

ITEM#: AAMPO 1
DATE: 07-18-23
DEPT: MPO

TRANSPORTATION POLICY COMMITTEE ACTION FORM

SUBJECT: 190TH STREET CORRIDOR STUDY FINDINGS

BACKGROUND:

Forward 2045, the Ames Area MPO's (AAMPO's) current Metropolitan Transportation Plan (MTP), identified the need for a study of the 190th Street Corridor from George Washington Carver Avenue to US Highway 69 (see Figure 1).

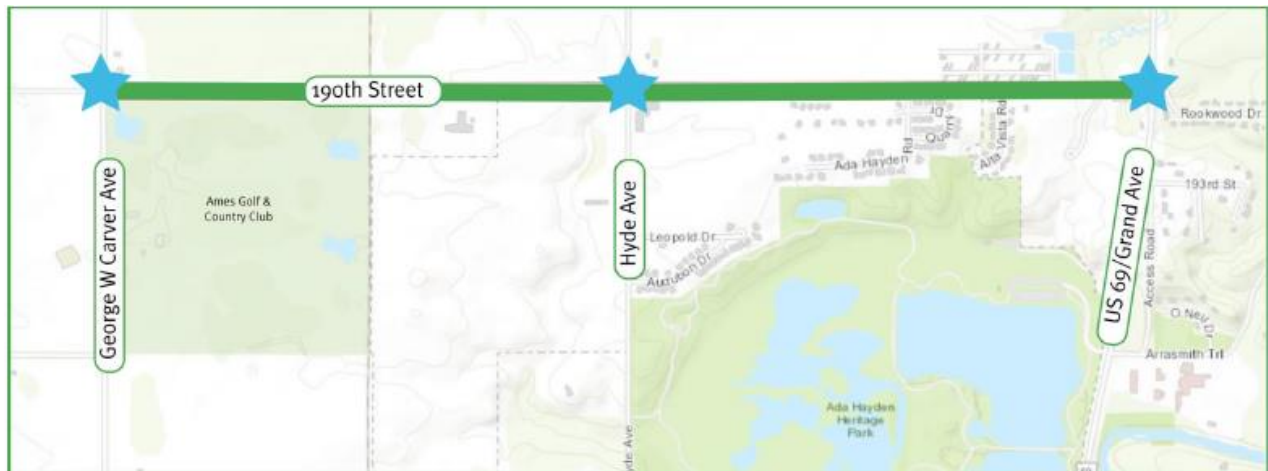


Figure 1: Study Area

The study looked at current safety, traffic operations, and multi-modal deficiencies along this corridor and the projected growth of traffic due to anticipated continued development along and near the study area. The AAMPO and City of Ames programmed this study with the anticipation that its findings will guide future corridor project programming.

STUDY FINDINGS:

For this study (see attached presentation and report), the engineering consultant, Bolton & Menk, Inc., conducted planning and conceptual-level engineering design services along the study corridor that included assessing traffic volumes, bicycle/pedestrian volumes, origin-destination data, evaluating traffic operations, and conducting safety analyses. Using data-driven and public input-based processes, initial alternatives were developed for the study corridor.

The initial alternatives included a roundabout and signalized option at each of the three primary study intersections (190th/GW Carver, 190th/Hyde, 190th/US 69). These

alternatives were presented at a public open house that was held on March 7, 2023, at the Vintage Cooperative of Ames.

Each of the initial intersection alternatives (roundabout and signal) were then evaluated in a decision matrix that considered predicted 2045 traffic operational performance (vehicle delay/queueing), pedestrian crossing characteristics, predicted safety performance, right-of-way impact, total emissions, and 25-year life-cycle costs. Table 1 summarizes the study’s recommended alternatives at each study intersection.

Table 1: Preferred Intersection Alternatives

Intersection	Preferred Alternative	Recommended Implementation Timeframe	Jurisdiction(s)
190th St & GW Carver Ave	Single Lane Roundabout w/NB Slip Lane OR Signal w/Left Turn Lanes and NBR Turn Lane	2030	Story County (100%)
190th St & Grant/Hyde Ave	Single Lane Roundabout OR Signal w/Left Turn Lanes*	2030	Story County (50%), City of Ames (50%)
190th St & US 69	Construct EBR Turn Lanes	2025-2030	Story County(33%), Iowa DOT (67%)
	Signalized Intersection w/NBL, SBL, and EBR Turn Lanes	2030-2035	

***If a signalization option is selected, staff recommends the permanent traffic signal be installed between 2025-2030 to also address destination lighting. Turn lanes would then be installed in 2030.**

The anticipated project costs (in 2023 dollars) for the above alternatives are shown in Table 2.

