

APPENDIX E

TRAFFIC AND PARKING

E.1 Traffic Volume Networks and Trip Generation

E.2 Traffic Impact Analyses

World Trade Center Memorial and Redevelopment Plan EIS

Appendix E.1 Traffic Volume Networks

March 2004

Eng-Wong, Taub & Associates



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
Current 2003 Conditions
AM Peak Hour



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
Current 2003 Conditions
MD Peak Hour



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
Current 2003 Conditions
PM Peak Hour



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Scenario
with Route 9A At-Grade
AM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Scenario
with Route 9A At-Grade
MD Peak Hour**

Figure E.1-5



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Scenario
with Route 9A At-Grade
PM Peak Hour**

Figure E.1-6



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Scenario
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-7



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Scenario
with Route 9A At-Grade
MD Peak Hour**

Figure E.1-8



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2009 Build Condition
Current Conditions Scenario
with Route 9A At-Grade
PM Peak Hour

Figure E.1-9



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Current Conditions Scenario
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-10



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2015 No Action Condition
Current Conditions Scenario
with Route 9A At-Grade
MD Peak Hour

Figure E.1-11



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Current Conditions Scenario
with Route 9A At-Grade
PM Peak Hour**

Figure E.1-12



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions Scenario
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-13



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions Scenario
with Route 9A At-Grade
MD Peak Hour**

Figure E.1-14



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions Scenario
with Route 9A At-Grade
PM Peak Hour**

Figure E.1-15



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
Pre September 11th Existing Conditions
AM Peak Hour**



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
Pre September 11th Existing Conditions
MD Peak Hour



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
Pre September 11th Existing Conditions
PM Peak Hour



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Pre September 11th Conditions Scenario
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-19



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Pre September 11th Conditions Scenario
with Route 9A At-Grade
MD Peak Hour**

Figure E.1-20



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Pre September 11th Conditions Scenario
with Route 9A At-Grade
PM Peak Hour**

Figure E.1-21



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Pre September 11th Conditions Scenario
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-22



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Pre September 11th Conditions Scenario
with Route 9A At-Grade
MD Peak Hour**



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2015 No Action Condition
Pre September 11th Conditions Scenario
with Route 9A At-Grade
PM Peak Hour

Figure E.1-24



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Scenario
with Route 9A Short Bypass
AM Peak Hour**

Figure E.1-25



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Scenario
with Route 9A Short Bypass
MD Peak Hour**

Figure E.1-26



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Scenario
with Route 9A Short Bypass
PM Peak Hour**

Figure E.1-27



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Scenario
with Route 9A Short Bypass
AM Peak Hour**

Figure E.1-28



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Scenario
with Route 9A Short Bypass
MD Peak Hour**

Figure E.1-29



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Scenario
with Route 9A Short Bypass
PM Peak Hour**

Figure E.1-30



**World Trade Center Memorial
and Redevelopment Plan**

Traffic Volumes
2015 No Action Condition
Current Conditions Scenario
with Route 9A Short Bypass
AM Peak Hour

Figure E.1-31



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Current Conditions Scenario
with Route 9A Short Bypass
MD Peak Hour**

Figure E.1-32



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Current Conditions Scenario
with Route 9A Short Bypass
PM Peak Hour**

Figure E.1-33



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions Scenario
with Route 9A Short Bypass
AM Peak Hour**

Figure E.1-34



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2015 Build Condition
Current Conditions Scenario
with Route 9A Short Bypass
MD Peak Hour

Figure E.1-35



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions Scenario
with Route 9A Short Bypass
PM Peak Hour**

Figure E.1-36



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A At-Grade
AM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A At-Grade
MD Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A At-Grade
PM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A At-Grade
AM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A At-Grade
MD Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A At-Grade
PM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A Short Bypass
AM Peak Hour**

Figure E.1-43



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A Short Bypass
MD Peak Hour**

Figure E.1-44



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A Short Bypass
PM Peak Hour**

Figure E.1-45



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A Short Bypass
AM Peak Hour**

Figure E.1-46



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A Short Bypass
MD Peak Hour**

Figure E.1-47



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2015 Build Condition
Current Conditions without Fulton and Greenwich
with Route 9A Short Bypass
PM Peak Hour

Figure E.1-48



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-49



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
MD Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
PM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-52



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
MD Peak Hour**

Figure E.1-53



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
PM Peak Hour**

Figure E.1-54



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-55



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
MD Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
PM Peak Hour**

Figure E.1-57



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
AM Peak Hour**

Figure E.1-58



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
MD Peak Hour**

Figure E.1-59



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A At-Grade
PM Peak Hour**

Figure E.1-60



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Pre September 11th Alternative Trip Assumptions
with Route 9A At-Grade
AM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Pre September 11th Alternative Trip Assumptions
with Route 9A At-Grade
MD Peak Hour**

Figure E.1-62



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 No Action Condition
Pre September 11th Alternative Trip Assumptions
with Route 9A At-Grade
PM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Pre September 11th Alternative Trip Assumptions
with Route 9A At-Grade
AM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Pre September 11th Alternative Trip Assumptions
with Route 9A At-Grade
MD Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 No Action Condition
Pre September 11th Alternative Trip Assumptions
with Route 9A At-Grade
PM Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A Short Bypass
AM Peak Hour**

Figure E.1-67



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A Short Bypass
MD Peak Hour**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A Short Bypass
PM Peak Hour**

Figure E.1-69



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2015 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A Short Bypass
AM Peak Hour

Figure E.1-70



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2015 Build Condition
Current Conditions Alternative Trip Assumptions
with Route 9A Short Bypass
MD Peak Hour

Figure E.1-71



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
 2015 Build Condition
 Current Conditions Alternative Trip Assumptions
 with Route 9A Short Bypass
 PM Peak Hour

Figure E.1-72



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
with Route 9A At-Grade
AM Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
with Route 9A At-Grade
MD Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
with Route 9A At-Grade
PM Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Street Direction Changes
with Route 9A At-Grade
AM Peak Period**



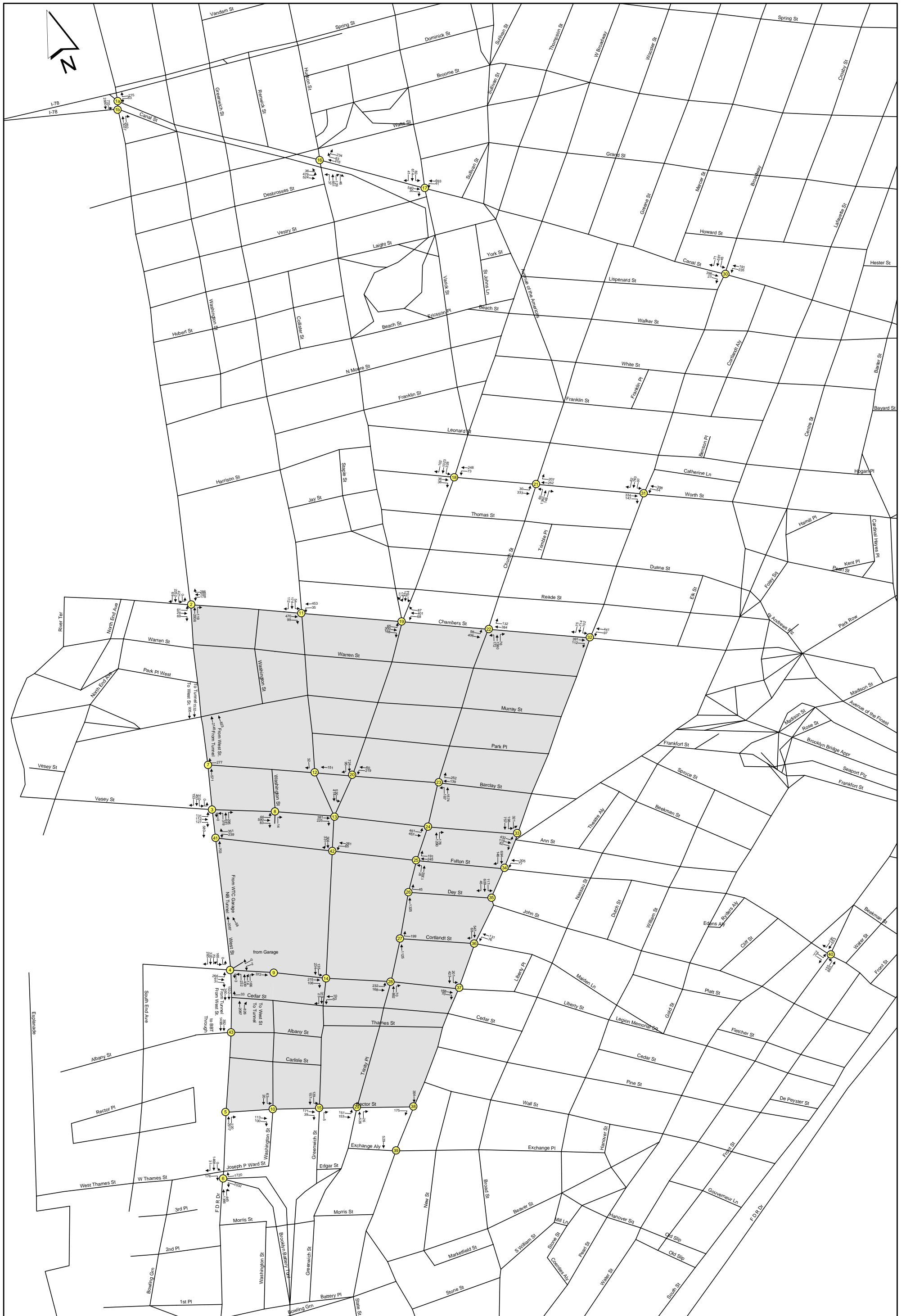
World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2015 Street Direction Changes
with Route 9A At-Grade
MD Peak Period



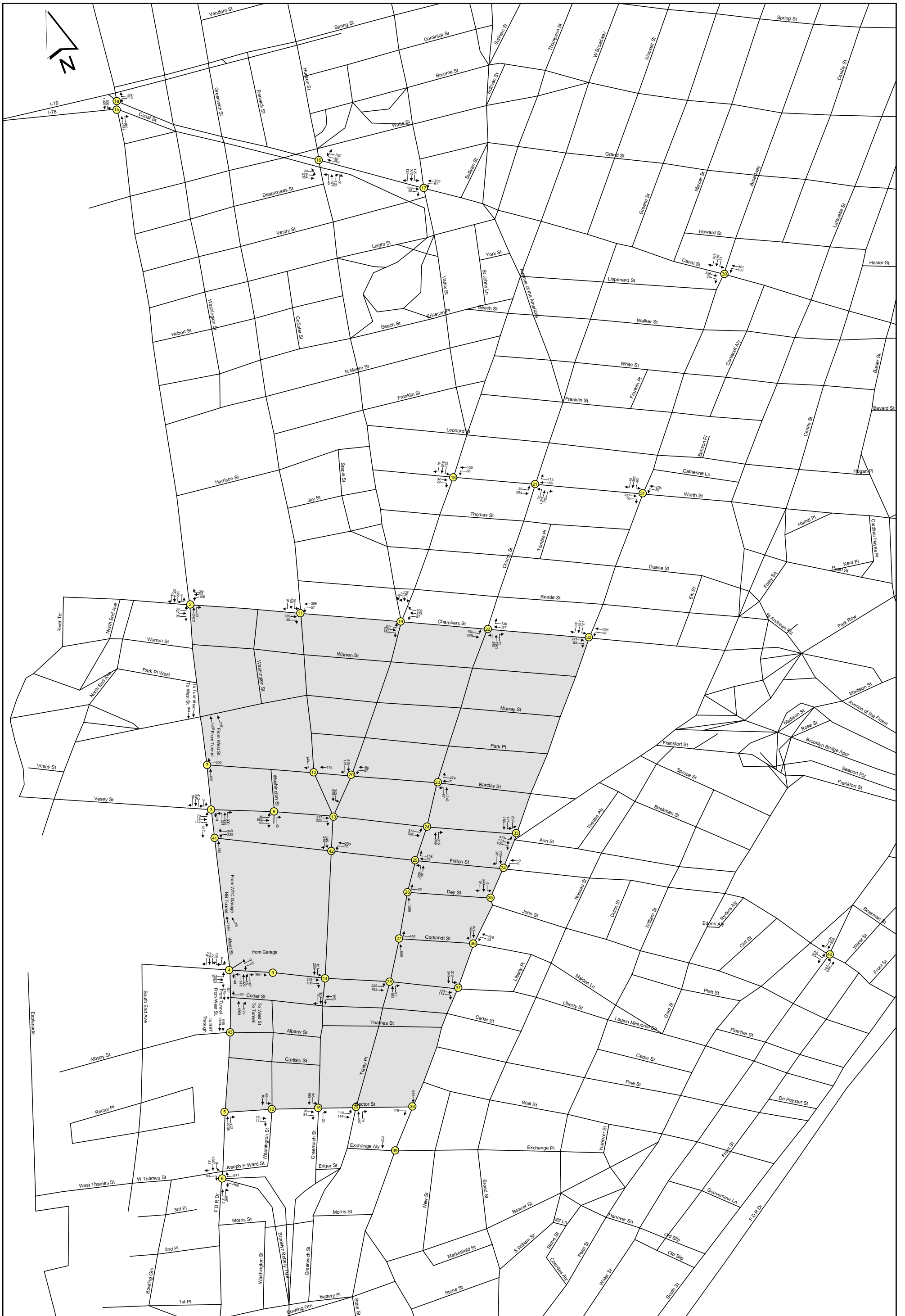
**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Street Direction Changes
with Route 9A At-Grade
PM Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
with Route 9A Short Bypass
AM Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
with Route 9A Short Bypass
MD Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
with Route 9A Short Bypass
PM Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Street Direction Changes
with Route 9A Short Bypass
AM Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Street Direction Changes
with Route 9A Short Bypass
MD Peak Period**



World Trade Center Memorial and Redevelopment Plan

**Traffic Volumes
2015 Street Direction Changes
with Route 9A Short Bypass
PM Peak Period**



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2009 Street Direction Changes
Alternative Trip Assumptions
with Route 9A At-Grade
AM Peak Period

Figure - E.1-85



**World Trade Center Memorial
and Redevelopment Plan**

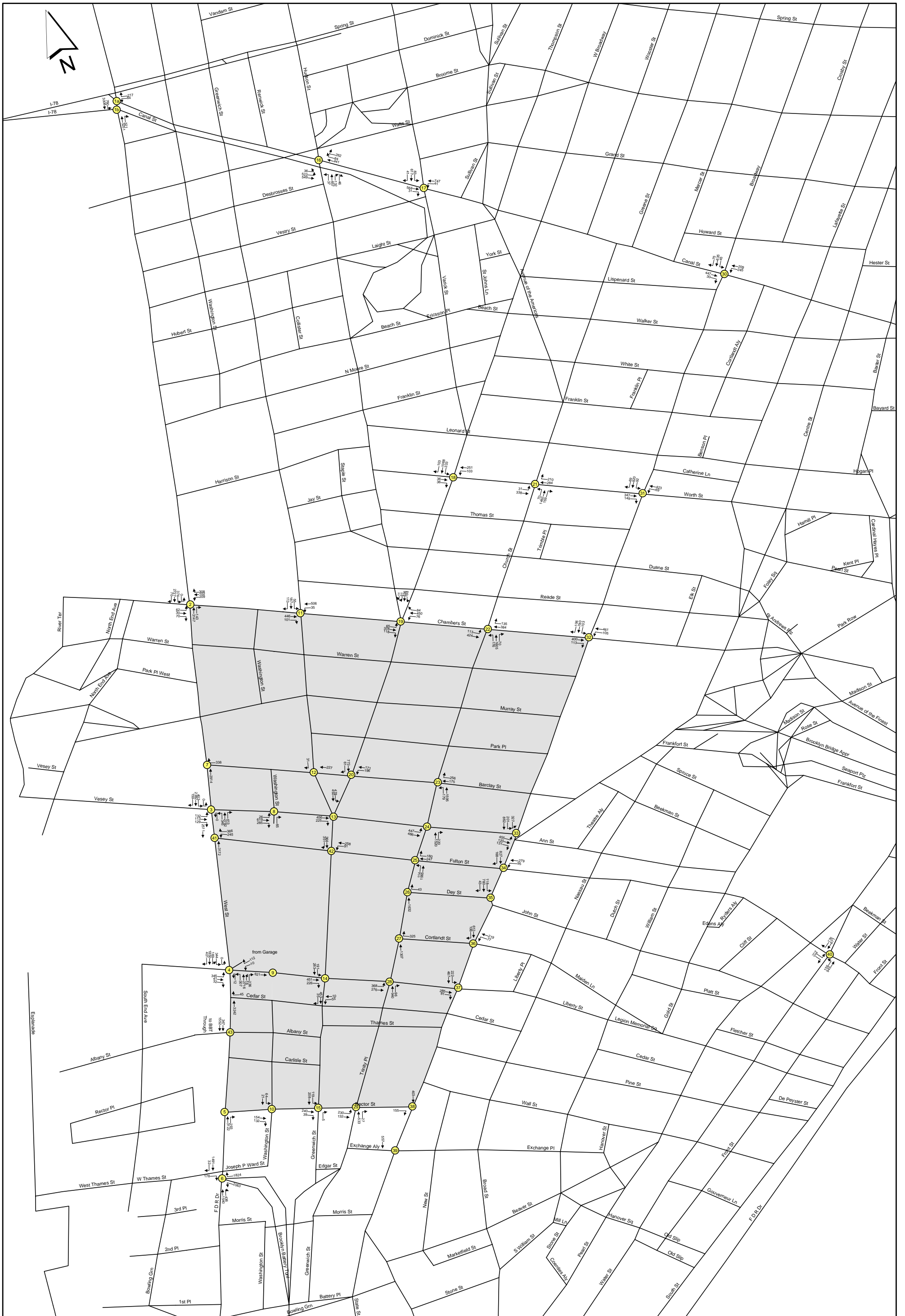
**Traffic Volumes
2009 Street Direction Changes
Alternative Trip Assumptions
with Route 9A At-Grade
MD Peak Period**

Figure - E.1-86



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
Alternative Trip Assumptions
with Route 9A At-Grade
PM Peak Period**



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Street Direction Changes
Alternative Trip Assumptions
with Route 9A At-Grade
AM Peak Period**

Figure - E.1-88



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Street Direction Changes
Alternative Trip Assumptions
with Route 9A At-Grade
MD Peak Period**



World Trade Center Memorial and Redevelopment Plan

**Traffic Volumes
2015 Street Direction Changes
Alternative Trip Assumptions
with Route 9A At-Grade
PM Peak Period**

Figure - E.1-90



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2009 Street Direction Changes
Alternative Trip Assumptions
with Route 9A Short Bypass
AM Peak Period

Figure - E.1-91



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
Alternative Trip Assumptions
with Route 9A Short Bypass
MD Peak Period**

Figure - E.1-92



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2009 Street Direction Changes
Alternative Trip Assumptions
with Route 9A Short Bypass
PM Peak Period**

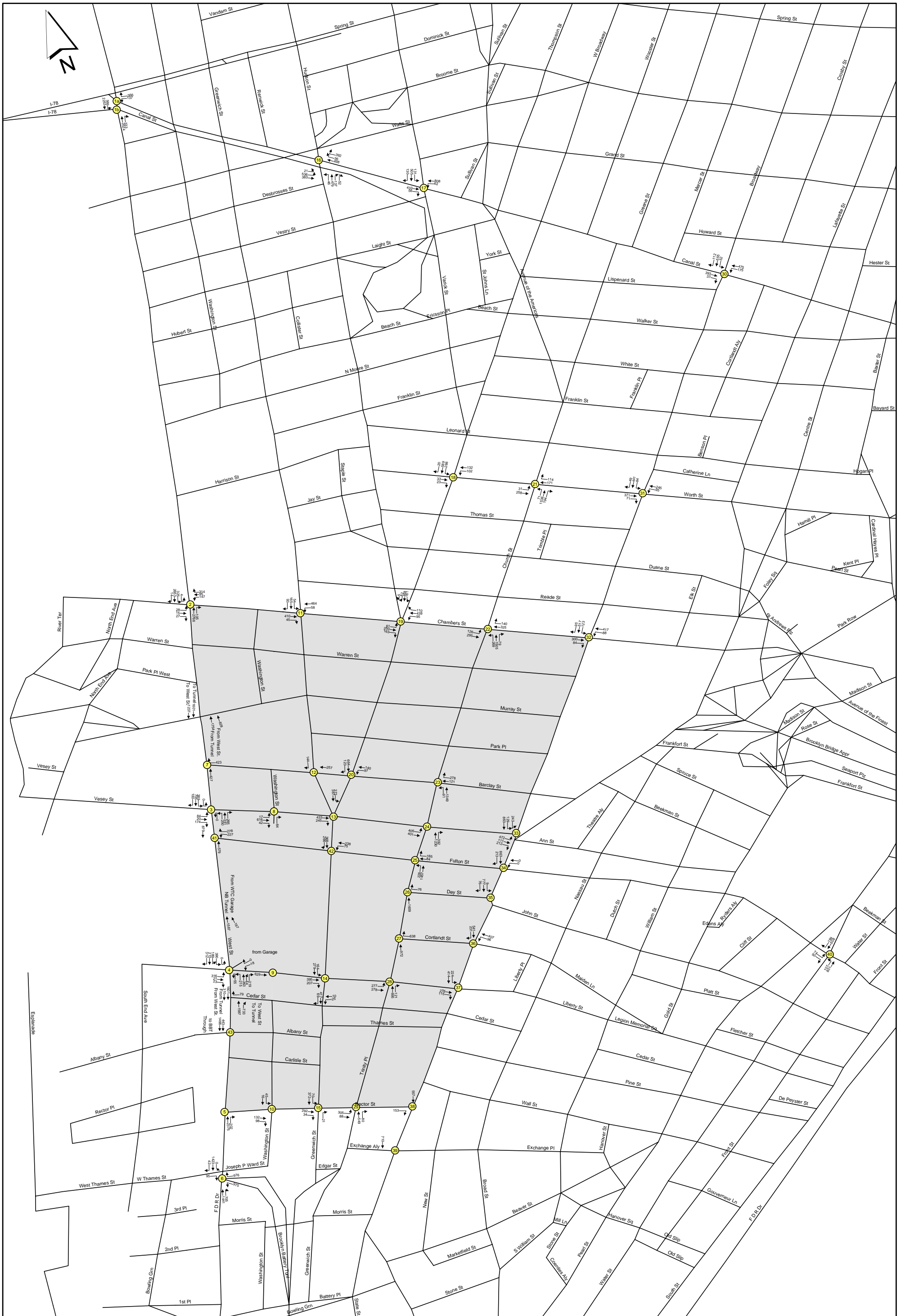
Figure - E.1-93



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
 2015 Street Direction Changes
 Alternative Trip Assumptions
 with Route 9A Short Bypass
 AM Peak Period

Figure - E.1-94



**World Trade Center Memorial
and Redevelopment Plan**

**Traffic Volumes
2015 Street Direction Changes
Alternative Trip Assumptions
with Route 9A Short Bypass
MD Peak Period**

Figure - E.1-95



World Trade Center Memorial and Redevelopment Plan

Traffic Volumes
2015 Street Direction Changes
Alternative Trip Assumptions
with Route 9A Short Bypass
PM Peak Period

Figure - E.1-96

Appendix E.1
Trip Generation

**Table E.1-1
Trip Generation Factors**

	Office Employees		Office Visitors		Retail Employees		Local Retail		Destination Retail		Hotel		Function Space Employees		Function Space		Performance		Memorial		Cultural Employees		Cultural		Restaurant Employees		Restaurant		Residential									
Daily Person Trip Generation Rate																																						
	12.0		6.0		10.0		21.7		21.7		12.8		10.0		27.2		4.0		based on attendance		10.0		based on peak hour attendance		10.0		48.9		8.0									
	employee trips per 1,000 sf		visitor trips per 1,000 sf		employee trips per 1,000 sf		trips per 1,000 sf		trips per 1,000 sf		trips per room		employee trips per 1,000 sf		trips per 1,000 sf						employee trips per 1,000 sf				employee trips per 1,000 sf		trips per 1,000 sf		trips per day									
Temporal Distribution																																						
	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out	%	% In/Out								
AM Peak Hour	14.7	96/4	14.7	96/4	14.7	96/4	18.2	50.5/49.5	18.2	50.5/49.5	6.6	39/61	14.7	96/4	14.7	90/10	0	—	6/0	14.7	96/4	—	—	14.7	96/4	0	100/100	9.1	20/80									
Midday Peak Hour	20.0	55/45	20.0	55/45	20.0	55/45	18.2	50.5/49.5	18.2	50.5/49.5	12.6	54/46	20.0	55/45	20.0	47/53	16.7	100/0	5/4.4	20.0	55/45	—	—	20.0	55/45	9.3	100/100	4.7	51/49									
PM Peak Hour	12.9	5/95	12.9	5/95	12.9	5/95	11.1	53.1/46.9	11.1	53.1/46.9	11.2	65/35	12.9	5/95	12.9	23/77	16.7	0/100	7.8/6.6	12.9	5/95	—	—	12.9	5/95	3.9	100/100	10.7	65/35									
% Modal Split																																						
	AM	MD	PM	All Peaks	AM	MD	PM	All Peaks	All Peaks	All Peaks	AM	MD	PM	All Peaks	All Peaks	All Peaks	AM	MD	PM	All Peaks	AM	MD	PM	All Peaks	AM	MD	PM	All Peaks	All Peaks									
Auto	3	2	3	3.5	3	2	3	3	5	4	3	2	3	7	15	6.3	3	2	3	6.3	3	2	3	6.3	3	2	3	17.4	7									
Taxi	2	2	2	3.5	2	2	2	2	4	6	2	2	2	6	9	16.3	2	2	2	16.3	2	2	2	6.4	2	2	2	6.4	4									
Subway	61	5.5	61	17.3	61	5.5	61	15	20	20	61	5.5	61	20	8	49.8	61	5.5	61	49.8	61	5.5	61	15.0	61	5.5	61	15.0	53									
Local Bus	2	2	2	0.5	2	2	2	5	5	10	2	2	2	5	34	1.0	2	2	2	1.0	2	2	2	3.4	2	2	2	3.4	2									
Express/Tour Bus	8	0	8	2.0	8	0	8	0	0	—	8	0	8	—	—	17.6	8	0	8	17.6	8	0	8	—	8	0	8	—	0									
PATH	18	1	18	5.0	18	1	18	3	3	1	18	1	18	5	5	5.1	18	1	18	5.1	18	1	18	5.0	18	1	18	5.0	1									
Ferry	4	0.5	4	0.5	4	0.5	4	2	2	0.5	4	0.5	4	5	5	2.9	4	0.5	4	2.9	4	0.5	4	5.0	4	0.5	4	5.0	1									
Walking/Other	2	87	2	67.7	2	87	2	70	61	58.5	2	87	2	52	24	1.0	2	87	2	1.0	2	87	2	47.8	2	87	2	47.8	32									
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100								
Average Vehicle Occupancy (AM & PM/Midday)																																						
Auto	1.6		1.25		1.6		1.6		1.6		1.37		1.6		2.3		3.5		2.9		1.6		2.9		1.6		2.2		1.22									
Taxi	1.4		1.4		1.2		1.2		1.2		1.8		1.4		1.8		2.4		2.2		1.4		2.2		1.4		2.3		1.4									
Trucks/Deliveries Trip Generation Rate																																						
	0.15		—		0.25		—		—		0.07		0.35		—		0.01		—		0.25		—		3.6		—		0.03									
Temporal Distribution																																						
	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM					
	9.6	11.0	1.0	9.7	10.4	7.6							14.1	9.9	0	7.9	14.7	1.1						11	1	1				25	25	25	9.7	7.8	5.1	9.7	7.9	6.1
Notes: sf = square foot; du = dwelling unit Sources: Office: New York Stock Exchange New Facility FEIS, December 2000; Localized Transit Trip Generation and Impact Analysis—World Trade Center and Battery Park City Area, December 1987; Battery Park City Final Fifth Supplemental EIS, November 2000. Retail: Retail and Industrial Zoning Text Amendments FGEIS, October 1996. Hotel: Battery Park City Fourth PDSFEIS, June 1996. Function Space: Coliseum Redevelopment FEIS, 1996. Performance Space: 42nd Street Development Project General Project Plan Amendment FSEIS, January 1994; surveys conducted by AKRF, Inc. at the New Amsterdam Theater and the Ford Center for the Performing Arts (1998). Memorial and Cultural: The Museum of Modern Art Expansion FEIS, October 2000; The American Museum of Natural History FEIS, September 1996; the Port Authority of New York and New Jersey (PANYNJ) Traffic Engineering. Restaurant: 42nd Street Redevelopment Project: General Project Plan Amendment FSEIS, January 1994. Residential: Battery Park City Fifth FSEIS, November 2000; Localized Transit Trip Generation and Impact Analysis—World Trade Center/Battery Park City Area, December 1987.																																						

Table E.1-2
Current Conditions - Projects in Construction or to be Complete by 2009
Summary of Trip Generation by Zone*

Peak Hour Person Trips

	<u>Auto</u>		<u>Taxi</u>		<u>Subway</u>		<u>Local Bus</u>		<u>Express/Tour Bus</u>		<u>PATH</u>		<u>Ferry</u>		<u>Walk/Other</u>		<u>Total</u>		<u>In+Out</u>
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	
North of WTC Site																			
Weekday AM Peak Hour	305	96	236	58	4,311	811	144	34	535	22	1,224	64	258	25	2,263	519	9,276	1,631	10,907
Weekday MD Peak Hour	202	170	191	159	872	744	116	96	46	38	167	138	40	34	5,771	4,748	7,407	6,127	13,534
Weekday PM Peak Hour	93	289	56	218	796	3,926	31	130	25	465	68	1,066	24	227	493	2,063	1,589	8,384	9,971
Saturday MD Peak Hour	55	53	52	51	155	148	33	31	8	8	36	34	12	11	1,136	1,106	1,485	1,442	2,925
Broadway Corridor																			
Weekday AM Peak Hour	2	10	1	6	19	75	1	3	0	0	0	1	0	1	12	45	35	141	176
Weekday MD Peak Hour	3	3	2	2	25	24	1	1	0	0	0	0	0	0	15	15	46	45	91
Weekday PM Peak Hour	9	5	5	3	71	38	3	1	0	0	1	1	1	1	45	23	135	72	207
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greenwich South Corridor																			
Weekday AM Peak Hour	8	32	5	19	62	246	2	9	0	0	1	5	1	5	37	148	116	464	580
Weekday MD Peak Hour	11	10	6	6	81	78	3	3	0	0	2	1	2	1	48	48	153	147	300
Weekday PM Peak Hour	31	17	18	10	235	127	9	5	0	0	4	2	4	2	142	76	443	239	682
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Battery Park City																			
Weekday AM Peak Hour	29	104	17	60	234	787	11	32	4	0	15	17	7	16	166	516	485	1,534	2,019
Weekday MD Peak Hour	37	35	21	21	268	257	14	13	0	0	7	7	6	6	235	223	591	563	1,153
Weekday PM Peak Hour	99	55	57	32	749	431	30	18	0	3	15	17	15	11	479	269	1,446	836	2,281
Saturday MD Peak Hour	9	7	6	5	40	34	14	12	0	0	8	6	5	4	204	177	284	246	531
Tribeca																			
Weekday AM Peak Hour	4	18	3	10	33	133	1	5	0	0	1	3	1	3	20	79	63	251	314
Weekday MD Peak Hour	6	6	3	3	44	42	2	2	0	0	1	1	1	1	26	24	83	79	162
Weekday PM Peak Hour	17	9	10	5	127	69	5	3	0	0	2	1	2	1	77	42	240	130	370
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chinatown																			
Weekday AM Peak Hour	4	16	2	9	30	120	1	5	0	0	1	2	1	2	18	73	57	227	284
Weekday MD Peak Hour	5	5	3	3	40	38	1	1	0	0	1	1	1	1	24	23	75	72	147
Weekday PM Peak Hour	15	8	9	5	115	62	4	2	0	0	2	1	2	1	70	38	217	117	334
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brooklyn Bridge to Battery Park																			
Weekday AM Peak Hour	35	127	20	72	279	957	14	40	4	0	16	20	7	19	197	620	574	1,857	2,431
Weekday MD Peak Hour	44	42	25	25	324	312	17	16	0	0	8	8	7	7	276	260	703	671	1,374
Weekday PM Peak Hour	120	66	69	39	910	520	36	21	0	4	18	18	18	12	580	324	1,753	1,004	2,757
Saturday MD Peak Hour	9	8	6	6	43	37	15	13	0	0	8	7	5	5	219	190	305	263	569
Total 2009																			
Weekday AM Peak Hour	387	403	284	234	4,968	3,129	174	128	543	22	1,258	112	275	71	2,713	2,000	10,606	6,105	16,711
Weekday MD Peak Hour	308	271	251	219	1,654	1,495	154	132	46	38	186	156	57	50	6,395	5,341	9,058	7,704	16,761
Weekday PM Peak Hour	384	449	224	312	3,003	5,173	118	180	25	472	110	1,106	66	255	1,886	2,835	5,823	10,782	16,602
Saturday MD Peak Hour	73	68	64	62	238	219	62	56	8	8	52	47	22	20	1,559	1,473	2,074	1,951	4,025

Notes:

* Based on Table 2-3, "Projects in Construction or to be Complete by 2009, Current Conditions Scenario." There are no projects in the WTC Site and Civic Center Area zones.

Table E.1-3

Current Conditions - Projects in Construction or to be Complete by 2009
Summary of Trip Generation by Zone*

	<u>Auto</u>		<u>Taxi</u>		<u>Deliveries (1)</u>		<u>Total</u>		<u>In+Out</u>	
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>		
Peak Hour Vehicle Trips										
North of WTC Site										
Weekday AM Peak Hour	213	77	168	42	55	55	435	173	609	
Weekday MD Peak Hour	145	122	136	114	65	65	341	296	636	
Weekday PM Peak Hour	75	205	40	156	9	9	123	369	491	
Saturday MD Peak Hour	34	33	36	35	5	5	70	68	138	
Broadway Corridor										
Weekday AM Peak Hour	2	8	1	4	0	0	3	12	15	
Weekday MD Peak Hour	3	3	1	1	0	0	4	4	8	
Weekday PM Peak Hour	8	4	4	2	0	0	12	6	18	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Greenwich South Corridor										
Weekday AM Peak Hour	7	27	3	13	1	1	11	41	52	
Weekday MD Peak Hour	9	8	4	4	1	1	14	13	27	
Weekday PM Peak Hour	25	14	13	7	1	1	39	22	61	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Battery Park City										
Weekday AM Peak Hour	23	85	12	43	5	5	40	133	173	
Weekday MD Peak Hour	29	28	16	15	4	4	49	46	95	
Weekday PM Peak Hour	81	45	41	24	3	3	125	71	195	
Saturday MD Peak Hour	3	3	3	3	0	0	6	6	13	
Tribeca										
Weekday AM Peak Hour	4	14	2	7	1	1	7	22	29	
Weekday MD Peak Hour	5	5	2	2	1	1	8	8	16	
Weekday PM Peak Hour	14	7	7	4	0	0	21	11	32	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Chinatown										
Weekday AM Peak Hour	3	13	2	6	1	1	6	20	26	
Weekday MD Peak Hour	4	4	2	2	0	0	6	6	12	
Weekday PM Peak Hour	12	7	6	3	0	0	18	10	28	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Brooklyn Bridge to Battery Park										
Weekday AM Peak Hour	28	103	15	52	5	5	48	160	208	
Weekday MD Peak Hour	36	33	19	18	5	5	60	56	115	
Weekday PM Peak Hour	99	55	50	28	4	4	153	86	239	
Saturday MD Peak Hour	4	3	4	3	0	0	8	6	15	
Total 2009										
Weekday AM Peak Hour	280	327	203	167	68	68	550	561	1,112	
Weekday MD Peak Hour	231	203	180	156	76	76	482	429	909	
Weekday PM Peak Hour	314	337	161	224	17	17	491	575	1,064	
Saturday MD Peak Hour	41	39	43	41	5	5	84	80	166	

Notes:

* Based on Table 2-3, "Projects in Construction or to be Complete by 2009, Current Conditions Scenario." There are no projects in the WTC Site and Civic Center Area zones.

Table E.1-4
Current Conditions - Projects in Construction or to be Complete by 2015
Summary of Trip Generation by Zone*

Peak Hour Person Trips

	<u>Auto</u>		<u>Taxi</u>		<u>Subway</u>		<u>Local Bus</u>		<u>Express/Tour Bus</u>		<u>PATH</u>		<u>Ferry</u>		<u>Walk/Other</u>		<u>Total</u>		<u>In+Out</u>
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	
North of WTC Site																			
Weekday AM Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weekday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weekday PM Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Broadway Corridor																			
Weekday AM Peak Hour	67	11	52	7	958	101	31	3	122	6	278	12	57	3	496	58	2,061	201	2,263
Weekday MD Peak Hour	42	35	41	33	169	143	25	20	11	9	37	31	8	6	1,288	1,056	1,622	1,333	2,955
Weekday PM Peak Hour	11	60	6	47	102	852	3	28	6	106	14	242	3	51	58	441	204	1,824	2,028
Saturday MD Peak Hour	10	10	10	10	25	25	4	4	2	2	6	6	1	1	209	209	268	268	536
Greenwich South Corridor																			
Weekday AM Peak Hour	159	30	123	19	2,287	279	74	10	289	12	660	30	138	8	1,181	162	4,914	551	5,465
Weekday MD Peak Hour	102	85	99	81	416	349	58	48	25	21	89	73	20	16	3,068	2,516	3,877	3,189	7,066
Weekday PM Peak Hour	30	146	19	112	280	2,041	10	67	13	252	33	575	9	121	161	1,059	555	4,371	4,926
Saturday MD Peak Hour	24	24	24	24	60	60	9	9	4	4	15	15	3	3	496	496	637	637	1,274
Battery Park City																			
Weekday AM Peak Hour	157	25	123	16	2,262	238	73	8	288	12	656	30	137	8	1,168	136	4,863	474	5,338
Weekday MD Peak Hour	100	83	98	80	401	334	58	48	25	20	88	72	19	16	3,039	2,492	3,828	3,145	6,972
Weekday PM Peak Hour	25	142	16	111	241	2,008	8	66	13	250	33	570	9	119	136	1,041	481	4,305	4,786
Saturday MD Peak Hour	24	24	24	24	59	59	9	9	4	4	15	15	3	3	493	493	633	633	1,265
Tribeca																			
Weekday AM Peak Hour	41	44	28	31	429	294	45	44	38	1	104	24	31	16	485	548	1,201	1,003	2,205
Weekday MD Peak Hour	40	37	34	31	202	188	54	50	1	0	25	21	15	14	856	771	1,223	1,112	2,337
Weekday PM Peak Hour	42	38	31	28	275	411	43	38	1	33	20	87	12	25	460	361	885	1,021	1,906
Saturday MD Peak Hour	70	60	52	45	341	289	117	100	0	0	63	54	42	35	1,695	1,466	2,382	2,051	4,433
Chinatown																			
Weekday AM Peak Hour	6	0	4	0	86	3	2	0	11	0	25	1	5	0	44	2	186	8	193
Weekday MD Peak Hour	4	3	4	3	13	11	2	2	1	1	3	3	0	0	117	96	144	118	263
Weekday PM Peak Hour	0	5	0	4	3	74	0	2	0	10	1	22	0	4	2	38	9	161	170
Saturday MD Peak Hour	1	1	1	1	2	2	0	0	0	0	0	0	0	0	20	20	24	24	49
Brooklyn Bridge to Battery Park																			
Weekday AM Peak Hour	192	66	149	40	2,705	540	90	23	335	14	765	40	160	14	1,414	336	5,812	1,074	6,887
Weekday MD Peak Hour	130	109	124	103	565	482	77	64	29	24	106	87	25	21	3,632	2,985	4,687	3,875	8,562
Weekday PM Peak Hour	64	185	41	140	539	2,479	25	85	16	291	44	667	15	141	349	1,316	1,094	5,302	6,396
Saturday MD Peak Hour	31	31	32	31	80	78	16	15	5	5	18	17	3	3	603	597	787	777	1,564
Total 2015																			
Weekday AM Peak Hour	622	176	479	113	8,727	1,455	315	88	1,083	45	2,488	137	528	49	4,788	1,242	19,037	3,311	22,351
Weekday MD Peak Hour	418	352	400	331	1,766	1,507	274	232	92	75	348	287	87	73	12,000	9,916	15,381	12,772	28,155
Weekday PM Peak Hour	172	576	113	442	1,440	7,865	89	286	49	942	145	2,163	48	461	1,166	4,256	3,228	16,984	20,212
Saturday MD Peak Hour	160	150	143	135	567	513	155	137	15	15	117	107	52	45	3,516	3,281	4,731	4,390	9,121

Notes:

* Based on Table 2-3, "Projects in Construction or to be Complete by 2009, Current Conditions Scenario." There are no projects in the WTC Site and Civic Center Area zones.

Table E.1-5

Current Conditions - Projects in Construction or to be Complete by 2015
Summary of Trip Generation by Zone*

Peak Hour Vehicle Trips	Auto		Taxi		Deliveries (1)		In	Total		
	In	Out	In	Out	In	Out		Out	In+Out	
North of WTC Site										
Weekday AM Peak Hour	0	0	0	0	0	0	0	0	0	
Weekday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Weekday PM Peak Hour	0	0	0	0	0	0	0	0	0	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Broadway Corridor										
Weekday AM Peak Hour	46	9	37	5	12	12	95	26	121	
Weekday MD Peak Hour	30	25	29	24	13	13	72	62	134	
Weekday PM Peak Hour	8	41	5	34	1	1	14	76	89	
Saturday MD Peak Hour	7	7	7	7	0	0	14	14	28	
Greenwich South Corridor										
Weekday AM Peak Hour	110	25	88	14	28	28	226	67	293	
Weekday MD Peak Hour	73	61	70	58	32	32	175	151	326	
Weekday PM Peak Hour	24	101	14	80	4	4	42	185	227	
Saturday MD Peak Hour	17	17	17	17	0	0	34	34	69	
Battery Park City										
Weekday AM Peak Hour	109	20	88	12	28	28	225	60	285	
Weekday MD Peak Hour	71	59	70	56	32	32	173	147	321	
Weekday PM Peak Hour	20	99	11	79	3	3	34	181	215	
Saturday MD Peak Hour	17	17	17	17	0	0	34	34	69	
Tribeca										
Weekday AM Peak Hour	26	33	21	22	10	10	57	65	122	
Weekday MD Peak Hour	27	25	25	23	10	10	61	58	119	
Weekday PM Peak Hour	31	27	21	21	6	6	59	54	113	
Saturday MD Peak Hour	33	28	34	29	0	0	67	57	124	
Chinatown										
Weekday AM Peak Hour	4	0	4	0	1	1	9	1	10	
Weekday MD Peak Hour	2	2	2	2	1	1	5	5	11	
Weekday PM Peak Hour	0	4	0	3	0	0	0	7	7	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	1	
Brooklyn Bridge to Battery Park										
Weekday AM Peak Hour	134	52	107	28	34	34	275	115	389	
Weekday MD Peak Hour	94	80	87	73	38	38	220	191	411	
Weekday PM Peak Hour	51	131	28	99	4	4	84	235	320	
Saturday MD Peak Hour	20	20	22	21	0	0	42	41	84	
Total 2015										
Weekday AM Peak Hour	429	139	345	81	113	113	887	334	1,220	
Weekday MD Peak Hour	297	252	283	236	126	126	706	614	1,322	
Weekday PM Peak Hour	134	403	79	316	18	18	233	738	971	
Saturday MD Peak Hour	94	89	97	91	0	0	191	180	375	

Notes:

* Based on Table 2-3, "Projects in Construction or to be Complete by 2009, Current Conditions Scenario." There are no projects in the WTC Site and Civic Center Area zones.

Table E.1-6
Pre-September 11 Conditions - Projects in Construction or to be Complete by 2009
Summary of Trip Generation by Zone*

Peak Hour Person Trips

	<u>Auto</u>		<u>Taxi</u>		<u>Subway</u>		<u>Local Bus</u>		<u>Express/Tour Bus</u>		<u>PATH</u>		<u>Ferry</u>		<u>Walk/Other</u>		<u>Total</u>		<u>In+Out</u>
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	
North of WTC Site																			
Weekday AM Peak Hour	121	44	93	27	1,699	360	59	15	210	9	479	25	101	10	904	241	3,664	734	4,396
Weekday MD Peak Hour	82	68	76	63	357	305	48	38	18	15	67	55	16	14	2,277	1,877	2,940	2,438	5,377
Weekday PM Peak Hour	42	116	26	88	352	1,557	14	53	9	181	28	419	10	90	225	824	706	3,327	4,033
Saturday MD Peak Hour	23	22	21	20	72	68	16	15	3	3	17	16	7	6	501	482	661	633	1,293
Broadway Corridor																			
Weekday AM Peak Hour	6	13	4	7	59	93	5	6	4	0	10	4	3	3	58	95	148	223	370
Weekday MD Peak Hour	7	6	4	4	39	37	5	5	0	0	3	2	2	1	92	87	151	142	292
Weekday PM Peak Hour	12	8	7	5	87	72	5	5	0	3	3	9	3	4	75	51	193	156	349
Saturday MD Peak Hour	8	7	6	5	37	32	13	11	0	0	7	6	5	4	187	162	261	225	485
Greenwich South Corridor																			
Weekday AM Peak Hour	4	16	2	9	30	119	1	5	0	0	1	2	1	2	17	73	56	226	282
Weekday MD Peak Hour	5	5	3	3	39	38	1	1	0	0	1	1	1	1	24	23	74	72	146
Weekday PM Peak Hour	15	8	9	5	114	61	4	2	0	0	2	1	2	1	69	38	215	116	331
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Battery Park City																			
Weekday AM Peak Hour	32	116	18	66	257	877	12	36	4	0	15	18	7	17	181	572	528	1,704	2,232
Weekday MD Peak Hour	41	39	24	23	297	286	15	14	0	0	7	7	6	6	254	241	647	617	1,263
Weekday PM Peak Hour	110	61	63	36	836	478	33	20	0	3	17	17	17	11	531	298	1,609	924	2,532
Saturday MD Peak Hour	9	7	6	5	40	34	14	12	0	0	8	6	5	4	204	177	284	246	531
Tribeca																			
Weekday AM Peak Hour	5	21	3	12	41	162	2	6	0	0	1	3	1	3	24	99	77	306	383
Weekday MD Peak Hour	7	7	4	4	53	51	2	2	0	0	1	1	1	1	33	31	101	97	198
Weekday PM Peak Hour	20	11	12	6	155	84	6	3	0	0	3	2	3	2	94	49	293	157	450
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chinatown																			
Weekday AM Peak Hour	7	29	4	17	55	222	2	8	0	0	1	4	1	4	35	134	105	418	523
Weekday MD Peak Hour	10	9	6	5	73	70	3	3	0	0	1	1	1	1	44	43	138	132	270
Weekday PM Peak Hour	28	15	16	9	212	114	8	4	0	0	4	2	4	2	128	69	400	215	615
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brooklyn Bridge to Battery Park																			
Weekday AM Peak Hour	176	37	42	25	1,717	283	45	11	251	2	629	11	262	7	446	184	3,568	560	4,129
Weekday MD Peak Hour	29	26	39	35	163	148	19	17	14	14	20	17	6	6	842	744	1,132	1,008	2,240
Weekday PM Peak Hour	34	167	20	39	271	1,645	11	44	2	230	11	577	6	243	173	434	530	3,381	3,911
Saturday MD Peak Hour	8	7	21	21	35	34	11	10	11	12	8	7	2	2	180	170	276	263	540
Total 2009																			
Weekday AM Peak Hour	351	276	166	163	3,858	2,116	126	87	469	11	1,136	67	376	46	1,665	1,398	8,146	4,171	12,315
Weekday MD Peak Hour	181	160	156	137	1,021	935	93	80	32	29	100	84	33	30	3,566	3,046	5,183	4,506	9,786
Weekday PM Peak Hour	261	386	153	188	2,027	4,011	81	131	11	417	68	1,027	45	353	1,295	1,763	3,946	8,276	12,221
Saturday MD Peak Hour	48	43	54	51	184	168	54	48	14	15	40	35	19	16	1,072	991	1,482	1,367	2,849

Notes:

* Based on Table 2-3, "Projects in Construction or to be Complete by 2009, Current Conditions Scenario." There are no projects in the WTC Site and Civic Center Area zones.

Table E.1-7

Pre-September 11 Conditions - Projects in Construction or to be Complete by 2009
Summary of Trip Generation by Zone*

<u>Peak Hour Vehicle Trips</u>	<u>Auto</u>		<u>Taxi</u>		<u>Deliveries (1)</u>		<u>Total</u>		<u>In+Out</u>	
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>		
North of WTC Site										
Weekday AM Peak Hour	85	35	68	18	22	22	174	75	249	
Weekday MD Peak Hour	58	49	54	45	24	24	136	118	254	
Weekday PM Peak Hour	34	83	18	62	3	3	56	148	205	
Saturday MD Peak Hour	15	14	15	15	0	0	30	29	60	
Broadway Corridor										
Weekday AM Peak Hour	4	10	3	5	1	1	8	16	23	
Weekday MD Peak Hour	4	4	3	2	1	1	7	7	15	
Weekday PM Peak Hour	10	7	5	4	1	1	16	11	26	
Saturday MD Peak Hour	3	3	3	3	0	0	6	6	13	
Greenwich South Corridor										
Weekday AM Peak Hour	3	13	2	6	1	1	6	20	26	
Weekday MD Peak Hour	4	4	2	2	0	0	6	6	12	
Weekday PM Peak Hour	12	7	6	3	0	0	18	10	28	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Battery Park City										
Weekday AM Peak Hour	25	95	14	48	5	5	44	148	192	
Weekday MD Peak Hour	32	31	17	17	4	4	53	51	104	
Weekday PM Peak Hour	91	50	46	26	4	4	141	79	219	
Saturday MD Peak Hour	3	3	3	3	0	0	6	6	13	
Tribeca										
Weekday AM Peak Hour	4	18	2	9	1	1	7	28	35	
Weekday MD Peak Hour	6	6	3	3	1	1	10	10	20	
Weekday PM Peak Hour	17	9	8	5	0	0	25	14	39	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Chinatown										
Weekday AM Peak Hour	6	24	3	12	1	1	10	37	47	
Weekday MD Peak Hour	8	8	4	4	1	1	13	13	26	
Weekday PM Peak Hour	23	12	11	6	1	1	35	19	54	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	0	
Brooklyn Bridge to Battery Park										
Weekday AM Peak Hour	129	28	37	17	6	6	173	51	225	
Weekday MD Peak Hour	21	19	26	23	6	6	54	49	104	
Weekday PM Peak Hour	27	127	14	35	1	1	42	164	207	
Saturday MD Peak Hour	5	5	14	14	0	0	19	19	38	
Total 2009										
Weekday AM Peak Hour	256	223	129	115	37	37	422	375	797	
Weekday MD Peak Hour	133	121	109	96	37	37	279	254	535	
Weekday PM Peak Hour	214	295	108	141	10	10	333	445	778	
Saturday MD Peak Hour	26	25	35	35	0	0	61	60	124	

Notes:

* Based on Table 2-3, "Projects in Construction or to be Complete by 2009, Current Conditions Scenario." There are no projects in the WTC Site and Civic Center Area zones.

Table E.1-8
Pre-September 11 Conditions - Projects in Construction or to be Complete by 2015
Summary of Trip Generation by Zone*

Peak Hour Person Trips

	<u>Auto</u>		<u>Taxi</u>		<u>Subway</u>		<u>Local Bus</u>		<u>Express/Tour Bus</u>		<u>PATH</u>		<u>Ferry</u>		<u>Walk/Other</u>		<u>Total</u>		<u>In+Out</u>	
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>		
North of WTC Site																				
Weekday AM Peak Hour	9	13	6	8	110	104	3	4	11	0	25	3	5	2	60	63	231	199	430	
Weekday MD Peak Hour	8	7	7	5	46	43	3	3	1	1	4	4	1	1	135	113	206	177	382	
Weekday PM Peak Hour	13	12	7	8	100	126	4	4	0	9	3	23	2	5	59	70	191	258	448	
Saturday MD Peak Hour	1	1	1	1	2	2	0	0	0	0	0	0	0	0	18	18	24	24	48	
Broadway Corridor																				
Weekday AM Peak Hour	67	11	52	7	958	101	31	3	122	6	278	12	57	3	496	58	2,061	201	2,263	
Weekday MD Peak Hour	42	35	41	33	169	143	25	20	11	9	37	31	8	6	1,288	1,056	1,622	1,333	2,955	
Weekday PM Peak Hour	11	60	6	47	102	852	3	28	6	106	14	242	3	51	58	441	204	1,824	2,028	
Saturday MD Peak Hour	10	10	10	10	25	25	4	4	2	2	6	6	1	1	209	209	268	268	536	
Greenwich South Corridor																				
Weekday AM Peak Hour	40	2	32	2	589	25	19	1	76	3	173	7	36	1	304	13	1,270	53	1,323	
Weekday MD Peak Hour	25	20	25	20	93	77	15	12	7	5	24	19	5	4	797	653	990	810	1,800	
Weekday PM Peak Hour	2	35	2	28	27	513	1	17	3	66	8	150	2	31	14	264	58	1,103	1,161	
Saturday MD Peak Hour	6	6	6	6	16	16	2	2	1	1	4	4	1	1	131	131	168	168	335	
Battery Park City																				
Weekday AM Peak Hour	157	25	123	16	2,262	238	73	8	288	12	656	30	137	8	1,168	136	4,863	474	5,338	
Weekday MD Peak Hour	100	83	98	80	401	334	58	48	25	20	88	72	19	16	3,039	2,492	3,828	3,145	6,972	
Weekday PM Peak Hour	25	142	16	111	241	2,008	8	66	13	250	33	570	9	119	136	1,041	481	4,305	4,786	
Saturday MD Peak Hour	24	24	24	24	59	59	9	9	4	4	15	15	3	3	493	493	633	633	1,265	
Tribeca																				
Weekday AM Peak Hour	41	44	28	31	429	294	45	44	38	1	104	24	31	16	485	548	1,201	1,003	2,205	
Weekday MD Peak Hour	40	37	34	31	202	188	54	50	1	0	25	21	15	14	856	771	1,223	1,112	2,337	
Weekday PM Peak Hour	42	38	31	28	275	411	43	38	1	33	20	87	12	25	460	361	885	1,021	1,906	
Saturday MD Peak Hour	70	60	52	45	341	289	117	100	0	0	63	54	42	35	1,695	1,466	2,382	2,051	4,433	
Chinatown																				
Weekday AM Peak Hour	6	0	4	0	86	3	2	0	11	0	25	1	5	0	44	2	186	8	193	
Weekday MD Peak Hour	4	3	4	3	13	11	2	2	1	1	3	3	0	0	117	96	144	118	263	
Weekday PM Peak Hour	0	5	0	4	3	74	0	2	0	10	1	22	0	4	2	38	9	161	170	
Saturday MD Peak Hour	1	1	1	1	2	2	0	0	0	0	0	0	0	0	20	20	24	24	49	
Brooklyn Bridge to Battery Park																				
Weekday AM Peak Hour	192	66	149	40	2,705	540	90	23	335	14	765	40	160	14	1,414	336	5,812	1,074	6,887	
Weekday MD Peak Hour	130	109	124	103	565	482	77	64	29	24	106	87	25	21	3,632	2,985	4,687	3,875	8,562	
Weekday PM Peak Hour	64	185	41	140	539	2,479	25	85	16	291	44	667	15	141	349	1,316	1,094	5,302	6,396	
Saturday MD Peak Hour	31	31	32	31	80	78	16	15	5	5	18	17	3	3	603	597	787	777	1,564	
Total 2015																				
Weekday AM Peak Hour	512	161	394	104	7,139	1,305	263	83	881	36	2,026	117	431	44	3,971	1,156	15,624	3,012	18,639	
Weekday MD Peak Hour	349	294	333	275	1,489	1,278	234	199	75	60	287	237	73	62	9,864	8,166	12,700	10,570	23,271	
Weekday PM Peak Hour	157	477	103	366	1,287	6,463	84	240	39	765	123	1,761	43	376	1,078	3,531	2,922	13,974	16,895	
Saturday MD Peak Hour	143	133	126	118	525	471	148	130	12	12	106	96	50	43	3,169	2,934	4,286	3,945	8,230	

Notes:

* Based on Table 2-3, "Projects in Construction or to be Complete by 2009, Current Conditions Scenario." There are no projects in the WTC Site and Civic Center Area zones.

Table E.1-9

Pre-September 11 Conditions - Projects in Construction or to be Complete by 2015
Summary of Trip Generation by Zone*

Peak Hour Vehicle Trips	Auto		Taxi		Deliveries (1)		In	Total		
	In	Out	In	Out	In	Out		Out	In+Out	
North of WTC Site										
Weekday AM Peak Hour	7	11	5	5	1	1	13	17	30	
Weekday MD Peak Hour	6	5	4	4	1	1	11	10	21	
Weekday PM Peak Hour	10	9	5	6	0	0	15	15	30	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	1	
Broadway Corridor										
Weekday AM Peak Hour	46	9	37	5	12	12	95	26	121	
Weekday MD Peak Hour	30	25	29	24	13	13	72	62	134	
Weekday PM Peak Hour	8	41	5	34	1	1	14	76	89	
Saturday MD Peak Hour	7	7	7	7	0	0	14	14	28	
Greenwich South Corridor										
Weekday AM Peak Hour	28	1	23	1	7	7	58	9	67	
Weekday MD Peak Hour	17	15	17	15	8	8	42	38	80	
Weekday PM Peak Hour	2	24	1	20	1	1	4	45	49	
Saturday MD Peak Hour	5	5	4	4	0	0	9	9	19	
Battery Park City										
Weekday AM Peak Hour	109	20	88	12	28	28	225	60	285	
Weekday MD Peak Hour	71	59	70	56	32	32	173	147	321	
Weekday PM Peak Hour	20	99	11	79	3	3	34	181	215	
Saturday MD Peak Hour	17	17	17	17	0	0	34	34	69	
Tribeca										
Weekday AM Peak Hour	26	33	21	22	10	10	57	65	122	
Weekday MD Peak Hour	27	25	25	23	10	10	61	58	119	
Weekday PM Peak Hour	31	27	21	21	6	6	59	54	113	
Saturday MD Peak Hour	33	28	34	29	0	0	67	57	124	
Chinatown										
Weekday AM Peak Hour	4	0	4	0	1	1	9	1	10	
Weekday MD Peak Hour	2	2	2	2	1	1	5	5	11	
Weekday PM Peak Hour	0	4	0	3	0	0	0	7	7	
Saturday MD Peak Hour	0	0	0	0	0	0	0	0	1	
Brooklyn Bridge to Battery Park										
Weekday AM Peak Hour	134	52	107	28	34	34	275	115	389	
Weekday MD Peak Hour	94	80	87	73	38	38	220	191	411	
Weekday PM Peak Hour	51	131	28	99	4	4	84	235	320	
Saturday MD Peak Hour	20	20	22	21	0	0	42	41	84	
Total 2015										
Weekday AM Peak Hour	354	126	285	73	93	93	732	293	1,024	
Weekday MD Peak Hour	247	211	234	197	103	103	584	511	1,097	
Weekday PM Peak Hour	122	335	71	262	15	15	210	613	823	
Saturday MD Peak Hour	82	77	84	78	0	0	166	155	326	

Notes:

* Based on Table 2-3, "Projects in Construction or to be Complete by 2009, Current Conditions Scenario." There are no projects in the WTC Site and Civic Center Area zones.

Table E.1-10
World Trade Center Memorial and Redevelopment Plan
Total Trip Generation - 2009
Peak Hour Person Trips by Use

	<u>Auto</u>		<u>Taxi</u>		<u>Subway</u>		<u>Local Bus</u>		<u>Express/Tour Bus</u>		<u>PATH</u>		<u>Ferry</u>		<u>Walk/Other</u>		<u>Total</u>		<u>In+Out</u>	
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>		
Office Uses																				
Weekday AM Peak Hour	209	9	165	7	3,067	128	99	4	396	17	903	38	187	8	1,578	66	6,604	275	6,880	
Weekday MD Peak Hour	129	105	129	105	486	397	77	63	34	28	120	98	26	21	4,148	3,393	5,148	4,212	9,360	
Weekday PM Peak Hour	10	182	8	143	140	2,663	5	86	18	344	41	784	9	163	72	1,371	302	5,735	6,037	
Retail Uses																				
Weekday AM Peak Hour	122	80	88	60	1,210	378	128	99	113	5	314	69	96	41	1,335	1,282	3,406	2,014	5,421	
Weekday MD Peak Hour	102	96	82	77	410	392	122	116	0	0	71	68	45	44	2,264	2,064	3,095	2,856	5,951	
Weekday PM Peak Hour	53	82	40	58	263	945	65	81	5	98	50	254	28	72	839	765	1,344	2,356	3,700	
Performance																				
Weekday AM Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weekday MD Peak Hour	220	0	132	0	118	0	500	0	0	0	73	0	73	0	353	0	1,470	0	1,470	
Weekday PM Peak Hour	0	220	0	132	0	118	0	500	0	0	0	73	0	73	0	353	0	1,470	1,470	
Memorial (with surge)																				
Weekday AM Peak Hour	165	0	427	0	1,304	0	26	0	306	0	134	0	76	0	26	0	2,464	0	2,464	
Weekday MD Peak Hour	137	121	355	314	1,085	958	22	19	1,262	497	111	98	63	56	22	19	3,057	2,083	5,140	
Weekday PM Peak Hour	215	181	557	467	1,703	1,427	34	29	344	765	174	146	99	83	34	29	3,162	3,127	6,288	
Cultural																				
Weekday AM Peak Hour	10	0	7	0	207	9	7	0	27	1	61	3	14	1	7	0	339	14	353	
Weekday MD Peak Hour	40	35	96	84	292	257	11	9	98	86	31	27	17	15	235	193	820	707	1,527	
Weekday PM Peak Hour	56	55	143	125	445	544	9	13	155	152	47	90	26	33	9	15	889	1,026	1,916	
Restaurant/Café																				
Weekday AM Peak Hour	1	0	1	0	26	1	1	0	3	0	8	0	2	0	1	0	42	2	44	
Weekday MD Peak Hour	24	24	9	9	22	22	5	5	0	0	7	7	7	7	94	89	169	163	333	
Weekday PM Peak Hour	10	11	4	4	10	31	2	3	0	3	3	9	3	4	27	28	59	94	153	
Total 2009																				
Weekday AM Peak Hour	508	89	688	67	5,813	516	261	103	846	22	1,419	110	375	50	2,947	1,348	12,856	2,306	15,161	
Weekday MD Peak Hour	653	382	803	589	2,412	2,026	737	213	1,394	612	414	298	232	143	7,115	5,758	13,760	10,021	23,781	
Weekday PM Peak Hour	344	731	751	931	2,561	5,728	115	711	523	1,362	316	1,358	165	428	982	2,560	5,756	13,807	19,564	

Table E.1-11
World Trade Center Memorial and Redevelopment Plan
Total Trip Generation - 2009
Peak Hour Vehicle Trips by Use

	<u>Auto</u>		<u>Taxi</u>		<u>Tour Bus</u>		<u>Deliveries (1)</u>		<u>Total</u>		<u>In+Out</u>
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	
Office Uses											
Weekday AM Peak Hour	145	6	118	5	N/A	N/A	37	37	300	48	348
Weekday MD Peak Hour	91	74	92	75	N/A	N/A	43	43	226	192	418
Weekday PM Peak Hour	7	126	5	102	N/A	N/A	4	4	16	232	249
Retail Uses											
Weekday AM Peak Hour	76	51	73	50	N/A	N/A	24	24	174	125	299
Weekday MD Peak Hour	64	61	68	64	N/A	N/A	26	26	158	151	309
Weekday PM Peak Hour	34	51	33	49	N/A	N/A	19	19	86	119	205
Performance											
Weekday AM Peak Hour	0	0	0	0	N/A	N/A	0	0	0	0	0
Weekday MD Peak Hour	63	0	55	0	N/A	N/A	1	1	119	1	120
Weekday PM Peak Hour	0	63	0	55	N/A	N/A	0	0	0	118	118
Memorial (with surge)											
Weekday AM Peak Hour	57	0	194	0	9	0	1	1	261	1	262
Weekday MD Peak Hour	47	42	161	143	38	15	1	1	248	201	448
Weekday PM Peak Hour	74	62	253	212	10	23	1	1	339	299	637
Cultural											
Weekday AM Peak Hour	6	0	5	0	0	0	2	2	13	2	15
Weekday MD Peak Hour	15	14	45	39	3	3	2	2	65	58	123
Weekday PM Peak Hour	19	22	65	58	5	4	2	2	91	86	177
Restaurant/Café											
Weekday AM Peak Hour	1	0	1	0	N/A	N/A	10	10	12	11	23
Weekday MD Peak Hour	11	11	4	4	N/A	N/A	8	8	24	24	48
Weekday PM Peak Hour	5	6	2	2	N/A	N/A	6	6	13	14	27
Total 2009											
Weekday AM Peak Hour	285	57	391	55	9	0	75	75	760	187	947
Weekday MD Peak Hour	291	202	426	325	41	18	81	81	840	627	1,466
Weekday PM Peak Hour	139	330	358	479	15	27	32	32	545	868	1,413
Total 2009 - With Adjusted Taxi Trips											
Weekday AM Peak Hour	285	57	403	403	9	0	75	75	772	535	1,307
Weekday MD Peak Hour	291	202	475	475	41	18	81	81	889	776	1,665
Weekday PM Peak Hour	139	330	567	567	15	27	32	32	753	956	1,709

Table E.1-12
World Trade Center Memorial and Redevelopment Plan
Total Trip Generation - 2015
Peak Hour Person Trips by Use

	<u>Auto</u>		<u>Taxi</u>		<u>Subway</u>		<u>Local Bus</u>		<u>Express/Tour Bus</u>		<u>PATH</u>		<u>Ferry</u>		<u>Walk/Other</u>		<u>Total</u>		<u>In+Out</u>
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	
Office 2015																			
Weekday AM Peak Hour	595	25	470	20	8,728	364	282	12	1,128	47	2,569	107	533	22	4,493	187	18,797	783	19,580
Weekday MD Peak Hour	366	300	366	300	1,382	1,131	220	180	98	80	342	280	73	60	11,805	9,658	14,652	11,988	26,640
Weekday PM Peak Hour	27	517	21	408	399	7,580	13	245	52	979	117	2,231	24	463	205	3,901	859	16,324	17,183
Hotel 2015																			
Weekday AM Peak Hour	11	17	16	25	53	83	26	41	0	0	3	4	1	2	155	242	264	413	678
Weekday MD Peak Hour	28	24	42	36	140	119	70	60	0	0	7	6	3	3	409	348	699	595	1,294
Weekday PM Peak Hour	30	16	45	24	150	81	75	40	0	0	7	4	4	2	437	235	748	403	1,150
Function Space 2015																			
Weekday AM Peak Hour	29	3	24	3	158	12	21	2	11	0	43	3	24	2	190	21	500	46	546
Weekday MD Peak Hour	20	22	18	19	57	63	15	16	0	0	14	15	13	15	228	228	365	378	743
Weekday PM Peak Hour	6	23	5	19	20	129	4	16	1	10	5	36	4	18	42	143	87	392	479
Memorial 2015																			
Weekday AM Peak Hour	104	0	269	0	822	0	16	0	264	0	84	0	48	0	16	0	1,624	0	1,624
Weekday MD Peak Hour	86	76	224	198	684	604	14	12	1,089	429	70	62	40	35	14	12	2,220	1,428	3,648
Weekday PM Peak Hour	136	114	351	294	1,073	899	22	18	297	660	110	92	62	52	22	18	2,072	2,148	4,220
Total 2009 to 2015																			
Weekday AM Peak Hour	739	44	779	47	9,761	458	346	55	1,403	47	2,699	114	605	26	4,853	450	21,185	1,242	22,428
Weekday MD Peak Hour	501	422	649	552	2,263	1,916	318	268	1,187	509	433	363	130	113	12,455	10,247	17,936	14,389	32,325
Weekday PM Peak Hour	199	669	422	745	1,641	8,688	113	319	349	1,649	240	2,363	95	535	706	4,298	3,766	19,266	23,032
Total 2009 (adjusted to remove Memorial surge condition)																			
Weekday AM Peak Hour	343	89	261	67	4,509	516	235	103	540	22	1,285	110	299	50	2,921	1,348	10,392	2,306	12,697
Weekday MD Peak Hour	516	261	448	276	1,327	1,068	715	193	132	115	303	200	169	87	7,093	5,739	10,702	7,939	18,640
Weekday PM Peak Hour	128	550	194	464	858	4,301	81	683	178	597	142	1,212	66	345	948	2,531	2,594	10,680	13,275
Total 2015																			
Weekday AM Peak Hour	1,082	133	1,040	114	14,270	973	580	159	1,943	70	3,984	224	904	76	7,774	1,798	31,577	3,548	35,125
Weekday MD Peak Hour	1,016	683	1,098	828	3,589	2,984	1,033	461	1,319	623	735	563	299	200	19,548	15,986	28,638	22,327	50,965
Weekday PM Peak Hour	327	1,219	616	1,209	2,499	12,989	194	1,002	528	2,247	382	3,574	160	880	1,654	6,829	6,360	29,947	36,307

Table E.1-13
World Trade Center Memorial and Redevelopment Plan
Total Trip Generation - 2015
Peak Hour Vehicle Trips by Use

	<u>Auto</u>		<u>Taxi</u>		<u>Tour Bus</u>		<u>Deliveries (1)</u>		<u>Total</u>		<u>In+Out</u>
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	
Office 2015											
Weekday AM Peak Hour	410	17	336	14	N/A	N/A	107	107	853	138	991
Weekday MD Peak Hour	259	212	262	214	N/A	N/A	122	122	643	548	1,191
Weekday PM Peak Hour	19	356	15	291	N/A	N/A	11	11	45	658	704
Hotel 2015											
Weekday AM Peak Hour	8	12	9	14	N/A	N/A	4	4	20	30	50
Weekday MD Peak Hour	20	17	23	20	N/A	N/A	3	3	46	40	86
Weekday PM Peak Hour	22	12	25	13	N/A	N/A	0	0	47	25	72
Function Space 2015											
Weekday AM Peak Hour	14	1	14	1	N/A	N/A	1	1	29	4	33
Weekday MD Peak Hour	9	10	10	11	N/A	N/A	3	3	22	23	45
Weekday PM Peak Hour	3	11	3	11	N/A	N/A	0	0	6	21	27
Memorial 2015											
Weekday AM Peak Hour	36	0	122	0	8	0	1	1	167	1	168
Weekday MD Peak Hour	30	26	102	90	33	13	1	1	166	130	296
Weekday PM Peak Hour	46	39	160	134	9	20	1	1	216	194	409
Total 2009 to 2015											
Weekday AM Peak Hour	467	30	481	29	8	0	113	113	1,069	173	1,242
Weekday MD Peak Hour	319	265	397	335	33	13	128	128	877	741	1,618
Weekday PM Peak Hour	89	417	203	449	9	20	12	12	313	899	1,212
Total 2009 (adjusted to remove Memorial Surge condition)											
Weekday AM Peak Hour	228	57	197	55	0	0	74	74	499	186	684
Weekday MD Peak Hour	244	160	265	183	3	3	80	80	592	426	1,018
Weekday PM Peak Hour	65	268	105	267	5	4	31	31	206	569	776
Total 2015											
Weekday AM Peak Hour	695	87	677	84	8	0	187	187	1,568	359	1,926
Weekday MD Peak Hour	563	425	661	517	36	16	209	209	1,469	1,167	2,636
Weekday PM Peak Hour	154	685	308	716	14	24	43	43	519	1,468	1,988
Total 2015 - With Adjusted Taxi Trips											
Weekday AM Peak Hour	695	87	697	697	8	0	187	187	1,587	971	2,559
Weekday MD Peak Hour	563	425	725	725	36	16	209	209	1,532	1,375	2,907
Weekday PM Peak Hour	154	685	798	798	14	24	43	43	1,009	1,550	2,559

World Trade Center Memorial and Redevelopment Plan EIS

Appendix E.2 Traffic Impact Analyses

March 2004

Eng-Wong, Taub & Associates

Appendix E.2 Traffic Impact Analyses

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**TABLE E.2-1
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
CURRENT 2003 CONDITIONS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.62	2.2	A	T	0.43	1.6	A	T	0.60	2.3	A
	SB	T	0.54	1.7	A	T	0.37	1.4	A	T	0.64	2.4	A
Canal Street	WB	L	0.18	42.9	D	L	0.32	43.9	D	L	0.18	39.5	D
	LR		0.43	49.4	D	LR	0.79	65.6	E	LR	0.35	42.9	D
	R		0.50	52.1	D	R	0.59	54.2	D	R	0.39	44.8	D
Overall Intersection	-		0.60	4.1	A	-	0.50	7.8	A	-	0.58	4.2	A
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	0.85	17.2	B	TR	0.56	11.5	B	TR	0.77	14.7	B
	R		0.39	11.0	B	R	0.39	11.1	B	R	0.21	9.0	A
	SB	L	0.97	77.3	E	L	0.96	55.3	E	L	0.96	56.5	E
	T		0.93	10.2	B	T	0.91	10.7	B	T	0.94	10.4	B
Overall Intersection	-		0.90	22.1	C	-	0.73	17.4	B	-	0.85	16.7	B
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	0.88	23.4	C	TR	0.62	16.3	B	TR	0.72	18.1	B
	SB	L	0.68	13.6	B	L	0.64	11.1	B	L	0.80	17.2	B
	TR		0.59	15.8	B	TR	0.51	14.7	B	TR	0.79	19.7	B
Chambers Street	EB	LTR	0.60	46.1	D	LTR	0.32	38.4	D	LTR	0.27	37.3	D
	WB	LT	0.69	50.6	D	LT	0.46	41.1	D	LT	0.68	51.6	D
	R		0.41	25.4	C	R	0.45	26.6	C	R	0.64	31.7	C
Overall Intersection	-		0.85	22.5	C	-	0.63	17.4	B	-	0.79	21.1	C
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	TR	0.95	118.6	F	TR	0.94	33.5	C	TR	0.99	45.2	D
	SB	L	0.07	7.8	A	L	0.08	6.0	A	L	0.02	6.6	A
	TR		1.01	40.7	D	TR	0.99	34.1	C	TR	0.99	47.5	D
Vesey Street	EB	LR	1.00	104.0	F	LR	0.90	74.4	E	LR	0.89	69.1	E
	WB	TR	0.03	32.8	C	TR	0.03	32.8	C	TR	0.01	32.4	C
Overall Intersection	-		1.04	83.0	F	-	0.99	36.2	D	-	0.99	47.8	D
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.95	118.9	F	L	0.87	88.0	F	L	0.99	117.6	F
	TR		0.86	16.6	B	TR	0.63	11.3	B	TR	0.68	12.1	B
	SB	TR	0.78	14.3	B	TR	0.68	12.1	B	TR	1.03	61.8	E
Liberty Street	EB	L	0.56	44.1	D	L	0.41	39.9	D	L	0.39	39.4	D
	R		0.13	35.1	D	R	0.09	34.4	C	R	0.22	36.9	D
Overall Intersection	-		0.79	21.7	C	-	0.63	16.9	B	-	0.85	43.7	D
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	TR	0.92	54.3	D	TR	0.86	49.2	D	TR	0.89	52.2	D
	SB	LTR	0.88	32.5	C	LTR	0.85	30.1	C	LTR	0.95	51.1	D
Albany Street	EB	LTR	0.68	46.5	D	LTR	0.24	32.6	C	LTR	0.42	36.9	D
Overall Intersection	-		0.84	45.5	D	-	0.66	40.0	D	-	0.78	51.2	D
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.00	120.0+	F*	T	0.95	110.3	F	TR	1.01	95.1	F
	R		1.04	95.2	F	R	1.01	60.6	E	R	1.03	92.2	F
	SB	TR	0.97	52.8	D	TR	0.87	46.0	D	TR	0.98	70.3	E
Brooklyn Battery Tunnel	EB	R	0.61	25.9	C	R	0.20	22.0	A	R	0.17	13.5	B
	WB	L	1.04	120.0+	F*	L	0.99	120.0+	F*	L	1.03	120.0+	F*
	R		1.02	120.0+	F*	R	0.95	120.0+	F*	R	0.87	120.0+	F*
Overall Intersection	-		1.04	120.0+	F*	-	1.01	105.6	F	-	1.03	110.7	F
WASHINGTON STREET CORRIDOR													
8 Washington Street at Vesey Street			CLOSED FOR CONSTRUCTION				CLOSED FOR CONSTRUCTION				CLOSED FOR CONSTRUCTION		
9 Washington Street at Liberty Street			CLOSED FOR CONSTRUCTION				CLOSED FOR CONSTRUCTION				CLOSED FOR CONSTRUCTION		

**TABLE E.2-1
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
CURRENT 2003 CONDITIONS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)					Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)					
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control		LOS	
			Delay	LOS				Delay	LOS			Delay	LOS		
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.21	14.5	B	LTR	0.19	14.3	B	LTR	0.17	14.2	B		
Chambers Street	EB	TR	0.40	16.7	B	TR	0.32	15.7	B	TR	0.38	16.4	B		
	WB	LT	0.60	21.3	C	LT	0.56	20.5	C	LT	0.66	22.6	C		
Overall Intersection	-		0.40	17.9	B	-	0.37	17.2	B	-	0.41	18.5	B		
14 Greenwich Street at Liberty Street															
			CLOSED FOR CONSTRUCTION					CLOSED FOR CONSTRUCTION					CLOSED FOR CONSTRUCTION		
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.02	17.6	B	R	0.08	18.5	B	R	0.08	18.5	B		
	SB	LT	0.02	17.7	B	LT	0.17	20.3	C	LT	0.04	17.9	B		
Rector Street	EB	TR	0.30	11.9	B	TR	0.69	33.1	C	TR	0.19	10.6	B		
Overall Intersection	-		0.19	12.3	B	-	0.48	28.9	C	-	0.15	12.5	B		
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.83	40.9	D	LTR	0.63	33.6	C	LTR	0.87	43.5	D		
	R		0.53	35.3	D	R	0.52	34.9	C	R	0.70	41.1	D		
Canal Street	EB	L	1.03	63.0	E	L	1.02	59.7	E	L	0.63	32.2	C		
		LT	0.99	47.6	D	LT	0.87	31.2	C	T	0.81	25.7	C		
	WB	T	0.95	60.1	E	T	0.97	62.6	E	T	0.46	27.3	C		
		R	0.85	33.2	C	R	0.89	37.1	D	R	1.00	52.0	D		
Overall Intersection	-		0.97	48.6	D	-	0.92	45.4	D	-	0.97	40.0	D		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.20	23.1	C	L	0.32	25.1	C	L	0.71	42.6	D		
		T	0.64	29.0	C	T	0.54	27.2	C	T	0.46	25.9	C		
		R	0.11	22.0	C	R	0.36	26.0	C	R	0.11	22.0	C		
Canal Street	EB	TR	0.42	10.1	B	TR	0.29	8.7	A	TR	0.28	8.7	A		
	WB	LT	0.88	43.1	D	LT	0.98	43.9	D	LT	1.00	103.7	F		
Overall Intersection	-		0.50	27.4	C	-	0.83	28.9	C	-	0.43	58.2	E		
WEST BROADWAY CORRIDOR															
18 West Broadway at Worth Street															
West Broadway	SB	LTR	0.90	25.5	C	LTR	0.56	13.8	B	LTR	0.62	15.0	B		
Worth Street	EB	TR	0.21	20.9	C	TR	0.15	19.9	B	TR	0.27	23.0	C		
	WB	LT	0.85	46.8	D	LT	0.48	25.9	C	LT	0.76	35.9	D		
Overall Intersection	-		0.88	28.9	C	-	0.53	16.3	B	-	0.68	21.1	C		
19 West Broadway at Chambers Street															
West Broadway	SB	L	0.37	17.3	B	L	0.31	16.4	B	L	0.26	15.6	B		
		TR	0.49	18.1	B	TR	0.38	16.5	B	TR	0.40	16.7	B		
Chambers Street	EB	L	0.34	19.3	B	LTR	0.92	49.3	D	L	0.32	19.0	B		
		TR	0.72	27.4	C	-	-	-	-	TR	0.72	28.9	C		
	WB	LTR	0.60	21.5	C	LTR	0.64	23.0	C	LTR	0.66	22.9	C		
Overall Intersection	-		0.61	21.1	C	-	0.65	27.5	C	-	0.56	21.6	C		
20 West Broadway at Barclay Street															
			CLOSED FOR CONSTRUCTION					CLOSED FOR CONSTRUCTION					CLOSED FOR CONSTRUCTION		
13 West Broadway at Vesey Street															
			CLOSED FOR CONSTRUCTION					CLOSED FOR CONSTRUCTION					CLOSED FOR CONSTRUCTION		

**TABLE E.2-1
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
CURRENT 2003 CONDITIONS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR													
21 Church Street at Worth Street													
Church Street	NB	LTR	1.05	57.7	E	LTR	0.98	54.3	E	LTR	0.98	54.8	D
Worth Street	EB	LT	0.93	55.4	E	LT	0.79	40.0	E	LT	0.58	30.3	C
	WB	TR	0.84	39.9	D	TR	0.73	37.0	D	TR	0.77	35.9	D
Overall Intersection	-		1.00	53.7	D	-	0.91	49.4	D	-	0.90	48.1	D
22 Church Street at Chambers Street													
Church Street	NB	LTR	0.83	25.8	C	LTR	0.73	22.2	C	LTR	0.82	25.4	C
Chambers Street	EB	LT	0.97	77.2	E	LT	0.95	55.3	E	LT	0.94	49.8	D
	WB	TR	0.73	25.9	C	TR	0.66	23.0	C	TR	0.60	21.2	C
Overall Intersection	-		0.90	36.7	D	-	0.84	29.2	C	-	0.88	29.8	C
23 Church Street at Barclay Street													
Church Street	NB	T	0.63	14.7	B	T	0.53	13.1	B	T	0.46	12.2	B
Barclay Street	EB	L	0.48	26.7	C	L	0.44	25.8	C	L	0.45	25.6	C
	WB	R	0.85	41.0	D	R	0.59	27.8	C	R	0.66	29.8	C
Overall Intersection	-		0.71	22.6	C	-	0.55	17.8	B	-	0.54	18.5	B
24 Church Street at Vesey Street													
Church Street	NB	LT	0.84	16.6	B	LT	0.63	10.1	B	LT	0.60	9.6	A
		R	0.34	8.9	A	R	0.65	16.4	B	R	0.23	6.8	A
Vesey Street	EB	LT	0.03	19.0	B	LT	0.00	18.7	B	LT	0.02	18.9	B
Overall Intersection	-		0.53	15.9	B	-	0.40	11.5	B	-	0.38	9.4	A
25 Church Street at Fulton Street													
Church Street	NB	T	0.48	12.4	B	T	0.50	12.7	B	T	0.34	10.9	B
Fulton Street	WB	R	0.42	23.6	C	R	0.60	32.0	C	R	0.45	24.1	C
Overall Intersection	-		0.46	14.7	B	-	0.54	15.7	B	-	0.38	14.5	B
26 Church Street at Dey Street													
Church Street	NB	T	0.40	7.3	A	T	0.40	7.4	A	T	0.28	6.4	A
Dey Street	WB	R	0.23	28.2	C	R	0.40	32.6	C	R	0.23	28.2	C
Overall Intersection	-		0.35	8.4	A	-	0.40	9.6	A	-	0.26	7.8	A
27 Church Street at Cortlandt Street													
Church Street	NB	T	0.40	7.7	A	T	0.30	7.0	A	T	0.22	6.5	A
Cortlandt Street	WB	R	0.29	21.9	C	R	0.74	35.9	D	R	0.40	24.1	C
Overall Intersection	-		0.35	9.5	A	-	0.47	16.6	B	-	0.30	11.0	B
28 Church Street at Liberty Street													
Church Street	NB	T	0.55	9.5	A	T	0.46	8.5	A	T	0.32	7.2	A
		R	0.14	6.5	A	R	0.20	7.1	A	R	0.10	6.2	A
Liberty Street	EB	LT	0.06	18.6	B	LT	0.02	18.2	B	LT	0.00	18.1	B
Overall Intersection	-		0.36	9.8	A	-	0.29	8.6	A	-	0.19	7.2	A
29 Trinity Street at Rector Street													
Trinity Street	NB	TR	0.33	11.1	B	TR	0.51	13.4	B	TR	0.29	10.6	B
Rector Street	EB	LT	0.28	21.4	C	LT	0.24	20.8	C	LT	0.26	21.1	C
Overall Intersection	-		0.31	13.9	B	-	0.40	14.8	B	-	0.28	13.4	B

**TABLE E.2-1
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
CURRENT 2003 CONDITIONS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.36	19.1	B	LTR	0.47	20.7	C	LTR	0.58	22.2	C
Canal Street	EB	TR	0.43	18.8	B	TR	0.38	18.1	B	TR	0.88	34.2	C
	WB	DefL	0.62	24.8	C	LT	0.59	11.2	B	DefL	0.95	66.5	E
	T		0.30	8.4	A	-	-	-	-	T	0.63	14.5	B
Overall Intersection	-		0.60	18.5	B	-	0.58	16.3	B	-	0.82	31.3	C
31 Broadway at Worth Street													
Broadway	SB	LTR	0.78	45.3	D	LTR	0.62	46.6	D	LTR	0.80	50.5	D
Worth Street	EB	TR	0.91	69.9	E	TR	0.80	59.9	E	TR	0.62	24.5	C
	WB	LT	0.69	32.8	C	LT	0.67	43.7	D	LT	0.68	25.4	C
Overall Intersection	-		0.83	48.8	D	-	0.70	50.1	D	-	0.75	41.0	D
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.57	12.6	B	LTR	0.44	11.2	B	LTR	0.57	12.7	B
Chambers Street	EB	TR	0.87	36.8	D	TR	0.65	23.6	C	TR	0.79	29.7	C
	WB	L	0.47	23.5	C	L	0.33	18.5	B	L	0.34	19.4	B
	LT		0.64	22.7	C	LT	0.56	20.5	C	LT	0.58	20.7	C
Overall Intersection	-		0.70	21.1	C	-	0.54	16.6	B	-	0.67	18.7	B
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.89	33.8	C	L	0.63	19.3	B	L	0.99	50.7	D
	LT		0.64	16.6	B	LT	0.50	14.6	B	LT	0.41	13.5	B
Vesey Street	EB	L	0.22	37.8	D	L	0.26	38.7	D	L	0.16	36.4	D
	LTR		0.25	36.7	D	LTR	0.56	42.8	D	LTR	0.25	36.5	D
Overall Intersection	-		0.47	23.2	C	-	0.40	19.8	B	-	0.53	31.2	C
34 Broadway at Fulton Street⁽¹⁾													
Broadway	SB	TR	0.58	10.7	B	TR	0.50	9.7	A	TR	0.33	8.0	A
Fulton Street	WB	LT	0.39	26.7	C	LT	CLOSED			LT	0.31	25.4	C
Overall Intersection	-		0.52	13.4	B	-	0.34	9.7	A	-	0.33	11.9	B
35 Broadway at Dey Street													
Broadway	SB	LTR	0.94	29.7	C	LTR	0.72	14.4	B	LTR	0.66	13.0	B
Overall Intersection	-		0.62	29.7	C	-	0.48	14.4	B	-	0.43	13.0	B
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.82	17.9	B	TR	0.67	13.1	B	TR	0.49	10.0	B
Maiden Lane	WB	LT	0.36	27.1	C	LT	0.41	27.8	C	LT	0.47	29.2	C
Overall Intersection	-		0.67	18.9	B	-	0.59	15.5	B	-	0.48	14.5	B
37 Broadway at Liberty Street													
Broadway	SB	LT	0.83	18.6	B	LT	0.54	10.7	B	LT	0.47	9.7	A
Liberty Street	EB	TR	0.08	22.8	C	TR	0.14	23.4	C	TR	0.07	22.7	C
Overall Intersection	-		0.59	18.8	B	-	0.41	12.2	B	-	0.34	10.7	B
38 Broadway at Rector Street													
Broadway	SB	T	0.74	14.2	B	T	0.65	11.9	B	T	0.62	11.3	B
Rector Street	EB	R	0.29	29.8	C	R	0.44	33.3	C	R	0.27	28.7	C
Overall Intersection	-		0.61	15.3	B	-	0.59	14.6	B	-	0.52	13.0	B
39 Broadway at Exchange Place													
Broadway	SB	T	0.58	9.8	A	T	0.45	8.0	A	T	0.47	8.4	A
Overall Intersection	-		0.39	9.8	A	-	0.31	8.0	A	-	0.32	8.4	A
WATER STREET CORRIDOR													
40 Water Street at Fulton Street													
Water Street	NB	L	0.60	24.1	C	L	0.39	16.8	B	L	0.35	15.5	B
	T		0.93	37.4	D	T	0.75	23.0	C	T	0.88	31.0	C
	SB	TR	0.42	14.0	B	TR	0.31	12.8	B	TR	0.21	11.9	B
Fulton Street	EB	LR	0.44	28.9	C	LR	0.47	29.7	C	LR	0.33	26.5	C
Overall Intersection	-		0.66	26.8	C	-	0.57	19.9	B	-	0.60	24.8	C

