

XI. FUTURE CONDITIONS WITH IMPROVEMENTS

XI. PORTWAY MODEL – SYSTEM-WIDE EVALUATION OF IMPROVEMENTS

The regional transportation planning model adopted and calibrated for Portway Extensions was used to evaluate the numerous improvements concepts under consideration. As detailed in Section IX, due to the extensive volume of background, non-container related traffic flows in the future conditions, the relative difference between the high and low container growth scenarios was found to have a minimal effect on the future operating conditions on the roadway network. As detailed in this section, two future scenarios were selected for evaluation of the system-wide improvements. These two future growth and development scenarios include:

- 2025 **High** Container Movement Growth **with no** PIDN
- 2025 **Low** Container Movement Growth **with** PIDN.

Also for the purpose of analysis, improvement concepts have been grouped into three (3) categories, or “Tiers”, and include both operational and infrastructure enhancements. The three Tiers may be summarized as:

- Tier 1 – Systems / Operational Improvements,
- Tier 2 – Shorthaul Rail and Barge Systems,
- Tier 3 – Roadway infrastructure improvements.

Tier 1 improvements focus on systems and operational improvement concepts (as detailed in Section X). Tier 1 contains two parts, the first of which involves the global extension of cargo related operating hours and management of container handling and the transportation infrastructure through application of ITS technologies. While the total daily container related truck activity would remain the same, under the Tier 1 condition, the proportion anticipated to occur during the peak traffic hours is expected to diminish. A reduction was applied to all container trip interchanges (trip purpose 2) in both the AM and PM peak hour model trip tables. Other background trip purposes were not affected.

The second operational enhancement involves the implementation of container management strategies, and also results in the reduction of peak hour container related truck trips. However, this trip reduction applies only to trip interchanges between marine ports and intermodal rail terminals, and all other areas (TAZs) representing dense trade clusters with container trip activity.

Tier 2 enhancements involve the establishment a shorthaul rail spine connecting the marine ports, intermodal railyards and locations of dense warehouse / distribution center activity. As detailed in Section X, this shorthaul rail spine would utilize existing rail rights-of-way, both active and inactive mainlines, segments and feeders. While primarily focusing on creating a system of non-truck dependent connectivity within the Portway Extensions Study Area, the shorthaul rail spine would also accommodate connections to the national Class I rail system. This spine would generally parallel the NJ Turnpike and serve container handling centers proximate to several turnpike interchanges resulting in the reduction of container related truck trips. While Tier 2 is an infrastructure improvement, the effect was replicated through adjustment of the trip tables rather than to the highway networks.

Individual roadway infrastructure improvements, as detailed in Section X, comprise the Tier 3 category of recommended improvements. While the aggregate roadway improvements combined in the full build network were compared using both the high and low growth scenarios for 2010 and 2025. The functional benefits of the individual infrastructure improvements were evaluated using the 2025 **High** Container Movement Growth **with no** PIDN scenario.

Tier 1 Improvements

The model runs indicate that the aggregated Tier 1 improvements would result in approximate 21 percent reduction in peak hour container related truck trips. The 2025 AM peak hour High Growth with no PIDN container related truck trips were reduced from 3,396 to 2,683 while the PM container related truck trips were reduced from 2,699 to 2,137. The Tier 1 trip tables (AM and PM) were assigned to the future networks using the Equilibrium Highway Load function of TRANPLAN. The resultant system performance parameters are listed in Table XI.1. As shown, a corresponding reduction was also noted in the container related truck hours and miles of travel.

**Table XI.1
Operational Performance Measures - Tier 1
2025 High Growth With No PIDN**

AM Peak Hour	Existing	No-Build	Tier 1	Delta
Container Truck Trips	1,404	3,396	2,683	-713
All Other Trips	2,789,300	3,601,728	3,601,728	0
Total Trips	2,790,704	3,605,124	3,604,411	-713
Container Truck VMT	66,022	154,476	126,397	-28,079
Container Truck VHT	1,716	4,786	3,853	-933

PM Peak Hour	Existing	No-Build	Tier 1	Delta
Container Truck Trips	1,084	2,699	2,137	-562
All Other Trips	2,929,421	3,767,384	3,767,384	0
Total Trips	2,930,505	3,770,083	3,769,521	-562
Container Truck VMT	51,221	123,660	101,001	-22,659
Container Truck VHT	1,312	3,806	3,037	-769

Similar trip reductions were applied to the 2025 Low Growth with PIDN trip tables and assigned to the model networks. The resultant system performance measures are summarized in Table XI.2.

Table XI.2
Operational Performance Measures - Tier 1
2025 Low Growth with no PIDN

AM Peak Hour	Existing	No-Build	Tier 1	Delta
Container Truck Trips	1,404	2,108	1,632	-476
All Other Trips	2,789,300	3,601,728	3,601,728	0
Total Trips	2,790,704	3,603,836	3,603,360	-476
Container Truck VMT	66,022	94,319	75,512	-18,807
Container Truck VHT	1,716	2,909	2,288	-621

PM Peak Hour	Existing	No-Build	Tier 1	Delta
Container Truck Trips	1,084	1,678	1,310	-368
All Other Trips	2,929,421	3,767,384	3,767,384	0
Total Trips	2,930,505	3,769,062	3,768,694	-368
Container Truck VMT	51,221	75,072	60,477	-14,595
Container Truck VHT	1,312	2,324	1,832	-492

Tier 2 enhancements center on establishment of a shorthaul rail spine connecting the marine ports, intermodal railyards and the warehouse and distribution centers. This spine would parallel the turnpike and serve cargo handling centers proximate to several turnpike interchanges resulting in the reduction of container related truck trips. While Tier 2 represents an infrastructure improvement, the effect was replicated through adjustment of the trip tables rather than to the highway networks.

For Tier 2 improvements, container related truck trips between marine ports and intermodal rail yards and all dense trade clusters along the New Jersey Turnpike south were reduced resulting in an overall container truck trip reduction of 6.4 to 6.7 percent. The 2025 Tier 2 trip tables were then assigned to the future networks. The pertinent system performance parameters are summarized in Tables XI.3 and XI.4 for the 2025 High Growth and Low Growth scenarios, respectively. The Tier 2 improvements would be expected to result in a 12 to 15 percent reduction of container traffic along the New Jersey Turnpike south of the Port Newark / Port Elizabeth area.

Table XI.3
Operational Performance Measures - Tier 2
2025 High Growth with no PIDN

AM Peak Hour	Existing	No Build	Tier 2	Delta
Container Truck Trips	1,404	3,396	2,507	-889
All Other Trips	2,789,300	3,601,728	3,601,728	0
Total Trips	2,790,704	3,605,124	3,604,235	-889
Container Truck VMT	66,022	154,476	115,234	-39,242
Container Truck VHT	1,716	4,786	3,555	-1,231

PM Peak Hour	Existing	No-Build	Tier 2	Delta
Container Truck Trips	1,084	2,699	1,999	-700
All Other Trips	2,929,421	3,767,384	3,767,384	0
Total Trips	2,930,505	3,770,083	3,769,383	-700
Container Truck VMT	51,221	123,660	92,504	-31,156
Container Truck VHT	1,312	3,806	2,814	-992

Table XI.4
Operational Performance Measures - Tier 2
2025 Low Growth with no PIDN

AM Peak Hour	Existing	No-Build	Tier 2	Delta
Container Truck Trips	1,404	2,108	1,522	-586
All Other Trips	2,789,300	3,601,728	3,601,728	0
Total Trips	2,790,704	3,603,836	3,603,250	-586
Container Truck VMT	66,022	94,319	68,582	-25,737
Container Truck VHT	1,716	2,909	2,101	-808

PM Peak Hour	Existing	No-Build	Tier 2	Delta
Container Truck Trips	1,084	1,678	1,226	-452
All Other Trips	2,929,421	3,767,384	3,767,384	0
Total Trips	2,930,505	3,769,062	3,768,610	-452
Container Truck VMT	51,221	75,072	55,528	-19,544
Container Truck VHT	1,312	2,324	1,696	-628

Figures XI.1 through XI.8 depict the container related truck trips under the future conditions as follows:

- Figure XI.1 - 2025 High Growth with no PIDN and Tier 1 Improvements – AM Peak
- Figure XI.2 - 2025 High Growth with no PIDN and Tier 1 Improvements – PM Peak
- Figure XI.3 - 2025 Low Growth with PIDN and Tier 1 Improvements – AM Peak
- Figure XI.4 - 2025 Low Growth with PIDN and Tier 1 Improvements – PM Peak
- Figure XI.5 - 2025 High Growth with no PIDN and Tier 2 Improvements – AM Peak
- Figure XI.6 - 2025 High Growth with no PIDN and Tier 2 Improvements – PM Peak
- Figure XI.7 - 2025 Low Growth with PIDN and Tier 2 Improvements – AM Peak
- Figure XI.8 - 2025 Low Growth with PIDN and Tier 2 Improvements – PM Peak

Figures XI.9 through XI.16 depict the roadway segments with more than 5 container related truck trips per hour and volume-to-capacity ratios in excess of 1.25 as follows:

- Figure XI.9 - 2025 High Growth with no PIDN and Tier 1 Improvements – AM Peak
- Figure XI.10 - 2025 High Growth with no PIDN and Tier 1 Improvements – PM Peak
- Figure XI.11 - 2025 Low Growth with PIDN and Tier 1 Improvements – AM Peak
- Figure XI.12 - 2025 Low Growth with PIDN and Tier 1 Improvements – PM Peak
- Figure XI.13 - 2025 High Growth with no PIDN and Tier 2 Improvements – AM Peak
- Figure XI.14 - 2025 High Growth with no PIDN and Tier 2 Improvements – PM Peak
- Figure XI.15 - 2025 Low Growth with PIDN and Tier 2 Improvements – AM Peak
- Figure XI.16 - 2025 Low Growth with PIDN and Tier 2 Improvements – PM Peak

As seen in the figures, even with the reduction in peak period container related truck trips that would result from the implementation of the systems, operational and alternative mode improvements, there will still be a number of locations where physical infrastructure improvements will be required to facilitate the movement of container trucks. These infrastructure improvements comprise the Tier 3 improvement packages.

Tier 3 improvements, as described in Section X, focus upon the roadway infrastructure and vary in magnitude, including projects varying from: interchange improvements; widening of roadways; improvement/replacement of bridges; and construction of new roadway segments and connectors. The effects of these improvements were evaluated using two distinct procedures: application of the regional model to identify regional benefits; detailed analysis of specific roadway system components where localized improvements are recommended.

New roadways and roadway segments were coded into the roadway network models as new links, with appropriate distance, speed, capacity and link type information incorporated to define the performance characteristics of the links. Improvement of existing facilities was represented by increase in speed and or roadway capacity on existing model network links. Two future networks were built that includes all applicable Tier 3 improvements to be implemented by year 2025: one representing the AM roadway conditions and the other the PM conditions. These networks were designated Full Build networks and subsequently used for assignment of all future trips.

Interchange and intersection improvements required a different approach. In a regional planning model, intersections and most interchanges are represented by a single node. A node has no performance characteristics (with the exception of turn penalties / delays, etc.). Therefore, an external spreadsheet model was created for the interchange improvements that listed the existing and proposed ramp configurations with corresponding distance and time/speed data. The turning movements at the

representative model node were tabulated and reassigned to the appropriate interchange component. With this process, vehicle miles and hours of travel through the specific interchange areas may be summarized.