Table 2: Project Costs

Intersection	Alternative	Construction ¹	25-Year Life Cycle Cost	Project Sponsor(s)
190th St & GW Carver Ave	Roundabout	\$5,750,000	\$5,875,000	Story County
	Signal	\$4,200,000	\$4,460,000	
190th St & Hyde/Grant Ave	Roundabout	\$5,000,000	\$5,125,000	Story County, City of Ames (50/50 Split) ²
	Signal	\$4,200,000	\$4,460,000	
190th/US 69 Signal	Signal	\$3,600,000	\$3,860,000	Story County, Iowa DOT ³

1 – Construction costs shown include right-of-way costs.

2 – At the 190th St & Hyde Ave intersection, this study estimated a 50%/50% cost sharing between the City of Ames and Story County based on their existing cost sharing agreement which was used for the temporary signal. The City of Ames and Story County would need to develop a new cost sharing agreement for future improvements at this intersection.

3 – At the 190th St & US 69 intersection, the cost sharing between the Iowa DOT and Story County will need to be established in a future cost sharing agreement between the agencies.

In addition to the intersection control and layout recommendations, the study also made other recommendations for the study area including:

- 190th St Corridor Reconstruction (**recommended in 15-20 years when existing pavement reaches end of life**)
 - Reconstruction to an urban 2-lane section within the study boundary with turn lanes at the public roadway connections.
 - Construction of a 10-foot trail on the south side of the roadway and a 5-foot sidewalk on the north side.
- Intersection destination lighting at the three primary corridor intersections (**recommended by years 2024-2025**).
- Continue to monitor the corridor as it develops and take appropriate speed control steps following industry recommended practices.
- To meet multi-modal goals of the corridor, a 10' trail should be built on one side of the road with a sidewalk on the other side.

STAFF COMMENTS ON STUDY FINDINGS:

This corridor study coordinated the planning and conceptual design of the three primary intersections along the 190th Street study corridor in addition to the recommended cross section that 190th Street should ultimately have. **By evaluating all these improvements along the study corridor together, MPO staff believes that this will allow the jurisdictional agencies to program and implement improvements along the corridor in a coordinated manner. It will also help inform the AAMPO's next MTP update, which is scheduled to be approved in the fall of 2025.**

At this point, the designs of the alternatives and recommendations shown in the MPO study are conceptual. Each improvement project will need to be programmed and funded by the respective sponsor agency (or agencies) with jurisdiction over that project's area and will need to go through its own design, right-of-way acquisition, and construction process. Sponsor's may apply for regionally allocated federal funding from the AAMPO, statewide Iowa DOT funding, or federal discretionary grant program funding should they so choose.

Most of these funding sources require a 20% local match from the applicant(s). Note that the AAMPO will only be eligible to provide federal funding from its formula programs to projects that are listed in the most current MTP. Currently, only the 190th Street and Hyde/Grant Avenue intersection is listed. However, it is expected that the 2050 MTP being developed for final approval in fall of 2025 will likely include the GW Carver Avenue and US 69 intersections along 190th Street as well, based upon this study's findings. If this occurs, all three projects would be eligible to apply for MPO grant funding.

Two of the study intersections have both a roundabout and signal option listed as a preferred alternative (190th St & GW Carver Ave & 190th St & Hyde/Grant Ave).

Because the MPO study found that both the roundabout and signal alternatives will adequately serve the forecasted traffic in the study area, the project sponsor(s) with jurisdiction of these intersections will need to determine which alternative they would like to program and pursue. MPO staff recommends that the project sponsor(s) consider the benefits and detriments that this study identified for the roundabout and signal options when determining which alternative to pursue.

Based upon the phased implementation that is possible with a traffic signal, and the lower costs, queues, and ROW impacts, staff believes a traffic signal is the best alternative for 190th & Hyde. In order to quickly address the destination lighting at the intersection and reduce the maintenance requirements of the existing temporary signal, staff would recommend the City of Ames and Story County explore constructing a permanent traffic signal with street light luminaires in the near future. The traffic signal should be designed to accommodate the future turn lanes at the intersection, which is estimated to be constructed in 2030.

It should be noted that an iterative implementation of a traffic signal is likely not possible at GW Carver due to the existing heavy turning movements.

