



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

NICOLE MAJESKI  
SECRETARY

September 26, 2024

Natalie Magdeburger  
800 Coastal Highway  
Fenwick Island, DE 19944

RE: Crosswalk at Bayard Street and Route 1 within the Town of Fenwick Island, DE

Dear Mayor Magdeburger:

I am writing in response to your August 8, 2024 letter regarding the intersection of SR 1 and Bayard Street.

DelDOT understands the Town of Fenwick Island's concerns with utilizing corridor access countermeasures at the intersection of SR 1 and Bayard Street and the accessibility impacts to Town facilities and emergency services. The enclosed Traffic Study presents four alternatives for the intersection of SR 1 and Bayard Street. If the Town of Fenwick Island would like to setup a meeting to discuss the Traffic Study in detail, please reach out to me directly so we can arrange a date and time for the meeting. Also, please take note of our request in the "Recommendations" section found on the last page of the Traffic Study. We are requesting the Town of Fenwick Island review the proposed alternatives and select 1 of the 4 alternatives to include in the future *SR 1 Sidewalks from Lighthouse Road to Lewes Street* project in DelDOT's Capital Transportation Program. Keep in mind, if the Town of Fenwick Island has interest in pursuing 1 of the 4 alternatives prior to the capital project, the Town of Fenwick Island is responsible to obtain the necessary funding for a separate project.

As part of the August 2024 letter, there was mention about the installation of supplemental post-mounted pedestrian warning signs within the median of SR 1. Post-mounted pedestrian warning signs are infeasible due to the narrow median, required offset from the edge of sign panel to the edge of travel lane(s), and the strict sizing and shape templates for signage as outlined in the *Manual for Uniform Traffic Control Devices (MUTCD)*. However, the Town may enter into a Right-of-Way Use Agreement with DelDOT that allows the Town to procure, install, and maintain in-roadway STATE LAW – YIELD TO PEDESTRIAN signage which is noted on the last page of the Traffic Study. If the Town of Fenwick Island would like to pursue the usage of the in-roadway



September 26, 2024

Crosswalk at Bayard Street and Route 1 within the Town of Fenwick Island, DE

Page 2 of 2

STATE LAW – YIELD TO PEDESTRIAN signage, please reach out to me directly so we can provide you with a copy of the Right-of-Way Use Agreement.

Also as part of the August 2024 letter, supplementary pedestrian pavement markings (pedestrian symbol + “XING”) was mentioned. Similar to the previous paragraph, a Right-of-Way Use Agreement is required if the Town of Fenwick Island would like to pursue supplementary pedestrian pavement markings. The Town would be responsible for funding, installation, and maintenance of the pavement markings. However, the Town has the ability to work directly with DelDOT’s existing Pavement Marking contractor (<https://mmp.delaware.gov/Contracts>) to iron out the necessary details for installation. As part of the agreement process, details on the type of material, size and shape of the symbols, and location will be outlined. If the Town of Fenwick Island would like to pursue supplementary pedestrian pavement markings, please reach out to me directly so we can provide you with a copy of the Right-of-Way Use Agreement.

Lastly, the future *SR 1 Sidewalks from Lighthouse Road to Lewes Street* project in DelDOT’s Capital Transportation Program is managed by Jeff Niezgoda, DelDOT’s Assistant Director for the Active Transportation & Community Connections Section within our Planning Division. We encourage the Town of Fenwick Island to engage the project team (contact information is below) so ideas, questions, or concerns, can be considered throughout the design process.

Should you have any questions or comments regarding the traffic study or to start the Right-of-Way Use Agreement process, please reach out to me directly at 302-659-4084 or [peter.haag@delaware.gov](mailto:peter.haag@delaware.gov) while Jeff Niezgoda, DelDOT’s Assistant Director, can be contacted at 302-760-2178 or [jeff.niezgoda@delaware.gov](mailto:jeff.niezgoda@delaware.gov) regarding the *SR 1 Sidewalks from Lighthouse Road to Lewes Street* project in DelDOT’s Capital Transportation Program.

Sincerely,



Peter Haag

Chief of Traffic Engineering

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Enclosure: SR 1 and Bayard Street Traffic Study

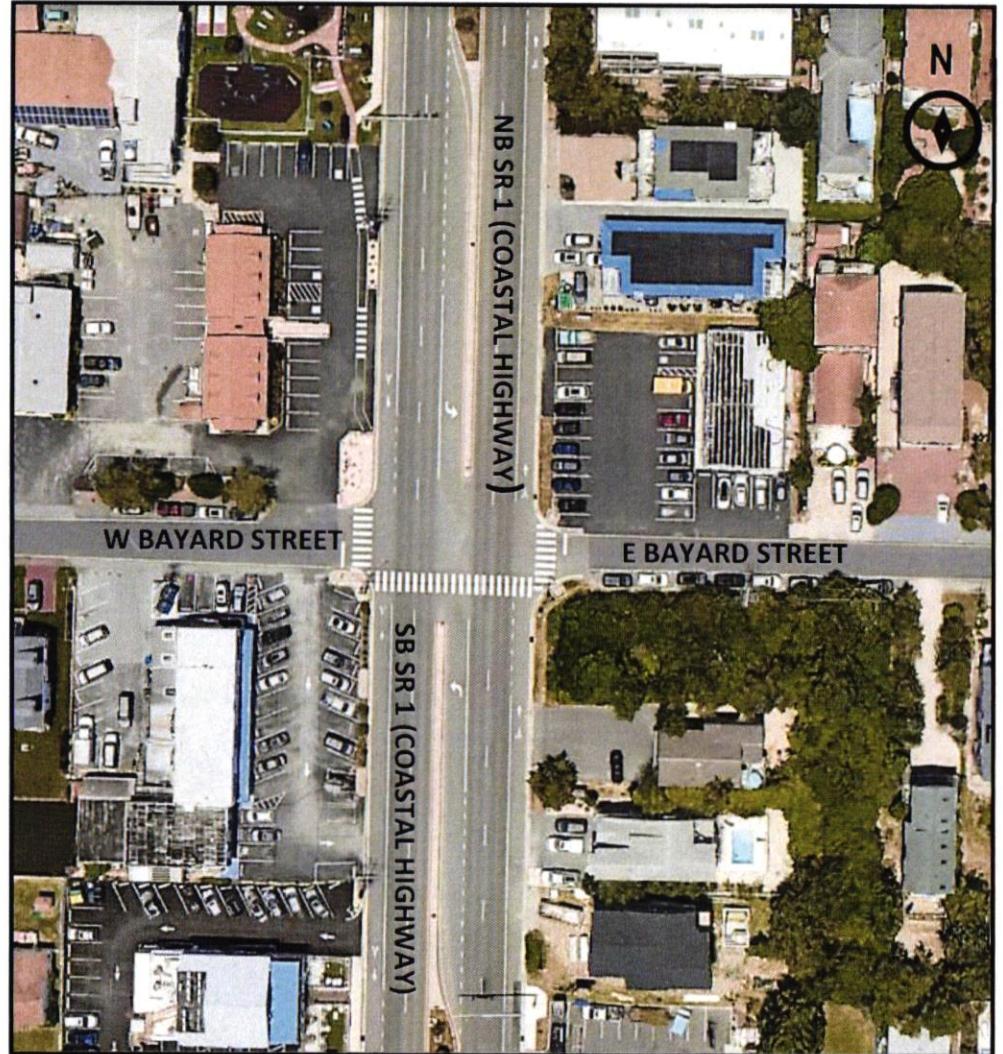
cc: Honorable Senator Gerald Hocker  
Honorable Representative Ronald Gray  
Nicole Majeski, Cabinet Secretary  
Shanté Hastings, Deputy Secretary/Chief Engineer  
Pam Steinbach, Director, Planning  
Sharon Bryson, Office of Highway Safety  
Maureen Kelley, Deputy Director, Design  
Jeff Niezgoda, Assistant Director, Planning  
Sonya LaGrand, Traffic Studies Manager  
Jon Derryberry, Traffic Studies Engineer



