# Island County Concurrency Intersection Analysis

Island sub-RTPO Policy Board briefing

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# Study purpose

The concurrency intersection study is a technical analysis to evaluate intersection vehicular traffic conditions, and identify potential improvements to address level of service deficiencies if they occur.

The study is not intended to address a broader range of regional mobility strategies that may be considered as part of Island County's comprehensive planning process, nor is it intended to make recommendations for changes in the concurrency statute or methodology.

The study does provide key information that can help facilitate further discussions on concurrency.

# How we did it

Island County, WSDOT and RTPO staff worked together on an analysis of ten intersections on SR 20 and SR 525 to determine if, or when, intersection vehicle delays exceed the adopted level of service (LOS) standard for concurrency.

For those intersections that have vehicle delays that exceed the LOS standard by or before 2035, we prepared conceptual layouts and cost estimates for intersection improvements that would restore LOS to the adopted standard.

# Which intersections did we focus on for our analysis?

Initially, ten intersections were evaluated for current and future level of service.

SR 20/Troxell RD.- Soundview Ln.
SR 20/ Banta Rd – Northgate Dr.
SR 20/ Fakkema Rd.
SR 20/ Main St.
SR 525/ Bush Pt.-Honeymoon Bay Rd.
SR 525/ Harbor Ave.
SR 525/ Scott Rd
SR 525/ Double Bluff Rd
SR 525/ Coles Rd
SR 525/ Cultus Bay Rd./ Langley Rd.

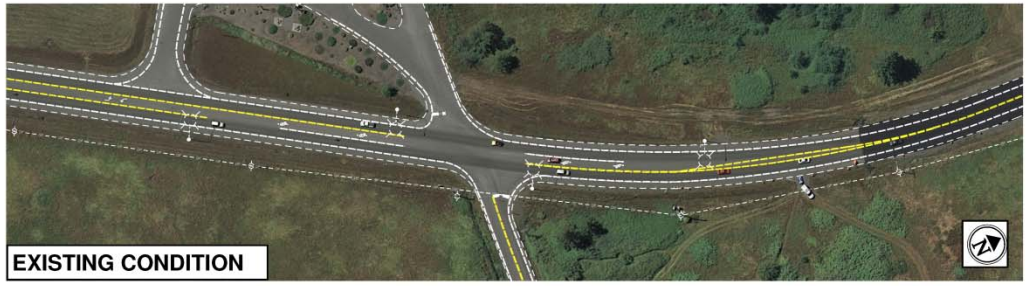
# Key Findings

- The current adopted methodology for calculating level of service is very sensitive to the type of intersection control.
- Level of service is currently below the adopted standard at several intersections and more are expected to follow in the future.
- At four of the study intersections, less than 5% of the traffic causes the intersection to fall below the level of service standard.
- Intersection improvements that restore level of service are estimated to cost between $1.1 million to $8.3 million per intersection, depending on the location and type of improvement.
- The cost of these improvements far exceed the benefits, and often the benefits alone, are negative as they add delay for all vehicles at the intersection in order to reduce the delay for a small percentage of vehicles.

# Traffic analysis, conceptual layouts and cost estimates*

*The cost estimates and layouts shown on the following pages represent WSDOT's planning-level estimates, reflecting less than five percent design completion. Cost estimates and layouts could change if full engineering design were completed.

## SR 20: TROXELL ROAD (MP 39.80)



**ESTIMATED COST RANGE = $1.3M - $1.7M**

**ESTIMATED COST RANGE = $5.8M - $7.5M**

### 2011 TURNING MOVEMENT VOLUME

**SR 20: Troxell Road/Soundview Lane (MP 39.80)**

Peak Hour (4:00 - 5:00 pm)

**SOUNDVIEW LN.**

| | | | | |
|---|---|---|---|---|
| | | 2% | | |
| 2035 | 23 | 8 | 14 | 45 |
| 2020 | 20 | 7 | 12 | 39 |
| 2011 | 18 | 6 | 11 | 35 |

**SR 20 (NB)**

| | 2035 | 2020 | 2011 |
|---|---|---|---|
| | 44 | 38 | 34 |
| 48% | 798 | 687 | 628 |
| | 33 | 29 | 26 |
| | 875 | 753 | 689 |