ALTERNATIVES:

1. Motion accepting the study findings as summarized in the study report.
2. Do not approve the findings of the study.

MPO ADMINISTRATOR'S RECOMMENDED ACTION:

This study was completed using transportation planning and traffic engineering best practices and was presented at a public meeting. The study findings will help guide the AAMPO and relevant agencies in the designing and programming of future projects along this corridor. **Therefore, it is the recommendation of the MPO Administrator that the Transportation Policy Committee adopt Alternative No. 1, as noted above.**

190th Street Corridor Study

Ames Area MPO Presentation

July 18, 2023

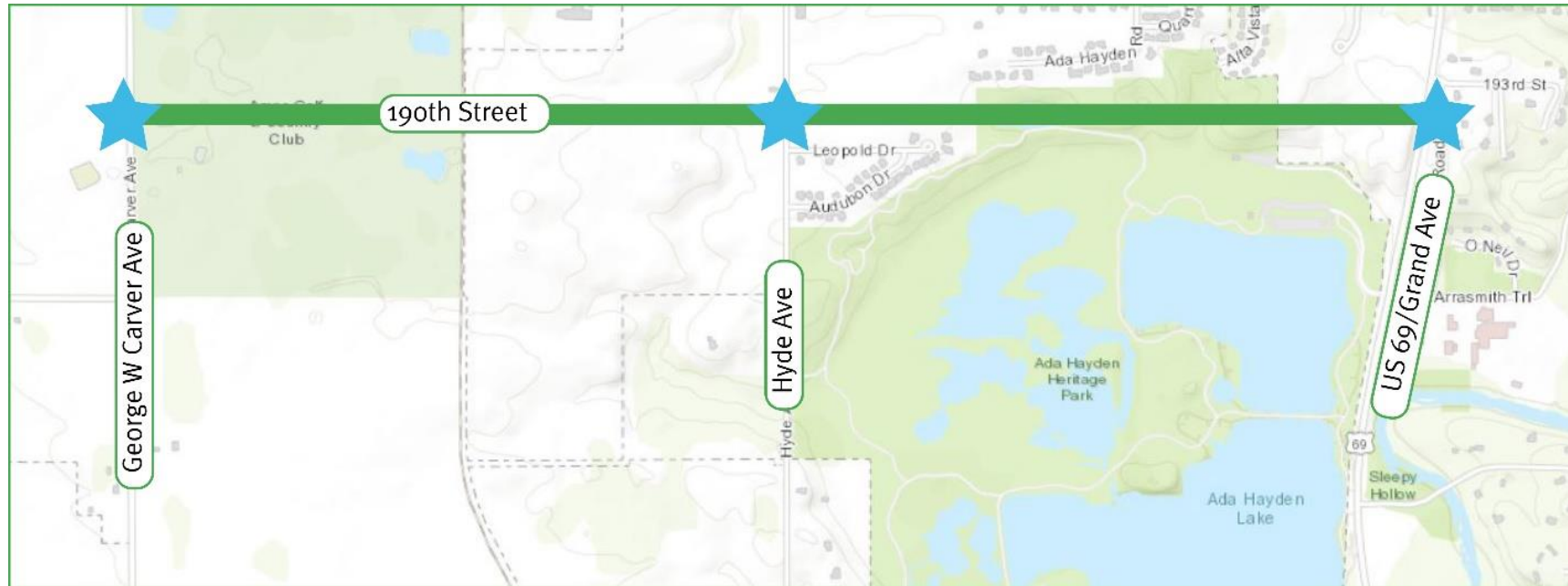


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1) Study Area Location & Background



- Need for study identified in AAMPO's MTP "Forward 2045"
- Existing & forecasted traffic operations concerns at the 3 primary corridor intersections
- Rapid development & growth occurring in the study area
- Study assessed alternatives for the intersections & the corridor

