Essex
COMMUNITY
DEVELOPMENT
CORPORATION

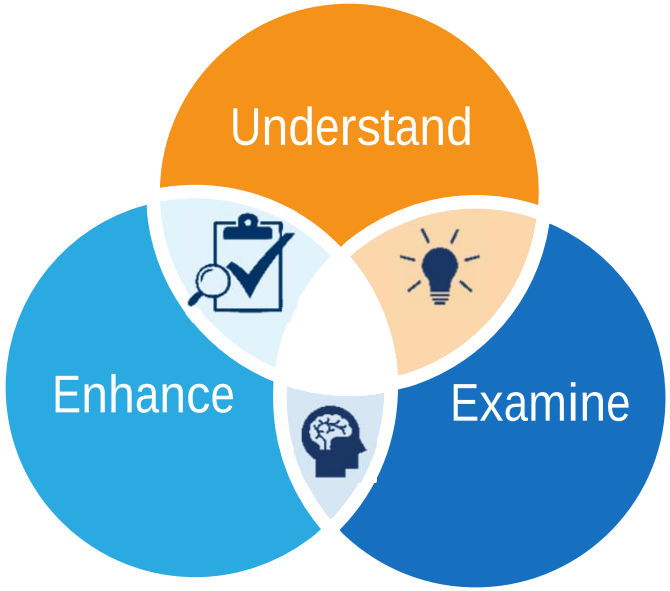
WALLACE
MONTGOMERY

Traffic, Parking, and Pedestrian Safety Impact and Optimization Study for Eastern Boulevard in Essex

December 2, 2025

Purpose of Study

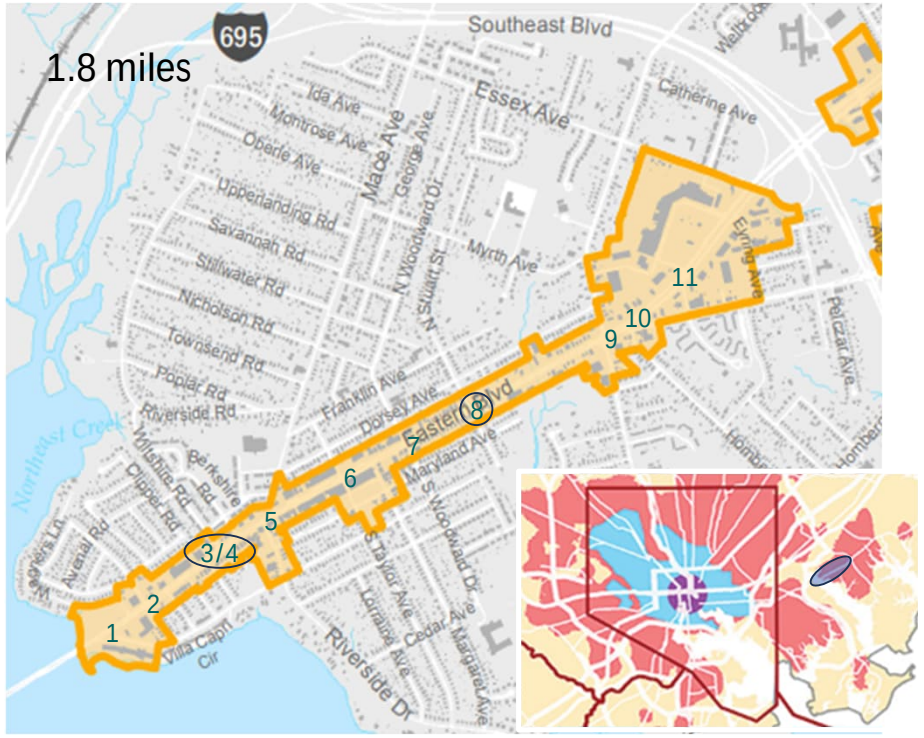
- Understand the current structure of Eastern Boulevard
- Document Existing Roadway User Movements, Access, Speeds & Crash History along Eastern Boulevard
- Examine Multimodal Transportation Improvement Options Along Eastern Boulevard
- Recommend solutions to enhance Transportation Connectivity & Safety for ALL Users. Transform Eastern Boulevard into an Attractive Destination for Shopping & Community Activities



Project Understanding: The Study Area

Eastern Boulevard (MD 150) in Essex

- From Virginia Ave to Southeast Blvd (MD 702)
- Study Intersections:
  1. Virginia Ave/Essex Park and Ride (*Signalized*)
  2. Marie Ave/Terrace Rd (*Signalized*)
  3. Helena Ave (Unsignalized)
  4. Wiltshire Rd (Unsignalized)
  5. Mace Ave/Riverside Dr (*Signalized*)
  6. Taylor Ave (*Signalized*)
  7. N Woodward Dr (*Signalized*)
  8. Stuart St (Unsignalized)
  9. Marlyn Ave (*Signalized*)
  10. Old Eastern Ave (*Signalized*)
  11. Middlesex Shopping Center/Selig Ave (*Signalized*)



2021 Essex Commercial Revitalization District Map / Context Zone Map

Project Understanding: Sections of Eastern Blvd.

