

# **Interstate Route I-91 Corridor Planning Study**

## **Springfield, Massachusetts**

### **APPENDIX A**



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**November 2014**

Prepared in cooperation with the Massachusetts Department of Transportation and the U.S. Department of Transportation. The views and opinions of the Pioneer Valley Planning Commission expressed herein do not reflect those of the Massachusetts Department of Transportation or the U.S. Department of Transportation.

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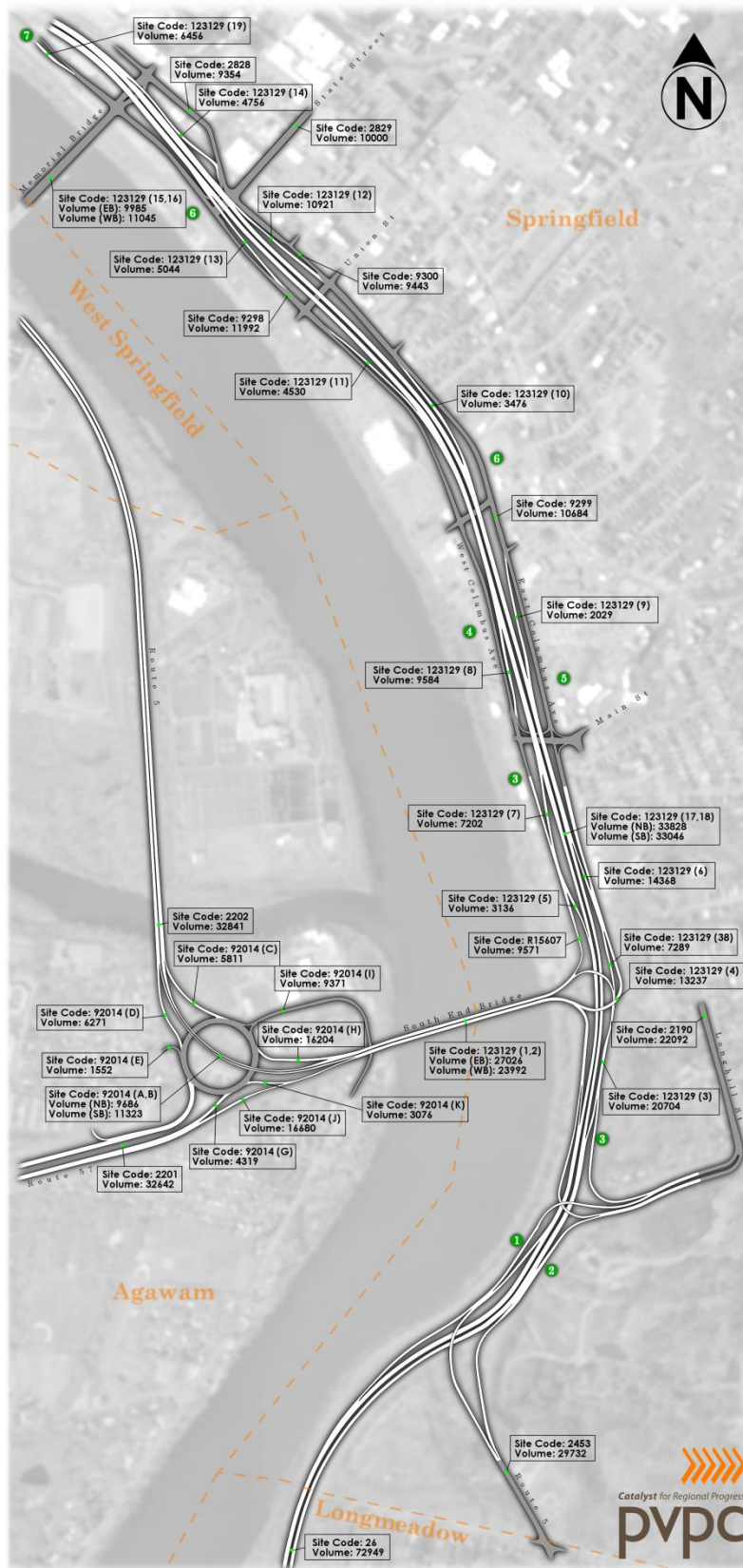
**Table 1 –Interstate Highway Historic Average Annual Daily Traffic Volume Along the I-91 Corridor.**

Site Code	Community	Facility	Location	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2797 L	WEST SPRINGFIELD	RTE.I- 91	NORTH OF RTE.5	77,453	77,600	80,371	75,350	74,605	73,721	71,189	67,011	71,080	71,102
2258	WEST SPRINGFIELD	RTE.I- 91	AT CONNECTICUT RIVER	78,436	76,800	84,800	84,982	77,600	83,100	82,454	73,000	71,100	75,270
2252	CHICOPEE	RTE.I-391	NORTH OF RTE.I-91	53,244	54,548	54,528	54,763	37,700	37,704	37,114	37,358	37,000	39,540
2257	CHICOPEE	RTE.I- 91	AT SPRINGFIELD C.L.	101,700	101,893	105,532	119,400	116,685	119,424	103,700	103,387	103,433	126,353
2157	SPRINGFIELD	RTE.I- 91	NORTH OF RTE.20	99,913	98,974	111,700	111,940	106,620	110,400	109,542	109,733	95,700	105,204
2255	SPRINGFIELD	RTE.I- 91	NORTH OF RTE.I-291	96,854	91,000	92,714	91,391	92,800	92,809	91,357	90,500	90,383	98,190
2246	SPRINGFIELD	RTE I-291	E/O I-91	88,740	89,746	93,127	93,528	93,500	93,514	91,977	91,421	91,000	98,070
2253	SPRINGFIELD	RTE.I- 91	0.8 km NORTH OF RTE.5	94,845	93,927	97,466	107,100	104,665	107,122	89,900	89,628	89,668	98,000
0026 L	LONGMEADOW	RTE.I- 91	0.8 km SOUTH OF SPRINGFIELD C.L.	75,441	74,711	77,526	77,859	72,100	72,107	73,070	75,312	76,382	72,949

Table 2 - Historic Average Annual Daily Traffic Volume Along the I-91 Corridor.

Average Daily Traffic														
Site Code	Community	Street	Location	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
2189	Springfield	Court St.	W/O Main St.	3,100	3,107	2,400	2,399	2,500	2,445	3,000	2,989	2,964	3,201	2,535
2190	Springfield	Longhill St.	S/O Sumner Ave.	20,841	21,500	21,437	24,000	23,970	20,600	20,213	20,440	20,818	22,092	
2191	Springfield	RTE. 5	@ AGAWAM T.L.	56,800	52,800	60,900	50,500	50,600	46,300	54,100	54,100	48,000	52,783	
2201	Agawam	RTE. 57	W/O RTE.5	41,700	38,700	40,600	44,300	37,000	39,000	38,600	36,800	31,300	32,642	
2202	Agawam	RTE. 5	N/O RTE. 57	29,120	30,100	29,503	29,122	28,500	28,806	27,428	30,700	30,808	32,841	
2207	West Springfield	MEMORIAL BRIDGE	OVER CONNECTICUT RIVER	22,928	23,297	22,372	23,800	23,457	24,312	21,000	20,918	21,148	27,116	
2226	Agawam	RTE. 5	OVER RTE.57	20,731	20,897	18,200	17,904	17,676	19,600	19,232	19,448	20,800	22,020	
2253	Springfield	RTE.I- 91	0.8 km N/O RTE.5	94,845	93,927	97,466	107,100	104,665	107,122	89,900	89,628	89,668	98,000	
2453	Springfield	RTE. 5	N/O LONGMEADOW T.L.	30,792	30,900	30,287	29,896	29,800	30,120	28,679	29,100	29,203	29,732	
2799	Springfield	Mill St.	E/O Pine St.	6,700	6,487	5,600	5,666	6,100	6,073	5,500	5,456	5,300	5,694	5,526
2823	Springfield	MAIN ST.	S/O BROAD ST.	18,102	17,900	17,545	17,318	16,900	17,082	16,265	13,200	13,247		
2824	Springfield	CHESTNUT ST.	N/O LIBERTY ST.	11,805	18,800	18,427	18,189	18,100	18,295	17,419	15,800	15,856		
2825	Springfield	DWIGHT ST.	N/O BRIDGE ST.	12,100	14,900	14,604	14,416	11,300	11,421	10,875	11,700	11,741		
2826	Springfield	MAIN ST.	N/O EMERY ST.	12,100	13,000	12,742	15,578	12,000	12,129	11,549	15,100	15,153		
2828	Springfield	EAST COLUMBUS AVE.	N/O COURT ST.	13,379	9,900	9,704	9,578	9,100	9,198	8,758	8,994	9,354		
2829	Springfield	STATE ST.	W/O MAIN ST.								10,000			
2830	Springfield	STATE ST.	E/O CHESTNUT ST.								16,500			
2841	Springfield	WEST COLUMBUS AVE.	N/O EMERY ST.	8,034	2,700	2,682	2,724	1,800	1,784	1,732	2,800	2,810		
2843	Springfield	HAMPDEN ST.	BTWN. EAST COLUMBUS & MAIN STS.	4,364	4,399	3,000	2,951	2,914	2,900	2,845	2,877	2,100		
2871	Springfield	BELMONT AVE.	E/O WOODSIDE TER.	10,428	9,600	9,410	9,288	10,700	10,815	10,298	10,800	10,838		
9298	Springfield	West Columbus Ave.	N/O Union Ave.					11,992						
9299	Springfield	East Columbus Ave.	S/O Broad St.					10,684						
9300	Springfield	East Columbus Ave.	N/O Union St.					9,443						
9458	Agawam	Meadow St.	E/O Main St.							2,607				
9514	Longmeadow	Converse St.	W/O Laurel St.								11,817			
9515	Longmeadow	Converse St.	E/O Laurel St.								16,004			
9516	Longmeadow	Laurel St.	N/O Converse St.								12,225			
9517	Longmeadow	Laurel St.	S/O Converse St.								6,293			
11001	Springfield	Connecticut Riverwalk and Bikeway	N/O Riverfront Park				154							
26	Longmeadow	RTE.I- 91	0.8 km S/O SPRINGFIELD C.L.	75,441	74,711	77,526	77,859	72,100	72,107	73,070	75,312	76,382	72,949	
R15506	Springfield	I-91	I-91 North Holyoke/Greenfield On-Ramp								13,381			
R15507	Springfield	I-91	Exit 5 Broad St								2,028			
R15508	Springfield	I-91	Exit 6 Springfield Center								3,202			
R15509	Springfield	I-91	Union Street On-Ramp								9,789			
R15510	Springfield	I-91	State St On-Ramp NB								4,351			
R15601	Springfield	I-91	Exit 7 Columbus Ave Downtown Springfield								6,768			
R15602	Springfield	I-91	Exit 6 Union Street								5,159			
R15603	Springfield	I-91	Union Street On-Ramp(W Columbus to I-91								3,956			
R15604	Springfield	I-91	Exit 4 Route 83 South Main Street/East Longmeadow								8,820			
R15605	Springfield	I-91	Exit 3 North to Route 5 and 57 Agawam								6,076			
R15606	Springfield	I-91	Route 5 South Hartford Conn On-Ramp								5,227			
R15607	Springfield	I-91	North to Route 5 and 57 Agawam								9,571			
S002	Agawam	RIVER RD.	NEAR SOUTH END BRIDGE						9,100					

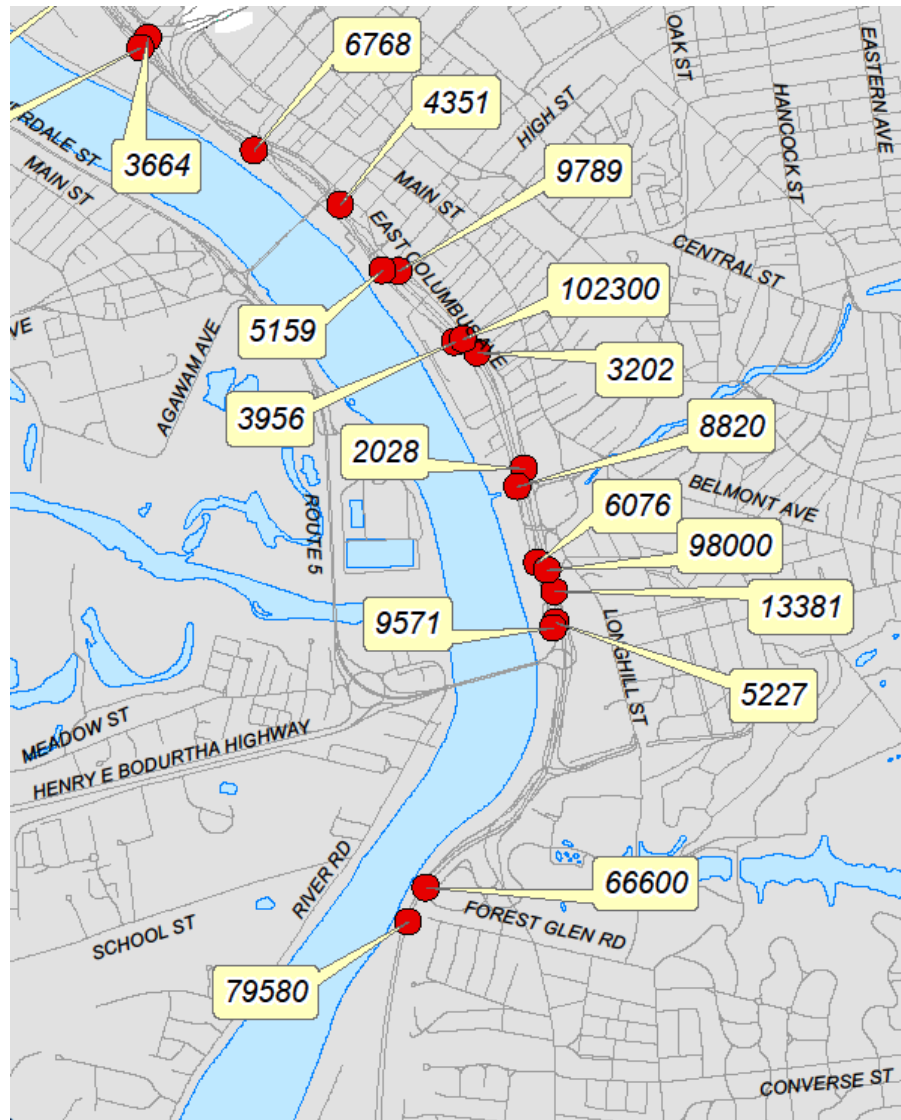
**Figure 1 - Daily Traffic Count Locations and Site Codes.**



**Table 3 - List of Available Daily Counts.**

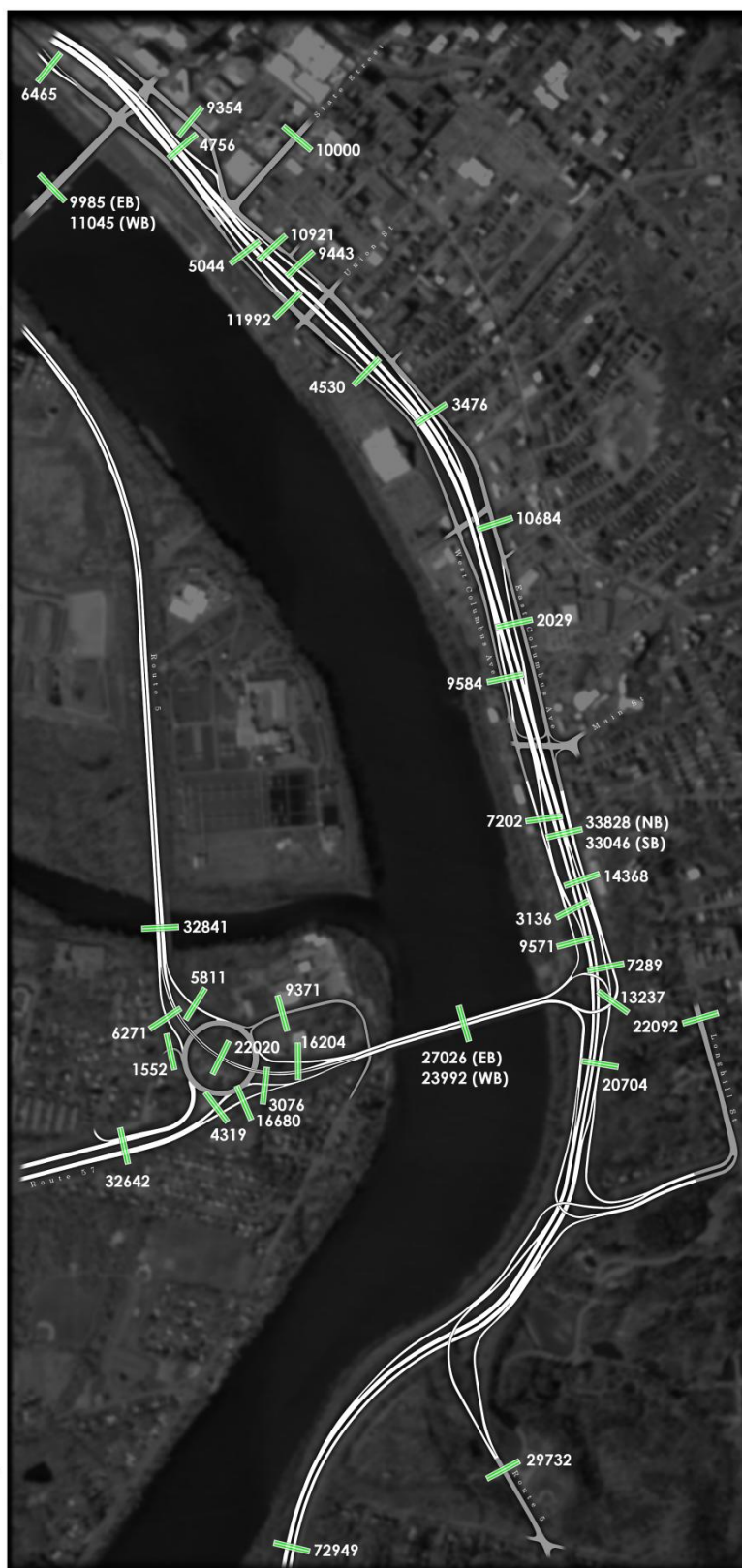
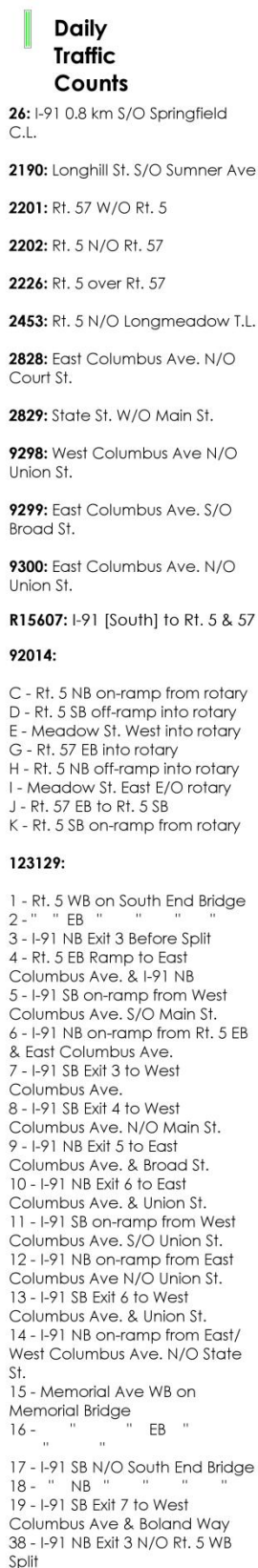
Average Daily Count Locations		
Community	Street	Location
Springfield	Court Street	West of Main Street
Springfield	Longhill Street	South of Sumner Avenue
Springfield	Route 5	At Agawam Town Line
Agawam	Route 57	West of Route 5
Agawam	Route 5	North of Route 57
West Springfield	Memorial Bridge	Over Connecticut River
Agawam	Route 5	Over Route 57
Springfield	I- 91	0.8 km North of Route 5
Springfield	Route 5	North of Longmeadow Town Line
Springfield	Mill Street	South of Pine Street
Springfield	Main Street	South of Broad Street
Springfield	Chestnut Street.	North of Liberty Street
Springfield	Dwight Street	North of Bridge Street
Springfield	Main Street	North of Emery Street
Springfield	East Columbus Avenue	North of Court Street
Springfield	State Street	West of Main Street.
Springfield	State Street	South of Chestnut Street
Springfield	West Columbus Avenue	North of Emery Street
Springfield	Hampden Street	Between East Columbus Avenue & Main Street
Springfield	Belmont Avenue	South of Woodside Terrace
Springfield	West Columbus Avenue	North of Union Avenue
Springfield	East Columbus Avenue	South of Broad Street
Springfield	East Columbus Avenue	North of Union Street
Agawam	Meadow Street	South of Main Street
Longmeadow	Converse Street	West of Laurel Street
Longmeadow	Converse Street	South of Laurel Street
Longmeadow	Laurel Street	North of Converse Street
Longmeadow	Laurel Street	South of Converse Street
Springfield	Connecticut Riverwalk and Bikeway	North of Riverfront Park
Longmeadow	I-91	0.8 km South of Springfield City Line
Springfield	I-91	I-91 North Holyoke/Greenfield On-Ramp
Springfield	I-91	Exit 5 Broad Street
Springfield	I-91	Exit 6 Springfield Center
Springfield	I-91	Union Street On-Ramp
Springfield	I-91	State St On-Ramp northbound
Springfield	I-91	Exit 7 Columbus Avenue Downtown Springfield
Springfield	I-91	Exit 6 Union Street
Springfield	I-91	Union Street On-Ramp (West Columbus Avenue to I-91)
Springfield	I-91	Exit 4 Route 83 South Main Street/East Longmeadow
Springfield	I-91	Exit 3 North to Route 5 and 57 Agawam
Springfield	I-91	Route 5 South Hartford Conn on-ramp
Springfield	I-91	North to Route 5 and 57 Agawam
Agawam	River Road	Near the South End Bridge
Agawam	Route 5	Over Rotary
Agawam	Route 5 northbound	On-Ramp from Rotary
Agawam	Route 5 southbound	Off-Ramp into Rotary
Agawam	Meadow Street West	Into Rotary
Agawam	Route 57 eastbound	Into Rotary
Agawam	Route 5 northbound	Off-Ramp into Rotary
Agawam	Meadow Street East	South of Rotary
Agawam	Route 57 eastbound	To Route 5 southbound
Agawam	Route 5 southbound	On-Ramp from Rotary
Springfield	Route 5	On South End Bridge
Springfield	I-91 northbound Exit 3	Before Split
Springfield	Route 5 eastbound Ramp	To East Columbus Avenue & I-91 northbound
Springfield	I-91 southbound On-Ramp	From West Columbus Avenue South of Main St
Springfield	I-91 northbound On-Ramp	From Route 5 eastbound & East Columbus Avenue
Springfield	I-91 southbound Exit 3	To West Columbus Avenue
Springfield	I-91 southbound Exit 4	To West Columbus Avenue North of Main Street
Springfield	I-91 northbound Exit 5	To East Columbus Avenue & Broad Street
Springfield	I-91 northbound Exit 6	To East Columbus Avenue & Union Street
Springfield	I-91 southbound On-Ramp	From West Columbus Avenue South of Union Street
Springfield	I-91 northbound On-Ramp	From East Columbus Avenue North of Union Street
Springfield	I-91 southbound Exit 6	To West Columbus Avenue & Union Street
Springfield	I-91 northbound On-Ramp	From East/West Columbus Avenue North of Streetate Street
Springfield	Memorial Avenue	On Memorial Bridge
Springfield	I-91	North of South End Bridge
Springfield	I-91 southbound Exit 7	To West Columbus Avenue & Boland Way
Springfield	I-91 northbound Exit 3	North of Route 5 westbound Split

