APPENDIX Q

Interchange Modification Report
Technical Analysis

INTERCHANGE MODIFICATION REPORT
TECHNICAL ANALYSIS

FOR

INTERSTATE 95/ROUTE 128 AT ROUTE 9
EXIT 20 INTERCHANGE

WELLESLEY, MASSACHUSETTS

AUGUST 2010

SUBMITTED TO:
MASSDOT &
FEDERAL HIGHWAY ADMINISTRATION

PREPARED BY:

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

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1.0 INTRODUCTION

1.1 Project Purpose

McMahon Associates, Inc. (McMahon) evaluated the impacts of modifications to the Interstate 95/Route 128 Exit 20 interchange in Wellesley, Massachusetts. The existing interchange provides full access between I-95/Route 128 and Route 9 with a full cloverleaf configuration. The ramps and weave areas at the existing interchange do not meet current American Association of State Highway and Transportation Officials (AASHTO) standards. Given the significant level of crashes along Route 9 and along I-95/Route 128 related to the existing interchange configuration, it was determined that the safety conditions could be significantly improved with modifications to the configuration. Modifications to the interchange would eliminate the weave areas along I-95/Routes 128 and Route 9 and would allow the reconstruction of ramps to improved design standards. Five (5) alternatives were developed to be compared to the No Build conditions. This study provides the technical analysis of the alternatives for the proposed Interchange Modification Report for I-95/Route 128 at Route 9.

1.2 Study Area

The study area includes Exit 20 on I-95/Route 128, and the signalized intersection of Route 9 at Sun Life/Harvard Pilgrim. Exit 20 is currently a full cloverleaf at I-95/Route 128 providing full access to/from Route 9. I-95/Route 128 is a north-south interstate highway and Route 9 is an east-west urban arterial roadway. The interchange of I-95/Route 128 will continue to provide full access to Route 9 with each proposed interchange configuration alternative. Therefore, modifications to Interchange 20 would not affect the traffic volumes and operations of the adjacent interchanges or the local roadway network. The project location is illustrated in **Figure 1**.

J:\Analysis\Edwards & Kelcey\Route 128\Graphics\figure 1 Study Area.dwg 31/06/10

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Figure 1
Study Area
I-95 / Rt 128 Add-A-Lane
Rt 9 / Highland Ave / Kendrick St

2.0 ANALYSIS YEARS

These interchange modifications were developed as part of the I-95/93 (Route 128) Transportation Improvement Plan, Bridge V contract, that includes the proposed Kendrick Street interchange and the existing Highland Avenue and Route 9 interchanges. The overall Route 128 project design year was 2025 and the analysis years for this interchange match the analysis years for the overall project. Intersection capacity is generally analyzed for the existing year and a design year 10 years into the future, which for this project is the year 2017. Additionally, intersection capacity analysis has been completed for the year 2025 in order to fully compare the five interchange alternatives discussed in this analysis. The analysis years for the project, and the tasks associated with each analysis year, include the following:

- Year 2007: Ramp Analysis, Weave Analysis and Intersection Analysis
- Year 2017: Intersection Analysis
- Year 2025: Ramp Analysis, Weave Analysis and Intersection Analysis

3.0 EXISTING CONDITIONS

3.1 Roadway Network

Interstate 95/Route 128 is designated as a north-south highway and travels in a northwest-southeast direction at the study interchange with a speed limit of 55 miles per hour (mph). South of the Route 9 Interchange, I-95/Route 128 currently provides three travel lanes in each direction. From 6:00 AM until 10:00 AM and again between 3:00 PM and 7:00 PM, travel is allowed in the breakdown lanes in both directions. With travel permitted in the breakdown lanes, I-95/Route 128 operates with four through travel lanes and no right-hand shoulder in each direction during the morning and evening peak hours. To assure that motorists have locations to pull over out of the active traffic stream, there are "pullouts" spaced at approximately ½ mile intervals in both the northbound and southbound directions.

There is one interchange within the study area. The existing interchange provides full access between I-95/Route 128 and Route 9 through a full cloverleaf configuration. The existing ramp configurations create a weave section within the interchange in each direction of travel on both roadways.

Route 9 (Worcester Street) is an east-west, median divided, four-lane, principal arterial roadway. The I-95/Route 128 interchange at Route 9 is a full cloverleaf interchange with unsignalized right-hand ramps along Route 9.

Route 9 at Sun Life and Harvard Pilgrim Drives

The closest intersection along Route 9 to the east of the interchange is the unsignalized intersection of Route 9 and William Street. William Street provides access to several office buildings and is limited to right in/right out movements at Route 9. Police details are

typically present during the peak periods to manage traffic at this location. Traffic operations and travel patterns at this intersection will not be altered by the interchange modifications and as such, traffic evaluations have not been conducted for this intersection.

The closest intersection along Route 9 to the west of the interchange is the intersection of Route 9 at the Sun Life/Harvard Pilgrim Driveways. This intersection is a four-approach signalized intersection. The Route 9 eastbound approach has a left-turn lane, two through lanes, and a shared through/right-turn lane. On the far side of the intersection, Route 9 eastbound has three lanes, with the right-most lane becoming an exit only lane to Route I-95/128 southbound. The Route 9 westbound approach to the intersection has a left-turn lane, three through lanes, and a right-turn lane. The three westbound through lanes reduce to two through lanes approximately 500 feet west of the intersection. The Sun Life northbound approach has a shared left-turn and through lane and a right-turn lane. The Harvard Pilgrim southbound approach has a left-turn lane, a shared left-turn and through lane, and a right-turn lane. The traffic signal phasing includes an advanced phase for the Route 9 left-turn movements and an exclusive pedestrian phase. **Figure 2** shows the existing interchange configuration.

3.2 Traffic Volumes

Existing traffic volumes were based on Automatic Traffic Recorder (ATR) count data collected by MassDOT in July 2007. The existing data is included in the I-95/I-93 Transportation Improvement Project (Bridge V) Functional Design Report prepared for MassDOT, dated October 2008. No appreciable changes have occurred in the vicinity of the interchange that would affect traffic volumes since the 2007 counts. The 2007 volumes are graphically shown on **Figure 3** and **Figure 4**.

3.3 Safety Conditions

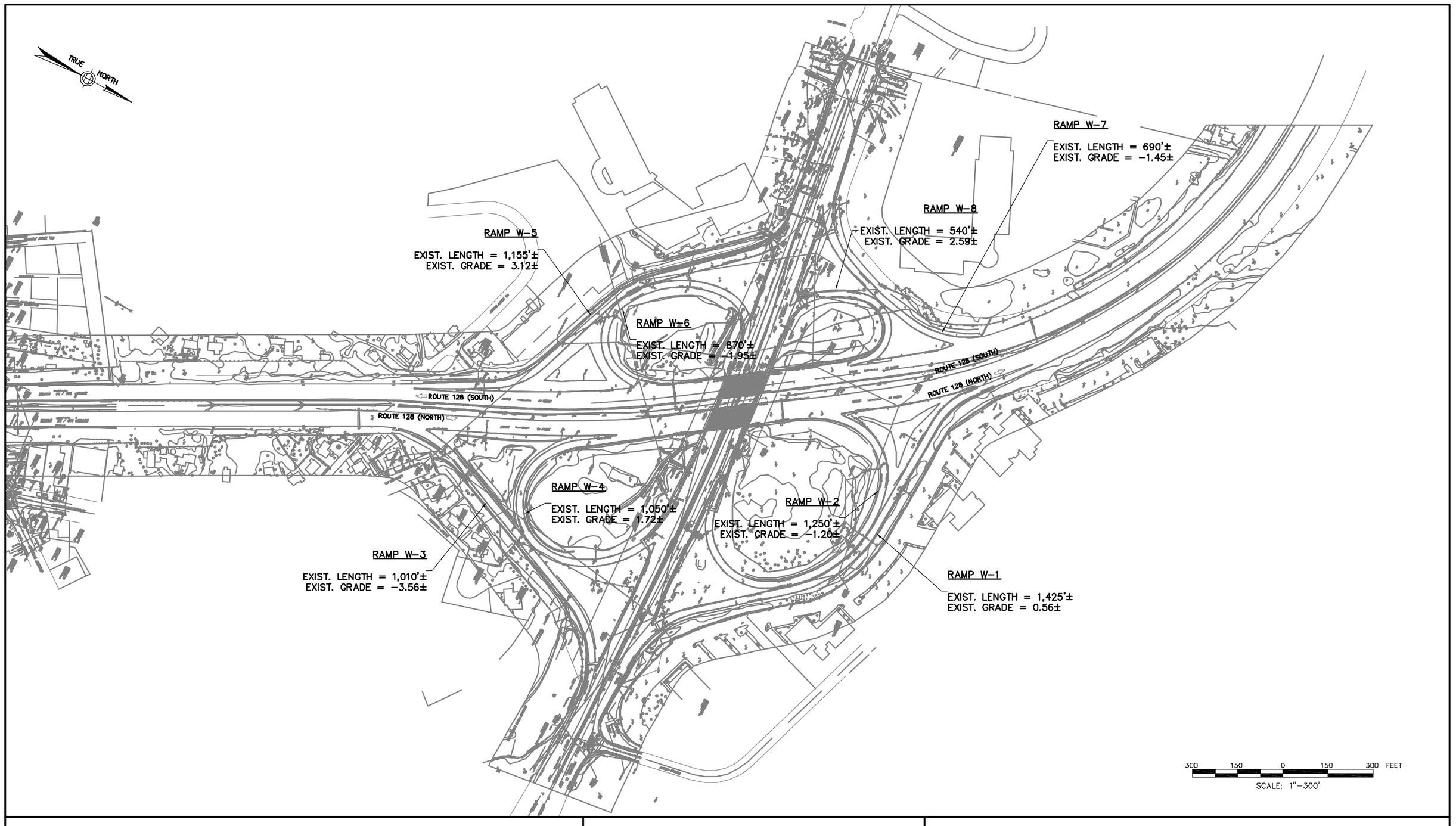
Crash data for I-95/Route 128 at the Route 9 interchange and for Route 9, between Sun Life/Harvard Pilgrim and William Street, was obtained from the MassDOT for the years 2006, 2007, and 2008. Summaries of the crash data for I-95/Route 128 and for Route 9 are summarized in **Table 1** and **Table 2**, respectively. Crash rates were not calculated for the interchange, as the crash data did not include specific information on the location of the crashes within the interchange.

As shown in Table 1, there were 173 reported crashes along I-95/Route 128 at the Route 9 interchange. There was only one (1) fatal crash along Route I-95/128 in the study area during the three-year period from 2006 through 2008. The majority of the crashes resulted in property damage only. Approximately 55 percent (95 crashes) were rear-end crashes. On freeway facilities, rear-end crashes are typically a result of congestion.

As summarized in Table 2, 106 crashes occurred along Route 9 between Sun Life/Harvard Pilgrim and William Street. Of the 106 crashes summarized in Table 2, the most common crash type was rear-end (51 percent). Thirteen crashes occurred on Route 9 at the intersection with Sun Life/Harvard Pilgrim, including crashes within 200 feet to the east of the intersection. This section of roadway is adjacent to the I-95/Route 128 ramps. Rear-end crashes at this location are most likely the result of congestion. The other crashes were sideswipe, same direction, angle, and single-vehicle crashes.

There were 73 crashes on Route 9 at the I-95/Route 128 interchange from 2006 through 2008. Thirty-eight of the crashes (52 percent) were rear-end collisions. For the accidents with a reported severity, the majority (75%, 49 crashes) of crashes at this location were property damage only, and 25% (16 crashes) resulted in a non-fatal injury.

Meanwhile, 20 crashes occurred at William Street, 50 percent of which were rear-end crashes. Seventeen, of the crashes resulted in property damage only.



Edwards and Kelcey HDR A Joint Venture

Existing Interchange Configuration

Drawn by: KPM
Scale: 1" = 300'
Date: March 19, 2010

I-95/I-93 (Route 128) Transportation Improvement Project (Bridge-V)
I-95 (Route 128) over Route 9
Wellesley, MA

Figure 2

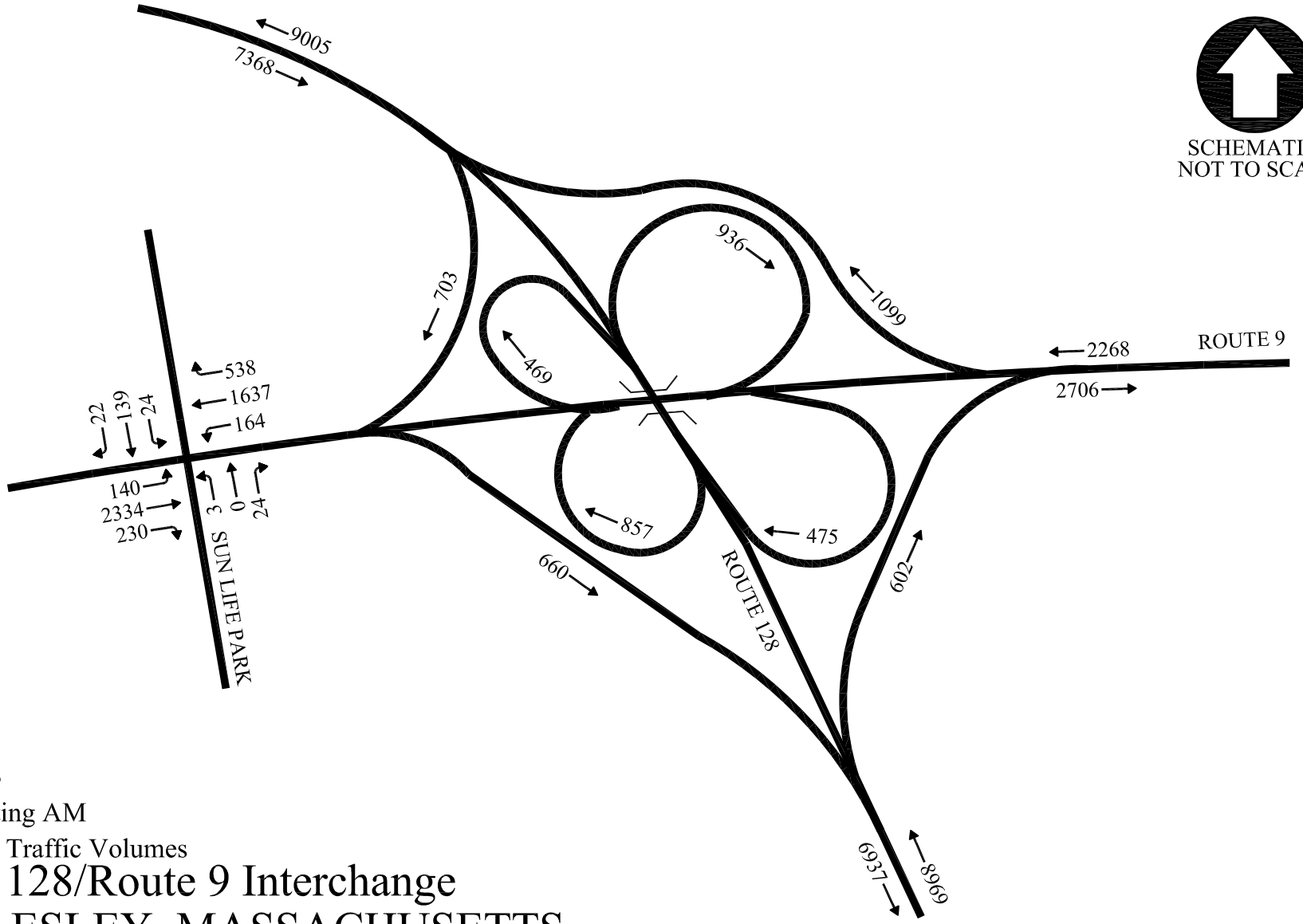


FIGURE 3
2007 Existing AM
Peak Hour Traffic Volumes
Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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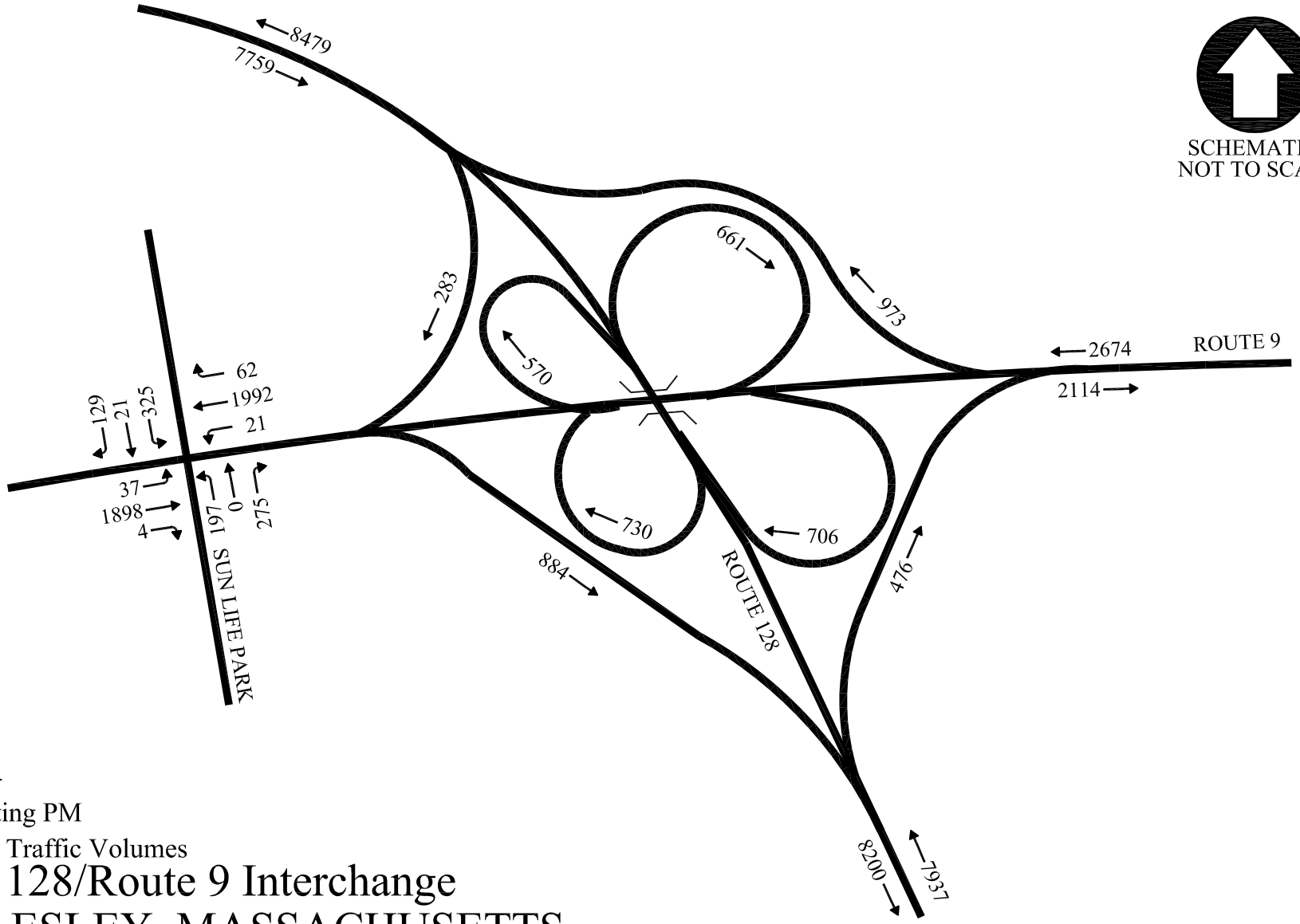

FIGURE 4
2007 Existing PM
Peak Hour Traffic Volumes
Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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TABLE 1
I-95/ROUTE 128 AT ROUTE 9 CRASH SUMMARY
I-95/ROUTE 128 AT ROUTE 9 INTERCHANGE JUSTIFICATION REPORT

Accident Characteristics	Route 9 Eastbound Ramps	Interchange 20	Route 9 Westbound Ramps	Total
2006	29	17	16	62
2007	26	16	9	51
2008	29	16	15	60
Total	**84**	**49**	**40**	**173**
Type				
Rear-end	49	24	22	95
Sideswipe, same direction	13	8	4	25
Angle	5	2	5	12
Single vehicle crash	11	9	8	28
Head-on	0	0	0	0
Rear-to-rear	0	0	0	0
Sideswipe, opposite direction	0	0	0	0
Not reported	5	6	1	12
Unknown	1	0	0	1
Total	**84**	**49**	**40**	**173**
Severity				
Fatal	1	0	0	1
Injury	19	12	15	46
PDO	58	32	24	114
Not Reported	4	5	1	10
Unknown	2	0	0	2
Total	**84**	**49**	**40**	**173**
Weather				
Clear	57	34	26	117
Cloudy	17	10	7	34
Rain	6	1	3	10
Snow	1	0	1	2
Fog	0	0	0	0
Sleet, hail	1	0	0	1
Not reported	2	4	3	9
Total	**84**	**49**	**40**	**173**
Time				
7:00 AM to 9:00 AM	17	5	9	31
9:00 AM to 4:00 PM	33	15	10	58
4:00 PM to 6:00 PM	13	5	6	24
6:00 PM to 7:00 AM	21	24	15	60
Total	**84**	**49**	**40**	**173**

