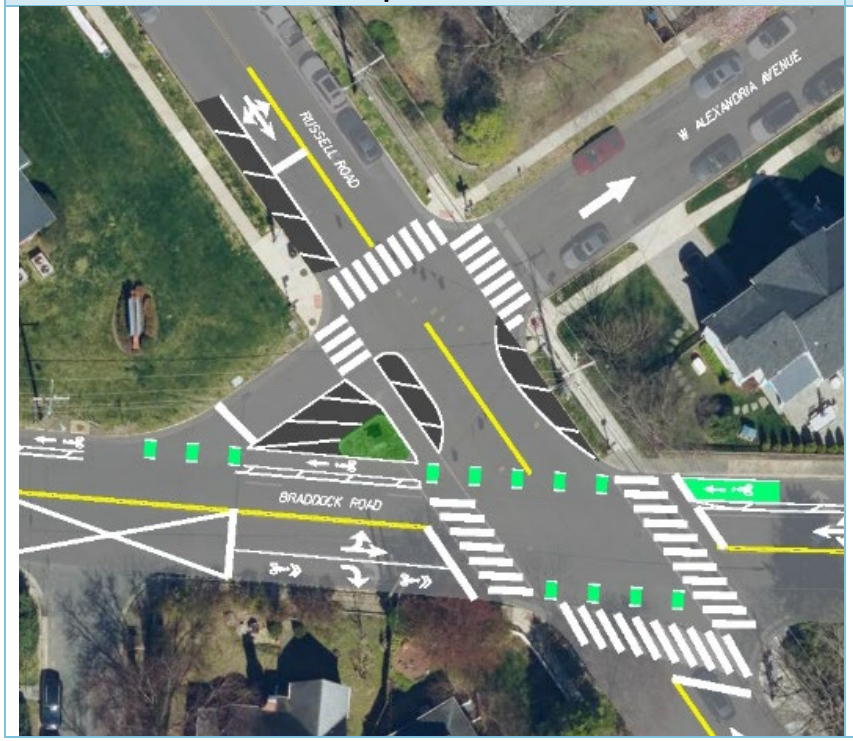
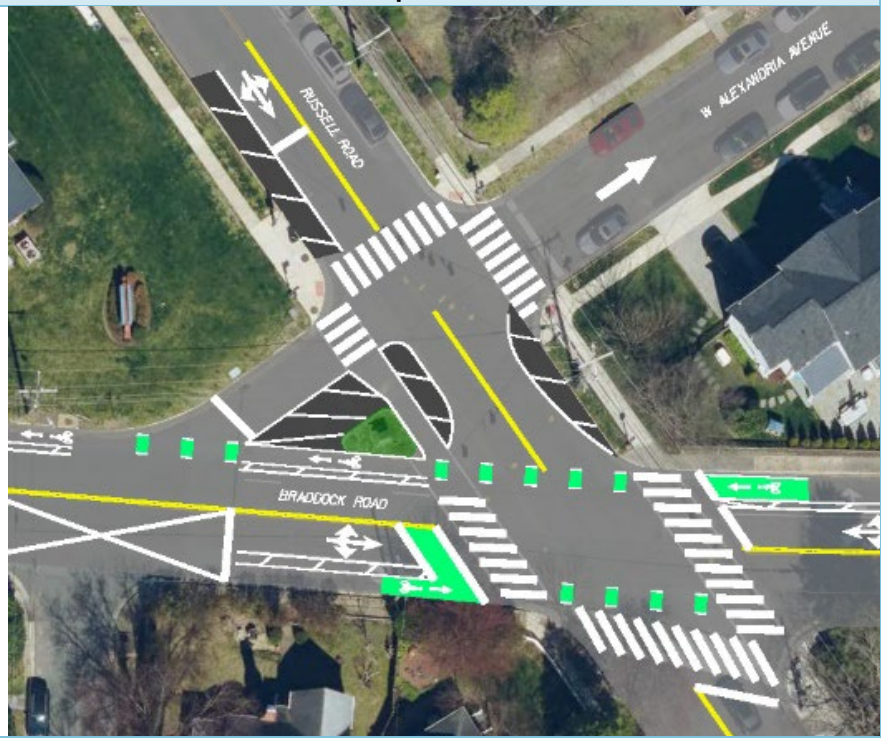