Tables XI.5 through XI.8 present the anticipated results of the Tier 3 network related improvements. Assigned volumes (total volumes less trips with origins and destinations within the same traffic analysis zone), vehicle miles and hours of travel and average system speed are listed for container trips, all other truck trips, light vehicle trips and total trips. These statistics describe the roadway network operations during the given peak hour and are based on the equilibrium loading, capacity restrained traffic assignment process. In all cases, the results of the future full build network with the improvements are compared to the future "No-Build" network.

The 2025 High Growth with no PIDN scenario assignment results and comparisons are presented in Table XI.5. During the AM peak hour, the Tier 3 improvements result in the savings of 30,261 vehicle miles of travel of which 335 are attributable to container trips and another 1,137 vehicle miles to the remaining truck trips. Likewise, a saving of 4,716 vehicle hours would be realized, of which 65 are attributable to containers. There is a slight overall improvement in network travel speed for container traffic of 0.4 miles per hour. Similar savings in are observed during the PM peak hour. Vehicle miles of travel is reduced by 22,988 (355 for containers) and vehicle hours by 4,026 (37 for containers). Speed increase for containers during the PM peak hour is 0.2 miles per hour.

Table XI.6 summarizes the assignment results for the 2025 Low Growth with PIDN scenario. During the AM peak hour, the Tier 3 improvements result in the savings of 28,620 vehicle miles of travel of which 228 are attributable to container trips and another 1,524 vehicle miles to the all other truck trips. Likewise, a saving of 5,000 vehicle hours is obtained of which 44 are attributable to containers and 72 to other trucks. During the PM peak hour, the roadway improvements result in a saving of 25,288 vehicle miles of travel and 6,881 vehicle hours of travel. The container trips contribute 296 vehicle miles and 27 vehicle hours to these totals. Modest overall system speed increases are obtained for container trucks during the AM peak hour and for all truck traffic during the PM peak hour.

**Table XI.5
System Operational Performance Measures - Tier 3
2025 High Growth - No PIDN**

AM Peak Hour	Assigned Volume	Vehicle Miles of Travel (VMT)			Vehicle Hours of Travel (VHT)			System Average Travel Speed (mph)		
		No-Build	Build	Reduction	No-Build	Build	Reduction	No-Build	Build	Increase
Container Truck Trips	3,386	154,476	154,141	335	4,786	4,721	65	32.3	32.7	0.4
All Other Truck Trips	90,407	1,473,728	1,472,591	1,137	54,933	54,906	27	26.8	26.8	-
Light Vehicle Trips	2,780,586	35,154,004	35,125,212	28,792	1,565,921	1,561,297	4,624	22.4	22.5	0.1
Total Trips	2,874,379	36,782,208	36,751,944	30,264	1,625,640	1,620,924	4,716	22.6	22.7	0.1

PM Peak Hour	Assigned Volume	No Build			No Build			No Build		
		VMT	VMT	Reduction	VHT	VHT	Reduction	Speed	Speed	Increase
Container Truck Trips	2,692	123,660	123,305	355	3,806	3,769	37	32.5	32.7	0.2
All Other Truck Trips	77,534	1,201,984	1,200,863	1,121	46,392	46,332	60	25.9	25.9	-
Light Vehicle Trips	2,904,813	36,972,744	36,951,232	21,512	1,635,335	1,631,406	3,929	22.6	22.6	-
Total Trips	2,985,039	38,298,388	38,275,400	22,988	1,685,533	1,681,507	4,026	22.7	22.8	0.1

**Table XI.6
System Operational Performance Measures - Tier 3
2025 Low Growth - With PIDN**

AM Peak Hour	Assigned Volume	Vehicle Miles of Travel (VMT)			Vehicle Hours of Travel (VHT)			System Average Travel Speed (mph)		
		No-Build	Build	Reduction	No-Build	Build	Reduction	No-Build	Build	Increase
Container Truck Trips	2,103	94,319	94,091	228	2,909	2,865	44	32.4	32.8	0.4
All Other Truck Trips	90,407	1,473,785	1,472,261	1,524	54,783	54,711	72	26.9	26.9	-
Light Vehicle Trips	2,780,586	35,154,732	35,127,864	26,868	1,564,188	1,559,304	4,884	22.5	22.5	-
Total Trips	2,873,096	36,722,836	36,694,216	28,620	1,621,880	1,616,880	5,000	22.6	22.7	0.1

PM Peak Hour	Assigned Volume	No Build			No Build			No Build		
		VMT	VMT	Reduction	VHT	VHT	Reduction	Speed	Speed	Increase
Container Truck Trips	1,673	75,072	74,776	296	2,324	2,297	27	32.3	32.6	0.3
All Other Truck Trips	77,534	1,202,072	1,200,764	1,308	46,787	46,211	576	25.7	26.0	0.3
Light Vehicle Trips	2,904,813	36,974,656	36,950,972	23,684	1,633,778	1,627,500	6,278	22.6	22.7	0.1
Total Trips	2,984,020	38,251,800	38,226,512	25,288	1,682,889	1,676,008	6,881	22.7	22.8	0.1

**Table XI.7
System Operational Performance Measures - Tier 3
2010 High Growth - No PIDN**

AM Peak Hour	Assigned Volume	Vehicle Miles of Travel (VMT)			Vehicle Hours of Travel (VHT)			System Average Travel Speed (mph)		
		No-Build	Build	Reduction	No-Build	Build	Reduction	No-Build	Build	Increase
Container Truck Trips	2,568	117,486	117,243	243	3,343	3,309	34	35.1	35.4	0.3
All Other Truck Trips	82,622	1,257,890	1,257,661	229	44,366	44,129	237	28.4	28.5	0.1
Light Vehicle Trips	2,478,609	30,041,830	30,024,292	17,538	1,244,353	1,240,414	3,939	24.1	24.2	0.1
Total Trips	2,563,799	31,417,206	31,399,196	18,010	1,292,062	1,287,852	4,210	24.3	24.4	0.1

PM Peak Hour	Assigned Volume	No Build			No Build			No Build		
		VMT	VMT	Reduction	VHT	VHT	Reduction	Speed	Speed	Increase
Container Truck Trips	1,992	92,167	91,854	313	2,602	2,590	12	35.4	35.5	0.1
All Other Truck Trips	68,659	1,005,155	1,004,572	583	36,555	36,358	197	27.5	27.6	0.1
Light Vehicle Trips	2,575,525	31,427,138	31,402,276	24,862	1,276,396	1,269,439	6,957	24.6	24.7	0.1
Total Trips	2,646,176	32,524,460	32,498,702	25,758	1,315,553	1,308,387	7,166	24.7	24.8	0.1

**Table XI.8
System Operational Performance Measures - Tier 3
2010 Low Growth - With PIDN**

AM Peak Hour	Assigned Volume	Vehicle Miles of Travel (VMT)			Vehicle Hours of Travel (VHT)			System Average Travel Speed (mph)		
		No-Build	Build	Reduction	No-Build	Build	Reduction	No-Build	Build	Increase
Container Truck Trips	1,732	78,029	77,818	211	2,223	2,203	20	35.1	35.3	0.2
All Other Truck Trips	82,622	1,257,729	1,257,344	385	44,315	43,986	329	28.4	28.6	0.2
Light Vehicle Trips	2,478,609	30,043,062	30,025,024	18,038	1,243,653	1,238,615	5,038	24.2	24.2	-
Total Trips	2,562,963	31,378,820	31,360,186	18,634	1,290,191	1,284,804	5,387	24.3	24.4	0.1

PM Peak Hour	Assigned Volume	No Build			No Build			No Build		
		VMT	VMT	Reduction	VHT	VHT	Reduction	Speed	Speed	Increase
Container Truck Trips	1,365	61,606	61,387	219	1,751	1,736	15	35.2	35.4	0.2
All Other Truck Trips	68,659	1,004,972	1,004,505	467	36,543	36,318	225	27.5	27.7	0.2
Light Vehicle Trips	2,575,525	31,418,194	31,401,656	16,538	1,275,507	1,268,795	6,712	24.6	24.7	0.1
Total Trips	2,645,549	32,484,772	32,467,548	17,224	1,313,801	1,306,849	6,952	24.7	24.8	0.1

The 2010 High Growth with no PIDN scenario assignment results are indicated in Table XI.7. During the AM peak hour, the Tier 3 roadway improvements result in the savings of 18,010 vehicle miles of travel of which 243 are attributable to container truck trips and another 229 vehicle miles to the remaining truck trips. A saving of 4,210 vehicle hours is obtained of which 34 are attributable to containers and 237 to other trucks. Average network speed increase is 0.3 miles per hour. During the PM peak hour, the roadway improvements result in a saving of 25,758 vehicle miles of travel and 7,166 vehicle hours of travel. The container truck trips contribute 313 vehicle miles and 12 vehicle hours to these totals.

Table XI.8 summarizes the assignment results for the 2010 Low Growth with PIDN scenario. During the AM peak hour, the Tier 3 improvements result in the savings of 18,634 vehicle miles of travel of which 211 are attributable to container truck trips and another 385 vehicle miles to the all other truck trips. Likewise, a saving of 5,387 vehicle hours is obtained of which 20 are attributable to containers and 329 to other trucks. During the PM peak hour, the roadway improvements result in a saving of 17,224 vehicle miles of travel and 6,952 vehicle hours of travel. The container truck trips contribute 219 vehicle miles and 15 vehicle hours to these totals. Other truck trips result in a saving of 467 vehicle miles of travel and 225 vehicle hours of travel. Minor speed increases are obtained for all truck traffic during both peak hours.

Comparison of the 2010 assignment results to 2025 results indicates that lower average network speeds and lesser savings in vehicle hour of travel are realized for the 2025 system. Both are an indication of growing traffic volumes with associated increases in the levels of peak hour traffic congestion. While container truck traffic contributes a relatively small part to the overall vehicle miles and hours of travel for all of the scenarios evaluated, the amount of congestion alleviated by the Tier 3 improvements directly impacts this travel mode as well.

Roadway improvements that were more localized in nature were represented in the Portway model as a single node. While the volumes and turning movement through that node could be determined, system benefits in terms changes in vehicle miles and vehicle hours could not. The following evaluation is also based on the 2025 High Growth without PIDN scenario and is presented for both the AM and PM peak hours. Vehicles are grouped by light vehicle and trucks.

Travel distances of selected trips are reduced with the proposed improvements at the US Routes 1&9 and Delancey Street interchange, at the New Jersey Turnpike Interchange 13 and at Interchange 14. Although improvements at the New Jersey Turnpike Interchange 10 do not affect the travel distance of light vehicles, heavy vehicle travel distance is increased.

Improvements also increased travel speeds and resulted in a decrease in travel times for selected trips at each interchange. Changes in travel distances and travel times are summarized in Table XI.9. The travel speeds and traffic control delay were estimated for each trip to determine the trip travel time.