**TABLE E.2-1
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
CURRENT 2003 CONDITIONS**

INTERSECTION & APPROACH	<u>AM (8:15 - 9:15AM)</u>				<u>Midday (12:00PM - 1:00PM)</u>				<u>PM (5:00 - 6:00PM)</u>				
	Mvt.	V/C	<u>Control</u>		Mvt.	V/C	<u>Control</u>		Mvt.	V/C	<u>Control</u>		
			Delay	LOS			Delay	LOS			Delay	LOS	
UNIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt. 9A) at Barclay	CLOSED FOR CONSTRUCTION				CLOSED FOR CONSTRUCTION				CLOSED FOR CONSTRUCTION				
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street	SB	LT	0.21	15.6	C	LT	0.12	12.5	B	LT	0.18	12.8	B
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street	CLOSED FOR CONSTRUCTION				CLOSED FOR CONSTRUCTION				CLOSED FOR CONSTRUCTION				

Eng-Wong, Taub & Associates Notes:

(1): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-2
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.68	2.6	A	T	0.48	1.8	A	T	0.65	2.6	A
	SB	T	0.59	1.9	A	T	0.41	1.5	A	T	0.68	2.6	A
Canal Street	WB	L	0.19	42.9	D	L	0.33	44.0	D	L	0.19	39.6	D
	LR		0.45	50.0	D	LR	0.81	67.0	E	LR	0.36	43.2	D
	R		0.52	53.1	D	R	0.61	54.9	D	R	0.41	45.3	D
Overall Intersection	-	0.65	4.3	A	-	0.55	7.5	A	-	0.62	4.4	A	
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	0.94	22.3	C	TR	0.62	12.3	B	TR	0.84	16.6	B
	R		0.42	11.5	B	R	0.41	11.3	B	R	0.23	9.2	A
	SB	L	0.99	100.1	F	L	0.98	60.9	E	L	1.00	70.3	E
	T		1.04	42.8	D	T	1.03	43.5	D	T	1.02	36.5	D
Overall Intersection	-	0.96	39.9	D	-	0.78	30.9	C	-	0.91	31.1	C	
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	0.99	36.8	D	TR	0.76	19.0	B	TR	0.81	20.4	C
	SB	L	0.94	49.6	D	L	0.84	22.8	C	L	0.69	12.1	B
	TR		0.69	17.6	B	TR	0.63	16.5	B	TR	0.92	25.5	C
Chambers Street	EB	LTR	0.48	42.0	D	LTR	0.27	37.4	D	LTR	0.33	39.5	D
	WB	LT	0.83	62.5	E	LT	0.66	49.2	D	LT	0.96	88.9	F
	R		0.44	26.2	C	R	0.52	28.3	C	R	0.74	36.1	D
Overall Intersection	-	1.13	32.3	C	-	0.79	20.4	C	-	0.94	26.5	C	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	0.96	96.3	F	L	0.66	63.3	E	L	0.66	63.3	E
	TR		1.05	120.0+	F*	TR	0.75	26.9	C	TR	0.82	27.8	C
	SB	L	0.34	53.5	D	L	0.58	60.0	E	L	0.34	53.5	D
	TR		0.92	32.8	C	TR	0.80	26.7	C	TR	1.13	118.9	F
Vesey Street	EB	L	0.54	35.2	D	L	0.29	28.4	C	L	0.25	27.5	C
	TR		0.91	78.1	E	TR	0.86	75.6	E	TR	1.06	113.3	F
	WB	L	1.00	100.1	F	L	0.76	53.0	D	L	1.12	120.0+	F*
	TR		0.86	71.3	E	TR	0.77	61.2	E	TR	0.77	59.7	E
Overall Intersection	-	1.02	109.5	F	-	0.84	33.6	C	-	1.11	82.5	F	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.56	55.1	E	L	0.49	52.5	D	L	0.64	59.0	E
	TR		0.83	18.5	B	TR	0.65	14.7	B	TR	0.63	14.3	B
	SB	L	0.53	53.6	D	L	0.49	52.8	D	L	0.74	65.1	E
	TR		0.71	15.8	B	TR	0.64	14.5	B	TR	0.93	27.5	C
Liberty Street	EB	LTR	0.51	40.6	D	LTR	0.35	37.7	D	LTR	0.44	39.2	D
Overall Intersection	-	0.70	21.6	C	-	0.55	19.1	B	-	0.77	26.2	C	
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	TR	1.09	120.0+	F*	TR	1.07	120.0+	F*	TR	1.03	120.0+	F*
	SB	TR	0.98	90.6	F	TR	0.98	95.5	F	TR	1.05	100.8	F
Albany Street	EB	LTR	0.90	68.2	E	LTR	0.31	34.1	C	LTR	0.56	41.5	D
Overall Intersection	-	1.03	118.0	F	-	0.83	120.0+	F*	-	0.89	114.0	F	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.20	120.0+	F*	T	1.20+	120.0+	F*	TR	1.14	120.0+	F*
	R		1.10	113.3	F	R	1.04	71.2	E	R	1.06	101.8	F
	SB	TR	1.14	111.7	F	TR	1.07	120.0+	F*	TR	0.99	81.1	F
Brooklyn Battery Tunnel	EB	R	0.62	26.3	C	R	0.20	22.0	C	R	0.18	13.6	B
	WB	L	1.06	120.0+	F*	L	1.01	120.0+	F*	L	1.05	120.0+	F*
	R		1.19	120.0+	F*	R	1.03	120.0+	F*	R	1.04	120.0+	F*
Overall Intersection	-	1.19	120.0+	F*	-	1.20+	120.0+	F*	-	1.09	120.0+	F*	
WASHINGTON STREET CORRIDOR													
8 Washington Street at Vesey Street													
Vesey Street	EB	LT	0.20	7.9	A	LT	0.20	8.0	A	LT	0.22	8.2	A
	WB	TR	0.26	8.3	A	TR	0.23	8.2	A	TR	0.32	8.9	A
Overall Intersection	-	0.17	8.1	A	-	0.14	8.1	A	-	0.21	8.6	A	
9 Washington Street at Liberty Street													
Washington Street	NB	R	0.02	20.9	C	R	0.05	21.3	C	R	0.06	21.4	C
Liberty Street	EB	T	0.23	8.2	A	T	0.22	8.1	A	T	0.23	8.3	A
Overall Intersection	-	0.16	8.4	A	-	0.16	8.7	A	-	0.18	9.0	A	

**TABLE E.2-2
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.25	15.0	B	LTR	0.22	14.7	B	LTR	0.20	14.5	B
Chambers Street	EB	TR	0.51	18.3	B	TR	0.37	16.3	B	TR	0.38	16.3	B
	WB	LT	0.71	24.8	C	LT	0.68	24.1	C	LT	0.82	30.0	C
Overall Intersection	-		0.48	19.8	B	-	0.45	18.9	B	-	0.51	22.1	C
14 Greenwich Street at Liberty Street													
Liberty Street	EB	TR	0.30	8.9	A	TR	0.28	8.7	A	TR	0.31	8.9	A
Overall Intersection	-		0.19	8.9	A	-	0.18	8.7	A	-	0.20	8.9	A
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.02	17.6	B	R	0.08	18.5	B	R	0.08	18.5	B
	SB	LT	0.45	24.2	C	LT	0.92	69.9	E	LT	0.44	24.2	C
Rector Street	EB	TR	0.38	13.0	B	TR	0.80	44.1	D	TR	0.32	12.1	B
Overall Intersection	-		0.41	18.1	B	-	0.85	56.7	E	-	0.37	17.8	B
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.84	41.7	D	LTR	0.64	33.9	C	LTR	0.88	44.7	D
	R		0.55	35.7	D	R	0.53	35.2	D	R	0.71	41.8	D
Canal Street	EB	L	1.08	80.2	F	L	1.05	68.1	E	L	0.66	33.4	C
	LT		1.02	55.9	E	LT	0.90	34.9	C	T	0.86	30.6	C
	WB	T	0.98	66.6	E	T	0.99	67.5	E	T	0.48	27.7	C
	R		1.07	84.7	F	R	1.07	80.5	F	R	1.14	95.9	F
Overall Intersection	-		1.02	61.0	E	-	0.95	55.1	E	-	1.07	52.7	D
17 Canal Street at Varick Street													
Varick Street	SB	L	0.20	23.1	C	L	0.33	25.2	C	L	0.72	43.6	D
	T		0.65	29.2	C	T	0.55	27.3	C	T	0.47	26.0	C
	R		0.11	22.0	C	R	0.37	26.1	C	R	0.11	22.0	C
Canal Street	EB	TR	0.44	10.3	B	TR	0.30	8.8	A	TR	0.30	8.9	A
	WB	LT	0.99	61.0	E	LT	1.07	70.5	E	LT	1.11	120.0+	F*
Overall Intersection	-		0.51	33.9	C	-	0.89	39.8	D	-	0.44	78.9	E
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	0.97	34.4	C	LTR	0.58	14.2	B	LTR	0.64	15.4	B
Worth Street	EB	TR	0.22	21.0	C	TR	0.15	19.9	B	TR	0.28	23.1	C
	WB	LT	0.92	57.5	E	LT	0.53	27.1	C	LT	0.80	38.5	D
Overall Intersection	-		0.95	37.7	D	-	0.56	16.9	B	-	0.70	22.1	C
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.38	17.4	B	L	0.31	16.5	B	L	0.26	15.6	B
	TR		0.59	19.7	B	TR	0.42	16.9	B	TR	0.43	17.0	B
Chambers Street	EB	L	0.38	21.1	C	LTR	1.20+	120.0+	F*	L	0.40	22.0	C
	TR		1.08	87.3	F	-	-	-	-	TR	0.74	30.5	C
	WB	LTR	0.91	42.3	D	LTR	0.85	34.0	C	LTR	1.15	110.2	F
Overall Intersection	-		0.83	43.2	D	-	0.81	58.3	E	-	0.79	52.2	D
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.45	10.6	B	TR	0.45	10.7	B	TR	0.54	11.6	B
Barclay Street	WB	LT	0.83	33.7	C	LT	0.48	21.7	C	LT	0.93	43.5	D
Overall Intersection	-		0.62	20.4	C	-	0.47	14.1	B	-	0.71	25.1	C
13 West Broadway/Greenwich Street at Vesey Street													
Greenwich Street	SB	L	0.61	44.9	D	L	0.45	36.3	D	L	0.56	41.4	D
	R		0.40	38.8	D	R	0.13	31.2	C	R	0.29	35.4	D
West Broadway	SB	L	0.84	26.0	C	L	0.88	40.9	D	L	1.14	102.6	F
	R		0.50	15.3	B	R	0.73	30.8	C	R	0.60	19.5	B
Vesey Street	EB	T	0.61	35.9	D	T	0.41	26.8	C	T	0.61	34.2	C
	WB	T	0.29	31.4	C	T	0.16	24.1	C	T	0.26	29.5	C
Overall Intersection	-		0.75	29.0	C	-	0.64	32.2	C	-	0.90	56.5	E

**TABLE E.2-2
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR													
21 Church Street at Worth Street													
Church Street	NB	LTR	1.19	110.3	F	LTR	1.12	114.8	F	LTR	1.10	108.2	F
Worth Street	EB	LT	0.94	57.8	E	LT	0.80	41.0	D	LT	0.59	30.6	C
	WB	TR	0.87	43.6	D	TR	0.77	39.8	D	TR	0.80	37.8	D
Overall Intersection	-		1.09	88.9	F	-	1.00	93.2	F	-	0.99	86.2	F
22 Church Street at Chambers Street													
Church Street	NB	LTR	0.98	42.5	D	LTR	0.92	32.7	C	LTR	1.03	55.0	D
Chambers Street	EB	LT	1.00	100.3	F	LT	0.98	63.1	E	LT	1.07	85.2	F
	WB	TR	0.80	29.6	C	TR	0.71	24.9	C	TR	0.66	22.8	C
Overall Intersection	-		0.99	51.0	D	-	0.95	36.1	D	-	1.05	62.7	E
23 Church Street at Barclay Street													
Church Street	NB	LT	0.99	38.2	D	LT	0.73	17.0	B	LT	0.84	21.1	C
Barclay Street	WB	T	0.41	23.5	C	T	0.27	21.3	C	T	0.50	25.3	C
		R	0.82	45.3	D	R	0.89	54.6	D	R	0.79	42.5	D
Overall Intersection	-		0.92	37.6	D	-	0.79	23.8	C	-	0.82	24.5	C
24 Church Street at Vesey Street													
Church Street	NB	LT	1.20+	120.0+	F*	LT	0.79	14.2	B	LT	0.91	21.5	C
		R	0.38	9.6	A	R	0.67	17.3	B	R	0.25	7.0	A
Vesey Street	EB	LT	1.20+	120.0+	F*	LT	1.15	113.2	F	LT	1.20+	120.0+	F*
Overall Intersection	-		1.20+	120.0+	F*	-	0.93	50.6	D	-	1.16	120.0+	F*
25 Church Street at Fulton Street													
Church Street	NB	T	0.67	15.4	B	T	0.61	14.3	B	T	0.50	12.7	B
Fulton Street	WB	R	0.56	26.6	C	R	0.59	31.4	C	R	0.54	26.0	C
Overall Intersection	-		0.63	17.6	B	-	0.60	16.5	B	-	0.52	15.8	B
26 Church Street at Dey Street													
Church Street	NB	T	0.56	9.0	A	T	0.49	8.2	A	T	0.43	7.5	A
Dey Street	WB	R	0.24	28.4	C	R	0.41	32.8	C	R	0.24	28.4	C
Overall Intersection	-		0.47	9.7	A	-	0.47	10.0	B	-	0.37	8.5	A
27 Church Street at Cortlandt Street													
Church Street	NB	T	0.53	8.9	A	T	0.34	7.3	A	T	0.35	7.3	A
Cortlandt Street	WB	R	0.56	28.1	C	R	1.01	76.7	E	R	0.58	28.8	C
Overall Intersection	-		0.54	12.2	B	-	0.61	33.3	C	-	0.44	12.4	B
28 Church Street at Liberty Street													
Church Street	NB	T	0.69	11.9	B	T	0.48	8.7	A	T	0.43	8.1	A
		R	0.15	6.6	A	R	0.21	7.2	A	R	0.12	6.3	A
Liberty Street	EB	LT	0.26	20.5	C	LT	0.24	20.3	C	LT	0.25	20.4	C
Overall Intersection	-		0.52	13.4	B	-	0.38	11.6	B	-	0.36	11.4	B
29 Trinity Street at Rector Street													
Trinity Street	NB	TR	0.47	12.8	B	TR	0.52	13.6	B	TR	0.36	11.4	B
Rector Street	EB	LT	0.49	25.0	C	LT	0.32	22.0	C	LT	0.44	23.8	C
Overall Intersection	-		0.48	16.8	B	-	0.44	15.5	B	-	0.39	15.6	B

**TABLE E.2-2
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.40	19.5	B	LTR	0.51	21.4	C	LTR	0.63	23.1	C
Canal Street	EB	TR	0.46	19.2	B	TR	0.40	18.4	B	TR	0.91	37.9	D
	WB	Defl.	0.70	30.0	C	LT	0.64	12.2	B	Defl.	1.03	76.1	E
		T	0.33	8.7	A	-	-	-	-	T	0.67	15.9	B
Overall Intersection	-		0.65	19.8	B	-	0.63	17.1	B	-	0.86	34.3	C
31 Broadway at Worth Street													
Broadway	SB	LTR	0.69	42.1	D	LTR	0.47	43.5	D	LTR	0.72	46.3	D
Worth Street	EB	TR	0.96	108.5	F	TR	0.86	85.1	F	TR	0.69	27.0	C
	WB	LT	0.72	37.4	D	LT	0.74	57.8	E	LT	0.71	26.8	C
Overall Intersection	-		0.81	59.1	E	-	0.64	61.8	E	-	0.72	38.3	D
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.51	12.0	B	LTR	0.37	10.5	B	LTR	0.51	12.0	B
Chambers Street	EB	TR	0.93	45.6	D	TR	0.63	22.8	C	TR	0.86	35.2	D
	WB	L	0.50	25.4	C	L	0.33	18.5	B	L	0.37	20.5	C
		LT	0.70	24.7	C	LT	0.61	21.6	C	LT	0.62	21.8	C
Overall Intersection	-		0.70	24.5	C	-	0.49	17.0	B	-	0.67	20.8	C
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.84	28.8	C	L	0.59	18.1	B	L	0.93	40.4	D
		LT	0.41	13.5	B	LT	0.40	13.4	B	LT	0.36	13.1	B
Vesey Street	EB	L	1.10	120.0+	F*	L	0.90	86.5	F	L	1.08	120.0+	F*
		LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.15	120.0+	F*
Overall Intersection	-		0.60	66.1	E	-	0.48	79.2	E	-	0.63	60.8	E
34 Broadway at Fulton Street⁽¹⁾													
Broadway	SB	TR	0.43	8.9	A	TR	0.47	9.3	A	TR	0.34	8.1	A
Fulton Street	WB	LT	0.50	28.6	C	LT	CLOSED			LT	0.39	26.5	C
Overall Intersection	-		0.45	14.2	B	-	0.32	9.3	A	-	0.35	12.9	B
35 Broadway at Dey Street													
Broadway	SB	LTR	0.71	14.5	B	LTR	0.65	12.8	B	LTR	0.68	13.4	B
Overall Intersection	-		0.47	14.5	B	-	0.42	12.8	B	-	0.44	13.4	B
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.58	11.2	B	TR	0.60	11.7	B	TR	0.50	10.1	B
Maiden Lane	WB	LT	0.55	31.3	C	LT	0.66	34.6	C	LT	0.61	32.9	C
Overall Intersection	-		0.57	15.9	B	-	0.62	17.8	B	-	0.54	16.6	B
37 Broadway at Liberty Street													
Broadway	SB	LT	0.57	11.2	B	LT	0.48	9.8	A	LT	0.47	9.7	A
Liberty Street	EB	TR	0.26	24.6	C	TR	0.34	25.7	C	TR	0.27	24.9	C
Overall Intersection	-		0.47	14.4	B	-	0.43	14.3	B	-	0.41	13.5	B
38 Broadway at Rector Street													
Broadway	SB	T	0.39	7.8	A	T	0.59	10.6	B	T	0.64	11.7	B
Rector Street	EB	R	0.72	50.1	D	R	0.59	39.2	D	R	0.55	36.9	D
Overall Intersection	-		0.48	18.6	B	-	0.59	15.7	B	-	0.61	16.1	B
39 Broadway at Exchange Place													
Broadway	SB	T	0.38	7.5	A	T	0.43	7.8	A	T	0.53	9.1	A
Overall Intersection	-		0.11	7.5	A	-	0.29	7.8	A	-	0.32	9.1	A
WATER STREET CORRIDOR													
40 Water Street at Fulton Street													
Water Street	NB	L	0.73	35.7	D	L	0.44	18.5	B	L	0.40	16.8	B
		T	1.03	60.5	E	T	0.80	25.1	C	T	0.95	40.0	D
	SB	TR	0.52	15.4	B	TR	0.40	13.9	B	TR	0.32	12.9	B
Fulton Street	EB	LR	0.44	29.1	C	LR	0.47	29.8	C	LR	0.34	26.6	C
Overall Intersection	-		0.72	38.2	D	-	0.60	21.0	C	-	0.64	29.2	C

TABLE E.2-2
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
UNSIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt. 9A) at Barclay Barclay Street	WB	R	0.51	31.5	D	R	0.44	21.6	C	R	0.45	22.7	C
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street Washington Street	SB	LT	0.22	15.9	C	LT	0.12	12.6	B	LT	0.20	13.8	B
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street Greenwich Street	SB	T	0.23	13.5	B	T	0.16	12.8	B	T	0.25	15.5	C
		R	0.06	11.5	B	R	0.25	13.2	B	R	0.00	11.6	B
Barclay Street	WB	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A

Eng-Wong, Taub & Associates Notes:

(1): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-3
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	Mvt.	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)			
		V/C	Control			V/C	Control			V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.74	3.0	A	T	0.57	2.1	A	T	0.75	3.4	A
	SB	T	0.65	2.2	A	T	0.48	1.7	A	T	0.74	3.1	A
Canal Street	WB	L	0.28	45.1	D	L	0.44	47.2	D	L	0.23	40.5	D
	LR	0.45	50.0	D	LR	0.81	67.0	E	LR	0.36	43.2	D	
	R	0.52	53.1	D	R	0.61	54.9	D	R	0.41	45.3	D	
Overall Intersection	-	0.70	4.6	A	-	0.62	7.2	A	-	0.67	4.8	A	
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	1.02	46.7	D	TR	0.74	14.3	B	TR	0.96	25.5	C
	R	0.44	11.8	B	R	0.44	11.8	B	R	0.26	9.5	A	
	SB	L	0.99	100.1	F	L	0.98	60.9	E	L	1.00	70.3	E
	T	1.17	96.0	F	T	1.20+	120.0+	F*	T	1.12	75.7	E	
Overall Intersection	-	1.01	72.2	E	-	0.84	73.9	E	-	0.98	52.9	D	
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.09	77.0	E	TR	0.90	24.4	C	TR	0.95	29.2	C
	SB	L	0.88	36.5	D	L	0.80	19.2	B	L	0.69	11.9	B
	TR	0.83	21.5	C	TR	0.80	20.2	C	TR	1.04	56.5	E	
Chambers Street	EB	LTR	0.48	42.0	D	LTR	0.27	37.4	D	LTR	0.33	39.5	D
	WB	LT	0.83	62.5	E	LT	0.66	49.2	D	LT	0.96	88.9	F
	R	0.44	26.2	C	R	0.52	28.3	C	R	0.74	36.1	D	
Overall Intersection	-	1.13	50.9	D	-	0.84	23.7	C	-	0.99	43.0	D	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	1.03	117.3	F	L	0.79	72.1	E	L	0.80	73.8	E
	TR	1.20+	120.0+	F*	TR	0.98	60.2	E	TR	1.09	85.8	F	
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
	TR	0.98	40.9	D	TR	0.86	29.2	C	TR	1.14	120.0+	F*	
Vesey Street	EB	L	0.66	43.2	D	L	0.40	31.9	C	L	0.35	30.4	C
	TR	1.06	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
	WB	L	1.20+	120.0+	F*	L	1.04	120.0+	F*	L	1.20+	120.0+	F*
	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
Overall Intersection	-	1.20+	120.0+	F*	-	1.10	103.2	F	-	1.20+	120.0+	F*	
41 West Street (NYS Rt. 9A) at Fulton Street													
West Street (NYS Rt. 9A)	NB	T	0.90	25.3	C	T	0.78	25.7	C	T	0.84	27.9	C
Fulton Street	WB	R	0.74	46.8	D	R	0.63	32.1	C	R	0.69	36.1	D
Overall Intersection	-	0.84	27.1	C	-	0.71	26.5	C	-	0.77	29.0	C	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.56	55.1	E	L	0.49	52.5	D	L	0.64	59.0	E
	TR	0.88	20.7	C	TR	0.75	16.5	B	TR	0.72	15.8	B	
	SB	L	0.72	63.5	E	L	0.72	63.6	E	L	0.66	61.5	E
	TR	0.73	16.1	B	TR	0.66	14.8	B	TR	0.96	31.7	C	
Liberty Street	EB	LTR	0.53	41.2	D	LTR	0.37	38.0	D	LTR	0.48	40.1	D
Overall Intersection	-	0.76	23.2	C	-	0.64	20.5	C	-	0.78	28.0	C	
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	T	0.91	44.5	D	T	0.83	32.5	C	T	0.81	26.1	C
	SB	TR	1.00	103.1	F	TR	1.02	110.1	F	TR	1.08	111.1	F
Albany Street	EB	LR	1.01	97.6	F	LR	0.33	34.6	C	LR	0.55	41.9	D
	WB	L	0.18	31.3	C	L	0.15	30.9	C	L	0.24	32.4	C
	TR	0.09	30.1	C	TR	0.38	37.2	D	TR	0.21	32.6	C	
Overall Intersection	-	1.00	67.9	E	-	0.81	65.2	E	-	0.91	68.4	E	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	R	1.11	118.1	F	R	1.06	79.7	E	R	1.07	107.3	F	
	SB	TR	1.20	120.0+	F*	TR	1.15	120.0+	F*	TR	1.20+	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.62	26.3	C	R	0.20	22.0	C	R	0.18	13.6	B
	WB	L	1.06	120.0+	F*	L	1.01	120.0+	F*	L	1.05	120.0+	F*
	R	1.20+	120.0+	F*	R	1.10	120.0+	F*	R	1.07	120.0+	F*	
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.14	120.0+	F*	
WASHINGTON STREET CORRIDOR													
8 Washington Street at Vesey Street													
Vesey Street	EB	LT	0.50	10.6	B	LT	0.57	11.5	B	LT	0.54	11.0	B
	WB	TR	0.32	8.8	A	TR	0.32	8.9	A	TR	0.37	9.2	A
Overall Intersection	-	0.32	9.9	A	-	0.36	10.5	B	-	0.34	10.2	B	
9 Washington Street at Liberty Street													

**TABLE E.2-3
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)					Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)			
	Mvt.	V/C	Control			Mvt.	V/C	Control		Mvt.	V/C	Control	
			Delay	LOS	Delay			LOS	Delay			LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.27	15.2	B	LTR	0.24	14.9	B	LTR	0.21	14.5	B
Chambers Street	EB	TR	0.51	18.3	B	TR	0.37	16.3	B	TR	0.38	16.3	B
	WB	LT	0.71	24.8	C	LT	0.68	24.2	C	LT	0.82	30.0	C
Overall Intersection	-		0.49	19.7	B	-	0.46	18.9	B	-	0.52	22.1	C
42 Greenwich Street at Fulton Street													
Greenwich Street	SB	TR	0.36	11.9	B	TR	0.48	13.5	B	TR	0.55	14.7	B
Fulton Street	WB	LT	0.40	24.8	C	LT	0.42	25.3	C	LT	0.53	27.2	C
Overall Intersection	-		0.38	16.6	B	-	0.46	17.3	B	-	0.54	19.2	B
14 Greenwich Street at Liberty Street													
Greenwich Street	SB	L	0.61	24.2	C	L	0.66	27.5	C	L	0.80	38.9	D
	LT		0.42	13.2	B	LT	0.53	15.5	B	LT	0.50	14.8	B
Liberty Street	EB	TR	0.47	24.3	C	TR	0.44	23.7	C	TR	0.44	23.6	C
Overall Intersection	-		0.55	20.0	B	-	0.57	21.0	C	-	0.66	23.3	C
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.02	17.6	B	R	0.08	18.5	B	R	0.08	18.5	B
	SB	LT	0.69	32.2	C	LT	1.20+	120.0+	F*	LT	0.69	32.6	C
Rector Street	EB	TR	0.38	13.0	B	TR	0.80	44.1	D	TR	0.32	12.1	B
Overall Intersection	-		0.51	23.7	C	-	1.09	120.0+	F*	-	0.47	23.5	C
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.85	42.2	D	LTR	0.64	34.0	C	LTR	0.89	45.2	D
	R		0.55	35.9	D	R	0.56	36.1	D	R	0.75	44.3	D
Canal Street	EB	L	1.10	88.8	F	L	1.09	80.9	F	L	0.70	35.3	D
	LT		1.02	55.9	E	LT	0.90	34.9	C	T	0.86	30.9	C
	WB	T	1.03	82.1	F	T	1.05	85.3	F	T	0.51	28.4	C
	R		1.10	95.3	F	R	1.12	97.3	F	R	1.18	110.5	F
Overall Intersection			1.04	66.6	E		0.99	64.3	E		1.10	57.3	E
17 Canal Street at Varick Street													
Varick Street	SB	L	0.20	23.1	C	L	0.33	25.2	C	L	0.72	43.6	D
	T		0.65	29.4	C	T	0.56	27.5	C	T	0.48	26.2	C
	R		0.11	22.0	C	R	0.37	26.1	C	R	0.11	22.0	C
Canal Street	EB	TR	0.44	10.3	B	TR	0.30	8.8	A	TR	0.30	8.9	A
	WB	LT	1.03	71.5	E	LT	1.14	94.6	F	LT	1.16	120.0+	F*
Overall Intersection	-		0.51	37.8	D	-	0.94	50.0	D	-	0.44	88.8	F
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	0.98	37.2	D	LTR	0.60	14.5	B	LTR	0.65	15.7	B
Worth Street	EB	TR	0.22	21.0	C	TR	0.15	19.9	B	TR	0.28	23.1	C
	WB	LT	1.01	81.1	F	LT	0.61	30.0	C	LT	0.85	43.2	D
Overall Intersection	-		0.99	44.2	D	-	0.60	17.8	B	-	0.73	23.6	C
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.38	17.4	B	L	0.31	16.5	B	L	0.26	15.6	B
	TR		0.62	20.5	C	TR	0.46	17.5	B	TR	0.45	17.4	B
Chambers Street	EB	L	0.39	21.6	C	LTR	1.20+	120.0+	F*	L	0.41	22.7	C
	TR		1.08	87.3	F	-	-	-	-	TR	0.74	30.5	C
	WB	LTR	1.07	84.0	F	LTR	0.94	46.6	D	LTR	1.20+	120.0+	F*
Overall Intersection	-		0.85	53.8	D	-	0.93	62.9	E	-	0.86	70.5	E
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.60	12.3	B	TR	0.58	12.1	B	TR	0.67	13.5	B
Barclay Street	WB	LT	0.73	28.8	C	LT	0.44	21.0	C	LT	0.89	39.5	D
Overall Intersection	-		0.66	17.4	B	-	0.52	14.1	B	-	0.77	22.5	C
13 West Broadway/Greenwich Street at Vesey Street													
Greenwich Street	SB	L	0.52	40.5	D	L	0.49	39.8	D	L	0.52	40.4	D
	R		0.63	49.7	D	R	0.28	37.1	D	R	0.42	40.9	D
West Broadway	SB	L	0.57	15.3	B	L	0.36	12.3	B	L	0.61	16.0	B
	TR		0.39	3.0	A	TR	0.37	3.0	A	TR	0.40	3.1	A
Vesey Street	EB	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	WB	LT	0.36	32.6	C	LT	0.28	31.6	C	LT	0.35	32.3	C
Overall Intersection	-		0.80	115.1	F	-	0.74	120.0+	F*	-	0.92	120.0+	F*

TABLE E.2-3
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)					Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control		LOS
			Delay	LOS				Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR														
21 Church Street at Worth Street														
Church Street	NB	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	
Worth Street	EB	LT	0.94	57.8	E	LT	0.80	41.0	D	LT	0.59	30.6	C	
	WB	TR	0.92	48.9	D	TR	0.84	45.9	D	TR	0.83	40.0	D	
Overall Intersection	-		1.14	111.4	F	-	1.07	120.0+	F*	-	1.07	120.0+	F*	
22 Church Street at Chambers Street														
Church Street	NB	LTR	1.05	61.3	E	LTR	1.02	52.1	D	LTR	1.14	96.5	F	
Chambers Street	EB	LT	1.00	100.3	F	LT	0.99	67.9	E	LT	1.07	87.5	F	
	WB	TR	0.82	31.1	C	TR	0.73	25.7	C	TR	0.67	23.1	C	
Overall Intersection	-		1.02	62.2	E	-	1.01	49.0	D	-	1.11	81.5	F	
23 Church Street at Barclay Street														
Church Street	NB	LT	0.99	38.4	D	LT	0.76	18.0	B	LT	0.86	21.9	C	
Barclay Street	WB	T	0.43	24.0	C	T	0.30	21.7	C	T	0.53	26.0	C	
		R	0.82	45.3	D	R	0.89	54.6	D	R	0.79	42.5	D	
Overall Intersection	-		0.92	37.7	D	-	0.81	24.2	C	-	0.83	25.1	C	
24 Church Street at Vesey Street														
Church Street	NB	LT	1.20+	120.0+	F*	LT	0.83	16.0	B	LT	0.95	27.4	C	
		R	1.04	97.7	F	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	
Vesey Street	EB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	116.6	F	-	1.20+	120.0+	F*	
25 Church Street at Fulton Street														
Church Street	NB	LT	0.74	16.9	B	LT	0.79	18.7	B	LT	0.63	14.6	B	
Fulton Street	WB	TR	1.20+	120.0+	F*	TR	0.90	61.8	E	TR	1.20+	120.0+	F*	
Overall Intersection	-		1.00	66.2	E	-	0.83	24.6	C	-	0.96	83.7	F	
26 Church Street at Dey Street														
Church Street	NB	T	0.63	9.9	A	T	0.63	10.0	A	T	0.54	8.7	A	
Dey Street	WB	R	0.34	32.5	C	R	0.57	42.8	D	R	0.33	32.3	C	
Overall Intersection	-		0.55	10.7	B	-	0.61	12.0	B	-	0.48	9.5	A	
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.61	9.7	A	T	0.44	8.0	A	T	0.47	8.2	A	
Cortlandt Street	WB	R	0.96	74.8	E	R	1.20+	120.0+	F*	R	0.99	84.0	F	
Overall Intersection	-		0.74	20.1	C	-	1.13	120.0+	F*	-	0.68	22.6	C	
28 Church Street at Liberty Street														
Church Street	NB	T	0.70	12.1	B	T	0.51	9.0	A	T	0.47	8.5	A	
		R	0.19	7.2	A	R	0.27	8.1	A	R	0.15	6.7	A	
Liberty Street	EB	LT	0.50	24.1	C	LT	0.52	24.5	C	LT	0.59	26.1	C	
Overall Intersection	-		0.62	15.3	B	-	0.51	14.6	B	-	0.52	15.3	B	
29 Trinity Street at Rector Street														
Trinity Street	NB	TR	0.48	12.9	B	TR	0.55	14.0	B	TR	0.40	11.8	B	
Rector Street	EB	LT	0.58	26.9	C	LT	0.41	23.3	C	LT	0.53	25.7	C	
Overall Intersection	-		0.52	18.0	B	-	0.49	16.6	B	-	0.45	16.9	B	

**TABLE E.2-3
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)					Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control		LOS
			Delay	LOS				Delay	LOS			Delay	LOS	
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.44	20.0	C	LTR	0.57	22.4	C	LTR	0.68	24.1	C	
Canal Street	EB	TR	0.47	19.5	B	TR	0.42	18.8	B	TR	0.92	39.5	D	
	WB	DefL	0.71	30.8	C	LT	0.66	12.9	B	DefL	1.04	79.0	E	
		T	0.36	9.1	A	-	-	-	-	T	0.69	16.6	B	
Overall Intersection	-		0.67	20.2	C	-	0.67	18.0	B	-	0.88	35.4	D	
31 Broadway at Worth Street														
Broadway	SB	LTR	0.74	48.0	D	LTR	0.54	49.0	D	LTR	0.77	53.9	D	
Worth Street	EB	TR	0.99	120.0+	F*	TR	0.92	118.3	F	TR	0.77	31.5	C	
	WB	LT	0.76	40.7	D	LT	0.86	96.6	F	LT	0.76	29.4	C	
Overall Intersection	-		0.85	69.0	E	-	0.71	84.1	F	-	0.77	44.2	D	
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.55	12.4	B	LTR	0.41	10.9	B	LTR	0.55	12.4	B	
Chambers Street	EB	TR	0.94	45.9	D	TR	0.64	23.0	C	TR	0.87	36.0	D	
	WB	L	0.52	26.0	C	L	0.34	18.9	B	L	0.38	20.8	C	
		LT	0.71	25.0	C	LT	0.62	21.8	C	LT	0.62	21.8	C	
Overall Intersection	-		0.72	24.5	C	-	0.51	17.0	B	-	0.70	20.9	C	
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.84	28.8	C	L	0.59	18.1	B	L	0.94	41.2	D	
		LT	0.40	13.5	B	LT	0.40	13.5	B	LT	0.37	13.2	B	
Vesey Street	EB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	
		LTR	1.20	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	
Overall Intersection	-		0.61	74.0	E	-	0.49	95.4	F	-	0.70	94.5	F	
34 Broadway at Fulton Street⁽¹⁾														
Broadway	SB	TR	0.43	9.0	A	TR	0.47	9.4	A	TR	0.32	8.0	A	
Fulton Street	WB	LT	0.63	31.4	C	LT	CLOSED			LT	0.55	29.1	C	
Overall Intersection	-		0.49	16.4	B	-	0.32	9.4	A	-	0.40	15.5	B	
35 Broadway at Dey Street														
Broadway	SB	LTR	0.65	12.8	B	LTR	0.58	11.4	B	LTR	0.60	11.9	B	
Overall Intersection	-		0.42	12.8	B	-	0.38	11.4	B	-	0.39	11.9	B	
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.50	10.1	B	TR	0.53	10.5	B	TR	0.42	9.2	A	
Maiden Lane	WB	LT	0.55	31.3	C	LT	0.89	51.6	D	LT	0.61	32.9	C	
Overall Intersection	-		0.52	15.6	B	-	0.64	25.5	C	-	0.48	16.8	B	
37 Broadway at Liberty Street														
Broadway	SB	LT	0.49	10.1	B	LT	0.40	9.0	A	LT	0.39	8.9	A	
Liberty Street	EB	TR	0.29	25.0	C	TR	0.38	26.3	C	TR	0.32	25.5	C	
Overall Intersection	-		0.43	14.3	B	-	0.40	14.9	B	-	0.37	14.0	B	
38 Broadway at Rector Street														
Broadway	SB	T	0.36	7.5	A	T	0.56	10.1	B	T	0.61	11.1	B	
Rector Street	EB	R	1.01	101.8	F	R	0.83	58.0	E	R	0.77	50.9	D	
Overall Intersection	-		0.55	39.9	D	-	0.64	21.7	C	-	0.66	20.6	C	
39 Broadway at Exchange Place														
Broadway	SB	T	0.40	7.7	A	T	0.45	8.0	A	T	0.55	9.4	A	
Overall Intersection	-		0.28	7.7	A	-	0.31	8.0	A	-	0.38	9.4	A	
WATER STREET CORRIDOR														
40 Water Street at Fulton Street														
Water Street	NB	L	0.83	48.7	D	L	0.49	20.7	C	L	0.44	18.3	B	
		T	1.07	73.8	E	T	0.88	31.4	C	T	1.06	69.8	E	
	SB	TR	0.58	16.5	B	TR	0.51	15.4	B	TR	0.43	14.4	B	
Fulton Street	EB	LR	0.45	29.3	C	LR	0.48	30.1	C	LR	0.35	26.9	C	
Overall Intersection	-		0.75	45.0	D	-	0.65	24.4	C	-	0.72	45.4	D	

TABLE E.2-3
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
UNIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt.9A) at Barclay Street	WB	R	0.51	33.4	D	R	0.49	25.4	D	R	0.47	25.9	D
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street	SB	LT	0.23	16.6	C	LT	0.13	13.1	B	LT	0.21	14.1	B
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street	SB	T	0.22	12.7	B	T	0.17	12.4	B	T	0.23	14.3	B
Greenwich Street		R	0.06	11.2	B	R	0.25	13.0	B	R	0.01	11.3	B
Barclay Street	WB	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A

General Notes:

Eng-Wong, Taub & Associates Notes:

(1): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-4
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.76	3.2	A	T	0.56	2.1	A	T	0.73	3.1	A
	SB	T	0.67	2.3	A	T	0.48	1.7	A	T	0.73	2.9	A
Canal Street	WB	L	0.20	43.2	D	L	0.35	44.4	D	L	0.19	39.7	D
	LR		0.45	50.2	D	LR	0.82	68.6	E	LR	0.37	43.3	D
	R		0.53	53.5	D	R	0.61	55.3	E	R	0.42	45.5	D
Overall Intersection	-	-	0.71	4.6	A	-	0.62	7.1	A	-	0.66	4.7	A
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	1.03	52.0	D	TR	0.73	14.1	B	TR	0.93	21.6	C
	R		0.47	12.3	B	R	0.48	12.5	B	R	0.31	10.0	A
	SB	L	1.04	120.0+	F*	L	1.04	81.5	F	L	1.06	86.2	F
	T		1.20	107.6	F	T	1.20+	120.0+	F*	T	1.08	59.9	E
Overall Intersection	-	-	1.04	81.8	F	-	0.87	66.5	E	-	0.98	45.1	D
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.11	85.5	F	TR	0.90	24.5	C	TR	0.94	27.5	C
	SB	L	0.86	32.3	C	L	0.79	18.2	B	L	0.70	12.3	B
	TR		0.86	22.3	C	TR	0.78	19.5	B	TR	1.00	38.0	D
Chambers Street	EB	LTR	0.49	42.3	D	LTR	0.31	38.7	D	LTR	0.36	40.7	D
	WB	LT	0.99	91.7	F	LT	0.85	66.6	E	LT	1.08	120.0+	F*
	R		0.45	26.3	C	R	0.52	28.5	C	R	0.75	36.7	D
Overall Intersection	-	-	1.18	56.2	E	-	0.90	24.3	C	-	1.02	36.1	D
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	1.04	120.0+	F*	L	0.77	70.3	E	L	0.82	74.8	E
	TR		1.14	120.0+	F*	TR	0.86	32.6	C	TR	0.92	33.5	C
	SB	L	0.46	56.2	E	L	0.69	65.0	E	L	0.39	54.5	D
	TR		1.13	98.8	F	TR	0.98	43.9	D	TR	1.20+	120.0+	F*
Vesey Street	EB	L	0.63	41.2	D	L	0.36	30.7	C	L	0.29	29.3	C
	TR		0.92	80.2	F	TR	0.87	77.1	E	TR	1.07	118.6	F
	WB	L	1.01	103.6	F	L	0.80	57.6	E	L	1.17	120.0+	F*
	TR		1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.19	120.0+	F*
Overall Intersection	-	-	1.07	120.0+	F*	-	0.98	50.9	D	-	1.20+	111.9	F
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.77	65.3	E	L	0.66	58.0	E	L	0.77	66.1	E
	TR		0.91	22.1	C	TR	0.73	16.2	B	TR	0.70	15.4	B
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.16	120.0+	F*
	TR		0.79	17.5	B	TR	0.70	15.6	B	TR	0.98	38.8	D
Liberty Street	EB	LTR	0.65	44.4	D	LTR	0.54	41.3	D	LTR	0.60	42.8	D
Overall Intersection	-	-	0.90	41.0	D	-	0.75	33.5	C	-	0.89	38.6	D
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	TR	1.18	120.0+	F*	TR	1.16	120.0+	F*	TR	1.09	120.0+	F*
	SB	TR	1.00	112.9	F	TR	1.00	116.8	F	TR	1.07	115.0	F
Albany Street	EB	LTR	1.09	117.2	F	LTR	0.53	39.9	D	LTR	0.85	62.5	E
Overall Intersection	-	-	1.15	120.0+	F*	-	0.96	120.0+	F*	-	1.01	120.0+	F*
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	R		1.19	120.0+	F*	R	1.11	100.6	F	R	1.10	120.0+	F*
	SB	TR	1.20+	120.0+	F*	TR	1.20	120.0+	F*	TR	1.12	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.63	26.6	C	R	0.21	22.1	C	R	0.18	13.6	B
	WB	L	1.08	120.0+	F*	L	1.03	120.0+	F*	L	1.07	120.0+	F*
	R		1.20+	120.0+	F*	R	1.11	120.0+	F*	R	1.09	120.0+	F*
Overall Intersection	-	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.15	120.0+	F*
WASHINGTON STREET CORRIDOR													
8 Washington Street at Vesey Street													
Vesey Street	EB	LT	0.22	8.1	A	LT	0.21	8.1	A	LT	0.23	8.2	A
	WB	TR	0.32	8.8	A	TR	0.29	8.7	A	TR	0.38	9.5	A
Overall Intersection	-	-	0.21	8.5	A	-	0.19	8.4	A	-	0.24	9.0	A
9 Washington Street at Liberty Street													
Washington Street	NB	R	0.02	20.9	C	R	0.05	21.3	C	R	0.07	21.5	C
Liberty Street	EB	T	0.49	10.7	B	T	0.43	10.0	B	T	0.35	9.2	A
Overall Intersection	-	-	0.32	10.8	B	-	0.30	10.3	B	-	0.25	9.7	A

**TABLE E.2-4
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.26	15.0	B	LTR	0.23	14.7	B	LTR	0.21	14.5	B
Chambers Street	EB	TR	0.54	18.9	B	TR	0.40	16.7	B	TR	0.41	16.8	B
	WB	LT	0.78	28.3	C	LT	0.76	27.3	C	LT	0.87	33.8	C
Overall Intersection	-	0.52	21.4	C	-	0.49	20.4	C	-	0.54	23.9	C	C
14 Greenwich Street at Liberty Street													
Liberty Street	EB	TR	0.59	12.6	B	TR	0.59	12.6	B	TR	0.55	11.8	B
Overall Intersection	-	0.37	12.6	B	-	0.37	12.6	B	-	0.35	11.8	B	B
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.02	17.6	B	R	0.08	18.5	B	R	0.09	18.6	B
	SB	LT	0.87	46.3	D	LT	1.20+	120.0+	F*	LT	0.63	29.4	C
Rector Street	EB	TR	0.70	20.6	C	TR	1.20+	120.0+	F*	TR	0.66	18.9	B
Overall Intersection	-	0.77	32.6	C	-	1.20+	120.0+	F*	-	0.65	22.8	C	C
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.85	42.5	D	LTR	0.64	34.0	C	LTR	0.90	45.9	D
	R		0.56	36.2	D	R	0.55	35.8	D	R	0.73	43.0	D
Canal Street	EB	L	1.16	111.0	F	L	1.16	107.4	F	L	0.79	40.3	D
	LT		1.08	75.4	E	LT	0.97	49.6	D	T	0.94	42.5	D
	WB	T	1.00	73.3	E	T	1.01	73.8	E	T	0.49	27.9	C
	R		1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*
Overall Intersection	-	1.14	81.7	F	-	1.10	79.8	E	-	1.18	71.3	E	E
17 Canal Street at Varick Street													
Varick Street	SB	L	0.20	23.1	C	L	0.34	25.3	C	L	0.73	44.5	D
	T		0.66	29.4	C	T	0.56	27.5	C	T	0.48	26.1	C
	R		0.11	22.0	C	R	0.37	26.2	C	R	0.11	22.0	C
Canal Street	EB	TR	0.46	10.6	B	TR	0.32	9.0	A	TR	0.32	9.1	A
	WB	LT	1.07	84.8	F	LT	1.18	110.6	F	LT	1.20+	120.0+	F*
Overall Intersection	-	0.53	42.6	D	-	0.96	56.9	E	-	0.46	104.7	F	F
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	0.99	38.7	D	LTR	0.60	14.5	B	LTR	0.66	15.7	B
Worth Street	EB	TR	0.22	21.0	C	TR	0.16	20.0	B	TR	0.28	23.1	C
	WB	LT	0.93	59.5	E	LT	0.54	27.5	C	LT	0.81	39.5	D
Overall Intersection	-	0.96	41.4	D	-	0.57	17.2	B	-	0.72	22.5	C	C
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.39	17.6	B	L	0.32	16.6	B	L	0.27	15.7	B
	TR		0.60	20.1	C	TR	0.43	17.1	B	TR	0.44	17.2	B
Chambers Street	EB	L	0.42	22.7	C	LTR	1.20+	120.0+	F*	L	0.42	23.2	C
	TR		1.15	114.2	F	-	-	-	-	TR	0.82	38.0	D
	WB	LTR	1.02	67.0	E	LTR	0.92	43.5	D	LTR	1.20+	120.0+	F*
Overall Intersection	-	0.88	57.7	E	-	0.88	76.8	E	-	0.84	68.0	E	E
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.46	10.7	B	TR	0.46	10.7	B	TR	0.55	11.6	B
Barclay Street	WB	LT	0.84	34.5	C	LT	0.49	21.8	C	LT	0.94	44.7	D
Overall Intersection	-	0.63	20.7	C	-	0.47	14.1	B	-	0.72	25.6	C	C
13 West Broadway/ Greenwich Street at Vesey Street													
Greenwich Street	SB	L	0.61	44.9	D	L	0.45	36.3	D	L	0.56	41.4	D
	R		0.40	38.8	D	R	0.13	31.2	C	R	0.29	35.4	D
West Broadway	SB	L	0.86	27.8	C	L	0.90	44.0	D	L	1.16	109.9	F
	R		0.51	15.4	B	R	0.74	31.3	C	R	0.61	19.7	B
Vesey Street	EB	T	0.68	37.4	D	T	0.46	27.4	C	T	0.64	34.7	C
	WB	T	0.48	33.6	C	T	0.30	25.6	C	T	0.42	31.3	C
Overall Intersection	-	0.78	30.7	C	-	0.66	32.6	C	-	0.92	57.7	E	E

TABLE E.2-4
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)					Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control		LOS
			Delay	LOS				Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR														
21 Church Street at Worth Street														
Church Street	NB	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	
Worth Street	EB	LT	0.96	60.9	E	LT	0.82	42.3	D	LT	0.59	30.9	C	
	WB	TR	0.88	44.8	D	TR	0.78	40.4	D	TR	0.81	38.8	D	
Overall Intersection	-		1.18	120.0+	F*	-	1.09	120.0+	F*	-	1.08	120.0+	F*	
22 Church Street at Chambers Street														
Church Street	NB	LTR	1.07	66.8	E	LTR	1.02	50.9	D	LTR	1.13	91.8	F	
Chambers Street	EB	LT	1.08	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	
	WB	TR	0.88	36.1	D	TR	0.77	27.8	C	TR	0.70	24.2	C	
Overall Intersection	-		1.07	72.7	E	-	1.14	65.0	E	-	1.20+	97.0	F	
23 Church Street at Barclay Street														
Church Street	NB	LT	1.07	62.8	E	LT	0.82	20.3	C	LT	0.94	28.5	C	
Barclay Street	WB	T	0.41	23.6	C	T	0.28	21.3	C	T	0.50	25.4	C	
		R	0.83	46.6	D	R	0.90	56.5	E	R	0.81	43.6	D	
Overall Intersection	-		0.98	57.3	E	-	0.85	26.1	C	-	0.88	30.0	C	
24 Church Street at Vesey Street														
Church Street	NB	LT	1.20+	120.0+	F*	LT	1.02	50.5	D	LT	1.13	89.3	F	
	R		0.57	14.3	B	R	0.88	34.6	C	R	0.41	9.0	A	
Vesey Street	EB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	
Overall Intersection	-		1.20+	120.0+	F*	-	1.10	76.4	E	-	1.20+	120.0+	F*	
25 Church Street at Fulton Street														
Church Street	NB	T	0.83	19.9	B	T	0.80	18.8	B	T	0.68	15.5	B	
Fulton Street	WB	R	0.57	26.8	C	R	0.60	32.0	C	R	0.55	26.2	C	
Overall Intersection	-		0.73	21.0	C	-	0.72	20.2	C	-	0.63	17.5	B	
26 Church Street at Dey Street														
Church Street	NB	T	0.70	11.1	B	T	0.65	10.4	B	T	0.58	9.2	A	
Dey Street	WB	R	0.24	28.4	C	R	0.41	32.9	C	R	0.24	28.4	C	
Overall Intersection	-		0.57	11.6	B	-	0.58	11.7	B	-	0.48	9.8	A	
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.60	9.6	A	T	0.42	7.8	A	T	0.42	7.8	A	
Cortlandt Street	WB	R	1.05	86.2	F	R	1.20+	120.0+	F*	R	1.09	101.6	F	
Overall Intersection	-		0.77	29.7	C	-	0.87	120.0+	F*	-	0.69	38.5	D	
28 Church Street at Liberty Street														
Church Street	NB	T	0.75	13.1	B	T	0.54	9.4	A	T	0.48	8.6	A	
		R	0.22	7.2	A	R	0.28	7.8	A	R	0.16	6.6	A	
Liberty Street	EB	LT	0.41	22.3	C	LT	0.40	22.1	C	LT	0.36	21.8	C	
Overall Intersection	-		0.61	15.3	B	-	0.49	13.5	B	-	0.44	12.7	B	
29 Trinity Street at Rector Street														
Trinity Street	NB	TR	0.48	12.9	B	TR	0.55	14.1	B	TR	0.37	11.4	B	
Rector Street	EB	LT	0.88	44.0	D	LT	0.74	33.2	C	LT	0.88	44.2	D	
Overall Intersection	-		0.64	26.8	C	-	0.62	21.3	C	-	0.57	27.6	C	

**TABLE E.2-4
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)					Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)			
	Mvt.	V/C	Control			Mvt.	V/C	Control		Mvt.	V/C	Control	
			Delay	LOS	Delay			LOS	Delay			LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.46	20.3	C	LTR	0.59	22.6	C	LTR	0.69	24.3	C
Canal Street	EB	TR	0.52	20.2	C	TR	0.45	19.2	B	TR	0.96	44.7	D
	WB	DefL	0.81	40.4	D	LT	0.69	13.7	B	DefL	1.10	101.4	F
	T		0.35	9.1	A	-	-	-	-	T	0.71	17.5	B
Overall Intersection	-		0.72	22.1	C	-	0.69	18.5	B	-	0.90	40.7	D
31 Broadway at Worth Street													
Broadway	SB	LTR	0.79	70.2	E	LTR	0.58	64.1	E	LTR	0.77	67.1	E
Worth Street	EB	TR	1.01	120.0+	F*	TR	0.93	120.0+	F*	TR	0.76	30.6	C
	WB	LT	0.74	42.6	D	LT	0.84	103.2	F	LT	0.75	29.1	C
Overall Intersection	-		0.89	85.7	F	-	0.74	99.3	F	-	0.77	51.8	D
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.59	13.0	B	LTR	0.44	11.2	B	LTR	0.56	12.5	B
Chambers Street	EB	TR	0.97	53.7	D	TR	0.68	24.4	C	TR	0.92	42.3	D
	WB	L	0.54	27.2	C	L	0.34	19.0	B	L	0.40	21.7	C
	LT		0.74	26.3	C	LT	0.64	22.5	C	LT	0.64	22.3	C
Overall Intersection	-		0.76	26.9	C	-	0.55	17.6	B	-	0.72	23.1	C
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.85	30.1	C	L	0.60	18.3	B	L	0.95	43.3	D
	LT		0.48	14.4	B	LT	0.46	14.1	B	LT	0.41	13.5	B
Vesey Street	EB	L	1.20+	120.0+	F*	L	1.09	120.0+	F*	L	1.20+	120.0+	F*
	LTR		1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Overall Intersection	-		0.64	98.3	F	-	0.54	116.2	F	-	0.66	87.7	F
34 Broadway at Fulton Street⁽¹⁾													
Broadway	SB	TR	0.52	9.9	A	TR	0.54	10.2	B	TR	0.38	8.4	A
Fulton Street	WB	LT	0.64	32.2	C	LT	CLOSED			LT	0.45	27.6	C
Overall Intersection	-		0.56	15.8	B	-	0.37	10.2	B	-	0.40	13.4	B
35 Broadway at Dey Street													
Broadway	SB	LTR	0.90	24.0	C	LTR	0.77	16.1	B	LTR	0.77	16.3	B
Overall Intersection	-		0.59	24.0	C	-	0.51	16.1	B	-	0.51	16.3	B
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.76	15.6	B	TR	0.74	15.1	B	TR	0.65	12.8	B
Maiden Lane	WB	LT	0.82	44.6	D	LT	1.11	107.0	F	LT	0.89	51.9	D
Overall Intersection	-		0.78	23.3	C	-	0.86	45.6	D	-	0.73	25.3	C
37 Broadway at Liberty Street													
Broadway	SB	LT	0.70	13.8	B	LT	0.58	11.2	B	LT	0.54	10.6	B
Liberty Street	EB	TR	0.42	26.7	C	TR	0.48	27.6	C	TR	0.36	25.8	C
Overall Intersection	-		0.61	17.5	B	-	0.54	16.6	B	-	0.48	14.9	B
38 Broadway at Rector Street													
Broadway	SB	T	0.40	7.9	A	T	0.61	10.9	B	T	0.65	12.1	B
Rector Street	EB	R	0.79	57.2	E	R	0.67	43.4	D	R	0.63	40.4	D
Overall Intersection	-		0.51	21.2	C	-	0.63	17.2	B	-	0.65	17.5	B
39 Broadway at Exchange Place													
Broadway	SB	T	0.40	7.7	A	T	0.45	8.0	A	T	0.55	9.5	A
Overall Intersection	-		0.28	7.7	A	-	0.31	8.0	A	-	0.38	9.5	A
WATER STREET CORRIDOR													
40 Water Street at Fulton Street													
Water Street	NB	L	1.08	119.5	F	L	0.54	23.7	C	L	0.44	18.4	B
	T		1.15	102.3	F	T	0.92	36.4	D	T	1.09	77.8	E
	SB	TR	0.68	18.4	B	TR	0.54	15.8	B	TR	0.41	13.9	B
Fulton Street	EB	LR	0.45	29.3	C	LR	0.48	30.0	C	LR	0.34	26.7	C
Overall Intersection	-		0.79	61.9	E	-	0.66	26.6	C	-	0.72	49.7	D

TABLE E.2-4
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
UNIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt.9A) at Barclay													
Barclay Street	WB	R	0.58	38.7	E	R	0.50	26.1	D	R	0.51	26.7	D
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street													
Washington Street	SB	LT	0.26	18.3	C	LT	0.14	13.4	B	LT	0.22	14.7	B
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street													
Greenwich Street	SB	T	0.23	13.5	B	T	0.16	12.8	B	T	0.25	15.6	C
		R	0.06	11.5	B	R	0.26	13.3	B	R	0.00	11.6	B
Barclay Street	WB	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A

General Notes:

Eng-Wong, Taub & Associates Notes:

(1): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-5
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.87	5.1	A	T	0.71	3.0	A	T	0.86	5.1	A
	SB	T	0.78	3.1	A	T	0.59	2.1	A	T	0.80	3.6	A
Canal Street	WB	L	0.44	50.0	D	L	0.60	53.9	D	L	0.25	41.0	D
	LR		0.45	50.2	D	LR	0.82	68.6	E	LR	0.37	43.3	D
	R		0.53	53.5	D	R	0.61	55.3	E	R	0.42	45.5	D
Overall Intersection	-	0.80	5.9	A	-	0.73	7.3	A	-	0.76	5.8	A	
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	1.19	114.1	F	TR	0.93	22.0	C	TR	1.10	77.2	E
	R		0.51	13.1	B	R	0.55	13.9	B	R	0.37	10.7	B
	SB	L	1.04	120.0+	F*	L	1.04	81.5	F	L	1.06	86.2	F
	T		1.20+	120.0+	F*	T	1.20+	120.0+	F*	T	1.20+	114.1	F
Overall Intersection	-	1.13	120.0+	F*	-	0.98	120.0+	F*	-	1.08	92.9	F	
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.20+	120.0+	F*	TR	1.13	94.2	F	TR	1.14	95.2	F
	SB	L	0.84	30.6	C	L	0.67	11.2	B	L	0.62	9.4	A
	TR		1.12	88.7	F	TR	1.06	64.3	E	TR	1.14	98.9	F
Chambers Street	EB	LTR	0.49	42.3	D	LTR	0.31	38.7	D	LTR	0.36	40.7	D
	WB	LT	0.99	91.7	F	LT	0.85	66.6	E	LT	1.08	120.0+	F*
	R		0.45	26.3	C	R	0.52	28.5	C	R	0.75	36.7	D
Overall Intersection	-	1.18	115.9	F	-	1.03	73.2	E	-	1.10	89.8	F	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	1.14	120.0+	F*	L	0.92	89.6	F	L	0.98	101.2	F
	TR		1.20+	120.0+	F*	TR	1.13	120.0+	F*	TR	1.19	120.0+	F*
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
	TR		1.20+	120.0+	F*	TR	1.15	108.1	F	TR	1.20+	120.0+	F*
Vesey Street	EB	L	0.76	54.9	D	L	0.47	37.1	D	L	0.43	35.7	D
	TR		1.08	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	WB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
	TR		1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	
41 West Street (NYS Rt. 9A) at Fulton Street													
West Street (NYS Rt. 9A)	NB	T	1.03	48.0	D	T	0.92	33.4	C	T	0.94	34.8	C
Fulton Street	WB	R	0.84	56.0	E	R	0.69	35.0	C	R	0.72	38.4	D
Overall Intersection	-	0.96	48.7	D	-	0.82	33.6	C	-	0.84	35.3	D	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.77	65.3	E	L	0.66	58.0	E	L	0.77	66.1	E
	TR		0.99	32.8	C	TR	0.85	19.6	B	TR	0.81	17.8	B
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
	TR		0.81	18.1	B	TR	0.74	16.5	B	TR	1.03	64.7	E
Liberty Street	EB	LTR	0.67	45.2	D	LTR	0.55	41.8	D	LTR	0.64	44.1	D
Overall Intersection	-	1.06	78.5	E	-	0.94	74.4	E	-	0.95	53.5	D	
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	T	1.16	120.0+	F*	T	0.96	91.9	F	T	0.89	49.3	D
	SB	TR	1.04	120.0+	F*	TR	1.07	120.0+	F*	TR	1.13	120.0+	F*
Albany Street	EB	LR	1.20+	120.0+	F*	LR	0.59	43.7	D	LR	0.88	69.4	E
	WB	L	0.47	37.4	D	L	0.46	36.7	D	L	0.61	41.9	D
	TR		0.32	33.7	C	TR	0.57	41.0	D	TR	0.51	38.8	D
Overall Intersection	-	1.20+	120.0+	F*	-	0.92	103.9	F	-	1.05	91.0	F	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	R		1.20+	120.0+	F*	R	1.15	117.2	F	R	1.13	120.0+	F*
	SB	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.63	26.6	C	R	0.21	22.1	C	R	0.18	13.6	B
	WB	L	1.08	120.0+	F*	L	1.03	120.0+	F*	L	1.07	120.0+	F*
	R		1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.13	120.0+	F*
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	
WASHINGTON STREET CORRIDOR													
8 Washington Street at Vesey Street													
Vesey Street	EB	LT	0.69	13.5	B	LT	0.65	12.7	B	LT	0.59	11.7	B
	WB	TR	0.50	10.6	B	TR	0.55	11.3	B	TR	0.55	11.0	B
Overall Intersection	-	0.43	12.3	B	-	0.41	12.1	B	-	0.37	11.3	B	
9 Washington Street at Liberty Street													
ANALYSIS NOT NEEDED. (FREE FLOW)													

**TABLE E.2-5
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.30	15.5	B	LTR	0.26	15.1	B	LTR	0.22	14.6	B
Chambers Street	EB	TR	0.54	18.9	B	TR	0.40	16.8	B	TR	0.41	16.8	B
	WB	LT	0.78	28.4	C	LT	0.76	27.3	C	LT	0.87	33.8	C
Overall Intersection	-		0.54	21.3	C	-	0.51	20.3	C	-	0.54	23.9	C
42 Greenwich Street at Fulton Street													
Greenwich Street	SB	TR	0.39	12.2	B	TR	0.49	13.5	B	TR	0.51	13.9	B
Fulton Street	WB	LT	0.56	27.8	C	LT	0.56	27.9	C	LT	0.63	29.8	C
Overall Intersection	-		0.45	18.7	B	-	0.51	19.0	B	-	0.56	20.6	C
14 Greenwich Street at Liberty Street													
Greenwich Street	SB	L	0.73	32.0	C	L	0.78	37.1	D	L	0.86	47.7	D
		LT	0.50	14.6	B	LT	0.68	20.2	C	LT	0.55	15.9	B
Liberty Street	EB	TR	1.02	66.0	E	TR	0.90	41.7	D	TR	0.79	32.9	C
Overall Intersection	-		0.84	47.5	D	-	0.83	34.5	C	-	0.83	30.4	C
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.02	17.6	B	R	0.08	18.5	B	R	0.09	18.6	B
	SB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	LT	0.94	58.4	E
Rector Street	EB	TR	0.70	20.6	C	TR	1.20+	120.0+	F*	TR	0.66	18.9	B
Overall Intersection	-		0.93	102.3	F	-	1.20+	120.0+	F*	-	0.77	37.1	D
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.86	43.0	D	LTR	0.65	34.3	C	LTR	0.91	46.9	D
	R		0.57	36.6	D	R	0.60	37.5	D	R	0.80	47.6	D
Canal Street	EB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	0.89	50.8	D
		LT	1.08	75.4	E	LT	0.97	49.6	D	T	0.94	42.5	D
	WB	T	1.13	115.0	F	T	1.15	119.6	F	T	0.53	29.0	C
		R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*
Overall Intersection	-		1.18	96.5	F	-	1.16	103.7	F	-	1.20+	80.4	F
17 Canal Street at Varick Street													
Varick Street	SB	L	0.20	23.1	C	L	0.34	25.3	C	L	0.73	44.5	D
		T	0.66	29.6	C	T	0.57	27.6	C	T	0.49	26.2	C
	R		0.11	22.0	C	R	0.37	26.2	C	R	0.11	22.0	C
Canal Street	EB	TR	0.46	10.6	B	TR	0.32	9.0	A	TR	0.32	9.1	A
	WB	LT	1.16	119.8	F	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*
Overall Intersection	-		0.53	56.0	E	-	1.05	82.3	F	-	0.46	120.0+	F*
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	1.02	46.4	D	LTR	0.63	15.1	B	LTR	0.68	16.2	B
Worth Street	EB	TR	0.22	21.0	C	TR	0.16	20.0	B	TR	0.28	23.1	C
	WB	LT	1.18	120.0+	F*	LT	0.70	34.6	C	LT	0.87	46.3	D
Overall Intersection	-		1.08	62.1	E	-	0.66	19.4	B	-	0.76	24.8	C
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.39	17.6	B	L	0.32	16.6	B	L	0.27	15.7	B
		TR	0.69	22.1	C	TR	0.51	18.3	B	TR	0.48	17.8	B
Chambers Street	EB	L	0.43	23.5	C	LTR	1.20+	120.0+	F*	L	0.44	24.3	C
		TR	1.15	114.2	F	-	-	-	-	TR	0.82	38.0	D
	WB	LTR	1.20+	120.0+	F*	LTR	1.11	95.9	F	LTR	1.20+	120.0+	F*
Overall Intersection	-		1.07	103.2	F	-	0.93	93.1	F	-	0.96	96.3	F
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.66	13.2	B	TR	0.64	12.9	B	TR	0.70	14.0	B
Barclay Street	WB	LT	0.81	33.0	C	LT	0.50	22.1	C	LT	0.92	42.2	D
Overall Intersection	-		0.73	19.5	B	-	0.58	15.1	B	-	0.80	23.8	C
13 West Broadway/Greenwich Street at Vesey Street													
Greenwich Street	SB	L	0.50	39.9	D	L	0.48	39.3	D	L	0.51	40.2	D
		R	0.86	72.6	E	R	0.42	40.9	D	R	0.43	41.3	D
West Broadway	SB	L	0.59	15.6	B	L	0.37	12.5	B	L	0.62	16.3	B
		TR	0.45	3.4	A	TR	0.41	3.2	A	TR	0.41	3.2	A
Vesey Street	EB	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	WB	LT	0.69	39.0	D	LT	0.62	37.0	D	LT	0.64	37.5	D
Overall Intersection	-		0.90	120.0+	F*	-	0.81	120.0+	F*	-	0.93	120.0+	F*

**TABLE E.2-5
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR													
21 Church Street at Worth Street													
Church Street	NB	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Worth Street	EB	LT	0.96	60.9	E	LT	0.82	42.3	D	LT	0.59	30.9	C
	WB	TR	0.99	63.1	E	TR	0.91	56.4	E	TR	0.85	42.0	D
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.19	120.0+	F*
22 Church Street at Chambers Street													
Church Street	NB	LTR	1.18	110.0	F	LTR	1.18	112.0	F	LTR	1.20+	120.0+	F*
Chambers Street	EB	LT	1.08	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*
	WB	TR	0.93	43.1	D	TR	0.81	30.0	C	TR	0.71	24.7	C
Overall Intersection	-		1.13	99.4	F	-	1.20+	106.4	F	-	1.20+	120.0+	F*
23 Church Street at Barclay Street													
Church Street	NB	LT	1.13	86.1	F	LT	0.92	26.8	C	LT	1.01	44.1	D
Barclay Street	WB	T	0.45	24.2	C	T	0.30	21.8	C	T	0.53	26.1	C
		R	0.83	46.6	D	R	0.90	56.5	E	R	0.81	43.6	D
Overall Intersection	-		1.01	75.9	E	-	0.91	30.6	C	-	0.93	41.9	D
24 Church Street at Vesey Street													
Church Street	NB	LT	1.20+	120.0+	F*	LT	1.17	103.4	F	LT	1.20+	120.0+	F*
		R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*
Vesey Street	EB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*
25 Church Street at Fulton Street													
Church Street	NB	LT	0.98	34.4	C	LT	1.06	56.9	E	LT	0.87	22.1	C
Fulton Street	WB	TR	1.20+	120.0+	F*	TR	1.02	88.9	F	TR	1.20+	120.0+	F*
Overall Intersection	-		1.19	84.2	F	-	1.04	60.9	E	-	1.14	86.8	F
26 Church Street at Dey Street													
Church Street	NB	T	0.83	14.9	B	T	0.86	16.2	B	T	0.76	12.3	B
Dey Street	WB	R	0.34	32.5	C	R	0.58	43.7	D	R	0.33	32.3	C
Overall Intersection	-		0.69	15.4	B	-	0.78	17.4	B	-	0.64	12.8	B
27 Church Street at Cortlandt Street													
Church Street	NB	T	0.74	11.9	B	T	0.57	9.3	A	T	0.60	9.5	A
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*
Overall Intersection	-		1.18	109.3	F	-	1.20+	120.0+	F*	-	1.12	120.0+	F*
28 Church Street at Liberty Street													
Church Street	NB	T	0.78	14.0	B	T	0.61	10.4	B	T	0.56	9.5	A
		R	0.27	8.1	A	R	0.35	9.2	A	R	0.20	7.2	A
Liberty Street	EB	LT	0.85	36.1	D	LT	0.83	34.5	C	LT	0.84	36.1	D
Overall Intersection	-		0.80	22.2	C	-	0.70	20.7	C	-	0.67	20.8	C
29 Trinity Street at Rector Street													
Trinity Street	NB	TR	0.49	13.1	B	TR	0.60	15.0	B	TR	0.43	12.1	B
Rector Street	EB	LT	1.00	67.1	E	LT	0.87	42.8	D	LT	1.02	70.8	E
Overall Intersection	-		0.69	38.9	D	-	0.70	26.2	C	-	0.66	41.2	D

**TABLE E.2-5
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.52	21.0	C	LTR	0.67	24.2	C	LTR	0.74	25.7	C
Canal Street	EB	TR	0.56	21.0	C	TR	0.51	20.1	C	TR	0.97	48.1	D
	WB	DefL	0.81	41.3	D	LT	0.75	15.5	B	DefL	1.10	101.3	F
		T	0.43	10.2	B	-	-	-	-	T	0.74	19.2	B
Overall Intersection	-	0.74	22.7	C	-	0.75	20.1	C	-	0.92	41.9	D	
31 Broadway at Worth Street													
Broadway	SB	LTR	0.85	93.3	F	LTR	0.67	78.2	E	LTR	0.83	83.4	F
Worth Street	EB	TR	1.06	120.0+	F*	TR	1.02	120.0+	F*	TR	0.88	42.4	D
	WB	LT	0.84	58.5	E	LT	1.14	120.0+	F*	LT	0.90	43.5	D
Overall Intersection	-	0.94	103.8	F	-	0.88	120.0+	F*	-	0.86	66.4	E	
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.64	13.8	B	LTR	0.49	11.7	B	LTR	0.60	13.2	B
Chambers Street	EB	TR	0.97	53.7	D	TR	0.69	24.9	C	TR	0.94	46.0	D
	WB	L	0.59	29.8	C	L	0.39	20.3	C	L	0.41	22.3	C
		LT	0.77	27.6	C	LT	0.66	23.1	C	LT	0.64	22.4	C
Overall Intersection	-	0.79	27.2	C	-	0.58	18.0	B	-	0.76	24.1	C	
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.85	30.1	C	L	0.60	18.4	B	L	0.96	44.2	D
		LT	0.49	14.4	B	LT	0.48	14.3	B	LT	0.43	13.8	B
Vesey Street	EB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
		LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Overall Intersection	-	0.68	120.0+	F*	-	0.55	120.0+	F*	-	0.76	120.0+	F*	
34 Broadway at Fulton Street⁽¹⁾													
Broadway	SB	TR	0.55	10.3	B	TR	0.58	10.7	B	TR	0.38	8.5	A
Fulton Street	WB	LT	0.77	36.8	D	LT	CLOSED			LT	0.60	30.3	C
Overall Intersection	-	0.62	18.6	B	-	0.39	10.7	B	-	0.45	15.7	B	
35 Broadway at Dey Street													
Broadway	SB	LTR	0.81	17.9	B	LTR	0.69	13.6	B	LTR	0.70	13.9	B
Overall Intersection	-	0.53	17.9	B	-	0.44	13.6	B	-	0.46	13.9	B	
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.67	13.1	B	TR	0.66	12.9	B	TR	0.58	11.3	B
Maiden Lane	WB	LT	0.82	44.6	D	LT	1.20+	120.0+	F*	LT	0.89	51.9	D
Overall Intersection	-	0.72	22.3	C	-	0.88	88.2	F	-	0.68	25.6	C	
37 Broadway at Liberty Street													
Broadway	SB	LT	0.58	11.4	B	LT	0.47	9.7	A	LT	0.45	9.4	A
Liberty Street	EB	TR	0.48	27.5	C	TR	0.55	28.9	C	TR	0.42	26.9	C
Overall Intersection	-	0.55	17.1	B	-	0.50	17.4	B	-	0.44	15.5	B	
38 Broadway at Rector Street													
Broadway	SB	T	0.38	7.7	A	T	0.59	10.5	B	T	0.64	11.7	B
Rector Street	EB	R	1.08	120.0+	F*	R	0.90	69.7	E	R	0.85	59.1	E
Overall Intersection	-	0.58	47.2	D	-	0.68	25.3	C	-	0.70	23.4	C	
39 Broadway at Exchange Place													
Broadway	SB	T	0.42	7.9	A	T	0.47	8.2	A	T	0.58	9.8	A
Overall Intersection	-	0.29	7.9	A	-	0.33	8.2	A	-	0.40	9.8	A	
WATER STREET CORRIDOR													
40 Water Street at Fulton Street													
Water Street	NB	L	1.20+	120.0+	F*	L	0.61	28.7	C	L	0.48	20.2	C
		T	1.20+	120.0+	F*	T	1.06	69.6	E	T	1.20+	120.0+	F*
	SB	TR	0.73	19.9	B	TR	0.64	17.7	B	TR	0.49	15.2	B
Fulton Street	EB	LR	0.46	29.4	C	LR	0.51	30.7	C	LR	0.37	27.2	C
Overall Intersection	-	0.84	77.2	E	-	0.75	42.6	D	-	0.83	88.6	F	

**TABLE E.2-5
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
UN SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				
7 West Street (NYS Rt. 9A) at Barclay Barclay Street	WB	R	0.70	54.4	F	R	0.66	39.1	E	R	0.63	37.7	E
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street Washington Street	SB	LT	0.28	19.8	C	LT	0.15	14.3	B	LT	0.22	15.1	C
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street Greenwich Street	SB	T	0.27	13.6	B	T	0.20	13.1	B	T	0.24	14.9	B
		R	0.06	11.4	B	R	0.27	13.3	B	R	0.01	11.5	B
Barclay Street	WB	LT	0.00	7.2	A	LT	0.00	7.2	A	LT	0.00	7.2	A

Eng-Wong, Taub & Associates Notes:

(1): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-6
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A SHORT BYPASS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.00	37.9	D	TR	0.77	19.2	B	TR	0.81	20.5	C
	SB	L	0.94	49.2	D	L	0.84	22.8	C	L	0.69	12.1	B
		TR	0.71	17.8	B	TR	0.65	16.7	B	TR	0.93	26.8	C
Chambers Street	EB	LTR	0.48	42.0	D	LTR	0.27	37.4	D	LTR	0.33	39.5	D
	WB	LT	0.83	62.5	E	LT	0.66	49.2	D	LT	0.96	88.9	F
		R	0.44	26.2	C	R	0.52	28.3	C	R	0.74	36.1	D
Overall Intersection	-	1.13	32.8	C	-	0.79	20.5	C	-	0.95	27.0	C	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	0.83	52.5	D	L	0.54	28.4	C	L	0.58	35.9	D
		TR	0.54	43.7	D	TR	0.44	37.3	D	TR	0.47	37.2	D
	SB	L	0.28	19.9	B	L	0.48	23.1	C	L	0.28	19.0	B
		TR	0.86	52.9	D	TR	0.52	38.0	D	TR	0.82	50.4	D
Vesey Street	EB	L	0.37	29.0	C	L	0.21	24.3	C	L	0.17	24.1	C
		TR	0.78	55.1	E	TR	0.73	54.6	D	TR	0.91	69.8	E
	WB	L	0.66	42.5	D	L	0.54	33.3	C	L	0.73	49.4	D
		TR	0.73	52.4	D	TR	0.66	47.4	D	TR	0.66	46.7	D
Overall Intersection	-	0.90	47.5	D	-	0.72	36.9	D	-	0.84	47.2	D	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.47	14.3	B	L	0.36	10.8	B	L	0.51	17.2	B
		TR	0.35	18.1	B	TR	0.26	17.1	B	TR	0.25	16.8	B
	SB	L	0.38	11.0	B	L	0.32	9.2	A	L	0.42	10.8	B
		TR	0.47	19.8	B	TR	0.36	18.2	B	TR	0.53	22.4	C
Liberty Street	EB	LTR	0.38	31.1	C	LTR	0.27	29.3	C	LTR	0.33	30.2	C
Overall Intersection	-	0.55	19.9	B	-	0.39	17.7	B	-	0.61	20.5	C	
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	TR	0.90	42.5	D	TR	0.89	58.0	E	TR	0.86	38.4	D
	SB	TR	0.86	29.6	C	TR	0.87	31.6	C	TR	0.92	32.8	C
Albany Street	EB	LTR	0.90	68.2	E	LTR	0.31	34.1	C	LTR	0.56	41.5	D
Overall Intersection	-	0.90	39.2	D	-	0.71	45.7	D	-	0.80	35.6	D	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.20	120.0+	F*	T	1.20+	120.0+	F*	TR	1.14	120.0+	F*
	R		1.10	113.3	F	R	1.04	71.2	E	R	1.06	101.8	F
	SB	TR	1.17	120.0+	F*	TR	1.10	120.0+	F*	TR	1.16	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.62	26.3	C	R	0.20	22.0	C	R	0.18	13.6	B
	WB	L	1.06	120.0+	F*	L	1.01	120.0+	F*	L	1.05	120.0+	F*
		R	1.19	120.0+	F*	R	1.06	120.0+	F*	R	1.04	120.0+	F*
Overall Intersection	-	1.19	120.0+	F*	-	1.20+	120.0+	F*	-	1.09	120.0+	F*	

UNSIGNALIZED INTERSECTIONS

WEST STREET CORRIDOR

5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt.9A) at Barclay	WB	R	0.23	12.8	B	R	0.26	12.5	B	R	0.26	12.6	B

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-7
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION : CURRENT CONDITIONS SCENARIO WITH ROUTE 9A SHORT BYPASS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.10	78.4	E	TR	0.90	24.3	C	TR	0.95	29.6	C
	SB	L	0.88	35.9	D	L	0.80	18.9	B	L	0.69	11.9	B
		TR	0.84	21.6	C	TR	0.81	20.6	C	TR	1.05	61.6	E
Chambers Street	EB	LTR	0.48	42.0	D	LTR	0.27	37.4	D	LTR	0.33	39.5	D
	WB	LT	0.83	62.5	E	LT	0.66	49.2	D	LT	0.96	88.9	F
		R	0.44	26.2	C	R	0.52	28.3	C	R	0.74	36.1	D
Overall Intersection	-	1.13	51.6	D	-	0.84	23.7	C	-	0.99	45.5	D	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	1.07	98.7	F	L	0.88	60.6	E	L	0.83	55.5	E
		TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
		TR	1.14	120.0+	F*	TR	0.77	48.6	D	TR	0.87	57.4	E
Vesey Street	EB	L	0.46	31.7	C	L	0.28	25.9	C	L	0.25	26.2	C
		TR	0.92	78.4	E	TR	1.11	120.0+	F*	TR	1.04	107.4	F
	WB	L	0.84	61.3	E	L	0.76	48.9	D	L	0.94	79.6	E
		TR	0.79	61.3	E	TR	0.81	65.3	E	TR	0.86	70.4	E
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	
41 West Street (NYS Rt. 9A) at Fulton Street													
West Street (NYS Rt. 9A)	NB	T	0.29	11.9	B	T	0.25	16.4	B	T	0.26	16.5	B
Fulton Street	WB	R	0.74	46.8	D	R	0.63	32.1	C	R	0.69	36.1	D
Overall Intersection	-	0.46	21.5	C	-	0.42	22.4	C	-	0.46	24.7	C	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.48	14.9	B	L	0.38	11.6	B	L	0.54	19.4	B
		TR	0.48	19.8	B	TR	0.45	19.5	B	TR	0.38	18.4	B
	SB	L	0.58	19.1	B	L	0.55	16.6	B	L	0.43	12.6	B
		TR	0.49	20.2	C	TR	0.40	18.7	B	TR	0.58	23.6	C
Liberty Street	EB	LTR	0.40	31.4	C	LTR	0.28	29.5	C	LTR	0.36	30.8	C
Overall Intersection	-	0.67	21.3	C	-	0.56	19.5	B	-	0.65	21.8	C	
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	T	0.75	16.7	B	T	0.68	16.4	B	T	0.66	14.2	B
	SB	TR	0.88	32.6	C	TR	0.89	37.8	D	TR	0.94	42.4	D
Albany Street	EB	LR	1.00	95.6	F	LR	0.32	34.6	C	LR	0.55	41.9	D
	WB	L	0.18	31.4	C	L	0.15	30.8	C	L	0.23	32.2	C
		TR	0.08	30.0	C	TR	0.28	34.3	C	TR	0.21	32.4	C
Overall Intersection	-	0.92	26.8	C	-	0.71	26.4	C	-	0.82	29.4	C	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
		R	1.11	118.1	F	R	1.06	79.7	E	R	1.07	107.3	F
	SB	TR	1.20+	120.0+	F*	TR	1.18	120.0+	F*	TR	1.20+	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.62	26.3	C	R	0.20	22.0	C	R	0.18	13.6	B
	WB	L	1.06	120.0+	F*	L	1.01	120.0+	F*	L	1.05	120.0+	F*
		R	1.20+	120.0+	F*	R	1.13	120.0+	F*	R	1.07	120.0+	F*
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.14	120.0+	F*	
UNSIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street ANALYSIS NOT NEEDED. (FREE FLOW)													
7 West Street (NYS Rt.9A) at Barclay													
Barclay Street	WB	R	0.22	13.3	B	R	0.28	13.2	B	R	0.25	13.0	B

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-8
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)					
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.12	87.1	F	TR	0.91	25.0	C	TR	0.94	28.0	C	
	SB	L	0.86	32.2	C	L	0.78	17.7	B	L	0.70	12.3	B	
		TR	0.87	22.8	C	TR	0.79	19.8	B	TR	1.01	48.8	D	
Chambers Street	EB	LTR	0.49	42.3	D	LTR	0.31	38.7	D	LTR	0.36	40.7	D	
	WB	LT	0.99	91.7	F	LT	0.85	66.6	E	LT	1.08	120.0+	F*	
		R	0.45	26.3	C	R	0.52	28.5	C	R	0.75	36.7	D	
Overall Intersection	-		1.18	57.0	E	-	0.91	24.6	C	-	1.02	40.9	D	
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	L	0.92	67.9	E	L	0.70	44.0	D	L	0.74	45.5	D	
		TR	0.65	56.8	E	TR	0.53	39.1	D	TR	0.43	36.4	D	
	SB	L	0.38	24.4	C	L	0.57	28.2	C	L	0.32	19.8	B	
		TR	1.20+	120.0+	F*	TR	0.94	61.8	E	TR	0.88	83.3	F	
Vesey Street	EB	L	0.41	35.0	D	L	0.23	29.4	C	L	0.19	28.4	C	
		TR	0.79	56.0	E	TR	0.74	55.3	E	TR	0.92	72.4	E	
	WB	L	0.68	43.7	D	L	0.57	34.5	C	L	0.76	52.5	D	
		TR	1.12	120.0+	F*	TR	1.09	120.0+	F*	TR	1.02	100.4	F	
Overall Intersection	-		1.09	119.8	F	-	0.84	57.8	E	-	0.91	65.9	E	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.68	23.9	C	L	0.52	14.9	B	L	0.57	18.0	B	
		TR	0.45	19.5	B	TR	0.34	18.0	B	TR	0.24	16.7	B	
	SB	L	1.09	83.6	F	L	0.85	30.8	C	L	0.65	16.2	B	
		TR	0.56	21.3	C	TR	0.43	19.2	B	TR	0.47	21.6	C	
Liberty Street	EB	LTR	0.49	33.1	C	LTR	0.41	31.5	C	LTR	0.45	32.3	C	
Overall Intersection	-		0.87	35.9	D	-	0.75	23.3	C	-	0.68	21.6	C	
43 West Street (NYS Rt. 9A) at Albany Street														
West Street (NYS Rt. 9A)	NB	TR	0.98	90.7	F	TR	0.97	111.8	F	TR	0.90	65.4	E	
	SB	TR	0.88	37.9	D	TR	0.88	40.9	D	TR	0.94	44.8	D	
Albany Street	EB	LTR	1.09	117.2	F	LTR	0.53	39.9	D	LTR	0.85	62.5	E	
Overall Intersection	-		1.01	73.8	E	-	0.83	79.0	E	-	0.91	55.0	D	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
		R	1.19	120.0+	F*	R	1.11	100.6	F	R	1.10	120.0+	F*	
	SB	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
Brooklyn Battery Tunnel	EB	R	0.63	26.6	C	R	0.21	22.1	C	R	0.18	13.6	B	
	WB	L	1.08	120.0+	F*	L	1.03	120.0+	F*	L	1.07	120.0+	F*	
		R	1.20+	120.0+	F*	R	1.13	120.0+	F*	R	1.09	120.0+	F*	
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.17	120.0+	F*	
UN SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street														
			ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)			
7 West Street (NYS Rt. 9A) at Barclay														
Barclay Street	WB	R	0.25	13.6	B	R	0.28	13.3	B	R	0.27	12.9	B	

