Inspection Notes:

P00060094+08281
Continue

***** Span : Appr-1 - P/S Concrete Spans 1 thru 13 and 20 (cont.) *****

Element Description

Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing Bents 5, 8, 11, 14, and Pier 20										
	1	2	49	ea.		80	20	0		
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - Alignment was ok. Dirt, debris, and bird nest on the bearings. Rust, scale, paint loss, and staining. ZZJO

09/27/2010 - Fair to Good alignment. Lots of debris on the bearings. Staining from leaky joints above. Rust, scale, and paint loss. EZJZ

06/20/2008 - Rusty spots, paint loss, and debris. Alignment appeared to be Good. OZKZ

08/17/2006 - None TZCZ

10/06/2004 - Bent anchor bolts. Rusty spots, scale, and pitting on most of the bearings. Rest is from previous reports when viewed by binoculars. GIDZ

10/21/2002 - All have bent anchor bolts except at Pier 20. All show some rust and minor paint loss with those at Bent 11 buried in sanding material. IZHX

08/23/2000 - Env. State 2 as under leaky joints. Rust and pitting; rest is unchanged. FIAS

12/11/1997 - Debris is covering the bearing devices to some extent. The anchor bolts are bent over due to excessive movement - see photos. FKAR

10/01/1995 - None YDNF

09/01/1992 - (12) each at Bents 5, 8, and 11 plus (6) at Bent 14 plus (7) at Pier 20. REFI

Inspection Notes:

Element 313 - Fixed Bearing Bent 2, 3, 4, 6, 7, 9, 10, 12, and 13										
	1	1	120	ea.		90	10	0		
						%	%	%	%	%

Previous Inspection Notes :

09/19/2012 - Spot rust, paint loss, scale, and debris. ZZJO

09/27/2010 - Rust, paint loss, scale, and lots of bird debris. EZJZ

06/20/2008 - Rusty spots, paint loss, and debris. Dropped Abutment bearings. OZKZ

08/17/2006 - None TZCZ

10/06/2004 - Rust spots and pitting. Some debris near the bearings from bird debris when viewed by binoculars. GIDZ

10/21/2002 - Some rust, pitting, and minor paint loss throughout. IZHX

08/23/2000 - Some rust and pitting FIAS

12/11/1997 - None FKAR

10/01/1995 - None YDNF

09/01/1992 - (7) at Abutment 1, (7) at Abutment 21, plus (15) at Bent 2, (18) at Bent 3, (15) at Bent 4, (12) at Bent 6, 7, 9, 10, 12, and 13 REFI

Inspection Notes:

INITIAL ASSESSMENT FORM FOR STRUCTURE :

P00060094+08281
Continue

***** Span : Appr-1 - P/S Concrete Spans 1 thru 13 and 20 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 331 - Conc Bridge Railing Left and Right vehicle rail										
	1	3	708	m.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :										
09/19/2012 - Small spalls, delaminations, and popouts throughout. Barrier has a lot of surface shrinkage cracks.										ZZJO
09/27/2010 - Some rubs and scrapes. Vertical cracking throughout with small spalls and scaling along cracks. Condition State 3 due to small delaminations on barrier in spots.										EZJZ
06/20/2008 - Same on cracks every 3 to 4 ft with many of the cracks showing small spalls or delaminated areas.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Minor and tight vertical cracks every 3 to 4 feet.										GIDZ
10/21/2002 - Minor dings, scrapes, and shrinkage cracks.										IZHX
08/23/2000 - None										FIAS
12/11/1997 - None										FKAR
10/01/1995 - None										YDNF
09/01/1992 - 353.79 * 707.58m										REFI

Inspection Notes:										

Element 334 - Metal Rail Coated Right Pedestrian Rail										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	354	m.		90	10	0	0	0
						%	%	%	%	%

Previous Inspection Notes :										
09/19/2012 - Spot rust, exposed base coat, and faded paint throughout. Chainlink fabric is in Good condition.										ZZJO
09/27/2010 - Spot rust, exposed primer coat, and paint loss throughout.										EZJZ
06/20/2008 - Rusty spots, paint loss, and prime coat visible throughout.										OZKZ
08/17/2006 - None										TZCZ
10/06/2004 - Rail posts and box beams show rust spots. Hand rail on top of the barrier rail has rust spots.										GIDZ
10/21/2002 - Add some scrapes and minor paint loss.										IZHX
08/23/2000 - Some rust and pitting.										FIAS
12/11/1997 - None										FKAR
10/01/1995 - None										YDNF
09/01/1992 - Pedestrian rail on the right outside of the bridge. 353.79 * 1 = 353.79m										REFI

Inspection Notes:										

P00060094+08282

Location : GREAT FALLS Structure Name: GF Warden-EB

General Location Data

MDT Maintenance Section : **31-01 Great Falls**

District Code, Number, Location : **03 Dist 3 GREAT FALLS**

Division Code, Location : **31 GREAT FALLS**

County Code, Location : **013 CASCADE**

City Code, Location : **32800 GREAT FALLS**

Kind fo Hwy Code, Description : **2 2 U.S. Numbered Hwy**

Signed Route Number : **00089**

Str Owner Code, Description : **1 State Highway Agency**

Maintained by Code, Description : **1 State Highway Agency**

Intersecting Feature : **MISSOURI RV, U5205, BNSF**

Kilometer Post, Mile Post : **152.60 km 94.82**

Structure on the State Highway System : Latitude : **47°29'37"**

Structure on the National Highway System : Longitude : **111°18'39"**

Str Meet or Exceed NBIS Bridge Length :

Construction Data

Construction Project Number : **FGU 388 1 2**

Construction Station Number : **45+89.00**

Construction Drawing Number : **2926**

Construction Year : **1951**

Reconstruction Year :

Traffic Data

Current ADT : **37,380** ADT Count Year : **2009** Percent Trucks : **2 %**

Structure Loading, Rating and Posting Data

Loading Data :

Design Loading :		5 MS 18 (HS 20)
Inventory Load, Design :	32.6 mton	B ASD Assigned
Operating Load, Design :	32.6 mton	B ASD Assigned
Posting :		5 At/Above Legal Loads

Rating Data :

	Operating	Inventory	Posting
Truck 1 Type 3 :			
Truck 2 Type 3-S3 :			
Truck 3 Type 3-3 :	86		

Structure, Roadway and Clearance Data

Structure Deck, Roadway and Span Data :

Structure Length : **637.90 m**
Deck Area : **6,960.00 m sq**
Deck Roadway Width : **8.53 m**
Approach Roadway Width : **10.90 m**
Median Code, Description : **0 No median**

Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **99.99 m**
Reference Feature for Vertical Clearance : **H Hwy beneath struct**
Vertical Clearance Under the Structure : **5.49 m**
Reference Feature for Lateral Underclearance : **H Hwy beneath struct**
Minimum Lateral Under Clearance Right : **3.50 m**
Minimum Lateral Under Clearance Left : **0.00 m**

Span Data

Main Span

Number Spans : **6**
Material Type Code, Description : **4 Steel continuous**
Span Design Code, Description : **3 Girder and Floorbeam System Deck**

Deck Structure Type : **1 Concrete Cast-in-Place**
Deck Surfacing Type : **3 Latex Concrete or similar additive**
Deck Protection Type : **0 None**
Deck Membrain Type : **0 None**

Approach Span

Number of Spans : **21**
Material Type Code, Description : **4 Steel continuous**
Span Design Code, Description : **2 Stringer/Multi-beam or Girder**



Structure Vertical and Horizontal Clearance Data Inventory Route :

Over / Under Direction Name	Inventory Route	South, West or Bi-directional Travel			North or East Travel		
		Direction	Vertical	Horizontal	Direction	Vertical	Horizontal
One Route Under	U05205	Both	5.49 m	7.92 m	N/A		
RIVER ROAD / U05205							
Route On Structure	P00060	N/A	99.99 m	8.53 m	East		
10TH AVE. SOUTH - EB							

P00060094+08282
Continue

Inspection Data

Sufficiency Rating : **75.7**
Structure Status : **Func Obs - Elg Rehab**

Inspection Due Date : **05 September 2015**
(91) Inspection Frequency (months) : **24**
Next Fracture Critical Due Date : **05 Sep 2015**
Fracture Critical Detail : **1 or 2 Stl-girder systms**

Next Under Water Insp : **15 Nov 2016**
Under Water Insp Type : **Type II**

NBI Inspection Data

(90) Date of Last Inspection : 05 September 2013
(90) Inspection Date :
Last Inspected By : Charles Pepos - 107
Inspected By :

(58) Deck Rating : 7	(68) Deck Geometry : 3	(36A) Bridge Rail Rating : 0	(62) Culvert Rating : N
(59) Superstructure Rating : 6	(67) Structure Rating : 6	(36B) Transition Rating : 0	(61) Channel Rating : 7
(60) Substructure Rating : 6	(69) Under Clearance : 7	(36C) Approach Rail Rating : 1	(71) Waterway Adequacy : 8
(72) App Rdwy Align : 7	(41) Posting Status : A	(36D) End Rail Rating : 1	(113) Scour Critical : 5

Unrepaired Spalls : 0 m sq
Deck Surfacing Depth : 0.00 in

Inspection Hours

Crew Hours for inspection : 35	Snooper Required : Y
Helper Hours : 0	Snooper Hours for inspection : 17
Special Crew Hours : 12	Flagger Hours : 0
Special Equipment Hours : -1	

Inspection Work Candidates		Status	Priority	Effected Structure Unit	Scope of Work	Action	Covered Condition States
Candidate ID	Date Requested						
D31-FY2006-000012	19 October 2005	Approved	Medium	All Spans	Bridge	Spot Paint (flex)	
Clean and paint the bearings. 08/27/2007 Blew off and overcoat painted bearings on Main Span during snooper inspection. 09/06/2011 Did this again. Approved. DRC							
D31-FY2006-000014	19 October 2005	Approved	High	M Main	305 Assm Jt w/o Seal	Rehab Elem	
Repair the drain trough under the finger joint at Bent 21. Approved. DRC							
D31-FY2006-000011	19 October 2005	Approved	Medium	A Approach	205 R/Conc Column	Min Repair	
Repair spalling/delaminated concrete on Columns at Bents 3 and 4. Approved. DRC							
D31-FY2011-000135	07 February 2011	Not Approved	Medium	All Spans	107 Paint Stl Opn Girder	Min Repair	
Clean and paint the girders as needed.							
D31-FY2011-000134	07 February 2011	Not Approved	Medium	All Spans	334 Metal Rail Coated	Repl Paint	
Clean and paint the bridge rail.							

Late Reason:
Inspection Date: 09/05/2013

P00060094+08282

Continue

Element Inspection Data

***** Span : Main-0 - Steel Girder - Spans 21 thru 26 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck 2011 Mill and Overlay w\ Silica Fume										
	1	3	3226	sq.m.	X	100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Mapping cracks reflecting up through the 2011 overlay. No delaminations found during chaining in the closed Right lane.										FPDZ
09/06/2011 - Removed and replaced 2" of the existing surface with Silica Fume Concrete in June 2011.										GCCY
08/25/2009 - Mapping cracks in all spans. Delaminated and spalled concrete along the joints. Poor skid resistance remains. Deck was evaluated by Helena earlier this summer and their report is on file in Helena.										ZQDZ
08/27/2007 - Quick chain drag showed delaminations or spalls every 20 to 30 ft or less than 10 percent for Condition State 3; may be more with a more through evaluation. Delaminations/spalls concrete at the joint anchorages. Rest of the previous comments still apply.										ZZBZ
06/28/2005 - Tight mapping cracks in all spans with some areas that are delaminated. Some areas of spalling along the edges of the joints. May be nearing the 2 percent limit for Condition State 2. Very little ski resistance remaining. (295.66 * 10.91 = 3225.65) Nate										SZMI
07/24/2003 - Same as previous report. Some delamination at the drain scuppers with exposed and rusty reinforcing on the underside of the deck soffits. Also covered with deck soffit smart flag.										YADZ
09/27/2001 - 306.75 * 10.91 = 3346.64 Tight mapping cracks throughout the deck area. Minor spalling at all the joints. Some cracks are wide with efflorescence on the under side of the deck. Wear in the wheel paths.										NIBL
09/02/1998 - Small, tight cracks throughout the deck.										GKLH
09/01/1992 - None										REFI
Inspection Notes:										
Element 107 - Paint Stl Opn Girder										
	1	2	591	m.		75	15	5	5	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Faded and dirty paint. Rust blisters w\ surface pitting under the blisters. Worst areas are under leaking joints. Not much leakage since the 2011 deck/joint rehab.										FPDZ
09/06/2011 - No change from previous inspections except a little more paint loss and rust noted.										GCCY
08/25/2009 - Paint is faded, dirty, peeling, and scaling in areas that moisture can get to the girders. Lots of heavy rust blisters in areas with surface pitting under the blisters. Bottom flange top side is sticky from the deicer placed on the deck.										ZQDZ
08/27/2007 - G2 at Pier 26 has some deep surface corrosion, 1/8", at the lower web longitudinal stiffener. Outside of the girders and under leaky joints show the worse paint loss and rust. Paint is very dirty in areas that mag. chloride/sanding material has accumulated.										ZZBZ
06/28/2005 - Rust, pack rust, pitting, paint loss, and paint peel; especially under or near leaky joints. Some area on the lower portions of the web have pack rust blisters, mostly still tight, on them. Mag chloride/dirt laying on the outside of the girders on the top of the bottom flange. (295.66 * 2 = 591.32) Nate.										SZMI
07/24/2003 - Rusty spots with pack rust and minor section loss on girder webs; especially under leaking joints. See photos from past FC inspections.										YADZ
09/27/2001 - 306.75 * 2 = 613.50m										NIBL
Rusty spots under all the joints and near the drains.										
09/02/1998 - None										GKLH
09/01/1992 - None										REFI
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

P00060094+08282
Continue

***** Span : Main-0 - Steel Girder - Spans 21 thru 26 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 113 - Paint Stl Stringer										
	1	1	887	m.		90	10	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Some paint loss and peeling paint in areas. Generally in Good paint system. Stringers are dirty.										FPDZ
09/06/2011 - No change from previous inspections except alittle more paint loss and rust noted.										GCCY
08/25/2009 - Paint is generally in good condition. Some rust and scale in area near joints.										ZQDZ
08/27/2007 - Same as past comments on rust at the deck to stringer flange area.										ZZBZ
06/28/2005 - Some rusty spots on the edges of the top flange where they meet the concrete deck. Some rusty spots and staining where the stringers are in the area of leaking joints. (295.66 * 3 = 886.98										SZMI
07/24/2003 - Minor rusty spots on the underside of the flanges; mainly near concrete connections under and near leaking joints.										YADZ
09/27/2001 - 3 * 306.75 = 920.25m										NIBL
Minor rust spots; mostly at the top flange to concrete connection and under the joints.										
09/02/1998 -										GKLH
Inspection Notes:										
Element 152 - Paint Stl Floor Beam										
	1	2	458	m.		80	10	5	5	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Faded and dirty paint, rust blisters, and surface pitting in those areas of past leakage and where water can gather.										FPDZ
09/06/2011 - No change from previous inspections except alittle more paint loss and rust noted.										GCCY
08/25/2009 - Floorbeams show dirty paint, some peeling, and rust blisters on those under the leaky joints. No change on 3rd floorbeam back from pier 25 on loose rivot.										ZQDZ
08/27/2007 - Floorbeams under leaky joints show rust blisters, pitting, paint loss, and minor section loss in open rust blisters. 3rd floorbeam back of Pier 25 in span 24 has (1) loose rivet; not a problem.										ZZBZ
06/28/2005 - Same comments with paint loss, pitting and some tight pack rust also noted and mostly near the leaking joints.										SZMI
07/24/2003 - Rusty spots throughout the floorbeams. Worse rust is in areas under leaking joints. Those floorbeams under leaking joints show some minor rust blisters and pack rust at connections.										YADZ
09/27/2001 - 10.91 * 42 = 458.22m All are in contact with the steel stringers.										NIBL
Rusty spots; especially under the joints. Need to verify number when snooper inspected.										
09/02/1998 - None										GKLH
Inspection Notes:										

P00060094+08282
Continue

***** Span : Main-0 - Steel Girder - Spans 21 thru 26 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 205 - R/Conc Column Pier 21 thru 26										
	1	3	8	ea.		90	5	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/05/2013 - Spalls and delamination along edges of the ice breaker's steel. Tight cracks from corners of ice breakers steel on Pier 22 and 23. FPDZ

09/06/2011 - No change from previous inspections. GCCY

08/25/2009 - Some tight cracking behind the ice breakers with small spalls and a couple of small delaminations. Some rust and scale on ice breaker steel. ZQDZ

08/27/2007 - Pier 23's column has a small spall with staining at the top-West corner of the ice breaker. Rusty spots throughout the ice breakers. ZZBZ

06/28/2005 - Unchanged from previous reports. Per Infrastructure Engineers August 24, 2006 underwater inspection, the steel ice breakers are separating from the concrete at piers 3 and 7. SZMI

07/24/2003 - Minor shrinkage cracks in columns 21 thru 26. Rusty steel on the upstream ice breaker. YADZ

09/27/2001 - Minor shrinkage cracks. Need to look at the columns closer when snoopered or with a boat to get closer to them. NIBL

09/02/1998 - Two columns at Bent 27(Tower Span). One column at Piers 21 - 26. GKLH

Inspection Notes:

Element 220 - R/C Sub Pile Cap/Ftg Pier 24 and 25										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	2	ea.		100	0	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/05/2013 - Refer to UW INspection. FPDZ

09/06/2011 - Per the 2011 underwater inspection report by Infrastructure Engineers there is no change to this element since the 2006 inspection. CRH GCCY

08/25/2009 - Information is in latest underwater inspection. ZQDZ

08/27/2007 - Check on the latest Underwater II report. ZZBZ

06/28/2005 - Unchanged until the next underwater inspection. Per Infrastructure Engineers August 24, 2006 underwater inspection, there is insufficient clear cover exposing secondary rebar at the top of the footing on the west side of pier 5. SZMI

07/24/2003 - Information from Guthrie Diving Co.'s underwater report. YADZ

09/27/2001 - None NIBL

09/02/1998 - LW - Piers 4 & 5 Underwater Inspection 7/15/98 (Guthrie Diving Co) -- Exposed footings in good condition GKLH

Inspection Notes:

Element 227 - R/C Submerged Pile Pier 22 thru 26										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	5	ea.		90	10	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/05/2013 - Refer to UW INspection. FPDZ

09/06/2011 - Per the 2011 underwater inspection by Infrastructure Engineers spalling is present at the concrete and steel ice breaker interfaces of the substructures. The steel Ice breakers are separating from the concrete at Piers 3 and 7. CRH GCCY

08/25/2009 - Information is on the past underwater inspection. ZQDZ

08/27/2007 - Check on the latest Underwater II report. ZZBZ

06/28/2005 - Unchanged until the next underwater inspection. Condition states changed Per Infrastructure Engineers August 24, 2006 underwater inspection. Spalling is present at the concrete/steel interfaces of the substructures. SZMI

07/24/2003 - Information from Guthrie Diving Co.'s underwater report. YADZ

09/27/2001 - None NIBL

09/02/1998 - LW -- Piers 3,4,5,6,&7 Underwater Inspection 7/15/98 (Guthrie Diving Co) -- All piers in good condition with light scaling below waterline. No areas of fsignificant deterioration or distress. GKLH

Inspection Notes:

P00060094+08282
Continue

***** Span : Main-0 - Steel Girder - Spans 21 thru 26 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 234 - R/Conc Cap Pier 21 thru 26										
	1	2	65	m.		90	5	5	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Spall with exposed rebar on centerline of Pier 23's cap. Some delaminations noted on all of the caps; mostly small surface type.										FPDZ
09/06/2011 - No change from previous inspections. Blown off during the snooper inspections.										GCCY
08/25/2009 - Same comments as the past inspection with a couple more of the caps showing some diagonal cracks. Caps also have some staining from leaking deck or bird debris.										ZQDZ
08/27/2007 - Cap at Pier 24 has a spall with exposed rebar on the Top-Left side on the underside of the cap. Cap at Pier 23 has a diagonal crack from G1 to the column connection area; digital photo 2115.										ZZBZ
06/28/2005 - Tight and minor cracks at ends of several caps.										SZMI
07/24/2003 - Unchanged from previous reports. Some staining of concrete under leaking joints.										YADZ
09/27/2001 - 6 * 10.91 = 65.46m										NIBL
Minor cracking on hammer heads. Need to be looked at with snooper.										
09/02/1998 - Some cracking, but minor at this time.										GKLH
09/01/1992 - None										REFI
Inspection Notes:										
Element 301 - Pourable Joint Seal Pier 22, 23, 25, and 26										
	1	3	44	m.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Sealant is generally in Good condition with a small area of Pier 23's where the sealant is loose. Steel portions sound solid when tapped on.										FPDZ
09/06/2011 - New sealant in June 2011.										GCCY
08/25/2009 - Torn and missing sealant in all joints. Some spalling and delamination along the edges of the joint steel.										ZQDZ
08/27/2007 - All have torn or missing sealant with leakage noted underneath. All have some delamiantions/spalls in the concrete along the anchorages. Some nicks to the guard angles.										ZZBZ
06/28/2005 - Loose and torn sealant in all (4) joints. Some dirt/debris in sealant areas. Minor delamination with some small spalls along the joint angle anchorages. Caps under the joints are wet from an overnight rain.										SZMI
07/24/2003 - Same as last report.										YADZ
09/27/2001 - 4 * 10.91 = 43.64m										NIBL
Double guard angle pourable joints. Some areas of loose sealant.										
Inspection Notes:										

P00060094+08282
Continue

***** Span : Main-0 - Steel Girder - Spans 21 thru 26 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 303 - Assembly Joint/Seal Acme Joints - Pier 24 and Bent 27										
	1	3	22	m.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Small portion on the Left side of the joint at Pier 24's has broken off. Gland appears to be in Good condition.										FPDZ
09/06/2011 - New joints in June 2011.										GCCY
08/25/2009 - Tears in the gland in areas, leakage, and some minor damage to the joint system. Small delaminations and spalls along the edges.										ZQDZ
08/27/2007 - Tears and damage to the joints themselves. Anchorage concrete has delamiantions or spalls. Nicks to the metal anchorages also noted.										ZZBZ
06/28/2005 - Minor delaminations and spalling along the joint anchorages. Some areas where gland is pushed down. Leakage evident after last nights rain.										SZMI
07/24/2003 - Same as last report.										YADZ
09/27/2001 - 2 * 10.91 =21.82m Acme joints.										NIBL
Areas of loose anchorage plates. Concrete spalling along the anchorages.										
Inspection Notes:										
Element 305 - Assm Jt w/o Seal Finger Joint at Pier 21										
	1	3	11	m.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Some spalling on the underside of the deck at the joint. Steel sounds solid when tapped on. Finger alignment looks Good.										FPDZ
09/06/2011 - No change from previous inspections.										GCCY
08/25/2009 - Good alignment on the fingers, steel sounds solid when tapped on, and some small spalls/delaminations along edges of joints. Trough under joint is torn up and needs some repair/modifications.										ZQDZ
08/27/2007 - No change from the previous reports.										ZZBZ
06/28/2005 - Minor spalling and delamination along the joint edges. Finger alignment is Good. Trough and drain system needs some work.										SZMI
07/24/2003 - Trough and drain system is in need of cleaning and repair.										YADZ
09/27/2001 - 10.91 * 1 = 10.91m										NIBL
Rusty areas. Some spalling of anchorage.										
09/02/1998 -										GKLH
09/01/1992 - None										REFI
Inspection Notes:										

P00060094+08282
Continue

***** Span : Main-0 - Steel Girder - Spans 21 thru 26 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing										
	1	3	12	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Spot rust and paint loss. Bearing alignment was to expansion slightly today; 85F.										FPDZ
09/06/2011 - No change from previous inspections. Blown off and overcoat painted during the snooper inspection.										GCCY
08/25/2009 - Bearings were cleaned some and spot painted. Bearings at Bent 27 tower span, are rocked towards expansion. Remaining bearing alignments are good.										ZQDZ
08/27/2007 - Bearings were blown off and overcoat painted during the snooper inspection. Alignment was tolerable except for those at Bent 27/Tower Span. These are at maximum expansion/ahead on line. These have been that way for a long time also.										ZZBZ
06/28/2005 - Rusty, pitting, pack rust-tight, and paint loss.										SZMI
07/24/2003 - Rusty with some debris from bird nests and sanding material. Some cleaning done when snooper inspection was done.										YADZ
09/27/2001 - Env. State #3 due to leaking joints.										NIBL
Debris from bird nests and some sanding material where visible. Need to verify numbers and condition when snoopered.										
09/02/1998 - None										GKLH
09/01/1992 - None										REFI
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	1	4	ea.		95	5	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Steel portion is Good. Some faded and missing paint with spot rust.										FPDZ
09/06/2011 - No change from previous inspections. Blown off and overcoat painted during the snooper inspection.										GCCY
08/25/2009 - Spot rost and scale. Bearings were spot painted where able to get at.										ZQDZ
08/27/2007 - Blown off and overcoat painted as needed.										ZZBZ
06/28/2005 - Some rust, pitting, and paint loss.										SZMI
07/24/2003 - Some minor rusty spots and minor debris near bearings. Some cleaning was done when snooper inspection was done.										YADZ
09/27/2001 - Rusty spots. Need to verify numbers and conditions when snoopered.										NIBL
09/02/1998 - None										GKLH
09/01/1992 - None										REFI
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

P00060094+08282
Continue

***** Span : Main-0 - Steel Girder - Spans 21 thru 26 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 334 - Metal Rail Coated										
	1	3	591	m.		60	25	10	5	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Rusty spots, thin paint, exposed base paint, rusted post webs at the curb line with section loss to the webs. On-going repairs to the rails. Delaminated and spalling on the curbs.										FPDZ
09/06/2011 - No change from previous inspections. Reaired some rail on the Left side in June 2011. Noted seveal posts and panels damaged over the Labor Day Weekend on the Righth side near the West Abutment.										GCCY
08/25/2009 - Same comments as past inspections. Several post have been repaired where webs have been rotted away.										ZQDZ
08/27/2007 - 5th post from Pier 26 on the Right/Median side is broken loose from the concrete. One bent post in Span 23 on the Right side. Lots of rust in the lower rail post webs causing section loss. Posts have been hit and bent over as web crumples. Most of the top coat of paint is faded to the primer coat.										ZZBZ
2007/09/10. Bent posts straightened and fixed today.										
06/28/2005 - Faded paint and rust spots where paint is chipped off. Red primer coat is coming through in most of the rail. A couple of areas rattle under traffic. (295.66 * 2 = 591.32) Nate										SZMI
07/24/2003 - Same as last report.										YADZ
09/27/2001 - 306.75 * 2 = 613.50m										NIBL
Paint is chalky and pitted from sanding material. Rusty spots throughout. Rattling with some loose areas noted when traffic is crossing.										GKLN
09/02/1998 - Minor areas of rust throughout.										
09/01/1992 - None										REFI
Inspection Notes:										
Element 357 - Sup Pack Rust SmFlag none										
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Swelling between connection plates. No distress visible to the rivets.										FPDZ
09/06/2011 - No change from previous inspections.										GCCY
08/25/2009 - Minor swelling between some of the conection plates exists.										ZQDZ
Inspection Notes:										
Element 358 - Deck Cracking SmFlag none										
X	1	3	1	ea.	X	0	100	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Mapping cracks in all Spans. Condition State 2 due to quantity.										FPDZ
09/06/2011 - Removed and replaced 2" of the existing surface with Silica Fume Concrete in June 2011.										GCCY
08/25/2009 - Added due to the quantity and size of cracking in this deck.										ZQDZ
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

P00060094+08282
Continue

******* Span : Main-0 - Steel Girder - Spans 21 thru 26 (cont.) *******

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 359 - Soffit Smart Flag										
X	1	1	1	ea.	X	0	0	0	100	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Spalling and deteriorated concrete throughout. Exposed and rusty rebar under post areas with delaminated concrete.										FPDZ
09/06/2011 - No change from previous inspections, but continueing to get worse.										GCCY
08/25/2009 - Outlets on the drains show deteriorated and crumbling concrete with exposed and rusty reinforcing steel. Spalling and delaminated areas throughout underside of the curbs.										ZQDZ
08/27/2007 - Same and lots of it throughout the bridge; see photos.										ZZBZ
06/28/2005 - Unchanged from last report or maybe slightly more deterioration/spalling.										SZMI
07/24/2003 - The outlets of the drain scuppers are deteriorating with some exposed and rusting reinforcing steel. Some deteriorating concrete is falling off and/or is loose.										YADZ
Inspection Notes:										

******* Span : Appr-1 - Steel Girders - Spans 1 thru 20 *******

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 12 - Bare Concrete Deck										
	1	3	3609	sq.m.	X	0	100	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - (1) small delamination found along Bent 5 and Bent 9's joints. Deck looks Good with minor wear in the wheel paths. Lots of mapping cracks.										FPDZ
09/06/2011 - Removed and replaced 2" of the existing surface with Silica Fume Concrete in June 2011.										GCCY
08/25/2009 - Poor skid resistance, and wear from studded tires. Helena did an indepth scan of delamination and spalling in the deck this past summer and their report is in Helena.										ZQDZ
08/27/2007 - Quick chain drag showed delaminations or spalls every 30 to 40 ft or less than 10 percent for Condition State 3; may be more with a more through evaluation. Delaimantions/spalls concrete at the joint anchorages. Rest of the previous comments still apply.										ZZBZ
06/28/2005 - Mapping cracks throughout all spans with some small areas of delamination and spalling; probably less than 2 percent. Very little skid resistance with wear in the wheel paths. (330.83 * 10.91 = 3609.36) Nate.										SZMI
07/24/2003 - Same on deck comments and on scuppers. Wear on deck with some exposed aggregate. Tight mapping cracks throughout the deck. Soffitt smart flag for popouts around scuppers.										YADZ
09/27/2001 - 331.12 * 10.91 = 3613.39 Cracking throughout. Some concrete is popping out under all drain scuppers with some exposed reinforcing steel. Some concrete popouts along the top flange of the main girders.										NIBL
09/02/1998 - minor cracking throughout.										GKLH
Inspection Notes:										

P00060094+08282
Continue

***** Span : Appr-1 - Steel Girders - Spans 1 thru 20 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 107 - Paint Stl Opn Girder										
	1	2	1323	m.		80	10	5	5	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Bottom flanges have rust blisters and minor pitting on their tops. Areas near the joints have heavy rust and paint loss from past leakage. Faded and dirty paint.										FPDZ
09/06/2011 - No change from previous inspections with a little more paint loss and rust noted.										GCCY
08/25/2009 - Rust blisters with some minor surface pitting on the tops of the bottom flanges in areas that moisture is collecting. Rust and some cracking of the welds on the bottom cover plates in areas that water has gotten between the cover and bottom flange.										ZQDZ
08/27/2007 - Spots of rust on the bottom flanges of the outside girders; especially where the drains are dumping water onto them. Rust blisters show surface pitting when cleaned off. Also the same as previous comments.										ZZBZ
06/28/2005 - Rust and scale along the underside of the deck where the top flange is against the concrete. Areas under leaky joints are the worse. (4 * 330.83 = 1323.32) Nate.										SZMI
07/24/2003 - Rusty spots along the upper flanges to concrete area. Ends of girders under leaking joints show some minor blistering rust.										YADZ
09/27/2001 - 4 * 331.2m = 1324.8m										NIBL
Rusty spots under the joints with some rust spots at the top flange to concrete connection.										
09/02/1998 -										GKLH
Inspection Notes:										
Element 178 - Painted Trans Girder Bent 21										
	1	3	11	m.		80	15	5	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Heavy rust, scale, rust blisters, and surface pitting where water can sit.										FPDZ
09/06/2011 - No change from previous inspections with a little more paint loss and rust noted.										GCCY
08/25/2009 - Dirty, rust, scale and some active corrosion in areas that moisture is collecting.										ZQDZ
08/27/2007 - Dirty, stained, and some rusty spots.										ZZBZ
06/28/2005 - Same as last report.										SZMI
07/24/2003 - Step up girder to make up difference in girder heights. (4) girders on top and supported by (2) bearings. Some areas of rust throughout.										YADZ
09/27/2001 - 10.91 * 1 = 10.91m Env. State #3 as under an open joint.										NIBL
Rusty spots at the connections.										
Inspection Notes:										

P00060094+08282
Continue

******* Span : Appr-1 - Steel Girders - Spans 1 thru 20 (cont.) *******

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 205 - R/Conc Column Bent 2 thru 20										
	1	2	23	ea.		85	10	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/05/2013 - Spalling and delaminations on Bent 5's. Vertical cracking along edges on some. Surface spalls from shallow tie wire. Staining on those under leaky areas. FPDZ

09/06/2011 - No change from previous inspections. GCCY

08/25/2009 - Delams and spalls on bent 5 about 6 feet up. Several with small spalls and staining on those that have some leakage from above. ZQDZ

08/27/2007 - 5 percent in Condition State 3 for exposed rebar chair feet. Also exposed rebar and rust at Bent 3 thru 5. Several have small delamiated areas. Bent 9's column has a spall on the Left corner. ZZBZ

06/28/2005 - Columns at Bents 3 thru 5 have some spalls on them. Rebar is rusted in these areas. Same on the shrinkage cracks. SZMI

07/24/2003 - Minor and tight shrinkage cracks on surface of concrete of most columns. Some scrapes on a couple of the columns from vehicle activity under the structure. YADZ

09/27/2001 - Minor cracking throughout. Minor shrinkage cracks. NIBL

09/02/1998 - 4 bents with 2 columns per (+) 15 bents with 1 column per = 23 GKLH

Inspection Notes:

Element 215 - R/Conc Abutment Abutment 1-East										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	2	15	m.		95	5	0	0	
						%	%	%	%	%

Previous Inspection Notes :

09/05/2013 - Generally Good condition. Some tight cracks in the backwall concrete. Water leaking through the backwall to cap areas. Small spall on the Left wignwall edge at the groundline. FPDZ

09/06/2011 - No change from previous inspections. GCCY

08/25/2009 - Tight cracks in abutment backwalls and wingwalls. Area is damp from leakage. All prior remarks still apply. ZQDZ

08/27/2007 - leaking at Abutment has area is damp. Lots of sanding material on the cap. Tight cracks in the Abutment's backwall and wingwalls. ZZBZ

Some moderate erosion from under the Abutment towards Bent 2.

06/28/2005 - Same as last report and add some small spalls where the girders are embedded. SZMI

07/24/2003 - Minor and tight cracking in Abutment backwall. Some graffiti painted on the backwall and girder ends. YADZ

09/27/2001 - 14.81 * 1 = 14.81m NIBL

Minor cracking in the Abutment backwalls.

09/02/1998 - _ GKLH

Inspection Notes:

P00060094+08282
Continue

***** Span : Appr-1 - Steel Girders - Spans 1 thru 20 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 234 - R/Conc Cap Bents 2 thru 20										
	1	2	219	m.		85	10	5	0	
						%	%	%	%	%

Previous Inspection Notes :

09/05/2013 - Staining on those that had leaking deck joints. Spalling from shallow rebar chairs and tie wire. Cracks with efflorescence on ends of some of the caps. Delaminations on Bent 6, 9, and 15. FPDZ

09/06/2011 - No change from previous inspections. GCCY

08/25/2009 - Same comments as prior inspections. ZQDZ

08/27/2007 - Bent 4 has delaminated area with some spalls and rusty rebar on its Left end and under G1. Bent 5's cap has a spall on the Span 4 side's Left corner. Bent 6 has a 2'(w) x 1'(h) delamination under G1S6. Bent 15's cap has a 1' x 1' spall on the underside of the Right end and a delaminated area near centerline on the Span 15 side. Lots of rusty rebar chair feet on the underside of some of the caps. Lots of staining under leaky joints also noted with some sanding material also. ZZBZ

06/28/2005 - Same as previous reports. Add that the Left end of the caps under the bearings at Bents 3 and 4 show some cracking and spalling starting. Staining from leaking joints. SZMI

07/24/2003 - Same as previous and add that the south end of the cap at Bent 2 is cracked with delaminated concrete. Some minor delaminations also noted at Bent 3 and 4 in the column to cap connection areas. YADZ

09/27/2001 - (5 * 10.91) + (4 * 13.84) = 219.01m NIBL

Minor cracks at ends of several caps. Need to look at with snoopers for condition state.

09/02/1998 - Some cracking, but minor GKLH

Inspection Notes:

Element 301 - Pourable Joint Seal Bents 3(skewed), 5(Skewed), 6, 9, 12, 15, and 18										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
	1	3	82	m.		95	5	0		
						%	%	%	%	%

Previous Inspection Notes :

09/05/2013 - Generally in Good condition. A couple of small tears in the sealant at Bents 3, 6, and 12. Sealant looks adhered in most of the areas of the joints. FPDZ

09/06/2011 - New Silicone sealant and joints in June 2011. GCCY

08/25/2009 - Torn and missing joint material. Spalling and delaminations along edges of joint steel. Most of the steel sounded solid when it was tapped on. ZQDZ

08/27/2007 - Some loose or missing joint material. Some delaminated concrete along the joint anchorages, but the steel sounds solid when tapped on. ZZBZ

06/28/2005 - These joints could be compression joint glands. Same as previous reports with loose material and dealaminations along the joint edges. SZMI

07/24/2003 - Leaking. Areas of loose joint material. Minor spalling and delaminations along the joint anchorages. YADZ

09/27/2001 - (5 * 10.91) + (2 * 13.84) = 82.23m (2) joints skewed and (5) are perpendicular. NIBL

Glands are up & down with some tears in them. Leaking. Some concrete is spalled along both sides of the anchorages.

09/02/1998 - Sliding Plate Joints at Bents 11, 14, 17, 20, 23, 24 & 26. GKLH

Inspection Notes:

P00060094+08282
Continue

***** Span : Appr-1 - Steel Girders - Spans 1 thru 20 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 311 - Moveable Bearing										
	1	3	56	ea.		80	15	5		
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Some of the bearings are at maximum movement with bending of the anchor bolts; 90F. Debris, faded paint, rust, and scale on the bearings.										FPDZ
09/06/2011 - No change from previous inspections.										GCCY
08/25/2009 - Some cleaning and spot painting was done during the snooper inspection. Left 5 percent in state 3 for alignment.										ZQDZ
08/27/2007 - Bearings at Bent 2 thru 6 and 19 thru 21 were blown off and overcoated painted. Several of the bearings are at maximum movement with bending of the pins at G1 and G4. Additional comments on attached paperwork.										ZZBZ
06/28/2005 - Areas of rust, paint losse, and debris.										SZMI
07/24/2003 - Still need to verify numbers with next snooper inspection.										YADZ
09/27/2001 - Rusty with some debris. Verify numbers and condition with snooper.										NIBL
09/02/1998 - _										GKLH
Inspection Notes:										
Element 313 - Fixed Bearing										
	1	2	56	ea.		90	10	0		
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Dirty, rust, paint loss, and scale.										FPDZ
09/06/2011 - No change from previous inspections.										GCCY
08/25/2009 - Dirty, some rust, debris, and scale. Some cleaning and spot painting was done during the snooper inspection.										ZQDZ
08/27/2007 - 5 percent in Condition State 3 due to rust and pitting. Some dirt and debris also noted. Some blowing off and overcoat painting of some of the bearings.										ZZBZ
06/28/2005 - Areas of rust, paint loss, and debris.										SZMI
07/24/2003 - Still need to verify numbers with next snooper inspection.										YADZ
09/27/2001 - Rusty spots throughout. Need to verify numbers and condition with snooper.										NIBL
09/02/1998 - _										GKLH
Inspection Notes:										

P00060094+08282
Continue

***** Span : Appr-1 - Steel Girders - Spans 1 thru 20 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 334 - Metal Rail Coated										
	1	3	662	m.		60	25	10	5	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Rusty spots, thin paint, exposed base paint, rusted post webs at the curb line with section loss to the webs. On-going repairs to the rails. Delaminated and spalling on the curbs.										FPDZ
09/06/2011 - No change from previous inspections. Replaced rail posts and panels in (2) areas in June 2011.										GCCY
08/25/2009 - Sanding material packed in the posts webs near the curbs has rusted and weakened the posts. This span is in the best condition, but still has rust, minor paint loss, and top coat worn down to a faded primer coat. Some posts that were bent over have been repaired by reinforcing the web in the rotted areas.										ZQDZ
08/27/2007 - Lots of rust in the lower rail post webs causing section loss. Posts have been hit and bent over as web crumples. Most of the top coat of paint is faded to the primer coat.										ZZBZ
06/28/2005 - Faded paint and rust where paint is chipped off. Red prime coat is coming through throughout. A rattle on the Right rail near Bent 2. (330.83 * 2 = 661.66) Nate.										SZMI
07/24/2003 - Same as previous report. Rail is rattling on the North side of the structure bear Bent 2 under heavy loads in the left traffic lane.										YADZ
09/27/2001 - 331.2 * 2 = 662.4m										NIBL
Rusty spots. Chaulky paint with some chips in the paint system.										
09/02/1998 - Some rusing throughout.										GKLH
Inspection Notes:										

***** Span : Appr-2 - Tower Abutment - Span 27 *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 62 - Bare Top Flang										
	1	3	123	sq.m.	X	100	0	0	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Generally in Good condition with some random mapping cracks. Wear in the wheel paths.										FPDZ
09/06/2011 - Removed and then replaced top 2" with Silica Fume Concrete in June 2011.										GCCY
08/25/2009 - Wear from studded tires. Small delaminated area near the guard angle.										ZQDZ
08/27/2007 - 11.30 * 10.91 = 123.28 Some wear in the wheel paths with reduced skid resistance. Some delamianted concrete along the joint. Some tight mapping cracks throughout.										ZZBZ
Inspection Notes:										

INITIAL ASSESSMENT FORM FOR STRUCTURE :

P00060094+08282
Continue

***** Span : Appr-2 - Tower Abutment - Span 27 (cont.) *****

Element Description										
Smart Flag	Scale Factor	Env	Quantity	Units	Insp Each	Pct Stat 1	Pct Stat 2	Pct Stat 3	Pct Stat 4	Pct Stat 5
Element 215 - R/Conc Abutment Abutment 27										
	1	2	33	m.		95	5	0	0	
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Some tight cracking in areas near the end posts. Face of the backwall has some tight cracks.										FPDZ
09/06/2011 - No change from previous inspections.										GCCY
08/25/2009 - Minor and tight cracking in Abutment backwall. Some graffiti painted on the backwall and girder ends. Some dirt and debris sitting area of the bearings.										ZQDZ
08/27/2007 - No change with some sanding material around the bearings.										ZZBZ
06/28/2005 - Same as previous reports. No major problems noted.										SZMI
07/24/2003 - 11.38 11.50 11.50 = 33.38m Abutment face and u-style wingwalls. Tight shrinkage cracks on the Abutment backwall face.										YADZ
09/27/2001 - 11.38 * 1 = 11.38m										NIBL
09/02/1998 - None										GKLH
09/01/1992 - None										REFI
Inspection Notes:										
Element 334 - Metal Rail Coated										
	1	3	22	m.		70	25	5	0	0
						%	%	%	%	%
Previous Inspection Notes :										
09/05/2013 - Rusty spots, thin paint, exposed base paint, rusted post webs at the curb line with section loss to the webs. Scrapes and dings from past traffic hits.										FPDZ
09/06/2011 - No change from previous inspections.										GCCY
08/25/2009 - Sanding material packed in the posts webs near the curbs. Concrete end posts are in good condition.										ZQDZ
08/27/2007 - Sanding material packed in the posts webs near the curbs has rusted and weakened the posts. This span is in the best condition, but still has rust, minor paint loss, and top coat worn down to a faded primer coat.										ZZBZ
06/28/2005 - Concrete end posts have tight shrinkage cracks. Rust and faded paint on steel. Some chips in the paint and primer coat is visible on the steel in areas. (10.82 * 2 = 21.64) Nate.										SZMI
07/24/2003 - Same as previous report.										YADZ
09/27/2001 - 11.3 * 2 = 22.6m										NIBL
Rusty spots. Chips from sanding material and debris. Paint is chalky.										GKLH
09/02/1998 - _										GKLH
Inspection Notes:										



APPENDIX B

Traffic Data Collection



Robert Peccia & Associates
825 Custer Ave

Helena, Montana, United States 59604
406-447-5000 scottr@rpa-hln.com

Count Name: 01-TriHillFrontage_AirportRd TMC
Site Code: TMC-01
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

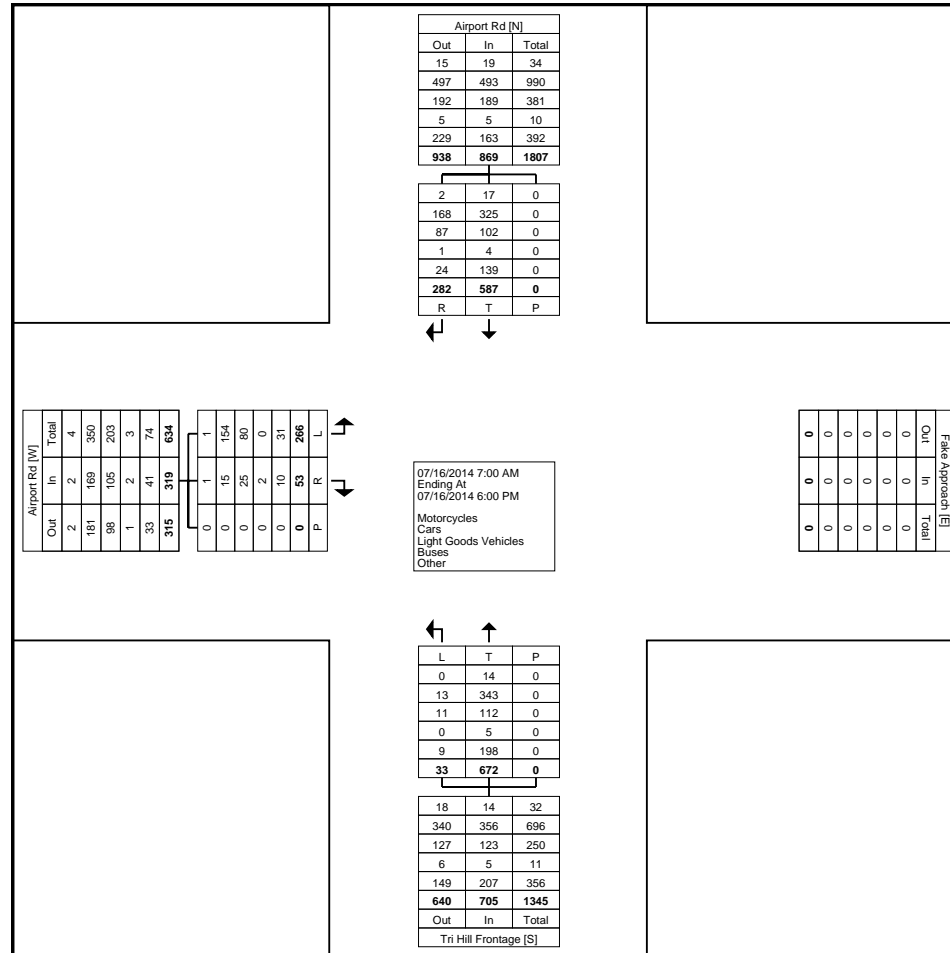
Start Time	Airport Rd Southbound				Tri Hill Frontage Northbound				Airport Rd Eastbound				Int. Total
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	
7:00 AM	15	13	0	28	4	41	0	45	11	2	0	13	86
7:15 AM	16	15	0	31	1	34	0	35	16	4	0	20	86
7:30 AM	22	29	0	51	2	54	0	56	20	10	0	30	137
7:45 AM	24	26	0	50	4	53	0	57	16	2	0	18	125
Hourly Total	77	83	0	160	11	182	0	193	63	18	0	81	434
8:00 AM	26	19	0	45	2	36	0	38	19	2	0	21	104
8:15 AM	25	14	0	39	1	46	0	47	28	5	0	33	119
8:30 AM	31	13	0	44	0	34	0	34	15	5	0	20	98
8:45 AM	26	6	0	32	0	50	0	50	8	2	0	10	92
Hourly Total	108	52	0	160	3	166	0	169	70	14	0	84	413
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	50	26	0	76	3	48	0	51	21	2	0	23	150
4:15 PM	37	16	0	53	1	43	0	44	11	5	0	16	113
4:30 PM	61	18	0	79	1	50	0	51	14	1	0	15	145
4:45 PM	45	12	0	57	2	41	0	43	16	1	0	17	117
Hourly Total	193	72	0	265	7	182	0	189	62	9	0	71	525
5:00 PM	46	21	0	67	3	31	0	34	33	1	0	34	135
5:15 PM	55	19	0	74	3	38	0	41	12	4	0	16	131
5:30 PM	57	16	0	73	4	38	0	42	12	2	0	14	129
5:45 PM	51	19	0	70	2	35	0	37	14	5	0	19	126
Hourly Total	209	75	0	284	12	142	0	154	71	12	0	83	521
Grand Total	587	282	0	869	33	672	0	705	266	53	0	319	1893
Approach %	67.5	32.5	-	-	4.7	95.3	-	-	83.4	16.6	-	-	-
Total %	31.0	14.9	-	45.9	1.7	35.5	-	37.2	14.1	2.8	-	16.9	-
Motorcycles	17	2	-	19	0	14	-	14	1	1	-	2	35
% Motorcycles	2.9	0.7	-	2.2	0.0	2.1	-	2.0	0.4	1.9	-	0.6	1.8
Cars	325	168	-	493	13	343	-	356	154	15	-	169	1018
% Cars	55.4	59.6	-	56.7	39.4	51.0	-	50.5	57.9	28.3	-	53.0	53.8
Light Goods Vehicles	102	87	-	189	11	112	-	123	80	25	-	105	417
% Light Goods Vehicles	17.4	30.9	-	21.7	33.3	16.7	-	17.4	30.1	47.2	-	32.9	22.0
Buses	4	1	-	5	0	5	-	5	0	2	-	2	12
% Buses	0.7	0.4	-	0.6	0.0	0.7	-	0.7	0.0	3.8	-	0.6	0.6
Single-Unit Trucks	33	19	-	52	6	45	-	51	29	7	-	36	139
% Single-Unit Trucks	5.6	6.7	-	6.0	18.2	6.7	-	7.2	10.9	13.2	-	11.3	7.3
Articulated Trucks	105	5	-	110	0	153	-	153	2	3	-	5	268
% Articulated Trucks	17.9	1.8	-	12.7	0.0	22.8	-	21.7	0.8	5.7	-	1.6	14.2
Bicycles on Road	1	0	-	1	3	0	-	3	0	0	-	0	4
% Bicycles on Road	0.2	0.0	-	0.1	9.1	0.0	-	0.4	0.0	0.0	-	0.0	0.2