**Figure 2 - Recent Average Daily Traffic Volumes Along the I-91 Corridor.**



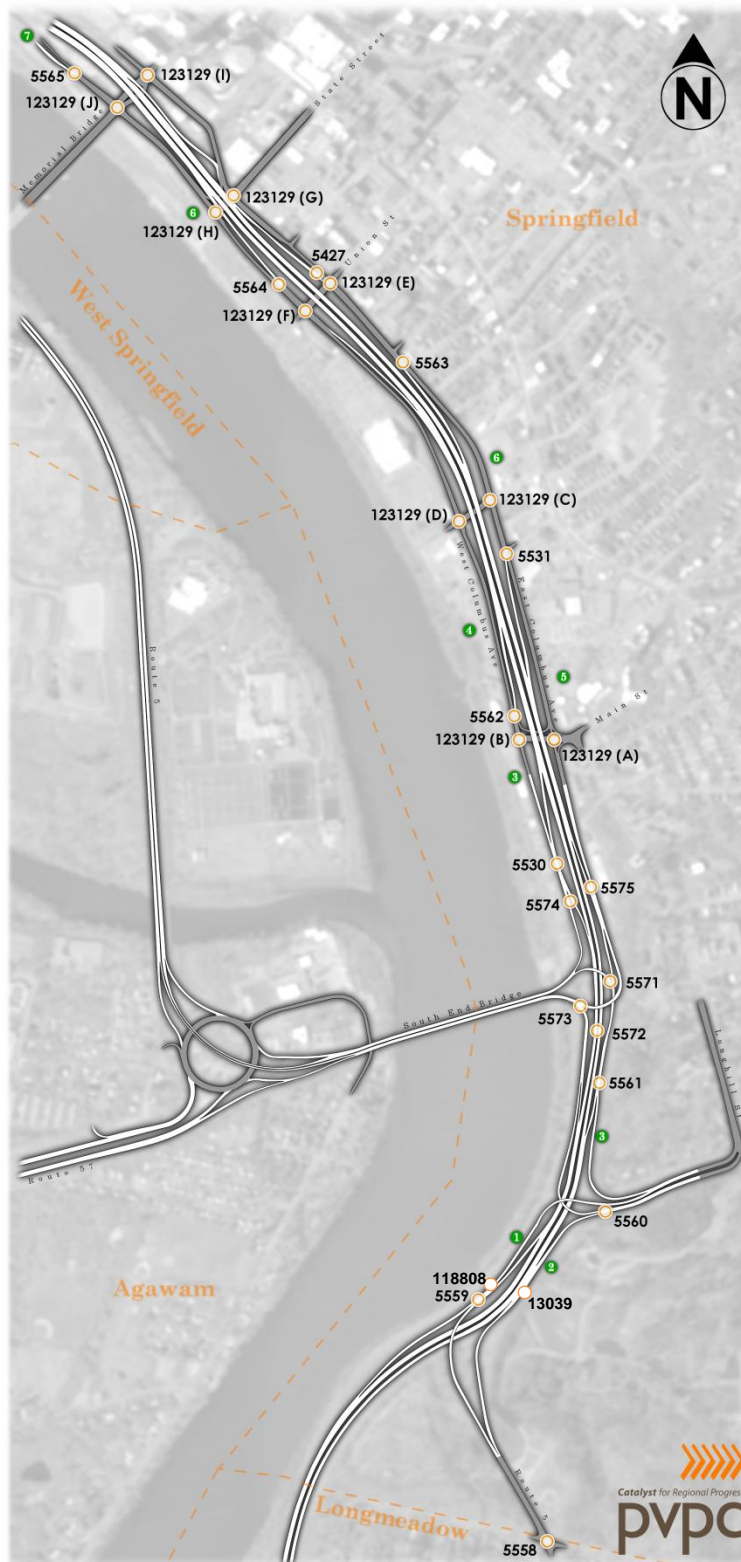


**Figure 3 - Daily Traffic Count Volumes and Site Codes.**

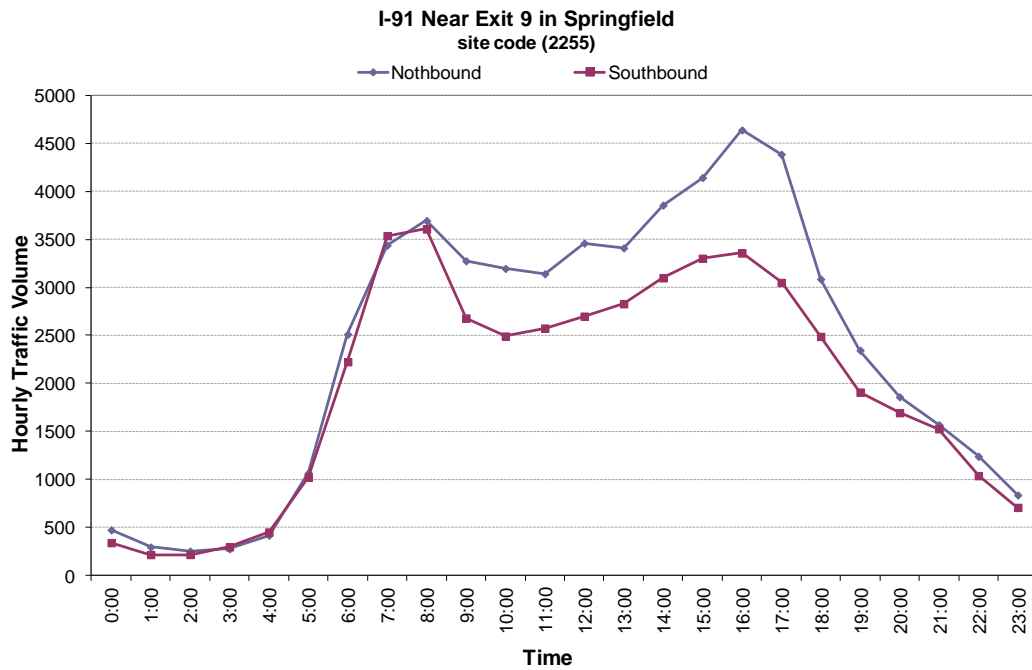




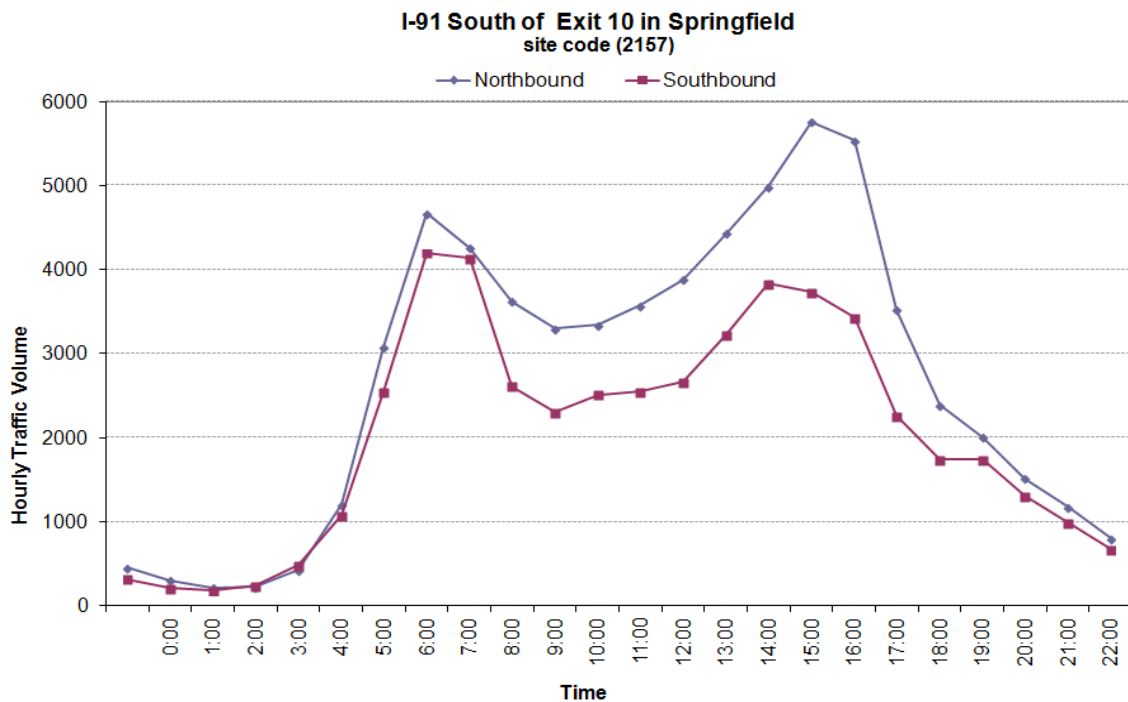
**Figure 4 - Turning Movement Count Locations.**



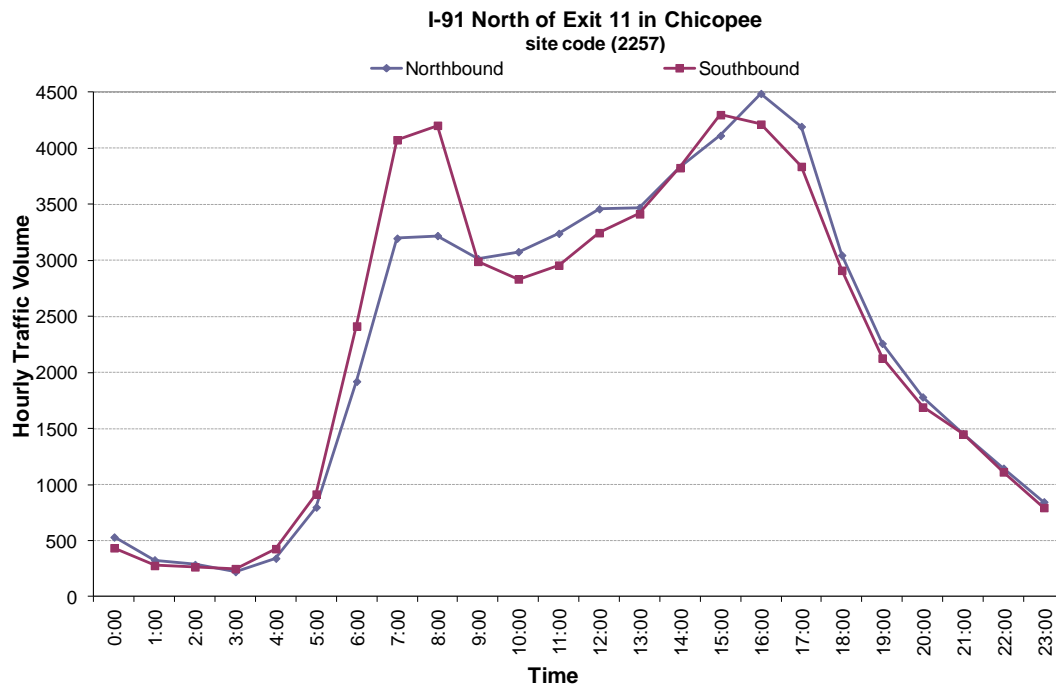
**Figure 5 - Interstate I-91 Directional Hourly Traffic Volumes Near Exit 9 in Springfield.**



**Figure 6 - Interstate I-91 Directional Hourly Traffic Volumes Near Exit 10 in Springfield.**



**Figure 7 - Interstate I-91 Directional Hourly Traffic Volumes Near Exit 11 in Chicopee.**



**Figure 8 - Interstate I-91 Directional Hourly Traffic Volumes Between Exits 11 and 12 in West Springfield.**

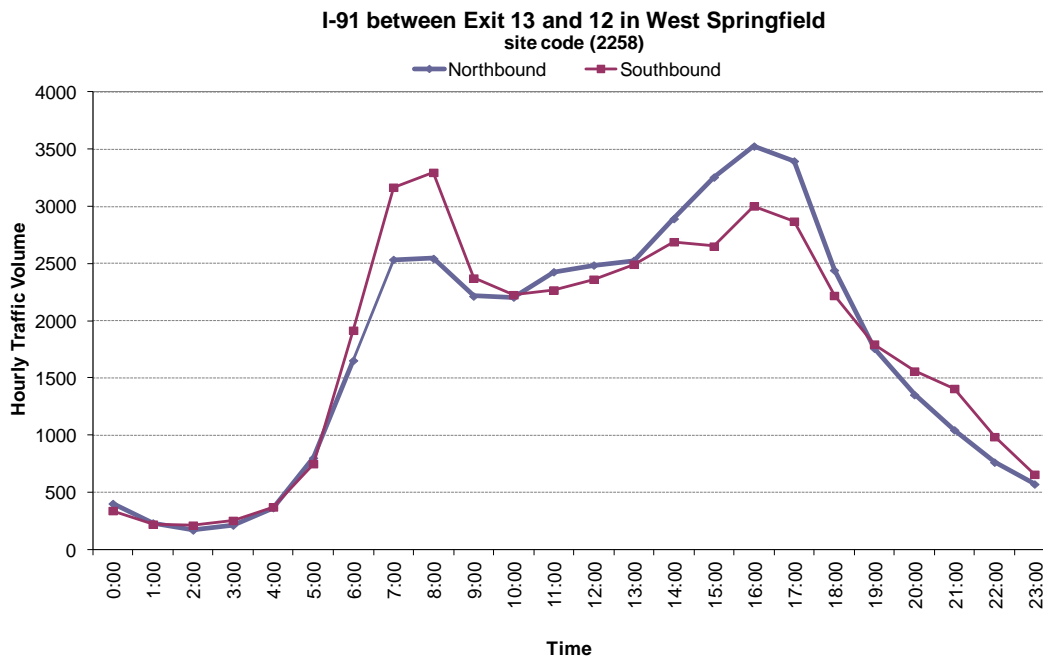
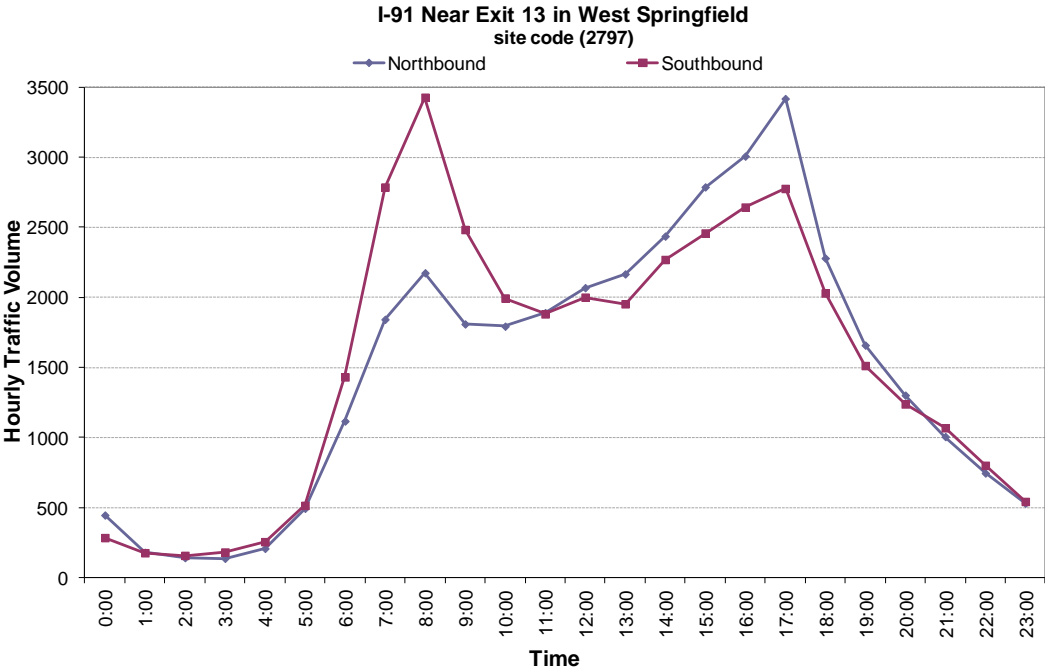
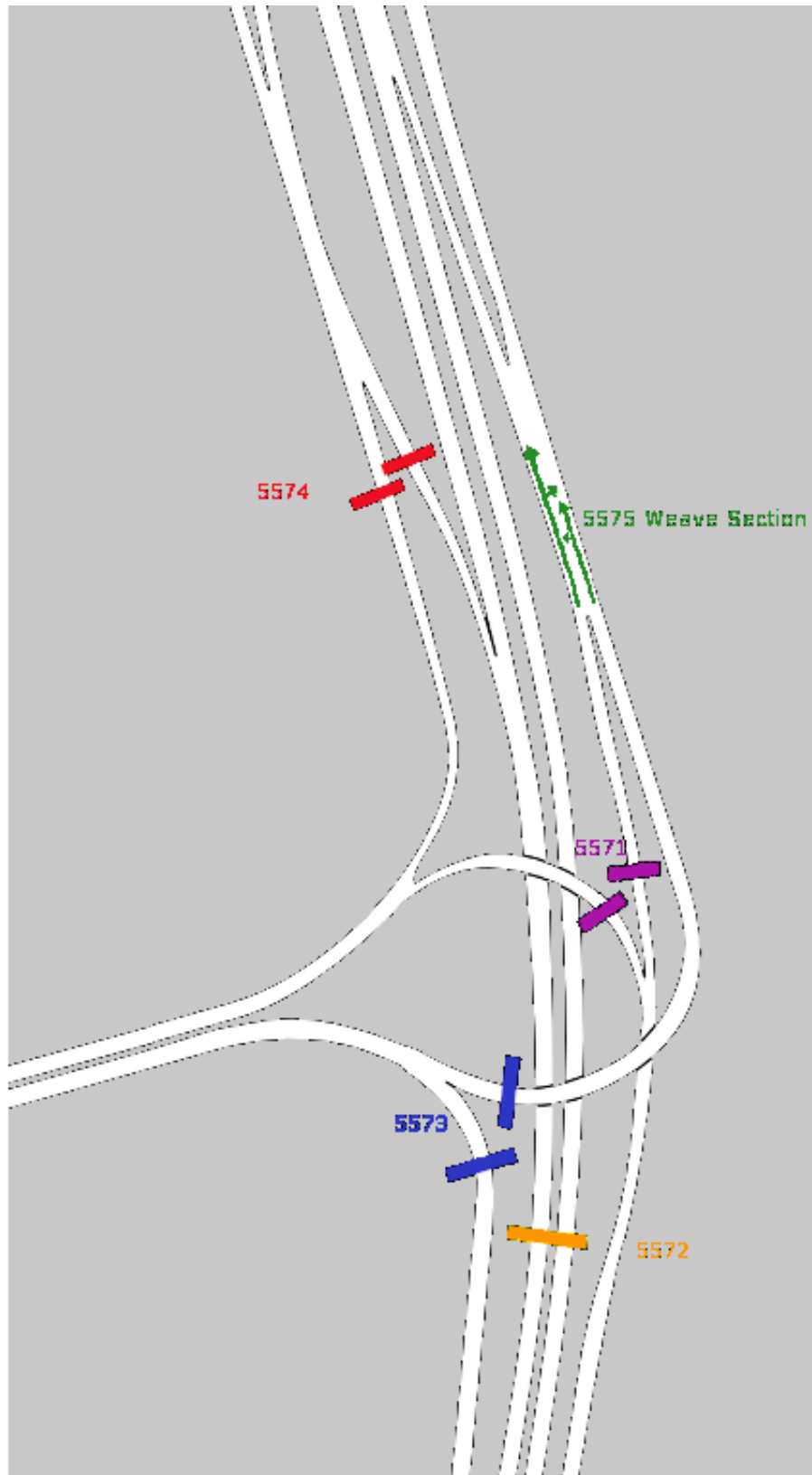


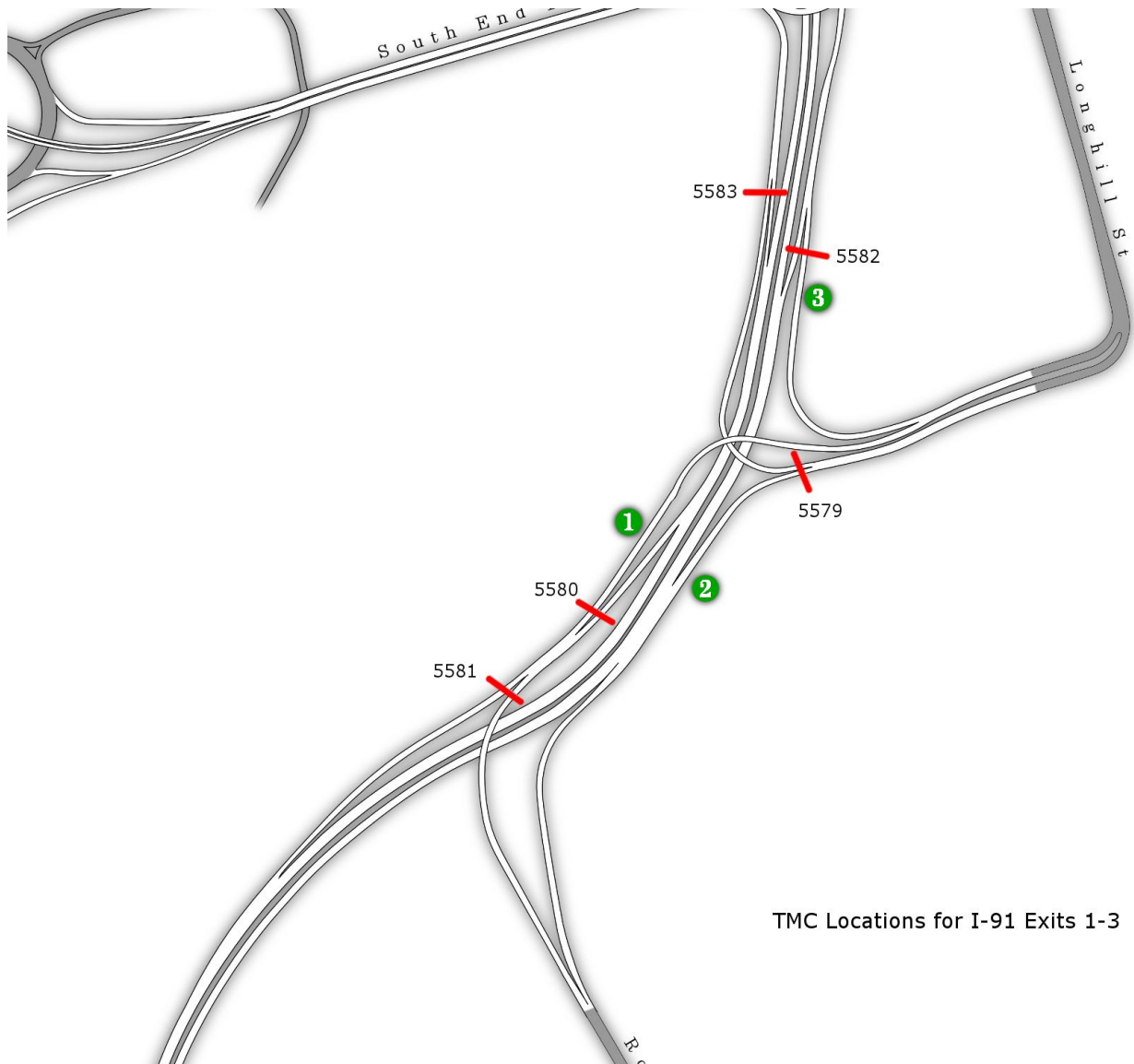
Figure 9 - Interstate I-91 Directional Hourly Traffic Volumes Near Exit 13 in West Springfield.