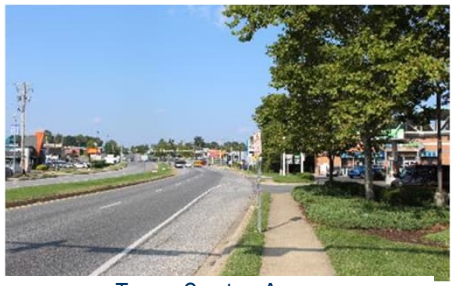
Urban Land Institute Essex-Eastern Boulevard TAP Report

- Functional Classification
  - Urban Principal Arterial
  - Suburban Activity Center
- 27,405 AADT / 5% Trucks
- 30 mph Speed Limit
  - 45 mph west of Virginia Ave
  - 35 mph east of Selig Ave
- Typical Section
  - 4 Lane Divided Roadway
  - Wide Shoulders and Lanes
  - Minimal Turn Lanes
  - Sidewalk Both Sides
  - On-Street Parking

Park n' Ride Bus Stop

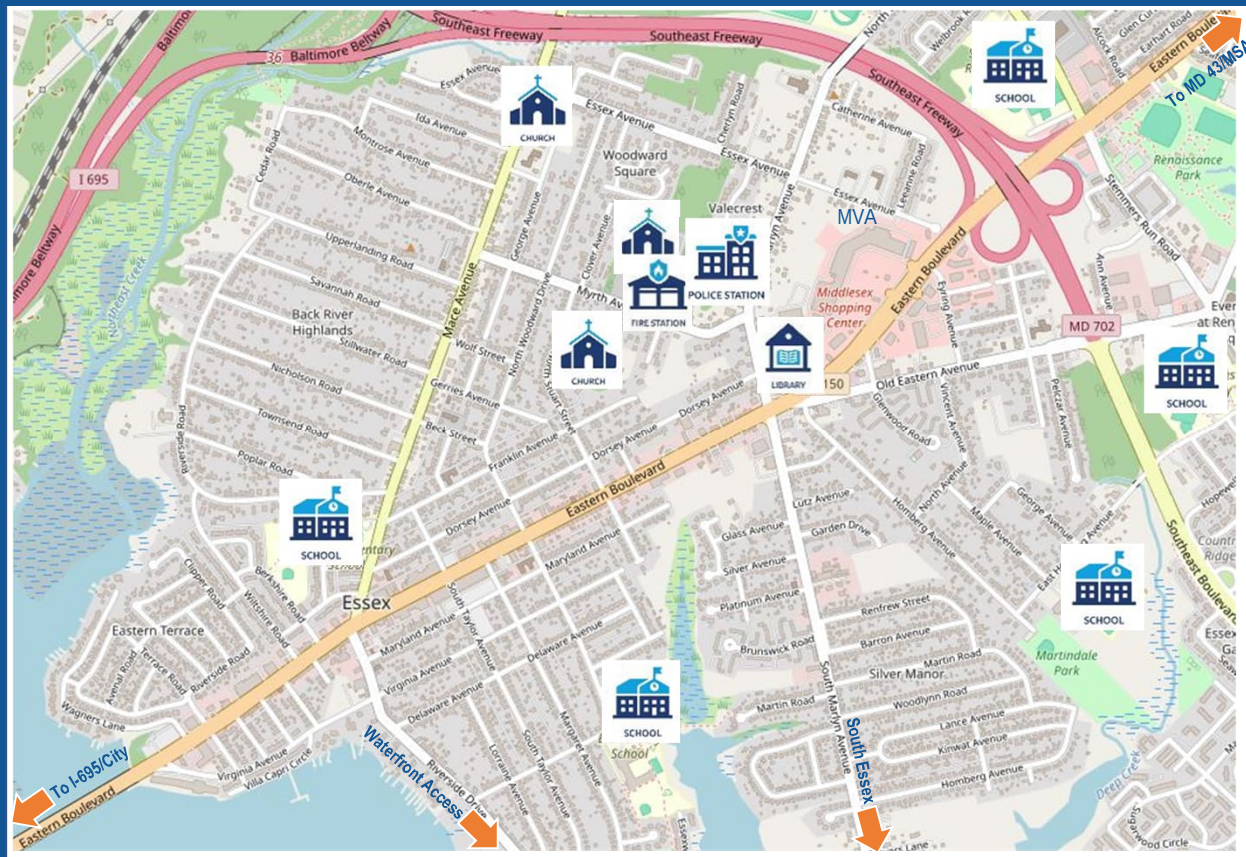
Downtown Area – Head In Parking

Minimal Retail Intervention Area



Town Center Area

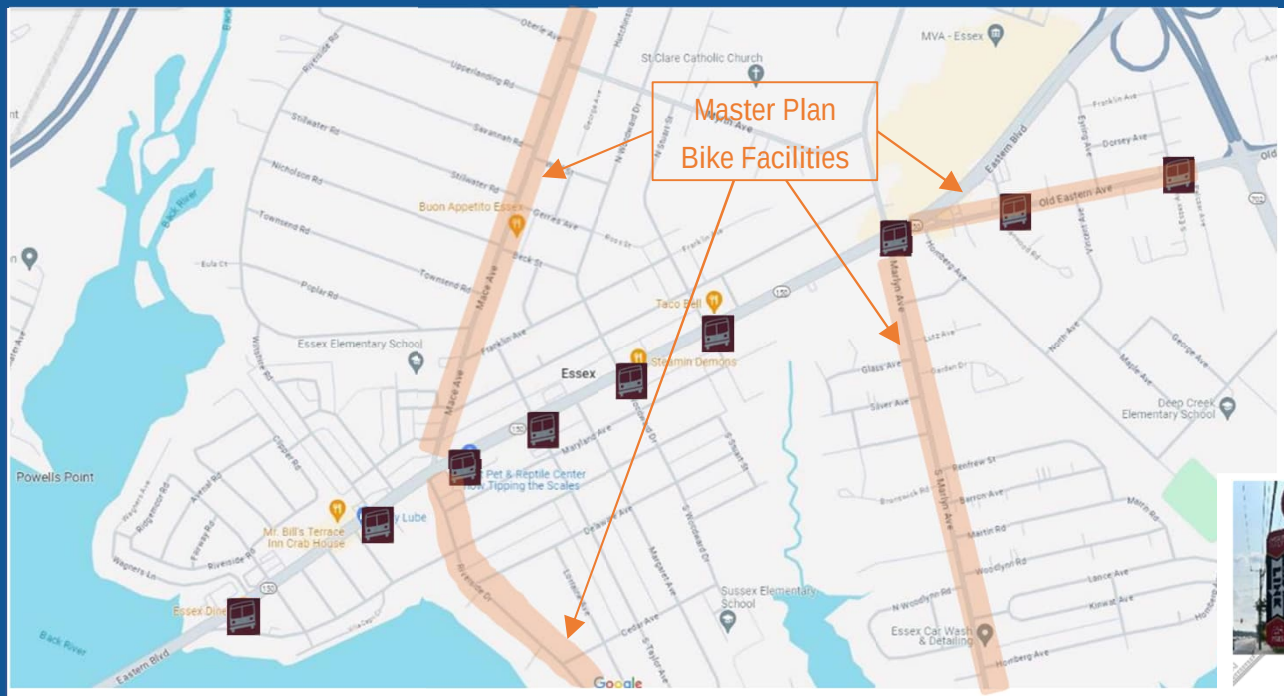
Project Understanding: Traffic Generators