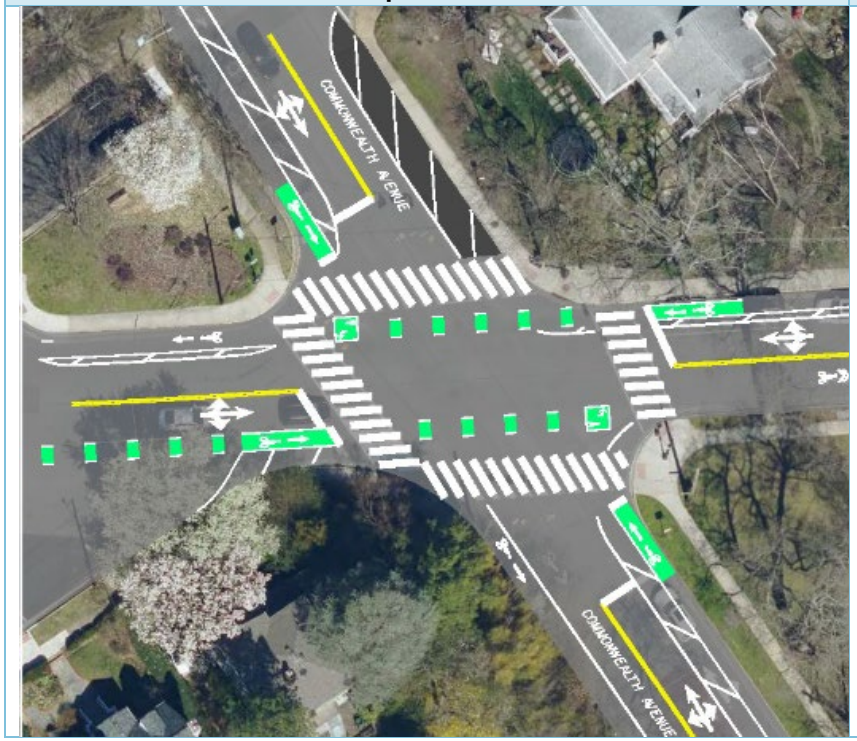
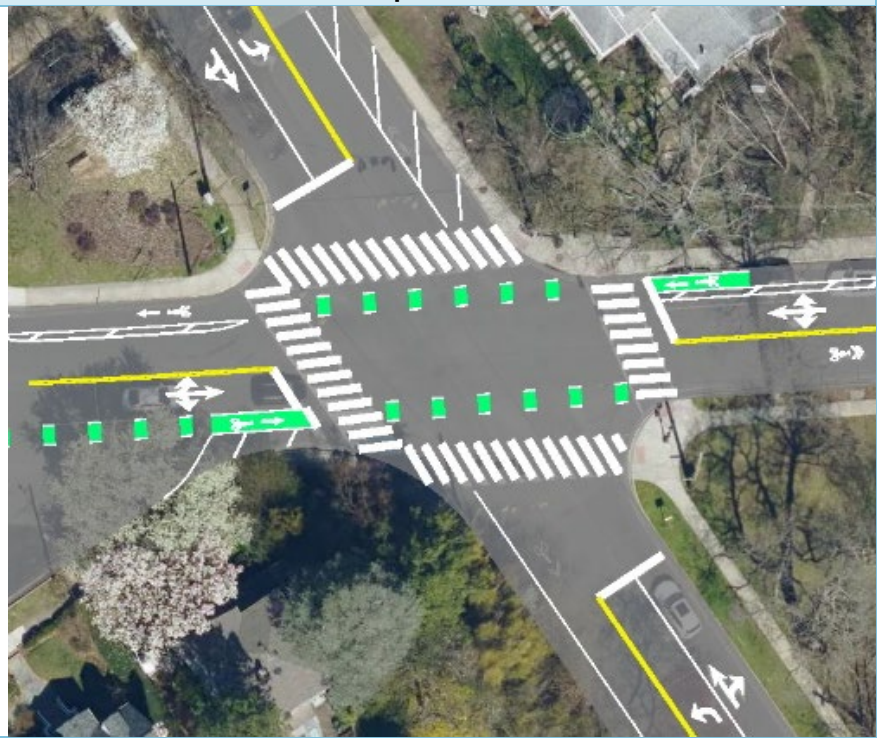
INTERSECTION LEVEL OF SERVICE SUMMARY

