

# Sullivan Rd / Trent Ave

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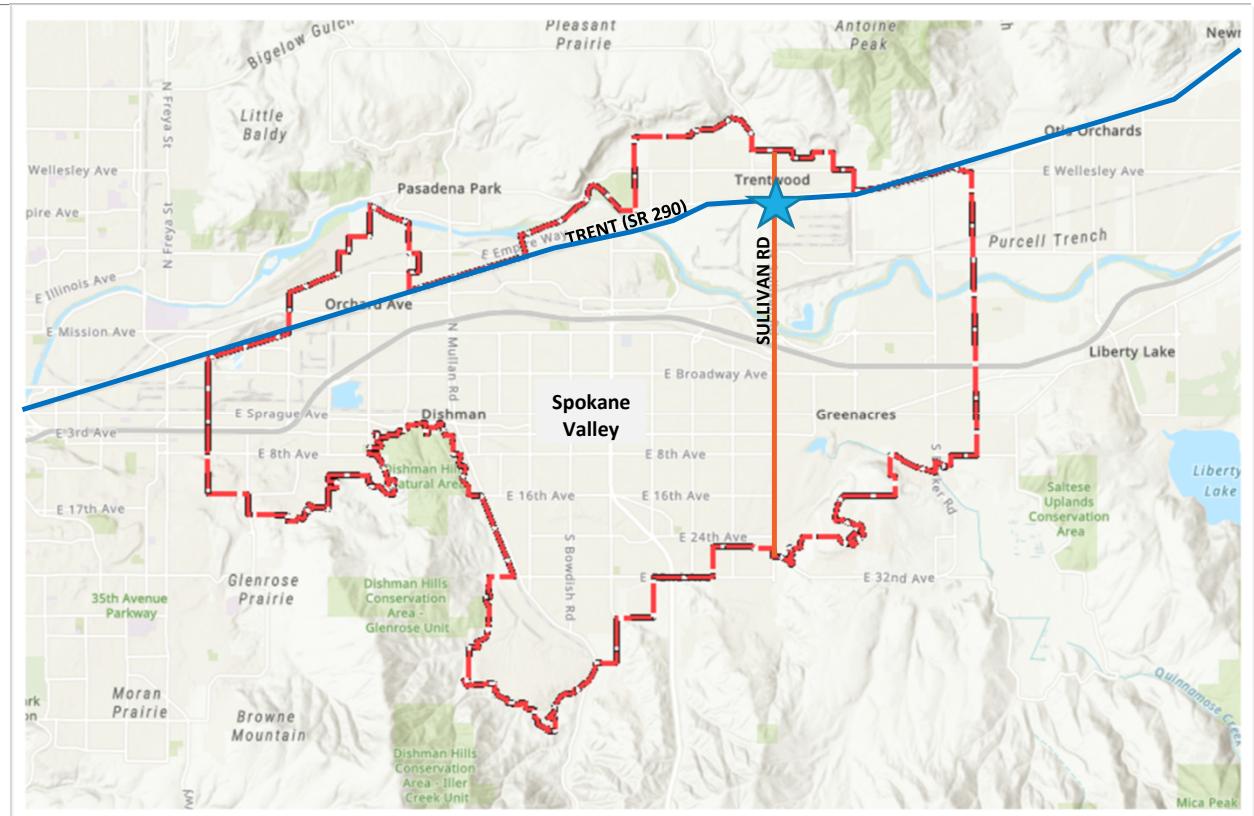
INTERCHANGE RECONFIGURATION

kpff | FEHR & PEERS



# Project Location

- Sullivan Rd intersects with Trent Ave (State Route 290) in northeast Spokane Valley.
- Adjacent to the Spokane Business and Industrial Park and Kaiser Aluminum.
- Just south of East Valley High School and East Valley Middle School.
- The current intersection is at grade separated diamond interchange.



# Project Introduction

- Both Sullivan Road and Trent Ave are high volume corridors with a large percentage of truck traffic.
- Sullivan Road crosses over the BNSF Railway just south of the interchange.
- The existing bridges were constructed in 1960.



# Project Introduction

## Existing Traffic Conditions

- Current performance and recent collision history indicate there is room for improvement.
- The signal for the eastbound ramps is already experiencing backup delays during the morning (AM) peak hour.
- The city anticipates both ramp signals will fail to handle the AM and PM peak hour traffic volumes by year 2030.