SHA I-TMS GIS Location Map

- I-695, City & Tradepoint Atlantic to West
- MD 702, Martin State Airport, MD 43 & Penn Line to East
- Residential Neighborhoods & Senior Living
- Mainstreet Retail & Middlesex Shopping Center/MVA
- Schools, Parks, Library & Places of Worship
- Police & Fire Stations
- Back River/Deep Creek Access

Project Understanding: Bike & Pedestrian Generators



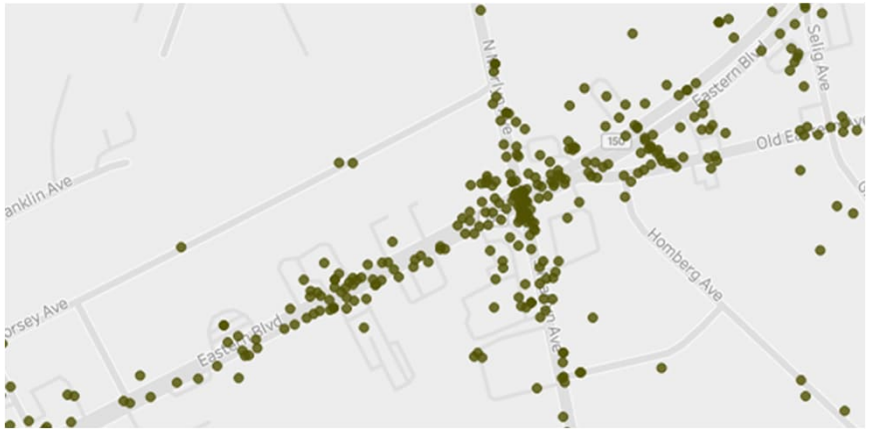
Google Map - Bus Stop & Bike Facility Locations

- Mainstreet Commercial & Middlesex Shopping Center
- Residential Neighborhoods & Parks
- Schools, Library & Places of Worship
- MTA Bus Stops
- Bicycle Routes

MTA Bus Routes

Task A: Study Initiation and Data Collection

1. Kick-off Meeting with Essex CDC (11/2024)
   - Initiated coordination with SHA D4 & OOTS
2. Received/Reviewed Available Data
   - Past Corridor Studies & Plans; GIS Based Data; Recent Traffic Volumes; Analysis Files; Signal Timings; and MTA Ridership Data
3. Obtained/Reviewed Crash Data from SHA OOTS / MSP Database
   - Past Five-Year Crash History



Eastern Blvd Crash Map

Task A: Study Initiation and Data Collection

MAP STOP #	STOP LOCATION	EASTBOUND US 40	WESTBOUND US 40	FACILITIES SEATING, SHELTER,ETC	DISTANCE TO NEXT STOP (MILES)	RIDERSHIP			
						WESTBOUND		EASTBOUND	
						BOARD	ALIGHT	BOARD	ALIGHT
1 E	Eastbound 150 E of Virginia Ave.	CityLink Orange 40, 59, 62, 160	-	N/A	0.29	-	-	41	54
1 W	Westbound 150 Essex Park and Ride	-	CityLink Orange 40, 59, 62, 160	SHELTER, SEATING	-	52	37	-	-
2 E	Eastbound 150 W of Dorothy Ave.	CityLink Orange 59, 62	-	N/A	0.13	-	-	19	37
2 W	Westbound 150 W of Wiltshire	-	CityLink Orange 59, 62	N/A	0.25	35	22	-	-
3 E	Eastbound 150 E of Riverside Dr.	CityLink Orange 59, 62	-	N/A	0.15	-	-	11	18
3 W	Westbound 150 E of Mace Ave.	-	CityLink Orange 59, 62	SEATING	0.18	37	20	-	-
4 E	Eastbound 150 W of S Taylor Ave.	CityLink Orange 40, 59, 62	-	N/A	0.17	-	-	106	117
4W	Westbound 150 E of N Taylor Ave.	-	CityLink Orange 40, 59, 62	SHELTER, SEATING	0.17	137	115	-	-
5 E	Eastbound 150 W of N Woodward DR	CityLink Orange 59, 62	-	N/A	0.15	-	-	31	39
5 W	Westbound 150 E of N Woodward Dr.	-	CityLink Orange 59, 62	N/A	0.16	25	24	-	-
6E	Eastbound 150 W of S Stuart St.	CityLink Orange 59, 62	-	N/A	0.38	-	-	31	37
6 W	Westbound 150 E of N Stuart St.	-	CityLink Orange 59, 62	N/A	0.16	33	27	-	-
7 E	Eastbound 150 E of S Marlyn Ave.	CityLink Orange 59, 62, 160	-	SHELTER, SEATING	0.19	-	-	137	194
7 W	Westbound 150 E of N Marlyn	-	CityLink Orange 59, 62, 160	SHELTER, SEATING	0.34	234	105	-	-
					Total Ridership	553	350	376	496

