



**Hwy 43 Roundabout Corridor:
Design & Traffic Management**



Dale Grove, PE
Project Manager

Kevin Hoglund, PE
Project Development Team Lead



Project Background


- 4-lane divided signalized urban roadway
- TH 61/TH 43 serves as entryway to Winona from south
- Serves wide range of interests - businesses, senior housing, YMCA, regional medical center
- Busiest road in Winona - est. 23,000 ADT
- Deteriorating pavement (~20-years since last overlay)
- Outdated traffic signals (25 - 40 years old)
- Project Length is $\frac{3}{4}$ of a mile

Safety and Operations

TH 61/TH 43 Intersection

- 2nd Highest Crash Cost Intersection in SE MN
- 120 Crashes in 10 years (2 Fatal and 41 Injury)
- Corridor-wide weaving
- Traffic signal length >3 minutes at AM and PM peak
- Pedestrian and bicyclists avoid intersection
- Excessive intersection delays and safety issues




Engagement: Information Gathering Phase

- Public open houses
- Online engagement
- Pop-up sessions at area businesses
- Listening sessions
 - Chamber of Commerce
 - Winona Health
 - Senior Advocacy Group
- Walk and bike audits
- Engagement committee
 - Area Businesses, City, School, Emergency Services, Hospital
- Initial engagement push produced 433 comments



Pop-up Session



Bike Audit



Walk Audit



Public Input Meeting

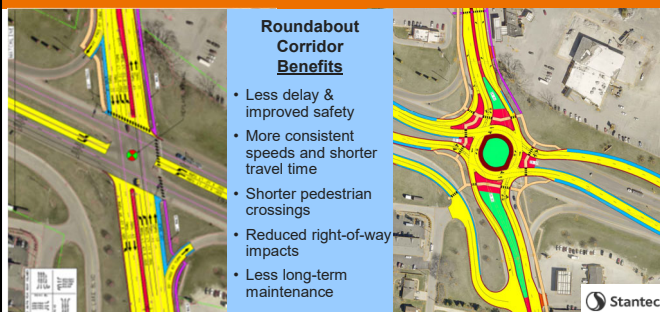


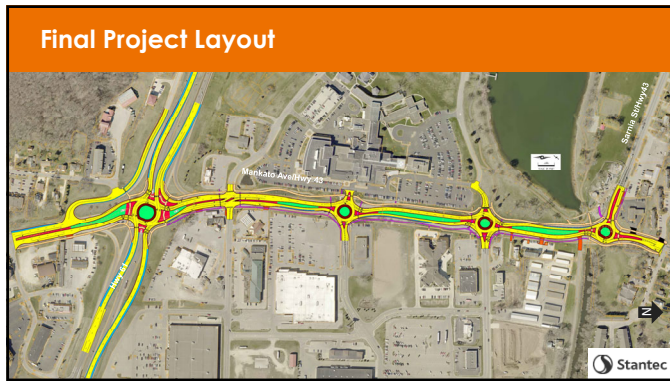
Multimodal Study

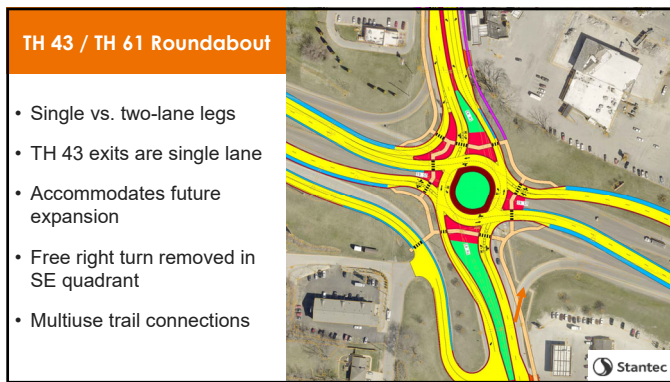
- VISSIM study performed
- Study included vehicles, peds, bikes and transit
- Roundabouts vs. traffic signal concepts developed
- Prepared traffic models for existing & future conditions
- Incorporated new development traffic
- Calibrated to model traffic patterns and weaving



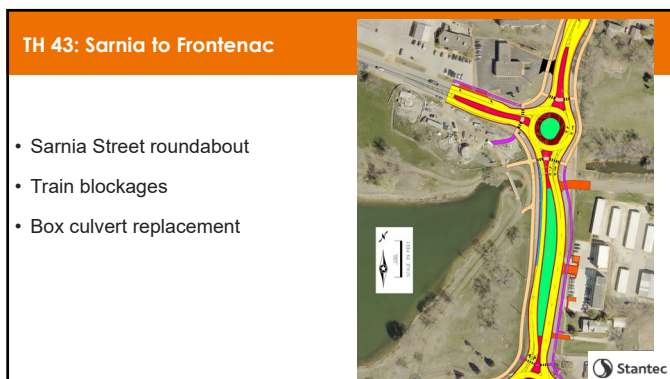
Multimodal Study: Traffic Signals vs. Roundabouts







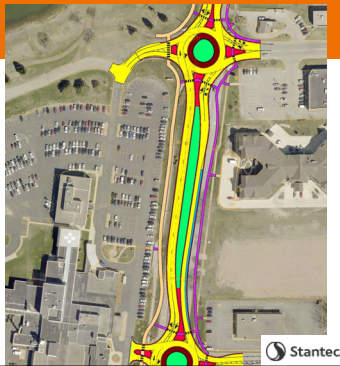
- Single vs. two-lane legs
- TH 43 exits are single lane
- Accommodates future expansion
- Free right turn removed in SE quadrant
- Multiuse trail connections



