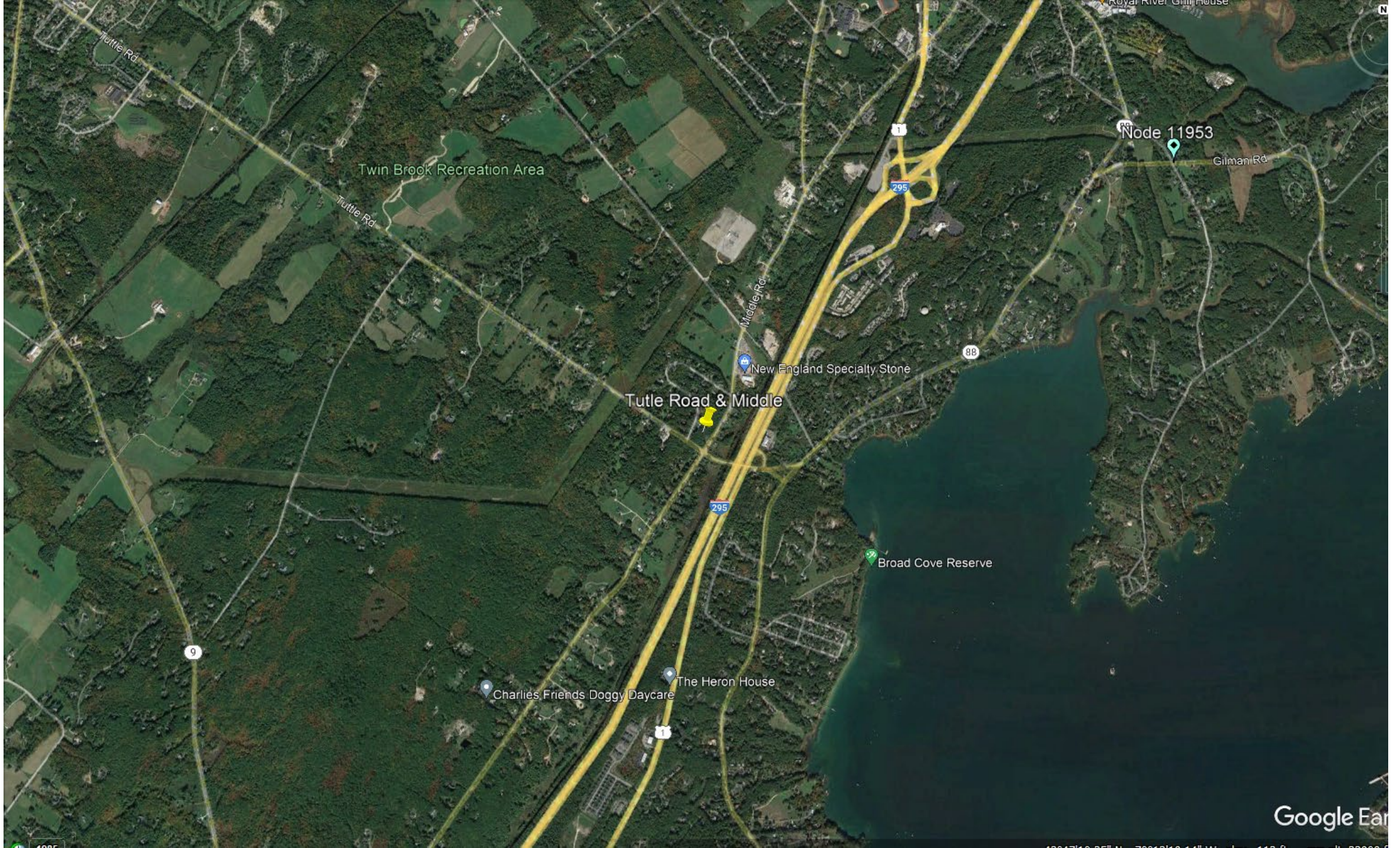


Cumberland -Tuttle Road & Middle Road Neighborhood Meeting

Slides provided by MaineDOT

August 7, 2023



Tuttle Road United Methodist Church









Tuttle Road United Methodist Church

35 MPH

35 MPH

35 MPH

35 MPH

Tuttle Road United Methodist Church

AADT 3,590

AADT 3,050

AADT 4,200

AADT 1,670

2022 PM Peak Hour 4:30-5:30



Crash Summary II - Characteristics**Crashes by Year and Month****2016 M&O Intersection Improvements**