2) Stakeholder Outreach

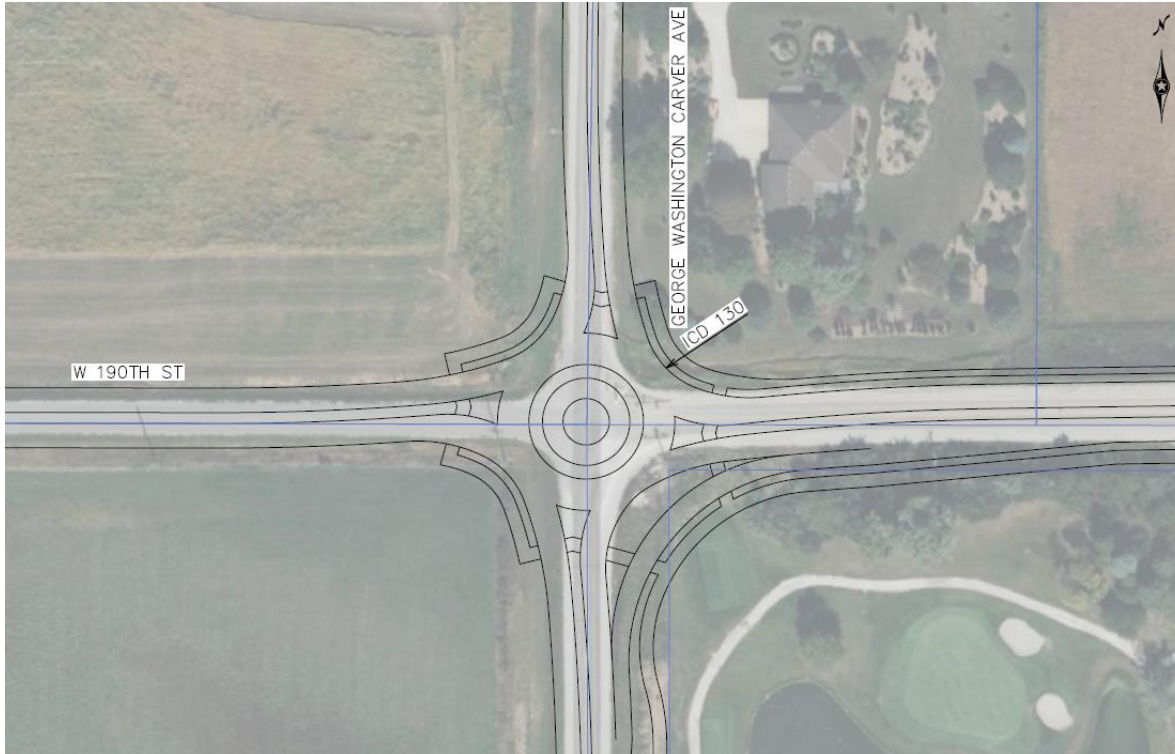
- Included Iowa DOT, Story County, the City of Ames, the AAMPO, and residents from both Ames and Gilbert
- INPUTiD Platform
 - *Approximately 40 responses from area residents*
 - *Themes: lighting, speeding, bicycle and pedestrian infrastructure, school-related traffic, difficult turning movements, and future traffic volumes*
- Public Open House (March 7th, 2023 @ Vintage Cooperative)
 - *Themes: roundabouts preferred, lighting, and bicycle/pedestrian infrastructure*
 - *Attendance was very good with over 50 people on site*

3) Study Intersection Analysis & Recommendations

- This study considered a signal and roundabout alternative at the following 3 intersections:
 - 190th St & George Washington (GW) Carver Ave
 - 190th St & Hyde/Grant Ave
 - 190th St & US Highway 69
- Analysis for each intersection considered:
 - Forecasted vehicle delays & queueing
 - Pedestrian crossing
 - Safety
 - Right-of-way impacts
 - Environmental/emissions
 - 25-year life-cycle cost