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Count Name: 01-TriHillFrontage_AirportRd TMC
Site Code: TMC-01
Start Date: 07/16/2014
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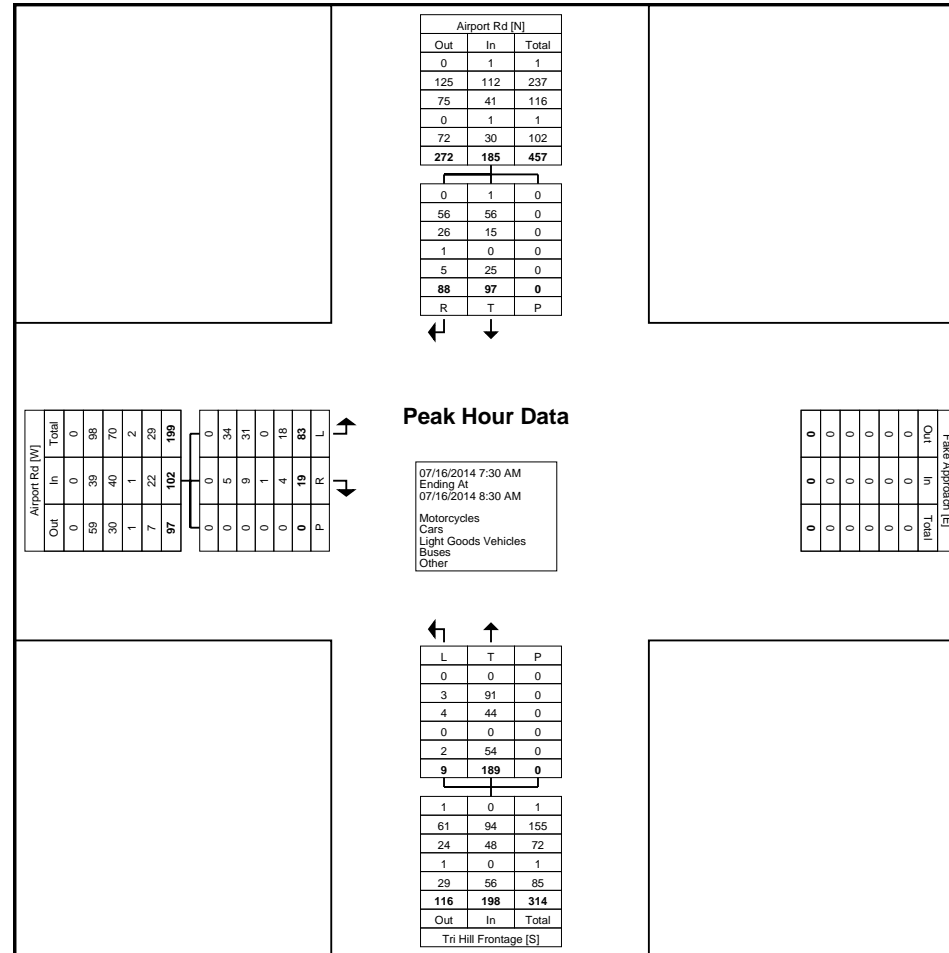
Turning Movement Data Plot



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Count Name: 01-TriHillFrontage_AirportRd TMC
Site Code: TMC-01
Start Date: 07/16/2014
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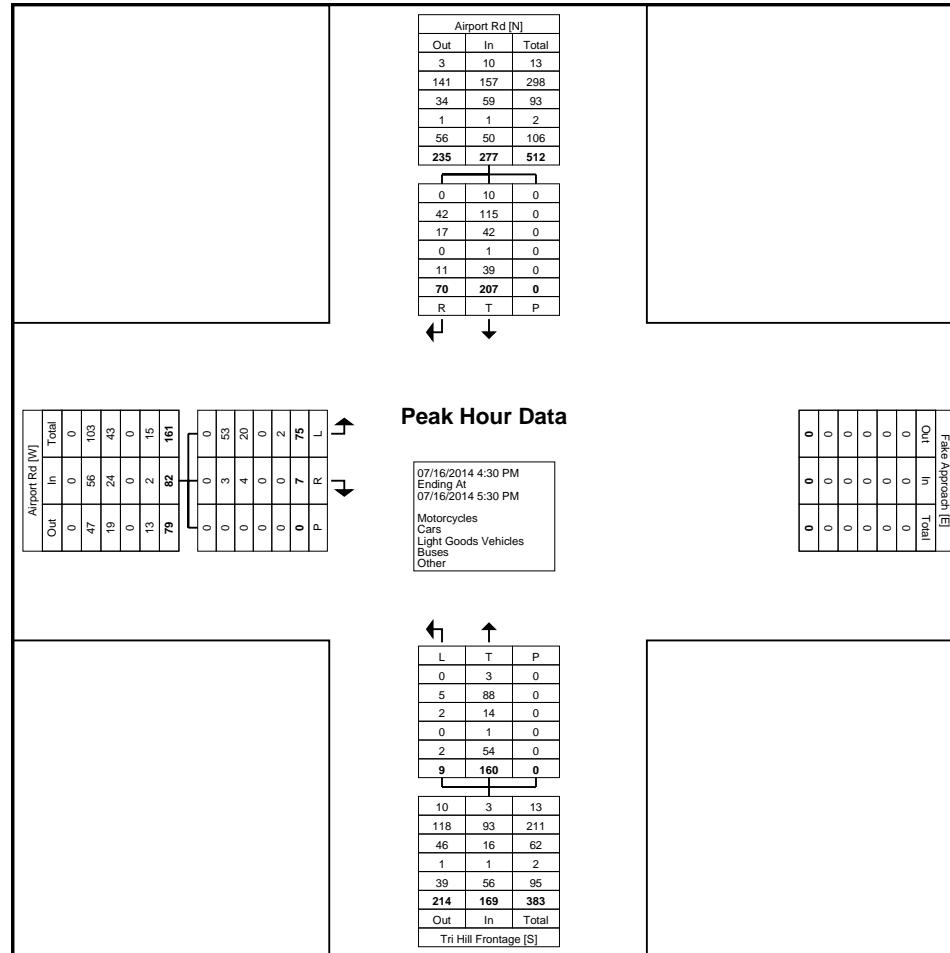
Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: 01-TriHillFrontage_AirportRd TMC
Site Code: TMC-01
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Turning Movement Peak Hour Data Plot (4:30 PM)



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Count Name: 01-TriHillFrontage_AirportRd TMC
Site Code: TMC-01
Start Date: 07/16/2014
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Count Name: 02-I15NB_AirportRd TMC
Site Code: TMC-02
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

Start Time	Southbound St. Southbound				Airport Rd Northbound				I-15 NB On Westbound		I-15 NB Off Eastbound				Int. Total	
	Thru	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Peds	App. Total	Right	Thru	Left	Peds		App. Total
7:00 AM	23	16	0	39	44	8	0	52	1	0	6	0	2	0	8	99
7:15 AM	28	16	0	44	42	8	0	50	0	0	2	1	1	0	4	98
7:30 AM	48	16	0	64	64	9	0	73	0	0	4	0	1	0	5	142
7:45 AM	47	12	0	59	54	15	0	69	0	0	3	0	2	0	5	133
Hourly Total	146	60	0	206	204	40	0	244	1	0	15	1	6	0	22	472
8:00 AM	43	28	0	71	47	8	0	55	0	0	2	0	0	0	2	128
8:15 AM	35	23	0	58	57	17	0	74	0	0	4	0	1	0	5	137
8:30 AM	33	17	0	50	40	10	0	50	0	0	8	0	1	0	9	109
8:45 AM	29	19	0	48	44	13	0	57	0	0	3	0	0	0	3	108
Hourly Total	140	87	0	227	188	48	0	236	0	0	17	0	2	0	19	482
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	68	107	0	175	60	8	0	68	0	0	8	0	0	0	8	251
4:15 PM	46	50	0	96	47	9	0	56	0	0	9	1	0	0	10	162
4:30 PM	68	111	0	179	47	17	0	64	0	0	10	1	1	0	12	255
4:45 PM	54	39	0	93	43	13	0	56	0	0	4	0	1	0	5	154
Hourly Total	236	307	0	543	197	47	0	244	0	0	31	2	2	0	35	822
5:00 PM	63	53	0	116	55	8	0	63	0	0	5	0	0	0	5	184
5:15 PM	66	44	0	110	39	12	0	51	0	0	7	0	1	0	8	169
5:30 PM	65	29	0	94	39	11	0	50	0	0	7	0	0	0	7	151
5:45 PM	59	21	0	80	38	12	0	50	0	0	12	0	0	0	12	142
Hourly Total	253	147	0	400	171	43	0	214	0	0	31	0	1	0	32	646
Grand Total	775	601	0	1376	760	178	0	938	1	0	94	3	11	0	108	2422
Approach %	56.3	43.7	-	-	81.0	19.0	-	-	-	-	87.0	2.8	10.2	-	-	-
Total %	32.0	24.8	-	56.8	31.4	7.3	-	38.7	-	0.0	3.9	0.1	0.5	-	4.5	-
Motorcycles	18	13	-	31	12	2	-	14	-	0	2	0	0	-	2	47
% Motorcycles	2.3	2.2	-	2.3	1.6	1.1	-	1.5	-	-	2.1	0.0	0.0	-	1.9	1.9
Cars	425	392	-	817	409	68	-	477	-	0	36	2	9	-	47	1341
% Cars	54.8	65.2	-	59.4	53.8	38.2	-	50.9	-	-	38.3	66.7	81.8	-	43.5	55.4
Light Goods Vehicles	208	175	-	383	165	36	-	201	-	0	17	1	2	-	20	604
% Light Goods Vehicles	26.8	29.1	-	27.8	21.7	20.2	-	21.4	-	-	18.1	33.3	18.2	-	18.5	24.9
Buses	5	0	-	5	2	2	-	4	-	0	0	0	0	-	0	9
% Buses	0.6	0.0	-	0.4	0.3	1.1	-	0.4	-	-	0.0	0.0	0.0	-	0.0	0.4
Single-Unit Trucks	45	13	-	58	78	17	-	95	-	0	8	0	0	-	8	161
% Single-Unit Trucks	5.8	2.2	-	4.2	10.3	9.6	-	10.1	-	-	8.5	0.0	0.0	-	7.4	6.6
Articulated Trucks	72	8	-	80	94	53	-	147	-	0	31	0	0	-	31	258
% Articulated Trucks	9.3	1.3	-	5.8	12.4	29.8	-	15.7	-	-	33.0	0.0	0.0	-	28.7	10.7
Bicycles on Road	2	0	-	2	0	0	-	0	-	0	0	0	0	-	0	2
% Bicycles on Road	0.3	0.0	-	0.1	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	-	0.0	0.1

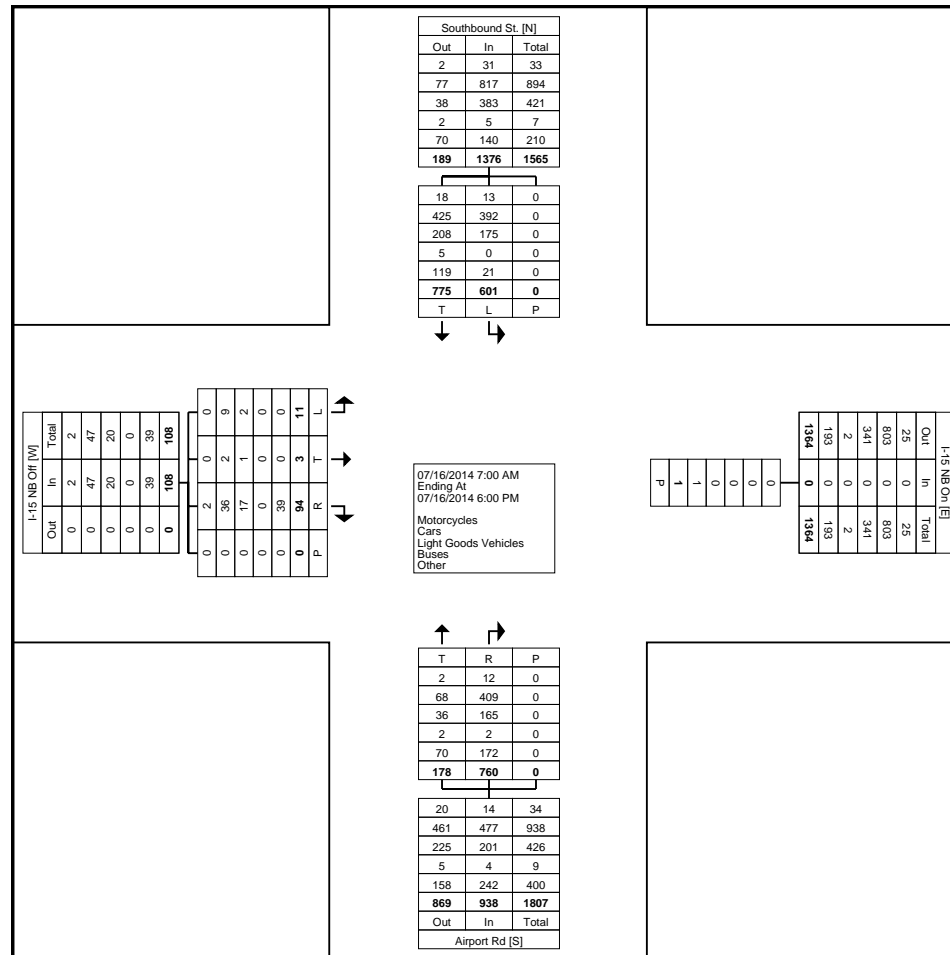
Pedestrians	-	-	0	-	-	-	0	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-



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Count Name: 02-I15NB_AirportRd TMC
Site Code: TMC-02
Start Date: 07/16/2014
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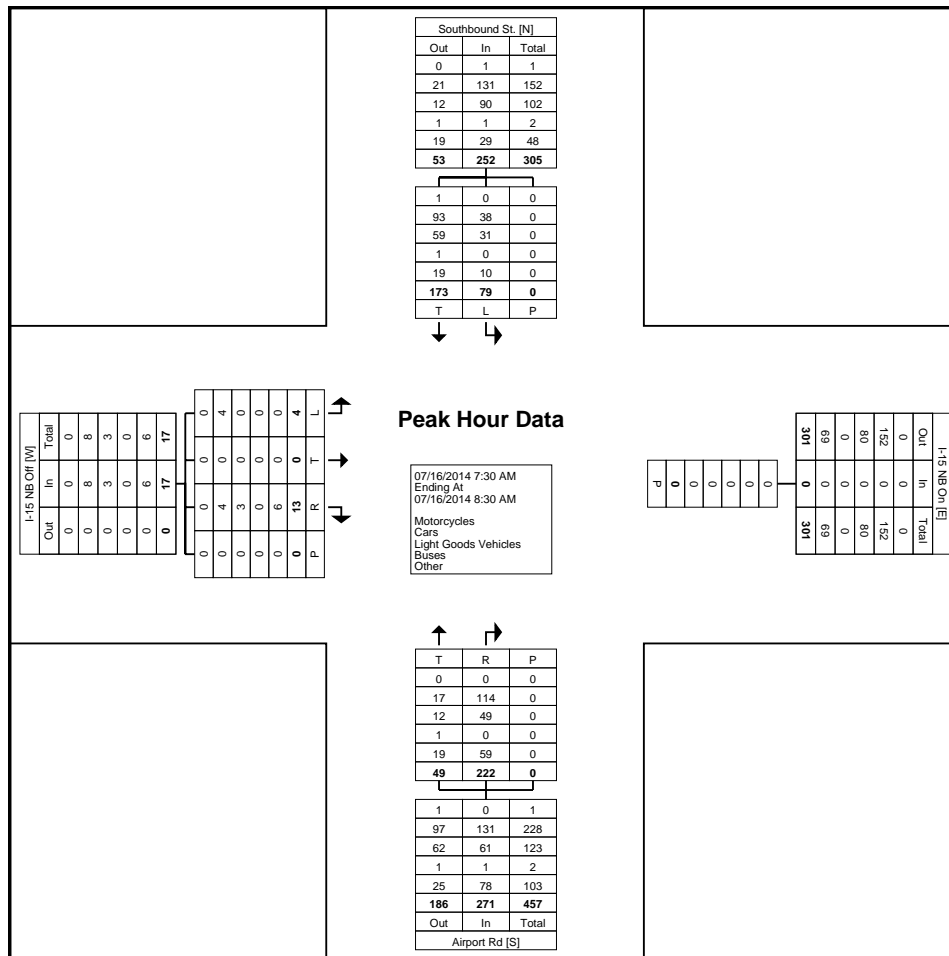
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Count Name: 02-I15NB_AirportRd TMC
Site Code: TMC-02
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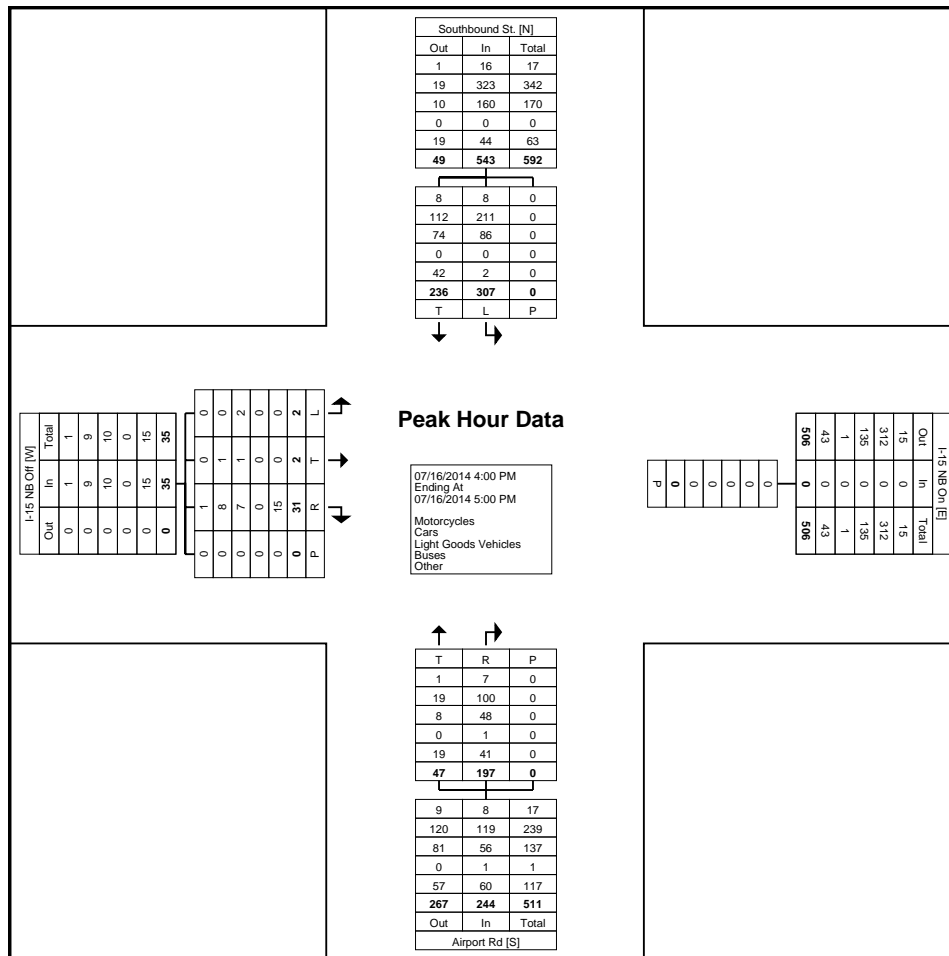
Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: 02-I15NB_AirportRd TMC
Site Code: TMC-02
Start Date: 07/16/2014
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Turning Movement Peak Hour Data Plot (4:00 PM)



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Count Name: 02-115NB_AirportRd TMC
Site Code: TMC-02
Start Date: 07/16/2014
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Count Name: 03-I15SBOn_AirportRd TMC
Site Code: TMC-03
Start Date: 07/16/2014
Page No: 1

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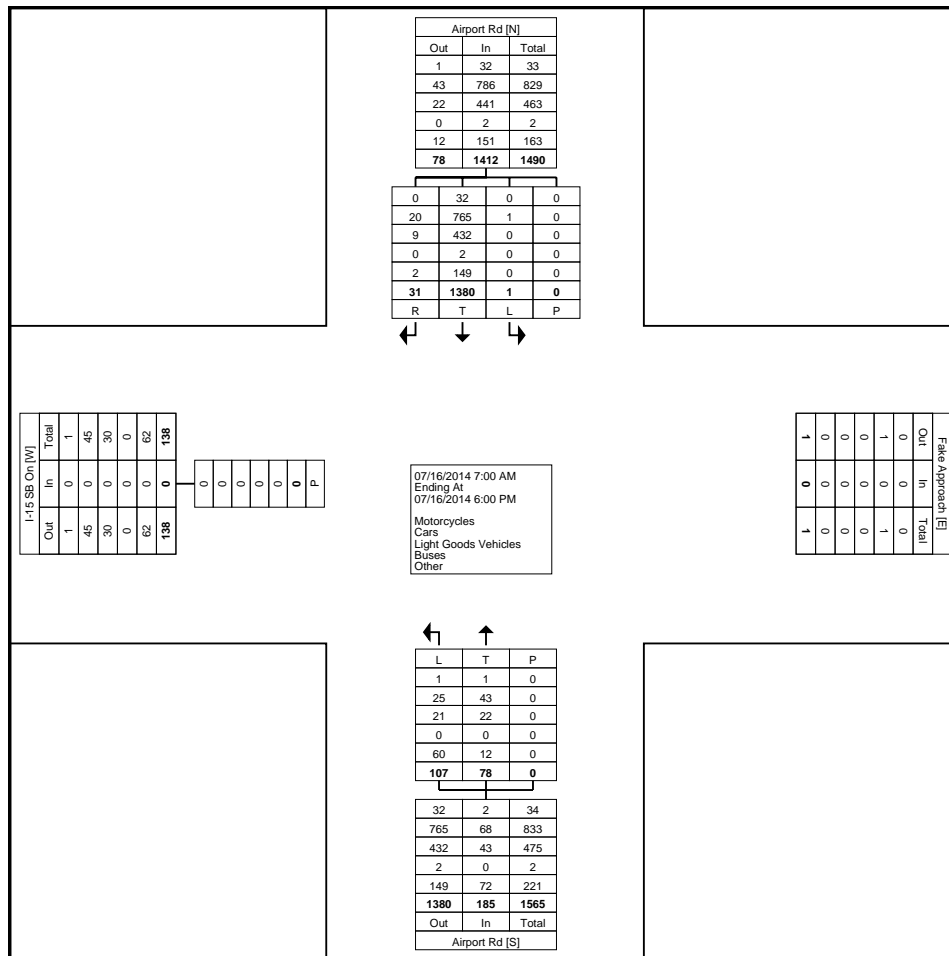
Start Time	Airport Rd Southbound					Airport Rd Northbound				I-15 SB On Eastbound		Int. Total
	Right	Thru	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Peds	App. Total	
7:00 AM	0	41	0	0	41	5	5	0	10	0	0	51
7:15 AM	1	44	0	0	45	4	5	0	9	0	0	54
7:30 AM	1	63	0	0	64	5	5	0	10	0	0	74
7:45 AM	1	61	0	0	62	9	9	0	18	0	0	80
Hourly Total	3	209	0	0	212	23	24	0	47	0	0	259
8:00 AM	0	72	0	0	72	2	6	0	8	0	0	80
8:15 AM	4	55	0	0	59	7	12	0	19	0	0	78
8:30 AM	1	55	1	0	57	6	5	0	11	0	0	68
8:45 AM	2	48	0	0	50	8	5	0	13	0	0	63
Hourly Total	7	230	1	0	238	23	28	0	51	0	0	289
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	5	175	0	0	180	4	3	0	7	0	0	187
4:15 PM	3	94	0	0	97	4	5	0	9	0	0	106
4:30 PM	2	182	0	0	184	6	10	0	16	0	0	200
4:45 PM	4	91	0	0	95	7	7	0	14	0	0	109
Hourly Total	14	542	0	0	556	21	25	0	46	0	0	602
5:00 PM	0	117	0	0	117	2	6	0	8	0	0	125
5:15 PM	2	108	0	0	110	4	9	0	13	0	0	123
5:30 PM	4	96	0	0	100	3	6	0	9	0	0	109
5:45 PM	1	78	0	0	79	2	9	0	11	0	0	90
Hourly Total	7	399	0	0	406	11	30	0	41	0	0	447
Grand Total	31	1380	1	0	1412	78	107	0	185	0	0	1597
Approach %	2.2	97.7	0.1	-	-	42.2	57.8	-	-	-	-	-
Total %	1.9	86.4	0.1	-	88.4	4.9	6.7	-	11.6	-	0.0	-
Motorcycles	0	32	0	-	32	1	1	-	2	-	0	34
% Motorcycles	0.0	2.3	0.0	-	2.3	1.3	0.9	-	1.1	-	-	2.1
Cars	20	765	1	-	786	43	25	-	68	-	0	854
% Cars	64.5	55.4	100.0	-	55.7	55.1	23.4	-	36.8	-	-	53.5
Light Goods Vehicles	9	432	0	-	441	22	21	-	43	-	0	484
% Light Goods Vehicles	29.0	31.3	0.0	-	31.2	28.2	19.6	-	23.2	-	-	30.3
Buses	0	2	0	-	2	0	0	-	0	-	0	2
% Buses	0.0	0.1	0.0	-	0.1	0.0	0.0	-	0.0	-	-	0.1
Single-Unit Trucks	1	61	0	-	62	5	10	-	15	-	0	77
% Single-Unit Trucks	3.2	4.4	0.0	-	4.4	6.4	9.3	-	8.1	-	-	4.8
Articulated Trucks	1	85	0	-	86	7	49	-	56	-	0	142
% Articulated Trucks	3.2	6.2	0.0	-	6.1	9.0	45.8	-	30.3	-	-	8.9
Bicycles on Road	0	3	0	-	3	0	1	-	1	-	0	4
% Bicycles on Road	0.0	0.2	0.0	-	0.2	0.0	0.9	-	0.5	-	-	0.3



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Count Name: 03-I15SBOn_AirportRd TMC
Site Code: TMC-03
Start Date: 07/16/2014
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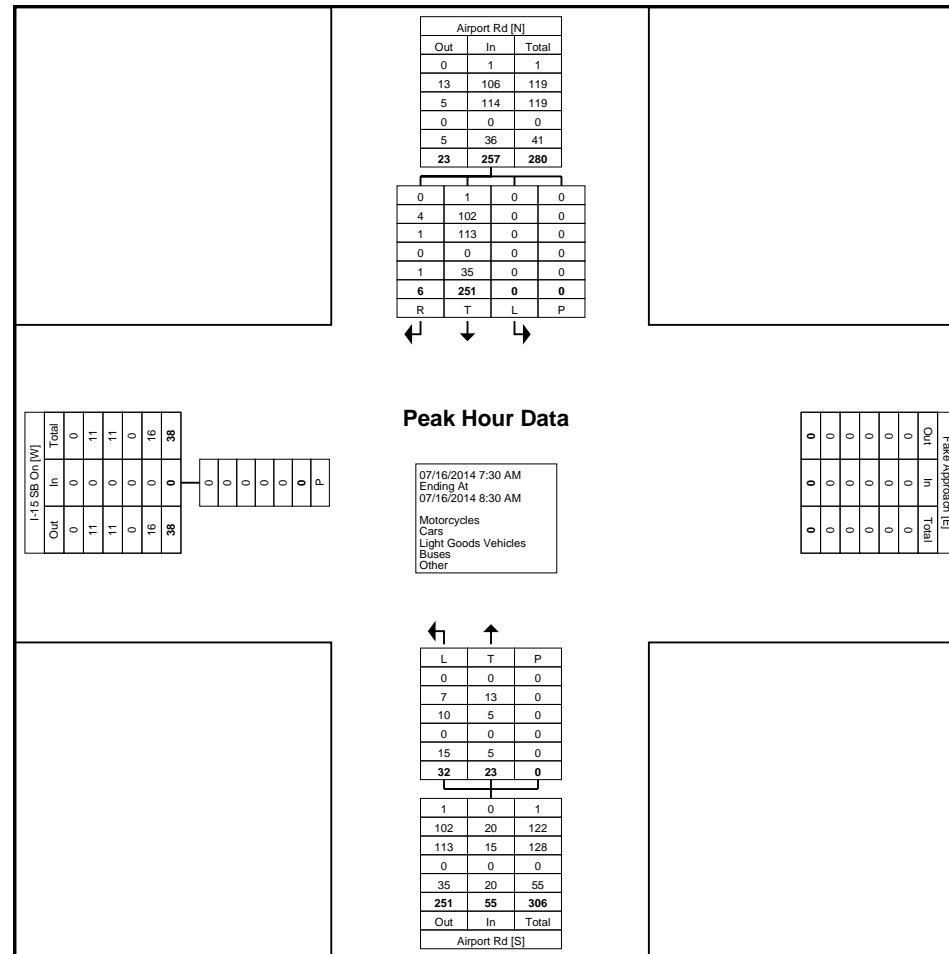
Turning Movement Data Plot



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Count Name: 03-I15SBOn_AirportRd TMC
Site Code: TMC-03
Start Date: 07/16/2014
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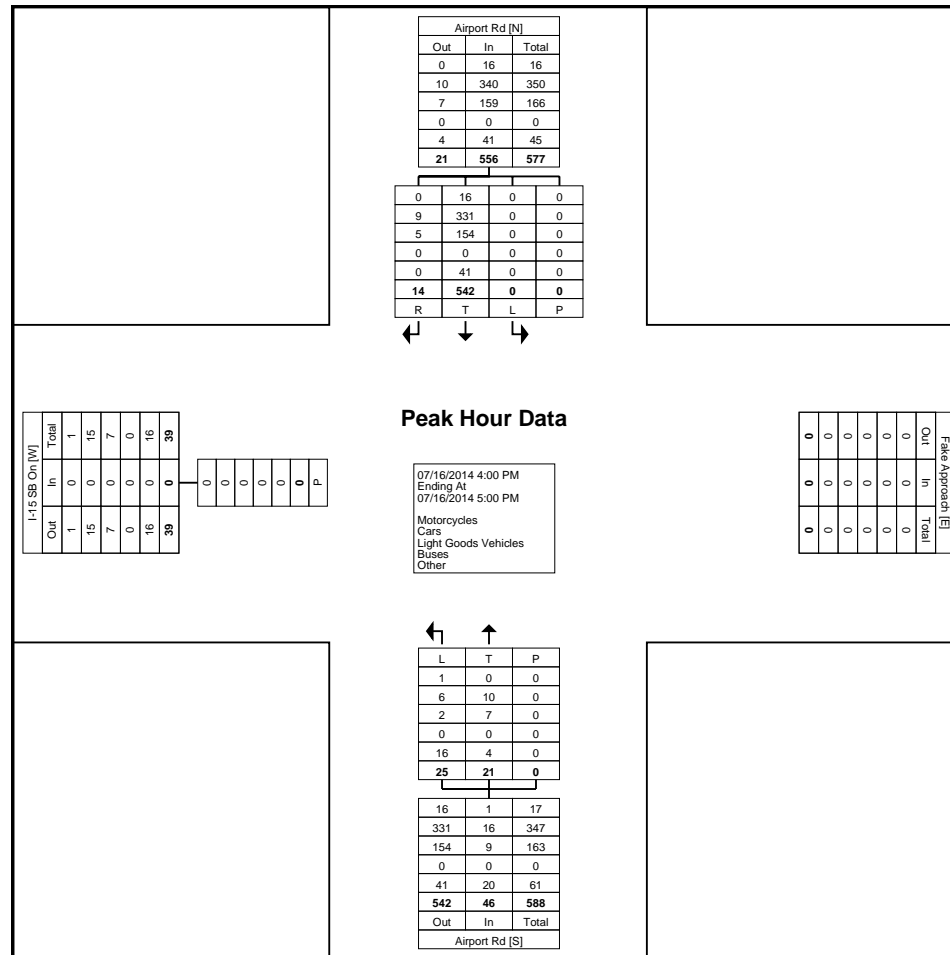
Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: 03-I15SBOn_AirportRd TMC
Site Code: TMC-03
Start Date: 07/16/2014
Page No: 7



Turning Movement Peak Hour Data Plot (4:00 PM)



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Count Name: 03-115SBOOn_AirportRd TMC
Site Code: TMC-03
Start Date: 07/16/2014
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Count Name: 04-I15SBOff_AirportRd_Frontage
TMC
Site Code: TMC-04
Start Date: 07/16/2014
Page No: 1

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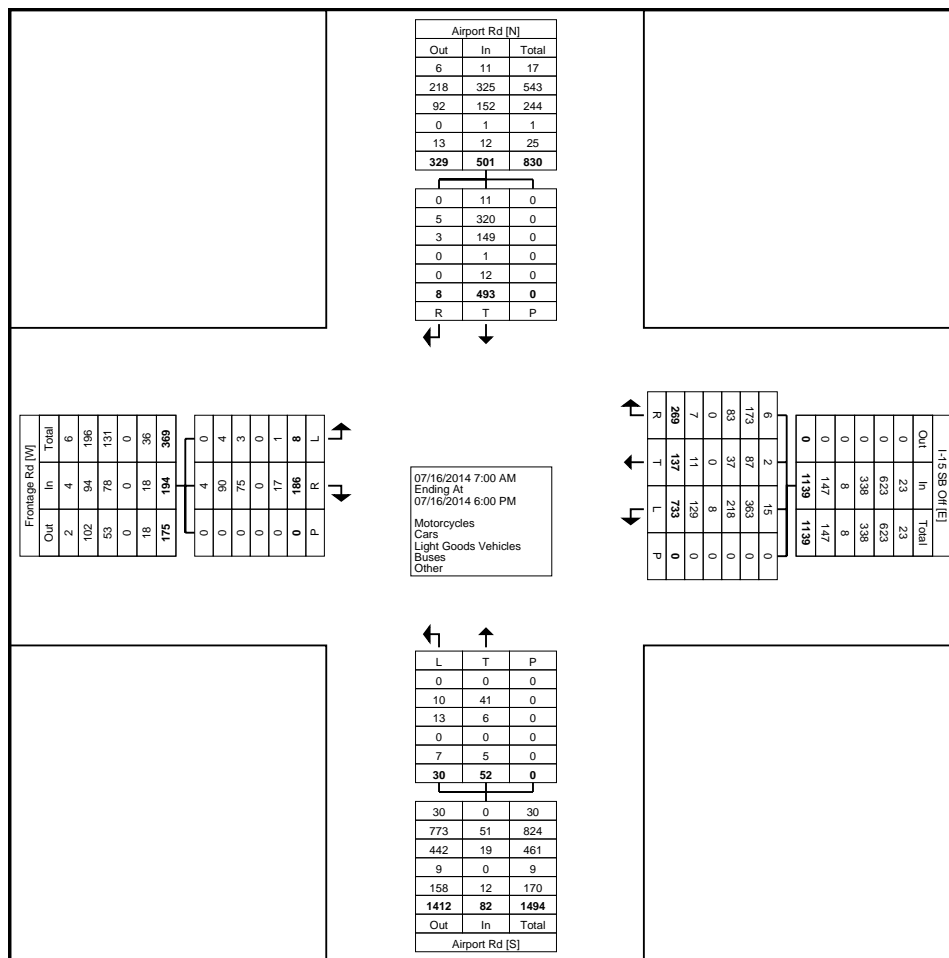
Start Time	Airport Rd Southbound				Airport Rd Northbound				I-15 SB Off Westbound					Frontage Rd Eastbound				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
7:00 AM	0	13	0	13	5	0	0	5	47	4	22	0	73	5	0	0	5	96
7:15 AM	1	9	0	10	4	0	0	4	34	13	31	0	78	5	1	0	6	98
7:30 AM	0	9	0	9	3	2	0	5	18	13	43	0	74	12	0	0	12	100
7:45 AM	1	9	0	10	4	5	0	9	28	15	49	0	92	6	3	0	9	120
Hourly Total	2	40	0	42	16	7	0	23	127	45	145	0	317	28	4	0	32	414
8:00 AM	2	13	0	15	1	1	0	2	16	13	36	0	65	21	1	0	22	104
8:15 AM	0	12	0	12	3	4	0	7	8	13	33	0	54	15	1	0	16	89
8:30 AM	1	13	0	14	2	5	0	7	13	2	36	0	51	7	0	0	7	79
8:45 AM	1	11	0	12	6	2	0	8	17	10	23	0	50	16	2	0	18	88
Hourly Total	4	49	0	53	12	12	0	24	54	38	128	0	220	59	4	0	63	360
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	101	0	101	2	3	0	5	13	4	61	0	78	19	0	0	19	203
4:15 PM	0	44	0	44	3	1	0	4	10	7	37	0	54	14	0	0	14	116
4:30 PM	1	105	0	106	5	3	0	8	7	6	65	0	78	14	0	0	14	206
4:45 PM	0	36	0	36	5	1	0	6	17	9	54	0	80	8	0	0	8	130
Hourly Total	1	286	0	287	15	8	0	23	47	26	217	0	290	55	0	0	55	655
5:00 PM	0	40	0	40	2	0	0	2	8	13	57	0	78	21	0	0	21	141
5:15 PM	1	37	0	38	3	1	0	4	10	5	65	0	80	7	0	0	7	129
5:30 PM	0	25	0	25	3	1	0	4	7	4	65	0	76	11	0	0	11	116
5:45 PM	0	16	0	16	1	1	0	2	16	6	56	0	78	5	0	0	5	101
Hourly Total	1	118	0	119	9	3	0	12	41	28	243	0	312	44	0	0	44	487
Grand Total	8	493	0	501	52	30	0	82	269	137	733	0	1139	186	8	0	194	1916
Approach %	1.6	98.4	-	-	63.4	36.6	-	-	23.6	12.0	64.4	-	-	95.9	4.1	-	-	-
Total %	0.4	25.7	-	26.1	2.7	1.6	-	4.3	14.0	7.2	38.3	-	59.4	9.7	0.4	-	10.1	-
Motorcycles	0	11	-	11	0	0	-	0	6	2	15	-	23	4	0	-	4	38
% Motorcycles	0.0	2.2	-	2.2	0.0	0.0	-	0.0	2.2	1.5	2.0	-	2.0	2.2	0.0	-	2.1	2.0
Cars	5	320	-	325	41	10	-	51	173	87	363	-	623	90	4	-	94	1093
% Cars	62.5	64.9	-	64.9	78.8	33.3	-	62.2	64.3	63.5	49.5	-	54.7	48.4	50.0	-	48.5	57.0
Light Goods Vehicles	3	149	-	152	6	13	-	19	83	37	218	-	338	75	3	-	78	587
% Light Goods Vehicles	37.5	30.2	-	30.3	11.5	43.3	-	23.2	30.9	27.0	29.7	-	29.7	40.3	37.5	-	40.2	30.6
Buses	0	1	-	1	0	0	-	0	0	0	8	-	8	0	0	-	0	9
% Buses	0.0	0.2	-	0.2	0.0	0.0	-	0.0	0.0	0.0	1.1	-	0.7	0.0	0.0	-	0.0	0.5
Single-Unit Trucks	0	6	-	6	3	2	-	5	4	2	46	-	52	7	0	-	7	70
% Single-Unit Trucks	0.0	1.2	-	1.2	5.8	6.7	-	6.1	1.5	1.5	6.3	-	4.6	3.8	0.0	-	3.6	3.7
Articulated Trucks	0	3	-	3	2	5	-	7	3	7	83	-	93	10	1	-	11	114
% Articulated Trucks	0.0	0.6	-	0.6	3.8	16.7	-	8.5	1.1	5.1	11.3	-	8.2	5.4	12.5	-	5.7	5.9
Bicycles on Road	0	3	-	3	0	0	-	0	0	2	0	-	2	0	0	-	0	5
% Bicycles on Road	0.0	0.6	-	0.6	0.0	0.0	-	0.0	0.0	1.5	0.0	-	0.2	0.0	0.0	-	0.0	0.3



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Count Name: 04-I15SBOff_AirportRd_Frontage
TMC
Site Code: TMC-04
Start Date: 07/16/2014
Page No: 3



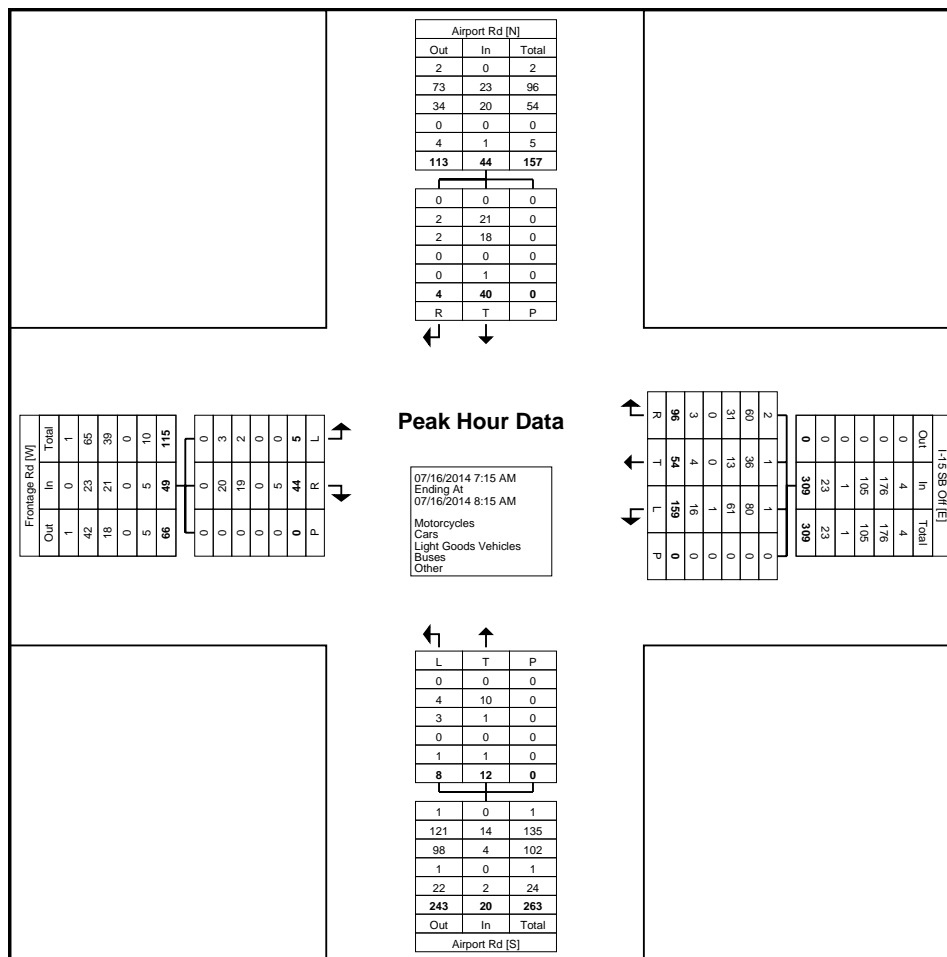
Turning Movement Data Plot



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Count Name: 04-I15SBOff_AirportRd_Frontage
TMC
Site Code: TMC-04
Start Date: 07/16/2014
Page No: 5



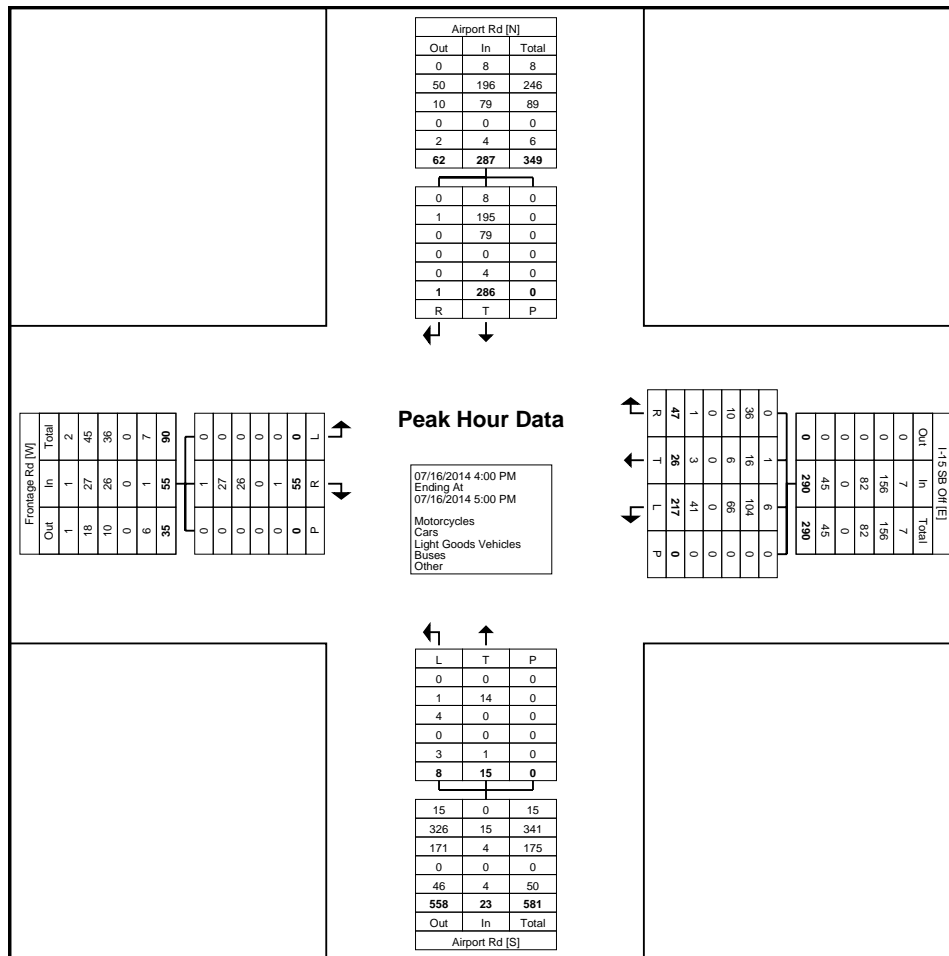
Turning Movement Peak Hour Data Plot (7:15 AM)



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Count Name: 04-I15SBOff_AirportRd_Frontage
TMC
Site Code: TMC-04
Start Date: 07/16/2014
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Turning Movement Peak Hour Data Plot (4:00 PM)



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Count Name: 04-I15SBOff_AirportRd_Frontage
TMC
Site Code: TMC-04
Start Date: 07/16/2014
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Count Name: 05-14thStSW_I315EB TMC
Site Code: TMC-05
Start Date: 07/16/2014
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Turning Movement Data

Start Time	14th St SW Southbound					14th St SW Northbound					I-315 EB Westbound					Marketplace Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
7:00 AM	15	18	26	0	59	52	15	2	0	69	1	4	3	0	8	0	6	4	0	10	146
7:15 AM	15	15	31	0	61	66	15	1	0	82	2	5	9	1	16	0	15	6	0	21	180
7:30 AM	21	25	41	0	87	75	21	4	0	100	0	4	2	1	6	1	22	12	0	35	228
7:45 AM	14	27	46	0	87	90	21	0	0	111	2	9	5	0	16	1	17	16	0	34	248
Hourly Total	65	85	144	0	294	283	72	7	0	362	5	22	19	2	46	2	60	38	0	100	802
8:00 AM	10	24	24	0	58	55	9	2	0	66	1	12	4	0	17	1	15	10	0	26	167
8:15 AM	19	38	16	0	73	47	16	1	0	64	4	3	9	0	16	0	15	12	0	27	180
8:30 AM	25	36	19	0	80	59	19	1	0	79	6	9	10	0	25	0	13	8	0	21	205
8:45 AM	37	48	22	0	107	55	16	0	0	71	4	6	17	0	27	0	20	8	0	28	233
Hourly Total	91	146	81	0	318	216	60	4	0	280	15	30	40	0	85	1	63	38	0	102	785
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	51	80	11	0	142	79	17	2	1	98	3	22	23	0	48	3	46	26	0	75	363
4:15 PM	67	97	16	0	180	48	16	0	0	64	4	11	23	0	38	4	48	29	1	81	363
4:30 PM	69	92	26	0	187	75	24	5	1	104	7	17	27	0	51	2	37	22	0	61	403
4:45 PM	77	97	24	0	198	70	28	2	0	100	6	10	21	0	37	4	51	30	0	85	420
Hourly Total	264	366	77	0	707	272	85	9	2	366	20	60	94	0	174	13	182	107	1	302	1549
5:00 PM	58	90	26	0	174	46	11	3	0	60	12	7	36	0	55	2	47	26	0	75	364
5:15 PM	58	117	19	0	194	69	19	3	0	91	6	16	18	0	40	2	33	29	0	64	389
5:30 PM	56	104	26	0	186	72	15	1	0	88	3	18	21	0	42	2	42	32	0	76	392
5:45 PM	70	98	19	0	187	72	22	5	0	99	8	14	15	0	37	3	32	22	0	57	380
Hourly Total	242	409	90	0	741	259	67	12	0	338	29	55	90	0	174	9	154	109	0	272	1525
Grand Total	662	1006	392	0	2060	1030	284	32	2	1346	69	167	243	2	479	25	459	292	1	776	4661
Approach %	32.1	48.8	19.0	-	-	76.5	21.1	2.4	-	-	14.4	34.9	50.7	-	-	3.2	59.1	37.6	-	-	-
Total %	14.2	21.6	8.4	-	44.2	22.1	6.1	0.7	-	28.9	1.5	3.6	5.2	-	10.3	0.5	9.8	6.3	-	16.6	-
Motorcycles	6	4	4	-	14	7	5	0	-	12	0	1	2	-	3	0	2	4	-	6	35
% Motorcycles	0.9	0.4	1.0	-	0.7	0.7	1.8	0.0	-	0.9	0.0	0.6	0.8	-	0.6	0.0	0.4	1.4	-	0.8	0.8
Cars	489	746	301	-	1536	770	218	20	-	1008	38	131	159	-	328	23	362	220	-	605	3477
% Cars	73.9	74.2	76.8	-	74.6	74.8	76.8	62.5	-	74.9	55.1	78.4	65.4	-	68.5	92.0	78.9	75.3	-	78.0	74.6
Light Goods Vehicles	161	238	72	-	471	236	49	7	-	292	22	29	73	-	124	2	88	64	-	154	1041
% Light Goods Vehicles	24.3	23.7	18.4	-	22.9	22.9	17.3	21.9	-	21.7	31.9	17.4	30.0	-	25.9	8.0	19.2	21.9	-	19.8	22.3
Buses	0	2	1	-	3	1	0	3	-	4	0	1	1	-	2	0	0	0	-	0	9
% Buses	0.0	0.2	0.3	-	0.1	0.1	0.0	9.4	-	0.3	0.0	0.6	0.4	-	0.4	0.0	0.0	0.0	-	0.0	0.2
Single-Unit Trucks	6	14	10	-	30	9	8	2	-	19	8	4	5	-	17	0	7	3	-	10	76
% Single-Unit Trucks	0.9	1.4	2.6	-	1.5	0.9	2.8	6.3	-	1.4	11.6	2.4	2.1	-	3.5	0.0	1.5	1.0	-	1.3	1.6
Articulated Trucks	0	1	4	-	5	7	3	0	-	10	1	1	3	-	5	0	0	1	-	1	21
% Articulated Trucks	0.0	0.1	1.0	-	0.2	0.7	1.1	0.0	-	0.7	1.4	0.6	1.2	-	1.0	0.0	0.0	0.3	-	0.1	0.5
Bicycles on Road	0	1	0	-	1	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	2

