



US 2/US 81 SKEWED INTERSECTION STUDY

Steering Committee Meeting #2

Grand Forks, ND
June 2019

Overcoming Barriers **Strengthening Connections**

M.P.O.
M.P.O.
M.P.O.

Grand Forks - East Grand Forks
Metropolitan Planning Organization

Ensuring Opportunities **Planning One Community**



ENGINEERING, REIMAGINED

Project Process

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graph LR; A[Identify Key Issues and Opportunities] --> B[Develop and Assess Alternatives]; B --> C[Formulate Implementation Strategy];
```

Identify Key
Issues and
Opportunities

Develop and
Assess
Alternatives

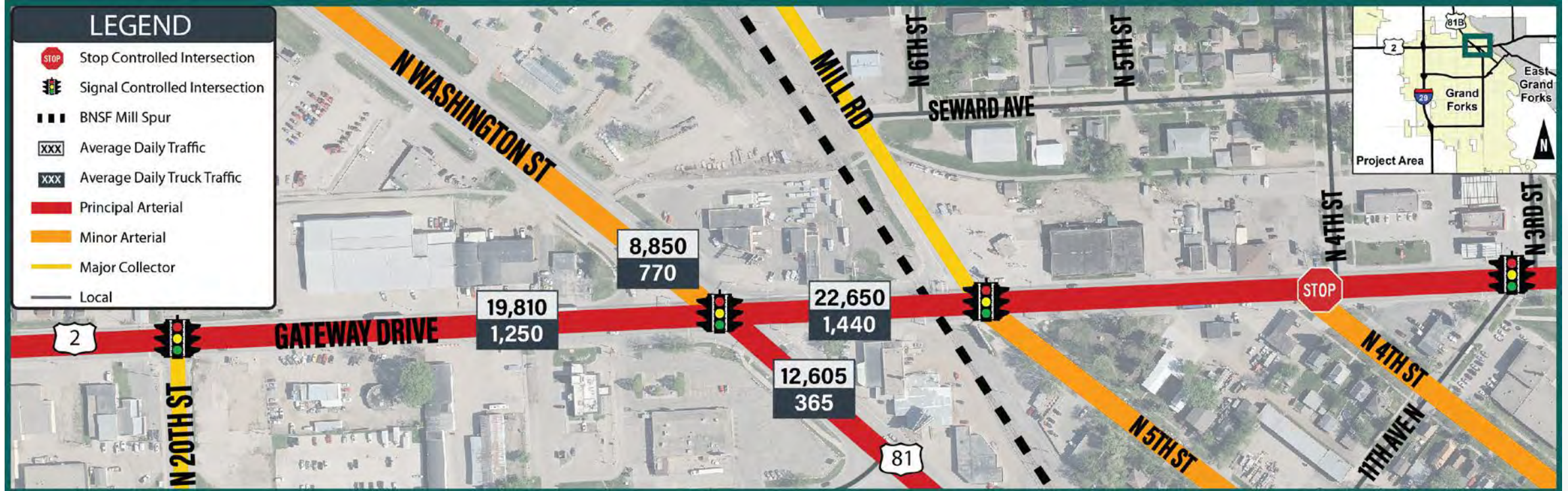
Formulate
Implementation
Strategy



AGENDA

- Study Area
- Train Crossings and Blockages
- Vehicular Traffic and Reliability
- Safety
- Pedestrian, Bicycle and Transit
- Environmental Conditions
- Alternatives Brainstorming
- Next Steps

Study Area



➤ Known Issues and Conflicts;

- Mill spur railroad crossing creates traffic blockages and queueing issues.
- Intersection skew makes turning movements for trucks difficult.
- Opportunities for improved pedestrian, bicycle and transit conditions.



Key Issues Refresher

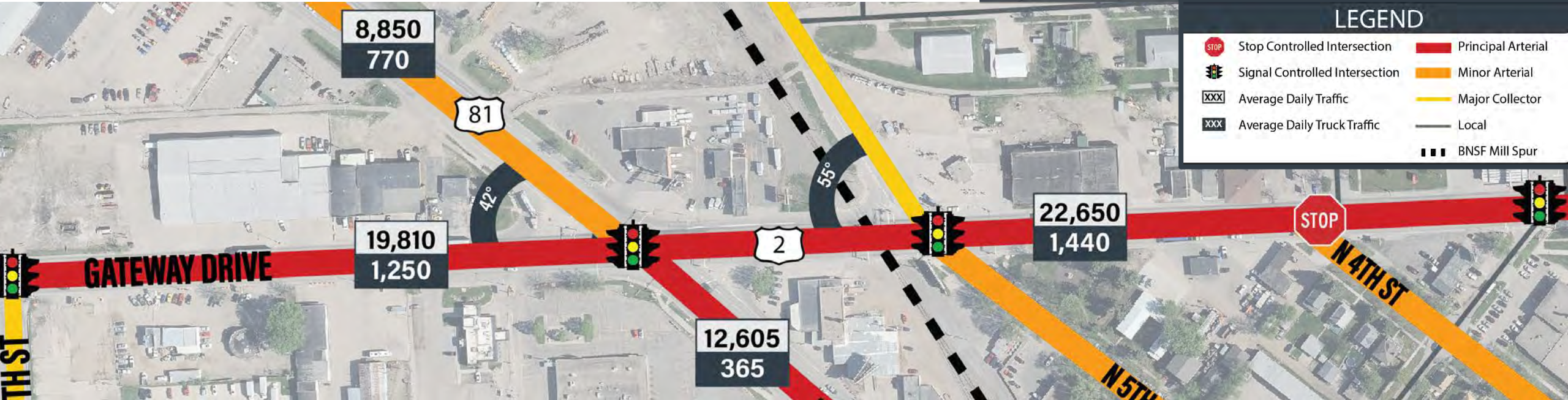
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N 20TH ST

Truck Traffic

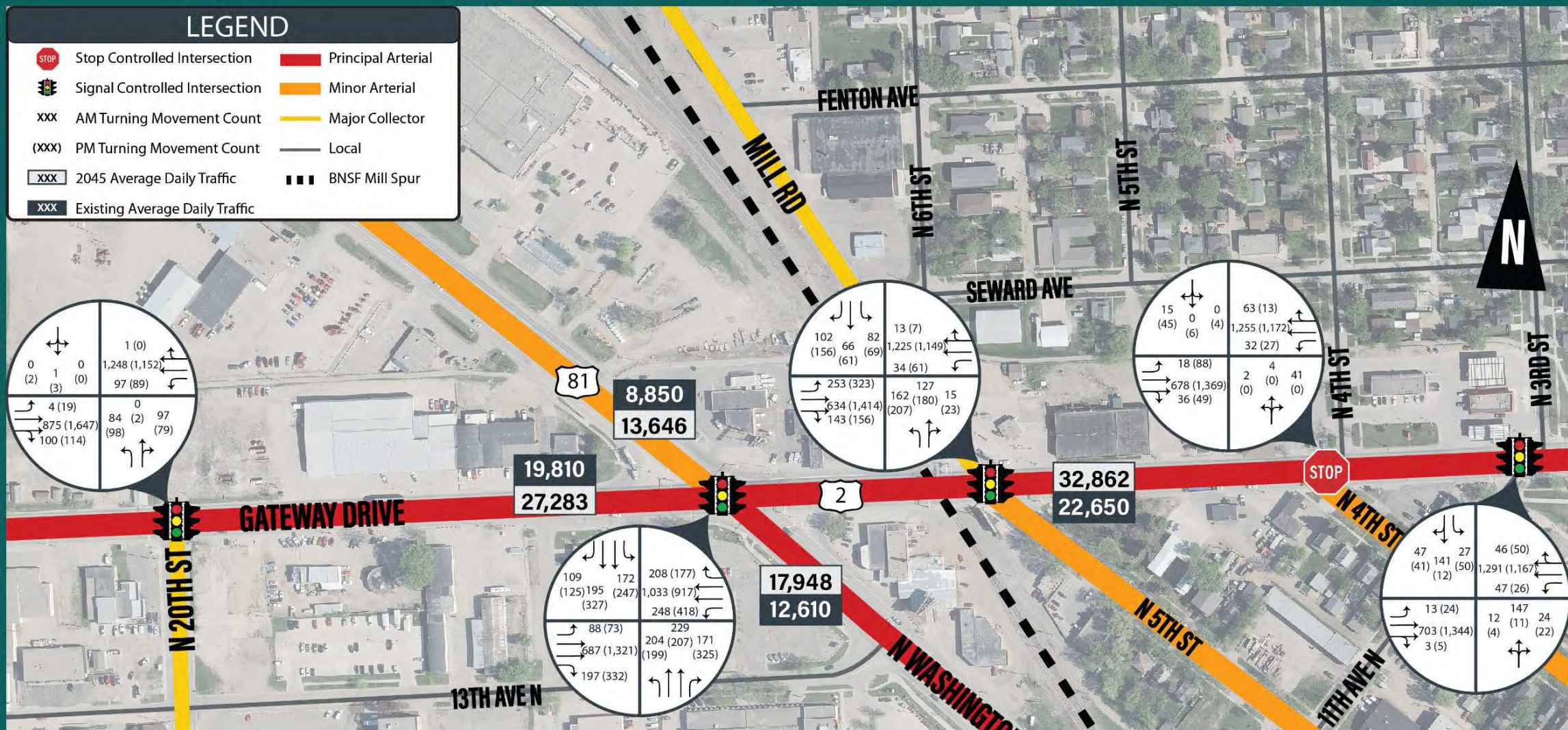
- Level One Freight System with international connections
- 1,200-1,500 trucks per day
- Trucks per day > 1,500 during sugar beet harvest season
- In 2016, NDSM increased capacity 33%, looking to expand another 22% in 5 years



Traffic Operations

CAPACITY	TRAFFIC FLOW	DESCRIPTION
Under	 <p>Diagram showing two cars on a two-lane road with a dashed center line, moving in the same direction. There is a large gap between them, indicating free flow.</p>	LOS A - FREE FLOW Low volumes and no delays.
	 <p>Diagram showing three cars on a two-lane road with a dashed center line, moving in the same direction. The cars are spaced out, indicating stable flow.</p>	LOS B - STABLE FLOW Low volumes and speeds dictated by travel conditions.
	 <p>Diagram showing four cars on a two-lane road with a dashed center line, moving in the same direction. The cars are closer together, indicating stable flow with higher volumes.</p>	LOS C - STABLE FLOW Speeds and maneuverability closely controlled due to higher volumes.
Approaching	 <p>Diagram showing six cars on a two-lane road with a dashed center line, moving in the same direction. The cars are very close together, indicating restricted flow.</p>	LOS D - RESTRICTED FLOW Higher density traffic restricts maneuverability and volumes approaching capacity.
At	 <p>Diagram showing eight cars on a two-lane road with a dashed center line, moving in the same direction. The cars are packed closely together, indicating unstable flow.</p>	LOS E - UNSTABLE FLOW Low speeds, considerable delays, and volumes at or slightly over capacity.
Over	 <p>Diagram showing ten cars on a two-lane road with a dashed center line, moving in the same direction. The cars are bumper-to-bumper, indicating forced flow.</p>	LOS F - FORCED FLOW Very low speeds, volumes exceed capacity, and long delays with stop-and-go traffic.

Existing and Future Traffic Volumes



- LOS acceptable at all intersections today, except N 4th Street.