**SR 20 (SB)**

| 2011 | 2020 | 2035 | |
|---|---|---|---|
| 21 | 23 | 27 | |
| 652 | 714 | 828 | 48% |
| 17 | 19 | 22 | |
| 691 | 756 | 877 | |

| | | | | |
|---|---|---|---|---|
| 2011 | 9 | 7 | 18 | 34 |
| 2020 | 10 | 8 | 20 | 38 |
| 2035 | 12 | 9 | 23 | 44 |
| | | 2% | | |

**TROXELL RD.**

### Results From Intersection Traffic Analysis

| | 2011 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| **No Build** | | | | | | |
| Level of service | LOS E | | LOS F | | | LOS F |
| Ave. delay/veh. | 49 sec. EB | | 81 sec. EB | | | 280 sec. EB |
| 95th% queue | 43 ft. WB | | 69 ft WB | | | 142 ft. WB |
| **Channelization** | | | | | | |
| Level of service | LOS E | | LOS F | | | LOS F |
| Ave. delay/veh. | 39 sec. EB | | 54 sec. EB | | | 128 sec. EB |
| 95th% queue | 21 ft. EB | | 33 ft. EB | | | 63 ft. EB |
| **Signal** | | | | | | |
| Level of service | LOS A | | LOS A | | | LOS A |
| Ave. delay/veh. | 5 sec. | | 6 sec. | | | 7 sec. |
| 95th% queue | 157 ft. SB | | 188 ft. SB | | | 271 ft. SB |
| **Roundabout** | | | | | | |
| Level of service | LOS A | | LOS A | | | LOS A |
| Ave. delay/veh. | 7 sec. | | 9 sec. | | | 7 sec. |
| 95th% queue | 166 ft. NB | | 165 ft. NB | | | 292 ft. NB |

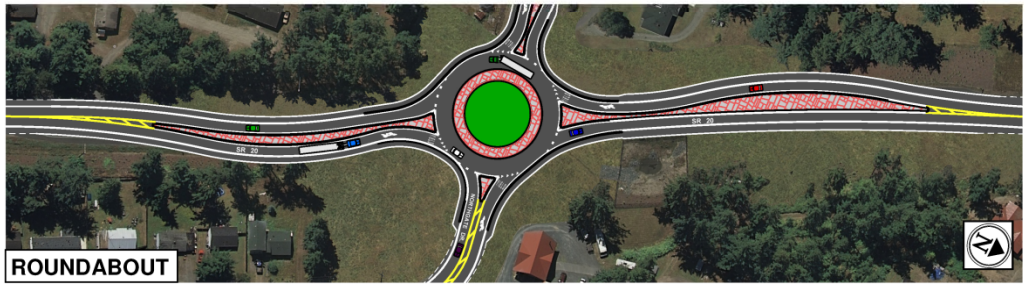
**Adopted Concurrency Std:** LOS D ( ≤35 sec./veh. ave. delay, PM peak hour)

LOS meets adopted concurrency standard

LOS does not meet adopted concurrency standard

## SR 20: BANTA ROAD (MP 39.24)

**ESTIMATED COST RANGE = $1.3M to $1.6M**

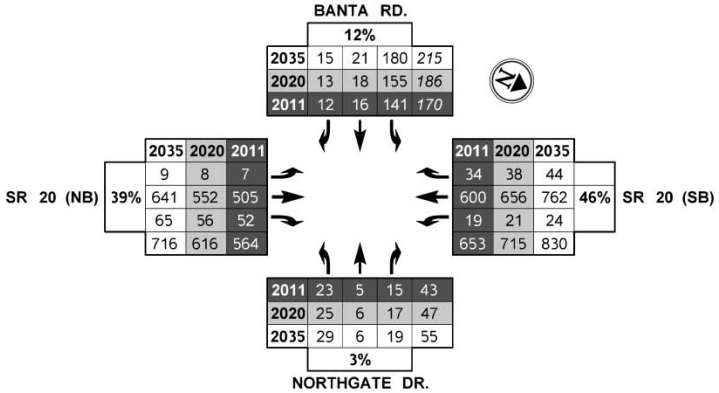



**ESTIMATED COST RANGE = $3.4M - $4.4M**

### 2011 TURNING MOVEMENT VOLUME

**SR 20: Banta Road/Northgate Dr. (MP 39.24)**

Peak Hour (4:00 - 5:00 pm)