# SR 1 (Coastal Highway) at Bayard Street

Traffic Engineering Study /  
Alternatives Assessment

SR 1 at Bayard Street  
Town of Fenwick Island  
Sussex County, DE



September 2024



# SR 1 (Coastal Highway) at Bayard Street

## Overview

- The Town of Fenwick Island requested an evaluation at SR 1 (Coastal Highway) and Bayard Street due to concerns regarding pedestrian safety; this study includes:
  - Collection of vehicle, pedestrian, & bicycle movement data
  - Review of intersection crash data
  - Field investigations of roadway characteristics & infrastructure
  - Measuring motorist yielding compliance at the existing crosswalk
  - Examination of criteria provided in the MUTCD
  - Analysis of intersection capacity, delay, & queuing
  - Development of intersection control alternatives





# SR 1 (Coastal Highway) at Bayard Street

## Site Overview

- Unsignalized intersection (stop-controlled movements on minor street)
  - Intersection located within signalized Zone 016 (SR 54 to James Street)
  - Dagsboro Street signal approx. 700 ft north of Bayard Street
  - South Carolina Avenue signal approx. 590 ft south of Bayard Street
- Existing leased light on the southwest corner
- Pavement in fair condition – cracking present
- Surrounding land use: government, retail, commercial, & residential
  - Fenwick Island Town Hall, Police Department, Public Works building, and satellite fire station located on the northwest corner
- Existing crosswalks on the east, west, & south legs
  - South-leg crosswalk has pushbutton-actuated RRFB (installed spring 2020; device is owned/maintained by the Town)
  - ADA compliant curb ramps on the northeast, southeast, & southwest corners
  - Non-compliant curb ramp on the northwest corner
- Existing sidewalk on the southbound intersection approach
  - Combination of 5 ft concrete sidewalk & 5 ft striped “sidewalk” on asphalt pavement
- Non-compliant DART bus stop (Route 208) at the southwest corner
  - Non-compliant northbound bus stop located approx. 130 feet north of E Bayard Street



# SR 1 (Coastal Highway) at Bayard Street

## Field Observations

### SR 1

- Functional classification is Principal Arterial
- 2023 annual average daily traffic (AADT) is 11,709 vehicles per day
- Two-lane divided roadway with dedicated bike lane in the shoulder
  - Left-turn/u-turn lane
  - Through lane
  - Through/right-turn lane
- Posted speed limit 35 mph on SR 1

### Bayard Street

- Functional classification is Local
- Two-lane undivided roadway
  - Shared left-turn/through/right-turn lane
- Posted speed limit 15 mph on Bayard Street

### Field observations were conducted on Thursday, June 27, 2024

- Red signals at the north and south signalized intersections (Dagsboro Street and South Carolina Avenue) resulted in queuing through Bayard Street
- Pedestrians utilized the existing crosswalk on the south leg (activated RRFB)
- Bicycles present in the northbound & southbound SR 1 shoulder/bike lane



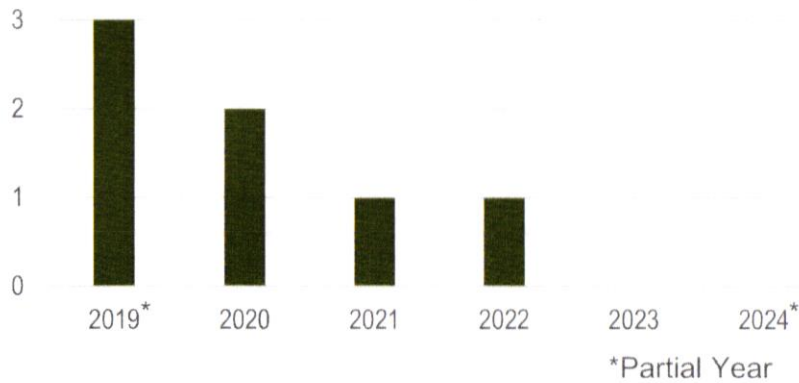
# SR 1 (Coastal Highway) at Bayard Street

## Crash Summary

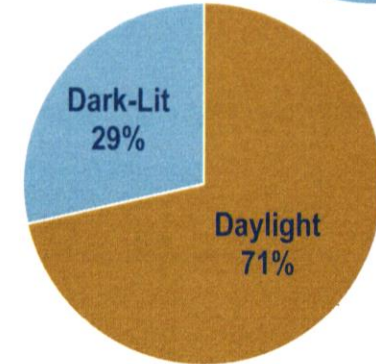
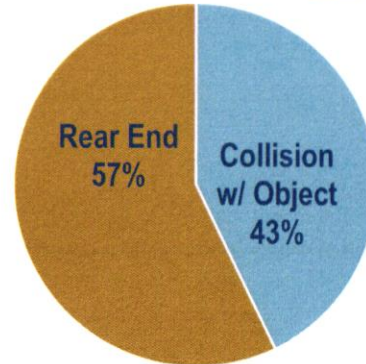
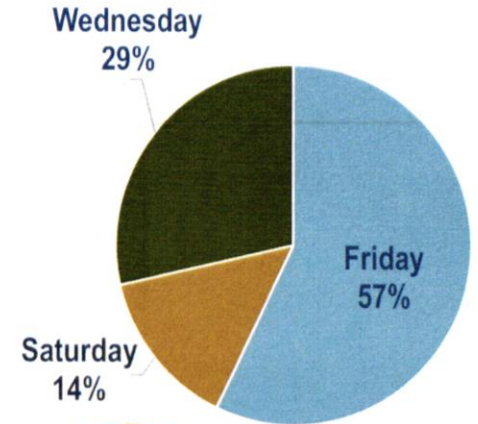
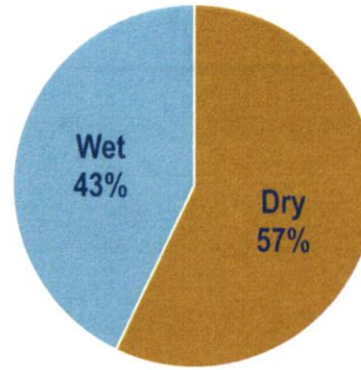
### 7 Crashes (4/17/2019 – 4/17/2024)

- 4 SB rear end crashes
  - 3 occurred during summer months (June through August)
  - 1 involved vulnerable road user (vehicle failed to stop behind a vehicle yielding to a pedestrian)
- 3 NB collision with fixed object crashes