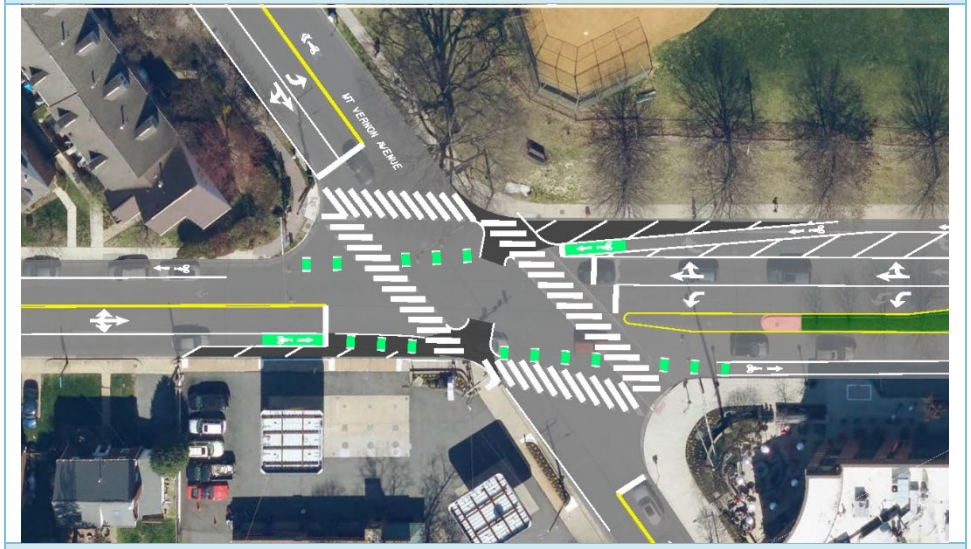
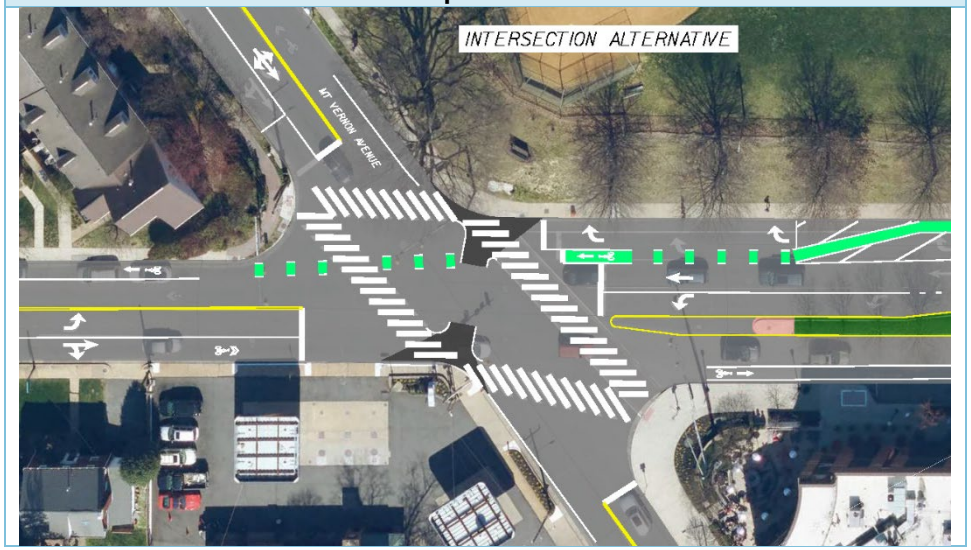
Braddock Road Corridor Improvements Project