CityLink Orange: Essex West Baltimore MARC Station
#40: Westgate to Selig Avenue
#59: Moravia to Whispering Woods
#62: CCBC Essex to Turner Station
#160: Downtown/Hopkins to Essex

Bus Ridership Data Summary

Task A: Study Initiation and Data Collection

4. Collected Weekday 24-Hour Vehicular, Pedestrian & Bicycle Turning Movement Counts (April 2025)
   - Counted Eight (8) Intersections using Three (3) Existing TMCs
5. Collected Weekday 48-Hour Speed/Class/Volume Counts (November 2024)
   - Three (3) Locations
6. Compiled Volume Data/Speed Statistics

National Data & Surveying Services

Task A: Study Initiation and Data Collection

MD 150 Speed Study Summary

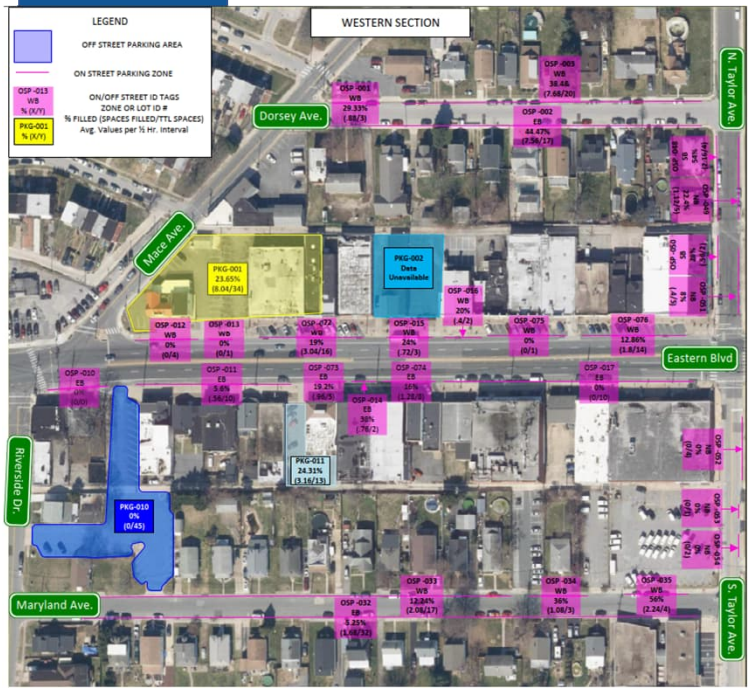
Location	Direction	Posted Speed (mph)	Minimum Speed (mph)	Maximum Speed (mph)	Average Speed (mph)	85th Percentile Speed (mph)	85th Percentile & Posted Speed Difference (mph)	% Enforceable (% > 10 mph over Speed Limit)
1. Between Goeller Ave and Helena Ave	EB	30	5	55	27	34.0	4.0	1.7
	WB	30	5	55	29	35.0	5.0	2.8
2. East of Hartman Ave	EB	30	5	60	30	35.0	5.0	3.3
	WB	30	5	60	31	37.0	7.0	3.9
3. West of Eyring Ave	EB	35*	5	65	32	38.0	3.0	8.2
	WB	35*	5	65	31	39.0	4.0	10.0

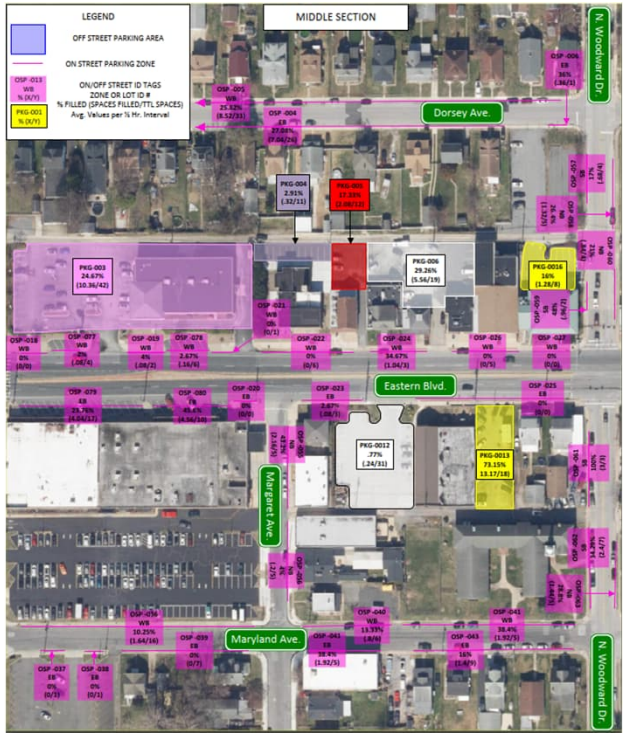
* EB posted 30 mph at Virginia Avenue (45 mph prior), 35 mph east of Selig Avenue (at Eyring Ave)

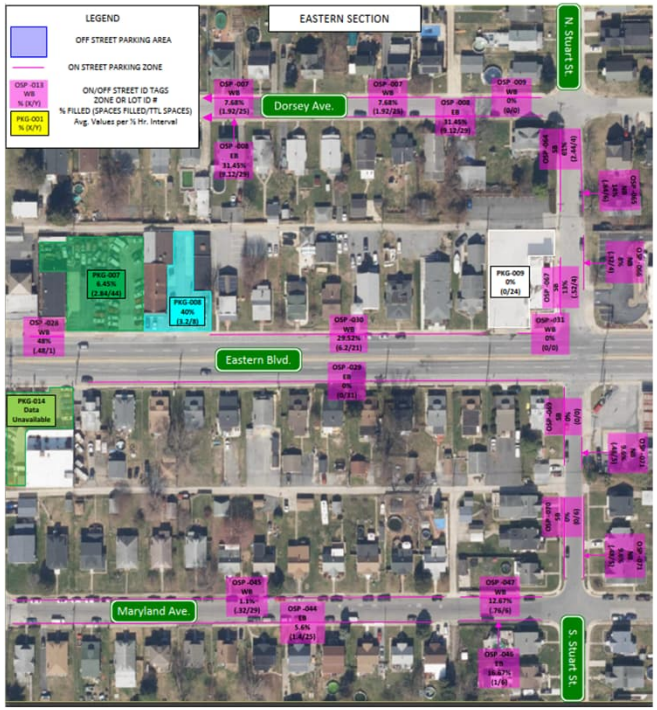
* WB posted 30 mph west of Marlyn Avenue, 35 mph prior (at Eyring Ave)