### Current Intersection Level of Service

Intersection	Control	AM Peak Hour LOS/Delay (s)	PM Peak Hour LOS/Delay(s)
Sullivan & WB Ramp	Signal	C/29	C/18
Sullivan & EB Ramp	Signal	E/63	D/43

Source: Fehr & Peers, 2021

### 2015-2019 Collision Summary

Intersection	All Collisions	Injury Collisions
Sullivan & WB Ramp	22	7
Sullivan & EB Ramp	19	3
Average per year		
Sullivan & WB Ramp	4.4	1.4
Sullivan & EB Ramp	3.8	0.6

Source: 2015-2019 WSDOT data evaluated by Fehr & Peers, 2021

# Project Purpose

- Improve Level of Service-Traffic Flow
- Improve Safety
- Improve Truck Mobility
- Add Non-Motorized Facilities
- Provide Adequate Vertical Clearance Over Trent Ave
- Replace Aging Infrastructure
- Accommodate Future Railroad Mainline Expansion



# Funding

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City has secured \$3,052,500 to fund the alternative analysis and final design on the preferred alternative.

- \$500,000 City Funds
- \$1,185,000 National Highway Funding Program (NHFB) – federal grant funds
- \$1,367,500 Spokane Regional Transportation Council (SRTC) – federal grant funds

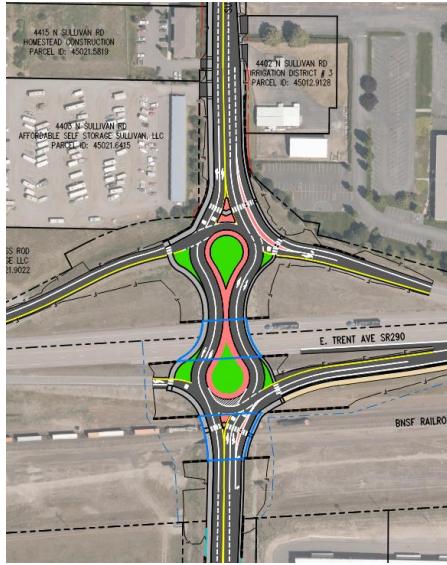
# Interchange Alternatives

- City is evaluating four different interchange types that fulfills the project's purpose.
- City is seeking community input on these alternatives to help determine the preferred alternative.

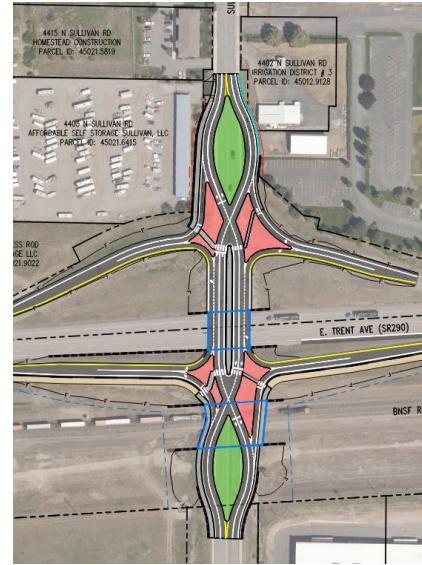
**Alternative #1**  
**Signalized Diamond Interchange**



