



# OHIO DEPARTMENT OF TRANSPORTATION

## State Route 21 Corridor Improvements

WAY-SR21-0.00 (PID 101439)

Chippewa Township, Wayne County, Ohio

February 13, 2020 6:00-8:00PM

### Purpose of Today's Meeting

The Ohio Department of Transportation (ODOT) would like to present proposed safety improvements at four intersections along the State Route (SR) 21 Corridor in Chippewa Township, Wayne County, Ohio. The intersections along the SR-21 corridor that are the focus of this meeting include: SR-21/Eastern Road, SR-21/Grill Road, SR-21/Edwards Road and SR-21/Clinton Road.

The public is encouraged to provide comments on the Department's proposed plans. Please review the materials and speak with the project team regarding your questions. To submit comments on the project, please fill out a comment form at the meeting, e-mail [Donald.Rostofer@dot.ohio.gov](mailto:Donald.Rostofer@dot.ohio.gov), or mail your input by March 13, 2020 to:

Ohio Department of Transportation District 3  
Attention: Donald Rostofer, Planning Section  
906 Clark Avenue  
Ashland, OH 44805

### Project Description

ODOT is scheduled to replace the SR-21 pavement through Wayne County between the Stark and Summit County lines in 2024. The project is six miles long and will include the following:

- Removing all existing pavement, performing global stabilization to the subgrade, placing new roadbed drainage, and re-constructing new pavement
- Minor Bridge work along the corridor
- Replacement of two culverts

Additionally, the Department is recommending the following safety improvements the intersections along the SR-21 corridor to include with the major rehabilitation project:

- A '*Superstreet*' at SR-21 and Eastern Road
- A '*Median Closure*' at SR-21 and Grill Road
- A '*Superstreet*' at SR-21 and Edwards Road
- A '*Reduced Conflict U-Turn*' (RCUT) at SR-21 and Clinton Road

### Why is this Project Important?

The purpose of this project is to address roadway deficiencies, historical traffic crash patterns and current traffic volumes by upgrading the SR-21 mainline road surface and utilizing appropriate countermeasures to reduce crashes at the at-grade intersections along the SR-21 corridor.



## Background

In 2019, ODOT hired a consultant to conduct a corridor safety study on SR-21 within Wayne County, Ohio. The four main intersecting roads included in the study are: SR-21/Eastern Road, SR-21/Grill Road, SR-21/Edwards Road, and SR-21/Clinton Road. The study also included a network of intersections on either side of the SR-21 corridor to determine if changes made at the SR-21 intersections would affect operations at the adjacent intersections. Figure 1 shows the general study area vicinity.

For this study, detailed turning movement counts were performed at all 13 study intersections. For the SR-21/ SR-585 Interchange, the most recent traffic volumes were downloaded from ODOT's database. Based on the counts, the AM and PM peak hours vary throughout the study area between 6:30 AM - 8:30 AM and 3:45 PM - 6:45 PM, respectively. Using the volumes from the traffic count, Existing Year 2019, Opening Year 2024, and Design Year 2044 volumes were developed in accordance with the ODOT certified traffic development process using seasonal adjustment factors, design hour volume (DHV) factors, and a calculated annual growth rate of +0.50% per year. The growth rate was developed by Akron Metropolitan Area Transportation Study (AMATS).



Figure 1: 2019 Corridor Safety Study Map



## Existing Intersection Conditions

SR-21 is primarily a four-lane divided asphalt and concrete roadway with no curbs and open ditch drainage. The current posted speed limit for this section of SR-21 is 60 mph. SR-21 is classified as an Urban Principal Arterial, is part of the National Highway System and is a Federal Aid Primary Route.

There are two existing signalized intersections and 11 unsignalized intersections that were included within the study area. ODOT's improvements focus on the four intersections along SR-21. The existing roadway geometries of these four intersections are as follows:

**State Route 21 / Eastern Road:** This intersection is currently signalized. The intersection consists of four approaches with the following lane configurations: EB & WB Eastern Road - one lane (left-thru-right), NB State Route 21 - four lanes (left, thru, right), and SB State Route 21 - four lanes (left, thru, thru-right).

**State Route 21 / Grill Road:** This intersection is currently unsignalized with the Grill Road approaches operating under stop control. The intersection consists of four approaches with the following lane configurations: EB & WB Grill Road - one lane (left-thru-right), and NB & SB State Route 21 - three lanes (left, thru, thru-right).

**State Route 21 / Edwards Road:** This intersection is currently signalized. The intersection consists of four approaches with the following lane configurations: EB & WB Edwards Road - one lane (left-thru-right), and NB & SB State Route 21 - four lanes (left, thru, thru, right).