Task A: Study Initiation and Data Collection

7. Conducted Parking Utilization Studies of Existing On & Off-Street Parking Spaces (April/May 2025)
   - Eastern Blvd, Dorsey Ave, Maryland Ave from Mace Ave/Riverside Dr to Stuart St

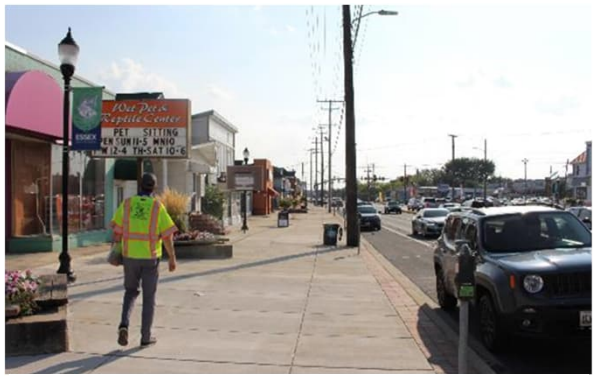




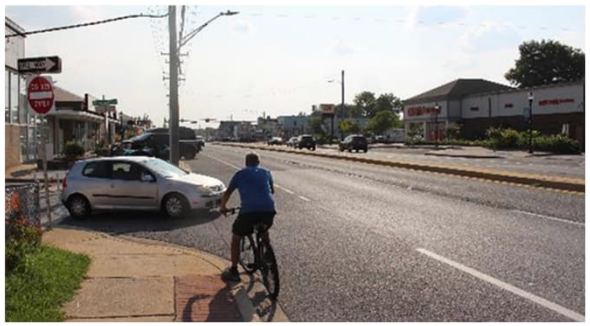


Task B: Existing Conditions Evaluation

1. Desktop & Field Review – Verified Existing Conditions
   - Parking, Transportation Infrastructure & Accessibility, Lighting, Operations
2. Developed Existing Corridor Condition Plans



Eastern Blvd Site Visit

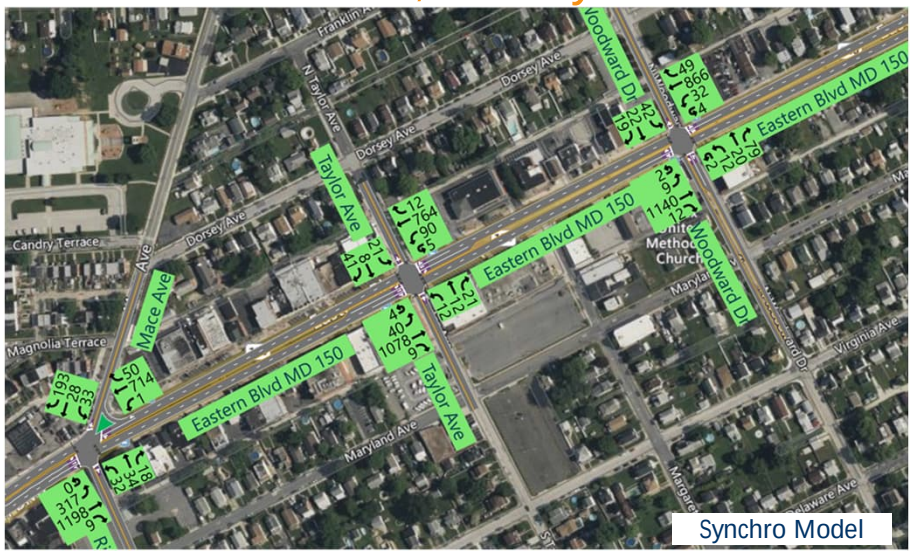


Eastern Blvd Existing Users

Eastern Blvd at Stuart St Existing Conditions

Task B: Existing Conditions Evaluation

3. Developed Existing AM/PM Peak Hour Corridor Synchro Models
4. Reviewed Vehicular/Pedestrian Crossing Signal Clearance Timings; Transit Ridership Data
5. Developed Aerial Display Diagrams of Crash Results & Identify Patterns
6. Coordinated Site Visit with Essex CDC, County & SHA to Discuss Findings & Needs



