

Traffic Study

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Sr. VP

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Dir. Eng. Design



TTG Project Involvement

- TTG Began working on Project April 2016
- Assisting w/ Loading / Truck Simulations
- Assisting w/ Site Design
- Assisting w/ Internal Garage
- Traffic Vehicle Counts
- Pedestrian Counts
- Traffic Study
- Intersection Designs

Traffic Study

- Existing Traffic
- Background Traffic
- Total Traffic
- AM Peak = 7:30-8:30 PM Peak = 5:15-6:15
- Site Traffic
 - AM = 47 In / 12 Out
 - PM = 70 In / 94 Out
- Prepared a Model
- Study Total Traffic Improvement Options

Delay Information

SimTraffic Simulation

		Existing Traffic	Background Traffic	Total Traffic	Total Traffic w/Imp.
Morning Peak Hour Traffic	HCM Delay Standard (sec/veh)	Delay (sec/veh)	Delay (sec/veh)	Delay (sec/veh)	Delay (sec/veh)
1. Ethan Allen Ave & Carroll Ave/Grant Ave	80	68.1	89.8	93.1	14.8
1a. Ethan Allen Ave & Sycamore Ave	80	151.9	147.1	154.2	
2. Carroll Ave & Philadelphia Ave	80	9.2	10.0	9.8	10.1
3. Carroll Ave & Site Access	80			1.5	1.7
Evening Peak Hour Traffic					
1. Ethan Allen Ave & Carroll Ave/Grant Ave	80	34.3	35.1	31.2	12.8
1a. Ethan Allen Ave & Sycamore Ave	80	41.5	39.3	54.1	
2. Carroll Ave & Philadelphia Ave	80	41.1	44.8	93.3	18.5
3. Carroll Ave & Site Access	80			21.4	3.4

Note: SimTraffic results are based on 10 simulation runs.