Source: MassHighway

TABLE 2
ROUTE 9 CRASH SUMMARY
I-95/ROUTE 128 AT ROUTE 9 INTERCHANGE JUSTIFICATION REPORT

Accident Characteristics	Sun Life Park	I-95 Southbound Ramps	I-95 Vicinity	I-95 Northbound Ramps	William Street	Total
2006	3	5	14	5	10	37
2007	6	2	13	9	5	35
2008	4	7	6	12	5	34
Total	**13**	**14**	**33**	**26**	**20**	**106**
Type						
Rear-end	6	6	23	9	10	54
Sideswipe, same direction	5	0	5	4	2	16
Angle	2	0	2	1	4	9
Single vehicle crash	0	7	1	9	3	20
Head-on	0	0	0	0	0	0
Rear-to-rear	0	0	0	0	0	0
Sideswipe, opposite direction	0	0	1	0	0	1
Not reported	0	1	1	3	1	6
Unknown	0	0	0	0	0	0
Total	**13**	**14**	**33**	**26**	**20**	**106**
Severity						
Fatal	0	0	0	0	0	0
Injury	2	6	4	6	2	20
PDO	11	6	25	18	17	77
Not Reported	0	2	3	2	1	8
Unknown	0	0	1	0	0	1
Total	**13**	**14**	**33**	**26**	**20**	**106**
Weather						
Clear	4	7	23	18	8	60
Cloudy	5	4	5	2	9	25
Rain	3	3	5	4	3	18
Snow	0	0	0	2	0	2
Fog	0	0	0	0	0	0
Sleet, hail	0	0	0	0	0	0
Not reported	1	0	0	0	0	1
Total	**13**	**14**	**33**	**26**	**20**	**106**
Time						
7:00 AM to 9:00 AM	1	1	6	3	2	13
9:00 AM to 4:00 PM	7	6	16	14	6	49
4:00 PM to 6:00 PM	4	2	4	2	9	21
6:00 PM to 7:00 AM	1	5	7	7	3	23
Total	**13**	**14**	**33**	**26**	**20**	**106**

Source: MassHighway

3.4 Intersection Capacity Analyses

Based on standard methodologies contained in the *Highway Capacity Manual* (HCM), a detailed capacity/level of service analysis was performed for the morning and evening peak hour traffic volumes. At signalized intersections, level of service is based primarily on the average control delay per vehicle for various movements within the intersection. Volume/capacity relationships also affect signal operations. Thus, both volume/capacity and delay must be considered to evaluate the overall operation of a signalized intersection. Correlation between average delay per vehicle and the respective levels of service are provided for signalized intersections as follows:

Level of Service	Control Delay Per Vehicle (seconds)
A	< 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	> 80.0

Intersection capacity analyses were performed for the existing conditions and for the projected no-build and build conditions using the latest version of the Synchro software, version 7.0. Existing conditions analyses included the intersection of Route 9 at Sun Life/Harvard Pilgrim. Existing truck factors were based on the collected data from the I-95/I-93 Transportation Improvement Project (Bridge V) prepared for MassDOT, dated October 2008. An area wide truck factor of three percent was used for the study area roadways, including the ramp and weave analyses described in the following sections of the report.

The existing conditions intersection capacity analyses worksheets are included in **Appendix A**. Results of the existing conditions intersection capacity analyses, summarized in **Table 3**, indicate that the intersection of Route 9 at Sun Life/Harvard Pilgrim is expected to operate at an overall acceptable level of service during AM and PM peak hour conditions. However, delays are observed along the minor street approaches to the intersection.

Table 3: 2007 Existing Intersection Capacity Analysis Summary

Intersection	Movement		AM Peak Hour			PM Peak Hour		
			LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C
Route 9 at Sun Life/Harvard Pilgrim	EB	L	C	21.3	0.53	A	9.9	0.20
	EB	TR	C	23.1	0.89	C	20.4	0.71
	WB	L	D	35.8	0.64	A	9.0	0.11
	WB	T	B	13.6	0.55	C	21.3	0.75
	WB	R	A	3.9	0.49	A	6.7	0.07
	NB	LT	D	53.0	0.04	F	263.7	1.44
	NB	R	A	9.8	0.06	A	5.7	0.44
	SB	L	D	53.5	0.17	F	271.5	1.44
	SB	LT	F	92.5	0.88	F	290.0	1.49
	SB	R	B	10.2	0.06	A	5.0	0.24
	Overall		***C***	***20.4***		***D***	***47.1***	

[1] Level-of-Service

[2] Average vehicle delay in seconds

[3] Volume to capacity ratio

3.5 Ramp Capacity Analyses

Analyses were performed for each merge and diverge point for the ramps at the interchange of I-95/Route 128 and Route 9 based on methodologies contained in the HCM. The level of service for merge and diverge areas is based on density for cases of stable operation. Stable operation represents levels of service A through E. Level of service F exists for a merge area when the total flow departing from the merge area exceeds the capacity on the downstream freeway. Likewise, level of service F exists for diverge areas when the volume entering the diverge area exceeds the capacity on the upstream freeway. Level of service criteria for merge and diverge areas are shown below.

Level of Service	Density (pc/mi/ln)
A	≤ 10
B	> 10 – 20
C	> 20 – 28
D	> 28 – 35
E	> 35
F	Demand exceeds capacity

Ramp capacity analyses were performed for existing and projected conditions using the latest version of the Highway Capacity Software, HCS+. The existing conditions ramp capacity analyses worksheets are

included in **Appendix B**.

Results of the existing conditions ramp capacity analyses, summarized in **Table 4**, indicated that most ramps currently operate at an unacceptable level of service during either the AM and/or PM peak hour, with the exception of the Route 9 eastbound to I-95 southbound ramp, the I-95 southbound to Route 9 westbound ramp, and the Route 9 westbound to I-95 southbound ramp.

The following ramps fall within exist weave sections on Route 128 and Route 9:

- Route 9 eastbound to I-95 northbound
- I-95 northbound to Route 9 westbound
- I-95 southbound to Route 9 eastbound
- Route 9 westbound to I-95 southbound

Ramp capacity analyses have not been conducted at these locations. Instead traffic operations at these ramps are analyzed in the weave analysis.

Table 4: 2007 Existing Ramp Capacity Analysis Summary

Intersection	Movement	AM Peak Hour		PM Peak Hour	
		LOS[1]	Density[2]	LOS	Density[2]
Route 9 at I-95/Route 128	I-95 Northbound to Route 9 Eastbound	F	39.0	D	34.1
	Route 9 Westbound to I-95 Northbound	F	37.6	F	33.2
	Route 9 Eastbound to I-95 Southbound	D	29.8	F	30.8
	I-95 Southbound to Route 9 Westbound	D	33.7	D	33.0
	Route 9 Westbound to I-95 Southbound	D	28.5	D	28.6

[1] Level-of-Service

[2] Density in passenger cars per mile per lane (pc/mi/ln)

3.6 Weave Capacity Analyses

Capacity/level-of-service analyses were performed for the weave sections on I-95/Route 128 at the Route 9 interchange. The analyses performed are based on HCM methodologies. Level of service for weave sections is determined by the density of traffic in the weave section, as summarized below. Parameters that affect density include: weave segment length, number of lanes, type of weaving configuration, and the type of terrain in the weave

segment.

Level of Service	Density (pc/mi/ln)
A	≤ 10
B	> 10 – 20
C	> 20 – 28
D	> 28 – 35
E	> 35 – 43
F	> 43

Weave capacity analyses were performed for existing conditions using the latest version of the Highway Capacity Software, HCS+.

The existing conditions weave capacity analyses worksheets are included in **Appendix C**. Results of the existing conditions weave capacity analyses, summarized in **Table 5**; indicate that both the northbound and the southbound weave segments at the interchange of I-95/Route 128 and Route 9 currently operate at an unacceptable level of service during AM and PM peak-hour conditions.

Table 5: 2007 Existing Weave Capacity Analyses Summary

Intersection	Movement	AM Peak Hour		PM Peak Hour	
		LOS[1]	Density[2]	LOS	Density[2]
Route 9 at I-95/Route 128	I-95 Northbound	F	77.1	F	69.7
	I-95 Southbound	E	41.5	F	47.6

[1] Level-of-Service

[2] Density in passenger cars per mile per lane (pc/mi/ln)

4.0 FUTURE NO BUILD ALTERNATIVE – FULL CLOVERLEAF INTERCHANGE

4.1 Roadway Network

The future No Build roadway network includes an additional travel lane in each direction on I-95/Route 128 (as a result of the I-95/93 (Route 128) Transportation Improvement Plan Project) and the existing full cloverleaf geometry with right-hand maneuvers to and from Route 9 at all I-95/Route 128 ramps. The weave conditions along I-95/Route 128 and along Route 9 will continue to occur for the future No Build condition.

4.2 Traffic Volumes

Future traffic volumes at the study intersections were estimated based upon traffic growth projected on the I-95/Route 128 corridor in the Central Transportation Planning Staff (CTPS) regional traffic model. In addition to the population and employment projections that formed the basis for the background traffic growth, two special generators were considered in the CTPS model. The traffic expected to be generated by the Charles River Landing project, which included the modification of 217,000 square feet of manufacturing to 350 apartment units, and the Northland site, which included the conversion of 256,000 square feet of manufacturing to a mixed use office-retail development, were added to the study area street network. The resulting 2017 Full Cloverleaf interchange traffic volumes along Route 9 and at the I-95/Route 128 ramps are graphically depicted in **Figure 5** and **Figure 6**, while the 2025 Full Cloverleaf traffic volumes for the I-95/Route 128 ramps and mainline are shown in **Figure 7** and **Figure 8**. The percentage of trucks in the traffic stream is not expected to change for the 2025 volumes. As such, a three percent truck factor is applied in the future year traffic analyses.

4.3 Safety Conditions

Given no change in the interchange geometry from existing conditions, the safety condition is not expected to improve for future No Build conditions. Further, the number of accidents could escalate as a result of the expected increase in traffic volumes and corresponding increase in congestion.

4.4 Intersection Capacity Analyses

Intersection capacity analyses were performed for the intersection of Route 9 at Sun Life/Harvard Pilgrim. The 2017 and 2025 No Build intersection capacity analyses worksheets are included in **Appendix D**.

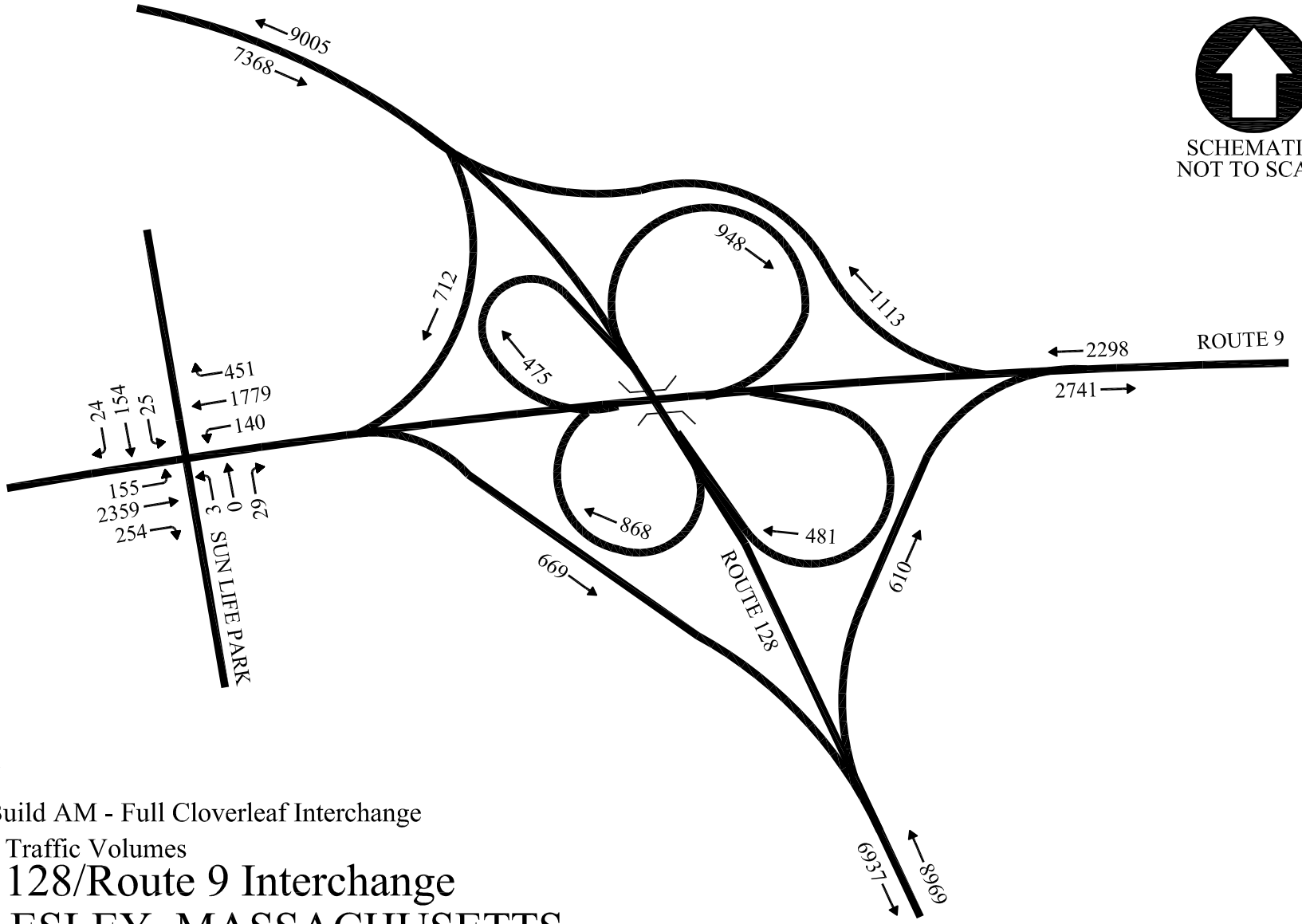

FIGURE 5
2017 No Build AM - Full Cloverleaf Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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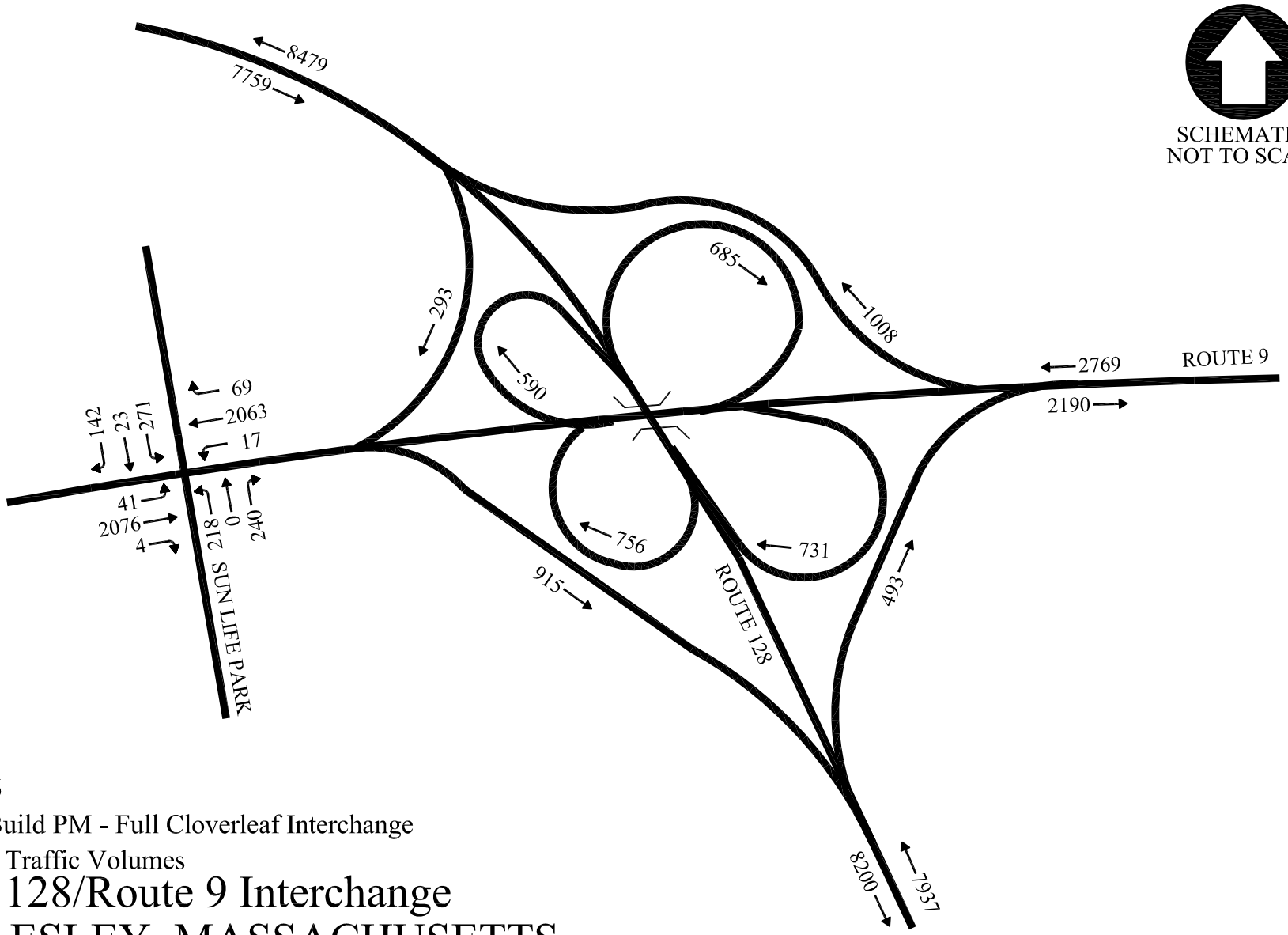

FIGURE 6
2017 No Build PM - Full Cloverleaf Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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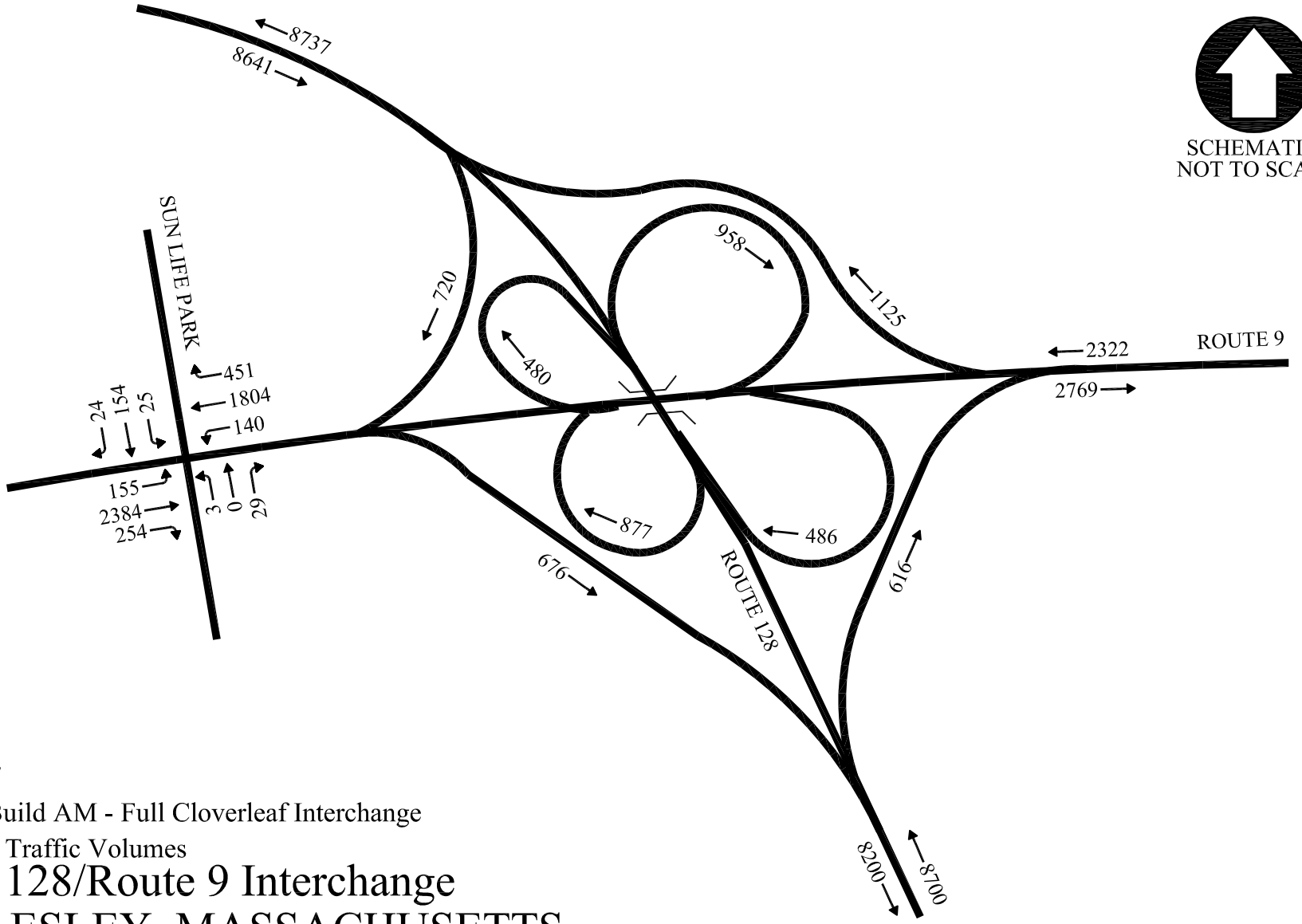