- Congestion Builds at Washington Street, causing unacceptable LOS in the future
- Queuing an Issues in All Scenarios
- Travel Time a Concern with Trains and Multiple Signals

2045 PM Queuing Issues

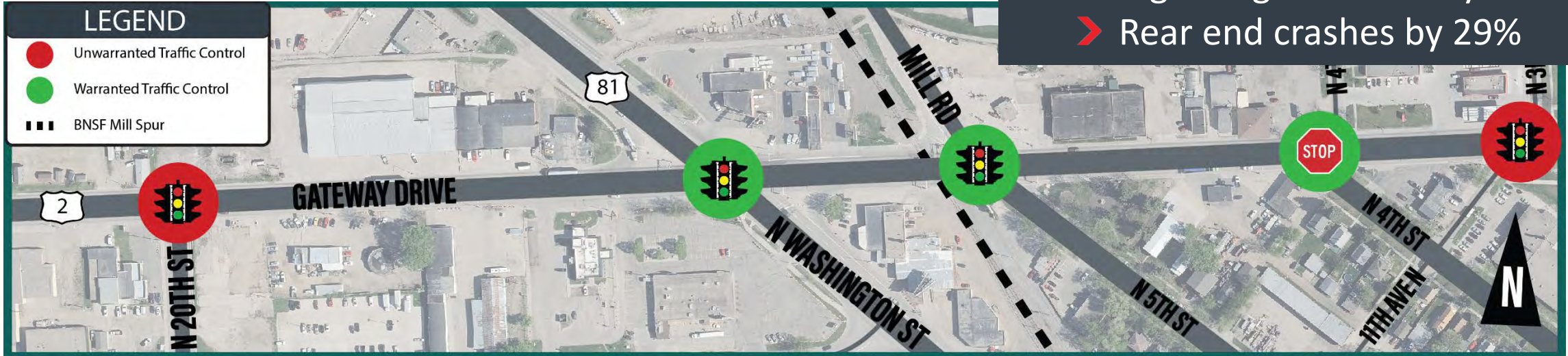
© 2017 Microsoft Corporation

2045 PM Peak



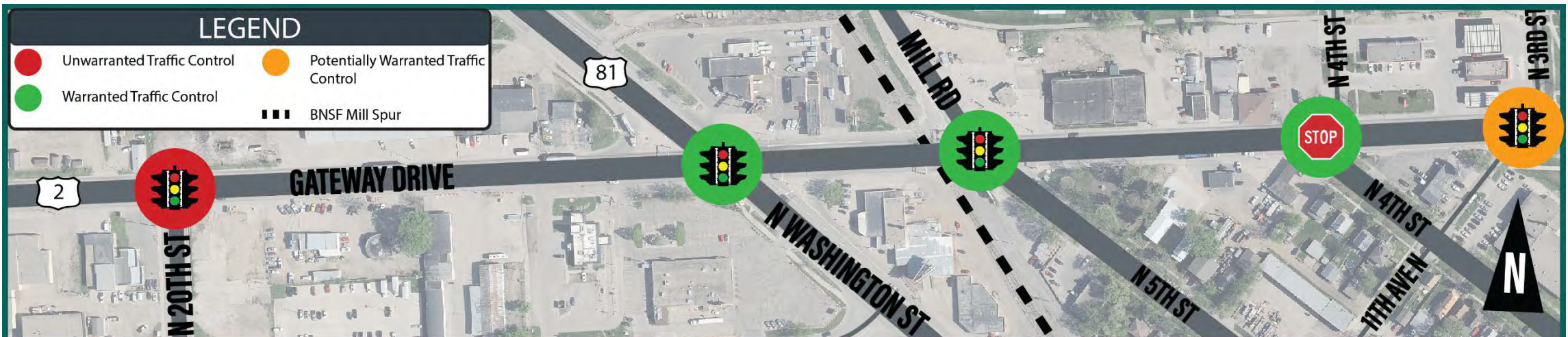
Existing Traffic Control Analysis

Existing



- Removal of unwarranted signals reduces
 - All crashes by 24%
 - Injury crashes by 54%
 - Right angle crashes by 24%
 - Rear end crashes by 29%

2030 and 2045



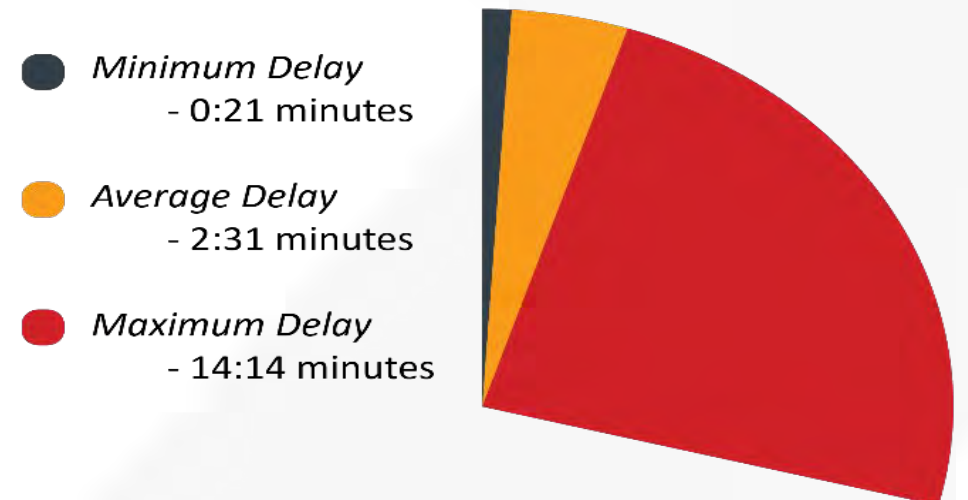
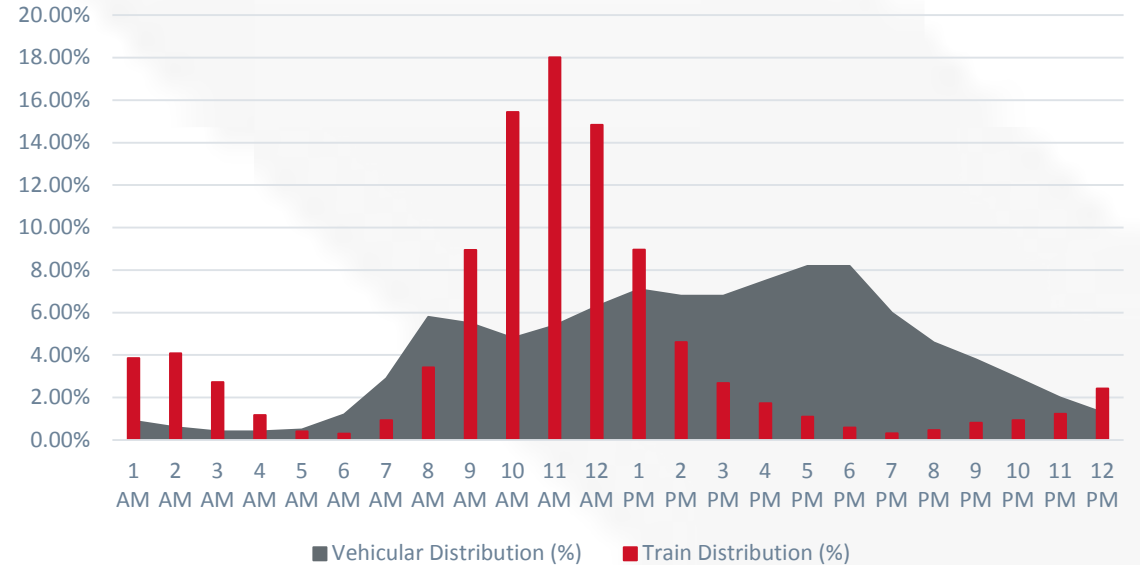
2045 Train Event Operations



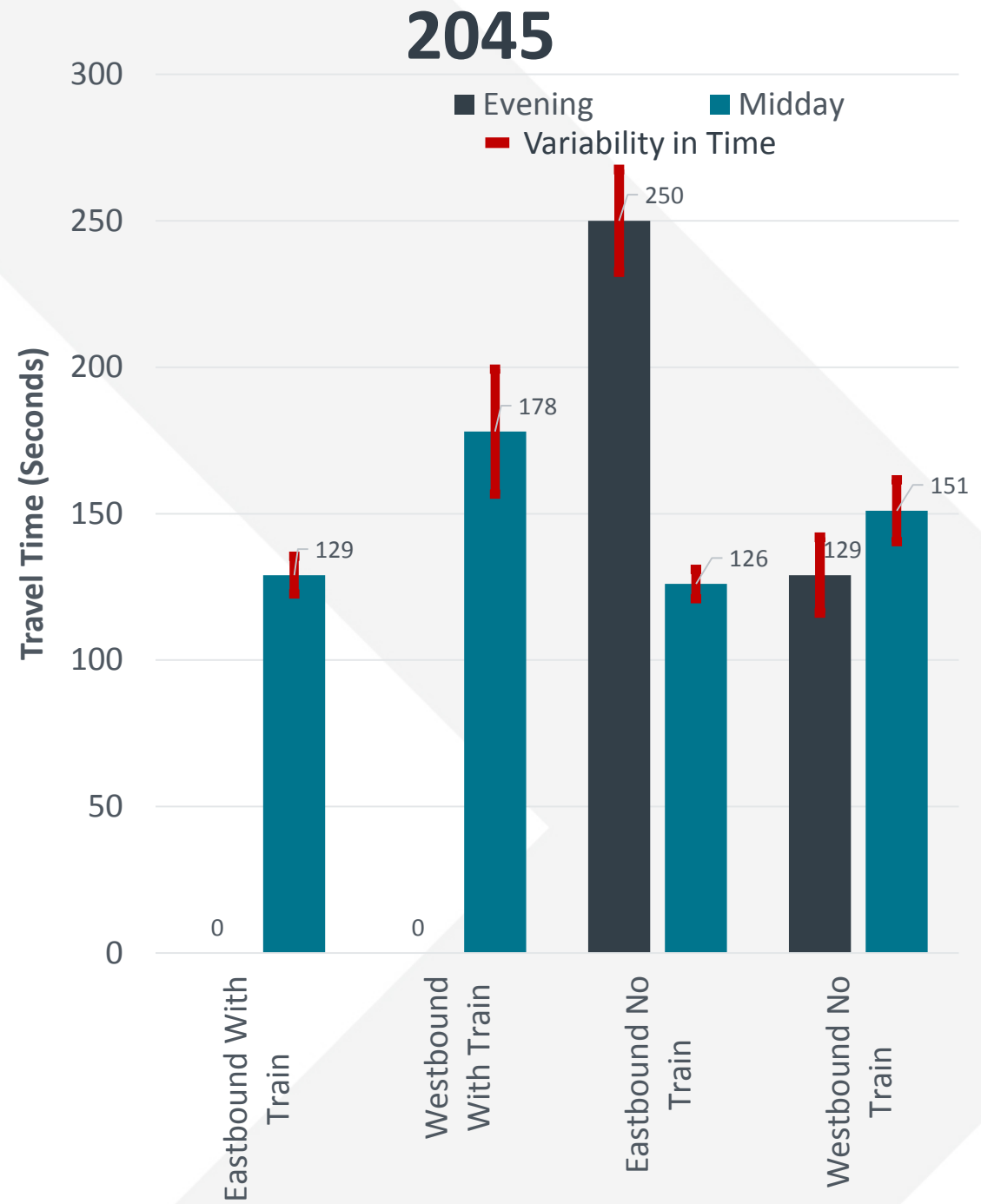
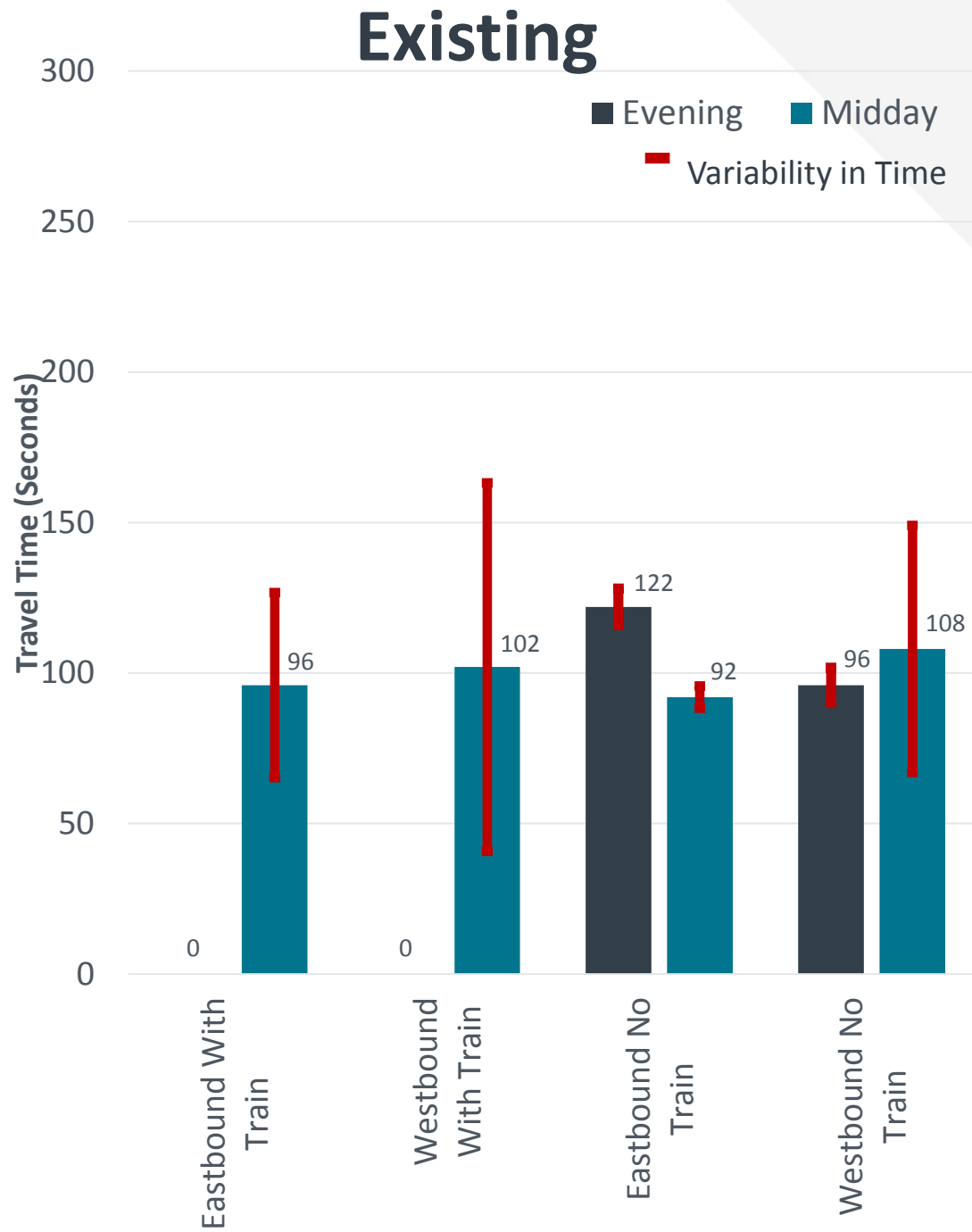
- One train event:
 - 4 hours of vehicle delay today
 - 7 hours by 2045

Train Blockages

- 4 to 5 blockages per day
 - 10 MPH or Less
- Rail Delay Estimates
 - 89 Hours/Day
 - 2,670 Hours/Month
 - 32,396 Hours/Year
- Safety
 - No Crashes Since 1994
 - 7th Highest Predicted Rail Crash Rate in the County



Travel Time and Reliability



Unit Trains

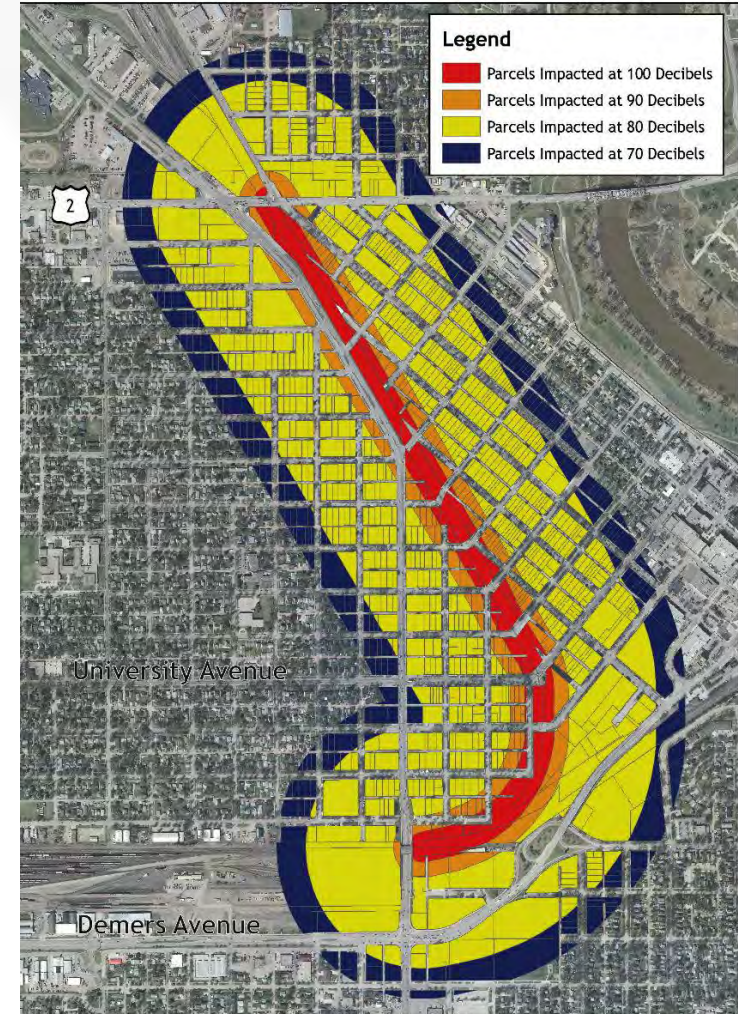
- ND Mill Working to Accommodate Unit Trains
- All crossings will be blocked at the same time.

4x Longer than Current Trains

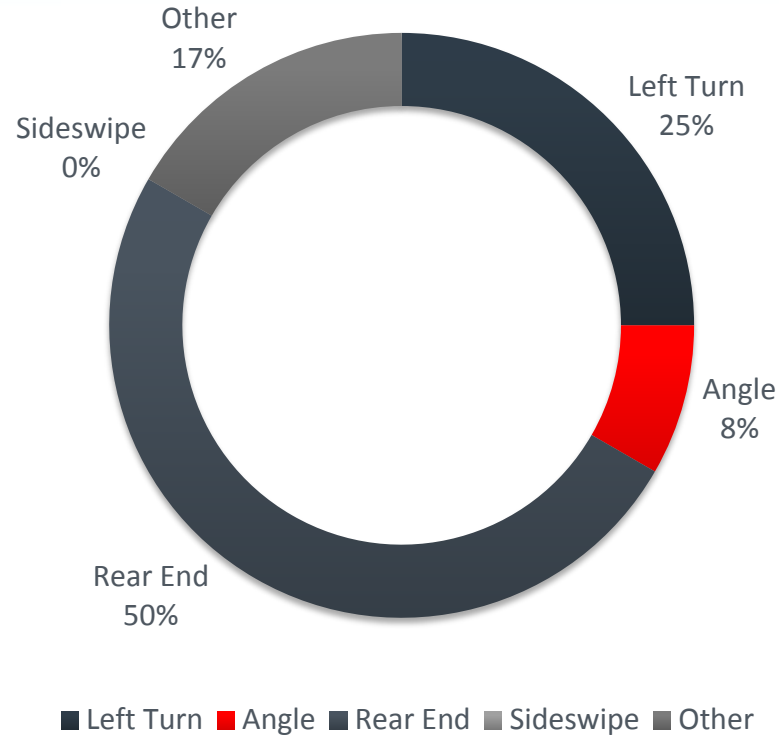