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-9
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION: CURRENT CONDITIONS SCENARIO WITH ROUTE 9A SHORT BYPASS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)					
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.20+	120.0+	F*	TR	1.14	97.2	F	TR	1.14	97.6	F	
	SB	L	0.84	30.6	C	L	0.67	11.1	B	L	0.62	9.3	A	
		TR	1.13	93.3	F	TR	1.07	69.2	E	TR	1.16	105.2	F	
Chambers Street	EB	LTR	0.49	42.3	D	LTR	0.31	38.7	D	LTR	0.36	40.7	D	
	WB	LT	0.99	91.7	F	LT	0.85	66.6	E	LT	1.08	120.0+	F*	
		R	0.45	26.3	C	R	0.52	28.5	C	R	0.75	36.7	D	
Overall Intersection	-		1.18	118.4	F	-	1.04	76.6	E	-	1.10	93.5	F	
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	L	1.02	89.4	F	L	0.87	63.4	E	L	1.01	81.8	F	
		TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	
		TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.02	114.3	F	
Vesey Street	EB	L	0.48	37.8	D	L	0.32	34.1	C	L	0.29	37.1	D	
		TR	0.93	80.7	F	TR	1.12	120.0+	F*	TR	1.06	112.5	F	
	WB	L	0.98	89.5	F	L	1.00	110.9	F	L	1.20+	120.0+	F*	
		TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	T	0.37	12.7	B	T	0.30	16.9	B	T	0.26	16.5	B	
Fulton Street	WB	R	0.84	56.0	E	R	0.69	35.0	C	R	0.72	38.4	D	
Overall Intersection	-		0.54	23.9	C	-	0.48	23.6	C	-	0.47	25.9	C	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.72	27.3	C	L	0.57	18.4	B	L	0.66	24.6	C	
		TR	0.64	22.9	C	TR	0.53	21.0	C	TR	0.39	18.5	B	
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	0.83	30.8	C	
		TR	0.61	22.4	C	TR	0.52	20.6	C	TR	0.59	24.3	C	
Liberty Street	EB	LTR	0.51	33.6	C	LTR	0.42	31.8	C	LTR	0.48	33.0	C	
Overall Intersection	-		1.13	119.5	F	-	1.05	95.7	F	-	0.76	25.8	C	
43 West Street (NYS Rt. 9A) at Albany Street														
West Street (NYS Rt. 9A)	NB	T	0.86	30.0	C	T	0.79	26.0	C	T	0.73	19.3	B	
	SB	TR	0.91	48.4	D	TR	0.94	68.3	E	TR	0.99	78.3	E	
Albany Street	EB	LR	1.20+	120.0+	F*	LR	0.59	43.6	D	LR	0.88	68.8	E	
	WB	L	0.47	37.4	D	L	0.46	36.7	D	L	0.61	41.9	D	
		TR	0.32	33.7	C	TR	0.56	40.8	D	TR	0.50	38.6	D	
Overall Intersection	-		1.14	52.8	D	-	0.83	43.7	D	-	0.95	49.6	D	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
		R	1.20+	120.0+	F*	R	1.15	117.2	F	R	1.13	120.0+	F*	
	SB	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
Brooklyn Battery Tunnel	EB	R	0.63	26.6	C	R	0.21	22.1	C	R	0.18	13.6	B	
	WB	L	1.08	120.0+	F*	L	1.03	120.0+	F*	L	1.07	120.0+	F*	
		R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.13	120.0+	F*	
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	
UN SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street														
			ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)			
7 West Street (NYS Rt. 9A) at Barclay Street														
Barclay Street	WB	R	0.25	13.2	B	R	0.34	14.6	B	R	0.31	14.5	B	

General Notes:
 (i): Control delay is measured in seconds per vehicle.
 (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
 (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
 (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
 (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-10
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION: STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)					
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.74	3.0	A	T	0.57	2.1	A	T	0.75	3.4	A	
	SB	T	0.65	2.2	A	T	0.48	1.7	A	T	0.74	3.1	A	
Canal Street	WB	L	0.28	45.1	D	L	0.44	47.2	D	L	0.23	40.5	D	
	LR		0.45	50.0	D	LR	0.81	67.0	E	LR	0.36	43.2	D	
	R		0.52	53.1	D	R	0.61	54.9	D	R	0.41	45.3	D	
Overall Intersection	-	0.70	4.6	A	-	0.62	7.2	A	-	0.67	4.8	A		
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	1.02	46.7	D	TR	0.74	14.3	B	TR	0.96	25.5	C	
	R		0.44	11.8	B	R	0.44	11.8	B	R	0.26	9.5	A	
	SB	L	0.99	100.1	F	L	0.98	60.9	E	L	1.00	70.3	E	
	T		1.17	96.0	F	T	1.20+	120.0+	F*	T	1.12	75.7	E	
Overall Intersection	-	1.01	72.2	E	-	0.84	73.9	E	-	0.98	52.9	D		
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.08	73.6	E	TR	0.89	23.9	C	TR	0.94	28.1	C	
	SB	L	1.02	100.1	F	L	0.79	63.4	E	L	0.71	58.2	E	
	TR		0.63	4.2	A	TR	0.60	4.0	A	TR	0.75	5.4	A	
Chambers Street	EB	LTR	0.48	42.0	D	LTR	0.26	37.1	D	LTR	0.33	39.5	D	
	WB	LT	0.83	62.5	E	LT	0.66	49.2	D	LT	0.96	88.9	F	
	R		0.49	27.2	C	R	0.50	27.4	C	R	0.78	38.7	D	
Overall Intersection	-	1.00	47.4	D	-	0.81	19.6	B	-	0.91	23.1	C		
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	L	0.82	66.4	E	L	0.57	53.9	D	L	0.62	55.5	E	
	TR		1.17	120.0+	F*	TR	0.94	39.8	D	TR	0.99	50.3	D	
	SB	L	0.80	65.1	E	L	1.12	120.0+	F*	L	0.87	72.0	E	
	TR		0.81	22.1	C	TR	0.72	19.9	B	TR	0.96	42.7	D	
Vesey Street	EB	LT	0.60	43.4	D	LT	0.24	34.5	C	LT	0.55	41.5	D	
	R		0.44	39.6	D	R	0.81	66.0	E	R	0.47	40.5	D	
Overall Intersection	-	0.94	120.0+	F*	-	0.93	41.5	D	-	0.84	48.0	D		
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	T	0.97	28.0	C	T	0.73	14.8	B	T	0.79	15.9	B	
	SB	T	0.72	14.5	B	T	0.68	13.7	B	T	0.90	20.2	C	
Fulton Street	WB	L	0.72	43.2	D	L	0.86	61.1	E	L	0.92	67.5	E	
	R		1.20+	120.0+	F*	R	0.92	62.9	E	R	1.02	120.0+	F*	
Overall Intersection	-	1.20+	46.9	D	-	0.81	20.3	C	-	0.95	29.2	C		
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.57	55.6	E	L	0.50	52.7	D	L	0.64	59.2	E	
	TR		0.96	31.3	C	TR	0.82	22.6	C	TR	0.78	21.0	C	
	SB	L	0.81	71.1	E	L	0.82	72.9	E	L	0.73	66.4	E	
	TR		0.78	21.2	C	TR	0.72	19.7	B	TR	1.04	71.8	E	
Liberty Street	EB	L	0.76	52.3	D	L	0.82	64.6	E	L	0.41	37.1	D	
	TR		0.23	33.2	C	TR	0.14	31.5	C	TR	0.48	38.9	D	
	WB	LTR	0.23	34.2	C	LTR	0.36	37.3	D	LTR	0.27	34.3	C	
Overall Intersection	-	0.87	31.2	C	-	0.82	27.1	C	-	0.82	49.5	D		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
	R		1.19	120.0+	F*	R	1.11	100.6	F	R	1.09	117.6	F	
	SB	TR	1.17	120.0+	F*	TR	1.12	120.0+	F*	TR	1.20	120.0+	F*	
Brooklyn Battery Tunnel	EB	R	0.62	26.3	C	R	0.20	22.0	C	R	0.18	13.6	B	
	WB	L	1.06	120.0+	F*	L	1.01	120.0+	F*	L	1.05	120.0+	F*	
	R		1.20+	120.0+	F*	R	1.10	120.0+	F*	R	1.07	120.0+	F*	
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.14	120.0+	F*		
WASHINGTON STREET CORRIDOR														
8 World Trade Center Garage/Washington Street at Vesey Street														
Vesey Street	NB	R	0.12	17.4	B	R	0.19	18.3	B	R	0.34	23.6	C	
	EB	L	0.13	11.5	B	L	0.21	13.2	B	L	0.22	13.3	B	
	T		0.41	13.6	B	T	0.47	14.3	B	T	0.50	14.6	B	
Washington Street	R		0.14	0.3	A	R	0.14	0.5	A	R	0.01	0.0	A	
Overall Intersection	-	0.28	12.1	B	-	0.35	13.8	B	-	0.43	15.1	B		
9 Washington Street at Liberty Street														
			ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)			

TABLE E.2-10
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION: STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.27	15.2	B	LTR	0.24	14.9	B	LTR	0.21	14.5	B
Chambers Street	EB	TR	0.51	18.3	B	TR	0.37	16.3	B	TR	0.38	16.3	B
	WB	LT	0.74	26.2	C	LT	0.72	25.4	C	LT	0.86	32.6	C
Overall Intersection	-		0.51	20.3	C	-	0.48	19.5	B	-	0.53	23.4	C
42 Greenwich Street at Fulton Street													
Greenwich Street	SB	T	0.65	19.1	B	T	0.69	20.2	C	T	0.74	23.2	C
		R	1.00	64.6	E	R	1.01	68.3	E	R	1.20+	120.0+	F*
Fulton Street	WB	LT	0.43	23.7	C	LT	0.45	24.2	C	LT	0.55	26.0	C
Overall Intersection	-		0.78	36.7	D	-	0.80	38.3	D	-	0.97	68.1	E
14 Greenwich Street at Liberty Street													
Greenwich Street	SB	LT	0.64	23.0	C	LT	0.80	31.5	C	LT	0.79	30.6	C
Liberty Street	EB	TR	0.37	16.4	B	TR	0.32	15.8	B	TR	0.35	16.1	B
Overall Intersection	-		0.50	19.7	B	-	0.56	24.1	C	-	0.57	23.9	C
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.02	17.6	B	R	0.08	18.5	B	R	0.08	18.5	B
	SB	LT	0.71	32.8	C	LT	1.20+	120.0+	F*	LT	0.70	32.7	C
Rector Street	EB	TR	0.38	13.0	B	TR	0.80	44.1	D	TR	0.32	12.1	B
Overall Intersection	-		0.51	24.1	C	-	1.10	120.0+	F*	-	0.47	23.7	C
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.85	42.2	D	LTR	0.64	34.0	C	LTR	0.89	45.2	D
	R		0.55	35.9	D	R	0.56	36.1	D	R	0.75	44.3	D
Canal Street	EB	L	1.10	88.8	F	L	1.09	80.9	F	L	0.70	35.3	D
	LT		1.02	55.9	E	LT	0.90	34.9	C	T	0.86	30.9	C
	WB	T	1.03	82.1	F	T	1.05	85.3	F	T	0.51	28.4	C
	R		1.10	95.3	F	R	1.12	97.3	F	R	1.18	110.5	F
Overall Intersection			1.04	66.6	E		0.99	64.3	E		1.10	57.3	E
17 Canal Street at Varick Street													
Varick Street	SB	L	0.20	23.1	C	L	0.33	25.2	C	L	0.72	43.6	D
	T		0.65	29.4	C	T	0.56	27.5	C	T	0.48	26.2	C
	R		0.11	22.0	C	R	0.37	26.1	C	R	0.11	22.0	C
Canal Street	EB	TR	0.44	10.3	B	TR	0.30	8.8	A	TR	0.30	8.9	A
	WB	LT	1.03	71.5	E	LT	1.14	94.6	F	LT	1.16	120.0+	F*
Overall Intersection	-		0.51	37.8	D	-	0.94	50.0	D	-	0.44	88.8	F
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	0.98	37.2	D	LTR	0.60	14.5	B	LTR	0.65	15.7	B
Worth Street	EB	TR	0.22	21.0	C	TR	0.15	19.9	B	TR	0.28	23.1	C
	WB	LT	1.01	81.1	F	LT	0.61	30.0	C	LT	0.85	43.2	D
Overall Intersection	-		0.99	44.2	D	-	0.60	17.8	B	-	0.73	23.6	C
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.38	17.4	B	L	0.31	16.5	B	L	0.26	15.6	B
	TR		0.62	20.5	C	TR	0.46	17.5	B	TR	0.45	17.4	B
Chambers Street	EB	L	0.41	22.4	C	LTR	1.20+	120.0+	F*	L	0.42	23.5	C
	TR		1.08	87.3	F	-	-	-	-	TR	0.74	31.4	C
	WB	LTR	1.11	97.7	F	LTR	0.97	53.0	D	LTR	1.20+	120.0+	F*
Overall Intersection	-		0.87	57.9	E	-	0.85	66.1	E	-	0.89	78.6	E
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.72	14.3	B	TR	0.67	13.5	B	TR	0.78	15.9	B
Barclay Street	WB	LT	0.64	25.3	C	LT	0.34	19.4	B	LT	0.75	28.9	C
Overall Intersection	-		0.68	17.1	B	-	0.53	14.5	B	-	0.77	19.6	B
13 West Broadway/Greenwich Street at Vesey Street													
West Broadway	SB	L	0.81	38.0	D	L	0.60	28.9	C	L	0.80	37.5	D
	LT		0.73	29.9	C	LT	0.56	26.1	C	LT	0.78	31.4	C
Vesey Street	EB	TR	0.73	29.0	C	TR	0.89	36.9	D	TR	0.93	41.0	D
Overall Intersection	-		0.56	31.2	C	-	0.55	32.0	C	-	0.63	36.9	D

TABLE E.2-10
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION: STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR													
21 Church Street at Worth Street													
Church Street	NB	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Worth Street	EB	LT	0.94	57.8	E	LT	0.80	41.0	D	LT	0.59	30.6	C
	WB	TR	0.92	48.9	D	TR	0.84	45.9	D	TR	0.83	40.0	D
Overall Intersection	-		1.14	111.4	F	-	1.07	120.0+	F*	-	1.07	120.0+	F*
22 Church Street at Chambers Street													
Church Street	NB	LTR	1.08	73.2	E	LTR	1.05	62.0	E	LTR	1.17	107.3	F
Chambers Street	EB	LT	1.00	107.1	F	LT	0.99	67.9	E	LT	1.07	87.5	F
	WB	TR	0.82	31.1	C	TR	0.73	25.7	C	TR	0.67	23.1	C
Overall Intersection	-		1.04	70.7	E	-	1.02	55.3	E	-	1.12	88.6	F
23 Church Street at Barclay Street													
Church Street	NB	LT	1.06	58.3	E	LT	0.84	15.3	B	LT	0.94	22.6	C
Barclay Street	WB	T	0.28	21.3	C	T	0.14	19.6	B	T	0.36	22.7	C
		R	0.63	30.3	C	R	0.74	36.3	D	R	0.58	28.2	C
Overall Intersection	-		0.89	52.6	D	-	0.80	18.9	B	-	0.80	23.3	C
24 Church Street at Vesey Street													
Church Street	NB	T	1.10	76.9	E	T	0.76	12.9	B	T	0.82	15.2	B
	R		0.53	12.8	B	R	0.87	31.8	C	R	0.67	17.1	B
Vesey Street	EB	LT	1.20+	120.0+	F*	LT	1.05	76.3	E	LT	1.20+	120.0+	F*
Overall Intersection	-		1.20+	120.0+	F*	-	0.94	38.9	D	-	1.06	112.4	F
25 Church Street at Fulton Street													
Church Street	NB	LT	0.83	14.7	B	LT	0.86	16.5	B	LT	0.72	11.6	B
Fulton Street	WB	TR	1.17	120.0+	F*	TR	0.79	41.6	D	TR	1.20+	120.0+	F*
Overall Intersection	-		0.96	42.9	D	-	0.83	20.4	C	-	0.94	58.0	E
26 Church Street at Dey Street													
Church Street	NB	T	0.65	4.9	A	T	0.63	4.7	A	T	0.57	4.1	A
Dey Street	WB	R	0.24	28.5	C	R	0.45	34.7	C	R	0.25	28.9	C
Overall Intersection	-		0.54	5.8	A	-	0.58	6.5	A	-	0.48	5.0	A
27 Church Street at Cortlandt Street													
Church Street	NB	T	0.65	10.5	B	T	0.48	8.4	A	T	0.51	8.6	A
Cortlandt Street	WB	R	0.76	41.1	D	R	1.20+	120.0+	F*	R	0.96	75.2	E
Overall Intersection	-		0.70	15.4	B	-	1.09	120.0+	F*	-	0.69	21.2	C
28 Church Street at Liberty Street													
Church Street	NB	T	0.70	12.1	B	T	0.51	9.0	A	T	0.47	8.5	A
	R		0.16	6.7	A	R	0.22	7.4	A	R	0.13	6.4	A
Liberty Street	EB	LT	0.57	25.8	C	LT	0.56	25.3	C	LT	0.68	29.1	C
Overall Intersection	-		0.65	15.8	B	-	0.53	14.9	B	-	0.55	16.5	B
29 Trinity Street at Rector Street													
Trinity Street	NB	TR	0.48	12.9	B	TR	0.55	14.0	B	TR	0.40	11.8	B
Rector Street	EB	LT	0.58	26.9	C	LT	0.41	23.3	C	LT	0.53	25.7	C
Overall Intersection	-		0.52	18.0	B	-	0.49	16.6	B	-	0.45	16.9	B

TABLE E.2-10
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION: STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.44	20.0	C	LTR	0.57	22.4	C	LTR	0.68	24.1	C
Canal Street	EB	TR	0.47	19.5	B	TR	0.42	18.8	B	TR	0.92	39.5	D
	WB	DefL	0.71	30.8	C	LT	0.66	12.9	B	DefL	1.04	79.0	E
		T	0.36	9.1	A	-	-	-	-	T	0.69	16.6	B
Overall Intersection	-	0.67	20.2	C	-	0.67	18.0	B	-	0.88	35.4	D	
31 Broadway at Worth Street													
Broadway	SB	LTR	0.74	48.0	D	LTR	0.54	49.0	D	LTR	0.77	53.9	D
Worth Street	EB	TR	0.99	120.0+	F*	TR	0.92	118.3	F	TR	0.77	31.5	C
	WB	LT	0.76	40.7	D	LT	0.86	96.6	F	LT	0.76	29.4	C
Overall Intersection	-	0.85	69.0	E	-	0.71	84.1	F	-	0.77	44.2	D	
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.55	12.4	B	LTR	0.41	10.9	B	LTR	0.55	12.4	B
Chambers Street	EB	TR	0.94	45.9	D	TR	0.64	23.0	C	TR	0.87	36.0	D
	WB	L	0.52	26.0	C	L	0.34	18.9	B	L	0.38	20.8	C
		LT	0.71	25.0	C	LT	0.62	21.8	C	LT	0.62	21.8	C
Overall Intersection	-	0.72	24.5	C	-	0.51	17.0	B	-	0.70	20.9	C	
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.84	28.8	C	L	0.59	18.1	B	L	0.94	41.2	D
		LT	0.45	14.0	B	LT	0.45	14.0	B	LT	0.42	13.6	B
Vesey Street	EB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
		LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Overall Intersection	-	0.61	72.1	E	-	0.49	93.4	F	-	0.70	92.8	F	
34 Broadway at Fulton Street ⁽¹⁾													
Broadway	SB	TR	0.48	9.5	A	TR	0.54	10.2	B	TR	0.36	8.3	A
Fulton Street	WB	LT	0.64	31.6	C	LT	0.00	22.1	C	LT	0.55	29.2	C
Overall Intersection	-	0.53	16.4	B	-	0.36	10.2	B	-	0.42	15.2	B	
35 Broadway at Dey Street													
Broadway	SB	LTR	0.61	11.8	B	LTR	0.58	11.3	B	LTR	0.57	11.0	B
Overall Intersection	-	0.40	11.8	B	-	0.38	11.3	B	-	0.37	11.0	B	
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.56	11.0	B	TR	0.63	12.4	B	TR	0.48	9.9	A
Maiden Lane	WB	LT	0.58	32.6	C	LT	0.91	54.4	D	LT	0.51	30.0	C
Overall Intersection	-	0.57	16.3	B	-	0.72	27.1	C	-	0.49	15.4	B	
37 Broadway at Liberty Street													
Broadway	SB	LT	0.65	13.1	B	LT	0.58	11.7	B	LT	0.49	10.1	B
Liberty Street	EB	TR	0.32	25.5	C	TR	0.41	26.7	C	TR	0.34	25.8	C
Overall Intersection	-	0.54	16.4	B	-	0.52	16.5	B	-	0.44	14.6	B	
38 Broadway at Rector Street													
Broadway	SB	T	0.41	8.0	A	T	0.62	11.1	B	T	0.67	12.4	B
Rector Street	EB	R	1.01	101.8	F	R	1.00	98.8	F	R	0.77	50.9	D
Overall Intersection	-	0.58	37.4	D	-	0.73	30.9	C	-	0.70	21.0	C	
39 Broadway at Exchange Place													
Broadway	SB	T	0.44	8.0	A	T	0.48	8.3	A	T	0.59	10.0	A
Overall Intersection	-	0.30	8.0	A	-	0.33	8.3	A	-	0.40	10.0	A	

**TABLE E.2-10
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION: STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
WATER STREET CORRIDOR													
40 Water Street at Fulton Street													
Water Street	NB	L	0.83	49.4	D	L	0.49	20.7	C	L	0.44	18.3	B
		T	1.06	70.8	E	T	0.85	28.4	C	T	1.01	55.0	E
	SB	TR	0.59	16.5	B	TR	0.51	15.4	B	TR	0.43	14.4	B
Fulton Street	EB	LR	0.45	29.3	C	LR	0.48	30.1	C	LR	0.35	26.9	C
Overall Intersection	-		0.75	43.6	D	-	0.63	23.0	C	-	0.69	37.1	D
UNIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED, (FREE FLOW)												
7 West Street (NYS Rt.9A) at Barclay Street	WB	R	0.60	38.2	E	R	0.55	27.1	D	R	0.54	28.1	D
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street	SB	LT	0.23	16.6	C	LT	0.13	13.1	B	LT	0.21	14.1	B
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street	SB	R	0.06	12.2	B	R	0.30	14.9	B	R	0.01	12.9	B

General Notes:

Eng-Wong, Taub & Associates Notes:

(1): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-11
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION : STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.87	5.1	A	T	0.71	3.0	A	T	0.86	5.1	A
	SB	T	0.78	3.1	A	T	0.59	2.1	A	T	0.80	3.6	A
Canal Street	WB	L	0.44	50.0	D	L	0.60	53.9	D	L	0.25	41.0	D
	LR		0.45	50.2	D	LR	0.82	68.6	E	LR	0.37	43.3	D
	R		0.53	53.5	D	R	0.61	55.3	E	R	0.42	45.5	D
Overall Intersection	-		0.80	5.9	A	-	0.73	7.3	A	-	0.76	5.8	A
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	1.19	114.1	F	TR	0.93	22.0	C	TR	1.10	77.2	E
	R		0.51	13.1	B	R	0.55	13.9	B	R	0.37	10.7	B
	SB	L	1.04	120.0+	F*	L	1.04	81.5	F	L	1.06	86.2	F
	T		1.20+	120.0+	F*	T	1.20+	120.0+	F*	T	1.20+	114.1	F
Overall Intersection	-		1.13	120.0+	F*	-	0.98	120.0+	F*	-	1.08	92.9	F
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.20+	120.0+	F*	TR	1.12	87.3	F	TR	1.12	88.7	F
	SB	L	1.03	102.6	F	L	0.79	63.9	E	L	0.72	58.5	E
	TR		0.85	7.2	A	TR	0.80	6.2	A	TR	0.83	6.7	A
Chambers Street	EB	LTR	0.49	42.3	D	LTR	0.30	38.4	D	LTR	0.36	40.7	D
	WB	LT	0.99	91.7	F	LT	0.85	66.6	E	LT	1.08	120.0+	F*
	R		0.53	28.2	C	R	0.54	28.4	C	R	0.83	42.1	D
Overall Intersection	-		1.16	84.7	F	-	0.99	48.6	D	-	1.05	50.8	D
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	0.88	73.6	E	L	0.65	56.4	E	L	0.73	60.5	E
	TR		1.20+	120.0+	F*	TR	1.17	120.0+	F*	TR	1.11	91.9	F
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	0.93	81.1	F
	TR		1.08	75.2	E	TR	0.97	36.0	D	TR	1.07	90.7	F
Vesey Street	EB	LT	0.61	43.7	D	LT	0.27	34.9	C	LT	0.57	42.1	D
	R		0.45	40.2	D	R	0.84	70.9	E	R	0.48	40.9	D
Overall Intersection	-		1.12	120.0+	F*	-	1.10	96.7	F	-	0.92	86.6	F
41 West Street (NYS Rt. 9A) at Fulton Street													
West Street (NYS Rt. 9A)	NB	T	1.13	89.6	F	T	0.91	21.0	C	T	0.91	21.3	C
	SB	T	0.95	25.6	C	T	0.89	20.2	C	T	1.00	34.2	C
Fulton Street	WB	L	0.91	66.7	E	L	1.02	96.9	F	L	1.09	113.7	F
	R		1.20+	120.0+	F*	R	1.00	80.1	F	R	0.90	72.6	E
Overall Intersection	-		1.16	67.2	E	-	0.96	28.2	C	-	1.04	35.1	D
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.81	68.6	E	L	0.70	59.6	E	L	0.81	69.0	E
	TR		1.09	75.1	E	TR	0.94	29.5	C	TR	0.87	24.4	C
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
	TR		0.88	24.8	C	TR	0.81	21.9	C	TR	1.09	92.0	F
Liberty Street	EB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.01	102.2	F
	TR		0.23	33.3	C	TR	0.15	31.8	C	TR	0.48	39.2	D
	WB	LTR	0.64	50.7	D	LTR	1.19	120.0+	F*	LTR	1.13	120.0+	F*
Overall Intersection	-		1.20+	115.2	F	-	1.20+	105.6	F	-	1.14	74.9	E
6 West Street (NYS Rt. 9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt. 9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	R		1.20+	120.0+	F*	R	1.13	107.7	F	R	1.11	120.0+	F*
	SB	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.63	26.6	C	R	0.21	22.1	C	R	0.18	13.6	B
	WB	L	1.08	120.0+	F*	L	1.03	120.0+	F*	L	1.07	120.0+	F*
	R		1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.13	120.0+	F*
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*
WASHINGTON STREET CORRIDOR													
8 World Trade Center Garage/Washington Street at Vesey Street													
World Trade Center Garage	NB	R	0.29	20.6	C	R	0.40	22.1	C	R	0.53	29.1	C
Vesey Street	EB	L	0.13	11.5	B	L	0.21	13.2	B	L	0.22	13.3	B
	T		0.48	14.4	B	T	0.52	14.9	B	T	0.53	15.0	B
	R		0.52	1.9	A	R	0.52	3.5	A	R	0.05	0.2	A
Overall Intersection	-		0.52	11.1	B	-	0.52	13.9	B	-	0.53	16.2	B
9 Washington Street at Liberty Street													
ANALYSIS NOT NEEDED. (FREE FLOW)													

**TABLE E.2-11
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION : STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.30	15.5	B	LTR	0.26	15.1	B	LTR	0.22	14.6	B
Chambers Street	EB	TR	0.54	18.9	B	TR	0.40	16.8	B	TR	0.41	16.8	B
	WB	LT	0.85	32.7	C	LT	0.82	31.1	C	LT	0.93	41.1	D
Overall Intersection	-		0.57	23.1	C	-	0.54	22.0	C	-	0.57	27.6	C
42 Greenwich Street at Fulton Street													
Greenwich Street	SB	T	0.74	22.9	C	T	0.74	22.6	C	T	0.75	23.7	C
	R		1.19	120.0+	F*	R	1.14	110.9	F	R	1.15	111.9	F
Fulton Street	WB	LT	0.60	27.0	C	LT	0.57	26.7	C	LT	0.64	28.3	C
Overall Intersection	-		0.96	60.1	E	-	0.93	53.4	D	-	0.95	54.7	D
14 Greenwich Street at Liberty Street													
Greenwich Street	SB	LT	0.82	32.8	C	LT	0.97	53.9	D	LT	0.93	47.3	D
Liberty Street	EB	TR	1.01	54.6	D	TR	0.66	21.4	C	TR	0.45	17.2	B
Overall Intersection	-		0.91	47.2	D	-	0.81	34.6	C	-	0.69	31.0	C
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.02	17.6	B	R	0.08	18.5	B	R	0.09	18.6	B
	SB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	LT	0.81	40.0	D
Rector Street	EB	TR	0.70	20.6	C	TR	1.20+	120.0+	F*	TR	0.66	18.9	B
Overall Intersection	-		0.91	94.3	F	-	1.20+	120.0+	F*	-	0.72	27.9	C
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.86	43.0	D	LTR	0.65	34.3	C	LTR	0.91	46.9	D
	R		0.57	36.6	D	R	0.60	37.5	D	R	0.80	47.6	D
Canal Street	EB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	0.89	50.8	D
	LT		1.08	75.4	E	LT	0.97	49.6	D	T	0.94	42.5	D
	WB	T	1.13	115.0	F	T	1.15	119.6	F	T	0.53	29.0	C
	R		1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*
Overall Intersection	-		1.18	96.5	F	-	1.16	103.7	F	-	1.20+	80.4	F
17 Canal Street at Varick Street													
Varick Street	SB	L	0.20	23.1	C	L	0.34	25.3	C	L	0.73	44.5	D
	T		0.66	29.6	C	T	0.57	27.6	C	T	0.49	26.2	C
	R		0.11	22.0	C	R	0.37	26.2	C	R	0.11	22.0	C
Canal Street	EB	TR	0.46	10.6	B	TR	0.32	9.0	A	TR	0.32	9.1	A
	WB	LT	1.16	119.8	F	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*
Overall Intersection	-		0.53	56.0	E	-	1.05	82.3	F	-	0.46	120.0+	F*
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	1.02	46.4	D	LTR	0.63	15.1	B	LTR	0.68	16.2	B
Worth Street	EB	TR	0.22	21.0	C	TR	0.16	20.0	B	TR	0.28	23.1	C
	WB	LT	1.18	120.0+	F*	LT	0.70	34.6	C	LT	0.87	46.3	D
Overall Intersection	-		1.08	62.1	E	-	0.66	19.4	B	-	0.76	24.8	C
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.39	17.6	B	L	0.32	16.6	B	L	0.27	15.7	B
	TR		0.69	22.1	C	TR	0.51	18.3	B	TR	0.48	17.8	B
Chambers Street	EB	L	0.46	25.3	C	LTR	1.20+	120.0+	F*	L	0.47	26.3	C
	TR		1.15	114.2	F	-	-	-	-	TR	0.82	38.0	D
	WB	LTR	1.20+	120.0+	F*	LTR	1.17	118.3	F	LTR	1.20+	120.0+	F*
Overall Intersection	-		1.11	116.3	F	-	0.94	103.5	F	-	1.00	113.1	F
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.79	16.3	B	TR	0.74	14.8	B	TR	0.81	16.7	B
Barclay Street	WB	LT	0.90	39.5	D	LT	0.56	23.0	C	LT	0.98	53.5	D
Overall Intersection	-		0.84	23.6	C	-	0.66	16.9	B	-	0.88	29.3	C
13 West Broadway/Greenwich Street at Vesey Street													
West Broadway	SB	L	0.84	40.0	D	L	0.62	29.5	C	L	0.82	38.8	D
	LT		0.83	33.8	C	LT	0.63	27.4	C	LT	0.80	32.5	C
Vesey Street	EB	TR	0.91	38.1	D	TR	1.07	77.2	E	TR	1.01	56.4	E
Overall Intersection	-		0.63	36.8	D	-	0.62	54.0	D	-	0.66	54.0	D

**TABLE E.2-11
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION : STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR													
21 Church Street at Worth Street													
Church Street	NB	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Worth Street	EB	LT	0.96	60.9	E	LT	0.82	42.3	D	LT	0.59	30.9	C
	WB	TR	0.99	63.1	E	TR	0.91	56.4	E	TR	0.85	42.0	D
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.19	120.0+	F*
22 Church Street at Chambers Street													
Church Street	NB	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Chambers Street	EB	LT	1.08	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*
	WB	TR	0.93	43.1	D	TR	0.81	30.0	C	TR	0.71	24.7	C
Overall Intersection	-		1.15	111.5	F	-	1.20+	119.1	F	-	1.20+	120.0+	F*
23 Church Street at Barclay Street													
Church Street	NB	LT	1.20+	120.0+	F*	LT	1.14	90.4	F	LT	1.20+	120.0+	F*
Barclay Street	WB	T	0.29	21.5	C	T	0.14	19.6	B	T	0.38	22.9	C
		R	0.64	30.8	C	R	0.75	37.4	D	R	0.59	28.6	C
Overall Intersection	-		1.06	120.0+	F*	-	0.99	81.1	F	-	0.98	109.5	F
24 Church Street at Vesey Street													
Church Street	NB	T	1.20+	120.0+	F*	T	1.02	49.7	D	T	1.09	73.6	E
	R		0.84	29.8	C	R	1.19	120.0+	F*	R	1.00	66.1	E
Vesey Street	EB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*
Overall Intersection	-		1.20+	120.0+	F*	-	1.20+	111.2	F	-	1.20+	120.0+	F*
25 Church Street at Fulton Street													
Church Street	NB	LT	1.11	79.5	E	LT	1.16	98.1	F	LT	0.99	31.6	C
Fulton Street	WB	TR	1.20+	120.0+	F*	TR	0.96	67.2	E	TR	1.20+	120.0+	F*
Overall Intersection	-		1.19	103.2	F	-	1.08	93.9	F	-	1.15	76.4	E
26 Church Street at Dey Street													
Church Street	NB	T	0.88	9.9	A	T	0.87	9.5	A	T	0.80	7.0	A
Dey Street	WB	R	0.26	29.2	C	R	0.58	43.7	D	R	0.27	29.6	C
Overall Intersection	-		0.70	10.4	B	-	0.79	11.1	B	-	0.65	7.6	A
27 Church Street at Cortlandt Street													
Church Street	NB	T	0.81	14.0	B	T	0.63	10.2	B	T	0.66	10.4	B
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*
Overall Intersection	-		1.20+	73.8	E	-	1.20+	120.0+	F*	-	1.13	120.0+	F*
28 Church Street at Liberty Street													
Church Street	NB	T	0.78	14.0	B	T	0.61	10.4	B	T	0.56	9.5	A
	R		0.24	7.6	A	R	0.30	8.2	A	R	0.18	6.9	A
Liberty Street	EB	LT	0.99	58.8	E	LT	0.98	56.2	E	LT	0.99	59.9	E
Overall Intersection	-		0.86	31.1	C	-	0.76	30.2	C	-	0.73	31.2	C
29 Trinity Street at Rector Street													
Trinity Street	NB	TR	0.49	13.1	B	TR	0.60	15.0	B	TR	0.43	12.1	B
Rector Street	EB	LT	0.97	59.1	E	LT	0.81	38.0	D	LT	0.95	54.5	D
Overall Intersection	-		0.68	34.6	C	-	0.68	23.8	C	-	0.63	32.2	C

**TABLE E.2-11
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION : STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.52	21.0	C	LTR	0.67	24.2	C	LTR	0.74	25.7	C
Canal Street	EB	TR	0.56	21.0	C	TR	0.51	20.1	C	TR	0.97	48.1	D
	WB	DefL	0.81	41.3	D	LT	0.75	15.5	B	DefL	1.10	101.3	F
		T	0.43	10.2	B	-	-	-	-	T	0.74	19.2	B
Overall Intersection	-		0.74	22.7	C	-	0.75	20.1	C	-	0.92	41.9	D
31 Broadway at Worth Street													
Broadway	SB	LTR	0.85	93.3	F	LTR	0.67	78.2	E	LTR	0.83	83.4	F
Worth Street	EB	TR	1.06	120.0+	F*	TR	1.02	120.0+	F*	TR	0.88	42.4	D
	WB	LT	0.84	58.5	E	LT	1.14	120.0+	F*	LT	0.90	43.5	D
Overall Intersection	-		0.94	103.8	F	-	0.88	120.0+	F*	-	0.86	66.4	E
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.64	13.7	B	LTR	0.49	11.7	B	LTR	0.60	13.1	B
Chambers Street	EB	TR	0.97	53.7	D	TR	0.69	24.9	C	TR	0.94	46.0	D
	WB	L	0.60	30.4	C	L	0.40	20.5	C	L	0.42	22.6	C
		LT	0.77	27.6	C	LT	0.66	23.1	C	LT	0.64	22.4	C
Overall Intersection	-		0.79	27.2	C	-	0.58	18.0	B	-	0.76	24.1	C
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.85	30.1	C	L	0.60	18.4	B	L	0.96	44.2	D
		LT	0.54	15.1	B	LT	0.52	14.8	B	LT	0.47	14.2	B
Vesey Street	EB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*
		LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Overall Intersection	-		0.68	120.0+	F*	-	0.56	120.0+	F*	-	0.77	120.0+	F*
34 Broadway at Fulton Street ⁽¹⁾													
Broadway	SB	TR	0.63	11.5	B	TR	0.64	11.9	B	TR	0.42	8.8	A
Fulton Street	WB	LT	0.78	37.3	D	LT	CLOSED			LT	0.61	30.6	C
Overall Intersection	-		0.68	19.1	B	-	0.44	11.9	B	-	0.48	15.6	B
35 Broadway at Dey Street													
Broadway	SB	LTR	0.78	16.1	B	LTR	0.69	13.4	B	LTR	0.66	12.7	B
Overall Intersection	-		0.51	16.1	B	-	0.44	13.4	B	-	0.43	12.7	B
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.77	16.4	B	TR	0.80	18.0	B	TR	0.67	13.5	B
Maiden Lane	WB	LT	0.86	48.4	D	LT	1.20+	120.0+	F*	LT	0.90	52.8	D
Overall Intersection	-		0.80	25.4	C	-	0.98	92.9	F	-	0.74	26.7	C
37 Broadway at Liberty Street													
Broadway	SB	LT	0.75	16.1	B	LT	0.66	13.4	B	LT	0.55	11.1	B
Liberty Street	EB	TR	0.50	28.0	C	TR	0.56	29.3	C	TR	0.43	27.1	C
Overall Intersection	-		0.67	20.1	C	-	0.63	19.4	B	-	0.52	16.3	B
38 Broadway at Rector Street													
Broadway	SB	T	0.43	8.3	A	T	0.64	11.6	B	T	0.69	13.1	B
Rector Street	EB	R	0.96	85.1	F	R	0.72	47.0	D	R	0.64	41.0	D
Overall Intersection	-		0.58	30.6	C	-	0.66	18.5	B	-	0.68	18.3	B
39 Broadway at Exchange Place													
Broadway	SB	T	0.45	8.1	A	T	0.48	8.3	A	T	0.58	9.9	A
Overall Intersection	-		0.31	8.1	A	-	0.33	8.3	A	-	0.40	9.9	A

TABLE E.2-11
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 2015 BUILD CONDITION : STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
WATER STREET CORRIDOR													
40 Water Street at Fulton Street													
Water Street	NB	L	1.20+	120.0+	F*	L	0.61	29.0	C	L	0.49	20.3	C
		T	1.20+	120.0+	F*	T	1.01	55.1	E	T	1.19	117.5	F
	SB	TR	0.74	20.1	C	TR	0.65	17.9	B	TR	0.50	15.3	B
Fulton Street	EB	LR	0.46	29.4	C	LR	0.51	30.7	C	LR	0.37	27.2	C
Overall Intersection	-		0.85	76.3	E	-	0.73	35.8	D	-	0.78	71.1	E
UNSIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED, (FREE FLOW)				ANALYSIS NOT NEEDED, (FREE FLOW)				ANALYSIS NOT NEEDED, (FREE FLOW)				
7 West Street (NYS Rt. 9A) at Barclay	WB	R	0.99	102.3	F	R	0.84	56.3	F	R	0.83	55.9	F
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street	SB	LT	0.28	19.8	C	LT	0.15	14.3	B	LT	0.22	15.0	C
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street	SB	R	0.08	13.8	B	R	0.36	18.0	C	R	0.02	14.6	B

Eng-Wong, Taub & Associates Notes:

(1): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-12
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 BUILD CONDITION : STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.09	77.0	E	TR	0.90	24.5	C	TR	0.95	29.2	C
	SB	L	1.02	100.1	F	L	0.79	63.4	E	L	0.71	58.2	E
		TR	0.64	4.3	A	TR	0.61	4.1	A	TR	0.76	5.5	A
Chambers Street	EB	LTR	0.48	42.0	D	LTR	0.26	37.1	D	LTR	0.33	39.5	D
	WB	LT	0.83	62.5	E	LT	0.66	49.2	D	LT	0.96	88.9	F
		R	0.49	27.2	C	R	0.50	27.4	C	R	0.78	38.7	D
Overall Intersection	-	1.01	48.9	D	-	0.81	19.9	B	-	0.92	23.5	C	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	0.74	45.6	D	L	0.52	36.9	D	L	0.56	38.1	D
		TR	0.87	120.0+	F*	TR	0.78	56.4	E	TR	0.94	62.7	E
	SB	L	0.80	49.7	D	L	1.20+	120.0+	F*	L	0.86	55.9	E
		TR	0.72	38.0	D	TR	0.50	32.4	C	TR	0.62	42.3	D
Vesey Street	EB	LT	0.64	46.6	D	LT	0.26	36.2	D	LT	0.59	44.3	D
		R	0.58	48.4	D	R	1.20+	120.0+	F*	R	0.61	49.9	D
Overall Intersection	-	0.78	120.0+	F*	-	1.15	99.5	F	-	0.82	51.6	D	
41 West Street (NYS Rt. 9A) at Fulton Street													
West Street (NYS Rt. 9A)	NB	T	0.38	18.1	B	T	0.28	17.1	B	T	0.34	17.7	B
Fulton Street	SB	T	0.35	17.9	B	T	0.30	17.3	B	T	0.35	17.8	B
	WB	L	0.64	30.5	C	L	0.61	29.2	C	L	0.70	32.1	C
		R	1.02	84.6	F	R	0.69	30.9	C	R	0.78	39.3	D
Overall Intersection	-	0.71	32.1	C	-	0.50	22.0	C	-	0.57	24.6	C	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.47	35.3	D	L	0.41	33.2	C	L	0.48	36.5	D
		TR	0.72	41.1	D	TR	0.72	41.8	D	TR	0.66	39.2	D
	SB	L	0.61	37.5	D	L	0.78	50.2	D	L	0.51	35.4	D
		TR	0.66	36.5	D	TR	0.53	33.2	C	TR	0.81	48.4	D
Liberty Street	EB	L	0.67	47.3	D	L	0.52	41.5	D	L	0.36	37.6	D
		TR	0.27	36.5	D	TR	0.17	34.5	C	TR	0.56	44.6	D
	WB	LTR	0.01	31.9	C	LTR	0.11	34.0	C	LTR	0.11	33.6	C
Overall Intersection	-	0.68	39.4	D	-	0.68	39.3	D	-	0.68	42.1	D	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
		R	1.19	120.0+	F*	R	1.11	100.6	F	R	1.09	117.6	F
	SB	TR	1.20	120.0+	F*	TR	1.15	120.0+	F*	TR	1.20+	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.62	26.3	C	R	0.20	22.0	C	R	0.18	13.6	B
	WB	L	1.06	120.0+	F*	L	1.01	120.0+	F*	L	1.05	120.0+	F*
		R	1.20+	120.0+	F*	R	1.13	120.0+	F*	R	1.07	120.0+	F*
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.14	120.0+	F*	
WASHINGTON STREET CORRIDOR													
8 World Trade Center Garage/Washington Street at Vesey Street													
World Trade Center Garage	NB	R	0.06	16.5	B	R	0.17	18.1	B	R	0.18	18.2	B
Vesey Street	EB	L	0.13	11.5	B	L	0.11	11.3	B	L	0.11	11.3	B
		T	0.41	13.6	B	T	0.47	14.3	B	T	0.50	14.6	B
		R	0.14	0.3	A	R	0.07	0.1	A	R	0.01	0.0	A
Overall Intersection	-	0.26	12.0	B	-	0.34	13.6	B	-	0.36	14.6	B	
GREENWICH STREET CORRIDOR													
42 Greenwich Street at Fulton Street													
Greenwich Street	SB	T	0.65	19.1	B	T	0.69	20.2	C	T	0.74	23.2	C
		R	0.96	55.8	E	R	0.97	56.7	E	R	1.20+	120.0+	F*
Fulton Street	WB	LT	0.43	23.7	C	LT	0.45	24.1	C	LT	0.55	26.0	C
Overall Intersection	-	0.76	33.3	C	-	0.77	33.9	C	-	0.96	65.0	E	
WEST BROADWAY CORRIDOR													
13 West Broadway/Greenwich Street at Vesey Street													
West Broadway	SB	L	0.81	38.0	D	L	0.60	28.9	C	L	0.80	37.5	D
		LT	0.73	29.9	C	LT	0.56	26.1	C	LT	0.78	31.4	C
Vesey Street	EB	TR	0.70	28.2	C	TR	0.86	34.9	C	TR	0.92	39.1	D
Overall Intersection	-	0.55	30.9	C	-	0.54	31.0	C	-	0.63	36.0	D	

TABLE E.2-12
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 2009 BUILD CONDITION : STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
UN SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				
7 West Street (NYS Rt. 9A) at Barclay Barclay Street	WB	R	0.29	14.3	B	R	0.33	14.2	B	R	0.32	14.6	B

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-13
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 BUILD CONDITION: STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Mvt.	AM (8:15 - 9:15AM)			Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
		V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.20+	120.0+	F*	TR	1.13	93.6	F	TR	1.13	93.9	F
	SB	L	1.03	102.6	F	L	0.79	63.9	E	L	0.72	58.5	E
		TR	0.86	7.5	A	TR	0.81	6.4	A	TR	0.84	7.0	A
Chambers Street	EB	LTR	0.49	42.3	D	LTR	0.30	38.4	D	LTR	0.36	40.7	D
	WB	LT	0.99	91.7	F	LT	0.85	66.6	E	LT	1.08	120.0+	F*
		R	0.53	28.2	C	R	0.54	28.4	C	R	0.83	42.1	D
Overall Intersection	-	1.16	85.3	F	-	1.00	51.5	D	-	1.05	53.1	D	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	L	0.78	48.3	D	L	0.57	38.5	D	L	0.97	41.7	D
		TR	1.14	120.0+	F*	TR	0.95	107.0	F	TR	0.74	52.3	D
	SB	L	1.17	120.0+	F*	L	1.20+	120.0+	F*	L	0.61	75.4	E
		TR	1.20+	120.0+	F*	TR	1.10	114.9	F	TR	0.68	49.2	D
Vesey Street	EB	LT	0.65	46.9	D	LT	0.28	36.7	D	LT	0.66	45.0	D
		R	0.64	52.4	D	R	1.20+	120.0+	F*	R	0.88	54.9	D
Overall Intersection	-	1.08	120.0+	F*	-	1.20+	120.0+	F*	-	0.85	53.1	D	
41 West Street (NYS Rt. 9A) at Fulton Street													
West Street (NYS Rt. 9A)	NB	T	0.48	19.5	B	T	0.37	18.1	B	T	0.36	17.9	B
Fulton Street	SB	T	0.68	23.4	C	T	0.61	21.8	C	T	0.41	18.6	B
	WB	L	0.68	31.6	C	L	0.73	35.5	D	L	0.80	39.8	D
		R	0.85	43.7	D	R	0.70	31.4	C	R	0.68	33.0	C
Overall Intersection	-	0.77	26.0	C	-	0.67	23.8	C	-	0.61	24.4	C	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.66	41.8	D	L	0.58	37.5	D	L	0.60	40.0	D
		TR	0.98	66.6	E	TR	0.88	52.3	D	TR	0.71	41.0	D
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	0.93	65.1	E
		TR	0.82	43.8	D	TR	0.66	36.5	D	TR	0.75	44.6	D
Liberty Street	EB	L	0.99	86.0	F	L	1.12	120.0+	F*	L	0.68	48.0	D
		TR	0.28	36.7	D	TR	0.18	34.7	C	TR	0.56	44.9	D
	WB	LTR	0.09	33.6	C	LTR	0.39	43.4	D	LTR	0.77	75.6	E
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	0.81	48.0	D	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.20+	120.0+	F*	T	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
		R	1.20+	120.0+	F*	R	1.13	107.7	F	R	1.11	120.0+	F*
	SB	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.63	26.6	C	R	0.21	22.1	C	R	0.18	13.6	B
	WB	L	1.08	120.0+	F*	L	1.03	120.0+	F*	L	1.07	120.0+	F*
		R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.13	120.0+	F*
Overall Intersection	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	
WASHINGTON STREET CORRIDOR													
8 World Trade Center Garage/Washington Street at Vesey Street													
World Trade Center Garage	NB	R	0.49	27.1	C	R	0.28	19.6	B	R	0.49	27.1	C
Vesey Street	EB	L	0.22	13.3	B	L	0.21	13.2	B	L	0.22	13.3	B
		T	0.53	15.0	B	T	0.52	14.9	B	T	0.53	15.0	B
		R	0.05	0.2	A	R	0.52	3.5	A	R	0.05	0.2	A
Overall Intersection	-	0.51	15.9	B	-	0.52	13.4	B	-	0.51	15.9	B	
GREENWICH STREET CORRIDOR													
42 Greenwich Street at Fulton Street													
Greenwich Street	SB	T	0.74	22.9	C	T	0.74	22.6	C	T	0.75	23.7	C
		R	1.06	83.6	F	R	0.99	63.3	E	R	1.13	105.2	F
Fulton Street	WB	LT	0.60	27.0	C	LT	0.57	26.7	C	LT	0.64	28.3	C
Overall Intersection	-	0.88	44.0	D	-	0.83	36.8	D	-	0.94	52.2	D	
WEST BROADWAY CORRIDOR													
13 West Broadway/Greenwich Street at Vesey Street													
West Broadway	SB	L	0.84	40.0	D	L	0.62	29.5	C	L	0.82	38.8	D
		LT	0.83	33.8	C	LT	0.63	27.4	C	LT	0.80	32.5	C
Vesey Street	EB	TR	0.84	33.2	C	TR	1.01	55.9	E	TR	1.00	52.1	D
Overall Intersection	-	0.61	34.7	C	-	0.60	42.5	D	-	0.65	42.9	D	

TABLE E.2-13
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 2015 BUILD CONDITION: STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
UN SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				
7 West Street (NYS Rt. 9A) at Barclay Barclay Street	WB	R	0.43	17.0	C	R	0.46	16.4	C	R	0.44	16.2	C

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

**TABLE E.2-14
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
PRE SEPTEMBER 11TH EXISTING CONDITIONS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.70	2.7	A	T	0.54	2.0	A	T	0.87	5.4	A
	SB	T	0.55	1.7	A	T	0.45	1.6	A	T	0.62	2.2	A
Canal Street	WB	L	0.31	45.5	D	L	0.56	51.7	D	L	0.16	38.4	D
	LR		0.47	51.3	D	LR	0.38	45.5	D	LR	0.17	39.4	D
	R		0.53	54.0	D	R	0.46	49.2	D	R	0.20	39.5	D
Overall Intersection	-	0.67	4.5	A	-	0.54	5.1	A	-	0.72	4.7	A	
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	0.96	25.1	C	TR	0.70	13.4	B	TR	0.98	71.6	E
	R		0.47	12.3	B	R	0.49	12.6	B	R	0.25	9.3	A
	SB	L	0.93	52.5	D	L	0.89	48.3	D	L	0.72	35.0	D
	T		0.96	12.1	B	T	0.93	10.3	B	T	0.97	47.4	D
Overall Intersection	-	0.95	21.2	C	-	0.78	14.9	B	-	0.87	57.5	E	
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	0.94	35.2	D	TR	0.81	19.7	B	TR	0.98	43.3	D
	SB	L	0.80	19.3	B	L	0.64	16.2	B	L	0.35	10.1	B
	TR		0.86	29.7	C	TR	0.62	15.6	B	TR	0.96	39.7	D
Chambers Street	EB	LTR	0.66	53.8	D	LTR	0.26	35.7	D	LTR	0.59	42.6	D
	WB	LT	0.69	49.1	D	LT	0.60	45.2	D	LT	0.86	60.3	E
	R		0.63	26.1	C	R	0.77	40.7	D	R	0.62	24.4	C
Overall Intersection	-	0.88	32.5	C	-	0.83	20.7	C	-	0.90	39.4	D	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	TR	0.93	18.0	B	TR	0.66	11.5	B	TR	0.73	12.5	B
	SB	L	0.13	6.7	A	L	0.19	4.3	A	L	0.15	4.6	A
	TR		0.56	3.4	A	TR	0.46	3.0	A	TR	0.59	3.6	A
Vesey Street	EB	LTR	1.03	90.4	F	LTR	0.74	48.7	D	LTR	1.00	81.1	F
	WB	L	1.03	103.0	F	L	0.73	49.8	D	L	0.83	60.5	E
	LTR		0.80	56.5	E	LTR	0.89	68.4	E	LTR	1.05	103.4	F
Overall Intersection	-	0.98	24.2	C	-	0.86	15.7	B	-	0.91	22.0	C	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.85	74.8	E	L	0.35	51.8	D	L	0.54	54.3	D
	TR		1.00	36.1	D	TR	0.72	15.9	B	TR	0.68	15.1	B
	SB	L	1.00	99.7	F	L	0.70	62.1	E	L	0.72	60.9	E
	TR		0.70	15.5	B	TR	0.60	13.9	B	TR	0.83	18.6	B
Liberty Street	EB	DefL	0.69	56.7	E	DefL	0.50	46.5	D	LTR	0.77	50.5	D
	TR		0.41	40.8	D	TR	0.42	42.2	D	-	-	-	-
	WB	LTR	0.28	37.0	D	LTR	0.58	48.5	D	DefL	0.42	43.4	D
	-		-	-	-	-	-	-	-	TR	0.36	40.5	D
Overall Intersection	-	0.91	35.3	D	-	0.68	20.6	C	-	0.80	23.9	C	
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	TR	0.99	82.5	F	TR	0.92	62.7	E	TR	0.91	56.9	E
	SB	TR	0.93	44.2	D	TR	0.91	37.6	D	TR	0.98	63.8	E
Albany Street	EB	LTR	0.90	65.4	E	LTR	0.87	61.8	E	LTR	0.88	62.9	E
Overall Intersection	-	0.96	67.8	E	-	0.90	51.9	D	-	0.95	60.9	E	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.04	120.0+	F*	T	1.03	120.0+	F*	TR	1.00	89.9	F
	R		0.99	89.1	F	R	0.93	46.0	D	R	1.03	90.0	F
	SB	T	1.05	98.4	F	T	1.03	84.8	F	T	0.97	67.3	E
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.08	20.3	C	R	0.03	12.0	B
	WB	L	1.03	120.0+	F*	L	0.82	120.0+	F*	L	0.91	120.0+	F*
	R		1.03	120.0+	F*	R	0.97	120.0+	F*	R	0.82	105.3	F
Overall Intersection	-	1.04	120.0+	F*	-	1.00	115.0	F	-	0.96	92.7	F	
WASHINGTON STREET CORRIDOR													
8 Washington Street at Vesey Street													
Vesey Street	EB	LT	0.47	10.4	B	LT	0.22	8.1	A	LT	0.46	10.7	B
	WB	TR	0.24	8.2	A	TR	0.25	8.4	A	TR	0.28	8.6	A
Overall Intersection	-	0.30	9.5	A	-	0.16	8.3	A	-	0.29	9.7	A	
9 Washington Street at Liberty Street													
Washington Street	NB	R	0.00	20.7	C	R	0.06	21.4	C	R	0.12	22.2	C
Liberty Street	EB	T	0.33	9.1	A	T	0.31	8.9	A	T	0.32	8.9	A
Overall Intersection	-	0.22	9.1	A	-	0.23	9.4	A	-	0.25	9.9	A	

**TABLE E.2-14
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
PRE SEPTEMBER 11TH EXISTING CONDITIONS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.52	24.1	C	LTR	0.52	24.2	C	LTR	0.52	24.0	C
Chambers Street	EB	TR	0.33	10.9	B	TR	0.23	10.0	B	TR	0.30	10.7	B
	WB	LT	0.61	15.8	B	LT	0.48	13.4	B	LT	0.65	17.3	B
Overall Intersection	-		0.57	17.0	B	-	0.50	16.9	B	-	0.60	17.7	B
14 Greenwich Street at Liberty Street													
Liberty Street	EB	TR	0.46	10.5	B	TR	0.41	10.0	A	TR	0.43	10.1	B
Overall Intersection	-		0.29	10.5	B	-	0.26	10.0	A	-	0.27	10.1	B
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.11	19.1	B	R	0.15	19.7	B	R	0.00	17.4	B
	SB	LT	0.78	39.7	D	LT	0.31	21.6	C	LT	0.32	21.6	C
Rector Street	EB	TR	0.10	9.8	A	TR	0.28	11.6	B	TR	0.25	11.3	B
Overall Intersection	-		0.38	33.4	C	-	0.29	16.4	B	-	0.28	16.0	B
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.92	48.2	D	LTR	0.77	37.2	D	LTR	0.37	28.6	C
	R		0.83	50.6	D	R	0.64	38.4	D	R	0.96	114.6	F
Canal Street	EB	L	0.90	52.0	D	L	0.94	57.7	E	L	0.24	23.7	C
	T		0.94	40.5	D	T	0.88	33.7	C	T	0.84	28.1	C
	WB	T	0.92	54.7	D	T	0.88	51.2	D	T	0.20	23.1	C
	R		1.05	60.5	E	R	1.01	55.3	E	R	1.04	56.9	E
Overall Intersection	-		1.02	51.8	D	-	0.95	46.1	D	-	1.02	54.9	D
17 Canal Street at Varick Street													
Varick Street	SB	L	0.24	23.7	C	L	0.15	22.5	C	L	0.40	26.3	C
	T		0.92	43.6	D	T	1.04	78.8	E	T	1.05	91.8	F
	R		0.16	22.6	C	R	0.16	22.6	C	R	0.19	23.5	C
Canal Street	EB	TR	0.42	10.3	B	TR	0.42	10.3	B	TR	0.39	10.1	B
	WB	LT	0.97	60.3	E	LT	0.95	46.5	D	LT	0.97	73.5	E
Overall Intersection	-		0.59	43.8	D	-	0.63	52.7	D	-	0.62	68.4	E
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	0.93	30.0	C	LTR	0.65	15.6	B	LTR	0.76	18.1	B
Worth Street	EB	TR	0.18	20.3	C	TR	0.16	19.9	B	TR	0.21	20.7	C
	WB	LT	0.75	35.9	D	LT	0.56	28.0	C	LT	0.62	29.0	C
Overall Intersection	-		0.86	30.7	C	-	0.62	18.2	B	-	0.70	20.3	C
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.34	16.9	B	L	0.37	17.2	B	L	0.36	17.1	B
	TR		0.65	21.2	C	TR	0.50	18.2	B	TR	0.47	17.6	B
Chambers Street	EB	L	0.42	22.1	C	LTR	0.96	83.9	F	L	0.26	17.5	B
	TR		0.89	39.7	D	-	-	-	-	TR	0.70	25.7	C
	WB	LTR	0.78	28.2	C	LTR	0.57	20.7	C	LTR	0.84	33.6	C
Overall Intersection	-		0.77	27.2	C	-	0.73	36.0	D	-	0.65	24.1	C
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.44	10.4	B	TR	0.31	9.4	A	TR	0.41	10.2	B
Barclay Street	WB	LT	0.78	30.6	C	LT	0.36	19.6	B	LT	0.84	33.6	C
Overall Intersection	-		0.59	18.7	B	-	0.33	12.7	B	-	0.60	20.9	C
13 West Broadway at Vesey Street													
West Broadway	SB	L	0.97	68.7	E	L	0.36	16.9	B	L	0.89	38.8	D
	R		0.69	25.3	C	R	0.75	28.2	C	R	0.85	35.9	D
Vesey Street	EB	T	0.35	15.8	B	T	0.28	15.1	B	T	0.31	15.3	B
	WB	T	0.12	13.7	B	T	0.12	13.7	B	T	0.13	13.7	B
Overall Intersection	-		0.66	36.3	D	-	0.52	18.9	B	-	0.60	27.1	C

**TABLE E.2-14
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
PRE SEPTEMBER 11TH EXISTING CONDITIONS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
CHURCH STREET CORRIDOR													
21 Church Street at Worth Street⁽¹⁾													
Church Street	NB	LTR	0.60	14.0	B	LTR	0.90	17.4	B	LTR	0.74	11.6	B
Worth Street	EB	LT	0.81	44.3	D	LT	0.50	25.9	C	LT	0.71	34.2	C
	WB	TR	0.74	33.5	C	TR	0.60	27.7	C	TR	0.63	28.7	C
Overall Intersection	-	0.68	22.0	C	-	0.78	19.6	B	-	0.73	17.0	B	
22 Church Street at Chambers Street													
Church Street	NB	LTR	0.82	25.2	C	LTR	0.93	33.7	C	LTR	0.75	22.7	C
Chambers Street	EB	LT	0.97	73.0	E	LT	0.97	78.4	E	LT	0.97	71.5	E
	WB	TR	0.99	70.3	E	TR	0.74	26.3	C	TR	0.80	29.1	C
Overall Intersection	-	0.91	46.7	D	-	0.95	40.3	D	-	0.86	36.2	D	
23 Church Street at Barclay Street													
Church Street	NB	LT	1.00	53.2	D	LT	0.72	16.8	B	LT	0.78	18.7	B
Barclay Street	WB	T	0.38	22.9	C	T	0.24	20.7	C	T	0.47	24.5	C
		R	0.97	90.9	F	R	0.99	74.7	E	R	1.00	77.0	E
Overall Intersection	-	0.99	55.7	E	-	0.83	28.6	C	-	0.87	29.3	C	
24 Church Street at Vesey Street													
Church Street	NB	LTR	0.93	20.1	C	LT	1.01	46.5	D	LT	1.02	48.2	D
		-	-	-	-	R	0.53	12.3	B	R	0.61	14.4	B
Vesey Street	EB	LT	0.91	39.6	D	LT	0.50	23.8	C	LT	0.73	29.1	C
Overall Intersection	-	0.92	26.6	C	-	0.81	36.7	D	-	0.90	38.1	D	
25 Church Street at Fulton Street													
Church Street	NB	T	0.73	11.8	B	T	0.58	9.2	A	T	0.58	9.1	A
Fulton Street	WB	R	0.69	39.8	D	R	0.57	40.2	D	R	0.53	33.3	C
Overall Intersection	-	0.72	15.4	B	-	0.58	11.4	B	-	0.56	12.1	B	
26 Church Street at Dey Street													
Church Street	NB	T	0.77	6.5	A	T	0.63	10.1	B	T	0.58	9.2	A
Dey Street	WB	R	0.27	29.3	C	R	0.27	29.3	C	R	0.26	29.0	C
Overall Intersection	-	0.63	7.2	A	-	0.53	10.8	B	-	0.49	9.9	A	
27 Church Street at Cortlandt Street													
Church Street	NB	T	0.69	11.0	B	T	0.54	8.9	A	T	0.52	8.7	A
Cortlandt Street	WB	R	0.93	57.5	E	R	0.77	38.4	D	R	0.73	35.8	D
Overall Intersection	-	0.78	20.9	C	-	0.63	15.5	B	-	0.60	14.5	B	
28 Church Street at Liberty Street													
Church Street	NB	T	0.88	19.3	B	T	0.67	11.5	B	T	0.59	10.0	A
		R	0.27	7.7	A	R	0.19	7.0	A	R	0.17	6.7	A
Liberty Street	EB	LT	0.29	20.9	C	LT	0.30	21.0	C	LT	0.34	21.5	C
Overall Intersection	-	0.65	18.6	B	-	0.53	13.5	B	-	0.49	12.8	B	
29 Trinity Street at Rector Street													
Trinity Street	NB	TR	0.93	30.8	C	TR	0.62	15.3	B	TR	0.57	14.1	B
Rector Street	EB	LT	0.36	22.6	C	LT	0.34	22.1	C	LT	0.33	22.1	C
Overall Intersection	-	0.71	29.6	C	-	0.51	16.7	B	-	0.47	15.7	B	

**TABLE E.2-14
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
PRE SEPTEMBER 11TH EXISTING CONDITIONS**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.22	17.8	B	LTR	0.47	20.7	C	LTR	0.48	22.5	C
Canal Street	EB	TR	0.37	18.0	B	TR	0.38	18.1	B	TR	1.04	108.0	F
	WB	DefL	0.80	35.0	D	LT	0.63	11.8	B	DefL	1.03	103.5	F
		T	0.39	9.3	A	-	-	-	-	T	0.84	33.3	C
Overall Intersection	-	0.60	20.6	C	-	0.60	16.4	B	-	0.82	69.7	E	
31 Broadway at Worth Street⁽¹⁾													
Broadway	SB	LTR	0.54	12.2	B	LTR	0.70	14.9	B	LTR	0.66	14.0	B
Worth Street	EB	TR	0.43	19.0	B	TR	0.75	28.3	C	TR	0.60	22.8	C
	WB	L	0.14	15.7	B	L	0.69	35.8	D	L	0.30	18.8	B
		T	0.53	20.8	C	T	0.45	19.1	B	T	0.54	21.0	C
Overall Intersection	-	0.54	15.9	B	-	0.72	20.6	C	-	0.64	17.6	B	
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.36	10.4	B	LTR	0.55	12.4	B	LTR	0.51	11.9	B
Chambers Street	EB	TR	1.00	68.9	E	TR	0.69	24.6	C	TR	0.91	40.3	D
	WB	L	0.13	15.4	B	L	0.44	21.6	C	L	0.68	35.8	D
		LT	0.86	33.8	C	LT	0.60	21.2	C	LT	0.79	28.4	C
Overall Intersection	-	0.65	37.0	D	-	0.61	17.3	B	-	0.69	24.9	C	
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.69	25.3	C	L	0.72	27.2	C	L	0.86	34.6	C
		LT	0.58	19.5	B	LT	0.52	18.7	B	LT	0.53	18.7	B
Vesey Street	EB	L	0.85	55.3	E	L	0.51	35.2	D	L	0.93	67.7	E
		LTR	0.93	53.3	D	LTR	0.69	36.8	D	LTR	0.72	37.3	D
Overall Intersection	-	0.55	33.9	C	-	0.50	26.1	C	-	0.62	32.8	C	
34 Broadway at Fulton Street⁽²⁾													
Broadway	SB	TR	0.57	10.0	A	TR	0.50	9.7	A	TR	0.50	9.6	A
Fulton Street	WB	LT	0.41	26.2	C	LT	CLOSED			LT	0.30	25.2	C
Overall Intersection	-	0.52	13.1	B	-	0.34	9.7	A	-	0.43	12.2	B	
35 Broadway at Dey Street													
Broadway	SB	LTR	0.94	28.8	C	LTR	0.69	13.4	B	LTR	0.81	17.8	B
Overall Intersection	-	0.61	28.8	C	-	0.44	13.4	B	-	0.53	17.8	B	
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.81	17.4	B	TR	0.64	12.2	B	TR	0.63	12.1	B
Maiden Lane	WB	LT	0.89	51.9	D	LT	1.00	73.9	E	LT	0.81	43.8	D
Overall Intersection	-	0.84	26.1	C	-	0.75	30.7	C	-	0.69	20.6	C	
37 Broadway at Liberty Street													
Broadway	SB	LT	0.69	7.9	A	LT	0.67	13.4	B	LT	0.64	12.8	B
Liberty Street	EB	TR	0.41	26.8	C	TR	0.60	36.0	D	TR	0.50	33.4	C
Overall Intersection	-	0.60	12.3	B	-	0.65	18.7	B	-	0.60	17.2	B	
38 Broadway at Rector Street													
Broadway	SB	T	0.51	9.9	A	T	0.47	5.0	A	T	0.47	9.5	A
Rector Street	EB	R	0.70	46.0	D	R	0.51	32.1	C	R	0.63	40.9	D
Overall Intersection	-	0.57	14.6	B	-	0.48	9.0	A	-	0.52	13.6	B	
39 Broadway at Exchange Place													
Broadway	SB	LT	0.67	11.1	B	LT	0.56	9.1	A	LT	0.59	9.8	A
Overall Intersection	-	0.46	11.1	B	-	0.38	9.1	A	-	0.41	9.8	A	
WATER STREET CORRIDOR													
40 Water Street at Fulton Street⁽³⁾													
Water Street	NB	LT	0.65	17.6	B	LT	0.46	14.5	B	LT	0.46	14.4	B
	SB	TR	0.50	15.0	B	TR	0.25	12.2	B	TR	0.21	11.8	B
Fulton Street	EB	LR	0.45	29.3	C	LR	0.35	27.1	C	LR	0.68	35.8	D
Overall Intersection	-	0.51	17.6	B	-	0.36	15.1	B	-	0.47	18.4	B	

TABLE E.2-14
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
PRE SEPTEMBER 11TH EXISTING CONDITIONS

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
UNSIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt. 9A) at Barclay Street	WB	R	0.39	26.6	D	R	0.50	25.8	D	R	0.53	28.5	D
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street	EB	LTR	0.05	7.5	A	LTR	0.03	7.4	A	LTR	0.03	7.4	A
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street	SB	R	0.04	11.3	B	R	0.18	12.2	B	R	0.06	11.7	B

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-15
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.75	3.0	A	T	0.57	2.1	A	T	0.92	7.5	A
	SB	T	0.59	1.9	A	T	0.48	1.7	A	T	0.65	2.4	A
Canal Street	WB	L	0.32	45.6	D	L	0.57	52.2	D	L	0.16	38.5	D
	LR	0.50	52.5	D	LR	0.40	46.0	D	LR	0.19	39.7	D	
	R	0.57	55.9	E	R	0.49	50.0	D	R	0.22	40.0	D	
Overall Intersection	-		0.71	4.8	A	-	0.57	5.2	A	-	0.76	5.9	A
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	1.02	48.1	D	TR	0.74	14.2	B	TR	1.04	105.1	F
	R	0.51	12.9	B	R	0.51	13.0	B	R	0.26	9.5	A	
	SB	L	0.98	61.7	E	L	0.93	53.9	D	L	0.79	40.0	D
	T	1.03	40.8	D	T	0.99	18.5	B	T	1.03	78.2	E	
Overall Intersection	-		1.00	44.3	D	-	0.82	19.2	B	-	0.93	87.7	F
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.02	56.3	E	TR	0.86	21.5	C	TR	1.05	67.4	E
	SB	L	0.68	50.5	D	L	0.81	69.9	E	L	0.74	57.1	E
	TR	0.61	5.1	A	TR	0.51	4.4	A	TR	0.69	9.9	A	
Chambers Street	EB	LTR	0.72	59.7	E	LTR	0.27	36.1	D	LTR	0.60	43.0	D
	WB	LT	0.79	56.1	E	LT	0.69	49.9	D	LT	1.02	94.1	F
	R	0.60	25.9	C	R	0.72	36.6	D	R	0.66	25.8	C	
Overall Intersection	-		0.88	35.5	D	-	0.80	20.4	C	-	0.98	42.1	D
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	TR	0.97	21.8	C	TR	0.69	12.0	B	TR	0.77	13.2	B
	SB	L	0.12	7.4	A	L	0.19	4.5	A	L	0.15	4.9	A
	TR	0.58	3.6	A	TR	0.48	3.1	A	TR	0.64	3.9	A	
Vesey Street	EB	LTR	1.05	96.3	F	LTR	0.75	49.4	D	LTR	1.01	84.7	F
	WB	L	1.14	120.0+	F*	L	0.80	54.4	D	L	0.91	71.8	E
	LTR	0.96	80.8	F	LTR	1.01	95.3	F	LTR	1.20+	120.0+	F*	
Overall Intersection	-		1.04	29.0	C	-	0.91	17.6	B	-	1.01	28.8	C
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.96	93.1	F	L	0.43	53.3	D	L	0.69	59.8	E
	TR	1.04	54.3	D	TR	0.75	16.5	B	TR	0.70	15.5	B	
	SB	L	1.20+	120.0+	F*	L	0.79	68.2	E	L	0.81	66.9	E
	TR	0.74	16.4	B	TR	0.63	14.3	B	TR	0.89	21.0	C	
Liberty Street	EB	DefL	1.15	120.0+	F*	DefL	0.69	58.0	E	LTR	0.90	62.0	E
	TR	0.42	41.0	D	TR	0.43	42.5	D	-	-	-	-	
	WB	LTR	0.28	37.1	D	LTR	0.60	49.3	D	DefL	0.43	43.7	D
	-	-	-	-	-	-	-	-	TR	0.36	40.6	D	
Overall Intersection	-		1.09	54.4	D	-	0.74	22.2	C	-	0.88	27.2	C
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.11	120.0+	F*	T	1.08	120.0+	F*	TR	1.08	120.0+	F*
	R	1.06	111.1	F	R	0.96	52.3	D	R	1.06	104.1	F	
	SB	T	1.12	120.0+	F*	T	1.08	107.2	F	T	1.03	103.0	F
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.09	20.3	C	R	0.03	12.0	B
	WB	L	1.05	120.0+	F*	L	0.84	120.0+	F*	L	0.93	120.0+	F*
	R	1.07	120.0+	F*	R	1.01	120.0+	F*	R	0.86	120.0+	F*	
Overall Intersection	-		1.09	120.0+	F*	-	1.05	120.0+	F*	-	0.99	120.0+	F*
WASHINGTON STREET CORRIDOR													
8 Washington Street at Vesey Street													
Vesey Street	EB	LT	0.50	10.7	B	LT	0.22	8.2	A	LT	0.49	11.1	B
	WB	TR	0.28	8.4	A	TR	0.28	8.6	A	TR	0.32	9.0	A
Overall Intersection	-		0.31	9.7	A	-	0.18	8.4	A	-	0.31	10.0	B
9 Washington Street at Liberty Street													
Washington Street	NB	R	0.00	20.7	C	R	0.06	21.4	C	R	0.13	22.3	C
Liberty Street	EB	T	0.38	9.5	A	T	0.34	9.1	A	T	0.34	9.2	A
Overall Intersection	-		0.25	9.5	A	-	0.24	9.6	A	-	0.27	10.1	B

**TABLE E.2-15
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE**

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.54	24.4	C	LTR	0.54	24.5	C	LTR	0.53	24.3	C
Chambers Street	EB	TR	0.39	11.6	B	TR	0.27	10.4	B	TR	0.34	11.1	B
	WB	LT	0.67	17.3	B	LT	0.54	14.4	B	LT	0.76	21.7	C
Overall Intersection	-	0.62	17.6	B	-	0.54	17.1	B	-	0.67	19.3	B	
14 Greenwich Street at Liberty Street													
Liberty Street	EB	TR	0.51	11.3	B	TR	0.44	10.2	B	TR	0.46	10.5	B
Overall Intersection	-	0.32	11.3	B	-	0.28	10.2	B	-	0.29	10.5	B	
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.11	19.1	B	R	0.16	19.8	B	R	0.00	17.4	B
	SB	LT	0.82	42.5	D	LT	0.33	21.9	C	LT	0.35	22.2	C
Rector Street	EB	TR	0.17	10.5	B	TR	0.30	11.9	B	TR	0.29	11.7	B
Overall Intersection	-	0.43	33.3	C	-	0.31	16.6	B	-	0.32	16.4	B	
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.94	50.6	D	LTR	0.82	39.8	D	LTR	0.38	28.6	C
	R		0.85	53.0	D	R	0.66	39.0	D	R	0.98	120.0+	F*
Canal Street	EB	L	0.97	64.2	E	L	0.97	64.1	E	L	0.27	24.2	C
	T		0.99	51.7	D	T	0.92	40.1	D	T	0.91	37.0	D
	WB	T	0.96	63.2	E	T	0.91	55.8	E	T	0.22	23.4	C
	R		1.12	83.6	F	R	1.09	77.5	E	R	1.13	88.2	F
Overall Intersection	-	1.07	62.9	E	-	1.01	54.3	D	-	1.09	70.1	E	
17 Canal Street at Varick Street													
Varick Street	SB	L	0.25	23.8	C	L	0.16	22.5	C	L	0.41	26.5	C
	T		0.94	46.1	D	T	1.06	88.1	F	T	1.07	103.6	F
	R		0.16	22.7	C	R	0.16	22.7	C	R	0.19	23.5	C
Canal Street	EB	TR	0.44	10.6	B	TR	0.44	10.6	B	TR	0.42	10.4	B
	WB	LT	1.03	94.6	F	LT	1.01	59.4	E	LT	1.06	119.1	F
Overall Intersection	-	0.61	59.9	E	-	0.65	61.0	E	-	0.64	88.1	F	
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	0.96	34.3	C	LTR	0.67	16.1	B	LTR	0.78	18.9	B
Worth Street	EB	TR	0.19	20.4	C	TR	0.16	19.9	B	TR	0.22	20.7	C
	WB	LT	0.78	38.4	D	LT	0.59	28.9	C	LT	0.64	29.8	C
Overall Intersection	-	0.89	34.4	C	-	0.64	18.7	B	-	0.72	21.0	C	
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.35	17.0	B	L	0.37	17.3	B	L	0.37	17.2	B
	TR		0.68	22.0	C	TR	0.52	18.5	B	TR	0.49	17.9	B
Chambers Street	EB	L	0.46	24.1	C	LTR	1.14	120.0+	F*	L	0.29	18.7	B
	TR		1.07	83.5	F	-	-	-	-	TR	0.81	32.4	C
	WB	LTR	1.04	71.4	E	LTR	0.66	23.2	C	LTR	1.06	77.9	E
Overall Intersection	-	0.88	51.0	D	-	0.83	60.4	E	-	0.77	39.9	D	
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.54	11.6	B	TR	0.42	10.3	B	TR	0.52	11.3	B
Barclay Street	WB	LT	0.88	38.4	D	LT	0.46	21.2	C	LT	0.95	47.6	D
Overall Intersection	-	0.69	22.0	C	-	0.44	13.6	B	-	0.71	26.9	C	
13 West Broadway at Vesey Street													
West Broadway	SB	L	1.16	120.0+	F*	L	0.60	21.8	C	L	1.20+	120.0+	F*
	R		0.75	28.3	C	R	0.81	32.0	C	R	0.93	45.9	D
Vesey Street	EB	T	0.36	15.9	B	T	0.29	15.2	B	T	0.32	15.4	B
	WB	T	0.15	13.9	B	T	0.14	13.8	B	T	0.17	14.1	B
Overall Intersection	-	0.76	69.4	E	-	0.55	21.0	C	-	0.76	61.2	E	

TABLE E.2-15
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 2009 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR													
21 Church Street at Worth Street ⁽¹⁾													
Church Street	NB	LTR	0.65	14.9	B	LTR	0.94	21.7	C	LTR	0.80	13.0	B
Worth Street	EB	LT	0.84	48.7	D	LT	0.51	26.1	C	LT	0.72	35.0	D
	WB	TR	0.76	34.7	C	TR	0.62	28.2	C	TR	0.65	29.3	C
Overall Intersection	-	0.73	23.1	C	-	0.82	22.9	C	-	0.77	18.0	B	
22 Church Street at Chambers Street													
Church Street	NB	LTR	0.89	29.3	C	LTR	1.01	48.9	D	LTR	0.84	26.5	C
Chambers Street	EB	LT	1.04	111.2	F	LT	1.01	109.3	F	LT	1.02	104.4	F
	WB	TR	1.05	99.8	F	TR	0.79	28.8	C	TR	0.86	34.0	C
Overall Intersection	-	0.97	64.3	E	-	1.01	55.6	E	-	0.93	46.6	D	
23 Church Street at Barclay Street													
Church Street	NB	LT	1.09	84.6	F	LT	0.80	19.4	B	LT	0.89	24.1	C
Barclay Street	WB	T	0.43	23.7	C	T	0.27	21.2	C	T	0.50	25.1	C
	R		0.99	111.6	F	R	1.01	80.6	F	R	1.01	82.4	F
Overall Intersection	-	1.05	82.4	F	-	0.89	30.9	C	-	0.94	33.2	C	
24 Church Street at Vesey Street													
Church Street	NB	LTR	0.99	30.3	C	LT	1.08	68.8	E	LT	1.12	84.8	F
	-	-	-	-	-	R	0.55	12.7	B	R	0.64	15.4	B
Vesey Street	EB	LT	1.01	58.8	E	LT	0.61	25.9	C	LT	0.87	36.0	D
Overall Intersection	-	1.00	40.0	D	-	0.89	50.5	D	-	1.02	60.7	E	
25 Church Street at Fulton Street													
Church Street	NB	T	0.78	12.9	B	T	0.62	9.8	A	T	0.63	9.8	A
Fulton Street	WB	R	0.78	45.7	D	R	0.58	40.7	D	R	0.59	35.1	D
Overall Intersection	-	0.78	17.4	B	-	0.61	11.9	B	-	0.62	13.0	B	
26 Church Street at Dey Street													
Church Street	NB	T	0.82	7.6	A	T	0.68	10.9	B	T	0.63	9.9	A
Dey Street	WB	R	0.27	29.5	C	R	0.27	29.5	C	R	0.26	29.1	C
Overall Intersection	-	0.66	8.3	A	-	0.56	11.6	B	-	0.53	10.6	B	
27 Church Street at Cortlandt Street													
Church Street	NB	T	0.71	11.3	B	T	0.55	9.1	A	T	0.53	8.8	A
Cortlandt Street	WB	R	1.10	105.2	F	R	0.94	60.4	E	R	0.98	68.7	E
Overall Intersection	-	0.86	33.7	C	-	0.70	22.2	C	-	0.71	24.6	C	
28 Church Street at Liberty Street													
Church Street	NB	T	0.91	21.3	C	T	0.69	11.8	B	T	0.61	10.2	B
	R		0.31	8.2	A	R	0.21	7.2	A	R	0.18	6.8	A
Liberty Street	EB	LT	0.35	21.6	C	LT	0.33	21.3	C	LT	0.37	21.8	C
Overall Intersection	-	0.69	20.2	C	-	0.55	13.9	B	-	0.52	13.1	B	
29 Trinity Street at Rector Street													
Trinity Street	NB	TR	0.95	33.5	C	TR	0.63	11.0	B	TR	0.58	14.3	B
Rector Street	EB	LT	0.45	24.3	C	LT	0.35	22.4	C	LT	0.38	23.0	C
Overall Intersection	-	0.75	31.9	C	-	0.52	13.4	B	-	0.50	16.2	B	

TABLE E.2-15
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.26	18.2	B	LTR	0.50	21.2	C	LTR	0.53	23.2	C
Canal Street	EB	TR	0.41	18.6	B	TR	0.40	18.5	B	TR	1.10	120.0+	F*
	WB	DefL	0.86	42.3	D	LT	0.66	12.6	B	DefL	1.07	120.0+	F*
		T	0.44	10.0	B	-	-	-	-	T	0.93	47.2	D
Overall Intersection	-		0.65	22.6	C	-	0.64	17.0	B	-	0.87	84.7	F
31 Broadway at Worth Street ⁽¹⁾													
Broadway	SB	LTR	0.60	13.0	B	LTR	0.74	16.0	B	LTR	0.71	15.1	B
Worth Street	EB	TR	0.45	19.4	B	TR	0.77	29.6	C	TR	0.63	23.5	C
	WB	L	0.15	15.9	B	L	0.73	39.5	D	L	0.33	19.6	B
		T	0.55	21.2	C	T	0.46	19.4	B	T	0.55	21.3	C
Overall Intersection	-		0.58	16.4	B	-	0.75	21.7	C	-	0.67	18.4	B
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.39	10.7	B	LTR	0.58	12.8	B	LTR	0.55	12.4	B
Chambers Street	EB	TR	1.06	85.9	F	TR	0.72	26.1	C	TR	0.95	48.1	D
	WB	L	0.14	15.6	B	L	0.46	22.7	C	L	0.72	40.3	D
		LT	0.90	38.2	D	LT	0.63	22.0	C	LT	0.82	30.7	C
Overall Intersection	-		0.70	43.5	D	-	0.65	18.1	B	-	0.73	27.8	C
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.70	25.9	C	L	0.74	27.9	C	L	0.88	36.4	D
		LT	0.61	19.9	B	LT	0.54	18.9	B	LT	0.55	18.9	B
Vesey Street	EB	L	0.91	63.6	E	L	0.56	36.8	D	L	0.99	81.6	F
		LTR	0.97	60.9	E	LTR	0.72	38.2	D	LTR	0.77	39.2	D
Overall Intersection	-		0.57	37.4	D	-	0.51	27.0	C	-	0.64	35.7	D
34 Broadway at Fulton Street ⁽²⁾													
Broadway	SB	TR	0.59	10.3	B	TR	0.51	9.8	A	TR	0.52	9.8	A
Fulton Street	WB	LT	0.46	26.9	C	LT	CLOSED			LT	0.34	25.7	C
Overall Intersection	-		0.55	13.7	B	-	0.33	9.8	A	-	0.46	12.7	B
35 Broadway at Dey Street													
Broadway	SB	LTR	0.98	35.4	D	LTR	0.71	14.0	B	LTR	0.85	19.6	B
Overall Intersection	-		0.64	35.4	D	-	0.47	14.0	B	-	0.56	19.6	B
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.86	19.9	B	TR	0.66	12.7	B	TR	0.67	12.7	B
Maiden Lane	WB	LT	1.01	77.9	E	LT	1.15	120.0+	F*	LT	1.02	79.1	E
Overall Intersection	-		0.91	35.5	D	-	0.82	48.8	D	-	0.78	33.3	C
37 Broadway at Liberty Street													
Broadway	SB	LT	0.72	8.4	A	LT	0.69	13.8	B	LT	0.66	13.2	B
Liberty Street	EB	TR	0.51	28.2	C	TR	0.65	37.5	D	TR	0.55	34.4	C
Overall Intersection	-		0.65	13.8	B	-	0.68	19.7	B	-	0.63	18.1	B
38 Broadway at Rector Street													
Broadway	SB	T	0.52	10.0	A	T	0.47	9.5	A	T	0.48	9.6	A
Rector Street	EB	R	0.73	48.4	D	R	0.81	57.2	E	R	0.65	42.5	D
Overall Intersection	-		0.59	15.1	B	-	0.58	16.5	B	-	0.53	13.9	B
39 Broadway at Exchange Place													
Broadway	SB	LT	0.68	11.4	B	LT	0.57	9.3	A	LT	0.61	10.1	B
Overall Intersection	-		0.47	11.4	B	-	0.39	9.3	A	-	0.41	10.1	B

TABLE E.2-15
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2009 NO ACTION CONDITION : PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
WATER STREET CORRIDOR													
40 Water Street at Fulton Street⁽³⁾													
Water Street	NB	LT	0.69	18.4	B	LT	0.49	14.8	B	LT	0.51	15.1	B
	SB	TR	0.60	16.7	B	TR	0.30	12.7	B	TR	0.26	12.3	B
Fulton Street	EB	LR	0.46	29.5	C	LR	0.35	27.2	C	LR	0.69	36.4	D
Overall Intersection	-		0.54	18.5	B	-	0.40	15.3	B	-	0.51	18.6	B
UNSIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt. 9A) at Barclay													
Barclay Street	WB	R	0.55	38.1	E	R	0.60	31.0	D	R	0.60	33.9	D
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street													
Rector Street	EB	LTR	0.05	7.5	A	LTR	0.03	7.4	A	LTR	0.03	7.4	A
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street													
Greenwich Street	SB	R	0.04	11.5	B	R	0.19	12.5	B	R	0.06	11.8	B