### Results From Intersection Traffic Analysis

| | 2011 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| **No Build** | | | | | | |
| Level of service | LOS F | | LOS F | | | LOS F |
| Ave. delay/veh. | 287 sec. EB | | 504 sec. EB | | | 8340 sec. EB |
| 95th% queue | 355 ft. EB | | 474 ft. EB | | | exceeds cap. |
| **Channelization** | | | | | | |
| Level of service | LOS F | | LOS F | | | LOS F |
| Ave. delay/veh. | 278 sec. EB | | 489 sec. EB | | | 8340 sec.EB |
| 95th% queue | 330 ft. EB | | 469 ft. EB | | | exceeds cap. |
| **Signal** | | | | | | |
| Level of service | LOS B | | LOS B | | | LOS B |
| Ave. delay/veh. | 10 sec. | | 11 sec. | | | 14 sec. |
| 95th% queue | 235 ft. SB | | 244 ft. SB | | | 316 ft. SB |
| **Roundabout** | | | | | | |
| Level of service | LOS A | | LOS A | | | LOS B |
| Ave. delay/veh. | 9 sec. | | 10 sec. | | | 13 sec. |
| 95th% queue | 178 ft. NB | | 242 ft. NB | | | 441 ft. NB |

**Adopted Concurrency Std:** LOS D ( ≤35 sec./veh. ave. delay, PM peak hour)

LOS meets adopted concurrency standard
LOS does not meet adopted concurrency standard

## SR 525: HONEYMOON BAY - BUSH PT. ROAD (MP

**ESTIMATED COST RANGE = $3.2M - $4.1M**

**ESTIMATED COST RANGE = $6.4M - $8.3M**

## 2011 TURNING MOVEMENT VOLUME

**SR 525: Honeymoon Bay - Bush Pt. (MP 18.92)**

Peak Hour (4:15 - 5:15 pm)

**BUSH PT.** (10%)

| | | | | |
|---|---|---|---|---|
| 2035 | 105 | 5 | 0 | *110* |
| 2020 | 91 | 4 | 0 | *95* |
| 2011 | 83 | 4 | 0 | *87* |

**SR 525 (SB)** (52%)

| | 2035 | 2020 | 2011 |
|---|---|---|---|
| | 171 | 148 | 135 |
| | 305 | 262 | 240 |
| | 109 | 94 | 86 |
| | 585 | 504 | 461 |

**SR 525 (NB)** (30%)

| | 2011 | 2020 | 2035 |
|---|---|---|---|
| | 2 | 2 | 3 |
| | 249 | 272 | 316 |
| | 10 | 11 | 13 |
| | 261 | 285 | 331 |

**HONEYMOON BAY** (8%)

| | | | | |
|---|---|---|---|---|
| 2011 | 57 | 7 | 6 | 70 |
| 2020 | 62 | 8 | 7 | 77 |
| 2035 | 72 | 9 | 8 | 89 |

## Results From Intersection Traffic Analysis

| | 2011 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| **No Build** | | | | | | |
| Level of service | LOS E | | LOS F | | | LOS F |
| Ave. delay/veh. | 37 sec. WB | | 52 sec. WB | | | 132 sec. WB |
| 95th% queue | 54 ft. WB | | 79 ft. WB | | | 155 ft. WB |
| **Channelization** | | | | | | |
| Level of service | | | LOS E | | | LOS F |
| Ave. delay/veh. | | | 45 sec. WB | | | 103 sec. WB |
| 95th% queue | | | 65 ft. WB | | | 127 ft. WB |
| **Signal** | | | | | | |
| Level of service | | | LOS A | | | LOS A |
| Ave. delay/veh. | | | 5 sec. | | | 6 sec. |
| 95th% queue | | | 59 ft. NB | | | 74 ft. NB |
| **Roundabout** | | | | | | |
| Level of service | | | LOS A | | | LOS A |
| Ave. delay/veh. | | | 9 sec. | | | 9 sec. |
| 95th% queue | | | 114 ft. NB | | | 149 ft. NB |

**Adopted Concurrency Std:** LOS E ( ≤50 sec./veh. ave. delay, PM peak hour)

LOS meets adopted concurrency standard

LOS does not meet adopted concurrency standard

## SR 525: S. HARBOR AVE. (MP 17.76)

**ESTIMATED COST RANGE = $1.6M- $2.1M**

### 2011 TURNING MOVEMENT VOLUME

**SR 525: South Harbor Ave. (MP 17.76)**

Peak Hour (4:00 - 5:00 pm)