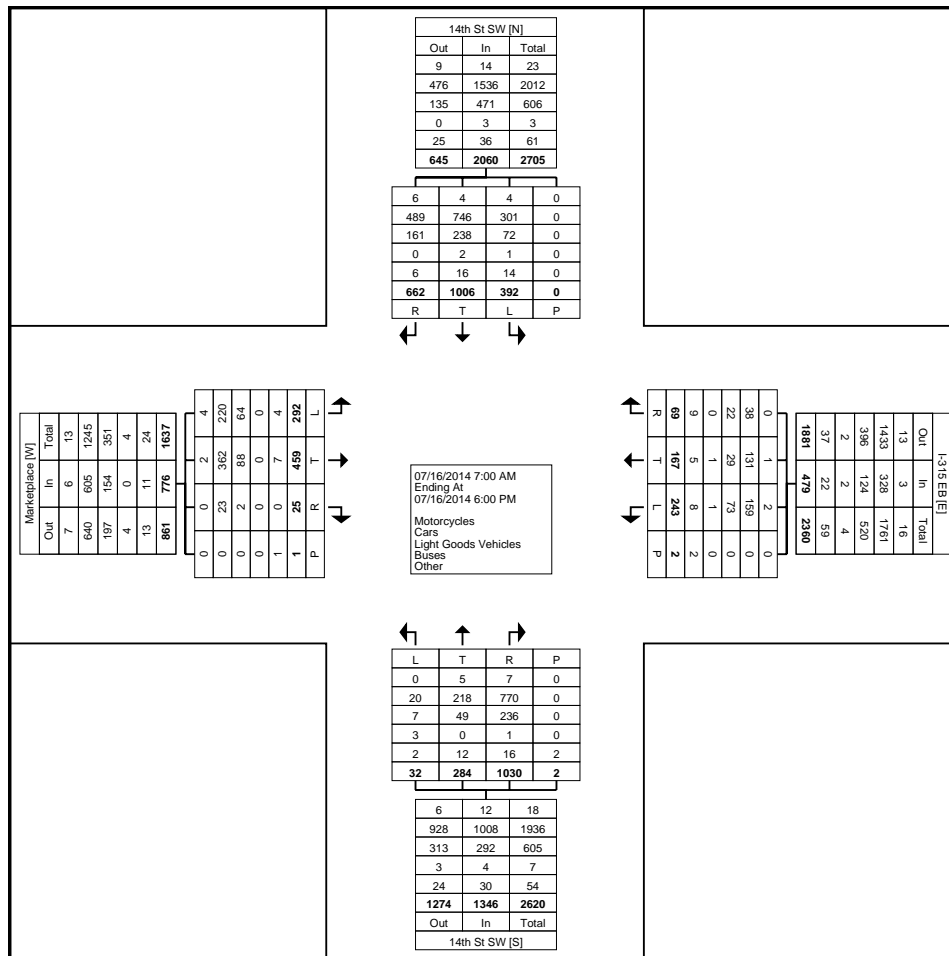
% Bicycles on Road	0.0	0.1	0.0	-	0.0	0.0	0.4	0.0	-	0.1	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	2	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: 05-14thStSW_I315EB TMC
Site Code: TMC-05
Start Date: 07/16/2014
Page No: 3



Turning Movement Data Plot



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Count Name: 05-14thStSW_I315EB TMC
Site Code: TMC-05
Start Date: 07/16/2014
Page No: 4

Turning Movement Peak Hour Data (7:15 AM)

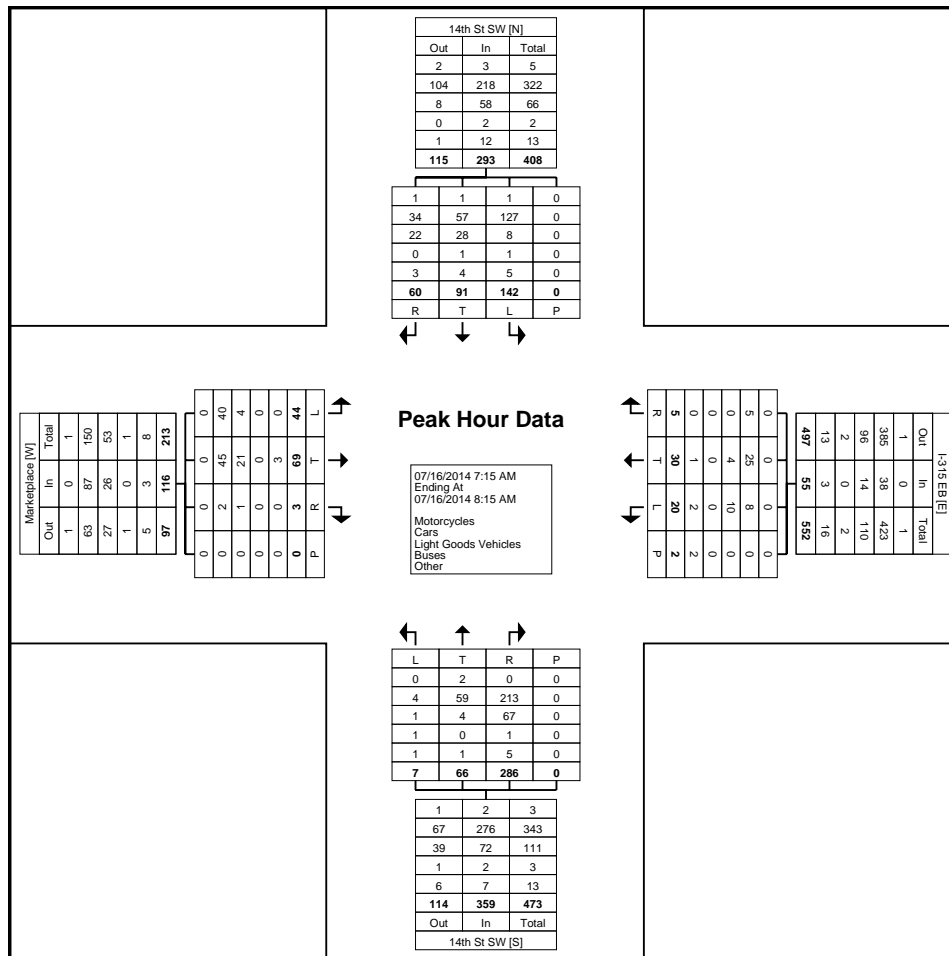
Start Time	14th St SW Southbound					14th St SW Northbound					I-315 EB Westbound					Marketplace Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
7:15 AM	15	15	31	0	61	66	15	1	0	82	2	5	9	1	16	0	15	6	0	21	180
7:30 AM	21	25	41	0	87	75	21	4	0	100	0	4	2	1	6	1	22	12	0	35	228
7:45 AM	14	27	46	0	87	90	21	0	0	111	2	9	5	0	16	1	17	16	0	34	248
8:00 AM	10	24	24	0	58	55	9	2	0	66	1	12	4	0	17	1	15	10	0	26	167
Total	60	91	142	0	293	286	66	7	0	359	5	30	20	2	55	3	69	44	0	116	823
Approach %	20.5	31.1	48.5	-	-	79.7	18.4	1.9	-	-	9.1	54.5	36.4	-	-	2.6	59.5	37.9	-	-	-
Total %	7.3	11.1	17.3	-	35.6	34.8	8.0	0.9	-	43.6	0.6	3.6	2.4	-	6.7	0.4	8.4	5.3	-	14.1	-
PHF	0.714	0.843	0.772	-	0.842	0.794	0.786	0.438	-	0.809	0.625	0.625	0.556	-	0.809	0.750	0.784	0.688	-	0.829	0.830
Motorcycles	1	1	1	-	3	0	2	0	-	2	0	0	0	-	0	0	0	0	-	0	5
% Motorcycles	1.7	1.1	0.7	-	1.0	0.0	3.0	0.0	-	0.6	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.6
Cars	34	57	127	-	218	213	59	4	-	276	5	25	8	-	38	2	45	40	-	87	619
% Cars	56.7	62.6	89.4	-	74.4	74.5	89.4	57.1	-	76.9	100.0	83.3	40.0	-	69.1	66.7	65.2	90.9	-	75.0	75.2
Light Goods Vehicles	22	28	8	-	58	67	4	1	-	72	0	4	10	-	14	1	21	4	-	26	170
% Light Goods Vehicles	36.7	30.8	5.6	-	19.8	23.4	6.1	14.3	-	20.1	0.0	13.3	50.0	-	25.5	33.3	30.4	9.1	-	22.4	20.7
Buses	0	1	1	-	2	1	0	1	-	2	0	0	0	-	0	0	0	0	-	0	4
% Buses	0.0	1.1	0.7	-	0.7	0.3	0.0	14.3	-	0.6	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.5
Single-Unit Trucks	3	4	3	-	10	5	1	1	-	7	0	0	2	-	2	0	3	0	-	3	22
% Single-Unit Trucks	5.0	4.4	2.1	-	3.4	1.7	1.5	14.3	-	1.9	0.0	0.0	10.0	-	3.6	0.0	4.3	0.0	-	2.6	2.7
Articulated Trucks	0	0	2	-	2	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	3
% Articulated Trucks	0.0	0.0	1.4	-	0.7	0.0	0.0	0.0	-	0.0	0.0	3.3	0.0	-	1.8	0.0	0.0	0.0	-	0.0	0.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-



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Count Name: 05-14thStSW_I315EB TMC
Site Code: TMC-05
Start Date: 07/16/2014
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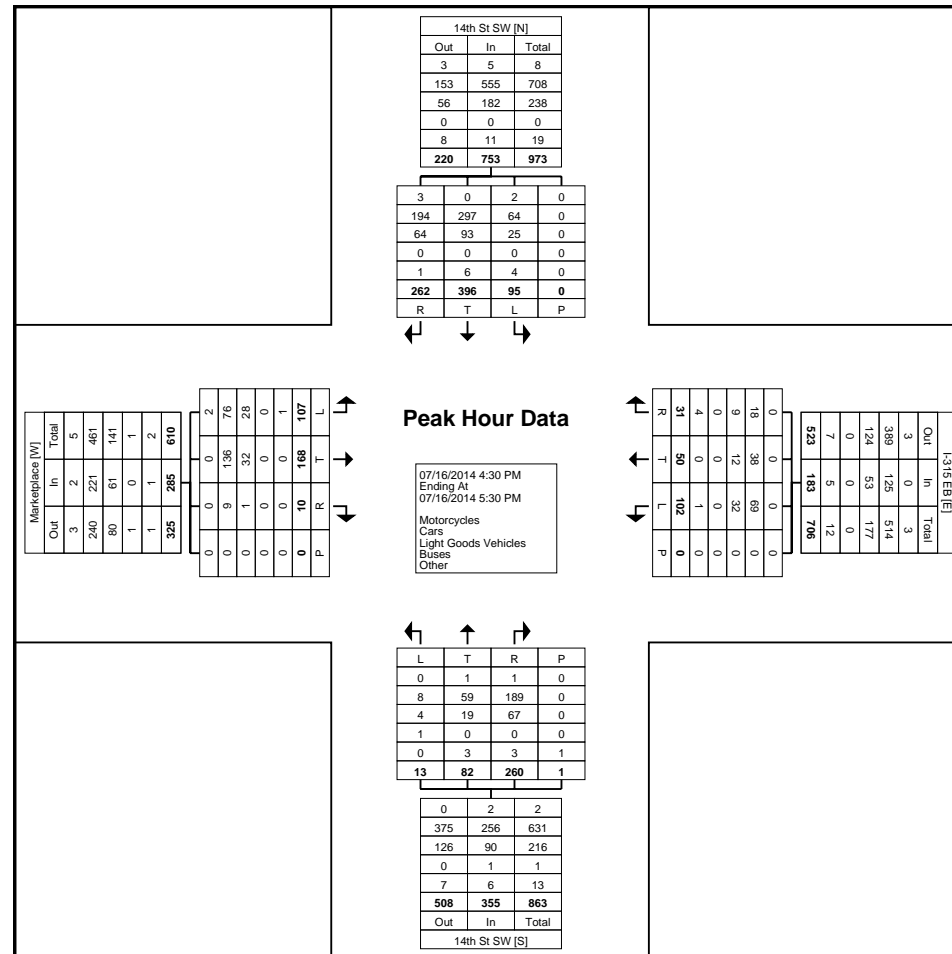
Turning Movement Peak Hour Data Plot (7:15 AM)



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Count Name: 05-14thStSW_I315EB TMC
Site Code: TMC-05
Start Date: 07/16/2014
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Turning Movement Peak Hour Data Plot (4:30 PM)



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Count Name: 05-14thStSW_I315EB TMC
Site Code: TMC-05
Start Date: 07/16/2014
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Count Name: 06-14thStSW_I315WB TMC
Site Code: TMC-06
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

Start Time	14th St SW Southbound					14th St SW Northbound					I-315 WB Westbound					16th Ave SW Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
7:00 AM	0	29	6	0	35	15	4	1	0	20	9	0	25	0	34	2	0	0	0	2	91
7:15 AM	0	31	7	0	38	19	5	1	0	25	12	1	28	1	41	3	0	0	0	3	107
7:30 AM	0	49	5	0	54	24	5	0	0	29	9	2	37	1	48	3	2	0	0	5	136
7:45 AM	0	45	13	0	58	28	5	7	0	40	13	5	38	0	56	5	2	0	0	7	161
Hourly Total	0	154	31	0	185	86	19	9	0	114	43	8	128	2	179	13	4	0	0	17	495
8:00 AM	0	24	7	0	31	14	6	1	0	21	10	5	31	0	46	2	1	0	0	3	101
8:15 AM	0	18	1	0	19	24	1	3	0	28	6	4	56	0	66	5	2	0	1	7	120
8:30 AM	0	23	6	0	29	24	11	0	0	35	6	0	53	0	59	4	1	1	0	6	129
8:45 AM	0	23	4	0	27	18	8	0	0	26	11	0	80	0	91	3	1	0	0	4	148
Hourly Total	0	88	18	0	106	80	26	4	0	110	33	9	220	0	262	14	5	1	1	20	498
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	18	4	0	22	33	10	2	0	45	20	3	121	0	144	1	1	0	0	2	213
4:15 PM	0	30	2	0	32	33	14	0	0	47	25	6	145	0	176	2	1	0	0	3	258
4:30 PM	0	37	5	0	42	29	21	2	0	52	24	3	156	0	183	2	0	1	0	3	280
4:45 PM	1	41	5	0	47	38	22	2	0	62	32	9	148	0	189	2	3	1	1	6	304
Hourly Total	1	126	16	0	143	133	67	6	0	206	101	21	570	0	692	7	5	2	1	14	1055
5:00 PM	0	28	3	0	31	37	20	2	0	59	41	1	161	0	203	6	1	0	0	7	300
5:15 PM	1	27	8	0	36	32	21	1	0	54	40	0	159	0	199	4	0	2	0	6	295
5:30 PM	0	35	6	0	41	39	13	0	0	52	29	2	170	0	201	7	1	0	0	8	302
5:45 PM	1	28	5	1	34	34	16	0	0	50	29	3	158	0	190	2	0	0	1	2	276
Hourly Total	2	118	22	1	142	142	70	3	0	215	139	6	648	0	793	19	2	2	1	23	1173
Grand Total	3	486	87	1	576	441	182	22	0	645	316	44	1566	2	1926	53	16	5	3	74	3221
Approach %	0.5	84.4	15.1	-	-	68.4	28.2	3.4	-	-	16.4	2.3	81.3	-	-	71.6	21.6	6.8	-	-	-
Total %	0.1	15.1	2.7	-	17.9	13.7	5.7	0.7	-	20.0	9.8	1.4	48.6	-	59.8	1.6	0.5	0.2	-	2.3	-
Motorcycles	0	6	0	-	6	8	0	1	-	9	2	2	8	-	12	0	0	0	-	0	27
% Motorcycles	0.0	1.2	0.0	-	1.0	1.8	0.0	4.5	-	1.4	0.6	4.5	0.5	-	0.6	0.0	0.0	0.0	-	0.0	0.8
Cars	2	329	54	-	385	315	129	15	-	459	232	31	1154	-	1417	38	10	1	-	49	2310
% Cars	66.7	67.7	62.1	-	66.8	71.4	70.9	68.2	-	71.2	73.4	70.5	73.7	-	73.6	71.7	62.5	20.0	-	66.2	71.7
Light Goods Vehicles	1	133	22	-	156	107	40	3	-	150	68	9	378	-	455	12	4	3	-	19	780
% Light Goods Vehicles	33.3	27.4	25.3	-	27.1	24.3	22.0	13.6	-	23.3	21.5	20.5	24.1	-	23.6	22.6	25.0	60.0	-	25.7	24.2
Buses	0	1	0	-	1	0	1	0	-	1	1	0	2	-	3	0	0	0	-	0	5
% Buses	0.0	0.2	0.0	-	0.2	0.0	0.5	0.0	-	0.2	0.3	0.0	0.1	-	0.2	0.0	0.0	0.0	-	0.0	0.2
Single-Unit Trucks	0	10	8	-	18	8	9	3	-	20	11	2	22	-	35	2	2	1	-	5	78
% Single-Unit Trucks	0.0	2.1	9.2	-	3.1	1.8	4.9	13.6	-	3.1	3.5	4.5	1.4	-	1.8	3.8	12.5	20.0	-	6.8	2.4
Articulated Trucks	0	5	1	-	6	3	2	0	-	5	2	0	2	-	4	1	0	0	-	1	16
% Articulated Trucks	0.0	1.0	1.1	-	1.0	0.7	1.1	0.0	-	0.8	0.6	0.0	0.1	-	0.2	1.9	0.0	0.0	-	1.4	0.5
Bicycles on Road	0	2	2	-	4	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	5

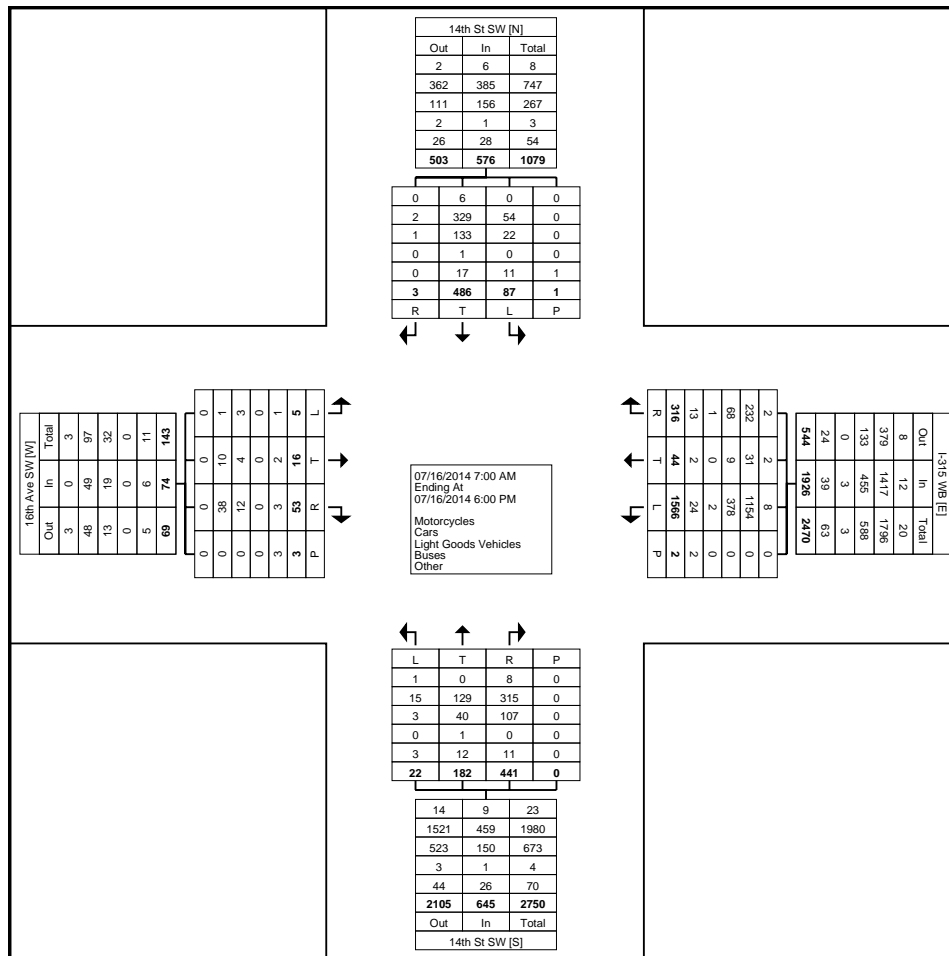
% Bicycles on Road	0.0	0.4	2.3	-	0.7	0.0	0.5	0.0	-	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.2	
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	2	-	-	-	-	3	-	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-



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Count Name: 06-14thStSW_I315WB TMC
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Turning Movement Data Plot



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Count Name: 06-14thStSW_I315WB TMC
Site Code: TMC-06
Start Date: 07/16/2014
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Turning Movement Peak Hour Data (7:30 AM)

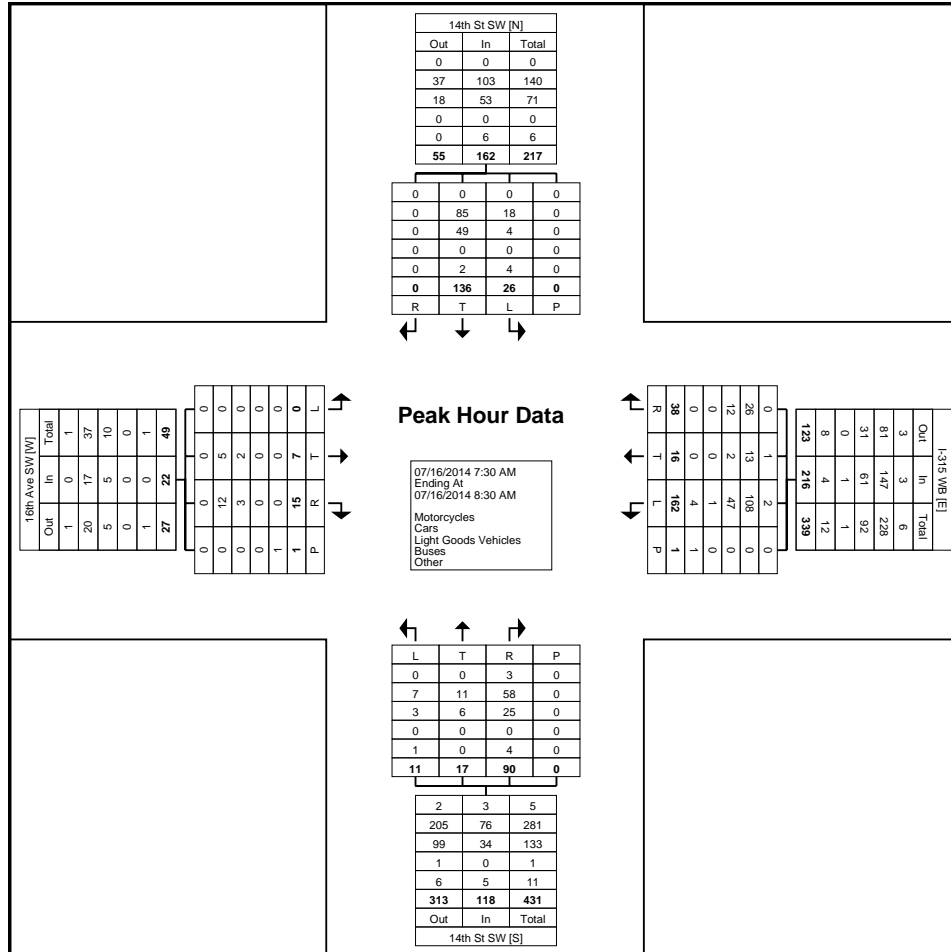
Start Time	14th St SW Southbound					14th St SW Northbound					I-315 WB Westbound					16th Ave SW Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
7:30 AM	0	49	5	0	54	24	5	0	0	29	9	2	37	1	48	3	2	0	0	5	136
7:45 AM	0	45	13	0	58	28	5	7	0	40	13	5	38	0	56	5	2	0	0	7	161
8:00 AM	0	24	7	0	31	14	6	1	0	21	10	5	31	0	46	2	1	0	0	3	101
8:15 AM	0	18	1	0	19	24	1	3	0	28	6	4	56	0	66	5	2	0	1	7	120
Total	0	136	26	0	162	90	17	11	0	118	38	16	162	1	216	15	7	0	1	22	518
Approach %	0.0	84.0	16.0	-	-	76.3	14.4	9.3	-	-	17.6	7.4	75.0	-	-	68.2	31.8	0.0	-	-	-
Total %	0.0	26.3	5.0	-	31.3	17.4	3.3	2.1	-	22.8	7.3	3.1	31.3	-	41.7	2.9	1.4	0.0	-	4.2	-
PHF	0.000	0.694	0.500	-	0.698	0.804	0.708	0.393	-	0.738	0.731	0.800	0.723	-	0.818	0.750	0.875	0.000	-	0.786	0.804
Motorcycles	0	0	0	-	0	3	0	0	-	3	0	1	2	-	3	0	0	0	-	0	6
% Motorcycles	-	0.0	0.0	-	0.0	3.3	0.0	0.0	-	2.5	0.0	6.3	1.2	-	1.4	0.0	0.0	-	-	0.0	1.2
Cars	0	85	18	-	103	58	11	7	-	76	26	13	108	-	147	12	5	0	-	17	343
% Cars	-	62.5	69.2	-	63.6	64.4	64.7	63.6	-	64.4	68.4	81.3	66.7	-	68.1	80.0	71.4	-	-	77.3	66.2
Light Goods Vehicles	0	49	4	-	53	25	6	3	-	34	12	2	47	-	61	3	2	0	-	5	153
% Light Goods Vehicles	-	36.0	15.4	-	32.7	27.8	35.3	27.3	-	28.8	31.6	12.5	29.0	-	28.2	20.0	28.6	-	-	22.7	29.5
Buses	0	0	0	-	0	0	0	0	-	0	0	0	1	-	1	0	0	0	-	0	1
% Buses	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.6	-	0.5	0.0	0.0	-	-	0.0	0.2
Single-Unit Trucks	0	2	2	-	4	3	0	1	-	4	0	0	4	-	4	0	0	0	-	0	12
% Single-Unit Trucks	-	1.5	7.7	-	2.5	3.3	0.0	9.1	-	3.4	0.0	0.0	2.5	-	1.9	0.0	0.0	-	-	0.0	2.3
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	-	0.0	0.0	-	0.0	1.1	0.0	0.0	-	0.8	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	2	-	2	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	2
% Bicycles on Road	-	0.0	7.7	-	1.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.4
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: 06-14thStSW_I315WB TMC
Site Code: TMC-06
Start Date: 07/16/2014
Page No: 5



Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: 06-14thStSW_I315WB TMC
Site Code: TMC-06
Start Date: 07/16/2014
Page No: 6

Turning Movement Peak Hour Data (4:45 PM)

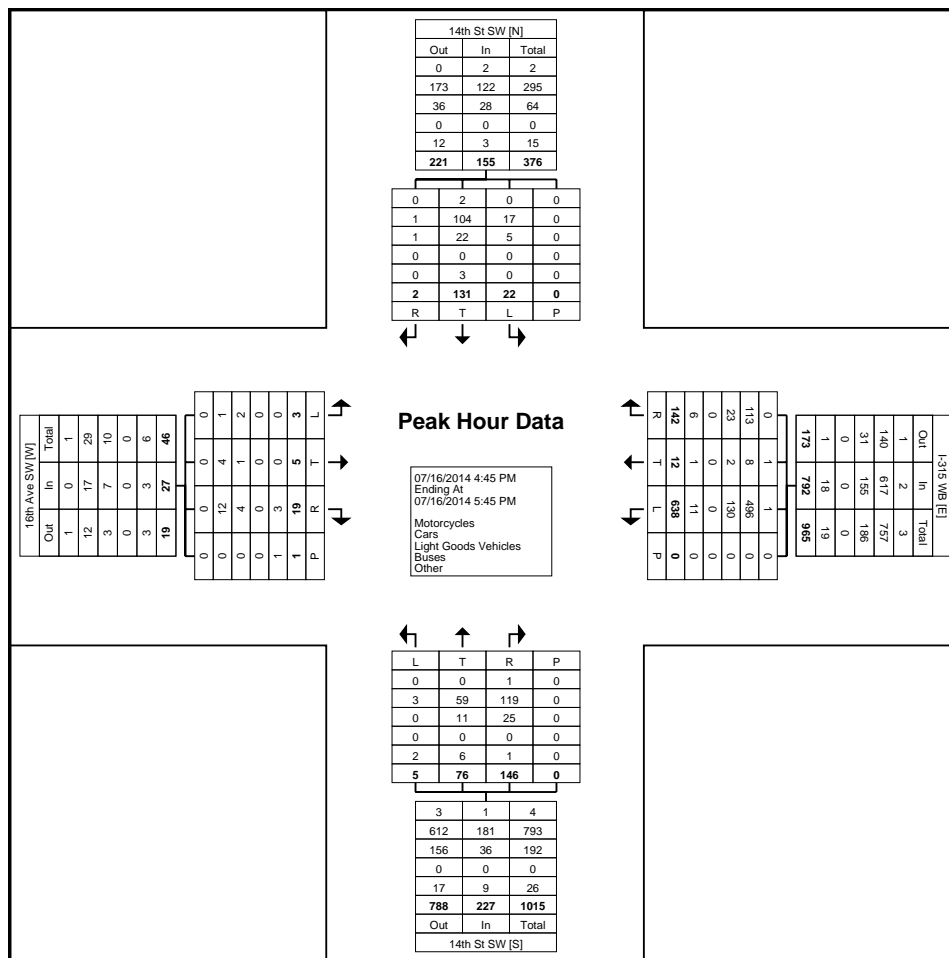
Start Time	14th St SW Southbound					14th St SW Northbound					I-315 WB Westbound					16th Ave SW Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
4:45 PM	1	41	5	0	47	38	22	2	0	62	32	9	148	0	189	2	3	1	1	6	304
5:00 PM	0	28	3	0	31	37	20	2	0	59	41	1	161	0	203	6	1	0	0	7	300
5:15 PM	1	27	8	0	36	32	21	1	0	54	40	0	159	0	199	4	0	2	0	6	295
5:30 PM	0	35	6	0	41	39	13	0	0	52	29	2	170	0	201	7	1	0	0	8	302
Total	2	131	22	0	155	146	76	5	0	227	142	12	638	0	792	19	5	3	1	27	1201
Approach %	1.3	84.5	14.2	-	-	64.3	33.5	2.2	-	-	17.9	1.5	80.6	-	-	70.4	18.5	11.1	-	-	-
Total %	0.2	10.9	1.8	-	12.9	12.2	6.3	0.4	-	18.9	11.8	1.0	53.1	-	65.9	1.6	0.4	0.2	-	2.2	-
PHF	0.500	0.799	0.688	-	0.824	0.936	0.864	0.625	-	0.915	0.866	0.333	0.938	-	0.975	0.679	0.417	0.375	-	0.844	0.988
Motorcycles	0	2	0	-	2	1	0	0	-	1	0	1	1	-	2	0	0	0	-	0	5
% Motorcycles	0.0	1.5	0.0	-	1.3	0.7	0.0	0.0	-	0.4	0.0	8.3	0.2	-	0.3	0.0	0.0	0.0	-	0.0	0.4
Cars	1	104	17	-	122	119	59	3	-	181	113	8	496	-	617	12	4	1	-	17	937
% Cars	50.0	79.4	77.3	-	78.7	81.5	77.6	60.0	-	79.7	79.6	66.7	77.7	-	77.9	63.2	80.0	33.3	-	63.0	78.0
Light Goods Vehicles	1	22	5	-	28	25	11	0	-	36	23	2	130	-	155	4	1	2	-	7	226
% Light Goods Vehicles	50.0	16.8	22.7	-	18.1	17.1	14.5	0.0	-	15.9	16.2	16.7	20.4	-	19.6	21.1	20.0	66.7	-	25.9	18.8
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	2	0	-	2	1	5	2	-	8	4	1	10	-	15	2	0	0	-	2	27
% Single-Unit Trucks	0.0	1.5	0.0	-	1.3	0.7	6.6	40.0	-	3.5	2.8	8.3	1.6	-	1.9	10.5	0.0	0.0	-	7.4	2.2
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	2	0	1	-	3	1	0	0	-	1	5
% Articulated Trucks	0.0	0.8	0.0	-	0.6	0.0	0.0	0.0	-	0.0	1.4	0.0	0.2	-	0.4	5.3	0.0	0.0	-	3.7	0.4
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	1.3	0.0	-	0.4	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: 06-14thStSW_I315WB TMC
Site Code: TMC-06
Start Date: 07/16/2014
Page No: 7



Turning Movement Peak Hour Data Plot (4:45 PM)



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Count Name: 06-14thStSW_I315WB TMC
Site Code: TMC-06
Start Date: 07/16/2014
Page No: 8



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Count Name: 07-FoxFarm_I315 TMC
Site Code: TMC-07
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

Start Time	6th St SW Southbound					Fox Farm Rd Northbound					10th Ave S Westbound					I-315 Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
7:00 AM	17	15	21	0	53	79	33	12	0	124	20	78	14	0	112	8	140	32	0	180	469
7:15 AM	24	14	45	0	83	77	33	7	0	117	41	79	22	0	142	15	155	47	0	217	559
7:30 AM	22	15	36	0	73	103	58	16	0	177	28	99	21	0	148	15	211	45	0	271	669
7:45 AM	32	19	63	0	114	145	81	16	0	242	49	81	24	0	154	10	244	50	0	304	814
Hourly Total	95	63	165	0	323	404	205	51	0	660	138	337	81	0	556	48	750	174	0	972	2511
8:00 AM	26	33	37	0	96	93	38	5	0	136	26	70	24	0	120	9	128	43	0	180	532
8:15 AM	41	23	36	0	100	96	42	13	0	151	33	85	32	0	150	11	149	23	0	183	584
8:30 AM	36	22	37	0	95	82	45	15	0	142	26	97	25	0	148	15	147	30	0	192	577
8:45 AM	45	27	38	0	110	99	39	9	0	147	34	129	36	0	199	8	156	44	0	208	664
Hourly Total	148	105	148	0	401	370	164	42	0	576	119	381	117	0	617	43	580	140	0	763	2357
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	54	52	39	0	145	31	26	16	0	73	54	188	95	0	337	17	223	53	1	293	848
4:15 PM	77	68	43	0	188	63	24	26	1	113	64	164	85	0	313	21	160	52	0	233	847
4:30 PM	79	46	33	0	158	50	37	18	0	105	52	244	121	0	417	34	216	61	1	311	991
4:45 PM	101	64	38	0	203	49	36	15	1	100	55	166	95	0	316	23	163	69	0	255	874
Hourly Total	311	230	153	0	694	193	123	75	2	391	225	762	396	0	1383	95	762	235	2	1092	3560
5:00 PM	69	79	44	0	192	54	43	18	0	115	63	217	105	1	385	22	184	53	0	259	951
5:15 PM	76	85	38	0	199	74	39	20	0	133	80	247	165	0	492	24	143	59	0	226	1050
5:30 PM	84	74	40	0	198	58	34	18	0	110	60	217	94	1	371	13	166	53	0	232	911
5:45 PM	82	60	27	0	169	48	38	16	0	102	48	216	133	0	397	25	149	52	0	226	894
Hourly Total	311	298	149	0	758	234	154	72	0	460	251	897	497	2	1645	84	642	217	0	943	3806
Grand Total	865	696	615	0	2176	1201	646	240	2	2087	733	2377	1091	2	4201	270	2734	766	2	3770	12234
Approach %	39.8	32.0	28.3	-	-	57.5	31.0	11.5	-	-	17.4	56.6	26.0	-	-	7.2	72.5	20.3	-	-	-
Total %	7.1	5.7	5.0	-	17.8	9.8	5.3	2.0	-	17.1	6.0	19.4	8.9	-	34.3	2.2	22.3	6.3	-	30.8	-
Motorcycles	3	9	11	-	23	8	6	2	-	16	10	30	12	-	52	3	41	7	-	51	142
% Motorcycles	0.3	1.3	1.8	-	1.1	0.7	0.9	0.8	-	0.8	1.4	1.3	1.1	-	1.2	1.1	1.5	0.9	-	1.4	1.2
Cars	694	471	399	-	1564	1068	490	165	-	1723	461	1681	791	-	2933	177	1877	533	-	2587	8807
% Cars	80.2	67.7	64.9	-	71.9	88.9	75.9	68.8	-	82.6	62.9	70.7	72.5	-	69.8	65.6	68.7	69.6	-	68.6	72.0
Light Goods Vehicles	147	200	195	-	542	116	135	64	-	315	240	550	276	-	1066	81	680	196	-	957	2880
% Light Goods Vehicles	17.0	28.7	31.7	-	24.9	9.7	20.9	26.7	-	15.1	32.7	23.1	25.3	-	25.4	30.0	24.9	25.6	-	25.4	23.5
Buses	1	5	1	-	7	1	5	2	-	8	1	4	1	-	6	0	4	0	-	4	25
% Buses	0.1	0.7	0.2	-	0.3	0.1	0.8	0.8	-	0.4	0.1	0.2	0.1	-	0.1	0.0	0.1	0.0	-	0.1	0.2
Single-Unit Trucks	16	10	5	-	31	8	9	6	-	23	17	59	11	-	87	8	65	19	-	92	233
% Single-Unit Trucks	1.8	1.4	0.8	-	1.4	0.7	1.4	2.5	-	1.1	2.3	2.5	1.0	-	2.1	3.0	2.4	2.5	-	2.4	1.9
Articulated Trucks	4	1	4	-	9	0	0	1	-	1	4	53	0	-	57	0	67	11	-	78	145
% Articulated Trucks	0.5	0.1	0.7	-	0.4	0.0	0.0	0.4	-	0.0	0.5	2.2	0.0	-	1.4	0.0	2.5	1.4	-	2.1	1.2
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1	0	0	-	1	2

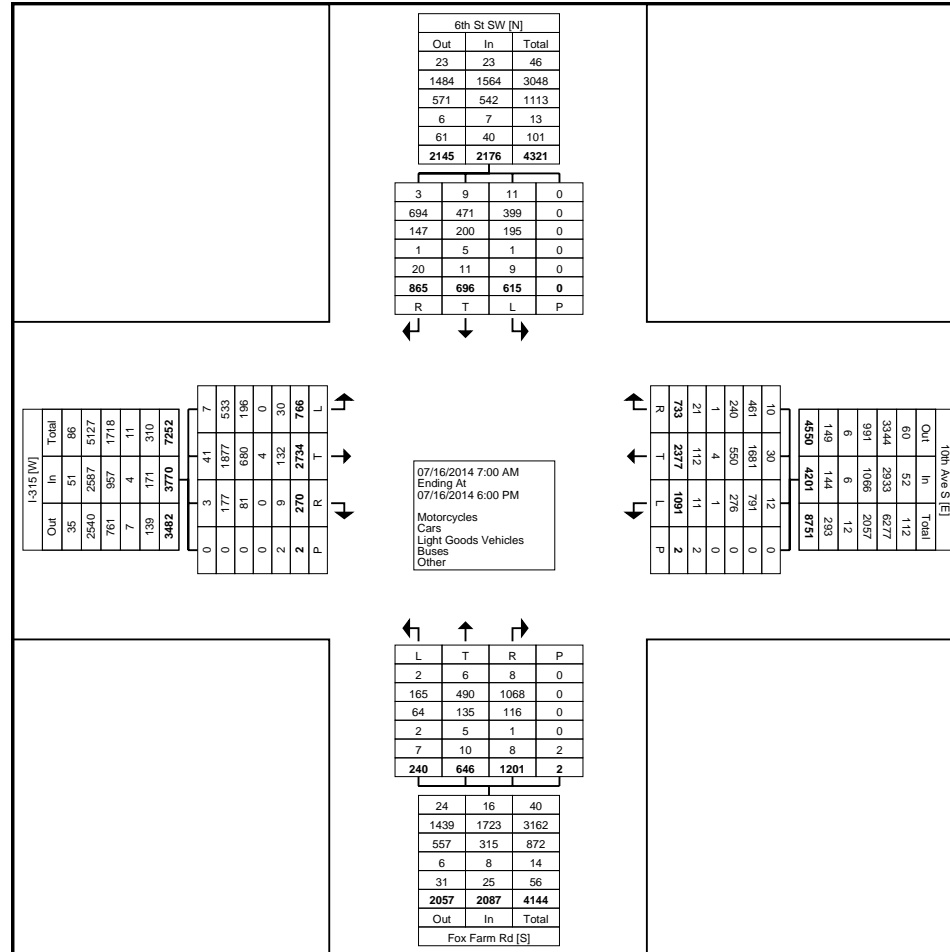
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.2	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.4	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	2	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: 07-FoxFarm_I315 TMC
Site Code: TMC-07
Start Date: 07/16/2014
Page No: 3



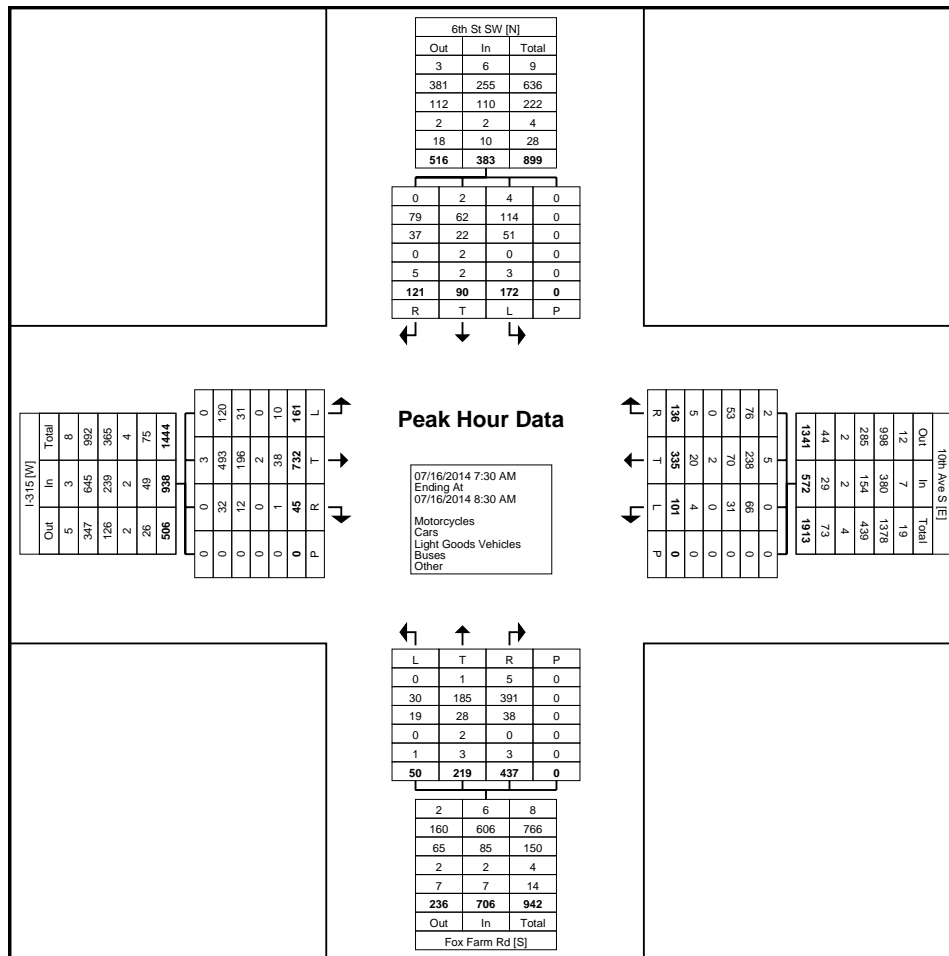
Turning Movement Data Plot



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Count Name: 07-FoxFarm_I315 TMC
Site Code: TMC-07
Start Date: 07/16/2014
Page No: 5



Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: 07-FoxFarm_I315 TMC
Site Code: TMC-07
Start Date: 07/16/2014
Page No: 6

Turning Movement Peak Hour Data (4:30 PM)

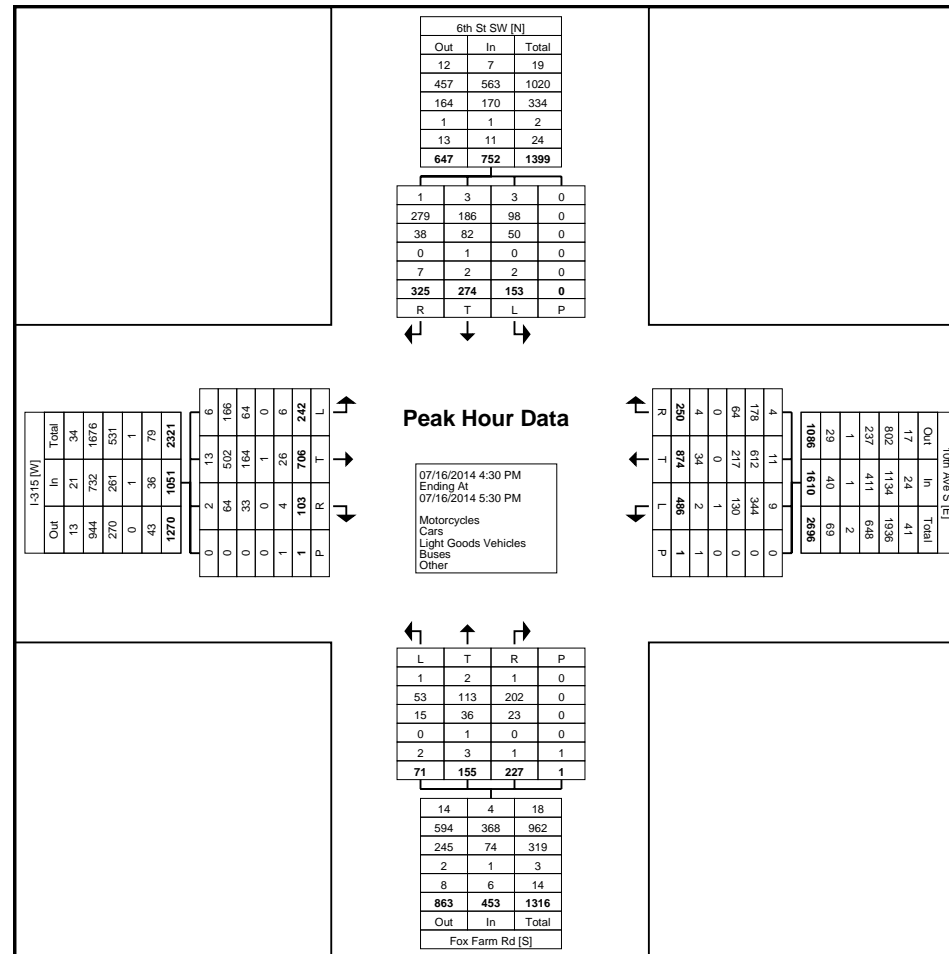
Start Time	6th St SW Southbound					Fox Farm Rd Northbound					10th Ave S Westbound					I-315 Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
4:30 PM	79	46	33	0	158	50	37	18	0	105	52	244	121	0	417	34	216	61	1	311	991
4:45 PM	101	64	38	0	203	49	36	15	1	100	55	166	95	0	316	23	163	69	0	255	874
5:00 PM	69	79	44	0	192	54	43	18	0	115	63	217	105	1	385	22	184	53	0	259	951
5:15 PM	76	85	38	0	199	74	39	20	0	133	80	247	165	0	492	24	143	59	0	226	1050
Total	325	274	153	0	752	227	155	71	1	453	250	874	486	1	1610	103	706	242	1	1051	3866
Approach %	43.2	36.4	20.3	-	-	50.1	34.2	15.7	-	-	15.5	54.3	30.2	-	-	9.8	67.2	23.0	-	-	-
Total %	8.4	7.1	4.0	-	19.5	5.9	4.0	1.8	-	11.7	6.5	22.6	12.6	-	41.6	2.7	18.3	6.3	-	27.2	-
PHF	0.804	0.806	0.869	-	0.926	0.767	0.901	0.888	-	0.852	0.781	0.885	0.736	-	0.818	0.757	0.817	0.877	-	0.845	0.920
Motorcycles	1	3	3	-	7	1	2	1	-	4	4	11	9	-	24	2	13	6	-	21	56
% Motorcycles	0.3	1.1	2.0	-	0.9	0.4	1.3	1.4	-	0.9	1.6	1.3	1.9	-	1.5	1.9	1.8	2.5	-	2.0	1.4
Cars	279	186	98	-	563	202	113	53	-	368	178	612	344	-	1134	64	502	166	-	732	2797
% Cars	85.8	67.9	64.1	-	74.9	89.0	72.9	74.6	-	81.2	71.2	70.0	70.8	-	70.4	62.1	71.1	68.6	-	69.6	72.3
Light Goods Vehicles	38	82	50	-	170	23	36	15	-	74	64	217	130	-	411	33	164	64	-	261	916
% Light Goods Vehicles	11.7	29.9	32.7	-	22.6	10.1	23.2	21.1	-	16.3	25.6	24.8	26.7	-	25.5	32.0	23.2	26.4	-	24.8	23.7
Buses	0	1	0	-	1	0	1	0	-	1	0	0	1	-	1	0	1	0	-	1	4
% Buses	0.0	0.4	0.0	-	0.1	0.0	0.6	0.0	-	0.2	0.0	0.0	0.2	-	0.1	0.0	0.1	0.0	-	0.1	0.1
Single-Unit Trucks	4	2	0	-	6	1	3	2	-	6	3	19	2	-	24	3	13	4	-	20	56
% Single-Unit Trucks	1.2	0.7	0.0	-	0.8	0.4	1.9	2.8	-	1.3	1.2	2.2	0.4	-	1.5	2.9	1.8	1.7	-	1.9	1.4
Articulated Trucks	3	0	2	-	5	0	0	0	-	0	1	15	0	-	16	0	13	2	-	15	36
% Articulated Trucks	0.9	0.0	1.3	-	0.7	0.0	0.0	0.0	-	0.0	0.4	1.7	0.0	-	1.0	0.0	1.8	0.8	-	1.4	0.9
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	1.0	0.0	0.0	-	0.1	0.0
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	1	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: 07-FoxFarm_I315 TMC
Site Code: TMC-07
Start Date: 07/16/2014
Page No: 7