10-17 Minutes of Delay at Mill Spur Crossings

4-6 Blockages per Month

Potential to Occur at Night



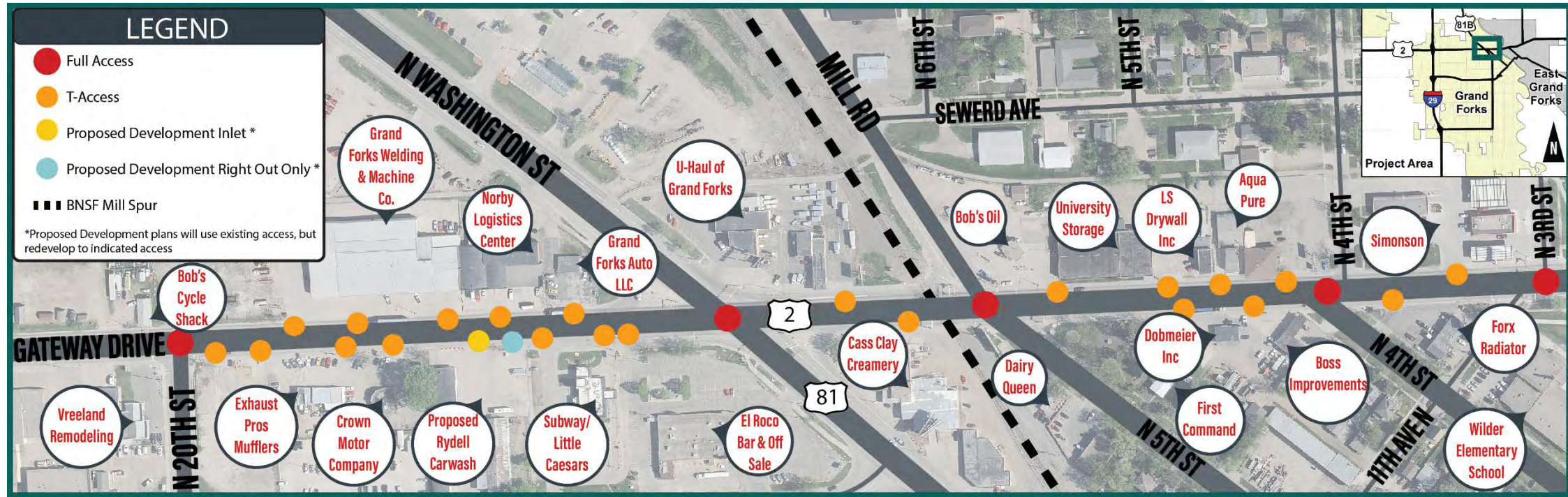
20th Street Intersection



- 12 crashes in last five years
- 33% rear end crashes on east approach
- 25% westbound left-turn crashes (Protected/Permitted)

- Unwarranted signal control increases
 - All crashes by 24%
 - Injury crashes by 53%
 - Right angle crashes by 24%
 - Rear end crashes by 29%

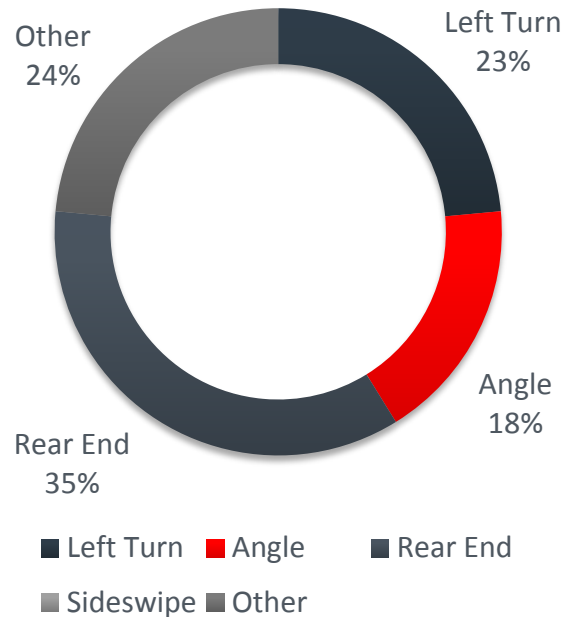
Access Management



- Unsignalized driveways
 - Increase crash rate by 2%
 - Reduces corridor travel speed by 0.25 MPH

- Desired Access Spacing
 - 660 feet
 - 8 access/mile
- Existing Access Spacing
 - 33 accesses
 - 66 access/mile (8x Standard)

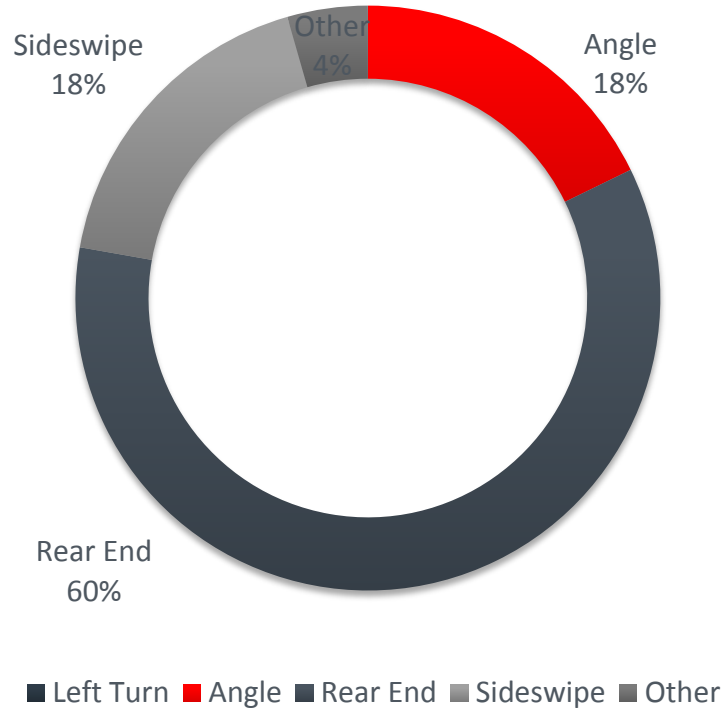
20th Street to Washington Street



- 17 crashes in last five years
- Above critical crash rate
- 41% during AM/PM peak hours
- Long queues and dense access spacings
- Queues block sight lines



US 81/Washington Street Intersection



➤ 45 crashes in last five years

➤ 60% rear end crashes

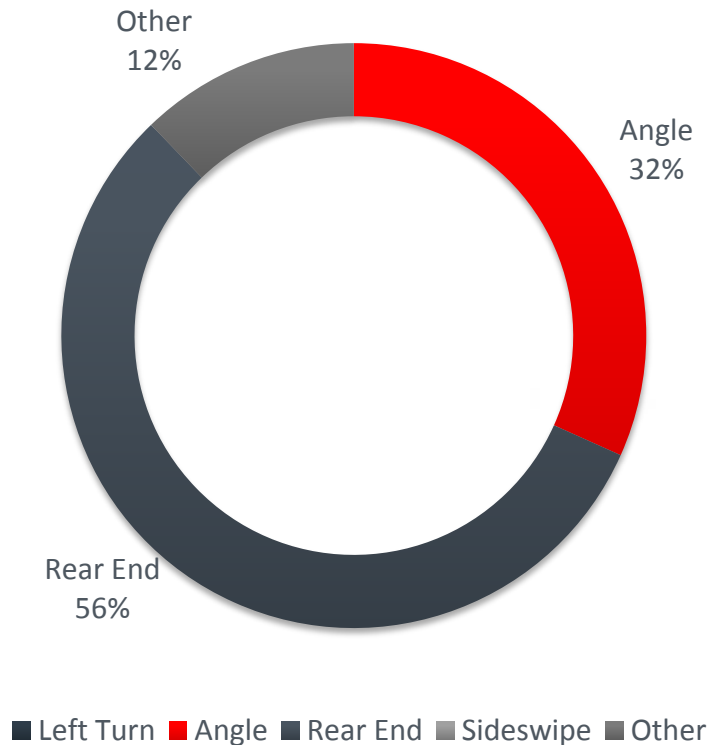
➤ 30% during AM or PM peak hour

➤ 30% between 11 AM to 1 PM

➤ 8 crashes involving trucks

➤ 0 Crashes involving Pedestrians or Bikes

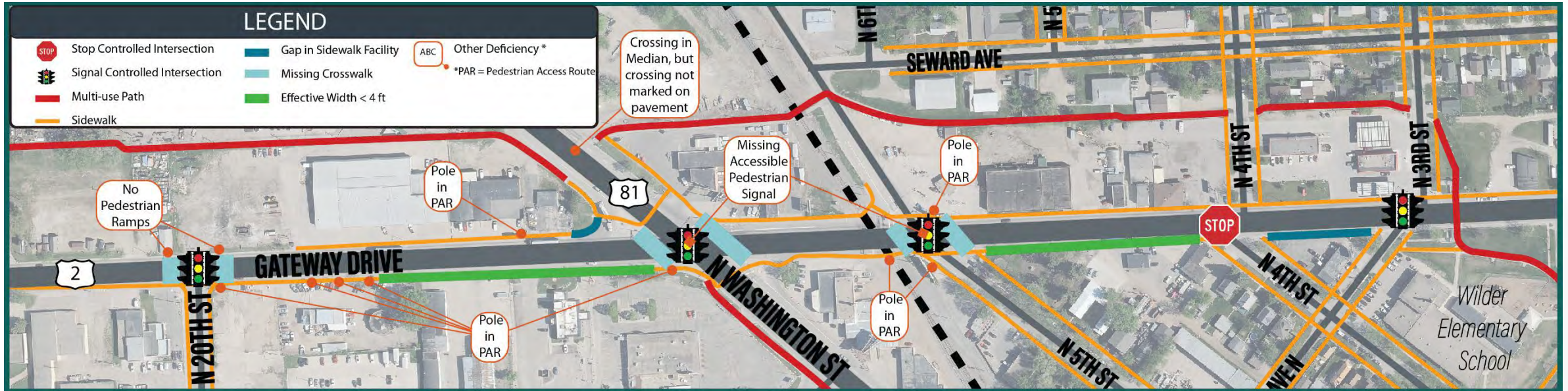