- Sarnia Street roundabout
- Train blockages
- Box culvert replacement

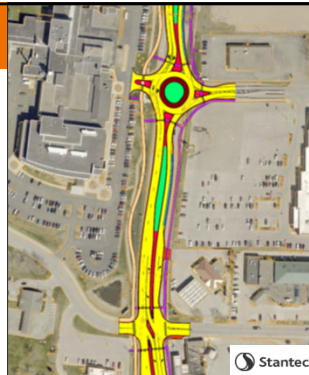
TH 43: Frontenac to Riverbend

- Single-lane vs. two-lane sections
- Intersection vs. corridor capacity
- Wider shoulder areas
- Ped & bike accommodations



TH 43: Riverbend to Bruski/Parks

- Single-lane vs. two-lane sections
- Left turn/crossing issues
- Private developments
- Ped & bike extensions



Pedestrian and Bike

- RRFBs at all multilane crossings
- Increases yielding by up to 88%
- City to own and maintain
- Solar powered
- Enhanced markings

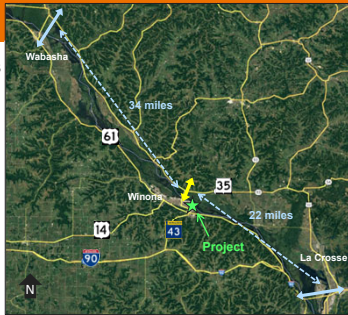


Staging & Construction



Regional Context

- Highway 43 is one of few routes to cross the Mississippi River
 - 34 miles north with MN 60 in Wabasha
 - 22 miles south with I-90 in La Crosse
- Highway 43 and Highway 61 are critical access points between Winona, I-90, and greater region
 - Few regional detour options



City Context

- Must maintain access to:
 - Winona Health
 - Area Businesses
 - Senior Housing



City Context

- Single arterial east of Lake Winona
- Within Winona, few detour options
 - Mankato Avenue is a key route
- Pelzer Street on far west side of city
 - Long detour for vehicles to/from south and east on MN 43 (1-90) and US 61
- Huff Street southwest of downtown
 - 2-lane, lower capacity
 - Citizens not amenable to this option



Initial Staging Plan Developed



- Stage 1
- Construct TH 43/TH 61 Roundabout
- Construct west side of TH 43
- Construct half of Box Culvert



Initial Staging Plan Developed



- Stage 2
- Construct east side of TH 43
- Construct half of Box Culvert



Contractor Constructability Review

- Solicited feedback from contractors on staging layout and general constructability
- Contractor determined the following:
 - Construction can occur in one season
 - Utilities should be relocated in advance as much as possible
 - Maintaining Highway 43 and 61 traffic feasible
 - Off-peak hour closures would be beneficial
 - Some modifications required to maintain access to certain businesses
 - No concerns with finding staging areas
 - Overall thought the staging plan looked good

[illegible]

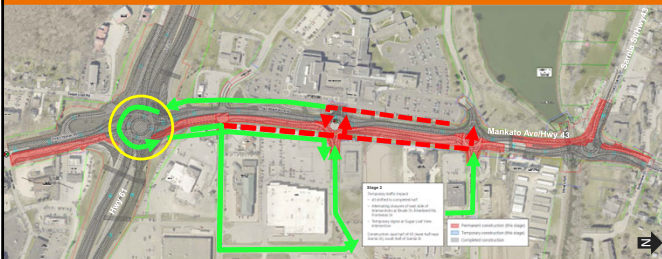
Stage 1



- Construction of roundabout and most of SB lanes
- Two portable coordinated signals at Highway 61
- Southbound lefts into shopping center rerouted
- Maintaining access to Winona Health crucial
- ER entrance open to first responders at all times
- 2 of 3 vehicle accesses remain open



Stage 2



- Construction of most of NB lanes
- Roundabout at Highway 61 is operational
- 2 of 3 shopping center accesses remain open
- Southbound lefts rerouted to roundabout to make U-turn and northbound right
- Northbound lefts make right, reroute, cross TH 43



During Stage 1

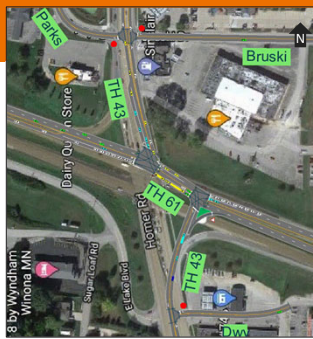


- Portable Signal at Sugar Loaf View
- South of Highway 61, southbound lefts are rerouted to make U-turn and northbound right
- Passenger cars U-turn at Highway 43
- Trucks U-turn at roundabout to south



Synchro Analysis

- Synchro models built for each stage
- 25% volume reduction to account for detours
- Vehicles rerouted for access and left turn lane closures
- Temporary/portable signal timings developed based on reduced/rerouted volumes, can be field adjusted
- Balance achieved to prevent queues from impacting upstream intersections



Bid Letting

- Project was let on February 9, 2022
- Engineers Estimate was \$14.3 million
- There was one bidder
 - Hoffman Construction
- Bid was \$17.3 million
- Supplier Issues
 - Direct buried wire for lighting
 - Box Culvert



Questions?

Dale Grove, PE
Stantec Project Manager
Dale.Grove@stantec.com

Kevin Hoglund, PE
Stantec Project Development Team Lead
Kevin.Hoglund@stantec.com