Turning Movement Peak Hour Data Plot (4:30 PM)



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Count Name: 07-FoxFarm_I315 TMC
Site Code: TMC-07
Start Date: 07/16/2014
Page No: 8



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Count Name: 08-CentralAve_115SB TMC
Site Code: TMC-08
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

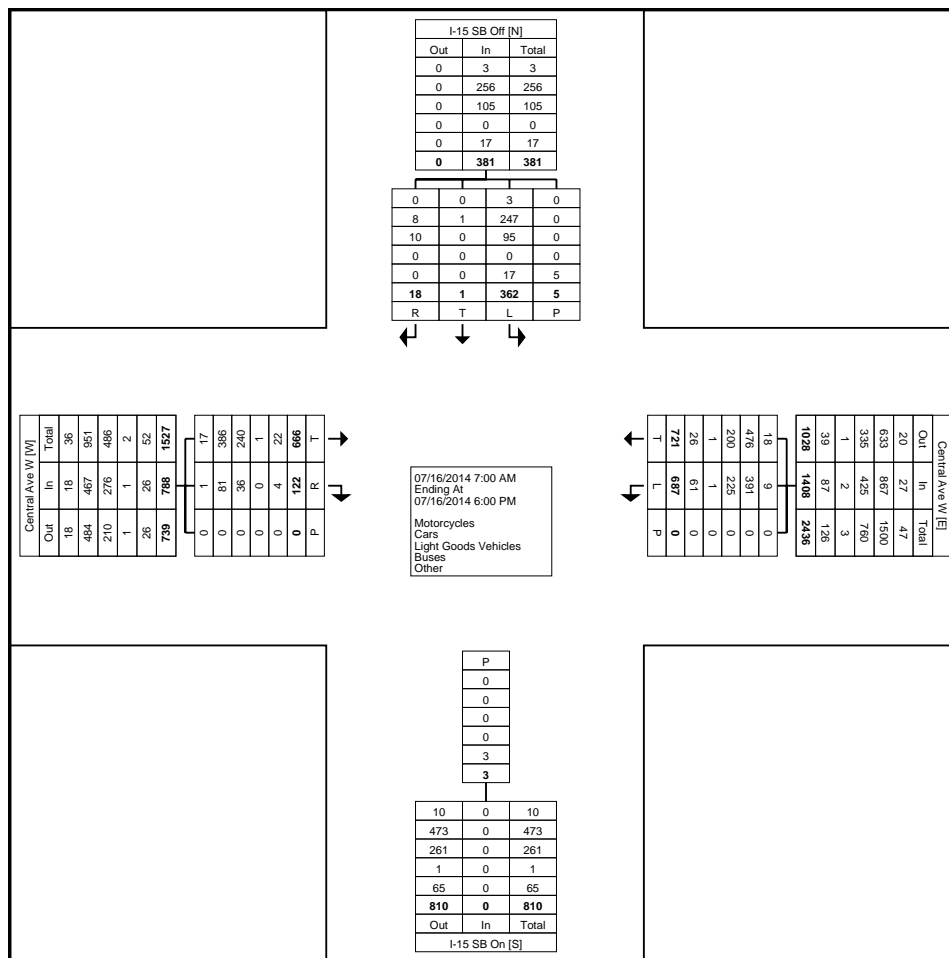
Start Time	I-15 SB Off Southbound					I-15 SB On Northbound		Central Ave W Westbound				Central Ave W Eastbound				Int. Total
	Right	Thru	Left	Peds	App. Total	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
7:00 AM	3	0	31	0	34	0	0	9	30	0	39	9	35	0	44	117
7:15 AM	1	0	37	0	38	0	0	19	28	0	47	13	33	0	46	131
7:30 AM	2	0	38	0	40	0	0	27	24	0	51	8	69	0	77	168
7:45 AM	1	0	35	0	36	0	0	22	40	0	62	12	47	0	59	157
Hourly Total	7	0	141	0	148	0	0	77	122	0	199	42	184	0	226	573
8:00 AM	2	0	20	0	22	0	0	20	31	0	51	6	42	0	48	121
8:15 AM	0	0	19	0	19	0	0	20	33	0	53	7	42	0	49	121
8:30 AM	0	0	20	0	20	0	0	23	28	0	51	6	29	0	35	106
8:45 AM	0	0	20	0	20	2	0	21	35	0	56	7	33	0	40	116
Hourly Total	2	0	79	0	81	2	0	84	127	0	211	26	146	0	172	464
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	1	1	26	0	28	0	0	59	46	0	105	10	44	0	54	187
4:15 PM	2	0	13	0	15	0	0	73	44	0	117	5	37	0	42	174
4:30 PM	0	0	23	0	23	0	0	68	53	0	121	7	49	0	56	200
4:45 PM	0	0	14	3	14	0	0	61	65	0	126	2	40	0	42	182
Hourly Total	3	1	76	3	80	0	0	261	208	0	469	24	170	0	194	743
5:00 PM	2	0	16	0	18	0	0	75	52	0	127	7	40	0	47	192
5:15 PM	1	0	17	1	18	1	0	86	64	0	150	5	49	0	54	222
5:30 PM	1	0	15	0	16	0	0	66	64	0	130	9	43	0	52	198
5:45 PM	2	0	18	1	20	0	0	72	50	0	122	9	34	0	43	185
Hourly Total	6	0	66	2	72	1	0	299	230	0	529	30	166	0	196	797
Grand Total	18	1	362	5	381	3	0	721	687	0	1408	122	666	0	788	2577
Approach %	4.7	0.3	95.0	-	-	-	-	51.2	48.8	-	-	15.5	84.5	-	-	-
Total %	0.7	0.0	14.0	-	14.8	-	0.0	28.0	26.7	-	54.6	4.7	25.8	-	30.6	-
Motorcycles	0	0	3	-	3	-	0	18	9	-	27	1	17	-	18	48
% Motorcycles	0.0	0.0	0.8	-	0.8	-	-	2.5	1.3	-	1.9	0.8	2.6	-	2.3	1.9
Cars	8	1	247	-	256	-	0	476	391	-	867	81	386	-	467	1590
% Cars	44.4	100.0	68.2	-	67.2	-	-	66.0	56.9	-	61.6	66.4	58.0	-	59.3	61.7
Light Goods Vehicles	10	0	95	-	105	-	0	200	225	-	425	36	240	-	276	806
% Light Goods Vehicles	55.6	0.0	26.2	-	27.6	-	-	27.7	32.8	-	30.2	29.5	36.0	-	35.0	31.3
Buses	0	0	0	-	0	-	0	1	1	-	2	0	1	-	1	3
% Buses	0.0	0.0	0.0	-	0.0	-	-	0.1	0.1	-	0.1	0.0	0.2	-	0.1	0.1
Single-Unit Trucks	0	0	7	-	7	-	0	13	28	-	41	4	10	-	14	62
% Single-Unit Trucks	0.0	0.0	1.9	-	1.8	-	-	1.8	4.1	-	2.9	3.3	1.5	-	1.8	2.4
Articulated Trucks	0	0	10	-	10	-	0	13	33	-	46	0	12	-	12	68
% Articulated Trucks	0.0	0.0	2.8	-	2.6	-	-	1.8	4.8	-	3.3	0.0	1.8	-	1.5	2.6
Bicycles on Road	0	0	0	-	0	-	0	0	0	-	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0



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Count Name: 08-CentralAve_115SB TMC
Site Code: TMC-08
Start Date: 07/16/2014
Page No: 3



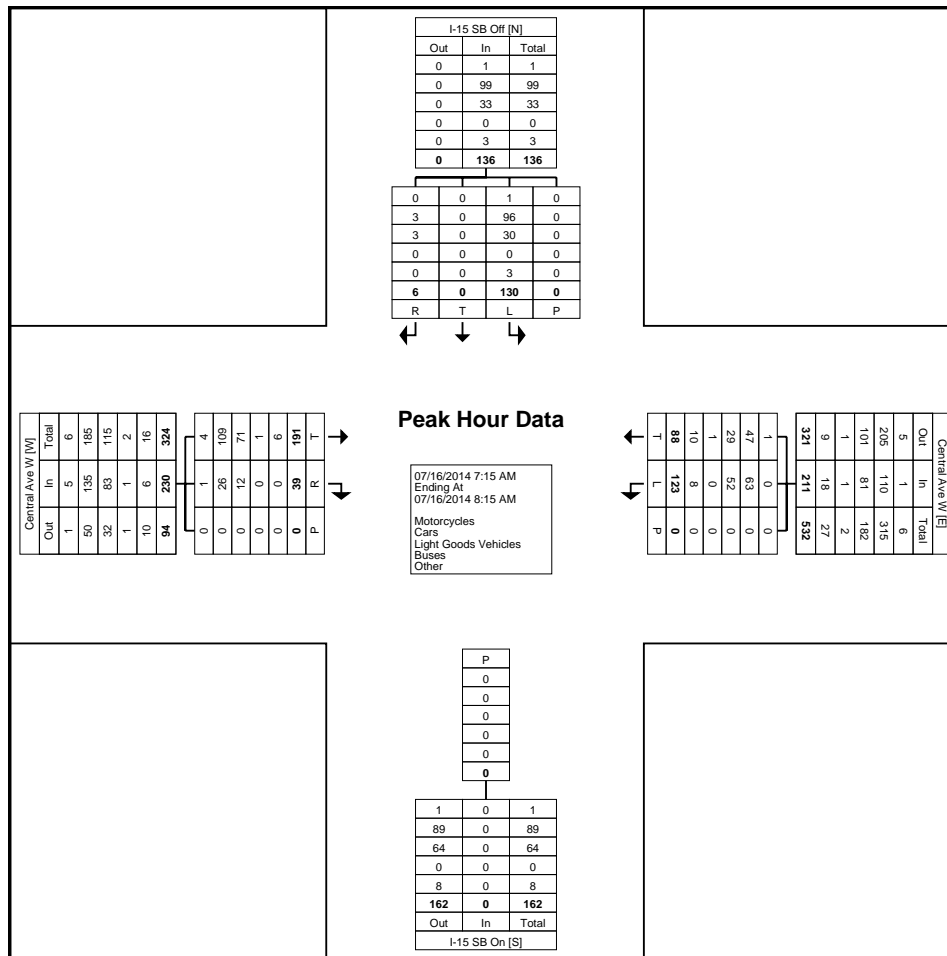
Turning Movement Data Plot



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Count Name: 08-CentralAve_115SB TMC
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Start Date: 07/16/2014
Page No: 5



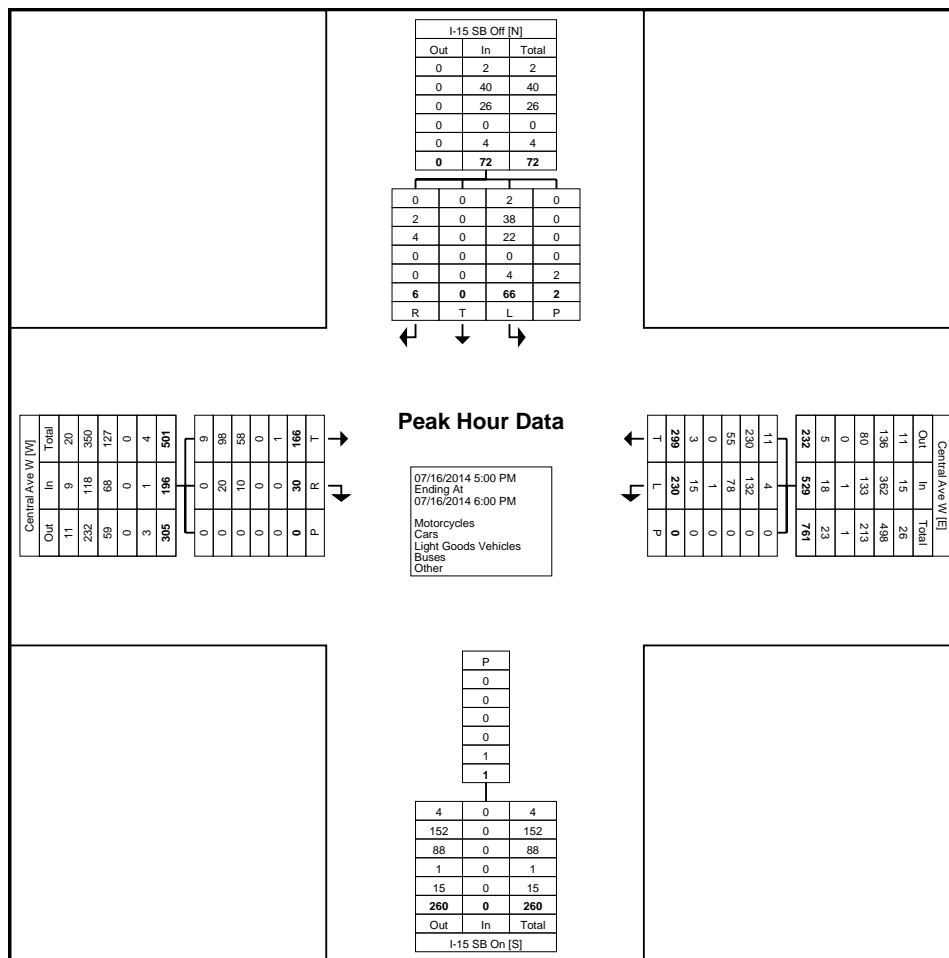
Turning Movement Peak Hour Data Plot (7:15 AM)



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Count Name: 08-CentralAve_115SB TMC
Site Code: TMC-08
Start Date: 07/16/2014
Page No: 7



Turning Movement Peak Hour Data Plot (5:00 PM)



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Count Name: 08-CentralAve_115SB TMC
Site Code: TMC-08
Start Date: 07/16/2014
Page No: 8



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Count Name: 09-CentralAve_115NB TMC
Site Code: TMC-09
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

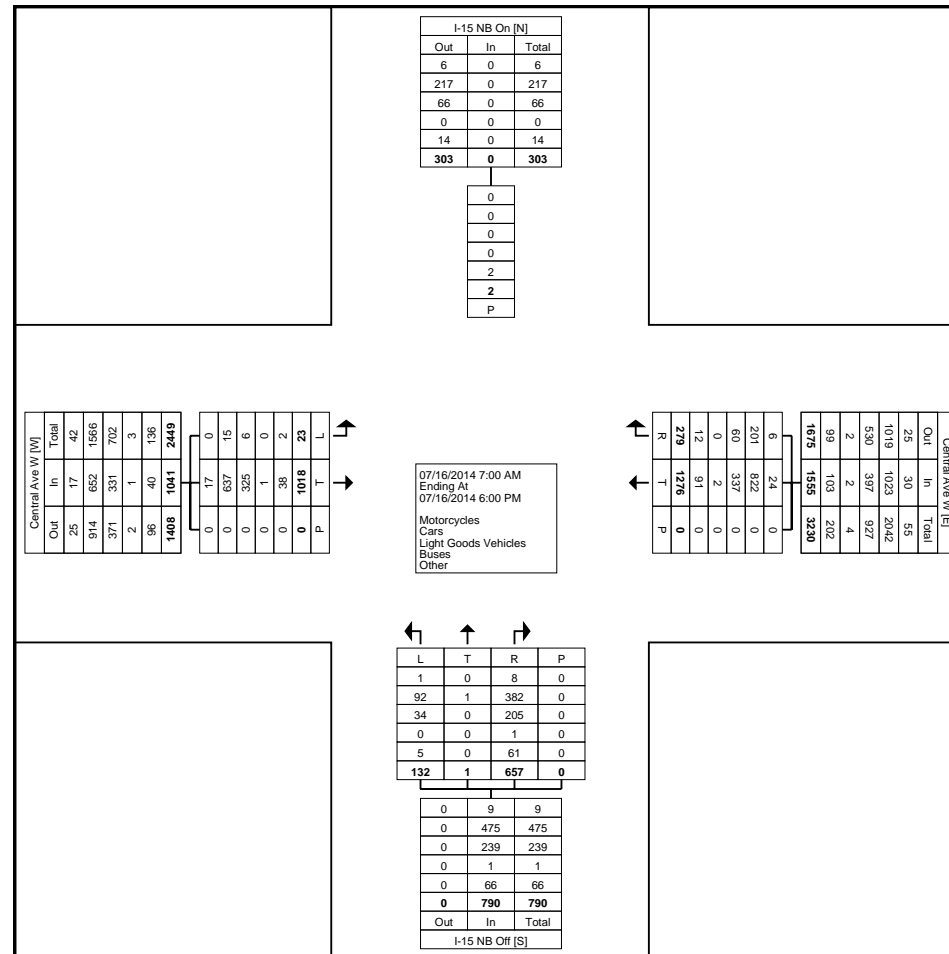
Start Time	I-15 NB On Southbound		I-15 NB Off Northbound				Central Ave W Westbound				Central Ave W Eastbound				Int. Total	
	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds		App. Total
7:00 AM	0	0	31	1	0	0	32	8	39	0	47	64	3	0	67	146
7:15 AM	0	0	27	0	7	0	34	6	41	0	47	70	0	0	70	151
7:30 AM	0	0	52	0	7	0	59	7	42	0	49	106	2	0	108	216
7:45 AM	0	0	42	0	1	0	43	11	60	0	71	79	1	0	80	194
Hourly Total	0	0	152	1	15	0	168	32	182	0	214	319	6	0	325	707
8:00 AM	0	0	39	0	3	0	42	11	52	0	63	61	1	0	62	167
8:15 AM	0	0	44	0	4	0	48	15	48	0	63	59	2	0	61	172
8:30 AM	0	0	32	0	3	0	35	11	45	0	56	54	0	0	54	145
8:45 AM	0	0	34	0	9	0	43	4	49	0	53	50	0	0	50	146
Hourly Total	0	0	149	0	19	0	168	41	194	0	235	224	3	0	227	630
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	61	0	7	0	68	19	96	0	115	70	1	0	71	254
4:15 PM	0	0	44	0	16	0	60	18	99	0	117	48	1	0	49	226
4:30 PM	0	0	56	0	12	0	68	20	117	0	137	72	1	0	73	278
4:45 PM	0	0	36	0	10	0	46	28	110	0	138	55	0	0	55	239
Hourly Total	0	0	197	0	45	0	242	85	422	0	507	245	3	0	248	997
5:00 PM	0	0	35	0	15	0	50	34	118	0	152	58	1	0	59	261
5:15 PM	1	0	43	0	20	0	63	31	126	0	157	64	3	0	67	287
5:30 PM	0	0	47	0	8	0	55	30	124	0	154	60	1	0	61	270
5:45 PM	1	0	34	0	10	0	44	26	110	0	136	48	6	0	54	234
Hourly Total	2	0	159	0	53	0	212	121	478	0	599	230	11	0	241	1052
Grand Total	2	0	657	1	132	0	790	279	1276	0	1555	1018	23	0	1041	3386
Approach %	-	-	83.2	0.1	16.7	-	-	17.9	82.1	-	-	97.8	2.2	-	-	-
Total %	-	0.0	19.4	0.0	3.9	-	23.3	8.2	37.7	-	45.9	30.1	0.7	-	30.7	-
Motorcycles	-	0	8	0	1	-	9	6	24	-	30	17	0	-	17	56
% Motorcycles	-	-	1.2	0.0	0.8	-	1.1	2.2	1.9	-	1.9	1.7	0.0	-	1.6	1.7
Cars	-	0	382	1	92	-	475	201	822	-	1023	637	15	-	652	2150
% Cars	-	-	58.1	100.0	69.7	-	60.1	72.0	64.4	-	65.8	62.6	65.2	-	62.6	63.5
Light Goods Vehicles	-	0	205	0	34	-	239	60	337	-	397	325	6	-	331	967
% Light Goods Vehicles	-	-	31.2	0.0	25.8	-	30.3	21.5	26.4	-	25.5	31.9	26.1	-	31.8	28.6
Buses	-	0	1	0	0	-	1	0	2	-	2	1	0	-	1	4
% Buses	-	-	0.2	0.0	0.0	-	0.1	0.0	0.2	-	0.1	0.1	0.0	-	0.1	0.1
Single-Unit Trucks	-	0	25	0	5	-	30	8	43	-	51	16	2	-	18	99
% Single-Unit Trucks	-	-	3.8	0.0	3.8	-	3.8	2.9	3.4	-	3.3	1.6	8.7	-	1.7	2.9
Articulated Trucks	-	0	36	0	0	-	36	4	47	-	51	19	0	-	19	106
% Articulated Trucks	-	-	5.5	0.0	0.0	-	4.6	1.4	3.7	-	3.3	1.9	0.0	-	1.8	3.1
Bicycles on Road	-	0	0	0	0	-	0	0	1	-	1	3	0	-	3	4
% Bicycles on Road	-	-	0.0	0.0	0.0	-	0.0	0.0	0.1	-	0.1	0.3	0.0	-	0.3	0.1



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Count Name: 09-CentralAve_115NB TMC
Site Code: TMC-09
Start Date: 07/16/2014
Page No: 3



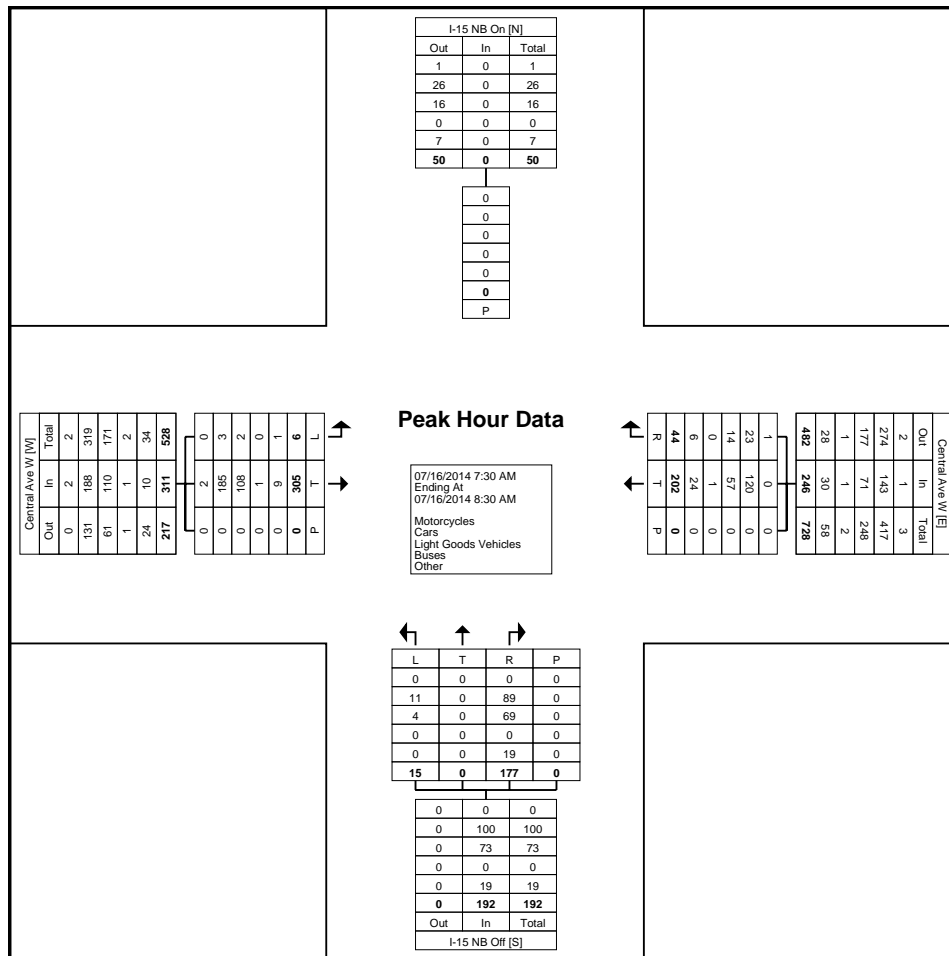
Turning Movement Data Plot



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Count Name: 09-CentralAve_115NB TMC
Site Code: TMC-09
Start Date: 07/16/2014
Page No: 5



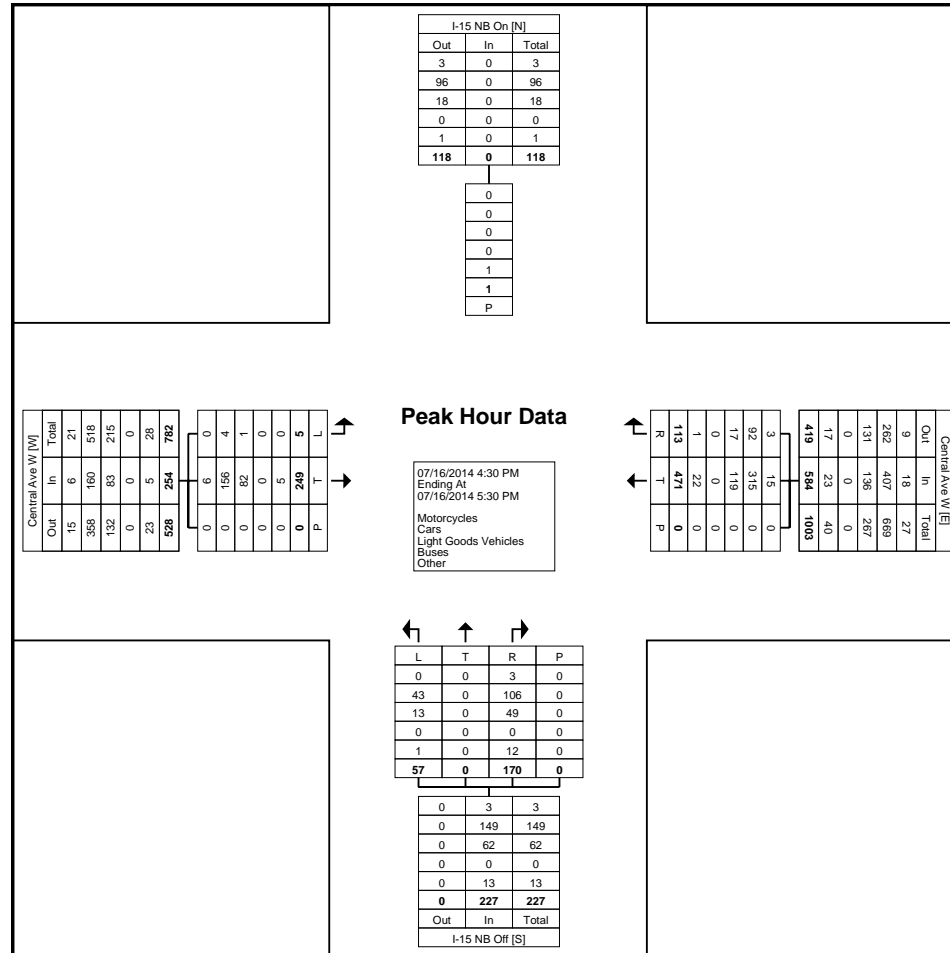
Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: 09-CentralAve_115NB TMC
Site Code: TMC-09
Start Date: 07/16/2014
Page No: 7



Turning Movement Peak Hour Data Plot (4:30 PM)



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Count Name: 09-CentralAve_115NB TMC
Site Code: TMC-09
Start Date: 07/16/2014
Page No: 8



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Count Name: 10-CentralAve_VaughnRd TMC
Site Code: TMC-10
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

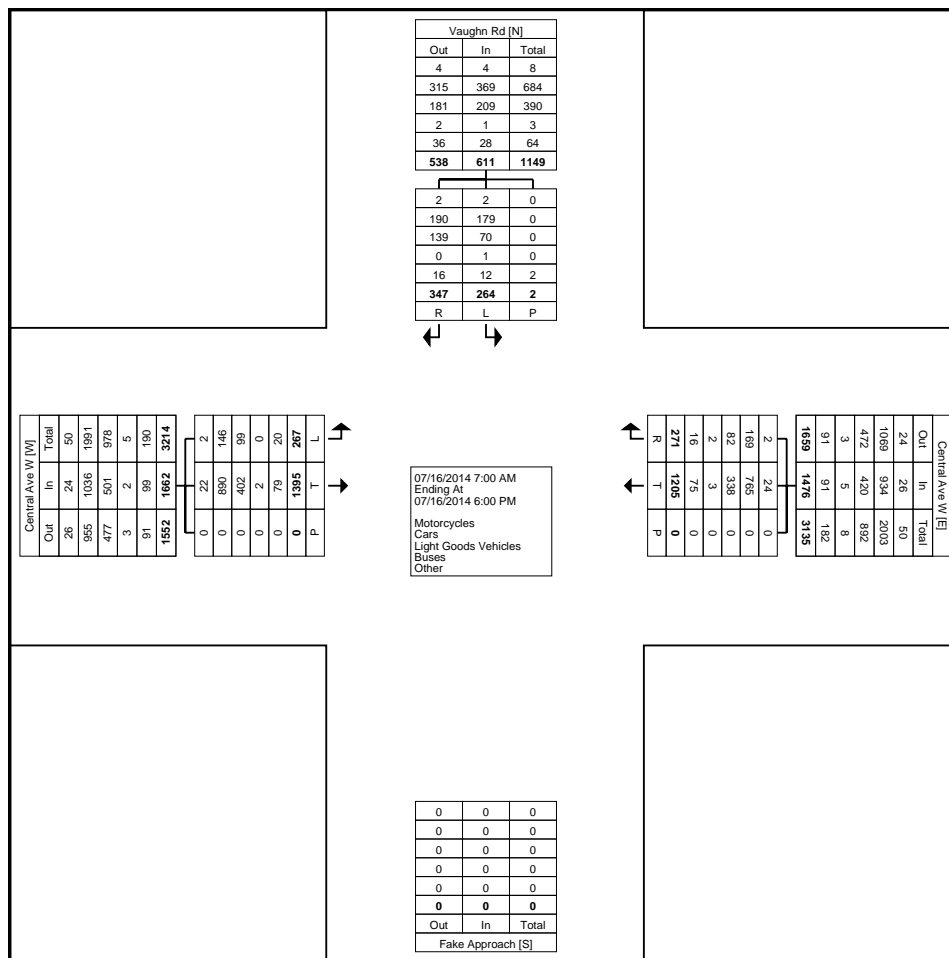
Start Time	Vaughn Rd Southbound				Central Ave W Westbound				Central Ave W Eastbound				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
7:00 AM	10	17	0	27	9	39	0	48	73	13	0	86	161
7:15 AM	13	13	0	26	10	33	0	43	95	12	0	107	176
7:30 AM	14	19	0	33	17	35	0	52	128	20	0	148	233
7:45 AM	16	25	0	41	21	54	0	75	110	21	0	131	247
Hourly Total	53	74	0	127	57	161	0	218	406	66	0	472	817
8:00 AM	19	21	0	40	14	44	0	58	85	12	0	97	195
8:15 AM	11	12	0	23	13	51	0	64	87	18	0	105	192
8:30 AM	15	8	0	23	16	43	0	59	71	12	0	83	165
8:45 AM	10	13	0	23	18	41	0	59	70	15	0	85	167
Hourly Total	55	54	0	109	61	179	0	240	313	57	0	370	719
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	27	19	0	46	19	90	0	109	99	30	0	129	284
4:15 PM	24	18	0	42	25	96	0	121	77	15	0	92	255
4:30 PM	32	26	0	58	12	104	0	116	111	17	0	128	302
4:45 PM	30	13	1	43	17	106	0	123	74	22	0	96	262
Hourly Total	113	76	1	189	73	396	0	469	361	84	0	445	1103
5:00 PM	31	18	0	49	26	119	0	145	71	16	0	87	281
5:15 PM	28	11	0	39	21	133	0	154	95	11	0	106	299
5:30 PM	34	20	1	54	18	116	0	134	87	19	0	106	294
5:45 PM	33	11	0	44	15	101	0	116	62	14	0	76	236
Hourly Total	126	60	1	186	80	469	0	549	315	60	0	375	1110
Grand Total	347	264	2	611	271	1205	0	1476	1395	267	0	1662	3749
Approach %	56.8	43.2	-	-	18.4	81.6	-	-	83.9	16.1	-	-	-
Total %	9.3	7.0	-	16.3	7.2	32.1	-	39.4	37.2	7.1	-	44.3	-
Motorcycles	2	2	-	4	2	24	-	26	22	2	-	24	54
% Motorcycles	0.6	0.8	-	0.7	0.7	2.0	-	1.8	1.6	0.7	-	1.4	1.4
Cars	190	179	-	369	169	765	-	934	890	146	-	1036	2339
% Cars	54.8	67.8	-	60.4	62.4	63.5	-	63.3	63.8	54.7	-	62.3	62.4
Light Goods Vehicles	139	70	-	209	82	338	-	420	402	99	-	501	1130
% Light Goods Vehicles	40.1	26.5	-	34.2	30.3	28.0	-	28.5	28.8	37.1	-	30.1	30.1
Buses	0	1	-	1	2	3	-	5	2	0	-	2	8
% Buses	0.0	0.4	-	0.2	0.7	0.2	-	0.3	0.1	0.0	-	0.1	0.2
Single-Unit Trucks	10	11	-	21	10	26	-	36	40	10	-	50	107
% Single-Unit Trucks	2.9	4.2	-	3.4	3.7	2.2	-	2.4	2.9	3.7	-	3.0	2.9
Articulated Trucks	6	1	-	7	6	48	-	54	37	10	-	47	108
% Articulated Trucks	1.7	0.4	-	1.1	2.2	4.0	-	3.7	2.7	3.7	-	2.8	2.9
Bicycles on Road	0	0	-	0	0	1	-	1	2	0	-	2	3
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.1	-	0.1	0.1	0.0	-	0.1	0.1



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Count Name: 10-CentralAve_VaughnRd TMC
Site Code: TMC-10
Start Date: 07/16/2014
Page No: 3



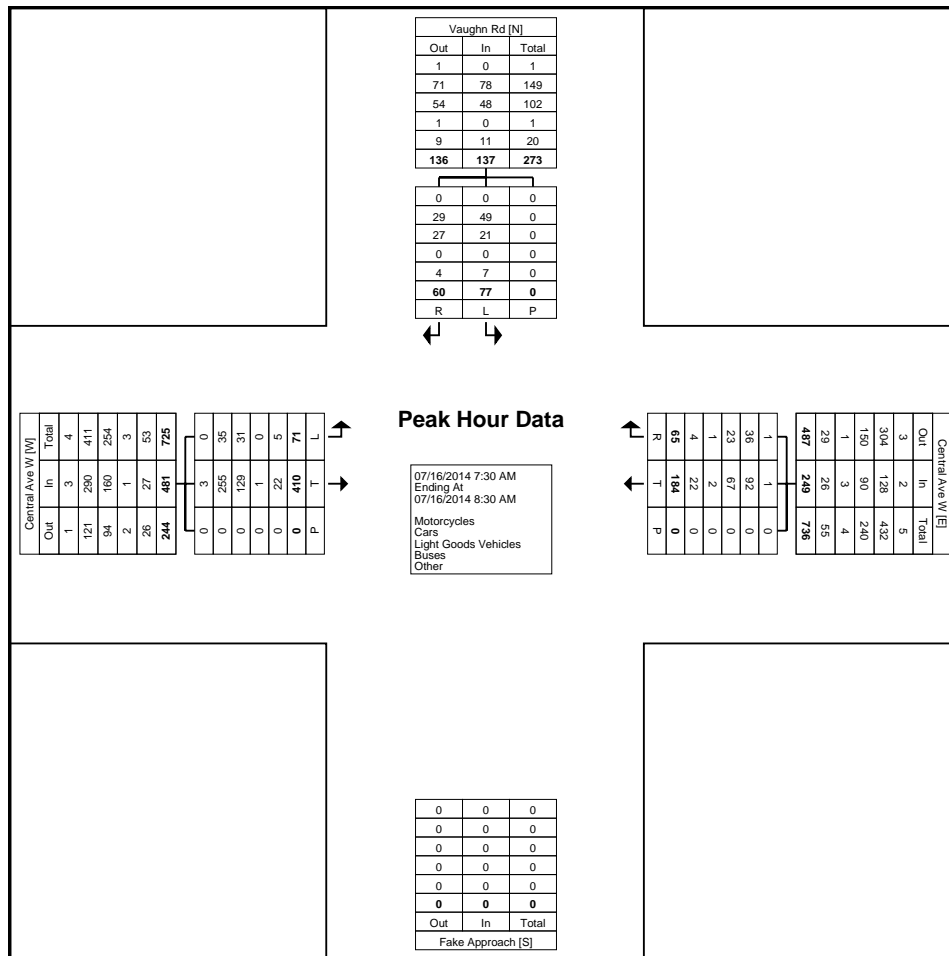
Turning Movement Data Plot



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Count Name: 10-CentralAve_VaughnRd TMC
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Page No: 5



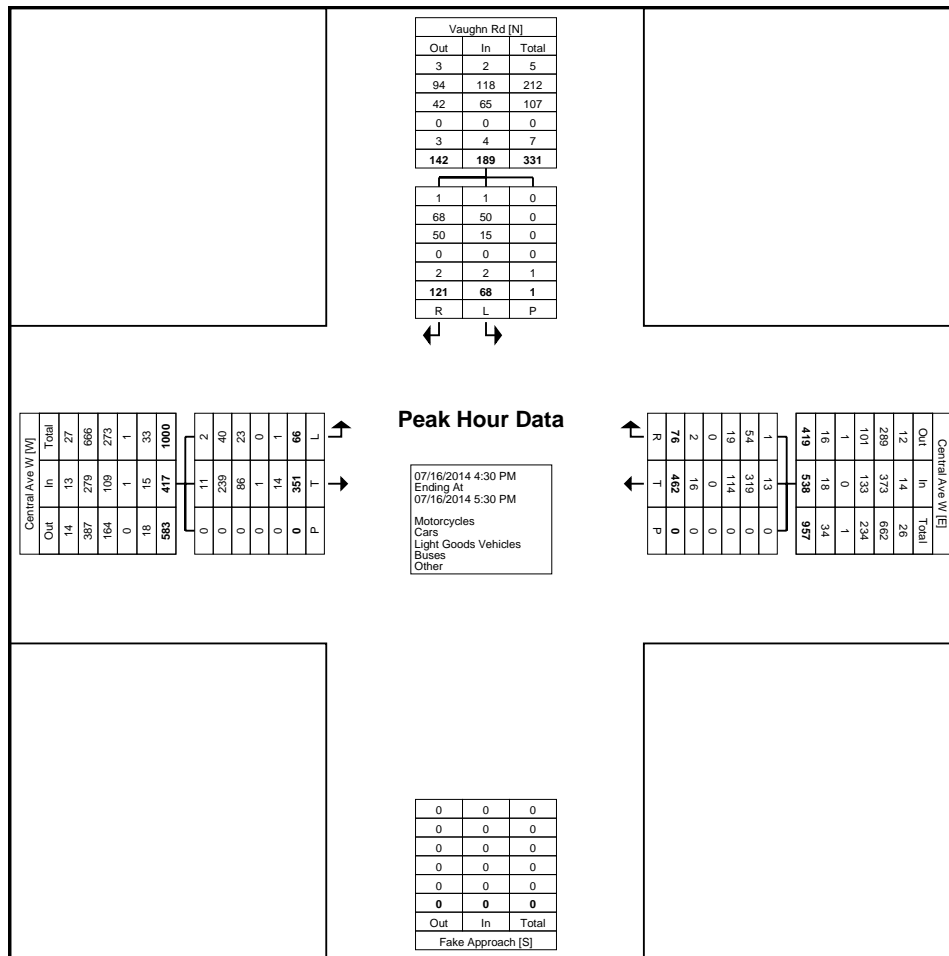
Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: 10-CentralAve_VaughnRd TMC
Site Code: TMC-10
Start Date: 07/16/2014
Page No: 7



Turning Movement Peak Hour Data Plot (4:30 PM)



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Count Name: 10-CentralAve_VaughnRd TMC
Site Code: TMC-10
Start Date: 07/16/2014
Page No: 8



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Count Name: 11-VaughnRd_I15SB TMC
Site Code: TMC-11
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

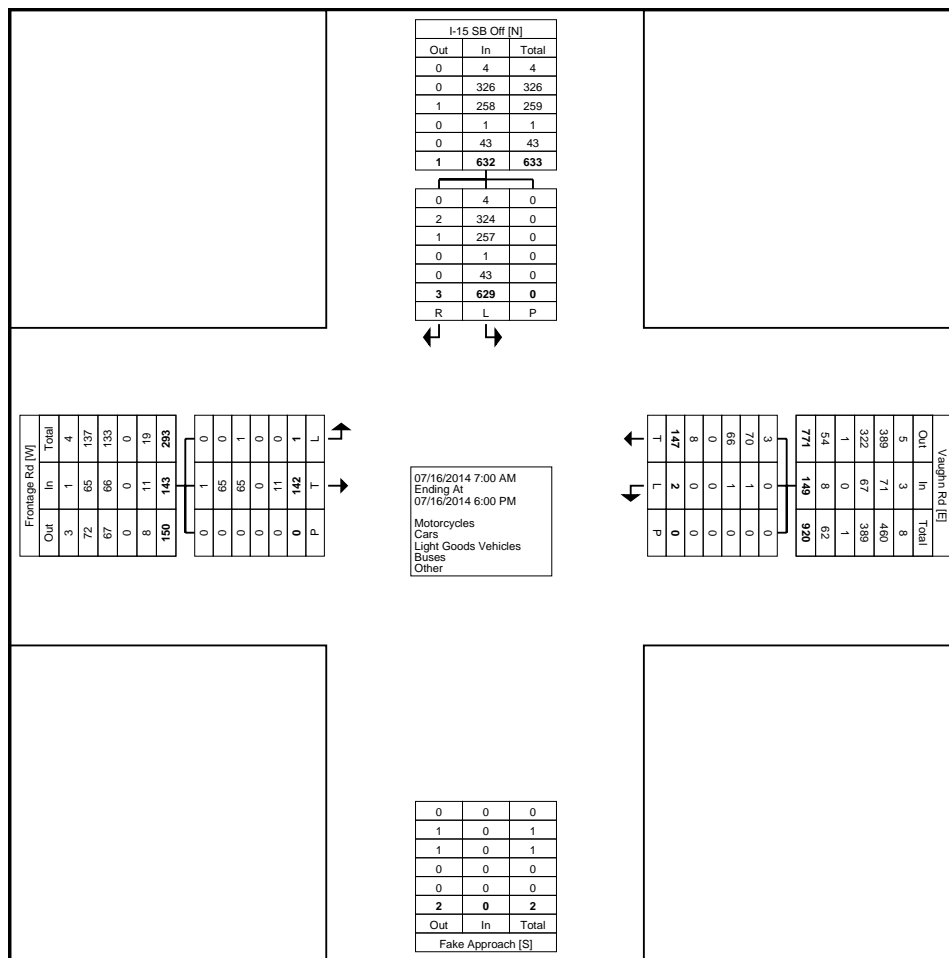
Start Time	I-15 SB Off Southbound				Vaughn Rd Westbound				Frontage Rd Eastbound				Int. Total
	Right	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Thru	Left	Peds	App. Total	
7:00 AM	0	50	0	50	1	0	0	1	8	0	0	8	59
7:15 AM	0	50	0	50	4	0	0	4	6	0	0	6	60
7:30 AM	0	62	0	62	3	1	0	4	5	0	0	5	71
7:45 AM	1	57	0	58	4	0	0	4	8	0	0	8	70
Hourly Total	1	219	0	220	12	1	0	13	27	0	0	27	260
8:00 AM	0	37	0	37	7	0	0	7	7	0	0	7	51
8:15 AM	0	38	0	38	8	0	0	8	6	0	0	6	52
8:30 AM	0	37	0	37	13	0	0	13	7	0	0	7	57
8:45 AM	1	35	0	36	4	0	0	4	9	0	0	9	49
Hourly Total	1	147	0	148	32	0	0	32	29	0	0	29	209
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	32	0	32	9	1	0	10	12	0	0	12	54
4:15 PM	0	38	0	38	14	0	0	14	12	0	0	12	64
4:30 PM	0	35	0	35	13	0	0	13	12	0	0	12	60
4:45 PM	1	38	0	39	14	0	0	14	17	0	0	17	70
Hourly Total	1	143	0	144	50	1	0	51	53	0	0	53	248
5:00 PM	0	23	0	23	14	0	0	14	8	1	0	9	46
5:15 PM	0	29	0	29	16	0	0	16	7	0	0	7	52
5:30 PM	0	35	0	35	11	0	0	11	6	0	0	6	52
5:45 PM	0	33	0	33	12	0	0	12	12	0	0	12	57
Hourly Total	0	120	0	120	53	0	0	53	33	1	0	34	207
Grand Total	3	629	0	632	147	2	0	149	142	1	0	143	924
Approach %	0.5	99.5	-	-	98.7	1.3	-	-	99.3	0.7	-	-	-
Total %	0.3	68.1	-	68.4	15.9	0.2	-	16.1	15.4	0.1	-	15.5	-
Motorcycles	0	4	-	4	3	0	-	3	1	0	-	1	8
% Motorcycles	0.0	0.6	-	0.6	2.0	0.0	-	2.0	0.7	0.0	-	0.7	0.9
Cars	2	324	-	326	70	1	-	71	65	0	-	65	462
% Cars	66.7	51.5	-	51.6	47.6	50.0	-	47.7	45.8	0.0	-	45.5	50.0
Light Goods Vehicles	1	257	-	258	66	1	-	67	65	1	-	66	391
% Light Goods Vehicles	33.3	40.9	-	40.8	44.9	50.0	-	45.0	45.8	100.0	-	46.2	42.3
Buses	0	1	-	1	0	0	-	0	0	0	-	0	1
% Buses	0.0	0.2	-	0.2	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	27	-	27	6	0	-	6	7	0	-	7	40
% Single-Unit Trucks	0.0	4.3	-	4.3	4.1	0.0	-	4.0	4.9	0.0	-	4.9	4.3
Articulated Trucks	0	16	-	16	2	0	-	2	4	0	-	4	22
% Articulated Trucks	0.0	2.5	-	2.5	1.4	0.0	-	1.3	2.8	0.0	-	2.8	2.4
Bicycles on Road	0	0	-	0	0	0	-	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0



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Count Name: 11-VaughnRd_I15SB TMC
Site Code: TMC-11
Start Date: 07/16/2014
Page No: 3



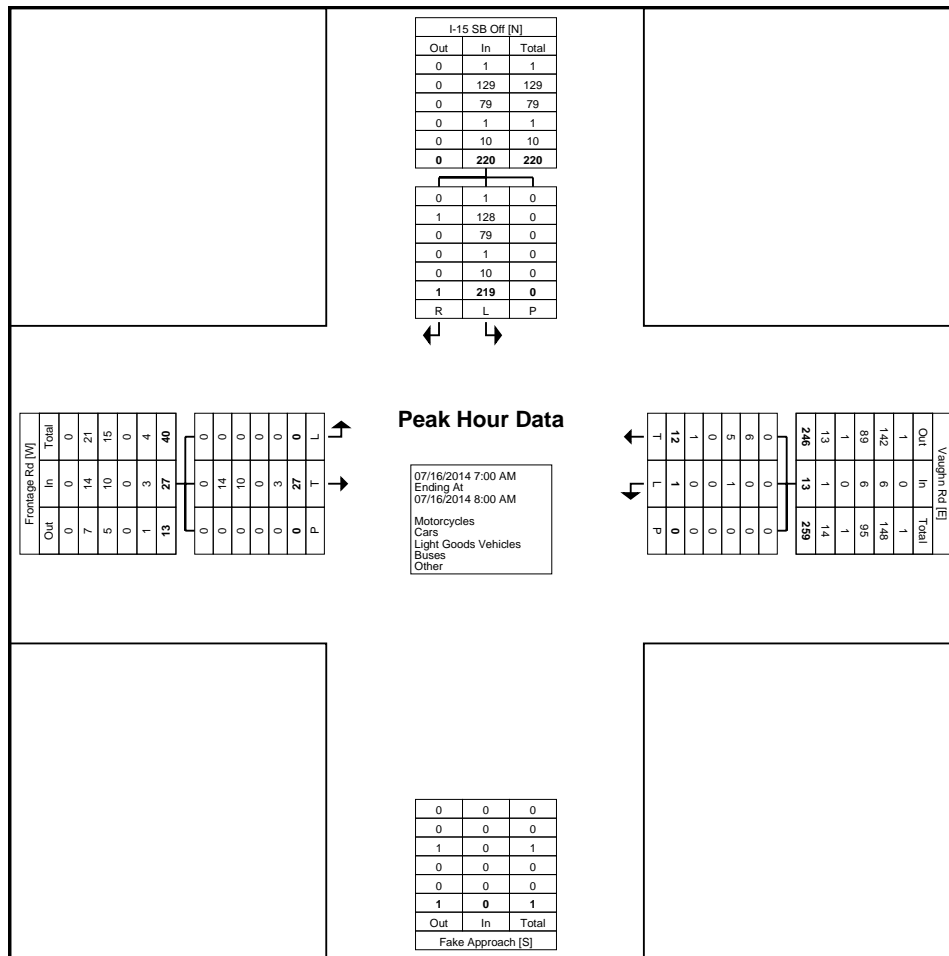
Turning Movement Data Plot



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Count Name: 11-VaughnRd_I15SB TMC
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Start Date: 07/16/2014
Page No: 5



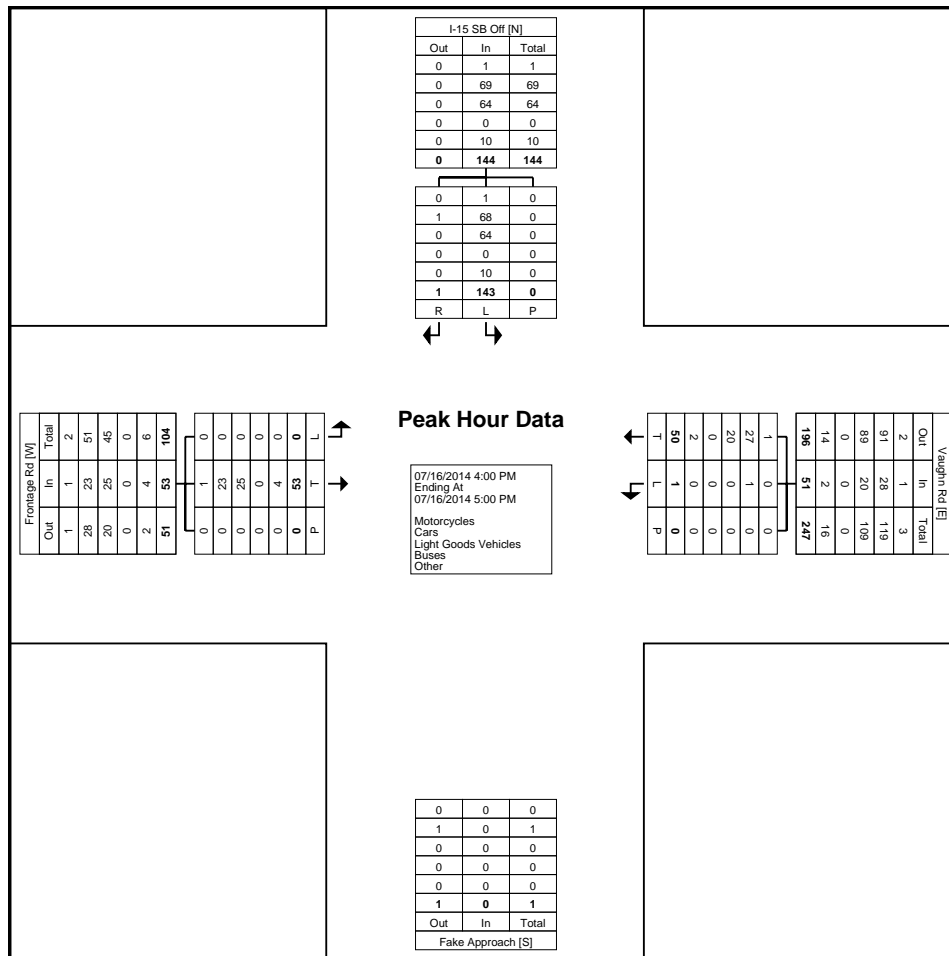
Turning Movement Peak Hour Data Plot (7:00 AM)