INTERSECTION DESIGN OPTIONS

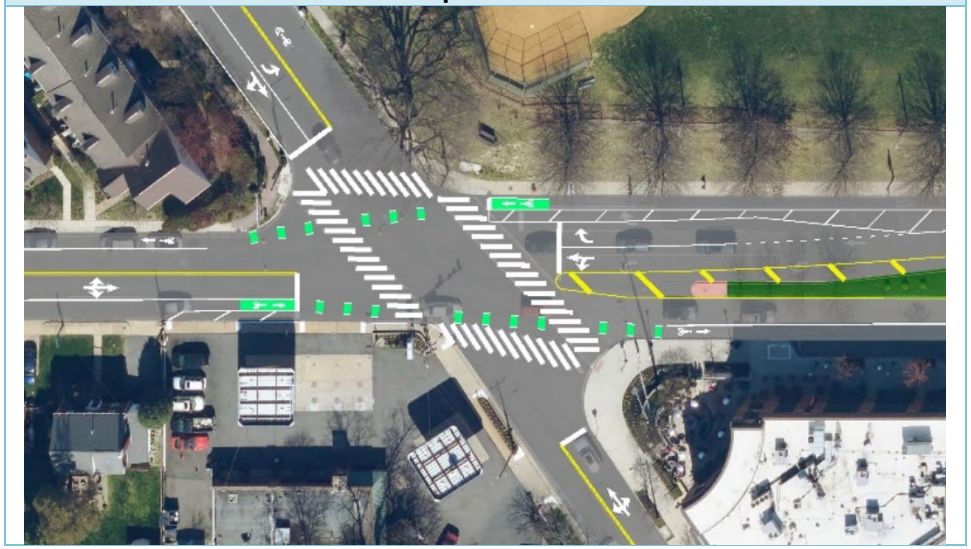
Multiple alternatives were developed for the signalized intersections in the project area. Each intersection alternative can be paired with any of the corridor alternatives. For the purposes of this summary, the versions of each intersection alternative are shown as paired with the partial on-street parking/bike lane corridor option.

Russell Road	
Option 4A	**Option 4B**
	

Commonwealth Avenue	
Option 5A	**Option 5B**
	

Mount Vernon Avenue
Option 6A

Option 6B


Option 6C



TRAFFIC OPERATIONS ANALYSIS

Traffic operations during the AM, PM, and Weekend peak hours were analyzed. This analysis provides a baseline for conducting future year condition analysis. The analysis was carried out using *Synchro Version 11*.

Level of Service & Control Delay

Level of Service (LOS) is a measurement of how well a transportation facility operates from a motorist's perspective. The *Highway Capacity Manual 6th Edition* defines six levels of service, ranging from A to F. LOS A represents free flow operating conditions, and LOS F represents forced or breakdown flow with volumes exceeding capacity. Most urban roadways are not designed to provide LOS A conditions during peak periods in order to balance other society imperatives like managing cost, right-of-way, and accommodation of other desired roadway features, such as sidewalks and trees.

LOS is determined by Control Delay. Control Delay is the average amount of additional travel time, in seconds, drivers experience due to a traffic control device (e.g. traffic signal or stop sign) – reported for each individual turning or through movement and for each intersection overall.

Figure 1. Level of Service Thresholds for Motor Vehicles

Unsignalized Intersections		Signalized Intersections	
LOS	Delay (sec)	LOS	Delay (sec)
A	≤10.0	A	≤ 10.0
B	>10.0 to ≤15.0	B	>10. to ≤20.0
C	>15.0 to ≤25.0	C	>20.1 to ≤35.0
D	>25.0 to ≤35.0	D	>35.1 to ≤55.0
E	>35.0 to ≤50.0	E	>55.1 to ≤80.0
F	>50.0	F	> 80.1

Existing Conditions Operational Summary

A field review was conducted in January 2025 to observe existing conditions and traffic patterns. Below is a summary of notable observations during the field visit:

- Traffic conditions on Braddock Road and the majority of intersections were generally acceptable and easy to travel through.
- The intersection of Mount Vernon Avenue and Braddock Road does experience the most amount of congestion, particularly during the PM peak hours traveling westbound on Braddock Road. Queues were observed extending to the bridge; however, they generally stayed west of the Potomac Yard Trail (Western crossing). Drivers were typically observed to make it through the intersection in one signal cycle.
- The intersection of Russell Road and Braddock Road is a cluster intersection where all six approaches run on one controller. Although all approaches are actuated, it was observed that each approach always got a green light during the site visit. This green time for some of the lighter movements like West Alexandria Avenue or the eastbound left turn on Braddock Road can increase delay for drivers and pedestrians. In addition, drivers traveling southbound along Russell Road were consistently observed to enter the intersection during the red clearance interval.