**Alternative #2**  
**Diamond Interchange w/  
Roundabout**



**Alternative #3**  
**Diverging Diamond  
Interchange**



**Alternative #4**  
**Jug Handle w/ Roundabouts**



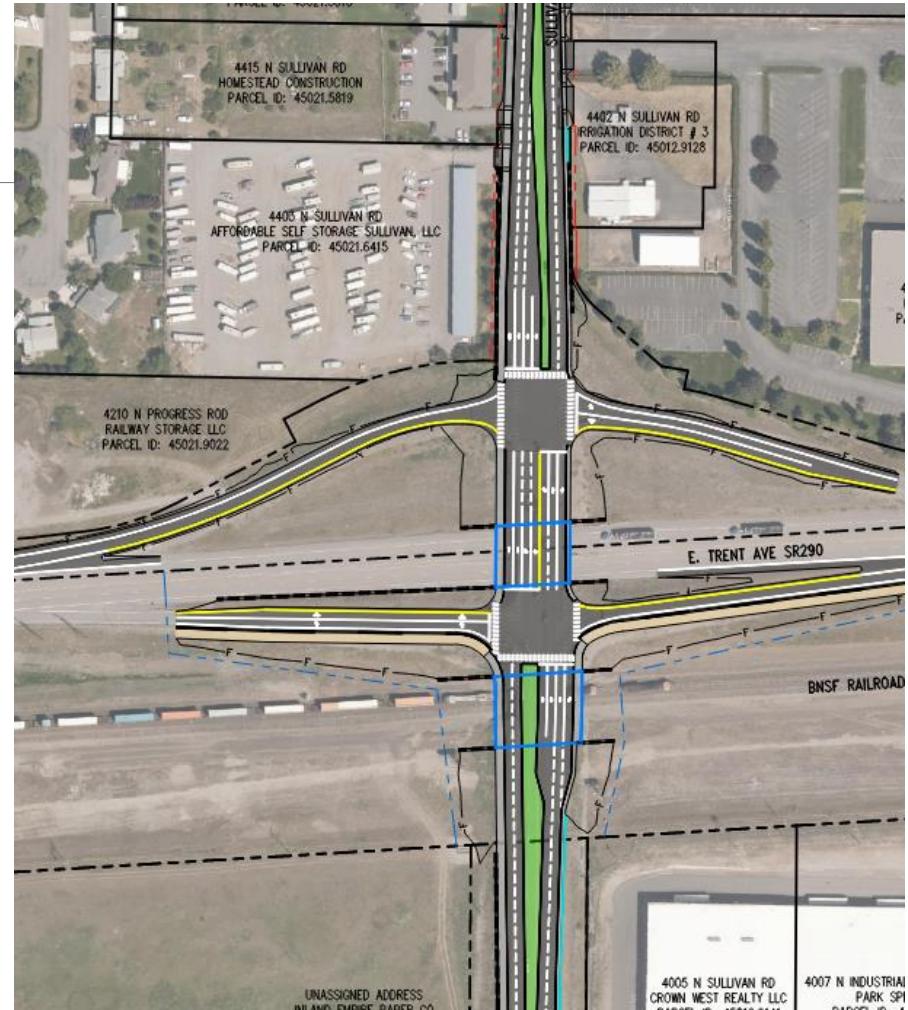
# Interchange Alternatives

## Alternative 1: Signalized Diamond Interchange

Named for the pattern that vehicle travel paths make; this is a standard intersection like you experience daily. Traffic light signals cycle through directional traffic.

Widens Sullivan Rd to 7 lanes: two lanes each direction, two southbound dedicated left turn lanes and one northbound dedicated left turn lane.

**Estimated Costs:** \$42.2 Million



# Interchange Alternatives

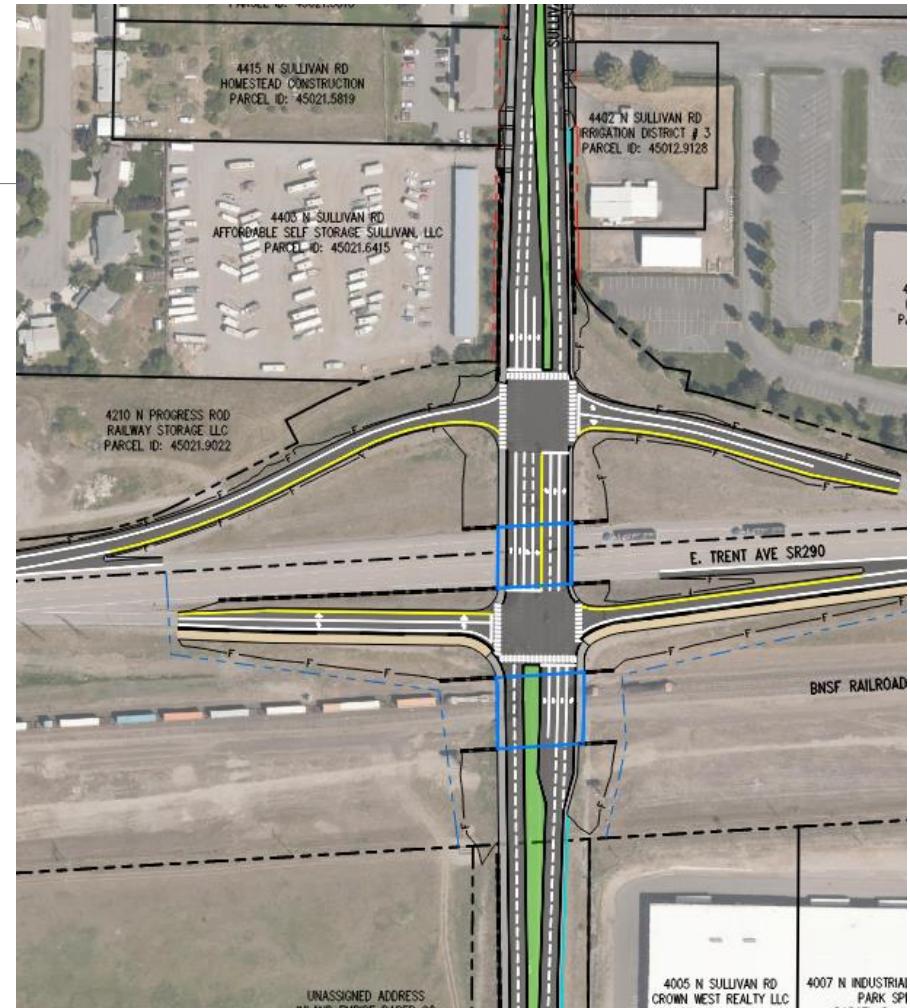
## Alternative 1: Signalized Diamond Interchange

### Pros

- Drivers are familiar with navigating them.