Mill Road/5th Street Intersection



- 41 crashes in last five years
- Above critical crash rate

- 50% rear end crashes
 - 65% During AM or PM peak hours
 - 52% occurred on east approach

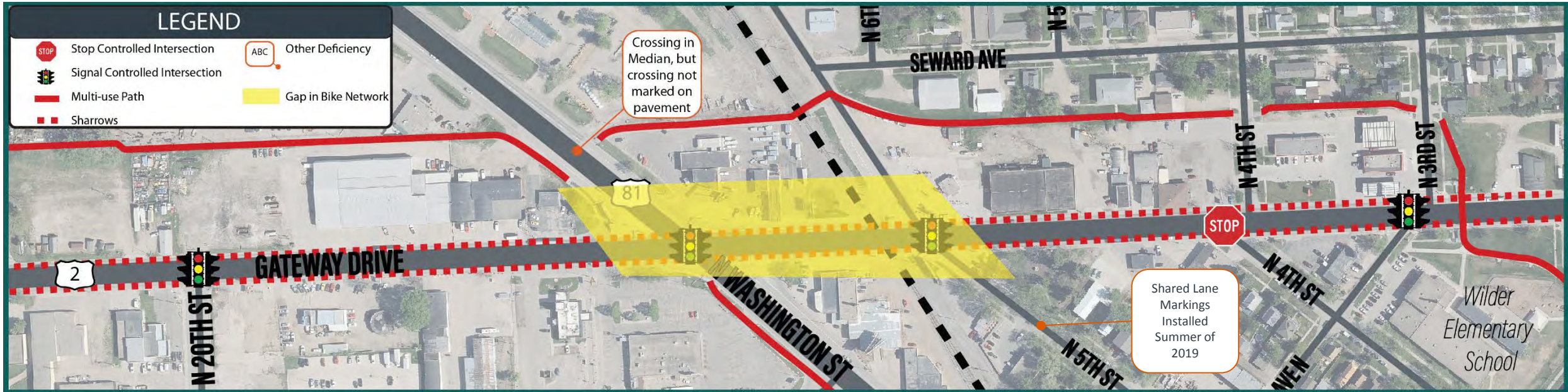
Pedestrian Network



- Only controlled crossing at 3rd Street underpass
- ADA conflicts at crosswalks, utilities and driveways
- Minimal to no buffer



Bicycle Network

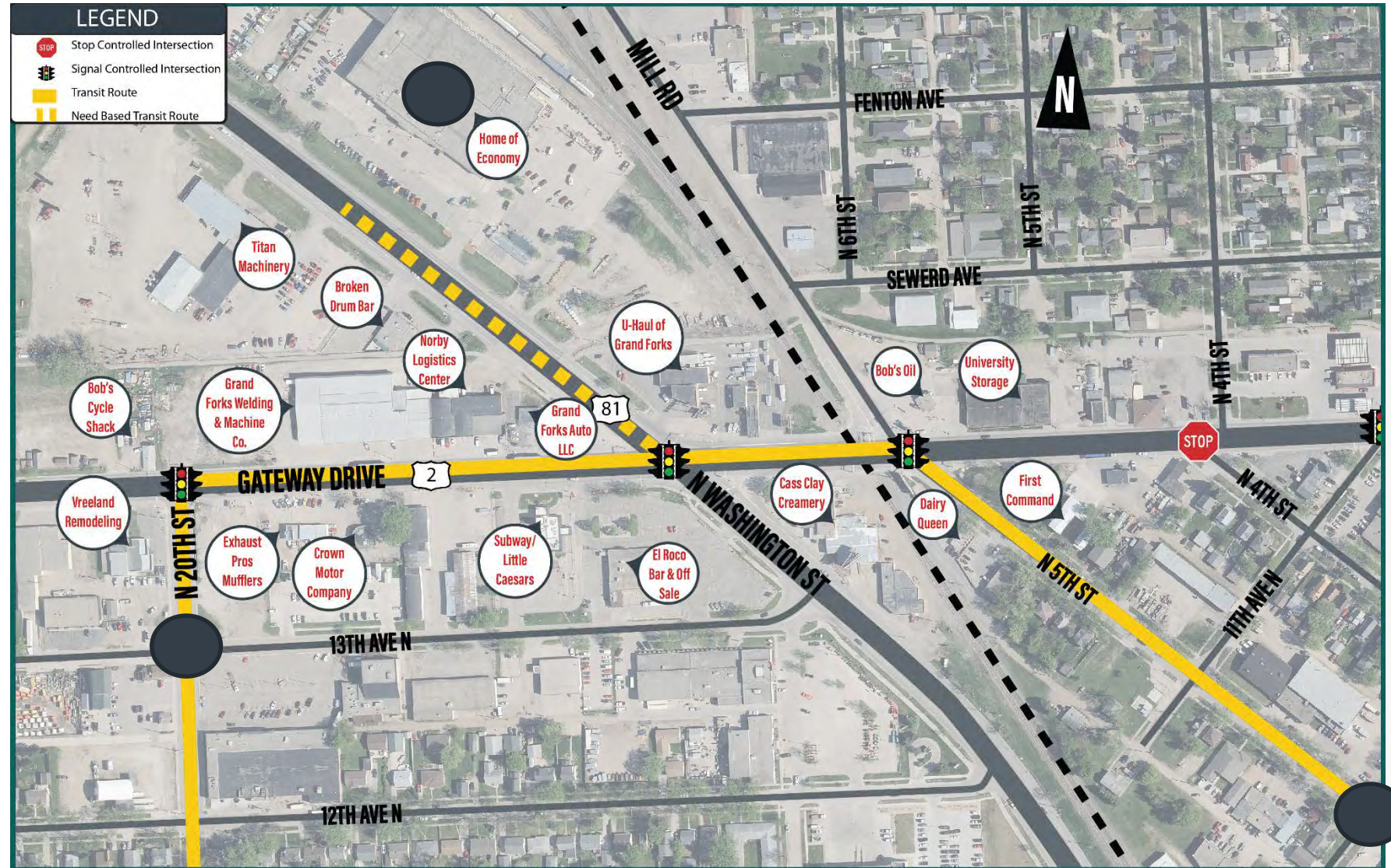


- > Connections
 - > 3rd Street and Red River Greenway to the east
 - > Columbia Road to the west
- > No traffic control to cross US 2/Washington Street
- > Underpass at 3rd Street
- > Bikes allowed on all streets



Transit Network

- CAT Route 2
 - Hourly service
- CAT Route 13
 - Night Route
- Stops
 - 5th Street/10th Ave
 - Hugo's on 20th St
 - Home of Economy when scheduled in advance

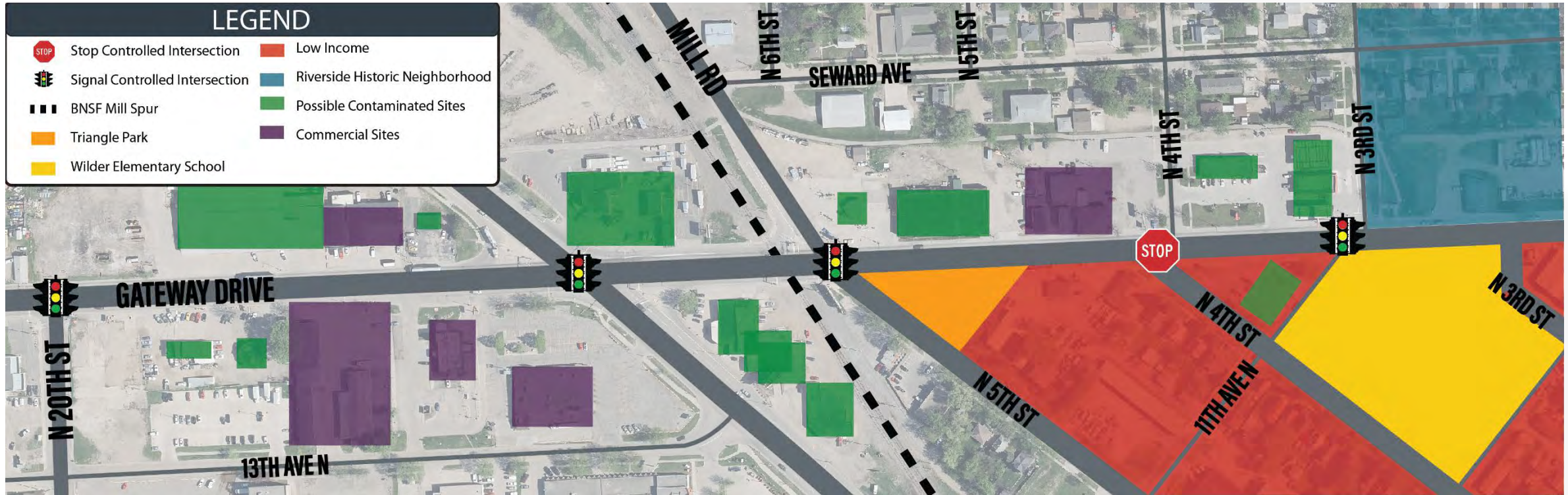


Right-Of-Way



- US2/Gateway Drive : 70 feet
- US 81/Washington Street : 20 feet on east side, 60 feet of west side

Affected Environment



> Potential Impacts

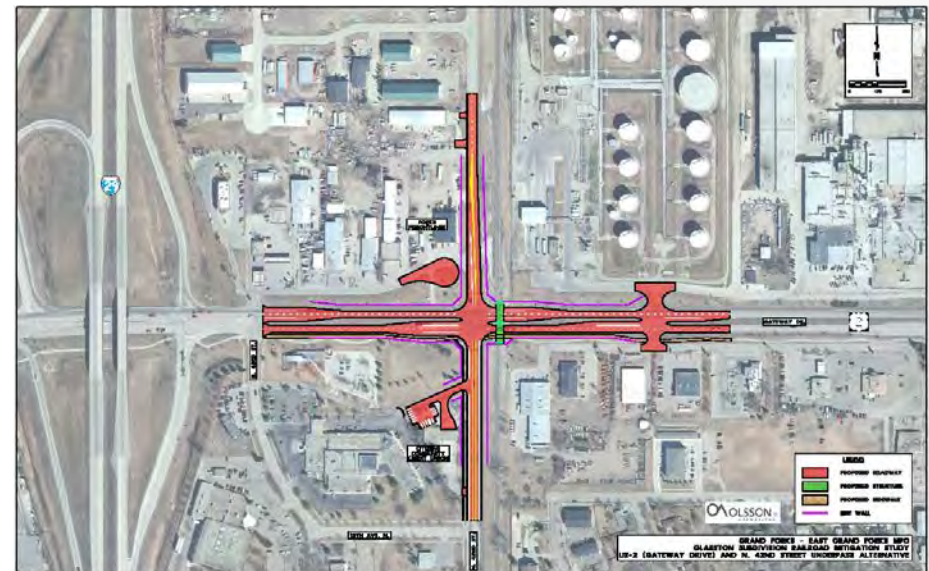
- > Hazardous Waste Sites
- > Social and Economic Impacts
- > Noise

- > Pedestrians and Bicyclists
- > Environmental Justice
- > Historic and Archaeological Preservation

> Section 4f

Funding Availability