**Table XI.9
Localized Interchange Improvements
Roadway Distance and Speed**

Location	Change in Distances (miles)	Change in Travel Times (hours)
Routes 1&9 at Delancey Street	0.1	0.07
NJTP Interchange 10	+ 0.3	0.01
NJTP Interchange 13	0.9	0.05
NJTP Interchange 14	0.8	0.04
NJTP Interchange 14A 4-1	3.3	1.38
NJTP Interchange 14A 4-2	+ 20.4	0.06

Routes 1/9 and Delancy Street

Enhancements at the US Routes 1&9 and Delancey Street interchange include improvements to the US Routes 1&9 Local exit ramp to Delancey Street and a truck ramp connecting the US Routes 1&9 Express exit ramp directly to southbound Stockton Street. The improvements resulted in a decrease in VMT and VHT for light vehicles. Since most of the heavy vehicles are on the Local exit ramp, congestion on Delancey Street and delays at the Stockton Street traffic signal remain part of the travel experience. Heavy vehicle VMT and VHT are unchanged. The assigned volumes and changes in VMT and VHT for US Routes 1&9 at Delancey Street, New Jersey Turnpike Interchange 10, New Jersey Turnpike Interchange 13 and New Jersey Turnpike Interchange 14 are listed in Tables XI.10 and XI.11 for AM and PM peak hours respectively.

**Table XI.10
Improvements at Selected Interchanges
2025 High Growth with no PIDN - AM Peak**

Light Vehicles							
Location	Assigned Volume	VMT No Build	VMT Full Build	Change in VMT	VHT No Build	VHT Full Build	Change in VHT
Routes 1&9 at Delancey Street	873	343	319	24	53	34	18
NJTP Interchange 10	2,083	1,826	1,826	-	73	73	-
NJTP Interchange 13	162	80	68	12	4	3	1
NJTP Interchange 14	369	179	179	-	7	6	1
NJTP Interchange 14A 4-1	6,728	6,881	7,021	+ 140	358	231	127
NJTP Interchange 14A 4-2	11,581	10,362	14,295	+ 3933	437	526	+ 89

Heavy Vehicles							
Location	Assigned Volume	VMT No Build	VMT Full Build	Change in VMT	VHT No Build	VHT Full Build	Change in VHT
Routes 1&9 at Delancey Street	167	54.8	54.8	0	2.19	1.83	0
NJTP Interchange 10	52	46	59	+ 13	2	2	-
NJTP Interchange 13	-	-	-	-	-	-	-
NJTP Interchange 14	579	335	237	98	13	8	5
NJTP Interchange 14A 4-1	1,062	1,102	1,078	24	68	39	29
NJTP Interchange 14A 4-2	1,493	1,410	1,859	+ 449	75	73	2

**Table XI.11
Improvements at Selected Interchanges
2025 High Growth with no PIDN - PM Peak**

Light Vehicles							
Location	Assigned Volume	VMT No Build	VMT Full Build	Change in VMT	VHT No Build	VHT Full Build	Change in VHT
Routes 1&9 at Delancey Street	563	231	213	18	37	24	13
NJTP Interchange 10	2,529	2,214	2,214	-	88	88	-
NJTP Interchange 13	162	80	68	12	4	3	1
NJTP Interchange 14	392	219	119	100	9	4	5
NJTP Interchange 14A 4-1	6,988	7,065	7,091	274	508	258	250
NJTP Interchange 14A 4-2	12,241	11,130	14,522	+ 3392	600	549	51

Heavy Vehicles							
Location	Assigned Volume	VMT No Build	VMT Full Build	Change in VMT	VHT No Build	VHT Full Build	Change in VHT
Routes 1&9 at Delancey Street	35	14.3	13.2	1.1	2.32	1.49	0.84
NJTP Interchange 10	166	145	189	+ 44	6	6	(0)
NJTP Interchange 13	-	-	-	-	-	-	-
NJTP Interchange 14	476	296	185	111	12	6	6
NJTP Interchange 14A 4-1	707	763	737	26	49	27	22
NJTP Interchange 14A 4-2	1,033	998	1,180	182	55	45	10

NJ Turnpike Interchange 10

Improvements at the New Jersey Turnpike Interchange 10 include a service road between the Turnpike and Industrial Road and a truck ramp on westbound Route 440 to the Turnpike entrance. The light vehicle travel distance and travel time are unchanged. Although the heavy vehicle travel distance is longer on the service road and truck ramp, the truck travel speeds are expected to increase and the truck travel time decrease.

NJ Turnpike Interchange 13

The New Jersey Turnpike Interchange 13 improvements include ramps connecting Bayway Avenue to the toll plaza and to the Goethels Bridge. The new ramps decrease the trip distance and travel time between Bayway Avenue and the New Jersey Turnpike and Goethels Bridge.

Improvements at the New Jersey Turnpike Interchange 14 include widening the ramps connecting the toll plaza to Port Street, widening the westbound I-78 exit ramp to Brewster Avenue/Port Street, and a new Port Street truck entrance ramp to the toll plaza. The enhancements improve travel times and the new ramp decreases the heavy vehicle travel distance and travel time.

NJ Turnpike Interchange 14-A

Two improvements packages were reviewed for New Jersey Turnpike Interchange 14A. Alternate 4-1 includes improvements to the toll plaza, and toll plaza ramp connections to Pulaski Street, Port Jersey Boulevard, Route 185, Route 440 and Avenue E. The 53rd Street access to the toll plaza is closed. Alternate 4-2 includes the relocation of the toll plaza, new ramps to the New Jersey Turnpike, a new Pulaski Street and Route 440 interchange, a new Pulaski Street and toll plaza road interchange, a new section of Route 440 between Pulaski Street and Avenue C, a new roadway connecting Route 185 and Port Jersey Boulevard, and local access roads.

Travel distances and travel times were summarized and compared to the No Build conditions. Nine trip origination/destination points, listed below, were paired to identify trips in the Interchange 14A service area. The pairing of the origination/destination points produced seventy-two trips within and around Interchange 14A.

- NJTP east of Interchange 14A
- NJTP west of Interchange 14A
- Route 440 west of Interchange 14A
- Route 440 south of Interchange 14A
- Route 185 at Route 440
- Port Jersey Boulevard at the Port Jersey Blvd-Pulaski Road Connector Drive
- Pulaski Road at the Port Jersey Blvd-Pulaski Road Connector Drive
- 53rd Street at Broadway
- Avenue E

The trip summaries for the above movement combinations are also listed in Table XI.10 for the AM peak hour and Table XI.11 for the PM peak hour.

The overall trip travel times are shorter in Alternate 41 than in the No Build condition. Most of the trips have shorter distances and shorter travel times. Only the trips from Pulaski Street to Avenue E, from Port Jersey Boulevard to 53rd Street, and between Pulaski Street and 53rd Street are approximately a mile longer with longer travel times.

During the AM Peak in Alternate 42, the overall Vehicle Miles Travel increased by approximately 3900 for light vehicles and 450 for heavy vehicles. The overall Vehicle Hour Travel increased by approximately 90 hours for light vehicles and relatively unchanged for heavy vehicles. The trips from 53rd Street and Avenue E to the toll plaza contribute to the longer travel distance and longer travel times for light vehicles. The 53rd Street and Avenue E access to the New Jersey Turnpike loops around Route 440 at Avenue C to the new Pulaski Street interchange.

During the PM Peak, the overall Vehicle Miles Travel increased by approximately 3400 for light vehicles and decreased by approximately 180 for heavy vehicles. The overall Vehicle Hour Travel decreased by approximately 50 for light vehicles and decreased by 10 for heavy vehicles. The trips from the New Jersey Turnpike to 53rd Street and Avenue E contribute to the longer travel distance and longer travel times for light vehicles. Vehicles destined to 53rd Street and Avenue E from the New Jersey Turnpike must loop around the new Pulaski Street interchanges to the Route 440 and Avenue C interchange.

Figure XI.1
Future Container Truck Traffic - AM Peak Hour
2025 NB - High Growth with No PIDN - TIER 1



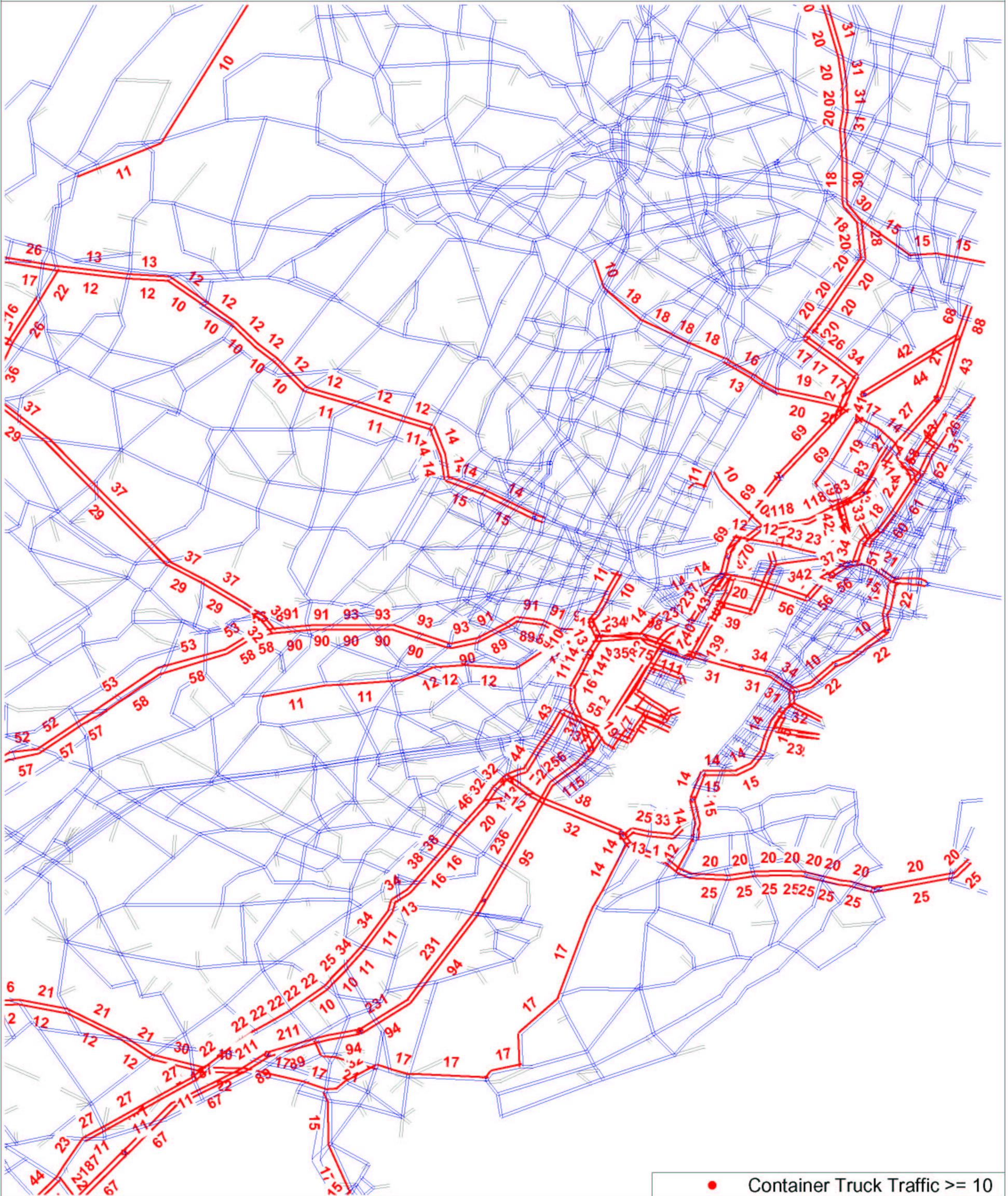
Figure XI.2
Future Container Truck Traffic - PM Peak Hour
2025 NB - High Growth with No PIDN - TIER 1



Figure XI.3
Future Container Truck Traffic - AM Peak Hour
2025 NB - Low Growth with PIDN - TIER 1