FIGURE 7
2025 No Build AM - Full Cloverleaf Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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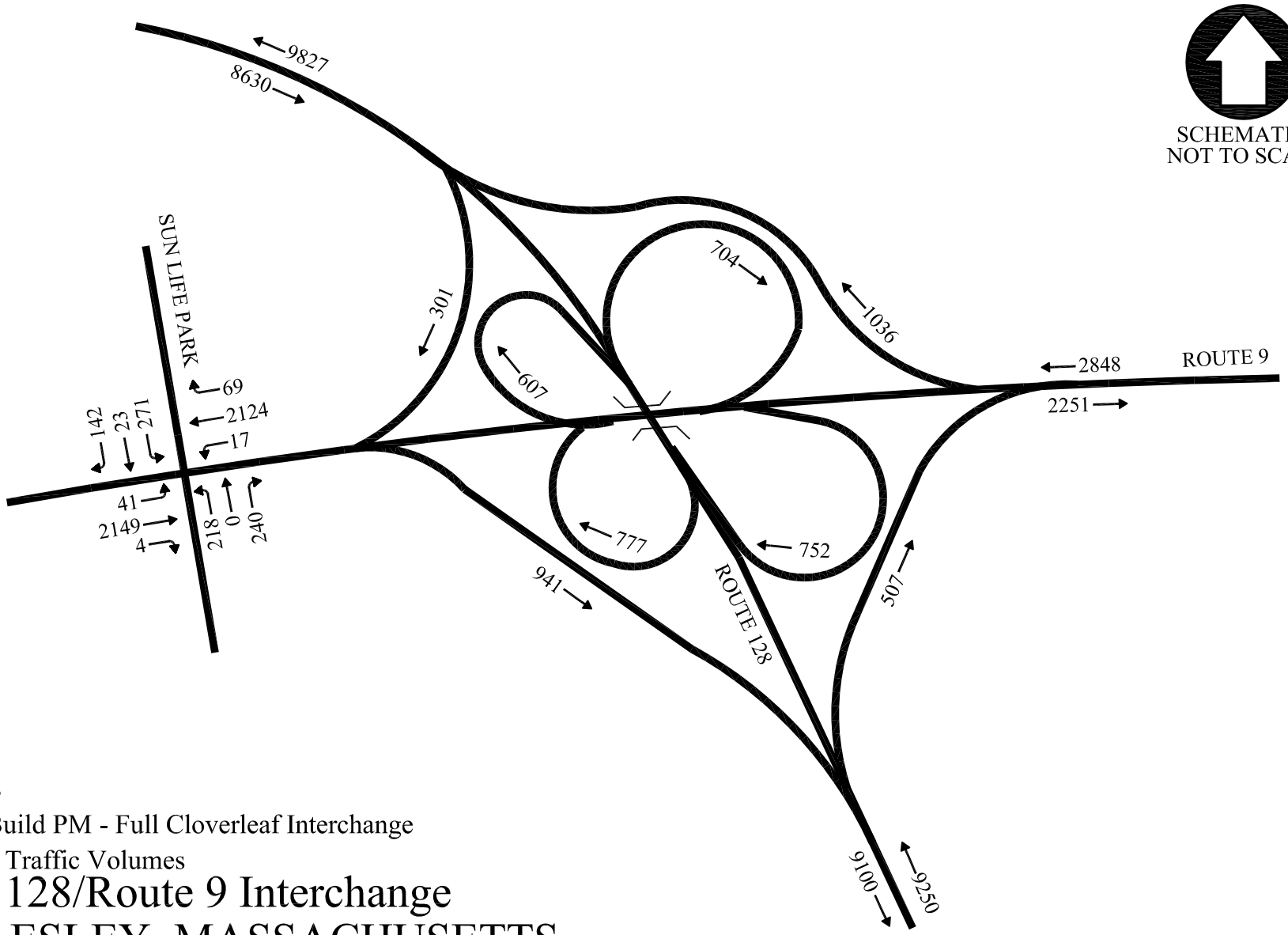

FIGURE 8
2025 No Build PM - Full Cloverleaf Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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Results of the analyses for the 2017 design year are summarized in **Table 6** and **Table 7** and the analyses for the 2025 design year are summarized in **Table 8** and **Table 9**, indicated that the intersection of Route 9 at Sun Life/Harvard Pilgrim is expected to continue to operate at an overall acceptable level of service during AM and PM peak hour under the 2017 and 2025 No Build conditions. However, increasing delays will be encountered along the minor streets of the intersection.

4.5 Ramp Capacity Analyses

The 2025 No Build conditions ramp capacity analyses worksheets are included in **Appendix E**. Results of the analyses, summarized in **Table 10** and **Table 11**, indicated that all ramps at the interchange of I-95/Route 128 and Route 9 are expected to operate at an unacceptable level of service during AM and PM peak hour conditions.

4.6 Weave Capacity Analyses

The 2025 No Build conditions weave capacity analyses worksheets are included in **Appendix F**. Results of the analyses, summarized in **Table 12**, indicate that all weave segments at the interchange of I-95/Route 128 and Route 9 are expected to continue to operate at an unacceptable level of service during AM and PM peak hour conditions. The densities reported for the weave segments have also increased in comparison to the current conditions.

Table 6: 2017 AM Peak Hour Intersection Capacity Analysis Summary

Intersection	Movement		No-Build Alternative			Build Alternative 2- Diamond Interchange			Build Alternative 3- Diverging Diamond			Build Alternative 4- Single Point Urban Interchange			Build Alternative 5- Partial Cloverleaf Interchange		
			LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
Route 9 at Sun Life/Harvard Pilgrim	EB	L	D	49.0	0.58	D	49.0	0.58	F	105.0	0.96	D	49.0	0.58	D	49.0	0.58
	EB	TR	C	25.5	0.92	C	25.5	0.92	C	25.5	0.92	C	25.5	0.92	C	25.5	0.92
	WB	L	F	145.8	1.09	F	125.9	1.09	F	96.1	1.09	F	140.4	1.09	F	126.5	1.09
	WB	T	C	22.3	0.72	B	15.7	0.72	B	11.2	0.64	C	26.5	0.72	B	15.8	0.72
	WB	R	A	5.3	0.47	A	2.6	0.47	A	3.1	0.44	A	9.4	0.47	A	2.2	0.47
	NB	LT	D	45.0	0.03	D	45.0	0.03	D	45.0	0.03	D	45.0	0.03	D	45.0	0.03
	NB	R	B	10.8	0.13	B	10.8	0.13	B	10.8	0.13	B	10.8	0.13	B	10.8	0.13
	SB	L	D	48.3	0.21	D	48.3	0.21	D	48.3	0.21	D	48.3	0.21	D	48.3	0.21
	SB	LT	F	251.3	1.38	F	251.3	1.38	F	251.3	1.38	F	251.3	1.38	F	251.3	1.38
	SB	R	A	7.2	0.06	A	7.2	0.06	B	12.7	0.07	A	7.2	0.06	A	7.2	0.06
	Overall		***C***	***33.1***		***C***	***30.2***		***C***	***29.6***		***C***	***34.7***		***C***	***30.2***	
Route 9 at I-95 Southbound Ramps	EB	T	Not applicable			F	113.0	1.20	F	90.9	1.15	Not applicable			A	7.7	0.77
	EB	R				A	3.1	0.46							A	3.1	0.46
	WB	L				F	82.1	1.08							D	46.5	0.84
	WB	T				A	5.6	0.55	F	160.0	1.29				A	8.1	0.62
	SB	L				F	139.7	1.21									
	SB	R				F	120.9	1.16	C	21.8	0.60				D	49.2	0.91
	Overall					***E***	***74.3***		***F***	***106.8***					***B***	***16.4***	
Route 9 at I-95 Northbound Ramps	EB	L	Not applicable			D	35.4	0.96				Not applicable			D	41.0	0.57
	EB	T				D	39.4	1.07	F	226.9	1.45				A	1.1	0.66
	WB	T				D	40.3	0.92	D	37.2	0.90				B	13.5	0.60
	WB	R				A	3.7	0.77									
	NB	L				F	121.4	1.17									
	NB	R				A	0.8	0.42									
	Overall					***D***	***41.5***		***F***	***159.1***					***B***	***10.0***	
Route 9 at I-95 Left Turn Traffic Signal	EB	L	Not applicable			Not applicable			Not applicable			F	272.9	0.85	Not applicable		
	EB	T										F	146.4	1.03			
	WB	L										F	180.3	1.01			
	WB	T										D	42.0	0.63			
	NB	L										F	84.7	1.04			
	SB	L										E	55.6	0.96			
	Overall											***F***	***118.1***				

[1] Level-of-Service

[2] Average vehicle delay in seconds

[3] Volume to capacity ratio

Table 7: 2017 PM Peak Hour Intersection Capacity Analysis Summary

Intersection	Movement		No-Build Alternative			Build Alternative 2- Diamond Interchange			Build Alternative 3- Diverging Diamond			Build Alternative 4- Single Point Urban Interchange			Build Alternative 5- Partial Cloverleaf Interchange		
			LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
Route 9 at Sun Life/Harvard Pilgrim	EB	L	D	45.7	0.26	D	45.9	0.27	D	45.7	0.26	D	45.9	0.27	D	45.7	0.26
	EB	TR	C	23.6	0.82	C	24.7	0.82	C	24.0	0.82	C	23.6	0.82	C	23.6	0.82
	WB	L	D	45.1	0.13	C	34.5	0.13	D	53.4	0.12	D	53.7	0.13	C	26.4	0.13
	WB	T	C	25.6	0.84	B	16.9	0.84	B	11.0	0.84	C	31.0	0.84	B	18.3	0.84
	WB	R	A	7.8	0.09	A	3.1	0.09	A	1.4	0.09	B	11.8	0.09	A	6.1	0.09
	NB	LT	F	288.9	1.50	F	288.9	1.50	F	288.9	1.50	F	288.9	1.50	F	288.9	1.50
	NB	R	A	7.8	0.54	A	8.0	0.54	A	6.4	0.49	A	7.8	0.54	A	7.8	0.54
	SB	L	F	244.4	1.36	F	244.4	1.36	F	244.4	1.36	F	244.4	1.36	F	244.4	1.36
	SB	LT	F	246.1	1.36	F	246.1	1.36	F	246.1	1.36	F	246.1	1.36	F	246.1	1.36
	SB	R	A	7.8	0.34	A	6.5	0.40	A	7.8	0.34	A	6.5	0.40	A	7.8	0.34
	Overall		***D***	***47.1***		***D***	***44.0***		***D***	***41.3***		***D***	***49.3***		***D***	***44.1***	
Route 9 at I-95 Southbound Ramps	EB	T	Not applicable			F	83.8	1.13	F	158.4	1.30	Not applicable			B	12.9	0.82
	EB	R				A	6.5	0.63	F	130.9	1.24				A	6.5	0.63
	WB	L				F	115.2	1.18	C	20.9	0.29				D	51.7	0.75
	WB	T				A	2.0	0.59							B	13.0	0.56
	SB	L				F	143.5	1.21							D	41.6	0.67
	SB	R				D	36.1	0.55									
	Overall					***E***	***55.4***		***F***	***134.5***					***B***	***17.7***	
Route 9 at I-95 Northbound Ramps	EB	L	Not applicable			F	109.3	1.17	F	188.1	1.36	Not applicable			C	27.1	0.79
	EB	T				A	1.9	0.73	F	96.5	1.14				A	0.5	0.53
	WB	T				F	118.0	1.19							C	30.4	0.93
	WB	R				A	2.6	0.70									
	NB	L				F	212.0	1.37									
	NB	R				A	0.6	0.34									
	Overall					***E***	***68.9***		***F***	***141.5***					***B***	***17.7***	
Route 9 at I-95 Left Turn Traffic Signal	EB	L	Not applicable			Not applicable			Not applicable			F	309.0	1.02	Not applicable		
	EB	T										F	113.7	0.81			
	WB	L										F	152.3	0.86			
	WB	T										F	144.0	1.04			
	NB	L										D	54.1	0.91			
	SB	L										E	72.2	1.01			
	Overall											***F***	***140.1***				

[1] Level-of-Service

[2] Average vehicle delay in seconds

[3] Volume to capacity ratio

Table 8: 2025 AM Peak Hour Intersection Capacity Analysis Summary

Intersection	Movement		No-Build Alternative			Build Alternative 2- Diamond Interchange			Build Alternative 3- Diverging Diamond			Build Alternative 4- Single Point Urban Interchange			Build Alternative 5- Partial Cloverleaf Interchange		
			LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
Route 9 at Sun Life/Harvard Pilgrim	EB	L	D	49.0	0.58	D	49.0	0.58	F	105.0	0.96	D	49.0	0.58	D	49.0	0.58
	EB	TR	C	26.2	0.93	C	26.2	0.93	C	26.2	0.93	C	26.2	0.93	C	26.2	0.93
	WB	L	F	145.8	1.09	F	125.4	1.09	F	96.1	1.09	F	140.1	1.09	F	126.1	1.09
	WB	T	C	22.6	0.73	B	16.0	0.83	B	11.4	0.65	C	26.8	0.73	B	16.0	0.73
	WB	R	A	5.4	0.48	A	2.7	0.48	A	3.1	0.44	A	9.4	0.48	A	2.3	0.48
	NB	LT	D	45.0	0.03	D	45.0	0.03	D	45.0	0.03	D	45.0	0.03	D	45.0	0.03
	NB	R	B	10.8	0.13	B	10.8	0.13	B	10.8	0.13	B	10.8	0.13	B	10.8	0.13
	SB	L	D	48.3	0.21	D	48.3	0.21	D	48.3	0.21	D	48.3	0.21	D	48.3	0.21
	SB	LT	F	251.3	1.38	F	251.3	1.38	F	251.3	1.38	F	251.3	1.38	F	251.3	1.38
	SB	R	A	7.2	0.06	A	7.2	0.06	B	12.7	0.07	A	7.2	0.06	A	7.2	0.06
	Overall		***C***	***33.4***		***C***	***30.5***		***C***	***29.9***		***D***	***35.0***		***C***	***30.5***	
Route 9 at I-95 Southbound Ramps	EB	T	Not applicable			F	118.2	1.21	F	95.9	1.16	Not applicable			A	7.7	0.78
	EB	R				A	3.2	0.47							A	3.2	0.47
	WB	L				F	87.0	1.10							D	47.3	0.85
	WB	T				A	5.7	0.56	F	166.1	1.31				A	8.1	0.62
	SB	L				F	144.8	1.22									
	SB	R				F	126.8	1.17	C	21.9	0.60				D	51.1	0.93
	Overall					***E***	***77.5***		***F***	***111.4***					***B***	***16.8***	
Route 9 at I-95 Northbound Ramps	EB	L	Not applicable			D	36.5	0.97				Not applicable			D	41.0	0.58
	EB	T				D	44.5	1.08	F	233.6	1.46				A	1.2	0.67
	WB	T				D	41.4	0.93	D	38.1	0.91				B	13.6	0.61
	WB	R				A	3.9	0.78									
	NB	L				F	126.2	1.18									
	NB	R				A	0.9	0.43									
	Overall					***D***	***44.2***		***F***	***163.7***					***B***	***10.1***	
Route 9 at I-95 Left Turn Traffic Signal	EB	L	Not applicable			Not applicable			Not applicable			F	277.9	0.86	Not applicable		
	EB	T										F	146.9	1.04			
	WB	L										F	186.1	1.02			
	WB	T										D	42.8	0.63			
	NB	L										F	89.8	1.06			
	SB	L										E	57.5	0.97			
	Overall											***F***	***120.8***				

[1] Level-of-Service

[2] Average vehicle delay in seconds

[3] Volume to capacity ratio

Table 9: 2025 PM Peak Hour Intersection Capacity Analysis Summary

Intersection	Movement		No-Build Alternative			Build Alternative 2- Diamond Interchange			Build Alternative 3- Diverging Diamond			Build Alternative 4- Single Point Urban Interchange			Build Alternative 5- Partial Cloverleaf Interchange		
			LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
Route 9 at Sun Life/Harvard Pilgrim	EB	L	D	45.7	0.26	D	45.9	0.27	D	45.7	0.26	D	45.9	0.27	D	45.7	0.26
	EB	TR	C	24.6	0.85	C	27.5	0.85	C	25.0	0.85	C	24.6	0.85	C	24.6	0.85
	WB	L	D	45.1	0.13	C	34.1	0.13	D	53.4	0.12	D	52.8	0.13	C	28.2	0.13
	WB	T	C	26.7	0.87	B	17.7	0.86	B	11.3	0.87	C	31.6	0.86	B	19.7	0.87
	WB	R	A	7.9	0.09	A	3.1	0.09	A	1.4	0.09	B	11.8	0.09	A	6.5	0.09
	NB	LT	F	288.9	1.50	F	288.9	1.50	F	288.9	1.50	F	288.9	1.50	F	288.9	1.50
	NB	R	A	7.8	0.54	A	8.0	0.54	A	6.4	0.49	A	7.8	0.54	A	7.8	0.54
	SB	L	F	244.4	1.36	F	244.4	1.36	F	244.4	1.36	F	244.4	1.36	F	244.4	1.36
	SB	LT	F	246.1	1.36	F	246.1	1.36	F	246.1	1.36	F	246.1	1.36	F	246.1	1.36
	SB	R	A	7.8	0.34	A	6.5	0.40	A	7.8	0.34	A	6.5	0.40	A	7.8	0.34
	Overall		D	47.4		***D***	***44.8***		***D***	***41.2***		***D***	***49.4***		***D***	***44.5***	
Route 9 at I-95 Southbound Ramps	EB	T	Not applicable			F	96.9	1.16	F	174.2	1.33	Not applicable			B	13.4	0.85
	EB	R				A	6.9	0.65	F	146.6	1.27				A	6.9	0.65
	WB	L				F	130.1	1.21	C	21.0	0.30				D	46.7	0.78
	WB	T				A	2.0	0.61							B	7.8	0.57
	SB	L				F	156.8	1.24							D	43.4	0.69
	SB	R				D	37.1	0.57									
	Overall					***E***	***62.2***		***F***	***149.1***					***B***	***15.7***	
Route 9 at I-95 Northbound Ramps	EB	L	Not applicable			F	123.2	1.20	F	204.4	1.39	Not applicable			D	42.2	0.91
	EB	T				A	2.0	0.75	F	110.3	1.17				A	0.5	0.54
	WB	T				F	132.7	1.22							C	25.0	0.91
	WB	R				A	2.9	0.72									
	NB	L				F	227.2	1.41									
	NB	R				A	0.6	0.35									
	Overall					***E***	***76.3***		***F***	***156.4***					***B***	***18.1***	
Route 9 at I-95 Left Turn Traffic Signal	EB	L	Not applicable			Not applicable			Not applicable			F	315.7	1.04	Not applicable		
	EB	T										F	118.5	0.83			
	WB	L										F	164.3	0.88			
	WB	T										F	147.5	1.07			
	NB	L										E	57.7	0.94			
	SB	L										E	79.2	1.04			
	Overall											***F***	***145.9***				

[1] Level-of-Service

[2] Average vehicle delay in seconds

[3] Volume to capacity ratio

Table 10: 2025 AM Peak Hour Ramp Capacity Analysis

Intersection	Movement From	Movement To	No-Build Alternative		Build Alternative 2-Diamond Interchange		Build Alternative 3-Diverging Diamond Interchange		Build Alternative 4-Single Point Urban Interchange		Build Alternative 5-Partial Cloverleaf Interchange	
			LOS[1]	Density[2]	LOS[1]	Density[2]	LOS[1]	Density[2]	LOS[1]	Density[2]	LOS[1]	Density[2]
Route 9 at I-95/Route 128	I-95 Northbound	Route 9 Eastbound	F	38.0								
		Route 9 Westbound	*	*							E	37.7
		Route 9 EB & WB			F	43.1	F	43.1	F	43.1		
	I-95 Southbound	Route 9 Eastbound	*	*							E	38.5
		Route 9 Westbound	F	39.0							F	42.3
		Route 9 EB & WB			F	45.8	F	44.9	F	44.9		
	Route 9 Eastbound	I-95 Northbound	*	*								
	Route 9 Westbound		F	35.3							F	34.1
	Route 9 EB & WB				F	34.1	F	34.1	F	34.1		
	Route 9 Eastbound	I-95 Southbound	F	30.9								
	Route 9 Westbound		*	*							F	30.7
	Route 9 EB & WB				F	30.7	F	30.7	F	30.7		

[1] Level-of-Service

[2] Density in passenger cars per mile per lane (pc/mi/ln)

[*] Ramp analysis is not applicable since ramp exists within weave segment.