- >\$150,000,000 in Unfunded Grand Forks Projects
- 42nd Street and DeMers Avenue (~\$25-30M)
- Gateway Drive/US 2 and Glasston (~\$28M)
- Part of the NHS and Freight System





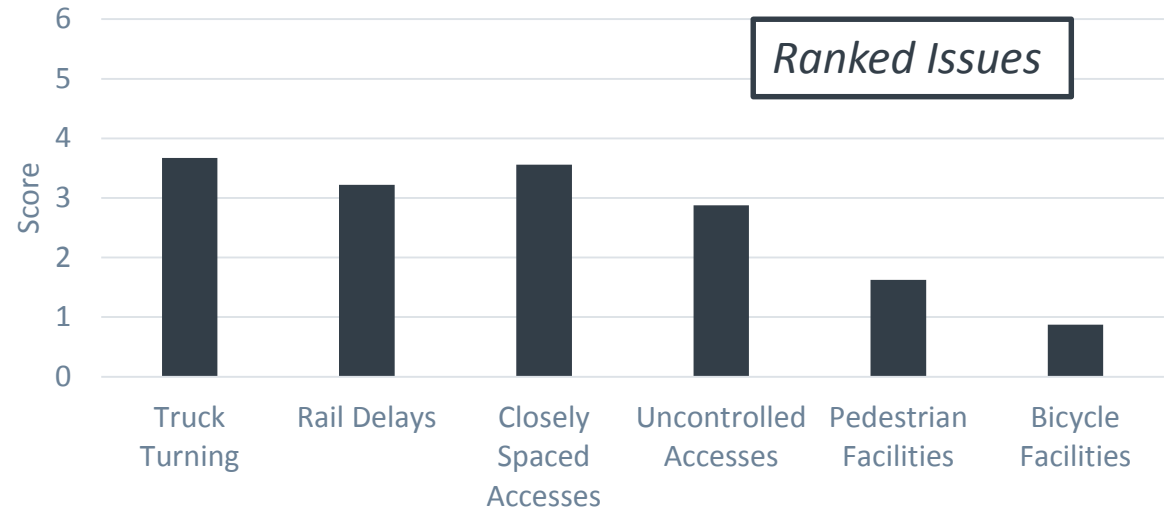
Alternative Development Approach

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Key Issues

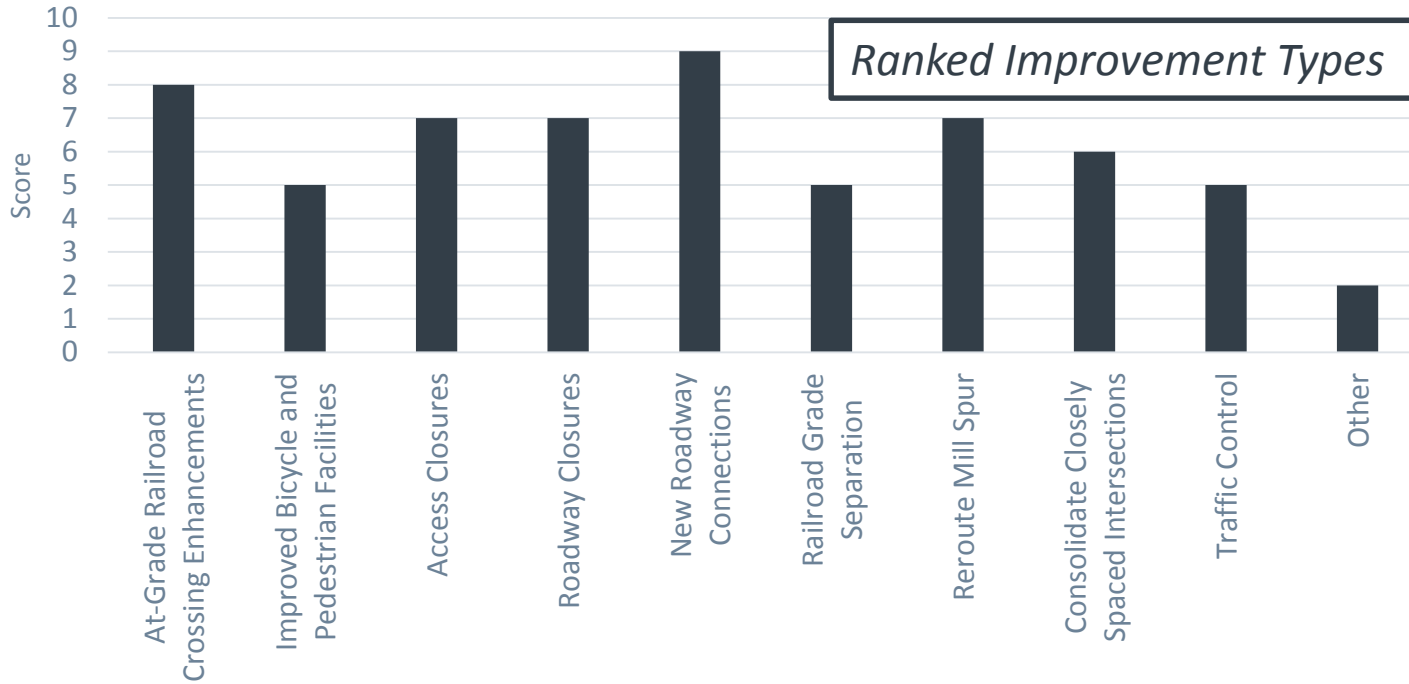
- Truck turning challenges
- Railroad-related delays
- Emergency vehicle impacts
- Closely spaced traffic signals
- Dense access spacing
- Need for improved pedestrian facilities
- Limited bicycle facilities



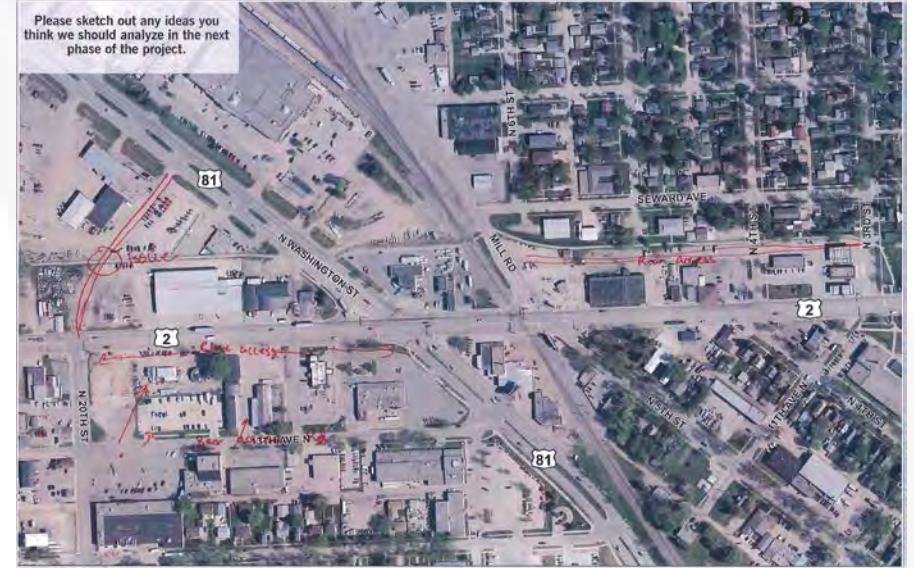
Represented Agencies at Steering Committee #1

- Forks MPO
- NDDOT Grand Forks District
- Grand Forks Engineering
- Grand Forks Planning
- Wilder Elementary School
- ND State Mill
- Local Businesses

Potential Solutions

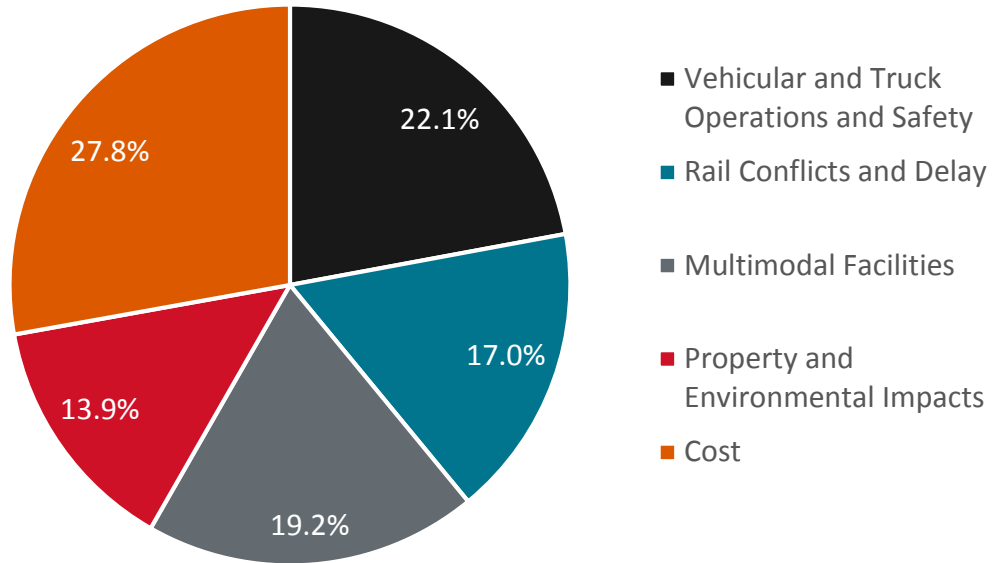


- Guided by Steering Committee feedback
- Brainstorming exercises helped generate many alternatives



Alternative Scoring

Ranked Evaluation Metrics



Sample Alternative Scoring

Scoring Category	Category Weight	Category Score	Weighted Score
Vehicular and Truck Operations and Safety	22	●●●○○○○○○	●●●●○○○○ (5.4)
Rail Conflicts and Delay	17	●○○○○○○○○	
Multimodal Facilities and Safety	19	●●○○○○○○	