Future Growth and Operations

The project team identified the year 2042 as the future growth scenario. Future traffic volumes were estimated by applying variable linear growth rates to the study area roadways and intersections based on input from the City and VDOT. A 0.25% growth rate was used for Braddock Road, Commonwealth Avenue, and Mount Vernon Avenue, while a 0.5% growth rate was applied to West Street north of Braddock Road due to adjacent potential redevelopments near the Metro Station. A 0% growth rate was applied to all other minor approaches within the study area due to limited redevelopment potential. These growth rates were applied linearly to the current traffic volumes to estimate the future “no build” traffic volumes. The current and projected future volumes are shown in Figure 2 and Figure 3.

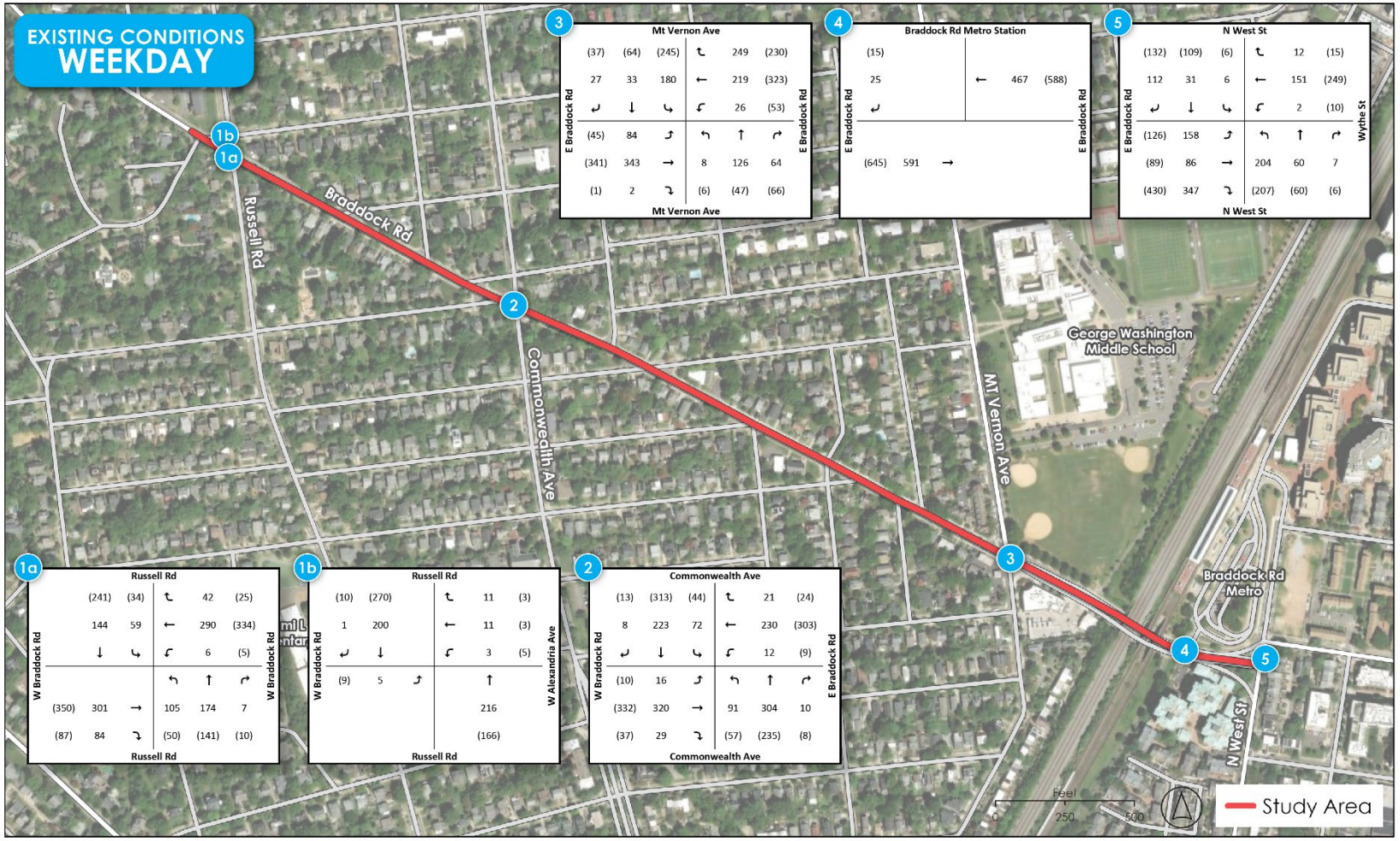


Figure 2. Existing Intersection Counts

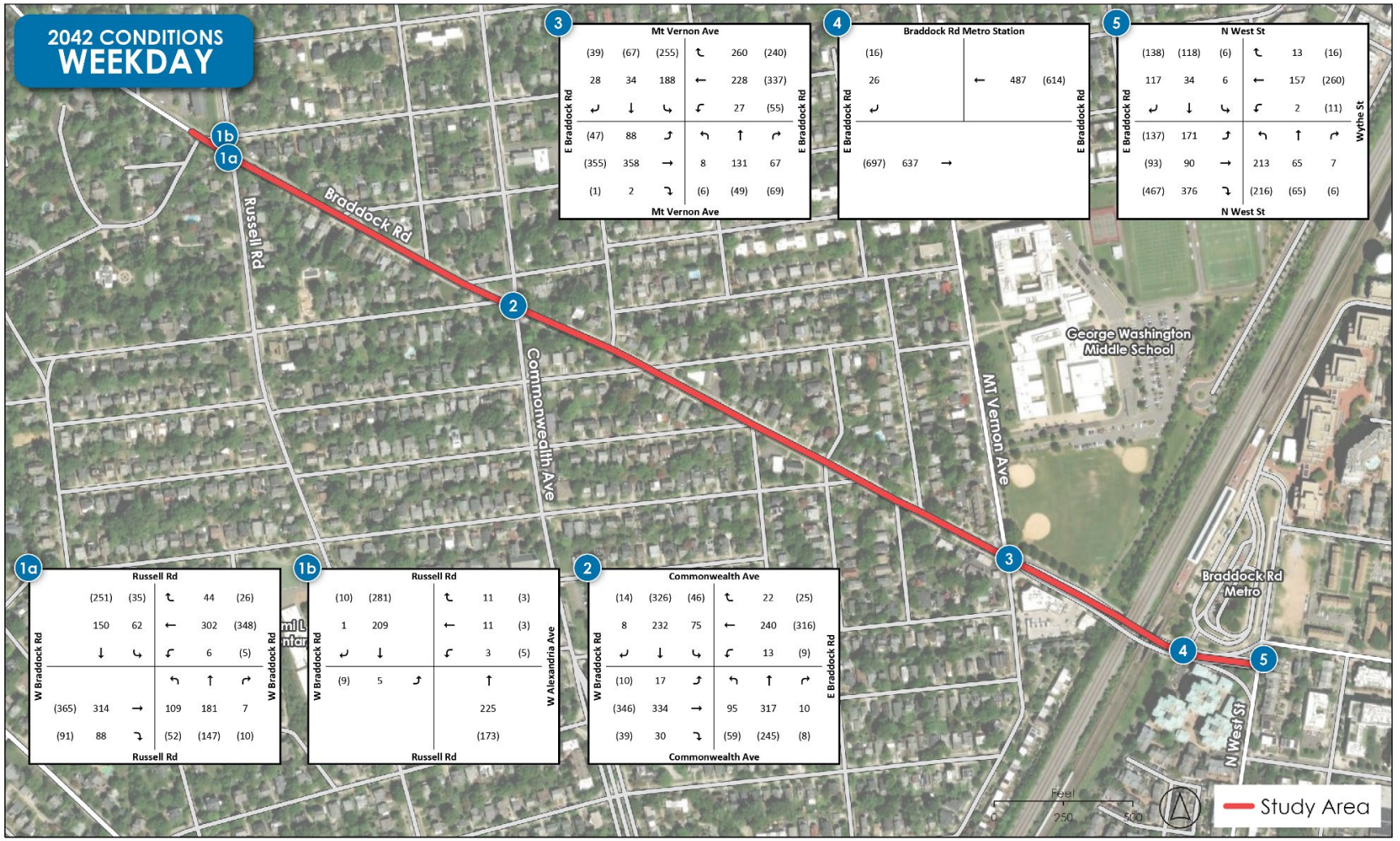


Figure 3. Projected Future Intersection Counts

Intersection Analysis Results

The following tables provide the peak period control delay and for the study intersections. The tables compare the existing operations, future "no build" operations, and each of the intersection alternatives for the afternoon peak hour. It is assumed that each intersection alternative includes projected future traffic volumes and signal optimization.