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Count Name: 11-VaughnRd_I15SB TMC
Site Code: TMC-11
Start Date: 07/16/2014
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Turning Movement Peak Hour Data Plot (4:00 PM)



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Count Name: 11-VaughnRd_I15SB TMC
Site Code: TMC-11
Start Date: 07/16/2014
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Count Name: 12-VaughnRd_I15NB TMC
Site Code: TMC-12
Start Date: 07/16/2014
Page No: 1

Turning Movement Data

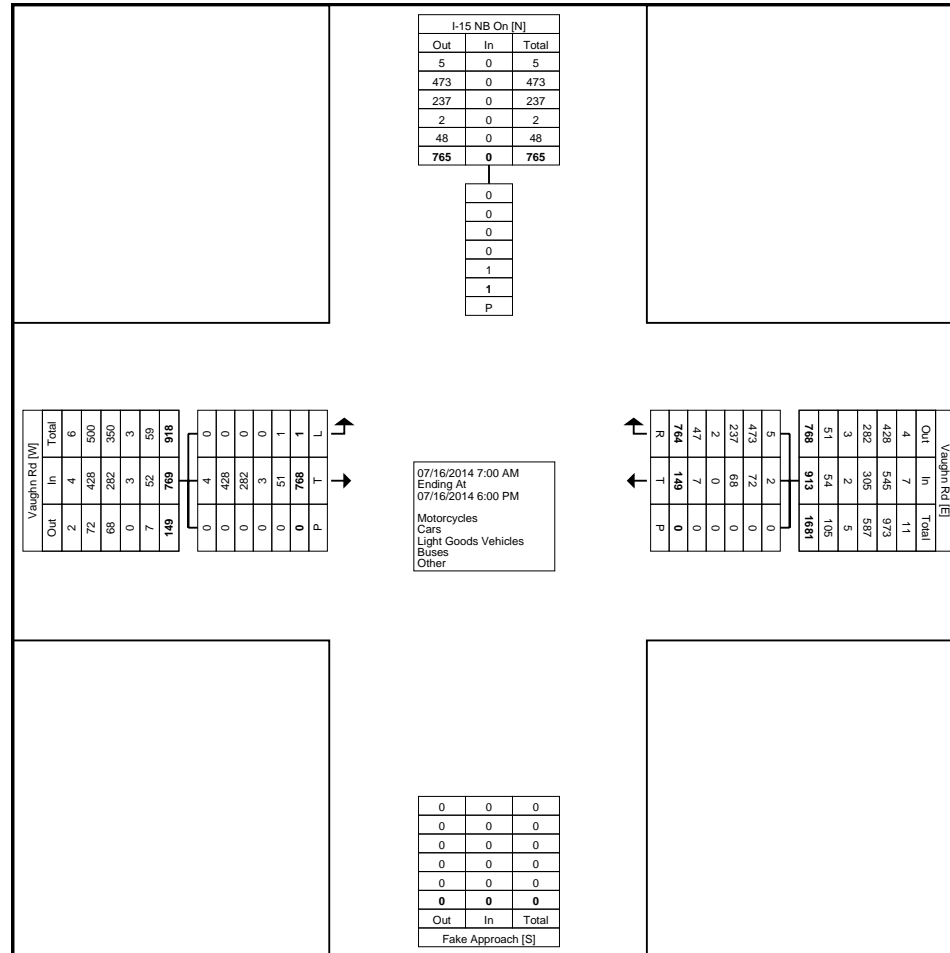
Start Time	I-15 NB On Southbound		Vaughn Rd Westbound				Vaughn Rd Eastbound				Int. Total
	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
7:00 AM	1	0	16	1	0	17	53	0	0	53	70
7:15 AM	0	0	23	4	0	27	58	0	0	58	85
7:30 AM	0	0	14	4	0	18	67	0	0	67	85
7:45 AM	0	0	18	3	0	21	69	0	0	69	90
Hourly Total	1	0	71	12	0	83	247	0	0	247	330
8:00 AM	0	0	21	8	0	29	43	0	0	43	72
8:15 AM	0	0	19	8	0	27	43	0	0	43	70
8:30 AM	0	0	23	12	0	35	40	1	0	41	76
8:45 AM	0	0	31	5	0	36	47	0	0	47	83
Hourly Total	0	0	94	33	0	127	173	1	0	174	301
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	61	10	0	71	47	0	0	47	118
4:15 PM	0	0	51	14	0	65	47	0	0	47	112
4:30 PM	0	0	72	14	0	86	48	0	0	48	134
4:45 PM	0	0	73	14	0	87	55	0	0	55	142
Hourly Total	0	0	257	52	0	309	197	0	0	197	506
5:00 PM	0	0	84	13	0	97	35	0	0	35	132
5:15 PM	0	0	91	17	0	108	34	0	0	34	142
5:30 PM	0	0	86	11	0	97	41	0	0	41	138
5:45 PM	0	0	81	11	0	92	41	0	0	41	133
Hourly Total	0	0	342	52	0	394	151	0	0	151	545
Grand Total	1	0	764	149	0	913	768	1	0	769	1682
Approach %	-	-	83.7	16.3	-	-	99.9	0.1	-	-	-
Total %	-	0.0	45.4	8.9	-	54.3	45.7	0.1	-	45.7	-
Motorcycles	-	0	5	2	-	7	4	0	-	4	11
% Motorcycles	-	-	0.7	1.3	-	0.8	0.5	0.0	-	0.5	0.7
Cars	-	0	473	72	-	545	428	0	-	428	973
% Cars	-	-	61.9	48.3	-	59.7	55.7	0.0	-	55.7	57.8
Light Goods Vehicles	-	0	237	68	-	305	282	0	-	282	587
% Light Goods Vehicles	-	-	31.0	45.6	-	33.4	36.7	0.0	-	36.7	34.9
Buses	-	0	2	0	-	2	3	0	-	3	5
% Buses	-	-	0.3	0.0	-	0.2	0.4	0.0	-	0.4	0.3
Single-Unit Trucks	-	0	17	5	-	22	31	1	-	32	54
% Single-Unit Trucks	-	-	2.2	3.4	-	2.4	4.0	100.0	-	4.2	3.2
Articulated Trucks	-	0	30	2	-	32	20	0	-	20	52
% Articulated Trucks	-	-	3.9	1.3	-	3.5	2.6	0.0	-	2.6	3.1
Bicycles on Road	-	0	0	0	-	0	0	0	-	0	0
% Bicycles on Road	-	-	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0



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Count Name: 12-VaughnRd_I15NB TMC
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Start Date: 07/16/2014
Page No: 3



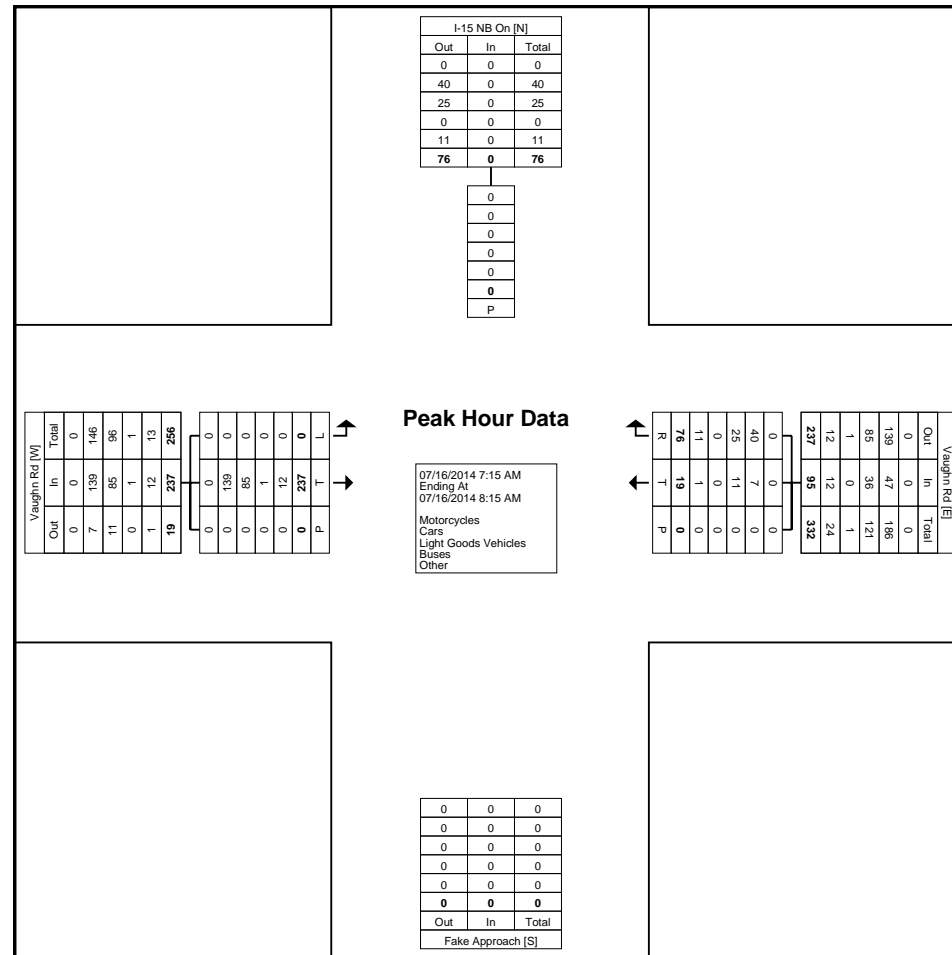
Turning Movement Data Plot



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Count Name: 12-VaughnRd_I15NB TMC
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Page No: 5



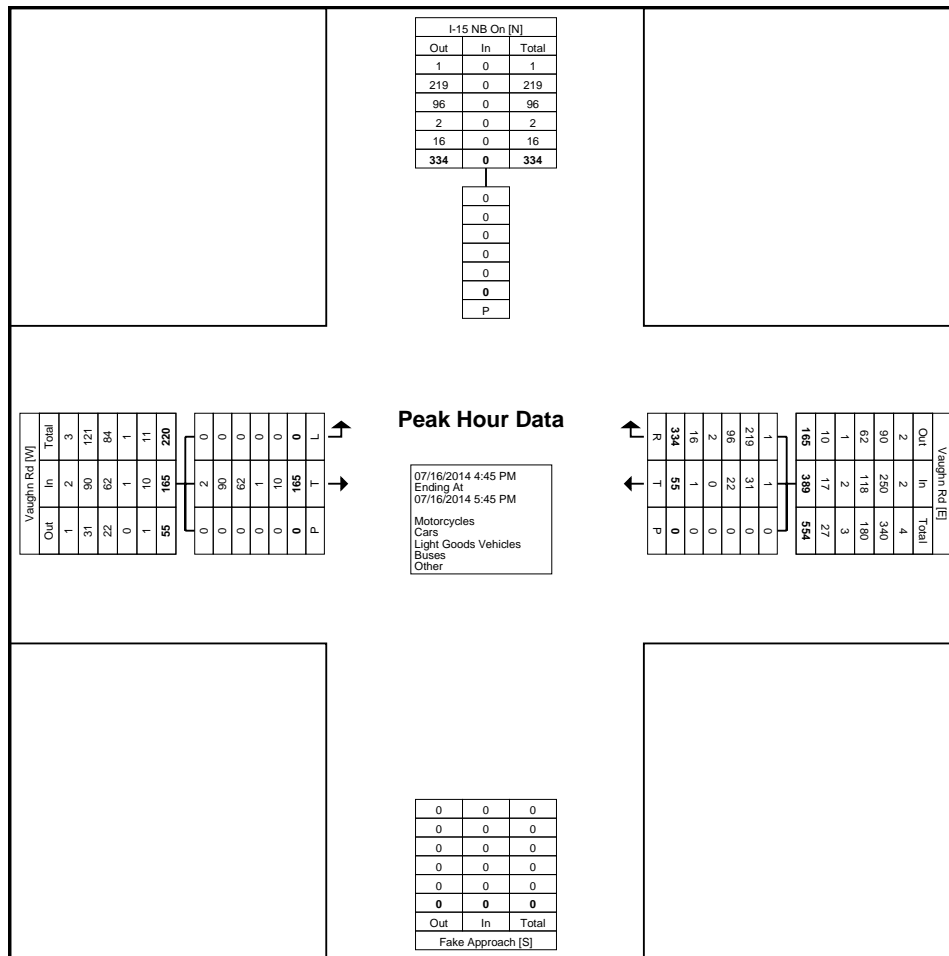
Turning Movement Peak Hour Data Plot (7:15 AM)



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Count Name: 12-VaughnRd_I15NB TMC
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Start Date: 07/16/2014
Page No: 7



Turning Movement Peak Hour Data Plot (4:45 PM)



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Count Name: 12-VaughnRd_I15NB TMC
Site Code: TMC-12
Start Date: 07/16/2014
Page No: 8



APPENDIX C

Existing Conditions Traffic Data Analysis

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-315 Eastbound</i>	
Agency or Company		From/To <i>I-15 to 14th Ave</i>	
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year <i>2014</i>	
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>530</i>	veh/h	Peak-Hour Factor, PHF <i>0.87</i>
AADT		veh/day	%Trucks and Buses, P _T <i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.971</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i> mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>314</i> pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>55.0</i> mph	x f _p)	
D = v _p / S	<i>5.7</i> pc/mi/ln	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Westbound</i>
Agency or Company		From/To	<i>I-15 to 14th Ave</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>454</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.76</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>6</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.971</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i>
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>308</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>55.0</i>	S	mph
D = v _p / S	<i>5.6</i>	D = v _p / S	pc/mi/ln
LOS	<i>A</i>	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Eastbound</i>
Agency or Company		From/To	<i>I-15 to 14th Ave</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>675</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.83</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>4</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.980</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW}
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>55.0</i>	mph	f _{LC}
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>55.0</i>
			mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>415</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>55.0</i>	mph	mph
D = v _p / S	<i>7.5</i>	pc/mi/ln	pc/mi/ln
LOS	<i>A</i>		
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Westbound</i>
Agency or Company		From/To	<i>I-15 to 14th Ave</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>646</i>	veh/h	Peak-Hour Factor, PHF <i>0.93</i>
AADT		veh/day	%Trucks and Buses, P _T <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.976</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>356</i>	pc/h/ln	Design LOS
S	<i>55.0</i>	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
D = v _p / S	<i>6.5</i>	pc/mi/ln	S
LOS	<i>A</i>		D = v _p / S
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-315 Eastbound</i>	
Agency or Company		From/To <i>14th Ave to Fox Farm</i>	
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year <i>2014</i>	
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>979</i>	veh/h	Peak-Hour Factor, PHF <i>0.83</i>
AADT		veh/day	%Trucks and Buses, P _T <i>4</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.980</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i> mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>602</i> pc/h/ln	Design LOS	
S	<i>55.0</i> mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>10.9</i> pc/mi/ln	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel <i>I-315 Westbound</i>	
Agency or Company		From/To	<i>14th Ave to Fox Farm</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>528</i>	veh/h	Peak-Hour Factor, PHF <i>0.82</i>
AADT		veh/day	%Trucks and Buses, P _T <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.976</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV}) <i>330</i>		Design LOS	
x f _p)	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
S	<i>55.0</i>	x f _p)	pc/h/ln
D = v _p / S	<i>6.0</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Eastbound</i>
Agency or Company		From/To	<i>14th Ave to Fox Farm</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>1044</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			3
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.985</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i>
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
x f _p)	<i>589</i>	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>55.0</i>	x f _p)	pc/h/ln
D = v _p / S	<i>10.7</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET													
General Information			Site Information										
Analyst	Shane Forsythe		Highway/Direction of Travel <i>I-315 Westbound</i>										
Agency or Company			From/To <i>14th Ave to Fox Farm</i>										
Date Performed	9/15/2014		Jurisdiction										
Analysis Time Period	PM Peak		Analysis Year <i>2014</i>										
Project Description <i>I-15 Corridor Study</i>													
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data									
Flow Inputs													
Volume, V	1279	veh/h	Peak-Hour Factor, PHF	0.95									
AADT			%Trucks and Buses, P _T	3									
Peak-Hr Prop. of AADT, K			%RVs, P _R	0									
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>										
DDHV = AADT x K x D	veh/h		Grade %	Length	mi								
			Up/Down %										
Calculate Flow Adjustments													
f _p	1.00		E _R	1.2									
E _T	1.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.985</i>										
Speed Inputs			Calc Speed Adj and FFS										
Lane Width	ft		<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f_{LW}</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f_{LC}</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">55.0 mph</td> </tr> </table>			f _{LW}	mph	f _{LC}	mph	TRD Adjustment	mph	FFS	55.0 mph
f _{LW}	mph												
f _{LC}	mph												
TRD Adjustment	mph												
FFS	55.0 mph												
Rt-Side Lat. Clearance	ft												
Number of Lanes, N	2												
Total Ramp Density, TRD	ramps/mi												
FFS (measured)	55.0 mph												
Base free-flow Speed, BFFS	mph												
LOS and Performance Measures			Design (N)										
<u>Operational (LOS)</u>			<u>Design (N)</u>										
v _p = (V or DDHV) / (PHF x N x f _{HV})			Design LOS										
683	pc/h/ln		v _p = (V or DDHV) / (PHF x N x f _{HV})										
x f _p)			pc/h/ln										
S	55.0 mph		x f _p)										
D = v _p / S	12.4 pc/mi/ln		S										
LOS	B		D = v _p / S										
			pc/mi/ln										
			Required Number of Lanes, N										
Glossary			Factor Location										
N - Number of lanes	S - Speed		E _R - Exhibits 11-10, 11-12		f _{LW} - Exhibit 11-8								
V - Hourly volume	D - Density		E _T - Exhibits 11-10, 11-11, 11-13		f _{LC} - Exhibit 11-9								
v _p - Flow rate	FFS - Free-flow speed		f _p - Page 11-18		TRD - Page 11-11								
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v _p - Exhibits 11-2, 11-3										
DDHV - Directional design hour volume													

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>North of Central</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>334</i>	veh/h	Peak-Hour Factor, PHF <i>0.83</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.966</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>209</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>3.2</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET					
General Information			Site Information		
Analyst	Shane Forsythe		Highway/Direction of Travel <i>I-15 SB</i>		
Agency or Company			From/To <i>North of Central</i>		
Date Performed	8/7/2014		Jurisdiction		
Analysis Time Period	AM Peak		Analysis Year <i>2014</i>		
Project Description <i>I-15 Corridor Study</i>					
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data	
Flow Inputs					
Volume, V	200	veh/h	Peak-Hour Factor, PHF	0.83	
AADT			%Trucks and Buses, P _T	21	
Peak-Hr Prop. of AADT, K			%RVs, P _R	0	
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>		
DDHV = AADT x K x D	veh/h		Grade %	Length	mi
			Up/Down %		
Calculate Flow Adjustments					
f _p	1.00		E _R	1.2	
E _T	1.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.905</i>		
Speed Inputs			Calc Speed Adj and FFS		
Lane Width	ft				
Rt-Side Lat. Clearance	ft		f _{LW}	mph	
Number of Lanes, N	2		f _{LC}	mph	
Total Ramp Density, TRD	ramps/mi		TRD Adjustment		
FFS (measured)	65.0		FFS		
Base free-flow Speed, BFFS	mph		65.0		
LOS and Performance Measures			Design (N)		
<u>Operational (LOS)</u>			<u>Design (N)</u>		
v _p = (V or DDHV) / (PHF x N x f _{HV})			Design LOS		
133	pc/h/ln		v _p = (V or DDHV) / (PHF x N x f _{HV})		
x f _p)			pc/h/ln		
S	65.0		x f _p)		
S	mph		S		
D = v _p / S	2.0		D = v _p / S		
pc/mi/ln			pc/mi/ln		
LOS	A		Required Number of Lanes, N		
Glossary			Factor Location		
N - Number of lanes	S - Speed		E _R - Exhibits 11-10, 11-12		
V - Hourly volume	D - Density		f _{LW} - Exhibit 11-8		
v _p - Flow rate	FFS - Free-flow speed		E _T - Exhibits 11-10, 11-11, 11-13		
LOS - Level of service	BFFS - Base free-flow speed		f _{LC} - Exhibit 11-9		
DDHV - Directional design hour volume			f _p - Page 11-18		
			TRD - Page 11-11		
			LOS, S, FFS, v _p - Exhibits 11-2, 11-3		

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>North of Central Ave</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>359</i>	veh/h	Peak-Hour Factor, PHF <i>0.97</i>
AADT		veh/day	%Trucks and Buses, P _T <i>8</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.962</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>193</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>3.0</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 SB</i>	
Agency or Company		From/To	<i>North of Central Ave</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>309</i>	veh/h	Peak-Hour Factor, PHF <i>0.79</i>
AADT		veh/day	%Trucks and Buses, P _T <i>14</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.935</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>210</i>	Design LOS	
S	<i>65.0</i>	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>3.2</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 NB</i>
Agency or Company		From/To	<i>North of Emerson Junction</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>288</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.89</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>21</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.905</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW}
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>65.0</i>	mph	f _{LC}
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>65.0</i>
			mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>179</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>65.0</i>	mph	mph
D = v _p / S	<i>2.8</i>	pc/mi/ln	pc/mi/ln
LOS	<i>A</i>		
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 SB</i>
Agency or Company		From/To	<i>North of Emerson Junction</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>548</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.87</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>6</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.971</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW}
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>65.0</i>	mph	f _{LC}
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>65.0</i>
			mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>323</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>65.0</i>	mph	mph
D = v _p / S	<i>5.0</i>	pc/mi/ln	pc/mi/ln
LOS	<i>A</i>		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 NB</i>
Agency or Company		From/To	<i>North of Emerson Junction</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>696</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
Up/Down %			
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.971</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	<i>2</i>		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	<i>65.0</i>	mph	FFS <i>65.0</i> mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>383</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
D = v _p / S	<i>5.9</i>	pc/mi/ln	pc/h/ln
LOS	<i>A</i>		S mph
		D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel	I-15 SB
Agency or Company		From/To	North of Emerson Junction
Date Performed	8/7/2014	Jurisdiction	
Analysis Time Period	PM Peak	Analysis Year	2014
Project Description I-15 Corridor Study			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	456	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.88
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			13
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.939
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	277	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	65.0	x f _p)	
D = v _p / S	4.3	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel	I-15 NB
Agency or Company		From/To	North of Gore Hill
Date Performed	8/7/2014	Jurisdiction	
Analysis Time Period	AM Peak	Analysis Year	2014
Project Description I-15 Corridor Study			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	517	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			16
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Grade
			-5.00%
			Length
			0.69mi
			Up/Down %
			-5.00
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.926
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
311	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	65.0	mph	mph
D = v _p / S	4.8	pc/mi/ln	pc/mi/ln
LOS	A	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 SB</i>
Agency or Company		From/To	<i>North of Gore Hill</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>458</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.85</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>7</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Grade</i>
			Grade
			<i>5.00%</i>
			Length
			<i>0.69mi</i>
			Up/Down %
			<i>5.00</i>
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>4.5</i>
E _T	<i>2.8</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.891</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW}
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>65.0</i>	mph	f _{LC}
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>65.0</i>
			mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>303</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>65.0</i>	mph	mph
D = v _p / S	<i>4.7</i>	pc/mi/ln	pc/mi/ln
LOS	<i>A</i>		
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 NB</i>
Agency or Company		From/To	<i>North of Gore Hill</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>722</i>	veh/h	Peak-Hour Factor, PHF <i>0.80</i>
AADT		veh/day	%Trucks and Buses, P _T <i>10</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Grade</i>
DDHV = AADT x K x D		veh/h	Grade <i>-5.00%</i>
			Length <i>0.69mi</i>
			Up/Down % <i>-5.00</i>
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.952</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	<i>2</i>		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	<i>65.0</i>	mph	FFS <i>65.0</i> mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
Operational (LOS)		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
v _p x f _p)	<i>473</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})
S	<i>65.0</i>	mph	x f _p)
D = v _p / S	<i>7.3</i>	pc/mi/ln	S
LOS	<i>A</i>		D = v _p / S
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel	I-15 SB
Agency or Company		From/To	North of Gore Hill
Date Performed	8/7/2014	Jurisdiction	
Analysis Time Period	PM Peak	Analysis Year	2014
Project Description I-15 Corridor Study			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	630	veh/h	Peak-Hour Factor, PHF 0.93
AADT		veh/day	%Trucks and Buses, P _T 10
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Grade
DDHV = AADT x K x D		veh/h	Grade 5.00% Length 0.69mi
			Up/Down % 5.00
Calculate Flow Adjustments			
f _p	1.00	E _R	4.5
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.870
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	65.0	mph	FFS 65.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	391	pc/h/ln	Design LOS
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	65.0	mph	x f _p)
D = v _p / S	6.0	pc/mi/ln	S
LOS	A		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>South of Central</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>321</i>	veh/h	Peak-Hour Factor, PHF <i>0.89</i>
AADT		veh/day	%Trucks and Buses, P _T <i>14</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.935</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
x f _p)	<i>193</i>	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>3.0</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 SB</i>	
Agency or Company		From/To	<i>South of Central</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>352</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>8</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.962</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>196</i>	Design LOS	
S	<i>65.0</i>	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>3.0</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>South of Central Ave</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>490</i>	veh/h	Peak-Hour Factor, PHF <i>0.87</i>
AADT		veh/day	%Trucks and Buses, P _T <i>11</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.948</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>298</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>4.6</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 SB</i>	
Agency or Company		From/To	<i>South of Central Ave</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>491</i>	veh/h	Peak-Hour Factor, PHF <i>0.90</i>
AADT		veh/day	%Trucks and Buses, P _T <i>14</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.935</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
x f _p)	<i>293</i>	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>4.5</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>South of Gore Hill</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>244</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P _T <i>10</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.952</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV}) <i>139</i>		Design LOS	
x f _p)	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
S	<i>65.0</i>	x f _p)	pc/h/ln
D = v _p / S	<i>2.1</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 SB</i>	
Agency or Company		From/To	<i>South of Gore Hill</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>235</i>	veh/h	Peak-Hour Factor, PHF <i>0.79</i>
AADT		veh/day	%Trucks and Buses, P _T <i>20</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
Up/Down %			
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.909</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>70.0</i>	FFS	<i>70.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>163</i>	Design LOS	
S	<i>70.0</i>	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>2.3</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>South of Gore Hill</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>249</i>	veh/h	Peak-Hour Factor, PHF <i>0.96</i>
AADT		veh/day	%Trucks and Buses, P _T <i>12</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
Up/Down %			
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.943</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV}) <i>138</i>		Design LOS	
x f _p)	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
S	<i>65.0</i>	x f _p)	pc/h/ln
D = v _p / S	<i>2.1</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 SB</i>	
Agency or Company		From/To	<i>South of Gore Hill</i>
Date Performed	<i>8/7/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2014</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>365</i>	veh/h	Peak-Hour Factor, PHF <i>0.89</i>
AADT		veh/day	%Trucks and Buses, P _T <i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.971</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
x f _p)	<i>212</i>	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>3.3</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave NB Off-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				740		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				517		V _D = veh/h	
		Ramp Volume, V _R				192			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				55.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	517	0.90	Level	16	0	0.926	1.00	622	
Ramp	192	0.83	Level	3	0	0.985	1.00	236	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 622 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	622	Exhibit 13-8	4700	No
					V _{FO} = V _F - V _R	386	Exhibit 13-8	4700	No
					V _R	236	Exhibit 13-10	2200	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	622	Exhibit 13-8 4400:All		No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 2.9 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.189 (Exhibit 13-12) S _R = 60.6 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 60.6 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave NB On-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			590			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			321			V _D = veh/h	
		Ramp Volume, V _R			167				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	321	0.89	Level	14	0	0.935	1.00	385	
Ramp	167	0.75	Level	7	0	0.966	1.00	232	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 385 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	617	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	617	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 6.5 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.287 (Exhibit 13-11) S _R = 58.4 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 58.4 mph (Exhibit 13-13)					D _s = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe				Freeway/Dir of Travel	10th Ave SB Off-ramp			
Agency or Company					Junction	I-15 and I-315			
Date Performed	9/15/2014				Jurisdiction				
Analysis Time Period	AM Peak				Analysis Year	2014			
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			463		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			352		V _D = veh/h		
		Ramp Volume, V _R			192				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			55.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	352	0.94	Level	8	0	0.962	1.00	391	
Ramp	192	0.83	Level	3	0	0.985	1.00	236	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13)				
L _{EQ} =					L _{EQ} =				
P _{FM} =					P _{FD} =				
V ₁₂ =					V ₁₂ =				
V ₃ or V _{av34}					V ₃ or V _{av34}				
Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No					Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No					Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
If Yes, V _{12a} =					If Yes, V _{12a} =				
pc/h (Equation 13-16, 13-18, or 13-19)					pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks									
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	391	Exhibit 13-8	4700	No
					V _{FO} = V _F - V _R	155	Exhibit 13-8	4700	No
					V _R	236	Exhibit 13-10	2200	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	391	Exhibit 13-8		4400:All
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D				
D _R = (pc/mi/ln)					D _R = 3.4 (pc/mi/ln)				
LOS = (Exhibit 13-2)					LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.189 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 60.6 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 60.6 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave SB On-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1500			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			458			V _D = veh/h	
		Ramp Volume, V _R			287				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	458	0.85	Level	7	0	0.966	1.00	559	
Ramp	287	0.77	Level	5	0	0.976	1.00	382	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 559 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	941	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	941	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 3.2 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.226 (Exhibit 13-11) S _R = 59.8 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.8 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave NB Off-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				740		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				722		V _D = veh/h	
		Ramp Volume, V _R				436			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				55.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	722	0.80	Level	10	0	0.952	1.00	948	
Ramp	436	0.83	Level	3	0	0.985	1.00	533	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 948 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	948	Exhibit 13-8	4700	No
					V _{FO} = V _F - V _R	415	Exhibit 13-8	4700	No
					V _R	533	Exhibit 13-10	2200	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	948	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 5.7 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.216 (Exhibit 13-12) S _R = 60.0 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 60.0 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave NB On-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			590		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			490		V _D = veh/h		
		Ramp Volume, V _R			262				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	490	0.87	Level	11	0	0.948	1.00	596	
Ramp	262	0.92	Level	4	0	0.980	1.00	290	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 596 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	886	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	886	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 8.6 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.289 (Exhibit 13-11) S _R = 58.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 58.3 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe				Freeway/Dir of Travel	10th Ave SB Off-ramp			
Agency or Company					Junction	I-15 and I-315			
Date Performed	9/15/2014				Jurisdiction				
Analysis Time Period	PM Peak				Analysis Year	2014			
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			463		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			491		V _D = veh/h		
		Ramp Volume, V _R			239				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			55.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	491	0.90	Level	14	0	0.935	1.00	586	
Ramp	239	0.83	Level	7	0	0.966	1.00	299	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 586 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	586	Exhibit 13-8	4700	No
					V _{FO} = V _F - V _R	287	Exhibit 13-8	4700	No
					V _R	299	Exhibit 13-10	2200	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	586	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 5.1 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.195 (Exhibit 13-12) S _R = 60.5 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 60.5 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave SB On-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			630		V _D = veh/h		
		Ramp Volume, V _R			384				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	630	0.93	Level	10	0	0.952	1.00	711	
Ramp	384	0.94	Level	5	0	0.976	1.00	419	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 711 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1130	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1130	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 4.7 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.228 (Exhibit 13-11) S _R = 59.8 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.8 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th EB Off-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				503		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				530		V _D = veh/h	
		Ramp Volume, V _R				55			
		Freeway Free-Flow Speed, S _{FF}				55.0			
		Ramp Free-Flow Speed, S _{FR}				35.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	530	0.87	Level	6	0	0.971	1.00	627	
Ramp	55	0.83	Level	5	0	0.976	1.00	68	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 627 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	627	Exhibit 13-8	4500	No
					V _{FO} = V _F - V _R	559	Exhibit 13-8	4500	No
					V _R	68	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	627	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 5.1 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.434 (Exhibit 13-12) S _R = 49.4 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 49.4 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th St EB On-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			930		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			979		V _D = veh/h		
		Ramp Volume, V _R			497				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	979	0.83	Level	4	0	0.980	1.00	1205	
Ramp	497	0.83	Level	3	0	0.985	1.00	608	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1205 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1813	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1813	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 13.5 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.280 (Exhibit 13-11) S _R = 51.4 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 51.4 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th WB Off-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				713		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				528		V _D = veh/h	
		Ramp Volume, V _R				216			
		Freeway Free-Flow Speed, S _{FF}				55.0			
		Ramp Free-Flow Speed, S _{FR}				35.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	528	0.82	Level	1	0	0.995	1.00	645	
Ramp	216	0.80	Level	0	0	1.000	1.00	269	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 645 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	645	Exhibit 13-8	4500	No
					V _{FO} = V _F - V _R	376	Exhibit 13-8	4500	No
					V _R	269	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	645	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 3.4 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.452 (Exhibit 13-12) S _R = 49.1 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 49.1 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th St WB On-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			505			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			454			V _D = veh/h	
		Ramp Volume, V _R			123				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	454	0.76	Level	6	0	0.971	1.00	614	
Ramp	123	0.80	Level	5	0	0.976	1.00	157	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 614 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	771	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	771	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 8.3 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.294 (Exhibit 13-11) S _R = 51.2 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 51.2 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe				Freeway/Dir of Travel	14th EB Off-ramp			
Agency or Company					Junction	I-315			
Date Performed	9/15/2014				Jurisdiction				
Analysis Time Period	PM Peak				Analysis Year	2014			
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			503		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			675		V _D = veh/h		
		Ramp Volume, V _R			183				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	675	0.83	Level	4	0	0.980	1.00	830	
Ramp	183	0.94	Level	3	0	0.985	1.00	198	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 830 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	830	Exhibit 13-8	4500	No
					V _{FO} = V _F - V _R	632	Exhibit 13-8	4500	No
					V _R	198	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	830	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 6.9 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.446 (Exhibit 13-12) S _R = 49.2 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 49.2 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th St EB On-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			930		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			1044		V _D = veh/h		
		Ramp Volume, V _R			523				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1044	0.90	Level	3	0	0.985	1.00	1177	
Ramp	523	0.94	Level	1	0	0.995	1.00	559	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1177 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1736	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1736	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 12.9 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.278 (Exhibit 13-11) S _R = 51.4 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 51.4 mph (Exhibit 13-13)					D _s = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe			Freeway/Dir of Travel	14th WB Off-ramp				
Agency or Company				Junction	I-315				
Date Performed	9/15/2014			Jurisdiction					
Analysis Time Period	PM Peak			Analysis Year	2014				
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			713		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			1279		V _D = veh/h		
		Ramp Volume, V _R			792				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1279	0.91	Level	3	0	0.985	1.00	1427	
Ramp	792	0.99	Level	2	0	0.990	1.00	810	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = using Equation (Exhibit 13-6) P _{FM} = V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = 1.000 using Equation (Exhibit 13-7) P _{FD} = V ₁₂ = 1427 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	1427	Exhibit 13-8	4500	No
					V _{FO} = V _F - V _R	617	Exhibit 13-8	4500	No
					V _R	810	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1427	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 10.1 (pc/mi/ln) LOS = B (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.501 (Exhibit 13-12) S _R = 48.5 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 48.5 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th St WB On-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			505		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			646		V _D = veh/h		
		Ramp Volume, V _R			173				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	646	0.93	Level	5	0	0.976	1.00	712	
Ramp	173	0.99	Level	1	0	0.995	1.00	176	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 712 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	888	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	888	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = 9.2 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.295 (Exhibit 13-11) S _R = 51.2 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 51.2 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central Ave NB Off			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year		2014			
Project Description I-15 Corridor Study										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D				1388		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				321		V _D = veh/h		
		Ramp Volume, V _R				192				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				45.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	321	0.89	Level	14	0	0.935	1.00	386		
Ramp	192	0.83	Level	10	0	0.952	1.00	244		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 386 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	386	Exhibit 13-8		4700	No
					V _{FO} = V _F - V _R	142	Exhibit 13-8		4700	No
					V _R	244	Exhibit 13-10		2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	386	Exhibit 13-8		4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = -4.9 (pc/mi/ln) LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.320 (Exhibit 13-12) S _R = 57.6 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 57.6 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central Ave NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year				
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1491			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			200			V _D = veh/h	
		Ramp Volume, V _R			50				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			55.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	200	0.83	Level	7	0	0.966	1.00	249	
Ramp	50	0.74	Level	40	0	0.833	1.00	82	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 249 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	331	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	331	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = -1.3 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.162 (Exhibit 13-11) S _R = 61.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 61.3 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central Ave SB Off			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year		2014			
Project Description I-15 Corridor Study										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D				1144		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				334		V _D = veh/h		
		Ramp Volume, V _R				136				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				45.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	334	0.83	Level	21	0	0.905	1.00	445		
Ramp	136	0.85	Level	2	0	0.990	1.00	162		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 445 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	445	Exhibit 13-8		4700 No	
					V _{FO} = V _F - V _R	283	Exhibit 13-8		4700 No	
					V _R	162	Exhibit 13-10		2100 No	
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	445	Exhibit 13-8		4400:All No	
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = -2.2 (pc/mi/ln) LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.313 (Exhibit 13-12) S _R = 57.8 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 57.8 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central Ave SB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year				
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				1379		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				352		V _D = veh/h	
		Ramp Volume, V _R				162			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				45.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	352	0.94	Level	8	0	0.962	1.00	389	
Ramp	162	0.76	Level	5	0	0.976	1.00	217	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 389 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	606	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	606	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 1.5 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.204 (Exhibit 13-11) S _R = 60.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.3 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central Ave NB Off		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				1388		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				490		V _D = veh/h	
		Ramp Volume, V _R				227			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				45.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	490	0.87	Level	11	0	0.948	1.00	594	
Ramp	227	0.75	Level	6	0	0.971	1.00	313	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 594 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	594	Exhibit 13-8	4700	No
			V _{FO} = V _F - V _R	281	Exhibit 13-8	4700	No		
			V _R	313	Exhibit 13-10	2100	No		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	594	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = -3.1 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.326 (Exhibit 13-12) S _R = 57.5 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 57.5 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Centrall NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1491			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			359			V _D = veh/h	
		Ramp Volume, V _R			118				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			55.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	359	0.97	Level	8	0	0.962	1.00	385	
Ramp	118	0.81	Level	1	0	0.995	1.00	146	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 385 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	531	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	531	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 0.2 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.164 (Exhibit 13-11) S _R = 61.2 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 61.2 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central Ave SB Off			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		PM Peak			Analysis Year		2014			
Project Description I-15 Corridor Study										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp			
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L _{up} = ft		Deceleration Lane Length L _D			1144		L _{down} = ft			
V _u = veh/h		Freeway Volume, V _F			309		V _D = veh/h			
		Ramp Volume, V _R			72					
		Freeway Free-Flow Speed, S _{FF}			65.0					
		Ramp Free-Flow Speed, S _{FR}			45.0					
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	309	0.79	Level	14	0	0.935	1.00	419		
Ramp	72	0.90	Level	6	0	0.971	1.00	82		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 419 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	419	Exhibit 13-8		4700	No
					V _{FO} = V _F - V _R	337	Exhibit 13-8		4700	No
					V _R	82	Exhibit 13-10		2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	419	Exhibit 13-8		4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = -2.4 (pc/mi/ln) LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.305 (Exhibit 13-12) S _R = 58.0 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 58.0 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Centrall SB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1379		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			491		V _D = veh/h		
		Ramp Volume, V _R			260				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	491	0.90	Level	14	0	0.935	1.00	584	
Ramp	260	0.89	Level	6	0	0.971	1.00	301	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 584 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	885	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	885	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 3.6 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.206 (Exhibit 13-11) S _R = 60.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.3 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Emerson Junction NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year				
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				980		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				288		V _D = veh/h	
		Ramp Volume, V _R				76			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				55.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	288	0.89	Level	21	0	0.905	1.00	358	
Ramp	76	0.83	Level	15	0	0.930	1.00	99	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 358 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	457	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	457	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 2.8 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.219 (Exhibit 13-11) S _R = 60.0 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.0 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Emerson Junction SB Off		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			340		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			548		V _D = veh/h		
		Ramp Volume, V _R			220				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			50.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	548	0.87	Level	6	0	0.971	1.00	649	
Ramp	220	0.88	Level	5	0	0.976	1.00	256	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 649 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	649	Exhibit 13-8		4700 No
					V _{FO} = V _F - V _R	393	Exhibit 13-8		4700 No
					V _R	256	Exhibit 13-10		2100 No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	649	Exhibit 13-8		4400:All No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 6.8 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.256 (Exhibit 13-12) S _R = 59.1 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 59.1 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Emerson Junction NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			980		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			696		V _D = veh/h		
		Ramp Volume, V _R			334				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			55.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	696	0.94	Level	6	0	0.971	1.00	763	
Ramp	334	0.92	Level	5	0	0.976	1.00	373	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 763 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1136	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1136	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 8.0 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.225 (Exhibit 13-11) S _R = 59.8 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.8 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Emerson Junction SB Off		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				340		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				456		V _D = veh/h	
		Ramp Volume, V _R				144			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				50.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	456	0.88	Level	13	0	0.939	1.00	552	
Ramp	144	0.94	Level	7	0	0.966	1.00	159	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 552 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	552	Exhibit 13-8		4700 No
					V _{FO} = V _F - V _R	393	Exhibit 13-8		4700 No
					V _R	159	Exhibit 13-10		2100 No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	552	Exhibit 13-8		4400:All No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 5.9 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.247 (Exhibit 13-12) S _R = 59.3 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 59.3 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill NB Off			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year		2014			
Project Description I-15 Corridor Study										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D				323		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				244		V _D = veh/h		
		Ramp Volume, V _R				17				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				50.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	244	0.92	Level	10	0	0.952	1.00	278		
Ramp	17	0.74	Level	35	0	0.851	1.00	27		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 278 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	278	Exhibit 13-8	4700	No	
					V _{FO} = V _F - V _R	251	Exhibit 13-8	4700	No	
					V _R	27	Exhibit 13-10	2100	No	
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	278	Exhibit 13-8 4400:All		No	
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 3.7 (pc/mi/ln) LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.235 (Exhibit 13-12) S _R = 59.6 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 59.6 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year				
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			517		V _D = veh/h		
		Ramp Volume, V _R			301				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			50.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	517	0.90	Grade	16	0	0.926	1.00	620	
Ramp	301	0.82	Level	23	0	0.897	1.00	407	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 620 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1027	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1027	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 3.9 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.182 (Exhibit 13-11) S _R = 60.8 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.8 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill SB Off			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year		2014			
Project Description I-15 Corridor Study										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D				358		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				458		V _D = veh/h		
		Ramp Volume, V _R				309				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				50.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	458	0.85	Grade	7	0	0.891	1.00	605		
Ramp	309	0.79	Level	7	0	0.966	1.00	403		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 605 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	605	Exhibit 13-8		4700 No	
					V _{FO} = V _F - V _R	202	Exhibit 13-8		4700 No	
					V _R	403	Exhibit 13-10		2100 No	
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	605	Exhibit 13-8		4400:All No	
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 6.2 (pc/mi/ln) LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.269 (Exhibit 13-12) S _R = 58.8 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 58.8 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill NB On			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year					
Project Description I-15 Corridor Study										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				235		V _D = veh/h		
		Ramp Volume, V _R				38				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				50.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	235	0.79	Level	20	0	0.909	1.00	327		
Ramp	38	0.62	Level	40	0	0.833	1.00	73		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 327 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}	400	Exhibit 13-8		No	V _F		Exhibit 13-8			
					V _{FO} = V _F - V _R		Exhibit 13-8			
					V _R		Exhibit 13-10			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}	400	Exhibit 13-8		No	V ₁₂		Exhibit 13-8			
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = -0.8 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = 0.177 (Exhibit 13-11) S _R = 60.9 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.9 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill NB Off			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		PM Peak			Analysis Year		2014			
Project Description I-15 Corridor Study										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D				323		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				249		V _D = veh/h		
		Ramp Volume, V _R				35				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				50.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	249	0.96	Level	12	0	0.943	1.00	275		
Ramp	35	0.74	Level	42	0	0.826	1.00	57		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 275 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	275	Exhibit 13-8		4700 No	
					V _{FO} = V _F - V _R	218	Exhibit 13-8		4700 No	
					V _R	57	Exhibit 13-10		2100 No	
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	275	Exhibit 13-8		4400:All No	
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 3.7 (pc/mi/ln) LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.238 (Exhibit 13-12) S _R = 59.5 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 59.5 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			722		V _D = veh/h		
		Ramp Volume, V _R			506				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			50.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	722	0.80	Grade	10	0	0.952	1.00	948	
Ramp	506	0.74	Level	9	0	0.957	1.00	714	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 948 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1662	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1662	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 8.7 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.192 (Exhibit 13-11) S _R = 60.6 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.6 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe			Freeway/Dir of Travel	Gore Hill SB Off				
Agency or Company				Junction					
Date Performed	9/9/2014			Jurisdiction					
Analysis Time Period	PM Peak			Analysis Year	2014				
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			358		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			630		V _D = veh/h		
		Ramp Volume, V _R			290				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			50.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	630	0.93	Grade	10	0	0.952	1.00	711	
Ramp	290	0.80	Level	16	0	0.926	1.00	391	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 711 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	711	Exhibit 13-8		4700 No
					V _{FO} = V _F - V _R	320	Exhibit 13-8		4700 No
					V _R	391	Exhibit 13-10		2100 No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	711	Exhibit 13-8		4400:All No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 7.1 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.268 (Exhibit 13-12) S _R = 58.8 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 58.8 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill SB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			365		V _D = veh/h		
		Ramp Volume, V _R			39				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			50.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	365	0.93	Level	6	0	0.971	1.00	404	
Ramp	39	0.65	Level	41	0	0.830	1.00	72	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 404 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	476	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	476	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = -0.3 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.177 (Exhibit 13-11) S _R = 60.9 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.9 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

I-15 Corridor Study

Vistro File: F:\...I-15 Corridor.vistropdb
Report File: F:\...LOS_Report_AM.pdf

Scenario 1: AM Scenario
9/15/2014

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Tri Hill and Frontage Airport Rd	Two-way stop	HCM2010	NEBL	0.202	13.5	B
2	I-15 NB and Airport Rd	Two-way stop	HCM2010	NEBT	0.000	16.9	C
3	I-15 SB On and Airport RD	Two-way stop	HCM2010	NWBL	0.046	8.6	A
4	I-15 SB Off and Airport RD Frontage	Two-way stop	HCM2010	SWBL	0.272	12.7	B
5	14th St SW and I-315 EB	Signalized	HCM2010	SBL	0.175	14.4	B
6	14th St SW and I-315 WB	Signalized	HCM2010	EBR	0.254	23.0	C
7	Fox Farm and I-315	Signalized	HCM2010	NEBL	0.687	45.3	D
8	Central Ave and I15 SB	Two-way stop	HCM2010	SBL	0.499	28.0	D
9	Central Ave and I-15 NB	Two-way stop	HCM2010	NBL	0.080	19.9	C
10	Central Ave and Vaughn Rd	Two-way stop	HCM2010	SBL	0.377	27.1	D
11	Vaughn Rd and I-15 SB	Two-way stop	HCM2010	SBL	0.260	10.1	B
12	Vaughn Rd and I-15 NB	Two-way stop	HCM2010	EBL	0.000	7.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report
#1: Tri Hill and Frontage Airport Rd**

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.202

Intersection Setup

Name	Northeastbound		Northwestbound		Southeastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Northeastbound		Northwestbound		Southeastbound	
Base Volume Input [veh/h]	83	19	9	189	97	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	21.70	31.10	22.20	28.60	25.70	5.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	19	9	189	97	88
Peak Hour Factor	0.7410	0.4750	0.5630	0.8750	0.9330	0.7590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	10	4	54	26	29
Total Analysis Volume [veh/h]	112	40	16	216	104	116
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.05	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.48	11.42	7.94	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.99	0.99	0.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	24.73	24.73	0.98	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.93		0.55		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.47					
Intersection LOS	B					

**Intersection Level Of Service Report
#2: I-15 NB and Airport Rd**

Control Type:	Two-way stop	Delay (sec / veh):	16.9
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	+						┌			┐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	4	0	13	0	0	0	0	49	222	79	173	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	46.20	2.00	2.00	2.00	2.00	38.80	26.60	12.70	10.90	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	0	13	0	0	0	0	49	222	79	173	0
Peak Hour Factor	0.5000	1.0000	0.8130	1.0000	1.0000	1.0000	1.0000	0.7210	0.8670	0.7050	0.9010	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	4	0	0	0	0	17	64	28	48	0
Total Analysis Volume [veh/h]	8	0	16	0	0	0	0	68	256	112	192	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
d_M, Delay for Movement [s/veh]	14.89	16.91	10.09	0.00	0.00	0.00	0.00	0.00	0.00	8.38	0.00	0.00
Movement LOS	B	C	B					A	A	A	A	
95th-Percentile Queue Length [veh]	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	1.03	1.03	0.00
95th-Percentile Queue Length [ft]	3.34	3.34	3.34	0.00	0.00	0.00	0.00	0.00	0.00	25.85	25.85	0.00
d_A, Approach Delay [s/veh]	11.69			0.00			0.00			3.09		
Approach LOS	B			A			A			A		
d_I, Intersection Delay [s/veh]	1.87											
Intersection LOS	C											