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-16
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
1a West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	T	0.80	3.6	A	T	0.63	2.4	A	T	0.93	7.7	A
	SB	T	0.64	2.1	A	T	0.53	1.9	A	T	0.69	2.6	A
Canal Street	WB	L	0.34	46.1	D	L	0.59	53.2	D	L	0.17	38.6	D
	LR		0.51	52.7	D	LR	0.40	46.1	D	LR	0.19	39.8	D
	R		0.58	56.4	E	R	0.50	50.3	D	R	0.22	40.0	D
Overall Intersection	-	0.76	5.1	A	-	0.62	5.2	A	-	0.76	6.0	A	
1b West Street (NYS Rt. 9A) at Canal Street													
West Street (NYS Rt. 9A)	NB	TR	1.09	73.1	E	TR	0.82	16.1	B	TR	1.04	114.3	F
	R		0.54	13.6	B	R	0.56	13.9	B	R	0.31	10.0	B
	SB	L	1.04	83.5	F	L	1.00	75.8	E	L	0.87	48.0	D
	T		1.13	78.8	E	T	1.09	62.7	E	T	1.07	101.7	F
Overall Intersection	-	1.07	73.4	E	-	0.90	41.1	D	-	0.96	102.6	F	
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.11	89.4	F	TR	0.96	29.4	C	TR	1.15	107.2	F
	SB	L	0.69	51.0	D	L	0.83	71.6	E	L	0.76	58.2	E
	TR		0.69	5.8	A	TR	0.58	4.9	A	TR	0.73	10.5	B
Chambers Street	EB	LTR	0.85	80.7	F	LTR	0.31	37.2	D	LTR	0.61	43.5	D
	WB	LT	0.94	77.6	E	LT	0.83	61.6	E	LT	1.10	119.6	F
	R		0.62	26.4	C	R	0.73	37.2	D	R	0.67	26.2	C
Overall Intersection	-	0.97	51.3	D	-	0.90	24.5	C	-	1.06	60.8	E	
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	TR	1.02	42.2	D	TR	0.75	12.8	B	TR	0.82	14.3	B
	SB	L	0.14	8.7	A	L	0.21	5.0	A	L	0.16	5.4	A
	TR		0.66	4.0	A	TR	0.56	3.4	A	TR	0.68	4.1	A
Vesey Street	EB	LTR	1.06	97.6	F	DefL	1.20+	120.0+	F*	DefL	1.20+	120.0+	F*
	-	-	-	-	-	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*
	WB	L	1.20	120.0+	F*	L	0.88	62.9	E	L	1.00	93.0	F
	LTR		1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*
Overall Intersection	-	1.19	47.7	D	-	1.11	42.4	D	-	1.20+	75.7	E	
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	1.20+	120.0+	F*	L	0.65	60.2	E	L	0.81	67.1	E
	TR		1.06	64.2	E	TR	0.77	17.0	B	TR	0.72	15.9	B
	SB	L	1.20+	120.0+	F*	L	1.14	120.0+	F*	L	0.98	91.8	F
	TR		0.81	18.1	B	TR	0.69	15.3	B	TR	0.93	23.6	C
Liberty Street	EB	DefL	1.20+	120.0+	F*	DefL	1.20+	120.0+	F*	DefL	1.04	105.8	F
	TR		0.43	41.3	D	TR	0.43	42.6	D	TR	1.15	120.0+	F*
	WB	LTR	0.29	37.2	D	LTR	0.60	49.3	D	DefL	0.44	43.9	D
	-	-	-	-	-	-	-	-	-	TR	0.37	40.8	D
Overall Intersection	-	1.20+	90.8	F	-	0.97	38.7	D	-	1.00	37.6	D	
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	TR	1.08	120.0+	F*	TR	1.01	120.0+	F*	TR	1.00	120.0+	F*
	SB	TR	0.98	96.6	F	TR	0.96	84.3	F	TR	1.04	99.9	F
Albany Street	EB	LTR	1.20	120.0+	F*	LTR	1.14	120.0+	F*	LTR	1.20+	120.0+	F*
Overall Intersection	-	1.12	120.0+	F*	-	1.05	117.3	F	-	1.10	120.0+	F*	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.19	120.0+	F*	T	1.15	120.0+	F*	TR	1.14	120.0+	F*
	R		1.16	120.0+	F*	R	1.03	76.5	E	R	1.10	120.0+	F*
	SB	T	1.17	120.0+	F*	T	1.15	120.0+	F*	T	1.10	120.0+	F*
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.09	20.3	C	R	0.03	12.0	B
	WB	L	1.07	120.0+	F*	L	0.85	120.0+	F*	L	0.94	120.0+	F*
	R		1.13	120.0+	F*	R	1.05	120.0+	F*	R	0.90	120.0+	F*
Overall Intersection	-	1.15	120.0+	F*	-	1.11	120.0+	F*	-	1.02	120.0+	F*	
WASHINGTON STREET CORRIDOR													
8 Washington Street at Vesey Street													
Vesey Street	EB	LT	0.55	11.4	B	LT	0.24	8.3	A	LT	0.53	11.8	B
	WB	TR	0.34	8.9	A	TR	0.35	9.2	A	TR	0.39	9.5	A
Overall Intersection	-	0.35	10.2	B	-	0.22	8.8	A	-	0.33	10.6	B	
9 Washington Street at Liberty Street													
Washington Street	NB	R	0.00	20.7	C	R	0.07	21.5	C	R	0.13	22.3	C
Liberty Street	EB	T	0.48	10.6	B	T	0.42	9.9	A	T	0.39	9.6	A
Overall Intersection	-	0.32	10.6	B	-	0.30	10.3	B	-	0.30	10.4	B	

TABLE E.2-16
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
GREENWICH STREET CORRIDOR													
11 Greenwich Street at Chambers Street													
Greenwich Street	SB	LTR	0.55	24.6	C	LTR	0.56	24.8	C	LTR	0.54	24.5	C
Chambers Street	EB	TR	0.42	11.9	B	TR	0.30	10.7	B	TR	0.37	11.4	B
	WB	LT	0.73	19.6	B	LT	0.59	15.5	B	LT	0.84	26.3	C
Overall Intersection	-		0.66	18.4	B	-	0.58	17.4	B	-	0.72	20.9	C
14 Greenwich Street at Liberty Street													
Liberty Street	EB	TR	0.63	13.1	B	TR	0.53	11.4	B	TR	0.51	11.2	B
Overall Intersection	-		0.39	13.1	B	-	0.33	11.4	B	-	0.32	11.2	B
15 Greenwich Street at Rector Street													
Greenwich Street	NB	R	0.11	19.1	B	R	0.16	19.8	B	R	0.00	17.4	B
	SB	LT	0.93	57.5	E	LT	0.42	23.7	C	LT	0.39	22.9	C
Rector Street	EB	TR	0.28	11.7	B	TR	0.40	13.3	B	TR	0.40	13.2	B
Overall Intersection	-		0.54	41.2	D	-	0.41	17.8	B	-	0.40	17.1	B
CANAL STREET CORRIDOR													
16 Canal Street at Hudson Street													
Hudson Street	NB	LTR	0.95	53.2	D	LTR	0.83	40.6	D	LTR	0.39	28.7	C
	R		0.87	56.1	E	R	0.68	39.9	D	R	1.01	120.0+	F*
Canal Street	EB	L	1.02	79.5	E	L	1.04	82.3	F	L	0.34	25.2	C
	T		1.06	72.6	E	T	0.99	55.8	E	T	0.98	52.6	D
	WB	T	0.99	69.2	E	T	0.94	59.9	E	T	0.23	23.4	C
	R		1.18	110.2	F	R	1.18	114.5	F	R	1.20+	120.0+	F*
Overall Intersection	-		1.12	76.8	E	-	1.09	69.1	E	-	1.16	87.9	F
17 Canal Street at Varick Street													
Varick Street	SB	L	0.25	23.8	C	L	0.16	22.6	C	L	0.42	26.6	C
	T		0.95	48.1	D	T	1.07	95.0	F	T	1.09	113.6	F
	R		0.16	22.7	C	R	0.16	22.7	C	R	0.20	23.6	C
Canal Street	EB	TR	0.47	11.0	B	TR	0.47	11.0	B	TR	0.45	10.8	B
	WB	LT	1.08	116.7	F	LT	1.08	80.5	F	LT	1.13	120.0+	F*
Overall Intersection	-		0.64	70.4	E	-	0.68	71.1	E	-	0.67	103.6	F
WEST BROADWAY CORRIDOR													
18 West Broadway at Worth Street													
West Broadway	SB	LTR	0.98	38.9	D	LTR	0.69	16.5	B	LTR	0.79	19.4	B
Worth Street	EB	TR	0.19	20.4	C	TR	0.17	20.0	C	TR	0.22	20.8	C
	WB	LT	0.79	39.4	D	LT	0.60	29.3	C	LT	0.65	30.1	C
Overall Intersection	-		0.91	38.2	D	-	0.65	19.1	B	-	0.74	21.5	C
19 West Broadway at Chambers Street													
West Broadway	SB	L	0.36	17.2	B	L	0.38	17.5	B	L	0.38	17.3	B
	TR		0.70	22.5	C	TR	0.53	18.8	B	TR	0.50	18.1	B
Chambers Street	EB	L	0.51	27.0	C	LTR	1.20+	120.0+	F*	L	0.31	19.5	B
	TR		1.15	109.8	F	-	-	-	-	TR	0.90	41.6	D
	WB	LTR	1.18	120.0+	F*	LTR	0.72	25.4	C	LTR	1.18	120.0+	F*
Overall Intersection	-		0.94	72.6	E	-	0.89	76.6	E	-	0.84	56.3	E
20 West Broadway at Barclay Street													
West Broadway	SB	TR	0.57	11.9	B	TR	0.43	10.4	B	TR	0.54	11.5	B
Barclay Street	WB	LT	0.90	41.2	D	LT	0.46	21.3	C	LT	0.97	51.7	D
Overall Intersection	-		0.71	23.1	C	-	0.45	13.7	B	-	0.73	28.7	C
13 West Broadway at Vesey Street													
West Broadway	SB	L	1.20+	120.0+	F*	L	0.63	22.7	C	L	1.20+	120.0+	F*
	R		0.77	29.4	C	R	0.83	33.3	C	R	0.95	49.2	D
Vesey Street	EB	T	0.39	16.2	B	T	0.32	15.4	B	T	0.33	15.5	B
	WB	T	0.23	14.6	B	T	0.23	14.6	B	T	0.25	14.7	B
Overall Intersection	-		0.80	77.1	E	-	0.57	21.0	C	-	0.79	64.7	E

TABLE E.2-16
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
CHURCH STREET CORRIDOR													
21 Church Street at Worth Street⁽¹⁾													
Church Street	NB	LTR	0.70	16.0	B	LTR	1.01	40.1	D	LTR	0.85	14.9	B
Worth Street	EB	LT	0.87	52.4	D	LT	0.51	26.3	C	LT	0.73	35.8	D
	WB	TR	0.78	35.5	D	TR	0.63	28.5	C	TR	0.66	29.6	C
Overall Intersection	-		0.77	24.1	C	-	0.86	37.4	D	-	0.81	19.3	B
22 Church Street at Chambers Street													
Church Street	NB	LTR	0.95	35.6	D	LTR	1.08	69.9	E	LTR	0.91	31.3	C
Chambers Street	EB	LT	1.10	120.0+	F*	LT	1.12	120.0+	F*	LT	1.11	120.0+	F*
	WB	TR	1.15	120.0+	F*	TR	0.86	34.0	C	TR	0.91	39.2	D
Overall Intersection	-		1.05	83.3	F	-	1.10	76.8	E	-	1.01	58.3	E
23 Church Street at Barclay Street													
Church Street	NB	LT	1.15	111.6	F	LT	0.86	22.4	C	LT	0.95	31.1	C
Barclay Street	WB	T	0.44	23.9	C	T	0.28	21.3	C	T	0.52	25.4	C
		R	1.01	120.0+	F*	R	1.03	85.1	F	R	1.03	87.3	F
Overall Intersection	-		1.09	105.2	F	-	0.93	33.4	C	-	0.98	38.7	D
24 Church Street at Vesey Street													
Church Street	NB	LTR	1.10	74.4	E	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*
	-	-	-	-	-	R	0.65	15.8	B	R	0.74	19.7	B
Vesey Street	EB	LT	1.08	78.8	E	LT	0.65	26.8	C	LT	0.90	38.9	D
Overall Intersection	-		1.09	75.8	E	-	1.03	99.8	F	-	1.13	101.2	F
25 Church Street at Fulton Street													
Church Street	NB	T	0.88	16.9	B	T	0.73	11.8	B	T	0.73	11.7	B
Fulton Street	WB	R	0.80	46.8	D	R	0.59	41.3	D	R	0.61	35.7	D
Overall Intersection	-		0.85	20.6	C	-	0.69	13.5	B	-	0.70	14.4	B
26 Church Street at Dey Street													
Church Street	NB	T	0.92	12.9	B	T	0.80	14.0	B	T	0.74	11.9	B
Dey Street	WB	R	0.28	29.7	C	R	0.28	29.7	C	R	0.27	29.3	C
Overall Intersection	-		0.74	13.4	B	-	0.65	14.5	B	-	0.61	12.5	B
27 Church Street at Cortlandt Street													
Church Street	NB	T	0.73	11.8	B	T	0.57	9.4	A	T	0.55	9.0	A
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*
Overall Intersection	-		1.07	100.0	F	-	0.93	95.9	F	-	0.92	97.8	F
28 Church Street at Liberty Street													
Church Street	NB	T	0.93	23.6	C	T	0.72	12.4	B	T	0.63	10.5	B
	R		0.38	9.1	A	R	0.27	7.8	A	R	0.22	7.2	A
Liberty Street	EB	LT	0.47	23.1	C	LT	0.42	22.4	C	LT	0.43	22.6	C
Overall Intersection	-		0.75	22.1	C	-	0.60	15.0	B	-	0.55	13.9	B
29 Trinity Street at Rector Street													
Trinity Street	NB	TR	0.96	36.0	D	TR	0.66	11.6	B	TR	0.58	14.5	B
Rector Street	EB	LT	0.59	27.6	C	LT	0.47	24.7	C	LT	0.53	25.9	C
Overall Intersection	-		0.82	34.3	C	-	0.59	14.8	B	-	0.56	17.5	B

TABLE E.2-16
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
BROADWAY CORRIDOR													
30 Broadway at Canal Street													
Broadway	SB	LTR	0.32	18.8	B	LTR	0.56	22.0	C	LTR	0.57	23.9	C
Canal Street	EB	TR	0.48	19.5	B	TR	0.46	19.2	B	TR	1.15	120.0+	F*
	WB	DefL	0.94	57.6	E	LT	0.71	13.8	B	DefL	1.10	120.0+	F*
		T	0.47	10.5	B	-	-	-	-	T	1.00	62.5	E
Overall Intersection	-	0.70	26.5	C	-	0.68	18.1	B	-	0.92	100.1	F	F
31 Broadway at Worth Street⁽¹⁾													
Broadway	SB	LTR	0.66	14.3	B	LTR	0.80	18.0	B	LTR	0.75	16.3	B
Worth Street	EB	TR	0.47	19.7	B	TR	0.79	30.8	C	TR	0.65	24.1	C
	WB	L	0.18	16.3	B	L	0.78	44.7	D	L	0.36	20.4	C
		T	0.56	21.4	C	T	0.47	19.5	B	T	0.56	21.5	C
Overall Intersection	-	0.62	17.0	B	-	0.80	23.4	C	-	0.71	19.2	B	B
32 Broadway at Chambers Street													
Broadway	SB	LTR	0.45	11.3	B	LTR	0.63	13.6	B	LTR	0.58	12.8	B
Chambers Street	EB	TR	1.11	103.7	F	TR	0.77	28.6	C	TR	1.02	66.9	E
	WB	L	0.15	16.0	B	L	0.50	24.1	C	L	0.79	49.0	D
		LT	0.94	44.0	D	LT	0.66	23.0	C	LT	0.85	32.7	C
Overall Intersection	-	0.75	50.2	D	-	0.70	19.2	B	-	0.78	33.9	C	C
33 Broadway at Vesey Street / Ann Street													
Broadway	SB	L	0.71	26.2	C	L	0.75	28.5	C	L	0.89	37.9	D
		LT	0.65	20.7	C	LT	0.58	19.5	B	LT	0.58	19.3	B
Vesey Street	EB	L	0.95	72.2	E	L	0.61	39.0	D	L	1.06	99.7	F
		LTR	1.08	93.6	F	LTR	0.84	45.1	D	LTR	0.83	43.3	D
Overall Intersection	-	0.59	48.4	D	-	0.56	29.5	C	-	0.68	39.6	D	D
34 Broadway at Fulton Street⁽²⁾													
Broadway	SB	TR	0.65	11.2	B	TR	0.56	10.5	B	TR	0.55	10.2	B
Fulton Street	WB	LT	0.52	28.1	C	LT	CLOSED			LT	0.37	26.2	C
Overall Intersection	-	0.61	14.7	B	-	0.38	10.5	B	-	0.49	13.1	B	B
35 Broadway at Dey Street													
Broadway	SB	LTR	1.09	71.4	E	LTR	0.79	16.6	B	LTR	0.91	24.5	C
Overall Intersection	-	0.71	71.4	E	-	0.52	16.6	B	-	0.59	24.5	C	C
36 Broadway at Maiden Lane / Cortlandt Street													
Broadway	SB	TR	0.96	32.0	C	TR	0.76	15.2	B	TR	0.77	15.7	B
Maiden Lane	WB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*
Overall Intersection	-	1.07	77.3	E	-	1.01	114.8	F	-	0.94	74.2	E	E
37 Broadway at Liberty Street													
Broadway	SB	LT	0.76	9.3	A	LT	0.73	14.7	B	LT	0.70	13.9	B
Liberty Street	EB	TR	0.66	31.4	C	TR	0.83	46.6	D	TR	0.65	36.9	D
Overall Intersection	-	0.73	16.5	B	-	0.76	24.4	C	-	0.68	20.0	B	B
38 Broadway at Rector Street													
Broadway	SB	T	0.53	10.1	B	T	0.48	9.6	A	T	0.49	9.7	A
Rector Street	EB	R	0.75	50.3	D	R	0.84	61.3	E	R	0.68	44.6	D
Overall Intersection	-	0.60	15.5	B	-	0.60	17.3	B	-	0.55	14.4	B	B
39 Broadway at Exchange Place													
Broadway	SB	LT	0.70	11.7	B	LT	0.58	9.5	A	LT	0.62	10.3	B
Overall Intersection	-	0.48	11.7	B	-	0.40	9.5	A	-	0.43	10.3	B	B

TABLE E.2-16
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
2015 NO ACTION CONDITION: PRE SEPTEMBER 11TH CONDITIONS SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	AM (8:15 - 9:15AM)				Midday (12:00PM - 1:00PM)				PM (5:00 - 6:00PM)				
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
WATER STREET CORRIDOR													
40 Water Street at Fulton Street⁽³⁾													
Water Street	NB	LT	0.75	20.2	C	LT	0.55	15.8	B	LT	0.58	16.2	B
	SB	TR	0.73	19.6	B	TR	0.41	13.9	B	TR	0.33	13.0	B
Fulton Street	EB	LR	0.47	29.7	C	LR	0.36	27.3	C	LR	0.70	36.8	D
Overall Intersection	-		0.57	20.6	C	-	0.43	16.0	B	-	0.55	18.9	B
UNSIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED (FREE FLOW)												
7 West Street (NYS 9A) at Barclay													
Barclay Street	WB	R	0.60	44.9	E	R	0.67	38.4	E	R	0.67	41.7	E
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street													
Rector Street	EB	LTR	0.05	7.5	A	LTR	0.03	7.4	A	LTR	0.03	7.4	A
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street													
Greenwich Street	SB	R	0.05	11.5	B	R	0.19	12.5	B	R	0.06	11.9	B

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-17
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.75	3.0	A	T	0.74	3.0	A	T	0.89	11.3	B	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback.
	SB	T	0.59	1.9	A	T	0.65	2.2	A	T	0.66	2.4	A	
Canal Street	WB	L	0.32	45.6	D	L	0.28	45.1	D	L	0.13	39.1	D	
	LR	0.50	52.5	D	LR	0.45	50.0	D	-	-	-	-	-	- Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane.
	R	0.57	55.9	E	R	0.52	53.1	D	R	0.70	46.9	D	-	-
Overall Intersection	-	0.71	4.8	A	-	0.70	4.6	A	-	0.82	8.2	A	[Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]	
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	1.02	48.1	D	TR	1.02	46.7	D	TR	0.96	21.9	C	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North.
	R	0.51	12.9	B	R	0.44	11.8	B	R	0.41	9.1	A	-	
	SB	L	0.98	61.7	E	L	0.99	100.1	F	L	0.90	55.7	E	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	T	1.03	40.8	D	T	1.17	96.0	F	T	0.78	1.7	A	-	
Overall Intersection	-	1.00	44.3	D	-	1.01	72.2	E	-	0.94	16.9	B	-	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.02	56.3	E	TR	1.09	77.0	E	TR	1.02	50.3	D	- Partially mitigated.
	SB	L	0.89	28.6	C	L	0.88	36.5	D	L	0.97	68.0	E	- Modify signal timing (increase cycle length from 120 s to 135 s).
	TR	0.92	33.7	C	TR	0.83	21.5	C	TR	0.77	17.7	B	-	
Chambers Street	LTR	0.74	62.1	E	LTR	0.48	42.0	D	LTR	0.44	42.1	D	-	
	WB	LT	0.79	56.1	E	LT	0.83	62.5	E	LT	0.75	55.9	E	-
	R	0.68	29.3	C	R	0.44	26.2	C	R	0.48	33.0	C	-	
Overall Intersection	-	1.00	44.5	D	-	1.13	50.9	D	-	1.12	39.5	D	-	
3 West Street (NYS Rt. 9A) at Vesey Street⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.03	117.3	F	-	-	-	-	- Meaningful TSM mitigation measures are not available.
	TR	0.97	21.8	C	TR	1.20+	120.0+	F*	-	-	-	-	-	
	SB	L	0.12	7.4	A	L	1.20+	120.0+	F*	-	-	-	-	
	TR	0.58	3.6	A	TR	0.98	40.9	D	-	-	-	-	-	
Vesey Street	EB	LTR	1.05	96.3	F	L	0.66	43.2	D	-	-	-	-	
	-	-	-	-	-	TR	1.06	120.0+	F*	-	-	-	-	
	WB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*	-	-	-	-	
	LTR	0.96	80.8	F	TR	1.20+	120.0+	F*	-	-	-	-	-	
Overall Intersection	-	1.04	29.0	C	-	1.20+	120.0+	F*	-	-	-	-	-	
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.90	25.3	C	T	0.91	26.8	C	- Modify signal timing (shift 1 s of green time from the NB phase to the WB phase).
Fulton Street	WB	-	-	-	-	R	0.74	46.8	D	R	0.72	44.6	D	-
Overall Intersection	-	-	-	-	-	0.84	27.1	C	-	0.84	28.3	C	-	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.96	93.1	F	L	0.56	55.1	E	-	-	-	-	- Mitigation not required.
	TR	1.04	54.3	D	TR	0.88	20.7	C	-	-	-	-	-	
	SB	L	1.20+	120.0+	F*	L	0.72	63.5	E	-	-	-	-	
	TR	0.74	16.4	B	TR	0.73	16.1	B	-	-	-	-	-	
Liberty Street	EB	DefL	1.15	120.0+	F*	LTR	0.53	41.2	D	-	-	-	-	
	TR	0.42	41.0	D	-	-	-	-	-	-	-	-	-	
	WB	LTR	0.28	37.1	D	-	-	-	-	-	-	-	-	
Overall Intersection	-	1.09	54.4	D	-	0.76	23.2	C	-	-	-	-	-	

TABLE E.2-17
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures			
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control					
			Delay	LOS			Delay	LOS			Delay	LOS				
43 West Street (NYS Rt. 9A) at Albany Street																
West Street (NYS Rt. 9A)	NB	TR	1.03	110.0	F	T	0.91	44.5	D	NB	T	0.87	28.1	C	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane. - Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane. - Modify signal timing (shift 4 s of green time from the EB/WB phase to the NB/SB phase).	
	SB	TR	0.96	74.9	E	TR	1.00	103.1	F	SB	TR	0.95	66.9	E		
Albany Street	EB	LTR	1.07	106.0	F	LR	1.01	97.6	F	EB	L	0.30	36.5	D		
	WB	-	-	-	-	L	0.18	31.3	C	R	R	0.59	46.9	D		
	-	-	-	-	-	TR	0.09	30.1	C	WB	L	0.20	34.7	C		
	-	-	-	-	-	-	-	-	-	R	R	0.10	33.2	C		
Overall Intersection	-	-	1.04	97.4	F	-	1.00	67.9	E	-	-	0.85	42.8	D		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel																
West Street (NYS Rt.9A)	NB	T	1.11	120.0+	F*	T	1.20+	120.0+	F*							- Meaningful TSM mitigation measures are not available.
	R		1.06	111.1	F	R	1.11	118.1	F							
	SB	T	1.12	120.0+	F*	TR	1.20	120.0+	F*							
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.62	26.3	C							
	WB	L	1.05	120.0+	F*	L	1.06	120.0+	F*							
	R		1.07	120.0+	F*	R	1.20+	120.0+	F*							
Overall Intersection	-	-	1.09	120.0+	F*	-	1.20+	120.0+	F*							
WASHINGTON STREET CORRIDOR																
8 Washington Street at Vesey Street																
Vesey Street	EB	LT	0.50	10.7	B	LT	0.50	10.6	B						- Mitigation not required.	
	WB	TR	0.28	8.4	A	TR	0.32	8.8	A							
Overall Intersection	-	-	0.31	9.7	A	-	0.32	9.9	A							
9 Washington Street at Liberty Street																
Washington Street	NB	R	0.00	20.7	C	ANALYSIS NOT NEEDED. (FREE FLOW)									- Mitigation not required.	
Liberty Street	EB	T	0.38	9.5	A	-	-	-	-							
Overall Intersection	-	-	0.25	9.5	A	-	-	-	-							
GREENWICH STREET CORRIDOR																
11 Greenwich Street at Chambers Street																
Greenwich Street	SB	LTR	0.54	24.4	C	LTR	0.27	15.2	B						- Mitigation not required.	
Chambers Street	EB	TR	0.39	11.6	B	TR	0.51	18.3	B							
	WB	LT	0.67	17.3	B	LT	0.71	24.8	C							
Overall Intersection	-	-	0.62	17.6	B	-	0.49	19.7	B							
42 Greenwich Street at Fulton Street																
Greenwich Street	SB	-	-	-	-	TR	0.36	11.9	B						- Mitigation not required.	
Fulton Street	WB	-	-	-	-	LT	0.40	24.8	C							
Overall Intersection	-	-	-	-	-	-	0.38	16.6	B							
14 Greenwich Street at Liberty Street																
Greenwich Street	SB	-	-	-	-	L	0.61	24.2	C						- Mitigation not required.	
	-	-	-	-	-	LT	0.42	13.2	B							
Liberty Street	EB	TR	0.51	11.3	B	TR	0.47	24.3	C							
Overall Intersection	-	-	0.32	11.3	B	-	0.55	20.0	B							
15 Greenwich Street at Rector Street																
Greenwich Street	NB	R	0.11	19.1	B	R	0.02	17.6	B	NB	R	0.01	17.6	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking. - Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane. [Measures reflect geometric improvements needed for the MD peak period, otherwise mitigation not needed.]	
	SB	LT	0.82	42.5	D	LT	0.69	32.2	C	SB	L	0.31	21.4	C		
Rector Street	EB	TR	0.17	10.5	B	TR	0.38	13.0	B	T	T	0.30	21.0	C		
	-	-	-	-	-	-	-	-	-	EB	TR	0.38	13.0	B		
Overall Intersection	-	-	0.43	33.3	C	-	0.51	23.7	C	-	-	0.35	17.6	B		

TABLE E.2-17
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CANAL STREET CORRIDOR														
16 Canal Street at Hudson Street														
Hudson Street	NB	LTR	0.94	50.6	D	LTR	0.85	42.2	D	LTR	0.64	33.8	C	- Restripe EB left-turn lane from 11 ft. to 12 ft. by reducing the median width. - Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain additional NB lane. - Modify signal timing (add 4 s to green time of EB/WB phase and 3 s to green time of EB/WB lead phase)
		R	0.85	53.0	D	R	0.55	35.9	D	R	0.66	42.2	D	
Canal Street	EB	L	0.97	64.2	E	L	1.10	88.8	F	L	1.03	63.7	E	
		T	0.99	51.7	D	LT	1.02	55.9	E	LT	0.98	45.3	D	
	WB	T	0.96	63.2	E	T	1.03	82.1	F	T	0.91	49.6	D	
		R	1.12	83.6	F	R	1.10	95.3	F	R	1.07	82.2	F	
Overall Intersection	-		1.07	62.9	E	-	1.04	66.6	E	-	0.97	51.1	D	
17 Canal Street at Varick Street														
Varick Street	SB	L	0.25	23.8	C	L	0.20	23.1	C					- Mitigation not required.
		T	0.94	46.1	D	T	0.65	29.4	C					
		R	0.16	22.7	C	R	0.11	22.0	C					
Canal Street	EB	TR	0.44	10.6	B	TR	0.44	10.3	B					
	WB	LT	1.03	94.6	F	LT	1.03	71.5	E					
Overall Intersection	-		0.61	59.9	E	-	0.51	37.8	D					
WEST BROADWAY CORRIDOR														
18 West Broadway at Worth Street														
West Broadway	SB	LTR	0.96	34.3	C	LTR	0.98	37.2	D	LTR	0.78	22.5	C	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of West Broadway during the AM peak period to gain an additional SB through lane. - Modify signal timing (shift 8 s of green time from SB phase to EB/WB phase).
Worth Street	EB	TR	0.19	20.4	C	TR	0.22	21.0	C	TR	0.17	15.3	B	
	WB	LT	0.78	38.4	D	LT	1.01	81.1	F	LT	0.81	35.9	D	
Overall Intersection	-		0.89	34.4	C	-	0.99	44.2	D	-	0.79	24.5	C	
19 West Broadway at Chambers Street														
West Broadway	SB	L	0.35	17.0	B	L	0.38	17.4	B	L	0.39	18.2	B	- Modify signal timing (shift 1 s of green time from SB phase to EB/WB phase).
		TR	0.68	22.0	C	TR	0.62	20.5	C	TR	0.64	21.5	C	
Chambers Street	EB	L	0.46	24.1	C	L	0.39	21.6	C	L	0.38	20.4	C	
		TR	1.07	83.5	F	TR	1.08	87.3	F	TR	1.05	77.7	E	
	WB	LTR	1.04	71.4	E	LTR	1.07	84.0	F	LTR	1.02	66.5	E	
Overall Intersection	-		0.88	51.0	D	-	0.85	53.8	D	-	0.85	47.2	D	
20 West Broadway at Barclay Street														
West Broadway	SB	TR	0.54	11.6	B	TR	0.60	12.3	B					- Mitigation not required.
Barclay Street	WB	LT	0.88	38.4	D	LT	0.73	28.8	C					
Overall Intersection	-		0.69	22.0	C	-	0.66	17.4	B					
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	-	L	0.52	40.5	D	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway). - SB Greenwich Street is STOP sign controlled. - Provide revised signal timing and phasing plan.
		-	-	-	-	R	0.63	49.7	D	-	-	-	-	
West Broadway	SB	L	1.16	120.0+	F*	L	0.57	15.3	B	L	0.78	25.4	C	
		R	0.75	28.3	C	TR	0.39	3.0	A	TR	0.46	7.8	A	
Vesey Street	EB	T	0.36	15.9	B	TR	1.20+	120.0+	F*	TR	0.65	20.3	C	
	WB	T	0.15	13.9	B	LT	0.36	32.6	C	LT	0.13	13.8	B	
Overall Intersection	-		0.76	69.4	E	-	0.80	115.1	F	-	0.71	18.4	B	

TABLE E.2-17
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CHURCH STREET CORRIDOR														
21 Church Street at Worth Street⁽¹⁾														
Church Street	NB	LTR	0.65	14.9	B	LTR	1.20+	120.0+	F*	LTR	0.98	31.7	C	- Prohibit parking along the west side of NB Church Street to provide one additional through lane.
Worth Street	EB	LT	0.84	48.7	D	LT	0.94	57.8	E	LT	0.86	42.8	D	
	WB	TR	0.76	34.7	C	TR	0.92	48.9	D	TR	0.84	37.2	D	
Overall Intersection	-		0.73	23.1	C	-	1.14	111.4	F	-	0.93	34.5	C	
22 Church Street at Chambers Street														
Church Street	NB	LTR	0.89	29.3	C	LTR	1.05	61.3	E	LTR	0.77	22.7	C	- Eliminate the truck loading/unloading zone along the west side of Church Street during the AM and PM peak periods to gain an additional NB through lane.
Chambers Street	EB	LT	1.04	111.2	F	LT	1.00	100.3	F	LT	1.00	100.3	F	
	WB	TR	1.05	99.8	F	TR	0.82	31.1	C	TR	0.82	31.1	C	
Overall Intersection	-		0.97	64.3	E	-	1.02	62.2	E	-	0.88	38.8	D	
23 Church Street at Barclay Street														
Church Street	NB	LT	1.09	84.6	F	LT	0.99	38.4	D					- Mitigation not required.
Barclay Street	WB	T	0.43	23.7	C	T	0.43	24.0	C					
	R		0.99	111.6	F	R	0.82	45.3	D					
Overall Intersection	-		1.05	82.4	F	-	0.92	37.7	D					
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>														
24 Church Street at Vesey Street														
Church Street	NB	LTR	0.99	30.3	C	LT	1.20+	120.0+	F*	LTR	0.84	31.3	C	- Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition.
			-	-	-	R	1.04	97.7	F		-	-	-	
Vesey Street	EB	LT	1.01	58.8	E	LT	1.20+	120.0+	F*	LT	0.94	53.3	D	
Overall Intersection	-		1.00	40.0	D	-	1.20+	120.0+	F*	-	0.74	39.5	D	
25 Church Street at Fulton Street														
Church Street	NB	T	0.78	12.9	B	LT	0.74	16.9	B	LT	0.80	19.7	B	- Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.
Fulton Street	WB	R	0.78	45.7	D	TR	1.20+	120.0+	F*	TR	0.68	44.8	D	
Overall Intersection	-		0.78	17.4	B	-	1.00	66.2	E	-	0.63	25.6	C	
26 Church Street at Dey Street														
Church Street	NB	T	0.82	7.6	A	T	0.63	9.9	A	T	0.76	18.5	B	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
Dey Street	WB	R	0.27	29.5	C	R	0.34	32.5	C	R	0.16	34.7	C	
Overall Intersection	-		0.66	8.3	A	-	0.55	10.7	B	-	0.46	19.1	B	
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.71	11.3	B	T	0.61	9.7	A	T	0.64	15.9	B	- Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes. - [Measures reflect geometric improvements needed for MD and PM peak periods, otherwise not needed.]
Cortlandt Street	WB	R	1.10	105.2	F	R	0.96	74.8	E	R	0.35	37.0	D	
Overall Intersection	-		0.86	33.7	C	-	0.74	20.1	C	-	0.45	19.2	B	
28 Church Street at Liberty Street														
Church Street	NB	T	0.91	21.3	C	T	0.70	12.1	B	T	0.81	26.0	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
			0.31	8.2	A	R	0.19	7.2	A	R	0.13	13.3	B	
Liberty Street	EB	LT	0.35	21.6	C	LT	0.50	24.1	C	LT	0.43	35.8	D	
Overall Intersection	-		0.69	20.2	C	-	0.62	15.3	B	-	0.56	28.2	C	
29 Trinity Street at Rector Street														
Trinity Street	NB	TR	0.95	33.5	C	TR	0.48	12.9	B					- Mitigation not required.
Rector Street	EB	LT	0.45	24.3	C	LT	0.58	26.9	C					
Overall Intersection	-		0.75	31.9	C	-	0.52	18.0	B					

TABLE E.2-17
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.26	18.2	B	LTR	0.44	20.0	C					- Mitigation not required.
Canal Street	EB	TR	0.41	18.6	B	TR	0.47	19.5	B					
	WB	DefL	0.86	42.3	D	DefL	0.71	30.8	C					
	T		0.44	10.0	B	T	0.36	9.1	A					
Overall Intersection	-		0.65	22.6	C	-	0.67	20.2	C					
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.60	13.0	B	LTR	0.74	48.0	D	LTR	0.62	33.6	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
Worth Street	EB	TR	0.45	19.4	B	TR	0.99	120.0+	F*	TR	0.84	43.3	D	
	WB	L	0.15	15.9	B	LT	0.76	40.7	D	LT	0.64	24.0	C	- Modify signal timing (shift 7 s of green time from SB phase to EB/WB phase).
	T		0.55	21.2	C	-	-	-	-	-	-	-	-	
Overall Intersection	-		0.58	16.4	B	-	0.85	69.0	E	-	0.73	34.1	C	
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.39	10.7	B	LTR	0.55	12.4	B					- Mitigation not required.
Chambers Street	EB	TR	1.06	85.9	F	TR	0.94	45.9	D					
	WB	L	0.14	15.6	B	L	0.52	26.0	C					
	LT		0.90	38.2	D	LT	0.71	25.0	C					
Overall Intersection	-		0.70	43.5	D	-	0.72	24.5	C					
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.70	25.9	C	L	0.84	28.8	C	L	0.49	18.7	B	- Prohibit parking along the north side of EB Vesey Street.
	LT		0.61	19.9	B	LT	0.40	13.5	B	T	0.67	22.2	C	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
Vesey Street	EB	L	0.91	63.6	E	L	1.20+	120.0+	F*	L	0.83	60.2	E	
	LTR		0.97	60.9	E	LTR	1.20	120.0+	F*	LTR	0.85	51.3	D	- Modify signal timing (shift 5 s of green time from SB phase to EB phase).
Overall Intersection	-		0.57	37.4	D	-	0.61	74.0	E	-	0.47	31.9	C	
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.59	10.3	B	TR	0.43	9.0	A					- Mitigation not required.
Fulton Street	WB	LT	0.46	26.9	C	LT	0.63	31.4	C					
Overall Intersection	-		0.55	13.7	B	-	0.49	16.4	B					
35 Broadway at Dey Street														
Broadway	SB	LTR	0.98	35.4	D	LTR	0.65	12.8	B					- Mitigation not required.
Overall Intersection	-		0.64	35.4	D	-	0.42	12.8	B					
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.86	19.9	B	TR	0.50	10.1	B					- Mitigation not required.
Maiden Lane	WB	LT	1.01	77.9	E	LT	0.55	31.3	C					
Overall Intersection	-		0.91	35.5	D	-	0.52	15.6	B					
37 Broadway at Liberty Street														
Broadway	SB	LT	0.72	8.4	A	LT	0.49	10.1	B					- Mitigation not required.
Liberty Street	EB	TR	0.51	28.2	C	TR	0.29	25.0	C					
Overall Intersection	-		0.65	13.8	B	-	0.43	14.3	B					
38 Broadway at Rector Street														
Broadway	SB	T	0.52	10.0	A	T	0.36	7.5	A	T	0.40	10.7	B	- Modify signal timing (shift 6 s of green time from SB phase to EB phase).
Rector Street	EB	R	0.73	48.4	D	R	1.01	101.8	F	R	0.75	43.7	D	
Overall Intersection	-		0.59	15.1	B	-	0.55	39.9	D	-	0.52	22.0	C	
39 Broadway at Exchange Place														
Broadway	SB	LT	0.68	11.4	B	T	0.40	7.7	A					- Mitigation not required.
Overall Intersection	-		0.47	11.4	B	-	0.28	7.7	A					

TABLE E.2-17
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street⁽³⁾														
Water Street	NB	-	-	-	-	L	0.83	48.7	D	L	0.69	28.6	C	- Modify signal timing (shift 5 s of green time from EB phase to NB/SB phase).
	LT	0.69	18.4	B	T	1.07	73.8	E	T	0.97	40.8	D		
	SB	TR	0.60	16.7	B	TR	0.58	16.5	B	TR	0.53	12.7	B	
Fulton Street	EB	LR	0.46	29.5	C	LR	0.45	29.3	C	LR	0.55	36.5	D	
Overall Intersection	-	0.54	18.5	B	-	0.75	45.0	D	-	0.75	28.1	C		
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)									
7 West Street (NYS Rt. 9A) at Barclay⁽⁴⁾	WB	R	0.55	38.1	E	R	0.51	33.4	D	- Mitigation not required.				
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.23	16.6	C	- Mitigation not required.				
Rector Street	EB	LTR	0.05	7.5	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.04	11.5	B	T	0.22	12.7	B	- Mitigation not required.				
	-	-	-	-	-	R	0.06	11.2	B					
Barclay Street	WB	-	-	-	-	LT	0.00	7.2	A					

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbiran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-18
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
1a West Street (NYS Rt. 9A) at Canal Street															
West Street (NYS Rt. 9A)	NB	T	0.57	2.1	A	T	0.57	2.1	A	T	0.79	18.3	B	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback. - Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North). - Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane. [Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]	
	SB	T	0.48	1.7	A	T	0.48	1.7	A	T	0.52	3.5	A		
Canal Street	WB	L	0.57	52.2	D	L	0.44	47.2	D	L	0.17	34.3	C		
	LR	0.40	46.0	D	LR	0.81	67.0	E	-	-	-	-			
	R	0.49	50.0	D	R	0.61	54.9	D	R	0.84	44.7	D			
Overall Intersection	-	-	0.57	5.2	A	-	0.62	7.2	A	-	0.81	13.6	B		
1b West Street (NYS Rt. 9A) at Canal Street															
West Street (NYS Rt. 9A)	NB	TR	0.74	14.2	B	TR	0.74	14.3	B	TR	0.86	24.6	C		- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North. - Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	R	0.51	13.0	B	R	0.44	11.8	B	R	0.50	19.1	B			
	SB	L	0.93	53.9	D	L	0.98	60.9	E	L	0.50	20.3	C		
	T	0.99	18.5	B	T	1.20+	120.0+	F*	T	0.58	0.7	A			
Overall Intersection	-	-	0.82	19.2	B	-	0.84	73.9	E	-	0.68	14.0	B		
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	0.86	21.5	C	TR	0.90	24.4	C					- Mitigation not required.	
	SB	L	0.75	25.7	C	L	0.80	19.2	B						
	TR	0.65	16.1	B	TR	0.80	20.2	C							
Chambers Street	EB	LTR	0.29	36.5	D	LTR	0.27	37.4	D						
	WB	LT	0.69	49.9	D	LT	0.66	49.2	D						
	R	0.81	44.0	D	R	0.52	28.3	C							
Overall Intersection	-	-	1.00	22.7	C	-	0.84	23.7	C						
3 West Street (NYS Rt. 9A) at Vesey Street⁽⁴⁾															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.79	72.1	E					- Meaningful TSM mitigation measures are not available.	
	TR	0.69	12.0	B	TR	0.98	60.2	E							
	SB	L	0.19	4.5	A	L	1.20+	120.0+	F*						
	TR	0.48	3.1	A	TR	0.86	29.2	C							
Vesey Street	EB	LTR	0.75	49.4	D	L	0.40	31.9	C						
	-	-	-	-	-	TR	1.20+	120.0+	F*						
	WB	L	0.80	54.4	D	L	1.04	120.0+	F*						
	LTR	1.01	95.3	F	TR	1.20+	120.0+	F*							
Overall Intersection	-	-	0.91	17.6	B	-	1.10	103.2	F						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.78	25.7	C					- Mitigation not required.	
Fulton Street	WB	-	-	-	-	R	0.63	32.1	C						
Overall Intersection	-	-	-	-	-	-	0.71	26.5	C						
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	0.43	53.3	D	L	0.49	52.5	D					- Mitigation not required.	
	TR	0.75	16.5	B	TR	0.75	16.5	B							
	SB	L	0.79	68.2	E	L	0.72	63.6	E						
	TR	0.63	14.3	B	TR	0.66	14.8	B							
Liberty Street	EB	DefL	0.69	58.0	E	LTR	0.37	38.0	D						
	TR	0.43	42.5	D	-	-	-	-							
	WB	LTR	0.60	49.3	D	-	-	-							
Overall Intersection	-	-	0.74	22.2	C	-	0.64	20.5	C						

TABLE E.2-18
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures			
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS				
43 West Street (NYS Rt. 9A) at Albany Street																
West Street (NYS Rt. 9A)	NB	TR	0.96	101.8	F	T	0.83	32.5	C	NB	T	0.77	20.1	C	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane.	
	SB	TR	0.94	64.8	E	TR	1.02	110.1	F	SB	TR	0.94	62.3	E		
Albany Street	EB	LTR	0.94	74.0	E	LR	0.33	34.6	C	EB	L	0.10	34.4	C		- Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane.
	WB	-	-	-	-	L	0.15	30.9	C	R	R	0.22	36.7	D		- Modify signal timing (shift 6 s of green time from the EB/WB phase to the NB/SB phase).
						TR	0.38	37.2	D	WB	L	0.18	35.7	D		
											R	0.44	44.1	D		
Overall Intersection	-	-	0.96	84.0	F	-	0.81	65.2	E	-	-	0.81	38.9	D		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel																
West Street (NYS Rt.9A)	NB	T	1.08	120.0+	F ^B	T	1.20+	120.0+	F ^B						- Meaningful TSM mitigation measures are not available.	
		R	0.96	52.3	D	R	1.06	79.7	E							
	SB	T	1.08	107.2	F	TR	1.15	120.0+	F ^B							
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.20	22.0	C							
	WB	L	0.84	120.0+	F ^B	L	1.01	120.0+	F ^B							
		R	1.01	120.0+	F ^B	R	1.10	120.0+	F ^B							
Overall Intersection	-	-	1.05	120.0+	F^B	-	1.20+	120.0+	F^B							
WASHINGTON STREET CORRIDOR																
8 Washington Street at Vesey Street																
Vesey Street	EB	LT	0.22	8.2	A	LT	0.57	11.5	B						- Mitigation not required.	
	WB	TR	0.28	8.6	A	TR	0.32	8.9	A							
Overall Intersection	-	-	0.18	8.4	A	-	0.36	10.5	B							
9 Washington Street at Liberty Street																
Washington Street	NB	R	0.06	21.4	C	ANALYSIS NOT NEEDED. (FREE FLOW)								- Mitigation not required.		
Liberty Street	EB	T	0.34	9.1	A	-	-	-	-							
Overall Intersection	-	-	0.24	9.6	A	-	-	-	-							
GREENWICH STREET CORRIDOR																
11 Greenwich Street at Chambers Street																
Greenwich Street	SB	LTR	0.54	24.5	C	LTR	0.24	14.9	B						- Mitigation not required.	
Chambers Street	EB	TR	0.27	10.4	B	TR	0.37	16.3	B							
	WB	LT	0.54	14.4	B	LT	0.68	24.2	C							
Overall Intersection	-	-	0.54	17.1	B	-	0.46	18.9	B							
42 Greenwich Street at Fulton Street																
Greenwich Street	SB	-	-	-	-	TR	0.48	13.5	B						- Mitigation not required.	
Fulton Street	WB	-	-	-	-	LT	0.42	25.3	C							
Overall Intersection	-	-	-	-	-	-	0.46	17.3	B							
14 Greenwich Street at Liberty Street																
Greenwich Street	SB	-	-	-	-	L	0.66	27.5	C						- Mitigation not required.	
		-	-	-	-	LT	0.53	15.5	B							
Liberty Street	EB	TR	0.44	10.2	B	TR	0.44	23.7	C							
Overall Intersection	-	-	0.28	10.2	B	-	0.57	21.0	C							
15 Greenwich Street at Rector Street																
Greenwich Street	NB	R	0.16	19.8	B	R	0.08	18.5	B	NB	R	0.07	17.7	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.	
	SB	LT	0.33	21.9	C	LT	1.20+	120.0+	F ^B	SB	L	0.33	21.8	C		
Rector Street	EB	TR	0.30	11.9	B	TR	0.80	44.1	D	T	0.80	44.6	D	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.		
										EB	TR	0.65	27.7	C		- Modify signal timing (shift 1 s of green time from EB phase to NB/SB phase).
Overall Intersection	-	-	0.31	16.6	B	-	1.09	120.0+	F^B	-	-	0.71	33.4	C		

TABLE E.2-18
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CANAL STREET CORRIDOR														
16 Canal Street at Hudson Street														
Hudson Street	NB	LTR	0.82	39.8	D	LTR	0.64	34.0	C	LTR	0.51	32.3	C	- Partially mitigated.
		R	0.66	39.0	D	R	0.56	36.1	D	R	0.62	40.2	D	- Restripe EB left-turn lane from 11 ft. to 12 ft. by reducing the median width.
Canal Street	EB	L	0.97	64.1	E	L	1.09	80.9	F	L	1.00	52.2	D	- Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain additional NB lane.
		T	0.92	40.1	D	LT	0.90	34.9	C	T	0.85	26.8	C	
	WB	T	0.91	55.8	E	T	1.05	85.3	F	T	0.93	49.9	D	- Modify signal timing (add 4 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).
		R	1.09	77.5	E	R	1.12	97.3	F	R	1.07	77.8	E	
Overall Intersection	-		1.01	54.3	D	-	0.99	64.3	E	-	0.96	46.8	D	
17 Canal Street at Varick Street														
Varick Street	SB	L	0.16	22.5	C	L	0.33	25.2	C	L	0.40	30.4	C	- Modify signal timing (shift 5 s of green time from SB phase to EB/WB phase).
		T	1.06	88.1	F	T	0.56	27.5	C	T	0.68	34.0	C	
		R	0.16	22.7	C	R	0.37	26.1	C	R	0.44	31.8	C	
Canal Street	EB	TR	0.44	10.6	B	TR	0.30	8.8	A	TR	0.28	6.5	A	
	WB	LT	1.01	59.4	E	LT	1.14	94.6	F	LT	1.04	57.2	E	
Overall Intersection	-		0.65	61.0	E	-	0.94	50.0	D		0.94	36.8	D	
WEST BROADWAY CORRIDOR														
18 West Broadway at Worth Street														
West Broadway	SB	LTR	0.67	16.1	B	LTR	0.60	14.5	B					- Mitigation not required.
Worth Street	EB	TR	0.16	19.9	B	TR	0.15	19.9	B					
	WB	LT	0.59	28.9	C	LT	0.61	30.0	C					
Overall Intersection	-		0.64	18.7	B	-	0.60	17.8	B					
19 West Broadway at Chambers Street														
West Broadway	SB	L	0.37	17.3	B	L	0.31	16.5	B	L	0.32	17.2	B	- Modify signal timing (shift 1 s of green time from SB phase to EB/WB phase).
		TR	0.52	18.5	B	TR	0.46	17.5	B	TR	0.47	18.2	B	
Chambers Street	EB	LTR	1.14	120.0+	F*	LTR	1.20+	120.0+	F*	L	1.19	120.0+	F*	
	WB	LTR	0.66	23.2	C	LTR	0.94	46.6	D	LTR	0.91	41.1	D	
Overall Intersection	-		0.83	60.4	E	-	0.93	62.9	E	-	0.84	57.3	E	
20 West Broadway at Barclay Street														
West Broadway	SB	TR	0.42	10.3	B	TR	0.58	12.1	B					- Mitigation not required.
Barclay Street	WB	LT	0.46	21.2	C	LT	0.44	21.0	C					
Overall Intersection	-		0.44	13.6	B	-	0.52	14.1	B					
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	-	L	0.49	39.8	D	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway).
		-	-	-	-	R	0.28	37.1	D	-	-	-	-	- SB Greenwich Street is STOP sign controlled.
West Broadway	SB	L	0.60	21.8	C	L	0.36	12.3	B	L	0.52	18.6	B	- Provide revised signal timing and phasing plan.
		R	0.81	32.0	C	TR	0.37	3.0	A	TR	0.45	7.7	A	
Vesey Street	EB	T	0.29	15.2	B	TR	1.20+	120.0+	F*	TR	0.80	24.7	C	
	WB	T	0.14	13.8	B	LT	0.28	31.6	C	LT	0.10	13.6	B	
Overall Intersection	-		0.55	21.0	C	-	0.74	120.0+	F*	-	0.66	18.4	B	

TABLE E.2-18
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CHURCH STREET CORRIDOR														
21 Church Street at Worth Street⁽¹⁾														
Church Street	NB	LTR	0.94	21.7	C	LTR	1.20+	120.0+	F*	LT	0.91	25.9	C	- Prohibit parking along the west side of NB Church Street to provide one additional through lane.
Worth Street	EB	LT	0.51	26.1	C	LT	0.80	41.0	D	LT	0.78	38.2	D	
	WB	TR	0.62	28.2	C	TR	0.84	45.9	D	TR	0.81	42.2	D	- Modify signal timing (shift 1 s of green time from NB phase to EB/WB phase).
Overall Intersection	-		0.82	22.9	C	-	1.07	120.0+	F*	-	0.87	29.9	C	
22 Church Street at Chambers Street														
Church Street	NB	LTR	1.01	48.9	D	LTR	1.02	52.1	D					- Mitigation not required.
Chambers Street	EB	LT	1.01	109.3	F	LT	0.99	67.9	E					
	WB	TR	0.79	28.8	C	TR	0.73	25.7	C					
Overall Intersection	-		1.01	55.6	E	-	1.01	49.0	D					
23 Church Street at Barclay Street														
Church Street	NB	LT	0.80	19.4	B	LT	0.76	18.0	B					- Mitigation not required.
Barclay Street	WB	T	0.27	21.2	C	T	0.30	21.7	C					
	R		1.01	80.6	F	R	0.89	54.6	D					
Overall Intersection	-		0.89	30.9	C	-	0.81	24.2	C					
													<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>	
24 Church Street at Vesey Street														
Church Street	NB	LT	1.08	68.8	E	LT	0.83	16.0	B	LTR	0.66	24.6	C	- Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition.
Vesey Street	R		0.55	12.7	B	R	1.20+	120.0+	F*	-	-	-	-	
	EB	LT	0.61	25.9	C	LT	1.20+	120.0+	F*	LT	0.75	39.2	D	- Move the Bus Layover Zone along the west of Church Street between Vesey Street and Fulton Street to the farside block to gain an additional NB lane.
Overall Intersection	-		0.89	50.5	D	-	1.20+	116.6	F	-	0.57	29.9	C	
25 Church Street at Fulton Street														
Church Street	NB	T	0.62	9.8	A	LT	0.79	18.7	B	LT	0.79	19.5	B	- Prohibit parking along the north and south sides of WB Fulton Street during the MD peak period.
Fulton Street	WB	R	0.58	40.7	D	TR	0.90	61.8	E	TR	0.35	37.0	D	- Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.
Overall Intersection	-		0.61	11.9	B	-	0.83	24.6	C	-	0.54	21.9	C	
26 Church Street at Dey Street														
Church Street	NB	T	0.68	10.9	B	T	0.63	10.0	A	T	0.73	17.7	B	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
Dey Street	WB	R	0.27	29.5	C	R	0.57	42.8	D	R	0.26	36.6	D	
Overall Intersection	-		0.56	11.6	B	-	0.61	12.0	B	-	0.48	18.8	B	
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.55	9.1	A	T	0.44	8.0	A	T	0.47	13.2	B	- Prohibit parking along the south side of Cortlandt Street.
Cortlandt Street	WB	R	0.94	60.4	E	R	1.20+	120.0+	F*	R	0.80	51.0	D	- Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.
Overall Intersection	-		0.70	22.2	C	-	1.13	120.0+	F*	-	0.48	27.4	C	
28 Church Street at Liberty Street														
Church Street	NB	T	0.69	11.8	B	T	0.51	9.0	A	T	0.58	19.0	B	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
Liberty Street	R		0.21	7.2	A	R	0.27	8.1	A	R	0.18	13.9	B	
	EB	LT	0.33	21.3	C	LT	0.52	24.5	C	LT	0.47	36.4	D	
Overall Intersection	-		0.55	13.9	B	-	0.51	14.6	B	-	0.45	25.0	C	
29 Trinity Street at Rector Street														
Trinity Street	NB	TR	0.63	11.0	B	TR	0.55	14.0	B					- Mitigation not required.
Rector Street	EB	LT	0.35	22.4	C	LT	0.41	23.3	C					
Overall Intersection	-		0.52	13.4	B	-	0.49	16.6	B					

TABLE E.2-18
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION VS CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.50	21.2	C	LTR	0.57	22.4	C					- Mitigation not required.
Canal Street	EB	TR	0.40	18.5	B	TR	0.42	18.8	B					
	WB	LT	0.66	12.6	B	LT	0.66	12.9	B					
Overall Intersection	-	0.64	17.0	B	-	0.67	18.0	B	-	0.62	17.0	B	-	
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.74	16.0	B	LTR	0.54	49.0	D	LTR	0.47	40.9	D	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
Worth Street	EB	TR	0.77	29.6	C	TR	0.92	118.3	F	TR	0.76	44.6	D	
	WB	L	0.73	39.5	D	LT	0.86	96.6	F	LT	0.58	29.4	C	- Modify signal timing (shift 8 s of green time from SB phase to EB/WB phase).
	T		0.46	19.4	B	-	-	-	-	-	-	-	-	
Overall Intersection	-	0.75	21.7	C	-	0.71	84.1	F	-	0.62	39.5	D	-	
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.58	12.8	B	LTR	0.41	10.9	B					- Mitigation not required.
Chambers Street	EB	TR	0.72	26.1	C	TR	0.64	23.0	C					
	WB	L	0.46	22.7	C	L	0.34	18.9	B					
	LT		0.63	22.0	C	LT	0.62	21.8	C					
Overall Intersection	-	0.65	18.1	B	-	0.51	17.0	B	-	0.62	18.1	B	-	
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.74	27.9	C	L	0.59	18.1	B	L	0.41	22.6	C	- Prohibit parking along the north side of EB Vesey Street.
	LT		0.54	18.9	B	LT	0.40	13.5	B	T	0.79	31.5	C	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
Vesey Street	EB	L	0.56	36.8	D	L	1.20+	120.0+	F*	L	0.59	36.1	D	
	LTR		0.72	38.2	D	LTR	1.20+	120.0+	F*	LTR	0.73	37.4	D	- Modify signal timing (shift 11 s of green time from SB phase to EB phase).
Overall Intersection	-	0.51	27.0	C	-	0.49	95.4	F	-	0.49	31.8	C	-	
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.51	9.8	A	TR	0.47	9.4	A					- Mitigation not required.
Fulton Street	WB	LT	CLOSED			LT	CLOSED							
Overall Intersection	-	0.33	9.8	A	-	0.32	9.4	A	-	0.32	9.4	A	-	
35 Broadway at Dey Street														
Broadway	SB	LTR	0.71	14.0	B	LTR	0.58	11.4	B					- Mitigation not required.
Overall Intersection	-	0.47	14.0	B	-	0.38	11.4	B	-	0.38	11.4	B	-	
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.66	12.7	B	TR	0.53	10.5	B					- Mitigation not required.
Maiden Lane	WB	LT	1.15	120.0+	F*	LT	0.89	51.6	D					
Overall Intersection	-	0.82	48.8	D	-	0.64	25.5	C	-	0.64	25.5	C	-	
37 Broadway at Liberty Street														
Broadway	SB	LT	0.69	13.8	B	LT	0.40	9.0	A					- Mitigation not required.
Liberty Street	EB	TR	0.65	37.5	D	TR	0.38	26.3	C					
Overall Intersection	-	0.68	19.7	B	-	0.40	14.9	B	-	0.40	14.9	B	-	
38 Broadway at Rector Street														
Broadway	SB	T	0.47	9.5	A	T	0.56	10.1	B					- Mitigation not required.
Rector Street	EB	R	0.81	57.2	E	R	0.83	58.0	E					
Overall Intersection	-	0.58	16.5	B	-	0.64	21.7	C	-	0.58	16.5	B	-	
39 Broadway at Exchange Place														
Broadway	SB	LT	0.57	9.3	A	T	0.45	8.0	A					- Mitigation not required.
Overall Intersection	-	0.39	9.3	A	-	0.31	8.0	A	-	0.31	8.0	A	-	

TABLE E.2-18
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures
			Control				Control				Control		
	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS	
WATER STREET CORRIDOR													
40 Water Street at Fulton Street⁽³⁾													
Water Street	NB	LT	0.49	14.8	B	L	0.49	20.7	C				- Mitigation not required.
			-	-	-	T	0.88	31.4	C				
	SB	TR	0.30	12.7	B	TR	0.51	15.4	B				
Fulton Street	EB	LR	0.35	27.2	C	LR	0.48	30.1	C				
Overall Intersection	-		0.40	15.3	B	-	0.65	24.4	C				
UNSIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)								
7 West Street (NYS Rt. 9A) at Barclay⁽⁴⁾	WB	R	0.60	31.0	D	R	0.49	25.4	D				- Mitigation not required.
WASHINGTON STREET CORRIDOR													
10 Washington Street at Rector Street													
Washington Street	SB	-	-	-	-	LT	0.13	13.1	B				- Mitigation not required.
Rector Street	EB	LTR	0.03	7.4	A	-	-	-	-				
GREENWICH STREET CORRIDOR													
12 Greenwich Street at Barclay Street													
Greenwich Street	SB	R	0.19	12.5	B	T	0.17	12.4	B				- Mitigation not required.
			-	-	-	R	0.25	13.0	B				
Barclay Street	WB	-	-	-	-	LT	0.00	7.2	A				

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-19
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.92	7.5	A	T	0.75	3.4	A	T	0.90	15.4	B	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback.
	SB	T	0.65	2.4	A	T	0.74	3.1	A	T	0.75	3.2	A	
Canal Street	WB	L	0.16	38.5	D	L	0.23	40.5	D	L	0.11	36.5	D	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North).
	LR	0.19	39.7	D	LR	0.36	43.2	D	-	-	-	-	-	
	R	0.22	40.0	D	R	0.41	45.3	D	R	0.61	38.7	D	- Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane.	
Overall Intersection	-	-	0.76	5.9	A	-	0.67	4.8	A	-	0.79	9.9	A	[Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	1.04	105.1	F	TR	0.96	25.5	C	TR	0.96	25.5	C	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North.
	R	0.26	9.5	A	R	0.26	9.5	A	R	0.26	9.5	A		
	SB	L	0.79	40.0	D	L	1.00	70.3	E	L	0.62	30.2	C	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	T	1.03	78.2	E	T	1.12	75.7	E	TR	0.85	2.6	A		
Overall Intersection	-	-	0.93	87.7	F	-	0.98	52.9	D	-	0.85	14.6	B	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.05	67.4	E	TR	0.95	29.2	C					- Mitigation not required.
	SB	L	0.38	11.3	B	L	0.69	11.9	B					
	TR	1.01	55.4	E	TR	1.04	56.5	E						
Chambers Street	EB	LTR	0.60	43.0	D	LTR	0.33	39.5	D					
	WB	LT	1.02	94.1	F	LT	0.96	88.9	F					
	R	0.66	25.8	C	R	0.74	36.1	D						
Overall Intersection	-	-	1.00	57.2	E	-	0.99	43.0	D					
3 West Street (NYS Rt. 9A) at Vesey Street⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.80	73.8	E					- Meaningful TSM mitigation measures are not available.
	TR	0.77	13.2	B	TR	1.09	85.8	F						
	SB	L	0.15	4.9	A	L	1.20+	120.0+	F*					
	TR	0.64	3.9	A	TR	1.14	120.0+	F*						
Vesey Street	EB	LTR	1.01	84.7	F	L	0.35	30.4	C					
	-	-	-	-	-	TR	1.20+	120.0+	F*					
	WB	L	0.91	71.8	E	L	1.20+	120.0+	F*					
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*						
Overall Intersection	-	-	1.01	28.8	C	-	1.20+	120.0+	F*					
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.84	27.9	C					- Mitigation not required.
Fulton Street	WB	-	-	-	-	R	0.69	36.1	D					
Overall Intersection	-	-	-	-	-	-	0.77	29.0	C					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.69	59.8	E	L	0.64	59.0	E					- Mitigation not required.
	TR	0.70	15.5	B	TR	0.72	15.8	B						
	SB	L	0.81	66.9	E	L	0.66	61.5	E					
	TR	0.89	21.0	C	TR	0.96	31.7	C						
Liberty Street	EB	LTR	0.90	62.0	E	LTR	0.48	40.1	D					
	WB	DefL	0.43	43.7	D	-	-	-	-					
	TR	0.36	40.6	D	-	-	-	-	-					
Overall Intersection	-	-	0.88	27.2	C	-	0.78	28.0	C					

TABLE E.2-19
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	0.96	103.1	F	T	0.81	26.1	C	NB	T	0.76	17.6	B	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane.
	SB	TR	1.02	86.9	F	TR	1.08	111.1	F	SB	TR	1.01	82.9	F	
Albany Street	EB	LTR	1.00	87.2	F	LR	0.55	41.9	D	EB	L	0.08	33.4	C	- Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane.
	WB	-	-	-	-	L	0.24	32.4	C	R	R	0.49	43.2	D	- Modify signal timing (shift 5 s of green time from the EB/WB phase to the NB/SB phase).
						TR	0.21	32.6	C	WB	L	0.28	36.9	D	
											R	0.24	36.9	D	
Overall Intersection			1.01	93.7	F		0.91	68.4	E			0.86	50.8	D	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	TR	1.08	120.0+	F*	TR	1.20+	120.0+	F*						- Meaningful TSM mitigation measures are not available.
		R	1.06	104.1	F	R	1.07	107.3	F						
	SB	T	1.03	103.0	F	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B						
	WB	L	0.93	120.0+	F*	L	1.05	120.0+	F*						
	R	R	0.86	120.0+	F*	R	1.07	120.0+	F*						
Overall Intersection			0.99	120.0+	F*		1.14	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street															
Vesey Street	EB	LT	0.49	11.1	B	LT	0.54	11.0	B						- Mitigation not required.
	WB	TR	0.32	9.0	A	TR	0.37	9.2	A						
Overall Intersection			0.31	10.0	B		0.34	10.2	B						
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.13	22.3	C	ANALYSIS NOT NEEDED. (FREE FLOW)								- Mitigation not required.	
Liberty Street	EB	T	0.34	9.2	A										
Overall Intersection			0.27	10.1	B										
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.53	24.3	C	LTR	0.21	14.5	B						- Mitigation not required.
Chambers Street	EB	TR	0.34	11.1	B	TR	0.38	16.3	B						
	WB	LT	0.76	21.7	C	LT	0.82	30.0	C						
Overall Intersection			0.67	19.3	B		0.52	22.1	C						
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	TR	0.55	14.7	B						- Mitigation not required.
Fulton Street	WB	-	-	-	-	LT	0.53	27.2	C						
Overall Intersection							0.54	19.2	B						
14 Greenwich Street at Liberty Street															
Greenwich Street	SB	-	-	-	-	L	0.80	38.9	D						- Mitigation not required.
						LT	0.50	14.8	B						
Liberty Street	EB	TR	0.46	10.5	B	TR	0.44	23.6	C						
Overall Intersection			0.29	10.5	B		0.66	23.3	C						
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.00	17.4	B	R	0.08	18.5	B	NB	R	0.08	18.4	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.35	22.2	C	LT	0.69	32.6	C	SB	L	0.39	23.6	C	
Rector Street	EB	TR	0.29	11.7	B	TR	0.32	12.1	B	T	T	0.24	20.1	C	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
										EB	TR	0.32	12.1	B	[Measures reflect geometric improvements needed for the MD peak period, otherwise mitigation not needed.]
Overall Intersection			0.32	16.4	B		0.47	23.5	C			0.35	17.7	B	

TABLE E.2-19
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CANAL STREET CORRIDOR														
16 Canal Street at Hudson Street														
Hudson Street	NB	LTR	0.38	28.6	C	LTR	0.89	45.2	D	LTR	0.71	35.9	D	- Restripe EB left-turn lane from 11 ft. to 12 ft. by reducing the median width.
		R	0.98	120.0+	F*	R	0.75	44.3	D	R	0.95	74.2	E	- Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain additional NB lane.
Canal Street	EB	L	0.27	24.2	C	L	0.70	35.3	D	L	0.60	27.9	C	
		T	0.91	37.0	D	T	0.86	30.9	C	T	0.82	24.4	C	- Modify signal timing (add 4 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).
	WB	T	0.22	23.4	C	T	0.51	28.4	C	T	0.45	24.2	C	
		R	1.13	88.2	F	R	1.18	110.5	F	R	1.12	87.1	F	
Overall Intersection	-		1.09	70.1	E	-	1.10	57.3	E	-	1.08	49.5	D	
17 Canal Street at Varick Street														
Varick Street	SB	L	0.41	26.5	C	L	0.72	43.6	D	L	0.72	43.6	D	- Modify signal timing (shift 3 s of green time from EB/WB lead phase to EB/WB phase).
		T	1.07	103.6	F	T	0.48	26.2	C	T	0.48	26.2	C	
		R	0.19	23.5	C	R	0.11	22.0	C	R	0.11	22.0	C	
Canal Street	EB	TR	0.42	10.4	B	TR	0.30	8.9	A	TR	0.30	8.9	A	
	WB	LT	1.06	119.1	F	LT	1.16	120.0+	F*	LT	1.05	115.0	F	
Overall Intersection	-		0.64	88.1	F	-	0.44	88.8	F	-	0.44	65.5	E	
WEST BROADWAY CORRIDOR														
18 West Broadway at Worth Street														
West Broadway	SB	LTR	0.78	18.9	B	LTR	0.65	15.7	B					- Mitigation not required.
Worth Street	EB	TR	0.22	20.7	C	TR	0.28	23.1	C					
	WB	LT	0.64	29.8	C	LT	0.85	43.2	D					
Overall Intersection	-		0.72	21.0	C	-	0.73	23.6	C					
19 West Broadway at Chambers Street														
West Broadway	SB	L	0.37	17.2	B	L	0.26	15.6	B	L	0.30	19.2	B	- Modify signal timing (shift 5 s of green time from SB phase to EB/WB phase).
		TR	0.49	17.9	B	TR	0.45	17.4	B	TR	0.52	21.5	C	
Chambers Street	EB	L	0.29	18.7	B	L	0.41	22.7	C	L	0.33	16.4	B	
		TR	0.81	32.4	C	TR	0.74	30.5	C	TR	0.66	22.7	C	
	WB	LTR	1.06	77.9	E	LTR	1.20+	120.0+	F*	LTR	1.04	68.5	E	
Overall Intersection	-		0.77	39.9	D	-	0.86	70.5	E	-	0.81	37.6	D	
20 West Broadway at Barclay Street														
West Broadway	SB	TR	0.52	11.3	B	TR	0.67	13.5	B					- Mitigation not required.
Barclay Street	WB	LT	0.95	47.6	D	LT	0.89	39.5	D					
Overall Intersection	-		0.71	26.9	C	-	0.77	22.5	C					
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	-	L	0.52	40.4	D	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway).
		-	-	-	-	R	0.42	40.9	D	-	-	-	-	
West Broadway	SB	L	1.20+	120.0+	F*	L	0.61	16.0	B	L	0.83	27.8	C	- SB Greenwich Street is STOP sign controlled.
		R	0.93	45.9	D	TR	0.40	3.1	A	TR	0.48	8.0	A	- Provide revised signal timing and phasing plan.
Vesey Street	EB	T	0.32	15.4	B	TR	1.20+	120.0+	F*	TR	0.85	27.2	C	
	WB	T	0.17	14.1	B	LT	0.35	32.3	C	LT	0.13	13.7	B	
Overall Intersection	-		0.76	61.2	E	-	0.92	120.0+	F*	-	0.84	22.2	C	

TABLE E.2-19
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CHURCH STREET CORRIDOR														
21 Church Street at Worth Street⁽¹⁾														
Church Street	NB	LTR	0.80	13.0	B	LTR	1.20+	120.0+	F*	LT	0.89	22.5	C	- Prohibit parking along the west side of NB Church Street to provide one additional through lane.
Worth Street	EB	LT	0.72	35.0	D	LT	0.59	30.6	C	LT	0.59	30.6	C	
	WB	TR	0.65	29.3	C	TR	0.83	40.0	D	TR	0.83	40.0	D	
Overall Intersection	-		0.77	18.0	B	-	1.07	120.0+	F*	-	0.87	26.6	C	
22 Church Street at Chambers Street														
Church Street	NB	LTR	0.84	26.5	C	LTR	1.14	96.5	F	LTR	0.84	25.1	C	- Eliminate the truck loading/unloading zone along the west side of Church Street during the AM and PM peak periods to gain an additional NB through lane.
Chambers Street	EB	LT	1.02	104.4	F	LT	1.07	87.5	F	LT	1.07	87.5	F	
	WB	TR	0.86	34.0	C	TR	0.67	23.1	C	TR	0.67	23.1	C	
Overall Intersection	-		0.93	46.6	D	-	1.11	81.5	F	-	0.96	35.7	D	
23 Church Street at Barclay Street														
Church Street	NB	LT	0.89	24.1	C	LT	0.86	21.9	C					- Mitigation not required.
Barclay Street	WB	T	0.50	25.1	C	T	0.53	26.0	C					
	R		1.01	82.4	F	R	0.79	42.5	D					
Overall Intersection	-		0.94	33.2	C	-	0.83	25.1	C					
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>														
24 Church Street at Vesey Street														
Church Street	NB	LT	1.12	84.8	F	LT	0.95	27.4	C	LTR	0.84	38.8	D	- Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition. - Move the Bus Layover Zone along the west of Church Street between Vesey Street and Fulton Street to the farside block to gain an additional NB lane.
	R		0.64	15.4	B	R	1.20+	120.0+	F*	-	-	-		
Vesey Street	EB	LT	0.87	36.0	D	LT	1.20+	120.0+	F*	LT	0.81	34.8	C	
Overall Intersection	-		1.02	60.7	E	-	1.20+	120.0+	F*	-	0.67	37.1	D	
25 Church Street at Fulton Street														
Church Street	NB	T	0.63	9.8	A	LT	0.63	14.6	B	LT	0.78	26.3	C	- Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.
Fulton Street	WB	R	0.59	35.1	D	TR	1.20+	120.0+	F*	TR	0.58	35.1	D	
Overall Intersection	-		0.62	13.0	B	-	0.96	83.7	F	-	0.59	28.8	C	
26 Church Street at Dey Street														
Church Street	NB	T	0.63	9.9	A	T	0.54	8.7	A	T	0.65	15.9	B	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
Dey Street	WB	R	0.26	29.1	C	R	0.33	32.3	C	R	0.15	34.6	C	
Overall Intersection	-		0.53	10.6	B	-	0.48	9.5	A	-	0.41	16.6	B	
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.53	8.8	A	T	0.47	8.2	A	T	0.50	13.6	B	- Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.
Cortlandt Street	WB	R	0.98	68.7	E	R	0.99	84.0	F	R	0.36	37.3	D	
Overall Intersection	-		0.71	24.6	C	-	0.68	22.6	C	-	0.39	18.1	B	
28 Church Street at Liberty Street														
Church Street	NB	T	0.61	10.2	B	T	0.47	8.5	A	T	0.54	18.0	B	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
	R		0.18	6.8	A	R	0.15	6.7	A	R	0.10	13.0	B	
Liberty Street	EB	LT	0.37	21.8	C	LT	0.59	26.1	C	LT	0.50	37.0	D	
Overall Intersection	-		0.52	13.1	B	-	0.52	15.3	B	-	0.43	25.1	C	
29 Trinity Street at Rector Street														
Trinity Street	NB	TR	0.58	14.3	B	TR	0.40	11.8	B					- Mitigation not required.
Rector Street	EB	LT	0.38	23.0	C	LT	0.53	25.7	C					
Overall Intersection	-		0.50	16.2	B	-	0.45	16.9	B					

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INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.53	23.2	C	LTR	0.68	24.1	C					- Mitigation not required.
Canal Street	EB	TR	1.10	120.0+	F*	TR	0.92	39.5	D					
	WB	DefL	1.07	120.0+	F*	DefL	1.04	79.0	E					
	T		0.93	47.2	D	T	0.69	16.6	B					
Overall Intersection	-	0.87	84.7	F	-	0.88	35.4	D						
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.71	15.1	B	LTR	0.77	53.9	D	LTR	0.55	22.6	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
Worth Street	EB	TR	0.63	23.5	C	TR	0.77	31.5	C	TR	0.77	31.5	C	
	WB	L	0.33	19.6	B	LT	0.76	29.4	C	LT	0.76	29.4	C	
	T		0.55	21.3	C	-	-	-	-	-	-	-	-	
Overall Intersection	-	0.67	18.4	B	-	0.77	44.2	D	-	0.65	25.8	C		
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.55	12.4	B	LTR	0.55	12.4	B					- Mitigation not required.
Chambers Street	EB	TR	0.95	48.1	D	TR	0.87	36.0	D					
	WB	L	0.72	40.3	D	L	0.38	20.8	C					
	LT		0.82	30.7	C	LT	0.62	21.8	C					
Overall Intersection	-	0.73	27.8	C	-	0.70	20.9	C						
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.88	36.4	D	L	0.94	41.2	D	L	0.62	24.4	C	- Prohibit parking along the north side of EB Vesey Street.
Vesey Street	LT		0.55	18.9	B	LT	0.37	13.2	B	T	0.69	26.3	C	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
	EB	L	0.99	81.6	F	L	1.20+	120.0+	F*	L	0.77	46.8	D	
	LTR		0.77	39.2	D	LTR	1.20+	120.0+	F*	LTR	0.69	37.1	D	- Modify signal timing (shift 9 s of green time from SB phase to EB phase).
Overall Intersection	-	0.64	35.7	D	-	0.70	94.5	F	-	0.46	31.0	C		
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.52	9.8	A	TR	0.32	8.0	A					- Mitigation not required.
Fulton Street	WB	LT	0.34	25.7	C	LT	0.55	29.1	C					
Overall Intersection	-	0.46	12.7	B	-	0.40	15.5	B						
35 Broadway at Dey Street														
Broadway	SB	LTR	0.85	19.6	B	LTR	0.60	11.9	B					- Mitigation not required.
Overall Intersection	-	0.56	19.6	B	-	0.39	11.9	B						
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.67	12.7	B	TR	0.42	9.2	A					- Mitigation not required.
Maiden Lane	WB	LT	1.02	79.1	E	LT	0.61	32.9	C					
Overall Intersection	-	0.78	33.3	C	-	0.48	16.8	B						
37 Broadway at Liberty Street														
Broadway	SB	LT	0.66	13.2	B	LT	0.39	8.9	A					- Mitigation not required.
Liberty Street	EB	TR	0.55	34.4	C	TR	0.32	25.5	C					
Overall Intersection	-	0.63	18.1	B	-	0.37	14.0	B						
38 Broadway at Rector Street														
Broadway	SB	T	0.48	9.6	A	T	0.61	11.1	B	T	0.63	12.6	B	- Modify signal timing (shift 2 s of green time from SB phase to EB phase).
Rector Street	EB	R	0.65	42.5	D	R	0.77	50.9	D	R	0.70	42.0	D	
Overall Intersection	-	0.53	13.9	B	-	0.66	20.6	C	-	0.65	19.6	B		
39 Broadway at Exchange Place														
Broadway	SB	LT	0.61	10.1	B	T	0.55	9.4	A					- Mitigation not required.
Overall Intersection	-	0.41	10.1	B	-	0.38	9.4	A						

TABLE E.2-19
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
			Control				Control				Control			
	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street⁽³⁾														
Water Street	NB	LT	0.51	15.1	B	L	0.44	18.3	B	L	0.38	14.3	B	- Modify signal timing (shift 4 s of green time from EB phase to NB/SB phase).
			-	-	-	T	1.06	69.8	E	T	0.98	43.2	D	
	SB	TR	0.26	12.3	B	TR	0.43	14.4	B	TR	0.39	11.7	B	
Fulton Street	EB	LR	0.69	36.4	D	LR	0.35	26.9	C	LR	0.42	31.2	C	
Overall Intersection	-	-	0.51	18.6	B	-	0.72	45.4	D	-	0.72	30.5	C	
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)									
7 West Street (NYS Rt. 9A) at Barclay⁽⁴⁾	WB	R	0.60	33.9	D	R	0.47	25.9	D	- Mitigation not required.				
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.21	14.1	B	- Mitigation not required.				
Rector Street	EB	LTR	0.03	7.4	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.06	11.8	B	T	0.23	14.3	B	- Mitigation not required.				
			-	-	-	R	0.01	11.3	B					
Barclay Street	WB	-	-	-	-	LT	0.00	7.2	A					

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-20
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
1a West Street (NYS Rt. 9A) at Canal Street (North)															
West Street (NYS Rt. 9A)	NB	T	0.80	3.6	A	T	0.87	5.1	A	T	1.01	37.4	D	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback.	
	SB	T	0.64	2.1	A	T	0.78	3.1	A	T	0.78	3.1	A		
Canal Street (North)	WB	L	0.34	46.1	D	L	0.44	50.0	D	L	0.22	42.1	D		- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North).
	LR	0.51	52.7	D	LR	0.45	50.2	D	-	-	-	-	-		
	R	0.58	56.4	E	R	0.53	53.5	D	R	0.76	54.6	D	- Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane.		
Overall Intersection	-	0.76	5.1	A	-	0.80	5.9	A	-	0.93	20.4	C	[Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]		
1b West Street (NYS Rt. 9A) at Canal Street (South)															
West Street (NYS Rt. 9A)	NB	TR	1.09	73.1	E	TR	1.19	114.1	F	TR	1.09	69.8	E	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North.	
	R	0.54	13.6	B	R	0.51	13.1	B	R	0.47	8.8	A			
	SB	L	1.04	83.5	F	L	1.04	120.0+	F*	L	0.94	71.6	E	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North	
	T	1.13	78.8	E	T	1.20+	120.0+	F*	T	0.92	4.6	A			
Overall Intersection	-	1.07	73.4	E	-	1.13	120.0+	F*	-	1.04	38.9	D			
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.11	89.4	F	TR	1.20+	120.0+	F*	TR	1.19	116.5	F	- Partially mitigated.	
	SB	L	0.85	24.9	C	L	0.84	30.6	C	L	0.85	34.5	C		
	TR	1.04	64.7	E	TR	1.12	88.7	F	TR	1.03	53.6	D	- Modify signal timing (increase cycle length from 120 s to 135 s).		
Chambers Street	EB	LTR	0.87	85.3	F	LTR	0.49	42.3	D	LTR	0.46	43.4		D	
	WB	LT	0.94	77.6	E	LT	0.99	91.7	F	LT	0.91	75.8	E		
	R	0.70	30.0	C	R	0.45	26.3	C	R	0.50	34.2	C			
Overall Intersection	-	1.06	71.6	E	-	1.18	115.9	F	-	1.17	81.0	F			
3 West Street (NYS Rt. 9A) at Vesey Street⁴⁰															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.14	120.0+	F*	-	-	-	-	- Meaningful TSM mitigation measures are not available.	
	TR	1.02	42.2	D	TR	1.20+	120.0+	F*	-	-	-	-			
	SB	L	0.14	8.7	A	L	1.20+	120.0+	F*	-	-	-			
	TR	0.66	4.0	A	TR	1.20+	120.0+	F*	-	-	-	-			
Vesey Street	EB	LTR	1.06	97.6	F	L	0.76	54.9	D	-	-	-	-		
	-	-	-	-	-	TR	1.08	120.0+	F*	-	-	-	-		
	WB	L	1.20	120.0+	F*	L	1.20+	120.0+	F*	-	-	-	-		
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	-	-	-	-			
Overall Intersection	-	1.19	47.7	D	-	1.20+	120.0+	F*	-	-	-	-			
4 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	1.03	48.0	D	-	-	-	-	- Meaningful TSM mitigation measures are not available.	
Fulton Street	WB	-	-	-	-	R	0.84	56.0	E	-	-	-	-		
Overall Intersection	-	-	-	-	-	0.96	48.7	D	-	-	-	-			
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	1.20+	120.0+	F*	L	0.77	65.3	E	L	0.59	50.9	D	- Modify signal timing (shift 4 s of green time from NB/SB through-right phase to NB/SB exclusive left-turn phase; shift 1 s of green time from EB phase to NB/SB exclusive left-turn phase).	
	TR	1.06	64.2	E	TR	0.99	32.8	C	TR	1.06	63.0	E			
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*		
	TR	0.81	18.1	B	TR	0.81	18.1	B	TR	0.86	23.3	C			
Liberty Street	EB	DefL	1.20+	120.0+	F*	LTR	0.67	45.2	D	LTR	0.70	46.9	D		
	TR	0.43	41.3	D	-	-	-	-	-	-	-	-			
	WB	LTR	0.29	37.2	D	-	-	-	-	-	-	-			
Overall Intersection	-	1.20+	90.8	F	-	1.06	78.5	E	-	1.06	72.6	E			

TABLE E.2-20
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvtl.	V/C	Control		Mvtl.	V/C	Control		Mvtl.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	1.08	120.0+	F*	T	1.16	120.0+	F*	NB	T	1.09	120.0+	F*	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane. - Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane. - Modify signal timing (shift 5 s of green time from the EB/WB phase to the NB/SB phase).
	SB	TR	0.98	96.6	F	TR	1.04	120.0+	F*	SB	TR	0.97	89.1	F	
Albany Street	EB	LTR	1.20	120.0+	F*	LR	1.20+	120.0+	F*	EB	L	0.32	37.4	D	
	WB	-	-	-	-	L	0.47	37.4	D	R	R	0.81	64.2	E	
						TR	0.32	33.7	C	WB	L	0.56	44.7	D	
										R	R	0.37	38.5	D	
Overall Intersection	-	-	1.12	120.0+	F*	-	1.20+	120.0+	F*	-	1.02	113.0	F		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.19	120.0+	F*	T	1.20+	120.0+	F*						- Meaningful TSM mitigation measures are not available.
	R		1.16	120.0+	F*	R	1.20+	120.0+	F*						
	SB	T	1.17	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.63	26.6	C						
	WB	L	1.07	120.0+	F*	L	1.08	120.0+	F*						
	R		1.13	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-	-	1.15	120.0+	F*	-	1.20+	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street															
Vesey Street	EB	LT	0.55	11.4	B	LT	0.69	13.5	B						- Mitigation not required.
	WB	TR	0.34	8.9	A	TR	0.50	10.6	B						
Overall Intersection	-	-	0.35	10.2	B	-	0.43	12.3	B						
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.00	20.7	C	ANALYSIS NOT NEEDED. (FREE FLOW)								- Mitigation not required.	
Liberty Street	EB	T	0.48	10.6	B										
Overall Intersection	-	-	0.32	10.6	B	-	-	-	-						
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.55	24.6	C	LTR	0.30	15.5	B					- Mitigation not required.	
Chambers Street	EB	TR	0.42	11.9	B	TR	0.54	18.9	B						
	WB	LT	0.73	19.6	B	LT	0.78	28.4	C						
Overall Intersection	-	-	0.66	18.4	B	-	0.54	21.3	C						
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	TR	0.39	12.2	B					- Mitigation not required.	
Fulton Street	WB	-	-	-	-	LT	0.56	27.8	C						
Overall Intersection	-	-	-	-	-	-	0.45	18.7	B						
14 Greenwich Street at Liberty Street															
Greenwich Street	SB	-	-	-	-	L	0.73	32.0	C	L	0.80	43.5	D	- Modify signal timing (shift 2.5 s of green time from SB phase to EB phase).	
						LT	0.50	14.6	B	LT	0.53	16.6	B		
Liberty Street	EB	TR	0.63	13.1	B	TR	1.02	66.0	E	TR	0.94	44.9	D		
Overall Intersection	-	-	0.39	13.1	B	-	0.84	47.5	D	-	0.86	36.8	D		
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.11	19.1	B	R	0.02	17.6	B	NB	R	0.01	17.6	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.93	57.5	E	LT	1.20+	120.0+	F*	SB	L	0.36	22.3	C	
Rector Street	EB	TR	0.28	11.7	B	TR	0.70	20.6	C	T	T	0.72	31.9	C	
										EB	TR	0.70	20.6	C	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
Overall Intersection	-	-	0.54	41.2	D	-	0.93	102.3	F	-	0.71	25.3	C		

TABLE E.2-20
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.95	53.2	D	LTR	0.86	43.0	D	LTR	0.68	35.5	D	- Restripe EB left-turn lane from 11 ft. to 14 ft. by reducing the median width. - Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain additional NB lane. - Modify signal timing (add 4 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).	
		R	0.87	56.1	E	R	0.57	36.6	D	R	0.72	47.5	D		
Canal Street	EB	L	1.02	79.5	E	L	1.20+	120.0+	F*	L	1.05	69.4	E		
		T	1.06	72.6	E	LT	1.08	75.4	E	LT	1.03	57.6	E		
	WB	T	0.99	69.2	E	T	1.13	115.0	F	T	0.99	67.4	E		
		R	1.18	110.2	F	R	1.20+	120.0+	F*	R	1.15	107.0	F		
Overall Intersection	-		1.12	76.8	E	-	1.18	96.5	F	-	1.05	62.3	E		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.25	23.8	C	L	0.20	23.1	C	L	0.20	23.1	C	- Modify signal timing (shift 1 s of green time from EB lead phase to EB/WB phase).	
		T	0.95	48.1	D	T	0.66	29.6	C	T	0.66	29.6	C		
		R	0.16	22.7	C	R	0.11	22.0	C	R	0.11	22.0	C		
Canal Street	EB	TR	0.47	11.0	B	TR	0.46	10.6	B	TR	0.46	10.6	B		
	WB	LT	1.08	116.7	F	LT	1.16	119.8	F	LT	1.13	103.6	F		
Overall Intersection	-		0.64	70.4	E	-	0.53	56.0	E	-	0.53	50.2	D		
WEST BROADWAY CORRIDOR															
18 West Broadway at Worth Street															
West Broadway	SB	LTR	0.98	38.9	D	LTR	1.02	46.4	D	LTR	0.87	28.2	C	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of West Broadway during the AM and PM peak periods to gain an additional SB through lane. - Modify signal timing (shift 11 s of green time from SB phase to EB/WB phase).	
Worth Street	EB	TR	0.19	20.4	C	TR	0.22	21.0	C	TR	0.16	13.4	B		
	WB	LT	0.79	39.4	D	LT	1.18	120.0+	F*	LT	0.87	40.6	D		
Overall Intersection	-		0.91	38.2	D	-	1.08	62.1	E	-	0.87	29.9	C		
19 West Broadway at Chambers Street															
West Broadway	SB	L	0.36	17.2	B	L	0.39	17.6	B	L	0.43	20.9	C		- Modify signal timing (shift 4 s of green time from SB phase to EB/WB phase).
		TR	0.70	22.5	C	TR	0.69	22.1	C	TR	0.77	27.3	C		
Chambers Street	EB	L	0.51	27.0	C	L	0.43	23.5	C	L	0.37	18.3	B		
		TR	1.15	109.8	F	TR	1.15	114.2	F	TR	1.05	74.1	E		
	WB	LTR	1.18	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.18	119.7	F		
Overall Intersection	-		0.94	72.6	E	-	1.07	103.2	F	-	0.99	63.1	E		
20 West Broadway at Barclay Street															
West Broadway	SB	TR	0.57	11.9	B	TR	0.66	13.2	B					- Mitigation not required.	
Barclay Street	WB	LT	0.90	41.2	D	LT	0.81	33.0	C						
Overall Intersection	-		0.71	23.1	C	-	0.73	19.5	B						
13 West Broadway/Greenwich Street at Vesey Street															
Greenwich Street	SB	-	-	-	-	L	0.50	39.9	D	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway). - SB Greenwich Street is STOP sign controlled. - Provide revised signal timing and phasing plan.	
		-	-	-	-	R	0.86	72.6	E	-	-	-	-		
West Broadway	SB	L	1.20+	120.0+	F*	L	0.59	15.6	B	L	0.80	26.5	C		
		R	0.77	29.4	C	TR	0.45	3.4	A	TR	0.54	8.6	A		
Vesey Street	EB	T	0.39	16.2	B	TR	1.20+	120.0+	F*	TR	0.74	22.5	C		
	WB	T	0.23	14.6	B	LT	0.69	39.0	D	LT	0.25	14.8	B		
Overall Intersection	-		0.80	77.1	E	-	0.90	120.0+	F*	-	0.77	19.3	B		