Improvement Alternatives



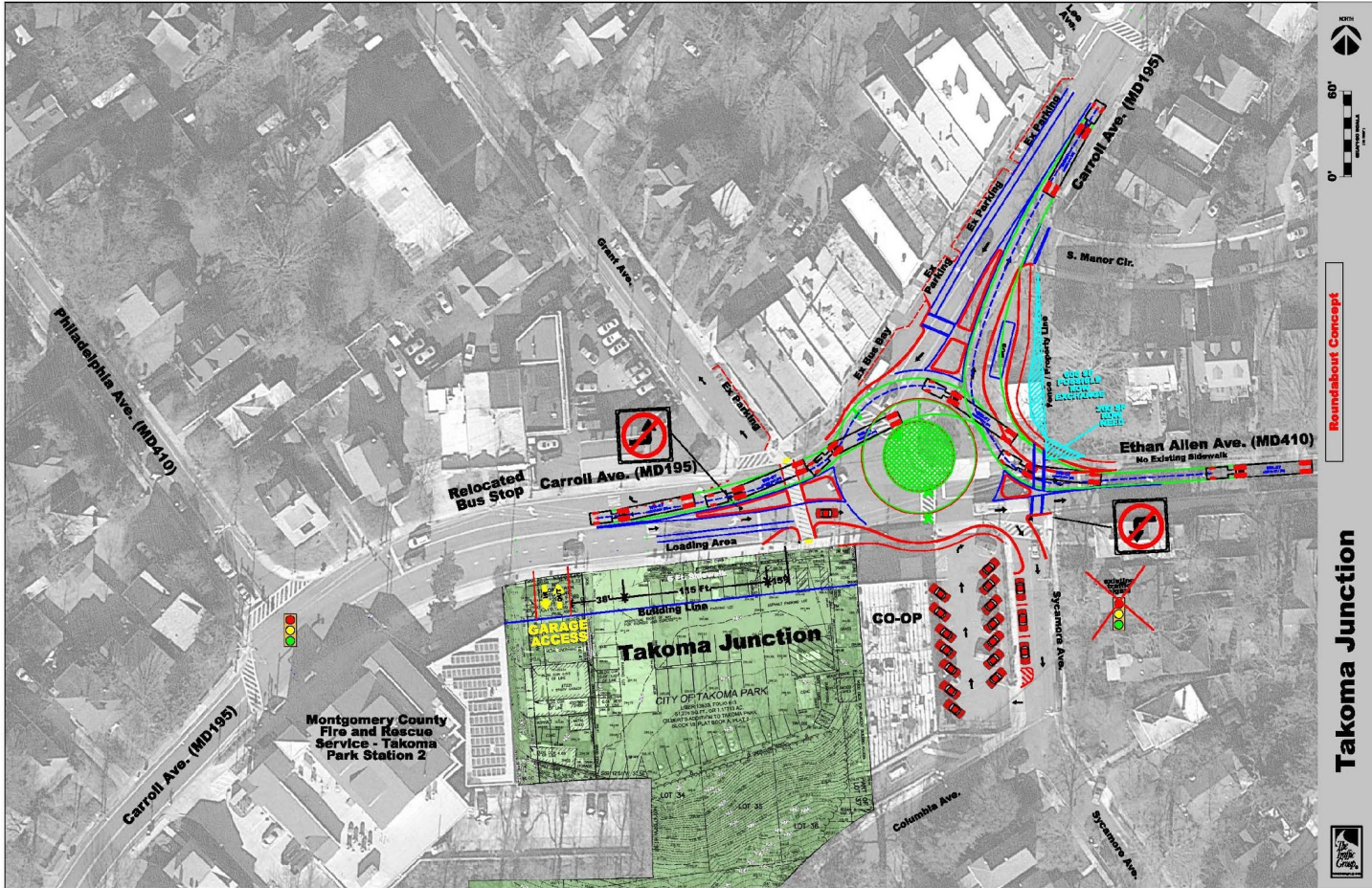
Improvement Alternatives



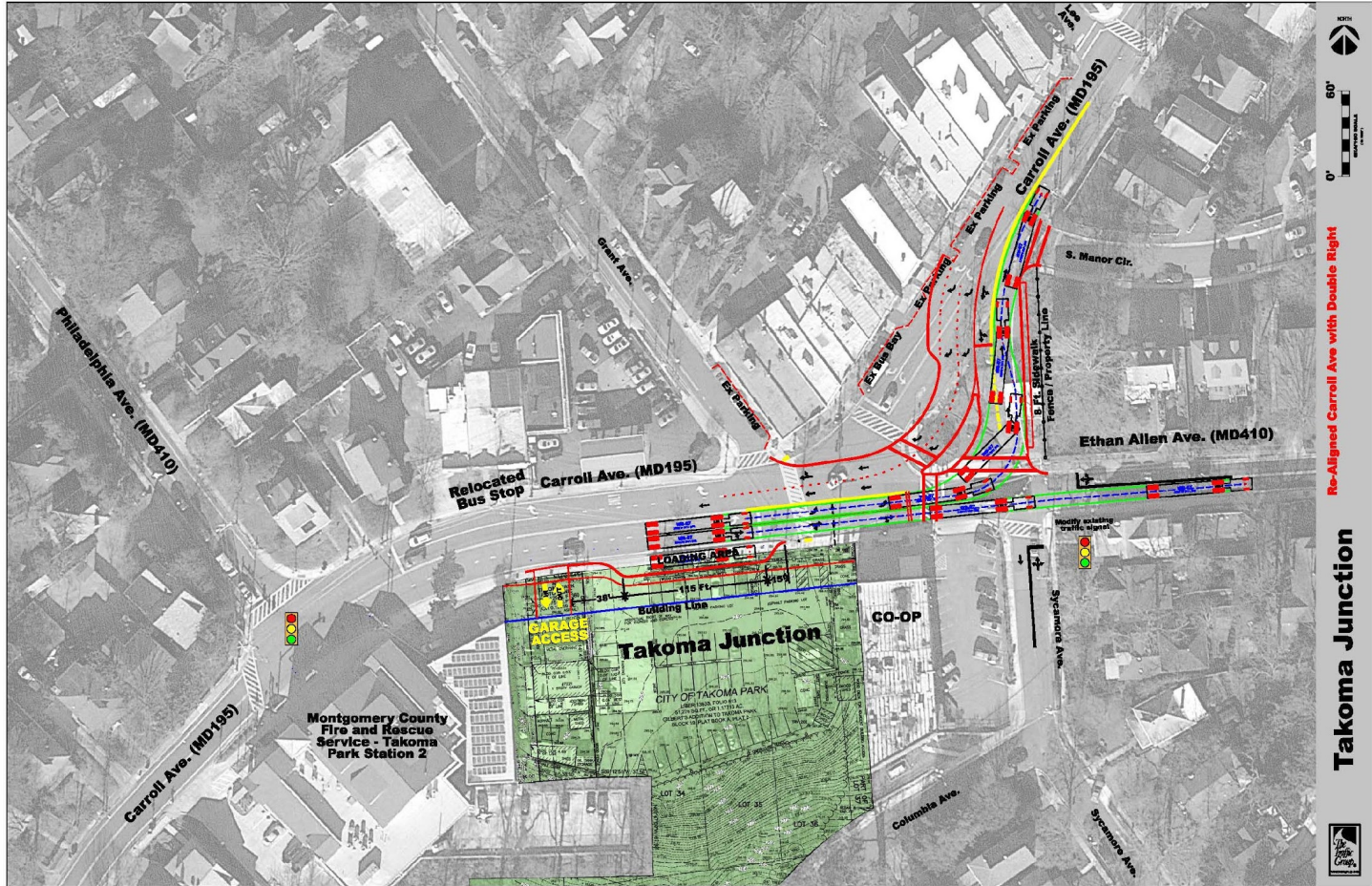
Improvement Alternatives



Improvement Alternatives



Improvement Alternatives

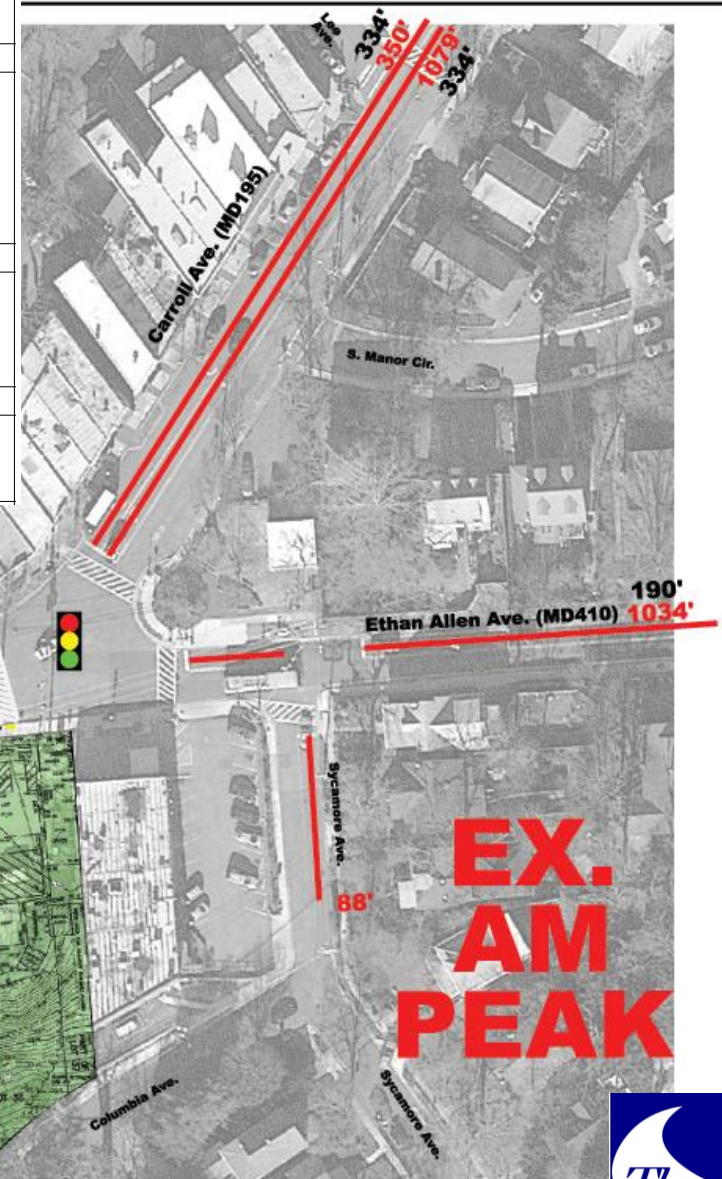


Intersection Improvement

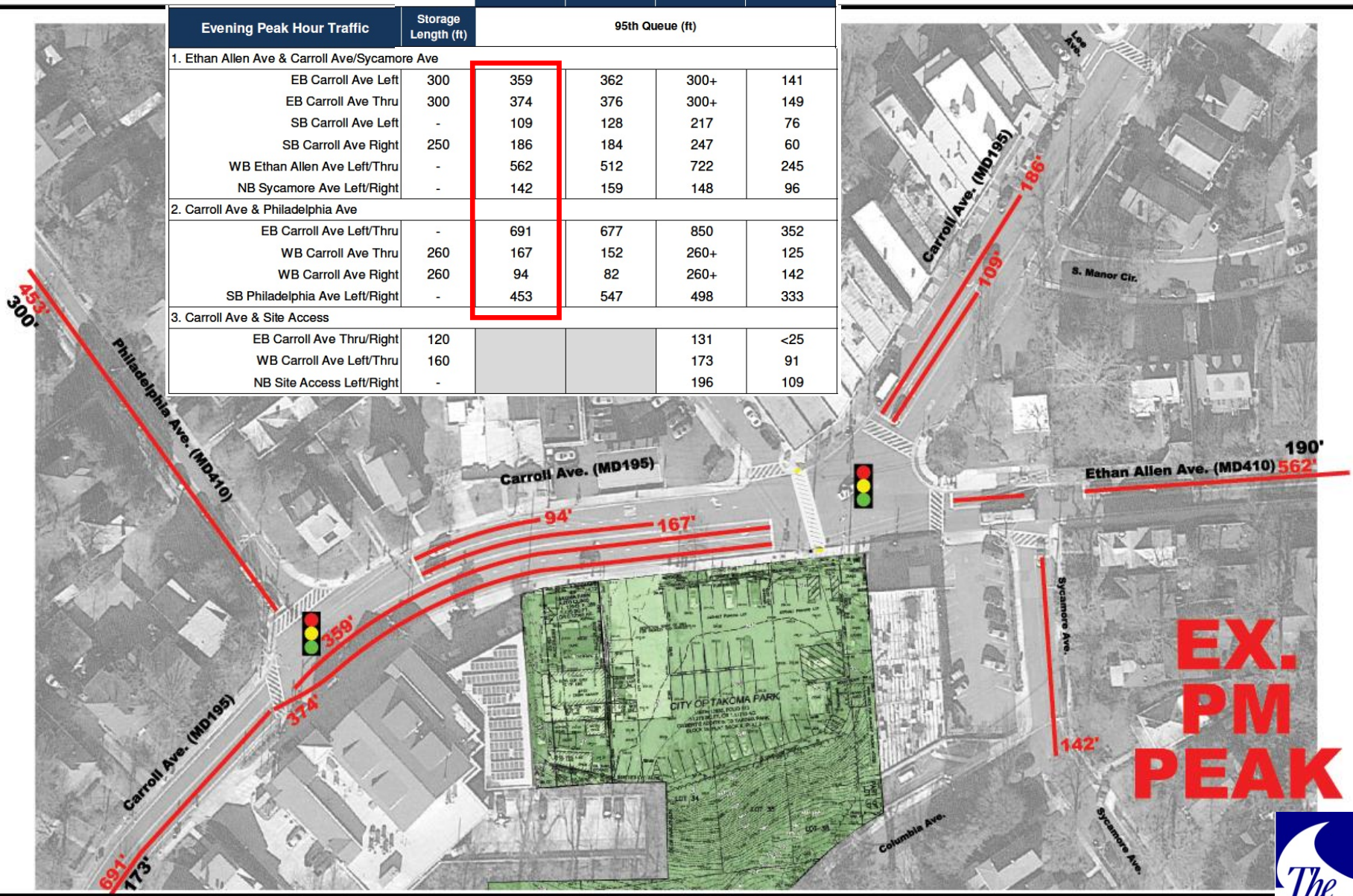


Queuing Analysis

		Existing Traffic	Background Traffic	Total Traffic	Total Traffic w/Imp.
Morning Peak Hour Traffic					
Storage Length (ft)	95th Queue (ft)				
1. Ethan Allen Ave & Carroll Ave/Sycamore Ave					
EB Carroll Ave Left	300	189	236	181	93
EB Carroll Ave Thru	300	248	264	242	138
SB Carroll Ave Left	-	1079	1230	1263	88
SB Carroll Ave Right	250	350	333	335	197
WB Ethan Allen Ave Left/Thru	-	1034	1065	1069	313
NB Sycamore Ave Left/Right	-	88	83	85	45
2. Carroll Ave & Philadelphia Ave					
EB Carroll Ave Left/Thru	-	96	138	130	138
WB Carroll Ave Thru	260	131	124	111	161
WB Carroll Ave Right	260	69	70	65	146
SB Philadelphia Ave Left/Right	-	200	210	225	189