Synchro Model

Task B: Existing Conditions Evaluation

Intersection		Movement	AM				PM			
			Delay (LOS)		Queue Length (FT)	Storage Length (FT)	Delay (LOS)		Queue Length (FT)	Storage Length (FT)
1	Virginia Avenue/ Park and Ride Lot	EBL/T/R	2.5 (A)	2.5 (A)	124	-	3.9 (A)	3.9 (A)	286	-
		WBT/R	1.7 (A)	1.7 (A)	110	-	2.2 (A)	2.2 (A)	118	-
		NBL	65.9 (E)	66.3 (E)	136	-	65.8 (E)	66.4 (E)	116	-
		NBT/R		60.5 (E)	20	-		61.4 (E)	23	-
		SBL	61.7 (E)	60.6 (E)	6	-	62.6 (E)	62.3 (E)	33	-
		SBR		62.3 (E)	10	-		63.2 (E)	26	-
		Overall	4.7 (A)		-		5.5 (A)		-	
2	Marie Avenue/ Terrace Road	EBL/T/R	1.2 (A)	1.2 (A)	116	-	1.1 (A)	1.1 (A)	177	-
		WBL/T/R	1.4 (A)	1.4 (A)	106	-	7.7 (A)	7.7 (A)	215	-
		NBL/T/R	66.5 (E)	66.5 (E)	15	-	66.7 (E)	66.7 (E)	51	-
		SBL/T/R	67.6 (E)	67.6 (E)	93	-	67.8 (E)	67.8 (E)	94	-
		Overall	3.1 (A)		-		6.1 (A)		-	
3	Helena Avenue (Unsignalized)	EBL/T/R	1.04 (A)	1.04 (A)	58	-	1.16 (A)	1.16 (A)	124	-
		WBL/T/R	0.23 (A)	0.23 (A)	19	-	1.04 (A)	1.04 (A)	39	-
		NBL/T/R	22.16 (C)	22.16 (C)	21	-	130.82 (F)	130.82 (F)	37	-
		SBL/T/R	69.46 (F)	69.46 (F)	69	-	176.15 (F)	176.15 (F)	101	-
		Overall	2.3 (A)		-		5.8 (A)		-	
4	Wiltshire Road (Unsignalized)	EBL/T	1.03 (A)	1.03 (A)	89	-	3.23 (A)	3.23 (A)	172	-
		WBT/R	0.0 (A)	0.0 (A)	8	-	0.0 (A)	0.0 (A)	10	-
		SBL/R	19.58 (C)	19.58 (C)	87	-	25.41 (D)	25.41 (D)	72	-
		Overall	1.4 (A)		-		2.7 (A)		-	
5	Mace Avenue/ Riverside Drive	EBL	21.9 (C)	69.7 (E)	239	350	23.0 (C)	68.4 (E)	408	350
		EBT/R		7.1 (A)	155	-		11.1 (B)	510	-
		WBL/T/R	14.9 (B)	14.9 (B)	292	-	32.2 (C)	32.2 (C)	307	-
		NBL/T/R	68.8 (E)	68.8 (E)	107	-	66.4 (E)	66.4 (E)	159	-
		SBL/T/R	71.6 (E)	71.6 (E)	477	-	100.3 (F)	100.3 (F)	570	-
		Overall	28.3 (C)		-		34.6 (C)		-	
6	Taylor Avenue	EBL	1.1 (A)	0.7 (A)	28	160	2.0 (A)	1.3 (A)	51	160
		EBT/R		1.1 (A)	49	-		2.1 (A)	103	-
		WBL	4.0 (A)	2.1 (A)	49	150	2.4 (A)	2.7 (A)	97	150
		WBT/R/		4.1 (A)	141	-		2.4 (A)	133	-
		NBL/T/R	71.6 (E)	71.6 (E)	69	-	67.1 (E)	67.1 (E)	94	-
		SBL/T/R	68.0 (E)	68.0 (E)	45	-	65.9 (E)	65.9 (E)	117	-
		Overall	4.7 (A)		-		5.7 (A)		-	