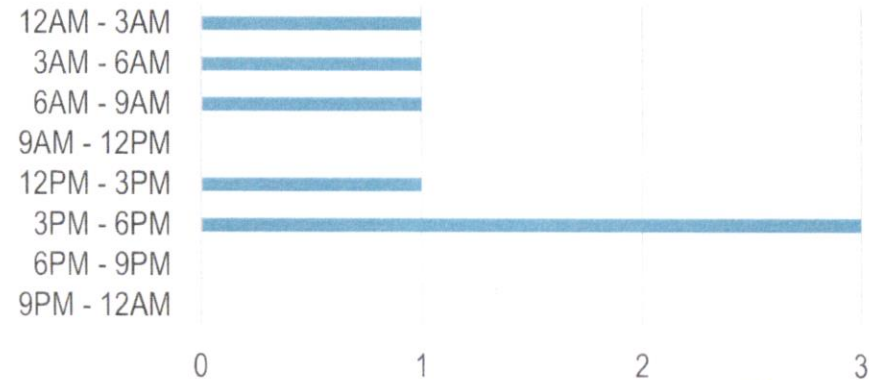
Crashes by Year



Crashes by Month



Time of Day Crashes



# SR 1 (Coastal Highway) at Bayard Street

## Field Observations

### Field observation photos - (southeast corner)

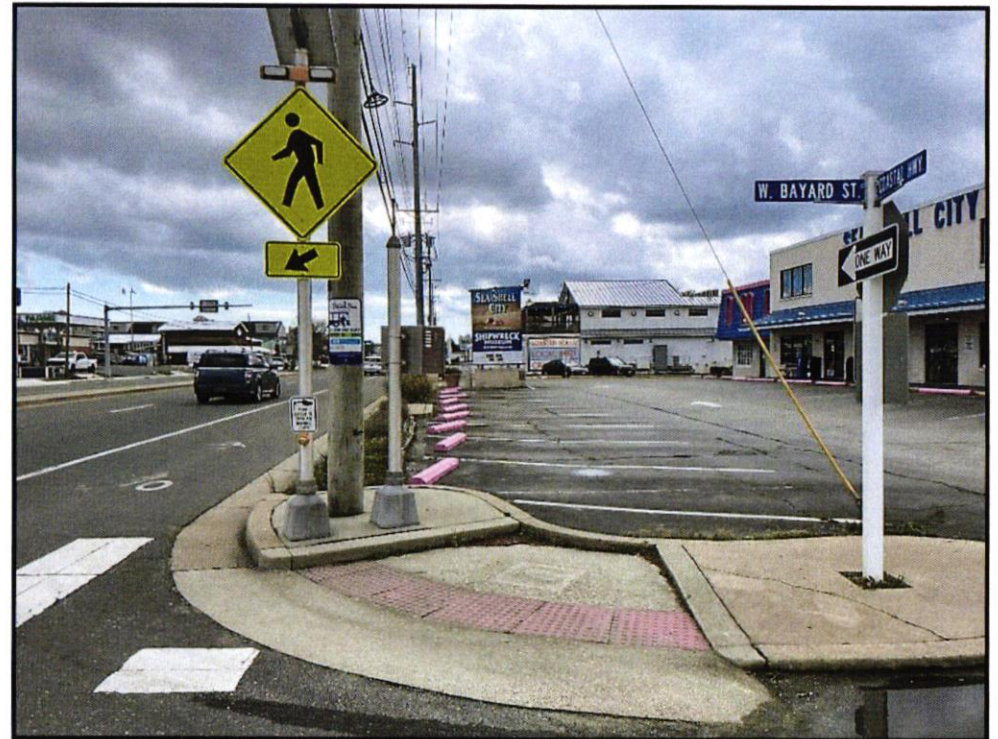




# SR 1 (Coastal Highway) at Bayard Street

## Field Observations

### Field observation photos - (southwest corner)





# SR 1 (Coastal Highway) at Bayard Street

## Field Observations

### Field observation photos - (northeast corner)

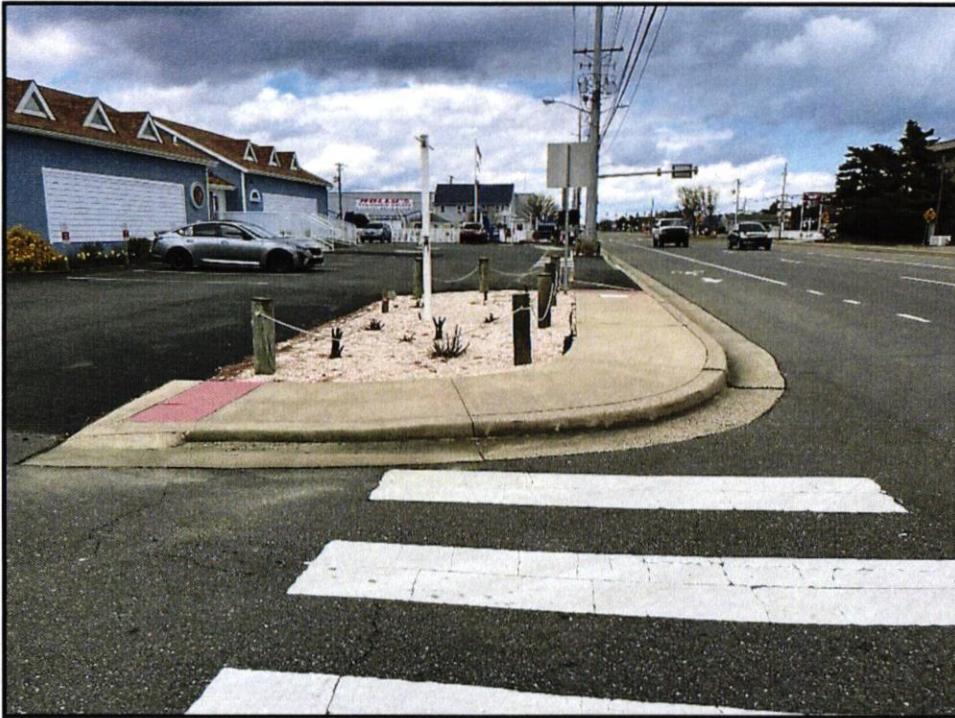




# SR 1 (Coastal Highway) at Bayard Street

Field Observations

## Field observation photos - (northwest corner)





# SR 1 (Coastal Highway) at Bayard Street

## Field Observations

### Field observation photos - (SR 1 intersection approaches)



NB Approach



SB Approach



# SR 1 (Coastal Highway) at Bayard Street

## Pedestrian Crossing Study & Speed Study Results

### SR 1

- Data collected during field observations on May 1, 2024 & June 27, 2024, using a handheld speed radar
- Existing posted speed limit is 35 MPH along SR 1
- Existing radar speed limit assembly approx. 260 ft south of Bayard Street (Town owned/maintained)

SR 1 at Bayard Street	Pre-Peak Study (May 2024)		Peak Study (June 2024)	
	NB	SB	NB	SB
Average Speed (MPH)	35	32	29	34
85 <sup>th</sup> Percentile Speed (MPH)	39	36	33	39





# SR 1 (Coastal Highway) at Bayard Street

## Pedestrian Crossing Study & Speed Study Results

SR 1 at Bayard Street	Pre-Peak Study (May 2024)		Peak Study (June 2024)	
	NB	SB	NB	SB
Time	1:45 PM - 2:30 PM		3:30 PM – 4:53 PM	
Average Not Yielding	1.7	1.5	3.8	2.7
Average Delay (sec)	11	11	13	9
Average Not Yielding if 1 <sup>st</sup> Vehicle Doesn't Yield	2.4	2.1	4.2	3.5
Average Delay if 1 <sup>st</sup> Vehicle Doesn't Yield (sec)	13	13	14	10
Average Delay, Yield Crossing (sec)	10	10	13	9
Average Delay, Gap Crossing (sec)	12	12	12	6
% Yield Crossings	66%	55%	76%	90%
% Gap Crossings	34%	45%	24%	10%
% First Vehicle Yields	28%	27%	10%	23%