### Cons

- Provides least improvement to traffic flow compared to the other three alternatives.
- Likely to close Progress Road at Trent Ave.
- Wide footprint at north end (More right-of-way needed)



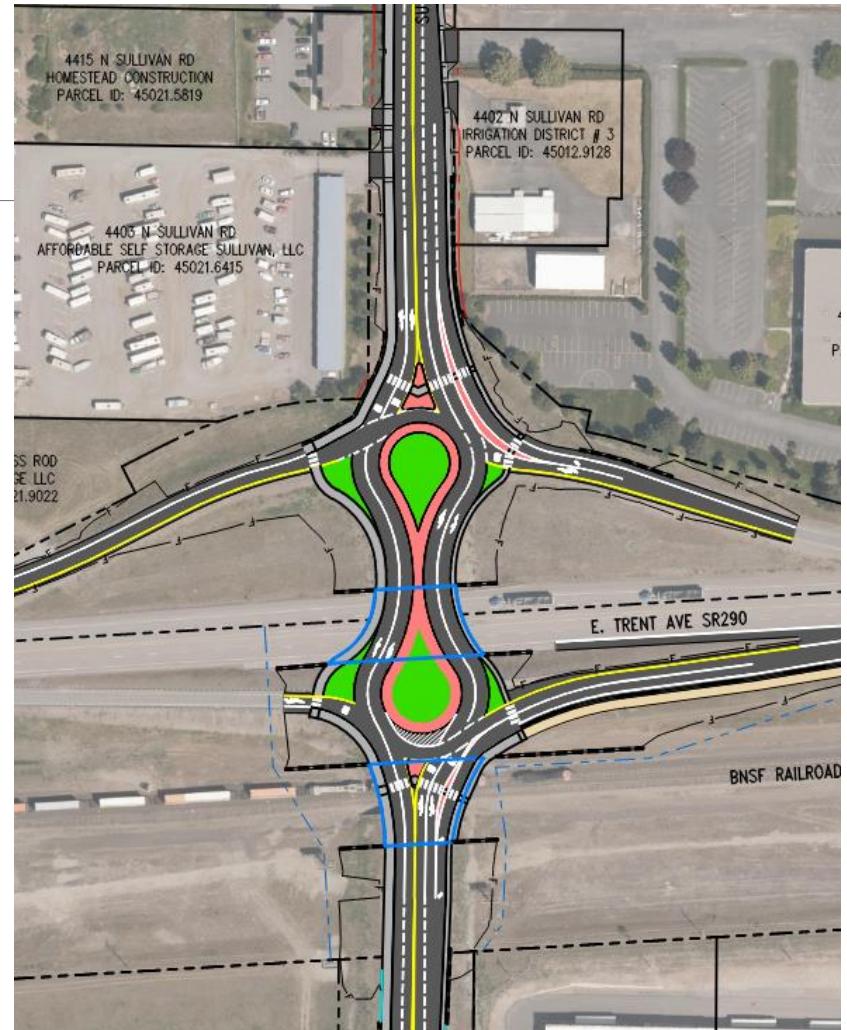
# Interchange Alternatives

## Alternative 2: Diamond Interchange with Peanut Roundabout

This 'peanut' or 'dogbone' roundabout configuration handles all the turn movements at both eastbound and westbound ramps.

Allows for bypass lanes for high-volume turn movements like westbound Trent to northbound Sullivan.