**S. HARBOR AVE.**

| | 10% | | | |
|---|---|---|---|---|
| **2030** | 46 | - | 89 | *135* |
| **2025** | 44 | - | 85 | *129* |
| **2011** | 38 | - | 74 | *112* |

**SR 525 (EB)**

| | 2030 | 2025 | 2011 |
|---|---|---|---|
| | 82 | 78 | 68 |
| **48%** | 560 | 533 | 464 |
| | - | - | - |
| | 642 | 611 | 531 |

**SR 525 (WB)**

| 2011 | 2025 | 2030 | |
|---|---|---|---|
| 120 | 138 | 145 | |
| 335 | 385 | 405 | **41%** |
| - | - | - | |
| 456 | 524 | 550 | |

N

## Results From Intersection Traffic Analysis

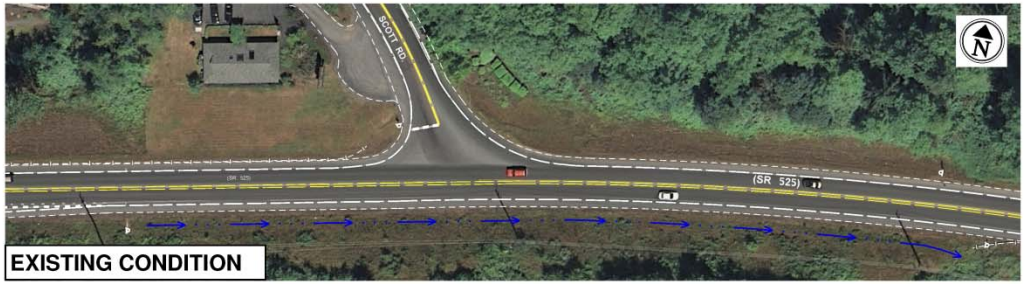
| | 2011 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| **No Build** | | | | | | |
| Level of service | LOS D | | LOS E | LOS F | LOS F | LOS F |
| Ave. delay/veh. | 31 sec. SB | | 44 sec. SB | 56 sec. SB | 77 sec. SB | 113 sec. SB |
| 95th% queue | 62 ft. SB | | 91 ft. SB | 114 ft. SB | 143 ft. SB | 184 ft. SB |
| **Channelization** | | | | | | |
| Level of service | | | | LOS C | LOS C | LOS C |
| Ave. delay/veh. | | | | 19 sec. SB | 21 sec. SB | 23 sec. SB |
| 95th% queue | | | | 42 ft. SB | 48 ft. SB | 57 ft. SB |
| **Signal** | Lower cost channelization addresses LOS need, therefore signal was not evaluated. | | | | | |
| **Roundabout** | Lower cost channelization addresses LOS need, therefore roundabout was not evaluated. | | | | | |

**Adopted Concurrency Std:** LOS E ( ≤50 sec./veh. ave. delay, PM peak hour)

LOS meets adopted concurrency standard

LOS does not meet adopted concurrency standard

## SR 525: SCOTT ROAD (MP 17.26)




EXISTING CONDITION

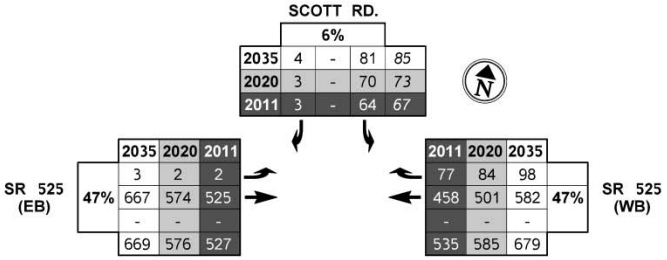
LEFT-TURN POCKET

**ESTIMATED COST RANGE = $2.1M - $2.7M**

### 2011 TURNING MOVEMENT VOLUME

**SR 525: Scott Road (MP 17.26)**

Peak Hour (4:30 - 5:30 pm)