**Figure 10 - Turning Movement Count Locations Around I-91 Exit 3.**

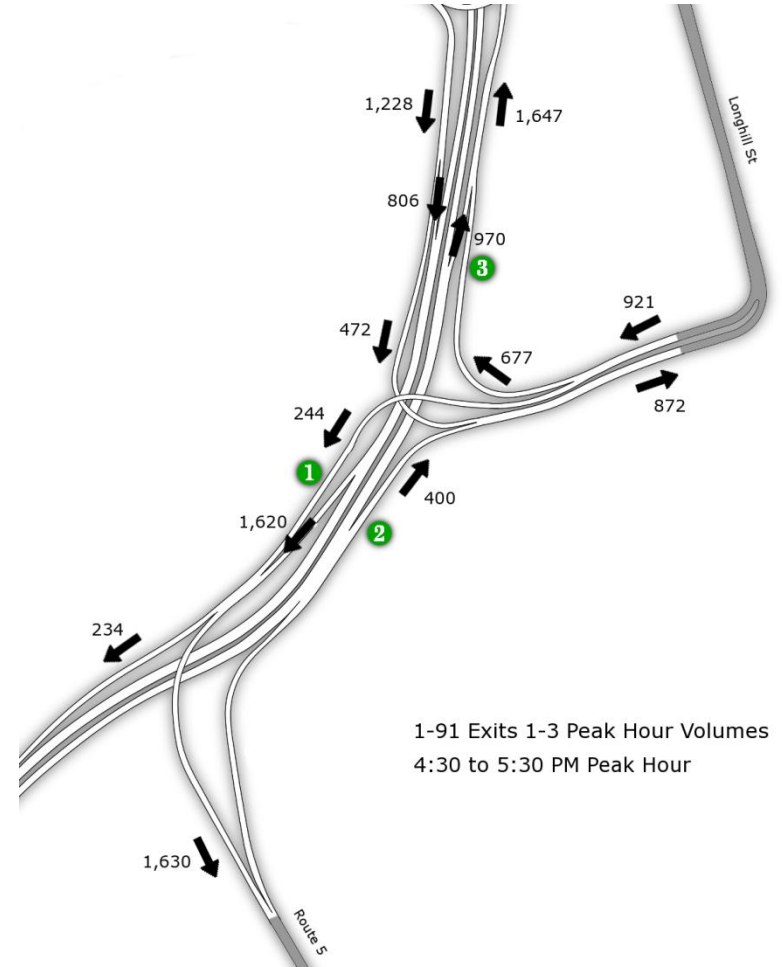
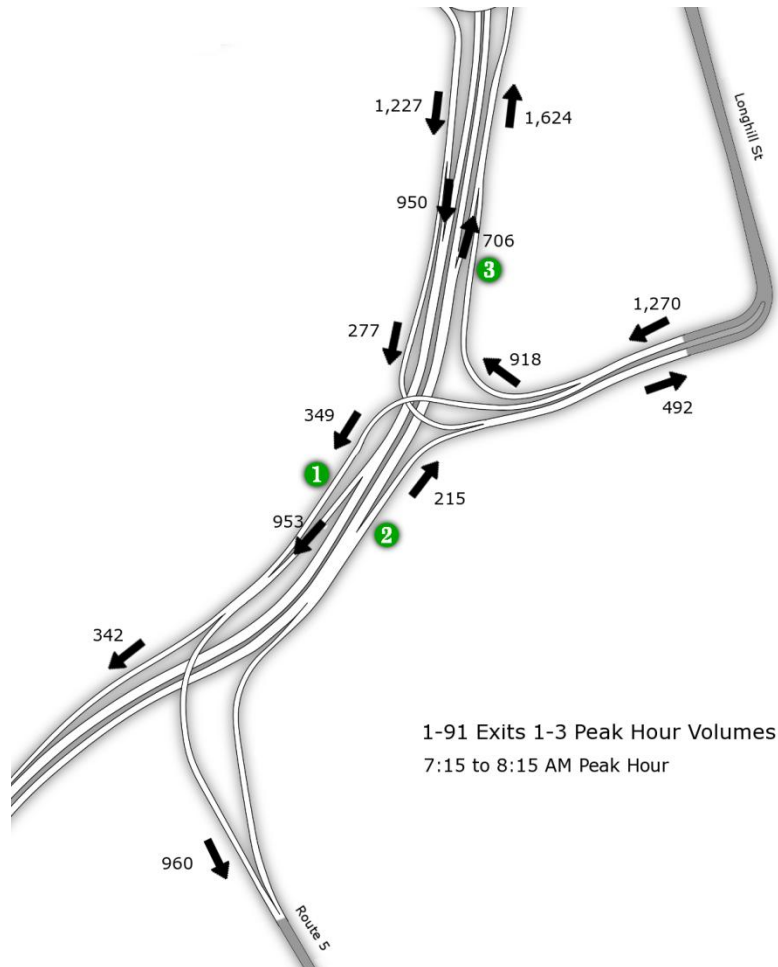


**Figure 11 - Turning Movement Count Locations Around I-91 Exit 1, 2 and 3.**





**Figure 12 - Turning Movement Counts Around I-91 Exit 1, 2 and 3 (AM and PM Peak Hour Volumes).**



**Table 4 - Vehicle Classifications on Local Streets.**

Vehicle Classifications														
Site Code	Community	Street	Location	Direction	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	> 3 Axle	Total	Heavy	% Heavy
2189	Springfield	Court St	W/O Main St	WB	20	1,163	61	2	4	6	1	1,257	13	1.03%
				EB	38	1,109	80	1	6	13	2	1,249	22	1.76%
2190	Springfield	Longhill Rd	S/O Sumner Ave	NB	113	8,263	1,082	21	167	45	94	9,785	327	3.34%
				SB	935	9,024	887	11	112	109	105	11,183	337	3.01%
2799	Springfield	Mill St	E/O Pine St	WB	39	2,789	302	12	69	16	9	3,236	106	3.28%
				EB	25	2,082	231	10	42	8	14	2,412	74	3.07%
9298	Springfield	West Columbus Ave	N/O Union St	SB	404	10,003	1,093	87	158	153	214	12,112	612	5.05%
9299	Springfield	East Columbus Ave	S/O Broad St	NB	292	9,164	1,103	97	210	137	118	11,121	562	5.05%
				-	-	-	-	-	-	-	-	-	-	-
9300	Springfield	East Columbus Ave	N/O Union St	NB	300	8,276	735	51	116	100	144	9,722	411	4.23%
				-	-	-	-	-	-	-	-	-	-	-
9458	Agawam	Meadow St	E/O Main St	EB	207	1,087	95	9	9	4	2	1,413	24	1.70%
				WB	7	1,069	127	3	16	6	4	1,232	29	2.35%
9514	Longmeadow	Converse St	W/O Laurel St	EB	176	5,443	2,219	34	481	61	146	8,560	722	8.43%
				WB	69	2,520	537	22	112	36	102	3,398	272	8.00%
9515	Longmeadow	Converse St	E/O Laurel St	EB	555	5,604	1,486	26	403	111	88	8,273	628	7.59%
				WB	204	6,596	1,016	29	155	86	110	8,196	380	4.64%
9516	Longmeadow	Laurel St	N/O Converse St	NB	655	6,713	1,835	22	246	379	78	9,928	725	7.30%
				SB	79	2,223	301	2	33	40	16	2,694	91	3.38%
9517	Longmeadow	Laurel St	S/O Converse St	SB	25	1,577	257	2	36	19	5	1,921	62	3.23%
				NB	26	3,971	519	5	54	9	14	4,598	82	1.78%

**Table 5 - Local Traffic Categorized by Speed.**

Site Code	Community	Street	Location	Direction	Vehicular Speeds (Miles Per Hour)											Total
					1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	> 60	
2189	Springfield	Court St	W/O Main St	WB	635	279	224	104	10	5	0	0	0	0	0	1,257
				EB	705	281	195	63	5	0	0	0	0	0	0	1,249
2190	Springfield	Longhill Rd	S/O Sumner Ave	NB	199	36	263	1,736	4,278	2,672	535	67	8	0	0	9,794
				SB	463	45	362	2,891	4,667	2,216	525	71	15	0	0	11,255
2799	Springfield	Mill St	E/O Pine St	WB	78	27	466	1,530	968	156	8	2	1	0	0	3,236
				EB	87	20	144	928	1,021	191	17	4	0	0	0	2,412
9298	Springfield	West Columbus Ave	N/O Union St	SB	1,427	1,136	2,438	3,103	2,164	1,209	543	129	28	8	4	12,189
				-	-	-	-	-	-	-	-	-	-	-	-	-
9299	Springfield	East Columbus Ave	S/O Broad St	NB	3,743	2,464	2,236	1,312	877	372	94	30	2	0	0	11,130
				-	-	-	-	-	-	-	-	-	-	-	-	-
9300	Springfield	East Columbus Ave	N/O Union St	NB	305	105	1,052	3,902	2,853	1,070	356	66	12	1	1	9,723
				-	-	-	-	-	-	-	-	-	-	-	-	-
9458	Agawam	Meadow St	E/O Main St	EB	326	17	77	355	511	121	5	1	0	0	1	1,414
				WB	76	19	62	252	532	247	36	7	1	1	0	1,233
9514	Longmeadow	Converse St	W/O Laurel St	EB	2,269	380	942	1,834	2,053	898	158	24	2	0	0	8,560
				WB	566	27	121	448	1,255	812	150	18	1	0	0	3,398
9515	Longmeadow	Converse St	E/O Laurel St	EB	1,202	37	253	1,647	3,022	1,350	516	186	37	16	2	8,268
				WB	1,472	368	774	1,853	2,665	926	143	13	6	0	0	8,220
9516	Longmeadow	Laurel St	N/O Converse St	NB	1,682	148	597	3,551	3,349	524	63	6	2	0	0	9,922
				SB	878	325	500	611	317	57	8	1	0	0	0	2,697
9517	Longmeadow	Laurel St	S/O Converse St	SB	66	5	45	259	833	600	101	10	2	0	0	1,921
				NB	151	107	378	1,385	1,887	613	73	3	0	1	0	4,598

THE COMMONWEALTH OF MASSACHUSETTS  
HIGHWAY DEPARTMENT  
SPECIAL SPEED REGULATION # 7379-B

Highway Location: LONGMEADOW, SPRINGFIELD, CHICOPEE,  
WEST SPRINGFIELD, HOLYOKE,  
EASTHAMPTON, NORTHAMPTON, HATFIELD,  
WHATELY, DEERFIELD, GREENFIELD &  
BERNARDSTON

Authority In Control: COMMONWEALTH OF MASSACHUSETTS  
HIGHWAY DEPARTMENT

Name of Highway (s): INTERSTATE ROUTE 91

In accordance with the provisions of Chapter 90, Section 18, of the General Laws (Ter. Ed.) as amended, the following Special Speed Regulation is hereby promulgated:

Special Speed Regulation number 7379-A, dated January 14, 1994 is hereby amended by striking out the Regulation in its entirety and inserting in place thereof the following revisions and addenda.

That the following speed limits are established at which motor vehicles may be operated in the areas described:

NORTHBOUND

Beginning in Longmeadow at the Connecticut-Massachusetts State Border Thence northerly

3.25 miles at 55 miles per hour to the Springfield City Line.

Thence northerly in Springfield

0.04 miles at 55 miles per hour

0.75 miles at 45 miles per hour

1.33 miles at 55 miles per hour

1.30 miles at 50 miles per hour

1.11 miles at 55 miles per hour

0.18 miles at 50 miles per hour to the Chicopee City Line.

Thence northerly in Chicopee

0.54 miles at 50 miles per hour

0.13 miles at 55 miles per hour to the West Springfield Town Line.

Thence northerly in West Springfield

1.52 miles at 55 miles per hour

1.42 miles at 65 miles per hour to the Holyoke City Line.

Thence northerly in Holyoke

9.29 miles at 65 miles per hour to the Easthampton Town Line.

Thence northerly in Easthampton

0.48 miles at 65 miles per hour to the Northampton City Line.

Thence northerly in Northampton

6.01 miles at 65 miles per hour to the Hatfield Town Line.

Thence northerly in Hatfield

3.77 miles at 65 miles per hour to the Whately Town Line.

Thence northerly in Whately

3.87 miles at 65 miles per hour to the Deerfield Town Line.

Thence northerly in Deerfield

7.01 miles at 65 miles per hour to the Greenfield Town Line.

Thence northerly in Greenfield

7.11 miles at 65 miles per hour to the Bernardston Town Line.

Thence northerly in Bernardston

5.80 miles at 65 miles per hour ending at the Massachusetts/Vermont State Line; the total distance being 54.90 miles.

#### SOUTHBOUND

Beginning in Bernardston at the Vermont/Massachusetts State Line.

Thence southerly in Bernardston

5.80 miles at 65 miles per hour to the Greenfield Town Line.

Thence southerly in Greenfield

7.11 miles at 65 miles per hour to the Deerfield Town Line.

Thence southerly in Deerfield

7.01 miles at 65 miles per hour to the Whately Town Line.

Thence southerly in Whately

3.87 miles at 65 miles per hour to the Hatfield Town Line.

Thence southerly in Hatfield

3.77 miles at 65 miles per hour to the Northampton City Line.

Thence southerly in Northampton

6.01 miles at 65 miles per hour to the Easthampton Town Line.

Thence southerly in Easthampton

0.48 miles at 65 miles per hour to the Holyoke City Line.

Thence southerly in Holyoke

9.29 miles at 65 miles per hour to the West Springfield Town Line.

Thence southerly in West Springfield

1.42 miles at 65 miles per hour

1.52 miles at 55 miles per hour to the Chicopee City Line.

Thence southerly in Chicopee

0.13 miles at 55 miles per hour

0.54 miles at 50 miles per hour to the Springfield City Line.

Thence southerly in Springfield

0.18 miles at 50 miles per hour

1.29 miles at 55 miles per hour

1.35 miles at 50 miles per hour

1.10 miles at 55 miles per hour

0.75 miles at 45 miles per hour

0.04 miles at 55 miles per hour to the Longmeadow Town Line.

Thence southerly in Longmeadow

3.25 miles at 55 miles per hour ending at the Massachusetts/Connecticut State Line; the total distance being 54.90 miles.



Operation of a motor vehicle at a rate of speed in excess of these limits shall be prima facie evidence that such speed is greater than is reasonable and proper.

The provisions of this regulation shall not, however, abrogate in any sense Chapter 90, Section 14, of the General Laws (Ter. Ed.).

The Highway Department and the Registry of Motor Vehicles, acting jointly, do hereby certify that this regulation is consistent with the public interest.

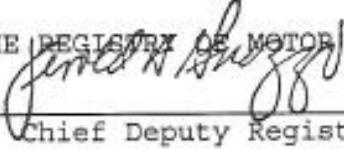
Standard signs must be erected at the beginning of each zone.

DATE: December 27, 1995

FOR THE HIGHWAY DEPARTMENT

BY:   
Traffic Engineer

FOR THE REGISTRY OF MOTOR VEHICLES

BY:   
Chief Deputy Registrar

THE COMMONWEALTH OF MASSACHUSETTS  
HIGHWAY DEPARTMENT  
SPECIAL SPEED REGULATION #7379-C

Highway Location: LONGMEADOW & SPRINGFIELD

Authority In Control: COMMONWEALTH OF MASSACHUSETTS  
HIGHWAY DEPARTMENT

Name of Highway (s): INTERSTATE ROUTE 91

In accordance with the provisions of Chapter 90, Section 18, of the General Laws (Ter. Ed.) as amended, the following Special Speed Regulation is hereby promulgated:

Special Speed Regulation Number 7379-B, dated December 27, 1995, is hereby amended in Springfield and Longmeadow as follows:

That the following speed limits are established at which motor vehicles may be operated in the areas described:

LONGMEADOW-NORTHBOUND

By striking out the clauses reading:

3.25 miles at 55 miles per hour to the Springfield City Line.

And inserting in place thereof:

2.98 miles at 65 miles per hour

0.27 miles at 55 miles per hour to the Springfield City Line.

SPRINGFIELD - SOUTHBOUND

By striking out the clause reading:

0.04 miles at 55 miles per hour to the Longmeadow Town Line.

And inserting in place thereof:

0.04 miles at 65 miles per hour to the Longmeadow Town Line.

LONGMEADOW - SOUTHBOUND

By striking out the clause reading:

3.25 miles at 55 miles per hour ending at the Massachusetts/Connecticut State Line; the total distance being 54.90 miles.

And inserting in place thereof:

3.25 miles at 65 miles per hour ending at the Massachusetts/Connecticut State Line; the total distance being 54.90 miles.

Operation of a motor vehicle at a rate of speed in excess of these limits shall be prima facie evidence that such speed is greater than is reasonable and proper.

The provisions of this regulation shall not, however, abrogate in any sense Chapter 90, Section 14, of the General Laws (Ter. Ed.).

The Highway Department and the Registry of Motor Vehicles, acting jointly, do hereby certify that this regulation is consistent with the public interest.

Standard signs must be erected at the beginning of each zone.