**Figure XI.4
 Future Container Truck Traffic - PM Peak Hour
 2025 NB - Low Growth with PIDN - TIER 1**



● Container Truck Traffic >= 10

**Figure XI.5
 Future Container Truck Traffic - AM Peak Hour
 2025 NB - High Growth with No PIDN - TIER 2**

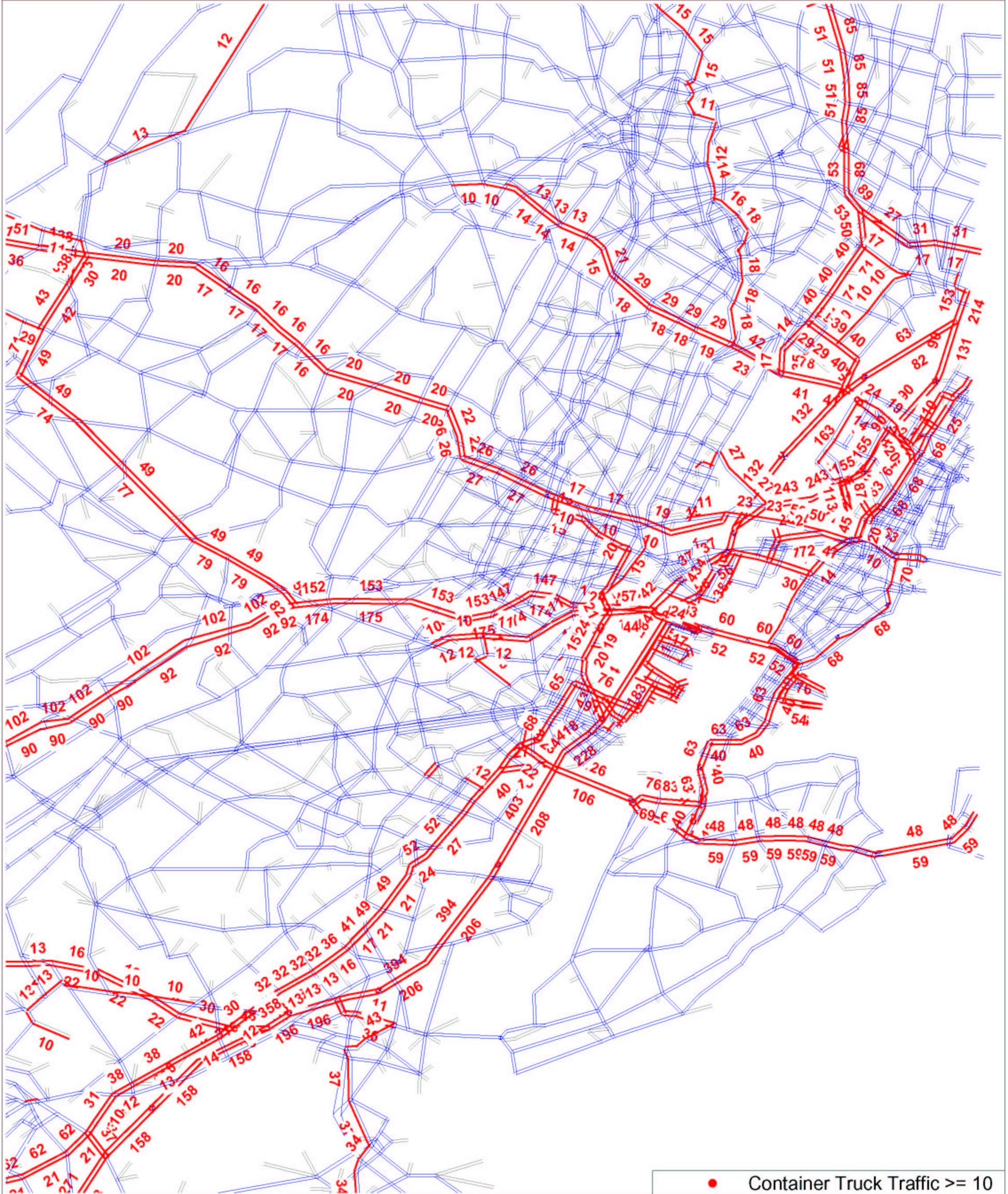


Figure XI.6
Future Container Truck Traffic - PM Peak Hour
2025 NB - High Growth no PIDN - TIER 2



● Container Truck Traffic >= 10

Figure XI.7
Future Container Truck Traffic - AM Peak Hour
2025 NB - Low Growth with PIDN - TIER 2



Figure XI.8
Future Container Truck Traffic - PM Peak Hour
2025 NB - Low Growth with PIDN - TIER 2



Figure XI.9
Future Container Truck Traffic and VC Ratio - AM Peak Hour
2025 NB - High Growth with No PIDN - TIER 1

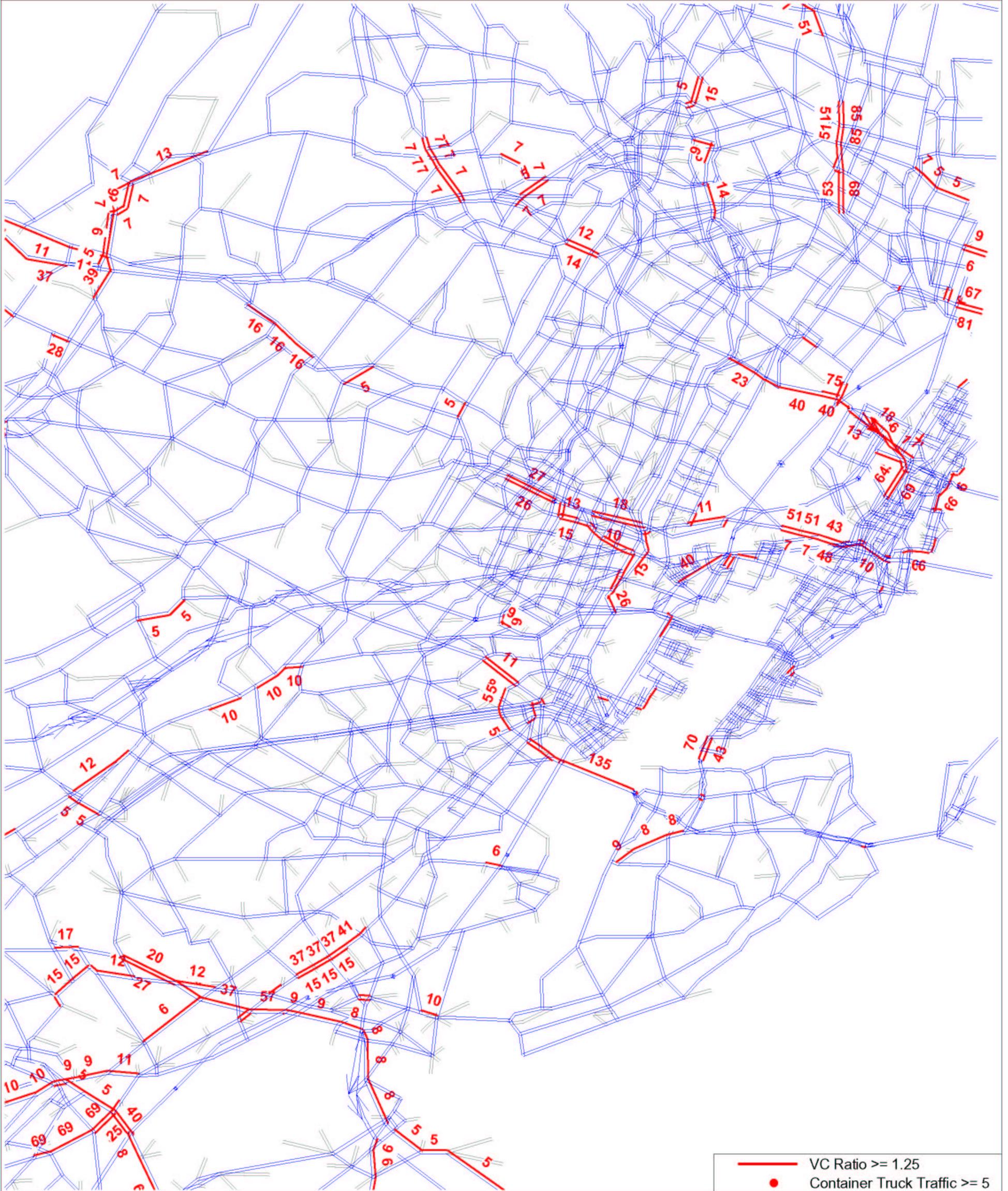


Figure XI.12
Future Container Truck Traffic and VC Ratio- PM Peak Hour
2025 NB - Low Growth with PIDN - TIER 1



Figure XI.13
Future Container Truck Traffic and VC Ratio- AM Peak Hour
2025 NB - High Growth with No PIDN - TIER 2

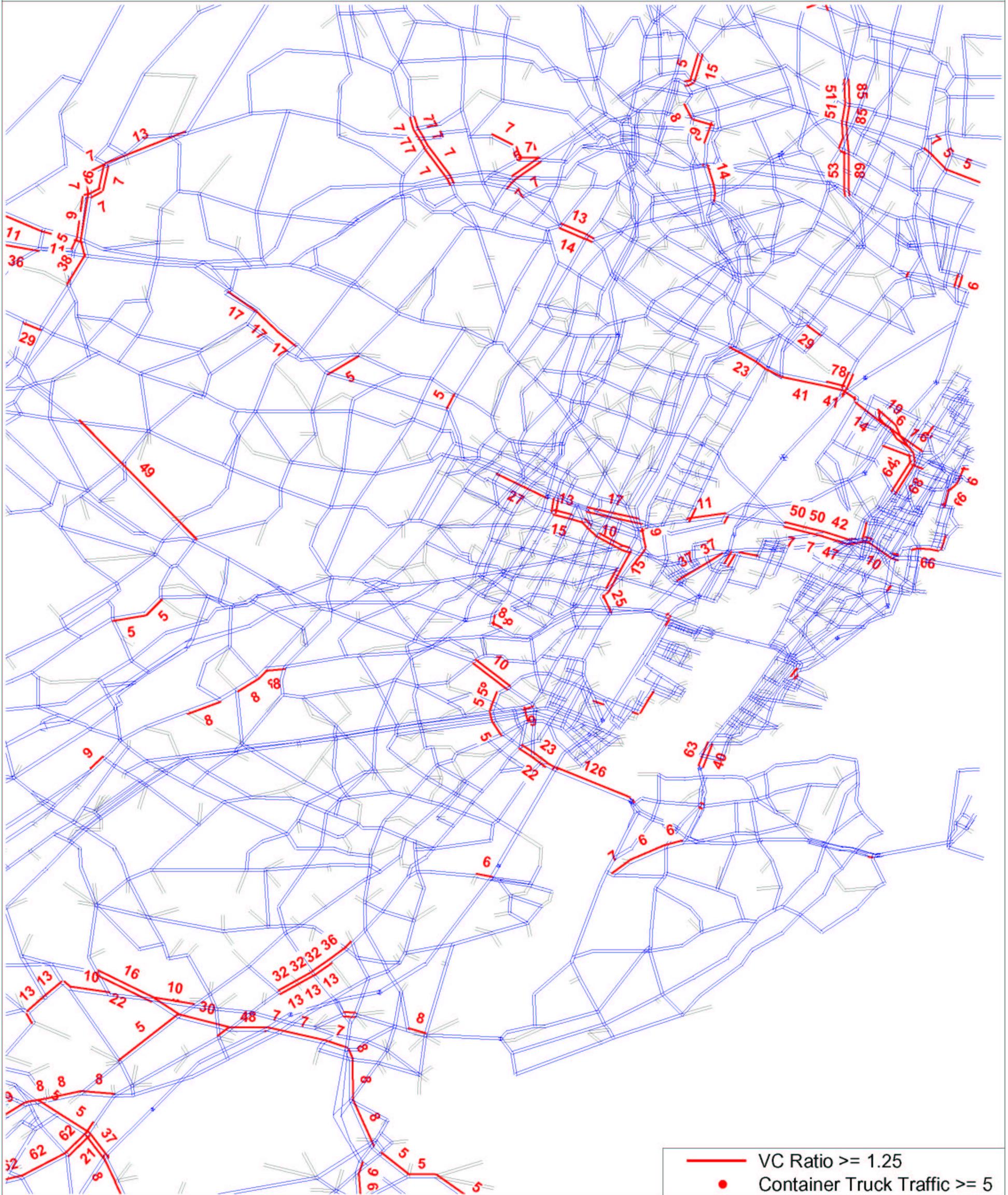


Figure XI.14
Future Container Truck Traffic and VC Ratio - PM Peak Hour
2025 NB - High Growth no PIDN - TIER 2