Table 11: 2025 PM Peak Hour Ramp Capacity Analysis Summary

Intersection	Movement From	Movement To	No-Build Alternative		Build Alternative 2-Diamond Interchange		Build Alternative 3-Diverging Diamond Interchange		Build Alternative 4-Single Point Urban Interchange		Build Alternative 5-Partial Cloverleaf Interchange	
			LOS[1]	Density[2]	LOS[1]	Density[2]	LOS[1]	Density[2]	LOS[1]	Density[2]	LOS[1]	Density[2]
Route 9 at I-95/Route 128	I-95 Northbound	Route 9 Eastbound	F	40.0								
		Route 9 Westbound	*	*							F	39.1
		Route 9 EB & WB			F	43.4	F	43.4	F	43.4		
	I-95 Southbound	Route 9 Eastbound	*	*							F	39.6
		Route 9 Westbound	F	36.7							F	40.0
		Route 9 EB & WB			F	43.0	F	42.1	F	42.1		
	Route 9 Eastbound	I-95 Northbound	*	*								
	Route 9 Westbound		F	44.8								
	Route 9 EB & WB				F	43.3	F	43.3	F	43.3	F	43.3
	Route 9 Eastbound	I-95 Southbound	F	38.6								
	Route 9 Westbound		*	*								
	Route 9 EB & WB				F	38.2	F	38.2	F	38.2	F	38.2

[1] Level-of-Service

[2] Density in passenger cars per mile per lane (pc/mi/ln)

[*] Ramp analysis is not applicable since ramp exists within weave segment.

Table 12: 2025 Weave Capacity Analysis Summary

Intersection	Movement	No-Build Alternative			
		AM Peak Hour		PM Peak Hour	
		LOS[1]	Density[2]	LOS	Density[2]
Route 9 at I-95/Route 128	I-95 Northbound	F	74.6	F	84.6
	I-95 Southbound	F	50.5	F	54.5

[1] Level-of-Service

[2] Density in passenger cars per mile per lane (pc/mi/ln)

Note: Weave sections are eliminated under Build Alternatives 2, 3, 4, and 5

5.0 FUTURE BUILD ALTERNATIVES

In an effort to determine the most appropriate interchange configuration for the Route 9 at I-95/Route 128 interchange, several Build alternatives were considered. These included the following:

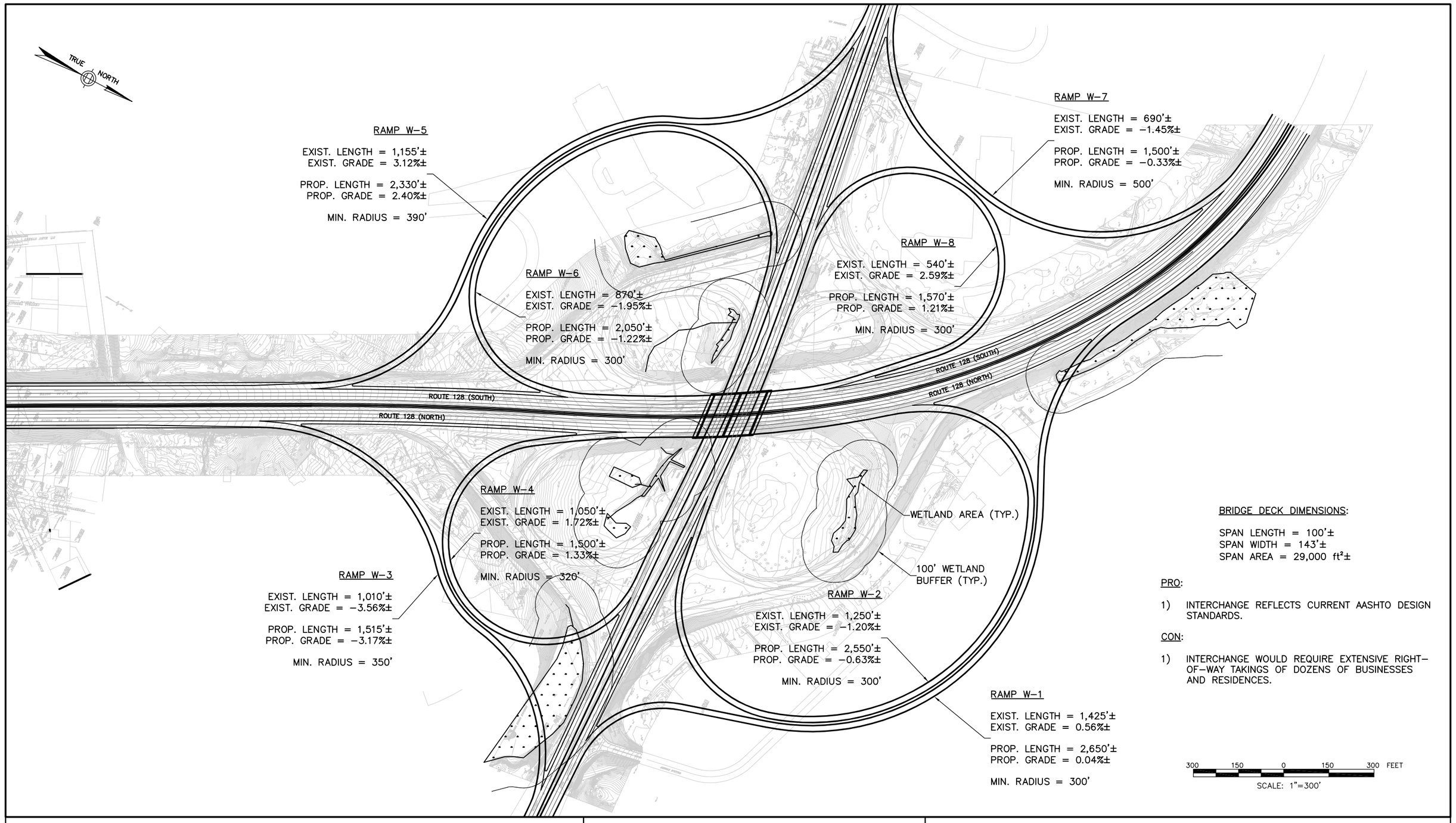
- Build Alternative 1: Full Cloverleaf Interchange with Compliant Geometry
- Build Alternative 2: Diamond Interchange
- Build Alternative 3: Diverging Diamond Interchange
- Build Alternative 4: Single Point Urban Interchange
- Build Alternative 5: Partial Cloverleaf Interchange

5.1 Build Alternative 1 – Full Cloverleaf Interchange with Compliant Geometry

This Build alternative considered maintaining the full cloverleaf configuration with the geometry reconfigured to meet current AASHTO standards. **Figure 9** shows the proposed interchange design concept for this alternative.

5.2 Build Alternative 2 – Diamond Interchange

Build Alternative 2 would be a complete reconstruction of the interchange as a Diamond interchange. All ramps would meet current AASHTO standards. With this geometry, traffic along Route 9 would be controlled by two signals; one at the I-95/Route 128 northbound ramps and one at the I-95/Route 128 southbound ramps. Right turn movements exiting the I-95/Route 128 ramps would operate under yield control. Right turn movements from Route 9 onto I-95/Route 128 would operate as free-flow. Dual left turn lanes would be provided on Route 9 at the signalized intersections. The proposed traffic signals would operate in a coordinated signal system with the existing traffic signal at Route 9/Sun Life/Harvard Pilgrim. **Figure 10** shows the proposed interchange design concept for this alternative.



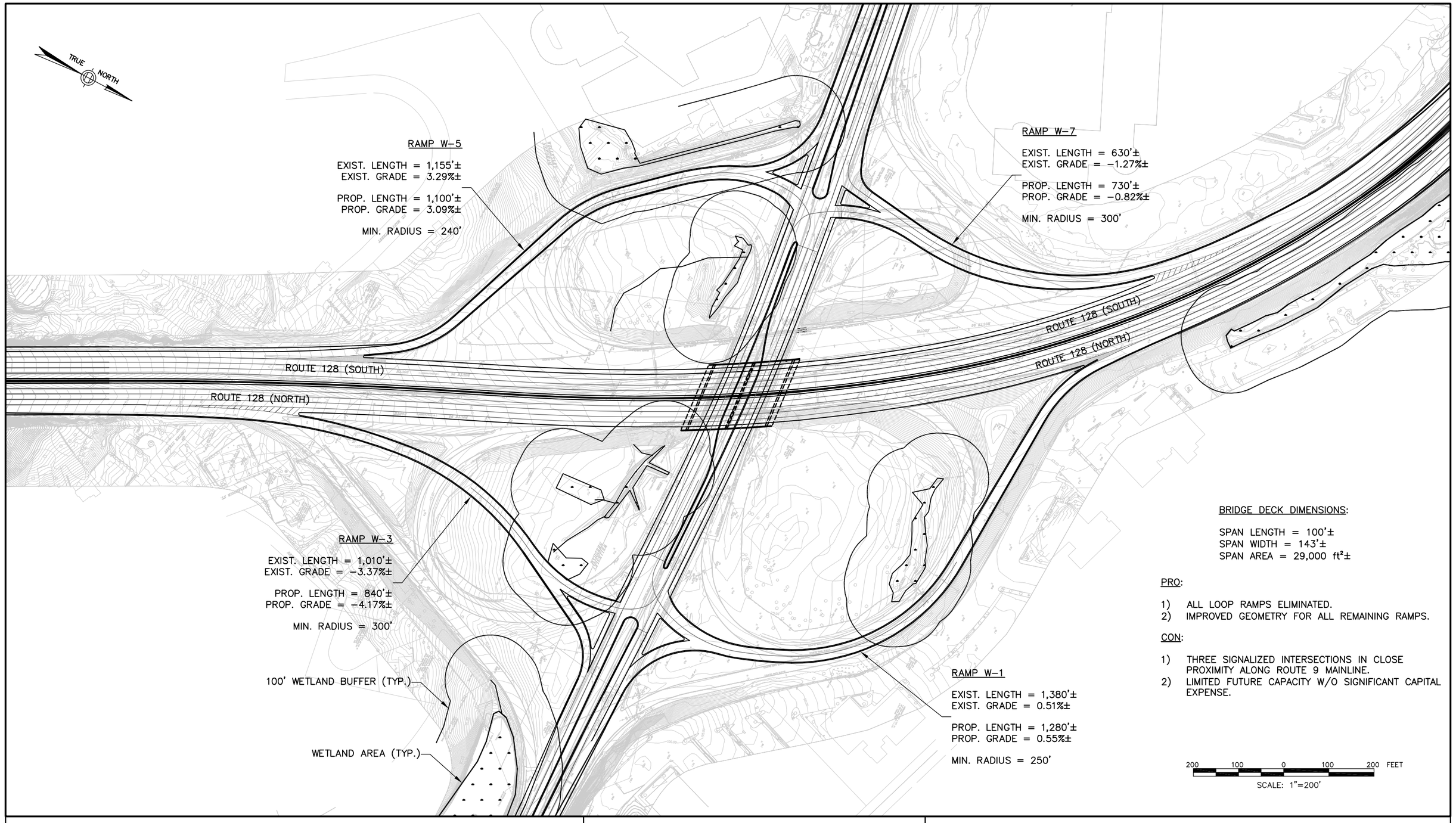
Edwards and Kelcey HDR A Joint Venture

Full Cloverleaf - Current AASHTO Standards

Drawn by: KPM
Scale: 1" = 300'
Date: April 7, 2010

I-95/I-93 (Route 128) Transportation Improvement Project (Bridge-V)
I-95 (Route 128) over Route 9
Wellesley, MA

Figure 9



Edwards and Kelcey HDR A Joint Venture

Proposed Full Diamond Option

Drawn by: KPM
Scale: 1" = 200'
Date: April 7, 2010

I-95/I-93 (Route 128) Transportation Improvement Project (Bridge-V)
I-95 (Route 128) over Route 9
Wellesley, MA

Figure 10

5.3 Build Alternative 3 – Diverging Diamond Interchange

Build Alternative 3 was developed as a Diverging Diamond interchange. All ramps would be reconfigured to meet current AASHTO standards. With this geometry, the eastbound and westbound travel movements along Route 9 would cross at a signalized intersection west of I-95/Route 128 and again at a signalized intersection east of I-95/Route 128.

Under this scenario, the left turn movements of a conventional diamond interchange are converted to free flowing or merge movements by crossing the two directions of travel along Route 9. Right turn movements entering ramps are free-flow and right turn movements exiting ramps are under yield condition. The Route 9 traffic reverses direction at two signalized intersections; one to the east of Route 128 and one to the west of Route 128. The signalized intersections do not have left turn movements, allowing the signals to operate in two phases; one phase for eastbound traffic and one phase for westbound traffic.

Figure 11 shows the proposed interchange design concept for this alternative.

5.4 Build Alternative 4 – Single Point Urban Interchange

Build Alternative 4 was developed as a Single Point Urban interchange. All ramps would be reconfigured to meet current AASHTO standards. With this geometry, all left turns and the Route 9 through movements would converge at a single signalized intersection on Route 9. Dual left turn lanes are provided on Route 9 and on the exiting ramps. The signal operates in three phases. Route 9 traffic turning right onto a ramp runs as free-flow and the ramp traffic turning right onto Route 9 runs under yield conditions. **Figure 12** shows the proposed interchange design concept for this alternative.

5.5 Build Alternative 5 – Partial Cloverleaf Interchange

Build Alternative 5 was developed as a Partial Cloverleaf interchange. With this geometry, the ramps in the northeast and southwest quadrants will remain. In the northwest quadrant, the loop ramps carrying traffic from Route 9 westbound to I-95 southbound will be removed and this movement will be served via Ramp W-6 on the opposite side of Route 9. Similarly, the loop ramp in the southeast quadrant will be removed and the movement from Route 9 eastbound to I-95 northbound will be served via Ramp W-1 on

the opposite side of Route 9.

The eastbound to northbound movement that was made via Ramp W-4 under existing conditions will now be served via a left turn from Route 9 eastbound onto Ramp W-1. The westbound to southbound movement that was made via Ramp W-8 under existing conditions will now be made via a left turn from Route 9 onto Ramp W-5.

The new ramp in the northeast quadrant will intersect Route 9 opposite of Ramp W-5. The four-legged intersection will be signal controlled with dual left turn lanes on Route 9. To the east of I-95/Route 128, the intersection of Route 9 and Ramp W-1 will also be signalized with dual left turn lanes on Route 9. These signals will operate in coordination with the Route 9/Sun Life/Harvard Pilgrim intersection.

Traffic entering Ramps W-1 and W-5 via right turns will continue to operate as free flow. Traffic exiting Ramp W-3 via a right turn will operate under yield conditions. Traffic exits Ramp W-7 via two right turn lanes. There is not adequate length along Route 9 prior to the adjacent signalized intersection to allow the dual right-turn lanes to merge onto Route 9. Therefore, the right turn lanes will be signal controlled.

Figure 13 shows the proposed interchange design concept for this alternative.

TRUE NORTH

RAMP W–5

EXIST. LENGTH = 1,155'±
EXIST. GRADE = 3.29%±

PROP. LENGTH = 1,110'±
PROP. GRADE = 3.06%±

MIN. RADIUS = 240'

RAMP W–7

EXIST. LENGTH = 630'±
EXIST. GRADE = –1.27%±

PROP. LENGTH = 770'±
PROP. GRADE = –0.65%±

MIN. RADIUS = 300'

ROUTE 128 (SOUTH)

ROUTE 128 (NORTH)

ROUTE 128 (SOUTH)

ROUTE 128 (NORTH)

RAMP W–3

EXIST. LENGTH = 1,010'±
EXIST. GRADE = –3.37%±

PROP. LENGTH = 870'±
PROP. GRADE = –4.14%±

MIN. RADIUS = 200'

RAMP W–1

EXIST. LENGTH = 1,380'±
EXIST. GRADE = 0.51%±

PROP. LENGTH = 1,320'±
PROP. GRADE = 0.53%±

MIN. RADIUS = 150'

BRIDGE DECK DIMENSIONS:

SPAN LENGTH = 100'±
SPAN WIDTH = 143'±
SPAN AREA = 29,000 ft²±

PRO:

1) ALL RAMP TURNING MOVEMENTS ARE FREE MOVEMENTS.
2) NO QUEUEING ON OFF–RAMPS IS REQUIRED.
3) ALL LOOP RAMPS ELIMINATED.
4) IMPROVED GEOMETRY FOR ALL REMAINING RAMPS.

CON:

1) ROUTE 9 MAINLINE CROSSES OVER ITSELF TWICE.
2) ROUTE 9 TRAFFIC DRIVING ON THE LEFT WILL BE CONFUSING TO SOME, THOUGH THE CENTER PIER OF THE STRUCTURE WILL MITIGATE THIS BY BLOCKING THE VIEW OF THE OPPOSITE SIDE.

200 100 0 100 200 FEET

SCALE: 1"=200'

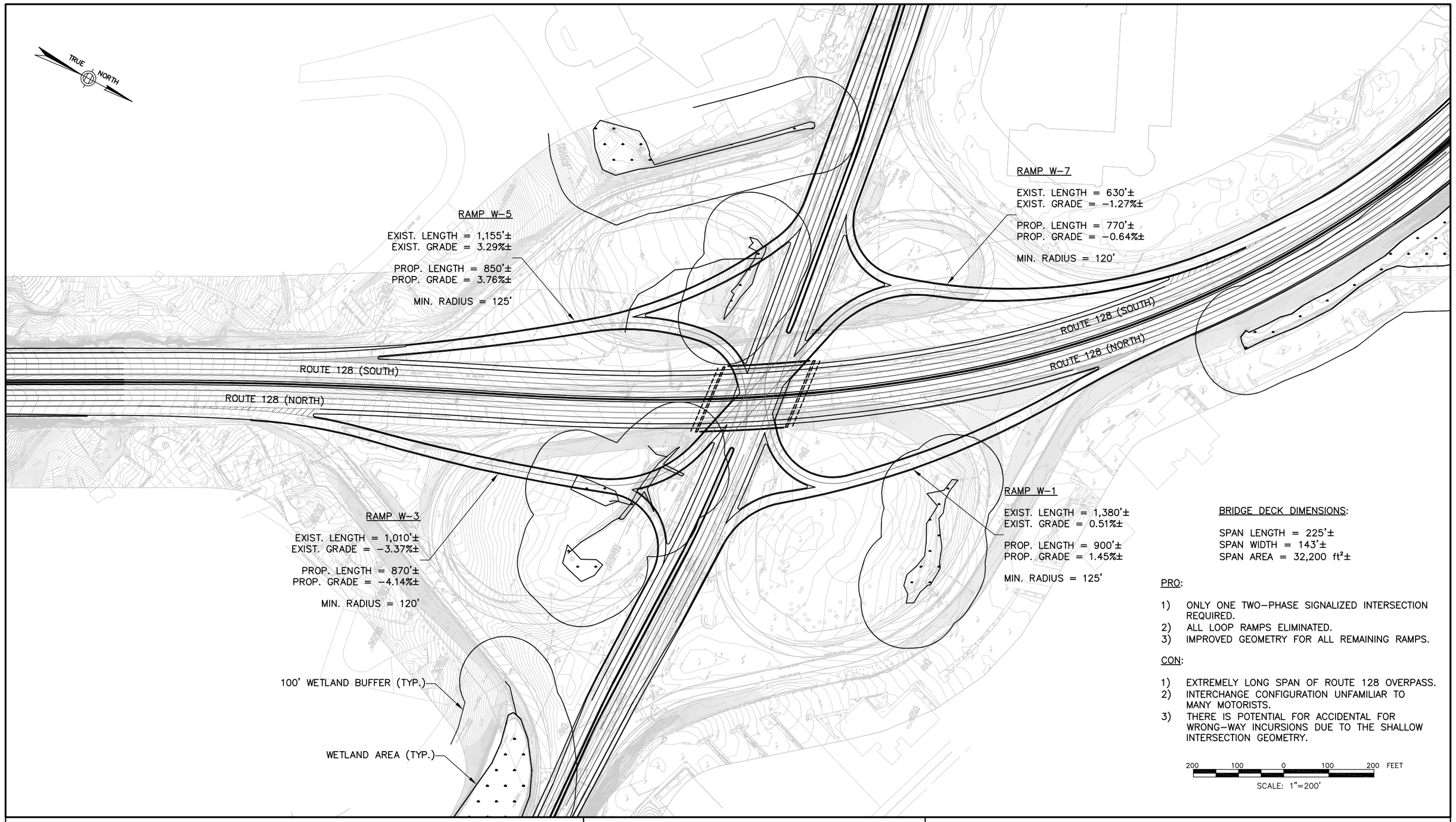
Edwards and Kelcey HDR A Joint Venture

Proposed Diverging Diamond Option

Drawn by: KPM
Scale: 1" = 200'
Date: March 19, 2010

I-95/I-93 (Route 128) Transportation Improvement Project (Bridge-V)
I-95 (Route 128) over Route 9
Wellesley, MA

Figure 11



Edwards and Kelcey HDR A Joint Venture

Proposed Single Point Urban Interchange Option

Drawn by: KPM
Scale: 1" = 200'
Date: April 7, 2010

I-95/I-93 (Route 128) Transportation Improvement Project (Bridge-V)
I-95 (Route 128) over Route 9
Wellesley, MA

Figure 12

TRUE NORTH

RAMP W–5

EXIST. LENGTH = 1,155'±
EXIST. GRADE = 3.29%±

PROP. LENGTH = 1,070'±
PROP. GRADE = 3.27%±

MIN. RADIUS = 240'

RAMP W–6

EXIST. LENGTH = 425'±
EXIST. GRADE = –2.59%±

PROP. LENGTH = 500'±
PROP. GRADE = –4.00%±

MIN. RADIUS = 160'

RAMP W–7

EXIST. LENGTH = 630'±
EXIST. GRADE = –1.27%±

PROP. LENGTH = 640'±
PROP. GRADE = –0.94%±

MIN. RADIUS = 500'

ROUTE 128 (SOUTH)

ROUTE 128 (NORTH)

ROUTE 128 (SOUTH)

ROUTE 128 (NORTH)

RAMP W–2

EXIST. LENGTH = 840'±
EXIST. GRADE = –1.67%±

PROP. LENGTH = 870'±
PROP. GRADE = –1.72%±

MIN. RADIUS = 180'

RAMP W–3

EXIST. LENGTH = 1,010'±
EXIST. GRADE = –3.37%±

PROP. LENGTH = 1,040'±
PROP. GRADE = –3.65%±

MIN. RADIUS = 500'

100' WETLAND BUFFER (TYP.)