DATE: 2/16/96

FOR THE HIGHWAY DEPARTMENT

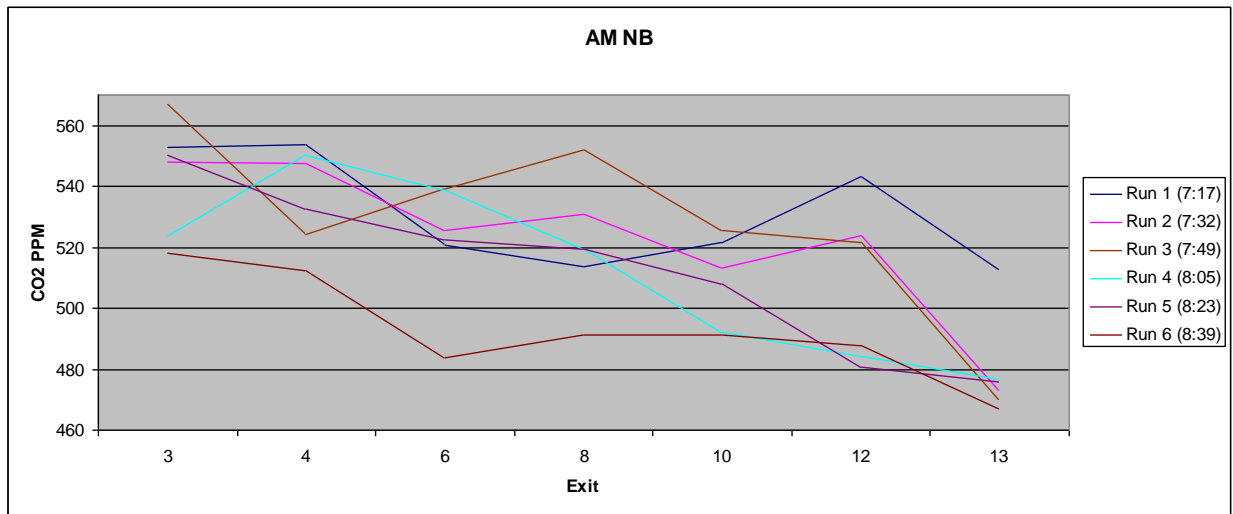
BY: 

Traffic Engineer

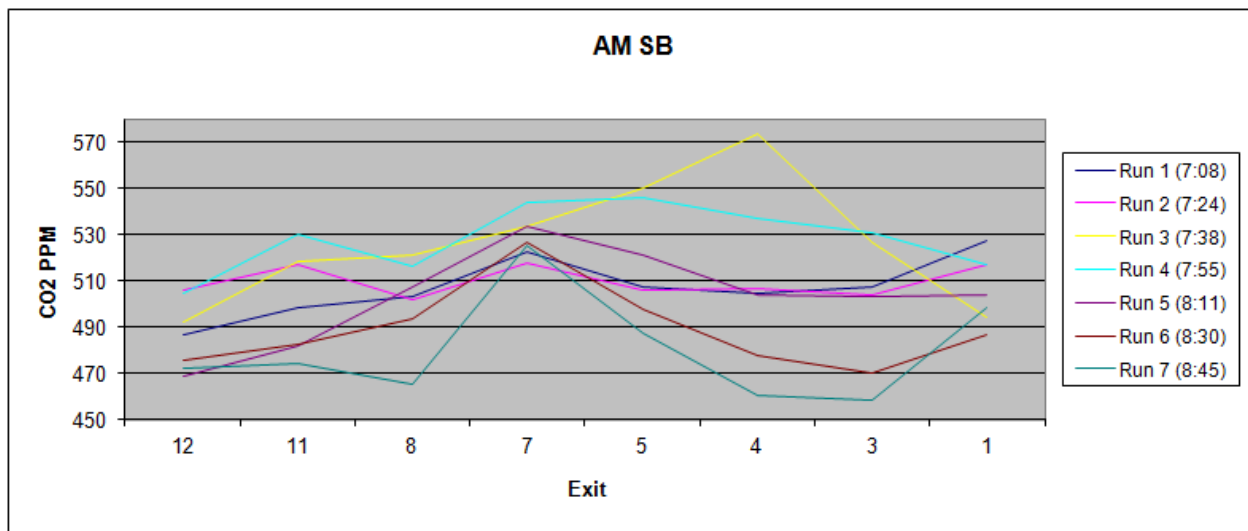
FOR THE REGISTRY OF MOTOR VEHICLES

BY: 

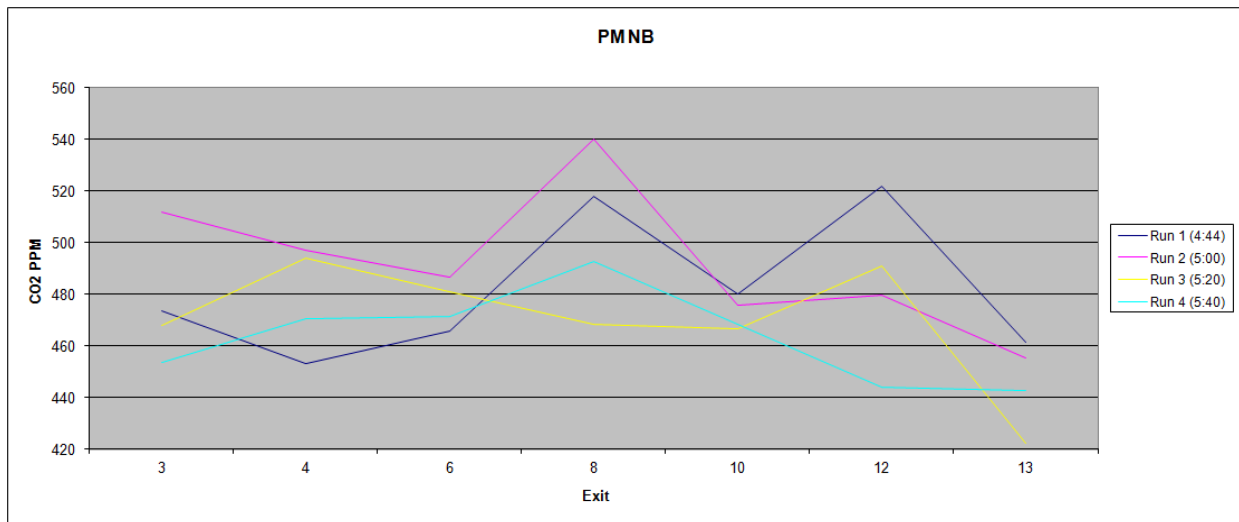
**Figure 13 - Carbon Dioxide Levels Along I-91 Northbound During the Morning Peak Hour.**



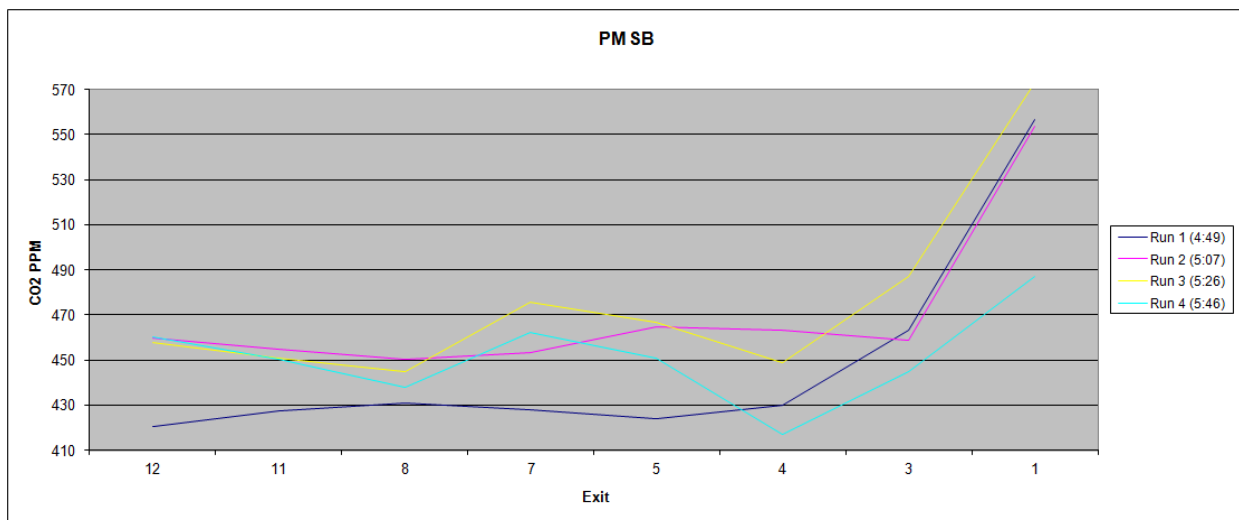
**Figure 14 - Carbon Dioxide Levels Along I-91 Southbound During the Morning Peak Hour.**



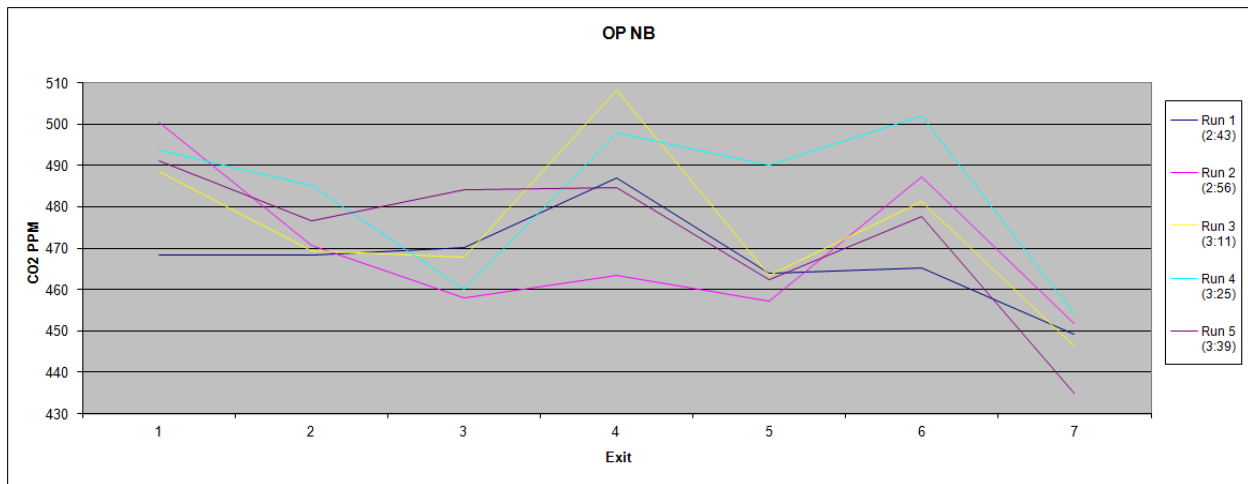
**Figure 15 - Carbon Dioxide Levels Along I-91 Northbound During the Afternoon Peak Hour.**



**Figure 16 - Carbon Dioxide Levels Along I-91 Southbound During the Afternoon Peak Hour.**



**Figure 17 - Carbon Dioxide Levels Along I-91 Northbound During Off-Peak Hour.**



**Figure 18 - Carbon Dioxide Levels Along I-91 Southbound During Off-Peak Hour.**

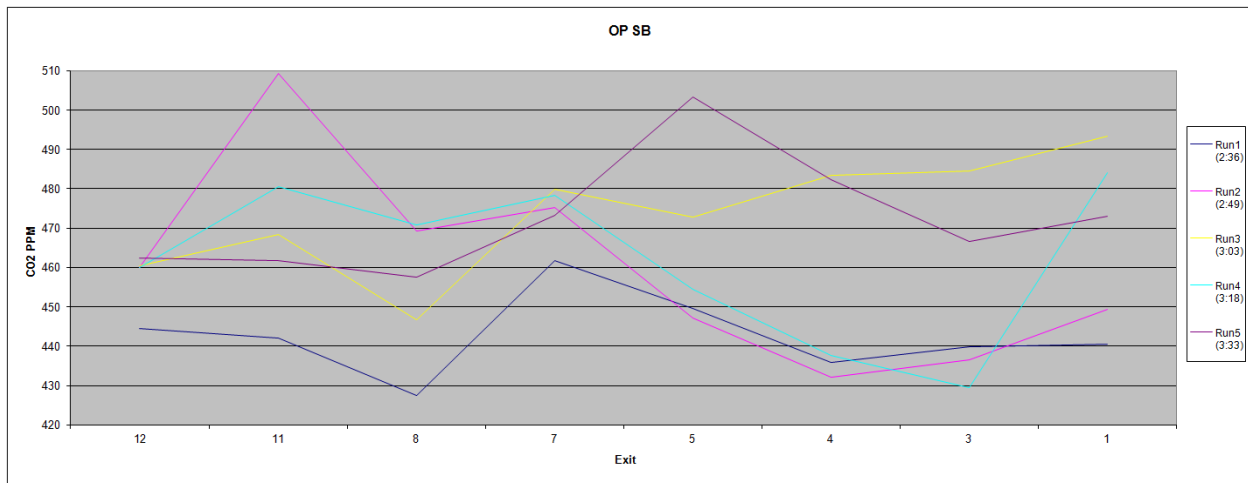




Figure 19 - Carbon Dioxide Intensity on I-91 Northbound During Morning Peak Hour.

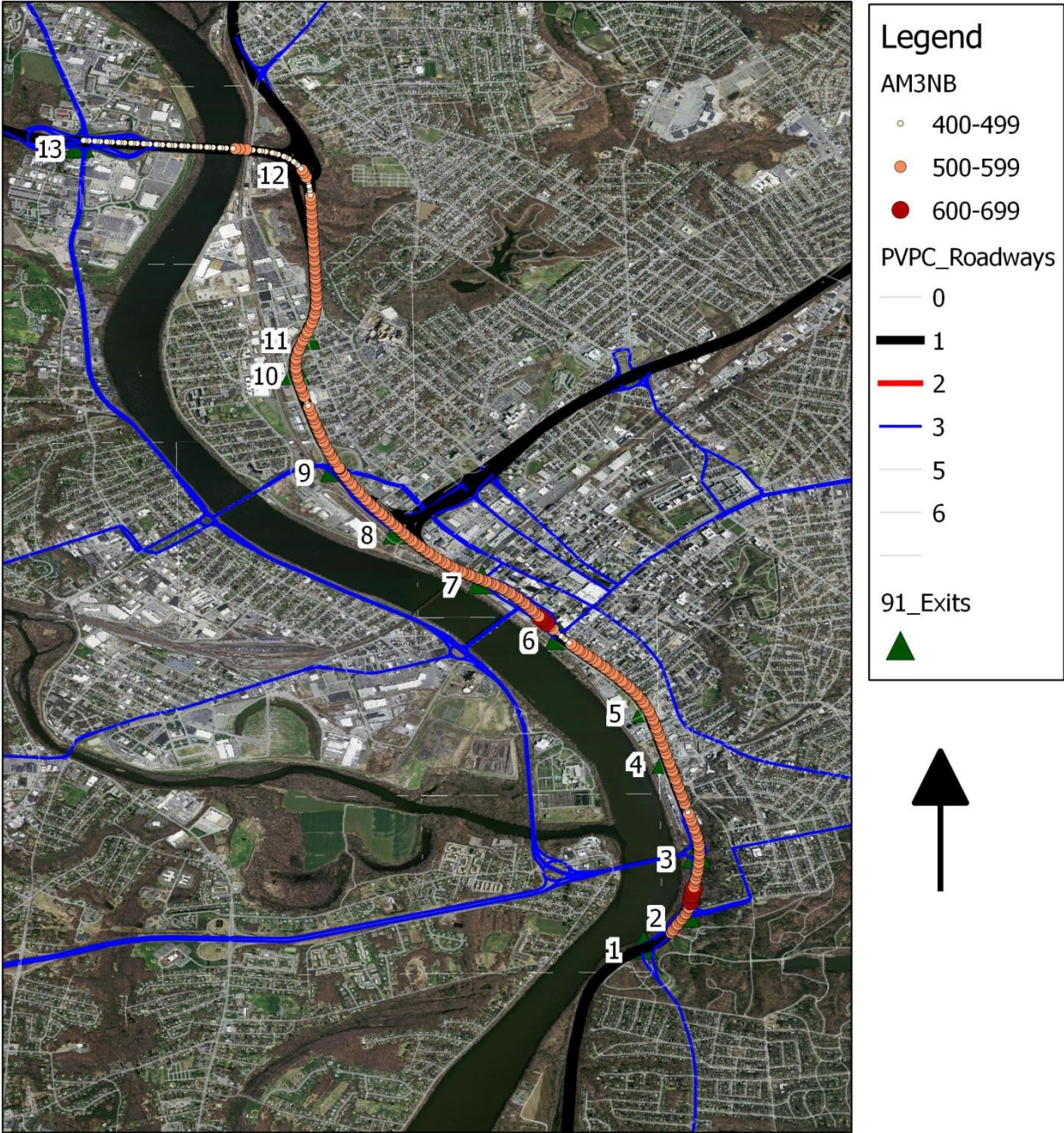




Figure 20 - Carbon Dioxide Intensity on I-91 Southbound During Morning Peak Hour.

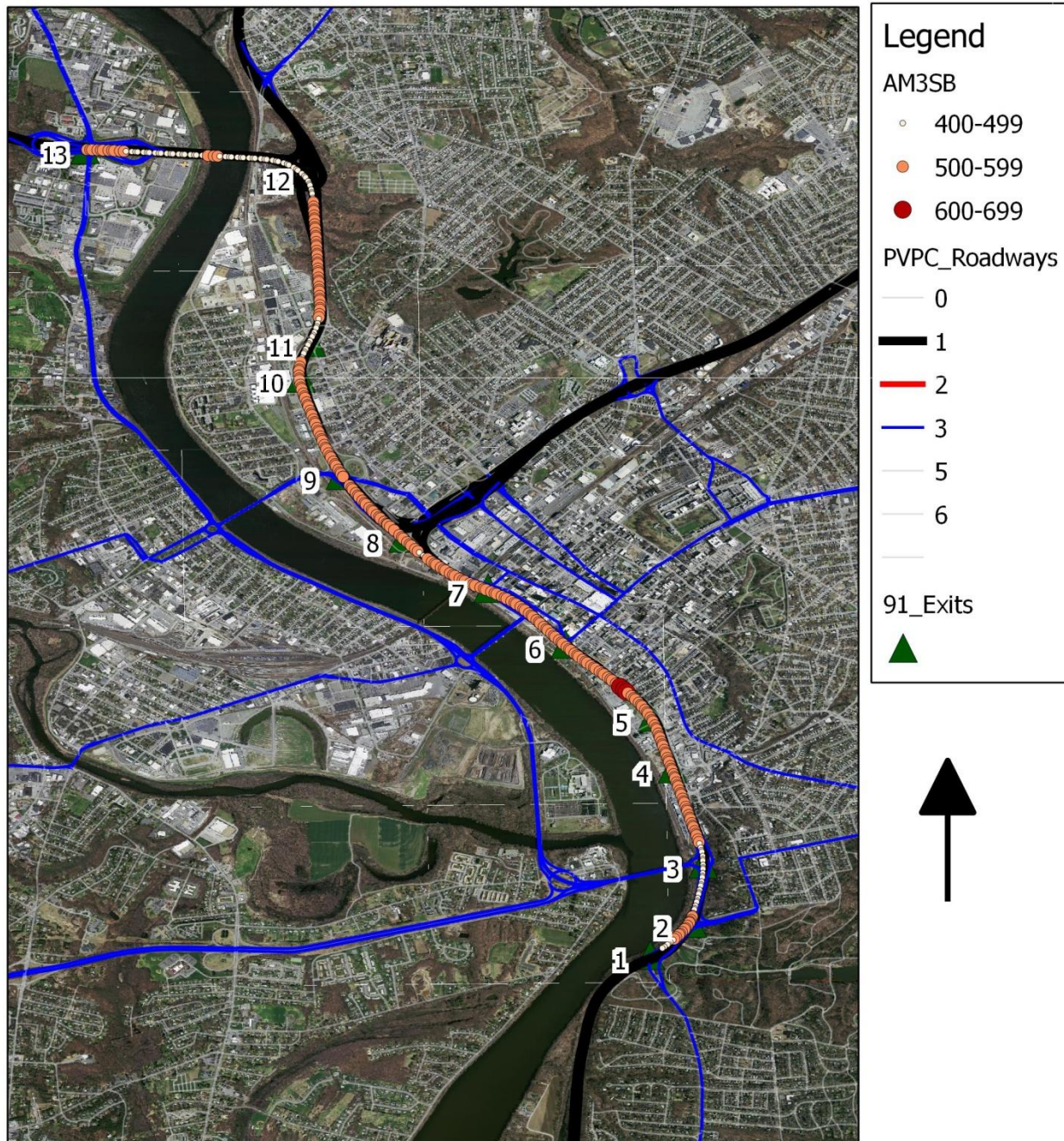




Figure 21 - Carbon Dioxide Intensity on I-91 Northbound During Off Peak Hour.

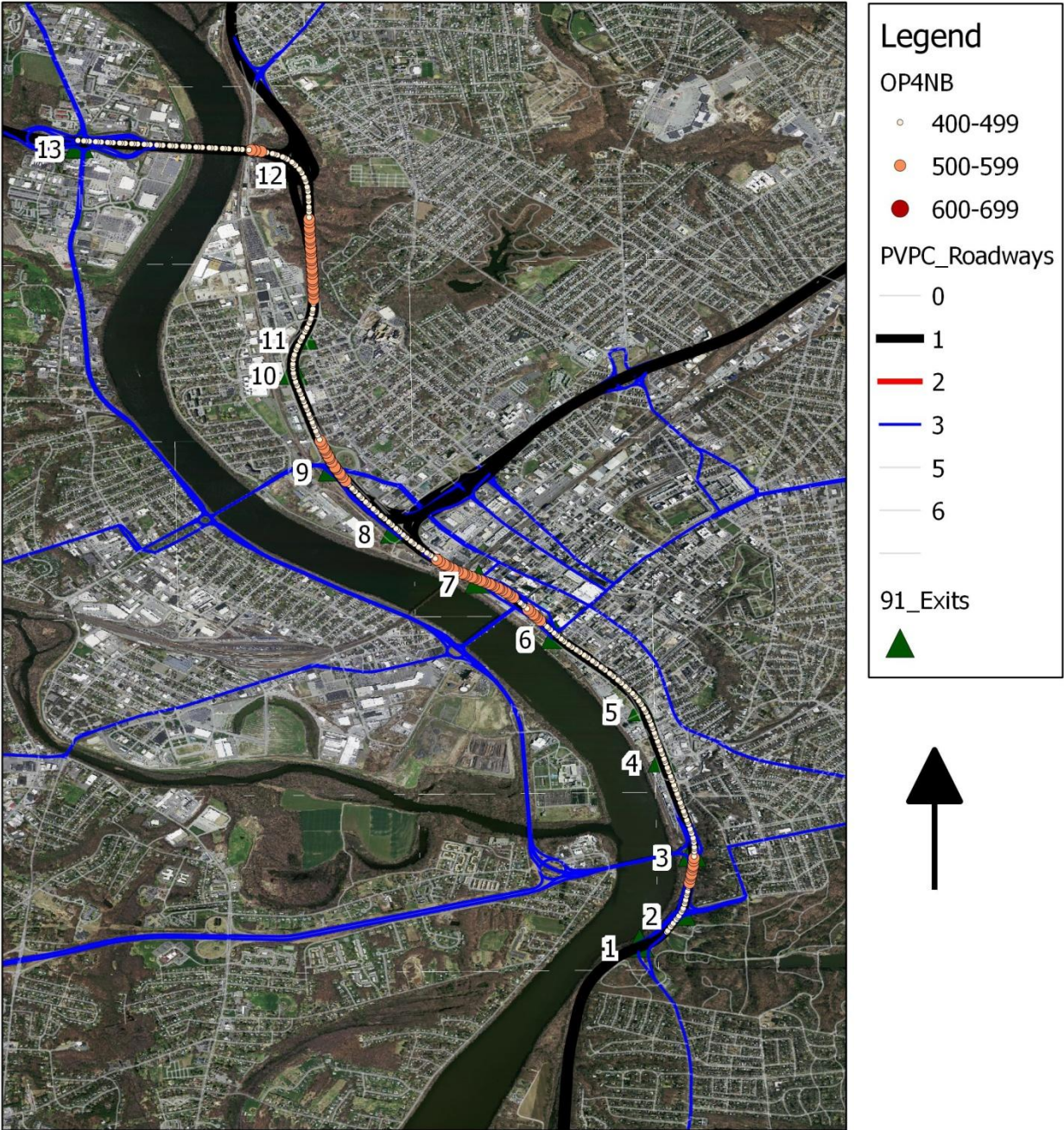




Figure 22 - Carbon Dioxide Intensity on I-91 Southbound During Off Peak Hour.