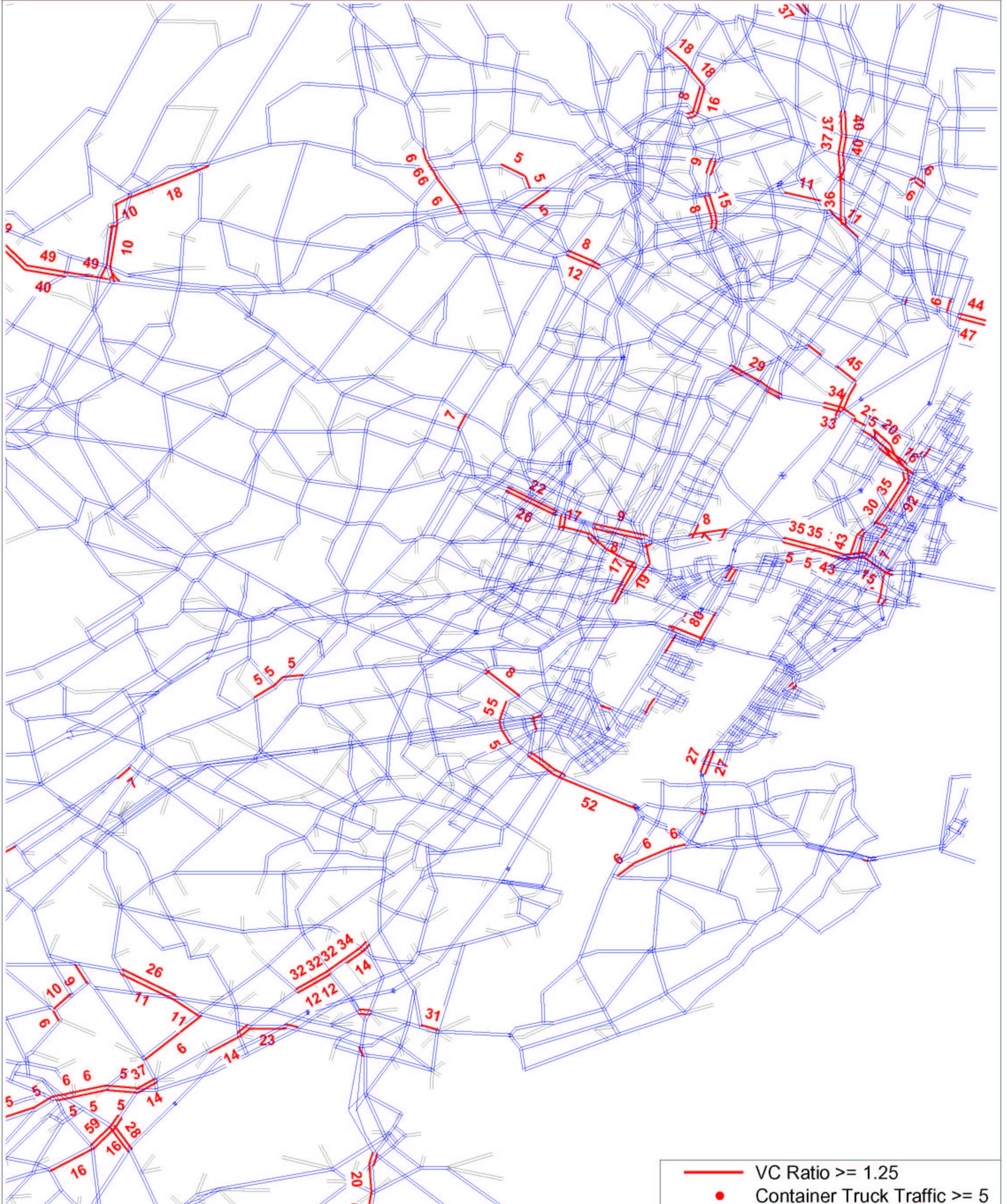
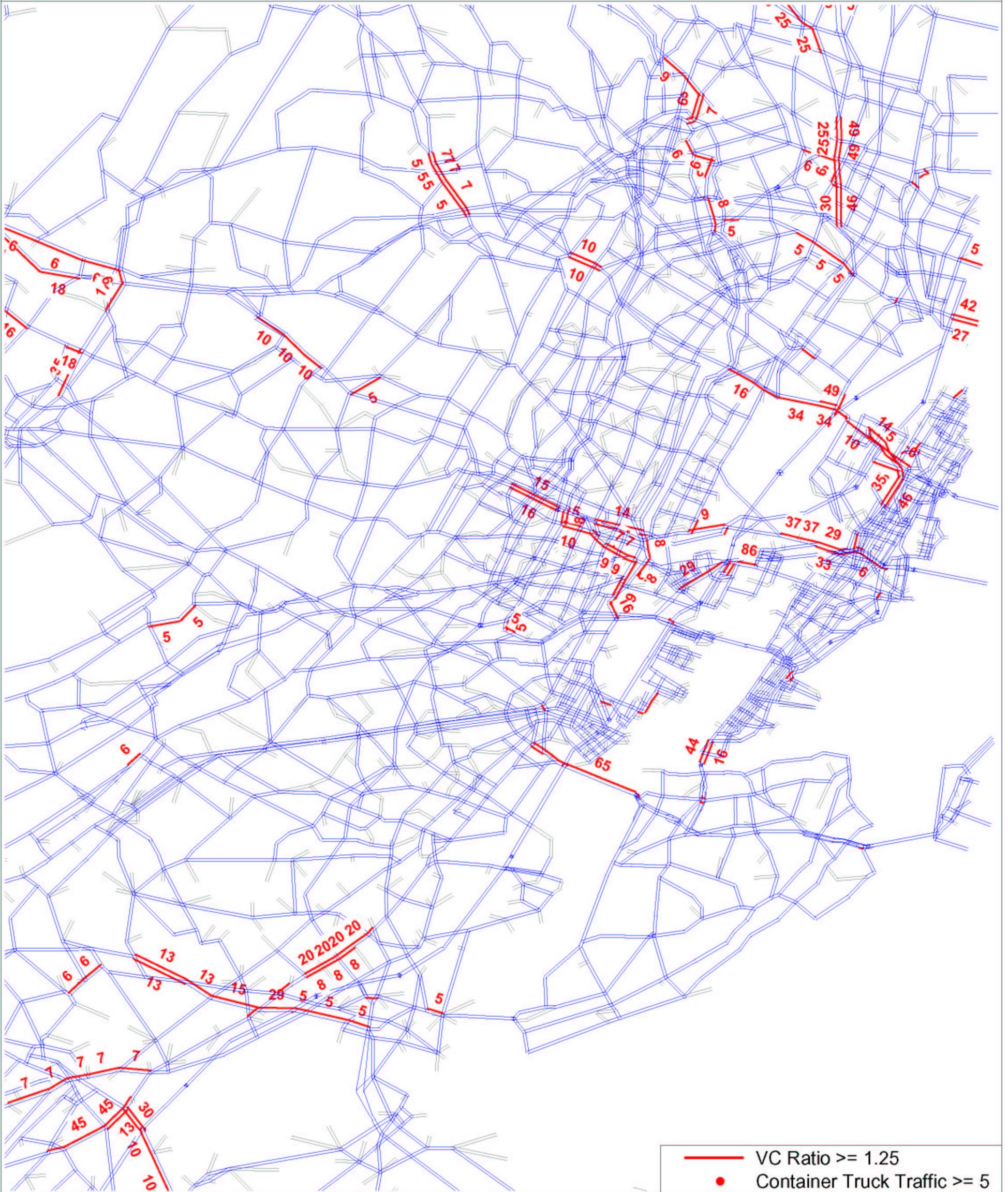


Figure XI.15
Future Container Truck Traffic and VC Ratio - AM Peak Hour
2025 NB - Low Growth with PIDN - TIER 2



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Figure XI.16
Future Container Truck Traffic and VC Ratio - PM Peak Hour
2025 NB - Low Growth with PIDN - TIER 2