WETLAND AREA (TYP.)

RAMP W–1

EXIST. LENGTH = 1,380'±
EXIST. GRADE = 0.51%±

PROP. LENGTH = 1,325'±
PROP. GRADE = 0.53%±

MIN. RADIUS = 240'

BRIDGE DECK DIMENSIONS:

SPAN LENGTH = 100'±
SPAN WIDTH = 143'±
SPAN AREA = 29,400 ft²±

PRO:

1) LOOP RAMPS (W–4 AND W–8) ELIMINATED.
2) IMPROVED GEOMETRY FOR RAMPS W–3 AND W–7.
3) ELIMINATES WEAVE AREAS ON I–95/ROUTE 128 AND ROUTE 9.

CON:

1) SUPERELEVATION ISSUES FOR RAMP W–2.
2) LIMITED FUTURE CAPACITY W/O SIGNIFICANT CAPITAL EXPENSE.
3) SIGNIFICANT RETAINING WALL CONSTRUCTION ALONG RAMPS W–1 AND W–5 TO KEEP LIMIT OF SLOPE WITHIN ROW.

200 100 0 100 200 FEET

SCALE: 1"=200'

Edwards and Kelcey HDR A Joint Venture

Proposed Partial Cloverleaf Option

Drawn by: KPM
Scale: 1" = 200'
Date: April 7, 2010

I-95/I-93 (Route 128) Transportation Improvement Project (Bridge-V)
I-95 (Route 128) over Route 9
Wellesley, MA

Figure 13

6.0 FUTURE BUILD ALTERNATIVE 1 – FULL CLOVERLEAF WITH COMPLIANT RAMPS INTERCHANGE

Build Alternative 1 was considered to determine the feasibility of maintaining the existing Full Cloverleaf operations for the study interchange. The configuration, and its expected impacts to the surrounding developments, was reviewed to determine its feasibility. A review of the proposed interchange configuration reveals that, with the redesign of all on and off-ramps to meet AASHTO standards, this configuration would be expected to significantly impact the existing development on all four quadrants of the proposed interchange. The proposed ramp modifications would be anticipated to significantly impact office developments located on the northeast and northwest quadrant of the interchange. On the south side of Route 9, the proposed ramp modifications would be expected to significantly impact Sun Life Financial and residential developments. Due to the magnitude of the abutter impacts, which render this alternative infeasible, traffic analyses were not conducted for this alternative.

Given the significant impacts expected as a result of the reconfiguration of the existing ramps to meet AASHTO standards while maintaining a Full Cloverleaf operation, Build Alternative 1 is not a practical solution.

7.0 FUTURE BUILD ALTERNATIVE 2 – DIAMOND INTERCHANGE

7.1 Traffic Volumes

Future traffic volumes along Route 9 and at the I-95/Route 128 interchange for this alternative were estimated based upon a reassignment of the future Full Cloverleaf volumes. The resulting 2017 Diamond interchange traffic volumes along Route 9 and the I-95/Route 128 ramps are graphically depicted in **Figure 14 and Figure 15,** while the 2025 Diamond interchange traffic volumes for the I-95/Route 128 ramps and mainline are shown in **Figure 16 and Figure 17**.

7.2 Safety Conditions

With the removal of the loop ramps connecting Route 9 to I-95/Route 128, the existing weave conditions along mainline I-95/Route 128 would be eliminated in both the northbound and southbound directions of travel. Further, the weave conditions along Route 9 in both the eastbound and westbound directions of travel would also be eliminated with the proposed interchange configuration. This would eliminate any accidents expected to occur as a result of the weave conditions, which could include, among others, rear-end and side-swipe accidents. In addition, the existing safety concern resulting from the weaving maneuver performed from the southbound off-ramp to Route 9 -westbound to the left-turn lane into Sun Life/Harvard Pilgrim, across the Route 9 westbound traffic would be eliminated with the signalization of the southbound off-ramp traffic. Finally, ample queue storage would be provided for the westbound-to-southbound and the eastbound-to-northbound left-turn traffic to assure that the queues from these movements do not spill back into the through traffic stream. This improvement may also reduce the rear-end accidents currently observed along the corridor. Therefore, safety conditions for this Build alternative are expected to improve in comparison to the No Build conditions.

7.3 Intersection Capacity Analyses

Intersection capacity analyses were performed for the intersection of Route 9 at Sun Life/Harvard Pilgrim and Route 9 at the proposed I-95/Route 128 ramps. The signals along Route 9 were coordinated to a 100-second cycle length for analyses purposes.

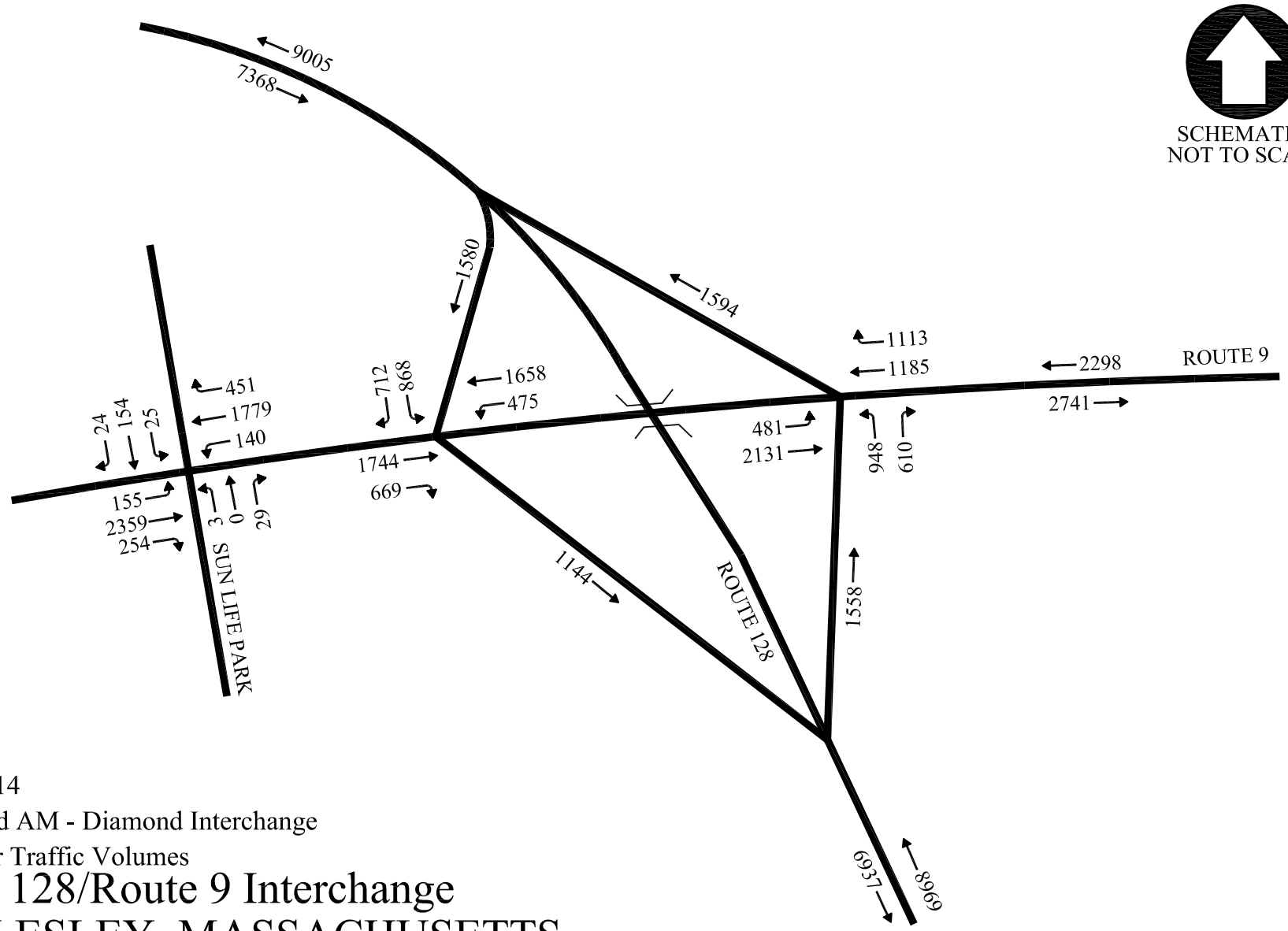


FIGURE 14
2017 Build AM - Diamond Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

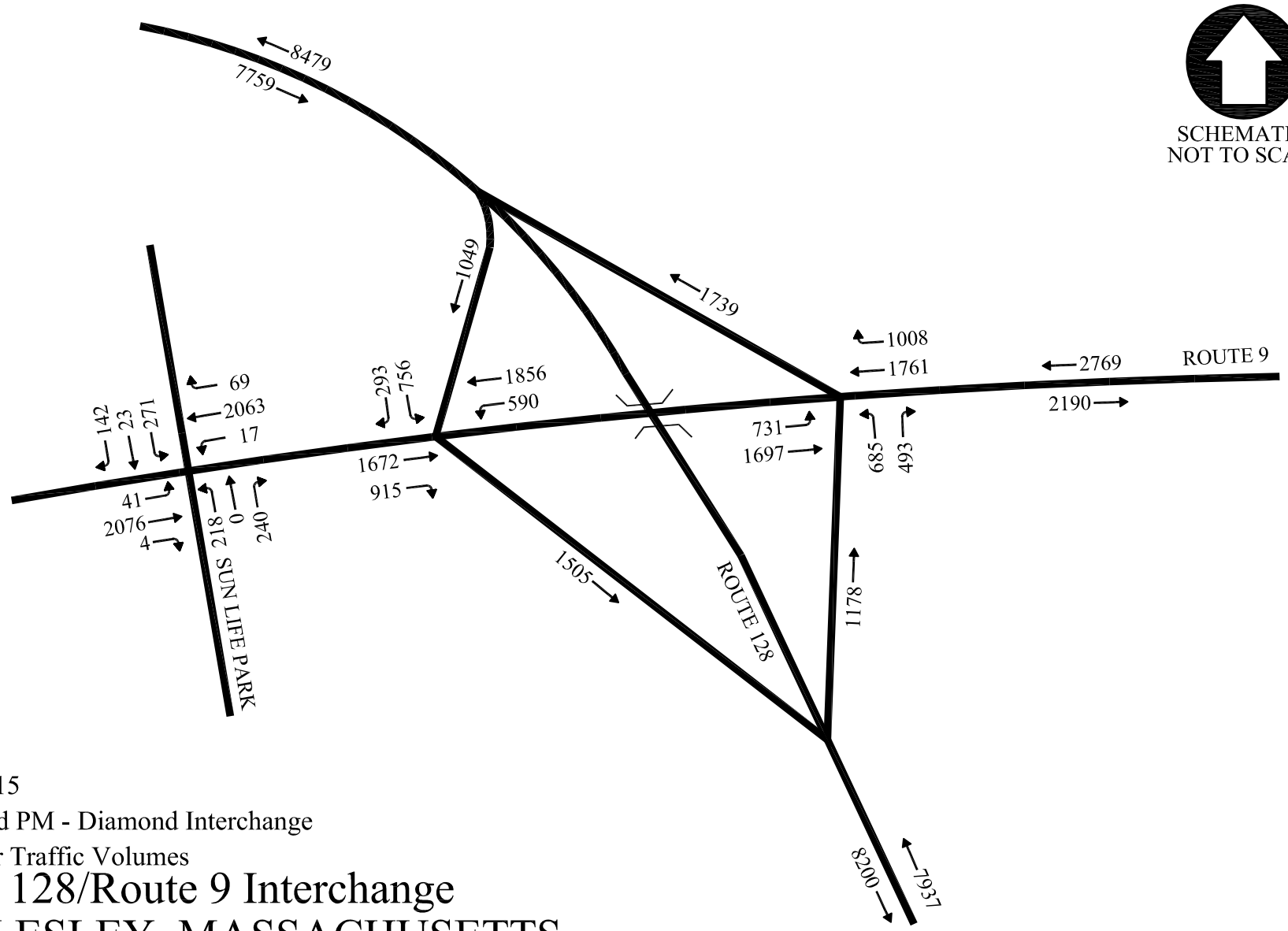


FIGURE 15
2017 Build PM - Diamond Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

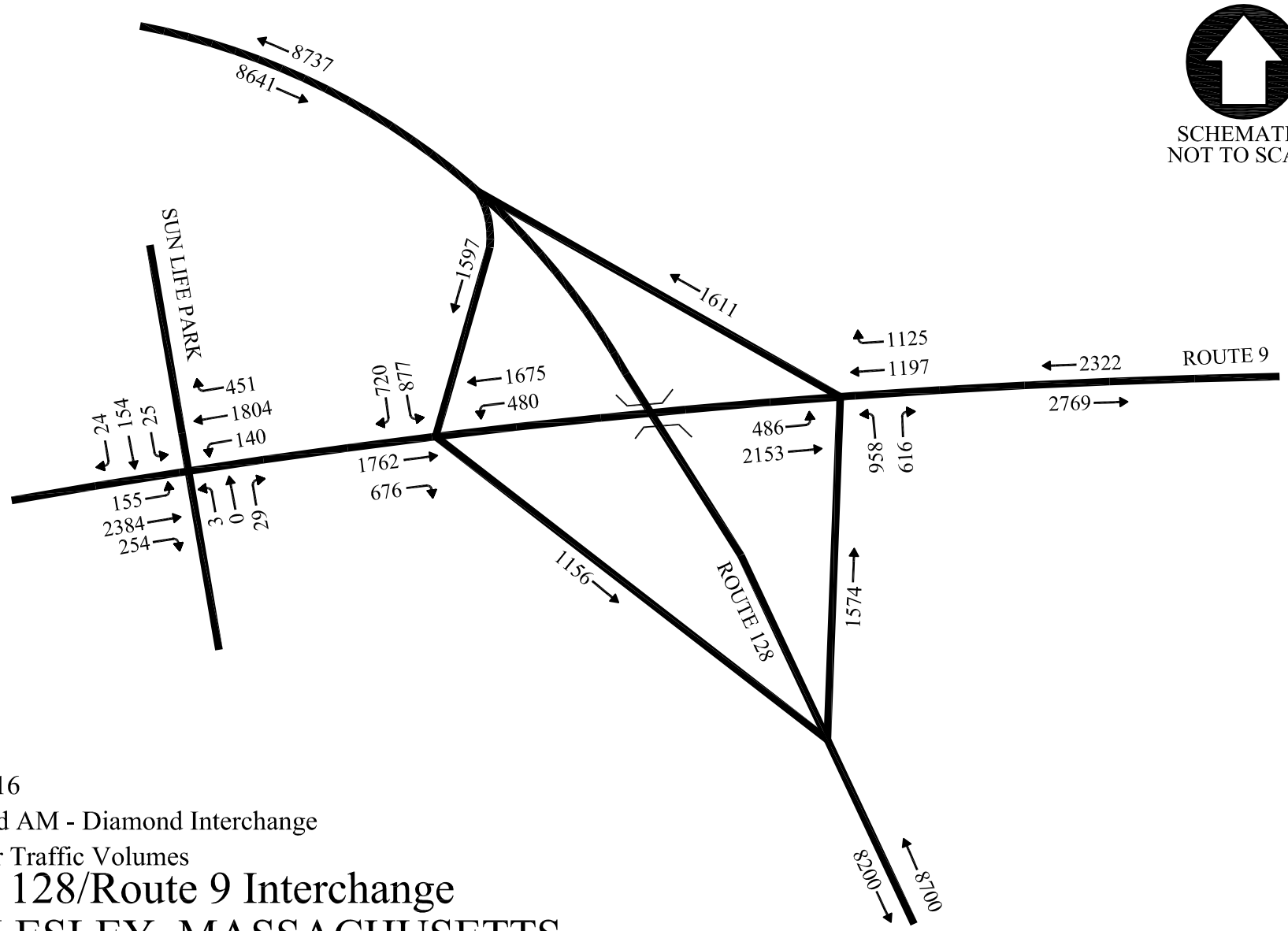


FIGURE 16
2025 Build AM - Diamond Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

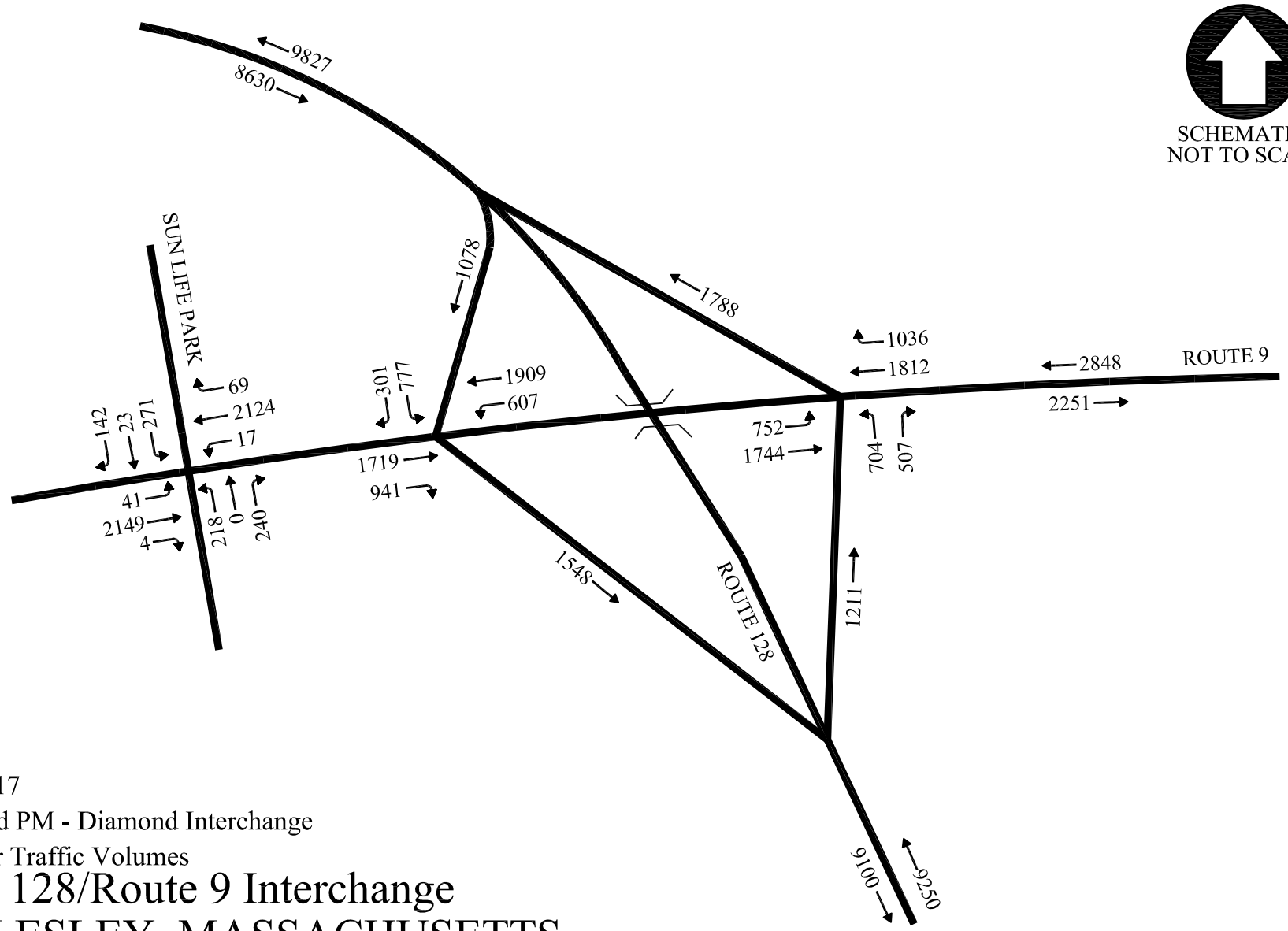


FIGURE 17
2025 Build PM - Diamond Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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TRANSPORTATION ENGINEERS & PLANNERS

The 2017 and 2025 Build Alternative 2 conditions intersection capacity analyses worksheets are included in **Appendix G**. Results of the analyses, summarized in **Table 6** and **Table 7**, indicated that the intersection of Route 9 at Sun Life/Harvard Pilgrim is expected to continue to operate at an overall acceptable level of service during AM and PM peak hour conditions. However, delays would continue to be observed along the minor streets of the intersection. The intersection of Route 9 and I-95/Route 128 Southbound Ramps would be expected to operate at an overall level of service E during both peak periods. However, several movements would be expected to operate at level of service F, with significant delays. The intersection of Route 9 and I-95/Route 128 Northbound Ramps would be expected to operate at an overall level of service D and E during the AM peak hour and PM peak hour, respectively, with several movements operating at level of service F.