**Intersection Level Of Service Report
#3: I-15 SB On and Airport RD**

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.046

Intersection Setup

Name	Northeastbound		Northwestbound		Southeastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Northeastbound		Northwestbound		Southeastbound	
Base Volume Input [veh/h]	0	0	32	23	251	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	43.80	21.70	14.00	16.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	32	23	251	6
Peak Hour Factor	1.0000	1.0000	0.6670	0.6390	0.8720	0.3750
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	12	9	72	4
Total Analysis Volume [veh/h]	0	0	48	36	288	16
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.58	0.00	0.00	0.00
Movement LOS			A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.26	0.26	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	6.49	6.49	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		4.90		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.06					
Intersection LOS	A					

**Intersection Level Of Service Report
#4: I-15 SB Off and Airport RD Frontage**

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.272

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	T			T			T			T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	5	0	44	159	54	96	8	12	0	0	40	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	11.30	10.10	7.40	3.10	12.50	8.30	2.00	2.00	2.50	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	0	44	159	54	96	8	12	0	0	40	4
Peak Hour Factor	0.4170	1.0000	0.5240	0.8110	0.9000	0.7060	0.4000	0.7500	1.0000	1.0000	0.7690	0.5000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	21	49	15	34	5	4	0	0	13	2
Total Analysis Volume [veh/h]	12	0	84	196	60	136	20	16	0	0	52	8
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no	no		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.09	0.27	0.08	0.13	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.78	0.00	9.10	12.67	12.44	8.90	7.47	0.00	0.00	0.00	0.00	0.00
Movement LOS	B		A	B	B	A	A	A			A	A
95th-Percentile Queue Length [veh]	0.34	0.00	0.34	1.59	1.59	0.44	0.07	0.07	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	8.59	0.00	8.59	39.68	39.68	11.00	1.87	1.87	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.31			11.33			4.15			0.00		
Approach LOS	A			B			A			A		
d_I, Intersection Delay [s/veh]	9.39											
Intersection LOS	B											

**Intersection Level Of Service Report
#5: 14th St SW and I-315 EB**

Control Type: Signalized
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 14.4
 Level Of Service: B
 Volume to Capacity (v/c): 0.175

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	7	66	286	142	91	60	44	69	3	20	30	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.30	1.50	1.70	3.50	4.40	5.00	0.00	4.30	0.00	10.00	3.30	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	66	286	142	91	60	44	69	3	20	30	5
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	20	86	43	27	18	13	21	1	6	9	2
Total Analysis Volume [veh/h]	8	80	345	171	110	72	53	83	4	24	36	6
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	3	0	6	7	7	4	0	3	8	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	15	0	5	15	15	5	0	15	15	0
Maximum Green [s]	0	50	20	0	50	20	20	60	0	20	60	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	22	18	0	22	18	18	20	0	18	20	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	10	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	1.0	0.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall		no	no		no	no	no	no		no	no	
Maximum Recall		no	no		no	no	no	no		no	no	
Pedestrian Recall		no	no		no	no	no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	15	15	34	15	15	33	28	12	12	28	10	10
g / C, Green / Cycle	0.24	0.24	0.57	0.24	0.24	0.54	0.47	0.20	0.20	0.47	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.04	0.22	0.13	0.06	0.05	0.03	0.05	0.00	0.02	0.02	0.00
s, saturation flow rate [veh/h]	1140	1872	1588	1294	1820	1538	1631	1822	1615	1432	1839	1615
c, Capacity [veh/h]	299	452	912	342	439	836	920	360	319	797	307	270
d1, Uniform Delay [s]	21.49	18.04	6.95	23.72	18.38	6.55	8.80	20.24	19.36	8.71	21.23	20.89
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.19	0.26	1.13	0.30	0.04	0.03	0.32	0.02	0.02	0.17	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

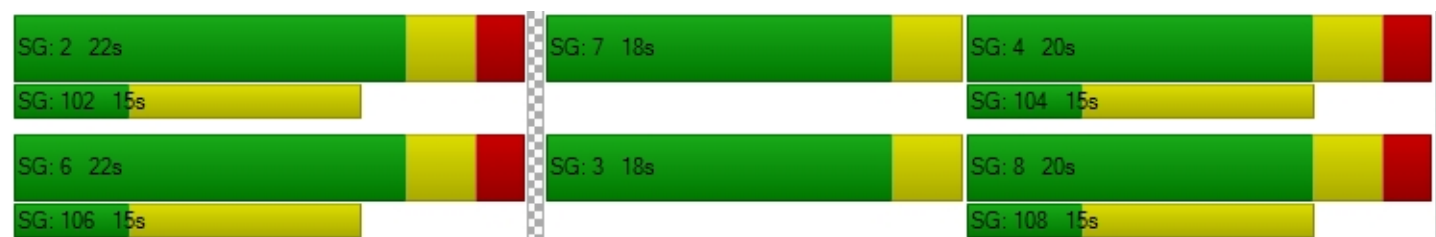
X, volume / capacity	0.03	0.18	0.38	0.50	0.25	0.09	0.06	0.23	0.01	0.03	0.12	0.02
d, Delay for Lane Group [s/veh]	21.52	18.22	7.21	24.85	18.67	6.60	8.83	20.56	19.38	8.72	21.39	20.92
Lane Group LOS	C	B	A	C	B	A	A	C	B	A	C	C
Critical Lane Group	no	no	yes	no	no	no	no	no	no	no	yes	no
50th-Percentile Queue Length [veh]	0.09	0.84	1.92	2.26	1.18	0.37	0.33	0.94	0.04	0.15	0.42	0.07
50th-Percentile Queue Length [ft]	2.32	20.94	47.91	56.41	29.43	9.15	8.37	23.62	1.09	3.74	10.46	1.72
95th-Percentile Queue Length [veh]	0.17	1.51	3.45	4.06	2.12	0.66	0.60	1.70	0.08	0.27	0.75	0.12
95th-Percentile Queue Length [ft]	4.18	37.70	86.24	101.54	52.97	16.46	15.06	42.51	1.95	6.74	18.82	3.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.52	18.22	7.21	24.85	18.67	6.60	8.83	20.56	19.38	8.72	21.39	20.92
Movement LOS	C	B	A	C	B	A	A	C	B	A	C	C
d_A, Approach Delay [s/veh]	9.51			19.20			16.09			16.74		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	14.37											
Intersection LOS	B											
Intersection V/C	0.175											

Sequence

Ring 1	2	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	3	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#6: 14th St SW and I-315 WB**

Control Type: Signalized
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 23.0
 Level Of Service: C
 Volume to Capacity (v/c): 0.254

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	11	17	90	26	136	0	0	7	15	162	16	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.10	0.00	4.40	7.70	1.50	0.00	0.00	0.00	0.00	2.50	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	17	90	26	136	0	0	7	15	162	16	38
Peak Hour Factor	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	5	28	8	42	0	0	2	5	50	5	12
Total Analysis Volume [veh/h]	14	21	112	32	169	0	0	9	19	201	20	47
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	1	2	0	1	0	0	3	0	0	2	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	35	40	0	35	0	0	25	0	0	40	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	25	19	0	25	0	0	16	0	0	19	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	9	7	0	9	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	11	7	0	11	0	0	0	0	0	7	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		no	no		no			no			no	
Maximum Recall		no	no		no			no			no	
Pedestrian Recall		no	no		no			no			no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	11	27	11	11	2	11	11
g / C, Green / Cycle	0.19	0.19	0.45	0.19	0.19	0.03	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.08	0.03	0.10	0.02	0.14	0.03
s, saturation flow rate [veh/h]	1019	1710	1392	1181	1685	1527	1636	1454
c, Capacity [veh/h]	178	321	624	283	316	48	290	257
d1, Uniform Delay [s]	27.05	20.04	9.94	22.89	22.00	28.67	23.49	20.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.08	0.14	0.17	1.40	10.79	4.15	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

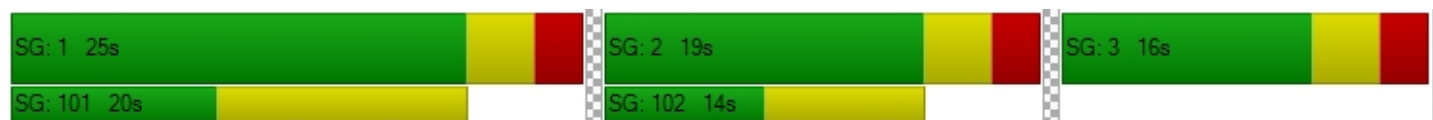
X, volume / capacity	0.08	0.07	0.18	0.11	0.53	0.58	0.76	0.18
d, Delay for Lane Group [s/veh]	27.24	20.13	10.07	23.06	23.41	39.47	27.64	21.33
Lane Group LOS	C	C	B	C	C	D	C	C
Critical Lane Group	no	no	no	no	yes	yes	yes	no
50th-Percentile Queue Length [veh]	0.19	0.23	0.79	0.39	2.12	0.52	3.10	0.55
50th-Percentile Queue Length [ft]	4.78	5.84	19.74	9.76	53.01	13.05	77.54	13.75
95th-Percentile Queue Length [veh]	0.34	0.42	1.42	0.70	3.82	0.94	5.58	0.99
95th-Percentile Queue Length [ft]	8.60	10.51	35.54	17.57	95.41	23.49	139.58	24.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.24	20.13	10.07	23.06	23.41	23.41	39.47	39.47	39.47	27.64	27.64	21.33
Movement LOS	C	C	B	C	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	13.14			23.35			39.47			26.53		
Approach LOS	B			C			D			C		
d_I, Intersection Delay [s/veh]	23.05											
Intersection LOS	C											
Intersection V/C	0.254											

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#7: Fox Farm and I-315**

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name	Northbound			Southbound			Northeastbound			Southwestbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Northeastbound			Southwestbound		
Base Volume Input [veh/h]	50	219	437	172	90	121	161	732	45	101	335	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.90	0.70	1.80	2.20	4.10	6.20	5.20	2.20	4.00	6.00	3.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	219	437	172	90	121	161	732	45	101	335	136
Peak Hour Factor	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	69	137	54	28	38	50	229	14	32	105	43
Total Analysis Volume [veh/h]	63	274	548	216	113	152	202	917	56	127	420	170
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	1	8	0	3	6	6	4	0	8	2	5
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	5	5	5	0	5	5	0
Maximum Green [s]	0	60	60	0	60	60	60	60	0	60	60	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	21	47	0	28	76	76	54	0	47	25	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	1.0	0.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall		no	no		no	no	no	no		no	no	
Maximum Recall		no	no		no	no	no	no		no	no	
Pedestrian Recall		no	no		no	no	no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	C	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	1.00	3.00	3.00	1.00	3.00	3.00
g_i, Effective Green Time [s]	31	31	99	27	27	53	20	44	44	31	54	54
g / C, Green / Cycle	0.21	0.21	0.66	0.18	0.18	0.35	0.14	0.29	0.29	0.20	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.16	0.34	0.15	0.03	0.10	0.12	0.27	0.04	0.04	0.12	0.11
s, saturation flow rate [veh/h]	1793	1714	1604	1414	3540	1551	1704	3439	1580	3379	3413	1557
c, Capacity [veh/h]	370	353	1058	290	649	547	231	997	458	688	1222	557
d1, Uniform Delay [s]	48.99	56.26	13.19	60.81	51.67	34.87	63.55	51.55	39.19	49.42	35.26	34.71
k, delay calibration	0.11	0.11	0.35	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	3.68	1.29	3.78	0.13	0.27	9.88	4.00	0.12	0.13	0.17	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.78	0.52	0.74	0.17	0.28	0.87	0.92	0.12	0.18	0.34	0.30
d, Delay for Lane Group [s/veh]	49.21	59.94	14.48	64.59	51.80	35.14	73.43	55.55	39.31	49.55	35.42	35.01
Lane Group LOS	D	E	B	E	D	D	E	E	D	D	D	D
Critical Lane Group	no	no	yes	yes	no	no	no	yes	no	no	no	no
50th-Percentile Queue Length [veh]	1.99	10.20	9.77	8.38	1.83	4.11	8.23	17.25	1.56	2.01	5.74	4.60
50th-Percentile Queue Length [ft]	49.82	255.07	244.37	209.46	45.76	102.67	205.68	431.14	39.12	50.27	143.52	114.99
95th-Percentile Queue Length [veh]	3.59	15.44	14.90	13.13	3.29	7.39	12.93	24.06	2.82	3.62	9.67	8.12
95th-Percentile Queue Length [ft]	89.67	386.04	372.56	328.14	82.36	184.80	323.28	601.41	70.42	90.48	241.76	202.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.21	59.94	14.48	64.59	51.80	35.14	73.43	55.55	39.31	49.55	35.42	35.01
Movement LOS	D	E	B	E	D	D	E	E	D	D	D	D
d_A, Approach Delay [s/veh]	31.02			52.28			57.85			37.83		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	45.33											
Intersection LOS	D											
Intersection V/C	0.687											

Sequence

Ring 1	1	3	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	2	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#8: Central Ave and I15 SB**

Control Type:	Two-way stop	Delay (sec / veh):	28.0
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

Intersection Setup

Name	Southbound			Eastbound			Westbound			Northwestbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Southbound			Eastbound			Westbound			Northwestbound		
Base Volume Input [veh/h]	130	0	6	0	191	39	123	88	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	0.00	0.00	2.00	3.10	0.00	6.50	11.30	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	130	0	6	0	191	39	123	88	0	0	0	0
Peak Hour Factor	0.8550	1.0000	0.7500	1.0000	0.6920	0.7500	0.7690	0.8150	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	0	2	0	69	13	40	27	0	0	0	0
Total Analysis Volume [veh/h]	152	0	8	0	276	52	160	108	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.50	0.00	0.01	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	28.03	27.54	8.82	0.00	0.00	0.00	8.27	0.00	0.00	0.00	0.00	0.00
Movement LOS	D	D	A		A	A	A	A				
95th-Percentile Queue Length [veh]	2.63	2.63	0.03	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	65.65	65.65	0.64	0.00	0.00	0.00	10.86	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	27.07			0.00			4.94			0.00		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	7.48											
Intersection LOS	D											

**Intersection Level of Service Report
#9: Central Ave and I-15 NB**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 19.9
 Level Of Service: C
 Volume to Capacity (v/c): 0.080

Intersection Setup

Name	Northbound			Eastbound			Westbound			Southeastbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Eastbound			Westbound			Southeastbound		
Base Volume Input [veh/h]	15	0	177	6	305	0	0	202	44	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	10.80	16.70	2.00	2.00	2.00	11.40	13.60	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	0	177	6	305	0	0	202	44	0	0	0
Peak Hour Factor	0.5360	1.0000	0.8510	0.7500	0.7190	1.0000	1.0000	0.8420	0.7330	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	52	2	106	0	0	60	15	0	0	0
Total Analysis Volume [veh/h]	28	0	208	8	424	0	0	240	60	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.00	0.34	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	19.87	19.21	15.45	7.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	C	C	C	A	A			A	A			
95th-Percentile Queue Length [veh]	2.07	2.07	2.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	51.73	51.73	51.73	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.98			0.15			0.00			0.00		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	3.96											
Intersection LOS	C											

**Intersection Level Of Service Report
#10: Central Ave and Vaughn Rd**

Control Type:	Two-way stop	Delay (sec / veh):	27.1
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.377

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	77	60	71	410	184	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.10	6.70	7.00	5.10	11.40	6.20
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	60	71	410	184	65
Peak Hour Factor	0.7700	0.7890	0.8450	0.8010	0.8520	0.7740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	19	21	128	54	21
Total Analysis Volume [veh/h]	100	76	84	512	216	84
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.10	0.07	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	27.07	18.19	8.13	0.00	0.00	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.47	2.47	0.22	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	61.70	61.70	5.47	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	23.23		1.15		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.45					
Intersection LOS	D					

**Intersection Level Of Service Report
#11: Vaughn Rd and I-15 SB**

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.260

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	219	1	0	27	12	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.60	0.00	2.00	11.10	8.30	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	219	1	0	27	12	0
Peak Hour Factor	0.8830	0.2500	1.0000	0.8440	0.7500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	1	0	8	4	0
Total Analysis Volume [veh/h]	248	4	0	32	16	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.26	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.11	9.71	0.00	0.00	0.00	0.00
Movement LOS	B	A		A	A	
95th-Percentile Queue Length [veh]	1.06	1.06	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	26.50	26.50	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.10		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	8.49					
Intersection LOS	B					

**Intersection Level Of Service Report
#12: Vaughn Rd and I-15 NB**

Control Type:	Two-way stop	Delay (sec / veh):	7.3
Analysis Method:	HCM2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Eastbound		Westbound		Southeastbound	
Approach						
Lane Configuration	1		1r			
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Eastbound		Westbound		Southeastbound	
Base Volume Input [veh/h]	0	237	19	76	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	5.30	14.50	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	237	19	76	0	0
Peak Hour Factor	1.0000	0.8590	0.5940	0.8260	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	69	8	23	0	0
Total Analysis Volume [veh/h]	0	276	32	92	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

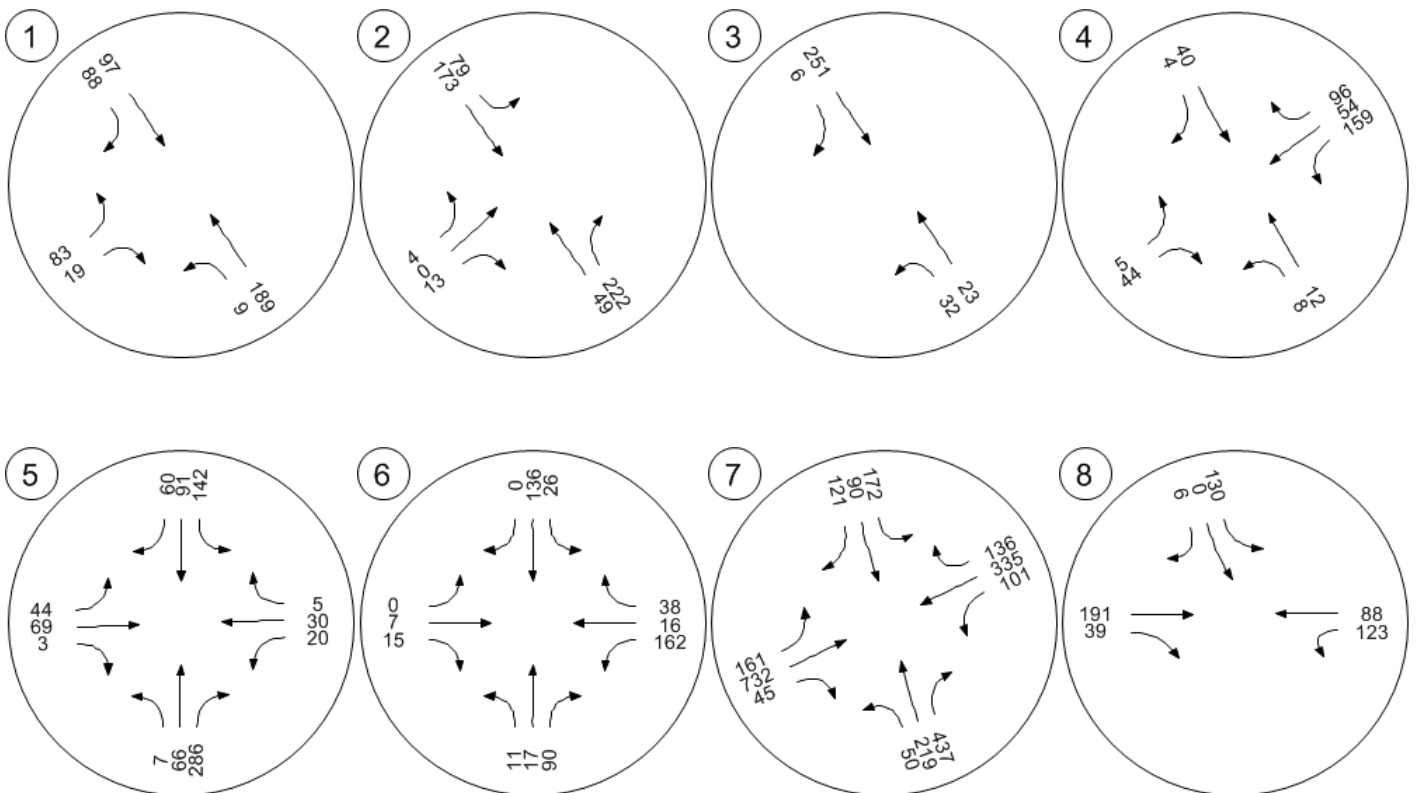
Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

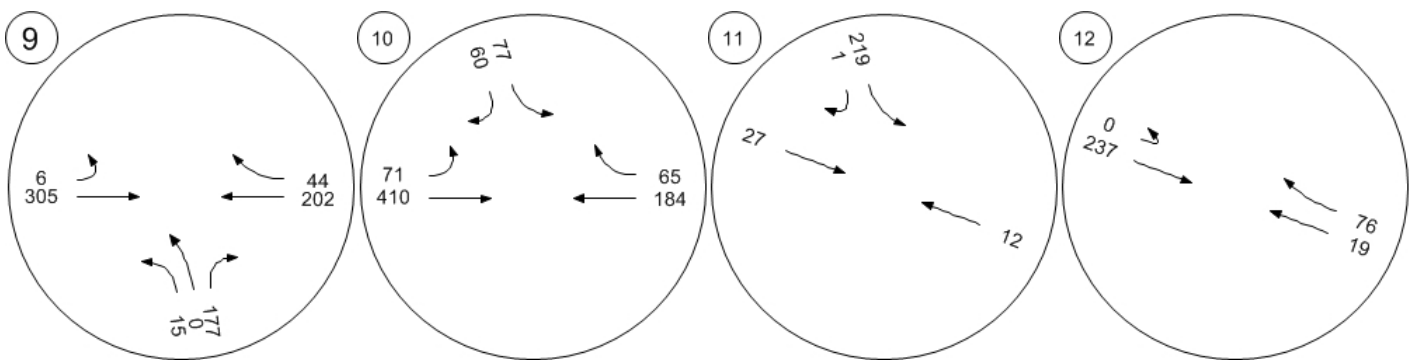
V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.26	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A		
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Traffic Volume - Base Volume

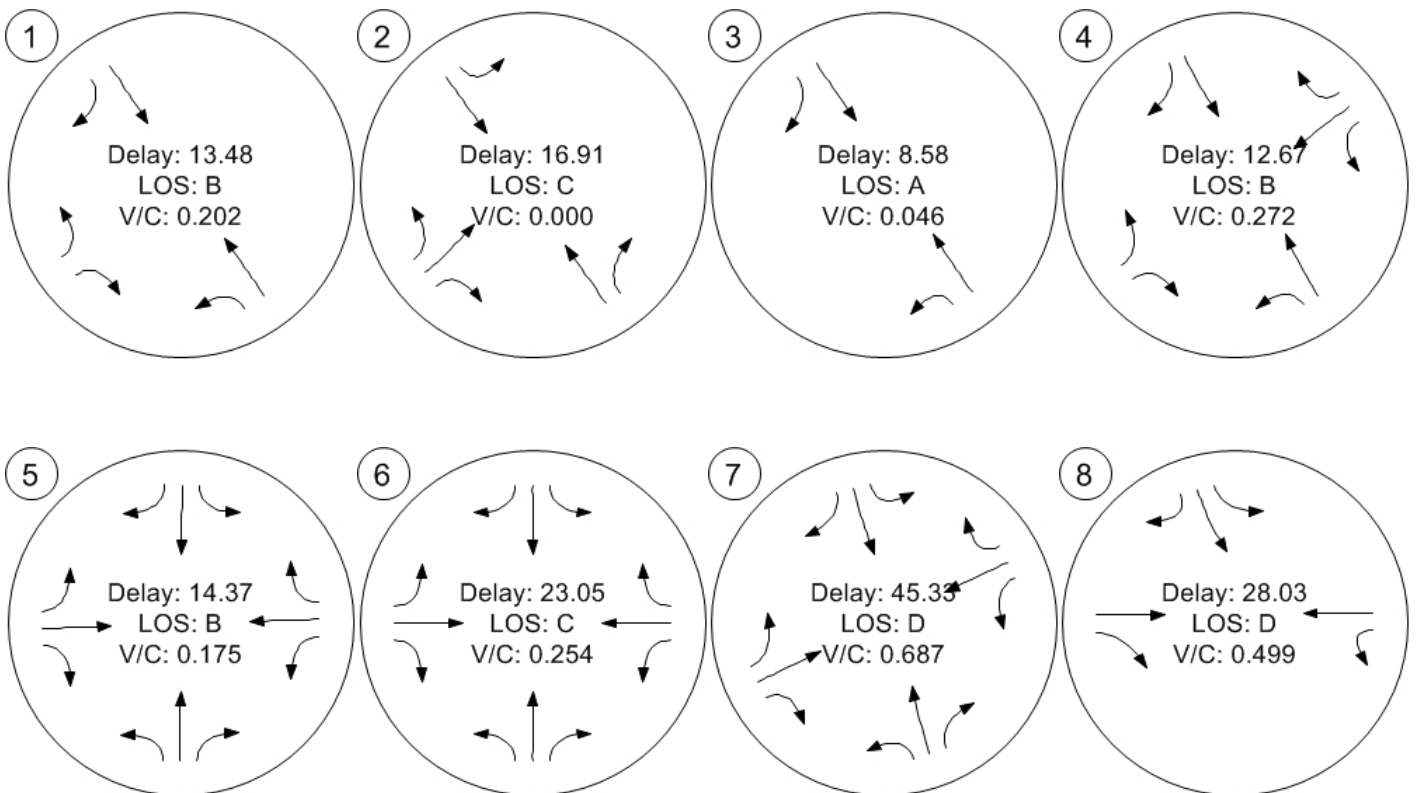


Version 2.00-10

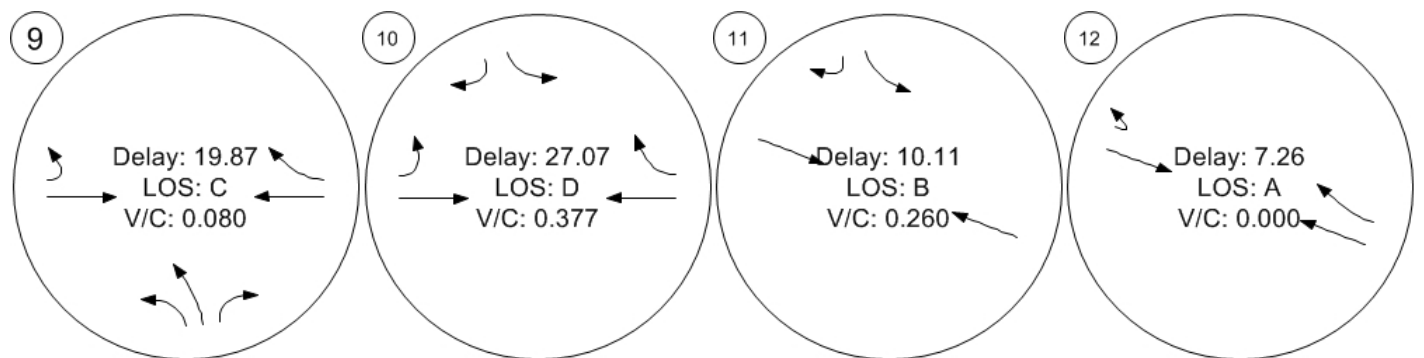
Traffic Volume - Base Volume



Traffic Conditions



Traffic Conditions



I-15 Corridor Study

Vistro File: F:\...\I-15 Corridor.vistropdb
Report File: F:\...\LOS_Report_PM.pdf

Scenario 2: PM Scenario
9/15/2014

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Tri Hill and Frontage Airport Rd	Two-way stop	HCM2010	NEBL	0.256	14.5	B
2	I-15 NB and Airport Rd	Two-way stop	HCM2010	NEBT	0.053	55.4	F
3	I-15 SB On and Airport RD	Two-way stop	HCM2010	NWBL	0.063	11.0	B
4	I-15 SB Off and Airport RD Frontage	Two-way stop	HCM2010	SWBL	0.660	35.3	E
5	14th St SW and I-315 EB	Signalized	HCM2010	NBL	0.368	13.0	B
6	14th St SW and I-315 WB	Signalized	HCM2010	EBR	0.536	19.4	B
7	Fox Farm and I-315	Signalized	HCM2010	NBT	0.795	38.5	D
8	Central Ave and I15 SB	Two-way stop	HCM2010	SBL	0.432	42.0	E
9	Central Ave and I-15 NB	Two-way stop	HCM2010	NBL	0.303	29.1	D
10	Central Ave and Vaughn Rd	Two-way stop	HCM2010	SBL	0.576	65.0	F
11	Vaughn Rd and I-15 SB	Two-way stop	HCM2010	SBL	0.177	10.1	B
12	Vaughn Rd and I-15 NB	Two-way stop	HCM2010	EBL	0.000	7.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report
#1: Tri Hill and Frontage Airport Rd**

Control Type:	Two-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.256

Intersection Setup

Name	Northeastbound		Northwestbound		Southeastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Northeastbound		Northwestbound		Southeastbound	
Base Volume Input [veh/h]	75	7	9	160	207	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	0.00	22.20	33.80	18.90	15.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	7	9	160	207	70
Peak Hour Factor	0.5680	0.4380	0.7500	0.8000	0.8480	0.8330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	4	3	50	61	21
Total Analysis Volume [veh/h]	132	16	12	200	244	84
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.26	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.52	12.30	8.23	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.12	1.12	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	28.04	28.04	0.81	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.28		0.47		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.22					
Intersection LOS	B					

**Intersection Level Of Service Report
#2: I-15 NB and Airport Rd**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 55.4
 Level Of Service: F
 Volume to Capacity (v/c): 0.053

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	+						┌			┐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name												
Base Volume Input [veh/h]	2	2	31	0	0	0	0	47	197	307	236	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	47.40	2.00	2.00	2.00	2.00	40.40	20.80	0.70	17.40	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	31	0	0	0	0	47	197	307	236	0
Peak Hour Factor	0.5000	0.5000	0.7750	1.0000	1.0000	1.0000	1.0000	0.6910	0.8210	0.6910	0.8680	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	10	0	0	0	0	17	60	111	68	0
Total Analysis Volume [veh/h]	4	4	40	0	0	0	0	68	240	444	272	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0



Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00
d_M, Delay for Movement [s/veh]	48.66	55.37	12.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.40	0.00	0.00
Movement LOS	E	F	B						A	A	A	A	
95th-Percentile Queue Length [veh]	0.56	0.56	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.74	3.74	0.00
95th-Percentile Queue Length [ft]	13.96	13.96	13.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.56	93.56	0.00
d_A, Approach Delay [s/veh]	19.19			0.00			0.00			5.83			
Approach LOS	C			A			A			A			
d_I, Intersection Delay [s/veh]	4.75												
Intersection LOS	F												

**Intersection Level Of Service Report
#3: I-15 SB On and Airport RD**

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.063

Intersection Setup

Name	Northeastbound		Northwestbound		Southeastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Northeastbound		Northwestbound		Southeastbound	
Base Volume Input [veh/h]	0	0	25	21	542	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	64.00	19.10	7.30	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	25	21	542	14
Peak Hour Factor	1.0000	1.0000	0.6250	0.7500	0.7450	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	10	7	182	5
Total Analysis Volume [veh/h]	0	0	40	28	728	20
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	11.03	0.00	0.00	0.00
Movement LOS			B	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.36	0.36	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	8.91	8.91	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		6.49		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.54					
Intersection LOS	B					

**Intersection Level Of Service Report
#4: I-15 SB Off and Airport RD Frontage**

Control Type:	Two-way stop	Delay (sec / veh):	35.3
Analysis Method:	HCM2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	T			T			T			T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	0	0	55	217	26	47	8	15	0	0	286	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	1.80	18.90	11.50	2.10	37.50	6.70	2.00	2.00	1.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	55	217	26	47	8	15	0	0	286	1
Peak Hour Factor	1.0000	1.0000	0.7240	0.8350	0.7220	0.6910	0.6670	0.7500	1.0000	1.0000	0.6810	0.2500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	19	65	9	17	3	5	0	0	105	1
Total Analysis Volume [veh/h]	0	0	76	260	36	68	12	20	0	0	420	4
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no	no		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.12	0.66	0.08	0.06	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.08	0.00	11.47	35.33	33.80	8.64	8.76	0.00	0.00	0.00	0.00	0.00
Movement LOS	B		B	E	D	A	A	A			A	A
95th-Percentile Queue Length [veh]	0.41	0.00	0.41	5.82	5.82	0.21	0.10	0.10	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	10.19	0.00	10.19	145.42	145.42	5.15	2.56	2.56	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.47			30.19			3.29			0.00		
Approach LOS	B			D			A			A		
d_I, Intersection Delay [s/veh]	13.35											
Intersection LOS	E											

**Intersection Level Of Service Report
#5: 14th St SW and I-315 EB**

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.368

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	13	82	260	95	396	262	107	168	10	102	50	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.40	1.20	4.30	1.30	0.40	0.90	0.00	0.00	1.00	0.00	12.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	82	260	95	396	262	107	168	10	102	50	31
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	22	69	25	106	70	29	45	3	27	13	8
Total Analysis Volume [veh/h]	14	87	277	101	422	279	114	179	11	109	53	33
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	3	0	6	7	7	4	0	3	8	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	15	0	5	15	15	5	0	15	15	0
Maximum Green [s]	0	50	20	0	50	20	20	45	0	20	45	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	22	18	0	22	18	18	20	0	18	20	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	10	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	1.0	0.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall		no	no		no	no	no	no		no	no	
Maximum Recall		no	no		no	no	no	no		no	no	
Pedestrian Recall		no	no		no	no	no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	3.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	18	18	38	18	18	38	32	14	14	32	14	14
g / C, Green / Cycle	0.31	0.31	0.64	0.31	0.31	0.64	0.54	0.24	0.24	0.54	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.01	0.05	0.17	0.08	0.22	0.17	0.07	0.09	0.01	0.07	0.03	0.02
s, saturation flow rate [veh/h]	980	1855	1596	1276	1876	1609	1573	1900	1615	1497	1900	1430
c, Capacity [veh/h]	181	566	1018	416	572	1027	1004	459	390	897	459	345
d1, Uniform Delay [s]	26.77	15.19	4.75	19.22	18.69	4.75	6.76	19.06	17.38	6.92	17.75	17.67
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	0.12	0.14	0.30	1.88	0.14	0.05	0.54	0.03	0.06	0.11	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.15	0.27	0.24	0.74	0.27	0.11	0.39	0.03	0.12	0.12	0.10
d, Delay for Lane Group [s/veh]	26.95	15.32	4.89	19.52	20.56	4.89	6.81	19.60	17.41	6.98	17.86	17.79
Lane Group LOS	C	B	A	B	C	A	A	B	B	A	B	B
Critical Lane Group	no	no	no	no	yes	yes	no	yes	no	no	no	no
50th-Percentile Queue Length [veh]	0.19	0.81	1.09	1.12	5.03	1.10	0.59	2.00	0.11	0.57	0.55	0.34
50th-Percentile Queue Length [ft]	4.75	20.31	27.29	28.03	125.69	27.47	14.87	49.98	2.78	14.22	13.67	8.53
95th-Percentile Queue Length [veh]	0.34	1.46	1.96	2.02	8.70	1.98	1.07	3.60	0.20	1.02	0.98	0.61
95th-Percentile Queue Length [ft]	8.55	36.56	49.12	50.46	217.62	49.44	26.77	89.97	5.01	25.60	24.60	15.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.95	15.32	4.89	19.52	20.56	4.89	6.81	19.60	17.41	6.98	17.86	17.79
Movement LOS	C	B	A	B	C	A	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	8.11			14.98			14.72			11.77		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	13.01											
Intersection LOS	B											
Intersection V/C	0.368											

Sequence

Ring 1	2	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	3	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#6: 14th St SW and I-315 WB**

Control Type: Signalized
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 19.4
 Level Of Service: B
 Volume to Capacity (v/c): 0.536

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	5	76	146	22	131	2	3	5	19	638	12	142
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	40.00	6.60	0.70	0.00	2.30	0.00	0.00	0.00	15.80	1.80	8.30	4.20
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	76	146	22	131	2	3	5	19	638	12	142
Peak Hour Factor	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	19	37	6	33	1	1	1	5	161	3	36
Total Analysis Volume [veh/h]	5	77	148	22	133	2	3	5	19	646	12	144
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	1	2	0	1	0	0	3	0	0	2	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	35	40	0	35	0	0	25	0	0	40	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	25	19	0	25	0	0	16	0	0	19	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	9	7	0	9	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	11	7	0	11	0	0	0	0	0	7	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		no	no		no			no			no	
Maximum Recall		no	no		no			no			no	
Pedestrian Recall		no	no		no			no			no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	10	44	10	10	2	29	29
g / C, Green / Cycle	0.17	0.17	0.73	0.17	0.17	0.03	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.01	0.05	0.10	0.02	0.08	0.02	0.44	0.10
s, saturation flow rate [veh/h]	819	1604	1443	1209	1667	1514	1505	1395
c, Capacity [veh/h]	164	265	1050	223	275	46	721	668
d1, Uniform Delay [s]	27.03	21.97	2.49	25.56	22.75	28.72	14.48	9.09
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.19	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.60	0.06	0.19	1.35	11.38	8.39	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

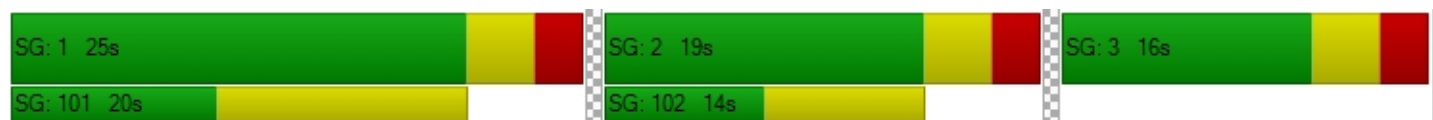
X, volume / capacity	0.03	0.29	0.14	0.10	0.49	0.59	0.91	0.22
d, Delay for Lane Group [s/veh]	27.10	22.57	2.55	25.75	24.11	40.09	22.87	9.25
Lane Group LOS	C	C	A	C	C	D	C	A
Critical Lane Group	no	no	no	no	yes	yes	yes	no
50th-Percentile Queue Length [veh]	0.07	0.94	0.29	0.29	1.72	0.51	8.46	0.96
50th-Percentile Queue Length [ft]	1.71	23.40	7.27	7.21	43.07	12.75	211.56	24.03
95th-Percentile Queue Length [veh]	0.12	1.68	0.52	0.52	3.10	0.92	13.23	1.73
95th-Percentile Queue Length [ft]	3.07	42.12	13.09	12.99	77.53	22.96	330.84	43.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.10	22.57	2.55	25.75	24.11	24.11	40.09	40.09	40.09	22.87	22.87	9.25
Movement LOS	C	C	A	C	C	C	D	D	D	C	C	A
d_A, Approach Delay [s/veh]	9.78			24.34			40.09			20.42		
Approach LOS	A			C			D			C		
d_I, Intersection Delay [s/veh]	19.35											
Intersection LOS	B											
Intersection V/C	0.536											

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#7: Fox Farm and I-315**

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.795

Intersection Setup

Name	Northbound			Southbound			Northeastbound			Southwestbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Northeastbound			Southwestbound		
Base Volume Input [veh/h]	71	155	227	153	274	325	242	706	103	486	874	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	1.90	0.40	1.30	0.70	2.10	2.50	3.60	2.90	0.40	3.90	1.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	155	227	153	274	325	242	706	103	486	874	250
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	42	62	42	74	88	66	192	28	132	238	68
Total Analysis Volume [veh/h]	77	168	247	166	298	353	263	767	112	528	950	272
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	1	8	0	3	6	6	4	0	8	2	5
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	5	5	5	0	5	5	0
Maximum Green [s]	0	60	60	0	60	60	60	60	0	60	60	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	31	28	0	20	25	25	41	0	28	44	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	1.0	0.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall		no	no		no	no	no	no		no	no	
Maximum Recall		no	no		no	no	no	no		no	no	
Pedestrian Recall		no	no		no	no	no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	C	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	1.00	3.00	3.00	1.00	3.00	3.00
g_i, Effective Green Time [s]	16	16	75	25	25	55	25	42	42	24	40	40
g / C, Green / Cycle	0.13	0.13	0.62	0.21	0.21	0.46	0.21	0.35	0.35	0.20	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.05	0.11	0.17	0.13	0.09	0.25	0.17	0.24	0.08	0.17	0.30	0.19
s, saturation flow rate [veh/h]	1604	1527	1448	1279	3233	1424	1589	3143	1413	3150	3134	1431
c, Capacity [veh/h]	211	201	903	303	682	657	332	1093	491	624	1055	482
d1, Uniform Delay [s]	47.76	50.63	10.25	45.27	41.14	23.11	44.98	33.77	27.73	46.37	37.89	32.60
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.21	7.40	0.16	1.55	0.44	0.68	4.26	0.83	0.23	3.29	3.12	1.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

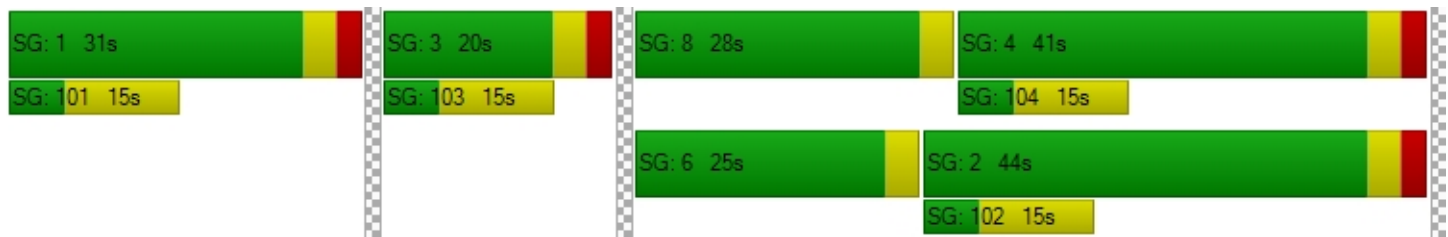
X, volume / capacity	0.40	0.81	0.27	0.55	0.44	0.54	0.79	0.70	0.23	0.85	0.90	0.56
d, Delay for Lane Group [s/veh]	48.97	58.03	10.41	46.82	41.59	23.80	49.23	34.60	27.96	49.65	41.02	33.65
Lane Group LOS	D	E	B	D	D	C	D	C	C	D	D	C
Critical Lane Group	no	no	yes	no	no	yes	yes	no	no	no	yes	no
50th-Percentile Queue Length [veh]	2.37	5.13	2.92	4.73	3.88	7.19	7.80	9.70	2.33	7.85	13.56	6.60
50th-Percentile Queue Length [ft]	59.22	128.16	73.04	118.23	97.06	179.81	194.94	242.50	58.19	196.24	339.12	164.94
95th-Percentile Queue Length [veh]	4.26	8.84	5.26	8.30	6.99	11.59	12.38	14.81	4.19	12.44	19.60	10.81
95th-Percentile Queue Length [ft]	106.59	220.99	131.48	207.39	174.71	289.77	309.43	370.20	104.74	311.11	490.12	270.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.97	57.68	10.41	46.82	41.59	23.80	49.23	34.60	27.96	49.65	41.02	33.65
Movement LOS	D	E	B	D	D	C	D	C	C	D	D	C
d_A, Approach Delay [s/veh]	32.58			34.96			37.32			42.48		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	38.46											
Intersection LOS	D											
Intersection V/C	0.795											

Sequence

Ring 1	1	3	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	2	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level of Service Report
#8: Central Ave and I15 SB**

Control Type:	Two-way stop	Delay (sec / veh):	42.0
Analysis Method:	HCM2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.432

Intersection Setup

Name	Southbound			Eastbound			Westbound			Northwestbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Southbound			Eastbound			Westbound			Northwestbound		
Base Volume Input [veh/h]	66	0	6	0	166	30	230	299	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	0.00	0.00	2.00	0.60	0.00	6.50	1.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	0	6	0	166	30	230	299	0	0	0	0
Peak Hour Factor	0.9170	1.0000	0.7500	1.0000	0.8470	0.8330	0.8980	0.8690	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	0	2	0	49	9	64	86	0	0	0	0
Total Analysis Volume [veh/h]	72	0	8	0	196	36	256	344	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.43	0.00	0.01	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	42.03	39.90	10.18	0.00	0.00	0.00	8.29	0.00	0.00	0.00	0.00	0.00
Movement LOS	E	E	B		A	A	A	A				
95th-Percentile Queue Length [veh]	1.96	1.96	0.03	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	48.88	48.88	0.86	0.00	0.00	0.00	17.46	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	38.84			0.00			3.54			0.00		
Approach LOS	E			A			A			A		
d_I, Intersection Delay [s/veh]	5.73											
Intersection LOS	E											

**Intersection Level of Service Report
#9: Central Ave and I-15 NB**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 29.1
 Level Of Service: D
 Volume to Capacity (v/c): 0.303

Intersection Setup

Name	Northbound			Eastbound			Westbound			Southeastbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Eastbound			Westbound			Southeastbound		
Base Volume Input [veh/h]	57	0	170	5	249	0	0	471	113	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	7.00	0.00	2.00	2.00	2.00	4.60	0.90	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	0	170	5	249	0	0	471	113	0	0	0
Peak Hour Factor	0.7130	1.0000	0.7590	0.4170	0.8650	1.0000	1.0000	0.9350	0.8310	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	0	56	3	72	0	0	126	34	0	0	0
Total Analysis Volume [veh/h]	80	0	224	12	288	0	0	504	136	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.00	0.30	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	29.07	27.04	20.30	8.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	D	D	C	A	A			A	A			
95th-Percentile Queue Length [veh]	3.98	3.98	3.98	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	99.39	99.39	99.39	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	22.61			0.34			0.00			0.00		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	5.61											
Intersection LOS	D											

**Intersection Level Of Service Report
#10: Central Ave and Vaughn Rd**

Control Type:	Two-way stop	Delay (sec / veh):	65.0
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	↔		↖		↗	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	68	121	66	361	462	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	1.60	1.50	4.00	3.40	2.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	121	66	361	462	76
Peak Hour Factor	0.6540	0.9450	0.7500	0.7910	0.8680	0.7310
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	32	22	114	133	26
Total Analysis Volume [veh/h]	104	128	88	456	532	104
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.58	0.25	0.09	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	65.02	52.12	9.18	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh]	6.75	6.75	0.31	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	168.80	168.80	7.64	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	57.91		1.48		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	10.09					
Intersection LOS	F					

**Intersection Level Of Service Report
#11: Vaughn Rd and I-15 SB**

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.177

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	↔		↑		↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	143	1	0	53	50	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	2.00	7.60	4.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	1	0	53	50	0
Peak Hour Factor	0.9410	0.2500	1.0000	0.7790	0.8930	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	1	0	17	14	0
Total Analysis Volume [veh/h]	152	4	0	68	56	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.11	9.46	0.00	0.00	0.00	0.00
Movement LOS	B	A		A	A	
95th-Percentile Queue Length [veh]	0.66	0.66	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	16.44	16.44	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.09		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.62					
Intersection LOS	B					

**Intersection Level Of Service Report
#12: Vaughn Rd and I-15 NB**

Control Type:	Two-way stop	Delay (sec / veh):	7.3
Analysis Method:	HCM2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Eastbound		Westbound		Southeastbound	
Approach						
Lane Configuration	1		1r			
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Eastbound		Westbound		Southeastbound	
Base Volume Input [veh/h]	0	165	55	334	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	6.10	1.80	4.80	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	165	55	334	0	0
Peak Hour Factor	1.0000	0.7500	0.8090	0.9180	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	55	17	91	0	0
Total Analysis Volume [veh/h]	0	220	68	364	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

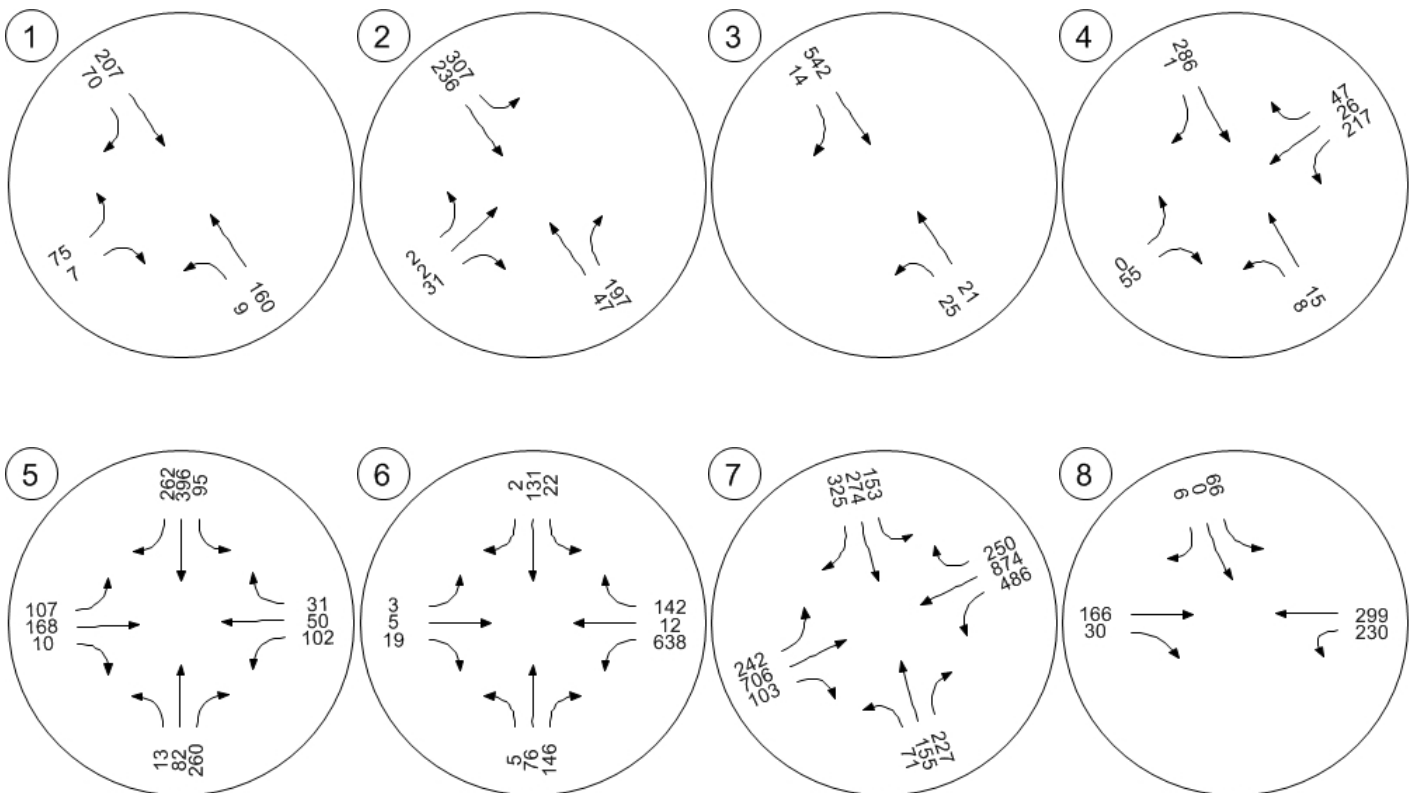
Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