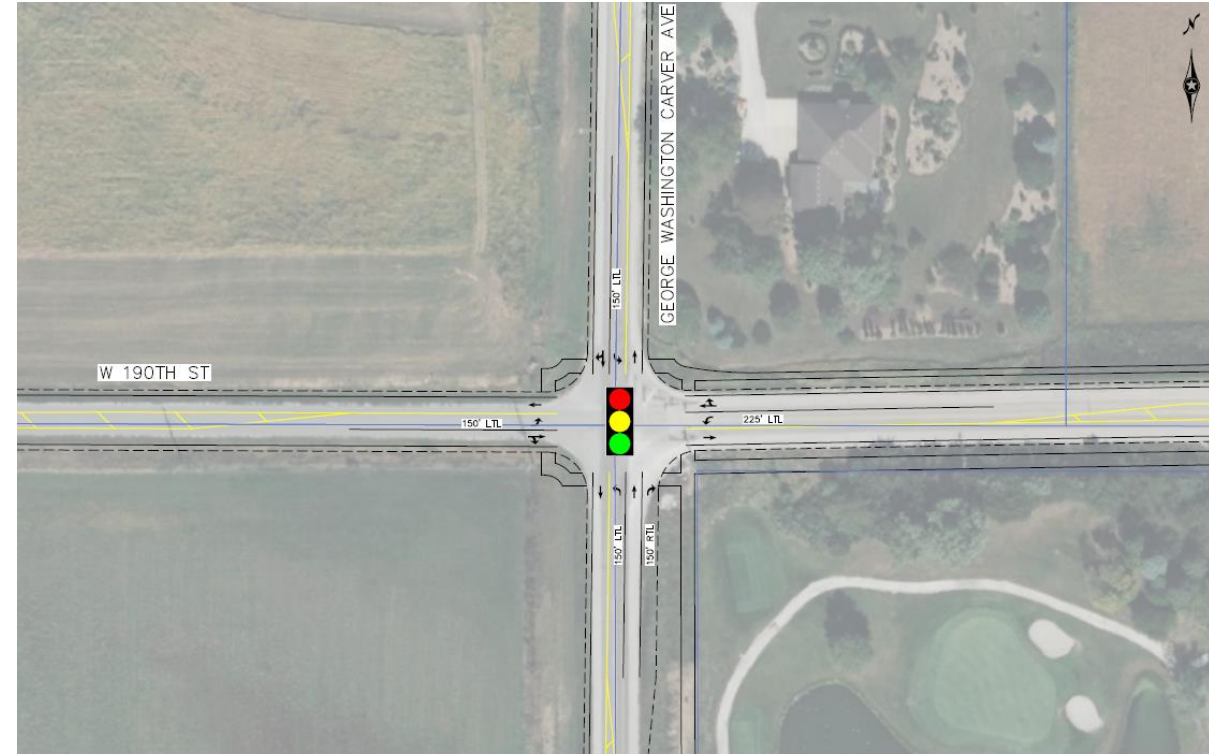
190th St & GW Carver Ave

Roundabout Alternative



- Single-Lane Roundabout
- Northbound Right Slip-Lane

Signal Alternative



- Left Turn Lanes (All Direction)
- Northbound Right Turn Lane

190th St & GW Carver Ave

Study Recommendation

Roundabout OR Signal

By Year 2030

- Both the roundabout and signal alternatives operate acceptably w/ 2045 traffic
- Roundabout option performs better than the signal for several metrics
- Signal option has significantly less ROW impacts & life-cycle costs

Criteria	Roundabout	Signal
2045 Vehicle Delay (Veh-Min)	196	523
AM Peak	163	514
PM Peak		
2045 Vehicle Queues	100' (WB)	150' (NBT)
AM Peak (Worst Movement)	175' (WB)	225' (WBL)
PM Peak (Worst Movement)		
Multi-Modal (Pedestrian Crossing)	Crossing Dist: 65' Yield Rate: 83% Worst Leg – LOS D	Crossing Dist: 60' Yield Rate: 99% Worst Leg – LOS C
Safety (Predicted Crashes/Yr)	1.03 (All) 0.27 (Fatal/Inj.)	2.22 (All) 1.77 (Fatal/Inj.)
Total Daily Emissions (kg)	14	23
Right-of-Way Impact (width)	145	85
Construction Cost	\$5,750,000	\$4,200,000
25-Yr Life Cycle Cost	\$5,875,000	\$4,460,000



Jurisdictions*: 50% Story County
50% City of Ames

190th St & Hyde/Grant Ave

Roundabout Alternative



- Single-Lane Roundabout

Signal Alternative



- Left Turn Lanes (All Directions)

*This is estimated based upon the existing cost sharing agreement for the temporary signal and is subject to change during project design.

190th St & Hyde/Grant Ave

Jurisdictions: 50% Story County
50% City of Ames
Study Recommendation

Roundabout OR Signal

By Year 2030

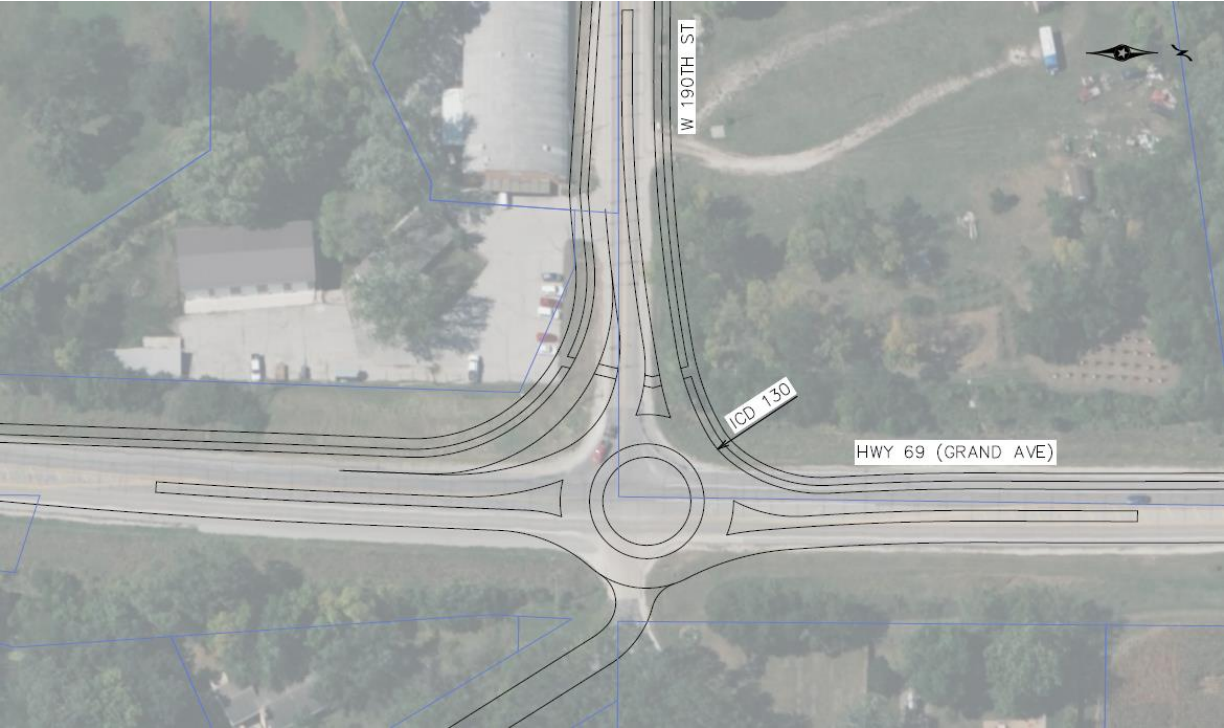
- Both options perform acceptably with 2045 traffic
- Roundabout does experience significant queueing compared to the signal and has greater ROW impact & life cycle costs
- Roundabout experiences less delay, emissions, and has better predicted safety