3. Carroll Ave & Site Access					
EB Carroll Ave Thru/Right	120			60	<25
WB Carroll Ave Left/Thru	160			50	98
NB Site Access Left/Right	-			<25	<25

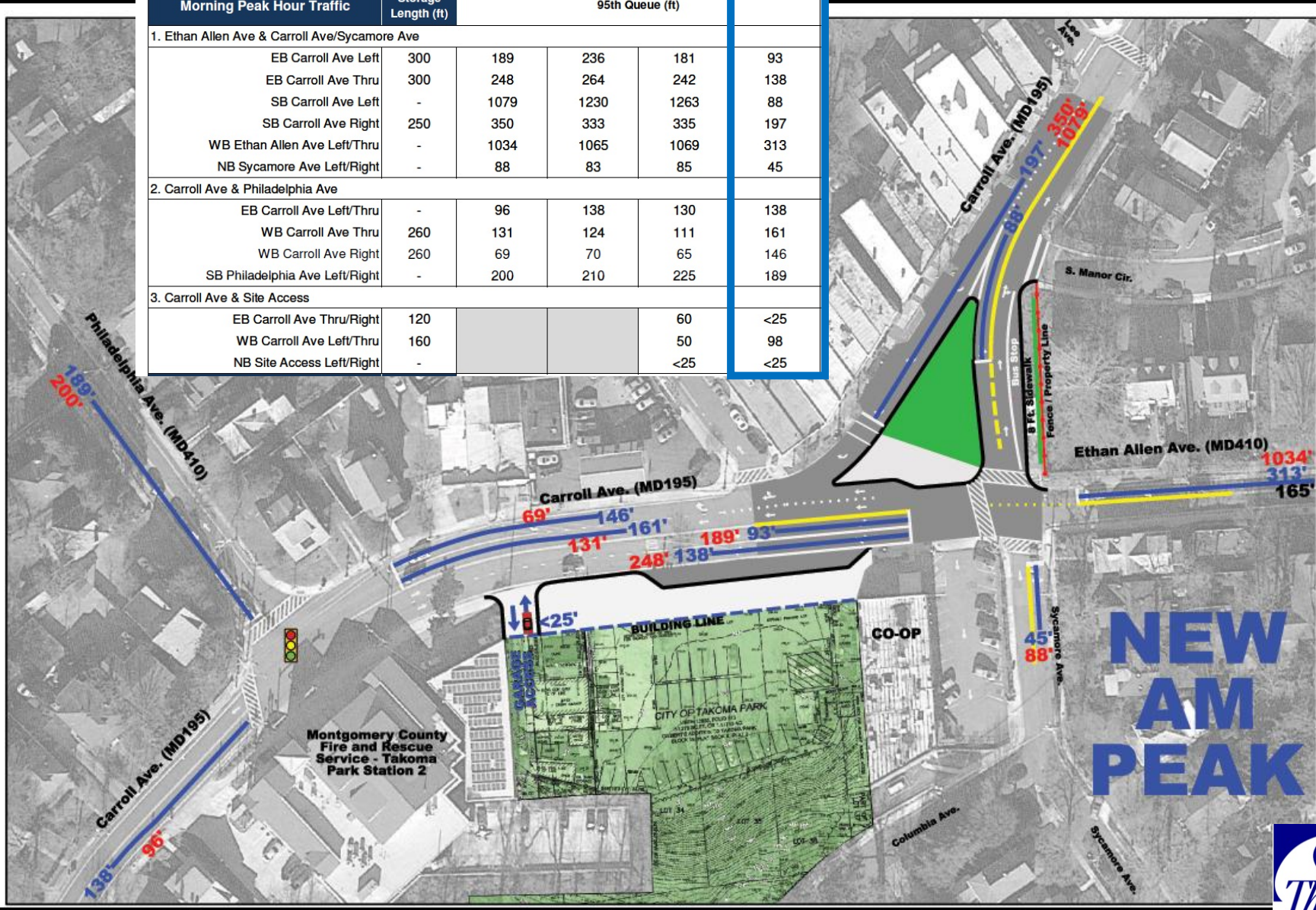


		Existing Traffic	Background Traffic	Total Traffic	Total Traffic w/Imp.
Evening Peak Hour Traffic		Storage Length (ft)	95th Queue (ft)		
1. Ethan Allen Ave & Carroll Ave/Sycamore Ave					
EB Carroll Ave Left	300	359	362	300+	141
EB Carroll Ave Thru	300	374	376	300+	149
SB Carroll Ave Left	-	109	128	217	76
SB Carroll Ave Right	250	186	184	247	60
WB Ethan Allen Ave Left/Thru	-	562	512	722	245
NB Sycamore Ave Left/Right	-	142	159	148	96
2. Carroll Ave & Philadelphia Ave					
EB Carroll Ave Left/Thru	-	691	677	850	352
WB Carroll Ave Thru	260	167	152	260+	125
WB Carroll Ave Right	260	94	82	260+	142
SB Philadelphia Ave Left/Right	-	453	547	498	333
3. Carroll Ave & Site Access					
EB Carroll Ave Thru/Right	120			131	<25
WB Carroll Ave Left/Thru	160			173	91
NB Site Access Left/Right	-			196	109