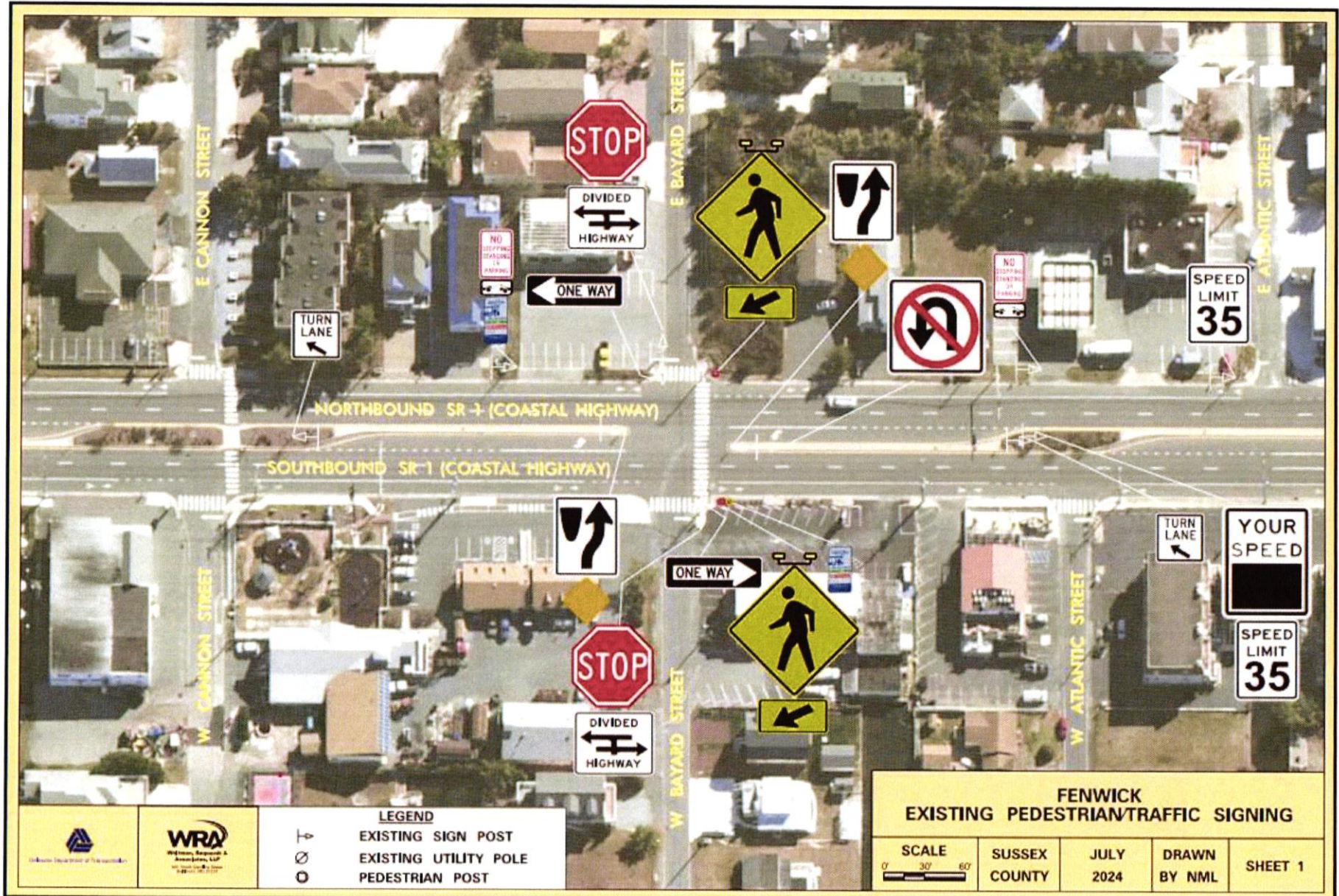
Overall, there is greater compliance during the pre-peak season study. During the peak study, the NB delay increased while SB decreased.

Note: RRFB was activated for the Pedestrian Crossing Study in May and June



# SR 1 (Coastal Highway) at Bayard Street

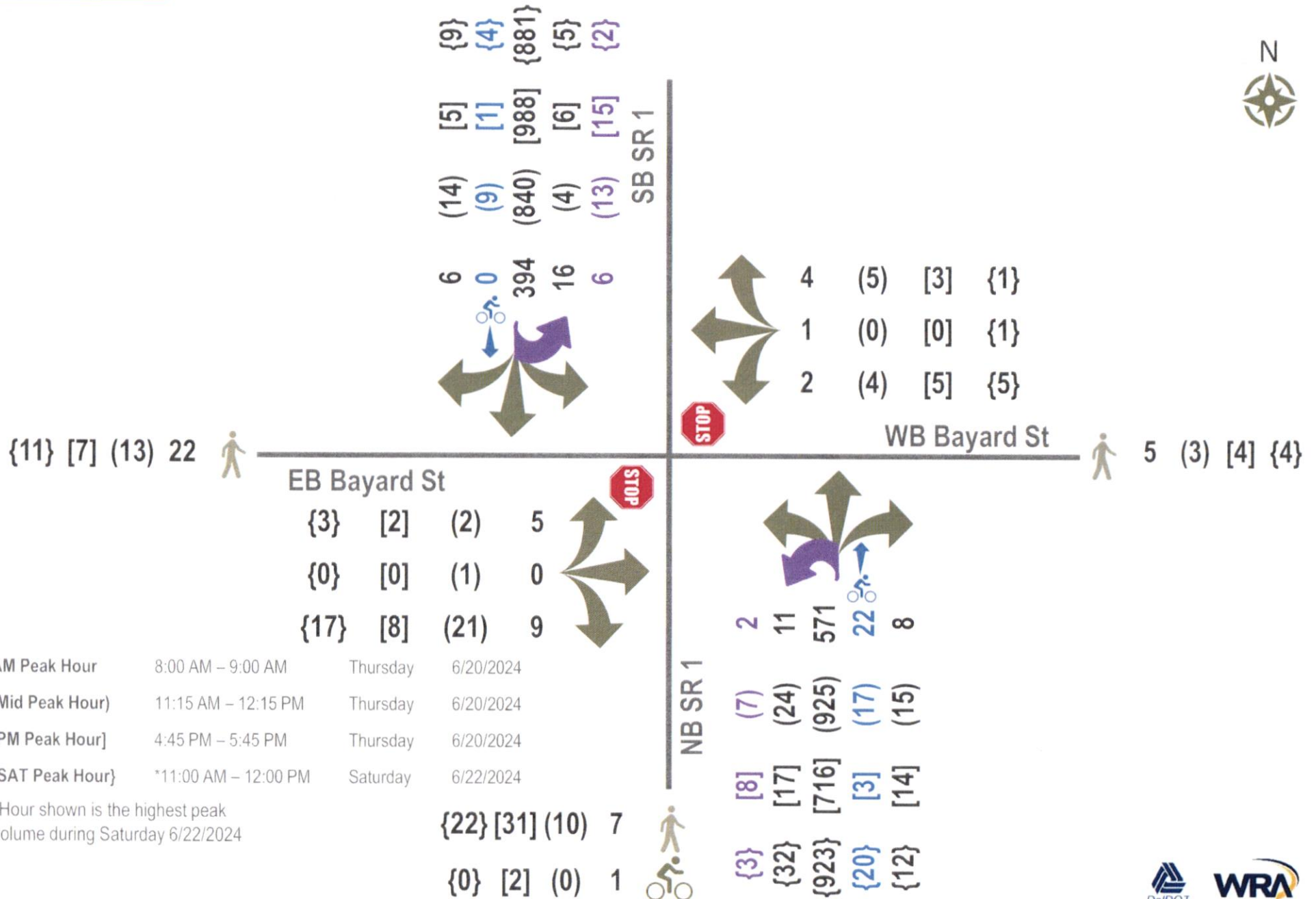
## Existing Signing Inventory





# SR 1 (Coastal Highway) at Bayard Street

## Intersection Volumes



AM Peak Hour	8:00 AM – 9:00 AM	Thursday	6/20/2024
(Mid Peak Hour)	11:15 AM – 12:15 PM	Thursday	6/20/2024
[PM Peak Hour]	4:45 PM – 5:45 PM	Thursday	6/20/2024
{SAT Peak Hour}	*11:00 AM – 12:00 PM	Saturday	6/22/2024

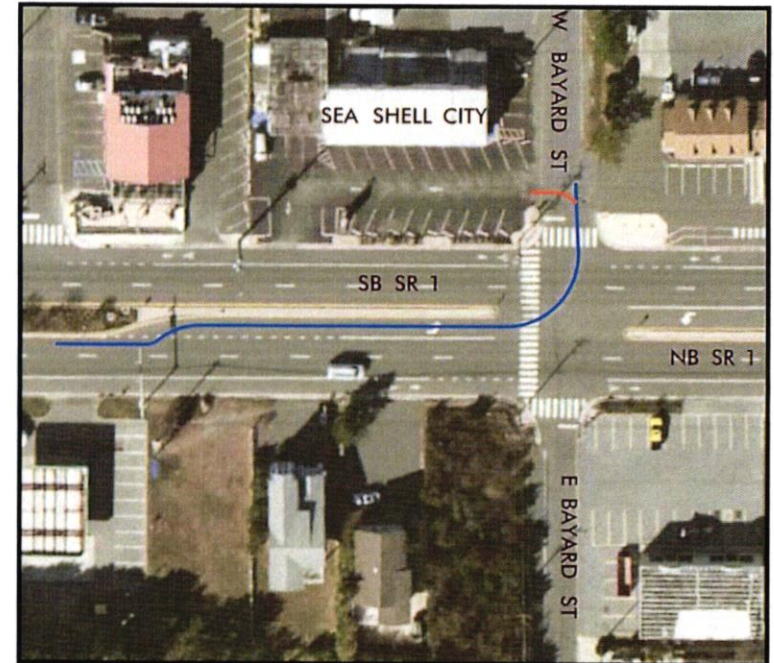
\*Hour shown is the highest peak volume during Saturday 6/22/2024