Month	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
JANUARY	0	0	1	0	0	1	0	0	0	1	3
FEBRUARY	0	0	0	0	0	0	0	0	1	2	3
MARCH	0	0	0	0	0	0	0	0	0	0	0
APRIL	1	1	0	0	0	0	0	0	0	0	2
MAY	1	1	0	0	0	0	1	0	0	0	3
JUNE	0	0	0	2	0	0	0	2	0	1	5
JULY	1	0	1	0	0	0	0	0	0	1	3
AUGUST	1	0	1	0	1	0	0	0	0	0	3
SEPTEMBER	0	0	0	0	0	1	0	0	0	0	1
OCTOBER	0	0	1	0	0	0	0	0	0	0	1
NOVEMBER	1	1	0	0	0	0	0	0	0	0	2
DECEMBER	0	1	0	0	0	1	0	0	1	0	3
Total	5	4	4	2	1	3	1	2	2	5	29

10 YEAR CRASH TYPE and LOCATION

CRASH TYPE	4- LEG INTERSECTION
REAR-END / SIDESWIPE	3 (10%)
INTERSECTION MOVEMENT	24 (83%)
Went Off Road	2 (7%)
Total	29

High Speed Angle Crash Severity

"Angle" Crash Severity By Intersection Speed Limit

	Injury %	K+A %	K+A+B %
25	25.96%	0.98%	6.30%
30	48.3%	3.4%	13.8%
35	31.65%	2.01%	9.53%
40	34.25%	2.53%	11.96%
45	40.68%	4.38%	15.82%
50	45.27%	5.55%	18.28%
55	49.42%	6.26%	22.74%

Tuttle & Middle intersection @ 35 mph

High Crash Location History

Years	Number of Crashes	Critical Rate Factor
2020-2022	9	2.71
2014-2016	10	3.24
2013-2015	13	3.98
2012-2014	11	4.29

Cumberland
Node: I2388
Study Period: 2020-2022
of Crashes: 9 / CRF: 2.71
Prepared by Office of Safety & Mobility
(MP 1/10/22)

Tuttle Rd.



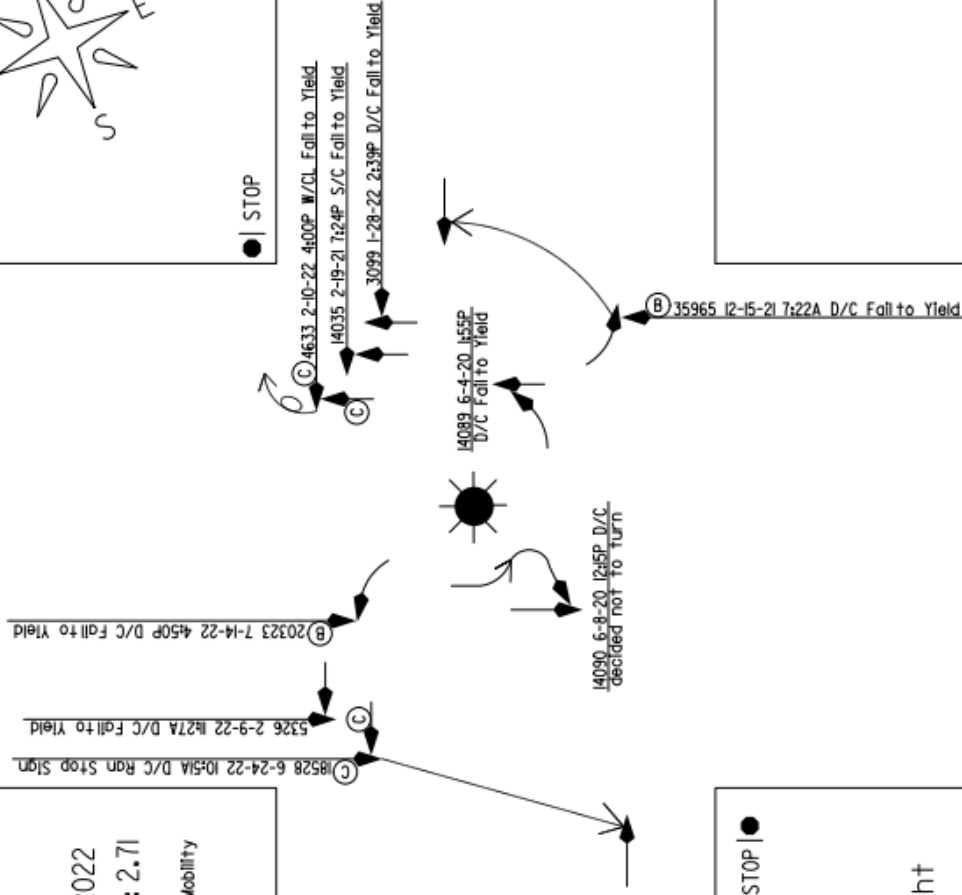
● STOP

Middle Rd.