7.4 Ramp Capacity Analyses

Ramp capacity analyses were performed for 2025 Build Alternative 2 conditions. The 2025 Build Alternative 2 conditions ramp capacity analyses worksheets are included in **Appendix H**. Results of the analyses, summarized in **Table 10** and **Table 11**, indicated that all ramps at the interchange of I-95/Route 128 and Route 9 would be expected to operate at an unacceptable level of service during AM and PM peak hour conditions. Even with the travel lanes that were added to I-95/Route 128, under the I-95/93 (Route 128) Transportation Improvement Plan, I-95/Route 128 carries a high volume of traffic in the peak hours. This coupled with the high volume of traffic being serviced on each ramp in the diamond interchange leads to poor levels of service for merge and diverge areas.

8.0 FUTURE BUILD ALTERNATIVE 3 – DIVERGING DIAMOND INTERCHANGE

8.1 Traffic Volumes

Future traffic volumes along Route 9 and at the I-95/Route 128 interchange for this alternative were estimated based upon a reassignment of the future Full Cloverleaf volumes. The resulting 2017 Diverging Diamond interchange traffic volumes along Route 9 and the I-95/Route 128 ramps are graphically depicted in **Figure 18** and **Figure 19**, while the 2025 Diverging Diamond interchange traffic volumes for the I-95/Route 128 ramps and mainline are shown in **Figure 20** and **Figure 21**.

8.2 Safety Conditions

With the removal of the loop ramps connecting Route 9 to I-95/Route 128, the existing weave conditions along mainline I-95/Route 128 would be eliminated in both the northbound and southbound directions of travel. This would eliminate any accidents expected to occur as a result of the weave conditions, which could include, among others, rear-end and side-swipe accidents. In addition, the existing safety condition occurring as a result of the weaving maneuver performed by the southbound-to-westbound traffic and the westbound traffic along Route 9 would be eliminated with the signalization of the southbound off-ramp traffic. However, a new weave condition would be introduced between the northbound-to-westbound traffic and the westbound-to-southbound traffic on Route 9 westbound. On Route 9 eastbound, a new weave condition would be introduced between the southbound-to-eastbound traffic and the eastbound-to-northbound traffic. Therefore, while this alternative eliminates the weave sections on Route 128 which may be contributing to the high occurrence of accidents, it creates weave sections along Route 9 that effectively retain the existing weave areas. The diverging diamond is also a newer type of interchange configuration that has not been used in this region. It is expected that significant driver education efforts would be needed for drivers to understand the new roadway configuration.

8.3 Intersection Capacity Analyses

Intersection capacity analyses were performed for 2017 Build Alternative 3 conditions at the intersection of Route 9 at Sun Life/Harvard Pilgrim and Route 9 at the proposed I-95/Route 128 ramps. The signals were coordinated to a 100-second cycle length for analyses purposes.

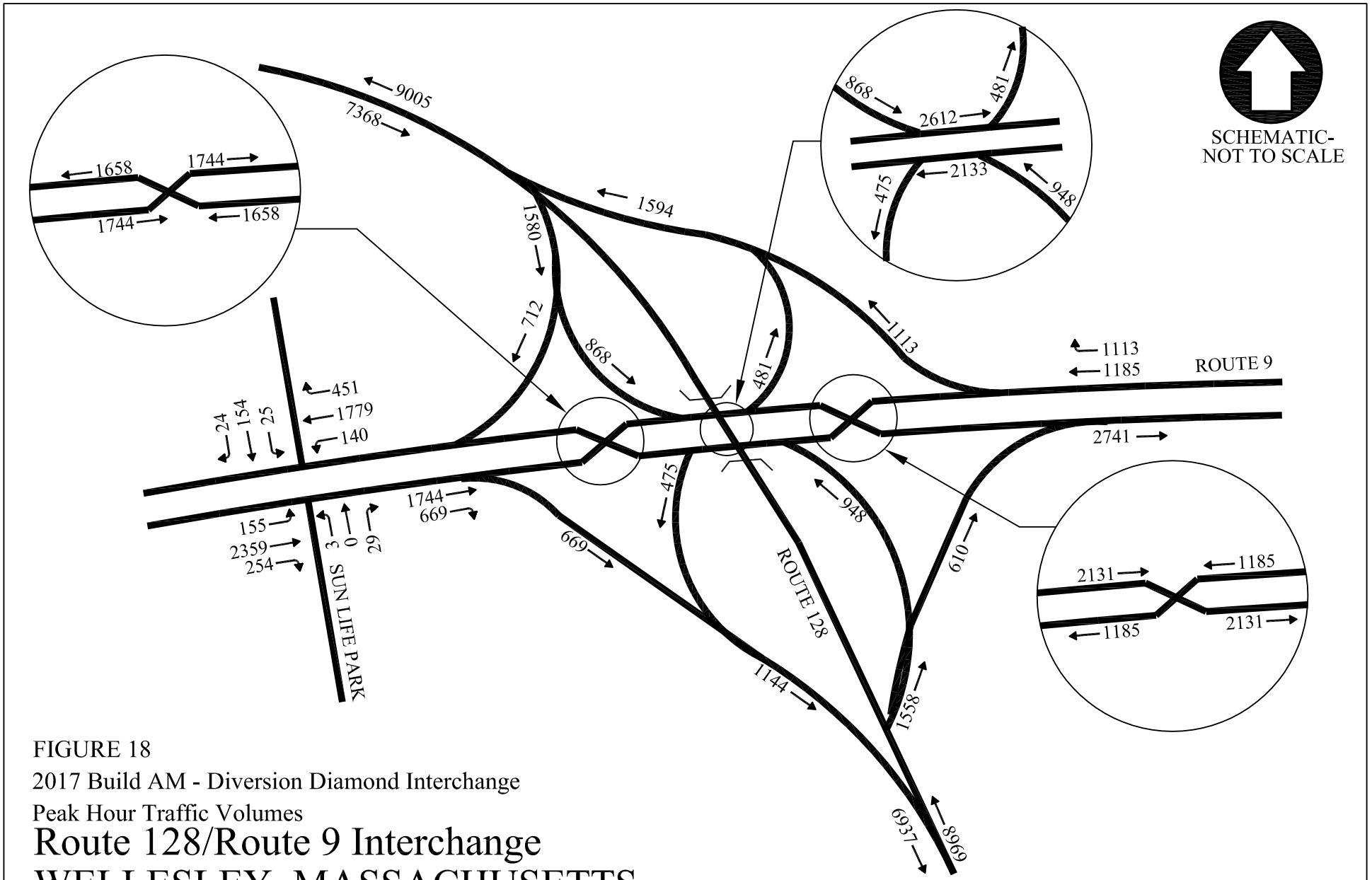

FIGURE 18
2017 Build AM - Diversion Diamond Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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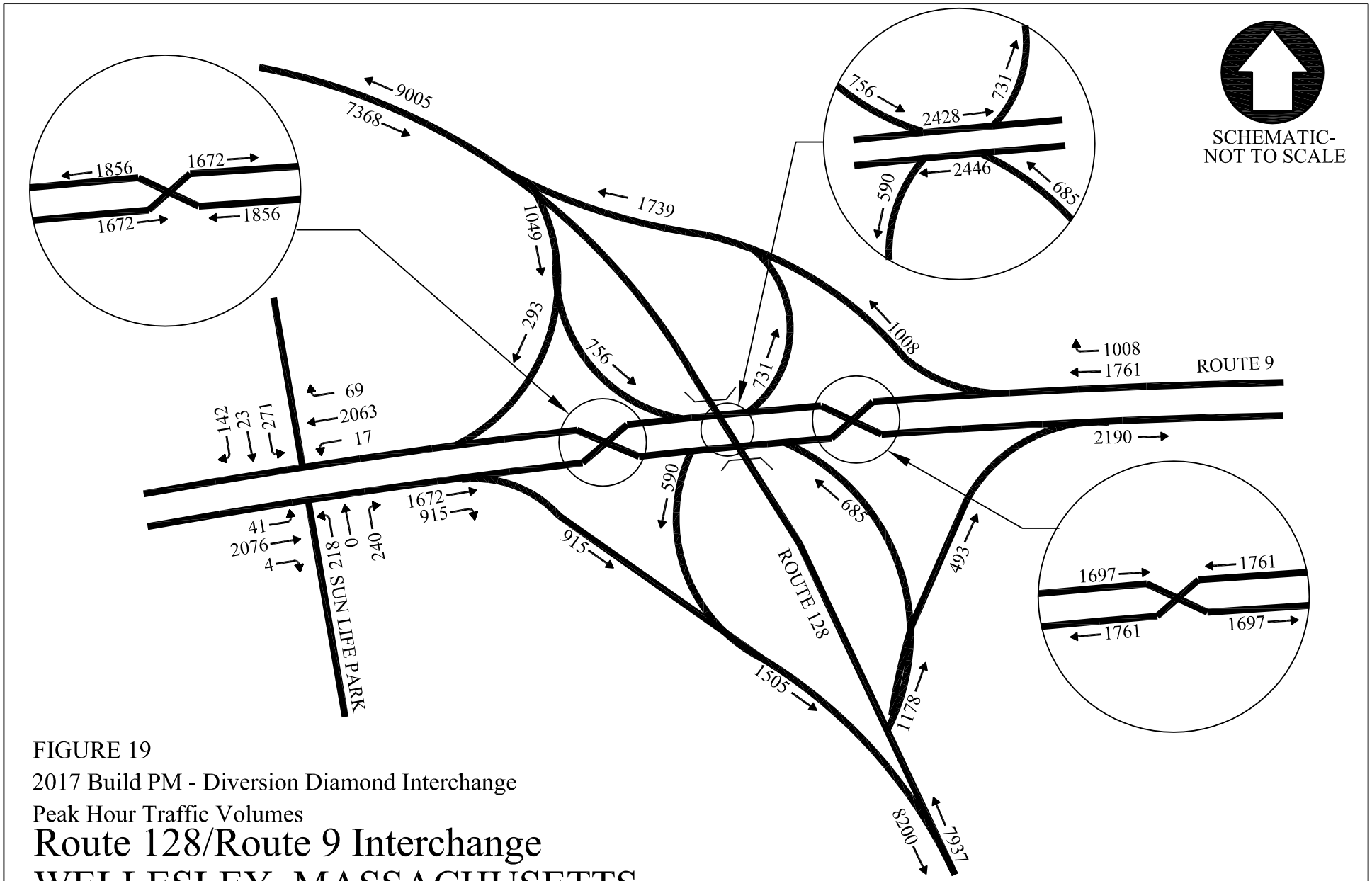

FIGURE 19
2017 Build PM - Diversion Diamond Interchange
Peak Hour Traffic Volumes
Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

McMAHON
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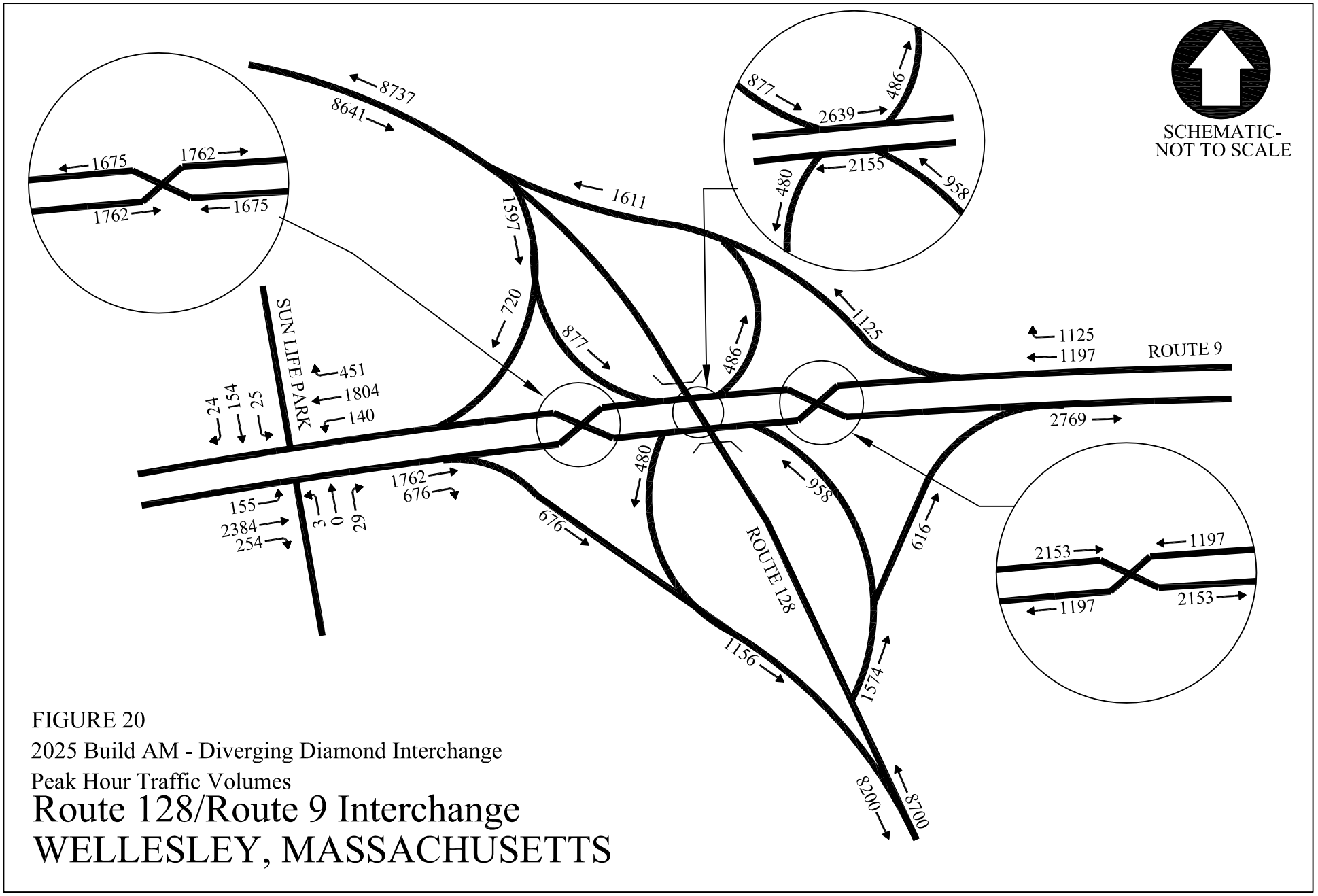

FIGURE 20
2025 Build AM - Diverging Diamond Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

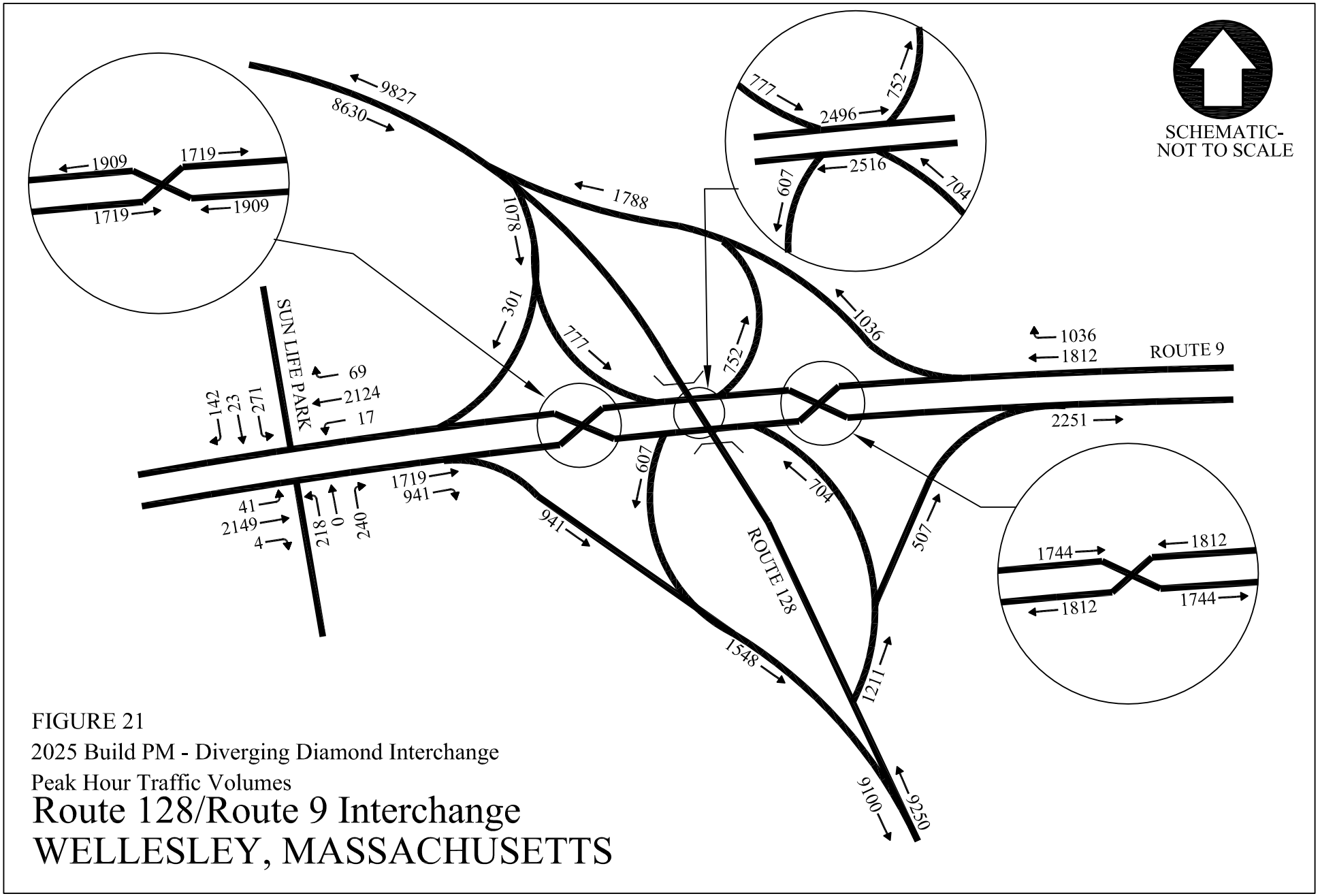

FIGURE 21
2025 Build PM - Diverging Diamond Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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The 2017 and 2025 Build Alternative 3 conditions intersection capacity analyses worksheets are included in **Appendix I**. Results of the analyses, summarized in **Table 6** and **Table 7**, indicated that the intersection of Route 9 at Sun Life/Harvard Pilgrim would be expected to continue to operate at an overall acceptable level of service during AM and PM peak hour conditions. However, delays would continue to be observed along the minor streets of the intersection. The intersection of Route 9 and I-95/Route 128 Southbound Ramps would be expected to operate at an overall level of service F during both peak periods. The intersection of Route 9 and I-95/Route 128 Northbound Ramps would also be expected to operate at an overall level of service F during the both peak periods. The increased delays at the ramp intersections are a result of the diverging diamond geometry that puts the Route 9 through movements in direct conflict with each other. As these are high volume movements, this configuration leads to a degradation of overall operations.

8.4 Ramp Capacity Analyses

Ramp capacity analyses were performed for 2025 Build Alternative 3 conditions. The 2025 Build Alternative 3 conditions ramp capacity analyses worksheets are included in **Appendix J**. Results of the analyses, summarized in **Table 10** and **Table 11**, indicated that all ramps at the interchange of I-95/Route 128 and Route 9 would be expected to operate at an unacceptable level of service during AM and PM peak hour conditions. The poor ramp levels of service are due to the over-capacity freeway conditions that occur on I-95/Route 128 in the peak hours, even with the additional travel lanes for the I-95/93 (Route 128) Transportation Improvement Plan.

9.0 FUTURE BUILD ALTERNATIVE 4 – SINGLE POINT URBAN INTERCHANGE

9.1 Traffic Volumes

Future traffic volumes along Route 9 and at the I-95/Route 128 interchange for this alternative were estimated based upon a reassignment of the future Full Cloverleaf volumes. The resulting 2017 Single Point Urban Interchange traffic volumes along Route 9 and the I-95/Route 128 ramps are graphically depicted in **Figure 22** and **Figure 23** while the 2025 Single Point Urban Interchange traffic volumes for the I-95/Route 128 ramps and mainline are shown in **Figure 24** and **Figure 25**.