# SR 1 (Coastal Highway) at Bayard Street

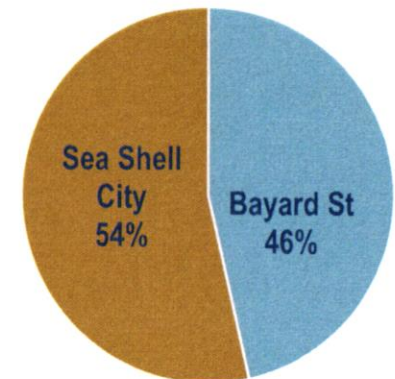
## Intersection Volumes – NB Left-turn/U-turn Analysis

Scenario	Total NBL	NBL Continuing WB on W Bayard Street	NBL Entering parking lot of Sea Shell City
AM Peak 8:00 AM - 9:00 AM	11	5	6
MID Peak 11:15 AM - 12:15 PM	24	12	12
PM Peak 4:45 PM - 5:45 PM	17	5	12
Summer Sat Peak 11:00 AM - 12:00 PM	32	17	15



Vehicle counts were manually conducted via Miovision footage. Overall, over 50% of vehicles are utilizing the Sea Shell City parking lot after executing a NB left-turn from NB SR 1. Due to the position of the camera, it is unclear if vehicles patronized Sea Shell City or utilized the parking lot to head SB on SR 1.

Per the Town's request, a NO U-TURN sign was placed for SR 1 NB traffic within the median. A NO THRU TRUCKS sign was placed by the Town at the Sea Shell City parking lot entrance. Fenwick Police were actively observed executing tickets to these "cut through" vehicles.

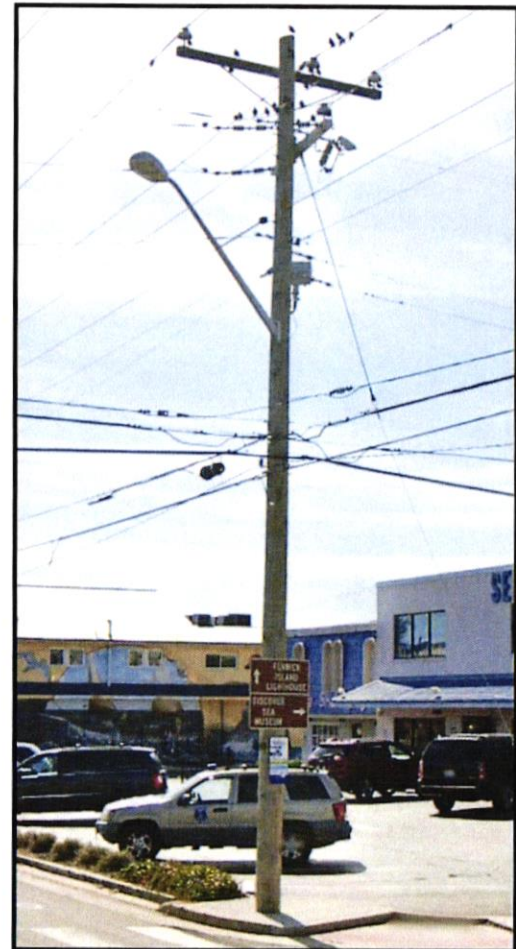




# SR 1 (Coastal Highway) at Bayard Street

## Summary of Previous Lighting Evaluation

- In April 2020, the Town of Fenwick Island requested that DeIDOT investigate continuous roadway lighting improvements along SR 1 from SR 54 (Lighthouse Road) to Lewes Street.
- Lighting evaluation completed in Spring 2020 which explored the following alternatives:
  1. Leased lighting improvements along SB SR 1
  2. Mongoose-Style leased lighting along SB SR 1
  3. New DeIDOT light standards along NB SR 1
  4. Replace/Upgrade aerial utilities along NB SR 1
- **Alternative 1 was installed in Fall 2022**
  - Alternative 4 was initially pursued but was dismissed due to utility and right-of-way impacts and coordination timeline
  - Field observations confirmed LED leased lighting along southbound SR 1
  - Existing 400W equivalent LED leased light at the Bayard Street intersection





# SR 1 (Coastal Highway) at Bayard Street

## Signal Warrant Analysis

WARRANT	WARRANT MET MIDWEEK	WARRANT MET WEEKEND
1. Eight-Hour Vehicular Volume	NO	NO
2. Four-Hour Vehicular Volume	NO	NO
3. Peak Hour	NO	NO
4. Pedestrian Volume	NO	NO
5. School Closing	N/A	N/A
6. Coordinated Signal System	N/A	N/A
7. Crash Experience	NO	NO
8. Roadway Network	N/A	N/A
9. Intersection Near Grade Crossing	N/A	N/A

**No Signal Warrants are met for the intersection of SR 1 and Bayard Street.**

A traffic signal is not supported and unjustified signals can result in excessive delay, excessive disobedience of signal indications and significant increases in the frequency of collisions (especially rear-end collisions).