**State Route 21 / Clinton Road:** This intersection is currently unsignalized with the Clinton Road approaches operating under stop control. The intersection consists of four approaches with the following lane configurations: EB & WB Clinton Road - one lane (left-thru-right), NB State Route 21 - three lanes (left-thru, thru, right), and SB State Route 21 - three lanes (left, thru, thru-right).

## Crash Analysis

Crash data was obtained from the Department of Public Safety's database for the calendar years of 2016 to 2018 for the entire study area. There were 128 crashes reported within the study area and analyzed as part of this study. These crashes include 30 fixed object, 29 angles, 23 rear-end, 23 left turn, 13 sideswipe - passing, four overturning, three head on, one backing, one parked vehicle, one sideswipe - meeting. Daylight crashes account for 70% of all crashes and 65% occurred on dry pavement. Property damage crashes account for 62% of the total with 38% being injury crashes, with no fatal crashes reported from 2016 to 2018. The total crashes and injury percent by intersection from 2016 to 2018 is as follows:

Intersection	Crashes	Injury Percentages
SR-21 and Eastern Road	31	39%
SR-21 and Grill Road	7	29%
SR-21 and Edwards Road	8	25%
SR-21 and Clinton Road	12	80%

## Alternatives Analysis

Along with the 'No-Build' alternative, this study developed the following 'Build' alternatives for one or more of the four intersections along SR-21. These alternatives are:

**'No-Build' Alternative:** The 'No-Build' alternative represents the existing roadway conditions as they are today. For the signalized intersections, the existing signal timings were maintained even though it is understood that minor signal timing adjustments would likely occur in the



future. The 'No-Build' analysis establishes a baseline analysis for comparison to each 'Build' alternative.

**'Build Alternative 1' - Standard Intersection Improvements:** 'Alternative 1' includes standard or conventional intersection improvements such as a new traffic signal, signalization changes (phases, timings, etc.), addition of turn lanes, and turn lane enhancements. This alternative was considered for the following intersections: SR-21/Eastern Road, SR-21/Grill Road, SR-21/Edwards Road, and SR-21/Clinton Road.

**'Build Alternative 2' - Median Closures:** 'Alternative 2' includes closing the mainline median, effectively making the side street right-in/right-out only. The median closures will affect adjacent roadways and intersections as traffic must reroute along the ancillary roadways to cross SR-21 or make left turn movements. In general, it would be expected that the impacted vehicles would utilize parallel routes such as Hametown Road and Taylor Road. This alternative was considered for the following intersections: SR-21/Grill Road and SR-21/Clinton Road.

**'Build Alternative 3' - Reduced Conflict U-Turn (RCUT):** This improvement would involve mainline median closures with new U-turn areas located downstream of the main intersections. Side-street left turns and through traffic would need to turn right on SR-21 and then perform a U-turn downstream at the designated U-turn area to complete their original desired movement. This alternative was considered for the following intersections: SR-21/Grill Road and SR-21/Clinton Road.

**'Build Alternative 4' - Superstreet:** 'Alternative 4' includes the installation of superstreet intersections at the signalized intersections of SR-21/Eastern Road and SR-21/Edwards Road. Like RCUTs, superstreet intersections redirect side-street through and left turning traffic to turn right and travel downstream to a signalized U-turn area where drivers then can continue to complete their original desired movement.

**Conclusions and Recommendations**

Typical RCUT intersections reduce the number of conflict points from 32 to 16, and completely remove all crossing type conflicts as illustrated in Figure 2. This type of improvement has been used for several years in Maryland, Tennessee and North Carolina. RCUTs have shown positive results in reducing crashes and were added to the Federal Highway Administration's list of Proven Safety Countermeasures in 2017. On average, it is reported that RCUTs reduce all crashes from 44% to 80% and reduce injuries and fatalities by as much as 63% to 100%.