Middle Rd.

Tuttle Rd.

STOP ●



Alternatives Considered

- Traffic Signal — Did Not Meet any MUTCD Signal Warrants.
- All Way Stop

HOW AWS Came To BE CONSIDERED As An ALTERNATIVE?

- REVIEWED MAINE EXAMPLES
 - Historical Data
 - Recent Examples
- NATIONAL STUDIES
 - North Carolina Meeting/Study

Older Example of AWS



Newer Type Installations



Historical Maine Before / After

- Crash Reduction = 45%
- Injury Crash Reduction = 52%
- Crash Cost Reduction = 54%

National Crash Reduction Convert Two-Way to All-Way Stop Control (flashing STOP / Non-flashing STOP)

- Crash Reduction = 82% / 61%
- Injury Crash Reduction = 87% / 72%

Casco Conversion – Route 11 / Route 121

CONVERTED OCTOBER 2019



Crashes Per Year		Crash Reduction
Before	After	64.3%
4.67	1.67	
Injury Crashes Per Year		Injury Crash Reduction
Before	After	66.7%
2.00	0.67	
Fatal / Severe Injury Crash Per Year		Fatal / Serious Injury Crash Reduction
Before	After	100.0%
1.00	0.00	
Crash Cost Per Year		Crash Cost Reduction
Before	After	97.8%
\$ 3,918,700	\$ 85,467	
Crash Cost Per Crash		Crashes are on average
Before	After	93.9% Less severe
\$ 839,721.43	\$ 51,280.00	