Existing Capacity Analysis Summary

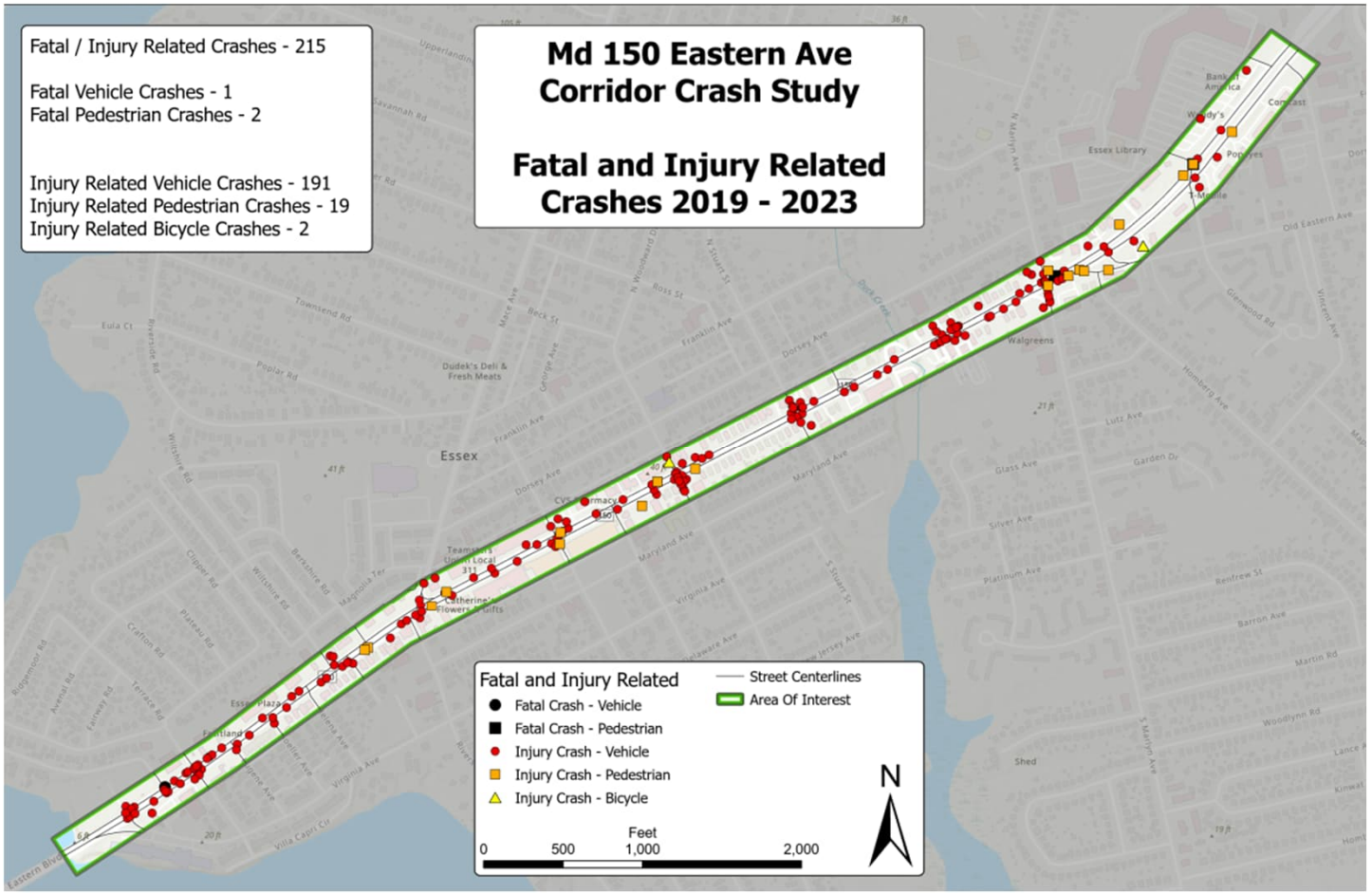
Task B: Existing Conditions Evaluation

Intersection		Movement	AM Delay (LOS)		AM Queue Length (FT)	AM Storage Length (FT)	PM Delay (LOS)		PM Queue Length (FT)	PM Storage Length (FT)
7	Woodward Drive	EBL/T/R	0.8 (A)	0.8 (A)	70	-	2.3 (A)	2.3 (A)	137	-
		WBL/T/R	1.5 (A)	1.5 (A)	122	-	1.1 (A)	1.1 (A)	122	-
		NBL	63.2 (E)	63.0 (E)	58	100	60.8 (E)	60.4 (E)	50	100
		NBT/R		63.2 (E)	161	-		60.9 (E)	142	-
		SBL/T/R	65.7 (E)	65.7 (E)	85	-	82.2 (F)	82.2 (F)	121	-
		Overall	8.2 (A)		-		7.6 (A)		-	
8	Stuart Street (Unsignalized)	EBL/T/R	0.78 (A)	0.78 (A)	35		2.67 (A)	2.67 (A)	79	
		WBL/T/R	2.43 (A)	2.43 (A)	70		1.67 (A)	1.67 (A)	73	
		NBL/T/R	11.31 (B)	11.31 (B)	48		26.31 (D)	26.31 (D)	46	
		SBL/T/R	26.61 (D)	26.61 (D)	46		37.63 (E)	37.63 (E)	45	
		Overall	2.3 (A)		-		2.9 (A)		-	
9	Marilyn Drive	EBL	11.7 (B)	10.9 (B)	78	230	12.7 (B)	10.6 (B)	158	230
		EBT		15.7 (B)	206	-		17.3 (B)	356	-
		EBR		0.1 (A)	0	-		0.3 (A)	173	-
		WBL	18.2 (B)	11.7 (B)	110	-	23.8 (C)	46.4 (D)	208	-
		WBT/R		19.5 (B)	229	-		16.8 (B)	242	-
		NBL	65.3 (E)	69.8 (E)	303	350	74.3 (E)	85.2 (F)	345	350
		NBT		69.8 (E)	339	-		82.8 (F)	419	-
		NBR		57.0 (E)	152	390		60.1 (E)	256	390
		SBL	65.1 (E)	71.2 (E)	203	190	64.4 (E)	70.4 (E)	230	190
		SBT/R		60.5 (E)	125			59.9 (E)	271	-
		Overall	32.6 (C)		-		31.5 (C)		-	
10	Old Eastern Avenue	EBL	1.7 (A)	1.8 (A)	40	100	1.9 (A)	2.0 (A)	52	100
		EBT		1.7 (A)	73	-		1.9 (A)	128	-
		WBU	1.2 (A)	0.4 (A)	3	200	3.1 (A)	1.3 (A)	12	200
		WBT		1.2 (A)	135	-		3.1 (A)	349	-
		NBL	68.8 (E)	68.3 (E)	59	-	68.4 (E)	68.7 (E)	84	-
		NBT/R		69.3 (E)	76	-		68.2 (E)	61	-
		SBL/T/R	57.0 (E)	57.0 (E)	47	-	55.5 (E)	55.5 (E)	62	-
		Overall	11.1 (B)		-		11.2 (B)		-	
11	Middlesex Shopping Center/ Selig Avenue	EBL	11.5 (B)	80.7 (F)	98	300	21.1 (C)	78.6 (E)	263	300
		EBT		7.3 (A)	169	-		14.3 (B)	343	-
		EBR		9.6 (A)	21	-		18.8 (B)	51	-
		WBL	15.0 (B)	70.4 (E)	115	365	32.2 (C)	88.2 (F)	463	365
		WBT/R		10.8 (B)	289	-		21.5 (C)	828	-
		NBL	67.9 (E)	67.0 (E)	17	-	65.8 (E)	63.6 (E)	52	-
		NBT/R		68.2 (E)	52	-		66.5 (E)	187	-
		SBT	67.5 (E)	68.6 (E)	71	-	69.4 (E)	75.9 (E)	267	-
		SBR		66.3 (E)	42	-		57.4 (E)	79	-
		Overall	16.9 (B)		-		33.7 (C)		-	

Existing Capacity Analysis Summary

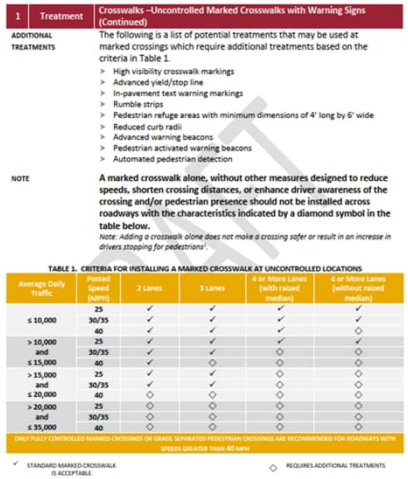
Task B: Existing Conditions Evaluation

Task B: Existing Conditions Evaluation



Task C: Alternative Solutions

1. Develop Initial Countermeasure Sketches to Evaluate Impacts
2. Develop Countermeasure Synchro Models to Evaluate Traffic Impacts
3. Perform Other Traffic Studies of Proposed Solutions Considered
   - Signal & Pedestrian Crossing Warrant Analyses; Speed Limit, NTOR & LPI Evaluations