9.2 Safety Conditions

With the removal of the loop ramps connecting Route 9 to I-95/Route 128, the existing weave conditions along mainline I-95/Route 128 would be eliminated in both the northbound and southbound directions of travel. Further, the weave conditions along Route 9 in both the eastbound and westbound directions of travel would also be eliminated with the proposed interchange configuration. This would eliminate any accidents expected to occur as a result of the weave conditions, which could include, among others, rear-end and side-swipe accidents. In addition, although the southbound-to-westbound right-turn movement would continue to be performed under free-flow control, the existing safety condition occurring as a result of the weaving maneuver performed by the southbound-to-westbound traffic and the westbound traffic along Route 9 would be eliminated given the relocation of the ramp. The southbound-to-westbound right-turn lane would transition into a westbound through travel lane along Route 9 with the proposed interchange configuration. Safety conditions for this Build alternative would be expected to be improved when compared to No Build conditions.

9.3 Intersection Capacity Analyses

Intersection capacity analyses were performed for 2017 Build Alternative 4 at the intersections of Route 9 at Sun Life/Harvard Pilgrim and Route 9 at the proposed I-95/Route 128 ramps. These signalized intersections would be coordinated.

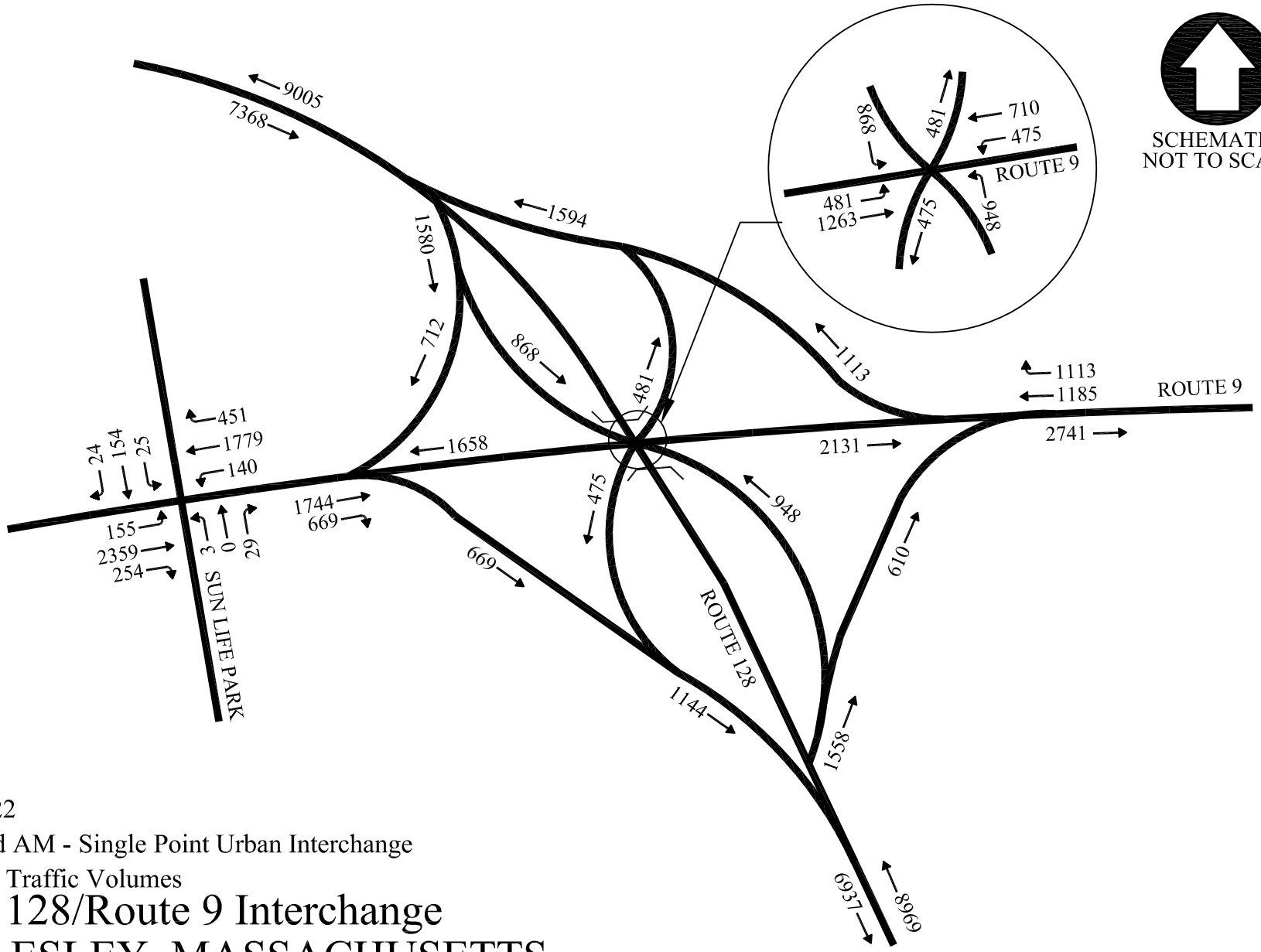

FIGURE 22
2017 Build AM - Single Point Urban Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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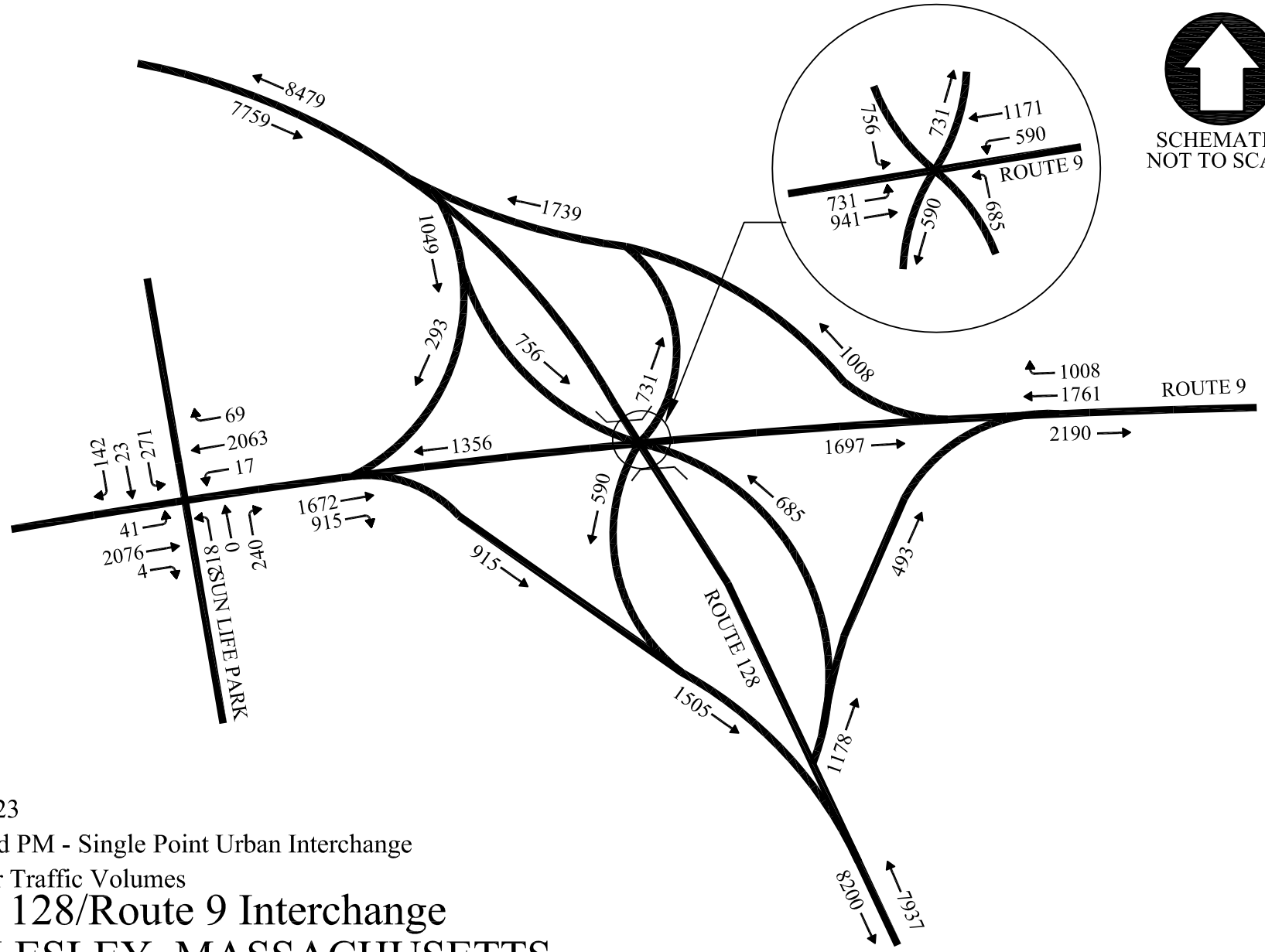

FIGURE 23
2017 Build PM - Single Point Urban Interchange
Peak Hour Traffic Volumes
Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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TRANSPORTATION ENGINEERS & PLANNERS

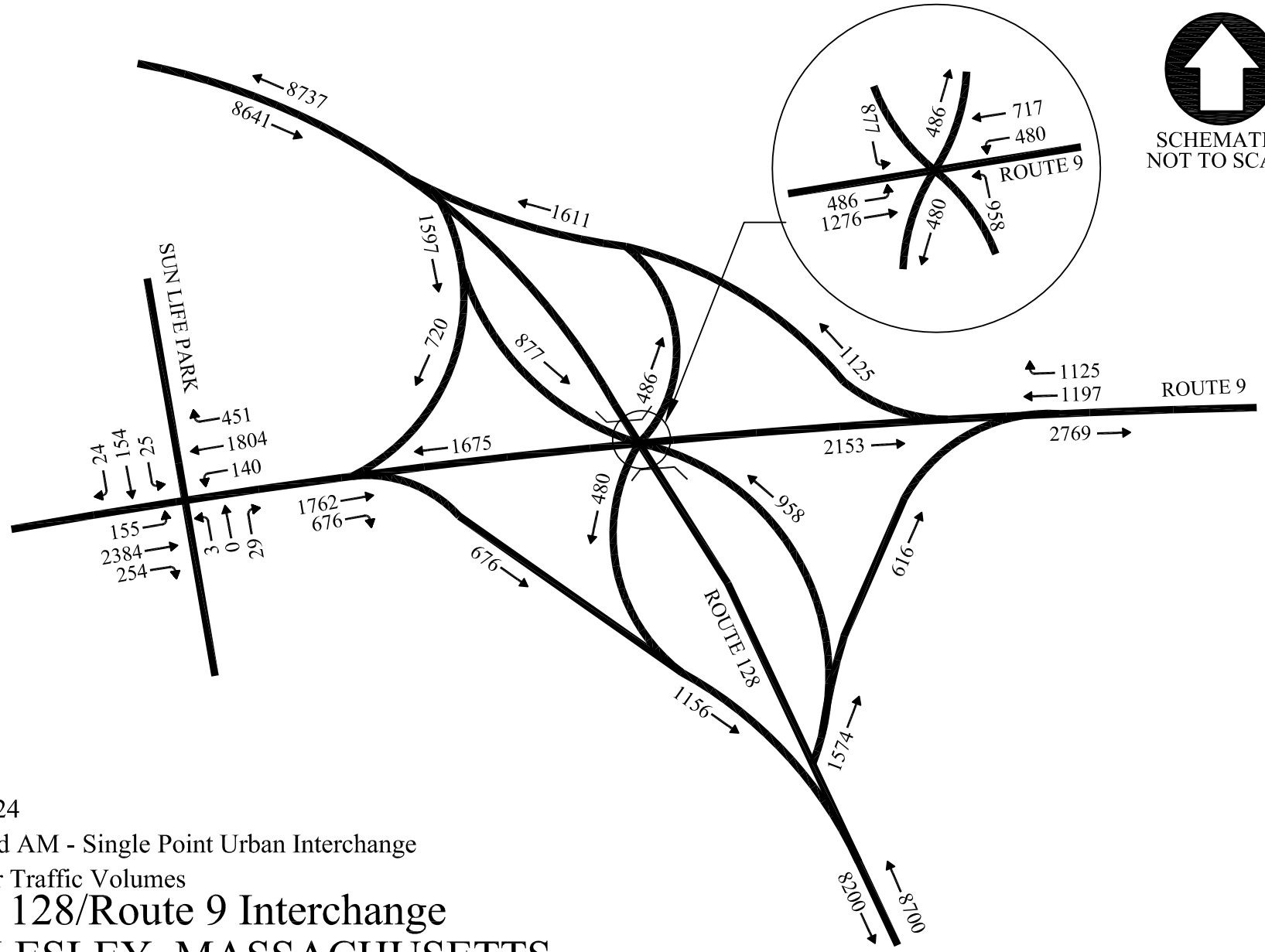

FIGURE 24
2025 Build AM - Single Point Urban Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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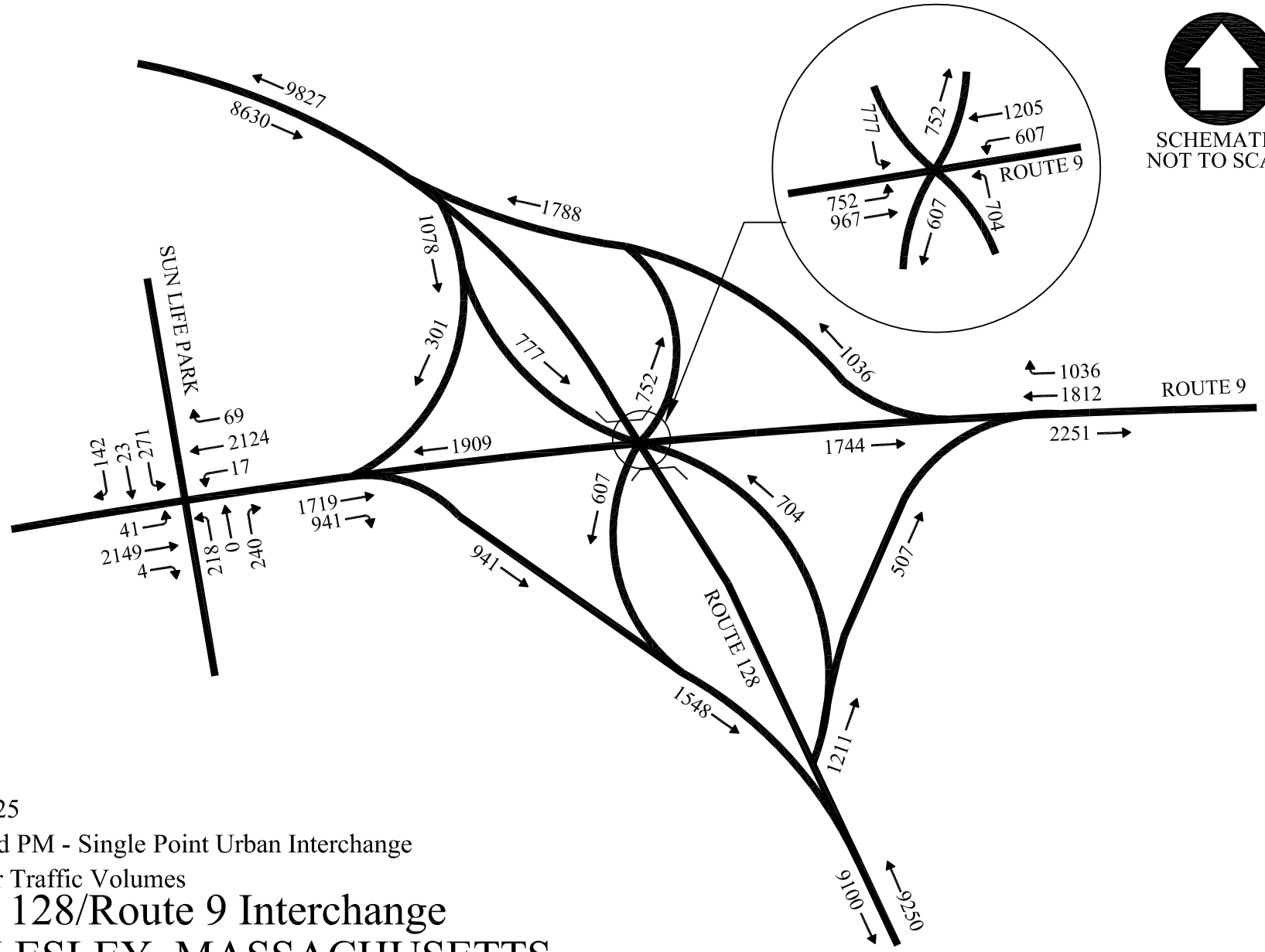

FIGURE 25
2025 Build PM - Single Point Urban Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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The 2017 and 2025 Build Alternative 4 conditions intersection capacity analyses worksheets are included in **Appendix K**. Results of the analyses, summarized in **Table 6** and **Table 7**, indicated that the intersection of Route 9 at Sun Life/Harvard Pilgrim would be expected to continue to operate at an overall acceptable level of service during AM and PM peak hour conditions. However, delays would continue to be observed along the minor streets of the intersection. The intersection of Route 9 and I-95/Route 128 would be expected to operate at an overall level of service F during both peak periods. The analysis is based on two through lanes and two left turn lanes on each of the Route 9 approaches, as well as two left-turn lanes on the ramps. The intersection services a high volume of traffic, requiring additional approach lanes for adequate level of service. From a design view point, the intersection became too large to be practical and feasible.

9.4 Ramp Capacity Analyses

Ramp capacity analyses were performed for 2025 Build Alternative 4 conditions. The 2025 Build Alternative 4 conditions ramp capacity analyses worksheets are included in **Appendix L**. Results of the analyses, summarized in **Table 10** and **Table 11**, indicate that all ramps at the interchange of I-95/Route 128 and Route 9 would be expected to operate at an unacceptable level of service during AM and PM peak hour conditions. The poor ramp levels of service are attributed to the over-capacity conditions of I-95/Route 128 turning peak hours.

10.0 FUTURE BUILD ALTERNATIVE 5 – PARTIAL CLOVERLEAF INTERCHANGE

10.1 Traffic Volumes

Future traffic volumes along Route 9 and at the I-95/Route 128 interchange for this alternative were estimated based upon a reassignment of the future Full Cloverleaf volumes. The resulting 2017 Partial Cloverleaf Interchange traffic volumes along Route 9 and the I-95/Route 128 ramps are graphically depicted in **Figure 26** and **Figure 27**, while the 2025 Partial Cloverleaf Interchange traffic volumes for the I-95/Route 128 ramps and mainline are shown in **Figure 28** and **Figure 29**.

10.2 Safety Conditions

With the removal of the eastbound-to-northbound and the westbound-to-southbound loop ramps connecting Route 9 to I-95/Route 128, the existing weave conditions along mainline I-95/Route 128 would be removed in both the northbound and southbound directions of travel. Further, the weave conditions along Route 9 in both the eastbound and westbound directions of travel would also be removed with the proposed interchange configuration. This would eliminate any accidents expected to occur as a result of the weave conditions, which could include, among others, rear-end and side-swipe accidents. In addition, the existing safety concerns occurring as a result of the weaving maneuver performed by the southbound-to-westbound traffic and the westbound traffic along Route 9 would be eliminated with the signalization of the southbound off-ramp traffic. Therefore, safety conditions for this Build alternative would be expected to be improved when compared to No Build conditions.

10.3 Intersection Capacity Analyses

Intersection capacity analyses were performed for 2017 Build Alternative 5 conditions at the intersection of Route 9 at Sun Life/Harvard Pilgrim and Route 9 at the proposed I-95/Route 128 ramps. The signals along Route 9 were coordinated to a 100-second cycle length for analyses purposes.