Criteria	Roundabout	Signal
2045 Vehicle Delay (Veh-Min) AM Peak PM Peak	1394 544	1942 587
2045 Vehicle Queues AM Peak (Worst Movement) PM Peak (Worst Movement)	950' (EB) 1000+' (WB)	425' (WB) 650' (WB)
Multi-Modal (Pedestrian Crossing)	Crossing Dist: 65' Yield Rate: 83% Worst Leg – LOS B	Crossing Dist: 60' Yield Rate: 99% Worst Leg – LOS B
Safety (Predicted Crashes/Yr)	1.79 (All) 0.28 (Fatal/Inj.)	3.83 (All) 1.86 (Fatal/Inj.)
Total Daily Emissions (kg)	22	38
Right-of-Way Impact (width)	135	75
Construction Cost	\$5,000,000	\$4,200,000
25-Yr Life Cycle Cost	\$5,125,000	\$4,460,000



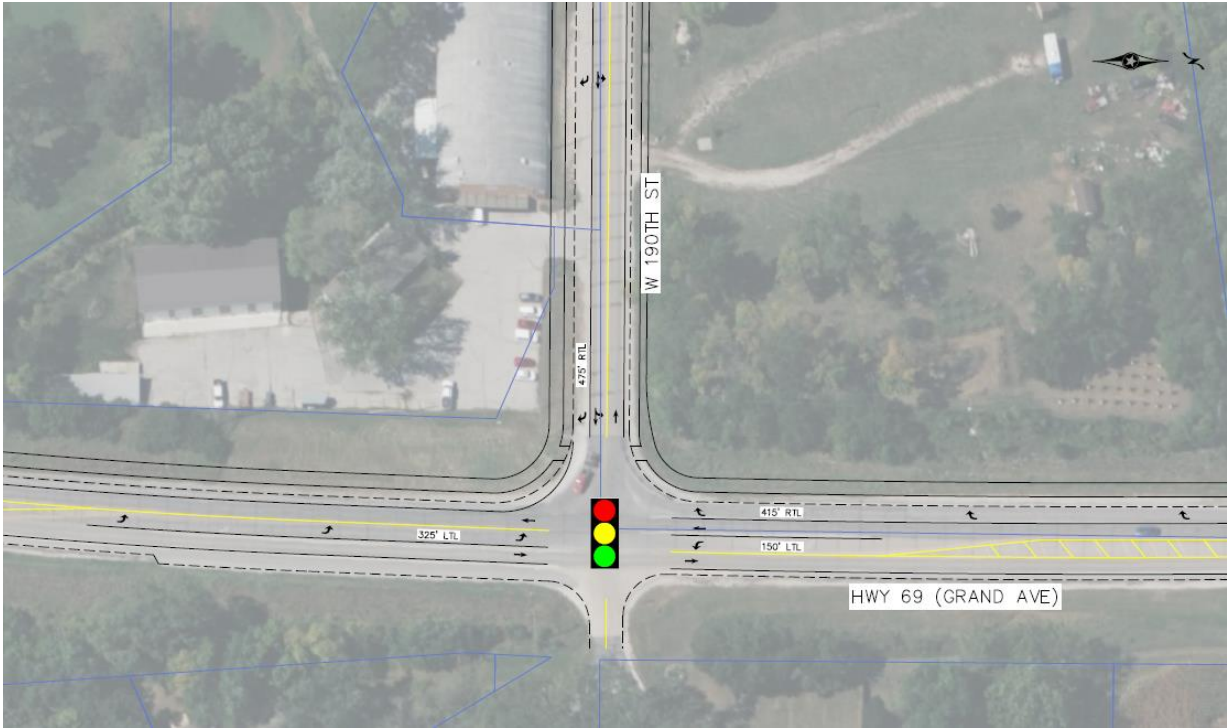
190th St & US 69

Roundabout Alternative



- Single-Lane Roundabout
- Eastbound Right Turn Slip Lane

Signal Alternative



- Left & Right Turn Lanes on US 69
- Right Turn Lane on 190th St

*Jurisdictional costs will be based on a future agreement between the Iowa DOT and Story County based upon specific project costs.