TABLE E.2-20
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
CHURCH STREET CORRIDOR															
21 Church Street at Worth Street⁽¹⁾															
Church Street	NB	LTR	0.70	16.0	B	LTR	1.20+	120.0+	F*	NB	LT	0.94	22.9	C	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.
Worth Street	EB	LT	0.87	52.4	D	LT	0.96	60.9	E	R	0.34	8.9	A		
	WB	TR	0.78	35.5	D	TR	0.99	63.1	E	EB	LT	0.90	48.9	D	
										WB	T	0.61	27.5	C	- Modify signal timing (shift 2 s of green time from NB phase to EB/WB phase).
										R	0.63	30.5	C		
Overall Intersection	-	0.77	24.1	C	-	1.20+	120.0+	F*	-	0.92	26.8	C			
22 Church Street at Chambers Street															
Church Street	NB	LTR	0.95	35.6	D	LTR	1.18	110.0	F	LTR	0.86	26.2	C	- Eliminate the truck loading/unloading zone along the west side of Church Street during the peak periods to gain an additional NB through lane.	
Chambers Street	EB	LT	1.10	120.0+	F*	LT	1.08	120.0+	F*	LT	0.94	63.9	E		
	WB	TR	1.15	120.0+	F*	TR	0.93	43.1	D	TR	0.93	43.1	D		- Provide strict enforcement of "No Standing Anytime" regulation along the north and south sides of EB Chambers Street during the peak periods.
Overall Intersection	-	1.05	83.3	F	-	1.13	99.4	F	-	0.90	36.6	D			
23 Church Street at Barclay Street															
Church Street	NB	LT	1.15	111.6	F	LT	1.13	86.1	F					- Mitigation not required.	
Barclay Street	WB	T	0.44	23.9	C	T	0.45	24.2	C						
		R	1.01	120.0+	F*	R	0.83	46.6	D						
Overall Intersection	-	1.09	105.2	F	-	1.01	75.9	E							
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>															
24 Church Street at Vesey Street															
Church Street	NB	LTR	1.10	74.4	E	LT	1.20+	120.0+	F*	LTR	1.01	57.0	E	- Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition.	
		-	-	-	-	R	1.20+	120.0+	F*		-	-	-		
Vesey Street	EB	LT	1.08	78.8	E	LT	1.20+	120.0+	F*	LT	1.03	73.2	E		- Move the Bus Layover Zone along the west of Church Street between Vesey Street and Fulton Street to the farside block to gain an additional NB lane.
Overall Intersection	-	1.09	75.8	E	-	1.20+	120.0+	F*	-	0.84	62.7	E			
25 Church Street at Fulton Street															
Church Street	NB	T	0.88	16.9	B	LT	0.98	34.4	C	LT	0.98	36.2	D	- Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.	
Fulton Street	WB	R	0.80	46.8	D	TR	1.20+	120.0+	F*	TR	0.73	46.0	D		
Overall Intersection	-	0.85	20.6	C	-	1.19	84.2	F	-	0.77	38.2	D			
26 Church Street at Dey Street															
Church Street	NB	T	0.92	12.9	B	T	0.83	14.9	B	T	0.94	29.1	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
Dey Street	WB	R	0.28	29.7	C	R	0.34	32.5	C	R	0.15	33.8	C		
Overall Intersection	-	0.74	13.4	B	-	0.69	15.4	B	-	0.57	29.2	C			
27 Church Street at Cortlandt Street															
Church Street	NB	T	0.73	11.8	B	T	0.74	11.9	B	T	0.84	27.9	C	- Prohibit parking along the south side of Cortlandt Street.	
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.53	34.1	C		- Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.
Overall Intersection	-	1.07	100.0	F	-	1.18	109.3	F	-	0.60	29.4	C			
28 Church Street at Liberty Street															
Church Street	NB	T	0.93	23.6	C	T	0.78	14.0	B	T	0.89	31.7	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
		R	0.38	9.1	A	R	0.27	8.1	A	R	0.18	13.9	B		
Liberty Street	EB	LT	0.47	23.1	C	LT	0.85	36.1	D	LT	0.74	43.4	D		
Overall Intersection	-	0.75	22.1	C	-	0.80	22.2	C	-	0.69	35.2	D			
29 Trinity Street at Rector Street															
Trinity Street	NB	TR	0.96	36.0	D	TR	0.49	13.1	B	TR	0.52	15.2	B	- Modify signal timing (shift 3 s of green time from NB phase to EB phase).	
Rector Street	EB	LT	0.59	27.6	C	LT	1.00	67.1	E	LT	0.90	44.0	D		
Overall Intersection	-	0.82	34.3	C	-	0.69	38.9	D	-	0.69	29.0	C			

TABLE E.2-20
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			LOS
			Delay	LOS			Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.32	18.8	B	LTR	0.52	21.0	C					- Mitigation not required.
Canal Street	EB	TR	0.48	19.5	B	TR	0.56	21.0	C					
	WB	DefL	0.94	57.6	E	DefL	0.81	41.3	D					
	T		0.47	10.5	B	T	0.43	10.2	B					
Overall Intersection	-		0.70	26.5	C	-	0.74	22.7	C					
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.66	14.3	B	LTR	0.85	93.3	F	LTR	0.69	43.0	D	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.
Worth Street	EB	TR	0.47	19.7	B	TR	1.06	120.0+	F*	TR	0.82	42.3	D	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
	WB	L	0.18	16.3	B	LT	0.84	58.5	E	L	0.34	15.7	B	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.
	T		0.56	21.4	C	-	-	-	-	T	0.61	25.7	C	- Modify signal timing (shift 6 s of green time from SB phase to EB/WB phase).
Overall Intersection	-		0.62	17.0	B	-	0.94	103.8	F	-	0.76	38.7	D	
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.45	11.3	B	LTR	0.64	13.8	B					- Mitigation not required.
Chambers Street	EB	TR	1.11	103.7	F	TR	0.97	53.7	D					
	WB	L	0.15	16.0	B	L	0.59	29.8	C					
	LT		0.94	44.0	D	LT	0.77	27.6	C					
Overall Intersection	-		0.75	50.2	D	-	0.79	27.2	C					
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.71	26.2	C	L	0.85	30.1	C	L	0.53	21.0	C	- Prohibit parking along the north side of EB Vesey Street.
	LT		0.65	20.7	C	LT	0.49	14.4	B	T	0.86	31.7	C	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
Vesey Street	EB	L	0.95	72.2	E	L	1.20+	120.0+	F*	L	0.93	72.1	E	
	LTR		1.08	93.6	F	LTR	1.20+	120.0+	F*	LTR	0.99	70.3	E	- Modify signal timing (shift 7 s of green time from SB phase to EB phase).
Overall Intersection	-		0.59	48.4	D	-	0.68	120.0+	F*	-	0.58	43.2	D	
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.65	11.2	B	TR	0.55	10.3	B					- Mitigation not required.
Fulton Street	WB	LT	0.52	28.1	C	LT	0.77	36.8	D					
Overall Intersection	-		0.61	14.7	B	-	0.62	18.6	B					
35 Broadway at Dey Street														
Broadway	SB	LTR	1.09	71.4	E	LTR	0.81	17.9	B					- Mitigation not required.
Overall Intersection	-		0.71	71.4	E	-	0.53	17.9	B					
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.96	32.0	C	TR	0.67	13.1	B					- Mitigation not required.
Maiden Lane	WB	LT	1.20+	120.0+	F*	LT	0.82	44.6	D					
Overall Intersection	-		1.07	77.3	E	-	0.72	22.3	C					
37 Broadway at Liberty Street														
Broadway	SB	LT	0.76	9.3	A	LT	0.58	11.4	B					- Mitigation not required.
Liberty Street	EB	TR	0.66	31.4	C	TR	0.48	27.5	C					
Overall Intersection	-		0.73	16.5	B	-	0.55	17.1	B					
38 Broadway at Rector Street														
Broadway	SB	T	0.53	10.1	B	T	0.38	7.7	A	T	0.44	12.2	B	- Modify signal timing (shift 8 s of green time from SB phase to EB phase).
Rector Street	EB	R	0.75	50.3	D	R	1.08	120.0+	F*	R	0.73	40.0	D	
Overall Intersection	-		0.60	15.5	B	-	0.58	47.2	D	-	0.55	21.8	C	
39 Broadway at Exchange Place														
Broadway	SB	LT	0.70	11.7	B	T	0.42	7.9	A					- Mitigation not required.
Overall Intersection	-		0.48	11.7	B	-	0.29	7.9	A					

TABLE E.2-20
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street⁽¹⁾														
Water Street	NB	LT	0.75	20.2	C	L	1.20+	120.0+	F*	LT	0.74	19.9	B	- Restripe the NB approach of Water Street to provide one through lane and one through-left lane.
			-	-	-	T	1.20+	120.0+	F*		-	-	-	
	SB	TR	0.73	19.6	B	TR	0.73	19.9	B	TR	0.73	19.9	B	
Fulton Street	EB	LR	0.47	29.7	C	LR	0.46	29.4	C	LR	0.46	29.4	C	
Overall Intersection			0.57	20.6	C		0.84	77.2	E		0.57	20.6	C	
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED (FREE FLOW)				ANALYSIS NOT NEEDED (FREE FLOW)								- Mitigation not required.	
7 West Street (NYS Rt. 9A) at Barclay⁽⁴⁾	WB	R	0.60	44.9	E	R	0.70	54.4	F					- Mitigation not required. (For Barclay, a minor street, volume increment from Pre-9/11 No Build condition to Post-9/11 Build condition is less than 90 vehicles per hour and hence not impacted according to CEQR requirements).
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.28	19.8	C					- Mitigation not required.
Rector Street	EB	LTR	0.05	7.5	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.05	11.5	B	T	0.27	13.6	B					- Mitigation not required.
			-	-	-	R	0.06	11.4	B					
	WB	-	-	-	-	LT	0.00	7.2	A					

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-21
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.63	2.4	A	T	0.71	3.0	A	T	0.97	30.1	C	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback. - Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North). - Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane. [Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]
	SB	T	0.53	1.9	A	T	0.59	2.1	A	T	0.68	6.6	A	
Canal Street	WB	L	0.59	53.2	D	L	0.60	53.9	D	L	0.20	31.5	C	
	LR	0.40	46.1	D	LR	0.82	68.6	E	-	-	-	-	-	
	R	0.50	50.3	D	R	0.61	55.3	E	R	0.86	47.6	D		
Overall Intersection	-	-	0.62	5.2	A	-	0.73	7.3	A	-	0.92	20.1	C	
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	0.82	16.1	B	TR	0.93	22.0	C	TR	0.97	30.1	C	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North. - Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	R	0.56	13.9	B	R	0.55	13.9	B	R	0.57	16.5	B		
	SB	L	1.00	75.8	E	L	1.04	81.5	F	L	0.57	24.8	C	
	T	1.09	62.7	E	T	1.20+	120.0+	F*	T	0.70	1.1	A		
Overall Intersection	-	-	0.90	41.1	D	-	0.98	120.0+	F*	-	0.80	16.5	B	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	0.96	29.4	C	TR	1.13	94.2	F	TR	1.04	57.5	E	- Partially mitigated. - Modify signal timing (increase cycle length from 120 s to 135 s).
	SB	L	0.69	24.5	C	L	0.67	11.2	B	L	0.74	20.8	C	
Chambers Street	TR	0.74	17.8	B	TR	1.06	64.3	E	TR	0.97	29.8	C		
	EB	LTR	0.32	37.6	D	LTR	0.31	38.7	D	LTR	0.27	39.5	D	
	WB	LT	0.83	61.6	E	LT	0.85	66.6	E	LT	0.78	61.0	E	
	R	0.82	45.2	D	R	0.52	28.5	C	R	0.57	36.7	D		
Overall Intersection	-	-	1.05	27.4	C	-	1.03	73.2	E	-	0.96	43.2	D	
3 West Street (NYS Rt. 9A) at Vesey Street⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.92	89.6	F	-	-	-	-	- Meaningful TSM mitigation measures are not available.
	TR	0.75	12.8	B	TR	1.13	120.0+	F*	-	-	-	-		
	SB	L	0.21	5.0	A	L	1.20+	120.0+	F*	-	-	-		
	TR	0.56	3.4	A	TR	1.15	108.1	F	-	-	-	-		
Vesey Street	EB	DefL	1.20+	120.0+	F*	L	0.47	37.1	D	-	-	-		
	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	-	-	-	-		
	WB	L	0.88	62.9	E	L	1.20+	120.0+	F*	-	-	-		
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	-	-	-	-		
Overall Intersection	-	-	1.11	42.4	D	-	1.20+	120.0+	F*	-	-	-	-	
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.92	33.4	C	-	-	-	-	- Mitigation not required.
Fulton Street	WB	-	-	-	-	R	0.69	35.0	C	-	-	-	-	
Overall Intersection	-	-	-	-	-	-	0.82	33.6	C	-	-	-	-	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.65	60.2	E	L	0.66	58.0	E	L	0.35	38.4	D	- Modify signal timing (shift 9 s of green time from NB/SB through-right phase to NB/SB exclusive left-turn phase; shift 5 s of green time from EB phase to NB/SB exclusive left-turn phase).
	TR	0.77	17.0	B	TR	0.85	19.6	B	TR	0.99	41.0	D		
	SB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*	L	1.09	109.9	F	
	TR	0.69	15.3	B	TR	0.74	16.5	B	TR	0.86	27.5	C		
Liberty Street	EB	DefL	1.20+	120.0+	F*	LTR	0.55	41.8	D	LTR	0.66	48.9	D	
	TR	0.43	42.6	D	-	-	-	-	-	-	-	-		
	WB	LTR	0.60	49.3	D	-	-	-	-	-	-	-		
Overall Intersection	-	-	0.97	38.7	D	-	0.94	74.4	E	-	0.94	43.4	D	

TABLE E.2-21
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	1.01	120.0+	F ^B	T	0.96	91.9	F	NB	T	0.93	75.4	E	- Partially mitigated.
	SB	TR	0.96	84.3	F	TR	1.07	120.0+	F ^B	SB	TR	1.04	120.0+	F ^B	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane.
Albany Street	EB	LTR	1.14	120.0+	F ^B	LR	0.59	43.7	D	EB	L	0.09	31.3	C	
	WB	-	-	-	-	L	0.46	36.7	D	R	R	0.39	37.3	D	- Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane.
	-	-	-	-	-	TR	0.57	41.0	D	WB	L	0.49	39.0	D	- Modify signal timing (shift 2 s of green time from the EB/WB phase to the NB/SB phase).
	-	-	-	-	-	-	-	-	-	R	R	0.60	44.0	D	
Overall Intersection	-	-	1.05	117.3	F	-	0.92	103.9	F	-	-	0.91	90.6	F	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.15	120.0+	F ^B	T	1.20+	120.0+	F ^B						- Meaningful TSM mitigation measures are not available.
	R		1.03	76.5	E	R	1.15	117.2	F						
	SB	T	1.15	120.0+	F ^B	TR	1.20+	120.0+	F ^B						
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.21	22.1	C						
	WB	L	0.85	120.0+	F ^B	L	1.03	120.0+	F ^B						
	R		1.05	120.0+	F ^B	R	1.20+	120.0+	F ^B						
Overall Intersection	-	-	1.11	120.0+	F^B	-	1.20+	120.0+	F^B	-	-	-	-	-	-
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street															
Vesey Street	EB	LT	0.24	8.2	A	LT	0.65	12.7	B						- Mitigation not required.
	WB	TR	0.35	9.2	A	TR	0.55	11.3	B						
Overall Intersection	-	-	0.22	8.8	A	-	0.41	12.1	B	-	-	-	-	-	-
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.07	21.5	C	ANALYSIS NOT NEEDED. (FREE FLOW)									- Mitigation not required.
Liberty Street	EB	T	0.42	9.9	A	-	-	-	-						
Overall Intersection	-	-	0.30	10.3	B	-	-	-	-	-	-	-	-	-	-
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.56	24.8	C	LTR	0.26	15.1	B						- Mitigation not required.
Chambers Street	EB	TR	0.30	10.7	B	TR	0.40	16.8	B						
	WB	LT	0.59	15.5	B	LT	0.76	27.3	C						
Overall Intersection	-	-	0.58	17.4	B	-	0.51	20.3	C	-	-	-	-	-	-
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	TR	0.49	13.5	B						- Mitigation not required.
Fulton Street	WB	-	-	-	-	LT	0.56	27.9	C						
Overall Intersection	-	-	-	-	-	-	0.51	19.0	B	-	-	-	-	-	-
14 Greenwich Street at Liberty Street															
	SB	-	-	-	-	L	0.78	37.1	D						- Mitigation not required.
	-	-	-	-	-	LT	0.68	20.2	C						
Liberty Street	EB	TR	0.53	11.4	B	TR	0.90	41.7	D						
Overall Intersection	-	-	0.33	11.4	B	-	0.83	34.5	C	-	-	-	-	-	-
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.16	19.8	B	R	0.08	18.5	B	NB	R	0.09	20.6	C	- Prohibit parking along the south side of EB Rector Street through daylighting for the MD peak period.
	SB	LT	0.42	23.7	C	LT	1.20+	120.0+	F ^B	SB	L	0.48	28.6	C	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
Rector Street	EB	TR	0.40	13.3	B	TR	1.20+	120.0+	F ^B	T	R	0.86	44.9	D	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
	-	-	-	-	-	-	-	-	-	EB	TR	0.90	39.9	D	- Modify signal timing (shift 3 s of green time from NB/SB phase to EB phase).
Overall Intersection	-	-	0.41	17.8	B	-	1.20+	120.0+	F^B	-	-	0.88	40.1	D	-

TABLE E.2-21
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CANAL STREET CORRIDOR														
16 Canal Street at Hudson Street														
Hudson Street	NB	LTR	0.83	40.6	D	LTR	0.65	34.3	C	LTR	0.47	30.3	C	- Partially mitigated. - Restripe EB left-turn lane from 11 ft. to 14 ft. by reducing the median width. - Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain additional NB lane. - Modify signal timing (add 3 s to green time of EB/WB phase and 3 s to green time of EB/WB lead phase).
		R	0.68	39.9	D	R	0.60	37.5	D	R	0.68	42.0	D	
Canal Street	EB	L	1.04	82.3	F	L	1.20+	120.0+	F*	L	1.12	90.4	F	
		T	0.99	55.8	E	LT	0.97	49.6	D	LT	0.96	45.0	D	
	WB	T	0.94	59.9	E	T	1.15	119.6	F	T	1.04	79.1	E	
		R	1.18	114.5	F	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	
Overall Intersection	-		1.09	69.1	E	-	1.16	103.7	F	-	1.09	75.0	E	
17 Canal Street at Varick Street														
Varick Street	SB	L	0.16	22.6	C	L	0.34	25.3	C	L	0.51	37.9	D	- Modify signal timing (shift 10 s of green time from SB phase to EB/WB phase).
		T	1.07	95.0	F	T	0.57	27.6	C	T	0.86	48.6	D	
		R	0.16	22.7	C	R	0.37	26.2	C	R	0.56	40.6	D	
Canal Street	EB	TR	0.47	11.0	B	TR	0.32	9.0	A	TR	0.27	4.7	A	
	WB	LT	1.08	80.5	F	LT	1.20+	120.0+	F*	LT	1.11	77.4	E	
Overall Intersection	-		0.68	71.1	E	-	1.05	82.3	F	-	1.05	49.9	D	
WEST BROADWAY CORRIDOR														
18 West Broadway at Worth Street														
West Broadway	SB	LTR	0.69	16.5	B	LTR	0.63	15.1	B					- Mitigation not required.
Worth Street	EB	TR	0.17	20.0	C	TR	0.16	20.0	B					
	WB	LT	0.60	29.3	C	LT	0.70	34.6	C					
Overall Intersection	-		0.65	19.1	B	-	0.66	19.4	B					
19 West Broadway at Chambers Street														
West Broadway	SB	L	0.38	17.5	B	L	0.32	16.6	B	L	0.43	25.1	C	- Modify signal timing (shift 10 s of green time from SB phase to EB/WB phase).
		TR	0.53	18.8	B	TR	0.51	18.3	B	TR	0.67	28.4	C	
Chambers Street	EB	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.05	73.3	E	
	WB	LTR	0.72	25.4	C	LTR	1.11	95.9	F	LTR	0.84	26.1	C	
Overall Intersection	-		0.89	76.6	E	-	0.93	93.1	F	-	0.91	39.8	D	
20 West Broadway at Barclay Street														
West Broadway	SB	TR	0.43	10.4	B	TR	0.64	12.9	B					- Mitigation not required.
Barclay Street	WB	LT	0.46	21.3	C	LT	0.50	22.1	C					
Overall Intersection	-		0.45	13.7	B	-	0.58	15.1	B					
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	-	L	0.48	39.3	D	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway). - SB Greenwich Street is STOP sign controlled. - Provide revised signal timing and phasing plan.
		-	-	-	-	R	0.42	40.9	D	-	-	-	-	
West Broadway	SB	L	0.63	22.7	C	L	0.37	12.5	B	L	0.54	18.9	B	
		R	0.83	33.3	C	TR	0.41	3.2	A	TR	0.50	8.1	A	
Vesey Street	EB	T	0.32	15.4	B	TR	1.20+	120.0+	F*	TR	0.89	29.9	C	
	WB	T	0.23	14.6	B	LT	0.62	37.0	D	LT	0.22	14.6	B	
Overall Intersection	-		0.57	21.0	C	-	0.81	120.0+	F*	-	0.72	20.7	C	

TABLE E.2-21
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION VS CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
CHURCH STREET CORRIDOR															
21 Church Street at Worth Street⁽¹⁾															
Church Street	NB	LTR	1.01	40.1	D	LTR	1.20+	120.0+	F*	NB	LT	0.90	23.2	C	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane. - Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.
Worth Street	EB	LT	0.51	26.3	C	LT	0.82	42.3	D	R	0.35	7.9	A		
	WB	TR	0.63	28.5	C	TR	0.91	56.4	E	EB	LT	0.82	42.3	D	
										WB	T	0.55	29.0	C	
										R	0.28	22.3	C		
Overall Intersection	-		0.86	37.4	D	-	1.20+	120.0+	F*	-	0.87	24.9	C		
22 Church Street at Chambers Street															
Church Street	NB	LTR	1.08	69.9	E	LTR	1.18	112.0	F	LTR	0.96	38.3	D	- Eliminate the truck loading/unloading zone along the west side of Church Street during the peak periods to gain an additional NB through lane. - Provide strict enforcement of "No Standing Anytime" regulation along the north and south sides of EB Chambers Street during the peak periods. - Modify Signal Timing (shift 4 s of green time from NB phase to EB/WB phase).	
Chambers Street	EB	LT	1.12	120.0+	F*	LT	1.20+	120.0+	F*	LT	0.93	48.5	D		
	WB	TR	0.86	34.0	C	TR	0.81	30.0	C	TR	0.74	23.3	C		
Overall Intersection	-		1.10	76.8	E	-	1.20+	106.4	F	-	0.95	36.7	D		
23 Church Street at Barclay Street															
Church Street	NB	LT	0.86	22.4	C	LT	0.92	26.8	C					- Mitigation not required.	
Barclay Street	WB	T	0.28	21.3	C	T	0.30	21.8	C						
		R	1.03	85.1	F	R	0.90	56.5	E						
Overall Intersection	-		0.93	33.4	C	-	0.91	30.6	C						
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>															
24 Church Street at Vesey Street															
Church Street	NB	LT	1.20+	120.0+	F*	LT	1.17	103.4	F	LTR	0.87	33.3	C	- Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition. - Move the Bus Layover Zone along the west of Church Street between Vesey Street and Fulton Street to the farside block to gain an additional NB lane.	
		R	0.65	15.8	B	R	1.20+	120.0+	F*	-	-	-	-		
Vesey Street	EB	LT	0.65	26.8	C	LT	1.20+	120.0+	F*	LT	0.86	43.6	D		
Overall Intersection	-		1.03	99.8	F	-	1.20+	120.0+	F*	-	0.71	36.8	D		
25 Church Street at Fulton Street															
Church Street	NB	T	0.73	11.8	B	LT	1.06	56.9	E	LT	0.96	38.5	D	- Prohibit parking along the north and south sides of WB Fulton Street during the MD peak period. - Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.	
Fulton Street	WB	R	0.59	41.3	D	TR	1.02	88.9	F	TR	0.44	40.2	D		
Overall Intersection	-		0.69	13.5	B	-	1.04	60.9	E	-	0.67	38.7	D		
26 Church Street at Dey Street															
Church Street	NB	T	0.80	14.0	B	T	0.86	16.2	B	T	0.94	30.2	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
Dey Street	WB	R	0.28	29.7	C	R	0.58	43.7	D	R	0.26	35.8	D		
Overall Intersection	-		0.65	14.5	B	-	0.78	17.4	B	-	0.60	30.5	C		
27 Church Street at Cortlandt Street															
Church Street	NB	T	0.57	9.4	A	T	0.57	9.3	A	T	0.67	22.9	C	- Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.	
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.92	54.4	D		
Overall Intersection	-		0.93	95.9	F	-	1.20+	120.0+	F*	-	0.65	35.6	D		
28 Church Street at Liberty Street															
Church Street	NB	T	0.72	12.4	B	T	0.61	10.4	B	T	0.70	21.9	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
		R	0.27	7.8	A	R	0.35	9.2	A	R	0.23	14.5	B		
Liberty Street	EB	LT	0.42	22.4	C	LT	0.83	34.5	C	LT	0.74	43.3	D		
Overall Intersection	-		0.60	15.0	B	-	0.70	20.7	C	-	0.60	30.5	C		
29 Trinity Street at Rector Street															
Trinity Street	NB	TR	0.66	11.6	B	TR	0.60	15.0	B					- Mitigation not required.	
Rector Street	EB	LT	0.47	24.7	C	LT	0.87	42.8	D						
Overall Intersection	-		0.59	14.8	B	-	0.70	26.2	C						

TABLE E.2-21
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.56	22.0	C	LTR	0.67	24.2	C					- Mitigation not required.
Canal Street	EB	TR	0.46	19.2	B	TR	0.51	20.1	C					
	WB	LT	0.71	13.8	B	LT	0.75	15.5	B					
Overall Intersection	-	0.68	18.1	B	-	0.75	20.1	C						
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.80	18.0	B	LTR	0.67	78.2	E	LTR	0.53	44.2	D	- Partially Mitigated.
Worth Street	EB	TR	0.79	30.8	C	TR	1.02	120.0+	F*	TR	0.79	54.5	D	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.
	WB	L	0.78	44.7	D	LT	1.14	120.0+	F*	L	0.53	27.9	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
	T	0.47	19.5	B	-	-	-	-	-	T	0.37	22.7	C	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.
Overall Intersection	-	0.80	23.4	C	-	0.88	120.0+	F*	-	0.65	43.1	D	-	- Modify signal timing (shift 4 s of green time from SB phase to EB/WB phase).
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.63	13.6	B	LTR	0.49	11.7	B					- Mitigation not required.
Chambers Street	EB	TR	0.77	28.6	C	TR	0.69	24.9	C					
	WB	L	0.50	24.1	C	L	0.39	20.3	C					
	LT	0.66	23.0	C	LT	0.66	23.1	C						
Overall Intersection	-	0.70	19.2	B	-	0.58	18.0	B						
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.75	28.5	C	L	0.60	18.4	B	L	0.42	22.8	C	- Partially Mitigated.
	LT	0.58	19.5	B	LT	0.48	14.3	B		T	0.93	42.8	D	- Prohibit parking along the north side of EB Vesey Street.
Vesey Street	EB	L	0.61	39.0	D	L	1.20+	120.0+	F*	L	0.77	45.8	D	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
	LTR	0.84	45.1	D	LTR	1.20+	120.0+	F*		LTR	0.92	51.8	D	
Overall Intersection	-	0.56	29.5	C	-	0.55	120.0+	F*	-	0.59	42.0	D	-	- Modify signal timing (shift 11 s of green time from SB phase to EB phase).
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.56	10.5	B	TR	0.58	10.7	B					- Mitigation not required.
Fulton Street	WB	LT	CLOSED			LT	CLOSED							
Overall Intersection	-	0.38	10.5	B	-	0.39	10.7	B						
35 Broadway at Dey Street														
Broadway	SB	LTR	0.79	16.6	B	LTR	0.69	13.6	B					- Mitigation not required.
Overall Intersection	-	0.52	16.6	B	-	0.44	13.6	B						
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.76	15.2	B	TR	0.66	12.9	B					- Mitigation not required.
Maiden Lane	WB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*					
Overall Intersection	-	1.01	114.8	F	-	0.88	88.2	F						
37 Broadway at Liberty Street														
Broadway	SB	LT	0.73	14.7	B	LT	0.47	9.7	A					- Mitigation not required.
Liberty Street	EB	TR	0.83	46.6	D	TR	0.55	28.9	C					
Overall Intersection	-	0.76	24.4	C	-	0.50	17.4	B						
38 Broadway at Rector Street														
Broadway	SB	T	0.48	9.6	A	T	0.59	10.5	B	T	0.68	17.1	B	- Modify signal timing (shift 8 s of green time from SB phase to EB phase).
Rector Street	EB	R	0.84	61.3	E	R	0.90	69.7	E	R	0.62	32.3	C	
Overall Intersection	-	0.60	17.3	B	-	0.68	25.3	C	-	0.66	20.9	C		
39 Broadway at Exchange Place														
Broadway	SB	LT	0.58	9.5	A	T	0.47	8.2	A					- Mitigation not required.
Overall Intersection	-	0.40	9.5	A	-	0.33	8.2	A						

TABLE E.2-21
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street⁽³⁾														
Water Street	NB	-	-	-	-	L	0.61	28.7	C	LT	0.64	17.3	B	- Restripe the NB approach of Water Street to provide one through lane and one through-left lane.
	LT	0.55	15.8	B	T	1.06	69.6	E	-	-	-	-		
	SB	TR	0.41	13.9	B	TR	0.64	17.7	B	TR	0.64	17.7	B	
Fulton Street	EB	LR	0.36	27.3	C	LR	0.51	30.7	C	LR	0.51	30.7	C	
Overall Intersection	-	0.43	16.0	B	-	0.75	42.6	D	-	0.51	18.7	B		
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)									
7 West Street (NYS Rt. 9A) at Barclay⁽⁴⁾	WB	R	0.67	38.4	E	R	0.66	39.1	E					- Mitigation not required.
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.15	14.3	B					- Mitigation not required.
Rector Street	EB	LTR	0.03	7.4	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.19	12.5	B	T	0.20	13.1	B					- Mitigation not required.
	-	-	-	-	-	R	0.27	13.3	B					
	WB	-	-	-	-	LT	0.00	7.2	A					

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-22
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.93	7.7	A	T	0.86	5.1	A	T	1.00	27.4	C	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback. - Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North). - Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane. - Provide strict enforcement of "No Standing" regulation along the north side of Canal Street during the PM peak period. [Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]
	SB	T	0.69	2.6	A	T	0.80	3.6	A	T	0.79	3.5	A	
Canal Street	WB	L	0.17	38.6	D	L	0.25	41.0	D	L	0.13	38.3	D	
	LR	R	0.19	39.8	D	LR	0.37	43.3	D	-	-	-	-	
	R		0.22	40.0	D	R	0.42	45.5	D	R	0.57	38.6	D	
Overall Intersection	-	-	0.76	6.0	A	-	0.76	5.8	A	-	0.85	15.6	B	
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	1.04	114.3	F	TR	1.10	77.2	E	TR	1.04	51.3	D	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North. - Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	R		0.31	10.0	B	R	0.37	10.7	B	R	0.35	8.3	A	
	SB	L	0.87	48.0	D	L	1.06	86.2	F	L	0.69	33.8	C	
	T		1.07	101.7	F	T	1.20+	114.1	F	T	0.91	4.2	A	
Overall Intersection	-	-	0.96	102.6	F	-	1.08	92.9	F	-	0.91	26.8	C	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.15	107.2	F	TR	1.14	95.2	F	TR	1.09	76.1	E	- Partially mitigated. - Modify signal timing (increase cycle length from 120 s to 135 s).
	SB	L	0.39	12.8	B	L	0.62	9.4	A	L	0.66	12.8	B	
	TR		1.07	75.1	E	TR	1.14	98.9	F	TR	1.09	79.3	E	
Chambers Street	EB	LTR	0.61	43.5	D	LTR	0.36	40.7	D	LTR	0.31	40.8	D	
	WB	LT	1.10	119.6	F	LT	1.08	120.0+	F*	LT	1.00	99.2	F	
	R		0.67	26.2	C	R	0.75	36.7	D	R	0.78	44.3	D	
Overall Intersection	-	-	1.08	83.3	F	-	1.10	89.8	F	-	1.05	73.1	E	
3 West Street (NYS Rt. 9A) at Vesey Street⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.98	101.2	F					- Meaningful TSM mitigation measures are not available.
	TR		0.82	14.3	B	TR	1.19	120.0+	F*					
	SB	L	0.16	5.4	A	L	1.20+	120.0+	F*					
Vesey Street	TR		0.68	4.1	A	TR	1.20+	120.0+	F*					
	EB	DefL	1.20+	120.0+	F*	L	0.43	35.7	D					
	TR		1.20+	120.0+	F*	TR	1.20+	120.0+	F*					
	WB	L	1.00	93.0	F	L	1.20+	120.0+	F*					
	LTR		1.20+	120.0+	F*	TR	1.20+	120.0+	F*					
Overall Intersection	-	-	1.20+	75.7	E	-	1.20+	120.0+	F*					
4 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.94	34.8	C					- Mitigation not required.
Fulton Street	WB	-	-	-	-	R	0.72	38.4	D					
Overall Intersection	-	-	-	-	-	-	0.84	35.3	D					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.81	67.1	E	L	0.77	66.1	E	L	0.57	51.4	D	- Modify signal timing (shift 1 s of all red time and 6 s of green time from EB phase to NB/SB through-right phase; shift 5 s of green time from EB phase to NB/SB exclusive left-turn phase).
	TR		0.72	15.9	B	TR	0.81	17.8	B	TR	0.73	11.1	B	
	SB	L	0.98	91.8	F	L	1.20+	120.0+	F*	L	0.94	81.2	F	
	TR		0.93	23.6	C	TR	1.03	64.7	E	TR	0.93	21.5	C	
Liberty Street	EB	DefL	1.04	105.8	F	LTR	0.64	44.1	D	LTR	0.99	90.3	F	
	TR		1.15	120.0+	F*	-	-	-	-	-	-	-	-	
	WB	DefL	0.44	43.9	D	-	-	-	-	-	-	-	-	
	TR		0.37	40.8	D	-	-	-	-	-	-	-	-	
Overall Intersection	-	-	1.00	37.6	D	-	0.95	53.5	D	-	0.94	26.6	C	

TABLE E.2-22
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures			
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS				
43 West Street (NYS Rt. 9A) at Albany Street																
West Street (NYS Rt. 9A)	NB	TR	1.00	120.0+	F*	T	0.89	49.3	D	NB	T	0.88	44.1	D	- Partially mitigated.	
	SB	TR	1.04	99.9	F	TR	1.13	120.0+	F*	SB	TR	1.12	120.0+	F*	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane.	
Albany Street	EB	LTR	1.20+	120.0+	F*	LR	0.88	69.4	E	EB	L	0.08	30.4	C		
	WB	-	-	-	-	L	0.61	41.9	D	R	R	0.68	48.2	D	- Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane.	
	-	-	-	-	-	TR	0.51	38.8	D	WB	L	0.63	43.7	D	Modify signal timing (shift 1 s of green time from the EB/WB phase to the NB/SB phase).	
	-	-	-	-	-	-	-	-	-	R	R	0.52	40.0	D		
Overall Intersection	-	-	1.10	120.0+	F*	-	1.05	91.0	F	-	0.98	84.6	F			
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel																
West Street (NYS Rt.9A)	NB	TR	1.14	120.0+	F*	TR	1.20+	120.0+	F*						- Meaningful TSM mitigation measures are not available.	
	R	-	1.10	120.0+	F*	R	1.13	120.0+	F*							
	SB	T	1.10	120.0+	F*	TR	1.20+	120.0+	F*							
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B							
	WB	L	0.94	120.0+	F*	L	1.07	120.0+	F*							
	R	-	0.90	120.0+	F*	R	1.13	120.0+	F*							
Overall Intersection	-	-	1.02	120.0+	F*	-	1.20+	120.0+	F*							
WASHINGTON STREET CORRIDOR																
8 Washington Street at Vesey Street																
Vesey Street	EB	LT	0.53	11.8	B	LT	0.59	11.7	B						- Mitigation not required.	
	WB	TR	0.39	9.5	A	TR	0.55	11.0	B							
Overall Intersection	-	-	0.33	10.6	B	-	0.37	11.3	B							
9 Washington Street at Liberty Street																
Washington Street	NB	R	0.13	22.3	C	ANALYSIS NOT NEEDED. (FREE FLOW)										
Liberty Street	EB	T	0.39	9.6	A	-	-	-	-							
Overall Intersection	-	-	0.30	10.4	B	-	-	-	-							
GREENWICH STREET CORRIDOR																
11 Greenwich Street at Chambers Street																
Greenwich Street	SB	LTR	0.54	24.5	C	LTR	0.22	14.6	B						- Mitigation not required.	
Chambers Street	EB	TR	0.37	11.4	B	TR	0.41	16.8	B							
	WB	LT	0.84	26.3	C	LT	0.87	33.8	C							
Overall Intersection	-	-	0.72	20.9	C	-	0.54	23.9	C							
42 Greenwich Street at Fulton Street																
Greenwich Street	SB	-	-	-	-	TR	0.51	13.9	B						- Mitigation not required.	
Fulton Street	WB	-	-	-	-	LT	0.63	29.8	C							
Overall Intersection	-	-	-	-	-	-	0.56	20.6	C							
14 Greenwich Street at Liberty Street																
	SB	-	-	-	-	L	0.86	47.7	D	L	0.83	41.4	D	- Modify signal timing (shift 1 s of green time from EB phase to SB phase).		
	-	-	-	-	-	LT	0.55	15.9	B	LT	0.54	15.1	B			
Liberty Street	EB	TR	0.51	11.2	B	TR	0.79	32.9	C	TR	0.82	35.1	D			
Overall Intersection	-	-	0.32	11.2	B	-	0.83	30.4	C	0.82	30.3	C				
15 Greenwich Street at Rector Street																
Greenwich Street	NB	R	0.00	17.4	B	R	0.09	18.6	B	NB	R	0.08	18.5	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.	
	SB	LT	0.39	22.9	C	LT	0.94	58.4	E	SB	L	0.46	25.2	C		
Rector Street	EB	TR	0.40	13.2	B	TR	0.66	18.9	B	T	0.40	22.4	C	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.		
	-	-	-	-	-	-	-	-	-	EB	TR	0.66	18.9	B		
Overall Intersection	-	-	0.40	17.1	B	-	0.77	37.1	D	-	0.58	21.0	C			

TABLE E.2-22
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CANAL STREET CORRIDOR														
16 Canal Street at Hudson Street														
Hudson Street	NB	LTR	0.39	28.7	C	LTR	0.91	46.9	D	LTR	0.72	36.3	D	- Restripe EB left-turn lane from 11 ft. to 14 ft. by reducing the median width. - Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain additional NB lane. - Modify signal timing (add 4 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).
		R	1.01	120.0+	F*	R	0.80	47.6	D	R	1.00	88.5	F	
Canal Street	EB	L	0.34	25.2	C	L	0.89	50.8	D	L	0.71	31.6	C	
		T	0.98	52.6	D	T	0.94	42.5	D	T	0.89	32.7	C	
	WB	T	0.23	23.4	C	T	0.53	29.0	C	T	0.46	24.5	C	
		R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20	115.4	F	
Overall Intersection	-		1.16	87.9	F	-	1.20+	80.4	F	-	1.15	60.6	E	
17 Canal Street at Varick Street														
Varick Street	SB	L	0.42	26.6	C	L	0.73	44.5	D	L	0.73	44.5	D	- Modify signal timing (shift 4 s of green time from EB lead phase to EB/WB phase).
		T	1.09	113.6	F	T	0.49	26.2	C	T	0.49	26.2	C	
		R	0.20	23.6	C	R	0.11	22.0	C	R	0.11	22.0	C	
Canal Street	EB	TR	0.45	10.8	B	TR	0.32	9.1	A	TR	0.32	9.1	A	
	WB	LT	1.13	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.12	120.0+	F*	
Overall Intersection	-		0.67	103.6	F	-	0.46	120.0+	F*	-	0.46	82.3	F	
WEST BROADWAY CORRIDOR														
18 West Broadway at Worth Street														
West Broadway	SB	LTR	0.79	19.4	B	LTR	0.68	16.2	B	LTR	0.47	12.7	B	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of West Broadway during the AM and PM peak periods to gain an additional SB through lane. - Modify signal timing (shift 1 s of green time from SB phase to EB/WB phase).
Worth Street	EB	TR	0.22	20.8	C	TR	0.28	23.1	C	TR	0.27	22.2	C	
	WB	LT	0.65	30.1	C	LT	0.87	46.3	D	LT	0.85	42.5	D	
Overall Intersection	-		0.74	21.5	C	-	0.76	24.8	C	-	0.62	21.3	C	
19 West Broadway at Chambers Street														
West Broadway	SB	L	0.38	17.3	B	L	0.27	15.7	B	L	0.31	19.3	B	
		TR	0.50	18.1	B	TR	0.48	17.8	B	TR	0.55	22.0	C	
Chambers Street	EB	L	0.31	19.5	B	L	0.44	24.3	C	L	0.35	17.3	B	
		TR	0.90	41.6	D	TR	0.82	38.0	D	TR	0.74	26.6	C	
	WB	LTR	1.18	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.16	111.0	F	
Overall Intersection	-		0.84	56.3	E	-	0.96	96.3	F	-	0.89	53.3	D	
20 West Broadway at Barclay Street														
West Broadway	SB	TR	0.54	11.5	B	TR	0.70	14.0	B					- Mitigation not required.
Barclay Street	WB	LT	0.97	51.7	D	LT	0.92	42.2	D					
Overall Intersection	-		0.73	28.7	C	-	0.80	23.8	C					
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	-	L	0.51	40.2	D	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway). - SB Greenwich Street is STOP sign controlled. - Provide revised signal timing and phasing plan.
		-	-	-	-	R	0.43	41.3	D	-	-	-	-	
West Broadway	SB	L	1.20+	120.0+	F*	L	0.62	16.3	B	L	0.85	28.9	C	
		R	0.95	49.2	D	TR	0.41	3.2	A	TR	0.50	8.1	A	
Vesey Street	EB	T	0.33	15.5	B	TR	1.20+	120.0+	F*	TR	0.87	28.1	C	
	WB	T	0.25	14.7	B	LT	0.64	37.5	D	LT	0.23	14.6	B	
Overall Intersection	-		0.79	64.7	E	-	0.93	120.0+	F*	-	0.86	22.6	C	

TABLE E.2-22
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures			
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control					
			Delay	LOS			Delay	LOS			Delay	LOS				
CHURCH STREET CORRIDOR																
21 Church Street at Worth Street⁽¹⁾																
Church Street	NB	LTR	0.85	14.9	B	LTR	1.20+	120.0+	F*	NB	LT	0.88	22.2	C	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.	
Worth Street	EB	LT	0.73	35.8	D	LT	0.59	30.9	C	R	R	0.35	7.8	A		
	WB	TR	0.66	29.6	C	TR	0.85	42.0	D	EB	LT	0.59	30.9	C		- Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.
										WB	T	0.56	27.5	C		
										R	R	0.31	22.7	C		
Overall Intersection	-		0.81	19.3	B	-	1.19	120.0+	F*	-		0.77	22.3	C		
22 Church Street at Chambers Street																
Church Street	NB	LTR	0.91	31.3	C	LTR	1.20+	120.0+	F*	LTR	0.98	39.7	D	- Eliminate the truck loading/unloading zone along the west side of Church Street during the peak periods to gain an additional NB through lane.		
Chambers Street	EB	LT	1.11	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.11	98.4	F			
	WB	TR	0.91	39.2	D	TR	0.71	24.7	C	TR	0.70	23.4	C		- Provide strict enforcement of "No Standing Anytime" regulation along the north and south sides of EB Chambers Street during the peak periods.	
Overall Intersection	-		1.01	58.3	E	-	1.20+	120.0+	F*	-		1.05	46.9	D		- Modify Signal Timing (shift 1 s of green time from NB phase to EB/WB phase).
23 Church Street at Barclay Street																
Church Street	NB	LT	0.95	31.1	C	LT	1.01	44.1	D						- Mitigation not required.	
Barclay Street	WB	T	0.52	25.4	C	T	0.53	26.1	C							
		R	1.03	87.3	F	R	0.81	43.6	D							
Overall Intersection	-		0.98	38.7	D	-	0.93	41.9	D							
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>																
24 Church Street at Vesey Street																
Church Street	NB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*	LTR	1.04	69.7	E	- Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition.		
		R	0.74	19.7	B	R	1.20+	120.0+	F*		-	-	-			
Vesey Street	EB	LT	0.90	38.9	D	LT	1.20+	120.0+	F*	LT	0.91	43.1	D	- Move the Bus Layover Zone along the west of Church Street between Vesey Street and Fulton Street to the farside block to gain an additional NB lane.		
Overall Intersection	-		1.13	101.2	F	-	1.20+	120.0+	F*	-		0.80	59.3	E		
25 Church Street at Fulton Street																
Church Street	NB	T	0.73	11.7	B	LT	0.87	22.1	C	LT	0.98	41.4	D	- Partially mitigated.		
Fulton Street	WB	R	0.61	35.7	D	TR	1.20+	120.0+	F*	TR	0.64	37.3	D	- Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.		
Overall Intersection	-		0.70	14.4	B	-	1.14	86.8	F	-		0.72	40.4	D		
26 Church Street at Dey Street																
Church Street	NB	T	0.74	11.9	B	T	0.76	12.3	B	T	0.87	23.2	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]		
Dey Street	WB	R	0.27	29.3	C	R	0.33	32.3	C	R	0.15	33.8	C			
Overall Intersection	-		0.61	12.5	B	-	0.64	12.8	B	-		0.53	23.5		C	
27 Church Street at Cortlandt Street																
Church Street	NB	T	0.55	9.0	A	T	0.60	9.5	A	T	0.69	23.4	C	- Prohibit parking along the south side of Cortlandt Street.		
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.55	34.6	C	- Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.		
Overall Intersection	-		0.92	97.8	F	-	1.12	120.0+	F*	-		0.54	26.4	C		
28 Church Street at Liberty Street																
Church Street	NB	T	0.63	10.5	B	T	0.56	9.5	A	T	0.65	20.1	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]		
		R	0.22	7.2	A	R	0.20	7.2	A	R	0.13	13.3	B			
Liberty Street	EB	LT	0.43	22.6	C	LT	0.84	36.1	D	LT	0.70	42.0	D			
Overall Intersection	-		0.55	13.9	B	-	0.67	20.8	C	-		0.56	29.1	C		
29 Trinity Street at Rector Street																
Trinity Street	NB	TR	0.58	14.5	B	TR	0.43	12.1	B	TR	0.46	14.8	B	- Modify signal timing (shift 4 s of green time from NB phase to EB phase).		
Rector Street	EB	LT	0.53	25.9	C	LT	1.02	70.8	E	LT	0.89	41.1	D			
Overall Intersection	-		0.56	17.5	B	-	0.66	41.2	D	-		0.65	27.8	C		

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INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.57	23.9	C	LTR	0.74	25.7	C					- Mitigation not required.
Canal Street	EB	TR	1.15	120.0+	F*	TR	0.97	48.1	D					
	WB	DefL	1.10	120.0+	F*	DefL	1.10	101.3	F					
	T		1.00	62.5	E	T	0.74	19.2	B					
Overall Intersection	-		0.92	100.1	F	-	0.92	41.9	D					
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.75	16.3	B	LTR	0.83	83.4	F	LTR	0.59	27.8	C	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.
Worth Street	EB	TR	0.65	24.1	C	TR	0.88	42.4	D	TR	0.86	38.7	D	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
	WB	L	0.36	20.4	C	LT	0.90	43.5	D	L	0.36	20.7	C	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.
	T		0.56	21.5	C					T	0.57	21.6	C	
Overall Intersection	-		0.71	19.2	B	-	0.86	66.4	E	-	0.71	28.6	C	
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.58	12.8	B	LTR	0.60	13.2	B					- Mitigation not required.
Chambers Street	EB	TR	1.02	66.9	E	TR	0.94	46.0	D					
	WB	L	0.79	49.0	D	L	0.41	22.3	C					
	LT		0.85	32.7	C	LT	0.64	22.4	C					
Overall Intersection	-		0.78	33.9	C	-	0.76	24.1	C					
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.89	37.9	D	L	0.96	44.2	D	L	0.65	26.0	C	- Prohibit parking along the north side of EB Vesey Street.
Vesey Street	LT		0.58	19.3	B	LT	0.43	13.8	B	T	0.83	32.9	C	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
	EB	L	1.06	99.7	F	L	1.20+	120.0+	F*	L	0.94	66.4	E	
	LTR		0.83	43.3	D	LTR	1.20+	120.0+	F*	LTR	0.82	41.9	D	- Modify signal timing (shift 10 s of green time from SB phase to EB phase).
Overall Intersection	-		0.68	39.6	D	-	0.76	120.0+	F*	-	0.56	38.3	D	
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.55	10.2	B	TR	0.38	8.5	A					- Mitigation not required.
Fulton Street	WB	LT	0.37	26.2	C	LT	0.60	30.3	C					
Overall Intersection	-		0.49	13.1	B	-	0.45	15.7	B					
35 Broadway at Dey Street														
Broadway	SB	LTR	0.91	24.5	C	LTR	0.70	13.9	B					- Mitigation not required.
Overall Intersection	-		0.59	24.5	C	-	0.46	13.9	B					
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.77	15.7	B	TR	0.58	11.3	B					- Mitigation not required.
Maiden Lane	WB	LT	1.20	120.0+	F*	LT	0.89	51.9	D					
Overall Intersection	-		0.94	74.2	E	-	0.68	25.6	C					
37 Broadway at Liberty Street														
Broadway	SB	LT	0.70	13.9	B	LT	0.45	9.4	A					- Mitigation not required.
Liberty Street	EB	TR	0.65	36.9	D	TR	0.42	26.9	C					
Overall Intersection	-		0.68	20.0	B	-	0.44	15.5	B					
38 Broadway at Rector Street														
Broadway	SB	T	0.49	9.7	A	T	0.64	11.7	B	T	0.67	14.1	B	- Modify signal timing (shift 3 s of green time from SB phase to EB phase).
Rector Street	EB	R	0.68	44.6	D	R	0.85	59.1	E	R	0.72	42.4	D	
Overall Intersection	-		0.55	14.4	B	-	0.70	23.4	C	-	0.69	21.1	C	
39 Broadway at Exchange Place														
Broadway	SB	LT	0.62	10.3	B	T	0.58	9.8	A					- Mitigation not required.
Overall Intersection	-		0.43	10.3	B	-	0.40	9.8	A					

TABLE E.2-22
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street⁽³⁾														
Water Street	NB	LT	0.58	16.2	B	L	0.48	20.2	C	LT	0.75	19.9	B	- Restripe the NB approach of Water Street to provide one through lane and one through-left lane.
			-	-	-	T	1.20+	120.0+	F*		-	-	-	
	SB	TR	0.33	13.0	B	TR	0.49	15.2	B	TR	0.49	15.2	B	
Fulton Street	EB	LR	0.70	36.8	D	LR	0.37	27.2	C	LR	0.37	27.2	C	
Overall Intersection			0.55	18.9	B		0.83	88.6	F		0.54	19.0	B	
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED (FREE FLOW)				ANALYSIS NOT NEEDED (FREE FLOW)									
7 West Street (NYS Rt. 9A) at Barclay⁽⁴⁾	WB	R	0.67	41.7	E	R	0.63	37.7	E					- Mitigation not required.
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.22	15.1	C					- Mitigation not required.
Rector Street	EB	LTR	0.03	7.4	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.05	11.5	B	T	0.24	14.9	B					- Mitigation not required.
			-	-	-	R	0.01	11.5	B					
	WB	-	-	-	-	LT	0.00	7.2	A					

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbtran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-23
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.02	56.3	E	TR	1.10	78.4	E	TR	1.03	56.1	E	- Partially mitigated.
	SB	L	0.89	28.6	C	L	0.88	35.9	D	L	0.96	64.5	E	- Modify signal timing (increase cycle length from 120 s to 135 s).
		TR	0.92	33.7	C	TR	0.84	21.6	C	TR	0.66	6.6	A	
Chambers Street	EB	LTR	0.74	62.1	E	LTR	0.48	42.0	D	LTR	0.44	42.1	D	
	WB	LT	0.79	56.1	E	LT	0.83	62.5	E	LT	0.75	55.9	E	
		R	0.68	29.3	C	R	0.44	26.2	C	R	0.47	32.1	C	
Overall Intersection	-	1.00	44.5	D	-	1.13	51.6	D	-	1.12	37.9	D		
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.07	98.7	F					- Meaningful TSM mitigation measures are not available.
	TR	0.97	21.8	C	TR	1.20+	120.0+	F*						
	SB	L	0.12	7.4	A	L	1.20+	120.0+	F*					
		TR	0.58	3.6	A	TR	1.14	120.0+	F*					
Vesey Street	EB	LTR	1.05	96.3	F	L	0.46	31.7	C					
		-	-	-	-	TR	0.92	78.4	E					
	WB	L	1.14	120.0+	F*	L	0.84	61.3	E					
		LTR	0.96	80.8	F	TR	0.79	61.3	E					
Overall Intersection	-	1.04	29.0	C	-	1.20+	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.29	11.9	B	T	0.29	12.4	B	- Modify signal timing (shift 1 s of green time from NB phase to WB phase).
Fulton Street	WB	-	-	-	-	R	0.74	46.8	D	R	0.72	44.6	D	
Overall Intersection	-	-	-	-	-	0.46	21.5	C	-	0.45	21.2	C		
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.96	93.1	F	L	0.48	14.9	B					- Mitigation not required.
	TR	1.04	54.3	D	TR	0.48	19.8	B						
	SB	L	1.20+	120.0+	F*	L	0.58	19.1	B					
		TR	0.74	16.4	B	TR	0.49	20.2	C					
Liberty Street	EB	DefL	1.15	120.0+	F*	LTR	0.40	31.4	C					
		TR	0.42	41.0	D	-	-	-	-					
	WB	LTR	0.28	37.1	D	-	-	-	-					
Overall Intersection	-	1.09	54.4	D	-	0.67	21.3	C						
43 West Street (NYS Rt. 9A) at Albany Street														
West Street (NYS Rt. 9A)	NB	TR	1.03	110.0	F	T	0.75	16.7	B					- Mitigation not required.
	SB	TR	0.96	74.9	E	TR	0.88	32.6	C					
Albany Street	EB	LTR	1.07	106.0	F	LR	1.00	95.6	F					
	WB	-	-	-	-	L	0.18	31.4	C					
		-	-	-	-	TR	0.08	30.0	C					
Overall Intersection	-	1.04	97.4	F	-	0.92	26.8	C						
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.11	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	R	1.06	111.1	F	R	1.11	118.1	F						
	SB	T	1.12	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.62	26.3	C					
	WB	L	1.05	120.0+	F*	L	1.06	120.0+	F*					
		R	1.07	120.0+	F*	R	1.20+	120.0+	F*					
Overall Intersection	-	1.09	120.0+	F*	-	1.20+	120.0+	F*						

TABLE E.2-23
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
UN SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)													
7 West Street (NYS Rt.9A) at Barclay Barclay Street	WB	R	0.55	38.1	E	R	0.22	13.3	B					- Mitigation not required.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-24
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	0.86	21.5	C	TR	0.90	24.3	C				- Mitigation not required.
	SB	L	0.75	25.7	C	L	0.80	18.9	B				
		TR	0.65	16.1	B	TR	0.81	20.6	C				
Chambers Street	EB	LTR	0.29	36.5	D	LTR	0.27	37.4	D				
	WB	LT	0.69	49.9	D	LT	0.66	49.2	D				
		R	0.81	44.0	D	R	0.52	28.3	C				
Overall Intersection	-	1.00	22.7	C	-	0.84	23.7	C					
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.88	60.6	E				- Meaningful TSM mitigation measures are not available.
		TR	0.69	12.0	B	TR	1.20+	120.0+	F*				
	SB	L	0.19	4.5	A	L	1.20+	120.0+	F*				
		TR	0.48	3.1	A	TR	0.77	48.6	D				
Vesey Street	EB	LTR	0.75	49.4	D	L	0.28	25.9	C				
		-	-	-	-	TR	1.11	120.0+	F*				
	WB	L	0.80	54.4	D	L	0.76	48.9	D				
		LTR	1.01	95.3	F	TR	0.81	65.3	E				
Overall Intersection	-	0.91	17.6	B	-	1.20+	120.0+	F*					
41 West Street (NYS Rt. 9A) at Fulton Street													
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.25	16.4	B				- Mitigation not required.
Fulton Street	WB	-	-	-	-	R	0.63	32.1	C				
Overall Intersection	-	-	-	-	-	0.42	22.4	C					
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.43	53.3	D	L	0.38	11.6	B				- Mitigation not required.
		TR	0.75	16.5	B	TR	0.45	19.5	B				
	SB	L	0.79	68.2	E	L	0.55	16.6	B				
		TR	0.63	14.3	B	TR	0.40	18.7	B				
Liberty Street	EB	DeL	0.69	58.0	E	LTR	0.28	29.5	C				
		TR	0.43	42.5	D	-	-	-	-				
	WB	LTR	0.60	49.3	D	-	-	-	-				
Overall Intersection	-	0.74	22.2	C	-	0.56	19.5	B					
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	TR	0.96	101.8	F	T	0.68	16.4	B				- Mitigation not required.
	SB	TR	0.94	64.8	E	TR	0.89	37.8	D				
Albany Street	EB	LTR	0.94	74.0	E	LR	0.32	34.6	C				
	WB	-	-	-	-	L	0.15	30.8	C				
		-	-	-	-	TR	0.28	34.3	C				
Overall Intersection	-	0.96	84.0	F	-	0.71	26.4	C					
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	T	1.08	120.0+	F*	T	1.20+	120.0+	F*				- Meaningful TSM mitigation measures are not available.
	R	0.96	52.3	D	R	1.06	79.7	E					
	SB	T	1.08	107.2	F	TR	1.18	120.0+	F*				
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.20	22.0	C				
	WB	L	0.84	120.0+	F*	L	1.01	120.0+	F*				
		R	1.01	120.0+	F*	R	1.13	120.0+	F*				
Overall Intersection	-	1.05	120.0+	F*	-	1.20+	120.0+	F*					

TABLE E.2-24
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
UNIGNALIZED INTERSECTIONS													

WEST STREET CORRIDOR

5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt.9A) at Barclay Barclay Street	WB	R	0.60	31.0	D	R	0.28	13.2	B				- Mitigation not required.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-25
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
2 West Street (NYS Rt. 9A) at Chambers Street													
West Street (NYS Rt. 9A)	NB	TR	1.05	67.4	E	TR	0.95	29.6	C				- Mitigation not required.
	SB	L	0.38	11.3	B	L	0.69	11.9	B				
		TR	1.01	55.4	E	TR	1.05	61.6	E				
Chambers Street	EB	LTR	0.60	43.0	D	LTR	0.33	39.5	D				
	WB	LT	1.02	94.1	F	LT	0.96	88.9	F				
		R	0.66	25.8	C	R	0.74	36.1	D				
Overall Intersection	-	1.00	57.2	E	-	0.99	45.5	D					
3 West Street (NYS Rt. 9A) at Vesey Street													
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.83	55.5	E				- Meaningful TSM mitigation measures are not available.
		TR	0.77	13.2	B	TR	1.20+	120.0+	F*				
	SB	L	0.15	4.9	A	L	1.20+	120.0+	F*				
		TR	0.64	3.9	A	TR	0.87	57.4	E				
Vesey Street	EB	LTR	1.01	84.7	F	L	0.25	26.2	C				
	-	-	-	-	-	TR	1.04	107.4	F				
	WB	L	0.91	71.8	E	L	0.94	79.6	E				
		LTR	1.20+	120.0+	F*	TR	0.86	70.4	E				
Overall Intersection	-	1.01	28.8	C	-	1.20+	120.0+	F*					
41 West Street (NYS Rt. 9A) at Fulton Street													
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.26	16.5	B				- Mitigation not required.
Fulton Street	WB	-	-	-	-	R	0.69	36.1	D				
Overall Intersection	-	-	-	-	-	0.46	24.7	C					
4 West Street (NYS Rt. 9A) at Liberty Street													
West Street (NYS Rt. 9A)	NB	L	0.69	59.8	E	L	0.54	19.4	B				- Mitigation not required.
		TR	0.70	15.5	B	TR	0.38	18.4	B				
	SB	L	0.81	66.9	E	L	0.43	12.6	B				
		TR	0.89	21.0	C	TR	0.58	23.6	C				
Liberty Street	EB	LTR	0.90	62.0	E	LTR	0.36	30.8	C				
	WB	DeFL	0.43	43.7	D	-	-	-	-				
		TR	0.36	40.6	D	-	-	-	-				
Overall Intersection	-	0.88	27.2	C	-	0.65	21.8	C					
43 West Street (NYS Rt. 9A) at Albany Street													
West Street (NYS Rt. 9A)	NB	TR	0.96	103.1	F	T	0.66	14.2	B				- Mitigation not required.
	SB	TR	1.02	86.9	F	TR	0.94	42.4	D				
Albany Street	EB	LTR	1.00	87.2	F	LR	0.55	41.9	D				
	WB	-	-	-	-	L	0.23	32.2	C				
		-	-	-	-	TR	0.21	32.4	C				
Overall Intersection	-	1.01	93.7	F	-	0.82	29.4	C					
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel													
West Street (NYS Rt.9A)	NB	TR	1.08	120.0+	F*	TR	1.20+	120.0+	F*				- Meaningful TSM mitigation measures are not available.
	R	R	1.06	104.1	F	R	1.07	107.3	F				
	SB	T	1.03	103.0	F	TR	1.20+	120.0+	F*				
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B				
	WB	L	0.93	120.0+	F*	L	1.05	120.0+	F*				
		R	0.86	120.0+	F*	R	1.07	120.0+	F*				
Overall Intersection	-	0.99	120.0+	F*	-	1.14	120.0+	F*					

TABLE E.2-25
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	

UNIGNALIZED INTERSECTIONS

WEST STREET CORRIDOR

5	West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)											
7	West Street (NYS Rt.9A) at Barclay Barclay Street	WB	R	0.60	33.9	D	R	0.25	13.0	B			- Mitigation not required.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-26
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.11	89.4	F	TR	1.20+	120.0+	F*	TR	1.17	110.7	F	- Partially mitigated.
	SB	L	0.85	24.9	C	L	0.84	30.6	C	L	0.85	39.0	D	- Modify signal timing (increase cycle length from 120 s to 135 s).
		TR	1.04	64.7	E	TR	1.13	93.3	F	TR	0.88	10.3	B	
Chambers Street	EB	LTR	0.87	85.3	F	LTR	0.49	42.3	D	LTR	0.46	43.4	D	
	WB	LT	0.94	77.6	E	LT	0.99	91.7	F	LT	0.91	75.8	E	
		R	0.70	30.0	C	R	0.45	26.3	C	R	0.51	35.1	D	
Overall Intersection	-	1.06	71.6	E	-	1.18	118.4	F	-	1.17	61.7	E		
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.02	89.4	F					- Meaningful TSM mitigation measures are not available.
	TR	1.02	42.2	D	TR	1.20+	120.0+	F*						
	SB	L	0.14	8.7	A	L	1.20+	120.0+	F*					
		TR	0.66	4.0	A	TR	1.20+	120.0+	F*					
Vesey Street	EB	LTR	1.06	97.6	F	L	0.48	37.8	D					
		-	-	-	-	TR	0.93	80.7	F					
	WB	L	1.20	120.0+	F*	L	0.98	89.5	F					
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*					
Overall Intersection	-	1.19	47.7	D	-	1.20+	120.0+	F*	-	1.19	47.7	D		
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.37	12.7	B	T	0.39	14.9	B	- Modify signal timing (shift 4 s of green time from NB phase to WB phase).
Fulton Street	WB	-	-	-	-	R	0.84	56.0	E	R	0.73	42.4	D	
Overall Intersection	-	-	-	-	-	0.54	23.9	C	-	0.53	22.0	C		
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	1.20+	120.0+	F*	L	0.72	27.3	C	L	0.61	16.5	B	- Modify signal timing (shift 6 s of green time from EB phase to NB/SB exclusive left-turn phase).
	TR	1.06	64.2	E	TR	0.64	22.9	C	TR	0.64	22.9	C		
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	
		TR	0.81	18.1	B	TR	0.61	22.4	C	TR	0.61	22.4	C	
Liberty Street	EB	DefL	1.20+	120.0+	F*	LTR	0.51	33.6	C	LTR	0.60	39.9	D	
		TR	0.43	41.3	D	-	-	-	-	-	-	-	-	
	WB	LTR	0.29	37.2	D	-	-	-	-	-	-	-	-	
Overall Intersection	-	1.20+	90.8	F	-	1.13	119.5	F	-	1.13	89.6	F		
43 West Street (NYS Rt. 9A) at Albany Street														
West Street (NYS Rt. 9A)	NB	TR	1.08	120.0+	F*	T	0.86	30.0	C	T	0.86	30.0	C	- Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane.
	SB	TR	0.98	96.6	F	TR	0.91	48.4	D	TR	0.91	48.4	D	
Albany Street	EB	LTR	1.20	120.0+	F*	LR	1.20+	120.0+	F*	LR	1.05	105.4	F	
	WB	-	-	-	-	L	0.47	37.4	D	L	0.47	37.4	D	
		-	-	-	-	TR	0.32	33.7	C	R	0.32	33.7	C	
Overall Intersection	-	1.12	120.0+	F*	-	1.14	52.8	D	-	0.95	40.4	D		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.19	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	R	1.16	120.0+	F*	R	1.20+	120.0+	F*						
	SB	T	1.17	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.63	26.6	C					
	WB	L	1.07	120.0+	F*	L	1.08	120.0+	F*					
		R	1.13	120.0+	F*	R	1.20+	120.0+	F*					
Overall Intersection	-	1.15	120.0+	F*	-	1.20+	120.0+	F*	-	1.15	120.0+	F*		

TABLE E.2-26
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
UN SIGNALIZED INTERSECTIONS													
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt.9A) at Barclay Barclay Street	WB	R	0.60	44.9	E	R	0.25	13.2	B				- Mitigation not required.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-27
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	0.96	29.4	C	TR	1.14	97.2	F	TR	0.99	31.0	C	- Modify signal timing (increase cycle length from 120 s to 135 s).	
	SB	L	0.69	24.5	C	L	0.67	11.1	B	L	0.77	23.5	C		
		TR	0.74	17.8	B	TR	1.07	69.2	E	TR	0.83	8.9	A		
Chambers Street	EB	LTR	0.32	37.6	D	LTR	0.31	38.7	D	LTR	0.27	39.5	D		
	WB	LT	0.83	61.6	E	LT	0.85	66.6	E	LT	0.78	61.0	E		
		R	0.82	45.2	D	R	0.52	28.5	C	R	0.61	41.3	D		
Overall Intersection	-		1.05	27.4	C	-	1.04	76.6	E	-	0.93	23.0	C		
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.87	63.4	E						- Meaningful TSM mitigation measures are not available.
		TR	0.75	12.8	B	TR	1.20+	120.0+	F*						
	SB	L	0.21	5.0	A	L	1.20+	120.0+	F*						
		TR	0.56	3.4	A	TR	1.20+	120.0+	F*						
Vesey Street	EB	De/L	1.20+	120.0+	F*	L	0.32	34.1	C						
		TR	1.20+	120.0+	F*	TR	1.12	120.0+	F*						
	WB	L	0.88	62.9	E	L	1.00	110.9	F						
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*						
Overall Intersection	-		1.11	42.4	D	-	1.20+	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.30	16.9	B					- Mitigation not required.	
Fulton Street	WB	-	-	-	-	R	0.69	35.0	C						
Overall Intersection	-		-	-	-	-	0.48	23.6	C						
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	0.65	60.2	E	L	0.57	18.4	B	L	0.43	5.5	A	- Modify signal timing (shift 12.5 s of green time from EB phase to NB/SB exclusive left-turn phase).	
		TR	0.77	17.0	B	TR	0.53	21.0	C	TR	0.53	21.0	C		
	SB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*		
		TR	0.69	15.3	B	TR	0.52	20.6	C	TR	0.52	20.6	C		
Liberty Street	EB	De/L	1.20+	120.0+	F*	LTR	0.42	31.8	C	LTR	0.60	45.0	D		
		TR	0.43	42.6	D	-	-	-	-	-	-	-	-		
	WB	LTR	0.60	49.3	D	-	-	-	-	-	-	-	-		
Overall Intersection	-		0.97	38.7	D	-	1.05	95.7	F	-	1.05	51.8	D		
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	1.01	120.0+	F*	T	0.79	26.0	C						- Mitigation not required.
	SB	TR	0.96	84.3	F	TR	0.94	68.3	E						
Albany Street	EB	LTR	1.14	120.0+	F*	LR	0.59	43.6	D						
	WB	-	-	-	-	L	0.46	36.7	D						
		-	-	-	-	TR	0.56	40.8	D						
Overall Intersection	-		1.05	117.3	F	-	0.83	43.7	D						
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.15	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	R		1.03	76.5	E	R	1.15	117.2	F						
	SB	T	1.15	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.21	22.1	C						
	WB	L	0.85	120.0+	F*	L	1.03	120.0+	F*						
		R	1.05	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-		1.11	120.0+	F*	-	1.20+	120.0+	F*						
UNSIGNALIZED INTERSECTIONS															

TABLE E.2-27
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control		
			Delay	LOS			Delay	LOS			Delay	LOS	
WEST STREET CORRIDOR													
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)												
7 West Street (NYS Rt.9A) at Barclay Barclay Street	WB	R	0.67	38.4	E	R	0.34	14.6	B				- Mitigation not required.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-28
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.15	107.2	F	TR	1.14	97.6	F	TR	1.09	78.2	E	- Modify signal timing (increase cycle length from 120 s to 135 s).	
	SB	L	0.39	12.8	B	L	0.62	9.3	A	L	0.68	15.7	B		
		TR	1.07	75.1	E	TR	1.16	105.2	F	TR	0.92	13.7	B		
Chambers Street	EB	LTR	0.61	43.5	D	LTR	0.36	40.7	D	LTR	0.28	38.4	D		
	WB	LT	1.10	119.6	F	LT	1.08	120.0+	F*	LT	0.94	83.8	F		
		R	0.67	26.2	C	R	0.75	36.7	D	R	0.78	44.3	D		
Overall Intersection	-		1.08	83.3	F	-	1.10	93.5	F	-	1.03	45.4	D		
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.01	81.8	F						- Meaningful TSM mitigation measures are not available.
		TR	0.82	14.3	B	TR	1.20+	120.0+	F*						
	SB	L	0.16	5.4	A	L	1.20+	120.0+	F*						
		TR	0.68	4.1	A	TR	1.02	114.3	F						
Vesey Street	EB	LTR	1.20+	120.0+	F*	L	0.29	37.1	D						
		-	1.20+	120.0+	F*	TR	1.06	112.5	F						
	WB	L	1.00	93.0	F	L	1.20+	120.0+	F*						
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*						
Overall Intersection	-		1.20+	75.7	E	-	1.20+	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.26	16.5	B					- Mitigation not required.	
Fulton Street	WB	-	-	-	-	R	0.72	38.4	D						
Overall Intersection	-		-	-	-	-	0.47	25.9	C						
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	0.81	67.1	E	L	0.66	24.6	C					- Mitigation not required.	
		TR	0.72	15.9	B	TR	0.39	18.5	B						
	SB	L	0.98	91.8	F	L	0.83	30.8	C						
		TR	0.93	23.6	C	TR	0.59	24.3	C						
Liberty Street	EB	DeFL	1.04	105.8	F	LTR	0.48	33.0	C						
	WB	TR	1.15	120.0+	F*	-	-	-	-						
		DeFL	0.44	43.9	D	-	-	-	-						
		TR	0.37	40.8	D	-	-	-	-						
Overall Intersection	-		1.00	37.6	D	-	0.76	25.8	C						
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	1.00	120.0+	F*	T	0.73	19.3	B					- Mitigation not required.	
	SB	TR	1.04	99.9	F	TR	0.99	78.3	E						
Albany Street	EB	LTR	1.20+	120.0+	F*	LR	0.88	68.8	E						
	WB	-	-	-	-	L	0.61	41.9	D						
		-	-	-	-	TR	0.50	38.6	D						
Overall Intersection	-		1.10	120.0+	F*	-	0.95	49.6	D						
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	TR	1.14	120.0+	F*	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
		R	1.10	120.0+	F*	R	1.13	120.0+	F*						
	SB	T	1.10	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B						
	WB	L	0.94	120.0+	F*	L	1.07	120.0+	F*						
		R	0.90	120.0+	F*	R	1.13	120.0+	F*						
Overall Intersection	-		1.02	120.0+	F*	-	1.20+	120.0+	F*						

TABLE E.2-28
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
UNIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)													
7 West Street (NYS Rt.9A) at Barclay Street	WB	R	0.67	41.7	E	R	0.31	14.5	B					- Mitigation not required.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-29
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	MvL	V/C	Control Delay	LOS	MvL	V/C	Control Delay	LOS	MvL	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.96	96.3	F					- Meaningful TSM mitigation measures are not available.
		TR	0.97	21.8	C	TR	1.20+	120.0+	F*					
	SB	L	0.12	7.4	A	L	1.04	118.7	F					
		TR	0.58	3.6	A	TR	1.01	53.6	D					
Vesey Street	EB	LTR	1.05	96.3	F	L	0.69	45.7	D					
		-	-	-	-	TR	1.06	120.0+	F*					
	WB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*					
		LTR	0.96	80.8	F	TR	1.20+	120.0+	F*					
Overall Intersection	-	1.04	29.0	C	-	1.20+	120.0+	F*						
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.96	93.1	F	L	0.56	55.1	E	L	0.50	51.4	D	- Modify signal timing (shift 2 s of green time from NB/SB phase to NB/SB exclusive left turn phase).
		TR	1.04	54.3	D	TR	0.91	22.0	C	TR	0.93	26.0	C	
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.16	120.0+	F*	
		TR	0.74	16.4	B	TR	0.73	16.1	B	TR	0.75	18.0	B	
Liberty Street	EB	DefL	1.15	120.0+	F*	LTR	0.53	41.2	D	LTR	0.53	41.2	D	
		TR	0.42	41.0	D	-	-	-	-	-	-	-	-	
	WB	LTR	0.28	37.1	D	-	-	-	-	-	-	-	-	
Overall Intersection	-	1.09	54.4	D	-	0.86	34.8	C	-	0.86	33.3	C		
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	-	L	0.80	62.2	E	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway).
		-	-	-	-	R	0.63	49.7	D	-	-	-	-	
West Broadway	SB	L	1.16	120.0+	F*	L	0.60	15.8	B	L	0.73	20.1	C	- SB Greenwich Street is STOP sign controlled.
		R	0.75	28.3	C	R	0.59	17.2	B	R	0.62	19.4	B	- Provide revised signal timing and phasing plan.
Vesey Street	EB	T	0.36	15.9	B	T	1.03	74.6	E	T	0.50	20.6	C	
	WB	T	0.15	13.9	B	T	0.52	34.3	C	T	0.25	17.8	B	
Overall Intersection	-	0.76	69.4	E	-	0.73	41.5	D	-	0.63	19.8	B		
CHURCH STREET CORRIDOR														
24 Church Street at Vesey Street														
Church Street	NB	LTR	0.99	30.3	C	LT	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
		-	-	-	-	R	1.04	97.7	F					
Vesey Street	EB	LT	1.01	58.8	E	LT	1.20+	120.0+	F*					
Overall Intersection	-	1.00	40.0	D	-	1.20+	120.0+	F*						
BROADWAY CORRIDOR														
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.70	25.9	C	L	0.84	28.8	C	L	0.57	24.3	C	- Prohibit parking along the north side of EB Vesey Street.
		LT	0.61	19.9	B	LT	0.40	13.5	B	T	0.78	30.2	C	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
Vesey Street	EB	L	0.91	63.6	E	L	1.20+	120.0+	F*	L	0.64	39.3	D	
		LTR	0.97	60.9	E	LTR	1.20+	120.0+	F*	LTR	0.93	54.7	D	- Modify signal timing (shift 10 s of green time from SB phase to EB phase).
Overall Intersection	-	0.57	37.4	D	-	0.66	120.0+	F*	-	0.55	36.4	D		
37 Broadway at Liberty Street														
Broadway	SB	LT	0.72	8.4	A	LT	0.60	11.7	B					- Mitigation not required.
Liberty Street	EB	TR	0.51	28.2	C	TR	0.27	24.7	C					
Overall Intersection	-	0.65	13.8	B	-	0.49	14.6	B						

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-30
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	L	0.66	63.3	E	-	-	-	-	-	- Meaningful TSM mitigation measures are not available.
	TR	0.69	12.0	B	TR	0.95	45.6	D	-	-	-	-		
	SB	L	0.19	4.5	A	L	1.20+	120.0+	F*	-	-	-		
	TR	0.48	3.1	A	TR	0.90	31.7	C	-	-	-	-		
Vesey Street	EB	LTR	0.75	49.4	D	L	0.43	34.0	C	-	-	-		
	-	-	-	-	TR	1.20+	120.0+	F*	-	-	-	-		
	WB	L	0.80	54.4	D	L	1.20+	120.0+	F*	-	-	-		
	LTR	1.01	95.3	F	TR	1.20+	120.0+	F*	-	-	-	-		
Overall Intersection	-	0.91	17.6	B	-	1.20+	120.0+	F*	-	-	-	-		
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.43	53.3	D	L	0.49	52.5	D	L	0.29	39.7	D	- Modify signal timing (shift 3 s of green time from EB phase to NB/SB exclusive left turn phase; shift 8 of green time from NB/SB phase to NB/SB exclusive left turn phase).
	TR	0.75	16.5	B	TR	0.76	16.9	B	TR	0.87	27.0	C		
	SB	L	0.79	68.2	E	L	1.20+	120.0+	F*	L	0.90	67.3	E	
	TR	0.63	14.3	B	TR	0.66	14.8	B	TR	0.75	22.7	C		
Liberty Street	EB	DefL	0.69	58.0	E	LTR	0.37	38.0	D	LTR	0.41	41.0	D	
	TR	0.43	42.5	D	-	-	-	-	-	-	-	-		
	WB	LTR	0.60	49.3	D	-	-	-	-	-	-	-		
Overall Intersection	-	0.74	22.2	C	-	0.76	44.3	D	-	0.76	30.1	C		
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	L	0.75	56.7	E	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway). - SB Greenwich Street is STOP sign controlled. - Provide revised signal timing and phasing plan.	
	-	-	-	-	R	0.28	37.1	D	-	-	-	-		
West Broadway	SB	L	0.60	21.8	C	L	0.39	12.7	B	L	0.50	15.3		B
	R	0.81	32.0	C	R	0.59	17.1	B	R	0.62	19.3	B		
Vesey Street	EB	T	0.29	15.2	B	T	1.18	120.0+	F*	T	0.57	21.7		C
	WB	T	0.14	13.8	B	T	0.61	36.1	D	T	0.30	18.2		B
Overall Intersection	-	0.55	21.0	C	-	0.74	65.4	E	-	0.60	19.1	B		
CHURCH STREET CORRIDOR														
24 Church Street at Vesey Street														
Church Street	NB	LT	1.08	68.8	E	LT	1.16	103.3	F	-	-	-		- Meaningful TSM mitigation measures are not available.
	R	0.55	12.7	B	R	1.20+	120.0+	F*	-	-	-			
Vesey Street	EB	LT	0.61	25.9	C	LT	1.20+	120.0+	F*	-	-	-		
Overall Intersection	-	0.89	50.5	D	-	1.20+	120.0+	F*	-	-	-	-		
BROADWAY CORRIDOR														
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.74	27.9	C	L	0.59	18.1	B	L	0.47	27.2	C	- Partially mitigated. - Prohibit parking along the north side of EB Vesey Street. - Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only). - Modify signal timing (shift 15 s of green time from SB phase to EB phase).
	LT	0.54	18.9	B	LT	0.41	13.5	B	T	0.91	44.7	D		
Vesey Street	EB	L	0.56	36.8	D	L	1.20+	120.0+	F*	L	0.75	39.4	D	
	LTR	0.72	38.2	D	LTR	1.20+	120.0+	F*	LTR	0.83	38.9	D		
Overall Intersection	-	0.51	27.0	C	-	0.60	120.0+	F*	-	0.56	39.0	D		
37 Broadway at Liberty Street														
Broadway	SB	LT	0.69	13.8	B	LT	0.53	10.5	B	-	-	-	- Mitigation not required.	
Liberty Street	EB	TR	0.65	37.5	D	TR	0.34	25.7	C	-	-	-		
Overall Intersection	-	0.68	19.7	B	-	0.47	14.5	B	-	-	-	-		

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-31
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A AT-GRADE
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.66	63.3	E					- Meaningful TSM mitigation measures are not available.	
	TR	0.77	13.2	B	TR	1.05	74.1	E							
Vesey Street	SB	L	0.15	4.9	A	L	1.03	117.3	F						
	TR	0.64	3.9	A	TR	1.18	120.0+	F*							
Vesey Street	EB	LTR	1.01	84.7	F	L	0.38	32.2	C						
	-	-	-	-	-	TR	1.20+	120.0+	F*						
Vesey Street	WB	L	0.91	71.8	E	L	1.20+	120.0+	F*						
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*							
Overall Intersection	-	1.01	28.8	C	-	1.20+	120.0+	F*							
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	0.69	59.8	E	L	0.64	59.0	E	L	0.37	43.2	D	- Modify signal timing (shift 9 s of green time from EB phase to NB/SB exclusive left turn phase; shift 1 of green time from NB/SB phase to NB/SB exclusive left turn phase).	
	TR	0.70	15.5	B	TR	0.76	16.6	B	TR	0.77	17.7	B			
Vesey Street	SB	L	0.81	66.9	E	L	1.20+	120.0+	F*	L	0.86	63.5	E		
	TR	0.89	21.0	C	TR	0.96	31.9	C	TR	0.97	37.5	D			
Liberty Street	EB	LTR	0.90	62.0	E	LTR	0.48	40.1	D	LTR	0.67	53.2	D		
	-	-	-	-	-	-	-	-	-	-	-	-	-		
Liberty Street	WB	Defl.	0.43	43.7	D	-	-	-	-	-	-	-	-		
	TR	0.36	40.6	D	TR	-	-	-	TR	-	-	-	-		
Overall Intersection	-	0.88	27.2	C	-	0.89	45.1	D	-	0.89	32.6	C			
WEST BROADWAY CORRIDOR															
13 West Broadway/Greenwich Street at Vesey Street															
Greenwich Street	SB	-	-	-	-	L	0.80	62.2	E					- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway). - SB Greenwich Street is STOP sign controlled. - Provide revised signal timing and phasing plan.	
	TR	-	-	-	-	R	0.42	40.9	D						
West Broadway	SB	L	1.20+	120.0+	F*	L	0.64	16.7	B	L	0.77	21.8	C		
	R	0.93	45.9	D	R	0.61	17.9	B	R	0.65	20.3	C			
Vesey Street	EB	T	0.32	15.4	B	T	1.20+	120.0+	F*	T	0.60	22.0	C		
	WB	T	0.17	14.1	B	T	0.69	37.9	D	T	0.34	18.6	B		
Overall Intersection	-	0.76	61.2	E	-	0.80	69.8	E	-	0.69	21.0	C			
CHURCH STREET CORRIDOR															
24 Church Street at Vesey Street															
Church Street	NB	LT	1.12	84.8	F	LT	1.20+	120.0+	F*						- Meaningful TSM mitigation measures are not available.
	R	0.64	15.4	B	R	1.20+	120.0+	F*							
Vesey Street	EB	LT	0.87	36.0	D	LT	1.20+	120.0+	F*						
	-	-	-	-	-	-	-	-	-	-	-	-	-		
Overall Intersection	-	1.02	60.7	E	-	1.20+	120.0+	F*							
BROADWAY CORRIDOR															
33 Broadway at Vesey Street / Ann Street															
Broadway	SB	L	0.88	36.4	D	L	0.94	41.2	D	L	0.73	32.2	C	- Prohibit parking along the north side of EB Vesey Street. - Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only). - Modify signal timing (shift 14 s of green time from SB phase to EB phase).	
	LT	0.55	18.9	B	LT	0.37	13.2	B	T	0.82	36.4	D			
Vesey Street	EB	L	0.99	81.6	F	L	1.20+	120.0+	F*	L	0.81	43.9	D		
	LTR	0.77	39.2	D	LTR	1.20+	120.0+	F*	LTR	0.79	36.9	D			
Overall Intersection	-	0.64	35.7	D	-	0.75	120.0+	F*	-	0.51	36.6	D			
37 Broadway at Liberty Street															
Broadway	SB	LT	0.66	13.2	B	LT	0.55	10.7	B						- Mitigation not required.
	EB	TR	0.55	34.4	C	TR	0.29	25.0	C						
Overall Intersection	-	0.63	18.1	B	-	0.46	14.0	B							

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-32
WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE
NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	MvL	V/C	Control Delay	LOS	MvL	V/C	Control Delay	LOS	MvL	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.16	120.0+	F*					- Meaningful TSM mitigation measures are not available.
		TR	1.02	42.2	D	TR	1.20+	120.0+	F*					
	SB	L	0.14	8.7	A	L	1.20+	120.0+	F*					
		TR	0.66	4.0	A	TR	1.20+	120.0+	F*					
Vesey Street	EB	LTR	1.06	97.6	F	L	0.74	52.4	D					
		-	-	-	-	TR	1.08	120.0+	F*					
	WB	L	1.20	120.0+	F*	L	1.20+	120.0+	F*					
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*					
Overall Intersection	-	1.19	47.7	D	-	1.20+	120.0+	F*	-	1.18	82.1	F	-	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	1.20+	120.0+	F*	L	0.77	65.3	E	L	0.43	40.7	D	- Modify signal timing (shift 9 s of green time and 1 s of all red time from EB phase to NB/SB exclusive left turn phase; shift 3 s of green time from NB/SB phase to NB/SB exclusive left turn phase).
		TR	1.06	64.2	E	TR	1.01	45.2	D	TR	1.06	62.6	E	
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	
		TR	0.81	18.1	B	TR	0.81	18.1	B	TR	0.85	21.9	C	
Liberty Street	EB	DefL	1.20+	120.0+	F*	LTR	0.67	45.2	D	LTR	0.95	78.8	E	
		TR	0.43	41.3	D	-	-	-	-	-	-	-	-	
	WB	LTR	0.29	37.2	D	-	-	-	-	-	-	-	-	
Overall Intersection	-	1.20+	90.8	F	-	1.19	120.0+	F*	-	1.18	82.1	F	-	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	-	L	0.80	62.2	E	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway).
		-	-	-	-	R	0.86	72.6	E	-	-	-	-	
West Broadway	SB	L	1.20+	120.0+	F*	L	0.63	16.5	B	L	0.77	21.5	C	- SB Greenwich Street is STOP sign controlled.
		R	0.77	29.4	C	R	0.71	21.1	C	R	0.75	24.5	C	- Provide revised signal timing and phasing plan.
Vesey Street	EB	T	0.39	16.2	B	T	1.20+	120.0+	F*	T	0.61	22.3	C	
		WB	0.23	14.6	B	T	0.96	57.4	E	T	0.47	20.2	C	
Overall Intersection	-	0.80	77.1	E	-	0.86	73.7	E	-	0.69	21.9	C	-	
CHURCH STREET CORRIDOR														
24 Church Street at Vesey Street														
Church Street	NB	LTR	1.10	74.4	E	LT	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
		-	-	-	-	R	1.20+	120.0+	F*					
Vesey Street	EB	LT	1.08	78.8	E	LT	1.20+	120.0+	F*					
Overall Intersection	-	1.09	75.8	E	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	
BROADWAY CORRIDOR														
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.71	26.2	C	L	0.85	30.1	C	L	0.58	24.5	C	- Prohibit parking along the north side of EB Vesey Street.
		LT	0.65	20.7	C	LT	0.49	14.4	B	T	0.94	43.3	D	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
Vesey Street	EB	L	0.95	72.2	E	L	1.20+	120.0+	F*	L	0.95	70.7	E	
		LTR	1.08	93.6	F	LTR	1.20+	120.0+	F*	LTR	1.04	80.1	F	- Modify signal timing (shift 10 s of green time from SB phase to EB phase).
Overall Intersection	-	0.59	48.4	D	-	0.72	120.0+	F*	-	0.62	52.5	D	-	
37 Broadway at Liberty Street														
Broadway	SB	LT	0.76	9.3	A	LT	0.68	13.4	B					- Mitigation not required.
Liberty Street	EB	TR	0.66	31.4	C	TR	0.46	27.2	C					
Overall Intersection	-	0.73	16.5	B	-	0.61	17.7	B	-	0.61	17.7	B	-	