Property and Environmental Impacts	14	●●●●●●●●	
Cost	28	●●●●●●●●	

- Scores ARE Comparative Summaries
- Scores ARE NOT Recommendations

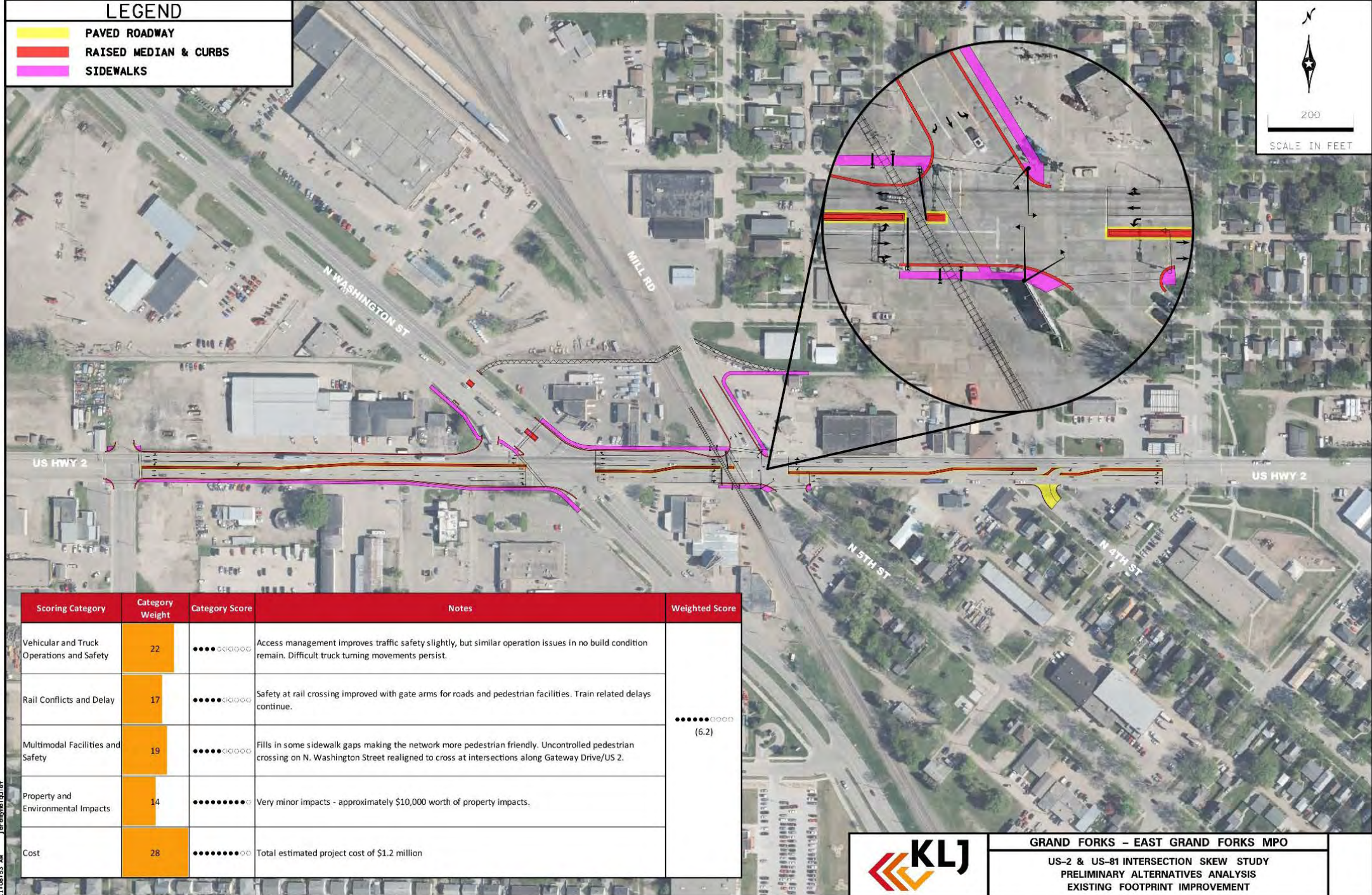


Alternatives with No Changes to the Mill Spur

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Alt EF: Existing Footprint Plan



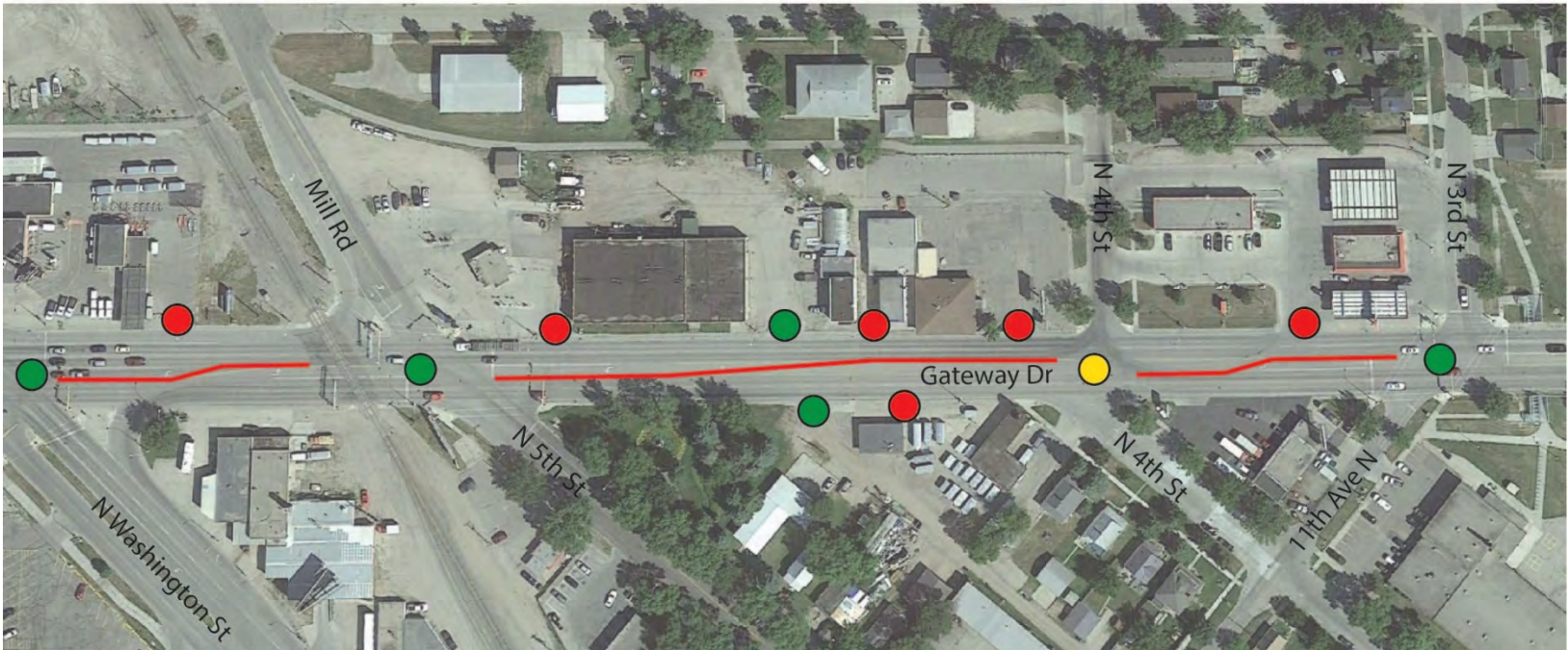
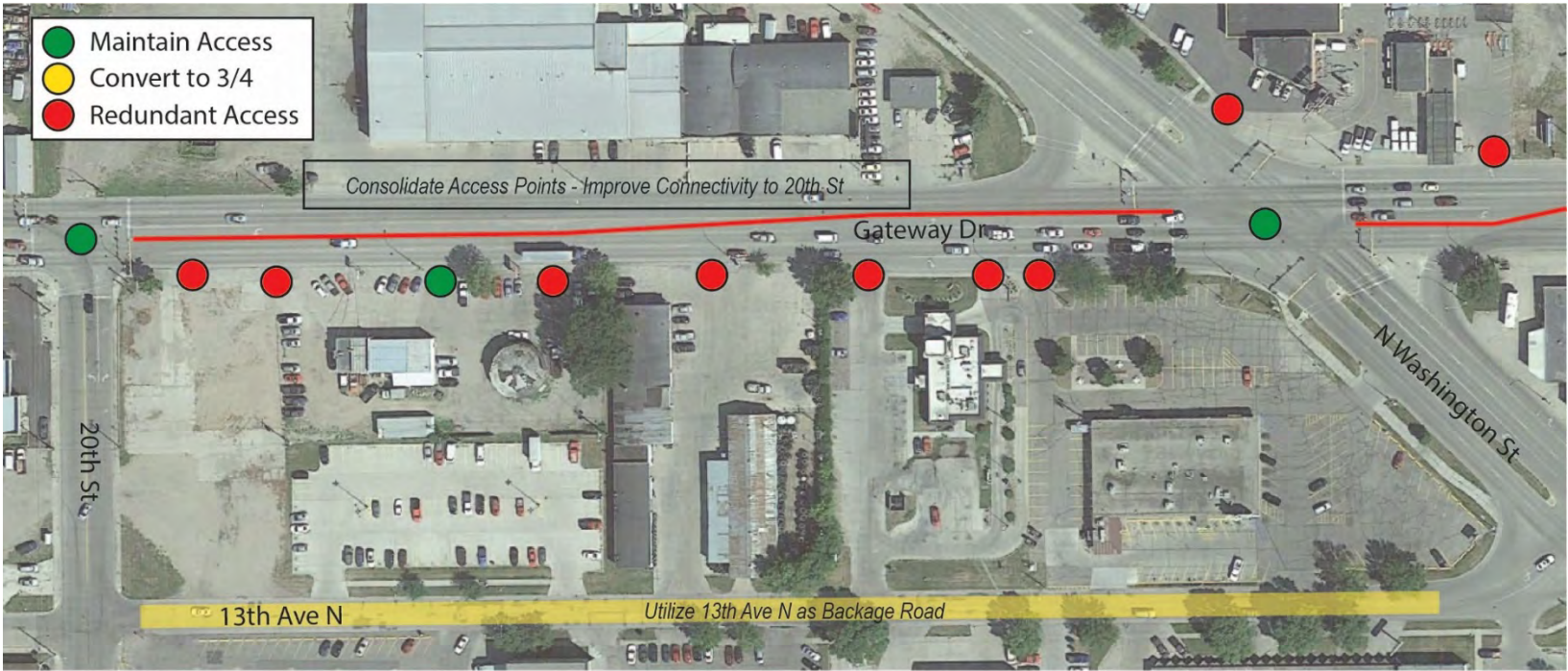
Scoring Category	Category Weight	Category Score	Notes	Weighted Score
Vehicular and Truck Operations and Safety	22	●●●●○○○○	Access management improves traffic safety slightly, but similar operation issues in no build condition remain. Difficult truck turning movements persist.	●●●●●○○○○ (6.2)
Rail Conflicts and Delay	17	●●●●○○○○	Safety at rail crossing improved with gate arms for roads and pedestrian facilities. Train related delays continue.	
Multimodal Facilities and Safety	19	●●●●○○○○	Fills in some sidewalk gaps making the network more pedestrian friendly. Uncontrolled pedestrian crossing on N. Washington Street realigned to cross at intersections along Gateway Drive/US 2.	
Property and Environmental Impacts	14	●●●●●○○	Very minor impacts - approximately \$10,000 worth of property impacts.	
Cost	28	●●●●●○○	Total estimated project cost of \$1.2 million	