Durham Conversion – Route 125 / Quaker Meetinghouse Rd

CONVERTED MARCH 2018



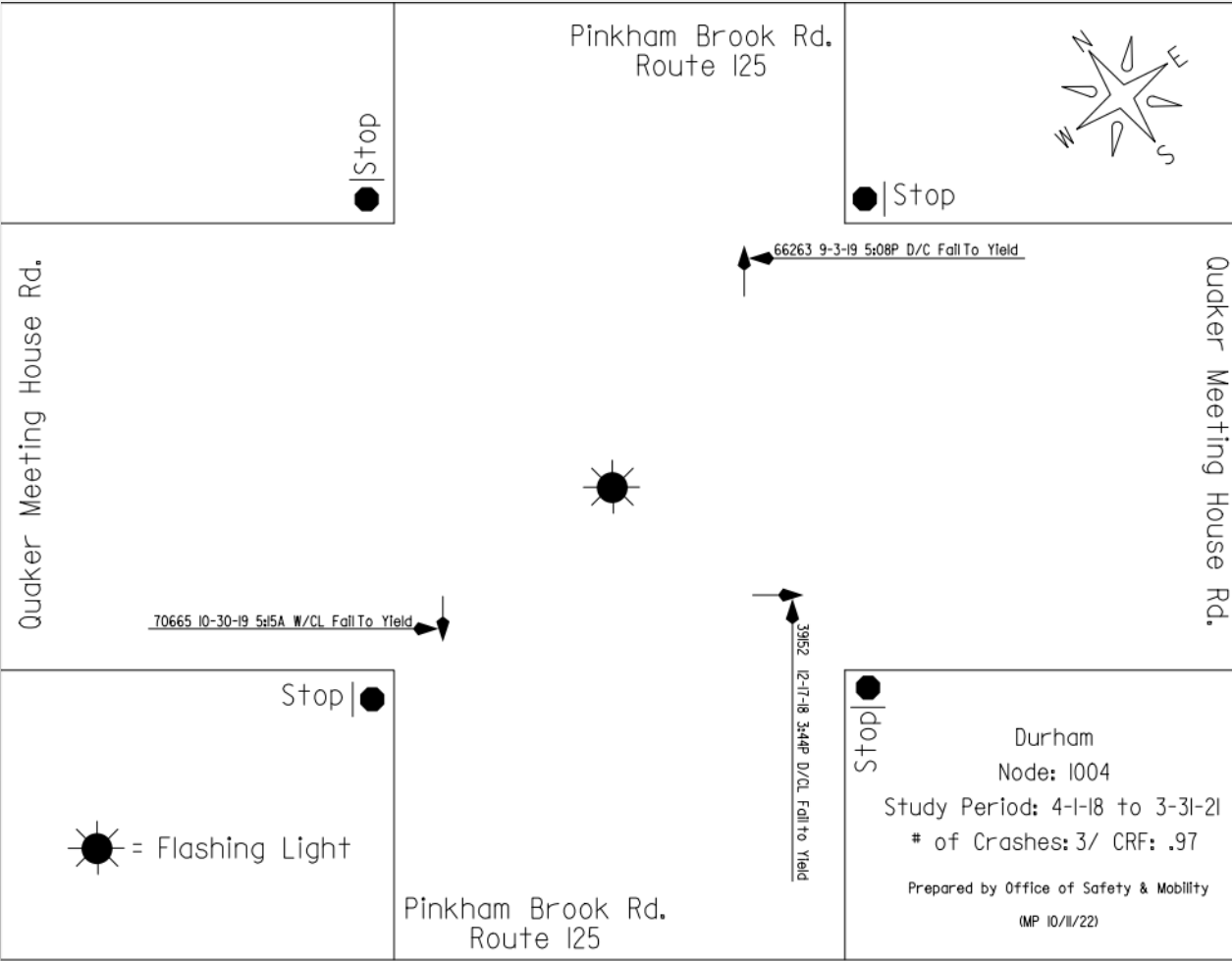
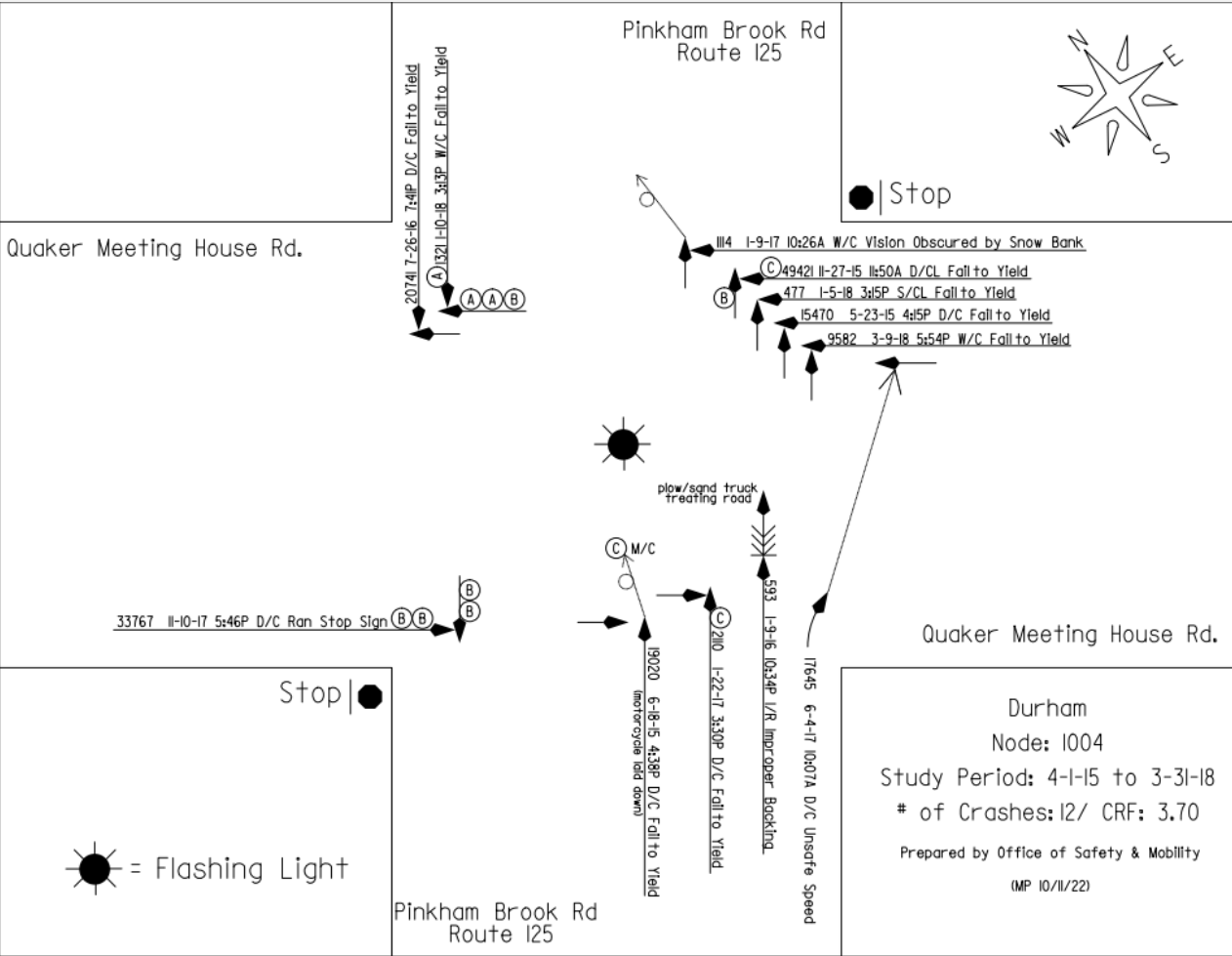
Crashes Per Year		Crash Reduction
Before	After	72.0%
3.30	0.92	
Injury Crashes Per Year		Injury Crash Reduction
Before	After	100.0%
1.90	0.00	
Fatal / Severe Injury Crash Per Year		Fatal / Serious Injury Crash Reduction
Before	After	100.0%
0.30	0.00	
Crash Cost Per Year		Crash Cost Reduction
Before	After	97.6%
\$ 409,320	\$ 9,792	
Crash Cost Per Crash		Crashes are on average
Before	After	91.5% Less severe
\$ 124,036.36	\$ 10,600.00	