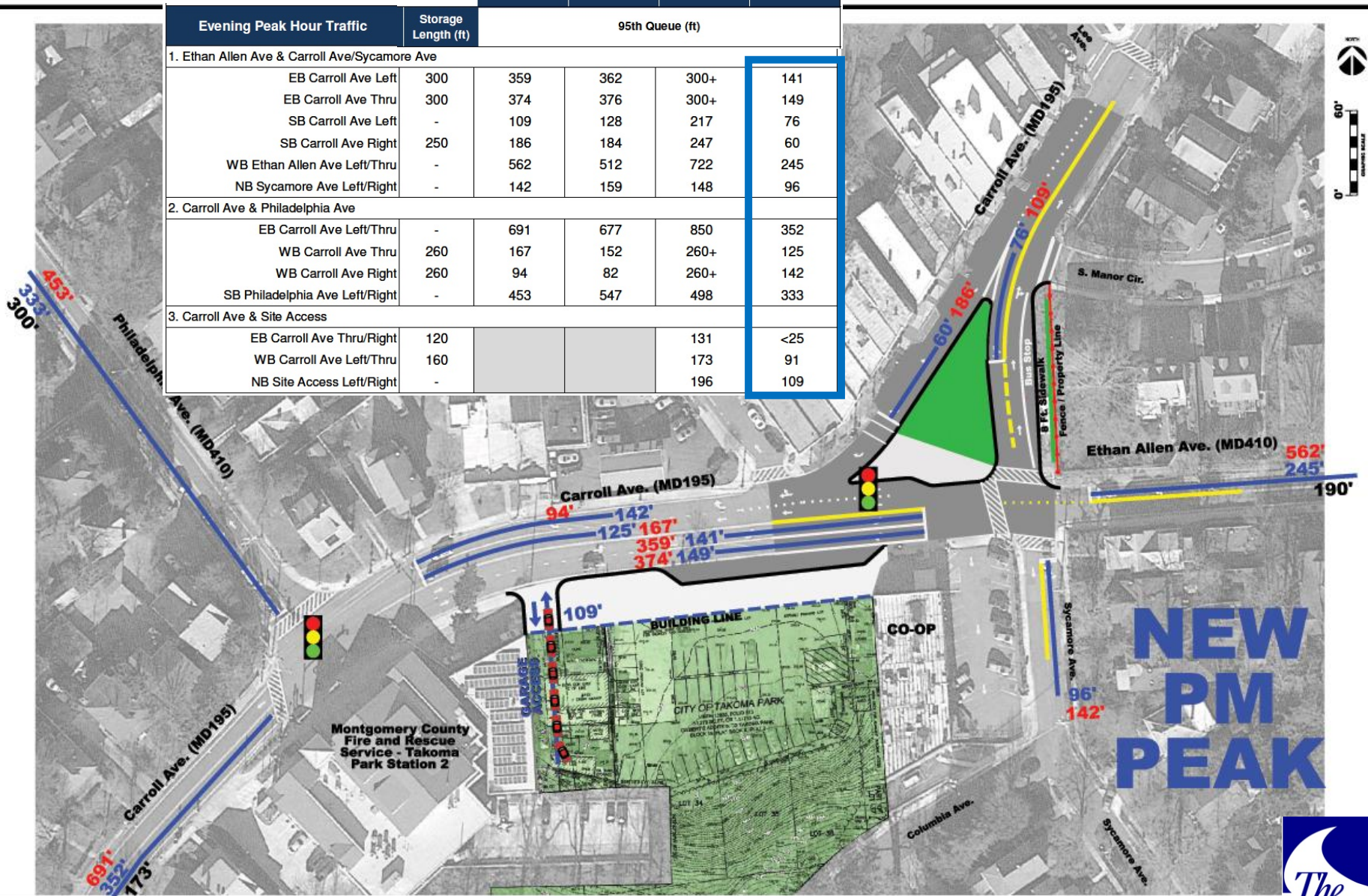
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**NEW
AM
PEAK**

Evening Peak Hour Traffic		Storage Length (ft)	95th Queue (ft)		Total Traffic w/lmp.
			Existing Traffic	Background Traffic	
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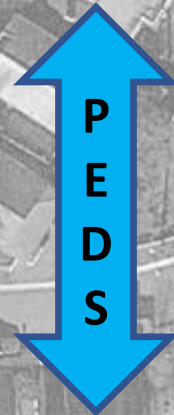
Proposed Traffic Signal Phasing