# SR 1 (Coastal Highway) at Bayard Street

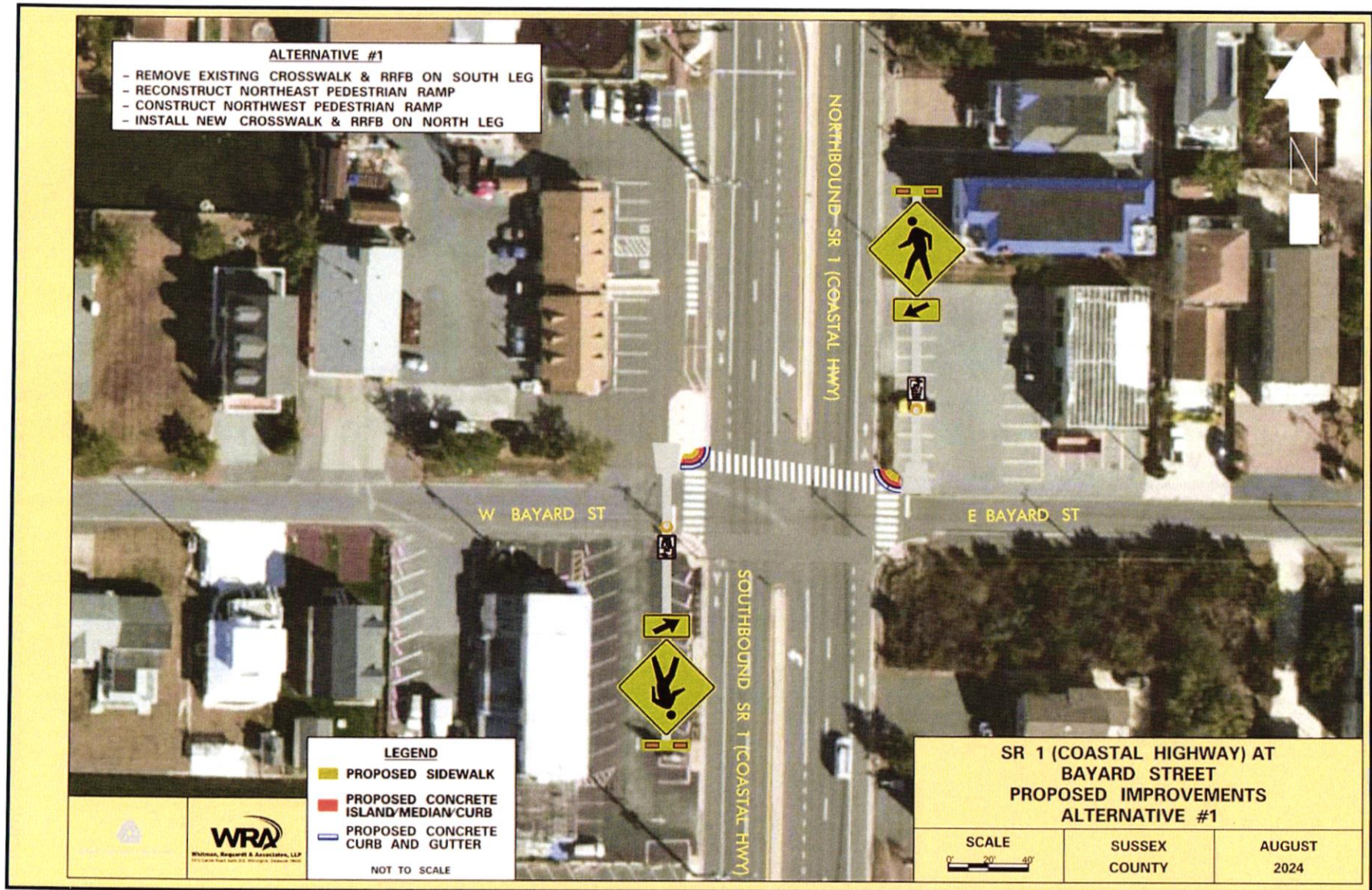
## Study Summary

- Design Alternatives:
  1. Relocate crosswalk and RRFB to the north leg while maintaining the existing roadway configuration.  
*\*Concept and cost estimate provided to the Town in April 2024*
  2. Eliminate Bayard Street EB and WB through/left-turn movements and install a staggered, two-stage crosswalk and RRFB with pedestrian refuge island while maintaining the SR 1 NB and SB left/U-turn movements (eliminates conflict between SR 1 pedestrian crossings and SR 1 left/U-turns)
  3. Eliminate SR 1 SB left/U-turn movement and provide two-stage crosswalk and RRFB on the north leg of SR 1 with pedestrian refuge in the median (provides full access to/from Town facilities)
  4. Eliminate Bayard Street EB and WB left-turn/through movements and SR 1 NB and SB left-turn/U-turn movements. Install a staggered, two-stage crosswalk & RRFB with pedestrian refuge in the median
- Town's Areas of Concern:
  - Numerous vehicles exiting Royal Farms (along NB SR 1 between Atlantic Street and Bayard Street) and making an illegal NB U-turn at Bayard Street, creating conflict with pedestrians crossing on the south leg
  - “Cut through” traffic making NB left and utilizing “Sea Shell City” parking lot to access SR 1 SB
  - Crossing, in general, is unfavorable due to length, no refuge, and NB left/U-turn conflict
  - The Town opposes movement restrictions to maintain access to Town/emergency facilities
- Considerations:
  - Overall safety and visibility of pedestrians
    - Lighting, vegetation/roadside features, roadway signage, pavement markings, and ADA compliant sidewalk and pedestrian connections.
  - Access to Fenwick Island Town Hall, Police Department, Public Works building, and satellite fire station
  - Potential drainage and/or utility impacts (for Alternatives 2 and 4)



# SR 1 (Coastal Highway) at Bayard Street

## Intersection Control Alternatives – Alternative #1



**Note:** Concept displays are not considered final design plans. Detailed design work will occur to understand various design elements and impacts.



# SR 1 (Coastal Highway) at Bayard St

## Synchro Analysis – Alternative #1

Delays / Level of Service & Queue Lengths / Travel Times

Scenario	EBL/T/R	WBL/T/R	NBL	SBL	Intersection
AM Peak	13 sec / B 2 ft	15 sec / C 1 ft	8 sec / A 1 ft	9 sec / A 2 ft	1 sec / A
PM Peak	16 sec / C 2 ft	23 sec / C 3 ft	11 sec / B 3 ft	9 sec / A 2 ft	0 sec / A
Summer Sat Peak	14 sec / B 4 ft	36 sec / E 4 ft	10 sec / B 4 ft	10 sec / A 1 ft	1 sec / A
Travel Time	7 sec	6 sec	11 sec	14 sec	-

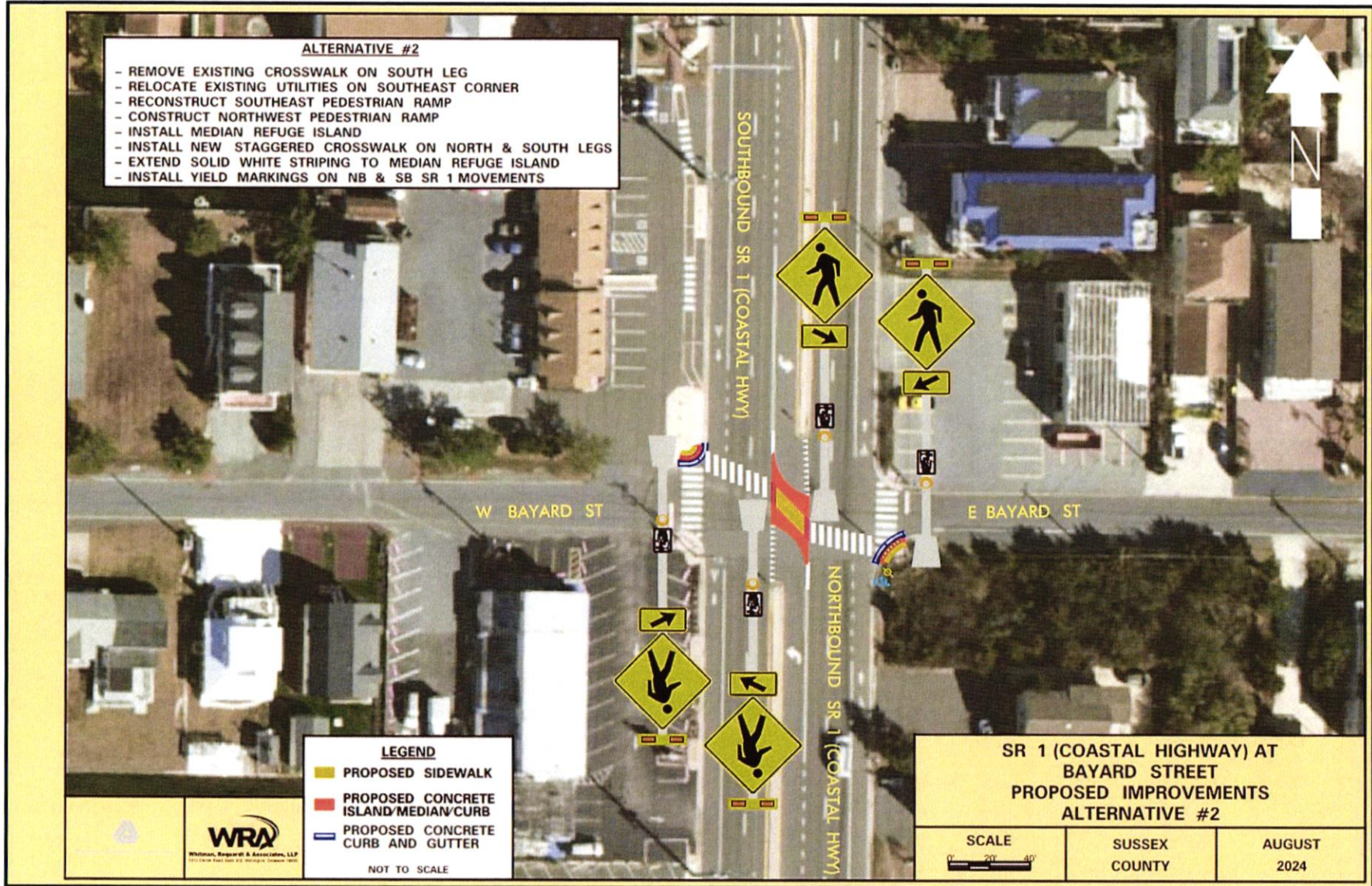
- Maintain existing lane configuration while relocating the pedestrian crossing and RRFB to the north leg of the intersection.