190th St & US 69

Study Recommendation

Add EBR Turn Lane 2025-2030

Signalize Intersection 2030-2035

Criteria	Roundabout	Signal
2045 Vehicle Delay (Veh-Min) AM Peak PM Peak	270 2170	1169 638
2045 Vehicle Queues AM Peak (Worst Movement) PM Peak (Worst Movement)	375' (SB) 1000+' (NB)	550' (SB) 300' (SB)
Multi-Modal (Pedestrian Crossing)	Crossing Dist: 100' Yield Rate: 83% Worst Leg – LOS B	Crossing Dist: 60' Yield Rate: 99% Worst Leg – LOS C
Safety (Predicted Crashes/Yr)	0.82 (All) 0.17 (Fatal/Inj.)	2.33 (All) 1.17 (Fatal/Inj.)
Total Daily Emissions (kg)	22	38
Right-of-Way Impact (width)	195	110
Construction Cycle Cost	\$4,300,000	\$3,600,000
25-Yr Life Cycle Cost	\$4,425,000	\$3,860,000

- Roundabout option cannot adequately serve the PM peak hour traffic
- Roundabout option requires significant ROW space due to the slip lane
- Signal option provides opportunity for coordination along US 69 with current and potential future signals

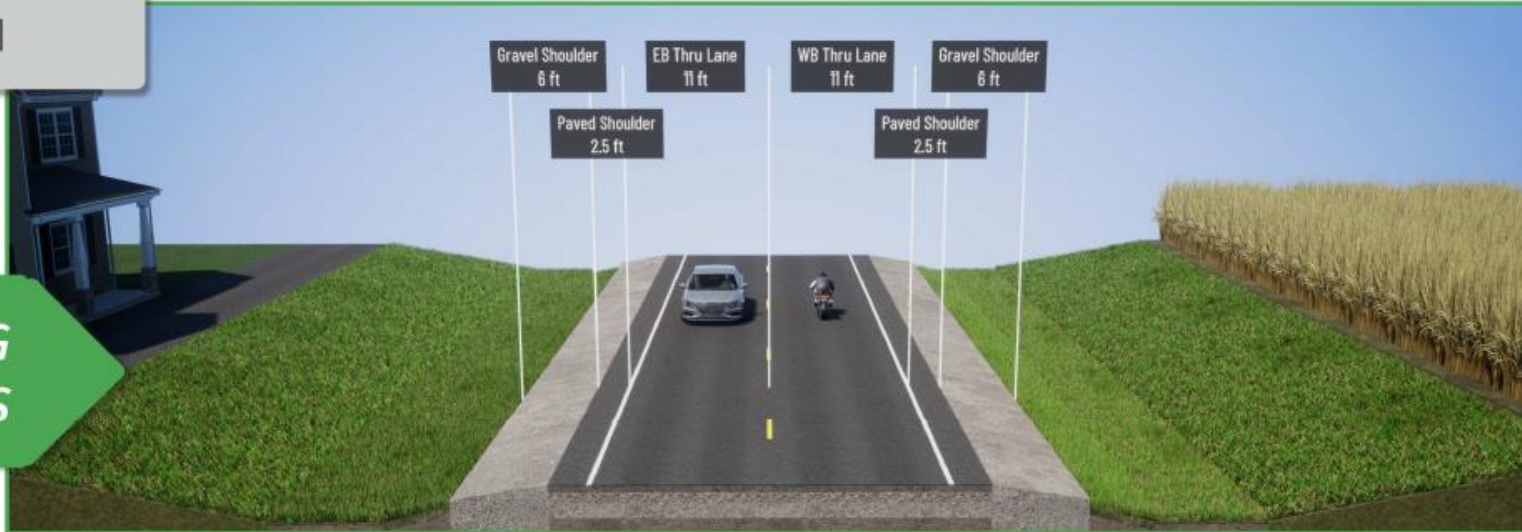


4) 190th Street Corridor & Cross-Section

190TH STREET CROSS SECTION

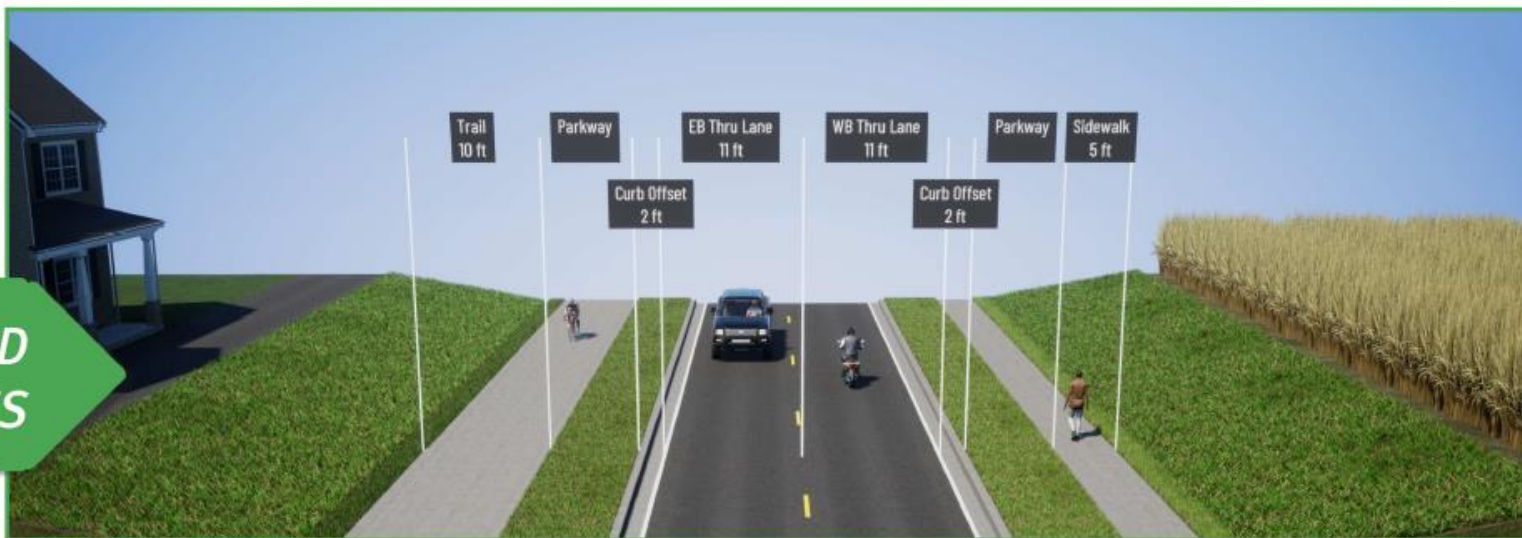
EXISTING CONDITIONS

2,000 to 3,120 vehicles per day



PROPOSED CHANGES

9,000 vehicles per day estimated by 2045



Study

Recommendation

Construct urban 2-lane section when existing pavement reaches end of life (~15-20 years)



5) Study Conclusions & Recommendations

- Recommended Cross-Section
 - *The AADT for 190th Street in 2045 is 9,000 vehicles/day.*
 - *2-lane roadway plus turn lanes will operate at LOS C up to 10,000 vehicles/day*
- Manage Access Control along 190th Street
- Intersections