Phase 1 – NB
Sycamore Avenue

Phase 2 – SB Carroll
Avenue

Phase 3 – EB to NB
Sycamore Avenue

Phase 4 – EB & WB
Ethan Allen Avenue



Montgomery County
Fire and Rescue
Service - Takoma
Park Station 2



Proposed Traffic Signal Phasing

Phase 1 – NB Sycamore Avenue

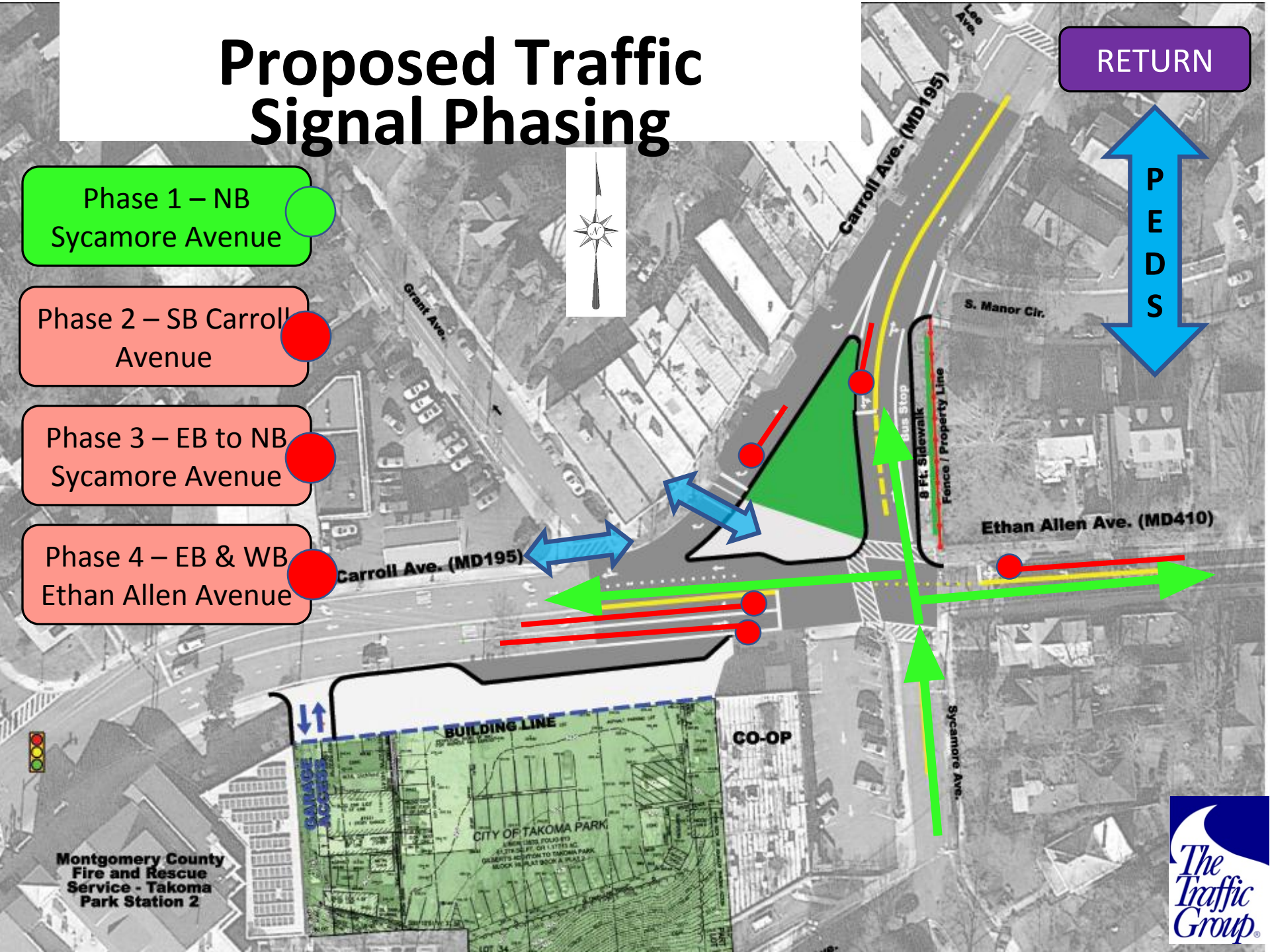
Phase 2 – SB Carroll Avenue

Phase 3 – EB to NB Sycamore Avenue

Phase 4 – EB & WB Ethan Allen Avenue

RETURN

P
E
D
S



Montgomery County
Fire and Rescue
Service - Takoma
Park Station 2

Proposed Traffic Signal Phasing

Phase 1 – NB Sycamore Avenue

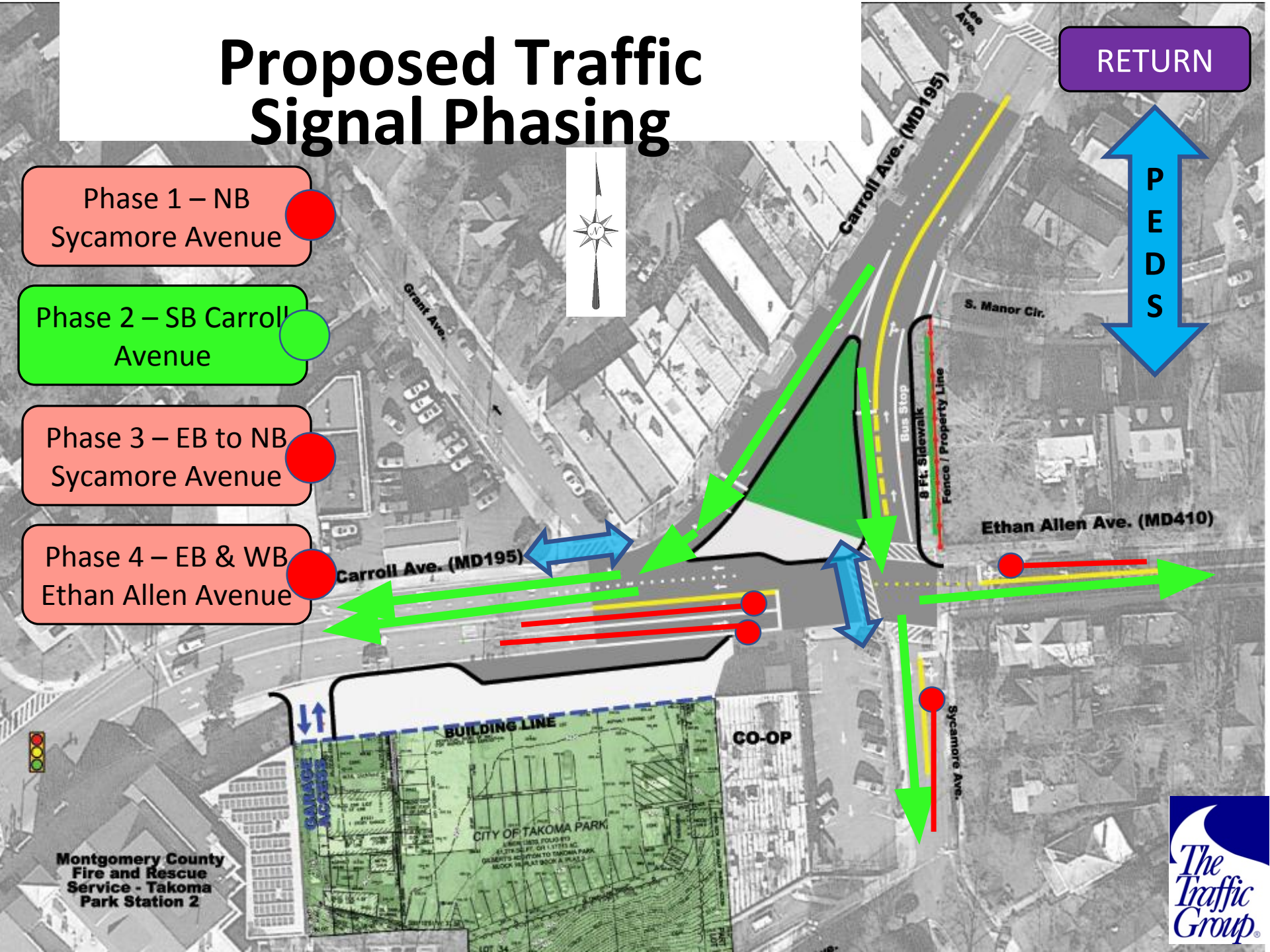
Phase 2 – SB Carroll Avenue

Phase 3 – EB to NB Sycamore Avenue

Phase 4 – EB & WB Ethan Allen Avenue

RETURN

P
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S



Montgomery County
Fire and Rescue
Service - Takoma
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Proposed Traffic Signal Phasing

Phase 1 – NB Sycamore Avenue



Phase 2 – SB Carroll Avenue



Phase 3 – EB to NB Carroll Avenue



Phase 4 – EB & WB Ethan Allen Avenue



RETURN

P
E
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S



Montgomery County
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Proposed Traffic Signal Phasing