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 US-2 & US-81 INTERSECTION SKEW STUDY
 PRELIMINARY ALTERNATIVES ANALYSIS
 EXISTING FOOTPRINT IMPROVEMENT

Optional Access Management

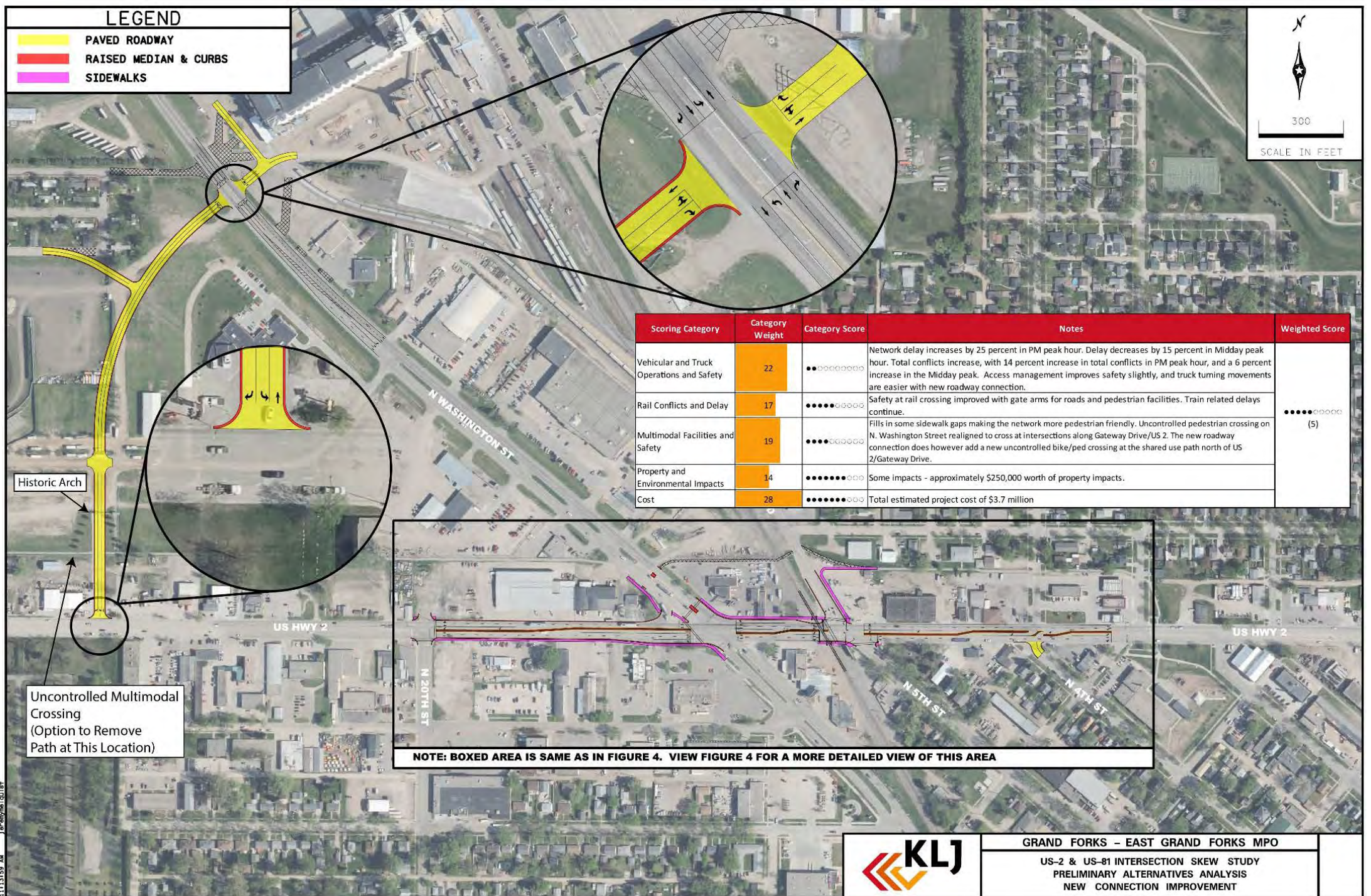


Alt EF: Existing Footprint Improvement Plan

➤ Rankings

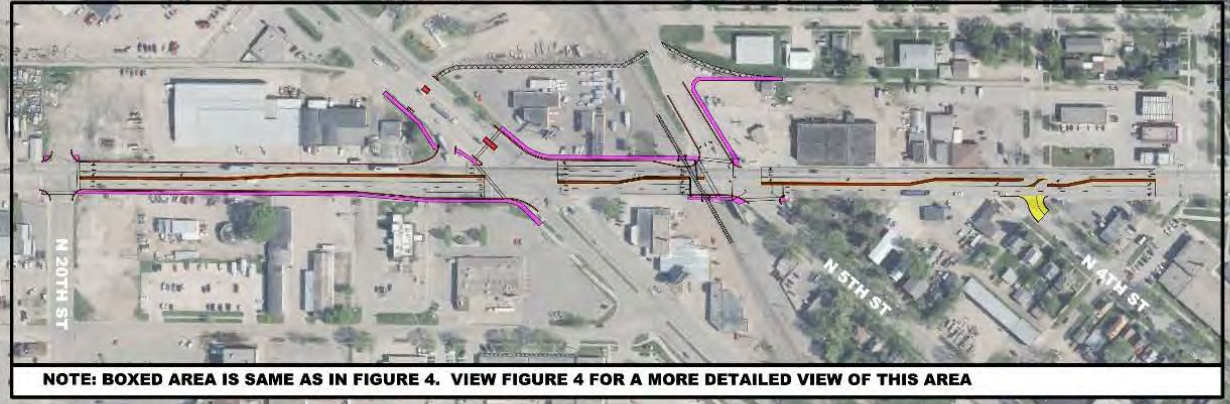
Alternative	Category	Category Rank	Overall Rank
EF: Existing Footprint Improvement Plan	Vehicular and Truck Operations and Safety	3	2
	Rail Conflicts and Delay	7	
	Multimodal Facilities and Safety	3	
	Property and Environmental Impacts	1	
	Cost	1	

Alt NRC: New Roadway Connection Improvement Plan



LEGEND	
█	PAVED ROADWAY
█	RAISED MEDIAN & CURBS
█	SIDEWALKS

Scoring Category	Category Weight	Category Score	Notes	Weighted Score
Vehicular and Truck Operations and Safety	22	●●○○○○○○	Network delay increases by 25 percent in PM peak hour. Delay decreases by 15 percent in Midday peak hour. Total conflicts increase, with 14 percent increase in total conflicts in PM peak hour, and a 6 percent increase in the Midday peak. Access management improves safety slightly, and truck turning movements are easier with new roadway connection.	●●●●○○○○ (5)
Rail Conflicts and Delay	17	●●●●○○○○	Safety at rail crossing improved with gate arms for roads and pedestrian facilities. Train related delays continue.	