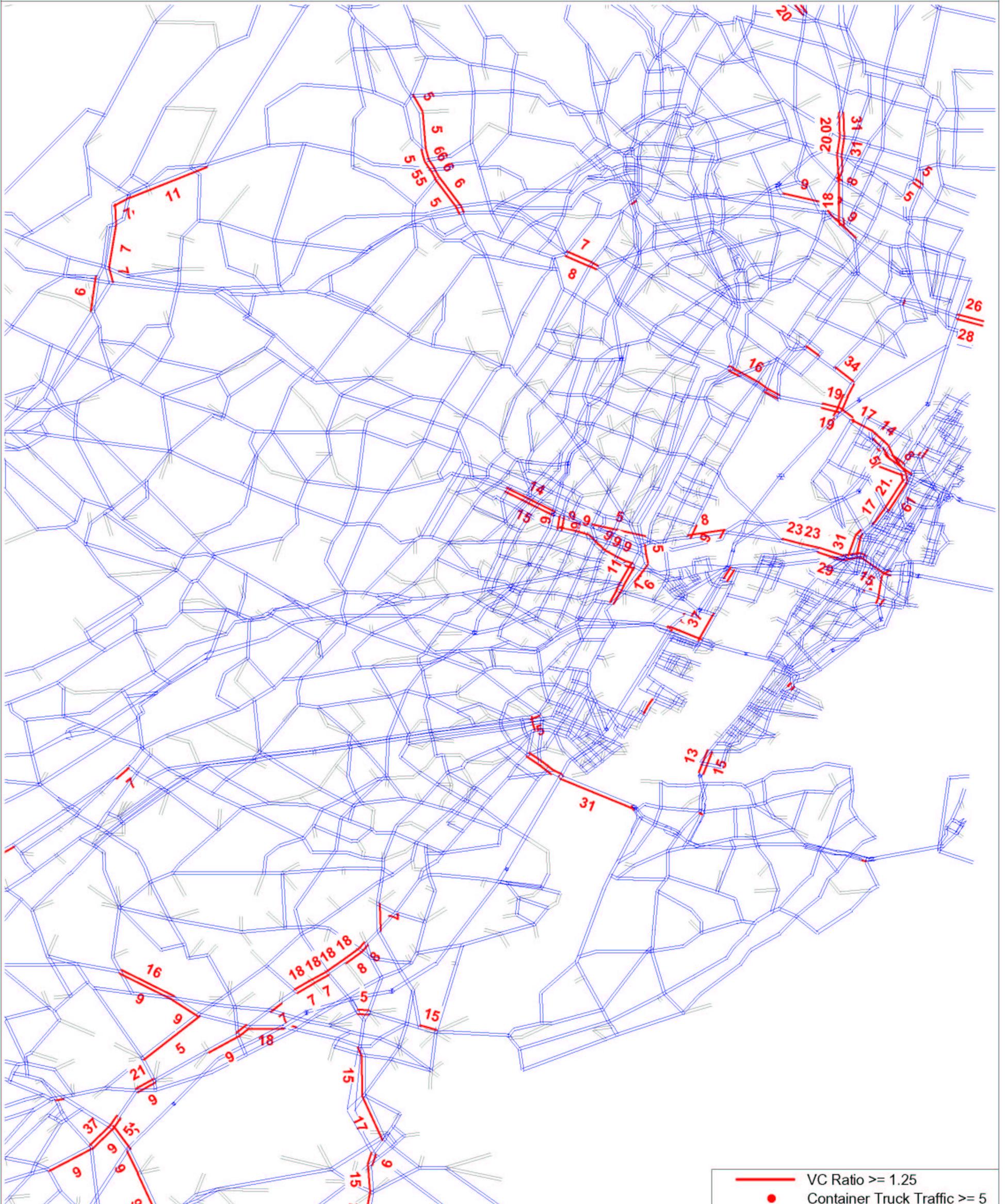


FIGURE XI.17
2025 BUILD CONDITIONS - AM PEAK HOUR
NEW ROAD EXTENSION AND PATERSON PLANK ROAD BRIDGE

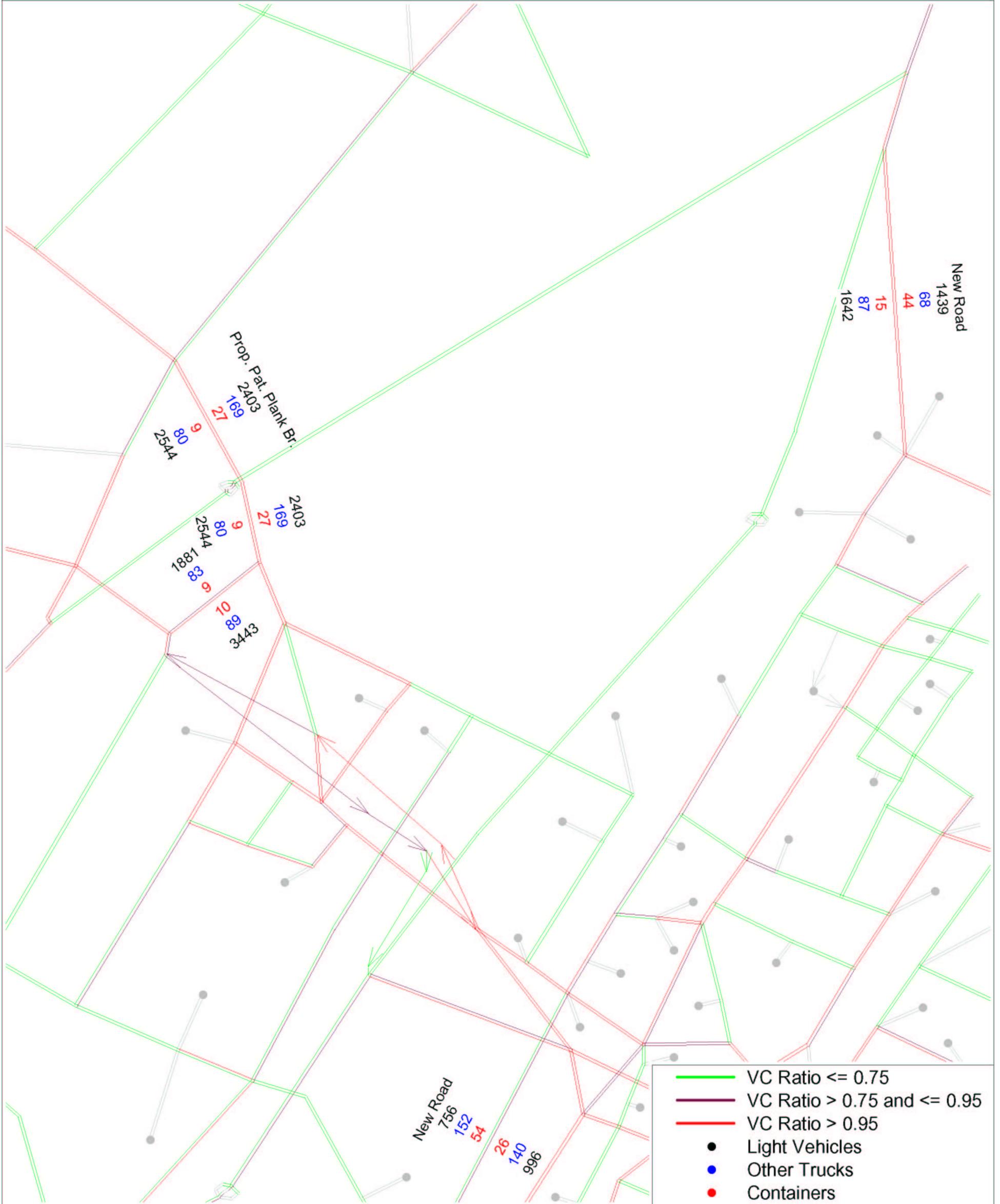
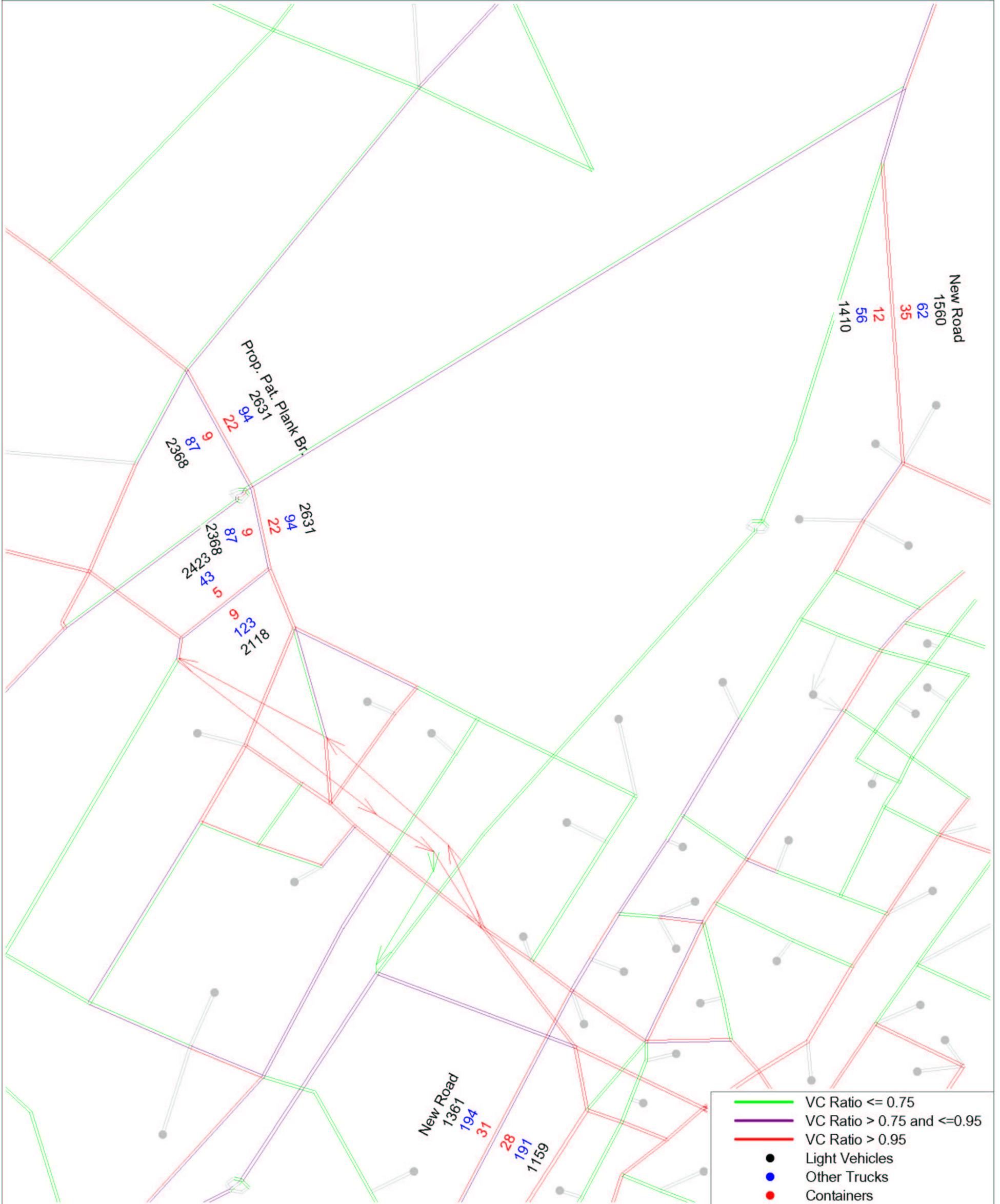