Russell Road

Lane Group	Eastbound (sec/veh)								Westbound (sec/veh)								Northbound (sec/veh)								Southbound (sec/veh)								Overall Intersection Delay (sec/veh)			
	Existing PM		Future No Build		Option 4A		Option 4B		Existing PM		Future No Build		Option 4A		Option 4B		Existing PM		Future No Build		Option 4A		Option 4B		Existing PM		Future No Build		Option 4A		Option 4B					
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	PM	NB	4A	4B
	Braddock Road								Braddock Road								Russell Road								Russell Road											
Left	50.9	D	51.9	D	20.1	C	22.4	C	30.8	C	31.6	C	21.1	C	20.5	C	36.3	D	37.4	D	25.2	C	28.5	C	43.1	D	43.8	D	23.5	C	26.7	C	Delay	Delay	Delay	Delay
Thru	33.6	C	35.1	D					34.5	C	36.1	D																					33.2	33.8	22.2	23.7
Right	28.1	C	28.8	C	17.5	B																											LOS	LOS	LOS	LOS
																																	C	C	C	C

Commonwealth Avenue

Lane Group	Eastbound (sec/veh)								Westbound (sec/veh)								Northbound (sec/veh)								Southbound (sec/veh)								Overall Intersection Delay (sec/veh)			
	Existing PM		Future No Build		Option 5A		Option 5B		Existing PM		Future No Build		Option 5A		Option 5B		Existing PM		Future No Build		Option 5A		Option 5B		Existing PM		Future No Build		Option 5A		Option 5B					
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	PM	NB	5A	5B
	Braddock Road								Braddock Road								Commonwealth Ave								Commonwealth Ave											
Left	15.4	B	15.6	B	17.0	B	16.5	B	12.3	B	12.3	B	15.9	B	15.4	B	8.2	A	8.4	B	14.3	B	8.4	A	8.1	A	8.2	A	15.1	B	8.3	A	Delay	Delay	Delay	Delay
Thru									14.9	B	15.0	B					19.4	B	19.8	B			19.7	B	21.7	C	22.3	C			22.3	C	16.8	17.1	15.6	17.6
Right	12.4	B	12.5	B																													LOS	LOS	LOS	LOS
																																	B	B	B	B

Mount Vernon Avenue

Lane Group	Eastbound (sec/veh)										Westbound (sec/veh)										Northbound (sec/veh)										Southbound (sec/veh)										Overall Intersection Delay (sec/veh)				
	Existing PM		Future No Build		Option 6A		Option 6B		Option 6C*		Existing PM		Future No Build		Option 6A		Option 6B		Option 6C*		Existing PM		Future No Build		Option 6A		Option 6B		Option 6C*		Existing PM		Future No Build		Option 6A		Option 6B		Option 6C*						
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	PM	NB	6A	6B	6C
	Braddock Road										Braddock Road										Mt. Vernon Avenue										Mt. Vernon Avenue														
Left	23.9	C	24.4	C	23.6	C	22.1	C	27.5	C	17.6	B	17.9	B	15.6	B	16.0	B	28.5	C	43.9	D	44.1	D	45.8	D	39.5	D	39.3	D	38.1	D	38.9	D	47.8	D	53.3	D	35.5	D	Delay	Delay	Delay	Delay	Delay
Thru	35.4	D	36.4	D			27.8	C			31.0	C	32.0	C	26.5	C	25.2	C													32.9	C	33.2	C	29.1	C			26.3	C	30.1	30.8	30.7	31.7	28.1
Right											8.3	A	8.5	A			15.2	B	14.9	B																					LOS	LOS	LOS	LOS	LOS
																																								C	C	C	C	C