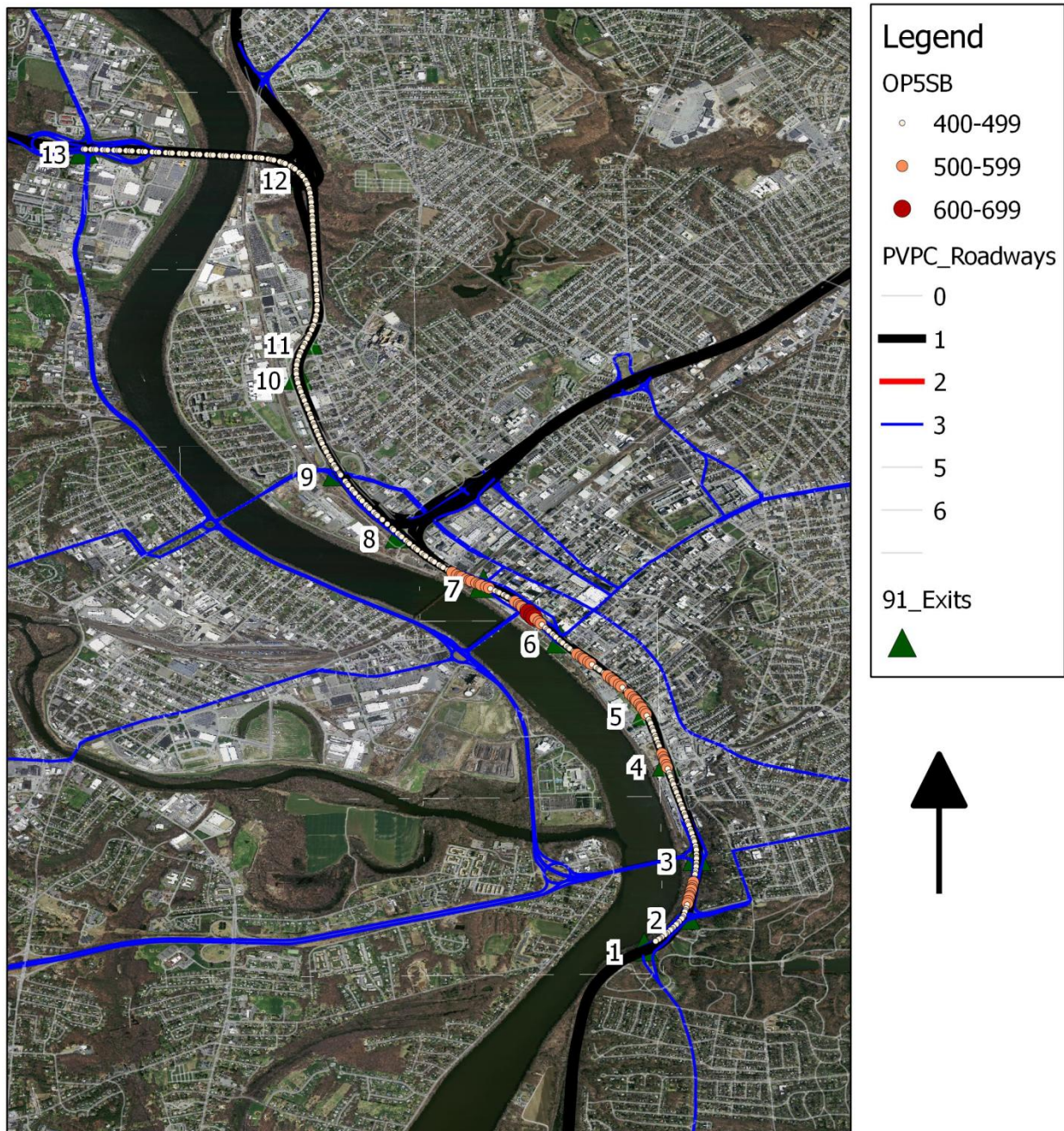




Figure 23 - Carbon Dioxide Intensity on I-91 Northbound During Evening Peak Hour.

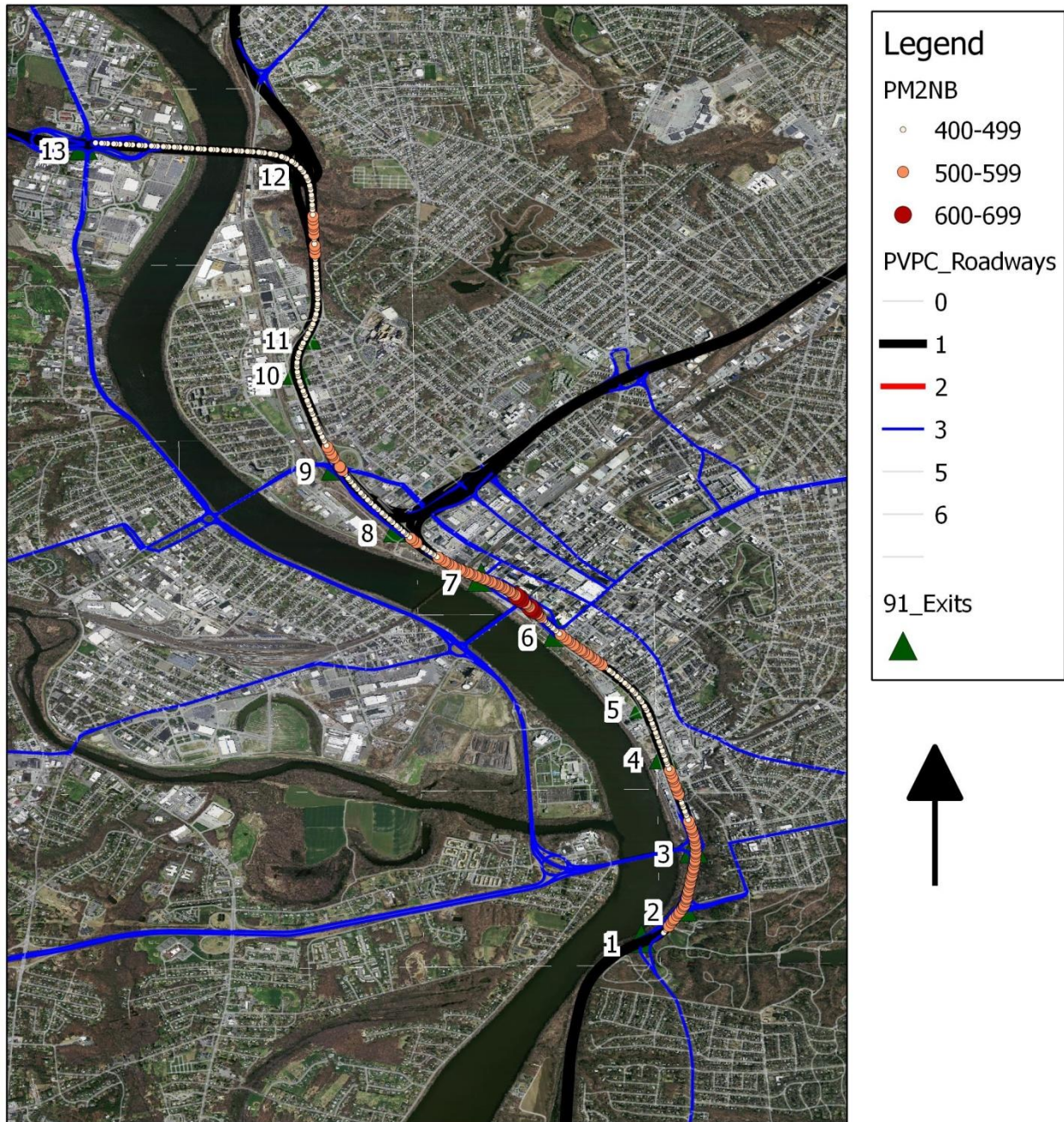
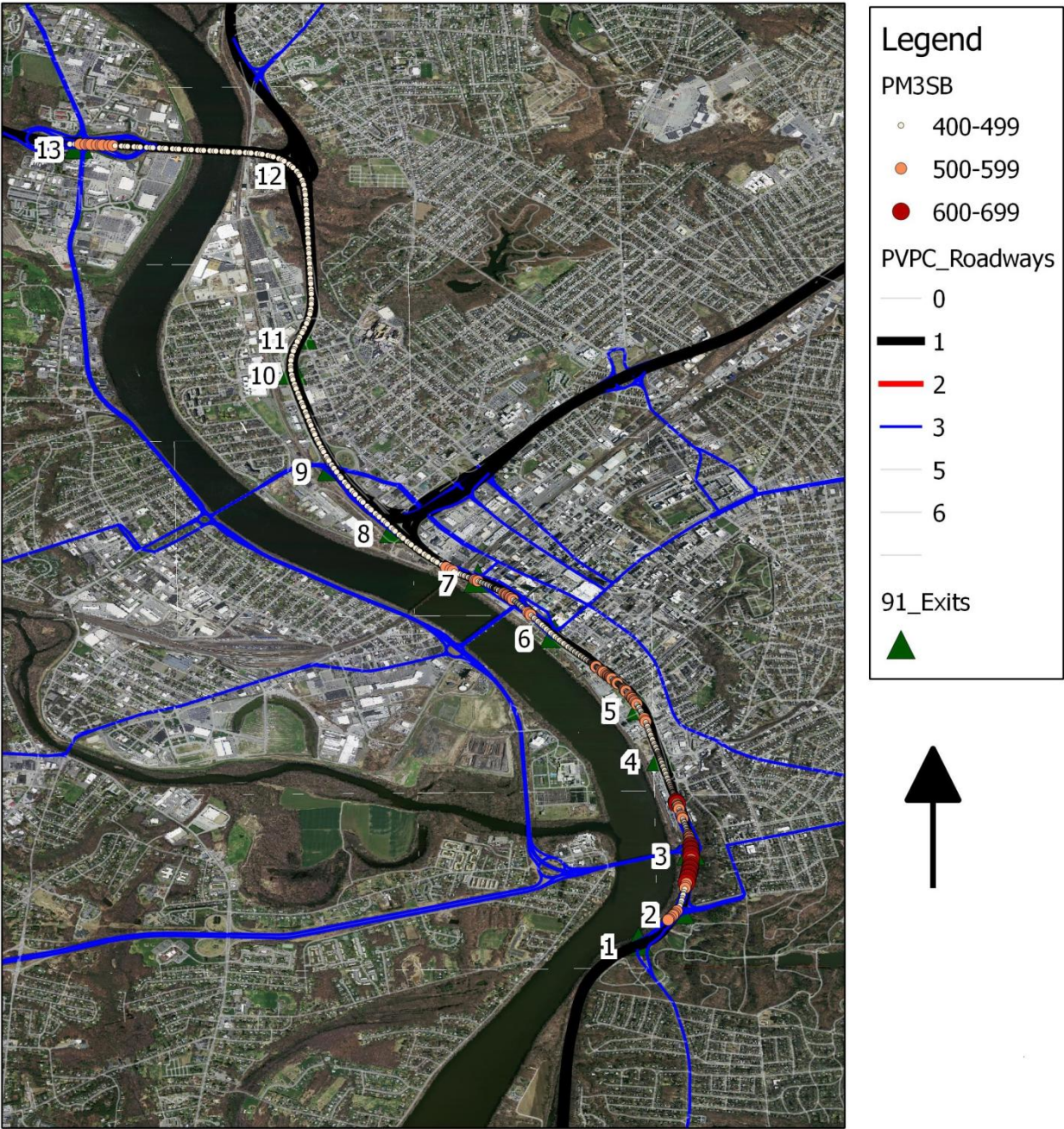




Figure 24 - Carbon Dioxide Intensity on I-91 Southbound During Evening Peak Hour.



**Table 6 - Weave Analysis Report for Morning Peak Hour at Location 1:  
I-91 Southbound Exit 4 off-ramps and Exit 3 on-ramps.**

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst	RA				Freeway/Dir of Travel	SB			
Agency/Company	PVPC				Weaving Segment Location	1- West Columbus Avenue/Exit3			
Date Performed	8/2/2013				Analysis Year	2013			
Analysis Time Period	AM Peak								
Project Description I-91 Corridor									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	C-D Roadway/ Multilane			
Weaving number of lanes, N	2					Highways			
Weaving segment length, L <sub>s</sub>	404ft				Freeway minimum speed, S <sub>MIN</sub>	30			
Freeway free-flow speed, FFS	40 mph				Freeway maximum capacity, C <sub>IFL</sub>	2100			
					Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	E <sub>T</sub>	E <sub>R</sub>	f <sub>HV</sub>	f <sub>p</sub>	v (pc/h)
V <sub>FF</sub>	218	0.94	5	0	1.5	1.2	0.976	1.00	238
V <sub>RF</sub>	494	0.94	7	0	1.5	1.2	0.966	1.00	544
V <sub>FR</sub>	111	0.82	5	0	1.5	1.2	0.976	1.00	139
V <sub>RR</sub>	0	0.90	0	0	1.5	1.2	1.000	1.00	0
V <sub>NW</sub>	238							V =	899
V <sub>W</sub>	683								
V <sub>R</sub>	0.742								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, N <sub>WL</sub>	2 lc				Minimum weaving lane changes, LC <sub>MIN</sub>	683 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, LC <sub>W</sub>	711 lc/h			
Minimum RF lane changes, LC <sub>RF</sub>	1 lc/pc				Non-weaving lane changes, LC <sub>NW</sub>	0 lc/h			
Minimum FR lane changes, LC <sub>FR</sub>	1 lc/pc				Total lane changes, LC <sub>ALL</sub>	711 lc/h			
Minimum RR lane changes, LC <sub>RR</sub>	lc/pc				Non-weaving vehicle index, I <sub>NW</sub>	10			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	899 veh/h				Weaving intensity factor, W	0.353			
Weaving segment capacity, c <sub>w</sub>	2548 veh/h				Weaving segment speed, S	36.1 mph			
Weaving segment v/c ratio	0.353				Average weaving speed, S <sub>w</sub>	37.4 mph			
Weaving segment density, D	12.8 pc/mi/ln				Average non-weaving speed, S <sub>NW</sub>	32.9 mph			
Level of Service, LOS	B				Maximum weaving length, L <sub>MAX</sub>	10784 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									



**Table 7 - Weave Analysis Report for Afternoon Peak Hour at Location 1:  
I-91 Southbound Exit 4 off-ramps and Exit 3 on-ramps.**

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst	RA				Freeway/Dir of Travel	SB			
Agency/Company	PVPC				Weaving Segment Location	1- West Columbus Avenue/Exit3			
Date Performed	8/2/2013				Analysis Year	2013			
Analysis Time Period	PM Peak								
Project Description I-91 Corridor									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	C-D Roadway/			
Weaving number of lanes, N	2					Multilane			
Weaving segment length, $L_s$	404ft					Highways			
Freeway free-flow speed, FFS	40 mph				Freeway minimum speed, $S_{MIN}$	30			
					Freeway maximum capacity, $C_{IFL}$	2100			
					Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	552	0.88	1	0	1.5	1.2	0.995	1.00	630
$V_{RF}$	531	0.87	6	0	1.5	1.2	0.971	1.00	629
$V_{FR}$	359	0.77	3	0	1.5	1.2	0.985	1.00	473
$V_{RR}$	30	0.68	7	0	1.5	1.2	0.966	1.00	46
$V_{NW}$	676							V =	1770
$V_W$	1102								
VR	0.620								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$	2 lc				Minimum weaving lane changes, $LC_{MIN}$	1102 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, $LC_W$	1130 lc/h			
Minimum RF lane changes, $LC_{RF}$	1 lc/pc				Non-weaving lane changes, $LC_{NW}$	0 lc/h			
Minimum FR lane changes, $LC_{FR}$	1 lc/pc				Total lane changes, $LC_{ALL}$	1130 lc/h			
Minimum RR lane changes, $LC_{RR}$	lc/pc				Non-weaving vehicle index, $I_{NW}$	27			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	1770 veh/h				Weaving intensity factor, W	0.509			
Weaving segment capacity, $c_w$	2832 veh/h				Weaving segment speed, S	32.7 mph			
Weaving segment v/c ratio	0.625				Average weaving speed, $S_W$	36.6 mph			
Weaving segment density, D	27.2 pc/mi/ln				Average non-weaving speed, $S_{NW}$	27.8 mph			
Level of Service, LOS	C				Maximum weaving length, $L_{MAX}$	9260 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

**Table 8 - Weave Analysis Report for Morning Peak Hour at Location 2:  
I-91 Northbound on-ramp near Exit 3.**

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst	R.A.				Freeway/Dir of Travel	NB			
Agency/Company	PVPC				Weaving Segment Location	2:E.Columbus Ave&Exit3on-ramp			
Date Performed	8/2/2013				Analysis Year	2013			
Analysis Time Period	AM Peak								
Project Description I-91 Corridor									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	C-D Roadway/Multilane Highways			
Weaving number of lanes, N	2				Freeway minimum speed, $S_{MIN}$	30			
Weaving segment length, $L_s$	330ft				Freeway maximum capacity, $C_{IFL}$	2100			
Freeway free-flow speed, FFS	40 mph				Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	365	0.90	2	0	1.5	1.2	0.990	1.00	410
$V_{RF}$	168	0.98	2	0	1.5	1.2	0.990	1.00	173
$V_{FR}$	997	0.89	3	0	1.5	1.2	0.985	1.00	1137
$V_{RR}$	524	0.89	1	0	1.5	1.2	0.995	1.00	592
$V_{NW}$	1002							V =	2290
$V_W$	1310								
VR	0.567								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$	2 lc				Minimum weaving lane changes, $LC_{MIN}$	1310 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, $LC_W$	1325 lc/h			
Minimum RF lane changes, $LC_{RF}$	1 lc/pc				Non-weaving lane changes, $LC_{NW}$	0 lc/h			
Minimum FR lane changes, $LC_{FR}$	1 lc/pc				Total lane changes, $LC_{ALL}$	1325 lc/h			
Minimum RR lane changes, $LC_{RR}$	lc/pc				Non-weaving vehicle index, $I_{NW}$	33			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	2290 veh/h				Weaving intensity factor, W	0.677			
Weaving segment capacity, $c_w$	2903 veh/h				Weaving segment speed, S	30.2 mph			
Weaving segment v/c ratio	0.789				Average weaving speed, $S_W$	36.0 mph			
Weaving segment density, D	38.2 pc/mi/ln				Average non-weaving speed, $S_{NW}$	25.0 mph			
Level of Service, LOS	E				Maximum weaving length, $L_{MAX}$	8615 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

**Table 9 - Weave Analysis Report for Afternoon Peak Hour at Location 2:  
I-91 Northbound on-ramp near Exit 3.**

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst	R.A.				Freeway/Dir of Travel	NB			
Agency/Company	PVPC				Weaving Segment Location	2:E.Columbus Ave&Exit3on-ramp			
Date Performed	8/2/2013				Analysis Year	2013			
Analysis Time Period	PM Peak								
Project Description I-91 Corridor									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	C-D Roadway/Multilane			
Weaving number of lanes, N	2					Highways			
Weaving segment length, $L_s$	330ft				Freeway minimum speed, $S_{MIN}$	30			
Freeway free-flow speed, FFS	40 mph				Freeway maximum capacity, $C_{IFL}$	2100			
					Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	317	0.90	2	0	1.5	1.2	0.990	1.00	356
$V_{RF}$	162	0.95	1	0	1.5	1.2	0.995	1.00	171
$V_{FR}$	792	0.88	3	0	1.5	1.2	0.985	1.00	914
$V_{RR}$	299	0.95	1	0	1.5	1.2	0.995	1.00	316
$V_{NW}$	672							V =	1740
$V_W$	1085								
VR	0.618								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$	2 lc				Minimum weaving lane changes, $LC_{MIN}$	1085 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, $LC_W$	1100 lc/h			
Minimum RF lane changes, $LC_{RF}$	1 lc/pc				Non-weaving lane changes, $LC_{NW}$	0 lc/h			
Minimum FR lane changes, $LC_{FR}$	1 lc/pc				Total lane changes, $LC_{ALL}$	1100 lc/h			
Minimum RR lane changes, $LC_{RR}$	lc/pc				Non-weaving vehicle index, $I_{NW}$	22			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	1740 veh/h				Weaving intensity factor, W	0.584			
Weaving segment capacity, $c_w$	2810 veh/h				Weaving segment speed, S	32.6 mph			
Weaving segment v/c ratio	0.619				Average weaving speed, $S_W$	36.3 mph			
Weaving segment density, D	27.0 pc/mi/ln				Average non-weaving speed, $S_{NW}$	28.0 mph			
Level of Service, LOS	C				Maximum weaving length, $L_{MAX}$	9232 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									


**Table 10 - Weave Analysis Report for Morning Peak Hour at Location 3:  
I-91 Southbound Exit 3 on-ramp and Exit 1 off-ramp.**

FREEWAY WEAVING WORKSHEET									
<b>General Information</b>					<b>Site Information</b>				
Analyst	R.A.				Freeway/Dir of Travel	SB			
Agency/Company	PVPC				Weaving Segment Location	3:I-91 off&on-ramp near Exit 1			
Date Performed	8/12/2013				Analysis Year	2013			
Analysis Time Period	AM Peak								
Project Description I-91 Corridor Study									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	Freeway			
Weaving number of lanes, N	3				Freeway minimum speed, $S_{MIN}$	40			
Weaving segment length, $L_S$	950ft				Freeway maximum capacity, $C_{IFL}$	2100			
Freeway free-flow speed, FFS	50 mph				Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	1241	0.87	1	0	1.5	1.2	0.995	1.00	1434
$V_{RF}$	865	0.89	3	0	1.5	1.2	0.985	1.00	986
$V_{FR}$	929	0.87	4	0	1.5	1.2	0.980	1.00	1089
$V_{RR}$	45	0.87	3	0	1.5	1.2	0.985	1.00	53
$V_{NW}$	1487							V =	3545
$V_W$	2075								
VR	0.583								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$	2 lc				Minimum weaving lane changes, $LC_{MIN}$	1089 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, $LC_W$	1245 lc/h			
Minimum RF lane changes, $LC_{RF}$	0 lc/pc				Non-weaving lane changes, $LC_{NW}$	243 lc/h			
Minimum FR lane changes, $LC_{FR}$	1 lc/pc				Total lane changes, $LC_{ALL}$	1488 lc/h			
Minimum RR lane changes, $LC_{RR}$	lc/pc				Non-weaving vehicle index, $I_{NW}$	141			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	3545 veh/h				Weaving intensity factor, W	0.322			
Weaving segment capacity, $c_w$	4099 veh/h				Weaving segment speed, S	42.2 mph			
Weaving segment v/c ratio	0.865				Average weaving speed, $S_W$	47.6 mph			
Weaving segment density, D	28.1 pc/mi/ln				Average non-weaving speed, $S_{NW}$	36.5 mph			
Level of Service, LOS	D				Maximum weaving length, $L_{MAX}$	8807 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