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Phase 2 – SB Carroll Avenue



Phase 3 – EB to NB Carroll Avenue



Phase 4 – EB & WB Ethan Allen Avenue



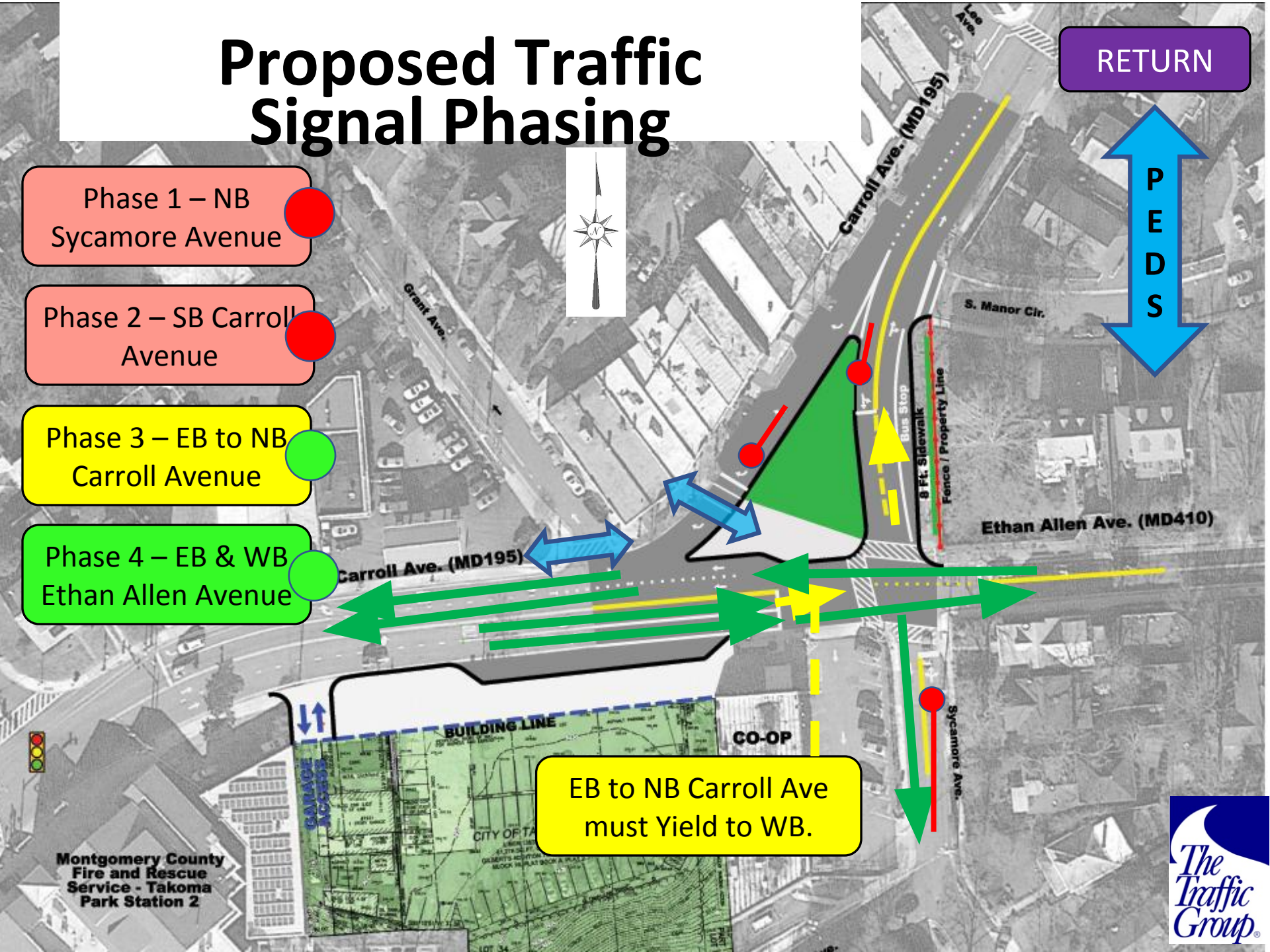
RETURN

P
E
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S



Montgomery County
Fire and Rescue
Service - Takoma
Park Station 2

EB to NB Carroll Ave
must Yield to WB.



Existing Truck Deliveries

Existing Peak Hour Truck Delivery Observations - WED 1/31/18

AM Hours 6:30 AM thru 9:30 AM

Truck Size	Time In	Time Out	Duration
Single Unit 30/40	6:33 AM	6:51 AM	18 Min
Single Unit 30/40	6:45 AM	7:13 AM	28 Min
Single Unit 30/40	7:21 AM	7:39 AM	18 Min
Single Unit 30/40	8:29 AM	8:32 AM	3 Min
Single Unit 30/40	8:51 AM	9:04 AM	13 Min
WB-67 Large Semi	8:58 AM	9:30 AM	32 Min

Arrival during Peak Hour:
7:30 AM thru 8:30 AM (2
Vehs = 10.5 Min Average

Total 6 Trucks:	112 Min.
Average Time:	18.7 Min.

PM Hours 4:00 PM thru 7:00 PM

Truck Size	Time In	Time Out	Duration
Single Unit 30/40	* 3:30:00 PM	3:31 PM	* 16 Min

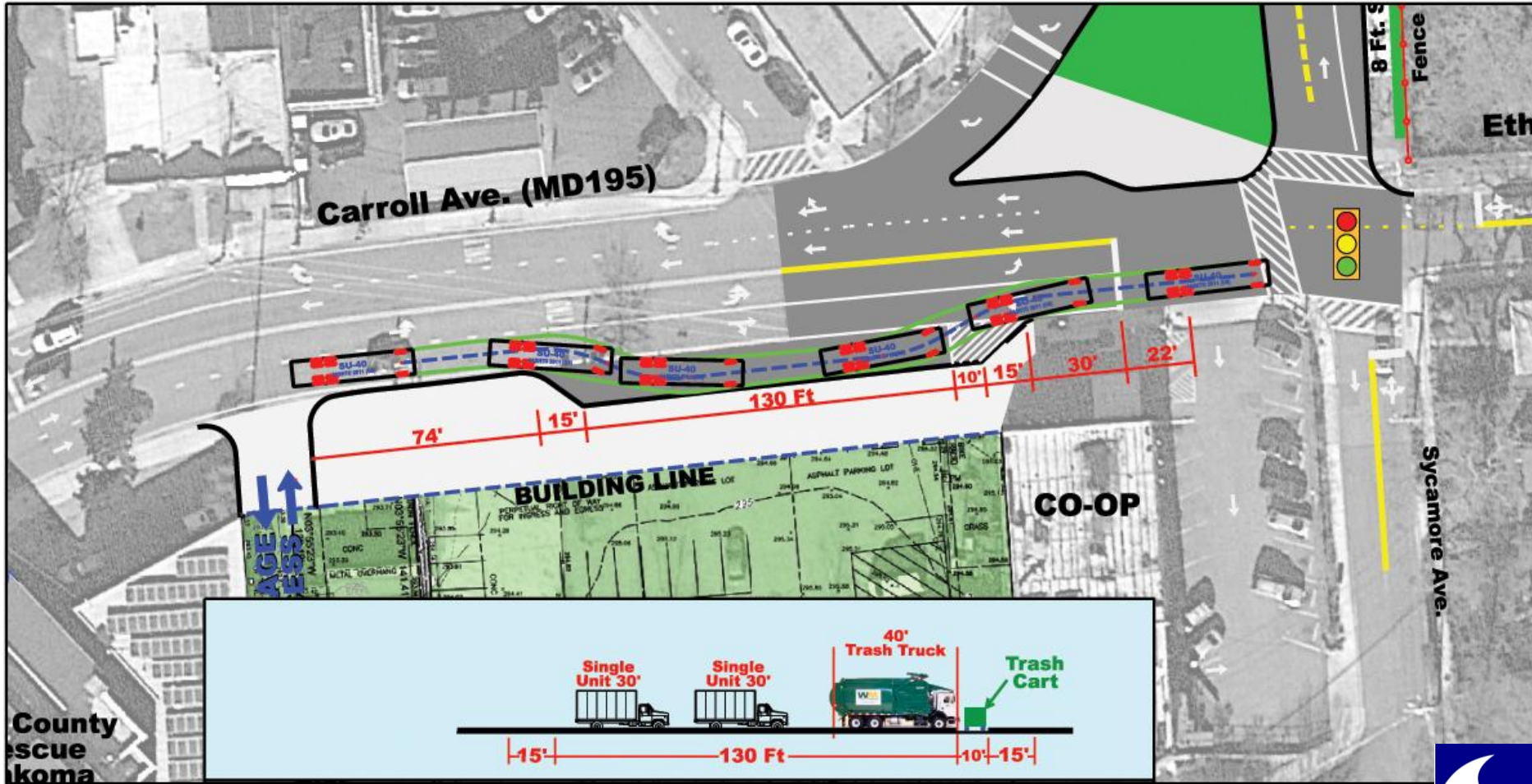
Arrival during Peak Hour: No
Delivery Vehicles Observed
during PM Peak Hour: 5:15
PM thru 6:15 PM.