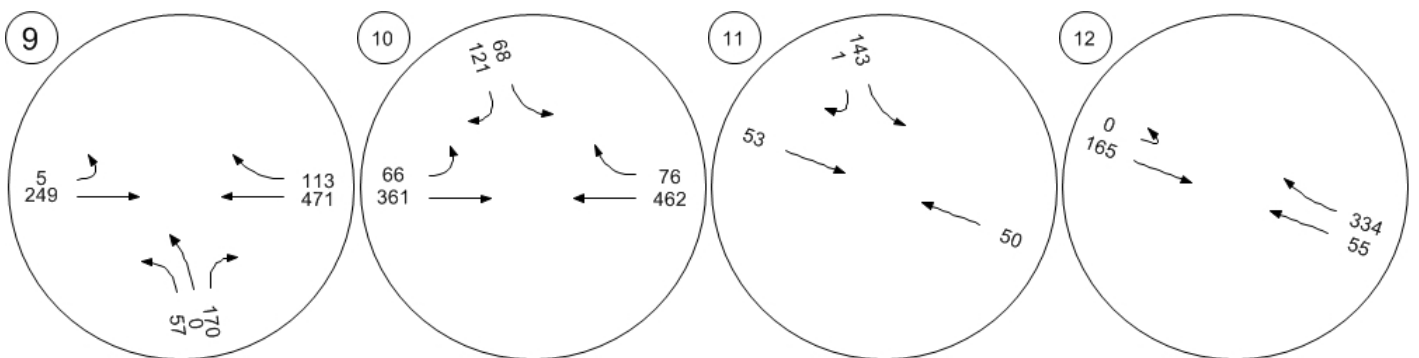
V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.33	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A		
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Version 2.00-10

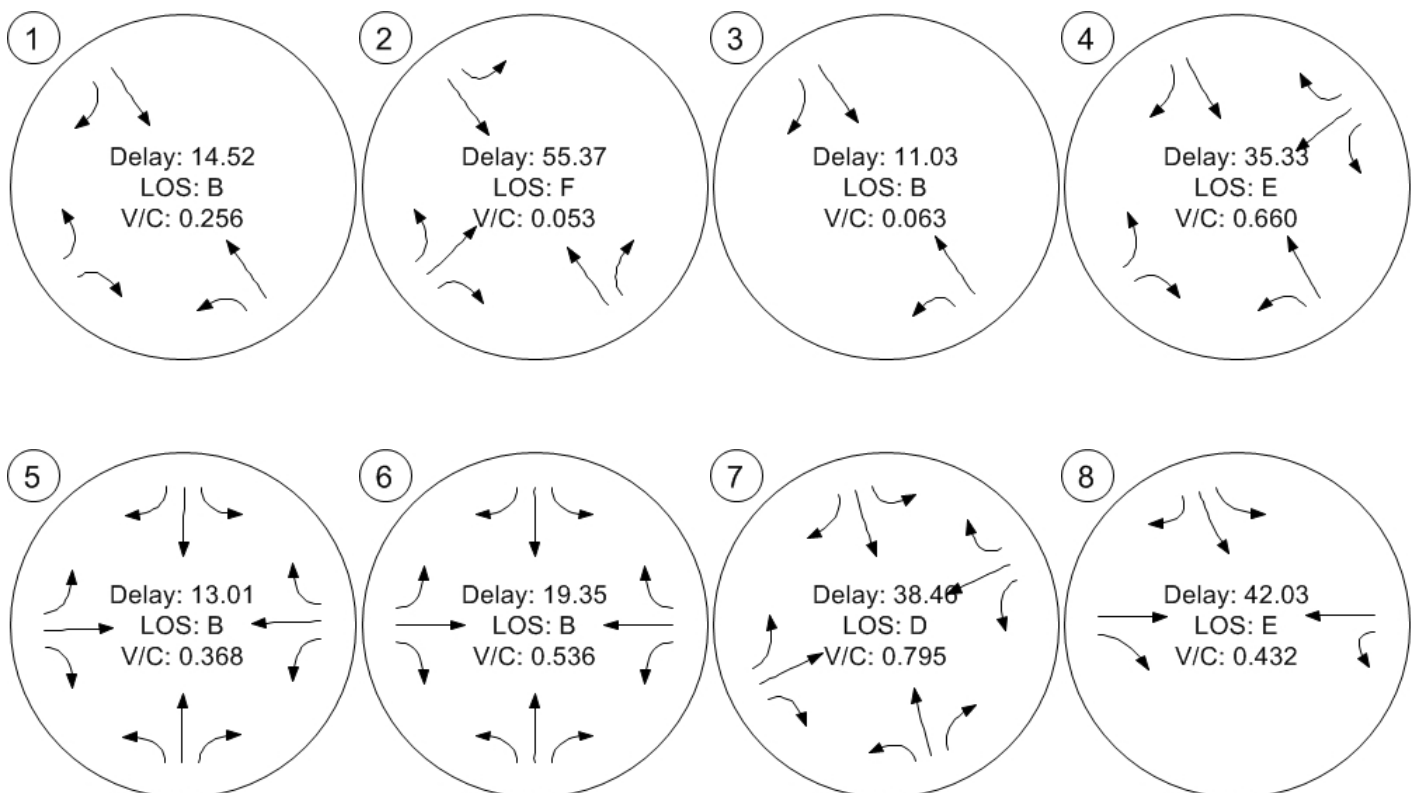
Traffic Volume - Base Volume



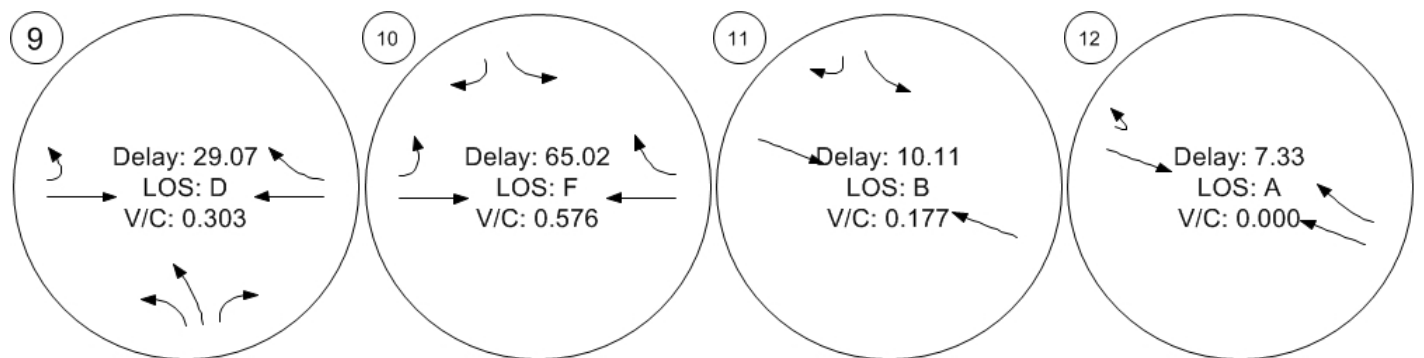
Traffic Volume - Base Volume



Traffic Conditions



Traffic Conditions





APPENDIX D

Projected Conditions Traffic Data Analysis

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-315 Eastbound</i>	
Agency or Company		From/To	
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>627</i>	veh/h	Peak-Hour Factor, PHF <i>0.87</i>
AADT		veh/day	%Trucks and Buses, P _T <i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.971</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>371</i> pc/h/ln	Design LOS	
S	<i>55.0</i> mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>6.7</i> pc/mi/ln	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Westbound</i>
Agency or Company		From/To	<i>I-15 to 14th Ave</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>514</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.76</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>6</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.971</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i>
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>348</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>55.0</i>	S	mph
D = v _p / S	<i>6.3</i>	D = v _p / S	pc/mi/ln
LOS	<i>A</i>	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-315 Eastbound</i>	
Agency or Company		From/To <i>I-15 to 14th Ave</i>	
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>799</i>	veh/h	Peak-Hour Factor, PHF <i>0.83</i>
AADT		veh/day	%Trucks and Buses, P _T <i>4</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.980</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i> mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV}) <i>491</i> pc/h/ln		Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV}) pc/h/ln	
S	<i>55.0</i> mph	x f _p)	
D = v _p / S	<i>8.9</i> pc/mi/ln	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Westbound</i>
Agency or Company		From/To	<i>I-15 to 14th Ave</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>728</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.93</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.976</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW}
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>55.0</i>	mph	f _{LC}
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>55.0</i>
			mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>401</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	<i>55.0</i>	x f _p)	
D = v _p / S	<i>7.3</i>	S	
LOS	<i>A</i>	mph	
		D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-315 Eastbound</i>	
Agency or Company		From/To	<i>14th Ave to Fox Farm</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>979</i>	veh/h	Peak-Hour Factor, PHF <i>0.83</i>
AADT		veh/day	%Trucks and Buses, P _T <i>4</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.980</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>602</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>55.0</i>	x f _p)	
D = v _p / S	<i>10.9</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Westbound</i>
Agency or Company		From/To	<i>14th Ave to Fox Farm</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>585</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.82</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>5</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.976</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	<i>2</i>	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	<i>55.0</i>
FFS (measured)	<i>55.0</i>	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>366</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>55.0</i>	x f _p)	
D = v _p / S	<i>6.7</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Eastbound</i>
Agency or Company		From/To	<i>14th Ave to Fox Farm</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>1216</i>	veh/h	Peak-Hour Factor, PHF <i>0.90</i>
AADT		veh/day	%Trucks and Buses, P _T <i>3</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
Up/Down %			
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.985</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	<i>2</i>		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	<i>55.0</i>	mph	FFS <i>55.0</i> mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV}) <i>686</i> pc/h/ln		Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV}) <i>686</i> pc/h/ln	
S	<i>55.0</i> mph	x f _p)	S mph
D = v _p / S	<i>12.5</i> pc/mi/ln	S	D = v _p / S
LOS	<i>B</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-315 Westbound</i>
Agency or Company		From/To	<i>14th Ave to Fox Farm</i>
Date Performed	<i>9/15/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>1418</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.95
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			3
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.985</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>55.0</i>	FFS	<i>55.0</i>
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>758</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>55.0</i>	S	mph
D = v _p / S	<i>13.8</i>	D = v _p / S	pc/mi/ln
LOS	<i>B</i>	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 NB</i>
Agency or Company		From/To	<i>North of Central</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>384</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.83</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>7</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.966</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>239</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>65.0</i>	S	mph
D = v _p / S	<i>3.7</i>	D = v _p / S	pc/mi/ln
LOS	<i>A</i>	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 SB</i>
Agency or Company		From/To	<i>North of Central</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>230</i>	veh/h	Peak-Hour Factor, PHF <i>0.83</i>
AADT		veh/day	%Trucks and Buses, P _T <i>21</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.905</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	<i>2</i>		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	<i>65.0</i>	mph	FFS <i>65.0</i> mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>153</i>	pc/h/ln	Design LOS
S	<i>65.0</i>	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
D = v _p / S	<i>2.4</i>	pc/mi/ln	S
LOS	<i>A</i>		D = v _p / S
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>North of Central</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>413</i>	veh/h	Peak-Hour Factor, PHF <i>0.97</i>
AADT		veh/day	%Trucks and Buses, P _T <i>8</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.962</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>221</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>3.4</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 SB</i>
Agency or Company		From/To	<i>North of Central</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>356</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.79</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>14</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.935</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW}
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>65.0</i>	mph	f _{LC}
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>65.0</i>
			mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>241</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>65.0</i>	mph	mph
D = v _p / S	<i>3.7</i>	pc/mi/ln	pc/mi/ln
LOS	<i>A</i>		
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 NB</i>
Agency or Company		From/To	<i>North of Emerson Junction</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>351</i>	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	<i>0.89</i>
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			<i>21</i>
DDHV = AADT x K x D		veh/h	%RVs, P _R
			<i>0</i>
			General Terrain:
			<i>Level</i>
			Grade % Length
			<i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.905</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW}
Total Ramp Density, TRD		ramps/mi	mph
FFS (measured)	<i>65.0</i>	mph	f _{LC}
Base free-flow Speed, BFFS		mph	mph
			TRD Adjustment
			mph
			FFS
			<i>65.0</i>
			mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
<i>218</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	<i>65.0</i>	mph	mph
D = v _p / S	<i>3.4</i>	pc/mi/ln	pc/mi/ln
LOS	<i>A</i>		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel	I-15 SB
Agency or Company		From/To	North of Emerson Junction
Date Performed	9/8/2014	Jurisdiction	
Analysis Time Period	AM Peak	Analysis Year	2035
Project Description I-15 Corridor Study			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	669	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.87
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	396	Design LOS	
x f _p)	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	65.0	x f _p)	
D = v _p / S	6.1	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 NB</i>
Agency or Company		From/To	<i>North of Emerson Junction</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>776</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.971</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>425</i>	pc/h/ln	
S	<i>65.0</i>	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
D = v _p / S	<i>6.5</i>	pc/mi/ln	pc/h/ln
LOS	<i>A</i>		S
			mph
			D = v _p / S
			pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 SB</i>
Agency or Company		From/To	<i>North of Emerson Junction</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>557</i>	veh/h	Peak-Hour Factor, PHF <i>0.88</i>
AADT		veh/day	%Trucks and Buses, P _T <i>13</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.939</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW} mph
Total Ramp Density, TRD		ramps/mi	f _{LC} mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>337</i>	pc/h/ln	Design LOS
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	<i>65.0</i>	mph	x f _p)
D = v _p / S	<i>5.2</i>	pc/mi/ln	S
LOS	<i>A</i>		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel	I-15 NB
Agency or Company		From/To	North of Gore Hill
Date Performed	9/8/2014	Jurisdiction	
Analysis Time Period	AM Peak	Analysis Year	2035
Project Description I-15 Corridor Study			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	803	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			16
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Grade
			-5.00%
			Length
			0.69mi
			Up/Down %
			-5.00
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.926
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	65.0
FFS (measured)	65.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
482	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	65.0	mph	mph
D = v _p / S	7.4	pc/mi/ln	pc/mi/ln
LOS	A	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 SB</i>
Agency or Company		From/To	<i>North of Gore Hill</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>712</i>	veh/h	Peak-Hour Factor, PHF <i>0.85</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Grade</i>
DDHV = AADT x K x D		veh/h	Grade <i>5.00%</i> Length <i>0.69mi</i>
			Up/Down % <i>5.00</i>
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>4.5</i>
E _T	<i>2.8</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.891</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>470</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>7.2</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel	I-15 NB
Agency or Company		From/To	North of Gore Hill
Date Performed	9/8/2014	Jurisdiction	
Analysis Time Period	PM Peak	Analysis Year	2035
Project Description I-15 Corridor Study			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	1122	veh/h	Peak-Hour Factor, PHF 0.80
AADT		veh/day	%Trucks and Buses, P _T 10
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Grade
DDHV = AADT x K x D		veh/h	Grade -5.00% 0.69mi
			Length Up/Down % -5.00
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.952
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	65.0	mph	FFS 65.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
	736	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)			x f _p)
S	65.0	mph	S
D = v _p / S	11.3	pc/mi/ln	D = v _p / S
LOS	B		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel	<i>I-15 SB</i>
Agency or Company		From/To	<i>North of Gore Hill</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>979</i>	veh/h	Peak-Hour Factor, PHF <i>0.93</i>
AADT		veh/day	%Trucks and Buses, P _T <i>10</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Grade</i>
DDHV = AADT x K x D		veh/h	Grade <i>5.00%</i> Length <i>0.69mi</i>
			Up/Down % <i>5.00</i>
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>4.5</i>
E _T	<i>2.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.870</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>605</i>	pc/h/ln	
x f _p)			pc/h/ln
S	<i>65.0</i>	mph	mph
D = v _p / S	<i>9.3</i>	pc/mi/ln	pc/mi/ln
LOS	<i>A</i>		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>South of Central</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>519</i>	veh/h	Peak-Hour Factor, PHF <i>0.89</i>
AADT		veh/day	%Trucks and Buses, P _T <i>14</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.935</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW} mph
Total Ramp Density, TRD		ramps/mi	f _{LC} mph
FFS (measured)	<i>65.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>65.0</i> mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
x f _p)	<i>312</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})
S	<i>65.0</i>	mph	x f _p)
D = v _p / S	<i>4.8</i>	pc/mi/ln	S
LOS	<i>A</i>		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 SB</i>	
Agency or Company		From/To	<i>South of Central</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>569</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>8</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.962</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
x f _p)	<i>315</i>	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>4.8</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>South of Central</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>792</i>	veh/h	Peak-Hour Factor, PHF <i>0.87</i>
AADT		veh/day	%Trucks and Buses, P _T <i>11</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.948</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>480</i>	Design LOS	
S	<i>65.0</i>	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>7.4</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel	I-15 SB
Agency or Company		From/To	South of Central
Date Performed	9/8/2014	Jurisdiction	
Analysis Time Period	PM Peak	Analysis Year	2035
Project Description I-15 Corridor Study			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	793	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 14
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.935
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	65.0	mph	FFS 65.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
	471 pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	65.0 mph	S mph	
D = v _p / S	7.2 pc/mi/ln	D = v _p / S pc/mi/ln	
LOS	A	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	Shane Forsythe	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>South of Gore Hill</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>297</i>	veh/h	Peak-Hour Factor, PHF <i>0.92</i>
AADT		veh/day	%Trucks and Buses, P _T <i>10</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.952</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	<i>2</i>		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	<i>65.0</i>	mph	FFS <i>65.0</i> mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>169</i>	pc/h/ln	Design LOS
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	<i>65.0</i>	mph	x f _p)
D = v _p / S	<i>2.6</i>	pc/mi/ln	S
LOS	<i>A</i>		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 SB</i>	
Agency or Company		From/To	<i>South of Gore Hill</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>AM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>286</i>	veh/h	Peak-Hour Factor, PHF <i>0.79</i>
AADT		veh/day	%Trucks and Buses, P _T <i>20</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.909</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV}) <i>199</i>		Design LOS	
x f _p)	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
S	<i>65.0</i>	x f _p)	pc/h/ln
D = v _p / S	<i>3.1</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 NB</i>	
Agency or Company		From/To	<i>South of Gore Hill</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>303</i>	veh/h	Peak-Hour Factor, PHF <i>0.96</i>
AADT		veh/day	%Trucks and Buses, P _T <i>12</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.943</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>167</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>2.6</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>Shane Forsythe</i>	Highway/Direction of Travel <i>I-15 SB</i>	
Agency or Company		From/To	<i>South of Gore Hill</i>
Date Performed	<i>9/8/2014</i>	Jurisdiction	
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2035</i>
Project Description <i>I-15 Corridor Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>444</i>	veh/h	Peak-Hour Factor, PHF <i>0.89</i>
AADT		veh/day	%Trucks and Buses, P _T <i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.971</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	FFS	<i>65.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>257</i>	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>65.0</i>	x f _p)	
D = v _p / S	<i>4.0</i>	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave NB Off-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				740		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				803		V _D = veh/h	
		Ramp Volume, V _R				206			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				55.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	803	0.90	Level	16	0	0.926	1.00	967	
Ramp	206	0.83	Level	3	0	0.985	1.00	253	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 967 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	967	Exhibit 13-8	4700	No
					V _{FO} = V _F - V _R	714	Exhibit 13-8	4700	No
					V _R	253	Exhibit 13-10	2200	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	967	Exhibit 13-8 4400:All		No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 5.9 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.191 (Exhibit 13-12) S _R = 60.6 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 60.6 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave NB On-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			590			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			519			V _D = veh/h	
		Ramp Volume, V _R			175				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	519	0.89	Level	14	0	0.935	1.00	623	
Ramp	175	0.75	Level	7	0	0.966	1.00	243	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 623 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	866	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	866	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 8.4 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.289 (Exhibit 13-11) S _R = 58.4 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 58.4 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave SB Off-ramp			
Agency or Company					Junction		I-15 and I-315			
Date Performed		9/15/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year		2035			
Project Description										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D				463		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				671		V _D = veh/h		
		Ramp Volume, V _R				206				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				55.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	671	0.94	Level	8	0	0.962	1.00	746		
Ramp	206	0.83	Level	3	0	0.985	1.00	253		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}			
		(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)			
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)			
V ₁₂ =		pc/h			V ₁₂ =		746 pc/h			
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)			
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	746	Exhibit 13-8		4700	No
					V _{FO} = V _F - V _R	493	Exhibit 13-8		4700	No
					V _R	253	Exhibit 13-10		2200	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	746	Exhibit 13-8		4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D					
D _R = (pc/mi/ln)					D _R = 6.5 (pc/mi/ln)					
LOS = (Exhibit 13-2)					LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11)					D _S = 0.191 (Exhibit 13-12)					
S _R = mph (Exhibit 13-11)					S _R = 60.6 mph (Exhibit 13-12)					
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 60.6 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave SB On-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1500			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			713			V _D = veh/h	
		Ramp Volume, V _R			339				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	713	0.85	Level	7	0	0.966	1.00	870	
Ramp	339	0.77	Level	5	0	0.976	1.00	451	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 870 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1321	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1321	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = 6.2 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.231 (Exhibit 13-11) S _R = 59.7 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.7 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe				Freeway/Dir of Travel	10th Ave NB Off-ramp			
Agency or Company					Junction	I-15 and I-315			
Date Performed	9/15/2014				Jurisdiction				
Analysis Time Period	PM Peak				Analysis Year	2035			
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			740		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			1122		V _D = veh/h		
		Ramp Volume, V _R			543				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			55.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1122	0.80	Level	10	0	0.952	1.00	1473	
Ramp	543	0.83	Level	3	0	0.985	1.00	664	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 1473 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	1473	Exhibit 13-8	4700	No
			V _{FO} = V _F - V _R	809	Exhibit 13-8	4700	No		
			V _R	664	Exhibit 13-10	2200	No		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1473	Exhibit 13-8 4400:All		No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 10.3 (pc/mi/ln) LOS = B (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.228 (Exhibit 13-12) S _R = 59.8 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 59.8 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave NB On-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		20		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			590		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			792		V _D = veh/h		
		Ramp Volume, V _R			274				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	792	0.87	Level	11	0	0.948	1.00	963	
Ramp	274	0.92	Level	4	0	0.980	1.00	304	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 963 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1267	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1267	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 11.5 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.294 (Exhibit 13-11) S _R = 58.2 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 58.2 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave NB Off-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				463		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				936		V _D = veh/h	
		Ramp Volume, V _R				256			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				55.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	936	0.90	Level	14	0	0.935	1.00	1118	
Ramp	256	0.83	Level	7	0	0.966	1.00	320	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 1118 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	1118	Exhibit 13-8	4700	No
			V _{FO} = V _F - V _R			798	Exhibit 13-8	4700	No
			V _R			320	Exhibit 13-10	2200	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1118	Exhibit 13-8 4400:All		No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D				
D _R = (pc/mi/ln)					D _R = 9.7 (pc/mi/ln)				
LOS = (Exhibit 13-2)					LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.197 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 60.5 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 60.5 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		10th Ave SB On-ramp		
Agency or Company					Junction		I-15 and I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			981		V _D = veh/h		
		Ramp Volume, V _R			453				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	981	0.93	Level	10	0	0.952	1.00	1108	
Ramp	453	0.94	Level	5	0	0.976	1.00	494	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1108 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1602	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1602	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 8.3 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.235 (Exhibit 13-11) S _R = 59.6 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.6 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th EB Off-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				503		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				627		V _D = veh/h	
		Ramp Volume, V _R				68			
		Freeway Free-Flow Speed, S _{FF}				55.0			
		Ramp Free-Flow Speed, S _{FR}				35.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	627	0.87	Level	6	0	0.971	1.00	742	
Ramp	68	0.83	Level	5	0	0.976	1.00	84	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 742 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	742	Exhibit 13-8	4500	No
					V _{FO} = V _F - V _R	658	Exhibit 13-8	4500	No
					V _R	84	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	742	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 6.1 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.436 (Exhibit 13-12) S _R = 49.3 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 49.3 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th St EB On-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			930		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			1140		V _D = veh/h		
		Ramp Volume, V _R			617				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1140	0.83	Level	4	0	0.980	1.00	1403	
Ramp	617	0.83	Level	3	0	0.985	1.00	755	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1403 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	2158	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	2158	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = 16.1 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.290 (Exhibit 13-11) S _R = 51.2 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 51.2 mph (Exhibit 13-13)					D _s = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th WB Off-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				713		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				585		V _D = veh/h	
		Ramp Volume, V _R				251			
		Freeway Free-Flow Speed, S _{FF}				55.0			
		Ramp Free-Flow Speed, S _{FR}				35.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	585	0.82	Level	1	0	0.995	1.00	714	
Ramp	251	0.80	Level	0	0	1.000	1.00	312	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = using Equation (Exhibit 13-6) P _{FM} = V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = 1.000 using Equation (Exhibit 13-7) P _{FD} = V ₁₂ = 714 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	714	Exhibit 13-8	4500	No
					V _{FO} = V _F - V _R	402	Exhibit 13-8	4500	No
					V _R	312	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	714	Exhibit 13-8		4400:All
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 4.0 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.456 (Exhibit 13-12) S _R = 49.1 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 49.1 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th St WB On-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			505		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			514		V _D = veh/h		
		Ramp Volume, V _R			142				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	514	0.76	Level	6	0	0.971	1.00	696	
Ramp	142	0.80	Level	5	0	0.976	1.00	181	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 696 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	877	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	877	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 9.1 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S =	0.295 (Exhibit 13-11)				D _S =	(Exhibit 13-12)			
S _R =	51.2 mph (Exhibit 13-11)				S _R =	mph (Exhibit 13-12)			
S ₀ =	N/A mph (Exhibit 13-11)				S ₀ =	mph (Exhibit 13-12)			
S =	51.2 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th EB Off-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				503		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				799		V _D = veh/h	
		Ramp Volume, V _R				226			
		Freeway Free-Flow Speed, S _{FF}				55.0			
		Ramp Free-Flow Speed, S _{FR}				35.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	799	0.83	Level	4	0	0.980	1.00	982	
Ramp	226	0.94	Level	3	0	0.985	1.00	244	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 982 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	982	Exhibit 13-8	4500	No
					V _{FO} = V _F - V _R	738	Exhibit 13-8	4500	No
					V _R	244	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	982	Exhibit 13-8 4400:All		No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 8.2 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.450 (Exhibit 13-12) S _R = 49.2 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 49.2 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th St EB On-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2014		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			930		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			1216		V _D = veh/h		
		Ramp Volume, V _R			648				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1216	0.90	Level	3	0	0.985	1.00	1371	
Ramp	648	0.94	Level	1	0	0.995	1.00	693	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1371 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	2064	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	2064	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 15.4 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.287 (Exhibit 13-11) S _R = 51.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 51.3 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th WB Off-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				713		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				1418		V _D = veh/h	
		Ramp Volume, V _R				919			
		Freeway Free-Flow Speed, S _{FF}				55.0			
		Ramp Free-Flow Speed, S _{FR}				35.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1418	0.91	Level	3	0	0.985	1.00	1582	
Ramp	919	0.99	Level	2	0	0.990	1.00	939	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = using Equation (Exhibit 13-6) P _{FM} = V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = 1.000 using Equation (Exhibit 13-7) P _{FD} = V ₁₂ = 1582 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	1582	Exhibit 13-8	4500	No
					V _{FO} = V _F - V _R	643	Exhibit 13-8	4500	No
					V _R	939	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1582	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 11.4 (pc/mi/ln) LOS = B (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.513 (Exhibit 13-12) S _R = 48.3 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 48.3 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		14th St WB On-ramp		
Agency or Company					Junction		I-315		
Date Performed		9/15/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description I-15 Corridor Study									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			505			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			728			V _D = veh/h	
		Ramp Volume, V _R			201				
		Freeway Free-Flow Speed, S _{FF}			55.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	728	0.93	Level	5	0	0.976	1.00	802	
Ramp	201	0.99	Level	1	0	0.995	1.00	204	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 802 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1006	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1006	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = 10.1 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.296 (Exhibit 13-11) S _R = 51.1 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 51.1 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe				Freeway/Dir of Travel	Central Ave NB Off			
Agency or Company					Junction				
Date Performed	9/9/2014				Jurisdiction				
Analysis Time Period	AM Peak				Analysis Year	2035			
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			1388		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			519		V _D = veh/h		
		Ramp Volume, V _R			315				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	519	0.89	Level	14	0	0.935	1.00	624	
Ramp	315	0.83	Level	10	0	0.952	1.00	400	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 624 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	624	Exhibit 13-8	4700	No
					V _{FO} = V _F - V _R	224	Exhibit 13-8	4700	No
					V _R	400	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	624	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = -2.9 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.334 (Exhibit 13-12) S _R = 57.3 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 57.3 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central NB On			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year		2035			
Project Description										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				1491		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				230		V _D = veh/h		
		Ramp Volume, V _R				82				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				55.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	230	0.83	Level	7	0	0.966	1.00	287		
Ramp	82	0.74	Level	14	0	0.935	1.00	119		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v₁₂					Estimation of v₁₂					
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 287 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}	406	Exhibit 13-8		No	V _F		Exhibit 13-8			
					V _{FO} = V _F - V _R		Exhibit 13-8			
					V _R		Exhibit 13-10			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}	406	Exhibit 13-8		No	V ₁₂		Exhibit 13-8			
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = -0.8 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = 0.163 (Exhibit 13-11) S _R = 61.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 61.3 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central Ave SB Off		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			1144		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			376		V _D = veh/h		
		Ramp Volume, V _R			191				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	376	0.83	Level	21	0	0.905	1.00	501	
Ramp	191	0.85	Level	2	0	0.990	1.00	227	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 501 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	501	Exhibit 13-8	4700	No
					V _{FO} = V _F - V _R	274	Exhibit 13-8	4700	No
					V _R	227	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	501	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = -1.7 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.318 (Exhibit 13-12) S _R = 57.7 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 57.7 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central SB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				1144		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				671		V _D = veh/h	
		Ramp Volume, V _R				228			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				45.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	671	0.94	Level	8	0	0.962	1.00	742	
Ramp	228	0.76	Level	5	0	0.976	1.00	306	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 742 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1048	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1048	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 6.3 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.229 (Exhibit 13-11) S _R = 59.7 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.7 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central Ave NB Off		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				1388		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				792		V _D = veh/h	
		Ramp Volume, V _R				372			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				45.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	792	0.87	Level	11	0	0.948	1.00	960	
Ramp	372	0.75	Level	6	0	0.971	1.00	513	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 960 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	960	Exhibit 13-8		4700 No
					V _{FO} = V _F - V _R	447	Exhibit 13-8		4700 No
					V _R	513	Exhibit 13-10		2100 No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	960	Exhibit 13-8		4400:All No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 0.0 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.344 (Exhibit 13-12) S _R = 57.1 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 57.1 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1491		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			413		V _D = veh/h		
		Ramp Volume, V _R			193				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			55.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	413	0.97	Level	8	0	0.962	1.00	443	
Ramp	193	0.81	Level	1	0	0.995	1.00	239	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 443 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	682	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	682	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 1.3 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.165 (Exhibit 13-11) S _R = 61.2 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 61.2 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe				Freeway/Dir of Travel	Central Ave SB Off			
Agency or Company					Junction				
Date Performed	9/9/2014				Jurisdiction				
Analysis Time Period	PM Peak				Analysis Year	2035			
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input type="checkbox"/> Yes <input type="checkbox"/> On		
L _{up} = ft		Deceleration Lane Length L _D			1144		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
V _u = veh/h		Freeway Volume, V _F			348		L _{down} = ft		
		Ramp Volume, V _R			101		V _D = veh/h		
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	348	0.79	Level	14	0	0.935	1.00	471	
Ramp	101	0.90	Level	6	0	0.971	1.00	115	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13)				
L _{EQ} =					L _{EQ} =				
P _{FM} = using Equation (Exhibit 13-6)					P _{FD} = 1.000 using Equation (Exhibit 13-7)				
V ₁₂ = pc/h					V ₁₂ = 471 pc/h				
V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17)					V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17)				
Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No					Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No					Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	471	Exhibit 13-8	4700	No
			V _{FO} = V _F - V _R	356	Exhibit 13-8	4700	No		
			V _R	115	Exhibit 13-10	2100	No		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	471	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D				
D _R = (pc/mi/ln)					D _R = -2.0 (pc/mi/ln)				
LOS = (Exhibit 13-2)					LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.308 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 57.9 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 57.9 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Central SB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				1144		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				936		V _D = veh/h	
		Ramp Volume, V _R				366			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				45.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	936	0.90	Level	14	0	0.935	1.00	1113	
Ramp	366	0.89	Level	6	0	0.971	1.00	423	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1113 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1536	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1536	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 10.1 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.236 (Exhibit 13-11) S _R = 59.6 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.6 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Emerson Junction NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			980		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			351		V _D = veh/h		
		Ramp Volume, V _R			104				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			55.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	351	0.89	Level	21	0	0.905	1.00	436	
Ramp	104	0.83	Level	15	0	0.930	1.00	135	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 436 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	571	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	571	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 3.7 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.220 (Exhibit 13-11) S _R = 59.9 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.9 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Emerson Junction SB Off		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				340		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				673		V _D = veh/h	
		Ramp Volume, V _R				299			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				50.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	673	0.87	Level	6	0	0.971	1.00	797	
Ramp	299	0.88	Level	5	0	0.976	1.00	348	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 797 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	797	Exhibit 13-8	4700	No
			V _{FO} = V _F - V _R	449	Exhibit 13-8	4700	No		
			V _R	348	Exhibit 13-10	2100	No		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	797	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 8.0 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.264 (Exhibit 13-12) S _R = 58.9 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 58.9 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Emerson Junction NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				980		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				849		V _D = veh/h	
		Ramp Volume, V _R				458			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				55.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	849	0.94	Level	6	0	0.971	1.00	930	
Ramp	458	0.92	Level	5	0	0.976	1.00	511	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 930 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1441	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1441	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 10.3 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.230 (Exhibit 13-11) S _R = 59.7 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.7 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Emerson Junction SB Off			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year		2035			
Project Description										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D				340		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				560		V _D = veh/h		
		Ramp Volume, V _R				195				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				50.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	560	0.88	Level	13	0	0.939	1.00	678		
Ramp	195	0.94	Level	7	0	0.966	1.00	216		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 678 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	678	Exhibit 13-8		4700	No
					V _{FO} = V _F - V _R	462	Exhibit 13-8		4700	No
					V _R	216	Exhibit 13-10		2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	678	Exhibit 13-8		4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 7.0 (pc/mi/ln) LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.252 (Exhibit 13-12) S _R = 59.2 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 59.2 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe				Freeway/Dir of Travel	Gore Hill NB Off			
Agency or Company					Junction				
Date Performed	9/9/2014				Jurisdiction				
Analysis Time Period	AM Peak				Analysis Year	2035			
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			323		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			442		V _D = veh/h		
		Ramp Volume, V _R			33				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			50.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	442	0.92	Level	10	0	0.952	1.00	504	
Ramp	33	0.74	Level	35	0	0.851	1.00	52	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 504 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	504	Exhibit 13-8	4700	No
					V _{FO} = V _F - V _R	452	Exhibit 13-8	4700	No
					V _R	52	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	504	Exhibit 13-8 4400:All		No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 5.7 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.238 (Exhibit 13-12) S _R = 59.5 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 59.5 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			803		V _D = veh/h		
		Ramp Volume, V _R			572				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			50.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	803	0.90	Grade	16	0	0.926	1.00	964	
Ramp	572	0.82	Level	23	0	0.897	1.00	774	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 964 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1738	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1738	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 9.3 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.193 (Exhibit 13-11) S _R = 60.6 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.6 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill SB Off			
Agency or Company					Junction					
Date Performed		9/9/2014			Jurisdiction					
Analysis Time Period		AM Peak			Analysis Year		2035			
Project Description										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D				358		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F				713		V _D = veh/h		
		Ramp Volume, V _R				686				
		Freeway Free-Flow Speed, S _{FF}				65.0				
		Ramp Free-Flow Speed, S _{FR}				50.0				
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	713	0.85	Grade	7	0	0.891	1.00	942		
Ramp	686	0.79	Level	7	0	0.966	1.00	894		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}			
		(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)			
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)			
V ₁₂ =		pc/h			V ₁₂ =		942 pc/h			
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)			
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	942	Exhibit 13-8	4700	No	
					V _{FO} = V _F - V _R	48	Exhibit 13-8	4700	No	
					V _R	894	Exhibit 13-10	2100	No	
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	942	Exhibit 13-8	4400:All	No	
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D					
D _R = (pc/mi/ln)					D _R = 9.1 (pc/mi/ln)					
LOS = (Exhibit 13-2)					LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11)					D _S = 0.313 (Exhibit 13-12)					
S _R = mph (Exhibit 13-11)					S _R = 57.8 mph (Exhibit 13-12)					
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 57.8 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill SB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				286		V _D = veh/h	
		Ramp Volume, V _R				81			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				50.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	286	0.79	Level	20	0	0.909	1.00	398	
Ramp	81	0.62	Level	40	0	0.833	1.00	157	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 398 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	555	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	555	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 0.3 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.178 (Exhibit 13-11) S _R = 60.9 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.9 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill NB Off		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				323		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				451		V _D = veh/h	
		Ramp Volume, V _R				67			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				50.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	451	0.96	Level	12	0	0.943	1.00	498	
Ramp	67	0.74	Level	42	0	0.826	1.00	109	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 498 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	498	Exhibit 13-8	4700	No
			V _{FO} = V _F - V _R			389	Exhibit 13-8	4700	No
			V _R			109	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	498	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 5.6 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.243 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 59.4 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 59.4 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill NB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		AM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				1122		V _D = veh/h	
		Ramp Volume, V _R				961			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				50.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1122	0.80	Grade	10	0	0.952	1.00	1473	
Ramp	961	0.74	Level	9	0	0.957	1.00	1357	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1473 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	2830	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	2830	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 17.5 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.237 (Exhibit 13-11) S _R = 59.5 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 59.5 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	Shane Forsythe			Freeway/Dir of Travel	Gore Hill SB Off				
Agency or Company				Junction					
Date Performed	9/9/2014			Jurisdiction					
Analysis Time Period	PM Peak			Analysis Year	2035				
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			358		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			981		V _D = veh/h		
		Ramp Volume, V _R			644				
		Freeway Free-Flow Speed, S _{FF}			65.0				
		Ramp Free-Flow Speed, S _{FR}			50.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	981	0.93	Grade	10	0	0.870	1.00	1213	
Ramp	644	0.80	Level	16	0	0.926	1.00	867	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 1213 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	1213	Exhibit 13-8		4700 No
					V _{FO} = V _F - V _R	346	Exhibit 13-8		4700 No
					V _R	867	Exhibit 13-10		2100 No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1213	Exhibit 13-8		4400:All No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 11.5 (pc/mi/ln) LOS = B (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.311 (Exhibit 13-12) S _R = 57.8 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 57.8 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		Shane Forsythe			Freeway/Dir of Travel		Gore Hill SB On		
Agency or Company					Junction				
Date Performed		9/9/2014			Jurisdiction				
Analysis Time Period		PM Peak			Analysis Year		2035		
Project Description									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				1500		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				444		V _D = veh/h	
		Ramp Volume, V _R				83			
		Freeway Free-Flow Speed, S _{FF}				65.0			
		Ramp Free-Flow Speed, S _{FR}				50.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	444	0.89	Level	6	0	0.971	1.00	514	
Ramp	83	0.65	Level	41	0	0.830	1.00	153	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 514 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	667	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	667	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 1.2 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.179 (Exhibit 13-11) S _R = 60.9 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 60.9 mph (Exhibit 13-13)					D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

Vistro File: F:\...\I-15 Corridor.vistropdb

Scenario 3: Future AM Scenario

Report File: F:\...\Future_LOS_Report_AM.pdf

8/19/2014

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Tri Hill and Frontage Airport Rd	Two-way stop	HCM2010	NEBL	0.514	27.3	D
2	I-15 NB and Airport Rd	Two-way stop	HCM2010	NEBT	0.000	44.2	E
3	I-15 SB On and Airport RD	Two-way stop	HCM2010	NWBL	0.133	10.4	B
4	I-15 SB Off and Airport RD Frontage	Two-way stop	HCM2010	SWBL	0.947	121.8	F
5	14th St SW and I-315 EB	Signalized	HCM2010	SBL	0.218	13.3	B
6	14th St SW and I-315 WB	Signalized	HCM2010	EBR	0.295	22.2	C
7	Fox Farm and I-315	Signalized	HCM2010	NEBL	0.760	39.0	D
8	Central Ave and I15 SB	Two-way stop	HCM2010	SBL	1.188	178.9	F
9	Central Ave and I-15 NB	Two-way stop	HCM2010	NBL	0.274	113.1	F
10	Central Ave and Vaughn Rd	Two-way stop	HCM2010	SBL	1.518	406.0	F
11	Vaughn Rd and I-15 SB	Two-way stop	HCM2010	SBL	0.361	11.0	B
12	Vaughn Rd and I-15 NB	Two-way stop	HCM2010	EBL	0.000	7.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report
#1: Tri Hill and Frontage Airport Rd**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 27.3
 Level Of Service: D
 Volume to Capacity (v/c): 0.514

Intersection Setup

Name	Northeastbound		Northwestbound		Southeastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Northeastbound		Northwestbound		Southeastbound	
Base Volume Input [veh/h]	83	19	9	189	97	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	21.70	31.10	22.20	28.60	25.70	5.70
Growth Rate	1.70	1.70	1.70	1.70	1.70	1.70
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	32	15	321	165	150
Peak Hour Factor	0.7410	0.4750	0.5630	0.8750	0.9330	0.7590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	17	7	92	44	49
Total Analysis Volume [veh/h]	190	67	27	367	177	198
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.51	0.10	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	27.25	22.66	8.42	0.00	0.00	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh]	3.94	3.94	0.08	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	98.56	98.56	1.92	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	26.06		0.58		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	6.75					
Intersection LOS	D					

**Intersection Level Of Service Report
#2: I-15 NB and Airport Rd**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 44.2
 Level Of Service: E
 Volume to Capacity (v/c): 0.000

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	+						T			T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	4	0	13	0	0	0	0	49	222	79	173	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	46.20	2.00	2.00	2.00	2.00	38.80	26.60	12.70	10.90	2.00
Growth Rate	1.90	1.90	1.90	1.00	1.00	1.00	1.00	1.90	1.90	1.90	1.90	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	0	25	0	0	0	0	93	422	150	329	0
Peak Hour Factor	0.5000	1.0000	0.8130	1.0000	1.0000	1.0000	1.0000	0.7210	0.8670	0.7050	0.9010	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	8	0	0	0	0	32	122	53	91	0
Total Analysis Volume [veh/h]	16	0	31	0	0	0	0	129	487	213	365	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results



V/C, Movement V/C Ratio	0.12	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00
d_M, Delay for Movement [s/veh]	34.72	44.22	13.81	0.00	0.00	0.00	0.00	0.00	0.00	10.13	0.00	0.00
Movement LOS	D	E	B					A	A	B	A	
95th-Percentile Queue Length [veh]	0.61	0.61	0.61	0.00	0.00	0.00	0.00	0.00	0.00	4.65	4.65	0.00
95th-Percentile Queue Length [ft]	15.29	15.29	15.29	0.00	0.00	0.00	0.00	0.00	0.00	116.18	116.18	0.00
d_A, Approach Delay [s/veh]	20.93			0.00			0.00			3.73		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	2.53											
Intersection LOS	E											

**Intersection Level Of Service Report
#3: I-15 SB On and Airport RD**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 10.4
 Level Of Service: B
 Volume to Capacity (v/c): 0.133

Intersection Setup

Name	Northeastbound		Northwestbound		Southeastbound	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Northeastbound		Northwestbound		Southeastbound	
Base Volume Input [veh/h]	0	0	32	23	251	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	43.80	21.70	14.00	16.70
Growth Rate	1.00	1.00	2.12	2.12	2.12	2.12
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	68	49	532	13
Peak Hour Factor	1.0000	1.0000	0.6670	0.6390	0.8720	0.3750
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	25	19	153	9
Total Analysis Volume [veh/h]	0	0	102	77	610	35
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.13	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	10.39	0.00	0.00	0.00
Movement LOS			B	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.90	0.90	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	22.46	22.46	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		5.92		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.29					
Intersection LOS	B					

**Intersection Level Of Service Report
#4: I-15 SB Off and Airport RD Frontage**

Control Type:	Two-way stop	Delay (sec / veh):	121.8
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.947

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	T			T			T			T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	5	0	44	159	54	96	8	12	0	0	40	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	11.30	10.10	7.40	3.10	12.50	8.30	2.00	2.00	2.50	0.00
Growth Rate	2.22	1.00	2.22	2.22	2.22	2.22	2.22	2.22	1.00	1.00	2.22	2.22
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	0	98	353	120	213	18	27	0	0	89	9
Peak Hour Factor	0.4170	1.0000	0.5240	0.8110	0.9000	0.7060	0.4000	0.7500	1.0000	1.0000	0.7690	0.5000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	47	109	33	75	11	9	0	0	29	5
Total Analysis Volume [veh/h]	26	0	187	435	133	302	45	36	0	0	116	18
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no	no		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.21	0.95	0.22	0.29	0.03	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.59	0.00	10.80	121.78	119.80	9.92	7.68	0.00	0.00	0.00	0.00	0.00
Movement LOS	C		B	F	F	A	A	A			A	A
95th-Percentile Queue Length [veh]	1.14	0.00	1.14	20.41	20.41	1.22	0.19	0.19	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	28.44	0.00	28.44	510.19	510.19	30.56	4.64	4.64	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.50			82.65			4.27			0.00		
Approach LOS	B			F			A			A		
d_I, Intersection Delay [s/veh]	57.55											
Intersection LOS	F											

**Intersection Level Of Service Report
#5: 14th St SW and I-315 EB**

Control Type: Signalized
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 13.3
 Level Of Service: B
 Volume to Capacity (v/c): 0.218

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	7	66	286	142	91	60	44	69	3	20	30	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.30	1.50	1.70	3.50	4.40	5.00	0.00	4.30	0.00	10.00	3.30	0.00
Growth Rate	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	82	355	176	113	74	55	86	4	25	37	6
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	25	107	53	34	22	17	26	1	8	11	2
Total Analysis Volume [veh/h]	11	99	428	212	136	89	66	104	5	30	45	7
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	3	0	6	7	7	4	0	3	8	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	15	0	5	15	15	5	0	15	15	0
Maximum Green [s]	0	50	20	0	50	20	20	60	0	20	60	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	22	18	0	22	18	18	20	0	18	20	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	10	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	1.0	0.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall		no	no		no	no	no	no		no	no	
Maximum Recall		no	no		no	no	no	no		no	no	
Pedestrian Recall		no	no		no	no	no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	17	17	37	17	17	36	29	12	12	29	11	11
g / C, Green / Cycle	0.28	0.28	0.62	0.28	0.28	0.60	0.49	0.21	0.21	0.49	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.01	0.05	0.27	0.17	0.07	0.06	0.04	0.06	0.00	0.02	0.02	0.00
s, saturation flow rate [veh/h]	1114	1872	1588	1272	1820	1538	1616	1822	1615	1422	1839	1615
c, Capacity [veh/h]	334	530	979	387	515	920	948	376	333	816	346	304
d1, Uniform Delay [s]	19.78	16.28	6.04	22.47	16.66	5.14	8.16	20.04	18.95	8.07	20.26	19.85
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.17	0.31	1.21	0.27	0.05	0.03	0.39	0.02	0.02	0.17	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.19	0.44	0.55	0.26	0.10	0.07	0.28	0.01	0.04	0.13	0.02
d, Delay for Lane Group [s/veh]	19.82	16.44	6.35	23.68	16.93	5.19	8.20	20.43	18.97	8.08	20.43	19.88
Lane Group LOS	B	B	A	C	B	A	A	C	B	A	C	B
Critical Lane Group	no	no	yes	no	no	no	no	no	no	no	yes	no
50th-Percentile Queue Length [veh]	0.12	0.97	2.14	2.75	1.37	0.37	0.40	1.18	0.05	0.18	0.51	0.08
50th-Percentile Queue Length [ft]	3.03	24.30	53.51	68.66	34.27	9.31	9.90	29.58	1.34	4.43	12.70	1.94
95th-Percentile Queue Length [veh]	0.22	1.75	3.85	4.94	2.47	0.67	0.71	2.13	0.10	0.32	0.91	0.14
95th-Percentile Queue Length [ft]	5.46	43.75	96.31	123.59	61.69	16.75	17.82	53.25	2.41	7.97	22.86	3.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.82	16.44	6.35	23.68	16.93	5.19	8.20	20.43	18.97	8.08	20.43	19.88
Movement LOS	B	B	A	C	B	A	A	C	B	A	C	B
d_A, Approach Delay [s/veh]	8.48			17.81			15.78			15.87		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	13.32											
Intersection LOS	B											
Intersection V/C	0.218											

Sequence

Ring 1	2	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	3	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#6: 14th St SW and I-315 WB**

Control Type: Signalized
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 22.2
 Level Of Service: C
 Volume to Capacity (v/c): 0.295

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	11	17	90	26	136	0	0	7	15	162	16	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.10	0.00	4.40	7.70	1.50	0.00	0.00	0.00	0.00	2.50	0.00	0.00
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	20	104	30	158	0	0	8	17	188	19	44
Peak Hour Factor	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040	0.8040
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	6	32	9	49	0	0	2	5	58	6	14
Total Analysis Volume [veh/h]	16	25	129	37	197	0	0	10	21	234	24	55
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	1	2	0	1	0	0	3	0	0	2	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	35	40	0	35	0	0	25	0	0	40	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	25	19	0	25	0	0	16	0	0	19	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	9	7	0	9	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	11	7	0	11	0	0	0	0	0	7	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		no	no		no			no			no	
Maximum Recall		no	no		no			no			no	
Pedestrian Recall		no	no		no			no			no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	13	13	30	13	13	2	12	12
g / C, Green / Cycle	0.21	0.21	0.49	0.21	0.21	0.03	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01	0.09	0.03	0.12	0.02	0.16	0.04
s, saturation flow rate [veh/h]	994	1710	1392	1176	1685	1527	1636	1454
c, Capacity [veh/h]	183	356	686	305	350	52	329	292
d1, Uniform Delay [s]	26.76	19.09	8.52	21.98	21.31	28.58	22.73	19.90
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	0.08	0.13	0.18	1.41	10.57	4.12	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