**Table 11 - Weave Analysis Report for Afternoon Peak Hour at Location 3:  
I-91 Southbound Exit 3 on-ramp and Exit 1 off-ramp.**

FREEWAY WEAVING WORKSHEET									
General Information					Site Information				
Analyst	R.A.				Freeway/Dir of Travel	SB			
Agency/Company	PVPC				Weaving Segment Location	3:I-91 off&on-ramp near Exit 1			
Date Performed	8/12/2013				Analysis Year	2013			
Analysis Time Period	PM Peak								
Project Description I-91 Corridor Study									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	Freeway			
Weaving number of lanes, N	3				Freeway minimum speed, $S_{MIN}$	40			
Weaving segment length, $L_S$	950ft				Freeway maximum capacity, $C_{IFL}$	2100			
Freeway free-flow speed, FFS	50 mph				Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	1241	0.94	8	0	1.5	1.2	0.962	1.00	1373
$V_{RF}$	468	0.90	2	0	1.5	1.2	0.990	1.00	525
$V_{FR}$	1257	0.95	1	0	1.5	1.2	0.995	1.00	1330
$V_{RR}$	338	0.93	1	0	1.5	1.2	0.995	1.00	365
$V_{NW}$	1738							V =	3455
$V_W$	1855								
$V_R$	0.516								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$	2 lc				Minimum weaving lane changes, $LC_{MIN}$	1330 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, $LC_W$	1486 lc/h			
Minimum RF lane changes, $LC_{RF}$	0 lc/pc				Non-weaving lane changes, $LC_{NW}$	295 lc/h			
Minimum FR lane changes, $LC_{FR}$	1 lc/pc				Total lane changes, $LC_{ALL}$	1781 lc/h			
Minimum RR lane changes, $LC_{RR}$	lc/pc				Non-weaving vehicle index, $I_{NW}$	165			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	3455 veh/h				Weaving intensity factor, W	0.371			
Weaving segment capacity, $c_w$	4470 veh/h				Weaving segment speed, S	40.2 mph			
Weaving segment v/c ratio	0.773				Average weaving speed, $S_W$	47.3 mph			
Weaving segment density, D	29.8 pc/mi/ln				Average non-weaving speed, $S_{NW}$	34.7 mph			
Level of Service, LOS	D				Maximum weaving length, $L_{MAX}$	8017 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

**Table 12 - Weave Analysis Report for Morning Peak Hour at Location 4:  
I-91 Southbound on and off-ramps at Exit 1.**

<b>FREEWAY WEAVING WORKSHEET</b>									
<b>General Information</b>					<b>Site Information</b>				
Analyst R.A. Agency/Company PVPC Date Performed 8/23/2013 Analysis Time Period AM					Freeway/Dir of Travel SB Weaving Segment Location 4: Exit 1 on & off-ramps Analysis Year 2013				
Project Description I-91 Corridor Study									
<b>Inputs</b>									
Weaving configuration  One-Sided Weaving number of lanes, N 2 Weaving segment length, L <sub>s</sub> 300ft Freeway free-flow speed, FFS 40 mph					Segment type Freeway Freeway minimum speed, S <sub>MIN</sub> 30 Freeway maximum capacity, C <sub>IFL</sub> 2100 Terrain type Level				
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	E <sub>T</sub>	E <sub>R</sub>	f <sub>HV</sub>	f <sub>p</sub>	v (pc/h)
V <sub>FF</sub>	342	0.90	1	0	1.5	1.2	0.995	1.00	382
V <sub>RF</sub>	1	0.25	50	0	1.5	1.2	0.800	1.00	5
V <sub>FR</sub>	18	0.71	0	0	1.5	1.2	1.000	1.00	25
V <sub>RR</sub>	867	0.88	5	0	1.5	1.2	0.976	1.00	1010
V <sub>NW</sub>	1392							V =	
V <sub>W</sub>	30								
V <sub>R</sub>	0.021								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, N <sub>WL</sub> 2 lc					Minimum weaving lane changes, LC <sub>MIN</sub> 30 lc/h				
Interchange density, ID 1.0 int/mi					Weaving lane changes, LC <sub>W</sub> 30 lc/h				
Minimum RF lane changes, LC <sub>RF</sub> 1 lc/pc					Non-weaving lane changes, LC <sub>NW</sub> 64 lc/h				
Minimum FR lane changes, LC <sub>FR</sub> 1 lc/pc					Total lane changes, LC <sub>ALL</sub> 94 lc/h				
Minimum RR lane changes, LC <sub>RR</sub> 1 lc/pc					Non-weaving vehicle index, I <sub>NW</sub> 42				
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v veh/h					Weaving intensity factor, W 0.090				
Weaving segment capacity, c <sub>w</sub> veh/h					Weaving segment speed, S 36.4 mph				
Weaving segment v/c ratio					Average weaving speed, S <sub>w</sub> 39.2 mph				
Weaving segment density, D 19.5 pc/mi/ln					Average non-weaving speed, S <sub>NW</sub> 36.4 mph				
Level of Service, LOS B					Maximum weaving length, L <sub>MAX</sub> 2791 ft				
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

**Table 13 - Weave Analysis Report for Afternoon Peak Hour at Location 4:  
I-91 Southbound on and off-ramps at Exit 1.**

FREEWAY WEAVING WORKSHEET									
General Information					Site Information				
Analyst	R.A.				Freeway/Dir of Travel	SB			
Agency/Company	PVPC				Weaving Segment Location	4: Exit 1 on & off-ramps			
Date Performed	8/23/2013				Analysis Year	2013			
Analysis Time Period	PM								
Project Description I-91 Corridor Study									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	Freeway			
Weaving number of lanes, N	2				Freeway minimum speed, $S_{MIN}$	30			
Weaving segment length, $L_S$	300ft				Freeway maximum capacity, $C_{IFL}$	2100			
Freeway free-flow speed, FFS	40 mph				Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	266	0.82	2	0	1.5	1.2	0.990	1.00	328
$V_{RF}$	4	0.33	0	0	1.5	1.2	1.000	1.00	12
$V_{FR}$	46	0.74	0	0	1.5	1.2	1.000	1.00	62
$V_{RR}$	1370	0.95	2	0	1.5	1.2	0.990	1.00	1457
$V_{NW}$	1785							V =	1841
$V_W$	74								
VR	0.040								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$	2 lc				Minimum weaving lane changes, $LC_{MIN}$	74 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, $LC_W$	74 lc/h			
Minimum RF lane changes, $LC_{RF}$	1 lc/pc				Non-weaving lane changes, $LC_{NW}$	145 lc/h			
Minimum FR lane changes, $LC_{FR}$	1 lc/pc				Total lane changes, $LC_{ALL}$	219 lc/h			
Minimum RR lane changes, $LC_{RR}$	lc/pc				Non-weaving vehicle index, $I_{NW}$	54			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	1841 veh/h				Weaving intensity factor, W	0.176			
Weaving segment capacity, $c_w$	3754 veh/h				Weaving segment speed, S	35.1 mph			
Weaving segment v/c ratio	0.490				Average weaving speed, $S_W$	38.5 mph			
Weaving segment density, D	26.5 pc/mi/ln				Average non-weaving speed, $S_{NW}$	35.0 mph			
Level of Service, LOS	C				Maximum weaving length, $L_{MAX}$	2965 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									



**Table 14 - Weave Analysis Report for Morning Peak Hour at Location 5:  
I-91 Northbound near Exit 2.**

FREEWAY WEAVING WORKSHEET									
General Information					Site Information				
Analyst	R.A.				Freeway/Dir of Travel	NB			
Agency/Company	PVPC				Weaving Segment Location	5: Exit 2 on and off-ramps			
Date Performed	8/23/2013				Analysis Year	2013			
Analysis Time Period	AM								
Project Description I-91 Corridor Study									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	Freeway			
Weaving number of lanes, N	4				Freeway minimum speed, $S_{MIN}$	40			
Weaving segment length, $L_S$	300ft				Freeway maximum capacity, $C_{IFL}$	2100			
Freeway free-flow speed, FFS	50 mph				Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	679	0.91	6	0	1.5	1.2	0.971	1.00	769
$V_{RF}$	1294	0.91	2	0	1.5	1.2	0.990	1.00	1436
$V_{FR}$	167	0.79	4	0	1.5	1.2	0.980	1.00	216
$V_{RR}$	48	0.90	4	0	1.5	1.2	0.980	1.00	54
$V_{NW}$	823							V =	2403
$V_W$	1652								
$V_R$	0.667								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$	2 lc				Minimum weaving lane changes, $LC_{MIN}$	1652 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, $LC_W$	1652 lc/h			
Minimum RF lane changes, $LC_{RF}$	1 lc/pc				Non-weaving lane changes, $LC_{NW}$	0 lc/h			
Minimum FR lane changes, $LC_{FR}$	1 lc/pc				Total lane changes, $LC_{ALL}$	1652 lc/h			
Minimum RR lane changes, $LC_{RR}$	lc/pc				Non-weaving vehicle index, $I_{NW}$	25			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	2403 veh/h				Weaving intensity factor, W	0.868			
Weaving segment capacity, $c_w$	3491 veh/h				Weaving segment speed, S	41.4 mph			
Weaving segment v/c ratio	0.688				Average weaving speed, $S_W$	45.4 mph			
Weaving segment density, D	15.0 pc/mi/ln				Average non-weaving speed, $S_{NW}$	35.1 mph			
Level of Service, LOS	B				Maximum weaving length, $L_{MAX}$	9849 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

**Table 15 - Weave Analysis Report for Afternoon Peak Hour at Location 5:  
I-91 Northbound near Exit 2.**

FREEWAY WEAVING WORKSHEET									
General Information					Site Information				
Analyst	R.A.				Freeway/Dir of Travel	NB			
Agency/Company	PVPC				Weaving Segment Location	5: Exit 2 on and off-ramps			
Date Performed	8/23/2013				Analysis Year	2013			
Analysis Time Period	PM								
Project Description I-91 Corridor Study									
<b>Inputs</b>									
Weaving configuration	One-Sided				Segment type	Freeway			
Weaving number of lanes, N	4				Freeway minimum speed, $S_{MIN}$	40			
Weaving segment length, $L_S$	300ft				Freeway maximum capacity, $C_{FL}$	2100			
Freeway free-flow speed, FFS	50 mph				Terrain type	Level			
<b>Conversions to pc/h Under Base Conditions</b>									
	V (veh/h)	PHF	Truck (%)	RV (%)	$E_T$	$E_R$	$f_{HV}$	$f_p$	v (pc/h)
$V_{FF}$	985	0.88	3	0	1.5	1.2	0.985	1.00	1136
$V_{RF}$	948	0.92	2	0	1.5	1.2	0.990	1.00	1041
$V_{FR}$	311	0.91	3	0	1.5	1.2	0.985	1.00	347
$V_{RR}$	34	0.90	2	0	1.5	1.2	0.990	1.00	38
$V_{NW}$	1174							V =	2525
$V_W$	1388								
$V_R$	0.542								
<b>Configuration Characteristics</b>									
Minimum maneuver lanes, $N_{WL}$	2 lc				Minimum weaving lane changes, $LC_{MIN}$	1388 lc/h			
Interchange density, ID	1.0 int/mi				Weaving lane changes, $LC_W$	1388 lc/h			
Minimum RF lane changes, $LC_{RF}$	1 lc/pc				Non-weaving lane changes, $LC_{NW}$	0 lc/h			
Minimum FR lane changes, $LC_{FR}$	1 lc/pc				Total lane changes, $LC_{ALL}$	1388 lc/h			
Minimum RR lane changes, $LC_{RR}$	lc/pc				Non-weaving vehicle index, $I_{NW}$	35			
<b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>									
Weaving segment flow rate, v	2525 veh/h				Weaving intensity factor, W	0.757			
Weaving segment capacity, $c_w$	4365 veh/h				Weaving segment speed, S	41.2 mph			
Weaving segment v/c ratio	0.578				Average weaving speed, $S_W$	45.7 mph			
Weaving segment density, D	15.5 pc/mi/ln				Average non-weaving speed, $S_{NW}$	36.9 mph			
Level of Service, LOS	B				Maximum weaving length, $L_{MAX}$	8319 ft			
<b>Notes</b>									
a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".									
b. For volumes that exceed the weaving segment capacity, the level of service is "F".									

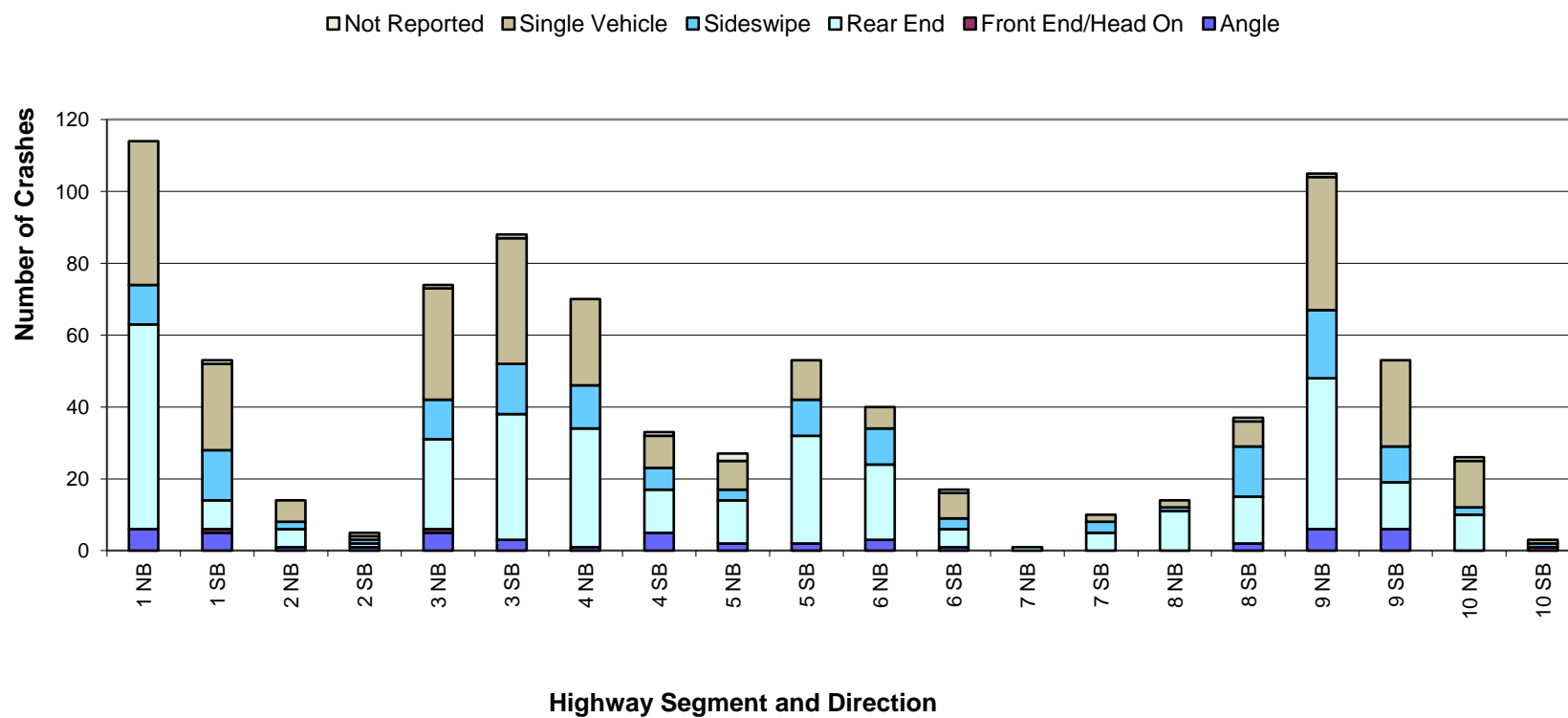
Table 16 - Comprehensive Crash Data by Highway Segment, 2007 to 2009 (Part 1).

		Severity					Manner of Collision							Weather Conditions										Totals	Percent
Segment	Direction	Fatal Injury	Non-Fatal Injury	Property Damage Only	Unknown	Totals	Angle	Front End/ Head On	Rear End	Sideswipe / Same Direction	Single Vehicle	Not Reported	Totals	Clear	Cloudy	Rain	Sleet / Freezing Rain	Snow	Fog / Smoke	High Winds	Not Reported	Totals		of Total	
1	NB	0	33	75	6	114	6	0	57	11	40	0	114	81	9	10	2	8	1	0	3	114	167	20%	
	SB	0	14	37	2	53	5	1	8	14	24	1	53	22	6	1	4	16	0	0	4	53			
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	NB %	0%	29%	66%	5%	100%	5%	0%	50%	10%	35%	0%	100%	71%	8%	9%	2%	7%	1%	0%	3%	100%			
	SB %	0%	26%	70%	4%	100%	9%	2%	15%	26%	45%	2%	100%	42%	11%	2%	8%	30%	0%	0%	8%	100%			
	Unknown %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			0%
2	NB	0	4	10	0	14	1	0	5	2	6	0	14	7	2	2	1	0	0	0	2	14	19	2%	
	SB	0	2	3	0	5	1	0	1	1	1	1	5	1	2	1	0	1	0	0	0	5			
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	NB %	0%	29%	71%	0%	100%	7%	0%	36%	14%	43%	0%	100%	50%	14%	14%	7%	0%	0%	0%	14%	100%			
	SB %	0%	40%	60%	0%	100%	20%	0%	20%	20%	20%	20%	100%	20%	40%	20%	0%	20%	0%	0%	0%	100%			
	Unknown %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			0%
3	NB	0	17	52	5	74	5	1	25	11	31	1	74	36	12	14	1	6	1	0	4	74	165	19%	
	SB	1	20	59	8	88	3	0	35	14	35	1	88	52	14	8	1	6	0	0	7	88			
	Unknown	0	1	1	1	3	0	1	1	0	1	0	3	3	0	0	0	0	0	0	0	3			
	NB %	0%	23%	70%	7%	100%	7%	1%	34%	15%	42%	1%	100%	49%	16%	19%	1%	8%	1%	0%	5%	100%			
	SB %	1%	23%	67%	9%	100%	3%	0%	40%	16%	40%	1%	100%	59%	16%	9%	1%	7%	0%	0%	8%	100%			
	Unknown %	0%	33%	33%	33%	100%	0%	33%	33%	0%	33%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	100%			
4	NB	0	21	45	4	70	1	0	33	12	24	0	70	42	11	12	0	0	0	0	5	70	104	12%	
	SB	0	7	23	3	33	5	0	12	6	9	1	33	23	6	2	0	1	0	0	1	33			
	Unknown	0	0	0	1	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1			
	NB %	0%	30%	64%	6%	100%	1%	0%	47%	17%	34%	0%	100%	60%	16%	17%	0%	0%	0%	0%	7%	100%			
	SB %	0%	21%	70%	9%	100%	15%	0%	36%	18%	27%	3%	100%	70%	18%	6%	0%	3%	0%	0%	3%	100%			
	Unknown %	0%	0%	0%	100%	100%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	100%			
5	NB	0	6	19	2	27	2	0	12	3	8	2	27	17	1	4	0	2	0	0	3	27	80	9%	
	SB	1	18	33	1	53	2	0	30	10	11	0	53	40	3	3	0	3	0	0	4	53			
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	NB %	0%	22%	70%	7%	100%	7%	0%	44%	11%	30%	7%	100%	63%	4%	15%	0%	7%	0%	0%	11%	100%			
	SB %	2%	34%	62%	2%	100%	4%	0%	57%	19%	21%	0%	100%	75%	6%	6%	0%	6%	0%	0%	8%	100%			
	Unknown %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			0%
6	NB	0	12	27	1	40	3	0	21	10	6	0	40	26	3	0	0	4	0	1	6	40	58	7%	
	SB	0	5	11	1	17	1	0	5	3	7	1	17	12	2	0	0	3	0	0	0	17			
	Unknown	0	0	1	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1			
	NB %	0%	30%	68%	3%	100%	8%	0%	53%	25%	15%	0%	100%	65%	8%	0%	0%	10%	0%	3%	15%	100%			
	SB %	0%	29%	65%	6%	100%	6%	0%	29%	18%	41%	6%	100%	71%	12%	0%	0%	18%	0%	0%	0%	100%			
	Unknown %	0%	0%	100%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%	100%	0%	0%	0%	0%	0%	0%	100%			

Table 16 Comprehensive Crash Data by Highway Segment, 2007 to 2009 (Part 2).