# SR 1 (Coastal Highway) at Bayard Street

## Intersection Control Alternatives – Alternative #2



**Note:** Concept displays are not considered final design plans. Detailed design work will occur to understand various design elements and impacts.



# SR 1 (Coastal Highway) at Bayard St

## Synchro Analysis – Alternative #2

Delays / Level of Service and Queue Lengths

Scenario	EBR	WBR	NBL	SBL	Intersection
AM Peak	10 sec / A 1 ft	10 sec / B 1 ft	8 sec / A 1 ft	9 sec / A 2 ft	1 sec / A
PM Peak	11 sec / B 1 ft	10 sec / B 1 ft	11 sec / B 3 ft	9 sec / A 2 ft	0 sec / A
Summer Sat Peak	11 sec / B 3 ft	10 sec / B 1 ft	10 sec / B 4 ft	10 sec / A 1 ft	0 sec / A

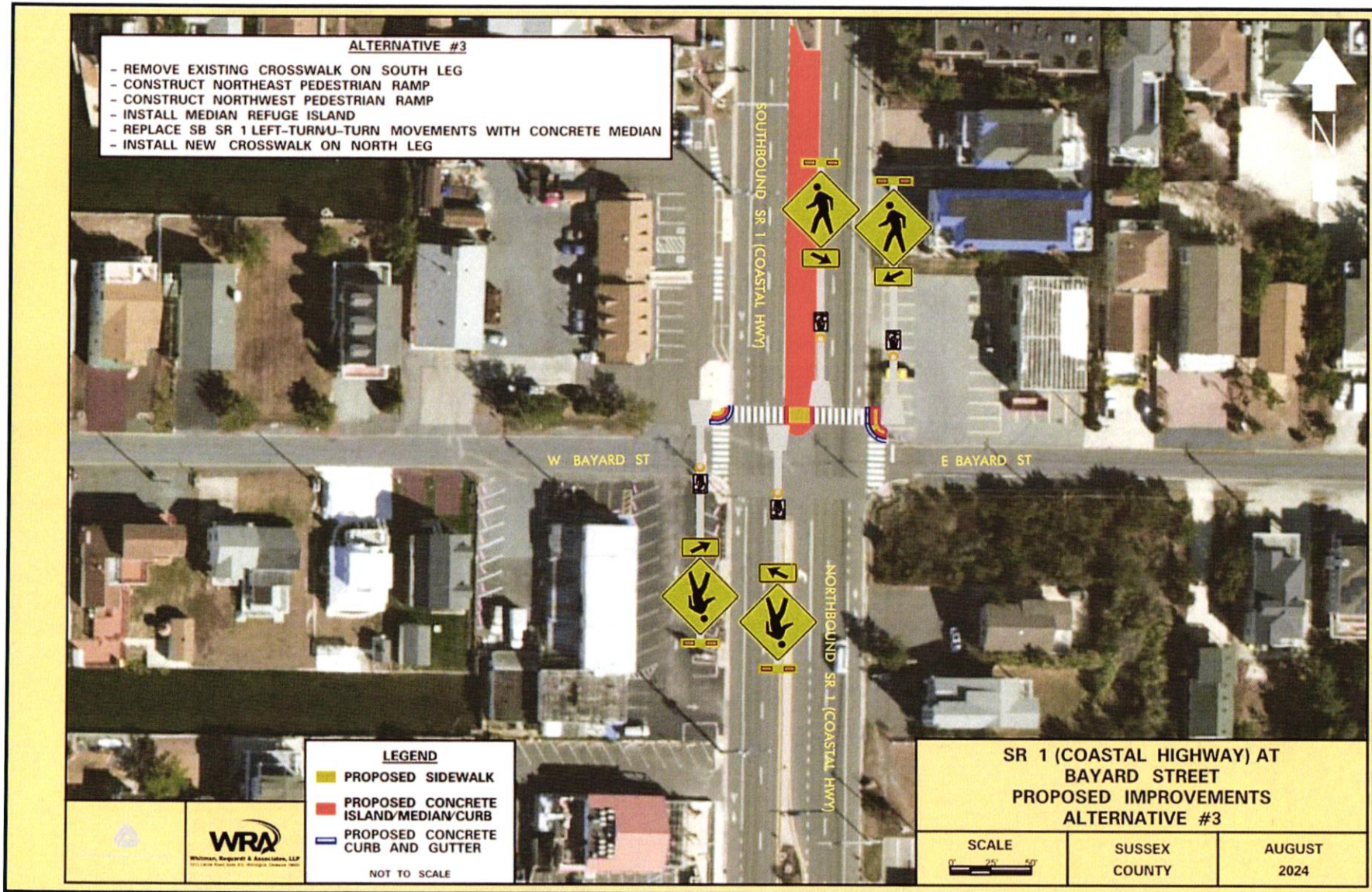
- EBT/L diverted south to South Carolina Avenue: 0-5 vehicles per hour
  - Travel Time: 39-42 sec
    - +32-35 seconds
- WBT/L diverted north to Dagsboro Street: 0-5 vehicles per hour
  - Travel Time: 35-38 sec
    - +29-32 sec





# SR 1 (Coastal Highway) at Bayard Street

## Intersection Control Alternatives – Alternative #3



**Note:** Concept displays are not considered final design plans. Detailed design work will occur to understand various design elements and impacts.



# SR 1 (Coastal Highway) at Bayard St

## Synchro Analysis – Alternative #3

Delays / Level of Service and Queue Lengths

Scenario	EBL/T/R	WBL/T/R	NBL	Intersection
AM Peak	13 sec / B 2 ft	15 sec / B 1 ft	8 sec / A 1 ft	0 sec / A
PM Peak	15 sec / C 2 ft	21 sec / C 3 ft	11 sec / B 3 ft	0 sec / A
Summer Sat Peak	14 sec / B 4 ft	35 sec / E 4 ft	10 sec / B 4 ft	1 sec / A