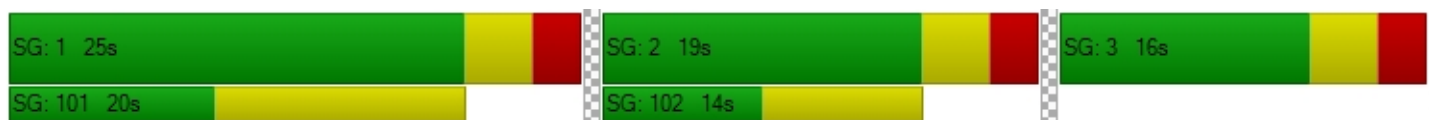
X, volume / capacity	0.09	0.07	0.19	0.12	0.56	0.60	0.78	0.19
d, Delay for Lane Group [s/veh]	26.96	19.18	8.65	22.16	22.72	39.15	26.86	20.21
Lane Group LOS	C	B	A	C	C	D	C	C
Critical Lane Group	no	no	no	no	yes	yes	yes	no
50th-Percentile Queue Length [veh]	0.22	0.27	0.82	0.44	2.44	0.57	3.57	0.62
50th-Percentile Queue Length [ft]	5.43	6.74	20.40	11.02	60.90	14.26	89.30	15.53
95th-Percentile Queue Length [veh]	0.39	0.49	1.47	0.79	4.38	1.03	6.43	1.12
95th-Percentile Queue Length [ft]	9.77	12.13	36.71	19.83	109.62	25.67	160.74	27.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.96	19.18	8.65	22.16	22.72	22.72	39.15	39.15	39.15	26.86	26.86	20.21
Movement LOS	C	B	A	C	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	11.92			22.63			39.15			25.69		
Approach LOS	B			C			D			C		
d_I, Intersection Delay [s/veh]	22.16											
Intersection LOS	C											
Intersection V/C	0.295											

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#7: Fox Farm and I-315**

Control Type: Signalized
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 39.0
 Level Of Service: D
 Volume to Capacity (v/c): 0.760

Intersection Setup

Name	Northbound			Southbound			Northeastbound			Southwestbound		
Approach	Northbound			Southbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Northeastbound			Southwestbound		
Base Volume Input [veh/h]	50	219	437	172	90	121	161	732	45	101	335	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.90	0.70	1.80	2.20	4.10	6.20	5.20	2.20	4.00	6.00	3.70
Growth Rate	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	256	511	201	105	142	188	856	53	118	392	159
Peak Hour Factor	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980	0.7980
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	80	160	63	33	44	59	268	17	37	123	50
Total Analysis Volume [veh/h]	74	321	640	252	132	178	236	1073	66	148	491	199
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	1	8	0	3	6	6	4	0	8	2	5
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	5	5	5	0	5	5	0
Maximum Green [s]	0	60	60	0	60	60	60	60	0	60	60	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	41	0	33	67	67	46	0	41	20	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	1.0	0.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall		no	no		no	no	no	no		no	no	
Maximum Recall		no	no		no	no	no	no		no	no	
Pedestrian Recall		no	no		no	no	no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	C	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	1.00	3.00	3.00	1.00	3.00	3.00
g_i, Effective Green Time [s]	31	31	97	25	25	52	22	47	47	31	56	56
g / C, Green / Cycle	0.22	0.22	0.69	0.18	0.18	0.37	0.16	0.34	0.34	0.22	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.04	0.19	0.40	0.14	0.04	0.11	0.14	0.31	0.04	0.04	0.14	0.13
s, saturation flow rate [veh/h]	1793	1714	1604	1778	3540	1551	1704	3439	1580	3379	3413	1557
c, Capacity [veh/h]	405	387	1160	365	727	618	268	1167	536	750	1378	629
d1, Uniform Delay [s]	43.76	51.63	8.93	51.50	45.91	28.61	57.70	44.43	31.90	44.32	29.06	28.52
k, delay calibration	0.11	0.11	0.41	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	4.62	1.56	2.33	0.12	0.25	9.13	3.49	0.10	0.13	0.16	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.83	0.55	0.69	0.18	0.29	0.88	0.92	0.12	0.20	0.36	0.32
d, Delay for Lane Group [s/veh]	43.98	56.25	10.49	53.83	46.03	28.87	66.82	47.91	32.00	44.45	29.22	28.81
Lane Group LOS	D	E	B	D	D	C	E	D	C	D	C	C
Critical Lane Group	no	no	yes	yes	no	no	no	yes	no	no	no	no
50th-Percentile Queue Length [veh]	2.13	11.29	10.10	9.13	2.00	4.36	8.87	18.35	1.59	2.14	5.88	4.71
50th-Percentile Queue Length [ft]	53.34	282.26	252.44	228.16	49.99	109.09	221.67	458.87	39.66	53.49	147.02	117.63
95th-Percentile Queue Length [veh]	3.84	16.80	15.31	14.08	3.60	7.79	13.75	25.38	2.86	3.85	9.86	8.26
95th-Percentile Queue Length [ft]	96.01	420.02	382.72	352.03	89.98	194.73	343.76	634.52	71.39	96.29	246.44	206.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.98	56.25	10.49	53.83	46.03	28.87	66.82	47.91	32.00	44.45	29.22	28.81
Movement LOS	D	E	B	D	D	C	E	D	C	D	C	C
d_A, Approach Delay [s/veh]	27.07			44.09			50.39			31.81		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	39.04											
Intersection LOS	D											
Intersection V/C	0.760											

Sequence

Ring 1	1	3	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	2	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#8: Central Ave and I15 SB**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 178.9
 Level Of Service: F
 Volume to Capacity (v/c): 1.188

Intersection Setup

Name	Southbound			Eastbound			Westbound			Northwestbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Southbound			Eastbound			Westbound			Northwestbound		
Base Volume Input [veh/h]	130	0	6	0	191	39	123	88	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	0.00	0.00	2.00	3.10	0.00	6.50	11.30	2.00	2.00	2.00	2.00
Growth Rate	1.41	1.41	1.41	1.00	1.41	1.41	1.41	1.41	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	8	0	269	55	173	124	0	0	0	0
Peak Hour Factor	0.8550	1.0000	0.7500	1.0000	0.6920	0.7500	0.7690	0.8150	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	0	3	0	97	18	56	38	0	0	0	0
Total Analysis Volume [veh/h]	214	0	11	0	389	73	225	152	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.19	0.00	0.01	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	178.88	176.96	9.05	0.00	0.00	0.00	8.91	0.00	0.00	0.00	0.00	0.00
Movement LOS	F	F	A		A	A	A	A				
95th-Percentile Queue Length [veh]	11.32	11.32	0.04	0.00	0.00	0.00	0.73	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	282.97	282.97	0.93	0.00	0.00	0.00	18.22	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	170.57			0.00			5.32			0.00		
Approach LOS	F			A			A			A		
d_I, Intersection Delay [s/veh]	37.95											
Intersection LOS	F											

**Intersection Level Of Service Report
#9: Central Ave and I-15 NB**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 113.1
 Level Of Service: F
 Volume to Capacity (v/c): 0.274

Intersection Setup

Name	Northbound			Eastbound			Westbound			Southeastbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Eastbound			Westbound			Southeastbound		
Base Volume Input [veh/h]	15	0	177	6	305	0	0	202	44	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	10.80	16.70	2.00	2.00	2.00	11.40	13.60	2.00	2.00	2.00
Growth Rate	1.64	1.64	1.64	1.64	1.64	1.00	1.00	1.64	1.64	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	0	290	10	500	0	0	331	72	0	0	0
Peak Hour Factor	0.5360	1.0000	0.8510	0.7500	0.7190	1.0000	1.0000	0.8420	0.7330	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	0	85	3	174	0	0	98	25	0	0	0
Total Analysis Volume [veh/h]	47	0	341	13	695	0	0	393	98	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.27	0.00	0.80	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	113.09	109.47	100.54	8.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	F	F	F	A	A			A	A			
95th-Percentile Queue Length [veh]	13.79	13.79	13.79	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	344.63	344.63	344.63	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	102.06			0.15			0.00			0.00		
Approach LOS	F			A			A			A		
d_I, Intersection Delay [s/veh]	25.02											
Intersection LOS	F											

**Intersection Level Of Service Report
#10: Central Ave and Vaughn Rd**

Control Type:	Two-way stop	Delay (sec / veh):	406.0
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.518

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	77	60	71	410	184	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.10	6.70	7.00	5.10	11.40	6.20
Growth Rate	1.63	1.63	1.63	1.63	1.63	1.63
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	98	116	668	300	106
Peak Hour Factor	0.7700	0.7890	0.8450	0.8010	0.8520	0.7740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	31	34	208	88	34
Total Analysis Volume [veh/h]	164	124	137	834	352	137
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.52	0.20	0.13	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	405.95	378.42	8.95	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh]	20.34	20.34	0.45	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	508.50	508.50	11.23	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	394.10		1.26		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	65.63					
Intersection LOS	F					

**Intersection Level Of Service Report
#11: Vaughn Rd and I-15 SB**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 11.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.361

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	↔		↑		↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	219	1	0	27	12	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.60	0.00	2.00	11.10	8.30	2.00
Growth Rate	1.36	1.36	1.00	1.36	1.36	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	298	1	0	37	16	0
Peak Hour Factor	0.8830	0.2500	1.0000	0.8440	0.7500	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	1	0	11	5	0
Total Analysis Volume [veh/h]	337	4	0	44	21	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.36	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.04	10.58	0.00	0.00	0.00	0.00
Movement LOS	B	B		A	A	
95th-Percentile Queue Length [veh]	1.68	1.68	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	42.07	42.07	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.04		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	9.27					
Intersection LOS	B					

**Intersection Level Of Service Report
#12: Vaughn Rd and I-15 NB**

Control Type:	Two-way stop	Delay (sec / veh):	7.3
Analysis Method:	HCM2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Eastbound		Westbound		Southeastbound	
Approach						
Lane Configuration	1		1r			
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Eastbound		Westbound		Southeastbound	
Base Volume Input [veh/h]	0	237	19	76	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	5.30	14.50	2.00	2.00
Growth Rate	1.37	1.37	1.37	1.37	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	325	26	104	0	0
Peak Hour Factor	1.0000	0.8590	0.5940	0.8260	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	95	11	31	0	0
Total Analysis Volume [veh/h]	0	378	44	126	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

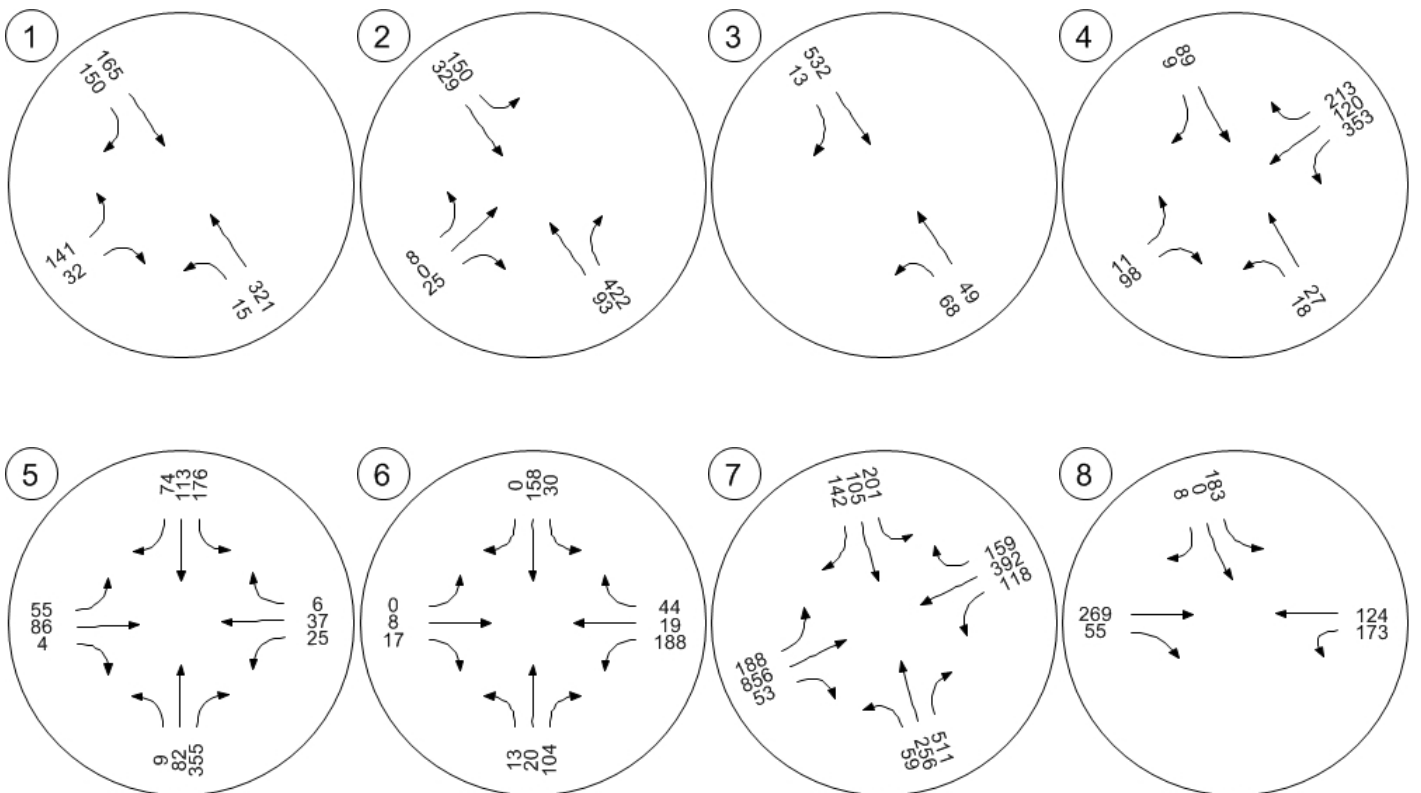
Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			
Number of Storage Spaces in Median	0	0	0

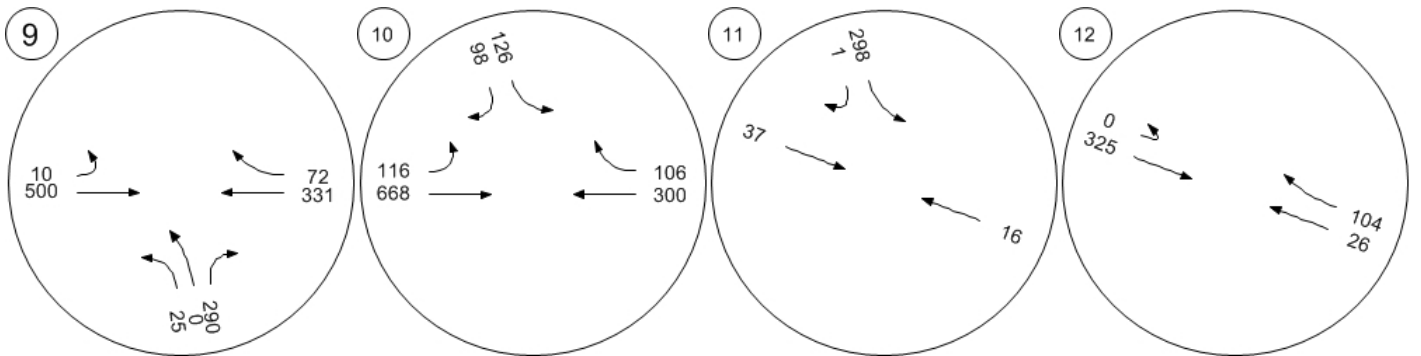
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.28	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A		
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

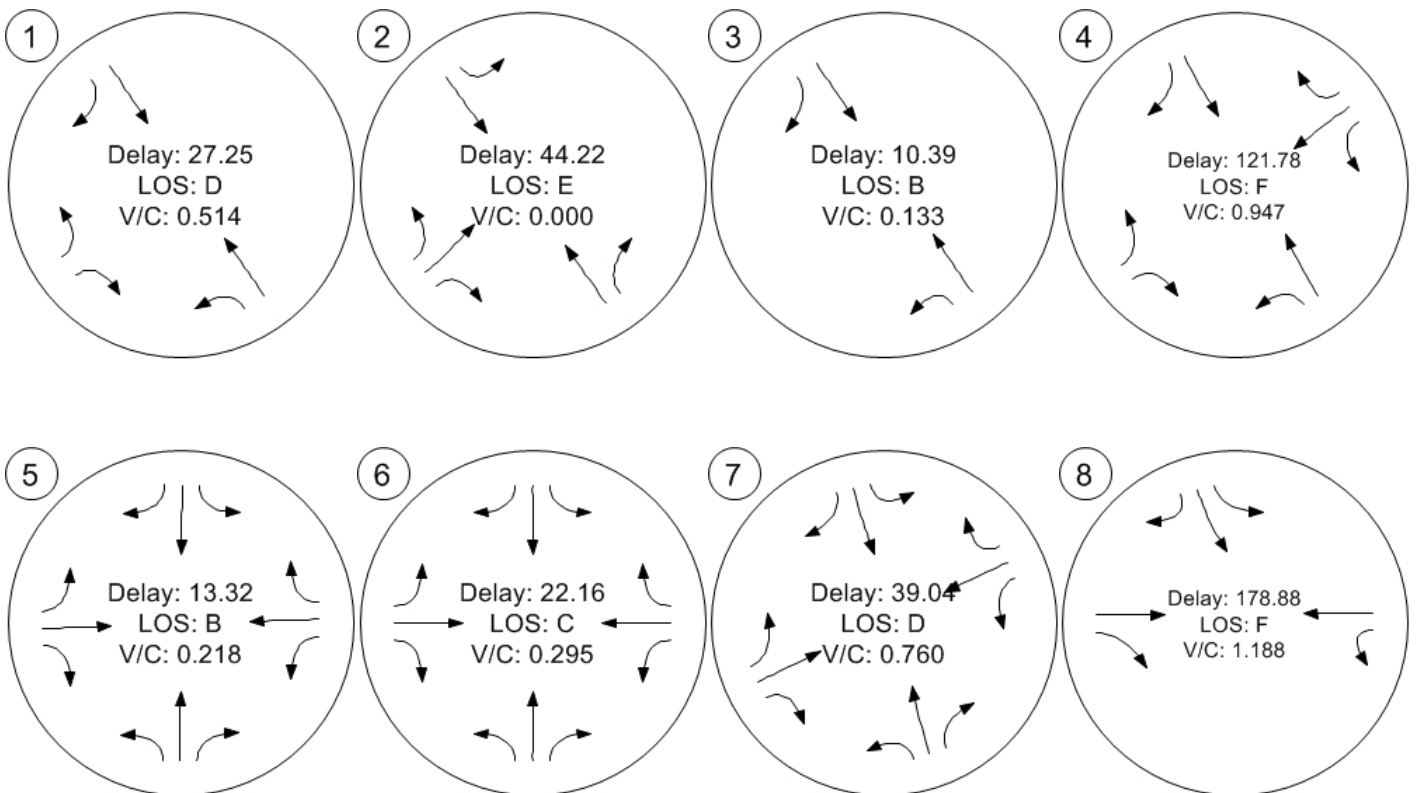
Traffic Volume - Future Total Volume



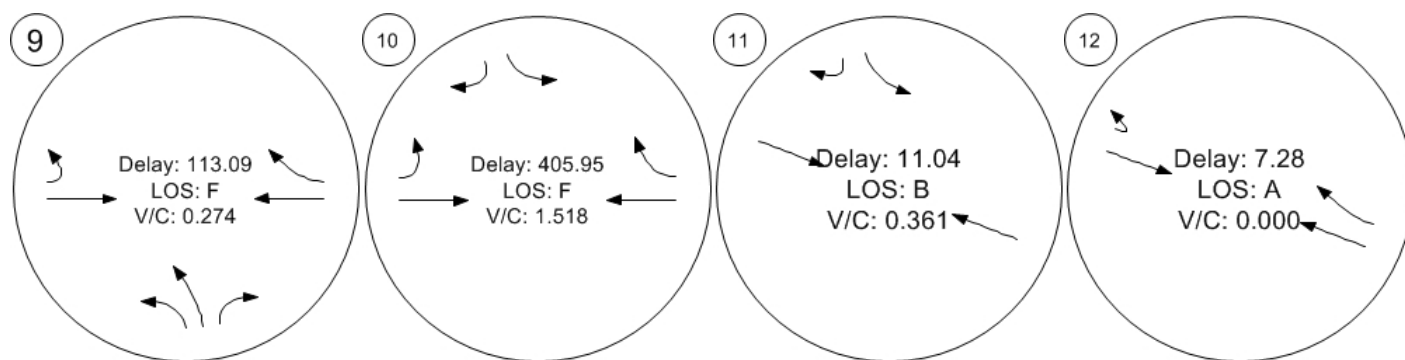
Traffic Volume - Future Total Volume



Traffic Conditions



Traffic Conditions



I-15 Corridor Study

Vistro File: F:\...\I-15 Corridor.vistropdb

Scenario 4: Future PM Scenario

Report File: F:\...\Future_LOS_Report_PM.pdf

9/15/2014

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Tri Hill and Frontage Airport Rd	Two-way stop	HCM2010	NEBL	0.713	43.7	E
2	I-15 NB and Airport Rd	Two-way stop	HCM2010	NEBR	0.159	10,000.0	F
3	I-15 SB On and Airport RD	Two-way stop	HCM2010	NWBL	0.305	23.5	C
4	I-15 SB Off and Airport RD Frontage	Two-way stop	HCM2010	SWBL	7.378	3,138.9	F
5	14th St SW and I-315 EB	Signalized	HCM2010	NBL	0.457	12.4	B
6	14th St SW and I-315 WB	Signalized	HCM2010	EBR	0.621	19.6	B
7	Fox Farm and I-315	Signalized	HCM2010	NBT	0.891	35.6	D
8	Central Ave and I15 SB	Two-way stop	HCM2010	SBL	1.339	314.9	F
9	Central Ave and I-15 NB	Two-way stop	HCM2010	NBL	1.211	445.2	F
10	Central Ave and Vaughn Rd	Two-way stop	HCM2010	SBL	3.231	1,422.7	F
11	Vaughn Rd and I-15 SB	Two-way stop	HCM2010	SBL	0.254	11.0	B
12	Vaughn Rd and I-15 NB	Two-way stop	HCM2010	EBL	0.000	7.4	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report
#1: Tri Hill and Frontage Airport Rd**

Control Type:	Two-way stop	Delay (sec / veh):	43.7
Analysis Method:	HCM2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

Intersection Setup

Name	Northeastbound		Northwestbound		Southeastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Northeastbound		Northwestbound		Southeastbound	
Base Volume Input [veh/h]	75	7	9	160	207	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	0.00	22.20	33.80	18.90	15.80
Growth Rate	1.70	1.70	1.70	1.70	1.70	1.70
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	12	15	272	352	119
Peak Hour Factor	0.5680	0.4380	0.7500	0.8000	0.8480	0.8330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	7	5	85	104	36
Total Analysis Volume [veh/h]	225	27	20	340	415	143
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.71	0.05	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	43.71	38.46	9.00	0.00	0.00	0.00
Movement LOS	E	E	A	A	A	A
95th-Percentile Queue Length [veh]	5.93	5.93	0.07	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	148.33	148.33	1.67	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	43.15		0.50		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	9.45					
Intersection LOS	E					

**Intersection Level Of Service Report
#2: I-15 NB and Airport Rd**

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.159

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	+						┌			┐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name												
Base Volume Input [veh/h]	2	2	31	0	0	0	0	47	197	307	236	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	47.40	2.00	2.00	2.00	2.00	40.40	20.80	0.70	17.40	2.00
Growth Rate	1.90	1.90	1.90	1.00	1.00	1.00	1.00	1.90	1.90	1.90	1.90	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	4	59	0	0	0	0	89	374	583	448	0
Peak Hour Factor	0.5000	0.5000	0.7750	1.0000	1.0000	1.0000	1.0000	0.6910	0.8210	0.6910	0.8680	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	2	19	0	0	0	0	32	114	211	129	0
Total Analysis Volume [veh/h]	8	8	76	0	0	0	0	129	456	844	516	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0



Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	0.00	0.00	0.00	0.00	0.00	0.00	24.83	0.00	0.00
Movement LOS	F	F	F					A	A	C	A	
95th-Percentile Queue Length [veh]	13.97	13.97	13.97	0.00	0.00	0.00	0.00	0.00	0.00	54.79	54.79	0.00
95th-Percentile Queue Length [ft]	349.24	349.24	349.24	0.00	0.00	0.00	0.00	0.00	0.00	1369.74	1369.74	0.00
d_A, Approach Delay [s/veh]	10000.00			0.00			0.00			15.41		
Approach LOS	F			A			A			F		
d_I, Intersection Delay [s/veh]	461.93											
Intersection LOS	F											

**Intersection Level Of Service Report
#3: I-15 SB On and Airport RD**

Control Type:	Two-way stop	Delay (sec / veh):	23.5
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.305

Intersection Setup

Name	Northeastbound		Northwestbound		Southeastbound	
Approach						
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Northeastbound		Northwestbound		Southeastbound	
Base Volume Input [veh/h]	0	0	25	21	542	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	64.00	19.10	7.30	0.00
Growth Rate	1.00	1.00	2.12	2.12	2.12	2.12
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	53	45	1149	30
Peak Hour Factor	1.0000	1.0000	0.6250	0.7500	0.7450	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	21	15	386	11
Total Analysis Volume [veh/h]	0	0	85	60	1542	43
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.30	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	23.48	0.00	0.00	0.00
Movement LOS			C	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	2.79	2.79	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	69.68	69.68	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		13.76		0.00	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	1.15					
Intersection LOS	C					

**Intersection Level Of Service Report
#4: I-15 SB Off and Airport RD Frontage**

Control Type:	Two-way stop	Delay (sec / veh):	3,138.9
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	7.378

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	T			T			T			T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	0	0	55	217	26	47	8	15	0	0	286	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	1.80	18.90	11.50	2.10	37.50	6.70	2.00	2.00	1.00	0.00
Growth Rate	2.22	1.00	2.22	2.22	2.22	2.22	2.22	2.22	1.00	1.00	2.22	2.22
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	122	482	58	104	18	33	0	0	635	2
Peak Hour Factor	1.0000	1.0000	0.7240	0.8350	0.7220	0.6910	0.6670	0.7500	1.0000	1.0000	0.6810	0.2500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	42	144	20	38	7	11	0	0	233	2
Total Analysis Volume [veh/h]	0	0	169	577	80	151	27	44	0	0	932	8
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no	no		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.53	7.38	0.38	0.15	0.04	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	47.75	0.00	27.94	3138.95	3109.90	9.11	11.25	0.00	0.00	0.00	0.00	0.00
Movement LOS	E		D	F	F	A	B	A			A	A
95th-Percentile Queue Length [veh]	2.88	0.00	2.88	74.83	74.83	0.52	0.40	0.40	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	72.12	0.00	72.12	1870.70	1870.70	12.88	9.95	9.95	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	27.94		2551.16				4.28		0.00			
Approach LOS	D		F				A		A			
d_I, Intersection Delay [s/veh]	1039.42											
Intersection LOS	F											

**Intersection Level of Service Report
#5: 14th St SW and I-315 EB**

Control Type:	Signalized	Delay (sec / veh):	12.4
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	13	82	260	95	396	262	107	168	10	102	50	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.40	1.20	4.30	1.30	0.40	0.90	0.00	0.00	1.00	0.00	12.90
Growth Rate	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	102	322	118	491	325	133	208	12	126	62	38
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	27	86	31	131	87	35	55	3	34	17	10
Total Analysis Volume [veh/h]	17	109	343	126	523	346	142	222	13	134	66	41
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	3	0	6	7	7	4	0	3	8	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	15	0	5	15	15	5	0	15	15	0
Maximum Green [s]	0	50	20	0	50	20	20	45	0	20	45	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	22	18	0	22	18	18	20	0	18	20	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	10	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	1.0	0.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall		no	no		no	no	no	no		no	no	
Maximum Recall		no	no		no	no	no	no		no	no	
Pedestrian Recall		no	no		no	no	no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	3.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	21	21	41	21	21	41	33	15	15	33	15	15
g / C, Green / Cycle	0.35	0.35	0.68	0.35	0.35	0.68	0.55	0.25	0.25	0.55	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.06	0.21	0.10	0.28	0.22	0.09	0.12	0.01	0.09	0.03	0.03
s, saturation flow rate [veh/h]	893	1855	1596	1251	1876	1609	1564	1900	1615	1472	1900	1430
c, Capacity [veh/h]	183	647	1089	469	654	1097	998	466	396	872	466	351
d1, Uniform Delay [s]	26.40	13.51	3.86	17.33	17.64	3.86	6.75	19.34	17.22	7.01	17.69	17.58
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.20	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.12	0.16	0.30	2.31	0.30	0.06	0.75	0.03	0.08	0.14	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.17	0.32	0.27	0.80	0.32	0.14	0.48	0.03	0.15	0.14	0.12
d, Delay for Lane Group [s/veh]	26.62	13.63	4.03	17.63	19.95	4.16	6.82	20.09	17.25	7.09	17.83	17.73
Lane Group LOS	C	B	A	B	B	A	A	C	B	A	B	B
Critical Lane Group	no	no	no	no	yes	yes	no	yes	no	no	no	no
50th-Percentile Queue Length [veh]	0.23	0.94	1.10	1.32	6.19	1.15	0.74	2.53	0.13	0.70	0.68	0.42
50th-Percentile Queue Length [ft]	5.73	23.57	27.43	32.90	154.65	28.69	18.54	63.35	3.27	17.48	17.01	10.58
95th-Percentile Queue Length [veh]	0.41	1.70	1.97	2.37	10.26	2.07	1.33	4.56	0.24	1.26	1.22	0.76
95th-Percentile Queue Length [ft]	10.31	42.42	49.37	59.22	256.62	51.65	33.37	114.02	5.88	31.46	30.62	19.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.62	13.63	4.03	17.63	19.95	4.16	6.82	20.09	17.25	7.09	17.83	17.73
Movement LOS	C	B	A	B	B	A	A	C	B	A	B	B
d_A, Approach Delay [s/veh]	7.08			14.16			15.00			11.84		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	12.45											
Intersection LOS	B											
Intersection V/C	0.457											

Sequence

Ring 1	2	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	3	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#6: 14th St SW and I-315 WB**

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	5	76	146	22	131	2	3	5	19	638	12	142
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	40.00	6.60	0.70	0.00	2.30	0.00	0.00	0.00	15.80	1.80	8.30	4.20
Growth Rate	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	88	169	26	152	2	3	6	22	740	14	165
Peak Hour Factor	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880	0.9880
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	22	43	7	38	1	1	2	6	187	4	42
Total Analysis Volume [veh/h]	6	89	171	26	154	2	3	6	22	749	14	167
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	1	2	0	1	0	0	3	0	0	2	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	35	40	0	35	0	0	25	0	0	40	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	25	19	0	25	0	0	16	0	0	19	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	9	7	0	9	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	11	7	0	11	0	0	0	0	0	7	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		no	no		no			no			no	
Maximum Recall		no	no		no			no			no	
Pedestrian Recall		no	no		no			no			no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	11	49	11	11	2	33	33
g / C, Green / Cycle	0.18	0.18	0.81	0.18	0.18	0.03	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.01	0.06	0.12	0.02	0.09	0.02	0.51	0.12
s, saturation flow rate [veh/h]	804	1604	1443	1196	1668	1513	1505	1395
c, Capacity [veh/h]	167	290	1168	234	301	51	820	760
d1, Uniform Delay [s]	26.79	21.32	1.24	25.10	22.21	28.59	12.61	7.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.27	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	0.59	0.06	0.21	1.37	11.05	11.60	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

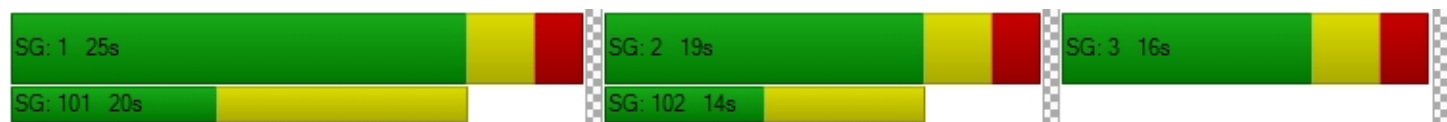
X, volume / capacity	0.04	0.31	0.15	0.11	0.52	0.61	0.93	0.22
d, Delay for Lane Group [s/veh]	26.88	21.91	1.30	25.31	23.59	39.64	24.21	7.20
Lane Group LOS	C	C	A	C	C	D	C	A
Critical Lane Group	no	no	no	no	yes	yes	yes	no
50th-Percentile Queue Length [veh]	0.08	1.06	0.08	0.34	1.97	0.58	9.92	0.92
50th-Percentile Queue Length [ft]	2.04	26.57	1.93	8.44	49.22	14.38	247.97	23.06
95th-Percentile Queue Length [veh]	0.15	1.91	0.14	0.61	3.54	1.04	15.08	1.66
95th-Percentile Queue Length [ft]	3.67	47.82	3.47	15.19	88.60	25.89	377.09	41.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.88	21.91	1.30	25.31	23.59	23.59	39.64	39.64	39.64	24.21	24.21	7.20
Movement LOS	C	C	A	C	C	C	D	D	D	C	C	A
d_A, Approach Delay [s/veh]	8.77			23.83			39.64			21.15		
Approach LOS	A			C			D			C		
d_I, Intersection Delay [s/veh]	19.57											
Intersection LOS	B											
Intersection V/C	0.621											

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#7: Fox Farm and I-315**

Control Type:	Signalized	Delay (sec / veh):	35.6
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.891

Intersection Setup

Name	Northbound			Southbound			Northeastbound			Southwestbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Southbound			Northeastbound			Southwestbound		
Base Volume Input [veh/h]	71	155	227	153	274	325	242	706	103	486	874	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	1.90	0.40	1.30	0.70	2.10	2.50	3.60	2.90	0.40	3.90	1.60
Growth Rate	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	181	266	179	321	380	283	826	121	569	1023	293
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	49	72	49	87	103	77	224	33	155	278	80
Total Analysis Volume [veh/h]	90	197	289	195	349	413	308	898	132	618	1112	318
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	1	8	0	3	6	6	4	0	8	2	5
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	5	5	5	0	5	5	0
Maximum Green [s]	0	60	60	0	60	60	60	60	0	60	60	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	35	26	0	20	23	23	39	0	26	42	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	1.0	0.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall		no	no		no	no	no	no		no	no	
Maximum Recall		no	no		no	no	no	no		no	no	
Pedestrian Recall		no	no		no	no	no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	C	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	1.00	3.00	3.00	1.00	3.00	3.00
g_i, Effective Green Time [s]	18	18	82	28	28	61	28	47	47	27	47	47
g / C, Green / Cycle	0.15	0.15	0.68	0.24	0.24	0.51	0.23	0.40	0.40	0.23	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.06	0.12	0.20	0.12	0.11	0.29	0.19	0.29	0.09	0.20	0.35	0.22
s, saturation flow rate [veh/h]	1604	1527	1448	1608	3233	1424	1589	3143	1413	3150	3134	1431
c, Capacity [veh/h]	243	231	985	380	764	729	371	1245	559	719	1224	559
d1, Uniform Delay [s]	46.00	49.37	7.66	39.82	39.22	20.15	43.70	30.64	24.14	44.46	34.54	28.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.15	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.06	7.18	0.16	1.07	0.43	0.96	4.79	0.80	0.21	3.15	2.94	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.82	0.29	0.51	0.46	0.57	0.83	0.72	0.24	0.86	0.91	0.57
d, Delay for Lane Group [s/veh]	47.07	56.55	7.83	40.89	39.65	21.11	48.50	31.44	24.35	47.61	37.48	29.57
Lane Group LOS	D	E	A	D	D	C	D	C	C	D	D	C
Critical Lane Group	no	yes	no	no	no	yes	yes	no	no	no	yes	no
50th-Percentile Queue Length [veh]	2.70	5.98	2.86	5.12	4.46	7.98	9.16	10.99	2.55	9.09	15.51	7.26
50th-Percentile Queue Length [ft]	67.38	149.57	71.39	127.98	111.45	199.62	228.90	274.66	63.65	227.31	387.83	181.61
95th-Percentile Queue Length [veh]	4.85	9.99	5.14	8.83	7.92	12.62	14.12	16.42	4.58	14.04	21.97	11.68
95th-Percentile Queue Length [ft]	121.29	249.86	128.51	220.75	198.02	315.47	352.97	410.56	114.57	350.95	549.31	292.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.07	56.22	7.83	40.89	39.65	21.11	48.50	31.44	24.35	47.61	37.48	29.57
Movement LOS	D	E	A	D	D	C	D	C	C	D	D	C
d_A, Approach Delay [s/veh]	30.51			31.90			34.67			39.31		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	35.58											
Intersection LOS	D											
Intersection V/C	0.891											

Sequence

Ring 1	1	3	8	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	2	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
#8: Central Ave and I15 SB**

Control Type:	Two-way stop	Delay (sec / veh):	314.9
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.339

Intersection Setup

Name	Southbound			Eastbound			Westbound			Northwestbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Southbound			Eastbound			Westbound			Northwestbound		
Base Volume Input [veh/h]	66	0	6	0	166	30	230	299	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	0.00	0.00	2.00	0.60	0.00	6.50	1.00	2.00	2.00	2.00	2.00
Growth Rate	1.41	1.41	1.41	1.00	1.41	1.41	1.41	1.41	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	0	8	0	234	42	324	422	0	0	0	0
Peak Hour Factor	0.9170	1.0000	0.7500	1.0000	0.8470	0.8330	0.8980	0.8690	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	0	3	0	69	13	90	121	0	0	0	0
Total Analysis Volume [veh/h]	101	0	11	0	276	50	361	486	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.34	0.00	0.02	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	314.89	307.18	11.27	0.00	0.00	0.00	8.99	0.00	0.00	0.00	0.00	0.00
Movement LOS	F	F	B		A	A	A	A				
95th-Percentile Queue Length [veh]	7.96	7.96	0.06	0.00	0.00	0.00	1.19	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	198.90	198.90	1.44	0.00	0.00	0.00	29.75	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	285.07			0.00			3.83			0.00		
Approach LOS	F			A			A			A		
d_I, Intersection Delay [s/veh]	27.37											
Intersection LOS	F											

**Intersection Level of Service Report
#9: Central Ave and I-15 NB**

Control Type: Two-way stop
 Analysis Method: HCM2010
 Analysis Period: 15 minutes

Delay (sec / veh): 445.2
 Level Of Service: F
 Volume to Capacity (v/c): 1.211

Intersection Setup

Name	Northbound			Eastbound			Westbound			Southeastbound		
Approach												
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Northbound			Eastbound			Westbound			Southeastbound		
Base Volume Input [veh/h]	57	0	170	5	249	0	0	471	113	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	7.00	0.00	2.00	2.00	2.00	4.60	0.90	2.00	2.00	2.00
Growth Rate	1.64	1.64	1.64	1.64	1.64	1.00	1.00	1.64	1.64	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	0	279	8	408	0	0	772	185	0	0	0
Peak Hour Factor	0.7130	1.0000	0.7590	0.4170	0.8650	1.0000	1.0000	0.9350	0.8310	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	0	92	5	118	0	0	206	56	0	0	0
Total Analysis Volume [veh/h]	130	0	368	19	472	0	0	826	223	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane	no			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.21	0.00	0.63	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	445.19	435.47	417.85	9.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	F	F	F	A	A			A	A			
95th-Percentile Queue Length [veh]	33.98	33.98	33.98	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	849.39	849.39	849.39	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	424.99			0.37			0.00			0.00		
Approach LOS	F			A			A			A		
d_I, Intersection Delay [s/veh]	103.94											
Intersection LOS	F											

**Intersection Level Of Service Report
#10: Central Ave and Vaughn Rd**

Control Type:	Two-way stop	Delay (sec / veh):	1,422.7
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.231

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	↔		↖		↗	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	68	121	66	361	462	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	1.60	1.50	4.00	3.40	2.60
Growth Rate	1.63	1.63	1.63	1.63	1.63	1.63
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	197	108	588	753	124
Peak Hour Factor	0.6540	0.9450	0.7500	0.7910	0.8680	0.7310
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	52	36	186	217	42
Total Analysis Volume [veh/h]	170	208	144	743	868	170
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	3.23	0.66	0.21	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	1422.75	1365.77	11.82	0.00	0.00	0.00
Movement LOS	F	F	B	A	A	A
95th-Percentile Queue Length [veh]	38.77	38.77	0.81	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	969.13	969.13	20.22	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1391.39		1.92		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	229.11					
Intersection LOS	F					

**Intersection Level Of Service Report
#11: Vaughn Rd and I-15 SB**

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.254

Intersection Setup

Name	Southbound		Eastbound		Westbound	
Approach						
Lane Configuration	↔		↑		↑	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Southbound		Eastbound		Westbound	
Base Volume Input [veh/h]	143	1	0	53	50	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	2.00	7.60	4.00	2.00
Growth Rate	1.36	1.36	1.00	1.36	1.36	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	1	0	72	68	0
Peak Hour Factor	0.9410	0.2500	1.0000	0.7790	0.8930	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	1	0	23	19	0
Total Analysis Volume [veh/h]	206	4	0	92	76	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.25	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.97	10.17	0.00	0.00	0.00	0.00
Movement LOS	B	B		A	A	
95th-Percentile Queue Length [veh]	1.03	1.03	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	25.74	25.74	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.96		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	6.09					
Intersection LOS	B					

**Intersection Level Of Service Report
#12: Vaughn Rd and I-15 NB**

Control Type:	Two-way stop	Delay (sec / veh):	7.4
Analysis Method:	HCM2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Eastbound		Westbound		Southeastbound	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration	1		1r			
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name	Eastbound		Westbound		Southeastbound	
Base Volume Input [veh/h]	0	165	55	334	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	6.10	1.80	4.80	2.00	2.00
Growth Rate	1.37	1.37	1.37	1.37	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	226	75	458	0	0
Peak Hour Factor	1.0000	0.7500	0.8090	0.9180	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	75	23	125	0	0
Total Analysis Volume [veh/h]	0	301	93	499	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

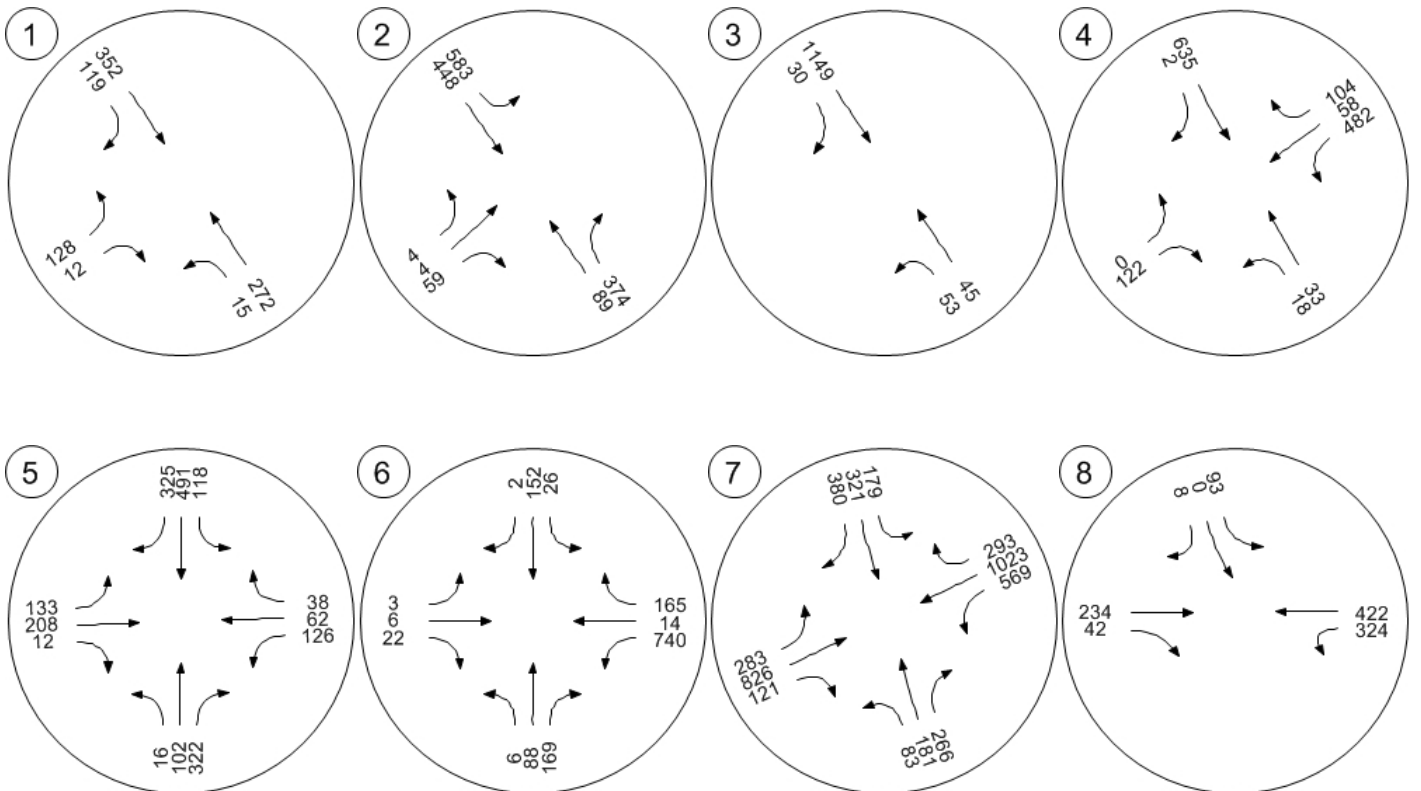
Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.38	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A	A		
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

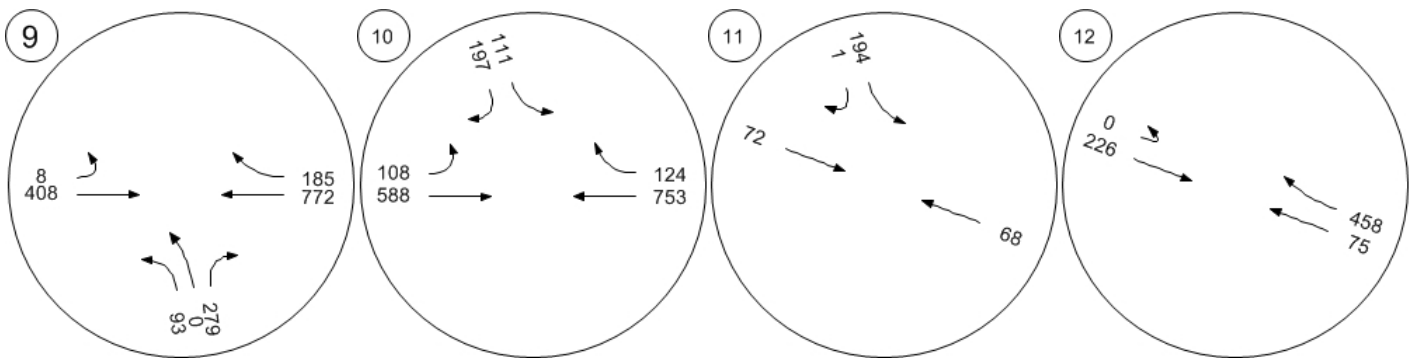
Version 2.00-10

Traffic Volume - Future Total Volume

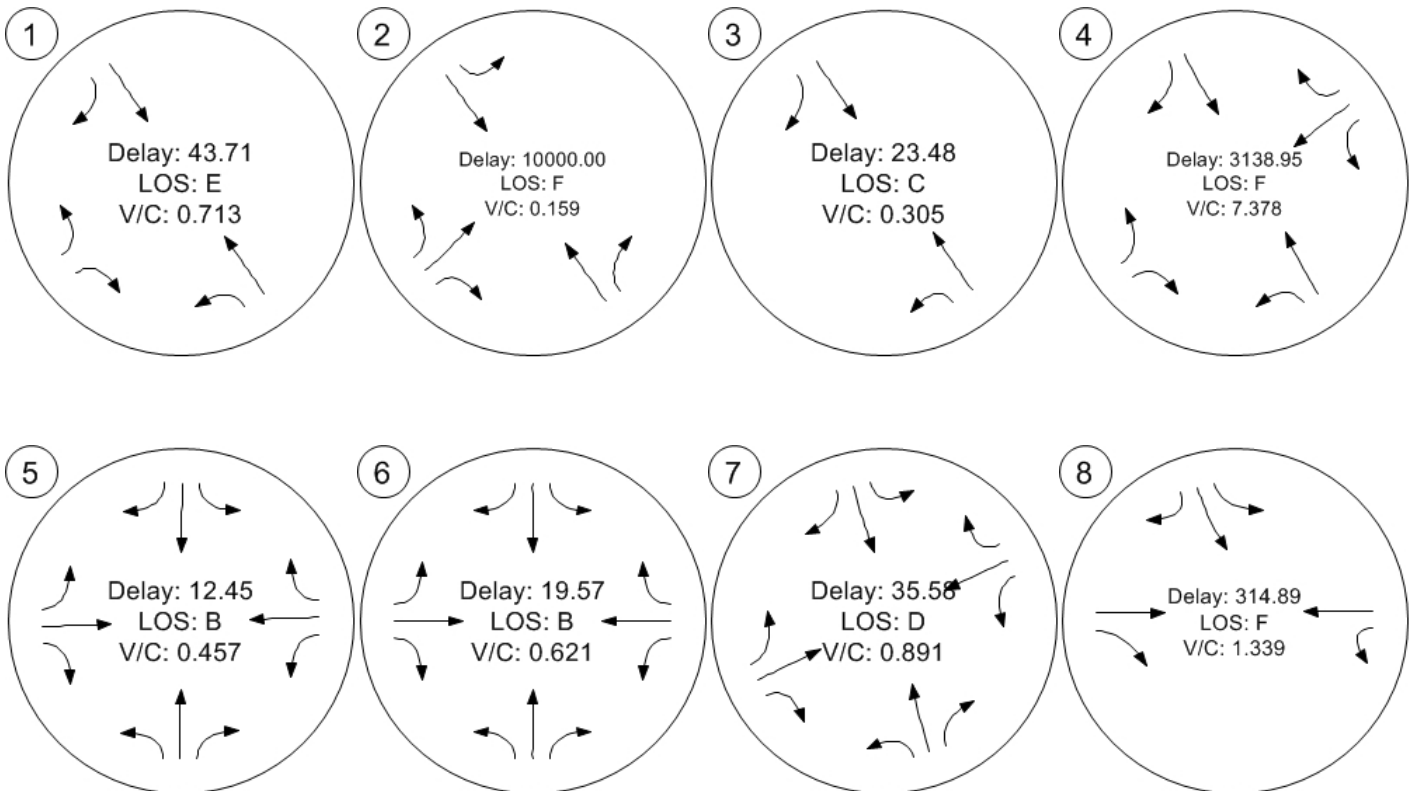


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Traffic Volume - Future Total Volume



Traffic Conditions



Traffic Conditions