		Severity					Manner of Collision							Weather Conditions										Totals	Percent
Segment	Direction	Fatal Injury	Non-Fatal Injury	Property Damage Only	Unknown	Totals	Angle	Front End/ Head On	Rear End	Sideswipe / Same Direction	Single Vehicle	Not Reported	Totals	Clear	Cloudy	Rain	Sleet / Freezing Rain	Snow	Fog / Smoke	High Winds	Not Reported	Totals		of Total	
7	NB	0	0	1	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	12	1%
	SB	0	2	8	0	10	0	0	5	3	2	0	10	4	1	3	0	2	0	0	0	0	10		
	Unknown	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1		
	NB %	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%		
	SB %	0%	20%	80%	0%	100%	0%	0%	50%	30%	20%	0%	100%	40%	10%	30%	0%	20%	0%	0%	0%	0%	100%		
Unknown %	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%		
8	NB	0	6	6	2	14	0	0	11	1	2	0	14	11	1	1	0	0	0	0	0	1	14	52	6%
	SB	0	8	28	1	37	2	0	13	14	7	1	37	22	7	6	0	0	0	0	0	2	37		
	Unknown	0	0	1	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1		
	NB %	0%	43%	43%	14%	100%	0%	0%	79%	7%	14%	0%	100%	79%	7%	7%	0%	0%	0%	0%	7%	100%			
	SB %	0%	22%	76%	3%	100%	5%	0%	35%	38%	19%	3%	100%	59%	19%	16%	0%	0%	0%	0%	5%	100%			
Unknown %	0%	0%	100%	0%	100%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%			
9	NB	0	27	68	10	105	6	0	42	19	37	1	105	63	14	6	2	15	0	0	5	105	167	20%	
	SB	0	14	36	3	53	6	0	13	10	24	0	53	31	7	6	1	6	0	0	2	53			
	Unknown	0	3	6	0	9	0	0	0	1	7	1	9	5	0	1	0	2	0	0	1	9			
	NB %	0%	26%	65%	10%	100%	6%	0%	40%	18%	35%	1%	100%	60%	13%	6%	2%	14%	0%	0%	5%	100%			
	SB %	0%	26%	68%	6%	100%	11%	0%	25%	19%	45%	0%	100%	58%	13%	11%	2%	11%	0%	0%	4%	100%			
Unknown %	0%	33%	67%	0%	100%	0%	0%	0%	11%	78%	11%	100%	56%	0%	11%	0%	22%	0%	0%	11%	100%				
10	NB	0	7	19	0	26	0	0	10	2	13	1	26	16	3	2	2	2	0	0	1	26	32	4%	
	SB	0	1	2	0	3	0	1	0	1	1	0	3	1	0	0	0	1	0	0	1	3			
	Unknown	0	3	0	0	3	0	0	3	0	0	0	3	2	1	0	0	0	0	0	0	3			
	NB %	0%	27%	73%	0%	100%	0%	0%	38%	8%	50%	4%	100%	62%	12%	8%	8%	8%	0%	0%	4%	100%			
	SB %	0%	33%	67%	0%	100%	0%	33%	0%	33%	33%	0%	100%	33%	0%	0%	0%	33%	0%	0%	33%	100%			
Unknown %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%	67%	33%	0%	0%	0%	0%	0%	0%	0%	100%			
Totals	Count	2	220	550	52	856	50	3	331	147	282	11	856	502	102	80	12	75	2	1	50	856	856	100%	
		0%	26%	64%	6%	100%	6%	0%	39%	17%	33%	1%	100%	59%	12%	9%	1%	9%	0%	0%	6%	100%			

**Figure 25 - Crashes Categorized by Manner of Collision.**



**Figure 26 - Crashes Categorized by Weather Conditions.**

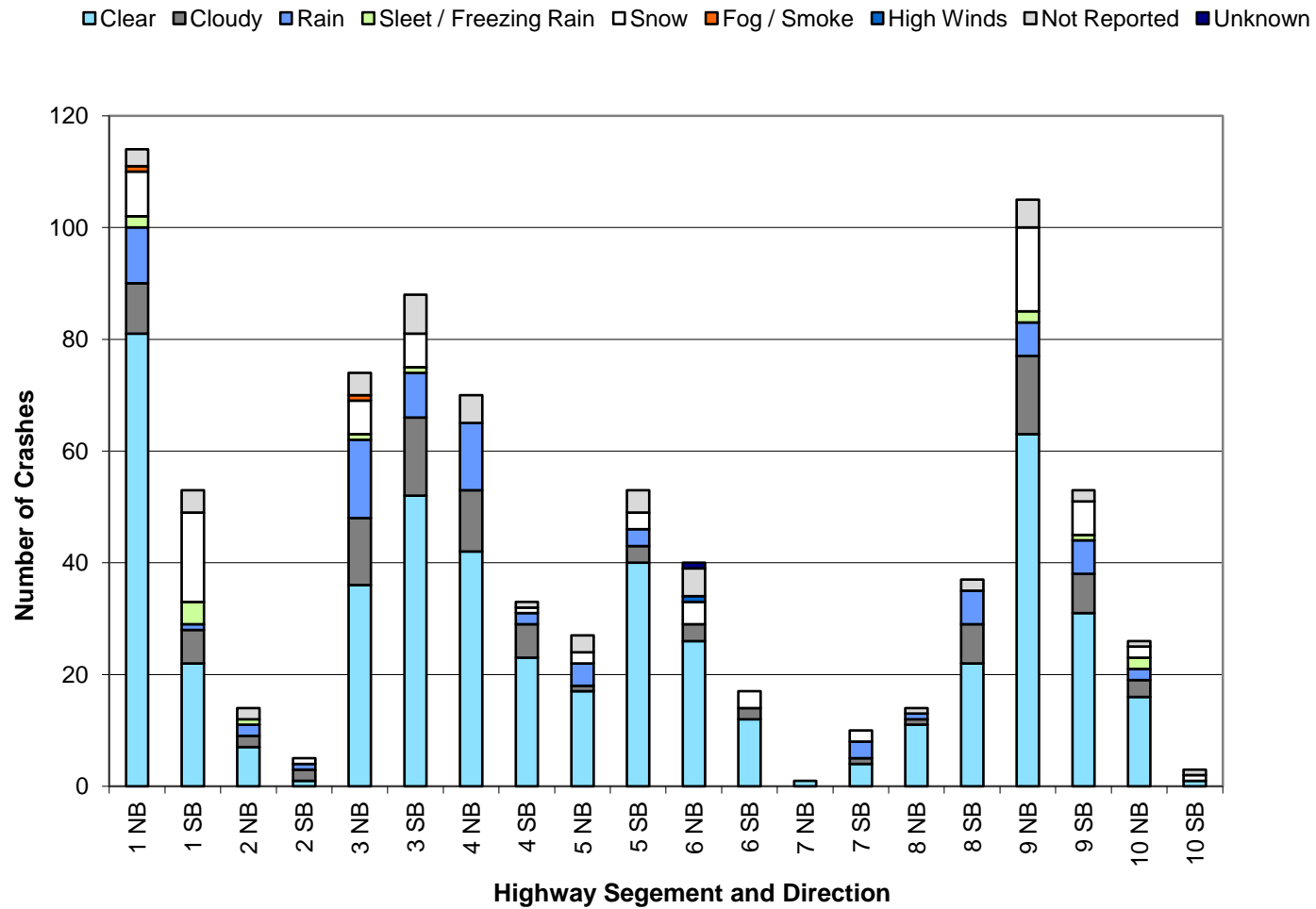


Figure 27 - Collision Diagram for Main Street at East Columbus Avenue Intersection.

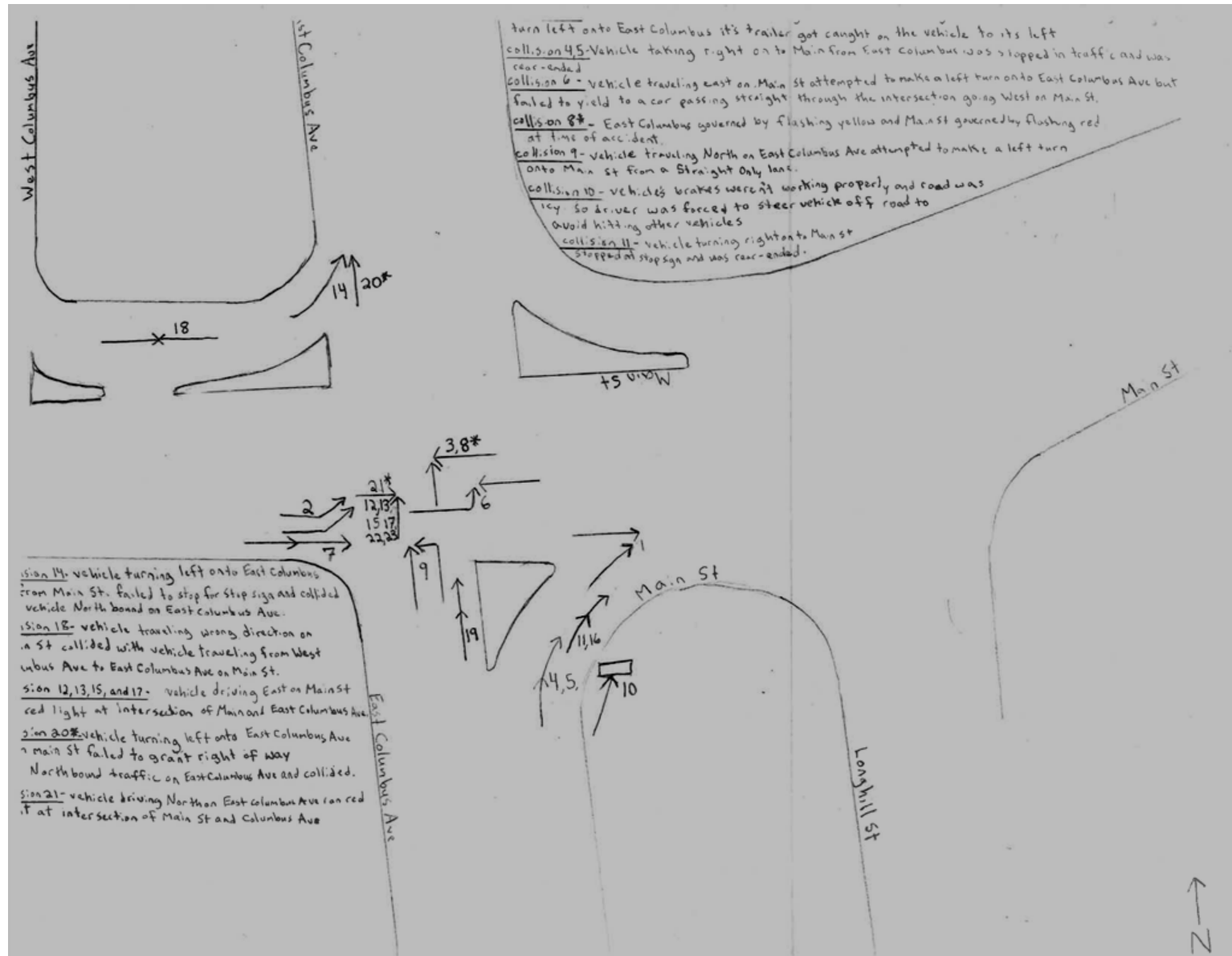




Figure 28 - Collision Diagram for Main Street at West Columbus Avenue Intersection.

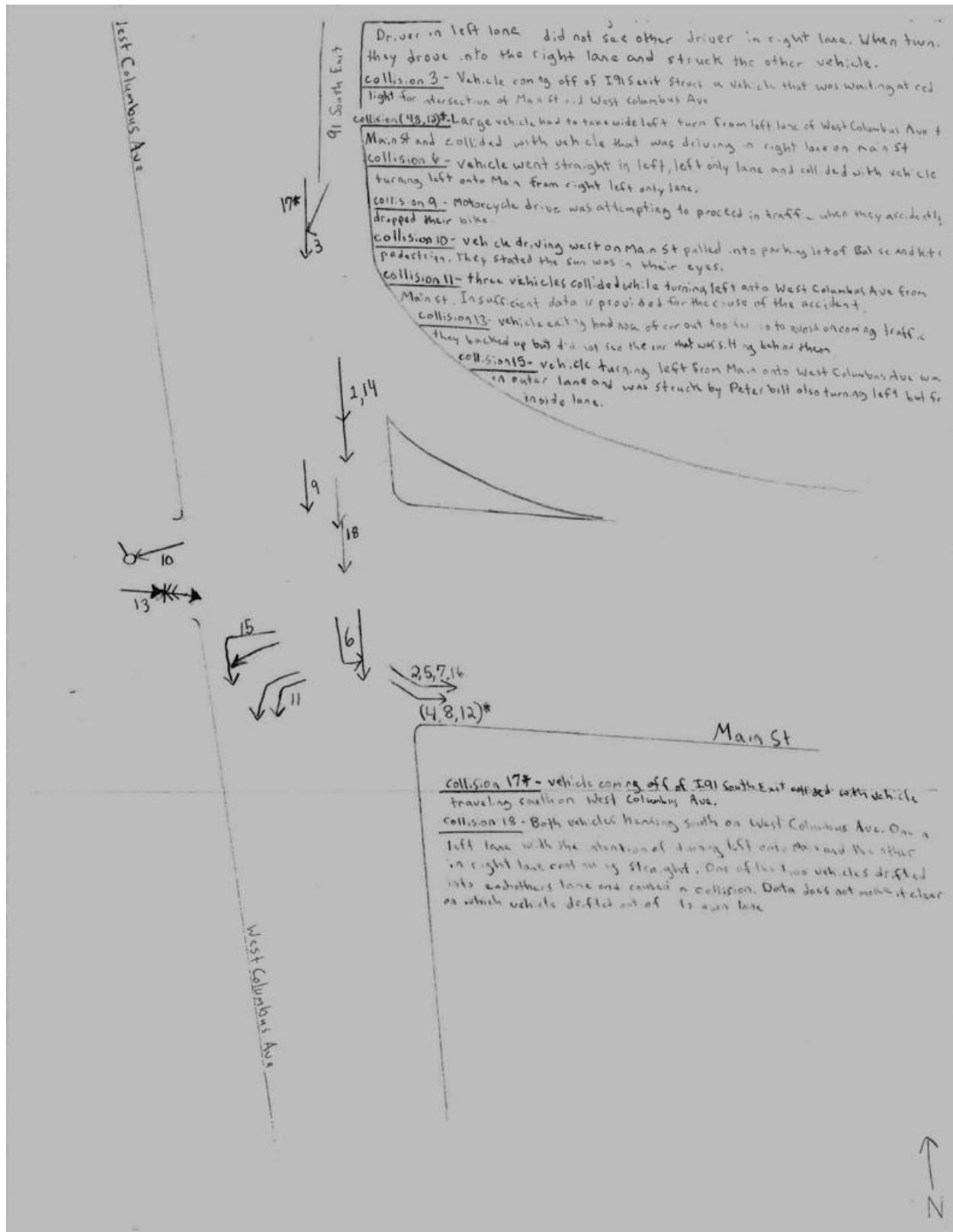


Figure 29 - Collision Diagram for Main Street at Longhill Street Intersection.

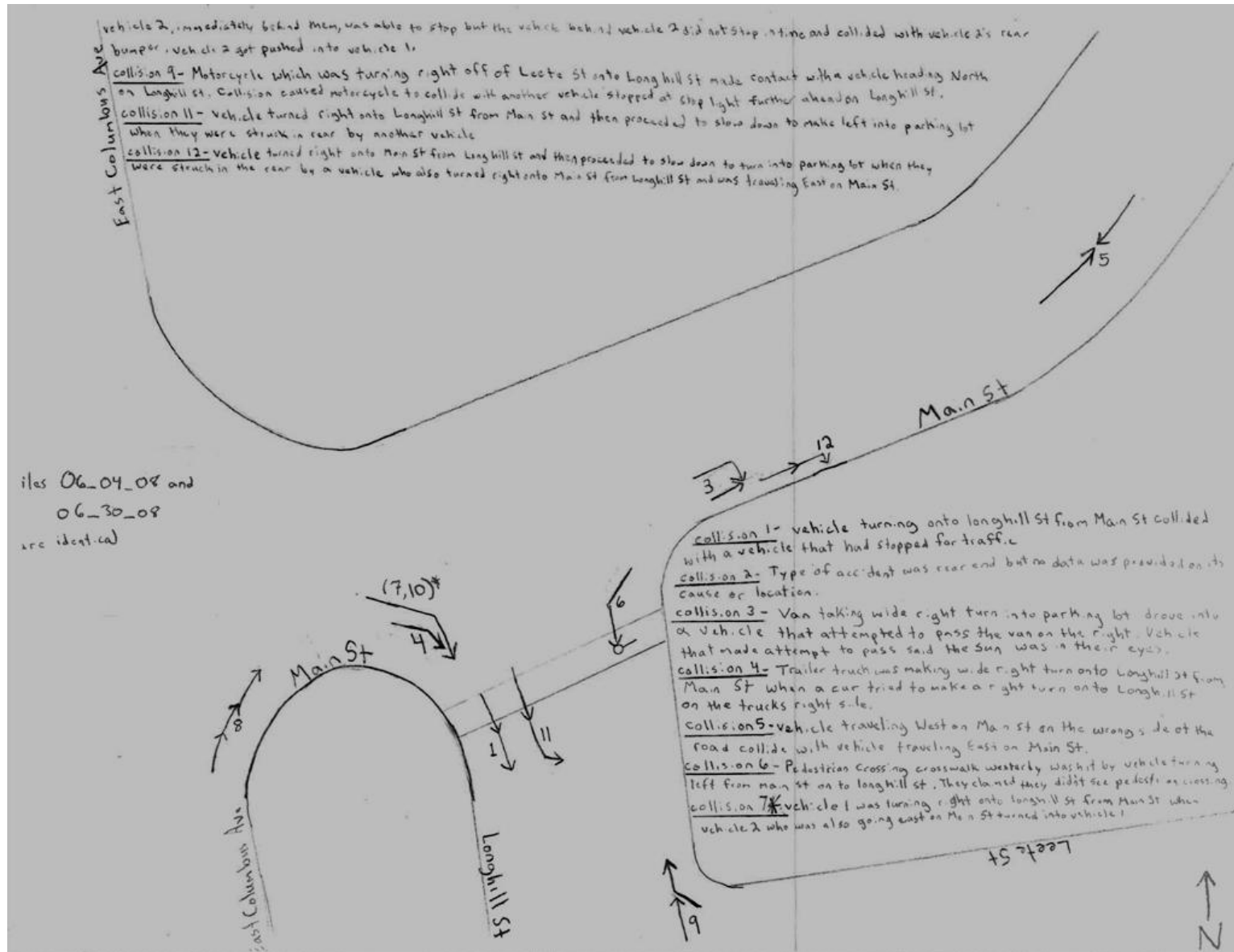
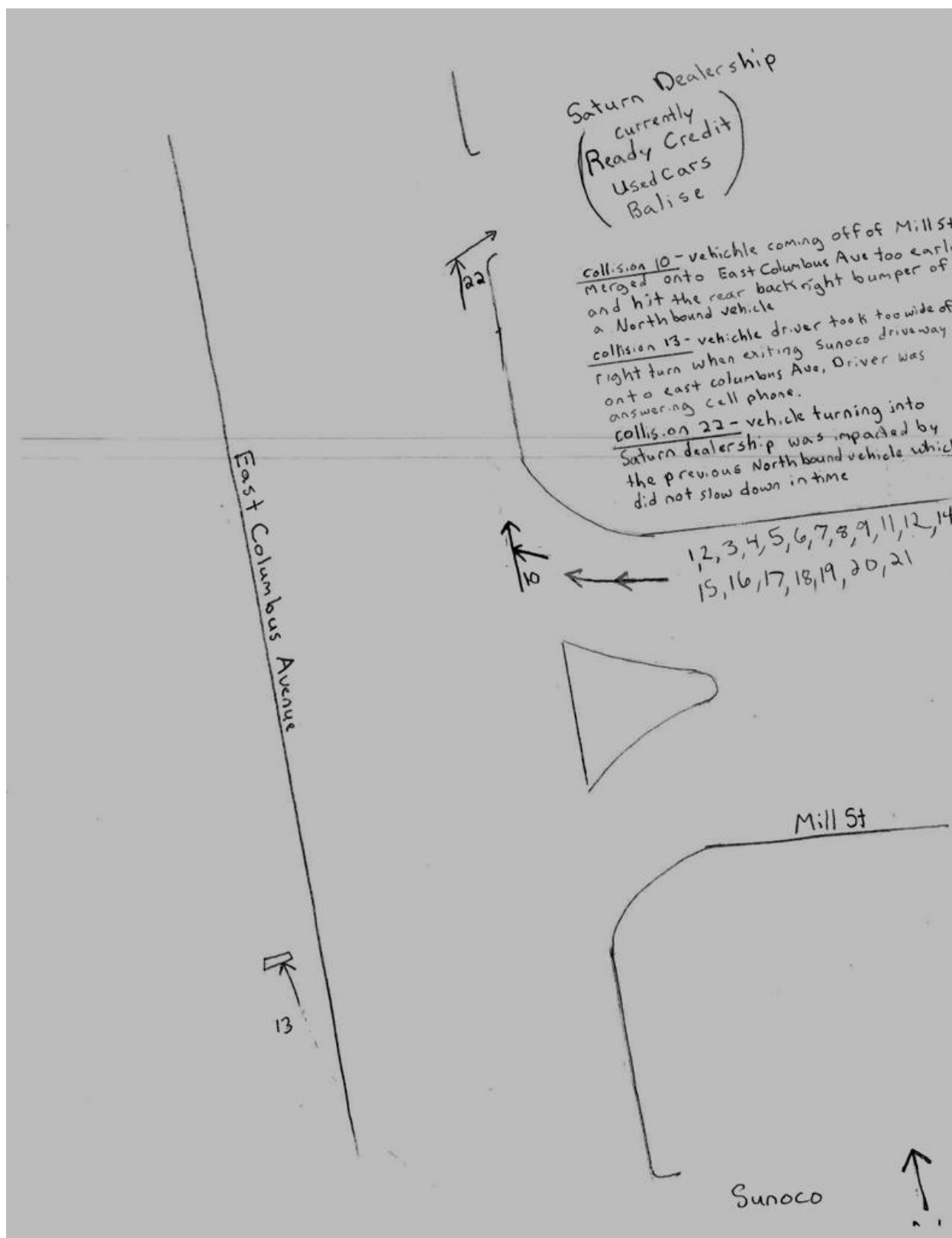


Figure 30 - Collision Diagram for Mill Street at East Columbus Avenue Intersection.