**Estimated Costs:** \$42.2 Million



# Interchange Alternatives

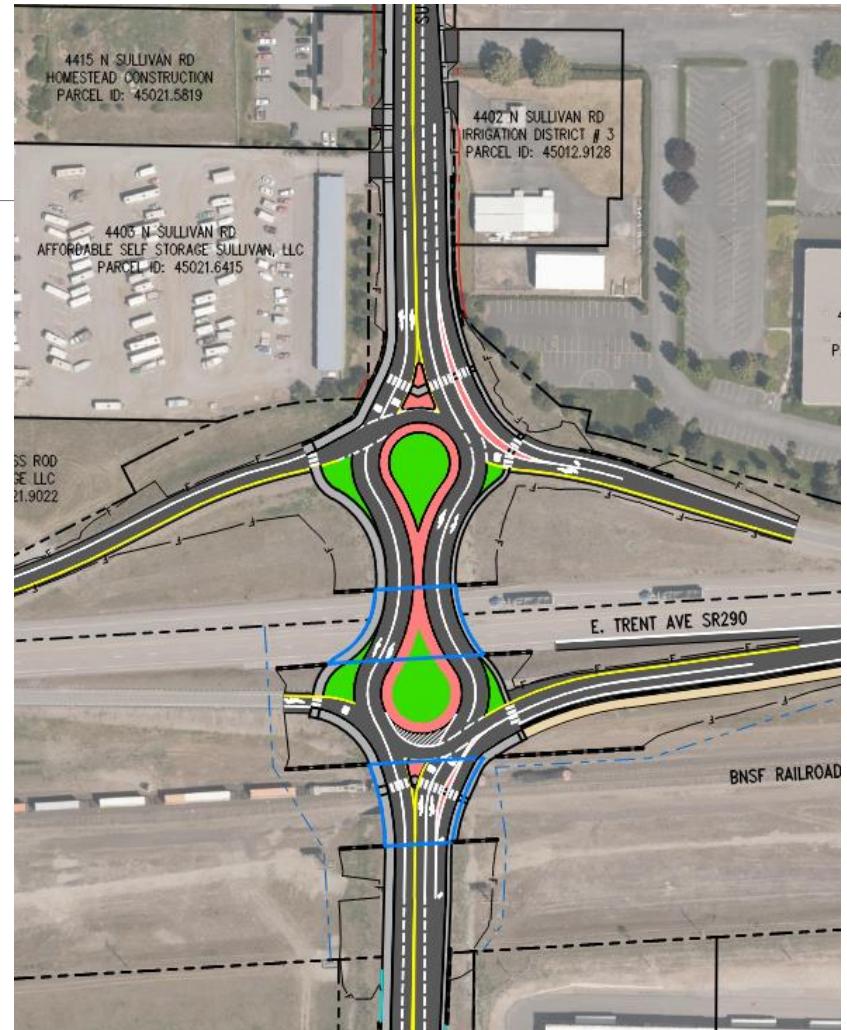
## Alternative 2: Diamond Interchange with Peanut Roundabout

### Pros

- Rates the best (tied) for the anticipated traffic flow in 2030 and 2050.
- Rates the best in reduction in fatal and severely injured collisions.

### Cons

- Likely to close Progress Road at Trent Ave.
- Wide footprint at north end. (additional right-of-way needed/bigger impact to adjacent property owners)



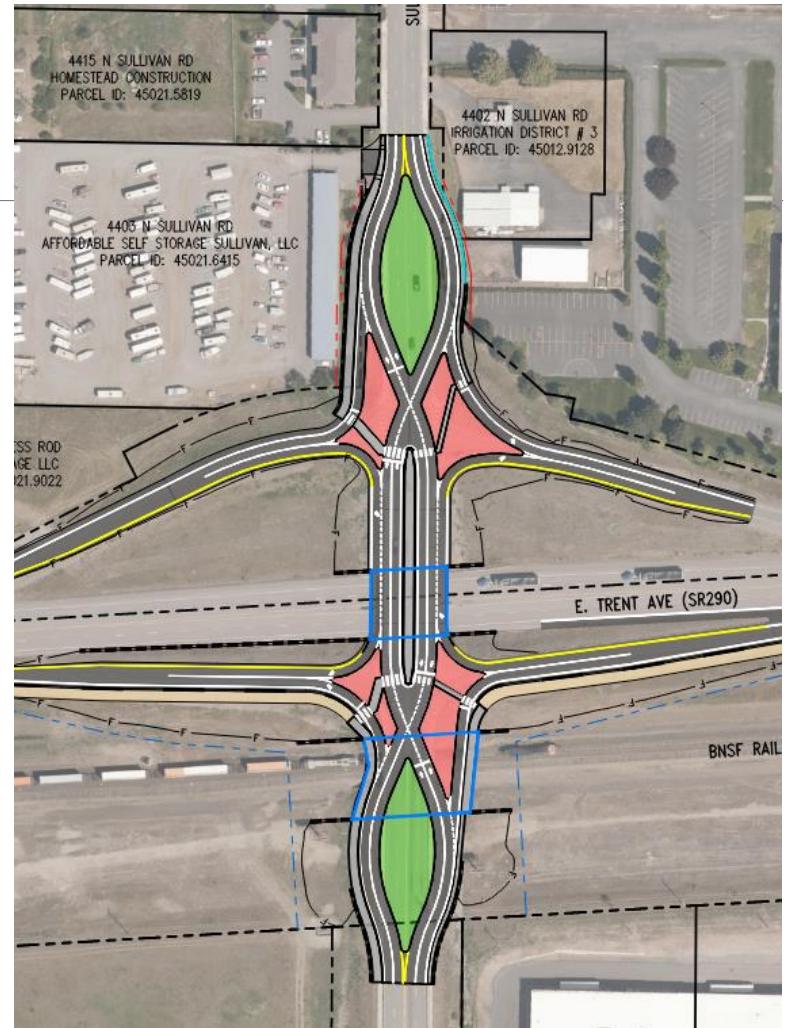
# Interchange Alternatives

## Alternative 3: Diverging Diamond Interchange

The Diverging Diamond configuration reduces vehicle conflict points, and improves operational efficiency as compared to a typical diamond interchange.