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-33
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION VS CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.77	70.3	E					- Meaningful TSM mitigation measures are not available.	
	TR	0.75	12.8	B	TR	1.09	105	F							
Vesey Street	SB	L	0.21	5.0	A	L	1.20+	120.0+	F*						
	TR	0.56	3.4	A	TR	1.2	120.0+	F*							
Overall Intersection	EB	DeFL	1.20+	120.0+	F*	L	0.46	36.7	D						
	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*							
	WB	L	0.88	62.9	E	L	1.20+	120.0+	F*						
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*							
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	0.65	60.2	E	L	0.66	58.0	E	L	0.26	27.8	C		- Partially mitigated. - Modify signal timing (shift 16 s of green time and 1 s of all red time from EB phase to NB/SB exclusive left turn phase; shift 8 s of green time from NB/SB phase to NB/SB exclusive left turn phase).
	TR	0.77	17.0	B	TR	0.86	20.2	C	TR	0.99	39.7	D			
Liberty Street	SB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*	L	1.18	120.0+	F*		
	TR	0.69	15.3	B	TR	0.74	16.5	B	TR	0.85	26.0	C			
Overall Intersection	EB	DeFL	1.20+	120.0+	F*	LTR	0.55	41.8	D	LTR	1.15	120.0+	F*		
	TR	0.43	42.6	D	-	-	-	-	-	-	-	-			
	WB	LTR	0.60	49.3	D	-	-	-	-	-	-	-			
WEST BROADWAY CORRIDOR															
13 West Broadway/Greenwich Street at Vesey Street															
Greenwich Street	SB	-	-	-	-	L	0.75	56.7	E	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway). - SB Greenwich Street is STOP sign controlled. - Provide revised signal timing and phasing plan.	
	TR	-	-	-	-	R	0.42	40.9	D	-	-	-	-		
West Broadway	SB	L	0.63	22.7	C	L	0.42	13.1	B	L	0.53	15.8	B		
	R	0.83	33.3	C	R	0.67	19.4	B	R	0.71	22.3	C			
Vesey Street	EB	T	0.32	15.4	B	T	1.20+	120.0+	F*	T	0.69	23.9	C		
	WB	T	0.23	14.6	B	T	1.02	72.4	E	T	0.50	20.6	C		
Overall Intersection															
CHURCH STREET CORRIDOR															
24 Church Street at Vesey Street															
Church Street	NB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*						- Meaningful TSM mitigation measures are not available.
	R	0.65	15.8	B	R	1.20+	120.0+	F*							
Vesey Street	EB	LT	0.65	26.8	C	LT	1.20+	120.0+	F*						
	Overall Intersection														
BROADWAY CORRIDOR															
33 Broadway at Vesey Street / Ann Street															
Broadway	SB	L	0.75	28.5	C	L	0.60	18.4	B	L	0.42	22.8	C	- Partially mitigated. - Prohibit parking along the north side of EB Vesey Street. - Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only). - Modify signal timing (shift 11 s of green time from SB phase to EB phase).	
	LT	0.58	19.5	B	LT	0.48	14.3	B	T	0.93	42.9	D			
Vesey Street	EB	L	0.61	39.0	D	L	1.20+	120.0+	F*	L	0.77	45.8	D		
	LTR	0.84	45.1	D	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*			
Overall Intersection															
37 Broadway at Liberty Street															
Broadway	SB	LT	0.73	14.7	B	LT	0.60	11.60	B						- Mitigation not required.
Liberty Street	EB	TR	0.83	46.6	D	TR	0.51	28.30	C						
Overall Intersection															

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-34
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.82	74.8	E					- Meaningful TSM mitigation measures are not available.
		TR	0.82	14.3	B	TR	1.15	112.1	F					
	SB	L	0.16	5.4	A	L	1.08	120.0+	F*					
Vesey Street		TR	0.68	4.1	A	TR	1.20+	120.0+	F*					
	EB	DefL	1.20+	120.0+	F*	L	0.41	35.0	D					
		TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*					
	WB	L	1.00	93.0	F	L	1.20+	120.0+	F*					
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*					
Overall Intersection	-	1.20+	75.7	E	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.81	67.1	E	L	0.77	66.1	E	L	0.41	42.4	D	- Partially mitigated
		TR	0.72	15.9	B	TR	0.84	18.8	B	TR	0.80	15.5	B	- Modify signal timing (shift 2 s of green time and 1 s of all red time from EB phase to NB/SB phase; shift 12 s of green time from EB phase to NB/SB exclusive left turn phase).
	SB	L	0.98	91.8	F	L	1.20+	120.0+	F*	L	1.18	120.0+	F*	
		TR	0.93	23.6	C	TR	1.03	64.9	E	TR	0.98	43.2	D	
Liberty Street	EB	DefL	1.04	105.8	F	LTR	0.64	44.1	D	LTR	1.09	120.0+	F*	
		TR	1.15	120.0+	F*	-	-	-	-	-	-	-	-	
	WB	DefL	0.44	43.9	D	-	-	-	-	-	-	-	-	
		TR	0.37	40.8	D	-	-	-	-	-	-	-	-	
Overall Intersection	-	1.00	37.6	D	-	1.07	96.4	F	-	1.05	47.1	D	-	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
Greenwich Street	SB	-	-	-	-	L	0.80	62.2	E	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway).
		-	-	-	-	R	0.43	41.3	D	-	-	-	-	
West Broadway	SB	L	1.20+	120.0+	F*	L	0.67	17.3	B	L	0.80	22.9	C	- SB Greenwich Street is STOP sign controlled.
		R	0.95	49.2	D	R	0.64	18.6	B	R	0.67	21.2	C	- Provide revised signal timing and phasing plan.
Vesey Street	EB	T	0.33	15.5	B	T	1.20+	120.0+	F*	T	0.69	24.0	C	
	WB	T	0.25	14.7	B	T	1.05	79.5	E	T	0.51	20.8	C	
Overall Intersection	-	0.79	64.7	E	-	0.86	109.4	F	-	0.75	22.5	C	-	
CHURCH STREET CORRIDOR														
24 Church Street at Vesey Street														
Church Street	NB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
		R	0.74	19.7	B	R	1.20+	120.0+	F*					
Vesey Street	EB	LT	0.90	38.9	D	LT	1.20+	120.0+	F*					
Overall Intersection	-	1.13	101.2	F	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	-	
BROADWAY CORRIDOR														
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.89	37.9	D	L	0.96	44.2	D	L	0.71	30.8	C	- Partially mitigated.
		LT	0.58	19.3	B	LT	0.43	13.8	B	T	0.91	43.8	D	- Prohibit parking along the north side of EB Vesey Street.
Vesey Street	EB	L	1.06	99.7	F	L	1.20+	120.0+	F*	L	0.83	46.7	D	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
		LTR	0.83	43.3	D	LTR	1.20+	120.0+	F*	LTR	1.00	64.0	E	
Overall Intersection	-	0.68	39.6	D	-	0.78	120.0+	F*	-	0.61	47.2	D	-	- Modify signal timing (shift 13 s of green time from SB phase to EB phase).
37 Broadway at Liberty Street														
Broadway	SB	LT	0.70	13.9	B	LT	0.57	11.1	B					- Mitigation not required.
Liberty Street	EB	TR	0.65	36.9	D	TR	0.41	26.7	C					
Overall Intersection	-	0.68	20.0	B	-	0.52	15.6	B	-	0.52	15.6	B	-	

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-35
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.99	84.8	F					- Meaningful TSM mitigation measures are not available.
	TR	0.97	21.8	C	TR	1.20+	120.0+	F*						
	SB	L	0.12	7.4	A	L	1.07	96.7	F					
	TR	0.58	3.6	A	TR	1.20+	120.0+	F*						
Vesey Street	EB	LTR	1.05	96.3	F	L	0.46	33.2	C					
	-	-	-	-	TR	0.92	78.4	E						
	WB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*					
	LTR	0.96	80.8	F	TR	0.98	97.0	F						
Overall Intersection	-	1.04	29.0	C	-	1.20+	120.0+	F*						
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.96	93.1	F	L	0.48	14.9	B					- Mitigation not required.
	TR	1.04	54.3	D	TR	0.53	20.7	C						
	SB	L	1.20+	120.0+	F*	L	1.12	90.1	F					
	TR	0.74	16.4	B	TR	0.49	20.2	C						
Liberty Street	EB	DefL	1.15	120.0+	F*	LTR	0.40	31.4	C					
	TR	0.42	41.0	D	-	-	-	-						
	WB	LTR	0.28	37.1	D	-	-	-						
Overall Intersection	-	1.09	54.4	D	-	0.85	33.7	C						

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-36
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.69	41.4	D					- Meaningful TSM mitigation measures are not available.
	TR	0.69	12.0	B	TR	1.20+	120.0+	F*						
	SB	L	0.19	4.5	A	L	1.20+	120.0+	F*					
	TR	0.48	3.1	A	TR	0.91	61.9	E						
Vesey Street	EB	LTR	0.75	49.4	D	L	0.28	28.7	C					
	-	-	-	-	TR	1.11	120.0+	F*						
	WB	L	0.80	54.4	D	L	1.20+	120.0+	F*					
	LTR	1.01	95.3	F	TR	1.20+	120.0+	F*						
Overall Intersection	-	0.91	17.6	B	-	1.20+	120.0+	F*						
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.43	53.3	D	L	0.38	11.6	B	L	0.33	7.2	A	- Modify signal timing (shift 6 s of green time from EB phase to NB/SB exclusive left-turn phase).
	TR	0.75	16.5	B	TR	0.49	20.1	C	TR	0.49	20.1	C		
	SB	L	0.79	68.2	E	L	1.20+	120.0+	F*	L	1.06	65.5	E	
	TR	0.63	14.3	B	TR	0.40	18.7	B	TR	0.40	18.7	B		
Liberty Street	EB	DeFl.	0.69	58.0	E	LTR	0.28	29.5	C	LTR	0.33	34.4	C	
	TR	0.43	42.5	D	-	-	-	-	-	-	-	-	-	
	WB	LTR	0.60	49.3	D	-	-	-	-	-	-	-	-	
Overall Intersection	-	0.74	22.2	C	-	0.84	44.7	D	-	0.84	30.7	C		

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-37
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs CURRENT 2009 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.68	43.6	D					- Meaningful TSM mitigation measures are not available.
		TR	0.77	13.2	B	TR	1.20+	120.0+	F*					
	SB	L	0.15	4.9	A	L	1.06	92.7	F					
Vesey Street		TR	0.64	3.9	A	TR	1.01	101.6	F					
	EB	LTR	1.01	84.7	F	L	0.25	29.7	C					
		-	-	-	-	TR	1.04	107.4	F					
	WB	L	0.91	71.8	E	L	1.20+	120.0+	F*					
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*					
Overall Intersection		-	1.01	28.8	C	-	1.20+	120.0+	F*					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.69	59.8	E	L	0.54	19.4	B	L	0.49	15.4	B	- Modify signal timing (shift 3 s of green time from EB phase to NB/SB exclusive left-turn phase).
		TR	0.70	15.5	B	TR	0.47	19.7	B	TR	0.47	19.7	B	
	SB	L	0.81	66.9	E	L	1.07	95.5	F	L	0.99	60.2	E	
		TR	0.89	21.0	C	TR	0.58	23.6	C	TR	0.58	23.6	C	
Liberty Street	EB	LTR	0.90	62.0	E	LTR	0.36	30.8	C	LTR	0.39	33.4	C	
		-	-	-	-	-	-	-	-	-	-	-	-	
	WB	DefL	0.43	43.7	D	-	-	-	-	-	-	-	-	
		TR	0.36	40.6	D	-	-	-	-	-	-	-	-	
Overall Intersection		-	0.88	27.2	C	-	0.81	36.6	D	-	0.81	29.9	C	

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-38
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.02	91.8	F					- Meaningful TSM mitigation measures are not available.
	TR	1.02	42.2	D	TR	1.20+	120.0+	F*						
	SB	L	0.14	8.7	A	L	1.20+	120.0+	F*					
	TR	0.66	4.0	A	TR	1.20+	120.0+	F*						
Vesey Street	EB	LTR	1.06	97.6	F	L	0.52	44.0	D					
	-	-	-	-	TR	0.93	80.7	F						
	WB	L	1.20	120.0+	F*	L	1.20+	120.0+	F*					
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*						
Overall Intersection	-	1.19	47.7	D	-	1.20+	120.0+	F*						
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	1.20+	120.0+	F*	L	0.72	27.3	C	L	0.57	12.4	B	- Partially mitigated.
	TR	1.06	64.2	E	TR	0.68	23.9	C	TR	0.68	23.9	C	- Modify signal timing (shift 9 s of green time from EB phase to NB/SB exclusive left-turn phase).	
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	
	TR	0.81	18.1	B	TR	0.61	22.4	C	TR	0.61	22.4	C		
Liberty Street	EB	DefL	1.20+	120.0+	F*	LTR	0.51	33.6	C	LTR	0.65	43.7	D	
	TR	0.43	41.3	D	-	-	-	-	-	-	-	-	-	
	WB	LTR	0.29	37.2	D	-	-	-	-	-	-	-	-	
Overall Intersection	-	1.20+	90.8	F	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*		

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-39
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.70	46.1	D					- Meaningful TSM mitigation measures are not available.
	TR	0.75	12.8	B	TR	1.20+	120.0+	F*						
	SB	L	0.21	5.0	A	L	1.20+	120.0+	F*					
	TR	0.56	3.4	A	TR	1.20+	120.0+	F*						
Vesey Street	EB	DeFL	1.20+	120.0+	F*	L	0.35	42.2	D					
	TR	1.20+	120.0+	F*	TR	1.12	120.0+	F*						
	WB	L	0.88	62.9	E	L	1.20+	120.0+	F*					
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*						
Overall Intersection		-	1.11	47.7	D	-	1.20+	120.0+	F*					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.65	60.2	E	L	0.57	18.4	B	L	0.43	5.9	A	- Partially mitigated.
	TR	0.77	17.0	B	TR	0.56	21.5	C		TR	0.56	21.5	C	- Modify signal timing (shift 12 s of green time from EB phase to NB/SB exclusive left-turn phase).
	SB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	
	TR	0.69	15.3	B	TR	0.52	20.6	C		TR	0.52	20.6	C	
Liberty Street	EB	DeFL	1.20+	120.0+	F*	LTR	0.42	31.8	C	LTR	0.59	44.3	D	
	TR	0.43	42.6	D	-	-	-	-		-	-	-	-	
	WB	LTR	0.60	49.3	D	-	-	-		-	-	-	-	
Overall Intersection		-	0.97	38.7	D	-	1.20+	120.0+	F*	-	1.20+	120.0+	F*	

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-40
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS
 NO VEHICULAR TRAFFIC ON GREENWICH AND FULTON STREET EXTENSIONS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.80	54.2	D					- Meaningful TSM mitigation measures are not available.	
	TR	0.82	14.3	B	TR	1.20+	120.0+	F*							
	SB	L	0.16	5.4	A	L	1.12	110.3	F						
Vesey Street	TR	0.68	4.1	A	TR	1.17	120.0+	F*							
	EB	DefL	1.20+	120.0+	F*	L	0.30	44.2	D						
	TR	1.20+	120.0+	F*	TR	1.06	112.5	F							
	WB	L	1.00	93.0	F	L	1.20+	120.0+	F*						
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*							
Overall Intersection		-	1.20+	75.7	E	-	1.20+	120.0+	F*						
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	0.81	67.1	E	L	0.66	24.7	C	L	0.50	10.0	A		- Partially mitigated. - Modify signal timing (shift 10 s of green time from EB phase to NB/SB exclusive left-turn phase).
	TR	0.72	15.9	B	TR	0.46	19.6	B	TR	0.46	9.6	A			
	SB	L	0.98	91.8	F	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*		
	TR	0.93	23.6	C	TR	0.60	24.4	C	TR	0.60	24.4	C			
Liberty Street	EB	DefL	1.04	105.8	F	LTR	0.48	33.0	C	LTR	0.64	44.1	D		
	TR	1.15	120.0+	F*	-	-	-	-	-	-	-	-			
	WB	DefL	0.44	43.9	D	-	-	-	-	-	-	-			
	TR	0.37	40.8	D	-	-	-	-	-	-	-	-			
Overall Intersection		-	1.00	37.6	D	-	1.03	87.6	F	-	1.03	56.2	E		

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-4I
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.09	81.4	F	TR	1.20+	120.0+	F*	TR	1.10	79.5	E	- Modify signal timing (increase cycle length from 120 s to 135 s).	
	SB	L	0.85	23.7	C	L	0.74	17.5	B	L	0.80	31.9	C		
		TR	1.03	59.8	E	TR	1.03	55.1	E	TR	0.94	24.0	C		
Chambers Street	EB	LTR	0.84	79.6	E	LTR	0.49	42.3	D	LTR	0.46	43.4	D		
	WB	LT	0.91	72.2	E	LT	0.93	78.0	E	LT	0.86	67.8	E		
		R	0.69	29.8	C	R	0.45	26.3	C	R	0.50	35.0	C		
Overall Intersection	-		1.04	65.8	E	-	1.10	86.3	F	-	1.05	52.5	D		
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.16	120.0+	F*						- Meaningful TSM mitigation measures are not available.
	TR	1.01	39.8	D	TR	1.20+	120.0+	F*							
	SB	L	0.14	8.4	A	L	1.20+	120.0+	F*						
	TR	0.65	4.0	A	TR	1.20	120.0+	F*							
Vesey Street	EB	LTR	1.06	98.2	F	L	0.76	55.7	E						
	-	-	-	-	-	TR	1.08	120.0+	F*						
	WB	L	1.15	120.0+	F*	L	1.20+	120.0+	F*						
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*							
Overall Intersection	-		1.20+	42.6	D	-	1.20+	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	1.01	42.9	D					- Meaningful TSM mitigation measures are not available.	
Fulton Street	WB	-	-	-	-	R	0.76	47.8	D						
Overall Intersection	-		-	-	-	-	0.92	43.3	D						
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	1.08	120.0+	F*	T	1.12	120.0+	F*	NB	T	1.06	120.0+	F*	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane. - Modify signal timing (shift 4 s of green time from the EB/WB phase to the NB/SB phase).
	SB	TR	0.98	92.9	F	TR	1.02	118.4	F	SB	TR	0.97	86.8	F	
Albany Street	EB	LTR	1.17	120.0+	F*	LR	1.20+	120.0+	F*	EB	L	0.46	41.6	D	
	WB	-	-	-	-	L	0.33	34.1	C	R	0.74	55.7	E		
	-	-	-	-	-	TR	0.24	32.4	C	WB	L	0.38	38.3	D	
										TR	0.27	35.9	D		
Overall Intersection	-		1.11	120.0+	F*	-	1.20+	120.0+	F*	-	0.97	106.0	F		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.17	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	R	1.13	120.0+	F*	R	1.16	120.0+	F*							
	SB	T	1.16	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.63	26.6	C						
	WB	L	1.07	120.0+	F*	L	1.08	120.0+	F*						
	R	1.12	120.0+	F*	R	1.20+	120.0+	F*							
Overall Intersection	-		1.14	120.0+	F*	-	1.20+	120.0+	F*						
GREENWICH STREET CORRIDOR															
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.11	19.1	B	R	0.02	17.6	B	NB	R	0.02	17.6		B
	SB	LT	0.92	55.7	E	LT	0.84	43.0	D	SB	L	0.34	21.9	C	
Rector Street	EB	TR	0.26	11.4	B	TR	0.48	14.8	B	T	0.40	22.6	C		
										EB	TR	0.48	14.8	B	
Overall Intersection	-		0.52	40.7	D	-	0.63	30.2	C	-	0.45	18.9	B		

TABLE E.2-4I
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)					Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control			Mvt.	V/C	Control			Mvt.	V/C	Control			
			Delay	LOS				Delay	LOS				Delay		LOS	
CANAL STREET CORRIDOR																
16 Canal Street at Hudson Street																
Hudson Street	NB	LTR	0.95	53.2	D	LTR	0.86	42.7	D	LTR	0.71	36.9	D	-	Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane.	
		R	0.87	55.4	E	R	0.57	36.3	D	R	0.66	43.1	D			
Canal Street	EB	L	1.01	76.6	E	L	1.20+	120.0+	F*	L	1.07	74.1	E	-	Modify signal timing (add 4 s to green time of EB/WB phase and 5 s to green time of EB/WB lead phase).	
		T	1.04	67.2	E	LT	1.07	70.5	E	LT	1.06	66.7	E			
	WB	T	0.98	68.1	E	T	1.12	111.7	F	T	0.99	65.3	E			
		R	1.16	100.3	F	R	1.20	120.0+	F*	R	1.11	92.1	F			
Overall Intersection	-		1.10	72.7	E	-	1.11	88.2	F	-	1.02	62.5	E			
17 Canal Street at Varick Street																
Varick Street	SB	L	0.25	23.8	C	L	0.20	23.1	C					-	Mitigation not required.	
		T	0.95	48.1	D	T	0.66	29.5	C							
		R	0.16	22.7	C	R	0.11	22.0	C							
Canal Street	EB	TR	0.47	10.9	B	TR	0.46	10.5	B							
	WB	LT	1.06	111.0	F	LT	1.12	102.6	F							
Overall Intersection	-		0.63	67.7	E	-	0.53	49.3	D							
WEST BROADWAY CORRIDOR																
13 West Broadway/Greenwich Street at Vesey Street																
Greenwich Street	SB	-	-	-	-	L	0.50	39.9	D	-	-	-	-	-	Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway).	
		-	-	-	-	R	0.82	66.8	E	-	-	-	-	-		
West Broadway	SB	L	1.16	120.0+	F*	L	0.50	14.2	B	L	0.70	22.6	C	-	SB Greenwich Street is STOP sign controlled.	
		R	0.76	28.5	C	TR	0.44	3.3	A	TR	0.52	8.4	A	-	Provide revised signal timing and phasing plan.	
Vesey Street	EB	T	0.39	16.2	B	LR	1.20+	120.0+	F*	TR	0.68	21.1	C			
	WB	T	0.20	14.4	B	LT	0.60	36.7	D	LT	0.22	14.5	B			
Overall Intersection	-		0.78	69.5	E	-	0.81	120.0+	F*	-	0.69	17.4	B			
CHURCH STREET CORRIDOR																
21 Church Street at Worth Street																
Church Street	NB	LTR	0.69	15.6	B	LTR	1.20+	120.0+	F*	NB	LT	0.89	18.6	B	-	Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.
Worth Street	EB	LT	0.86	52.0	D	LT	0.96	60.9	E	R	0.32	13.4	B			
	WB	TR	0.78	35.4	D	TR	0.98	62.3	E	EB	LT	0.90	48.9	D	-	Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.
										WB	T	0.60	27.4	C		
										R	0.50	25.0	C	-	Modify signal timing (shift 2 s of green time from NB phase to EB/WB phase).	
Overall Intersection	-		0.76	23.9	C	-	1.20+	120.0+	F*	-	0.90	24.3	C			
<i>General Measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>																
24 Church Street at Vesey Street																
Church Street	NB	LTR	1.07	59.8	E	LT	1.20+	120.0+	F*	LTR	1.01	57.8	E	-	Apply General Measures.	
		-	-	-	-	R	1.20+	120.0+	F*	-	-	-	-	-	Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition.	
Vesey Street	EB	LT	1.05	68.9	E	LT	1.20+	120.0+	F*	LT	0.97	60.3	E	-	Move the Bus Layover Zone along the west of Church Street between Vesey Street and Fulton Street to the farside block to gain an additional NB lane.	
Overall Intersection	-		1.06	62.8	E	-	1.20+	120.0+	F*	-	0.81	58.7	E			
25 Church Street at Fulton Street																
Church Street	NB	T	0.84	15.3	B	LT	0.88	22.5	C	LT	0.95	37.7	D	-	Apply General Measures.	
Fulton Street	WB	R	0.79	45.9	D	TR	1.20+	120.0+	F*	TR	0.65	42.9	D	-	Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.	
Overall Intersection	-		0.83	19.2	B	-	1.06	59.0	E	-	0.72	38.7	D			

TABLE E.2-41
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)					Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures
	Mvt.	V/C	Control Delay	LOS		Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.73	11.8	B	T	0.68	10.7	B	T	0.81	25.8	C	- Apply General Measures.
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.86	58.5	E	
Overall Intersection	-	0.99	71.5	E	-	1.02	73.7	E	-	0.68	32.9	C		
31 Broadway at Worth Street														
Broadway	SB	LTR	0.65	14.0	B	LTR	0.79	69.6	E	LTR	0.67	43.4	D	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.
Worth Street	EB	TR	0.46	19.6	B	TR	1.02	120.0+	F*	TR	0.83	44.1	D	
	WB	L	0.17	16.2	B	LT	0.83	55.7	E	L	0.29	13.3	B	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
	T	0.56	21.3	C	-	-	-	-	T	0.58	23.1	C	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.	
Overall Intersection	-	0.61	16.8	B	-	0.89	88.6	F	-	0.75	38.6	D	- Modify signal timing (shift 7.5 s of green time from SB phase to EB/WB phase).	
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.71	26.2	C	L	0.85	30.1	C	L	0.50	18.8	B	- Prohibit parking along the north side of EB Vesey Street.
	LT	0.64	20.5	C	LT	0.49	14.0	B	T	0.74	24.2	C	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).	
Vesey Street	EB	L	0.93	67.4	E	L	1.20+	120.0+	F*	L	0.85	61.5	E	
	LTR	1.06	85.0	F	LTR	1.20+	120.0+	F*	LTR	1.01	79.1	E		
Overall Intersection	-	0.59	45.1	D	-	0.63	97.9	F	-	0.53	39.8	D	- Modify signal timing (shift 5 s of green time from SB phase to EB phase).	

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-42
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	0.93	26.2	C	TR	1.01	47.4	D	TR	0.91	21.9	C	- Modify signal timing (increase cycle length from 120 s to 135 s).	
	SB	L	0.68	19.7	B	L	0.61	10.0	B	L	0.71	18.5	B		
		TR	0.72	17.3	B	TR	0.93	27.5	C	TR	0.85	18.6	B		
Chambers Street	EB	LTR	0.31	37.2	D	LTR	0.29	37.9	D	LTR	0.25	39.0	D		
	WB	LT	0.77	55.9	E	LT	0.70	52.0	D	LT	0.65	51.2	D		
		R	0.81	44.4	D	R	0.49	27.7	C	R	0.55	36.7	D		
Overall Intersection	-		0.98	25.2	C	-	0.92	36.6	D	-	0.84	22.2	C		
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.89	83.7	F						- Meaningful TSM mitigation measures are not available.
		TR	0.73	12.6	B	TR	0.97	56.9	E						
	SB	L	0.21	4.9	A	L	1.20+	120.0+	F*						
		TR	0.54	3.3	A	TR	1.04	68.1	E						
Vesey Street	EB	LTR	0.75	49.5	D	L	0.48	37.4	D						
		-	-	-	-	TR	1.20+	120.0+	F*						
	WB	L	0.81	55.3	E	L	1.05	120.0+	F*						
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*						
Overall Intersection	-		1.20+	26.6	C	-	1.12	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.89	30.5	C					- Mitigation not required.	
Fulton Street	WB	-	-	-	-	R	0.51	28.2	C						
Overall Intersection	-		-	-	-	-	0.71	30.2	C						
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	0.99	120.0+	F*	T	0.88	51.9	D	NB	T	0.82	32.3	C	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane. - Modify signal timing (shift 5 s of green time from the EB/WB phase to the NB/SB phase).
	SB	TR	0.95	80.7	F	TR	1.02	120.0+	F*	SB	TR	0.96	80.3	F	
Albany Street	EB	LTR	1.08	109.8	F	LR	0.47	38.6	D	EB	L	0.17	35.3	D	
	WB	-	-	-	-	L	0.28	33.0	C		R	0.36	38.8	D	
		-	-	-	-	TR	0.42	36.4	D	WB	L	0.33	37.7	D	
											TR	0.48	42.3	D	
Overall Intersection	-		1.02	110.7	F	-	0.84	77.7	E	-	0.82	51.9	D		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.13	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
		R	1.01	71.0	E	R	1.11	101.1	F						
	SB	T	1.12	120.0+	F*	TR	1.17	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.21	22.1	C						
	WB	L	0.85	120.0+	F*	L	1.03	120.0+	F*						
		R	1.04	120.0+	F*	R	1.14	120.0+	F*						
Overall Intersection	-		1.09	120.0+	F*	-	1.20+	120.0+	F*						
GREENWICH STREET CORRIDOR															
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.16	19.8	B	R	0.08	18.5	B	NB	R	0.10	22.3		C
	SB	LT	0.40	23.2	C	LT	1.20+	120.0+	F*	SB	L	0.48	30.7	C	
Rector Street	EB	TR	0.37	12.8	B	TR	0.91	62.2	E		T	0.56	29.8	C	
										EB	TR	0.82	43.0	D	
Overall Intersection	-		0.38	17.5	B	-	1.20+	120.0+	F*	-	0.73	33.6	C		

TABLE E.2-42
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)					Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control			LOS
			Delay	LOS				Delay	LOS			Delay	LOS		
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.83	40.6	D	LTR	0.65	34.1	C	LTR	0.54	33.6	C	- Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane. - Modify signal timing (add 5 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).	
		R	0.68	39.9	D	R	0.59	37.1	D	R	0.68	44.5	D		
Canal Street	EB	L	1.02	77.7	E	L	1.19	117.3	F	L	1.02	57.6	E		
		T	0.98	52.7	D	LT	0.95	45.2	D	LT	1.00	53.8	D		
	WB	T	0.93	59.4	E	T	1.14	117.4	F	T	0.98	59.1	E		
		R	1.14	97.9	F	R	1.19	120.0+	F*	R	1.12	93.9	F		
Overall Intersection	-		1.06	63.7	E	-	1.05	85.1	F	-	1.02	57.1	E		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.16	22.6	C	L	0.34	25.3	C	L	0.46	34.5	C	- Modify signal timing (shift 8 s of green time from the SB phase to the EB/WB phase).	
		T	1.07	95.0	F	T	0.56	27.6	C	T	0.78	40.5	D		
		R	0.16	22.7	C	R	0.37	26.2	C	R	0.51	36.6	D		
Canal Street	EB	TR	0.46	10.9	B	TR	0.32	8.9	A	TR	0.28	5.4	A		
	WB	LT	1.05	72.0	E	LT	1.20+	120.0+	F*	LT	1.08	66.8	E		
Overall Intersection	-		0.67	68.1	E	-	1.00	66.9	E	-	1.00	42.7	D		
WEST BROADWAY CORRIDOR															
13 West Broadway/Greenwich Street at Vesey Street															
Greenwich Street	SB	-	-	-	-	L	0.49	39.7	D	-	-	-	-	- Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway). - SB Greenwich Street is STOP sign controlled. - Provide revised signal timing and phasing plan.	
		-	-	-	-	R	0.31	37.9	D	-	-	-	-		
West Broadway	SB	L	0.55	20.4	C	L	0.22	11.0	B	L	0.36	16.3	B		
		R	0.81	31.9	C	TR	0.36	2.9	A	TR	0.43	7.6	A		
Vesey Street	EB	T	0.31	15.4	B	LR	1.20+	120.0+	F*	TR	0.74	22.5	C		
	WB	T	0.20	14.3	B	LT	0.51	34.8	C	LT	0.18	14.2	B		
Overall Intersection	-		0.56	20.2	C	-	0.70	120.0+	F*	-	0.59	16.6	B		
CHURCH STREET CORRIDOR															
21 Church Street at Worth Street															
Church Street	NB	LTR	0.98	27.9	C	LTR	1.20+	120.0+	F*	NB	LT	0.83	17.5	B	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane. - Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.
Worth Street	EB	LT	0.51	26.3	C	LT	0.82	42.3	D	R	0.31	12.1	B		
	WB	TR	0.62	28.4	C	TR	0.87	49.7	D	EB	LT	0.82	42.3	D	
										WB	T	0.51	27.7	C	
											R	0.28	22.3	C	
Overall Intersection	-		0.84	27.8	C	-	1.13	120.0+	F*	-	0.82	21.7	C		
<i>General Measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>															
24 Church Street at Vesey Street															
Church Street	NB	LT	1.21	120.0+	F*	LT	1.02	49.0	D	LTR	0.80	31.0	C	- Apply General Measures. - Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition. - Move the Bus Layover Zone along the west of Church Street between Vesey Street and Fulton Street to the far side block to gain an additional NB lane.	
		R	0.61	14.7	B	R	1.20+	120.0+	F*	-	-	-	-		
Vesey Street	EB	LT	0.61	25.9	C	LT	1.15	115.2	F	LT	0.68	36.2	D		
Overall Intersection	-		0.97	83.1	F	-	1.20+	120.0+	F*	-	0.60	32.6	C		
25 Church Street at Fulton Street															
Church Street	NB	T	0.70	11.0	B	LT	0.87	22.1	C	LT	0.88	30.7	C		- Apply General Measures. - Prohibit parking along the north and south sides of WB Fulton Street during the MD peak period. - Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.
Fulton Street	WB	R	0.59	41.3	D	TR	0.95	71.4	E	TR	0.36	36.5	D		
Overall Intersection	-		0.67	12.9	B	-	0.90	28.7	C	-	0.60	31.5	C		

TABLE E.2-42
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.57	9.3	A	T	0.48	8.3	A	T	0.72	32.9	C	- Apply General Measures.
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.10	102.6	F	
Overall Intersection	-	-	0.85	62.0	E	-	1.20+	120.0+	F*	-	0.76	60.7	E	
31 Broadway at Worth Street														
Broadway	SB	LTR	0.78	17.2	B	LTR	0.57	62.4	E	LTR	0.47	43.9	D	- Partially Mitigated.
Worth Street	EB	TR	0.79	30.5	C	TR	0.95	120.0+	F*	TR	0.79	58.5	E	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.
	WB	L	0.77	43.7	D	LT	1.01	120.0+	F*	L	0.43	21.3	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
		T	0.46	19.5	B	-	-	-	-	T	0.33	20.3	C	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.
Overall Intersection	-	-	0.78	22.9	C	-	0.76	120.0+	F*	-	0.63	43.4	D	- Modify signal timing (shift 6 s of green time from SB phase to EB/WB phase).
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.75	28.5	C	L	0.60	18.4	B	L	0.43	23.8	C	- Prohibit parking along the north side of EB Vesey Street.
		LT	0.57	19.3	B	LT	0.43	13.8	B	T	0.87	37.8	D	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).
Vesey Street	EB	L	0.58	37.7	D	L	1.20+	120.0+	F*	L	0.61	36.0	D	
		LTR	0.80	42.3	D	LTR	1.20+	120.0+	F*	LTR	0.73	36.4	D	
Overall Intersection	-	-	0.55	28.4	C	-	0.51	107.4	F	-	0.51	34.4	C	- Modify signal timing (shift 12 s of green time from SB phase to EB phase).

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-43
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.13	99.5	F	TR	1.05	60.6	E					- Mitigation not required.	
	SB	L	0.38	12.6	B	L	0.61	9.0	A						
		TR	1.05	69.0	E	TR	1.08	70.9	E						
Chambers Street	EB	LTR	0.61	43.5	D	LTR	0.34	39.7	D						
	WB	LT	1.08	111.0	F	LT	0.99	95.2	F						
		R	0.67	26.2	C	R	0.72	35.3	D						
Overall Intersection	-		1.06	77.1	E	-	1.02	62.1	E						
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.95	96.5	F					- Meaningful TSM mitigation measures are not available.	
	TR	0.81	14.1	B	TR	1.09	89.5	F							
	SB	L	0.15	5.3	A	L	1.18	120.0+	F*						
	TR	0.67	4.1	A	TR	1.20+	120.0+	F*							
Vesey Street	EB	LTR	1.02	86.8	F	L	0.43	35.1	D						
		-	-	-	-	TR	1.20+	120.0+	F*						
	WB	L	0.93	75.5	E	L	1.20+	120.0+	F*						
	LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*							
Overall Intersection	-		1.20+	39.2	D	-	1.20+	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.92	32.7	C					- Mitigation not required.	
Fulton Street	WB	-	-	-	-	R	0.57	32.0	C						
Overall Intersection	-		-	-	-	-	0.76	32.6	C						
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	0.99	120.0+	F*	T	0.85	37.4	D	NB	T	0.80	24.5	C	- Prohibit parking on the south side of EB Albany Street to provide one 10 ft. exclusive left-turn lane and one 10 ft. exclusive right-turn lane.
	SB	TR	1.03	98.9	F	TR	1.11	120.0+	F*	SB	TR	1.04	98.8	F	
Albany Street	EB	LTR	1.19	120.0+	F*	LR	0.82	60.3	E	EB	L	0.14	34.7	C	- Modify signal timing (shift 5 s of green time from the EB/WB phase to the NB/SB phase).
	WB	-	-	-	-	L	0.40	35.8	D		R	0.75	57.9	E	
		-	-	-	-	TR	0.34	34.4	C	WB	L	0.49	42.0	D	
											TR	0.39	39.4	D	
Overall Intersection	-		1.09	117.7	F	-	1.01	82.1	F	-	0.96	61.3	E		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.12	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	R	1.09	119.1	F	R	1.11	120.0+	F*							
	SB	T	1.09	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B						
	WB	L	0.94	120.0+	F*	L	1.07	120.0+	F*						
	R	0.89	120.0+	F*	R	1.10	120.0+	F*							
Overall Intersection	-		1.01	120.0+	F*	-	1.18	120.0+	F*						
GREENWICH STREET CORRIDOR															
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.00	17.4	B	R	0.09	18.6	B	NB	R	0.09	18.6	B	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
	SB	LT	0.38	22.7	C	LT	0.78	37.9	D	SB	L	0.43	24.5	C	
Rector Street	EB	TR	0.38	12.8	B	TR	0.38	12.9	B		T	0.28	20.6	C	- [Measures reflect geometric improvements needed for the MD peak period, otherwise mitigation not needed.]
										EB	TR	0.38	12.9	B	
Overall Intersection	-		0.38	16.8	B	-	0.54	26.5	C	-	0.40	18.3	B		

TABLE E.2-43
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)					Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control			Mvt.	V/C	Control			Mvt.	V/C	Control			
			Delay	LOS				Delay	LOS				Delay		LOS	
CANAL STREET CORRIDOR																
16 Canal Street at Hudson Street																
Hudson Street	NB	LTR	0.39	28.7	C	LTR	0.91	46.9	D	LTR	0.75	38.0	D	-	Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane.	
		R	1.00	120.0+	F*	R	0.78	46.1	D	R	0.90	64.7	E			
Canal Street	EB	L	0.33	25.1	C	L	0.86	46.3	D	L	0.73	32.4	C	-	Modify signal timing (add 4 s to green time of EB/WB phase and 5 s to green time of EB/WB lead phase).	
		T	0.95	45.3	D	T	0.90	36.8	D	T	0.85	26.4	C			
	WB	T	0.23	23.4	C	T	0.52	28.8	C	T	0.46	24.4	C			
		R	1.19	114.2	F	R	1.20+	120.0+	F*	R	1.19	111.9	F			
Overall Intersection	-		1.14	83.4	F	-	1.17	69.9	E	-	1.12	56.5	E			
17 Canal Street at Varick Street																
Varick Street	SB	L	0.42	26.6	C	L	0.73	44.5	D	L	0.73	44.5	D	-	Modify signal timing (shift 3 s of green time from the EB lead phase to the EB/WB phase).	
		T	1.09	113.6	F	T	0.48	26.2	C	T	0.48	26.2	C			
		R	0.20	23.6	C	R	0.11	22.0	C	R	0.11	22.0	C			
Canal Street	EB	TR	0.44	10.7	B	TR	0.31	9.0	A	TR	0.31	9.0	A			
	WB	LT	1.11	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.11	120.0+	F*			
Overall Intersection	-		0.66	101.3	F	-	0.45	107.4	F	-	0.45	80.0	F			
WEST BROADWAY CORRIDOR																
13 West Broadway/Greenwich Street at Vesey Street																
Greenwich Street	SB	-	-	-	-	L	0.51	40.3	D	-	-	-	-	-	Prohibit SB Greenwich Street left turn movement (Reroute SB Greenwich Street left turn volume to SB West Broadway).	
		-	-	-	-	R	0.43	41.3	D	-	-	-	-	-		
West Broadway	SB	L	1.20	120.0+	F*	L	0.49	14.1	B	L	0.69	22.4	C	-	SB Greenwich Street is STOP sign controlled.	
		R	0.94	47.2	D	TR	0.40	3.1	A	TR	0.47	7.9	A	-	Provide revised signal timing and phasing plan.	
Vesey Street	EB	T	0.32	15.5	B	LR	1.20+	120.0+	F*	TR	0.74	22.6	C			
	WB	T	0.22	14.5	B	LT	0.57	35.9	D	LT	0.21	14.4	B			
Overall Intersection	-		0.76	57.4	E	-	0.78	120.0+	F*	-	0.72	18.2	B			
CHURCH STREET CORRIDOR																
21 Church Street at Worth Street																
Church Street	NB	LTR	0.84	14.3	B	LTR	1.20+	120.0+	F*	NB	LT	0.83	18.0	B	Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.	
Worth Street	EB	LT	0.73	35.8	D	LT	0.59	30.9	C	R	0.32	12.2	B			
	WB	TR	0.66	29.5	C	TR	0.85	41.8	D	EB	LT	0.59	30.9	C	Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.	
										WB	T	0.56	27.4	C		
										R	0.31	22.7	C			
Overall Intersection	-		0.80	19.0	B	-	1.14	120.0+	F*	-	0.74	20.1	C			
<i>General Measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>																
24 Church Street at Vesey Street																
Church Street	NB	LT	1.20+	120.0+	F*	LT	1.17	106.2	F	LTR	1.01	63.3	E	-	Apply General Measures.	
		R	0.70	17.7	B	R	1.20+	120.0+	F*	-	-	-	-	-	Restripe the EB Vesey Street approach from one shared through-left lane to one through lane and one shared through-left lane to match Pre-9/11 condition.	
Vesey Street	EB	LT	0.87	36.1	D	LT	1.20+	120.0+	F*	LT	0.80	35.3	D	-	Move the Bus Layover Zone along the west of Church Street between Vesey Street and Fulton Street to the farside block to gain an additional NB lane.	
Overall Intersection	-		1.09	89.2	F	-	1.20+	120.0+	F*	-	0.72	52.6	D			
25 Church Street at Fulton Street																
Church Street	NB	T	0.70	11.1	B	LT	0.76	17.4	B	LT	0.81	26.8	C	-	Apply General Measures.	
Fulton Street	WB	R	0.59	35.1	D	TR	1.20+	120.0+	F*	TR	0.67	43.5	D	-	Restripe WB Fulton Street approach from one shared through-right lane to one 12 ft. wide through lane and one 12 ft. wide shared through-right lane.	
Overall Intersection	-		0.67	13.8	B	-	1.01	66.0	E	-	0.65	30.7	C			

TABLE E.2-43
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)					Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control			LOS
			Delay	LOS				Delay	LOS			Delay	LOS		
27 Church Street at Cortlandt Street															
Church Street	NB	T	0.55	9.0	A	T	0.52	8.6	A	T	0.62	20.3	C	- Apply General Measures.	
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.95	72.1	E		
Overall Intersection	-	-	0.86	70.7	E	-	0.99	105.5	F	-	0.61	34.3	C		
31 Broadway at Worth Street															
Broadway	SB	LTR	0.74	15.8	B	LTR	0.78	68.9	E	LTR	0.56	26.3	C	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.	
Worth Street	EB	TR	0.64	23.9	C	TR	0.83	35.9	D	TR	0.80	33.4	C		
	WB	L	0.34	20.0	C	LT	0.86	38.7	D	L	0.33	19.9	B	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.	
		T	0.56	21.5	C	-	-	-	-	T	0.57	21.6	C	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.	
Overall Intersection	-	-	0.70	18.9	B	-	0.82	55.5	E	-	0.67	26.6	C		
33 Broadway at Vesey Street / Ann Street															
Broadway	SB	L	0.89	37.9	D	L	0.95	43.9	D	L	0.61	23.3	C	- Prohibit parking along the north side of EB Vesey Street.	
		LT	0.57	19.2	B	LT	0.40	13.5	B	T	0.72	26.2	C	- Reconfigure Broadway SB approach as two exclusive through lanes and two exclusive left-turn lanes (provide markings indicating that the east most left turn lane is for turns onto Park Row only).	
Vesey Street	EB	L	1.04	93.6	F	L	1.20+	120.0+	F*	L	0.88	59.9	E		
		LTR	0.79	40.7	D	LTR	1.20+	120.0+	F*	LTR	0.75	40.5	D	- Modify signal timing (shift 8 s of green time from SB phase to EB phase).	
Overall Intersection	-	-	0.66	38.1	D	-	0.72	106.7	F	-	0.50	33.3	C		

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-44
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.09	81.4	F	TR	1.20+	120.0+	F*	TR	1.17	112.4	F	- Partially mitigated - Modify signal timing and phasing plan (increase cycle length from 120 s to 135 s).
	SB	L	0.85	23.7	C	L	0.84	30.8	C	L	0.87	36.7	D	
Chambers Street		TR	1.03	59.8	E	TR	1.09	76.3	E	TR	0.85	10.2	B	
	EB	LTR	0.84	79.6	E	LTR	0.49	42.3	D	LTR	0.44	42.4	D	
	WB	LT	0.91	72.2	E	LT	0.99	91.7	F	LT	0.89	71.1	E	
		R	0.69	29.8	C	R	0.45	26.3	C	R	0.49	33.2	C	
Overall Intersection	-		1.04	65.8	E	-	1.18	105.1	F	-	1.17	62.2	E	
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	1.04	93.3	F					- Meaningful TSM mitigation measures are not available.
	TR		1.01	39.8	D	TR	1.20+	120.0+	F*					
	SB	L	0.14	8.4	A	L	1.20+	120.0+	F*					
	TR		0.65	4.0	A	TR	1.20+	120.0+	F*					
Vesey Street	EB	LTR	1.06	98.2	F	L	0.48	37.7	D					
		-	-	-	-	TR	0.93	80.7	F					
	WB	L	1.15	120.0+	F*	L	0.95	81.2	F					
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*					
Overall Intersection	-		1.20+	42.6	D	-	1.20+	120.0+	F*					
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.35	12.5	B	T	0.36	13.6	B	- Modify signal timing (shift 2 s of green time from NB phase to WB phase).
Fulton Street	WB	-	-	-	-	R	0.76	47.8	D	R	0.71	42.7	D	
Overall Intersection	-		-	-	-	-	0.50	21.2	C	-	0.49	20.8	C	
43 West Street (NYS Rt. 9A) at Albany Street														
West Street (NYS Rt. 9A)	NB	TR	1.08	120.0+	F*	T	0.84	26.8	C	T	0.88	34.1	C	- Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane.
	SB	TR	0.98	92.9	F	TR	0.90	47.2	D	TR	0.90	47.2	D	
Albany Street	EB	LTR	1.17	120.0+	F*	LR	1.20+	120.0+	F*	LR	1.05	105.4	F	
	WB	-	-	-	-	L	0.39	35.5	D	L	0.39	35.5	D	
		-	-	-	-	TR	0.32	33.7	C	R	0.32	33.7	C	
Overall Intersection	-		1.11	120.0+	F*	-	1.13	51.0	D	-	0.95	42.4	D	
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.17	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	R		1.13	120.0+	F*	R	1.20	120.0+	F*					
	SB	T	1.16	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.63	26.6	C					
	WB	L	1.07	120.0+	F*	L	1.08	120.0+	F*					
		R	1.12	120.0+	F*	R	1.20+	120.0+	F*					
Overall Intersection	-		1.14	120.0+	F*	-	1.20+	120.0+	F*					

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-45
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	0.93	26.2	C	TR	1.08	70.5	E	TR	1.00	40.4	D	- Modify signal timing and phasing plan (increase cycle length from 120 s to 135 s).	
	SB	L	0.68	19.7	B	L	0.70	12.5	B	L	0.79	26.1	C		
		TR	0.72	17.3	B	TR	1.00	46.3	D	TR	0.79	9.3	A		
Chambers Street	EB	LTR	0.31	37.2	D	LTR	0.31	38.7	D	LTR	0.25	37.4	D		
	WB	LT	0.77	55.9	E	LT	0.85	66.6	E	LT	0.74	55.7	E		
		R	0.81	44.4	D	R	0.52	28.5	C	R	0.55	35.5	D		
Overall Intersection	-		0.98	25.2	C	-	1.00	55.1	E	-	0.92	27.3	C		
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.86	61.9	E						- Meaningful TSM mitigation measures are not available.
		TR	0.73	12.6	B	TR	1.20+	120.0+	F*						
	SB	L	0.21	4.9	A	L	1.20+	120.0+	F*						
		TR	0.54	3.3	A	TR	1.20+	120.0+	F*						
Vesey Street	EB	LTR	0.75	49.5	D	L	0.30	31.4	C						
		-	-	-	-	TR	1.12	120.0+	F*						
	WB	L	0.81	55.3	E	L	0.85	59.7	E						
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*						
Overall Intersection	-		1.20+	26.6	C	-	1.20+	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.25	16.4	B					- Mitigation not required.	
Fulton Street	WB	-	-	-	-	R	0.51	28.2	C						
Overall Intersection	-		-	-	-	-	0.37	20.3	C						
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	0.99	120.0+	F*	T	0.75	22.4	C	T	0.75	22.4	C	- Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane. [Measures reflect geometric improvements necessary for the AM peak period, otherwise mitigation not needed.]	
	SB	TR	0.95	80.7	F	TR	0.91	53.3	D	TR	0.91	53.3	D		
Albany Street	EB	LTR	1.08	109.8	F	LR	0.59	43.6	D	LR	0.51	39.3	D		
	WB	-	-	-	-	L	0.37	34.7	C	L	0.37	34.7	C		
		-	-	-	-	TR	0.56	40.7	D	R	0.56	40.7	D		
Overall Intersection	-		1.02	110.7	F	-	0.81	36.3	D	-	0.80	36.2	D		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.13	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
		R	1.01	71.0	E	R	1.15	114.5	F						
	SB	T	1.12	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.21	22.1	C						
	WB	L	0.85	120.0+	F*	L	1.03	120.0+	F*						
		R	1.04	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-		1.09	120.0+	F*	-	1.20+	120.0+	F*						

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-46
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs CURRENT 2015 BUILD CONDITION WITH ROUTE 9A SHORT BYPASS (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.13	99.5	F	TR	1.09	78.0	E	TR	1.08	73.2	E	- Modify signal timing and phasing plan (increase cycle length from 120 s to 135 s).	
	SB	L	0.38	12.6	B	L	0.64	9.7	A	L	0.66	12.0	B		
		TR	1.05	69.0	E	TR	1.12	86.8	F	TR	0.86	8.7	A		
Chambers Street	EB	LTR	0.61	43.5	D	LTR	0.36	40.7	D	LTR	0.32	42.2	D		
	WB	LT	1.08	111.0	F	LT	1.08	120.0+	F*	LT	1.03	109.6	F		
		R	0.67	26.2	C	R	0.75	36.7	D	R	0.76	41.0	D		
Overall Intersection	-		1.06	77.1	E	-	1.08	77.3	E	-	1.05	41.9	D		
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.98	82.9	F						- Meaningful TSM mitigation measures are not available.
		TR	0.81	14.1	B	TR	1.13	120.0+	F*						
	SB	L	0.15	5.3	A	L	1.20+	120.0+	F*						
		TR	0.67	4.1	A	TR	0.96	85.6	F						
Vesey Street	EB	LTR	1.02	86.8	F	L	0.28	36.0	D						
		-	-	-	-	TR	1.06	112.5	F						
	WB	L	0.93	75.5	E	L	1.20+	120.0+	F*						
		LTR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*						
Overall Intersection	-		1.20+	39.2	D	-	1.20+	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.24	16.3	B					- Mitigation not required.	
Fulton Street	WB	-	-	-	-	R	0.57	32.0	C						
Overall Intersection	-		-	-	-	-	0.39	22.5	C						
43 West Street (NYS Rt. 9A) at Albany Street															
West Street (NYS Rt. 9A)	NB	TR	0.99	120.0+	F*	T	0.71	18.0	B	T	0.71	18.0	B	- Restripe the shared through-right lane of WB Albany Street to a 13 ft. exclusive right-turn lane. [Measures reflect geometric improvements necessary for the AM peak period, otherwise mitigation not needed.]	
	SB	TR	1.03	98.9	F	TR	0.98	73.6	E	TR	0.98	73.6	E		
Albany Street	EB	LTR	1.19	120.0+	F*	LR	0.87	68.3	E	LR	0.81	59.0	E		
	WB	-	-	-	-	L	0.51	38.7	D	L	0.51	38.7	D		
		-	-	-	-	TR	0.50	38.4	D	R	0.50	38.4	D		
Overall Intersection	-		1.09	117.7	F	-	0.95	47.1	D	-	0.93	46.7	D		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.12	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
		R	1.09	119.1	F	R	1.12	120.0+	F*						
	SB	T	1.09	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B						
	WB	L	0.94	120.0+	F*	L	1.07	120.0+	F*						
		R	0.89	120.0+	F*	R	1.12	120.0+	F*						
Overall Intersection	-		1.01	120.0+	F*	-	1.20+	120.0+	F*						

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-47
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.75	3.0	A	T	0.74	3.0	A	T	0.89	11.3	B	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback. - Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North). - Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane. [Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]
	SB	T	0.59	1.9	A	T	0.65	2.2	A	T	0.66	2.4	A	
Canal Street	WB	L	0.32	45.6	D	L	0.28	45.1	D	L	0.13	39.1	D	
	LR		0.50	52.5	D	LR	0.45	50.0	D	-	-	-	-	
	R		0.57	55.9	E	R	0.52	53.1	D	R	0.70	46.9	D	
Overall Intersection	-	-	0.71	4.8	A	-	0.70	4.6	A	-	0.82	8.2	A	
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	1.02	48.1	D	TR	1.02	46.7	D	TR	0.96	21.9	C	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North. - Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	R		0.51	12.9	B	R	0.44	11.8	B	R	0.41	9.1	A	
	SB	L	0.98	61.7	E	L	0.99	100.1	F	L	0.90	55.7	E	
	T		1.03	40.8	D	T	1.17	96.0	F	T	0.78	1.7	A	
Overall Intersection	-	-	1.00	44.3	D	-	1.01	72.2	E	-	0.94	16.9	B	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.02	56.3	E	TR	1.08	73.6	E					- Meaningful TSM mitigation measures are not available.
	SB	L	0.68	50.5	D	L	1.02	100.1	F					
	TR		0.61	5.1	A	TR	0.63	4.2	A					
Chambers Street	EB	LTR	0.72	59.7	E	LTR	0.48	42.0	D					
	WB	LT	0.79	56.1	E	LT	0.83	62.5	E					
	R		0.60	25.9	C	R	0.49	27.2	C					
Overall Intersection	-	-	0.88	35.5	D	-	1.00	47.4	D					
3 West Street (NYS Rt. 9A) at Vesey Street⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.82	66.4	E					- Meaningful TSM mitigation measures are not available.
	TR		0.97	21.8	C	TR	1.17	120.0+	F*					
	SB	L	0.12	7.4	A	L	0.80	65.1	E					
	TR		0.58	3.6	A	TR	0.81	22.1	C					
Vesey Street	EB	LTR	1.05	96.3	F	LT	0.60	43.4	D					
	-	-	-	-	-	R	0.44	39.6	D					
	WB	L	1.14	120.0+	F*	-	-	-	-					
	LTR		0.96	80.8	F	-	-	-	-					
Overall Intersection	-	-	1.04	29.0	C	-	0.94	120.0+	F*					
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.97	28.0	C					- Meaningful TSM mitigation measures are not available.
	SB	-	-	-	-	T	0.72	14.5	B					
Fulton Street	WB	-	-	-	-	L	0.72	43.2	D					
	-	-	-	-	-	R	1.20+	120.0+	F*					
Overall Intersection	-	-	-	-	-	-	1.20+	46.9	D					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.96	93.1	F	L	0.57	55.6	E					- Mitigation not required.
	TR		1.04	54.3	D	TR	0.96	31.3	C					
	SB	L	1.20+	120.0+	F*	L	0.81	71.1	E					
	TR		0.74	16.4	B	TR	0.78	21.2	C					
Liberty Street	EB	DefL	1.15	120.0+	F*	L	0.76	52.3	D					
	TR		0.42	41.0	D	TR	0.23	33.2	C					
	WB	LTR	0.28	37.1	D	LTR	0.23	34.2	C					
Overall Intersection	-	-	1.09	54.4	D	-	0.87	31.2	C					

TABLE E.2-47
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
WASHINGTON STREET CORRIDOR															
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.11	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	R		1.06	111.1	F	R	1.19	120.0+	F*						
	SB	T	1.12	120.0+	F*	TR	1.17	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.62	26.3	C						
	WB	L	1.05	120.0+	F*	L	1.06	120.0+	F*						
	R		1.07	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-		1.09	120.0+	F*	-	1.20+	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street															
Vesey Street	EB	LT	0.50	10.7	B	NB	R	0.12	17.4	B					- Mitigation not required.
			-	-	-	EB	L	0.13	11.5	B					
			-	-	-		T	0.41	13.6	B					
	WB	TR	0.28	8.4	A	R	0.14	0.3	A						
Overall Intersection	-		0.31	9.7	A	-	0.28	12.1	B						
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.00	20.7	C	ANALYSIS NOT NEEDED. (FREE FLOW)								- Mitigation not required.	
Liberty Street	EB	T	0.38	9.5	A	-	-	-	-						
			0.25	9.5	A	-	-	-	-						
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.54	24.4	C	LTR	0.27	15.2	B					- Mitigation not required.	
Chambers Street	EB	TR	0.39	11.6	B	TR	0.51	18.3	B						
	WB	LT	0.67	17.3	B	LT	0.74	26.2	C						
Overall Intersection	-		0.62	17.6	B	-	0.51	20.3	C						
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.65	19.1	B	T	0.79	33.2	C	- Revise the current 90 s cycle to include a pedestrian-only phase.	
						R	1.00	64.6	E	R	0.69	25.4	C		
Fulton Street	WB	-	-	-	-	LT	0.43	23.7	C	LT	0.54	32.8	C		
Overall Intersection	-		-	-	-	-	0.78	36.7	D	-	0.55	30.3	C		
14 Greenwich Street at Liberty Street															
Greenwich Street	SB	-	-	-	-	LT	0.64	23.0	C					- Mitigation not required.	
Liberty Street	EB	TR	0.51	11.3	B	TR	0.37	16.4	B						
Overall Intersection	-		0.32	11.3	B	-	0.50	19.7	B						
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.11	19.1	B	R	0.02	17.6	B	NB	R	0.01	17.6	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.82	42.5	D	LT	0.71	32.8	C	SB	L	0.31	21.4	C	
Rector Street	EB	TR	0.17	10.5	B	TR	0.38	13.0	B	T	0.31	21.2	C	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.	
										EB	TR	0.38	13.0	B	
Overall Intersection	-		0.43	33.3	C	-	0.51	24.1	C	-	0.35	17.7	B	[Measures reflect geometric improvements needed for the MD peak period, otherwise mitigation not needed.]	

TABLE E.2-47
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CANAL STREET CORRIDOR														
16 Canal Street at Hudson Street														
Hudson Street	NB	LTR	0.94	50.6	D	LTR	0.85	42.2	D	LTR	0.64	33.8	C	- Restripe EB left-turn lane from 11 ft. to 12 ft. by reducing the median width.
		R	0.85	53.0	D	R	0.55	35.9	D	R	0.66	42.2	D	- Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain additional NB lane.
Canal Street	EB	L	0.97	64.2	E	L	1.10	88.8	F	L	1.03	63.7	E	
		T	0.99	51.7	D	LT	1.02	55.9	E	LT	0.98	45.3	D	- Modify signal timing (add 4 s to green time of EB/WB phase and 3 s to green time of EB/WB lead phase)
	WB	T	0.96	63.2	E	T	1.03	82.1	F	T	0.91	49.6	D	
		R	1.12	83.6	F	R	1.10	95.3	F	R	1.07	82.2	F	
Overall Intersection	-	1.07	62.9	E	-	1.04	66.6	E	-	0.97	51.1	D		
17 Canal Street at Varick Street														
Varick Street	SB	L	0.25	23.8	C	L	0.20	23.1	C					- Mitigation not required.
		T	0.94	46.1	D	T	0.65	29.4	C					
		R	0.16	22.7	C	R	0.11	22.0	C					
Canal Street	EB	TR	0.44	10.6	B	TR	0.44	10.3	B					
	WB	LT	1.03	94.6	F	LT	1.03	71.5	E					
Overall Intersection	-	0.61	59.9	E	-	0.51	37.8	D						
WEST BROADWAY CORRIDOR														
18 West Broadway at Worth Street														
West Broadway	SB	LTR	0.96	34.3	C	LTR	0.98	37.2	D	LTR	0.78	22.5	C	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of West Broadway during the AM peak period to gain additional SB through lane.
Worth Street	EB	TR	0.19	20.4	C	TR	0.22	21.0	C	TR	0.17	15.3	B	
	WB	LT	0.78	38.4	D	LT	1.01	81.1	F	LT	0.81	35.9	D	- Modify signal timing (shift 8 s of green time from SB phase to EB/WB phase).
Overall Intersection	-	0.89	34.4	C	-	0.99	44.2	D	-	0.79	24.5	C		
19 West Broadway at Chambers Street														
West Broadway	SB	L	0.35	17.0	B	L	0.38	17.4	B	L	0.40	19.0	B	- Modify signal timing (shift 2 s of green time from SB phase to EB/WB phase).
		TR	0.68	22.0	C	TR	0.62	20.5	C	TR	0.66	22.5	C	
Chambers Street	EB	L	0.46	24.1	C	L	0.41	22.4	C	L	0.38	19.7	B	
		TR	1.07	83.5	F	TR	1.08	87.3	F	TR	1.03	69.3	E	
	WB	LTR	1.04	71.4	E	LTR	1.11	97.7	F	LTR	1.01	62.5	E	
Overall Intersection	-	0.88	51.0	D	-	0.87	57.9	E	-	0.85	44.6	D		
20 West Broadway at Barclay Street														
West Broadway	SB	TR	0.54	11.6	B	TR	0.72	14.3	B					- Mitigation not required.
Barclay Street	WB	LT	0.88	38.4	D	LT	0.64	25.3	C					
Overall Intersection	-	0.69	22.0	C	-	0.68	17.1	B						
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	1.16	120.0+	F*	L	0.81	38.0	D					- Mitigation not required.
		R	0.75	28.3	C	LT	0.73	29.9	C					
Vesey Street	EB	T	0.36	15.9	B	TR	0.73	29.0	C					
	WB	T	0.15	13.9	B	-	-	-	-					
Overall Intersection	-	0.76	69.4	E	-	0.56	31.2	C						

TABLE E.2-47
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
CHURCH STREET CORRIDOR														
21 Church Street at Worth Street⁽¹⁾														
Church Street	NB	LTR	0.65	14.9	B	LTR	1.20+	120.0+	F*	LTR	0.98	31.7	C	- Prohibit parking along the west side of NB Church Street to provide one additional through lane.
Worth Street	EB	LT	0.84	48.7	D	LT	0.94	57.8	E	LT	0.86	42.8	D	
	WB	TR	0.76	34.7	C	TR	0.92	48.9	D	TR	0.84	37.2	D	- Modify signal timing (shift 3 s of green time from NB phase to EB/WB phase).
Overall Intersection	-		0.73	23.1	C	-	1.14	111.4	F	-	0.93	34.5	C	
22 Church Street at Chambers Street														
Church Street	NB	LTR	0.89	29.3	C	LTR	1.08	73.2	E	LTR	0.80	23.5	C	- Eliminate the truck loading/unloading zone along the west side of Church Street during the AM and PM peak periods to gain an additional NB through lane.
Chambers Street	EB	LT	1.04	111.2	F	LT	1.00	107.1	F	LT	1.00	107.1	F	
	WB	TR	1.05	99.8	F	TR	0.82	31.1	C	TR	0.82	31.1	C	
Overall Intersection	-		0.97	64.3	E	-	1.04	70.7	E	-	0.90	40.4	D	
23 Church Street at Barclay Street														
Church Street	NB	LT	1.09	84.6	F	LT	1.06	58.3	E					- Mitigation not required.
Barclay Street	WB	T	0.43	23.7	C	T	0.28	21.3	C					
	R		0.99	111.6	F	R	0.63	30.3	C					
Overall Intersection	-		1.05	82.4	F	-	0.89	52.6	D					
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>														
24 Church Street at Vesey Street														
Church Street	NB	LTR	0.99	30.3	C	T	1.10	76.9	E	TR	0.73	22.4	C	- Apply general measures.
	-	-	-	-	-	R	0.53	12.8	B	-	-	-	-	- Prohibit parking along the north side of Vesey Street through daylighting to gain an exclusive left-turn lane.
Vesey Street	EB	LT	1.01	58.8	E	LT	1.20+	120.0+	F*	L	0.75	48.3	D	- Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.
										LT	0.75	43.5	D	
Overall Intersection	-		1.00	40.0	D	-	1.20+	120.0+	F*	-	0.60	31.0	C	
25 Church Street at Fulton Street														
Church Street	NB	T	0.78	12.9	B	LT	0.83	14.7	B	LT	0.92	32.3	C	- Apply general measures.
Fulton Street	WB	R	0.78	45.7	D	TR	1.17	120.0+	F*	TR	0.71	43.1	D	- Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.
Overall Intersection	-		0.78	17.4	B	-	0.96	42.9	D	-	0.68	35.0	C	
26 Church Street at Dey Street														
Church Street	NB	T	0.82	7.6	A	T	0.65	4.9	A	T	0.86	26.8	C	- Apply general measures.
Dey Street	WB	R	0.27	29.5	C	R	0.24	28.5	C	R	0.14	32.2	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
Overall Intersection	-		0.66	8.3	A	-	0.54	5.8	A	-	0.48	27.0	C	
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.71	11.3	B	T	0.65	10.5	B	T	0.73	21.6	C	- Apply general measures.
Cortlandt Street	WB	R	1.10	105.2	F	R	0.76	41.1	D	R	0.32	34.4	C	- Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.
Overall Intersection	-		0.86	33.7	C	-	0.70	15.4	B	-	0.47	23.7	C	- [Measures reflect geometric improvements needed for MD and PM peak periods, otherwise not needed.]
28 Church Street at Liberty Street														
Church Street	NB	T	0.91	21.3	C	T	0.70	12.1	B	T	0.81	26.0	C	- Apply general measures.
Liberty Street	EB	LT	0.35	21.6	C	R	0.16	6.7	A	R	0.13	13.3	B	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
						LT	0.57	25.8	C	LT	0.49	37.1	D	
Overall Intersection	-		0.69	20.2	C	-	0.65	15.8	B	-	0.57	28.6	C	
29 Trinity Street at Rector Street														
Trinity Street	NB	TR	0.95	33.5	C	TR	0.48	12.9	B					- Mitigation not required.
Rector Street	EB	LT	0.45	24.3	C	LT	0.58	26.9	C					
Overall Intersection	-		0.75	31.9	C	-	0.52	18.0	B					

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INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.26	18.2	B	LTR	0.44	20.0	C					- Mitigation not required.
Canal Street	EB	TR	0.41	18.6	B	TR	0.47	19.5	B					
	WB	DefL	0.86	42.3	D	DefL	0.71	30.8	C					
		T	0.44	10.0	B	T	0.36	9.1	A					
Overall Intersection	-		0.65	22.6	C	-	0.67	20.2	C					
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.60	13.0	B	LTR	0.74	48.0	D	LTR	0.62	33.6	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
Worth Street	EB	TR	0.45	19.4	B	TR	0.99	120.0+	F*	TR	0.84	43.3	D	
	WB	L	0.15	15.9	B	LT	0.76	40.7	D	LT	0.64	24.0	C	- Modify signal timing (shift 7 s of green time from SB phase to EB/WB phase).
		T	0.55	21.2	C	-	-	-	-	-	-	-	-	
Overall Intersection	-		0.58	16.4	B	-	0.85	69.0	E	-	0.73	34.1	C	
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.39	10.7	B	LTR	0.55	12.4	B					- Mitigation not required.
Chambers Street	EB	TR	1.06	85.9	F	TR	0.94	45.9	D					
	WB	L	0.14	15.6	B	L	0.52	26.0	C					
		LT	0.90	38.2	D	LT	0.71	25.0	C					
Overall Intersection	-		0.70	43.5	D	-	0.72	24.5	C					
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.70	25.9	C	L	0.84	28.8	C	L	0.64	23.8	C	- Prohibit parking along the north side of EB Vesey Street.
		LT	0.61	19.9	B	LT	0.45	14.0	B	LT	0.63	20.5	C	- Restripe EB Vesey Street to two 11ft. exclusive left-turn lanes and one 11ft. shared through-right lane.
Vesey Street	EB	L	0.91	63.6	E	L	1.20+	120.0+	F*	L	0.89	56.4	E	- Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only.
		LTR	0.97	60.9	E	LTR	1.20+	120.0+	F*	TR	0.81	58.8	E	- Modify signal timing (shift 5 s of green time from SB phase to EB phase).
Overall Intersection	-		0.57	37.4	D	-	0.61	72.1	E	-	0.46	32.8	C	
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.59	10.3	B	TR	0.48	9.5	A					- Mitigation not required.
Fulton Street	WB	LT	0.46	26.9	C	LT	0.64	31.6	C					
Overall Intersection	-		0.55	13.7	B	-	0.53	16.4	B					
35 Broadway at Dey Street														
Broadway	SB	LTR	0.98	35.4	D	LTR	0.61	11.8	B					- Mitigation not required.
Overall Intersection	-		0.64	35.4	D	-	0.40	11.8	B					
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.86	19.9	B	TR	0.56	11.0	B					- Mitigation not required.
Maiden Lane	WB	LT	1.01	77.9	E	LT	0.58	32.6	C					
Overall Intersection	-		0.91	35.5	D	-	0.57	16.3	B					
37 Broadway at Liberty Street														
Broadway	SB	LT	0.72	8.4	A	LT	0.65	13.1	B					- Mitigation not required.
Liberty Street	EB	TR	0.51	28.2	C	TR	0.32	25.5	C					
Overall Intersection	-		0.65	13.8	B	-	0.54	16.4	B					
38 Broadway at Rector Street														
Broadway	SB	T	0.52	10.0	A	T	0.41	8.0	A	T	0.45	10.8	B	- Modify signal timing (shift 5 s of green time from SB phase to EB phase).
Rector Street	EB	R	0.73	48.4	D	R	1.01	101.8	F	R	0.78	48.1	D	
Overall Intersection	-		0.59	15.1	B	-	0.58	37.4	D	-	0.56	22.5	C	
39 Broadway at Exchange Place														
Broadway	SB	LT	0.68	11.4	B	T	0.44	8.0	A					- Mitigation not required.
Overall Intersection	-		0.47	11.4	B	-	0.30	8.0	A					

TABLE E.2-47
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
WATER STREET CORRIDOR															
40 Water Street at Fulton Street⁽³⁾															
Water Street	NB	-	-	-	-	L	0.83	49.4	D	L	0.72	31.5	C	- Modify signal timing (shift 4 s of green time from EB phase to NB/SB phase).	
	LT	0.69	18.4	B	T	1.06	70.8	E	T	0.98	44.0	D			
	SB	TR	0.60	16.7	B	TR	0.59	16.5	B	TR	0.54	13.4	B		
Fulton Street	EB	LR	0.46	29.5	C	LR	0.45	29.3	C	LR	0.53	34.8	C		
Overall Intersection			0.54	18.5	B		0.75	43.6	D		0.75	29.8	C		
UNSIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)										
7 West Street (NYS Rt. 9A) at Barclay⁽⁴⁾	WB	R	0.55	38.1	E	R	0.60	38.2	E					- Mitigation not required.	
WASHINGTON STREET CORRIDOR															
10 Washington Street at Rector Street															
Washington Street	SB	-	-	-	-	LT	0.23	16.6	C					- Mitigation not required.	
Rector Street	EB	LTR	0.05	7.5	A	-	-	-	-						
GREENWICH STREET CORRIDOR															
12 Greenwich Street at Barclay Street															
Greenwich Street	SB	R	0.04	11.5	B	R	0.06	12.2	B					- Mitigation not required.	

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F⁸ indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-48
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.57	2.1	A	T	0.57	2.1	A	T	0.79	18.3	B	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback. - Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North). - Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane. [Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]
	SB	T	0.48	1.7	A	T	0.48	1.7	A	T	0.52	3.5	A	
Canal Street	WB	L	0.57	52.2	D	L	0.44	47.2	D	L	0.17	34.3	C	
	LR		0.40	46.0	D	LR	0.81	67.0	E	-	-	-	-	
	R		0.49	50.0	D	R	0.61	54.9	D	R	0.84	44.7	D	
Overall Intersection	-	-	0.57	5.2	A	-	0.62	7.2	A	-	0.81	13.6	B	
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	0.74	14.2	B	TR	0.74	14.3	B	TR	0.86	24.6	C	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North. - Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	R		0.51	13.0	B	R	0.44	11.8	B	R	0.50	19.1	B	
	SB	L	0.93	53.9	D	L	0.98	60.9	E	L	0.50	20.3	C	
	T		0.99	18.5	B	T	1.20+	120.0+	F*	T	0.58	0.7	A	
Overall Intersection	-	-	0.82	19.2	B	-	0.84	73.9	E	-	0.68	14.0	B	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	0.86	21.5	C	TR	0.89	23.9	C					- Mitigation not required.
	SB	L	0.81	69.9	E	L	0.79	63.4	E					
	TR		0.51	4.4	A	TR	0.60	4.0	A					
Chambers Street	EB	LTR	0.27	36.1	D	LTR	0.26	37.1	D					
	WB	LT	0.69	49.9	D	LT	0.66	49.2	D					
	R		0.72	36.6	D	R	0.50	27.4	C					
Overall Intersection	-	-	0.80	20.4	C	-	0.81	19.6	B					
3 West Street (NYS Rt. 9A) at Vesey Street ⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.57	53.9	D					- Meaningful TSM mitigation measures are not available.
	TR		0.69	12.0	B	TR	0.94	39.8	D					
	SB	L	0.19	4.5	A	L	1.12	120.0+	F*					
	TR		0.48	3.1	A	TR	0.72	19.9	B					
Vesey Street	EB	LTR	0.75	49.4	D	LT	0.24	34.5	C					
	-	-	-	-	-	R	0.81	66.0	E					
	WB	L	0.80	54.4	D	-	-	-	-					
	LTR		1.01	95.3	F	-	-	-	-					
Overall Intersection	-	-	0.91	17.6	B	-	0.93	41.5	D					
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.73	14.8	B	T	0.81	21.2	C	- Modify signal timing (shift 6 s of green time from NB/SB phase to WB phase).
	SB	-	-	-	-	T	0.68	13.7	B	T	0.74	19.4	B	
Fulton Street	WB	-	-	-	-	L	0.86	61.1	E	L	0.72	39.6	D	
	-	-	-	-	-	R	0.92	62.9	E	R	0.81	42.9	D	
Overall Intersection	-	-	-	-	-	-	0.81	20.3	C	-	0.81	23.0	C	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.43	53.3	D	L	0.50	52.7	D	L	0.47	51.1	D	- Modify signal timing (shift 1 s of green time from NB/SB phase to NB/SB left-turn phase; shift 2 s of green time from NB/SB phase to EB/WB phase).
	TR		0.75	16.5	B	TR	0.82	22.6	C	TR	0.87	26.9	C	
	SB	L	0.79	68.2	E	L	0.82	72.9	E	L	0.77	66.5	E	
	TR		0.63	14.3	B	TR	0.72	19.7	B	TR	0.76	23.0	C	
Liberty Street	EB	De/L	0.69	58.0	E	L	0.82	64.6	E	L	0.78	57.3	E	
	TR		0.43	42.5	D	TR	0.14	31.5	C	TR	0.13	30.0	C	
	WB	LTR	0.60	49.3	D	LTR	0.36	37.3	D	LTR	0.34	35.2	D	
Overall Intersection	-	-	0.74	22.2	C	-	0.82	27.1	C	-	0.82	29.6	C	

TABLE E.2-48
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Mvt.	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
		V/C	Delay	LOS	Control	V/C	Delay	LOS	Control	V/C	Delay	LOS			
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.08	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
		R	0.96	52.3	D	R	1.11	100.6	F						
	SB	T	1.08	107.2	F	TR	1.12	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.20	22.0	C						
	WB	L	0.84	120.0+	F*	L	1.01	120.0+	F*						
		R	1.01	120.0+	F*	R	1.10	120.0+	F*						
Overall Intersection	-		1.05	120.0+	F*	-	1.20+	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street															
Vesey Street	EB	LT	0.22	8.2	A	NB	R	0.19	18.3	B					- Mitigation not required.
		-	-	-	-	EB	L	0.21	13.2	B					
		-	-	-	-		T	0.47	14.3	B					
	WB	TR	0.28	8.6	A		R	0.14	0.5	A					
Overall Intersection	-		0.18	8.4	A	-		0.35	13.8	B					
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.06	21.4	C	ANALYSIS NOT NEEDED. (FREE FLOW)								- Mitigation not required.	
Liberty Street	EB	T	0.34	9.1	A	-	-	-	-						
Overall Intersection	-		0.24	9.6	A	-	-	-	-						
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.54	24.5	C	LTR	0.24	14.9	B					- Mitigation not required.	
Chambers Street	EB	TR	0.27	10.4	B	TR	0.37	16.3	B						
	WB	LT	0.54	14.4	B	LT	0.72	25.4	C						
Overall Intersection	-		0.54	17.1	B	-	0.48	19.5	B						
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.69	20.2	C	T	0.83	36.7	D	- Revise the current 90 s cycle to include a pedestrian-only phase.	
						R	1.01	68.3	E	R	0.71	25.9	C		
Fulton Street	WB	-	-	-	-	LT	0.45	24.2	C	LT	0.52	32.3	C		
Overall Intersection	-					-	0.80	38.3	D	-	0.57	31.6	C		
14 Greenwich Street at Liberty Street															
Greenwich Street	SB	-	-	-	-	LT	0.80	31.5	C					- Mitigation not required.	
Liberty Street	EB	TR	0.44	10.2	B	TR	0.32	15.8	B						
Overall Intersection	-		0.28	10.2	B	-	0.56	24.1	C						
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.16	19.8	B	R	0.08	18.5	B	NB	R	0.07	18.4	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.33	21.9	C	LT	1.20+	120.0+	F*	SB	L	0.34	22.8	C	
Rector Street	EB	TR	0.30	11.9	B	TR	0.80	44.1	D		T	0.76	40.3	D	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
										EB	TR	0.80	44.1	D	
Overall Intersection	-		0.31	16.6	B	-	1.10	120.0+	F*	-	0.78	36.6	D		

TABLE E.2-48
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CANAL STREET CORRIDOR														
16 Canal Street at Hudson Street														
Hudson Street	NB	LTR	0.82	39.8	D	LTR	0.64	34.0	C	LTR	0.51	32.3	C	- Partially mitigated.
		R	0.66	39.0	D	R	0.56	36.1	D	R	0.62	40.2	D	- Restripe EB left-turn lane from 11 ft. to 12 ft. by reducing the median width.
Canal Street	EB	L	0.97	64.1	E	L	1.09	80.9	F	L	1.00	52.2	D	- Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane.
		T	0.92	40.1	D	LT	0.90	34.9	C	T	0.85	26.8	C	
	WB	T	0.91	55.8	E	T	1.05	85.3	F	T	0.93	49.9	D	- Modify signal timing (add 4 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).
		R	1.09	77.5	E	R	1.12	97.3	F	R	1.07	77.8	E	
Overall Intersection	-		1.01	54.3	D	-	0.99	64.3	E	-	0.96	46.8	D	
17 Canal Street at Varick Street														
Varick Street	SB	L	0.16	22.5	C	L	0.33	25.2	C	L	0.40	30.4	C	- Modify signal timing (shift 5 s of green time from SB phase to EB/WB phase).
		T	1.06	88.1	F	T	0.56	27.5	C	T	0.68	34.0	C	
		R	0.16	22.7	C	R	0.37	26.1	C	R	0.44	31.8	C	
Canal Street	EB	TR	0.44	10.6	B	TR	0.30	8.8	A	TR	0.28	6.5	A	
	WB	LT	1.01	59.4	E	LT	1.14	94.6	F	LT	1.04	57.2	E	
Overall Intersection	-		0.65	61.0	E	-	0.94	50.0	D	-	0.94	36.8	D	
WEST BROADWAY CORRIDOR														
18 West Broadway at Worth Street														
West Broadway	SB	LTR	0.67	16.1	B	LTR	0.60	14.5	B					- Mitigation not required.
Worth Street	EB	TR	0.16	19.9	B	TR	0.15	19.9	B					
	WB	LT	0.59	28.9	C	LT	0.61	30.0	C					
Overall Intersection	-		0.64	18.7	B	-	0.60	17.8	B					
19 West Broadway at Chambers Street														
West Broadway	SB	L	0.37	17.3	B	L	0.31	16.5	B	L	0.33	17.9	B	- Modify signal timing (shift 2 s of green time from SB phase to EB/WB phase).
		TR	0.52	18.5	B	TR	0.46	17.5	B	TR	0.48	19.0	B	
Chambers Street	EB	LTR	1.14	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.17	120.0+	F*	
	WB	LTR	0.66	23.2	C	LTR	0.97	53.0	D	LTR	0.91	40.5	D	
Overall Intersection	-		0.83	60.4	E	-	0.85	66.1	E	-	0.84	54.3	D	
20 West Broadway at Barclay Street														
West Broadway	SB	TR	0.42	10.3	B	TR	0.67	13.5	B					- Mitigation not required.
Barclay Street	WB	LT	0.46	21.2	C	LT	0.34	19.4	B					
Overall Intersection	-		0.44	13.6	B	-	0.53	14.5	B					
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	0.60	21.8	C	L	0.60	28.9	C					- Mitigation not required.
		R	0.81	32.0	C	LT	0.56	26.1	C					
Vesey Street	EB	T	0.29	15.2	B	TR	0.89	36.9	D					
	WB	T	0.14	13.8	B	-	-	-	-					
Overall Intersection	-		0.55	21.0	C	-	0.55	32.0	C					

TABLE E.2-48
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
CHURCH STREET CORRIDOR														
21 Church Street at Worth Street ⁽¹⁾														
Church Street	NB	LTR	0.94	21.7	C	LTR	1.20+	120.0+	F*	LT	0.91	25.9	C	- Prohibit parking along the west side of NB Church Street to provide one additional through lane.
Worth Street	EB	LT	0.51	26.1	C	LT	0.80	41.0	D	LT	0.78	38.2	D	
	WB	TR	0.62	28.2	C	TR	0.84	45.9	D	TR	0.81	42.2	D	
Overall Intersection	-		0.82	22.9	C	-	1.07	120.0+	F*	-	0.87	29.9	C	
22 Church Street at Chambers Street														
Church Street	NB	LTR	1.01	48.9	D	LTR	1.05	62.0	E	LTR	1.00	46.1	D	- Modify signal timing (shift 2 s of green time from EB/WB phase to NB phase).
Chambers Street	EB	LT	1.01	109.3	F	LT	0.99	67.9	E	LT	1.11	107.8	F	
	WB	TR	0.79	28.8	C	TR	0.73	25.7	C	TR	0.77	28.8	C	
Overall Intersection	-		1.01	55.6	E	-	1.02	55.3	E	-	1.06	51.9	D	
23 Church Street at Barclay Street														
Church Street	NB	LT	0.80	19.4	B	LT	0.84	15.3	B					- Mitigation not required.
Barclay Street	WB	T	0.27	21.2	C	T	0.14	19.6	B					
	R		1.01	80.6	F	R	0.74	36.3	D					
Overall Intersection	-		0.89	30.9	C	-	0.80	18.9	B					
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>														
24 Church Street at Vesey Street														
Church Street	NB	LT	1.08	68.8	E	T	0.76	12.9	B	TR	0.64	23.4	C	- Apply general measures. - Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.
	R		0.55	12.7	B	R	0.87	31.8	C	-	-	-	-	
Vesey Street	EB	LT	0.61	25.9	C	LT	1.05	76.3	E	LT	0.83	44.5	D	
Overall Intersection	-		0.89	50.5	D	-	0.94	38.9	D	-	0.59	31.1	C	
25 Church Street at Fulton Street														
Church Street	NB	T	0.62	9.8	A	LT	0.86	16.5	B	LT	0.90	29.5	C	- Apply general measures. - Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.
Fulton Street	WB	R	0.58	40.7	D	TR	0.79	41.6	D	TR	0.41	36.1	D	
Overall Intersection	-		0.61	11.9	B	-	0.83	20.4	C	-	0.59	30.5	C	
26 Church Street at Dey Street														
Church Street	NB	T	0.68	10.9	B	T	0.63	4.7	A	T	0.83	25.2	C	- Apply general measures. - [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
Dey Street	WB	R	0.27	29.5	C	R	0.45	34.7	C	R	0.24	33.9	C	
Overall Intersection	-		0.56	11.6	B	-	0.58	6.5	A	-	0.51	25.7	C	
27 Church Street at Cortlandt Street														
Church Street	NB	T	0.55	9.1	A	T	0.48	8.4	A	T	0.53	17.6	B	- Apply general measures. - Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.
Cortlandt Street	WB	R	0.94	60.4	E	R	1.20+	120.0+	F*	R	0.74	44.9	D	
Overall Intersection	-		0.70	22.2	C	-	1.09	120.0+	F*	-	0.49	27.8	C	
28 Church Street at Liberty Street														
Church Street	NB	T	0.69	11.8	B	T	0.51	9.0	A	T	0.58	19.0	B	- Apply general measures. - [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
	R		0.21	7.2	A	R	0.22	7.4	A	R	0.18	13.9	B	
Liberty Street	EB	LT	0.33	21.3	C	LT	0.56	25.3	C	LT	0.53	37.9	D	
Overall Intersection	-		0.55	13.9	B	-	0.53	14.9	B	-	0.47	25.6	C	
29 Trinity Street at Rector Street														
Trinity Street	NB	TR	0.63	11.0	B	TR	0.55	14.0	B					- Mitigation not required.
Rector Street	EB	LT	0.35	22.4	C	LT	0.41	23.3	C					
Overall Intersection	-		0.52	13.4	B	-	0.49	16.6	B					

TABLE E.2-48
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)					Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control			LOS
			Delay	LOS				Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR															
30 Broadway at Canal Street															
Broadway	SB	LTR	0.50	21.2	C	LTR	0.57	22.4	C					- Mitigation not required.	
Canal Street	EB	TR	0.40	18.5	B	TR	0.42	18.8	B						
	WB	LT	0.66	12.6	B	LT	0.66	12.9	B						
Overall Intersection	-		0.64	17.0	B	-	0.67	18.0	B						
31 Broadway at Worth Street ⁽¹⁾															
Broadway	SB	LTR	0.74	16.0	B	LTR	0.54	49.0	D	LTR	0.47	40.9	D	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.	
Worth Street	EB	TR	0.77	29.6	C	TR	0.92	118.3	F	TR	0.76	44.6	D		
	WB	L	0.73	39.5	D	LT	0.86	96.6	F	LT	0.58	29.4	C	- Modify signal timing (shift 8 s of green time from SB phase to EB/WB phase).	
	T		0.46	19.4	B	-	-	-	-	-	-	-	-		
Overall Intersection	-		0.75	21.7	C	-	0.71	84.1	F	-	0.62	39.5	D		
32 Broadway at Chambers Street															
Broadway	SB	LTR	0.58	12.8	B	LTR	0.41	10.9	B					- Mitigation not required.	
Chambers Street	EB	TR	0.72	26.1	C	TR	0.64	23.0	C						
	WB	L	0.46	22.7	C	L	0.34	18.9	B						
	LT		0.63	22.0	C	LT	0.62	21.8	C						
Overall Intersection	-		0.65	18.1	B	-	0.51	17.0	B						
33 Broadway at Vesey Street / Ann Street															
Broadway	SB	L	0.74	27.9	C	L	0.59	18.1	B	L	0.76	39.9	D	- Prohibit parking along the north side of EB Vesey Street.	
	LT		0.54	18.9	B	LT	0.45	14.0	B	LT	0.76	32.5	C	- Restripe EB Vesey Street to two 11ft. exclusive left-turn lanes and one 11ft. shared through-right lane.	
Vesey Street	EB	L	0.56	36.8	D	L	1.20+	120.0+	F*	L	0.54	28.5	C	- Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only.	
	LTR		0.72	38.2	D	LTR	1.20+	120.0+	F*	TR	0.71	37.8	D	- Modify signal timing (shift 15 s of green time from SB phase to EB phase).	
Overall Intersection	-		0.51	27.0	C	-	0.49	93.4	F	-	0.58	33.6	C		
34 Broadway at Fulton Street ⁽²⁾															
Broadway	SB	TR	0.51	9.8	A	TR	0.54	10.2	B					- Mitigation not required.	
Fulton Street	WB	LT	CLOSED			LT	0.00	22.1	C						
Overall Intersection	-		0.33	9.8	A	-	0.36	10.2	B						
35 Broadway at Dey Street															
Broadway	SB	LTR	0.71	14.0	B	LTR	0.58	11.3	B					- Mitigation not required.	
Overall Intersection	-		0.47	14.0	B	-	0.38	11.3	B						
36 Broadway at Maiden Lane / Cortlandt Street															
Broadway	SB	TR	0.66	12.7	B	TR	0.63	12.4	B					- Mitigation not required.	
Maiden Lane	WB	LT	1.15	120.0+	F*	LT	0.91	54.4	D						
Overall Intersection	-		0.82	48.8	D	-	0.72	27.1	C						
37 Broadway at Liberty Street															
Broadway	SB	LT	0.69	13.8	B	LT	0.58	11.7	B					- Mitigation not required.	
Liberty Street	EB	TR	0.65	37.5	D	TR	0.41	26.7	C						
Overall Intersection	-		0.68	19.7	B	-	0.52	16.5	B						
38 Broadway at Rector Street															
Broadway	SB	T	0.47	9.5	A	T	0.62	11.1	B	T	0.66	14.3	B	- Modify signal timing (shift 4 s of green time from SB phase to EB phase).	
Rector Street	EB	R	0.81	57.2	E	R	1.00	98.8	F	R	0.83	55.8	E		
Overall Intersection	-		0.58	16.5	B	-	0.73	30.9	C	-	0.72	23.6	C		
39 Broadway at Exchange Place															
Broadway	SB	LT	0.57	9.3	A	T	0.48	8.3	A					- Mitigation not required.	
Overall Intersection	-		0.39	9.3	A	-	0.33	8.3	A						

TABLE E.2-48
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street ⁽³⁾														
Water Street	NB	LT	0.49	14.8	B	L	0.49	20.7	C					- Mitigation not required.
			-	-	-	T	0.85	28.4	C					
			0.30	12.7	B	TR	0.51	15.4	B					
Fulton Street	SB	TR	0.30	12.7	B	TR	0.51	15.4	B					
	EB	LR	0.35	27.2	C	LR	0.48	30.1	C					
Overall Intersection			0.40	15.3	B		0.63	23.0	C					
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)													
7 West Street (NYS Rt. 9A) at Barclay ⁽⁴⁾	WB	R	0.60	31.0	D	R	0.55	27.1	D					- Mitigation not required.
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.13	13.1	B					- Mitigation not required.
Rector Street	EB	LTR	0.03	7.4	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.19	12.5	B	R	0.30	14.9	B					- Mitigation not required.