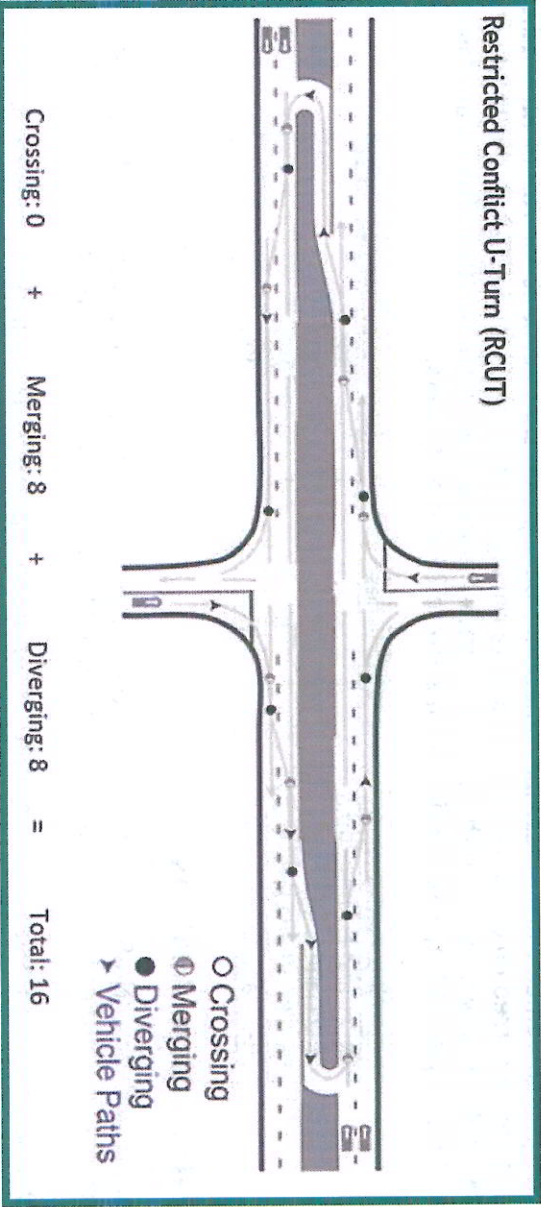


Figure 2: Typical RCUT Intersection



Superstreets improve safety by reducing the number of conflict points in an intersection from 32 (typical intersection) to 14 (superstreet intersection). This reduction in conflict points may be expected to reduce the likelihood of crashes. Superstreets also reduce the number of signal phases needed which leads to more efficient operations and reduction in delay. Superstreet intersections are different from RCTs because they include ‘signalized’ U-turn and left/right turns.

Based on the capacity results, safety analysis and cost estimates, the feasible alternatives investigated at each intersection are as follows:

- SR-21 and Eastern Road:
  - Alternative 1: Adding additional westbound right turn lane on Eastern Road, and an additional northbound thru lane on SR-21.
  - Alternative 4: A superstreet reconfiguration
- SR-21 and Grill Road:
  - Alternative 1: Adding additional northbound and southbound left turn and right turn lanes on SR-21
  - Alternative 2: Median Closure
  - Alternative 3: A Reduced Conflict U-Turn (RCUT) reconfiguration
- SR-21 and Edwards Road:
  - Alternative 1: Adding additional northbound and southbound left and right turn lanes on SR-21
  - Alternative 4: A superstreet reconfiguration
- SR-21 and Clinton Road:
  - Alternative 1: Adding additional northbound and southbound left and right turn lanes on SR-21
  - Alternative 2: Median Closure
  - Alternative 3: A Reduced Conflict U-Turn (RCUT) reconfiguration

Based on the analysis contained in the study, a preferred alternative has been proposed for each of the intersections. The preferred alternative and estimated cost for each intersection are as follows:

- Eastern Road and SR-21 - Superstreet - \$989,740.00
- Grill Road and SR-21 - Median Closure - 455,060.00
- Edwards Road and SR-21 - Superstreet - \$1,390,870.00
- Clinton Road and SR-21 - Reduced Conflict U-Turn (RCUT) - \$1,064,340.00

To improve the capacity and safety of the SR-21 corridor, the Department recommends these preferred alternatives for each intersection.

## Funding and Schedule

ODOT now dedicates about \$158 million annually, through the Highway Safety Improvement Program, for engineering improvements at high-crash and severe-crash locations - the third largest state investments in the nation. This funding is available to ODOT districts and local governments, and it can be used to make improvements on any public roadway.

ODOT District Three has secured \$26.3 million of federal-aid funds for the major rehabilitation project. The District plans to apply for Highway Safety Improvement funds for the four proposed intersection safety improvements in April 2020. The project is currently scheduled to begin construction in 2024.

### Right-of-Way Purchase

There are currently no areas within the proposed project construction footprint that would require ODOT to purchase new right-of-way for the project. If your property may be impacted by the project, you will be contacted by an ODOT Real Estate pre-qualified professional. You can also find more information on this subject by conducting an on-line search for "When ODOT Needs Your Property".

### Construction Traffic

Two lanes of traffic will be maintained most of the time. SR-21 may be reduced to one lane in each direction during the construction period. There will be short and long-term closures of Eastern Road, Grill Road, Edwards Road and Clinton Road for critical construction activities, if funding is secured for these safety improvements, ODOT will notify the communities in advance of any closures or changes in traffic flow.

**Thank You for attending this important project meeting.**

*This meeting is being held in compliance with Title VI, Section 601 of 42USC 2000(d), which states no person in the United States shall be excluded from participation in or otherwise discriminated against on the grounds of race, color, or national origin under any program or activity receiving Federal financial assistance.*