Total 1 Truck:	16 Min.
Average Time:	16 Min.

* Delivery truck onsite at beginning of video count, 16 min. average delivery time calculated by averaging the Single Unit 30/40 trucks from AM Observations.



Loading Area

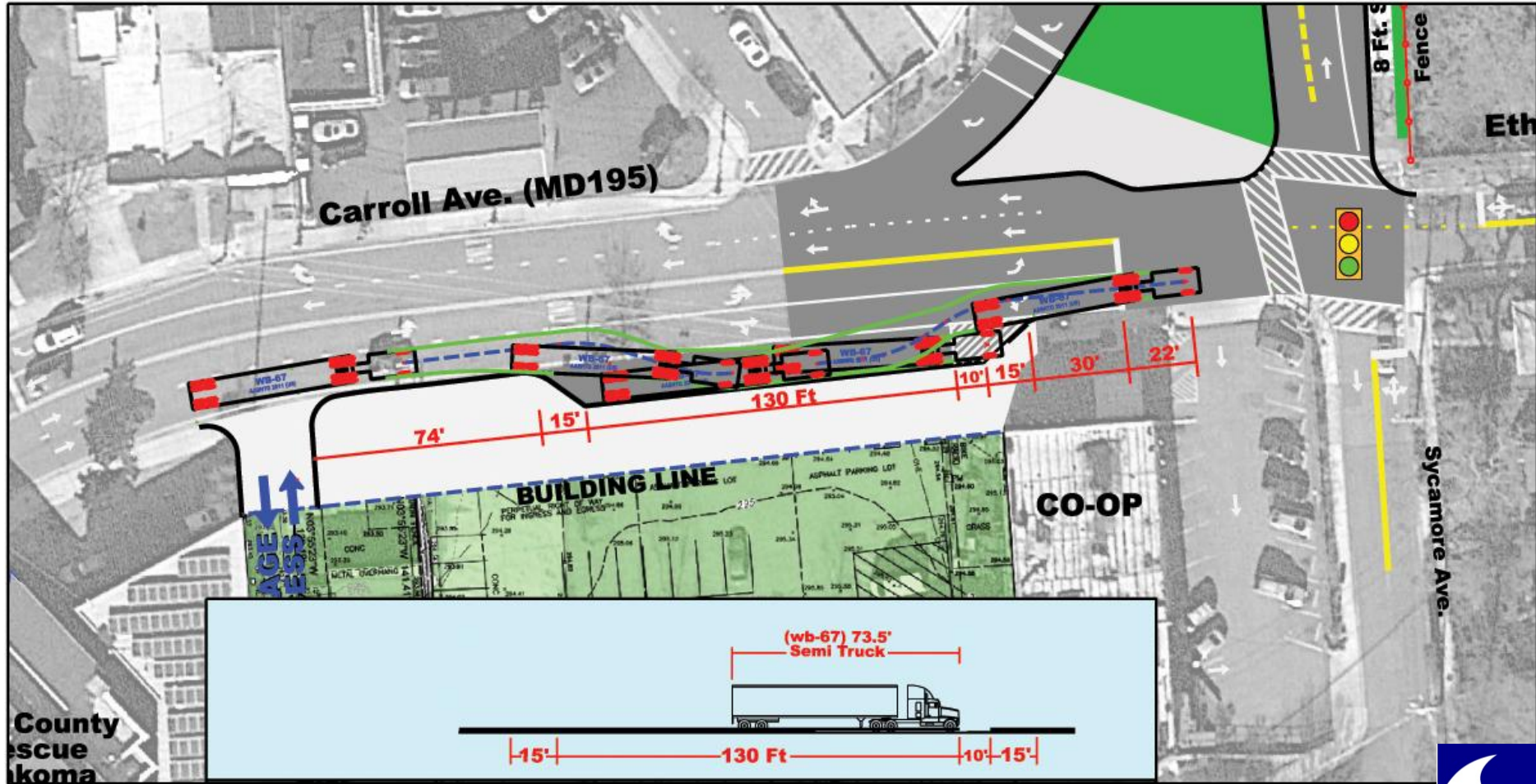


County
Rescue
Sikoma

Loading Area