1	Treatment	Crosswalks –Uncontrolled Marked Crosswalks with Warning Signs (Continued)
ADDITIONAL TREATMENTS		The following is a list of potential treatments that may be used at marked crossings which require additional treatments based on the criteria in Table 1. ➢ High visibility crosswalk markings ➢ Advanced yield/stop line ➢ In-pavement text warning markings ➢ Rumble strips ➢ Pedestrian refuge areas with minimum dimensions of 4' long by 6' wide ➢ Reduced curb radii ➢ Advanced warning beacons ➢ Pedestrian activated warning beacons ➢ Automated pedestrian detection
NOTE		**A marked crosswalk alone, without other measures designed to reduce speeds, shorten crossing distances, or enhance driver awareness of the crossing and/or pedestrian presence should not be installed across roadways with the characteristics indicated by a diamond symbol in the table below.** *Note: Adding a crosswalk alone does not make a crossing safer or result in an increase in drivers stopping for pedestrians[1].*

TABLE 1. CRITERIA FOR INSTALLING A MARKED CROSSWALK AT UNCONTROLLED LOCATIONS

Average Daily Traffic	Posted Speed (MPH)	2 Lanes	3 Lanes	4 or More Lanes (with raised median)	4 or More Lanes (without raised median)
≤ 10,000	25	✓	✓	✓	✓
	30/35	✓	✓	✓	✓
	40	✓	✓	✓	◇
> 10,000 and ≤ 15,000	25	✓	✓	✓	✓
	30/35	✓	✓	◇	◇
	40	✓	◇	◇	◇
> 15,000 and ≤ 20,000	25	✓	✓	◇	◇
	30/35	✓	✓	◇	◇
	40	◇	◇	◇	◇
> 20,000 and ≤ 35,000	25	◇	◇	◇	◇
	30/35	◇	◇	◇	◇
	40	◇	◇	◇	◇

ONLY FULLY CONTROLLED MARKED CROSSINGS OR GRADE SEPARATED PEDESTRIAN CROSSINGS ARE RECOMMENDED FOR ROADWAYS WITH SPEEDS GREATER THAN 40 MPH

✓ STANDARD MARKED CROSSWALK IS ACCEPTABLE

◇ REQUIRES ADDITIONAL TREATMENTS

SHA Uncontrolled Crosswalk Treatment Criteria

Task C: Alternative Solutions

4. Identify Pros/Cons for Each Countermeasure Alternative
5. Identify Recommended Countermeasures to Retain
   Prioritize Based on Short- and Long-Term Improvements
6. Meet with Community & Agencies to Discuss Findings & Solutions to Consider

Task C: Alternative Solutions

Speed Management Solutions

- Narrowed Lanes – Restriping
- Additional/Enhanced Speed Limit Signage
- Bump-outs at Crosswalks/Parking

The Countermeasures

- Barrier Separated Bike Lanes
- Continental Crosswalks
- Green Pavement for Bike Lanes
- Hardened Centerlines
- In-Lane Floating Bus Stops
- Lane Width Reduction
- Leading Pedestrian Intervals
- Midblock Crosswalks
- No Turn on Red
- Pedestrian Hybrid Beacon
- Posted Speed Limit Reduction
- Protected Intersections
- Rectangular Rapid Flashing Beacon

SHA Context Driven Toolkit List

Task C: Alternative Solutions

Safety Solutions

- Signal Clearance Interval Updates – Pedestrian & Vehicular
- Signal Phasing Updates
- Leading Pedestrian Intervals
- No Turn on Red Restrictions
- Mid-block Pedestrian Crossings
- Lighting Upgrades
- On-Street Parking Improvements / Removal

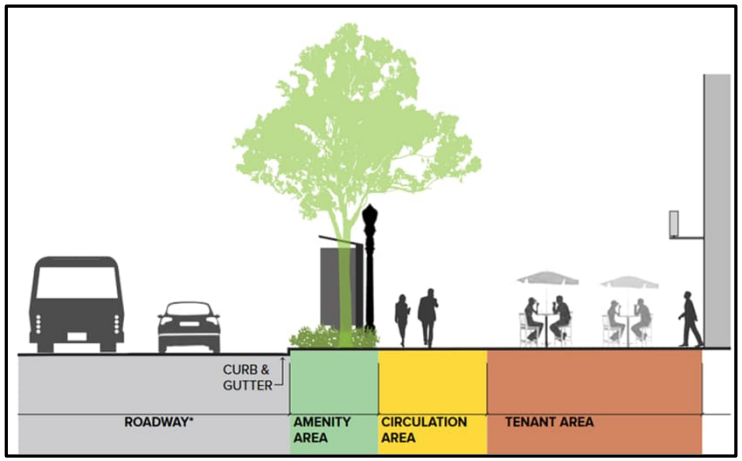
Task C: Alternative Solutions

Accessibility Solutions

- Additional Signalized Pedestrian Crossings
- Median and Driveway Access Improvements
- Left Turn Lanes / Turn Restrictions
- Separate Marked Bike Lanes
- Additional ADA Improvements – Ramps, Sidewalks, Driveways, Signals

Other Transportation Solutions

- Signal Equipment Upgrades – Pedestrian and Vehicular
- Corridor Beautification – Trees
- Redistribute Sidewalk Spaces



Task D: Summary Report and Presentation

1. Finalize Recommended Improvement Concept Plans
2. Develop Preliminary Construction Cost Estimates
3. Prepare Summary Report
4. Prepare Findings Presentation