Eng-Wong, Taub & Associates Notes:

- (1): AM/MID/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-49
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Mvt.	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures
		V/C	Control		LOS	V/C	Control		LOS	V/C	Control		LOS	
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.92	7.5	A	T	0.75	3.4	A	T	0.90	15.4	B	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback. - Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North). - Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane. [Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]
	SB	T	0.65	2.4	A	T	0.74	3.1	A	T	0.75	3.2	A	
Canal Street	WB	L	0.16	38.5	D	L	0.23	40.5	D	L	0.11	36.5	D	
	LR		0.19	39.7	D	LR	0.36	43.2	D	-	-	-	-	
	R		0.22	40.0	D	R	0.41	45.3	D	R	0.61	38.7	D	
Overall Intersection	-	-	0.76	5.9	A	-	0.67	4.8	A	-	0.79	9.9	A	
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	1.04	105.1	F	TR	0.96	25.5	C	TR	0.96	25.5	C	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North. - Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	R		0.26	9.5	A	R	0.26	9.5	A	R	0.26	9.5	A	
	SB	L	0.79	40.0	D	L	1.00	70.3	E	L	0.62	30.2	C	
	T		1.03	78.2	E	T	1.12	75.7	E	TR	0.85	2.6	A	
Overall Intersection	-	-	0.93	87.7	F	-	0.98	52.9	D	-	0.85	14.6	B	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.05	67.4	E	TR	0.94	28.1	C					- Mitigation not required.
	SB	L	0.74	57.1	E	L	0.71	58.2	E					
	TR		0.69	9.9	A	TR	0.75	5.4	A					
Chambers Street	EB	LTR	0.60	43.0	D	LTR	0.33	39.5	D					
	WB	LT	1.02	94.1	F	LT	0.96	88.9	F					
	R		0.66	25.8	C	R	0.78	38.7	D					
Overall Intersection	-	-	0.98	42.1	D	-	0.91	23.1	C	-	-	-	-	
3 West Street (NYS Rt. 9A) at Vesey Street ⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.62	55.5	E	L	0.59	53.4	D	- Partially mitigated. - Modify signal timing (shift 1 s of green time from EB phase to NB/SB phase; shift 1 s of green time from EB phase to NB/SB left-turn phase).
	TR		0.77	13.2	B	TR	0.99	50.3	D	TR	0.98	38.2	D	
	SB	L	0.15	4.9	A	L	0.87	72.0	E	L	0.82	65.5	E	
	TR		0.64	3.9	A	TR	0.96	42.7	D	TR	0.94	36.9	D	
Vesey Street	EB	LTR	1.01	84.7	F	LT	0.55	41.5	D	LT	0.59	44.3	D	
	-	-	-	-	-	R	0.47	40.5	D	R	0.50	43.1	D	
	WB	L	0.91	71.8	E	-	-	-	-	-	-	-	-	
	LTR		1.20+	120.0+	F*	-	-	-	-	-	-	-	-	
Overall Intersection	-	-	1.01	28.8	C	-	0.84	48.0	D	-	0.84	40.1	D	
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.79	15.9	B	T	0.86	23.2	C	- Modify signal timing (shift 6 s of green time from the NB/SB phase to the WB phase). - Prohibit parking along the north side of WB Fulton Street through daylighting for the PM peak period.
	SB	-	-	-	-	T	0.90	20.2	C	T	0.98	35.6	D	
Fulton Street	WB	-	-	-	-	L	0.92	67.5	E	L	0.79	43.7	D	
	-	-	-	-	-	R	1.02	120.0+	F*	R	0.78	42.4	D	
Overall Intersection	-	-	-	-	-	-	0.95	29.2	C	-	0.90	31.5	C	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.69	59.8	E	L	0.64	59.2	E	L	0.64	59.2	E	- Modify signal timing (shift 4 s of green time from EB/WB phase to NB/SB phase).
	TR		0.70	15.5	B	TR	0.78	21.0	C	TR	0.73	16.8	B	
	SB	L	0.81	66.9	E	L	0.73	66.4	E	L	0.73	66.4	E	
	TR		0.89	21.0	C	TR	1.04	71.8	E	TR	0.97	38.7	D	
Liberty Street	EB	LTR	0.90	62.0	E	L	0.41	37.1	D	L	0.47	41.9	D	
	WB	De/L	0.43	43.7	D	TR	0.48	38.9	D	TR	0.54	44.3	D	
	TR		0.36	40.6	D	LTR	0.27	34.3	C	LTR	0.31	38.2	D	
Overall Intersection	-	-	0.88	27.2	C	-	0.82	49.5	D	-	0.82	32.3	C	

TABLE E.2-49
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Mvt.	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
		V/C	Delay	LOS	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS			
													Control		Control
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	TR	1.08	120.0+	F*	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
		R	1.06	104.1	F	R	1.09	117.6	F						
Brooklyn Battery Tunnel	SB	T	1.03	103.0	F	TR	1.20	120.0+	F*						
	EB	R	0.03	12.0	B	R	0.18	13.6	B						
	WB	L	0.93	120.0+	F*	L	1.05	120.0+	F*						
		R	0.86	120.0+	F*	R	1.07	120.0+	F*						
Overall Intersection	-	0.99	120.0+	F*	-	1.14	120.0+	F*							
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street															
Vesey Street	EB	LT	0.49	11.1	B	NB	R	0.34	23.6	C				- Mitigation not required.	
		-	-	-	-	EB	L	0.22	13.3	B					
		-	-	-	-		T	0.50	14.6	B					
	WB	TR	0.32	9.0	A	R	0.01	0.0	A						
Overall Intersection	-	0.31	10.0	B	-	0.43	15.1	B							
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.13	22.3	C	ANALYSIS NOT NEEDED. (FREE FLOW)							- Mitigation not required.		
Liberty Street	EB	T	0.34	9.2	A	-	-	-	-						
Overall Intersection	-	0.27	10.1	B	-	-	-	-							
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.53	24.3	C	LTR	0.21	14.5	B					- Mitigation not required.	
Chambers Street	EB	TR	0.34	11.1	B	TR	0.38	16.3	B						
	WB	LT	0.76	21.7	C	LT	0.86	32.6	C						
Overall Intersection	-	0.67	19.3	B	-	0.53	23.4	C							
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.74	23.2	C	T	0.87	41.4	D	- Revise the current 90 s cycle to include a pedestrian-only phase.	
		-	-	-	-	R	1.20+	120.0+	F*	R	0.84	34.0	C		
Fulton Street	WB	-	-	-	-	LT	0.55	26.0	C	LT	0.68	37.2	D		
Overall Intersection	-	-	-	-	-	0.97	68.1	E	-	0.63	37.3	D			
14 Greenwich Street at Liberty Street															
Greenwich Street	SB	-	-	-	-	LT	0.79	30.6	C					- Mitigation not required.	
Liberty Street	EB	TR	0.46	10.5	B	TR	0.35	16.1	B						
Overall Intersection	-	0.29	10.5	B	-	0.57	23.9	C							
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.00	17.4	B	R	0.08	18.5	B	NB	R	0.08	18.4	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.35	22.2	C	LT	0.70	32.7	C	SB	L	0.39	23.6	C	
	Rector Street	EB	TR	0.29	11.7	B	TR	0.32	12.1	B		T	0.24	20.1	
										EB	TR	0.32	12.1	B	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
Overall Intersection	-	0.32	16.4	B	-	0.47	23.7	C	-	0.35	17.7	B	[Measures reflect geometric improvements needed for the MD peak period, otherwise mitigation not needed.]		

TABLE E.2-49
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)					Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control			LOS
			Delay					Delay				Delay			
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.38	28.6	C	LTR	0.89	45.2	D	LTR	0.71	35.9	D	- Restripe EB left-turn lane from 11 ft. to 12 ft. by reducing the median width. - Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane. - Modify signal timing (add 4 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).	
		R	0.98	120.0+	F*	R	0.75	44.3	D	R	0.95	74.2	E		
Canal Street	EB	L	0.27	24.2	C	L	0.70	35.3	D	L	0.60	27.9	C		
		T	0.91	37.0	D	T	0.86	30.9	C	T	0.82	24.4	C		
	WB	T	0.22	23.4	C	T	0.51	28.4	C	T	0.45	24.2	C		
		R	1.13	88.2	F	R	1.18	110.5	F	R	1.12	87.1	F		
Overall Intersection	-		1.09	70.1	E	-	1.10	57.3	E	-	1.08	49.5	D		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.41	26.5	C	L	0.72	43.6	D	L	0.72	43.6	D	- Modify signal timing (shift 3 s of green time from EB/WB lead phase to EB/WB phase).	
		T	1.07	103.6	F	T	0.48	26.2	C	T	0.48	26.2	C		
		R	0.19	23.5	C	R	0.11	22.0	C	R	0.11	22.0	C		
Canal Street	EB	TR	0.42	10.4	B	TR	0.30	8.9	A	TR	0.30	8.9	A		
	WB	LT	1.06	119.1	F	LT	1.16	120.0+	F*	LT	1.05	115.0	F		
Overall Intersection	-		0.64	88.1	F	-	0.44	88.8	F	-	0.44	65.5	E		
WEST BROADWAY CORRIDOR															
18 West Broadway at Worth Street															
West Broadway	SB	LTR	0.78	18.9	B	LTR	0.65	15.7	B					- Mitigation not required.	
Worth Street	EB	TR	0.22	20.7	C	TR	0.28	23.1	C						
	WB	LT	0.64	29.8	C	LT	0.85	43.2	D						
Overall Intersection	-		0.72	21.0	C	-	0.73	23.6	C						
19 West Broadway at Chambers Street															
West Broadway	SB	L	0.37	17.2	B	L	0.26	15.6	B	L	0.31	20.0	B	- Modify signal timing (shift 6 s of green time from SB phase to EB/WB phase).	
		TR	0.49	17.9	B	TR	0.45	17.4	B	TR	0.53	22.4	C		
Chambers Street	EB	L	0.29	18.7	B	L	0.42	23.5	C	L	0.33	15.8	B		
		TR	0.81	32.4	C	TR	0.74	31.4	C	TR	0.65	22.0	C		
	WB	LTR	1.06	77.9	E	LTR	1.20+	120.0+	F*	LTR	1.04	68.3	E		
Overall Intersection	-		0.77	39.9	D	-	0.89	78.6	E	-	0.82	38.1	D		
20 West Broadway at Barclay Street															
West Broadway	SB	TR	0.52	11.3	B	TR	0.78	15.9	B					- Mitigation not required.	
Barclay Street	WB	LT	0.95	47.6	D	LT	0.75	28.9	C						
Overall Intersection	-		0.71	26.9	C	-	0.77	19.6	B						
13 West Broadway/Greenwich Street at Vesey Street															
West Broadway	SB	L	1.20+	120.0+	F*	L	0.80	37.5	D					- Mitigation not required.	
		R	0.93	45.9	D	LT	0.78	31.4	C						
Vesey Street	EB	T	0.32	15.4	B	TR	0.93	41.0	D						
	WB	T	0.17	14.1	B	-	-	-	-						
Overall Intersection	-		0.76	61.2	E	-	0.63	36.9	D						

TABLE E.2-49
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)					Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control			LOS
			Delay	LOS				Delay	LOS			Delay	LOS		
CHURCH STREET CORRIDOR															
21 Church Street at Worth Street ⁽¹⁾															
Church Street	NB	LTR	0.80	13.0	B	LTR	1.20+	120.0+	F*	LT	0.89	22.5	C	- Prohibit parking along the west side of NB Church Street to provide one additional through lane.	
Worth Street	EB	LT	0.72	35.0	D	LT	0.59	30.6	C	LT	0.59	30.6	C		
	WB	TR	0.65	29.3	C	TR	0.83	40.0	D	TR	0.83	40.0	D		
Overall Intersection	-		0.77	18.0	B	-	1.07	120.0+	F*	-	0.87	26.6	C		
22 Church Street at Chambers Street															
Church Street	NB	LTR	0.84	26.5	C	LTR	1.17	107.3	F	LTR	0.86	26.0	C	- Eliminate the truck loading/unloading zone along the west side of Church Street during the AM and PM peak periods to gain an additional NB through lane.	
Chambers Street	EB	LT	1.02	104.4	F	LT	1.07	87.5	F	LT	1.07	87.5	F		
	WB	TR	0.86	34.0	C	TR	0.67	23.1	C	TR	0.67	23.1	C		
Overall Intersection	-		0.93	46.6	D	-	1.12	88.6	F	-	0.97	36.2	D		
23 Church Street at Barclay Street															
Church Street	NB	LT	0.89	24.1	C	LT	0.94	22.6	C					- Mitigation not required.	
Barclay Street	WB	T	0.50	25.1	C	T	0.36	22.7	C						
	R		1.01	82.4	F	R	0.58	28.2	C						
Overall Intersection	-		0.94	33.2	C	-	0.80	23.3	C						
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>															
24 Church Street at Vesey Street															
Church Street	NB	LT	1.12	84.8	F	T	0.82	15.2	B	TR	0.69	27.8	C	- Apply general measures.	
	R		0.64	15.4	B	R	0.67	17.1	B	-	-	-	-	- Prohibit parking along the north side of Vesey Street through daylighting to gain an exclusive left-turn lane.	
Vesey Street	EB	LT	0.87	36.0	D	LT	1.20+	120.0+	F*	L	0.66	37.1	D	- Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.	
										LT	0.65	33.9	C		
Overall Intersection	-		1.02	60.7	E	-	1.06	112.4	F	-	0.56	30.9	C		
25 Church Street at Fulton Street															
Church Street	NB	T	0.63	9.8	A	LT	0.72	11.6	B	LT	0.90	36.8	D	- Apply general measures.	
Fulton Street	WB	R	0.59	35.1	D	TR	1.20+	120.0+	F*	TR	0.64	35.7	D	- Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.	
Overall Intersection	-		0.62	13.0	B	-	0.94	58.0	E	-	0.64	36.4	D		
26 Church Street at Dey Street															
Church Street	NB	T	0.63	9.9	A	T	0.57	4.1	A	T	0.74	21.8	C	- Apply general measures.	
Dey Street	WB	R	0.26	29.1	C	R	0.25	28.9	C	R	0.14	32.2	C	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
Overall Intersection	-		0.53	10.6	B	-	0.48	5.0	A	-	0.43	22.2	C		
27 Church Street at Cortlandt Street															
Church Street	NB	T	0.53	8.8	A	T	0.51	8.6	A	T	0.57	18.1	B	- Apply general measures.	
Cortlandt Street	WB	R	0.98	68.7	E	R	0.96	75.2	E	R	0.33	34.6	C	- Prohibit parking along the south side of Cortlandt Street.	
														- Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.	
Overall Intersection	-		0.71	24.6	C	-	0.69	21.2	C	-	0.40	21.2	C		
28 Church Street at Liberty Street															
Church Street	NB	T	0.61	10.2	B	T	0.47	8.5	A	T	0.54	18.0	B	- Apply general measures.	
	R		0.18	6.8	A	R	0.13	6.4	A	R	0.10	13.0	B	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
Liberty Street	EB	LT	0.37	21.8	C	LT	0.68	29.1	C	LT	0.57	38.7	D		
Overall Intersection	-		0.52	13.1	B	-	0.55	16.5	B	-	0.45	25.9	C		
29 Trinity Street at Rector Street															
Trinity Street	NB	TR	0.58	14.3	B	TR	0.40	11.8	B					- Mitigation not required.	
Rector Street	EB	LT	0.38	23.0	C	LT	0.53	25.7	C						
Overall Intersection	-		0.50	16.2	B	-	0.45	16.9	B						

TABLE E.2-49
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.53	23.2	C	LTR	0.68	24.1	C					- Mitigation not required.
Canal Street	EB	TR	1.10	120.0+	F*	TR	0.92	39.5	D					
	WB	DefL	1.07	120.0+	F*	DefL	1.04	79.0	E					
		T	0.93	47.2	D	T	0.69	16.6	B					
Overall Intersection	-	0.87	84.7	F	-	0.88	35.4	D						
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.71	15.1	B	LTR	0.77	53.9	D	LTR	0.55	22.6	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
Worth Street	EB	TR	0.63	23.5	C	TR	0.77	31.5	C	TR	0.77	31.5	C	
	WB	L	0.33	19.6	B	LT	0.76	29.4	C	LT	0.76	29.4	C	
		T	0.55	21.3	C	-	-	-	-	-	-	-	-	
Overall Intersection	-	0.67	18.4	B	-	0.77	44.2	D	-	0.65	25.8	C		
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.55	12.4	B	LTR	0.55	12.4	B					- Mitigation not required.
Chambers Street	EB	TR	0.95	48.1	D	TR	0.87	36.0	D					
	WB	L	0.72	40.3	D	L	0.38	20.8	C					
		LT	0.82	30.7	C	LT	0.62	21.8	C					
Overall Intersection	-	0.73	27.8	C	-	0.70	20.9	C						
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.88	36.4	D	L	0.94	41.2	D	L	0.69	28.8	C	- Prohibit parking along the north side of EB Vesey Street.
		LT	0.55	18.9	B	LT	0.42	13.6	B	LT	0.69	24.3	C	- Restripe EB Vesey Street to two 11ft. exclusive left-turn lanes and one 11ft. shared through-right lane.
Vesey Street	EB	L	0.99	81.6	F	L	1.20+	120.0+	F*	L	0.87	48.3	D	- Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only.
		LTR	0.77	39.2	D	LTR	1.20+	120.0+	F*	TR	0.60	39.0	D	- Modify signal timing (shift 8 s of green time from SB phase to EB phase).
Overall Intersection	-	0.64	35.7	D	-	0.70	92.8	F	-	0.48	32.6	C		
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.52	9.8	A	TR	0.36	8.3	A					- Mitigation not required.
Fulton Street	WB	LT	0.34	25.7	C	LT	0.55	29.2	C					
Overall Intersection	-	0.46	12.7	B	-	0.42	15.2	B						
35 Broadway at Dey Street														
Broadway	SB	LTR	0.85	19.6	B	LTR	0.57	11.0	B					- Mitigation not required.
Overall Intersection	-	0.56	19.6	B	-	0.37	11.0	B						
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.67	12.7	B	TR	0.48	9.9	A					- Mitigation not required.
Maiden Lane	WB	LT	1.02	79.1	E	LT	0.51	30.0	C					
Overall Intersection	-	0.78	33.3	C	-	0.49	15.4	B						
37 Broadway at Liberty Street														
Broadway	SB	LT	0.66	13.2	B	LT	0.49	10.1	B					- Mitigation not required.
Liberty Street	EB	TR	0.55	34.4	C	TR	0.34	25.8	C					
Overall Intersection	-	0.63	18.1	B	-	0.44	14.6	B						
38 Broadway at Rector Street														
Broadway	SB	T	0.48	9.6	A	T	0.67	12.4	B	T	0.69	14.2	B	- Modify signal timing (shift 2 s of green time from SB phase to EB phase).
Rector Street	EB	R	0.65	42.5	D	R	0.77	50.9	D	R	0.70	42.0	D	
Overall Intersection	-	0.53	13.9	B	-	0.70	21.0	C	-	0.69	20.3	C		
39 Broadway at Exchange Place														
Broadway	SB	LT	0.61	10.1	B	T	0.59	10.0	A					- Mitigation not required.
Overall Intersection	-	0.41	10.1	B	-	0.40	10.0	A						

TABLE E.2-49
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street ⁽³⁾														
Water Street	NB	LT	0.51	15.1	B	L	0.44	18.3	B	L	0.41	16.2	B	- Modify signal timing (shift 2 s of green time from EB phase to NB/SB phase).
		-	-	-	-	T	1.01	55.0	E	T	0.97	43.2	D	
	SB	TR	0.26	12.3	B	TR	0.43	14.4	B	TR	0.41	13.0	B	
Fulton Street	EB	LR	0.69	36.4	D	LR	0.35	26.9	C	LR	0.38	28.9	C	
Overall Intersection	-	-	0.51	18.6	B	-	0.69	37.1	D	-	0.69	30.5	C	
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)									
7 West Street (NYS Rt. 9A) at Barclay ⁽⁴⁾	WB	R	0.60	33.9	D	R	0.54	28.1	D					- Mitigation not required.
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.21	14.1	B					- Mitigation not required.
Rector Street	EB	LTR	0.03	7.4	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.06	11.8	B	R	0.01	12.9	B					- Mitigation not required.

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E. 2-50
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
1a West Street (NYS Rt. 9A) at Canal Street (North)															
West Street (NYS Rt. 9A)	NB	T	0.80	3.6	A	T	0.87	5.1	A	T	1.01	37.4	D	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback.	
	SB	T	0.64	2.1	A	T	0.78	3.1	A	T	0.78	3.1	A		
Canal Street (North)	WB	L	0.34	46.1	D	L	0.44	50.0	D	L	0.22	42.1	D		- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North).
	LR	0.51	52.7	D	LR	0.45	50.2	D	-	-	-	-	- Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane.		
	R	0.58	56.4	E	R	0.53	53.5	D	R	0.76	54.6	D	-		
Overall Intersection	-	-	0.76	5.1	A	-	0.80	5.9	A	-	0.93	20.4	C	[Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]	
1b West Street (NYS Rt. 9A) at Canal Street (South)															
West Street (NYS Rt. 9A)	NB	TR	1.09	73.1	E	TR	1.19	114.1	F	TR	1.09	69.8	E	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North.	
	R	0.54	13.6	B	R	0.51	13.1	B	R	0.47	8.8	A			
	SB	L	1.04	83.5	F	L	1.04	120.0+	F*	L	0.94	71.6	E	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North	
	T	1.13	78.8	E	T	1.20+	120.0+	F*	T	0.92	4.6	A			
Overall Intersection	-	-	1.07	73.4	E	-	1.13	120.0+	F*	-	1.04	38.9	D		
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.11	89.4	F	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	SB	L	0.69	51.0	D	L	1.03	102.6	F						
	TR	0.69	5.8	A	TR	0.85	7.2	A							
Chambers Street	EB	LTR	0.85	80.7	F	LTR	0.49	42.3	D						
	WB	LT	0.94	77.6	E	LT	0.99	91.7	F						
	R	0.62	26.4	C	R	0.53	28.2	C							
Overall Intersection	-	-	0.97	51.3	D	-	1.16	84.7	F						
3 West Street (NYS Rt. 9A) at Vesey Street ^{4b}															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.88	73.6	E					- Meaningful TSM mitigation measures are not available.	
	TR	1.02	42.2	D	TR	1.20+	120.0+	F*							
	SB	L	0.14	8.7	A	L	1.20+	120.0+	F*						
	TR	0.66	4.0	A	TR	1.08	75.2	E							
Vesey Street	EB	LTR	1.06	97.6	F	LT	0.61	43.7	D						
	-	-	-	-	-	R	0.45	40.2	D						
	WB	L	1.20	120.0+	F*	-	-	-	-						
	LTR	1.20+	120.0+	F*	-	-	-	-							
Overall Intersection	-	-	1.19	47.7	D	-	1.12	120.0+	F						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	1.13	89.6	F					- Meaningful TSM mitigation measures are not available.	
	SB	-	-	-	-	T	0.95	25.6	C						
Fulton Street	WB	-	-	-	-	L	0.91	66.7	E						
	-	-	-	-	-	R	1.20+	120.0+	F*						
Overall Intersection	-	-	-	-	-	-	1.16	67.2	E						
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	1.20+	120.0+	F*	L	0.81	68.6	E					- Meaningful TSM mitigation measures are not available.	
	TR	1.06	64.2	E	TR	1.09	75.1	E							
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*						
	TR	0.81	18.1	B	TR	0.88	24.8	C							
Liberty Street	EB	DefL	1.20+	120.0+	F*	L	1.20+	120.0+	F*						
	TR	0.43	41.3	D	TR	0.23	33.3	C							
	WB	LTR	0.29	37.2	D	LTR	0.64	50.7	D						
Overall Intersection	-	-	1.20+	90.8	F	-	1.20+	115.2	F						

TABLE E. 2-50
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.19	120.0+	F*	T	1.20+	120.0+	F*				- Meaningful TSM mitigation measures are not available.		
	R		1.16	120.0+	F*	R	1.20+	120.0+	F*						
	SB	T	1.17	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.63	26.6	C						
	WB	L	1.07	120.0+	F*	L	1.08	120.0+	F*						
	R		1.13	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-		1.15	120.0+	F*	-	1.20+	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street (World Trade Center Garage/Washington Street at Vesey Street)															
Washington Street	NB	-	-	-	-	R	0.29	20.6	C				- Mitigation not required.		
Vesey Street	EB	LT	0.55	11.4	B	L	0.13	11.5	B						
	-	-	-	-	-	T	0.48	14.4	B						
	-	-	-	-	-	R	0.52	1.9	A						
	WB	TR	0.34	8.9	A	-	-	-	-						
Overall Intersection	-		0.35	10.2	B	-	0.52	11.1	B						
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.00	20.7	C	ANALYSIS NOT NEEDED. (FREE FLOW)						- Mitigation not required.			
Liberty Street	EB	T	0.48	10.6	B	-	-	-	-						
Overall Intersection	-		0.32	10.6	B	-	-	-	-						
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.55	24.6	C	LTR	0.30	15.5	B				- Mitigation not required.		
Chambers Street	EB	TR	0.42	11.9	B	TR	0.54	18.9	B						
	WB	LT	0.73	19.6	B	LT	0.85	32.7	C						
Overall Intersection	-		0.66	18.4	B	-	0.57	23.1	C						
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.74	22.9	C	T	0.89	44.6	D	- Revise the current 90 s cycle to include a pedestrian-only phase.	
	-	-	-	-	-	R	1.19	120.0+	F*	R	0.83	34.2	C		
Fulton Street	WB	-	-	-	-	LT	0.60	27.0	C	LT	0.70	37.1	D		
Overall Intersection	-		-	-	-	-	0.96	60.1	E	-	0.64	38.4	D		
14 Greenwich Street at Liberty Street															
Greenwich Street	SB	-	-	-	-	LT	0.82	32.8	C	LT	0.87	39.0	D	- Modify signal timing (shift 2 s of green time from SB phase to EB phase).	
Liberty Street	EB	TR	0.63	13.1	B	TR	1.01	54.6	D	TR	0.95	40.4	D		
Overall Intersection	-		0.39	13.1	B	-	0.91	47.2	D	-	0.91	39.9	D		
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.11	19.1	B	R	0.02	17.6	B	NB	R	0.01	17.6	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.93	57.5	E	LT	1.20+	120.0+	F*	SB	L	0.31	21.4	C	
Rector Street	EB	TR	0.28	11.7	B	TR	0.70	20.6	C	T	0.74	32.8	C		
										EB	TR	0.70	20.6	C	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
Overall Intersection	-		0.54	41.2	D	-	0.91	94.3	F	-	0.71	25.7	C		

TABLE E.2-50
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.95	53.2	D	LTR	0.86	43.0	D	LTR	0.68	35.5	D	- Restripe EB left-turn lane from 11 ft. to 14 ft. by reducing the median width. - Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane. - Modify signal timing (add 4 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).	
	R		0.87	56.1	E	R	0.57	36.6	D	R	0.72	47.5	D		
Canal Street	EB	L	1.02	79.5	E	L	1.20+	120.0+	F*	L	1.05	69.4	E		
	T		1.06	72.6	E	LT	1.08	75.4	E	LT	1.03	57.6	E		
	WB	T	0.99	69.2	E	T	1.13	115.0	F	T	0.99	67.4	E		
	R		1.18	110.2	F	R	1.20+	120.0+	F*	R	1.15	107.0	F		
Overall Intersection	-		1.12	76.8	E	-	1.18	96.5	F	-	1.05	62.3	E		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.25	23.8	C	L	0.20	23.1	C	L	0.20	23.1	C	- Modify signal timing (shift 1 s of green time from EB lead phase to EB/WB phase).	
	T		0.95	48.1	D	T	0.66	29.6	C	T	0.66	29.6	C		
	R		0.16	22.7	C	R	0.11	22.0	C	R	0.11	22.0	C		
Canal Street	EB	TR	0.47	11.0	B	TR	0.46	10.6	B	TR	0.46	10.6	B		
	WB	LT	1.08	116.7	F	LT	1.16	119.8	F	LT	1.13	103.6	F		
Overall Intersection	-		0.64	70.4	E	-	0.53	56.0	E	-	0.53	50.2	D		
WEST BROADWAY CORRIDOR															
18 West Broadway at Worth Street															
West Broadway	SB	LTR	0.98	38.9	D	LTR	1.02	46.4	D	LTR	0.87	28.2	C	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of West Broadway during the AM and PM peak periods to gain an additional SB through lane. - Modify signal timing (shift 11 s of green time from SB phase to EB/WB phase).	
Worth Street	EB	TR	0.19	20.4	C	TR	0.22	21.0	C	TR	0.16	13.4	B		
	WB	LT	0.79	39.4	D	LT	1.18	120.0+	F*	LT	0.87	40.6	D		
Overall Intersection	-		0.91	38.2	D	-	1.08	62.1	E	-	0.87	29.9	C		
19 West Broadway at Chambers Street															
West Broadway	SB	L	0.36	17.2	B	L	0.39	17.6	B	L	0.45	22.8	C		- Modify signal timing (shift 6 s of green time from SB phase to EB/WB phase).
	TR		0.70	22.5	C	TR	0.69	22.1	C	TR	0.81	30.8	C		
Chambers Street	EB	L	0.51	27.0	C	L	0.46	25.3	C	L	0.37	17.0	B		
	TR		1.15	109.8	F	TR	1.15	114.2	F	TR	1.01	59.9	E		
	WB	LTR	1.18	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.14	102.7	F		
Overall Intersection	-		0.94	72.6	E	-	1.11	116.3	F	-	1.00	57.3	E		
20 West Broadway at Barclay Street															
West Broadway	SB	TR	0.57	11.9	B	TR	0.79	16.3	B					- Mitigation not required.	
Barclay Street	WB	LT	0.90	41.2	D	LT	0.90	39.5	D						
Overall Intersection	-		0.71	23.1	C	-	0.84	23.6	C						
13 West Broadway/Greenwich Street at Vesey Street															
West Broadway	SB	L	1.20+	120.0+	F*	L	0.84	40.0	D					- Mitigation not required.	
	R		0.77	29.4	C	LT	0.83	33.8	C						
Vesey Street	EB	T	0.39	16.2	B	TR	0.91	38.1	D						
	WB	T	0.23	14.6	B	-	-	-	-						
Overall Intersection	-		0.80	77.1	E	-	0.63	36.8	D						

TABLE E. 2-50
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
CHURCH STREET CORRIDOR															
21 Church Street at Worth Street⁽¹⁾															
Church Street	NB	LTR	0.70	16.0	B	LTR	1.20+	120.0+	F*	NB	LT	0.94	22.9	C	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.
Worth Street	EB	LT	0.87	52.4	D	LT	0.96	60.9	E	R	0.34	8.9	A	- Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.	
	WB	TR	0.78	35.5	D	TR	0.99	63.1	E	EB	LT	0.90	48.9		
										WB	T	0.61	27.5	C	- Modify signal timing (shift 2 s of green time from NB phase to EB/WB phase).
										R	0.63	30.5	C		
Overall Intersection	-		0.77	24.1	C	-	1.20+	120.0+	F*	-	0.92	26.8	C		
22 Church Street at Chambers Street															
Church Street	NB	LTR	0.95	35.6	D	LTR	1.20+	120.0+	F*	LTR	0.90	28.3	C	- Eliminate the truck loading/unloading zone along the west side of Church Street during the peak periods to gain an additional NB through lane.	
Chambers Street	EB	LT	1.10	120.0+	F*	LT	1.08	120.0+	F*	LT	0.94	63.9	E		- Provide strict enforcement of "No Standing Anytime" regulation along the north and south sides of EB Chambers Street during the peak periods.
	WB	TR	1.15	120.0+	F*	TR	0.93	43.1	D	TR	0.93	43.1	D		
Overall Intersection	-		1.05	83.3	F	-	1.15	111.5	F	-	0.92	37.7	D		
23 Church Street at Barclay Street															
Church Street	NB	LT	1.15	111.6	F	LT	1.20+	120.0+	F*	LT	0.95	22.2	C	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of NB Church Street during the peak periods to gain an additional NB through lane.	
Barclay Street	WB	T	0.44	23.9	C	T	0.29	21.5	C	T	0.29	21.5	C		
	R	1.01	120.0+	F*	R	0.64	30.8	C	R	0.64	30.8	C			
Overall Intersection	-		1.09	105.2	F	-	1.06	120.0+	F*	-	0.83	23.0	C		
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase. Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane. Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>															
24 Church Street at Vesey Street															
Church Street	NB	LTR	1.10	74.4	E	T	1.20+	120.0+	F*	TR	0.98	43.4	D	- Apply general measures. - Prohibit parking along the north side of Vesey Street through daylighting to gain an exclusive left-turn lane.	
Vesey Street	EB	LT	1.08	78.8	E	R	0.84	29.8	C	L	0.77	46.1	D		- Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.
										LT	0.78	40.9	D		
Overall Intersection	-		1.09	75.8	E	-	1.20+	120.0+	F*	-	0.73	43.2	D		
25 Church Street at Fulton Street															
Church Street	NB	T	0.88	16.9	B	LT	1.11	79.5	E	LT	0.84	25.8	C	- Apply general measures. - Eliminate the Bus Layover Zone along the west side of Church Street between Fulton Street and Dey Street to gain an additional NB lane.	
Fulton Street	WB	R	0.80	46.8	D	TR	1.20+	120.0+	F*	TR	0.76	44.5	D		
Overall Intersection	-		0.85	20.6	C	-	1.19	103.2	F	-	0.66	29.8	C		- Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.
26 Church Street at Dey Street															
Church Street	NB	T	0.92	12.9	B	T	0.88	9.9	A	T	0.99	39.3	D	- Apply general measures. - [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
Dey Street	WB	R	0.28	29.7	C	R	0.26	29.2	C	R	0.17	36.4	D		
Overall Intersection	-		0.74	13.4	B	-	0.70	10.4	B	-	0.60	39.3	D		
27 Church Street at Cortlandt Street															
Church Street	NB	T	0.73	11.8	B	T	0.81	14.0	B	T	0.87	29.2	C	- Apply general measures. - [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.59	38.4	D		
Overall Intersection	-		1.07	100.0	F	-	1.20+	73.8	E	-	0.63	31.3	C		- Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes. - [Measures reflect geometric improvements necessary for MD and PM peak periods, otherwise mitigation not needed.]
28 Church Street at Liberty Street															
Church Street	NB	T	0.93	23.6	C	T	0.78	14.0	B	T	0.94	40.6	D	- Apply general measures.	
Liberty Street	R	0.38	9.1	A	R	0.24	7.6	A	R	0.19	16.0	B			
	EB	LT	0.47	23.1	C	LT	0.99	58.8	E	LT	0.79	43.8	D		
Overall Intersection	-		0.75	22.1	C	-	0.86	31.1	C	-	0.73	40.4	D		
29 Trinity Street at Rector Street															
Trinity Street	NB	TR	0.96	36.0	D	TR	0.49	13.1	B	TR	0.52	15.2	B	- Modify signal timing (shift 3 s of green time from NB phase to EB phase).	
Rector Street	EB	LT	0.59	27.6	C	LT	0.97	59.1	E	LT	0.88	40.7	D		
Overall Intersection	-		0.82	34.3	C	-	0.68	34.6	C	-	0.67	27.2	C		

TABLE E.2-50
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
BROADWAY CORRIDOR															
30 Broadway at Canal Street															
Broadway	SB	LTR	0.32	18.8	B	LTR	0.52	21.0	C					- Mitigation not required.	
Canal Street	EB	TR	0.48	19.5	B	TR	0.56	21.0	C						
	WB	DefL	0.94	57.6	E	DefL	0.81	41.3	D						
	T		0.47	10.5	B	T	0.43	10.2	B						
Overall Intersection	-		0.70	26.5	C	-	0.74	22.7	C						
31 Broadway at Worth Street ⁽¹⁾															
Broadway	SB	LTR	0.66	14.3	B	LTR	0.85	93.3	F	LTR	0.69	43.0	D	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.	
Worth Street	EB	TR	0.47	19.7	B	TR	1.06	120.0+	F*	TR	0.82	42.3	D		
	WB	L	0.18	16.3	B	LT	0.84	58.5	E	L	0.34	15.7	B		- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
	T		0.56	21.4	C	-	-	-	-	T	0.61	25.7	C		- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.
Overall Intersection	-		0.62	17.0	B	-	0.94	103.8	F	-	0.76	38.7	D	- Modify signal timing (shift 6 s of green time from SB phase to EB/WB phase).	
32 Broadway at Chambers Street															
Broadway	SB	LTR	0.45	11.3	B	LTR	0.64	13.7	B					- Mitigation not required.	
Chambers Street	EB	TR	1.11	103.7	F	TR	0.97	53.7	D						
	WB	L	0.15	16.0	B	L	0.60	30.4	C						
	LT		0.94	44.0	D	LT	0.77	27.6	C						
Overall Intersection	-		0.75	50.2	D	-	0.79	27.2	C						
33 Broadway at Vesey Street / Ann Street															
Broadway	SB	L	0.71	26.2	C	L	0.85	30.1	C	L	0.77	32.4	C	- Prohibit parking along the north side of EB Vesey Street. - Restripe EB Vesey Street to two 11ft. exclusive left-turn lanes and one 11ft. shared through-right lane. - Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only. - Modify signal timing (shift 8 s of green time from SB phase to EB phase).	
Vesey Street	EB	L	0.95	72.2	E	L	1.20+	120.0+	F*	L	0.95	60.8	E		
	LTR		1.08	93.6	F	LTR	1.20+	120.0+	F*	TR	0.93	71.2	E		
Overall Intersection	-		0.59	48.4	D	-	0.68	120.0+	F*	-	0.54	40.6	D		
34 Broadway at Fulton Street ⁽²⁾															
Broadway	SB	TR	0.65	11.2	B	TR	0.63	11.5	B					- Mitigation not required.	
Fulton Street	WB	LT	0.52	28.1	C	LT	0.78	37.3	D						
Overall Intersection	-		0.61	14.7	B	-	0.68	19.1	B						
35 Broadway at Dey Street															
Broadway	SB	LTR	1.09	71.4	E	LTR	0.78	16.1	B					- Mitigation not required.	
Overall Intersection	-		0.71	71.4	E	-	0.51	16.1	B						
36 Broadway at Maiden Lane / Cortlandt Street															
Broadway	SB	TR	0.96	32.0	C	TR	0.77	16.4	B					- Mitigation not required.	
Maiden Lane	WB	LT	1.20+	120.0+	F*	LT	0.86	48.4	D						
Overall Intersection	-		1.07	77.3	E	-	0.80	25.4	C						
37 Broadway at Liberty Street															
Broadway	SB	LT	0.76	9.3	A	LT	0.75	16.1	B					- Mitigation not required.	
Liberty Street	EB	TR	0.66	31.4	C	TR	0.50	28.0	C						
Overall Intersection	-		0.73	16.5	B	-	0.67	20.1	C						
38 Broadway at Rector Street															
Broadway	SB	T	0.53	10.1	B	T	0.43	8.3	A	T	0.46	10.5	B	- Modify signal timing (shift 4 s of green time from SB phase to EB phase).	
Rector Street	EB	R	0.75	50.3	D	R	0.96	85.1	F	R	0.78	48.9	D		
Overall Intersection	-		0.60	15.5	B	-	0.58	30.6	C	-	0.57	21.7	C		
39 Broadway at Exchange Place															
Broadway	SB	LT	0.70	11.7	B	T	0.45	8.1	A					- Mitigation not required.	
Overall Intersection	-		0.48	11.7	B	-	0.31	8.1	A						

TABLE E. 2-50
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street ⁽³⁾														
Water Street	NB	LT	0.75	20.2	C	L	1.20+	120.0+	F*	LT	0.74	19.8	B	- Restripe the NB approach of Water Street to provide one through lane and one through-left lane.
	-	-	-	-	-	T	1.20+	120.0+	F*	-	-	-	-	
	SB	TR	0.73	19.6	B	TR	0.74	20.1	C	TR	0.74	20.1	C	
Fulton Street	EB	LR	0.47	29.7	C	LR	0.46	29.4	C	LR	0.46	29.4	C	
Overall Intersection	-	-	0.57	20.6	C	-	0.85	76.3	E	-	0.57	20.6	C	
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED (FREE FLOW)				ANALYSIS NOT NEEDED (FREE FLOW)								- Mitigation not required.	
7 West Street (NYS Rt. 9A) at Barclay ⁽⁴⁾														
	NB	-	-	-	-	-	-	-	-	T	0.96	18.3	B	- Install a traffic signal.
	WB	R	0.60	44.9	E	R	0.99	102.3	F	R	0.41	34.0	C	- Restripe WB Barclay Street to three 11ft. right-turn lanes.
Overall Intersection	-	-	-	-	-	-	-	-	-	-	0.79	20.2	C	
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.28	19.8	C					- Mitigation not required.
Rector Street	EB	LTR	0.05	7.5	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.05	11.5	B	R	0.08	13.8	B					- Mitigation not required.

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbtrian Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-51
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.63	2.4	A	T	0.71	3.0	A	T	0.97	30.1	C	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback. - Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North). - Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane. [Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]
	SB	T	0.53	1.9	A	T	0.59	2.1	A	T	0.68	6.6	A	
Canal Street	WB	L	0.59	53.2	D	L	0.60	53.9	D	L	0.20	31.5	C	
	LR		0.40	46.1	D	LR	0.82	68.6	E	-	-	-	-	
	R		0.50	50.3	D	R	0.61	55.3	E	R	0.86	47.6	D	
Overall Intersection	-	-	0.62	5.2	A	-	0.73	7.3	A	-	0.92	20.1	C	
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	0.82	16.1	B	TR	0.93	22.0	C	TR	0.97	30.1	C	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North. - Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	R		0.56	13.9	B	R	0.55	13.9	B	R	0.57	16.5	B	
	SB	L	1.00	75.8	E	L	1.04	81.5	F	L	0.57	24.8	C	
	T		1.09	62.7	E	T	1.20+	120.0+	F*	T	0.70	1.1	A	
Overall Intersection	-	-	0.90	41.1	D	-	0.98	120.0+	F*	-	0.80	16.5	B	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	0.96	29.4	C	TR	1.12	87.3	F					- Meaningful TSM mitigation measures are not available.
	SB	L	0.83	71.6	E	L	0.79	63.9	E					
	TR		0.58	4.9	A	TR	0.80	6.2	A					
Chambers Street	EB	LTR	0.31	37.2	D	LTR	0.30	38.4	D					
	WB	LT	0.83	61.6	E	LT	0.85	66.6	E					
	R		0.73	37.2	D	R	0.54	28.4	C					
Overall Intersection	-	-	0.90	24.5	C	-	0.99	48.6	D					
3 West Street (NYS Rt. 9A) at Vesey Street^(d)														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.65	56.4	E					- Meaningful TSM mitigation measures are not available.
	TR		0.75	12.8	B	TR	1.17	120.0+	F*					
	SB	L	0.21	5.0	A	L	1.20+	120.0+	F*					
	TR		0.56	3.4	A	TR	0.97	36.0	D					
Vesey Street	EB	DefL	1.20+	120.0+	F*	LT	0.27	34.9	C					
	TR		1.20+	120.0+	F*	R	0.84	70.9	E					
	WB	L	0.88	62.9	E	-	-	-	-					
	LTR		1.20+	120.0+	F*	-	-	-	-					
Overall Intersection	-	-	1.11	42.4	D	-	1.10	96.7	F					
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.91	21.0	C					- Meaningful TSM mitigation measures are not available.
	SB	-	-	-	-	T	0.89	20.2	C					
Fulton Street	WB	-	-	-	-	L	1.02	96.9	F					
	-	-	-	-	-	R	1.00	80.1	F					
Overall Intersection	-	-	-	-	-	-	0.96	28.2	C					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.65	60.2	E	L	0.70	59.6	E					- Meaningful TSM mitigation measures are not available.
	TR		0.77	17.0	B	TR	0.94	29.5	C					
	SB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*					
	TR		0.69	15.3	B	TR	0.81	21.9	C					
Liberty Street	EB	DefL	1.20+	120.0+	F*	L	1.20+	120.0+	F*					
	TR		0.43	42.6	D	TR	0.15	31.8	C					
	WB	LTR	0.60	49.3	D	LTR	1.19	120.0+	F*					
Overall Intersection	-	-	0.97	38.7	D	-	1.20+	105.6	F					

TABLE E.2-51
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.15	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	R		1.03	76.5	E	R	1.13	107.7	F						
	SB	T	1.15	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.21	22.1	C						
	WB	L	0.85	120.0+	F*	L	1.03	120.0+	F*						
	R		1.05	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-		1.11	120.0+	F*	-	1.20+	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street (World Trade Center Garage/Washington Street at Vesey Street)															
Washington Street	NB	-	-	-	A	R	0.40	22.1	C					- Mitigation not required.	
Vesey Street	EB	LT	0.24	8.3	A	L	0.21	13.2	B						
						T	0.52	14.9	B						
						R	0.52	3.5	A						
	WB	TR	0.35	9.2	A	-	-	-	-						
Overall Intersection	-		0.22	8.8	A	-	0.52	13.9	B						
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.07	21.5	C	ANALYSIS NOT NEEDED. (FREE FLOW)								- Mitigation not required.	
Liberty Street	EB	T	0.42	9.9	A	-	-	-	-						
Overall Intersection	-		0.30	10.3	B	-	-	-	-						
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.56	24.8	C	LTR	0.26	15.1	B					- Mitigation not required.	
Chambers Street	EB	TR	0.30	10.7	B	TR	0.40	16.8	B						
	WB	LT	0.59	15.5	B	LT	0.82	31.1	C						
Overall Intersection	-		0.58	17.4	B	-	0.54	22.0	C						
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.74	22.6	C	T	0.90	44.4	D	- Revise the current 90 s cycle to include a pedestrian-only phase.	
						R	1.14	110.9	F	R	0.80	31.6	C		
Fulton Street	WB	-	-	-	-	LT	0.57	26.7	C	LT	0.63	34.9	C		
Overall Intersection	-		-	-	-	-	0.93	53.4	D	-	0.62	37.0	D		
14 Greenwich Street at Liberty Street															
Greenwich Street	SB	-	-	-	-	LT	0.97	53.9	D	LT	0.92	42.8	D	- Modify signal timing (shift 2 s of green time from EB phase to SB phase).	
Liberty Street	EB	TR	0.53	11.4	B	TR	0.66	21.4	C	TR	0.70	23.7	C		
Overall Intersection	-		0.33	11.4	B	-	0.81	34.6	C	-	0.81	31.4	C		
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.16	19.8	B	R	0.08	18.5	B	NB	R	0.08	18.4	B	- Prohibit parking along the south side of EB Rector Street through daylighting for the MD peak period. - Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking. - Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
	SB	LT	0.42	23.7	C	LT	1.20+	120.0+	F*	SB	L	0.29	21.7	C	
Rector Street	EB	TR	0.40	13.3	B	TR	1.20+	120.0+	F*	T	0.81	36.8	D		
										EB	TR	0.89	40.1	D	
Overall Intersection	-		0.41	17.8	B	-	1.20+	120.0+	F*	-	0.85	36.2	D		

TABLE E.2-51
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
CANAL STREET CORRIDOR														
16 Canal Street at Hudson Street														
Hudson Street	NB	LTR	0.83	40.6	D	LTR	0.65	34.3	C	LTR	0.47	30.3	C	- Partially mitigated. - Restripe EB left-turn lane from 11 ft. to 14 ft. by reducing the median width. - Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane. - Modify signal timing (add 3 s to green time of EB/WB phase and 3 s to green time of EB/WB lead phase).
		R	0.68	39.9	D	R	0.60	37.5	D	R	0.68	42.0	D	
Canal Street	EB	L	1.04	82.3	F	L	1.20+	120.0+	F*	L	1.12	90.4	F	
		T	0.99	55.8	E	LT	0.97	49.6	D	LT	0.96	45.0	D	
	WB	T	0.94	59.9	E	T	1.15	119.6	F	T	1.04	79.1	E	
		R	1.18	114.5	F	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	
Overall Intersection	-		1.09	69.1	E	-	1.16	103.7	F	-	1.09	75.0	E	
17 Canal Street at Varick Street														
Varick Street	SB	L	0.16	22.6	C	L	0.34	25.3	C	L	0.51	37.9	D	- Modify signal timing (shift 10 s of green time from SB phase to EB/WB phase).
		T	1.07	95.0	F	T	0.57	27.6	C	T	0.86	48.6	D	
		R	0.16	22.7	C	R	0.37	26.2	C	R	0.56	40.6	D	
Canal Street	EB	TR	0.47	11.0	B	TR	0.32	9.0	A	TR	0.27	4.7	A	
	WB	LT	1.08	80.5	F	LT	1.20+	120.0+	F*	LT	1.11	77.4	E	
Overall Intersection	-		0.68	71.1	E	-	1.05	82.3	F	-	1.05	49.9	D	
WEST BROADWAY CORRIDOR														
18 West Broadway at Worth Street														
West Broadway	SB	LTR	0.69	16.5	B	LTR	0.63	15.1	B					- Mitigation not required.
Worth Street	EB	TR	0.17	20.0	C	TR	0.16	20.0	B					
	WB	LT	0.60	29.3	C	LT	0.70	34.6	C					
Overall Intersection	-		0.65	19.1	B	-	0.66	19.4	B					
19 West Broadway at Chambers Street														
West Broadway	SB	L	0.38	17.5	B	L	0.32	16.6	B	L	0.39	22.3	C	- Modify signal timing (shift 7 s of green time from SB phase to EB/WB phase).
		TR	0.53	18.8	B	TR	0.51	18.3	B	TR	0.61	24.8	C	
Chambers Street	EB	LTR	1.20+	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.14	104.9	F	
		-	-	-	-	-	-	-	-	-	-	-	-	
	WB	LTR	0.72	25.4	C	LTR	1.17	118.3	F	LTR	0.95	43.1	D	
Overall Intersection	-		0.89	76.6	E	-	0.94	103.5	F	-	0.92	52.4	D	
20 West Broadway at Barclay Street														
West Broadway	SB	TR	0.43	10.4	B	TR	0.74	14.8	B					- Mitigation not required.
Barclay Street	WB	LT	0.46	21.3	C	LT	0.56	23.0	C					
Overall Intersection	-		0.45	13.7	B	-	0.66	16.9	B					
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	0.63	22.7	C	L	0.62	29.5	C	L	0.72	36.1	D	- Modify signal timing (shift 4 s of green time from SB phase to EB phase).
		R	0.83	33.3	C	LT	0.63	27.4	C	LT	0.72	32.4	C	
Vesey Street	EB	T	0.32	15.4	B	TR	1.07	77.2	E	TR	0.95	40.8	D	
	WB	T	0.23	14.6	B	-	-	-	-	-	-	-	-	
Overall Intersection	-		0.57	21.0	C	-	0.62	54.0	D	-	0.62	37.4	D	

TABLE E.2-51
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures			
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS				
CHURCH STREET CORRIDOR																
21 Church Street at Worth Street⁽¹⁾																
Church Street	NB	LTR	1.01	40.1	D	LTR	1.20+	120.0+	F*	NB	LT	0.90	23.2	C	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.	
Worth Street	EB	LT	0.51	26.3	C	LT	0.82	42.3	D	R	0.35	7.9	A			
	WB	TR	0.63	28.5	C	TR	0.91	56.4	E	EB	LT	0.82	42.3	D		- Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.
										WB	T	0.55	29.0	C		
											R	0.28	22.3	C		
Overall Intersection			0.86	37.4	D		1.20+	120.0+	F*		0.87	24.9	C			
22 Church Street at Chambers Street																
Church Street	NB	LTR	1.08	69.9	E	LTR	1.20+	120.0+	F*	LTR	0.90	28.7	C	- Eliminate the truck loading/unloading zone along the west side of Church Street during the peak periods to gain an additional NB through lane.		
Chambers Street	EB	LT	1.12	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.15	119.5	F			
	WB	TR	0.86	34.0	C	TR	0.81	30.0	C	TR	0.81	30.0	C		- Provide strict enforcement of "No Standing Anytime" regulation along the north and south sides of EB Chambers Street during the peak periods.	
Overall Intersection			1.10	76.8	E		1.20+	119.1	F		1.03	42.4	D			
23 Church Street at Barclay Street																
Church Street	NB	LT	0.86	22.4	C	LT	1.14	90.4	F	LT	0.81	13.4	B	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of NB Church Street during the peak periods to gain an additional NB through lane.		
Barclay Street	WB	T	0.28	21.3	C	T	0.14	19.6	B	T	0.14	19.6	B			
	R		1.03	85.1	F	R	0.75	37.4	D	R	0.75	37.4	D			
Overall Intersection			0.93	33.4	C		0.99	81.1	F		0.79	16.7	B			
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>																
24 Church Street at Vesey Street																
Church Street	NB	LT	1.20+	120.0+	F*	T	1.02	49.7	D	TR	0.84	30.0	C	- Apply general measures.		
	R		0.65	15.8	B	R	1.19	120.0+	F*	-	-	-	-		- Prohibit parking along the north side of Vesey Street through daylighting to gain an exclusive left-turn lane.	
Vesey Street	EB	LT	0.65	26.8	C	LT	1.20+	120.0+	F*	L	0.64	39.1	39.1			
			-	-	-	-	-	-	-	LT	0.65	36.0	D	- Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.		
Overall Intersection			1.03	99.8	F		1.20+	111.2	F		0.62	32.3	C			
25 Church Street at Fulton Street																
Church Street	NB	T	0.73	11.8	B	LT	1.16	98.1	F	LT	0.85	26.1	C	- Apply general measures.		
Fulton Street	WB	R	0.59	41.3	D	TR	0.96	67.2	E	TR	0.45	35.4	D		- Eliminate the Bus Layover Zone along the west side of Church Street between Fulton Street and Dey Street to gain an additional NB lane.	
Overall Intersection			0.69	13.5	B		1.08	93.9	F		0.57	27.4	C	- Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.		
26 Church Street at Dey Street																
Church Street	NB	T	0.80	14.0	B	T	0.87	9.5	A	T	0.99	36.9	D	- Apply general measures.		
Dey Street	WB	R	0.28	29.7	C	R	0.58	43.7	D	R	0.29	38.6	D		- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
Overall Intersection			0.65	14.5	B		0.79	11.1	B		0.63	36.9	D			
27 Church Street at Cortlandt Street																
Church Street	NB	T	0.57	9.4	A	T	0.63	10.2	B	T	0.69	21.9	C	- Apply general measures.		
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.02	79.7	E		- Prohibit parking along the south side of Cortlandt Street.	
Overall Intersection			0.93	95.9	F		1.20+	120.0+	F*		0.67	44.9	D	- Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.		
28 Church Street at Liberty Street																
Church Street	NB	T	0.72	12.4	B	T	0.61	10.4	B	T	0.74	25.7	C	- Apply general measures.		
	R		0.27	7.8	A	R	0.30	8.2	A	R	0.24	16.7	B			
Liberty Street	EB	LT	0.42	22.4	C	LT	0.98	56.2	E	LT	0.79	44.1	D			
Overall Intersection			0.60	15.0	B		0.76	30.2	C		0.63	33.0	C			
29 Trinity Street at Rector Street																
Trinity Street	NB	TR	0.66	11.6	B	TR	0.60	15.0	B					- Mitigation not required.		
Rector Street	EB	LT	0.47	24.7	C	LT	0.81	38.0	D							
Overall Intersection			0.59	14.8	B		0.68	23.8	C							

TABLE E.2-51
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 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.56	22.0	C	LTR	0.67	24.2	C					- Mitigation not required.
Canal Street	EB	TR	0.46	19.2	B	TR	0.51	20.1	C					
	WB	LT	0.71	13.8	B	LT	0.75	15.5	B					
Overall Intersection	-	0.68	18.1	B	-	0.75	20.1	C						
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.80	18.0	B	LTR	0.67	78.2	E	LTR	0.53	44.2	D	- Partially Mitigated.
Worth Street	EB	TR	0.79	30.8	C	TR	1.02	120.0+	F*	TR	0.79	54.5	D	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along E Worth Street from 14 ft. to 15 ft.
	WB	L	0.78	44.7	D	LT	1.14	120.0+	F*	L	0.53	27.9	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
		T	0.47	19.5	B	-	-	-	-	T	0.37	22.7	C	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.
Overall Intersection	-	0.80	23.4	C	-	0.88	120.0+	F*	-	0.63	43.1	D	-	- Modify signal timing (shift 4 s of green time from SB phase to EB/WB phase).
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.63	13.6	B	LTR	0.49	11.7	B					- Mitigation not required.
Chambers Street	EB	TR	0.77	28.6	C	TR	0.69	24.9	C					
	WB	L	0.50	24.1	C	L	0.40	20.5	C					
		LT	0.66	23.0	C	LT	0.66	23.1	C					
Overall Intersection	-	0.70	19.2	B	-	0.58	18.0	B						
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.75	28.5	C	L	0.60	18.4	B	L	0.78	39.0	D	- Partially Mitigated.
		LT	0.58	19.5	B	LT	0.52	14.8	B	LT	0.79	31.7	C	- Prohibit parking along the north side of EB Vesey Street.
Vesey Street	EB	L	0.61	39.0	D	L	1.20+	120.0+	F*	L	0.77	37.3	D	- Restripe EB Vesey Street to two 11ft. exclusive left-turn lanes and one 11ft. shared through-right lane.
		LTR	0.84	45.1	D	LTR	1.20+	120.0+	F*	TR	0.93	63.7	E	- Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only.
Overall Intersection	-	0.56	29.5	C	-	0.56	120.0+	F*	-	0.55	38.9	D	-	- Modify signal timing (shift 13 s of green time from SB phase to EB phase).
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.56	10.5	B	TR	0.64	11.9	B					- Mitigation not required.
Fulton Street	WB	LT	CLOSED			LT	CLOSED							
Overall Intersection	-	0.38	10.5	B	-	0.44	11.9	B						
35 Broadway at Dey Street														
Broadway	SB	LTR	0.79	16.6	B	LTR	0.69	13.4	B					- Mitigation not required.
Overall Intersection	-	0.52	16.6	B	-	0.44	13.4	B						
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.76	15.2	B	TR	0.80	18.0	B					- Mitigation not required.
Maiden Lane	WB	LT	1.20+	120.0+	F*	LT	1.20+	120.0+	F*					
Overall Intersection	-	1.01	114.8	F	-	0.98	92.9	F						
37 Broadway at Liberty Street														
Broadway	SB	LT	0.73	14.7	B	LT	0.66	13.4	B					- Mitigation not required.
Liberty Street	EB	TR	0.83	46.6	D	TR	0.56	29.3	C					
Overall Intersection	-	0.76	24.4	C	-	0.63	19.4	B						
38 Broadway at Rector Street														
Broadway	SB	T	0.48	9.6	A	T	0.64	11.6	B					- Mitigation not required.
Rector Street	EB	R	0.84	61.3	E	R	0.72	47.0	D					
Overall Intersection	-	0.60	17.3	B	-	0.66	18.5	B						
39 Broadway at Exchange Place														
Broadway	SB	LT	0.58	9.5	A	T	0.48	8.3	A					- Mitigation not required.
Overall Intersection	-	0.40	9.5	A	-	0.33	8.3	A						

TABLE E.2-51
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street⁽¹⁾														
Water Street	NB	-	-	-	-	L	0.61	29.0	C	LT	0.61	16.8	B	- Restripe the NB approach of Water Street to provide one through lane and one through-left lane.
	LT	0.55	15.8	B	T	1.01	55.1	E	-	-	-	-		
	SB	TR	0.41	13.9	B	TR	0.65	17.9	B	TR	0.65	17.9	B	
Fulton Street	EB	LR	0.36	27.3	C	LR	0.51	30.7	C	LR	0.51	30.7	C	
Overall Intersection			0.43	16.0	B		0.73	35.8	D		0.53	18.6	B	
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS R1.9A) at Rector Street	ANALYSIS NOT NEEDED (FREE FLOW)				ANALYSIS NOT NEEDED (FREE FLOW)									
7 West Street (NYS R1.9A) at Barclay⁽⁴⁾	NB	-	-	-	-	-	-	-	-	T	0.73	8.2	A	- Install a traffic signal.
	WB	R	0.67	38.4	E	R	0.84	56.3	F	R	0.47	35.1	D	- Restripe WB Barclay Street to three 11ft. right-turn lanes.
Overall Intersection											0.65	12.8	B	
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.15	14.3	B					- Mitigation not required.
Rector Street	EB	LTR	0.03	7.4	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.19	12.5	B	R	0.36	18.0	C					- Mitigation not required.

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-52
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
1a West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	T	0.93	7.7	A	T	0.86	5.1	A	T	1.00	27.4	C	- Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street (South) to reduce spillback. - Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street (South) further north to the intersection of Rt. 9A and Canal Street (North). - Restripe Canal Street WB to provide two 11 ft. exclusive left turn lanes and one 11 ft. exclusive right turn lane. - Provide strict enforcement of "No Standing" regulation along the north side of Canal Street during the PM peak period. [Measures reflect operational and geometric improvements needed for coordination with the adjacent intersection, Rt. 9A at Canal Street (South) which operates in tandem.]
	SB	T	0.69	2.6	A	T	0.80	3.6	A	T	0.79	3.5	A	
Canal Street	WB	L	0.17	38.6	D	L	0.25	41.0	D	L	0.13	38.3	D	
	LR		0.19	39.8	D	LR	0.37	43.3	D	-	-	-	-	
	R		0.22	40.0	D	R	0.42	45.5	D	R	0.57	38.6	D	
Overall Intersection	-	-	0.76	6.0	A	-	0.76	5.8	A	-	0.85	15.6	B	
1b West Street (NYS Rt. 9A) at Canal Street														
West Street (NYS Rt. 9A)	NB	TR	1.04	114.3	F	TR	1.10	77.2	E	TR	1.04	51.3	D	- Shift the crosswalk across Rt. 9A at the intersection of Rt. 9A and Canal Street South further north to the intersection of Rt. 9A and Canal Street North. - Provide revised signal timing and phasing plan for better coordination with the intersection of Rt. 9A at Canal Street North
	R		0.31	10.0	B	R	0.37	10.7	B	R	0.35	8.3	A	
	SB	L	0.87	48.0	D	L	1.06	86.2	F	L	0.69	33.8	C	
	T		1.07	101.7	F	T	1.20+	114.1	F	T	0.91	4.2	A	
Overall Intersection	-	-	0.96	102.6	F	-	1.08	92.9	F	-	0.91	26.8	C	
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.15	107.2	F	TR	1.12	88.7	F					- Meaningful TSM mitigation measures are not available.
	SB	L	0.76	58.2	E	L	0.72	58.5	E					
	TR		0.73	10.5	B	TR	0.83	6.7	A					
Chambers Street	EB	LTR	0.61	43.5	D	LTR	0.36	40.7	D					
	WB	LT	1.10	119.6	F	LT	1.08	120.0+	F*					
	R		0.67	26.2	C	R	0.83	42.1	D					
Overall Intersection	-	-	1.06	60.8	E	-	1.05	50.8	D					
3 West Street (NYS Rt. 9A) at Vesey Street⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.73	60.5	E					- Meaningful TSM mitigation measures are not available.
	TR		0.82	14.3	B	TR	1.11	91.9	F					
	SB	L	0.16	5.4	A	L	0.93	81.1	F					
Vesey Street	TR		0.68	4.1	A	TR	1.07	90.7	F					
	EB	DefL	1.20+	120.0+	F*	LT	0.57	42.1	D					
	TR		1.20+	120.0+	F*	R	0.48	40.9	D					
	WB	L	1.00	93.0	F	-	-	-	-					
	LTR		1.20+	120.0+	F*	-	-	-	-					
Overall Intersection	-	-	1.20+	75.7	E	-	0.92	86.6	F					
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.91	21.3	C					- Meaningful TSM mitigation measures are not available.
	SB					T	1.00	34.2	C					
Fulton Street	WB	-	-	-	-	L	1.09	113.7	F					
						R	0.90	72.6	E					
Overall Intersection	-	-	-	-	-	-	1.04	35.1	D					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.81	67.1	E	L	0.81	69.0	E					- Meaningful TSM mitigation measures are not available.
	TR		0.72	15.9	B	TR	0.87	24.4	C					
	SB	L	0.98	91.8	F	L	1.20+	120.0+	F*					
	TR		0.93	23.6	C	TR	1.09	92.0	F					
Liberty Street	EB	DefL	1.04	105.8	F	L	1.01	102.2	F					
	TR		1.15	120.0+	F*	TR	0.48	39.2	D					
	WB	DefL	0.44	43.9	D	LTR	1.13	120.0+	F*					
	TR		0.37	40.8	D	-	-	-	-					
Overall Intersection	-	-	1.00	37.6	D	-	1.14	74.9	E					

TABLE E.2-52
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	TR	1.14	120.0+	F*	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	R		1.10	120.0+	F*	R	1.11	120.0+	F*						
	SB	T	1.10	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B						
	WB	L	0.94	120.0+	F*	L	1.07	120.0+	F*						
	R		0.90	120.0+	F*	R	1.13	120.0+	F*						
Overall Intersection	-		1.02	120.0+	F*	-	1.20+	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street (World Trade Center Garage/Washington Street at Vesey Street)															
Washington Street	NB	-	-	-	-	R	0.53	29.1	C					- Mitigation not required.	
Vesey Street	EB	LT	0.53	11.8	B	L	0.22	13.3	B						
	-	-	-	-	-	T	0.53	15.0	B						
	-	-	-	-	-	R	0.05	0.2	A						
	WB	TR	0.39	9.5	A	-	-	-	-						
Overall Intersection	-		0.33	10.6	B	-	0.53	16.2	B						
9 Washington Street at Liberty Street															
Washington Street	NB	R	0.13	22.3	C	ANALYSIS NOT NEEDED. (FREE FLOW)									
Liberty Street	EB	T	0.39	9.6	A	-	-	-	-						
Overall Intersection	-		0.30	10.4	B	-	-	-	-						
GREENWICH STREET CORRIDOR															
11 Greenwich Street at Chambers Street															
Greenwich Street	SB	LTR	0.54	24.5	C	LTR	0.22	14.6	B					- Mitigation not required.	
Chambers Street	EB	TR	0.37	11.4	B	TR	0.41	16.8	B						
	WB	LT	0.84	26.3	C	LT	0.93	41.1	D						
Overall Intersection	-		0.72	20.9	C	-	0.57	27.6	C						
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.75	23.7	C	T	0.89	43.0	D	- Revise the current 90 s cycle to include a pedestrian-only phase.	
	-	-	-	-	-	R	1.15	111.9	F	R	0.78	29.4	C		
Fulton Street	WB	-	-	-	-	LT	0.64	28.3	C	LT	0.75	39.9	D		
Overall Intersection	-		-	-	-	-	0.95	54.7	D	-	0.65	37.4	D		
14 Greenwich Street at Liberty Street															
Greenwich Street	SB	-	-	-	-	LT	0.93	47.3	D	LT	0.91	42.3	D	- Modify signal timing (shift 1 s of green time from EB phase to SB phase).	
Liberty Street	EB	TR	0.51	11.2	B	TR	0.45	17.2	B	TR	0.46	18.0	B		
Overall Intersection	-		0.32	11.2	B	-	0.69	31.0	C	-	0.69	29.2	C		
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.00	17.4	B	R	0.09	18.6	B	NB	R	0.08	18.5	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.39	22.9	C	LT	0.81	40.0	D	SB	L	0.32	22.2	C	
Rector Street	EB	TR	0.40	13.2	B	TR	0.66	18.9	B	T	0.40	22.5	C	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.	
										EB	TR	0.66	18.9		B
Overall Intersection	-		0.40	17.1	B	-	0.72	27.9	C	-	0.55	20.4	C		

TABLE E.2-52
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.39	28.7	C	LTR	0.91	46.9	D	LTR	0.72	36.3	D	- Restripe EB left-turn lane from 11 ft. to 14 ft. by reducing the median width. - Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane. - Modify signal timing (add 4 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).	
		R	1.01	120.0+	F*	R	0.80	47.6	D	R	1.00	88.5	F		
Canal Street	EB	L	0.34	25.2	C	L	0.89	50.8	D	L	0.71	31.6	C		
		T	0.98	52.6	D	T	0.94	42.5	D	T	0.89	32.7	C		
	WB	T	0.23	23.4	C	T	0.53	29.0	C	T	0.46	24.5	C		
		R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.20	115.4	F		
Overall Intersection	-		1.16	87.9	F	-	1.20+	80.4	F	-	1.15	60.6	E		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.42	26.6	C	L	0.73	44.5	D	L	0.73	44.5	D		- Modify signal timing (shift 4 s of green time from EB lead phase to EB/WB phase).
		T	1.09	113.6	F	T	0.49	26.2	C	T	0.49	26.2	C		
		R	0.20	23.6	C	R	0.11	22.0	C	R	0.11	22.0	C		
Canal Street	EB	TR	0.45	10.8	B	TR	0.32	9.1	A	TR	0.32	9.1	A		
	WB	LT	1.13	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.12	120.0+	F*		
Overall Intersection	-		0.67	103.6	F	-	0.46	120.0+	F*	-	0.46	82.3	F		
WEST BROADWAY CORRIDOR															
18 West Broadway at Worth Street															
West Broadway	SB	LTR	0.79	19.4	B	LTR	0.68	16.2	B	LTR	0.47	12.7	B	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of West Broadway during the AM and PM peak periods to gain an additional SB through lane. - Modify signal timing (shift 1 s of green time from SB phase to EB/WB phase).	
Worth Street	EB	TR	0.22	20.8	C	TR	0.28	23.1	C	TR	0.27	22.2	C		
	WB	LT	0.65	30.1	C	LT	0.87	46.3	D	LT	0.85	42.5	D		
Overall Intersection	-		0.74	21.5	C	-	0.76	24.8	C	-	0.62	21.3	C		
19 West Broadway at Chambers Street															
West Broadway	SB	L	0.38	17.3	B	L	0.27	15.7	B	L	0.33	20.9	C		- Modify signal timing (shift 7 s of green time from SB phase to EB/WB phase).
		TR	0.50	18.1	B	TR	0.48	17.8	B	TR	0.58	24.0	C		
Chambers Street	EB	L	0.31	19.5	B	L	0.47	26.3	C	L	0.35	16.0	B		
		TR	0.90	41.6	D	TR	0.82	38.0	D	TR	0.71	23.5	C		
	WB	LTR	1.18	120.0+	F*	LTR	1.20+	120.0+	F*	LTR	1.14	101.6	F		
Overall Intersection	-		0.84	56.3	E	-	1.00	113.1	F	-	0.91	51.2	D		
20 West Broadway at Barclay Street															
West Broadway	SB	TR	0.54	11.5	B	TR	0.81	16.7	B					- Mitigation not required.	
Barclay Street	WB	LT	0.97	51.7	D	LT	0.98	53.5	D						
Overall Intersection	-		0.73	28.7	C	-	0.88	29.3	C						
13 West Broadway/Greenwich Street at Vesey Street															
West Broadway	SB	L	1.20+	120.0+	F*	L	0.82	38.8	D	L	0.88	46.2	D	- Modify signal timing (shift 2 s of green time from SB phase to EB phase).	
		R	0.95	49.2	D	LT	0.80	32.5	C	LT	0.86	37.0	D		
Vesey Street	EB	T	0.33	15.5	B	TR	1.01	56.4	E	TR	0.95	41.6	D		
	WB	T	0.25	14.7	B	-	-	-	-	-	-	-	-		
Overall Intersection	-		0.79	64.7	E	-	0.66	54.0	D	-	0.66	40.7	D		

TABLE E.2-52
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
CHURCH STREET CORRIDOR															
21 Church Street at Worth Street^(D)															
Church Street	NB	LTR	0.85	14.9	B	LTR	1.20+	120.0+	F*	NB	LT	0.88	22.2	C	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.
Worth Street	EB	LT	0.73	35.8	D	LT	0.59	30.9	C	R	R	0.35	7.8	A	
	WB	TR	0.66	29.6	C	TR	0.85	42.0	D	EB	LT	0.59	30.9	C	
										WB	T	0.56	27.5	C	
										R	R	0.31	22.7	C	
Overall Intersection	-		0.81	19.3	B	-	1.19	120.0+	F*	-		0.77	22.3	C	
22 Church Street at Chambers Street															
Church Street	NB	LTR	0.91	31.3	C	LTR	1.20+	120.0+	F*	LTR	0.99	41.1	D	D	- Eliminate the truck loading/unloading zone along the west side of Church Street during the peak periods to gain an additional NB through lane.
Chambers Street	EB	LT	1.11	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.17	120.0+	F*	C	
	WB	TR	0.91	39.2	D	TR	0.71	24.7	C	TR	0.71	24.7	C	C	- Provide strict enforcement of "No Standing Anytime" regulation along the north and south sides of EB Chambers Street during the peak periods.
Overall Intersection	-		1.01	58.3	E	-	1.20+	120.0+	F*	-		1.08	51.8	D	
23 Church Street at Barclay Street															
Church Street	NB	LT	0.95	31.1	C	LT	1.20+	120.0+	F*	LT	0.87	15.4	B	B	- Provide strict enforcement of "No Standing Anytime" regulation along the west side of NB Church Street during the peak periods to gain an additional NB through lane.
Barclay Street	WB	T	0.52	25.4	C	T	0.38	22.9	C	T	0.38	22.9	C	C	
	R	R	1.03	87.3	F	R	0.59	28.6	C	R	0.59	28.6	C	C	
Overall Intersection	-		0.98	38.7	D	-	0.98	109.5	F	-		0.76	17.4	B	
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>															
24 Church Street at Vesey Street															
Church Street	NB	LT	1.20+	120.0+	F*	T	1.09	73.6	E	TR	0.90	36.1	D	D	- Apply general measures. - Prohibit parking along the north side of Vesey Street through daylighting to gain an exclusive left-turn lane.
	R	R	0.74	19.7	B	R	1.00	66.1	E	-	-	-	-	-	
Vesey Street	EB	LT	0.90	38.9	D	LT	1.20+	120.0+	F*	L	0.74	41.2	D	D	- Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.
										LT	0.74	37.0	D		
Overall Intersection	-		1.13	101.2	F	-	1.20+	120.0+	F*	-		0.68	37.0	D	
25 Church Street at Fulton Street															
Church Street	NB	T	0.73	11.7	B	LT	0.99	31.6	C	LT	0.85	32.0	C	C	- Apply general measures.
Fulton Street	WB	R	0.61	35.7	D	TR	1.20+	120.0+	F*	TR	0.66	35.6	D	D	- Eliminate the Bus Layover Zone along the west side of Church Street between Fulton Street and Dey Street to gain an additional NB lane.
Overall Intersection	-		0.70	14.4	B	-	1.15	76.4	E	-		0.62	32.9	C	- Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.
26 Church Street at Dey Street															
Church Street	NB	T	0.74	11.9	B	T	0.80	7.0	A	T	0.91	25.1	C	C	- Apply general measures.
Dey Street	WB	R	0.27	29.3	C	R	0.27	29.6	C	R	0.16	36.3	D	D	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]
Overall Intersection	-		0.61	12.5	B	-	0.65	7.6	A	-		0.55	25.4	C	
27 Church Street at Cortlandt Street															
Church Street	NB	T	0.55	9.0	A	T	0.66	10.4	B	T	0.71	22.4	C	C	- Apply general measures.
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.61	38.9	D	D	- Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.
Overall Intersection	-		0.92	97.8	F	-	1.13	120.0+	F*	-		0.56	26.7	C	
28 Church Street at Liberty Street															
Church Street	NB	T	0.63	10.5	B	T	0.56	9.5	A	T	0.68	23.3	C	C	- Apply general measures.
	R	R	0.22	7.2	A	R	0.18	6.9	A	R	0.14	15.3	B	B	
Liberty Street	EB	LT	0.43	22.6	C	LT	0.99	59.9	E	LT	0.75	42.1	D	D	
Overall Intersection	-		0.55	13.9	B	-	0.73	31.2	C	-		0.59	31.1	C	
29 Trinity Street at Rector Street															
Trinity Street	NB	TR	0.58	14.5	B	TR	0.43	12.1	B	TR	0.44	13.4	B	B	- Modify signal timing (shift 2 s of green time from NB phase to EB phase).
Rector Street	EB	LT	0.53	25.9	C	LT	0.95	54.5	D	LT	0.88	42.5	D	D	
Overall Intersection	-		0.56	17.5	B	-	0.63	32.2	C	-		0.63	27.2	C	

TABLE E.2-52
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
BROADWAY CORRIDOR														
30 Broadway at Canal Street														
Broadway	SB	LTR	0.57	23.9	C	LTR	0.74	25.7	C					- Mitigation not required.
Canal Street	EB	TR	1.15	120.0+	F*	TR	0.97	48.1	D					
	WB	DefL	1.10	120.0+	F*	DefL	1.10	101.3	F					
		T	1.00	62.5	E	T	0.74	19.2	B					
Overall Intersection	-		0.92	100.1	F	-	0.92	41.9	D					
31 Broadway at Worth Street⁽¹⁾														
Broadway	SB	LTR	0.75	16.3	B	LTR	0.83	83.4	F	LTR	0.59	27.8	C	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along E1 Worth Street from 14 ft. to 15 ft.
Worth Street	EB	TR	0.65	24.1	C	TR	0.88	42.4	D	TR	0.86	38.7	D	
	WB	L	0.36	20.4	C	LT	0.90	43.5	D	L	0.36	20.7	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.
		T	0.56	21.5	C					T	0.57	21.6	C	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.
Overall Intersection	-		0.71	19.2	B	-	0.86	66.4	E	-	0.71	28.6	C	
32 Broadway at Chambers Street														
Broadway	SB	LTR	0.58	12.8	B	LTR	0.60	13.1	B					- Mitigation not required.
Chambers Street	EB	TR	1.02	66.9	E	TR	0.94	46.0	D					
	WB	L	0.79	49.0	D	L	0.42	22.6	C					
		LT	0.85	32.7	C	LT	0.64	22.4	C					
Overall Intersection	-		0.78	33.9	C	-	0.76	24.1	C					
33 Broadway at Vesey Street / Ann Street														
Broadway	SB	L	0.89	37.9	D	L	0.96	44.2	D	L	0.76	33.4	C	- Partially Mitigated.
		LT	0.58	19.3	B	LT	0.47	14.2	B	LT	0.77	27.3	C	- Prohibit parking along the north side of EB Vesey Street.
Vesey Street	EB	L	1.06	99.7	F	L	1.20+	120.0+	F*	L	1.06	86.1	F	- Restripe EB Vesey Street to two 11ft. exclusive left-turn lanes and one 11ft. shared through-right lane.
		LTR	0.83	43.3	D	LTR	1.20+	120.0+	F*	TR	0.67	41.0	D	- Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only.
Overall Intersection	-		0.68	39.6	D	-	0.77	120.0+	F*	-	0.57	46.8	D	- Modify signal timing (shift 9 s of green time from SB phase to EB phase).
34 Broadway at Fulton Street⁽²⁾														
Broadway	SB	TR	0.55	10.2	B	TR	0.42	8.8	A					- Mitigation not required.
Fulton Street	WB	LT	0.37	26.2	C	LT	0.61	30.6	C					
Overall Intersection	-		0.49	13.1	B	-	0.48	15.6	B					
35 Broadway at Dey Street														
Broadway	SB	LTR	0.91	24.5	C	LTR	0.66	12.7	B					- Mitigation not required.
Overall Intersection	-		0.59	24.5	C	-	0.43	12.7	B					
36 Broadway at Maiden Lane / Cortlandt Street														
Broadway	SB	TR	0.77	15.7	B	TR	0.67	13.5	B					- Mitigation not required.
Maiden Lane	WB	LT	1.20+	120.0+	F*	LT	0.90	52.8	D					
Overall Intersection	-		0.94	74.2	E	-	0.74	26.7	C					
37 Broadway at Liberty Street														
Broadway	SB	LT	0.70	13.9	B	LT	0.55	11.1	B					- Mitigation not required.
Liberty Street	EB	TR	0.65	36.9	D	TR	0.43	27.1	C					
Overall Intersection	-		0.68	20.0	B	-	0.52	16.3	B					
38 Broadway at Rector Street														
Broadway	SB	T	0.49	9.7	A	T	0.69	13.1	B					- Mitigation not required.
Rector Street	EB	R	0.68	44.6	D	R	0.64	41.0	D					
Overall Intersection	-		0.55	14.4	B	-	0.68	18.3	B					
39 Broadway at Exchange Place														
Broadway	SB	LT	0.62	10.3	B	T	0.58	9.9	A					- Mitigation not required.
Overall Intersection	-		0.43	10.3	B	-	0.40	9.9	A					

TABLE E.2-52
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
WATER STREET CORRIDOR														
40 Water Street at Fulton Street⁽³⁾														
Water Street	NB	LT	0.58	16.2	B	L	0.49	20.3	C	LT	0.71	18.9	B	- Restripe the NB approach of Water Street to provide one through lane and one through-left lane.
			-	-	-	T	1.19	117.5	F		-	-	-	
	SB	TR	0.33	13.0	B	TR	0.50	15.3	B	TR	0.50	15.3	B	
Fulton Street	EB	LR	0.70	36.8	D	LR	0.37	27.2	C	LR	0.37	27.2	C	
Overall Intersection			0.55	18.9	B		0.78	71.1	E		0.51	18.4	B	
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS RL9A) at Rector Street	ANALYSIS NOT NEEDED (FREE FLOW)				ANALYSIS NOT NEEDED (FREE FLOW)									
7 West Street (NYS RL 9A) at Barclay⁽⁴⁾	NB	-	-	-	-	-	-	-	-	T	0.74	8.2	A	- Install a traffic signal.
	WB	R	0.67	41.7	E	R	0.83	55.9	F	R	0.44	34.4	C	- Restripe WB Barclay Street to three 11ft. right-turn lanes.
Overall Intersection											0.64	12.3	B	
WASHINGTON STREET CORRIDOR														
10 Washington Street at Rector Street														
Washington Street	SB	-	-	-	-	LT	0.22	15.0	C					- Mitigation not required.
Rector Street	EB	LTR	0.03	7.4	A	-	-	-	-					
GREENWICH STREET CORRIDOR														
12 Greenwich Street at Barclay Street														
Greenwich Street	SB	R	0.06	11.9	B	R	0.02	14.6	B					- Mitigation not required.

Eng-Wong, Taub & Associates Notes:

- (1): AM/MD/PM volumes were obtained from Urbitran Associates, Inc., Catherine Village Public Parking Garage, 1999. These volumes were balanced to fit into the WTC EIS networks.
- (2): Broadway at Fulton Street is closed during the midday for the Pedestrian mall.
- (3): Pre-9/11 traffic volumes were obtained from 1997 MESA study.
- (4): Locations analyzed without diversion volumes due to uncertainty of future lane configuration changes.