Loading Area



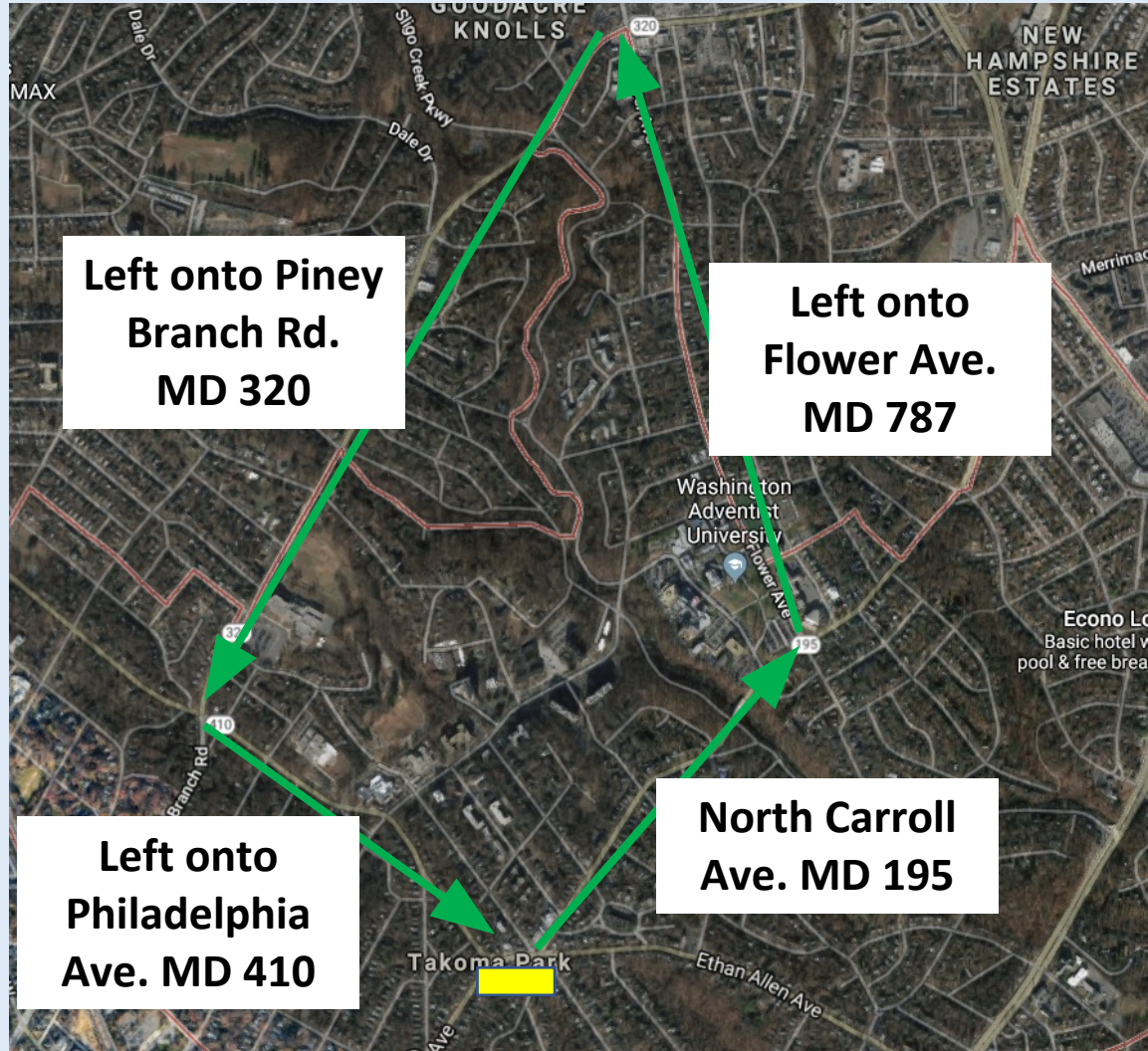
EXAMPLE



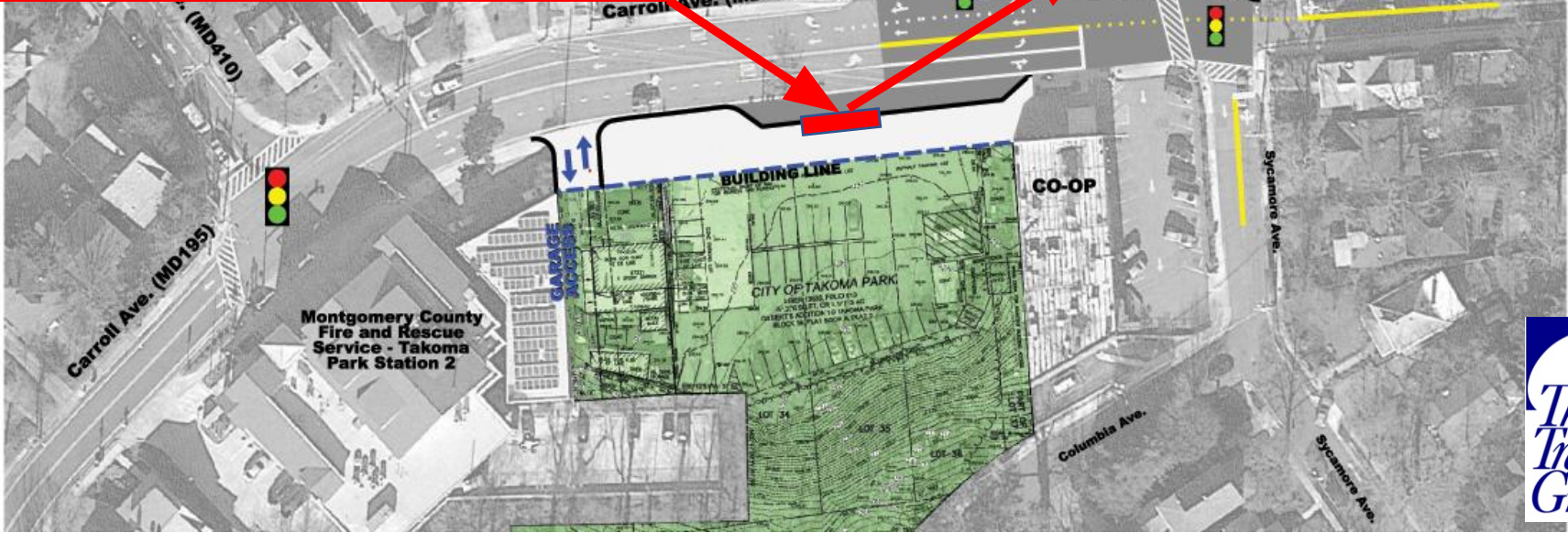
TRUCK HANDOUT

(Please Circle Back Map)

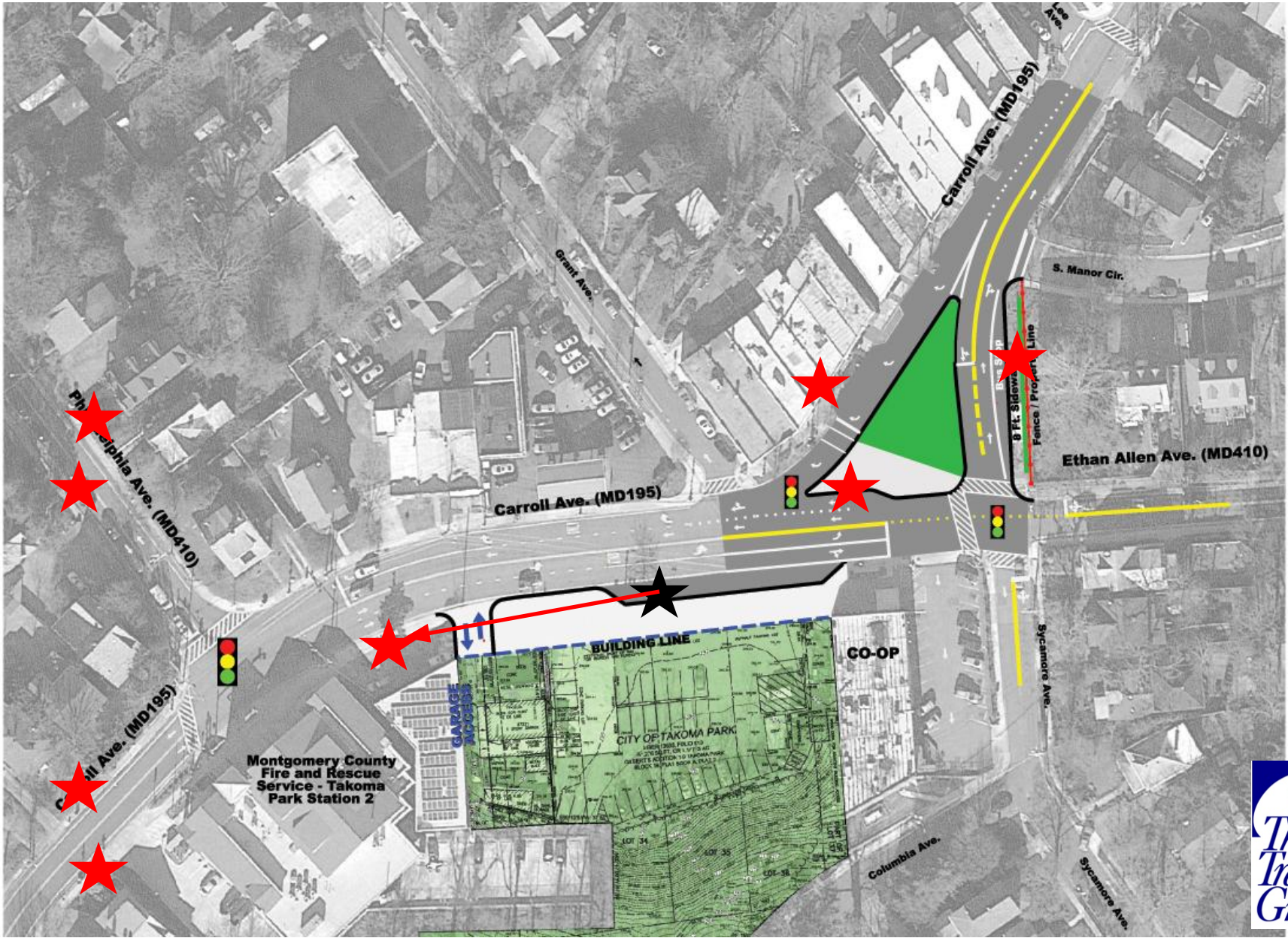
13 min.
3.5 miles



Capital Bike Share Station Re-location



Bus Stop Re-locations





Questions