Durham Conversion – Route 125 / Quaker Meetinghouse Rd

CONVERTED MARCH 2018

DURHAM 3-YEARS BEFORE

DURHAM 3-YEARS AFTER



Benefits of an All-Way Stop

- Significant Reduction in Total Crashes.
- Significant Reduction in Injury Crash Severity.
- ZERO Fatal Crashes at AWS since 2003 (in Maine)
- Highest Safety Benefit / Cost Ratio.
- Vehicles Enter the Intersection at Low Speeds.
- Intersection LOS A or B with Each Conversion.
- Provides a Low Speed for Pedestrian Crossing.

2022 PM Peak Hour 4:30-5:30



2022 PM Peak Hour

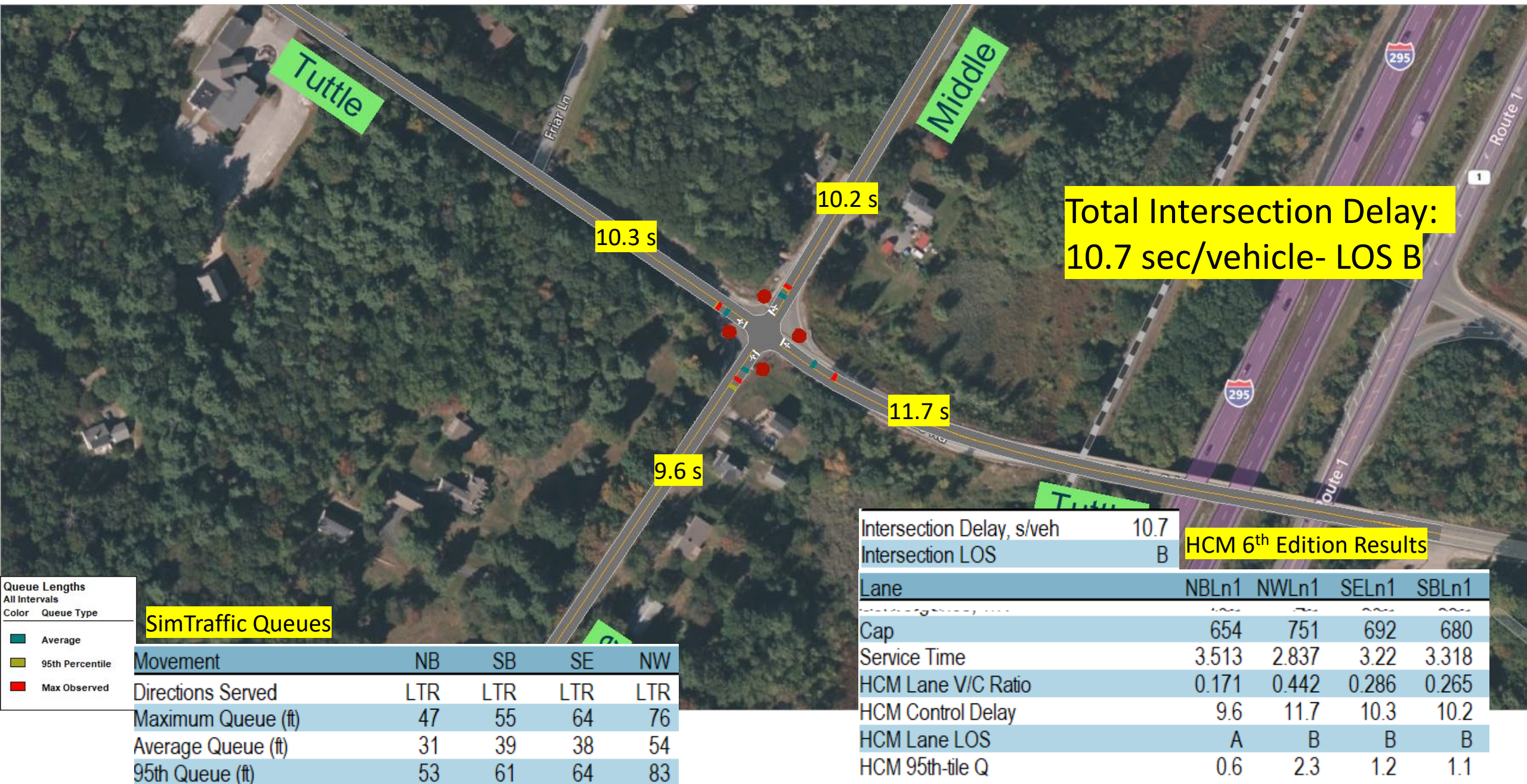


HCM - Total Intersection
Delay: 6.5 sec/vehicle-
LOS A

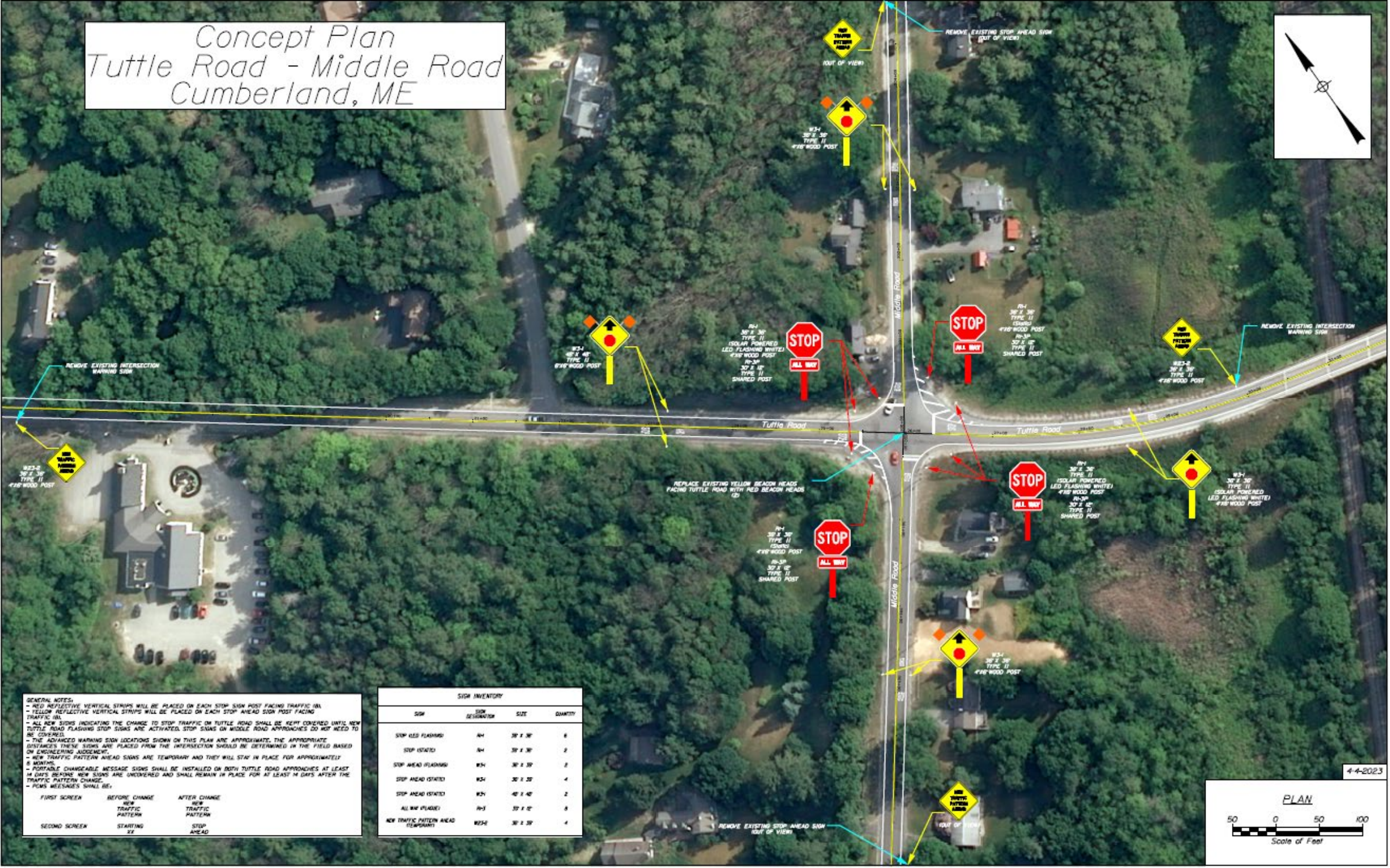
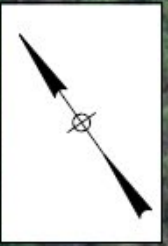
Queue Lengths All Intervals	
Color	Queue Type
■	Average
■	95th Percentile
■	Max Observed