## Results From Intersection Traffic Analysis

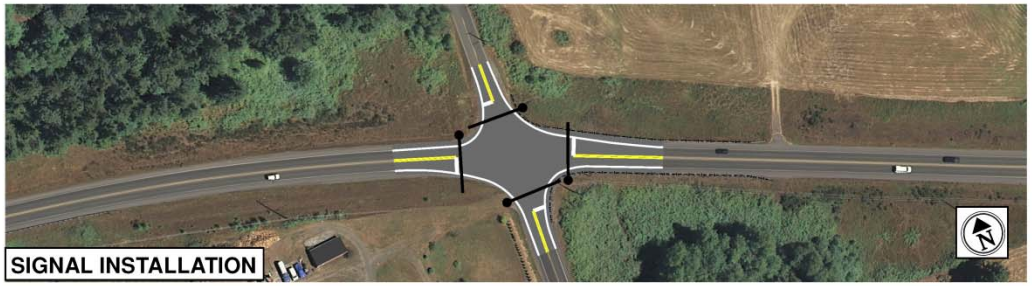
| | 2011 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| **No Build** | | | | | | |
| Level of service | LOS D | | LOS E | LOS F | LOS F | LOS F |
| Ave. delay/veh. | 34 sec. SB | | 46 sec. SB | 57 sec. SB | 73 sec. SB | 102 sec. SB |
| 95th% queue | 48 ft. SB | | 68 ft. SB | 85 ft. SB | 105 ft. SB | 131 ft. SB |
| **Channelization** | | | | | | |
| Level of service | | | | LOS C | LOS C | LOS C |
| Ave. delay/veh. | | | | 18 sec. SB | 19 sec. SB | 21 sec. SB |
| 95th% queue | | | | 27 ft. SB | 30 ft. SB | 35 ft. SB |
| **Signal** | Lower cost channelization addresses LOS need, therefore signal was not evaluated. | | | | | |
| **Roundabout** | Lower cost channelization addresses LOS need, therefore roundabout was not evaluated. | | | | | |

**Adopted Concurrency Std:** LOS E ( ≤50 sec./veh. ave. delay, PM peak hour)

LOS meets adopted concurrency standard

LOS does not meet adopted concurrency standard

## SR 525: DOUBLE BLUFF ROAD (MP 16.93)




**ESTIMATED COST RANGE = $1.1M - $1.5M**

**ESTIMATED COST RANGE = $2.9M - $3.8M**

## 2011 TURNING MOVEMENT VOLUME

**SR 525: Double Bluff Rd. (MP 16.93)**

Peak Hour (4:15 - 5:15 pm)

**DOUBLE BLUFF RD.**

| | 1% | | | |
|---|---|---|---|---|
| 2035 | 4 | 3 | 3 | 9 |
| 2020 | 3 | 2 | 2 | 8 |
| 2011 | 3 | 2 | 2 | 7 |

**SR 525 (EB)**

| | 2035 | 2020 | 2011 |
|---|---|---|---|
| | 3 | 2 | 2 |
| 51% | 706 | 608 | 556 |
| | 39 | 34 | 31 |
| | 748 | 644 | 589 |

**SR 525 (WB)**

| 2011 | 2020 | 2035 | |
|---|---|---|---|
| 4 | 4 | 5 | |
| 501 | 548 | 636 | 45% |
| 15 | 16 | 19 | |
| 520 | 569 | 660 | |

| | | | | |
|---|---|---|---|---|
| 2011 | 21 | 0 | 24 | 45 |
| 2020 | 23 | 0 | 26 | 49 |
| 2035 | 27 | 0 | 30 | 57 |
| | | 4% | | |