FIGURE XI.18
2025 FULL BUILD CONDITIONS - PM PEAK HOUR
NEW ROAD EXTENSION AND PATERSON PLANK ROAD BRIDGE



**FIGURE XI.19
2025 BUILD CONDITIONS - AM PEAK HOUR
INTERCHANGE 15W**

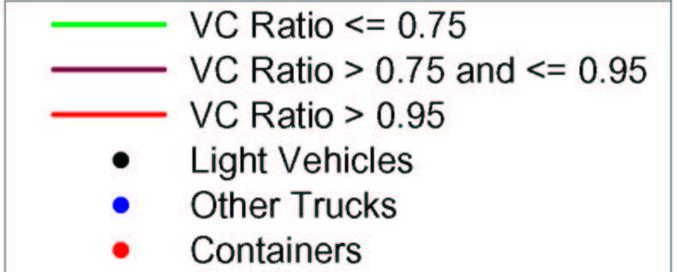
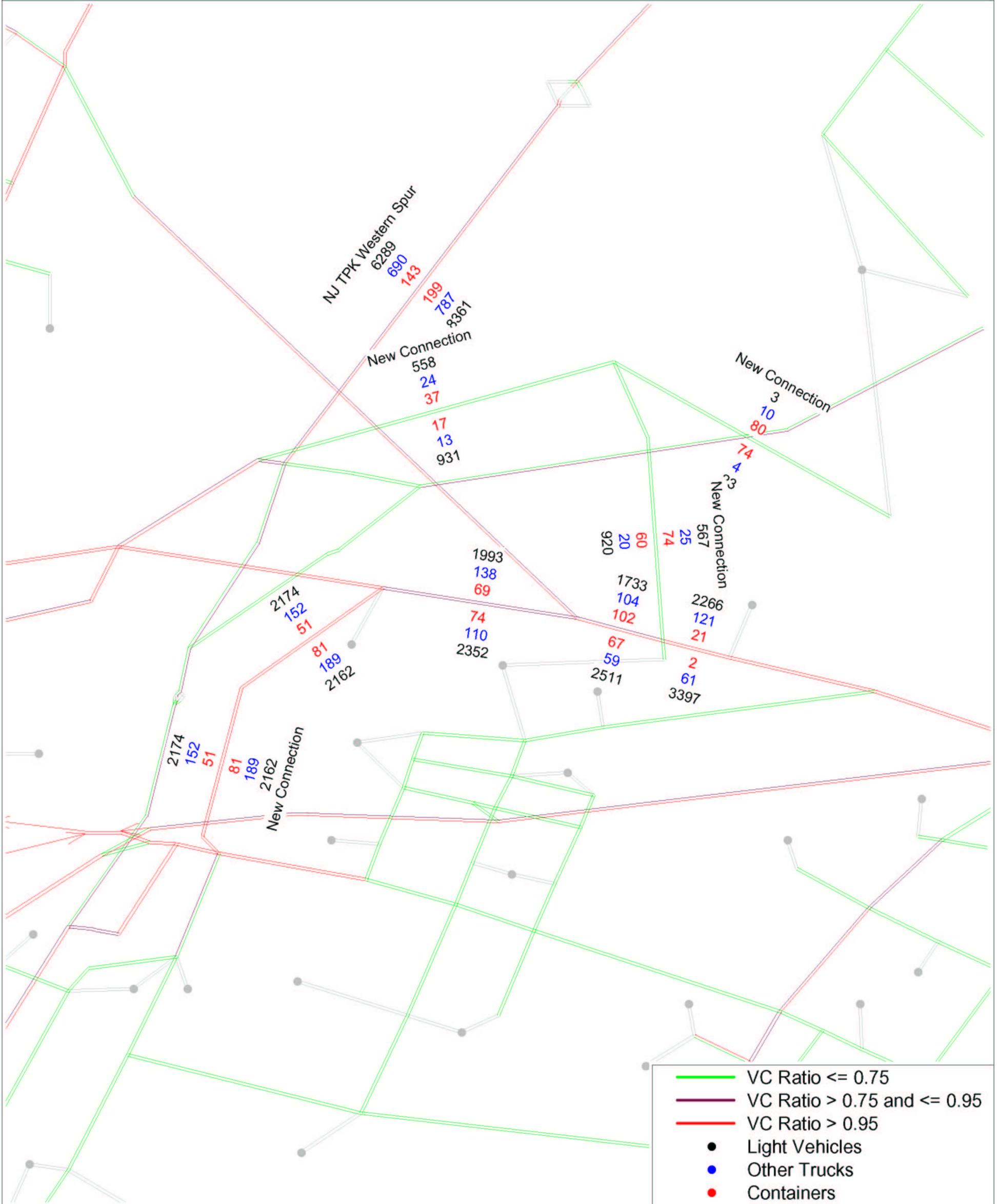