Movement	NB	SB	SE	NW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	52	62	35	14
Average Queue (ft)	33	46	13	4
95th Queue (ft)	57	71	39	18

2022 PM Peak Hour ALL-Way STOP



Concept Plan Tuttle Road - Middle Road Cumberland, ME



GENERAL NOTES:

- RED REFLECTIVE VERTICAL STRIPS WILL BE PLACED ON EACH STOP SIGN POST FACING TRAFFIC (BA)
- YELLOW REFLECTIVE VERTICAL STRIPS WILL BE PLACED ON EACH STOP AHEAD SIGN POST FACING TRAFFIC (BA)
- ALL NEW SIGNS INDICATING THE CHANGE TO STOP TRAFFIC ON TUTTLE ROAD SHALL BE KEPT COVERED UNTIL NEW TUTTLE ROAD FLASHING STOP SIGNS ARE ACTIVATED. STOP SIGNS ON MIDDLE ROAD APPROACHES DO NOT NEED TO BE COVERED.
- THE ADVANCED WARNING SIGN LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE. THE APPROPRIATE DISTANCES THESE SIGNS ARE PLACED FROM THE INTERSECTION SHOULD BE DETERMINED IN THE FIELD BASED ON ENGINEERING JUDGEMENT.
- NEW TRAFFIC PATTERN AHEAD SIGNS ARE TEMPORARY AND THEY WILL STAY IN PLACE FOR APPROXIMATELY 6 MONTHS.
- PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE INSTALLED ON BOTH TUTTLE ROAD APPROACHES AT LEAST 14 DAYS BEFORE NEW SIGNS ARE UNCOVERED AND SHALL REMAIN IN PLACE FOR AT LEAST 14 DAYS AFTER THE TRAFFIC PATTERN CHANGE.
- PCMS MESSAGES SHALL BE:

FIRST SCREEN	BEFORE CHANGE	AFTER CHANGE
NEW TRAFFIC PATTERN	NEW TRAFFIC PATTERN	STOP AHEAD
SECOND SCREEN	STARTING XX	STOP AHEAD

SIGN INVENTORY			
SIGN	SIGN DESCRIPTION	SIZE	QUANTITY
STOP (LED FLASHING)	R4	30" x 30"	6
STOP (STATIC)	R4	30" x 30"	2
STOP AHEAD (FLASHING)	W34	30" x 30"	2
STOP AHEAD (STATIC)	W34	30" x 30"	4
STOP AHEAD (STATIC)	W34	40" x 40"	2
ALL WAY (PLAQUE)	R43	30" x 30"	8
NEW TRAFFIC PATTERN AHEAD (TEMPORARY)	W24E	30" x 30"	4

4-4-2023