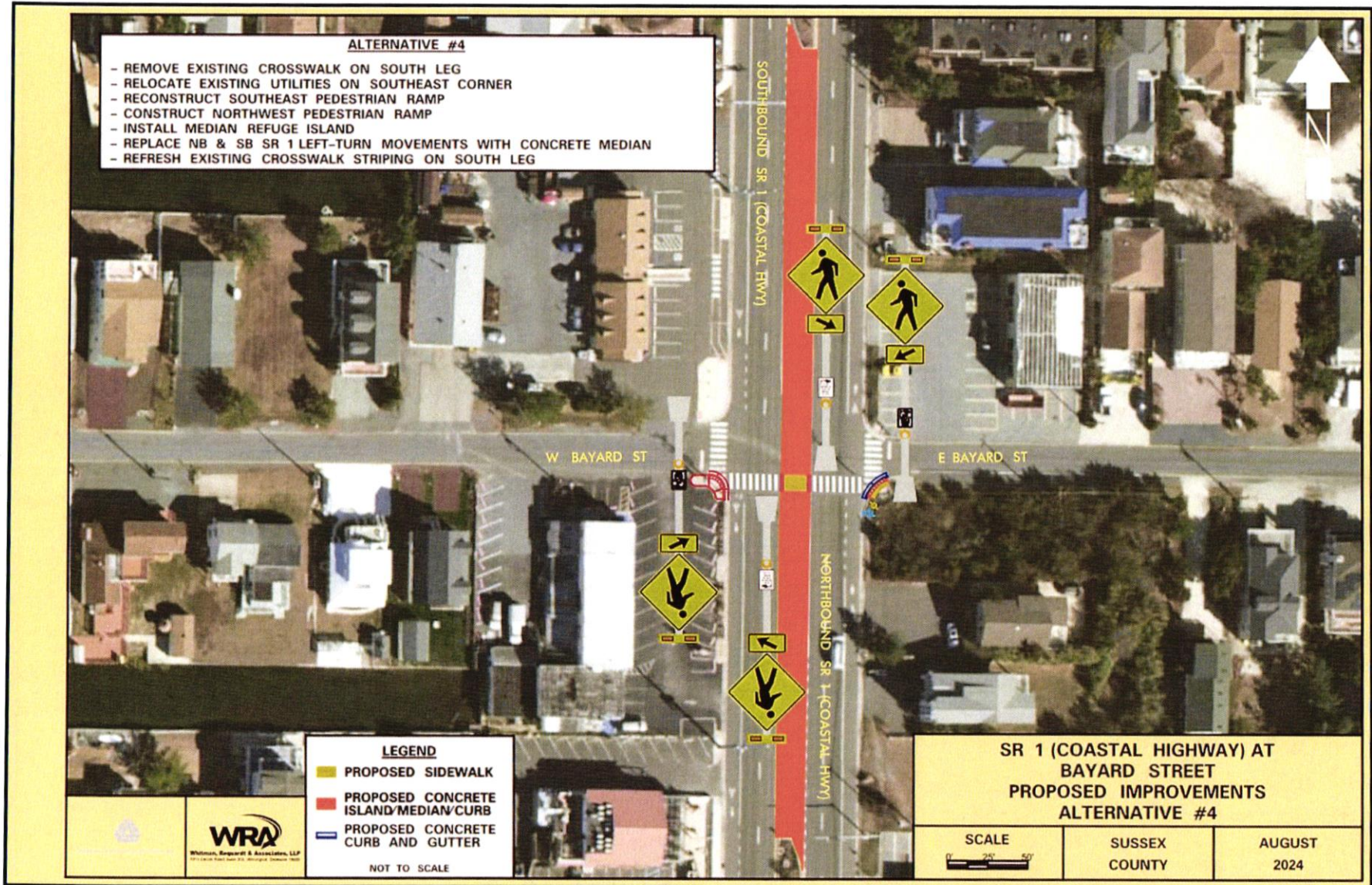
- SBL diverted south to South Carolina Avenue: 7-22 vehicles per hour
  - Travel Time: 24-27 sec
    - +10-13 sec





# SR 1 (Coastal Highway) at Bayard Street

## Intersection Control Alternatives – Alternative #4



**Note:** Concept displays are not considered final design plans. Detailed design work will occur to understand various design elements and impacts.



# SR 1 (Coastal Highway) at Bayard St

## Synchro Analysis – Alternative #4

Delays / Level of Service and Queue Lengths

Scenario	EBR	WBR	Intersection
AM Peak	10 sec / B 2 ft	10 sec / B 1 ft	0 sec / A
PM Peak	11 sec / B 1 ft	10 sec / B 1 ft	0 sec / A
Summer Sat Peak	11 sec / B 3 ft	10 sec / B 1 ft	0 sec / A

- NBL diverted north to Dagsboro Street: 13-35 vehicles per hour
  - Travel Time: 31-32 sec
    - +20-21 sec
- SBL diverted south to South Carolina Avenue: 7-22 vehicles per hour
  - Travel Time: 24-27 sec
    - +10-13 sec
- EBT/L diverted south to South Carolina Avenue: 0-5 vehicles per hour
  - Travel Time: 39-42 sec
    - +32-35 seconds
- WBT/L diverted north to Dagsboro Street: 0-5 vehicles per hour
  - Travel Time: 35-38 sec
    - +29-32 sec





# SR 1 (Coastal Highway) at Bayard Street

## Summary

- **Summary of Findings:**

- 7 crashes reported at the intersection over the 5-year study period from April 2019 – April 2024
  - No crashes involving pedestrians or bicyclists. One SB rear-end crash reported where vehicle failed to stop behind a vehicle yielding to a pedestrian (pedestrian was not involved).
  - Only 2 crashes reported since 2020
- 85<sup>th</sup> percentile speeds range from 33 to 39 MPH (posted speed limit = 35 MPH)
- Pedestrian crossing study resulted in average pedestrian delay between 9 and 13 seconds. The percentage of first-vehicle yields was greater during the May 2024 study; however, overall percentage of yield crossings was greater during the June 2024 study (likely due to limited gap crossing opportunities with higher traffic volumes).
- After assessing the considerations of the area and based on the Town's areas of concerns, it is recommended to pursue Alternative #1 or Alternative #3
  - Both alternatives eliminate frequent NB left-turn/U-turn conflict with pedestrians and allows for removal of NB U-turn prohibition
  - Enhanced ADA compliance at the intersection
  - Alternative #3 provides pedestrian refuge to allow for two-stage crossings with shorter crossing distances
  - Alternative #3 maintains access to/from Town and emergency facilities on the west side of the intersection and the SR 1 SB left/U-turn diversion is a low-volume movement with minimal travel time impacts (only one single-unit truck was observed making SR 1 SB left/U-turn movement during 26 hours of data collection from 6A-7P on Thursday 6/20/2024 and Saturday 6/22/2024)
- Signal warrants are not met for the intersection and full signalization is not an identified alternative to pursue



# SR 1 (Coastal Highway) at Bayard Street

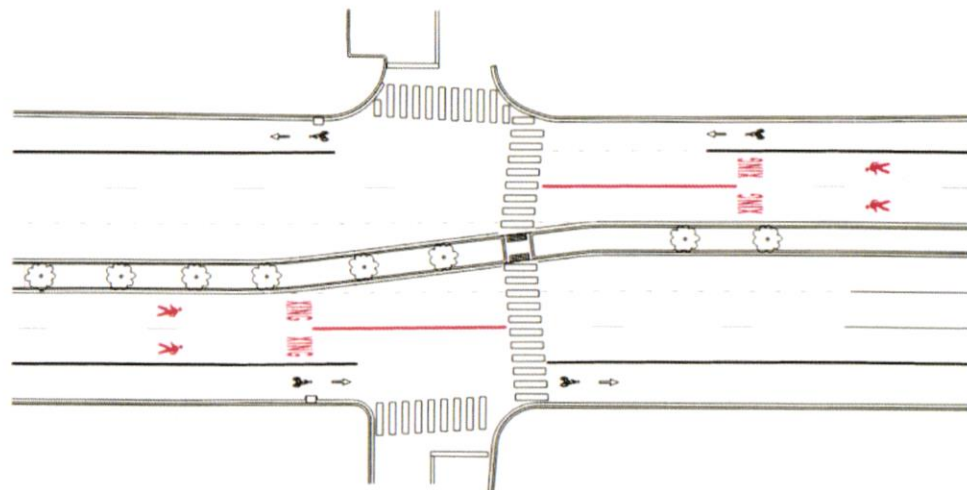
## Summary

- **Recommendations:**

- The Town will identify one of the four alternatives on slides 19-26 in the study to be implemented via the future *SR 1 Sidewalks from Lighthouse Road to Lewes Street* project in DeIDOT's Capital Transportation Program
  - Note: full signalization is not an identified alternative to pursue.
- Town of Fenwick Island to obtain funding for any advance/interim improvements prior to the Capital Transportation Program project
- Town of Fenwick Island can consider entering into a Right-of-Way Use agreement with DeIDOT for placement of in-roadway STATE LAW – YIELD TO PEDESTRIAN and/or installation of pedestrian + “XING” pavement marking symbols approaching unsignalized crosswalks (funding, installation, and maintenance via Town)



In-Roadway STATE LAW –  
YIELD TO PEDESTRIANS sign



Pedestrian + “XING” Pavement Marking Symbols