FIGURE XI.21
2025 BUILD CONDITIONS - AM PEAK HOUR
HACKENSACK RIVER BRIDGE

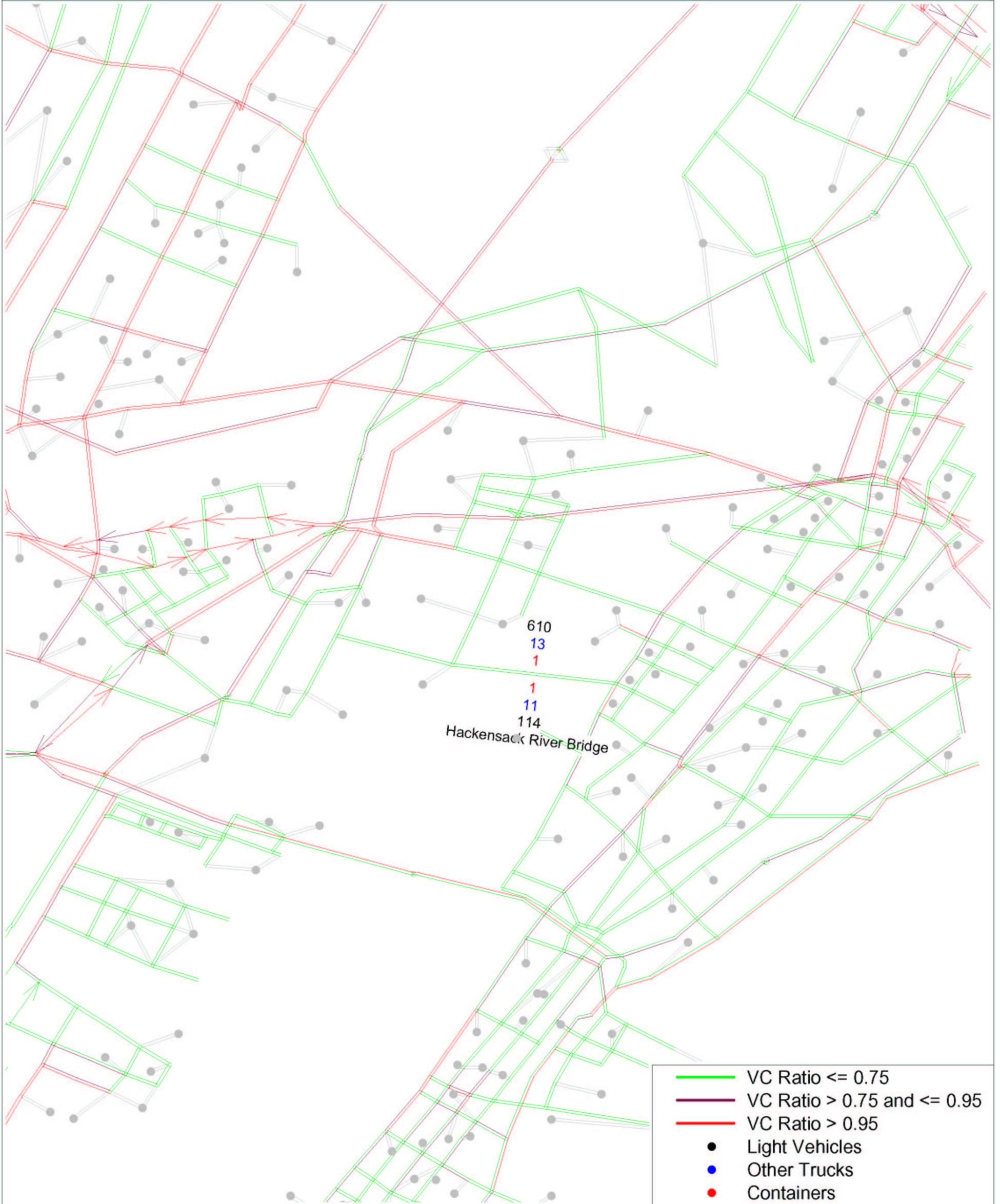


FIGURE XI.22
2025 FULL BUILD CONDITIONS - PM PEAK HOUR
HACKENSACK RIVER BRIDGE

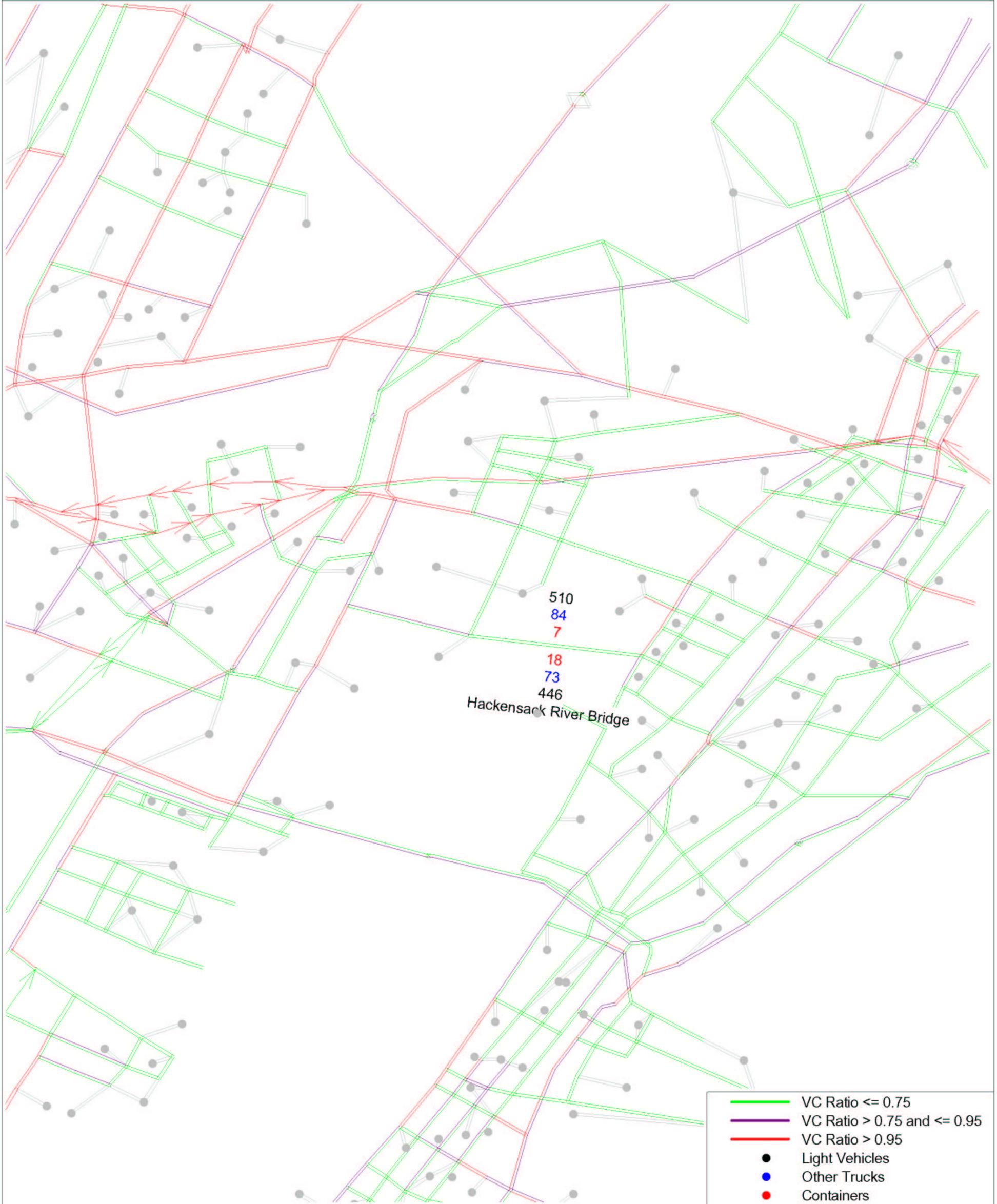


FIGURE XI.23
2025 BUILD CONDITIONS - AM PEAK HOUR
NEWARK BAY BRIDGE

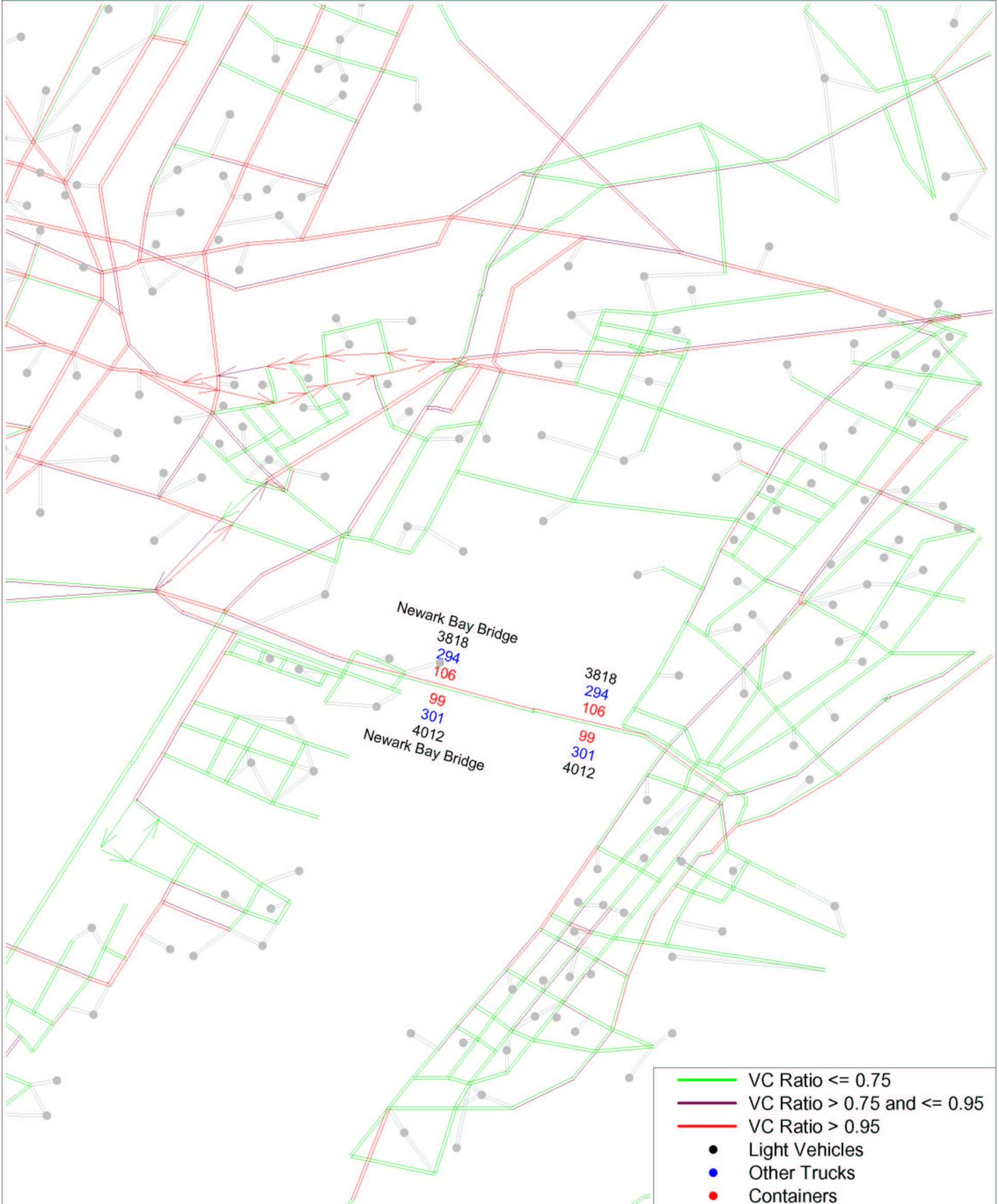
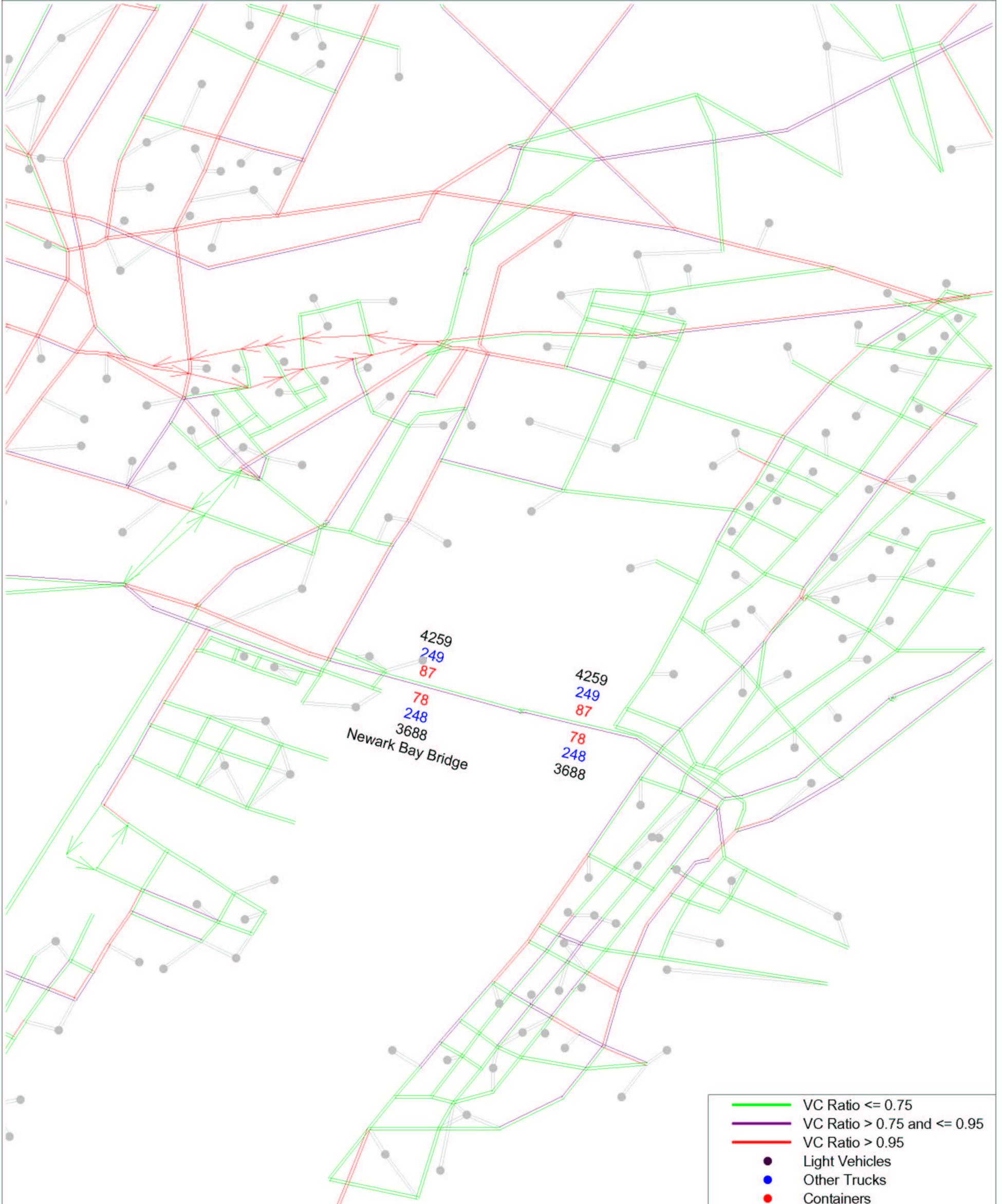
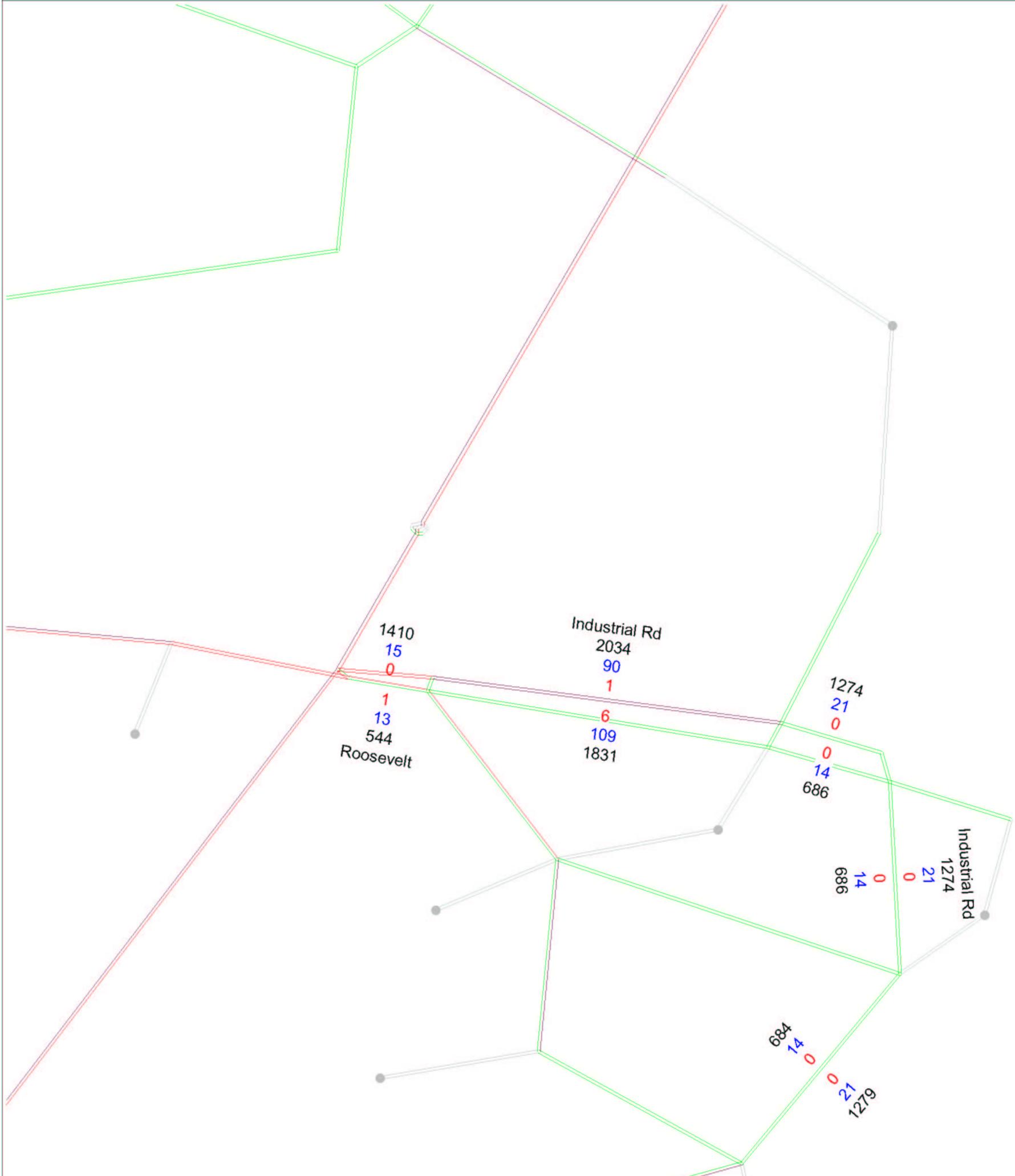


FIGURE XI.24
2025 FULL BUILD CONDITIONS - PM PEAK HOUR
NEWARK BAY BRIDGE



**FIGURE XI.25
2025 BUILD CONDITIONS - AM PEAK HOUR
INTERCHANGE 12**



- VC Ratio ≤ 0.75
- VC Ratio > 0.75 and ≤ 0.95
- VC Ratio > 0.95
- Light Vehicles
- Other Trucks
- Containers

FIGURE XI.26
2025 FULL BUILD CONDITIONS - PM PEAK HOUR
INTERCHANGE 12