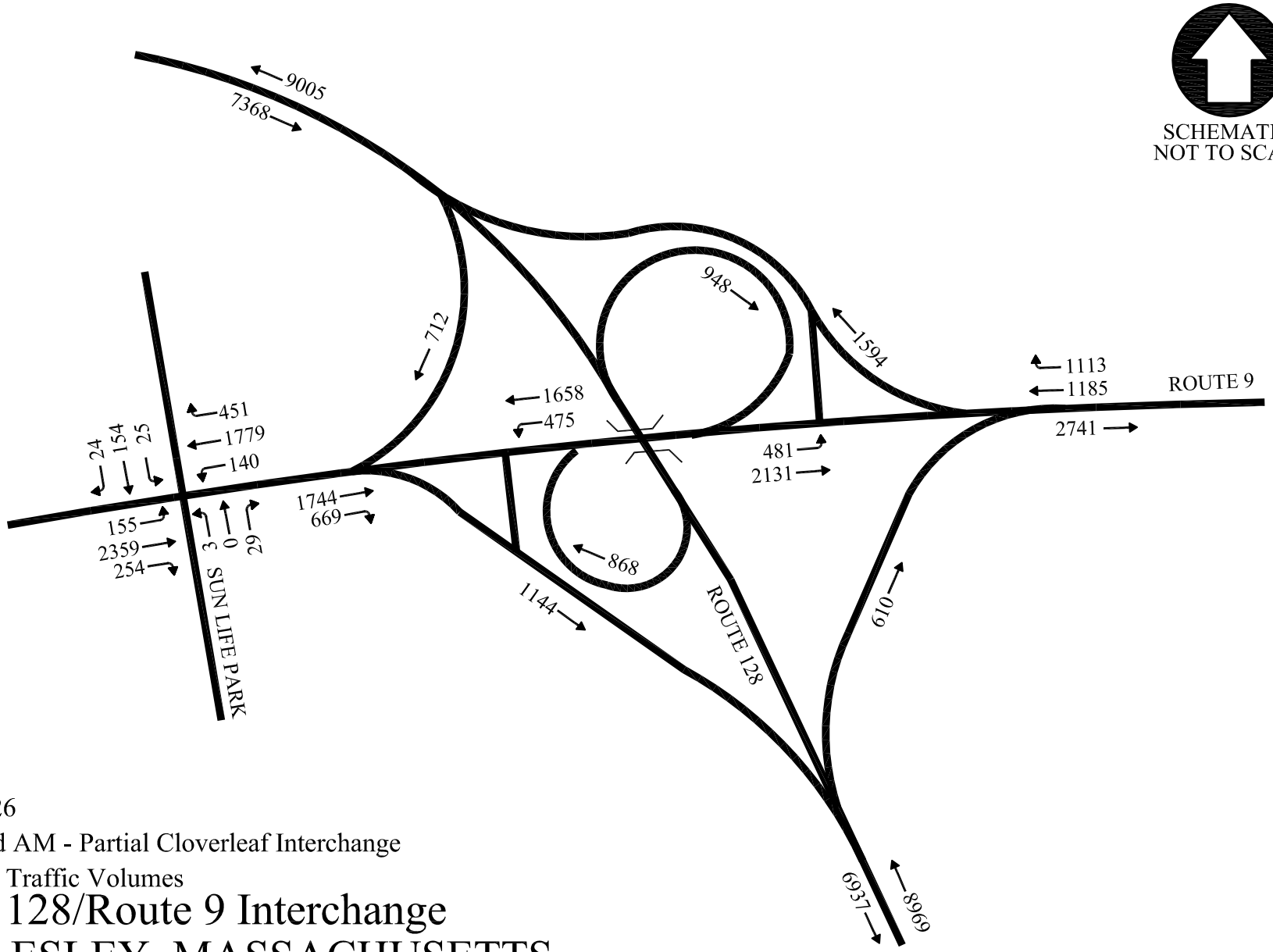

FIGURE 26
2017 Build AM - Partial Cloverleaf Interchange
Peak Hour Traffic Volumes
Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

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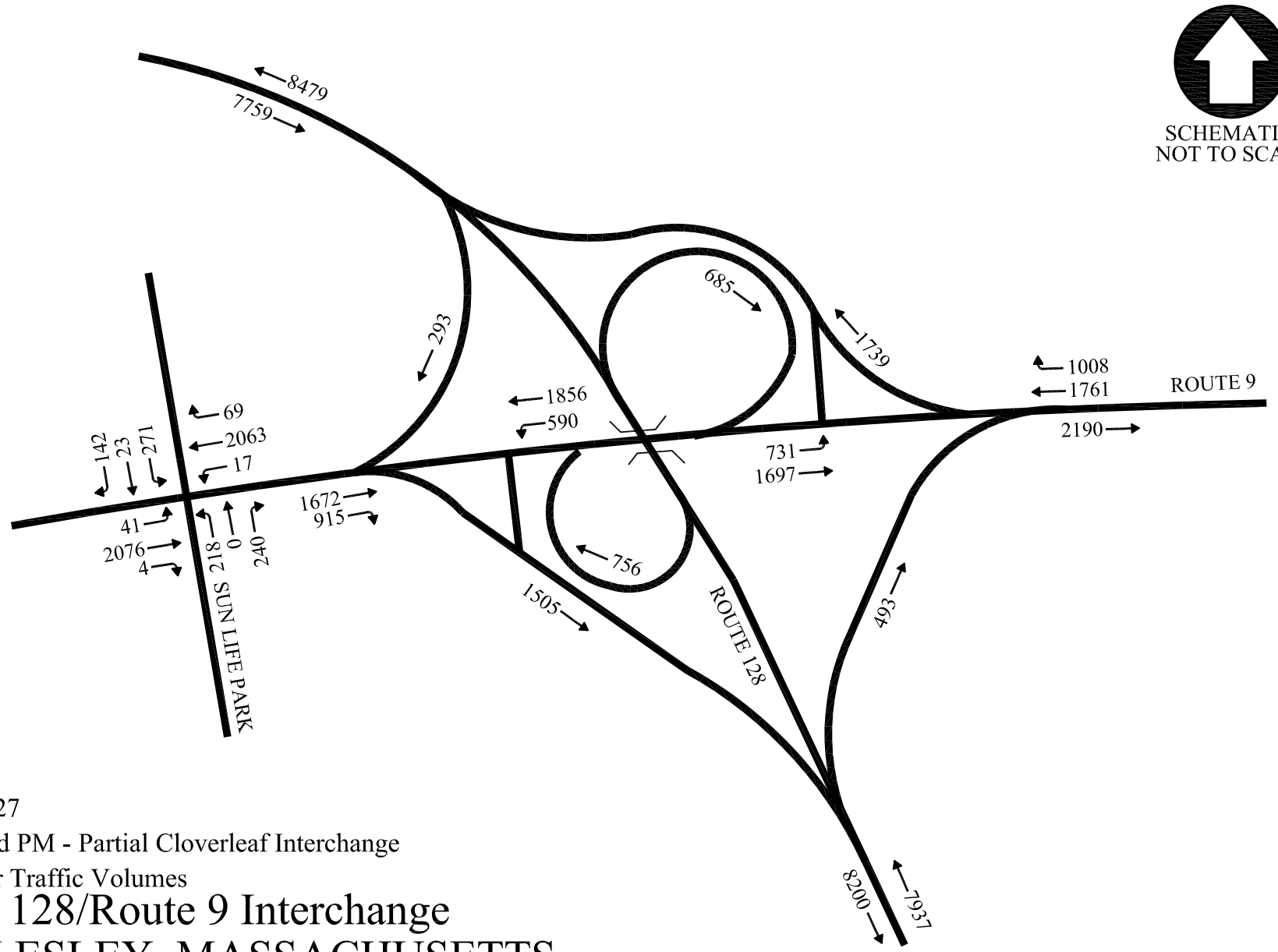

FIGURE 27
2017 Build PM - Partial Cloverleaf Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

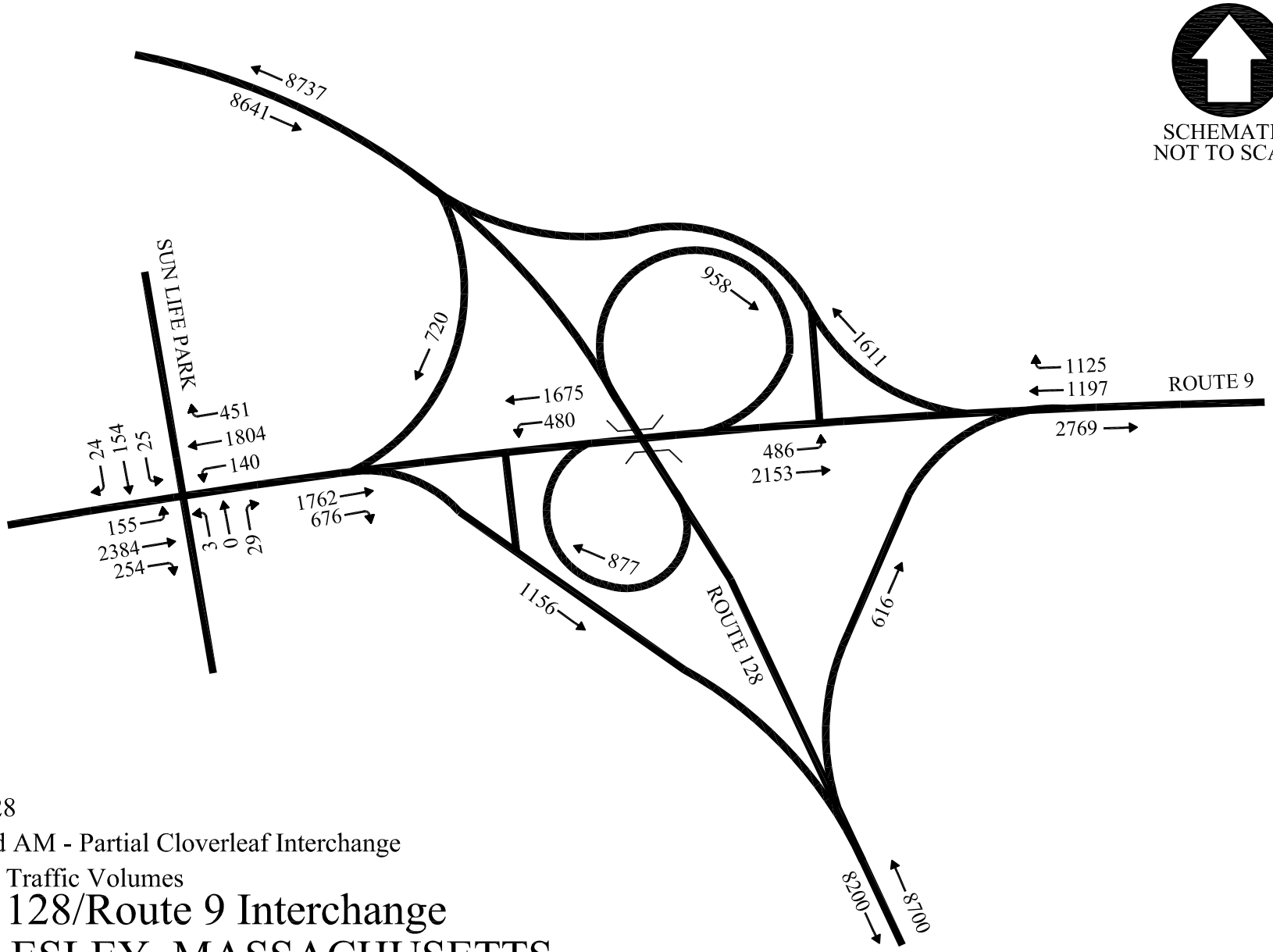

FIGURE 28
2025 Build AM - Partial Cloverleaf Interchange
Peak Hour Traffic Volumes

Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

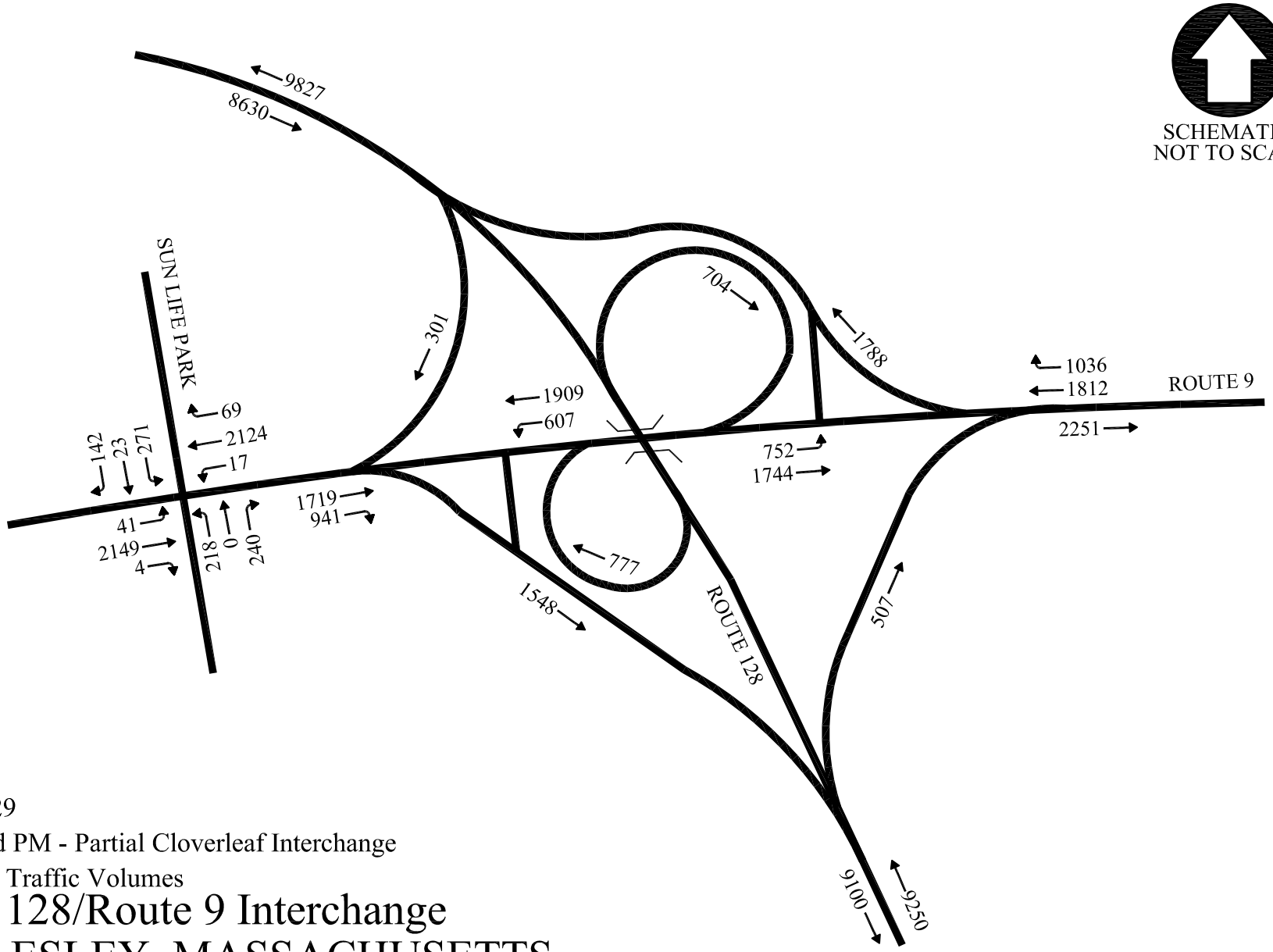

FIGURE 29
2025 Build PM - Partial Cloverleaf Interchange
Peak Hour Traffic Volumes
Route 128/Route 9 Interchange
WELLESLEY, MASSACHUSETTS

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

The 2017 and 2025 Build Alternative 5 conditions intersection capacity analyses worksheets are included in **Appendix M**. Results of the analyses, summarized in **Table 6** and **Table 7**, indicated that the intersection of Route 9 at Sun Life/Harvard Pilgrim would be expected to continue to operate at an overall acceptable level of service during AM and PM peak hour conditions. However, delays would continue to be observed along the minor streets of the intersection. The intersection of Route 9 and I-95/Route 128 Northbound Ramps and the intersection of Route 9 and I-95/Route 128 Southbound Ramps would be expected to operate at an overall acceptable level of service B during both peak periods. Further, all movements would be expected to operate at an acceptable level of service during both peak periods. It is also worth noting that the future queues for the eastbound-to-northbound and the westbound-to-southbound left-turn movements would not be anticipated to exceed the available storage expected to be provided on Route 9.

The improved operations associated with this alternative are due to the fact that only one direction of Route 9 traffic and the left –turn onto the ramp are under signal control at each intersection. These signals are able to operate with an efficient two-phase configuration.

10.4 Ramp Capacity Analyses

Ramp capacity analyses were performed for 2025 Build Alternative 5 conditions. The 2025 Build Alternative 5 conditions ramp capacity analyses worksheets are included in **Appendix N**. Results of the analyses, summarized in **Table 10** and **Table 11**, indicated that all, but two ramps at the interchange of I-95/Route 128 and Route 9 would be expected to operate at an unacceptable level of service during AM and PM peak hour conditions. Poor ramp levels of service are attributed to the over-capacity peak hour conditions on I-95/Route 128.

Two of the ramps were not analyzed utilizing HCS, since they are classified as lane additions/drops instead of merges and diverges. These ramps are located at the southern most part of the Route 9 Interchange, Ramps W-5 and W-3. Traffic travels on Ramp W-5 from Route 9 eastbound to I-95/Route 128 southbound and results in an added lane in the southbound direction on I-95/Route 128. Ramp W-3 travels from I-95/Route 128 northbound to Route 9 eastbound and results in a dropped lane on I-95/Route

128 in the northbound direction. The HCS procedure does not adjust for mainline lane additions or lane drops at a ramp junction. Therefore, different analyses were completed to account for the mainline lane addition and drop.

When dealing with ramps that either add a lane or drop a lane from the mainline, a ramp merge analysis does not provide the complete analysis. Instead these types of merges are considered lane additions. As indicated on page 25-9 of the HCM, it should be analyzed by comparing the capacities of each entering ramp lane and the departing freeway (Exhibit 25-7) to the peak demand flow. The downstream segment should simply be looked at as a basic freeway segment with an added lane or subtracted lane.

Using this methodology, sufficient capacity has been calculated downstream of the W-5 ramp for the demand during both the morning and evening peak hours. This same methodology was applied to the W-3 ramp in the northbound direction and sufficient capacity has been calculated downstream of the W-3 ramp for the demand during the morning peak hour. During the afternoon peak hour, the downstream segment is just slightly over capacity as the demand flow is less than one percent higher than the capacity.

11.0 FINDINGS

A comparative analysis was performed of the intersection and ramp capacity results among the proposed alternatives and the No Build Alternative.

The Build alternatives offer safety improvements as they eliminate the inadequate weaves on Route 128 and eliminate some of the weave maneuvers on Route 9. Under the Build alternatives, the ramps are projected to operate at poor levels of service due to the over-capacity peak hour conditions of I-95/Route 128. Build Alternative 1 would likely provide the best traffic operations relative to capacity given that all the ramps operate under free-flow condition. However, the construction of the ramps to AASHTO standards renders the project infeasible given its impacts to the abutting properties. A comparison of the analyses for the practical alternatives revealed that the Partial Cloverleaf Alternative would provide significant improvement in vehicle delays and, therefore, in levels of service, when compared to the other Build alternatives and when compared to the No Build Alternative.

Given the analyses contained herein, the preferred interchange configuration for the proposed reconstruction of the interchange of Route 9 and I-95/Route 128 is Build Alternative 5 – Partial Cloverleaf. The preferred Alternative is graphically depicted in **Figure 30**.

TRUE NORTH

RAMP W–5

EXIST. LENGTH = 1,155'±
EXIST. GRADE = 3.29%±

PROP. LENGTH = 1,070'±
PROP. GRADE = 3.27%±

MIN. RADIUS = 240'

RAMP W–6

EXIST. LENGTH = 425'±
EXIST. GRADE = –2.59%±

PROP. LENGTH = 500'±
PROP. GRADE = –4.00%±

MIN. RADIUS = 160'

RAMP W–7

EXIST. LENGTH = 630'±
EXIST. GRADE = –1.27%±

PROP. LENGTH = 640'±
PROP. GRADE = –0.94%±

MIN. RADIUS = 500'

ROUTE 128 (SOUTH)

ROUTE 128 (NORTH)

ROUTE 128 (SOUTH)

ROUTE 128 (NORTH)

RAMP W–2

EXIST. LENGTH = 840'±
EXIST. GRADE = –1.67%±

PROP. LENGTH = 870'±
PROP. GRADE = –1.72%±

MIN. RADIUS = 180'

RAMP W–3

EXIST. LENGTH = 1,010'±
EXIST. GRADE = –3.37%±

PROP. LENGTH = 1,040'±
PROP. GRADE = –3.65%±

MIN. RADIUS = 500'

100' WETLAND BUFFER (TYP.)

WETLAND AREA (TYP.)

RAMP W–1

EXIST. LENGTH = 1,380'±
EXIST. GRADE = 0.51%±

PROP. LENGTH = 1,325'±
PROP. GRADE = 0.53%±

MIN. RADIUS = 240'

BRIDGE DECK DIMENSIONS:

SPAN LENGTH = 100'±
SPAN WIDTH = 143'±
SPAN AREA = 29,400 ft²±

PRO:

1) LOOP RAMPS (W–4 AND W–8) ELIMINATED.
2) IMPROVED GEOMETRY FOR RAMPS W–3 AND W–7.
3) ELIMINATES WEAVE AREAS ON I–95/ROUTE 128 AND ROUTE 9.

CON:

1) SUPERELEVATION ISSUES FOR RAMP W–2.
2) LIMITED FUTURE CAPACITY W/O SIGNIFICANT CAPITAL EXPENSE.
3) SIGNIFICANT RETAINING WALL CONSTRUCTION ALONG RAMPS W–1 AND W–5 TO KEEP LIMIT OF SLOPE WITHIN ROW.

200 100 0 100 200 FEET

SCALE: 1"=200'

Edwards and Kelcey HDR A Joint Venture

Proposed Partial Cloverleaf Option

Drawn by: KPM
Scale: 1" = 200'
Date: April 7, 2010

I-95/I-93 (Route 128) Transportation Improvement Project (Bridge-V)
I-95 (Route 128) over Route 9
Wellesley, MA

Figure 30