Crosses the northbound and southbound traffic to the opposite side of Sullivan between the two signalized crossover intersections.

**Estimated Costs:** \$43.1 Million



# Interchange Alternatives

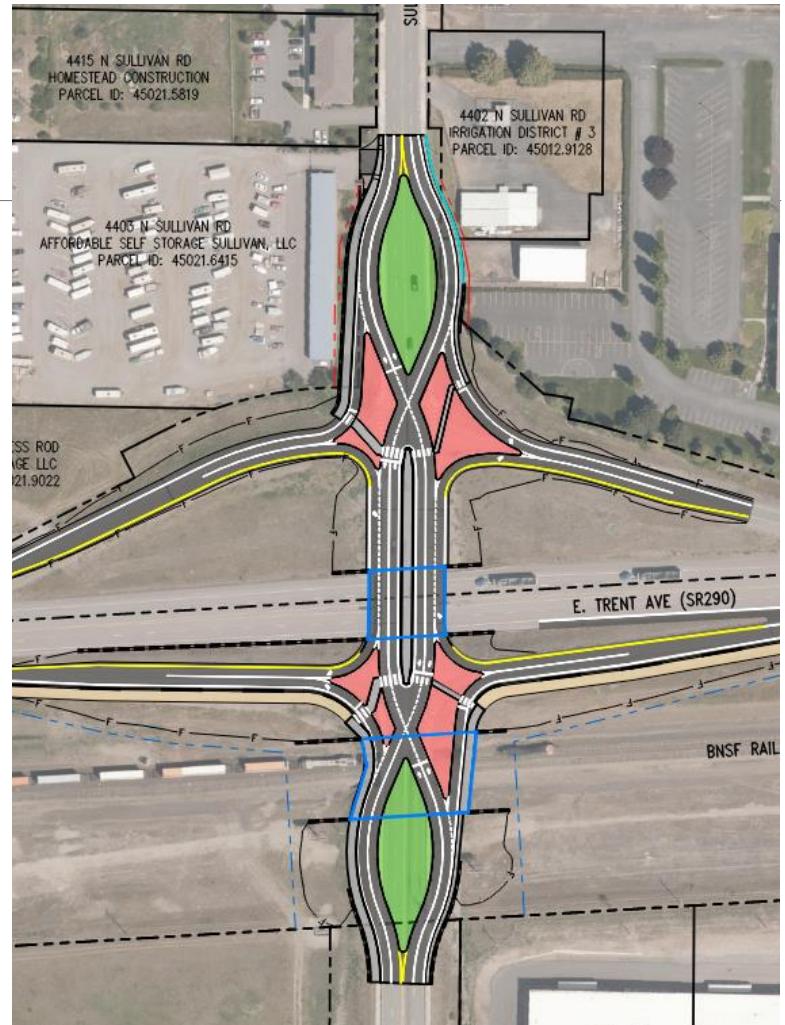
## Alternative 3: Diverging Diamond Interchange

### Pros

- Provides better traffic flow compared to a standard signalized intersection(s).
- Improves vehicle safety at the on and off ramps. (eliminates turn conflicts)

### Cons

- Most expensive alternative.
- Wide footprint at north and south ends. (additional right-of-way and bridge width needed)
- Likely to close Progress Road at Trent Ave.
- Drivers are less familiar navigating them.