**DOUBLE BLUFF RD.**

## Results From Intersection Traffic Analysis

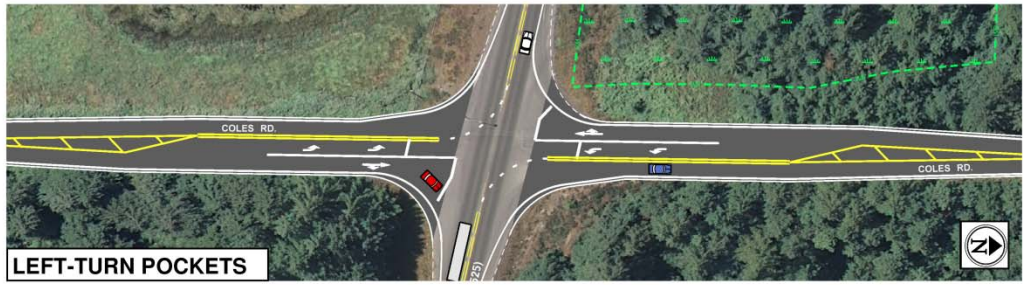
| | 2011 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| **No Build** | | | | | | |
| Level of service | LOS D | | LOS E | LOS E | | LOS F |
| Ave. delay/veh. | 30 sec NB. | | 40 sec. NB | 48 sec. NB | | 87 sec. NB |
| 95th% queue | 32 ft. NB | | 45 ft. NB | 56 ft. NB | | 93 ft. NB |
| **Channelization** | | | | | | |
| Level of service | | | LOS D | LOS E | | LOS F |
| Ave. delay/veh. | | | 34 sec. NB | 40 sec. NB | | 64 sec. NB |
| 95th% queue | | | 32 ft. NB | 38 ft. NB | | 61 ft. NB |
| **Signal** | | | | | | |
| Level of service | | | LOS B | | | LOS B |
| Ave. delay/veh. | | | 10 sec. | | | 11 sec. |
| 95th% queue | | | 160 ft. EB | | | 219 ft. EB |
| **Roundabout** | | | | | | |
| Level of service | | | LOS A | | | LOS A |
| Ave. delay/veh. | | | 6 sec. | | | 6 sec. |
| 95th% queue | | | 148 ft. WB | | | 201 ft. WB |

**Adopted Concurrency Std:** LOS D ( ≤35 sec./veh. ave. delay, PM peak hour)

LOS meets adopted concurrency standard

LOS does not meet adopted concurrency standard

## SR 525: COLES ROAD (MP 12.72)

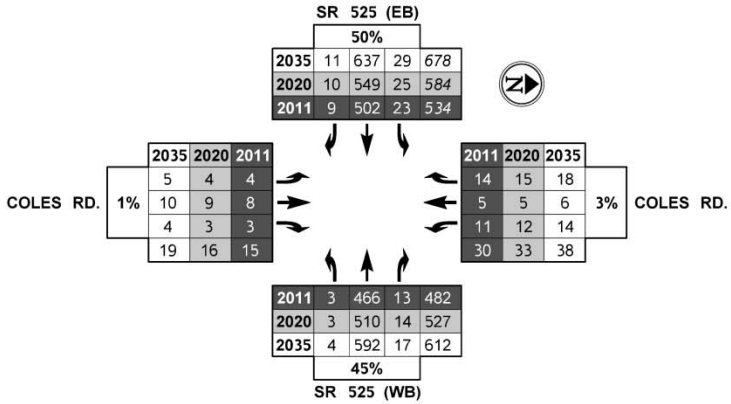



**ESTIMATED COST RANGE = $1.7M - $2.2M**

### 2011 TURNING MOVEMENT VOLUME

**SR 525: Coles Road (MP 12.72)**

Peak Hour (4:30 - 5:30 pm)




## Results From Intersection Traffic Analysis

| | 2011 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| **No Build** | | | | | | |
| Level of service | LOS C | | LOS D | LOS D | LOS E | LOS E |
| Ave. delay/veh. | 25 sec. NB | | 29 sec. NB | 34 sec. NB | 37 sec. NB | 42 sec. NB |
| 95th% queue | 17 ft. SB | | 22 ft. SB | 27 ft. SB | 32 ft. SB | 40 ft. SB |
| **Channelization** | | | | | | |
| Level of service | | | | | LOS D | LOS E |
| Ave. delay/veh. | | | | | 34 sec. SB | 36 sec. NB |
| 95th% queue | | | | | 32 ft. SB | 22 ft. SB |
| **Signal** | Lower cost channelization addresses LOS need, therefore signal was not evaluated. | | | | | |
| **Roundabout** | Lower cost channelization addresses LOS need, therefore roundabout was not evaluated. | | | | | |

**Adopted Concurrency Std:** LOS D ( ≤35 sec./veh. ave. delay, PM peak hour)

LOS meets adopted concurrency standard
LOS does not meet adopted concurrency standard

# Key Findings

- The current adopted methodology for calculating level of service is very sensitive to the type of intersection control.
- Level of service is currently below the adopted standard at several intersections and more are expected to follow in the future.
- At four of the study intersections, less than 5% of the traffic causes the intersection to fall below the level of service standard.
- Intersection improvements that restore level of service are estimated to cost between $1.1 million to $8.3 million per intersection, depending on the location and type of improvement.
- The cost of these improvements far exceed the benefits, and often the benefits alone, are negative as they add delay for all vehicles at the intersection in order to reduce the delay for a small percentage of vehicles.