**Figure 31 - Collision Diagram for Broad Street at East Columbus Avenue Intersection.**

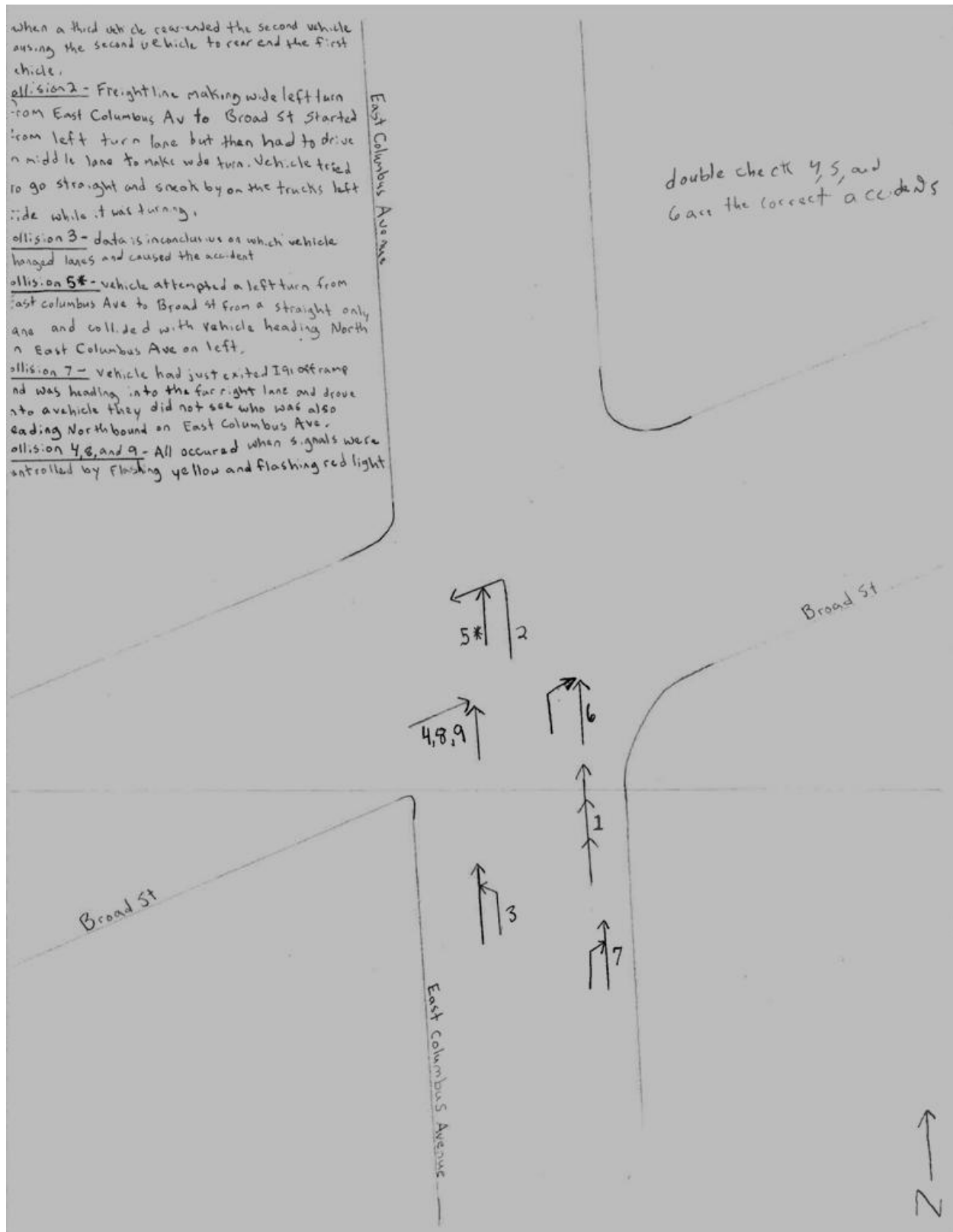


Figure 32 - Collision Diagram for Union Street at East Columbus Avenue Intersection.

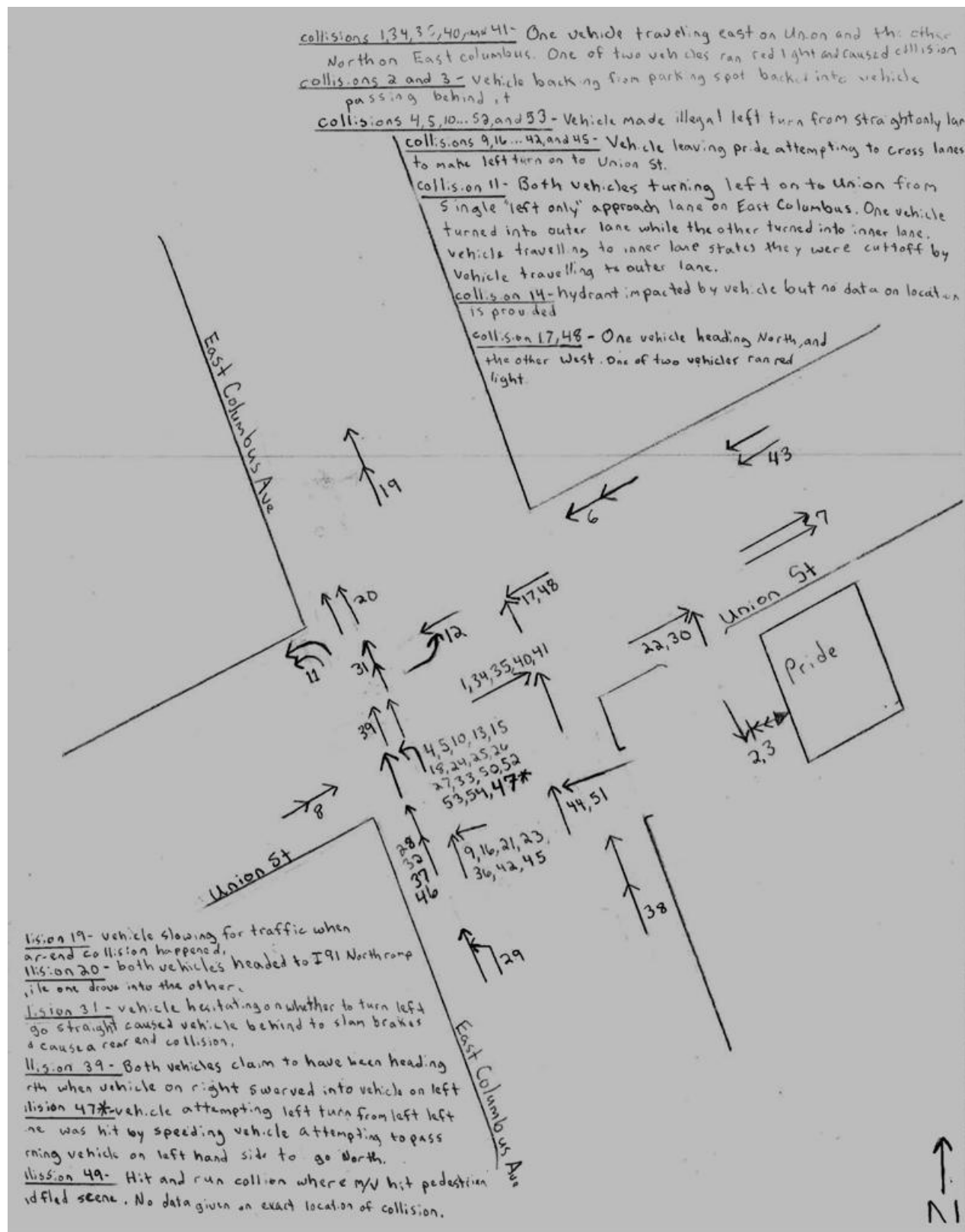


Figure 33 - Collision Diagram for Union Street at West Columbus Avenue Intersection.

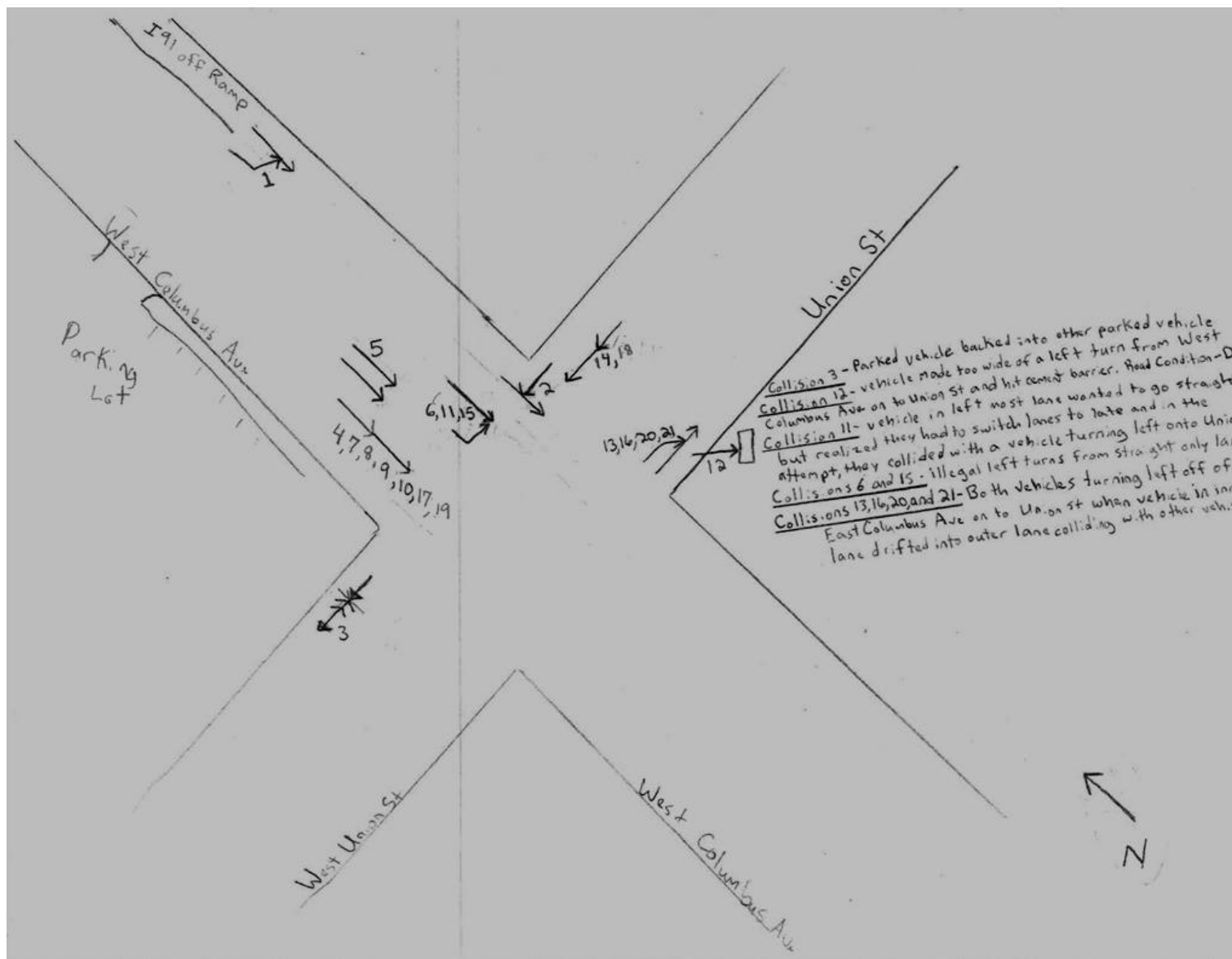


Figure 34 - Collision Diagram for State Street at East Columbus Avenue Intersection.

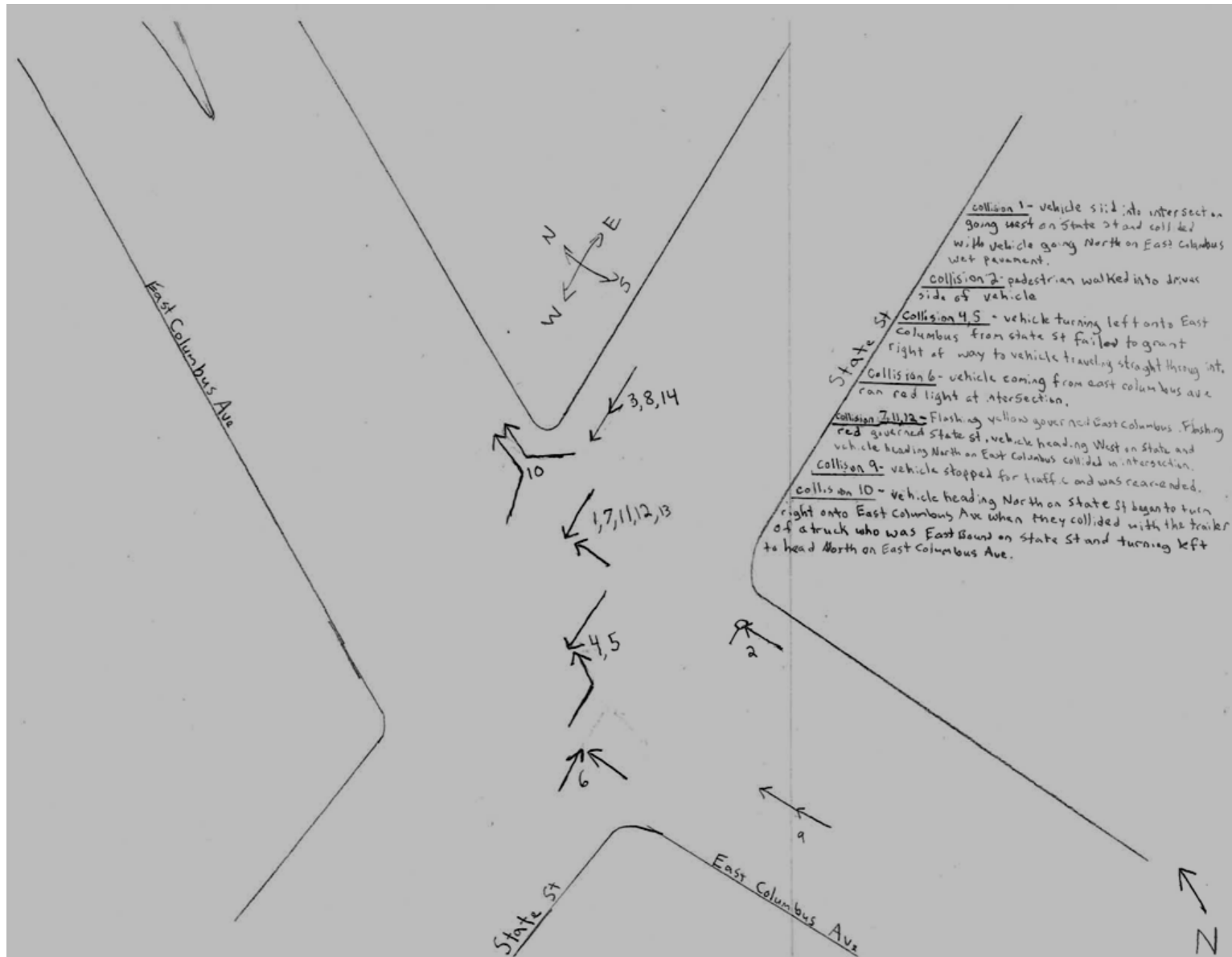




Figure 35 - Collision Diagram for State Street at West Columbus Avenue Intersection.

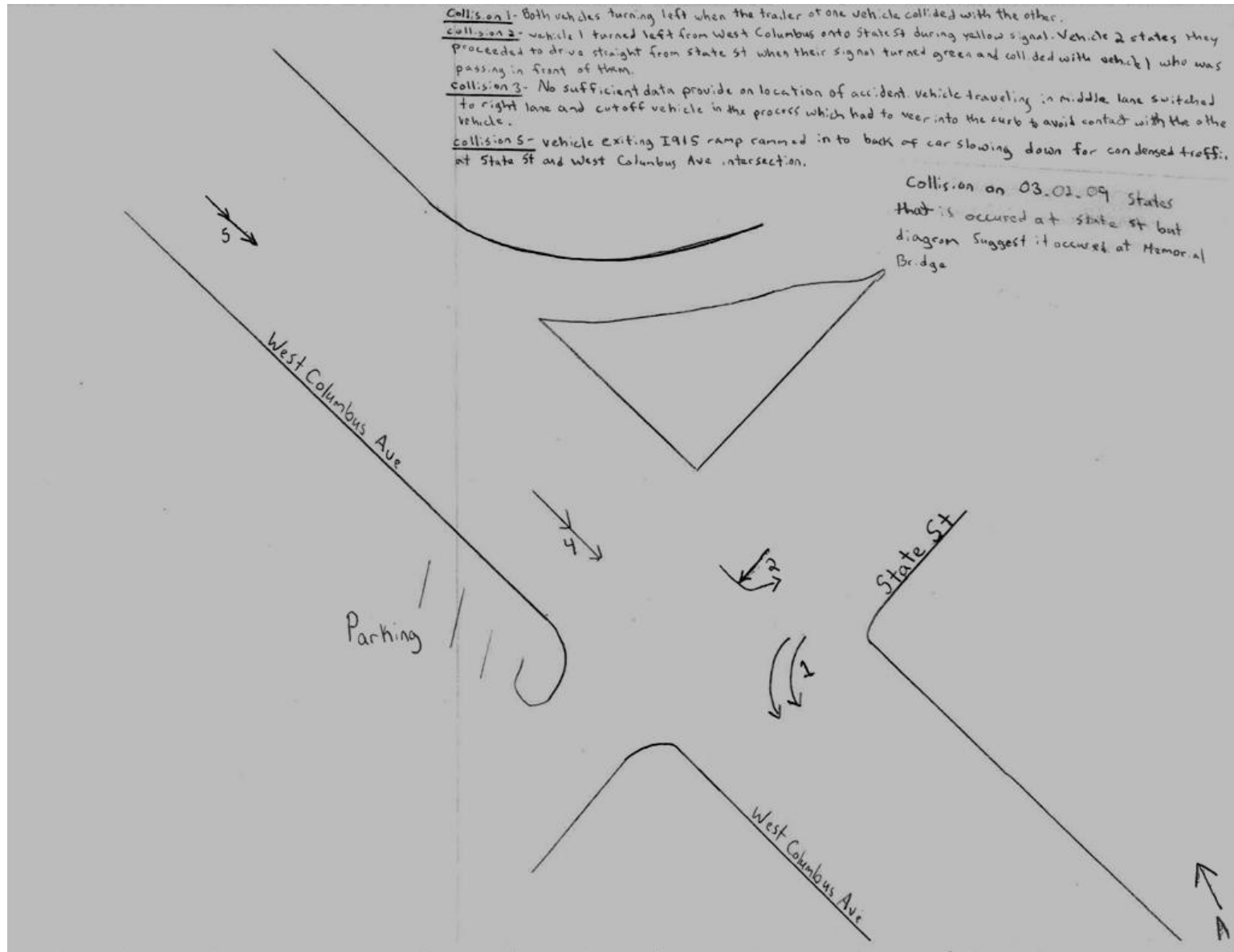


Figure 36 - Collision Diagram for Boland Way at East Columbus Avenue Intersection.

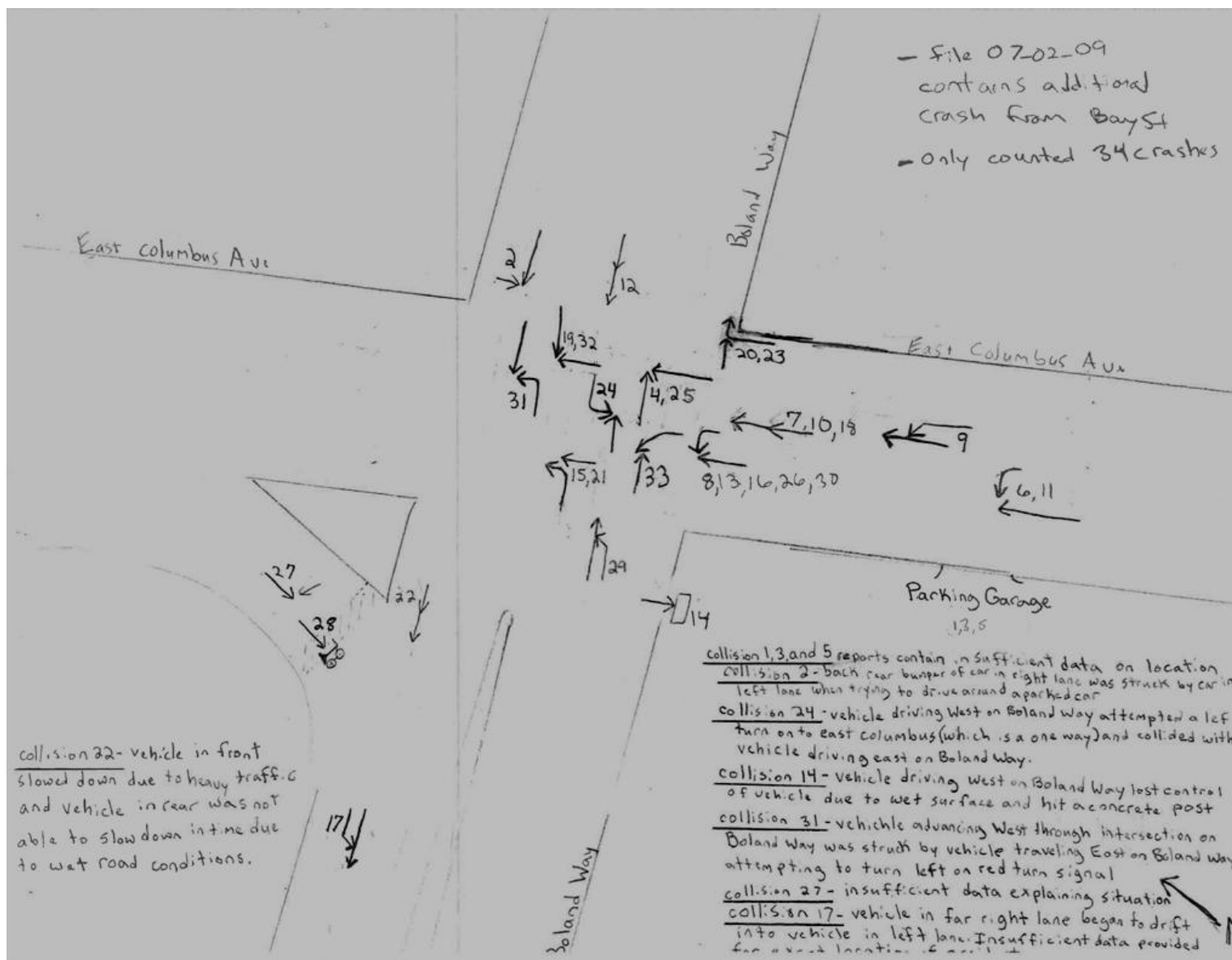


Figure 37 - Collision Diagram for Boland Way at West Columbus Avenue Intersection.