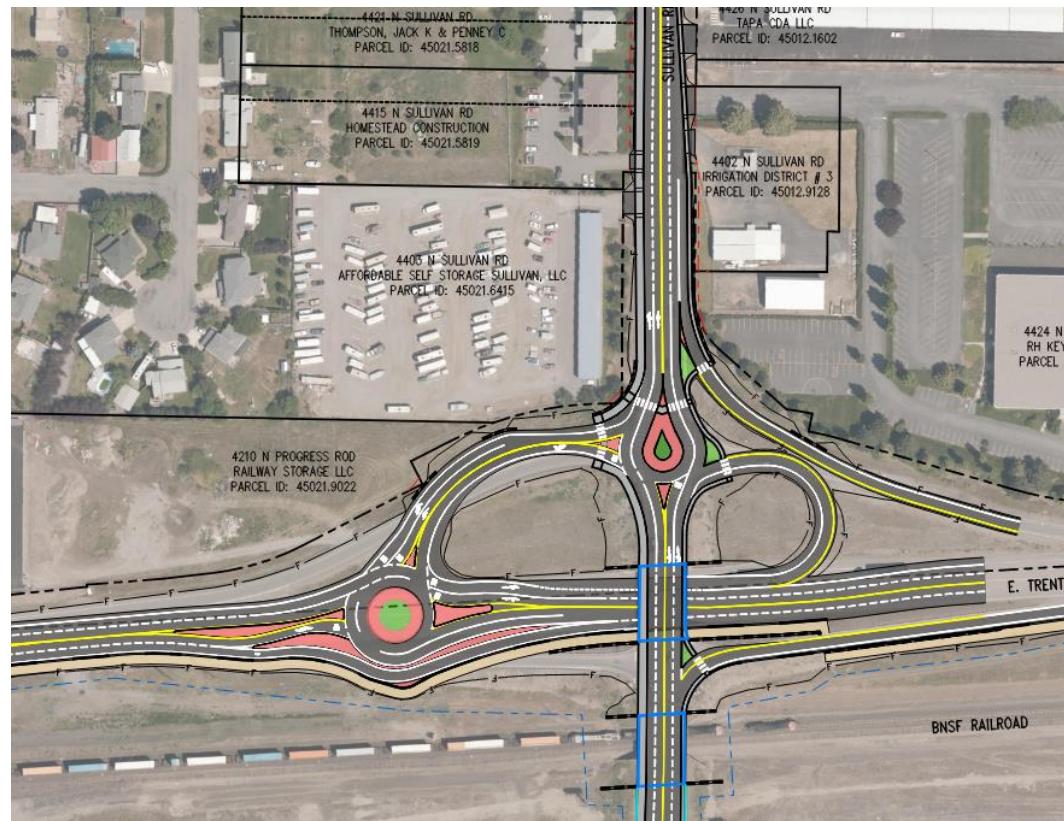
# Interchange Alternatives

## Alternative 4: Jug Handle with Roundabouts

Sullivan and Trent connect using two roundabouts in the northwest corner of the interchange. This connection is referred to as the "jug handle"

There is also free flowing northbound onramps to access both east and westbound Trent Ave.

**Estimated Costs:** \$35.2 Million



# Interchange Alternatives

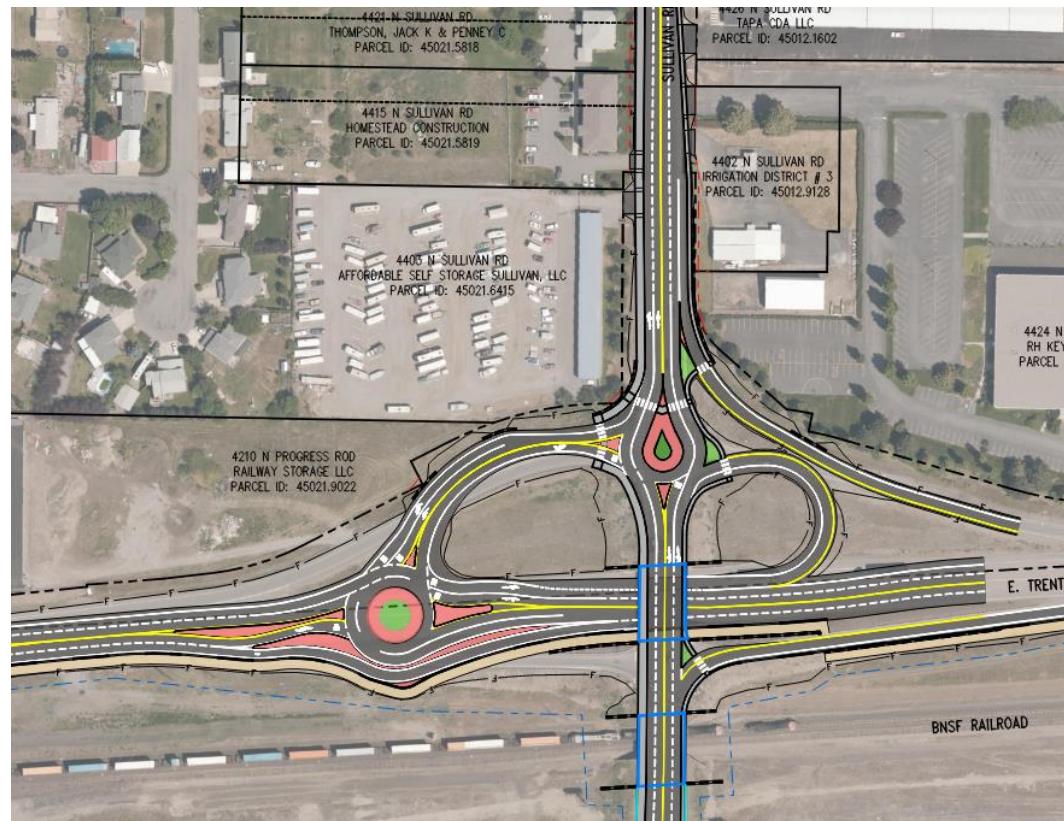
## Alternative 4: Jug Handle with Roundabouts