 - ***George Washington Carver Avenue*** – *Single Lane Roundabout with northbound right-turn slip lane or Signal with northbound right-turn lane and left-turn lanes in all directions*
 - ***Hyde Avenue/Grant Avenue*** – *Single Lane Roundabout or Signal with left-turn lanes*
 - ***Highway 69/Grand Avenue*** – *Signal with single northbound left, single southbound left, and single eastbound right turn lanes*



Implementation Plan

Location	2023-2025	2025-2030	2030-2035	2035-2040	2040-2045
190th Street @ George Washington Carver Ave	Intersection Destination Lighting	Single Lane Roundabout with NB Slip Lane (or) Signal with Left Turn Lanes, NB Right Turn Lane by 2030	-	-	-
190th Street @ Grant Ave/Hyde Ave	Intersection Destination Lighting. Maintain Existing Temp Signal ¹	Single Lane Roundabout (or) Signal with Turn Lanes by 2030	-	-	-
190th Street @ Hwy69/Grand Ave	Intersection Destination Lighting	Add Eastbound Right Turn Lane	Signalize Intersection	-	-
190th Street: Hyde/Grant to Hwy69/Grand Ave	Install Roadway Lighting. Plan For Shared Use Path Along One Side	-	-	Urban 2-Lane Section With Turn Lanes at Public Streets From HWY 69 to Hyde	Urban 2-Lane Section With Turn Lanes at Public Streets From Hyde to GW Carver
Hwy 69/Grand Avenue South of 190th St (Iowa DOT)	-	-	-	-	5-Lane section With Trail Connection on West Side to ADA Hayden
Hwy 69/Grand Avenue North of 190th St (Iowa DOT)	-	-	-	-	2-Lane Section With Turn Lanes At Public Road Intersections

¹-If the signal option is pursued, the recommendation would be to install permanent signal poles in 2025-2030. This would also address intersection destination lighting.



Thank you!
Any Questions?



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