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-53
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.02	56.3	E	TR	1.09	77.0	E					- Meaningful TSM mitigation measures are not available.
	SB	L	0.68	50.5	D	L	1.02	100.1	F					
		TR	0.61	5.1	A	TR	0.64	4.3	A					
Chambers Street	EB	LTR	0.72	59.7	E	LTR	0.48	42.0	D					
	WB	LT	0.79	56.1	E	LT	0.83	62.5	E					
		R	0.60	25.9	C	R	0.49	27.2	C					
Overall Intersection	-	-	0.88	35.5	D	-	1.01	48.9	D					
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.74	45.6	D	L	0.74	45.6	D	- Partially mitigated. - Shift NB approach curbline east to gain one additional through lane.
		TR	0.97	21.8	C	TR	0.87	120.0+	F*	TR	0.61	120.0+	F*	
	SB	L	0.12	7.4	A	L	0.80	49.7	D	L	0.80	49.7	D	
		TR	0.58	3.6	A	TR	0.72	38.0	D	TR	0.72	38.0	D	
Vesey Street	EB	LTR	1.05	96.3	F	LT	0.64	46.6	D	LT	0.64	46.6	D	
		-	-	-	-	R	0.58	48.4	D	R	0.58	48.4	D	
	WB	L	1.14	120.0+	F*	-	-	-	-	-	-	-	-	
		LTR	0.96	80.8	F	-	-	-	-	-	-	-	-	
Overall Intersection	-	-	1.04	29.0	C	-	0.78	120.0+	F*	-	0.73	80.2	F	
OPTION 1														
OPTION 2														
	NB	L	0.71	43.8	D	TR	0.71	120.0+	F*					- Partially mitigated. - Gain one additional SB approach travel lane by constructing a cantilever lane section - Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane. - Shift NB approach curbline east to gain one additional through lane. - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
		TR	0.71	120.0+	F*									
SB	L	0.55	34.7	C	LTR	0.55	32.2	C						
		LTR	0.55	32.2	C									
EB	LT	0.64	46.6	D	R	0.58	48.4	D						
Overall Intersection	-	-	0.63	105.7	F									
OPTION 3														
	NB	L	0.27	20.0	B	TR	0.39	57.5	E					- Partially mitigated. - Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street. - Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach). - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
		TR	0.39	57.5	E									
SB	L	0.49	42.3	D	TR	0.56	42.6	D						
		TR	0.56	42.6	D									
EB	LT	0.64	46.6	D	R	0.58	48.4	D						
Overall Intersection	-	-	0.51	44.9	D									
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.38	18.1	B	T	0.40	20.6	C	- Modify signal timing (shift 3 s of green time from the NB/SB phase to the WB phase). - Prohibit parking along the north side of WB Fulton Street through daylighting for the AM peak period.
Fulton Street	SB	-	-	-	-	T	0.35	17.9	B	T	0.37	20.3	C	
	WB	-	-	-	-	L	0.64	30.5	C	L	0.60	26.4	C	
		-	-	-	-	R	1.02	84.6	F	R	0.84	42.5	D	
Overall Intersection	-	-	-	-	-	-	0.71	32.1	C	-	0.64	25.3	C	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.96	93.1	F	L	0.47	35.3	D					- Mitigation not required.
		TR	1.04	54.3	D	TR	0.72	41.1	D					
	SB	L	1.20+	120.0+	F*	L	0.61	37.5	D					
		TR	0.74	16.4	B	TR	0.66	36.5	D					
Liberty Street	EB	DeFL	1.15	120.0+	F*	L	0.67	47.3	D					
		TR	0.42	41.0	D	TR	0.27	36.5	D					
	WB	LTR	0.28	37.1	D	LTR	0.01	31.9	C					
		-	-	-	-	-	-	-	-					
Overall Intersection	-	-	1.09	54.4	D	-	0.68	39.4	D					

TABLE E.2-53
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (8:15 - 9:15 AM)				Current 2009 Build (8:15 - 9:15 AM)				Current 2009 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.11	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	R		1.06	111.1	F	R	1.19	120.0+	F*						
	SB	T	1.12	120.0+	F*	TR	1.20	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.62	26.3	C						
	WB	L	1.05	120.0+	F*	L	1.06	120.0+	F*						
	R		1.07	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-		1.09	120.0+	F*	-	1.20+	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street															
(World Trade Center Garage/Washington Street at Vesey Street)															
World Trade Center Garage	NB	-	-	-	-	R	0.06	16.5	B					- Mitigation not required.	
Vesey Street	EB	LT	0.50	10.7	B	L	0.13	11.5	B						
	-	-	-	-	-	T	0.41	13.6	B						
	-	-	-	-	-	R	0.14	0.3	A						
	WB	TR	0.28	8.4	A	-	-	-	-						
Overall Intersection	-		0.31	9.7	A	-	0.26	12.0	B						
GREENWICH STREET CORRIDOR															
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.65	19.1	B	T	0.79	33.2	C	- Revise the current 90 s cycle to include a pedestrian-only phase.	
	-	-	-	-	-	R	0.96	55.8	E	R	0.67	24.5	C		
Fulton Street	WB	-	-	-	-	LT	0.43	23.7	C	LT	0.54	32.8	C		
	-	-	-	-	-	-	-	-	-	-	-	-	-		
Overall Intersection	-	-	-	-	-	-	0.76	33.3	C	-	0.55	30.0	C		
WEST BROADWAY CORRIDOR															
13 West Broadway/Greenwich Street at Vesey Street															
West Broadway	SB	L	1.16	120.0+	F*	L	0.81	38.0	D					- Mitigation not required.	
	R		0.75	28.3	C	LT	0.73	29.9	C						
Vesey Street	EB	T	0.36	15.9	B	TR	0.70	28.2	C						
	WB	T	0.15	13.9	B	-	-	-	-						
Overall Intersection	-		0.76	69.4	E	-	0.55	30.9	C						
UNSIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)						
7 West Street (NYS Rt.9A) at Barclay															
Barclay Street	WB	R	0.55	38.1	E	R	0.29	14.3	B					- Mitigation not required.	
General Notes:															
(i): Control delay is measured in seconds per vehicle.															
(ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.															
(iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.															
(iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.															
(v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).															

TABLE E.2-54
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	0.86	21.5	C	TR	0.90	24.5	C				- Mitigation not required.	
	SB	L	0.81	69.9	E	L	0.79	63.4	E					
		TR	0.51	4.4	A	TR	0.61	4.1	A					
Chambers Street	EB	LTR	0.27	36.1	D	LTR	0.26	37.1	D					
	WB	LT	0.69	49.9	D	LT	0.66	49.2	D					
		R	0.72	36.6	D	R	0.50	27.4	C					
Overall Intersection	-	0.80	20.4	C	-	0.81	19.9	B	-	-	-	-		
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.52	36.9	D	L	0.52	36.9	D	- Partially mitigated.
		TR	0.69	12.0	B	TR	0.78	56.4	E	TR	0.54	38.2	D	- Shift NB approach curbline east to gain one additional through lane.
	SB	L	0.19	4.5	A	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	- Prohibit parking along the south side of EB Vesey Street during MD peak period.
		TR	0.48	3.1	A	TR	0.50	32.4	C	TR	0.50	32.4	C	
Vesey Street	EB	LTR	0.75	49.4	D	LT	0.26	36.2	D	LT	0.26	36.2	D	
		R	0.80	54.4	D	R	1.20+	120.0+	F*	R	1.12	120.0+	F*	
	WB	L	1.01	95.3	F	-	-	-	-	-	-	-	-	
		LTR	1.01	95.3	F	-	-	-	-	-	-	-	-	
Overall Intersection	-	0.91	17.6	B	-	1.15	99.5	F	-	1.02	88.0	F	-	
OPTION 2														
	NB	L	0.47	33.5	C	-	-	-	-	-	-	-	-	- Partially mitigated.
		TR	0.69	45.0	D	-	-	-	-	-	-	-	-	- Gain one additional SB approach travel lane by constructing a cantilever lane section
	SB	L	0.42	33.3	C	-	-	-	-	-	-	-	-	- Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane.
		LTR	0.57	34.7	C	-	-	-	-	-	-	-	-	- Shift NB approach curbline east to gain one additional through lane.
	EB	LT	0.26	36.2	D	-	-	-	-	-	-	-	-	- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
		R	1.12	120.0+	F*	-	-	-	-	-	-	-	-	- Prohibit parking along the south side of EB Vesey Street during MD peak period.
	-	0.77	48.5	D	-	-	-	-	-	-	-	-	-	
OPTION 3														
	NB	L	0.26	31.3	C	-	-	-	-	-	-	-	-	- Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street.
		TR	0.56	39.7	D	-	-	-	-	-	-	-	-	
	SB	L	0.56	39.4	D	-	-	-	-	-	-	-	-	
		TR	0.32	34.7	C	-	-	-	-	-	-	-	-	
	EB	LT	0.21	29.6	C	-	-	-	-	-	-	-	-	- Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach).
		R	0.69	48.2	D	-	-	-	-	-	-	-	-	- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
	-	0.60	37.9	D	-	-	-	-	-	-	-	-	-	- Prohibit parking along the south side of EB Vesey Street through daylighting during MD peak period.
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.28	17.1	B				- Mitigation not required.	
Fulton Street	SB	-	-	-	-	T	0.30	17.3	B					
	WB	-	-	-	-	L	0.61	29.2	C					
		-	-	-	-	R	0.69	30.9	C					
Overall Intersection	-	-	-	-	-	0.50	22.0	C	-	-	-	-	-	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.43	53.3	D	L	0.41	33.2	C				- Mitigation not required.	
		TR	0.75	16.5	B	TR	0.72	41.8	D					
	SB	L	0.79	68.2	E	L	0.78	50.2	D					
		TR	0.63	14.3	B	TR	0.53	33.2	C					
Liberty Street	EB	DefL	0.69	58.0	E	L	0.52	41.5	D					
		TR	0.43	42.5	D	TR	0.17	34.5	C					
	WB	LTR	0.60	49.3	D	LTR	0.11	34.0	C					
		-	-	-	-	-	-	-	-					
Overall Intersection	-	0.74	22.2	C	-	0.68	39.3	D	-	-	-	-	-	

TABLE E.2-54
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (12:00 - 1:00 PM)				Current 2009 Build (12:00 - 1:00 PM)				Current 2009 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
WASHINGTON STREET CORRIDOR														
8 West Street at Vesey Street (World Trade Center Garage/Washington Street at Vesey Street)														
World Trade Center Garage	NB	-	-	-	D	R	0.17	18.1	B				- Mitigation not required.	
Vesey Street	EB	LT	0.22	8.2	A	L	0.11	11.3	B					
	-	-	-	-	-	T	0.47	14.3	B					
	-	-	-	-	-	R	0.07	0.1	A					
	WB	TR	0.28	8.6	A	-	-	-	-					
Overall Intersection	-	-	0.18	8.4	A	-	0.34	13.6	B					
GREENWICH STREET CORRIDOR														
42 Greenwich Street at Fulton Street														
Greenwich Street	SB	TR	-	-	-	T	0.69	20.2	C	T	0.83	36.7	D	- Revise the current 90 s cycle to include a pedestrian-only phase.
	-	-	-	-	-	R	0.97	56.7	E	R	0.68	24.6	C	
Fulton Street	WB	LT	-	-	-	LT	0.45	24.1	C	LT	0.52	32.3	C	
Overall Intersection	-	-	-	-	-	-	0.77	33.9	C	-	0.57	31.2	C	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	0.60	21.8	C	L	0.60	28.9	C					- Mitigation not required.
	R	0.81	32.0	C	LT	0.56	26.1	C						
Vesey Street	EB	T	0.29	15.2	B	TR	0.86	34.9	C					
	WB	T	0.14	13.8	B	-	-	-	-					
Overall Intersection	-	-	0.55	21.0	C	-	0.54	31.0	C					
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street														
			ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)			
7 West Street (NYS Rt.9A) at Barclay														
Barclay Street	WB	R	0.60	31.0	D	R	0.33	14.2	B					- Mitigation not required.

General Notes:
 (i): Control delay is measured in seconds per vehicle.
 (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual – TRB.
 (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual – TRB.
 (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
 (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-55
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.05	67.4	E	TR	0.95	29.2	C					- Mitigation not required.
	SB	L	0.74	57.1	E	L	0.71	58.2	E					
		TR	0.69	9.9	A	TR	0.76	5.5	A					
Chambers Street	EB	LTR	0.60	43.0	D	LTR	0.33	39.5	D					
	WB	LT	1.02	94.1	F	LT	0.96	88.9	F					
		R	0.66	25.8	C	R	0.78	38.7	D					
Overall Intersection	-		0.98	42.1	D	-	0.92	23.5	C					
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.56	38.1	D	L	0.63	44.9	D	- Shift NB approach curbline east to gain one additional through lane.
	TR	0.77	13.2	B	TR	0.94	62.7	E	TR	0.73	43.8	D	- Modify signal timing (shift 4 s of green time from NB phase to SB phase).	
	SB	L	0.15	4.9	A	L	0.86	55.9	E	L	0.78	43.0	D	
		TR	0.64	3.9	A	TR	0.62	42.3	D	TR	0.57	35.7	D	
Vesey Street	EB	LTR	1.01	84.7	F	LT	0.59	44.3	D	LT	0.59	44.3	D	
	-	-	-	-	-	R	0.61	49.9	D	R	0.61	49.9	D	
	WB	L	0.91	71.8	E	-	-	-	-	-	-	-	-	
	LTR	1.20+	120.0+	F ^B	-	-	-	-	-	-	-	-	-	
Overall Intersection	-		1.01	28.8	C	-	0.82	51.6	D	-	0.72	42.3	D	
OPTION 2														
	NB	L	0.54	37.3	D									- Gain one additional SB approach travel lane by constructing a cantilever lane section
		TR	0.75	41.4	D									- Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane.
	SB	L	0.51	33.6	C									
		LTR	0.51	34.6	C									- Shift NB approach curbline east to gain one additional through lane.
	EB	LT	0.59	44.3	D									- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
		R	0.61	49.9	D									
	-		0.62	39.0	D									
OPTION 3														
	NB	L	0.28	30.7	C									- Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street.
		TR	0.56	35.1	D									
	SB	L	0.36	29.2	C									
		TR	0.33	30.0	C									
	EB	LT	0.59	44.3	D									- Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach).
		R	0.61	49.9	D									- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
	-		0.50	34.3	C									
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.34	17.7	B					- Mitigation not required.
Fulton Street	SB	-	-	-	-	T	0.35	17.8	B					
	WB					L	0.70	32.1	C					
						R	0.78	39.3	D					
Overall Intersection	-		-	-	-	-	0.57	24.6	C					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.69	59.8	E	L	0.48	36.5	D	L	0.51	39.1	D	- Modify signal timing (shift 2 s of green time from NB phase to SB phase).
	TR	0.70	15.5	B	TR	0.66	39.2	D	TR	0.70	42.5	D		
	SB	L	0.81	66.9	E	L	0.51	35.4	D	L	0.49	32.8	C	
		TR	0.89	21.0	C	TR	0.81	48.4	D	TR	0.77	43.4	D	
Liberty Street	EB	LTR	0.90	62.0	E	L	0.36	37.6	D	L	0.36	37.6	D	
	-	-	-	-	-	TR	0.56	44.6	D	TR	0.56	44.6	D	
	WB	De/L	0.43	43.7	D	LTR	0.11	33.6	C	LTR	0.11	33.6	C	
		TR	0.36	40.6	D	-	-	-	-	-	-	-	-	
Overall Intersection	-		0.88	27.2	C	-	0.68	42.1	D	-	0.68	41.2	D	

TABLE E.2-55
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2009 NO ACTION CONDITION vs 2009 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2009 No Action (5:00 - 6:00 PM)				Current 2009 Build (5:00 - 6:00 PM)				Current 2009 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	TR	1.08	120.0+	F*	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	R		1.06	104.1	F	R	1.09	117.6	F					
	SB	T	1.03	103.0	F	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B					
	WB	L	0.93	120.0+	F*	L	1.05	120.0+	F*					
	R		0.86	120.0+	F*	R	1.07	120.0+	F*					
Overall Intersection	-		0.99	120.0+	F*	-	1.14	120.0+	F*					
WASHINGTON STREET CORRIDOR														
8 Washington Street at Vesey Street (World Trade Center Garage/Washington Street at Vesey Street)														
World Trade Center Garage	NB	-	-	-	-	R	0.18	18.2	B					- Mitigation not required.
Vesey Street	EB	LT	0.49	11.1	B	L	0.11	11.3	B					
	-	-	-	-	-	T	0.50	14.6	B					
	-	-	-	-	-	R	0.01	0.0	A					
	WB	TR	0.32	9.0	A	-	-	-	-					
Overall Intersection	-		0.31	10.0	B	-	0.36	14.6	B					
GREENWICH STREET CORRIDOR														
42 Greenwich Street at Fulton Street														
Greenwich Street	SB	-	-	-	-	T	0.74	23.2	C	T	0.87	41.4	D	- Revise the current 90 s cycle to include a pedestrian-only phase.
						R	1.20+	120.0+	F*	R	0.83	32.9	C	
Fulton Street	WB	-	-	-	-	LT	0.55	26.0	C	LT	0.68	37.2	D	
Overall Intersection	-		-	-	-	-	0.96	65.0	E	-	0.63	36.9	D	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	1.20+	120.0+	F*	L	0.80	37.5	D					- Mitigation not required.
	R		0.93	45.9	D	LT	0.78	31.4	C					
Vesey Street	EB	T	0.32	15.4	B	TR	0.92	39.1	D					
	WB	T	0.17	14.1	B	-	-	-	-					
Overall Intersection	-		0.76	61.2	E	-	0.63	36.0	D					
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)					
7 West Street (NYS Rt.9A) at Barclay														
Barclay Street	WB	R	0.60	33.9	D	R	0.32	14.6	B					- Mitigation not required.
General Notes:														
(i): Control delay is measured in seconds per vehicle.														
(ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.														
(iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.														
(iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.														
(v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).														

TABLE E.2-56
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.11	89.4	F	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	SB	L	0.69	51.0	D	L	1.03	102.6	F					
		TR	0.69	5.8	A	TR	0.86	7.5	A					
Chambers Street	EB	LTR	0.85	80.7	F	LTR	0.49	42.3	D					
	WB	LT	0.94	77.6	E	LT	0.99	91.7	F					
		R	0.62	26.4	C	R	0.53	28.2	C					
Overall Intersection			0.97	51.3	D		1.16	85.3	F					
3 West Street (NYS Rt. 9A) at Vesey Street														
West Street (NYS Rt. 9A)	NB		-	-	-	L	0.78	48.3	D	L	0.78	48.3	D	- Partially mitigated.
		TR	1.02	42.2	D	TR	1.14	120.0+	F*	TR	0.80	120.0+	F*	- Shift NB approach curbline east to gain one additional through lane.
	SB	L	0.14	8.7	A	L	1.17	120.0+	F*	L	1.17	120.0+	F*	
		TR	0.66	4.0	A	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*	
Vesey Street	EB	LTR	1.06	97.6	F	LT	0.65	46.9	D	LT	0.65	46.9	D	
			-	-	-	R	0.64	52.4	D	R	0.64	52.4	D	
	WB	L	1.20	120.0+	F*	-	-	-	-	-	-	-	-	
		LTR	1.20+	120.0+	F*	-	-	-	-	-	-	-	-	
Overall Intersection			1.19	47.7	D		1.08	120.0+	F*		0.96	120.0+	F*	
OPTION 1														
	NB	L	0.77	47.2	D									- Partially mitigated.
		TR	0.99	120.0+	F*									- Gain one additional SB approach travel lane by constructing a cantilever lane section
SB	L	0.96	69.0	E										- Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared though-left lane and one 11 ft. exclusive left-turn lane.
		LTR	0.96	54.7	D									
EB	LT	0.65	46.9	D										- Shift NB approach curbline east to gain one additional through lane.
		R	0.64	52.4	D									- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
Overall Intersection			0.88	120.0+	F*									
OPTION 2														
	NB	L	0.35	27.4	C									- Partially mitigated.
		TR	0.65	120.0+	F*									- Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street.
SB	L	0.57	37.7	D										
		TR	0.81	43.5	D									
EB	LT	0.65	46.9	D										- Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach).
		R	0.64	52.4	D									- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
Overall Intersection			0.70	66.8	E									
OPTION 3														
	NB	L	1.20+	120.0+	F*	L	0.66	41.8	D	L	0.63	39.0	D	- Partially mitigated.
		TR	1.06	64.2	E	TR	0.98	66.6	E	TR	0.97	63.2	E	- Reduce median width and reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared though-left lane and one 11 ft. exclusive left-turn lane.
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	0.92	63.9	E	
		TR	0.81	18.1	B	TR	0.82	43.8	D	LTR	0.91	49.0	D	
Liberty Street	EB	DefL	1.20+	120.0+	F*	L	0.99	86.0	F	L	0.99	86.0	F	- Provide markings indicating that turns onto World Trade Center garage entry ramp must use the exclusive SB left-turn lane only.
		TR	0.43	41.3	D	TR	0.28	36.7	D	TR	0.28	36.7	D	
	WB	LTR	0.29	37.2	D	LTR	0.09	33.6	C	LTR	0.09	33.6	C	- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
Overall Intersection			1.20+	90.8	F		1.20+	120.0+	F*		0.96	57.9	E	- Modify signal timing (shift 1 s of green time from SB phase to NB phase).

TABLE E.2-56
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.19	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	R		1.16	120.0+	F*	R	1.20+	120.0+	F*					
	SB	T	1.17	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.63	26.6	C					
	WB	L	1.07	120.0+	F*	L	1.08	120.0+	F*					
	R		1.13	120.0+	F*	R	1.20+	120.0+	F*					
Overall Intersection	-		1.15	120.0+	F*	-	1.20+	120.0+	F*					
WASHINGTON STREET CORRIDOR														
8 Washington Street at Vesey Street (World Trade Center Garage/Washington Street at Vesey Street)														
World Trade Center Garage	NB	-	-	-	-	R	0.49	27.1	C					- Mitigation not required.
Vesey Street	EB	LT	0.55	11.4	B	L	0.22	13.3	B					
	-	-	-	-	-	T	0.53	15.0	B					
	-	-	-	-	-	R	0.05	0.2	A					
	WB	TR	0.34	8.9	A	-	-	-	-					
Overall Intersection	-		0.35	10.2	B	-	0.51	15.9	B					
GREENWICH STREET CORRIDOR														
42 Greenwich Street at Fulton Street														
Greenwich Street	SB	-	-	-	-	T	0.74	22.9	C	T	0.89	44.6	D	- Revise the current 90 s cycle to include a pedestrian-only phase.
	-	-	-	-	-	R	1.06	83.6	F	R	0.74	27.7	C	
Fulton Street	WB	-	-	-	-	LT	0.60	27.0	C	LT	0.70	37.1	D	
Overall Intersection	-	-	-	-	-	-	0.88	44.0	D	-	0.64	36.4	D	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	1.20+	120.0+	F*	L	0.84	40.0	D					- Mitigation not required.
	R		0.77	29.4	C	LT	0.83	33.8	C					
Vesey Street	EB	T	0.39	16.2	B	TR	0.84	33.2	C					
	WB	T	0.23	14.6	B	-	-	-	-					
Overall Intersection	-		0.80	77.1	E	-	0.61	34.7	C					
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)					
7 West Street (NYS Rt.9A) at Barclay														
Barclay Street	WB	R	0.60	44.9	E	R	0.43	17.0	C					- Mitigation not required.
General Notes:														
(i): Control delay is measured in seconds per vehicle.														
(ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.														
(iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.														
(iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.														
(v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).														

TABLE E.2-57
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Mvt.	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
		V/C	Delay	LOS	Mvt.	V/C	Delay	LOS	Mvt.	V/C	Delay	LOS			
													Control		Control
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	0.96	29.4	C	TR	1.13	93.6	F					- Meaningful TSM mitigation measures are not available.	
	SB	L	0.83	71.6	E	L	0.79	63.9	E						
		TR	0.58	4.9	A	TR	0.81	6.4	A						
Chambers Street	EB	LTR	0.31	37.2	D	LTR	0.30	38.4	D						
	WB	LT	0.83	61.6	E	LT	0.85	66.6	E						
		R	0.73	37.2	D	R	0.54	28.4	C						
Overall Intersection			0.90	24.5	C	1.00	51.5	D							
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.57	38.5	D	L	0.57	38.5	D		- Partially mitigated.
	TR	0.75	12.8	B	TR	0.95	107.0	F	TR	0.66	41.9	D	- Shift NB approach curbline east to gain one additional through lane.		
	SB	L	0.21	5.0	A	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	- Prohibit parking along the south side of EB Vesey Street during MD peak period.	
		TR	0.56	3.4	A	TR	1.10	114.9	F	TR	1.10	114.9	F		
Vesey Street	EB	DefL	1.20+	120.0+	F*	LT	0.28	36.7	D	LT	0.28	36.7	D		
		TR	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	1.14	120.0+	F*		
	WB	L	0.88	62.9	E	-	-	-	-	-	-	-	-		
		LTR	1.20+	120.0+	F*	-	-	-	-	-	-	-	-		
Overall Intersection			1.11	42.4	D	1.20+	120.0+	F*		1.12	120.0+	F*			
OPTION 2															
	NB	L	0.56	37.9	D									- Partially mitigated.	
		TR	0.91	80.9	F									- Gain one additional SB approach travel lane by constructing a cantilever lane section	
	SB	L	0.86	52.8	D									- Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane.	
		LTR	0.86	43.7	D									- Shift NB approach curbline east to gain one additional through lane.	
	EB	LT	0.28	36.7	D									- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
		R	1.14	120.0+	F*									- Prohibit parking along the south side of EB Vesey Street during MD peak period.	
Overall Intersection			0.96	62.5	E										
OPTION 3															
	NB	L	0.29	30.8	C									- Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street.	
		TR	0.68	43.1	D										
	SB	L	0.56	33.0	C										
		TR	0.58	32.6	C										
	EB	LT	0.28	36.7	D									- Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach).	
		R	1.06	120.0+	F*									- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
Overall Intersection			0.75	42.2	D									- Prohibit parking along the south side of EB Vesey Street through daylighting during MD peak period.	
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.37	18.1	B					- Mitigation not required.	
	SB	-	-	-	-	T	0.61	21.8	C						
Fulton Street	WB	-	-	-	-	L	0.73	35.5	D						
		-	-	-	-	R	0.70	31.4	C						
Overall Intersection							0.67	23.8	C						
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	0.65	60.2	E	L	0.58	37.5	D	L	0.54	35.3	D	- Partially mitigated.	
		TR	0.77	17.0	B	TR	0.88	52.3	D	TR	0.95	62.2	E	- Reduce median width and reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane.	
	SB	L	1.14	120.0+	F*	L	1.20+	120.0+	F*	L	0.81	50.8	D	- Provide markings indicating that turns onto World Trade Center garage entry ramp must use the exclusive SB left-turn lane only.	
		TR	0.69	15.3	B	TR	0.66	36.5	D	LTR	0.82	42.7	D	- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
Liberty Street	EB	DefL	1.20+	120.0+	F*	L	1.12	120.0+	F*	L	1.12	120.0+	F*	- Modify signal timing (shift 1 s of green time from SB phase to NB phase).	
		TR	0.43	42.6	D	TR	0.18	34.7	C	TR	0.18	34.7	C		
	WB	LTR	0.60	49.3	D	LTR	0.39	43.4	D	LTR	0.39	43.4	D		
Overall Intersection			0.97	38.7	D	1.20+	120.0+	F*		0.95	59.1	E			

TABLE E.2-57
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Mvt.	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
		V/C	Control		LOS	Mvt.	V/C	Control		Mvt.	V/C	Control			LOS
			Delay	LOS				Delay	LOS			Delay	LOS		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt.9A)	NB	T	1.15	120.0+	F*	T	1.20+	120.0+	F*						- Meaningful TSM mitigation measures are not available.
	R		1.03	76.5	E	R	1.13	107.7	F						
	SB	T	1.15	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.21	22.1	C						
	WB	L	0.85	120.0+	F*	L	1.03	120.0+	F*						
	R		1.05	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-		1.11	120.0+	F*	-	1.20+	120.0+	F*						
WASHINGTON STREET CORRIDOR															
8 Washington Street at Vesey Street															
(World Trade Center Garage/Washington Street at Vesey Street)															
World Trade Center Garage	NB	-	-	-	-	R	0.28	19.6	B						- Mitigation not required.
Vesey Street	EB	LT	0.24	8.3	A	L	0.21	13.2	B						
	-	-	-	-	-	T	0.52	14.9	B						
	-	-	-	-	-	R	0.52	3.5	A						
	WB	TR	0.35	9.2	A	-	-	-	-						
Overall Intersection	-		0.22	8.8	A	-	0.52	13.4	B						
GREENWICH STREET CORRIDOR															
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	TR	-	-	-	T	0.74	22.6	C	T	0.90	44.4	D	- Revise the current 90 s cycle to include a pedestrian-only phase.	
	-	-	-	-	-	R	0.99	63.3	E	R	0.69	25.3	C		
Fulton Street	WB	LT	-	-	-	LT	0.57	26.7	C	LT	0.63	34.9	C		
	-	-	-	-	-	-	-	-	-	-	-	-	-		
Overall Intersection	-	-	-	-	-	-	0.83	36.8	D	-	0.62	35.2	D		
WEST BROADWAY CORRIDOR															
13 West Broadway/Greenwich Street at Vesey Street															
West Broadway	SB	L	0.63	22.7	C	L	0.62	29.5	C	L	0.67	32.5	C	- Modify signal timing (shift 2 s of green time from SB phase to EB phase).	
	R		0.83	33.3	C	LT	0.63	27.4	C	LT	0.67	29.7	C		
Vesey Street	EB	T	0.32	15.4	B	TR	1.01	55.9	E	TR	0.95	41.3	D		
	WB	T	0.23	14.6	B	-	-	-	-	-	-	-	-		
Overall Intersection	-		0.57	21.0	C	-	0.6	42.5	D	-	0.60	36.1	D		
UNSIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)						
7 West Street (NYS Rt.9A) at Barclay															
Barclay Street	WB	R	0.67	38.4	E	R	0.46	16.4	C						- Mitigation not required.

General Notes:
 (i): Control delay is measured in seconds per vehicle.
 (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
 (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
 (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
 (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-58
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.15	107.2	F	TR	1.13	93.9	F	TR	1.15	102.4	F	- Modify signal timing (shift 1 s of green time from NB/SB phase to EB/WB phase).	
	SB	L	0.76	58.2	E	L	0.72	58.5	E	L	0.72	58.5	E		
		TR	0.73	10.5	B	TR	0.84	7.0	A	TR	0.85	7.9	A		
Chambers Street	EB	LTR	0.61	43.5	D	LTR	0.36	40.7	D	LTR	0.33	38.9	D		
	WB	LT	1.10	119.6	F	LT	1.08	120.0+	F*	LT	1.05	110.2	F		
		R	0.67	26.2	C	R	0.83	42.1	D	R	0.81	40.2	D		
Overall Intersection			1.06	60.8	E		1.05	53.1	D		1.05	56.4	E		
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.97	41.7	D	L	0.66	41.7	D	- Partially mitigated. - Shift NB approach curbline east to gain one additional through lane.	
		TR	0.82	14.3	B	TR	0.74	52.3	D	TR	0.61	36.6	D		
	SB	L	0.16	5.4	A	L	0.61	75.4	E	L	0.97	75.4	E		
		TR	0.68	4.1	A	TR	0.68	49.2	D	TR	0.74	49.2	D		
Vesey Street	EB	LTR	1.20+	120.0+	F*	LT	0.66	45.0	D	LT	0.61	45.0	D		
			-	1.20+	120.0+	F*	R	0.88	54.9	D	R	0.68	54.9		D
	WB	L	1.00	93.0	F	-	-	-	-	-	-	-	-		
		LTR	1.20+	120.0+	F*	-	-	-	-	-	-	-	-		
Overall Intersection			1.20+	75.7	E		0.85	53.1	D		0.78	48.3	D		
OPTION 2															
	NB	L	0.64	40.6	D									- Gain one additional SB approach travel lane by constructing a cantilever lane section - Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane. - Shift NB approach curbline east to gain one additional through lane. - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
		TR	0.73	40.9	D										
	SB	L	0.58	35.5	D										
		LTR	0.58	36.6	D										
	EB	LT	0.61	45.0	D										
		R	0.68	54.9	D										
OPTION 3															
	NB	L	0.33	31.4	C									- Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street. - Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach). - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
		TR	0.55	35.0	C										
	SB	L	0.39	29.6	C										
		TR	0.39	30.9	C										
	EB	LT	0.61	45.0	D										
		R	0.68	54.9	D										
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.36	17.9	B					- Mitigation not required.	
Fulton Street	SB	-	-	-	-	T	0.41	18.6	B						
	WB					L	0.80	39.8	D						
						R	0.68	33.0	C						
Overall Intersection							0.61	24.4	C						
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	0.81	67.1	E	L	0.60	40.0	D	L	0.59	39.6	D	- Partially mitigated. - Reduce median width and reconfigure SB approach to one 11 ft. shared through-right lane , one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane. - Provide markings indicating that turns onto World Trade Center garage entry ramp must use the exclusive SB left-turn lane only. - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
		TR	0.72	15.9	B	TR	0.71	41.0	D	TR	0.72	41.5	D		
	SB	L	0.98	91.8	F	L	0.93	65.1	E	L	0.62	38.6	D		
		TR	0.93	23.6	C	TR	0.75	44.6	D	LTR	0.61	36.0	D		
Liberty Street	EB	DeFL	1.04	105.8	F	L	0.68	48.0	D	L	0.68	48.0	D		
		TR	1.15	120.0+	F*	TR	0.56	44.9	D	TR	0.56	44.9	D		
	WB	DeFL	0.44	43.9	D	LTR	0.77	75.6	E	LTR	0.77	75.6	E		
		TR	0.37	40.8	D	-	-	-	-	-	-	-	-		
Overall Intersection			1.00	37.6	D		0.81	48.0	D		0.70	41.3	D		

TABLE E.2-58
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A SHORT BYPASS

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	TR	1.14	120.0+	F*	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
		R	1.10	120.0+	F*	R	1.11	120.0+	F*					
		SB	1.10	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B					
	WB	L	0.94	120.0+	F*	L	1.07	120.0+	F*					
		R	0.90	120.0+	F*	R	1.13	120.0+	F*					
Overall Intersection	-		1.02	120.0+	F*	-	1.20+	120.0+	F*					
WASHINGTON STREET CORRIDOR														
8 Washington Street at Vesey Street (World Trade Center Garage/Washington Street at Vesey Street)														
World Trade Center Garage	NB	-	-	-	-	R	0.49	27.1	C					- Mitigation not required.
Vesey Street	EB	LT	0.53	11.8	B	L	0.22	13.3	B					
		-	-	-	-	T	0.53	15.0	B					
		-	-	-	-	R	0.05	0.2	A					
	WB	TR	0.39	9.5	A	-	-	-	-					
Overall Intersection	-		0.33	10.6	B	-	0.51	15.9	B					
GREENWICH STREET CORRIDOR														
42 Greenwich Street at Fulton Street														
Greenwich Street	SB	-	-	-	-	T	0.75	23.7	C	T	0.89	43.0	D	- Revise the current 90 s cycle to include a pedestrian-only phase.
						R	1.13	105.2	F	R	0.77	28.6	C	
Fulton Street	WB	-	-	-	-	LT	0.64	28.3	C	LT	0.75	39.9	D	
Overall Intersection	-					-	0.94	52.2	D	-	0.65	37.1	D	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	1.20+	120.0+	F*	L	0.82	38.8	D	L	0.85	42.1	D	- Modify signal timing (shift 1 s of green time from SB phase to EB phase).
		R	0.95	49.2	D	LT	0.80	32.5	C	LT	0.83	34.5	C	
Vesey Street	EB	T	0.33	15.5	B	TR	1.00	52.1	D	TR	0.97	44.7	D	
	WB	T	0.25	14.7	B	-	-	-	-	-	-	-	-	
Overall Intersection	-		0.79	64.7	E	-	0.65	42.9	D	-	0.65	40.6	D	
UNSIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
5 West Street (NYS Rt.9A) at Rector Street	ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)				ANALYSIS NOT NEEDED. (FREE FLOW)					
7 West Street (NYS Rt.9A) at Barclay														
Barclay Street	WB	R	0.67	41.7	E	R	0.44	16.2	C					- Mitigation not required.
General Notes:														
(i): Control delay is measured in seconds per vehicle.														
(ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.														
(iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.														
(iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.														
(v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).														

TABLE E.2-59
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.09	81.4	F	TR	1.20	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	SB	L	0.68	50.5	D	L	0.90	75.8	E						
		TR	0.68	5.7	A	TR	0.78	5.9	A						
Chambers Street	EB	LTR	0.82	75.6	E	LTR	0.49	42.3	D						
	WB	LT	0.91	72.2	E	LT	0.93	78.0	E						
		R	0.61	26.2	C	R	0.52	28.1	C						
Overall Intersection	-		0.95	47.3	D	-	1.08	67.0	E						
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.88	73.6	E						- Meaningful TSM mitigation measures are not available.
		TR	1.01	39.8	D	TR	1.20+	120.0+	F*						
	SB	L	0.14	8.4	A	L	1.04	108.3	F						
		TR	0.65	4.0	A	TR	1.00	47.9	D						
Vesey Street	EB	LTR	1.06	98.2	F	LT	0.61	43.6	D						
		-	-	-	-	R	0.45	40.2	D						
	WB	L	1.15	120.0+	F*	-	-	-	-						
		LTR	1.20+	120.0+	F*	-	-	-	-						
Overall Intersection	-		1.20+	42.6	D	-	1.04	120.0+	F*						
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	1.07	66.7	E	T	1.07	66.7	E	- Partially mitigated. - Prohibit parking along the north side of WB Fulton Street and restripe WB Fulton Street to one 14 ft. exclusive left-turn lane and one 16 ft. exclusive right-turn lane.	
	SB	-	-	-	-	T	0.89	19.9	B	T	0.89	19.9	B		
Fulton Street	WB	-	-	-	-	L	0.78	49.0	D	L	0.71	42.0	D		
		-	-	-	-	R	1.04	96.1	F	R	0.78	43.4	D		
Overall Intersection	-					-	1.06	49.1	D	-	0.95	45.7	D		
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	1.19	120.0+	F*	L	0.77	65.5	E	L	0.69	57.7	E	- Partially mitigated. - Modify signal timing (shift 2 s of green time from NB/SB through-right phase to NB/SB exclusive left-turn phase).	
		TR	1.06	62.3	E	TR	1.02	51.4	D	TR	1.05	64.3	E		
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*		
		TR	0.80	17.8	B	TR	0.85	23.5	C	TR	0.88	26.5	C		
Liberty Street	EB	DefL	1.20+	120.0+	F*	L	1.19	120.0+	F*	L	1.19	120.0+	F*		
		TR	0.43	41.3	D	TR	0.23	33.3	C	TR	0.23	33.3	C		
	WB	LTR	0.29	37.2	D	LTR	0.62	49.0	D	LTR	0.62	49.0	D		
Overall Intersection	-		1.20+	84.2	F	-	1.18	74.8	E	-	1.18	74.4	E		
6 West Street (NYS Rt. 9A) at Brooklyn Battery Tunnel															
West Street (NYS Rt. 9A)	NB	T	1.17	120.0+	F*	T	1.20+	120.0+	F*						- Meaningful TSM mitigation measures are not available.
		R	1.13	120.0+	F*	R	1.17	120.0+	F*						
	SB	T	1.16	120.0+	F*	TR	1.20+	120.0+	F*						
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.63	26.6	C						
	WB	L	1.07	120.0+	F*	L	1.08	120.0+	F*						
		R	1.12	120.0+	F*	R	1.20+	120.0+	F*						
Overall Intersection	-		1.14	120.0+	F*	-	1.20+	120.0+	F*						

TABLE E.2-59
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
GREENWICH STREET CORRIDOR															
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.77	24.9	C	T	0.89	42.4	D	- Revise the current 90 s cycle to include a pedestrian-only phase.	
		-	-	-	-	R	1.06	82.6	F	R	0.70	24.7	C		
Fulton Street	WB	-	-	-	-	LT	0.51	25.3	C	LT	0.64	36.9	D		
Overall Intersection		-	-	-	-		0.85	44.0	D		0.62	34.8	C		
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.11	19.1	B	R	0.02	17.6	B	NB	R	0.01	17.6	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.92	55.7	E	LT	0.80	39.2	D	SB	L	0.28	21.0	C	
Rector Street	EB	TR	0.26	11.4	B	TR	0.48	14.8	B		T	0.41	22.9	C	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
										EB	TR	0.48	14.8	B	
Overall Intersection		-	0.52	40.7	D		0.61	27.9	C		0.45	18.8	B	- [Measures reflect geometric improvements necessary for the MD peak period, otherwise mitigation not needed.]	
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.95	53.2	D	LTR	0.86	42.7	D	LTR	0.71	36.9	D	- Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane.	
	R		0.87	55.4	E	R	0.57	36.3	D	R	0.66	43.1	D		
Canal Street	EB	L	1.01	76.6	E	L	1.20+	120.0+	F*	L	1.07	74.1	E	- Modify signal timing (add 4 s to green time of EB/WB phase and 5 s to green time of EB/WB lead phase).	
	T		1.04	67.2	E	LT	1.07	70.5	E	LT	1.06	66.7	E		
	WB	T	0.98	68.1	E	T	1.12	111.7	F	T	0.99	65.3	E		
	R		1.16	100.3	F	R	1.20	120.0+	F*	R	1.11	92.1	F		
Overall Intersection		-	1.10	72.7	E		1.11	88.2	F		1.02	62.5	E		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.25	23.8	C	L	0.20	23.1	C					- Mitigation not required.	
	T		0.95	48.1	D	T	0.66	29.5	C						
	R		0.16	22.7	C	R	0.11	22.0	C						
Canal Street	EB	TR	0.47	10.9	B	TR	0.46	10.5	B						
	WB	LT	1.06	111.0	F	LT	1.12	102.6	F						
Overall Intersection		-	0.63	67.7	E		0.53	49.3	D						
WEST BROADWAY CORRIDOR															
13 West Broadway/Greenwich Street at Vesey Street															
West Broadway	SB	L	1.16	120.0+	F*	L	0.73	33.5	C					- Mitigation not required.	
	R		0.76	28.5	C	LT	0.79	31.8	C						
Vesey Street	EB	T	0.39	16.2	B	TR	0.87	35.2	D						
	WB	T	0.20	14.4	B	-	-	-	-						
Overall Intersection		-	0.78	69.5	E		0.60	33.5	C						

TABLE E.2-59
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
CHURCH STREET CORRIDOR															
21 Church Street at Worth Street															
Church Street	NB	LTR	0.69	15.6	B	LTR	1.20+	120.0+	F*	NB	LT	0.89	18.6	B	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.
Worth Street	EB	LT	0.86	52.0	D	LT	0.96	60.9	E		R	0.32	13.4	B	
	WB	TR	0.78	35.4	D	TR	0.98	62.3	E	EB	LT	0.90	48.9	D	- Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.
										WB	T	0.60	27.4	C	
											R	0.50	25.0	C	- Modify signal timing (shift 2 s of green time from NB phase to EB/WB phase).
Overall Intersection	-	0.76	23.9	C	-	1.20+	120.0+	F*	-	0.90	24.3	C			
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>															
24 Church Street at Vesey Street															
Church Street	NB	LTR	1.07	59.8	E	T	1.20+	120.0+	F*	TR	0.94	37.9	D	- Apply general measures.	
						R	0.66	17.5	B					D	- Prohibit parking along the north side of Vesey Street through daylighting to gain an exclusive left-turn lane.
Vesey Street	EB	LT	1.05	68.9	E	LT	1.20+	120.0+	F*	L	0.66	40.0	D		
										LT	0.70	37.9	D	- Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.	
Overall Intersection	-	1.06	62.8	E	-	1.20+	120.0+	F*	-	0.69	38.1	D			
25 Church Street at Fulton Street															
Church Street	NB	T	0.84	15.3	B	LT	1.01	44.4	D	LT	0.82	25.1	C	- Apply general measures.	
Fulton Street	WB	R	0.79	45.9	D	TR	1.18	120.0+	F*	TR	0.67	41.1	D	- Eliminate the Bus Layover Zone along the west side of Church Street between Fulton Street and Dey Street to gain an additional NB lane.	
Overall Intersection	-	0.83	19.2	B	-	1.08	63.3	E	-	0.63	28.5	C		- Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.	
27 Church Street at Cortlandt Street															
Church Street	NB	T	0.73	11.8	B	T	0.75	12.4	B	T	0.87	29.3	C	- Apply general measures.	
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.49	36.1	D	- [Measures reflect geometric and operational improvements along the Church Street corridor, otherwise mitigation not needed.]	
Overall Intersection	-	0.99	71.5	E	-	0.95	46.4	D	-	0.59	30.7	C		- Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes. - [Measures reflect geometric improvements necessary for MD and PM peak periods, otherwise mitigation not needed.]	
BROADWAY CORRIDOR															
31 Broadway at Worth Street															
Broadway	SB	LTR	0.65	14.0	B	LTR	0.79	69.6	E	LTR	0.67	43.4	D	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.	
Worth Street	EB	TR	0.46	19.6	B	TR	1.02	120.0+	F*	TR	0.83	44.1	D		
	WB	L	0.17	16.2	B	LT	0.83	55.7	E	L	0.29	13.3	B	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.	
		T	0.56	21.3	C					T	0.58	23.1	C	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.	
Overall Intersection	-	0.61	16.8	B	-	0.89	88.6	F	-	0.75	38.6	D		- Modify signal timing (shift 7.5 s of green time from SB phase to EB/WB phase).	
33 Broadway at Vesey Street / Ann Street															
Broadway	SB	L	0.71	26.2	C	L	0.85	30.1	C	L	0.71	28.6	C	- Prohibit parking along the north side of EB Vesey Street.	
		LT	0.64	20.5	C	LT	0.50	14.5	B	LT	0.71	23.9	C	- Restripe EB Vesey Street to two 11ft. exclusive left-turn lanes and one 11ft. shared through-right lane.	
Vesey Street	EB	L	0.93	67.4	E	L	1.20+	120.0+	F*	L	0.84	48.1	D	- Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only.	
		LTR	1.06	85.0	F	LTR	1.20+	120.0+	F*	TR	0.93	72.2	E		
Overall Intersection	-	0.59	45.1	D	-	0.63	94.7	F	-	0.51	35.5	D		- Modify signal timing (shift 7 s of green time from SB phase to EB phase).	

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-60
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	0.93	26.2	C	TR	0.99	36.0	D					- Mitigation not required.
	SB	L	0.79	68.2	E	L	0.66	56.5	E					
		TR	0.57	4.7	A	TR	0.71	4.9	A					
Chambers Street	EB	LTR	0.29	36.7	D	LTR	0.28	37.6	D					
	WB	LT	0.77	55.9	E	LT	0.70	52.0	D					
		R	0.72	36.8	D	R	0.51	27.7	C					
Overall Intersection	-	-	0.87	22.5	C	-	0.86	24.3	C					
3 West Street (NYS Rt. 9A) at Vesey Street⁽⁴⁾														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.65	56.4	E					- Meaningful TSM mitigation measures are not available.
	TR	0.73	12.6	B	TR	0.98	56.9	E						
	SB	L	0.21	4.9	A	L	1.03	106.2	F					
		TR	0.54	3.3	A	TR	0.88	25.7	C					
Vesey Street	EB	LTR	0.75	49.5	D	LT	0.26	34.7	C					
		-	-	-	-	R	0.84	70.9	E					
	WB	L	0.81	55.3	E	-	-	-	-					
	LTR	1.20+	120.0+	F*	-	-	-	-	-					
Overall Intersection	-	-	1.20+	26.6	C	-	0.94	47.8	D					
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.81	16.5	B	T	0.81	16.5	B	- Prohibit parking along the north side of WB Fulton Street and restripe WB Fulton Street to one 14 ft. exclusive left-turn lane and one 16 ft. exclusive right-turn lane.
	SB	-	-	-	-	T	0.81	16.9	B	T	0.81	16.9	B	
Fulton Street	WB	-	-	-	-	L	0.77	50.2	D	L	0.70	43.0	D	
		-	-	-	-	R	0.74	42.9	D	R	0.55	32.4	C	
Overall Intersection	-	-	-	-	-	-	0.80	19.5	B	-	0.77	18.6	B	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.57	57.3	E	L	0.63	56.6	E	L	0.40	43.0	D	- Partially Mitigated.
	TR	0.76	16.8	B	TR	0.83	22.8	C	TR	0.96	39.6	D	- Modify signal timing (shift 8 s of green time from NB/SB through-right phase to NB/SB exclusive left-turn phase; shift 1 s of green time from EB phase to NB/SB exclusive left-turn phase).	
	SB	L	1.04	111.8	F	L	1.20+	120.0+	F*	L	1.03	98.9	F	
		TR	0.67	15.0	B	TR	0.74	20.2	C	TR	0.86	30.5	C	
Liberty Street	EB	DefL	1.17	120.0+	F*	L	1.15	120.0+	F*	L	1.19	120.0+	F*	
		TR	0.43	42.6	D	TR	0.15	31.8	C	TR	0.15	32.6	C	
	WB	LTR	0.60	49.3	D	LTR	0.84	71.9	E	LTR	0.86	77.5	E	
Overall Intersection	-	-	0.91	31.7	C	-	1.05	61.5	E	-	1.05	49.2	D	
6 West Street (NYS Rt. 9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt. 9A)	NB	T	1.13	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	R	1.01	71.0	E	R	1.09	92.8	F						
	SB	T	1.12	120.0+	F*	TR	1.13	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.21	22.1	C					
	WB	L	0.85	120.0+	F*	L	1.03	120.0+	F*					
		R	1.04	120.0+	F*	R	1.14	120.0+	F*					
Overall Intersection	-	-	1.09	120.0+	F*	-	1.20+	120.0+	F*					

TABLE E.2-60
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
GREENWICH STREET CORRIDOR															
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.72	21.3	C	T	0.87	40.1	D	- Revise the current 90 s cycle to include a pedestrian-only phase. - [Measures reflect operational improvements necessary for the AM and PM peak periods, otherwise mitigation not needed.]	
		-	-	-	-	R	0.85	36.6	D	R	0.59	21.9	C		
Fulton Street	WB	-	-	-	-	LT	0.43	23.8	C	LT	0.47	31.4	C		
Overall Intersection		-	-	-	-		0.69	26.6	C		0.57	32.0	C		
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.16	19.8	B	R	0.08	18.5	B	NB	R	0.06	14.0	B	- Prohibit parking along the south side of EB Rector Street through daylighting for the MD peak period. - Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking. - Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
	SB	LT	0.40	23.2	C	LT	1.20+	120.0+	F*	SB	L	0.19	15.6	B	
Rector Street	EB	TR	0.37	12.8	B	TR	0.91	62.2	E		T	0.83	41.8	D	
										EB	TR	0.76	40.1	D	
Overall Intersection		-	0.38	17.5	B		1.18	120.0+	F*		0.79	36.2	D	- Modify signal timing (shift 7 s of green time from EB phase to NB/SB phase).	
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.83	40.6	D	LTR	0.65	34.1	C	LTR	0.54	33.6	C	- Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane.	
	R		0.68	39.9	D	R	0.59	37.1	D	R	0.68	44.5	D		
Canal Street	EB	L	1.02	77.7	E	L	1.19	117.3	F	L	1.02	57.6	E	- Modify signal timing (add 5 s to green time of EB/WB phase and 4 s to green time of EB/WB lead phase).	
	T		0.98	52.7	D	LT	0.95	45.2	D	LT	1.00	53.8	D		
	WB	T	0.93	59.4	E	T	1.14	117.4	F	T	0.98	59.1	E		
	R		1.14	97.9	F	R	1.19	120.0+	F*	R	1.12	93.9	F		
Overall Intersection		-	1.06	63.7	E		1.05	85.1	F		1.02	57.1	E		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.16	22.6	C	L	0.34	25.3	C	L	0.46	34.5	C	- Modify signal timing (shift 8 s of green time from the SB phase to the EB/WB phase).	
	T		1.07	95.0	F	T	0.56	27.6	C	T	0.78	40.5	D		
	R		0.16	22.7	C	R	0.37	26.2	C	R	0.51	36.6	D		
Canal Street	EB	TR	0.46	10.9	B	TR	0.32	8.9	A	TR	0.28	5.4	A		
	WB	LT	1.05	72.0	E	LT	1.20+	120.0+	F*	LT	1.08	66.8	E		
Overall Intersection		-	0.67	68.1	E		1.00	66.9	E		1.00	42.7	D		
WEST BROADWAY CORRIDOR															
13 West Broadway/Greenwich Street at Vesey Street															
West Broadway	SB	L	0.55	20.4	C	L	0.42	25.2	C					- Mitigation not required.	
	R		0.81	31.9	C	LT	0.51	25.4	C						
Vesey Street	EB	T	0.31	15.4	B	TR	0.94	43.7	D						
	WB	T	0.20	14.3	B	-	-	-	-						
Overall Intersection		-	0.56	20.2	C		0.54	35.3	D						

TABLE E.2-60
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
CHURCH STREET CORRIDOR															
21 Church Street at Worth Street⁽¹⁾															
Church Street	NB	LTR	0.98	27.9	C	LTR	1.20+	120.0+	F*	NB	LT	0.83	17.5	B	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane. - Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.
Worth Street	EB	LT	0.51	26.3	C	LT	0.82	42.3	D	R	R	0.31	12.1	B	
	WB	TR	0.62	28.4	C	TR	0.87	49.7	D	EB	LT	0.82	42.3	D	
										WB	T	0.51	27.7	C	
										R	R	0.28	22.3	C	
Overall Intersection	-		0.84	27.8	C	-	1.13	120.0+	F*	-		0.82	21.7	C	
<i>General measures for Church Street corridor between Liberty Street and Vesey Street: Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>															
24 Church Street at Vesey Street															
Church Street	NB	LT	1.20+	120.0+	F*	T	0.90	20.4	C	TR	0.76	27.1	C	-	- Apply general measures. - Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.
	R	R	0.61	14.7	B	R	0.96	48.7	D	-	-	-	-		
Vesey Street	EB	LT	0.61	25.9	C	LT	0.99	59.0	E	LT	0.76	40.0	D		
Overall Intersection	-		0.97	83.1	F	-	0.97	36.9	D	-		0.63	31.1	C	
25 Church Street at Fulton Street															
Church Street	NB	T	0.70	11.0	B	LT	0.96	26.3	C	LT	0.75	23.1	C	-	- Apply general measures. - Eliminate the Bus Layover Zone along the west side of Church Street between Fulton Street and Dey Street to gain an additional NB lane. - Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.
Fulton Street	WB	R	0.59	41.3	D	TR	0.91	58.8	E	TR	0.41	34.5	C		
Overall Intersection	-		0.67	12.9	B	-	0.94	31.0	C	-		0.52	24.8	C	
27 Church Street at Cortlandt Street															
Church Street	NB	T	0.57	9.3	A	T	0.53	8.9	A	T	0.61	20.5	C	-	- Apply general measures. - Prohibit parking along the south side of Cortlandt Street. - Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.83	49.0	D		
Overall Intersection	-		0.85	62.0	E	-	1.20+	120.0+	F*	-		0.58	31.6	C	
BROADWAY CORRIDOR															
31 Broadway at Worth Street⁽¹⁾															
Broadway	SB	LTR	0.78	17.2	B	LTR	0.57	62.4	E	LTR	0.47	43.9	D	-	- Partially Mitigated. - Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along E1 Worth Street from 14 ft. to 15 ft. - Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane. - Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane. - Modify signal timing (shift 6 s of green time from SB phase to EB/WB phase).
Worth Street	EB	TR	0.79	30.5	C	TR	0.95	120.0+	F*	TR	0.79	58.5	E		
	WB	L	0.77	43.7	D	LT	1.01	120.0+	F*	L	0.43	21.3	C		
	T	T	0.46	19.5	B	-	-	-	-	T	0.33	20.3	C		
Overall Intersection	-		0.78	22.9	C	-	0.76	120.0+	F*	-		0.63	43.4	D	
33 Broadway at Vesey Street / Ann Street															
Broadway	SB	L	0.75	28.5	C	L	0.60	18.4	B	L	0.79	42.2	D	-	- Partially Mitigated. - Prohibit parking along the north side of EB Vesey Street. - Restripe EB Vesey Street to two 11ft. exclusive left-turn lanes and one 11ft. shared through-right lane. - Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only. - Modify signal timing (shift 15 s of green time from SB phase to EB phase).
	LT	L	0.57	19.3	B	LT	0.48	14.3	B	LT	0.80	33.9	C		
Vesey Street	EB	L	0.58	37.7	D	L	1.20+	120.0+	F*	L	0.54	28.5	C		
	LTR	L	0.80	42.3	D	LTR	1.20+	120.0+	F*	TR	0.81	45.1	D		
Overall Intersection	-		0.55	28.4	C	-	0.51	106.7	F	-		0.51	35.8	D	

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-61
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.13	99.5	F	TR	1.03	55.4	E					- Mitigation not required.
	SB	L	0.75	57.3	E	L	0.67	56.3	E					
		TR	0.72	10.3	B	TR	0.78	5.8	A					
Chambers Street	EB	LTR	0.61	43.5	D	LTR	0.34	39.7	D					
	WB	LT	1.08	111.0	F	LT	0.99	95.2	F					
		R	0.67	26.2	C	R	0.80	40.0	D					
Overall Intersection	-	1.04	56.9	E	-	0.96	34.8	C						
3 West Street (NYS Rt. 9A) at Vesey Street^(d)														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.74	61.0	E					- Meaningful TSM mitigation measures are not available.
	TR	0.81	14.1	B	TR	0.96	34.3	C						
	SB	L	0.15	5.3	A	L	0.74	60.8	E					
		TR	0.67	4.1	A	TR	1.02	75.1	E					
Vesey Street	EB	LTR	1.02	86.8	F	LT	0.57	42.0	D					
		-	-	-	-	R	0.48	40.9	D					
	WB	L	0.93	75.5	E	-	-	-	-					
		LTR	1.20+	120.0+	F*	-	-	-	-					
Overall Intersection	-	1.20+	39.2	D	-	0.84	55.5	E						
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.81	16.6	B	T	0.83	18.9	B	- Prohibit parking along the north side of WB Fulton Street and restripe WB Fulton Street to one 14 ft. exclusive left-turn lane and one 16 ft. exclusive right-turn lane.
	SB	-	-	-	-	T	0.96	25.6	C	T	0.99	32.5	C	
Fulton Street	WB	-	-	-	-	L	0.90	63.4	E	L	0.77	44.4	D	- Modify signal timing (shift 2 s of green time from NB/SB phase to WB phase).
						R	0.74	47.5	D	R	0.52	31.9	C	
Overall Intersection	-	-	-	-	-	0.93	24.8	C		-	0.89	27.4	C	
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.78	64.9	E	L	0.77	66.3	E					- Meaningful TSM mitigation measures are not available.
		TR	0.72	15.8	B	TR	0.81	21.7	C					
	SB	L	0.92	79.8	E	L	1.04	117.4	F					
		TR	0.92	22.9	C	TR	1.06	78.2	E					
Liberty Street	EB	DefL	0.99	91.5	F	L	0.91	76.4	E					
		TR	1.15	120.0+	F*	TR	0.48	39.2	D					
	WB	DefL	0.44	43.9	D	LTR	0.97	92.3	F					
		TR	0.37	40.8	D	-	-	-	-					
Overall Intersection	-	0.98	35.6	D	-	1.03	58.5	E						
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	TR	1.12	120.0+	F*	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	R		1.09	119.1	F	R	1.09	118.3	F					
	SB	T	1.09	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B					
	WB	L	0.94	120.0+	F*	L	1.07	120.0+	F*					
		R	0.89	120.0+	F*	R	1.10	120.0+	F*					
Overall Intersection	-	1.01	120.0+	F*	-	1.17	120.0+	F*						

TABLE E.2-61
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES SCENARIO WITH ROUTE 9A AT-GRADE (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures		
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control				
			Delay	LOS			Delay	LOS			Delay	LOS			
GREENWICH STREET CORRIDOR															
42 Greenwich Street at Fulton Street															
Greenwich Street	SB	-	-	-	-	T	0.77	25.0	C	T	0.89	42.8	D	- Revise the current 90 s cycle to include a pedestrian-only phase.	
		-	-	-	-	R	0.99	63.9	E	R	0.66	22.8	C		
Fulton Street	WB	-	-	-	-	LT	0.53	25.6	C	LT	0.65	37.0	D		
Overall Intersection							0.82	37.7	D		0.63	34.4	C		
15 Greenwich Street at Rector Street															
Greenwich Street	NB	R	0.00	17.4	B	R	0.09	18.6	B	NB	R	0.08	18.5	B	- Restripe NB Greenwich Street approach by shifting the centerline 4ft. to the west and providing one 12 ft. wide exclusive right-turn lane and 8 ft. for parking.
	SB	LT	0.38	22.7	C	LT	0.63	29.7	C	SB	L	0.29	21.5	C	
Rector Street	EB	TR	0.38	12.8	B	TR	0.38	12.9	B		T	0.28	20.6	C	- Restripe SB Greenwich Street approach from one 24 ft. wide shared through-left lane to one 12 ft. wide through lane and one 12 ft. wide exclusive left-turn lane.
										EB	TR	0.39	13.0	B	
Overall Intersection			0.38	16.8	B		0.48	21.5	C			0.35	17.2	B	- [Measures reflect geometric improvements necessary for the MD peak period, otherwise mitigation not needed.]
CANAL STREET CORRIDOR															
16 Canal Street at Hudson Street															
Hudson Street	NB	LTR	0.39	28.7	C	LTR	0.91	46.9	D	LTR	0.75	38.0	D	- Prohibit truck loading/unloading along the west side of NB Hudson Street during peak periods to gain an additional NB lane.	
	R		1.00	120.0+	F*	R	0.78	46.1	D	R	0.90	64.7	E		
Canal Street	EB	L	0.33	25.1	C	L	0.86	46.3	D	L	0.73	32.4	C	- Modify signal timing (add 4 s to green time of EB/WB phase and 5 s to green time of EB/WB lead phase).	
	T		0.95	45.3	D	T	0.90	36.8	D	T	0.85	26.4	C		
	WB	T	0.23	23.4	C	T	0.52	28.8	C	T	0.46	24.4	C		
	R		1.19	114.2	F	R	1.20+	120.0+	F*	R	1.19	111.9	F		
Overall Intersection			1.14	83.4	F		1.17	69.9	E		1.12	56.5	E		
17 Canal Street at Varick Street															
Varick Street	SB	L	0.42	26.6	C	L	0.73	44.5	D	L	0.73	44.5	D	- Modify signal timing (shift 3 s of green time from the EB lead phase to the EB/WB phase).	
	T		1.09	113.6	F	T	0.48	26.2	C	T	0.48	26.2	C		
	R		0.20	23.6	C	R	0.11	22.0	C	R	0.11	22.0	C		
Canal Street	EB	TR	0.44	10.7	B	TR	0.31	9.0	A	TR	0.31	9.0	A		
	WB	LT	1.11	120.0+	F*	LT	1.20+	120.0+	F*	LT	1.11	120.0+	F*		
Overall Intersection			0.66	101.3	F		0.45	107.4	F		0.45	80.0	F		
WEST BROADWAY CORRIDOR															
13 West Broadway/Greenwich Street at Vesey Street															
West Broadway	SB	L	1.20	120.0+	F*	L	0.67	31.2	C					- Mitigation not required.	
	R		0.94	47.2	D	LT	0.76	30.8	C						
Vesey Street	EB	T	0.32	15.5	B	TR	0.92	39.1	D						
	WB	T	0.22	14.5	B	-	-	-	-						
Overall Intersection			0.76	57.4	E		0.61	34.7	C						

TABLE E.2-61
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
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INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures			
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS				
CHURCH STREET CORRIDOR																
21 Church Street at Worth Street⁽¹⁾																
Church Street	NB	LTR	0.84	14.3	B	LTR	1.20+	120.0+	F*	NB	LT	0.83	18.0	B	- Prohibit parking along both sides of NB Church Street to provide one additional through lane and one exclusive right-turn lane.	
Worth Street	EB	LT	0.73	35.8	D	LT	0.59	30.9	C		R	0.32	12.2	B		
	WB	TR	0.66	29.5	C	TR	0.85	41.8	D	EB	LT	0.59	30.9	C	- Prohibit parking along the north side of WB Worth Street and shift the centerline 7 ft. to the south to provide one 12 ft. through lane and one 12 ft. exclusive right-turn lane.	
										WB	T	0.56	27.4	C		
											R	0.31	22.7	C		
Overall Intersection	-		0.80	19.0	B	-	1.14	120.0+	F*	-	0.74	20.1	C			
																<i>Reconfigure the section of Church Street as a pedestrian corridor with the following measures: Revise the signal timing plan at each intersection to have a 120 s cycle with a pedestrian-only phase; Eliminate the Bus Only lane along the east side of the corridor to gain an additional NB travel lane; Restripe Church Street NB as two 12 ft. inner lanes and two 15 ft. outer lanes to facilitate drop-off and bus layover.</i>
24 Church Street at Vesey Street																
Church Street	NB	LT	1.20+	120.0+	F*	T	1.01	47.1	D	TR	0.84	32.5	C	- Apply general measures.		
		R	0.70	17.7	B	R	0.77	22.5	C		-	-	-	-	- Prohibit parking along the north side of Vesey Street through daylighting to gain an exclusive left-turn lane.	
Vesey Street	EB	LT	0.87	36.1	D	LT	1.20+	120.0+	F*	L	0.64	38.0	D			
										LT	0.65	33.9	C	- Eliminate the Bus Layover Zone along the west side of Church Street between Vesey Street and Fulton Street to gain an additional NB lane.		
Overall Intersection	-		1.09	89.2	F	-	1.16	110.2	F	-	0.61	33.5	C			
25 Church Street at Fulton Street																
Church Street	NB	T	0.70	11.1	B	LT	0.87	16.7	B	LT	0.78	28.8	C	- Apply general measures.		
Fulton Street	WB	R	0.59	35.1	D	TR	1.20+	120.0+	F*	TR	0.60	34.4	C	- Eliminate the Bus Layover Zone along the west side of Church Street between Fulton Street and Dey Street to gain an additional NB lane.		
Overall Intersection	-		0.67	13.8	B	-	1.02	50.3	D	-	0.57	30.1	C	- Restripe WB Fulton Street approach from one shared through-right lane to one 11 ft. wide through lane and one 11 ft. wide shared through-right lane.		
27 Church Street at Cortlandt Street																
Church Street	NB	T	0.55	9.0	A	T	0.58	9.4	A	T	0.67	21.5	C	- Apply general measures.		
Cortlandt Street	WB	R	1.20+	120.0+	F*	R	1.20+	120.0+	F*	R	0.54	37.2	D	- Prohibit parking along the south side of Cortlandt Street.		
Overall Intersection	-		0.86	70.7	E	-	1.00	97.0	F	-	0.52	25.6	C	- Restripe the WB Cortlandt Street approach from one 16 ft. right turn lane to two 12 ft. right turn lanes.		
BROADWAY CORRIDOR																
31 Broadway at Worth Street⁽¹⁾																
Broadway	SB	LTR	0.74	15.8	B	LTR	0.78	68.9	E	LTR	0.56	26.3	C	- Relocate the bus stop along EB Worth Street from nearside to farside and increase the lane width along EB Worth Street from 14 ft. to 15 ft.		
Worth Street	EB	TR	0.64	23.9	C	TR	0.83	35.9	D	TR	0.80	33.4	C	- Provide strict enforcement of "No Parking" regulation and prohibit truck loading/unloading along the east side of SB Broadway to gain one through lane.		
	WB	L	0.34	20.0	C	LT	0.86	38.7	D	L	0.33	19.9	B	- Provide strict enforcement of "No Parking" regulation along WB Worth Street approach to gain one through and one exclusive left-turn lane.		
		T	0.56	21.5	C					T	0.57	21.6	C			
Overall Intersection	-		0.70	18.9	B	-	0.82	55.5	E	-	0.67	26.6	C			
33 Broadway at Vesey Street / Ann Street																
Broadway	SB	L	0.89	37.9	D	L	0.95	43.9	D	L	0.74	32.0	C	- Prohibit parking along the north side of EB Vesey Street.		
		LT	0.57	19.2	B	LT	0.44	13.9	B	LT	0.74	26.4	C	- Restripe EB Vesey Street to two 11 ft. exclusive left-turn lanes and one 11 ft. shared through-right lane.		
Vesey Street	EB	L	1.04	93.6	F	L	1.20+	120.0+	F*	L	0.87	47.5	D	- Provide markings indicating that the exclusive SB Broadway left-turn lane is for turns onto Park Row only.		
		LTR	0.79	40.7	D	LTR	1.20+	120.0+	F*	TR	0.61	38.6	D	- Modify signal timing (shift 9 s of green time from SB phase to EB phase).		
Overall Intersection	-		0.66	38.1	D	-	0.72	106.0	F	-	0.50	34.0	C			

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-62
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES WITH ROUTE 9A SHORT BYPASS (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures		
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS			
SIGNALIZED INTERSECTIONS															
WEST STREET CORRIDOR															
2 West Street (NYS Rt. 9A) at Chambers Street															
West Street (NYS Rt. 9A)	NB	TR	1.09	81.4	F	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.	
	SB	L	0.68	50.5	D	L	1.03	102.6	F						
		TR	0.68	5.7	A	TR	0.82	6.7	A						
Chambers Street	EB	LTR	0.82	75.6	E	LTR	0.49	42.3	D						
	WB	LT	0.91	72.2	E	LT	0.99	90.1	F						
		R	0.61	26.2	C	R	0.53	28.2	C						
Overall Intersection			0.95	47.3	D		1.14	78.8	E						
3 West Street (NYS Rt. 9A) at Vesey Street															
West Street (NYS Rt. 9A)	NB		-	-	-	L	0.78	48.5	D	L	0.78	48.5	D	- Partially mitigated. - Shift NB approach curbline east to gain one additional through lane.	
		TR	1.01	39.8	D	TR	1.03	120.0+	F*	TR	0.72	120.0+	F*		
	SB	L	0.14	8.4	A	L	1.05	98.9	F	L	1.05	98.9	F		
		TR	0.65	4.0	A	TR	1.20+	120.0+	F*	TR	1.20+	120.0+	F*		
Vesey Street	EB	LTR	1.06	98.2	F	LT	0.64	46.8	D	LT	0.64	46.8	D		
			-	-	-	R	0.64	52.4	D	R	0.64	52.4	D		
	WB	L	1.15	120.0+	F*	-	-	-	-	-	-	-	-		
		LTR	1.20+	120.0+	F*	-	-	-	-	-	-	-	-		
Overall Intersection			1.20+	42.6	D		1.02	120.0+	F*		0.93	120.0+	F*		
OPTION 1															
	NB	L	0.77	47.2	D									- Partially mitigated. - Gain one additional SB approach travel lane by constructing a cantilever lane section - Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. though lane, one 11 ft. shared though-left lane and one 11 ft. exclusive left-turn lane. - Shift NB approach curbline east to gain one additional through lane. - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
		TR	0.90	120.0+	F*										
SB	L	0.84	50.5	D											
		LTR	0.92	48.5	D										
EB	LT	0.64	46.8	D											
		R	0.64	52.4	D										
Overall Intersection			0.83	120.0+	F*										
OPTION 2															
	NB	L	0.34	26.4	C										- Partially mitigated. - Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street. - Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach). - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
		TR	0.57	106.2	F										
SB	L	0.51	37.4	D											
		TR	0.80	43.9	D										
EB	LT	0.64	46.8	D											
		R	0.64	52.4	D										
Overall Intersection			0.67	59.2	E										
OPTION 3															
41 West Street (NYS Rt. 9A) at Fulton Street															
West Street (NYS Rt. 9A)	NB		-	-	-	T	0.45	19.1	B					- Mitigation not required.	
Fulton Street	SB		-	-	-	T	0.65	22.7	C						
	WB		-	-	-	L	0.62	28.8	C						
			-	-	-	R	0.77	36.4	D						
Overall Intersection							0.72	24.1	C						
4 West Street (NYS Rt. 9A) at Liberty Street															
West Street (NYS Rt. 9A)	NB	L	1.19	120.0+	F*	L	0.66	41.5	D	L	0.64	40.3	D	- Reduce median width and reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. though lane, one 11 ft. shared though-left lane and one 11 ft. exclusive left-turn lane. - Provide markings indicating that turns onto World Trade Center garage entry ramp must use the exclusive SB left-turn lane only. - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
		TR	1.06	62.3	E	TR	0.86	49.2	D	TR	0.88	50.5	D		
	SB	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*	L	0.83	51.4	D		
		TR	0.80	17.8	B	TR	0.80	42.2	D	LTR	0.84	43.0	D		
Liberty Street	EB	DefL	1.20+	120.0+	F*	L	0.99	86.0	F	L	0.99	86.0	F		
		TR	0.43	41.3	D	TR	0.28	36.7	D	TR	0.28	36.7	D		
	WB	LTR	0.29	37.2	D	LTR	0.09	33.6	C	LTR	0.09	33.6	C		
Overall Intersection			1.20+	84.2	F		1.16	107.3	F		0.89	51.1	D		

TABLE E.2-62
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 AM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES WITH ROUTE 9A SHORT BYPASS (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (8:15 - 9:15 AM)				Current 2015 Build (8:15 - 9:15 AM)				Current 2015 Build Mitigated (8:15 - 9:15 AM)				Mitigation Measures	
	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS	Mvt.	V/C	Control Delay	LOS		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.17	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
	R		1.13	120.0+	F*	R	1.20+	120.0+	F*					
	SB	T	1.16	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.10	12.7	B	R	0.63	26.6	C					
	WB	L	1.07	120.0+	F*	L	1.08	120.0+	F*					
	R		1.12	120.0+	F*	R	1.20+	120.0+	F*					
Overall Intersection	-		1.14	120.0+	F*	-	1.20+	120.0+	F*					
GREENWICH STREET CORRIDOR														
42 Greenwich Street at Fulton Street														
Greenwich Street	SB	-	-	-	-	T	0.77	24.9	C	T	0.89	42.4	D	- Revise the current 90 s cycle to include a pedestrian-only phase.
	R	-	-	-	-	R	0.98	59.0	E	R	0.65	22.2	C	
Fulton Street	WB	-	-	-	-	LT	0.54	25.8	C	LT	0.69	38.6	D	
Overall Intersection	-	-	-	-	-	-	0.81	35.8	D	-	0.63	34.8	C	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	1.16	120.0+	F*	L	0.83	39.4	D					- Mitigation not required.
	R		0.76	28.5	C	LT	0.84	34.0	C					
Vesey Street	EB	T	0.39	16.2	B	TR	0.77	30.3	C					
	WB	T	0.20	14.4	B	-	-	-	-					
Overall Intersection	-		0.78	69.5	E	-	0.59	33.6	C					

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-63

WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION: PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES WITH ROUTE 9A SHORT BYPASS (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures			
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control					
			Delay	LOS			Delay	LOS			Delay	LOS				
SIGNALIZED INTERSECTIONS																
WEST STREET CORRIDOR																
2 West Street (NYS Rt. 9A) at Chambers Street																
West Street (NYS Rt. 9A)	NB	TR	0.93	26.2	C	TR	1.06	64.4	E					- Meaningful TSM mitigation measures are not available.		
	SB	L	0.79	68.2	E	L	0.79	63.9	E							
		TR	0.57	4.7	A	TR	0.76	5.5	A							
	Chambers Street	EB	LTR	0.29	36.7	D	LTR	0.30	38.4	D						
		WB	LT	0.77	55.9	E	LT	0.85	66.6	E						
			R	0.72	36.8	D	R	0.54	28.4	C						
Overall Intersection			0.87	22.5	C		0.96	38.3	D							
3 West Street (NYS Rt. 9A) at Vesey Street																
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.58	38.5	D	L	0.61	41.7	D	- Partially mitigated. - Shift NB approach curblines east to gain one additional through lane. - Prohibit parking along the south side of EB Vesey Street during MD peak period. - Modify signal timing (shift 2 s of green time from NB phase to SB phase).		
	TR	0.73	12.6	B	TR	0.73	51.3	D	TR	0.53	40.0	D				
	SB	L	0.21	4.9	A	L	1.20+	120.0+	F*	L	1.20+	120.0+	F*			
	TR	0.54	3.3	A	TR	1.03	89.9	F	TR	0.98	66.9	E				
	Vesey Street	EB	LTR	0.75	49.5	D	LT	0.28	36.6	D	LT	0.28	36.6		D	
			-	-	-	-	R	1.20+	120.0+	F*	R	1.14	120.0+		F*	
		WB	L	0.81	55.3	E	-	-	-	-	-	-	-		-	
		LTR	1.20+	120.0+	F*	-	-	-	-	-	-	-	-		-	
	Overall Intersection			1.20+	26.6	C		1.11	100.3	F		1.01	80.5		F	
	OPTION 1															
		NB	L	0.55	36.5	D										- Partially mitigated. - Gain one additional SB approach travel lane by constructing a cantilever lane section - Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane. - Shift NB approach curblines east to gain one additional through lane. - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
		TR	0.65	43.5	D											
	SB	L	0.76	44.9	D											
	LTR	0.77	39.9	D												
	EB	LT	0.28	36.6	D											
		R	1.14	120.0+	F*											
Overall Intersection			0.83	49.9	D											
OPTION 2																
	NB	L	0.32	34.9	C									- Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street. - Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach). - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase). - Prohibit parking along the south side of EB Vesey Street through daylighting during MD peak period.		
	TR	0.56	42.6	D												
	SB	L	0.51	38.3	D											
	TR	0.65	40.5	D												
	EB	LT	0.20	27.5	C											
		R	0.69	46.9	D											
Overall Intersection			0.64	40.0	D											
OPTION 3																
	NB	L	0.57	57.3	E	L	0.57	37.4	D	L	0.54	35.1	D		- Partially mitigated. - Reduce median width and reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane. - Provide markings indicating that turns onto World Trade Center garage entry ramp must use the exclusive SB left-turn lane only. - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).	
	TR	0.76	16.8	B	TR	0.71	41.2	D	TR	0.76	43.2	D				
	SB	L	1.04	111.8	F	L	1.20+	120.0+	F*	L	0.76	46.1	D			
	TR	0.67	15.0	B	TR	0.61	35.2	D	LTR	0.75	39.5	D				
Liberty Street	EB	DefL	1.17	120.0+	F*	L	1.16	120.0+	F*	L	1.16	120.0+	F*			
	TR	0.43	42.6	D	TR	0.18	34.7	C	TR	0.18	34.7	C				
	WB	LTR	0.60	49.3	D	LTR	0.12	34.2	C	LTR	0.12	34.2	C			
Overall Intersection			0.91	31.7	C		1.20+	120.0+	F*		0.88	55.9	E			
41 West Street (NYS Rt. 9A) at Fulton Street																
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.32	17.4	B					- Mitigation not required.		
	SB	-	-	-	-	T	0.57	21.1	C							
	Fulton Street	WB	-	-	-	-	L	0.61	29.0	C						
			-	-	-	-	R	0.56	25.5	C						
Overall Intersection						0.59	21.6	C								
4 West Street (NYS Rt. 9A) at Liberty Street																
West Street (NYS Rt. 9A)	NB	L	0.57	57.3	E	L	0.57	37.4	D	L	0.54	35.1	D	- Partially mitigated. - Reduce median width and reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane. - Provide markings indicating that turns onto World Trade Center garage entry ramp must use the exclusive SB left-turn lane only. - Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase). - Modify signal timing (shift 1 s of green time from SB phase to NB phase).		
	TR	0.76	16.8	B	TR	0.71	41.2	D	TR	0.76	43.2	D				
	SB	L	1.04	111.8	F	L	1.20+	120.0+	F*	L	0.76	46.1	D			
	TR	0.67	15.0	B	TR	0.61	35.2	D	LTR	0.75	39.5	D				
	Liberty Street	EB	DefL	1.17	120.0+	F*	L	1.16	120.0+	F*	L	1.16	120.0+		F*	
		TR	0.43	42.6	D	TR	0.18	34.7	C	TR	0.18	34.7	C			
		WB	LTR	0.60	49.3	D	LTR	0.12	34.2	C	LTR	0.12	34.2		C	
	Overall Intersection			0.91	31.7	C		1.20+	120.0+	F*		0.88	55.9		E	

TABLE E.2-63
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 MD COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES WITH ROUTE 9A SHORT BYPASS (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (12:00 - 1:00 PM)				Current 2015 Build (12:00 - 1:00 PM)				Current 2015 Build Mitigated (12:00 - 1:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.13	120.0+	F*	T	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
		R	1.01	71.0	E	R	1.12	105.2	F					
		SB	1.12	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.09	20.3	C	R	0.21	22.1	C					
	WB	L	0.85	120.0+	F*	L	1.03	120.0+	F*					
		R	1.04	120.0+	F*	R	1.20+	120.0+	F*					
Overall Intersection	-		1.09	120.0+	F*	-	1.20+	120.0+	F*					
GREENWICH STREET CORRIDOR														
42 Greenwich Street at Fulton Street														
Greenwich Street	SB	TR	-	-	-	T	0.72	21.3	C	T	0.87	40.1	D	- Revise the current 90 s cycle to include a pedestrian-only phase.
		-	-	-	-	R	0.76	27.3	C	R	0.53	20.0	C	
Fulton Street	WB	LT	-	-	-	LT	0.46	24.3	C	LT	0.52	32.4	C	
Overall Intersection	-		-	-	-	-	0.64	24.0	C	-	0.58	31.9	C	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	0.55	20.4	C	L	0.62	29.4	C					- Mitigation not required.
		R	0.81	31.9	C	LT	0.58	26.6	C					
Vesey Street	EB	T	0.31	15.4	B	TR	0.83	32.7	C					
	WB	T	0.20	14.3	B	-	-	-	-					
Overall Intersection	-		0.56	20.2	C	-	0.53	30.0	C					

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).

TABLE E.2-64
 WORLD TRADE CENTER MEMORIAL AND REDEVELOPMENT PLAN
 PM COMPARISON AND MITIGATION : PRE SEPTEMBER 11TH 2015 NO ACTION CONDITION vs 2015 STREET DIRECTION CHANGES WITH ROUTE 9A SHORT BYPASS (ALTERNATIVE TRIP ASSUMPTIONS)

INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
SIGNALIZED INTERSECTIONS														
WEST STREET CORRIDOR														
2 West Street (NYS Rt. 9A) at Chambers Street														
West Street (NYS Rt. 9A)	NB	TR	1.13	99.5	F	TR	1.08	71.7	E	TR	1.10	79.4	E	- Modify signal timing (shift 1 s of green time from NB/SB phase to EB/WB phase).
	SB	L	0.75	57.3	E	L	0.72	58.5	E	L	0.72	58.5	E	
		TR	0.72	10.3	B	TR	0.81	6.3	A	TR	0.82	7.1	A	
Chambers Street	EB	LTR	0.61	43.5	D	LTR	0.36	40.7	D	LTR	0.33	38.9	D	
	WB	LT	1.08	111.0	F	LT	1.08	120.0+	F*	LT	1.05	110.2	F	
		R	0.67	26.2	C	R	0.83	42.1	D	R	0.81	40.2	D	
Overall Intersection	-		1.04	56.9	E	-	1.02	43.4	D	-	1.02	46.3	D	
3 West Street (NYS Rt. 9A) at Vesey Street														
OPTION 1														
West Street (NYS Rt. 9A)	NB	-	-	-	-	L	0.66	41.8	D	L	0.68	43.7	D	- Partially mitigated.
		TR	0.81	14.1	B	TR	0.76	43.1	D	TR	0.54	35.9	D	- Shift NB approach curbline east to gain one additional through lane.
	SB	L	0.15	5.3	A	L	0.83	53.0	D	L	0.81	49.6	D	- Modify signal timing (shift 1 s of green time from NB phase to SB phase).
		TR	0.67	4.1	A	TR	0.70	46.2	D	TR	0.68	44.0	D	
Vesey Street	EB	LTR	1.02	86.8	F	LT	0.60	44.9	D	LT	0.60	44.9	D	
		-	-	-	-	R	0.68	54.9	D	R	0.68	54.9	D	
	WB	L	0.93	75.5	E	-	-	-	-	-	-	-	-	
		LTR	1.20+	120.0+	F*	-	-	-	-	-	-	-	-	
Overall Intersection	-		1.20+	39.2	D	-	0.76	46.1	D	-	0.73	43.2	D	
OPTION 2														
	NB	L	0.65	42.4	D									- Gain one additional SB approach travel lane by constructing a cantilever lane section
		TR	0.65	39.0	D									- Reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane.
	SB	L	0.50	32.5	C									- Shift NB approach curbline east to gain one additional through lane.
		LTR	0.51	33.7	C									- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
	EB	LT	0.60	44.9	D									
		R	0.68	54.9	D									
	-		0.61	38.7	D									
OPTION 3														
	NB	L	0.33	31.4	C									- Shift the north entrance/exit of the Short Bypass tunnel further north to the section between the intersection of Route 9A at Warren Street and the intersection of Route 9A at Murray Street. The tunnel roadway surface will descend from at-grade at Warren Street to fully below-grade at Murray Street.
		TR	0.47	33.5	C									
	SB	L	0.31	28.5	C									
		TR	0.37	30.5	C									
	EB	LT	0.60	44.9	D									- Reconfigure NB and SB Route 9A at Vesey Street to at-grade conditions (three through lanes, one shared through-right lane, and two exclusive left-turn lanes per approach).
		R	0.68	54.9	D									- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
	-		0.49	34.3	C									
41 West Street (NYS Rt. 9A) at Fulton Street														
West Street (NYS Rt. 9A)	NB	-	-	-	-	T	0.33	17.6	B					- Mitigation not required.
Fulton Street	SB	-	-	-	-	T	0.39	18.3	B					
	WB					L	0.71	33.3	C					
						R	0.59	28.9	C					
Overall Intersection	-		-	-	-	-	0.56	22.2	C					
4 West Street (NYS Rt. 9A) at Liberty Street														
West Street (NYS Rt. 9A)	NB	L	0.78	64.9	E	L	0.60	40.0	D	L	0.59	39.4	D	- Partially mitigated.
		TR	0.72	15.8	B	TR	0.58	37.1	D	TR	0.59	37.3	D	- Reduce median width and reconfigure SB approach to one 11 ft. shared through-right lane, one 11 ft. through lane, one 11 ft. shared through-left lane and one 11 ft. exclusive left-turn lane.
	SB	L	0.92	79.8	E	L	0.84	52.7	D	L	0.59	39.4	D	
		TR	0.92	22.9	C	TR	0.70	42.1	D	LTR	0.60	37.6	D	
Liberty Street	EB	DeFL	0.99	91.5	F	L	0.68	48.1	D	L	0.64	44.2	D	- Provide markings indicating that turns onto World Trade Center garage entry ramp must use the exclusive SB left-turn lane only.
		TR	1.15	120.0+	F*	TR	0.56	44.9	D	TR	0.53	41.9	D	- Provide revised signal timing and phasing plan (allow west side pedestrian crosswalk movement during SB-only phase and allow east side pedestrian crosswalk movement during NB-only phase).
	WB	LTR	0.44	43.9	D	LTR	0.66	62.1	E	LTR	0.60	53.5	D	
			0.37	40.8	D	-	-	-	-	-	-	-	-	
Overall Intersection	-		0.98	35.6	D	-	0.71	44.0	D	-	0.61	39.6	D	- Modify signal timing (shift 2 s of green time from SB phase to EB/WB phase).

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INTERSECTION & APPROACH	Pre 9/11 2015 No Action (5:00 - 6:00 PM)				Current 2015 Build (5:00 - 6:00 PM)				Current 2015 Build Mitigated (5:00 - 6:00 PM)				Mitigation Measures	
	Mvt.	V/C	Control		Mvt.	V/C	Control		Mvt.	V/C	Control			
			Delay	LOS			Delay	LOS			Delay	LOS		
6 West Street (NYS Rt.9A) at Brooklyn Battery Tunnel														
West Street (NYS Rt.9A)	NB	T	1.12	120.0+	F*	TR	1.20+	120.0+	F*					- Meaningful TSM mitigation measures are not available.
		R	1.09	119.1	F	R	1.11	120.0+	F*					
		SB	1.09	120.0+	F*	TR	1.20+	120.0+	F*					
Brooklyn Battery Tunnel	EB	R	0.03	12.0	B	R	0.18	13.6	B					
	WB	L	0.94	120.0+	F*	L	1.07	120.0+	F*					
		R	0.89	120.0+	F*	R	1.12	120.0+	F*					
Overall Intersection	-		1.01	120.0+	F*	-	1.20+	120.0+	F*					
GREENWICH STREET CORRIDOR														
42 Greenwich Street at Fulton Street														
Greenwich Street	SB	-	-	-	-	T	0.77	25.0	C	T	0.89	42.8	D	- Revise the current 90 s cycle to include a pedestrian-only phase.
						R	0.94	51.3	D	R	0.63	21.6	C	
Fulton Street	WB	-	-	-	-	LT	0.56	26.2	C	LT	0.70	38.6	D	
Overall Intersection	-					-	0.79	33.4	C	-	0.64	34.9	C	
WEST BROADWAY CORRIDOR														
13 West Broadway/Greenwich Street at Vesey Street														
West Broadway	SB	L	1.20	120.0+	F*	L	0.82	38.7	D					- Mitigation not required.
		R	0.94	47.2	D	LT	0.81	32.5	C					
Vesey Street	EB	T	0.32	15.5	B	TR	0.86	34.4	C					
	WB	T	0.22	14.5	B	-	-	-	-					
Overall Intersection	-		0.76	57.4	E	-	0.61	34.5	C					

General Notes:

- (i): Control delay is measured in seconds per vehicle.
- (ii): Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group as listed in the 2000 Highway Capacity Manual -- TRB.
- (iii): Level of service (LOS) for unsignalized intersections is based upon control delay per vehicle (sec/veh) for each minor-approach as listed in the 2000 Highway Capacity Manual -- TRB.
- (iv): Overall intersection V/C ratio is the critical lane groups' V/C ratio, not the weighted average of all the movements.
- (v): F* indicates level of service F conditions with delays in excess of two minutes for the movement with an asterisk (*).