### Pros

- Rates the best (tied) for the anticipated traffic flow in 2030 and 2050.
- Roundabouts typically reduce fatal and severely injured collisions compared to standard signalized intersections.
- Speed reduction on Trent would lead to less severe collisions
- Progress Road is not impacted.
- Lowest cost alternative.

### Cons

- Introduces a new intersection on Trent Ave.
- Trent Ave speed limit would be reduced through roundabout section.



# Intersection Level of Service (LOS)

- Level of Service (LOS) is the measure of the average delay or wait time at an intersection.
- For intersections at LOS E or F are considered failing intersections.

Level of Service	Description	Signalized Intersection Delay (seconds)	Unsignalized Intersection Delay (seconds)
A	Free-flowing conditions.	0-10	0-10
B	Stable operating conditions.	10-20	10-15
C	Stable operating conditions, but individual motorists are affected by the intersection with other motorists.	20-35	15-25
D	High density of motorists, but stable flow.	35-55	25-35
E	Near capacity operations, with speeds reduced to a low but uniform speed.	55-80	35-50
F	Over-capacity conditions long delays	>80	>50

Source: Highway Capacity Manual 2016, Transportation Research Board

# Level of Service (LOS) Comparison

## ■ Year 2030

Alternative	Intersection	Control	AM Peak Hour LOS/Delay (s)	PM Peak Hour LOS/Delay(s)
No Build	Sullivan & WB Ramp	Signal	D/46	F/111
	Sullivan & EB Ramp	Signal	F/90	F/102
Alternative 1: Signalized Diamond Interchange	Sullivan & WB Ramp	Signal	C/25	C/25
	Sullivan & EB Ramp	Signal	B/20	C/22
Alternative 2: Diamond Interchange w/ Roundabout	Sullivan & WB Ramp	Roundabout	A/6	A/5
	Sullivan & EB Ramp	Roundabout	A/6	A/5
Alternative 3: Diverging Diamond Interchange	Sullivan & WB Ramp	Signal	B/11	B/12
	Sullivan & EB Ramp	Signal	A/10	B/15
Alternative 4: Jug Handle	Sullivan RAB	Roundabout	A/4	A/4
	Trent RAB	Roundabout	A/7	A/7

Source: Fehr & Peers, 2022

# Level of Service (LOS) Comparison

## ■ Year 2050

Alternative	Intersection	Control	AM Peak Hour LOS/Delay (s)	PM Peak Hour LOS/Delay(s)
No Build	Sullivan & WB Ramp	Signal	F/85	F>120
	Sullivan & EB Ramp	Signal	F>120	F>120
Alternative 1: Signalized Diamond Interchange	Sullivan & WB Ramp	Signal	B/13	B/14
	Sullivan & EB Ramp	Signal	C/28	D/44
Alternative 2: Diamond Interchange w/ Roundabout	Sullivan & WB Ramp	Roundabout	A/6	A/6
	Sullivan & EB Ramp	Roundabout	A/6	A/6
Alternative 3: Diverging Diamond Interchange	Sullivan & WB Ramp	Signal	B/12	B/16
	Sullivan & EB Ramp	Signal	A/11	B/18
Alternative 4: Jug Handle	Sullivan RAB	Roundabout	A/4	A/4
	Trent RAB	Roundabout	A/7	A/8

Source: Fehr & Peers, 2022

# Next Steps

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- Gather input from public, stakeholders, emergency services and WSDOT on the alternatives.
- Provide a recommendation to City Council on the Preferred Alternative.
- Begin final design on the Preferred Alternative.
- Continue to pursue funding for the right-of-way and construction phases.
- Construction schedule unknown until all funding is secured.

# Thank You!

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We appreciate your interest and your willingness to participate in the development of this important project. As you continue to consider this project and have questions or comments, please either submit your hand-written survey form or participate in the online survey.

## Online Survey

You may review this information and participate in the online survey by accessing the project web page.

- [Spokanevalley.org/sullivaninterchange](http://Spokanevalley.org/sullivaninterchange)