Multimodal Facilities and Safety	19	●●●●○○○○	Fills in some sidewalk gaps making the network more pedestrian friendly. Uncontrolled pedestrian crossing on N. Washington Street realigned to cross at intersections along Gateway Drive/US 2. The new roadway connection does however add a new uncontrolled bike/ped crossing at the shared use path north of US 2/Gateway Drive.	
Property and Environmental Impacts	14	●●●●○○○○	Some impacts - approximately \$250,000 worth of property impacts.	
Cost	28	●●●●○○○○	Total estimated project cost of \$3.7 million	



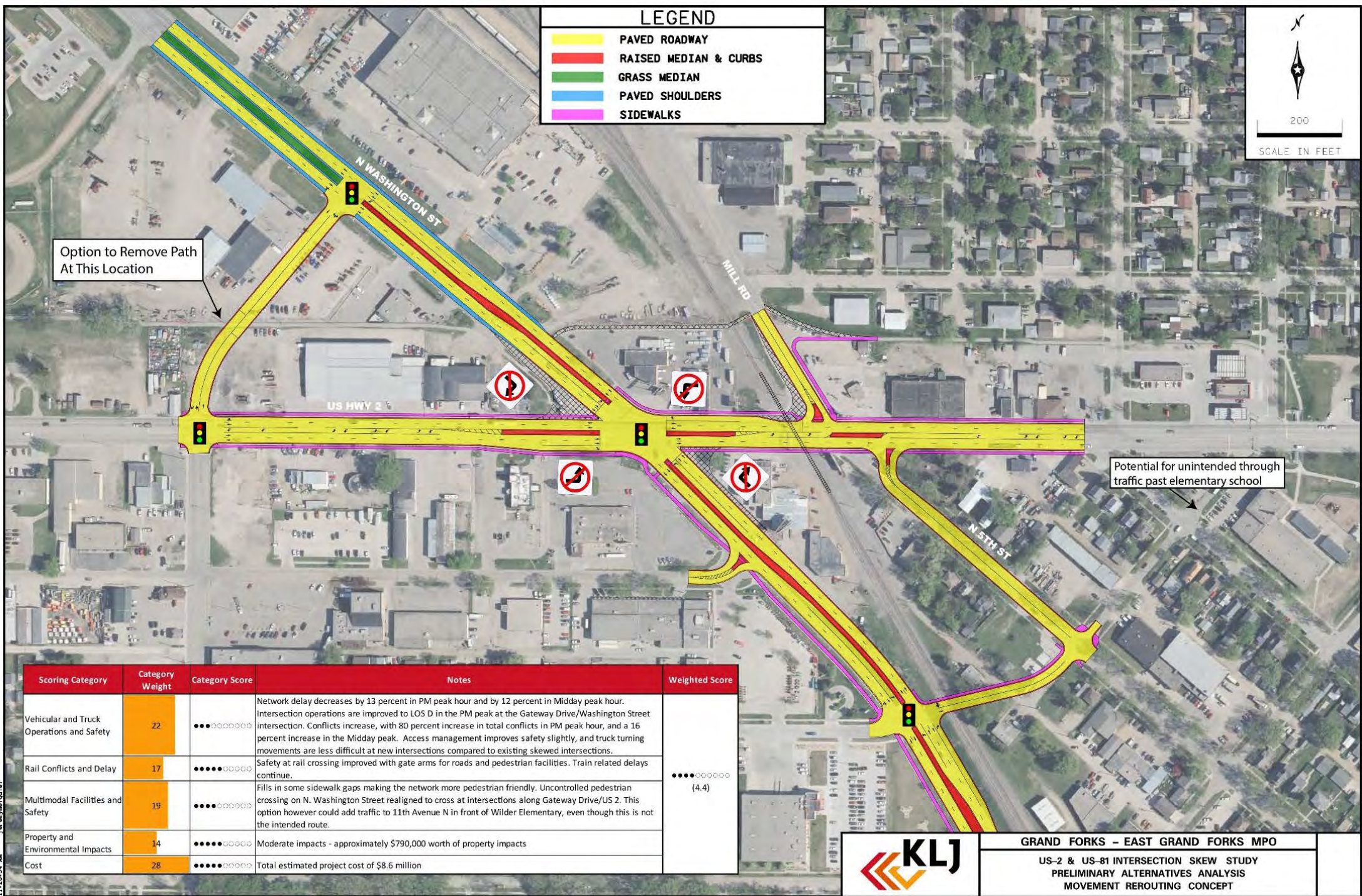
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Alt NRC: New Roadway Connection Improvement Plan

➤ Rankings

Alternative	Category	Category Rank	Overall Rank
NRC: New Roadway Connection Improvement Plan	Vehicular and Truck Operations and Safety	7	7
	Rail Conflicts and Delay	7	
	Multimodal Facilities and Safety	6	
	Property and Environmental Impacts	3	
	Cost	2	

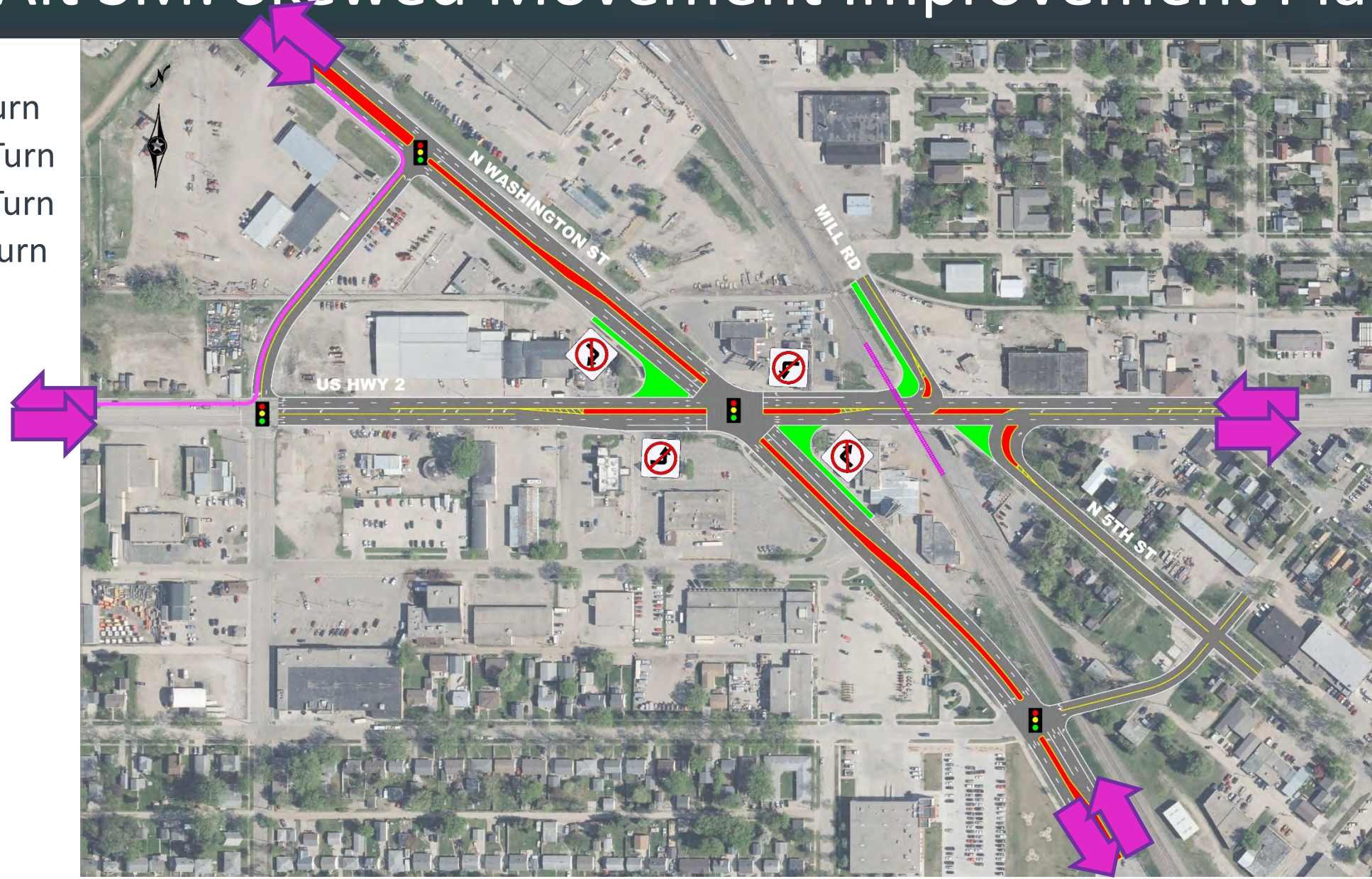
Alt SM: Skewed Movement Improvement Plan



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Alt SM: Skewed Movement Improvement Plan

- EB Left Turn
- WB Left Turn
- NB Right Turn
- SB Right Turn



Alt SM: Skewed Movement Improvement Plan

➤ Rankings

Alternative	Category	Category Rank	Overall Rank
SM: Skewed Movement Rerouting Improvement Plan	Vehicular and Truck Operations and Safety	5	8
	Rail Conflicts and Delay	7	
	Multimodal Facilities and Safety	6	
	Property and Environmental Impacts	4	
	Cost	4	

Sub-Option: ITS Routing Solution



Sub-Options: ITS Routing Solution



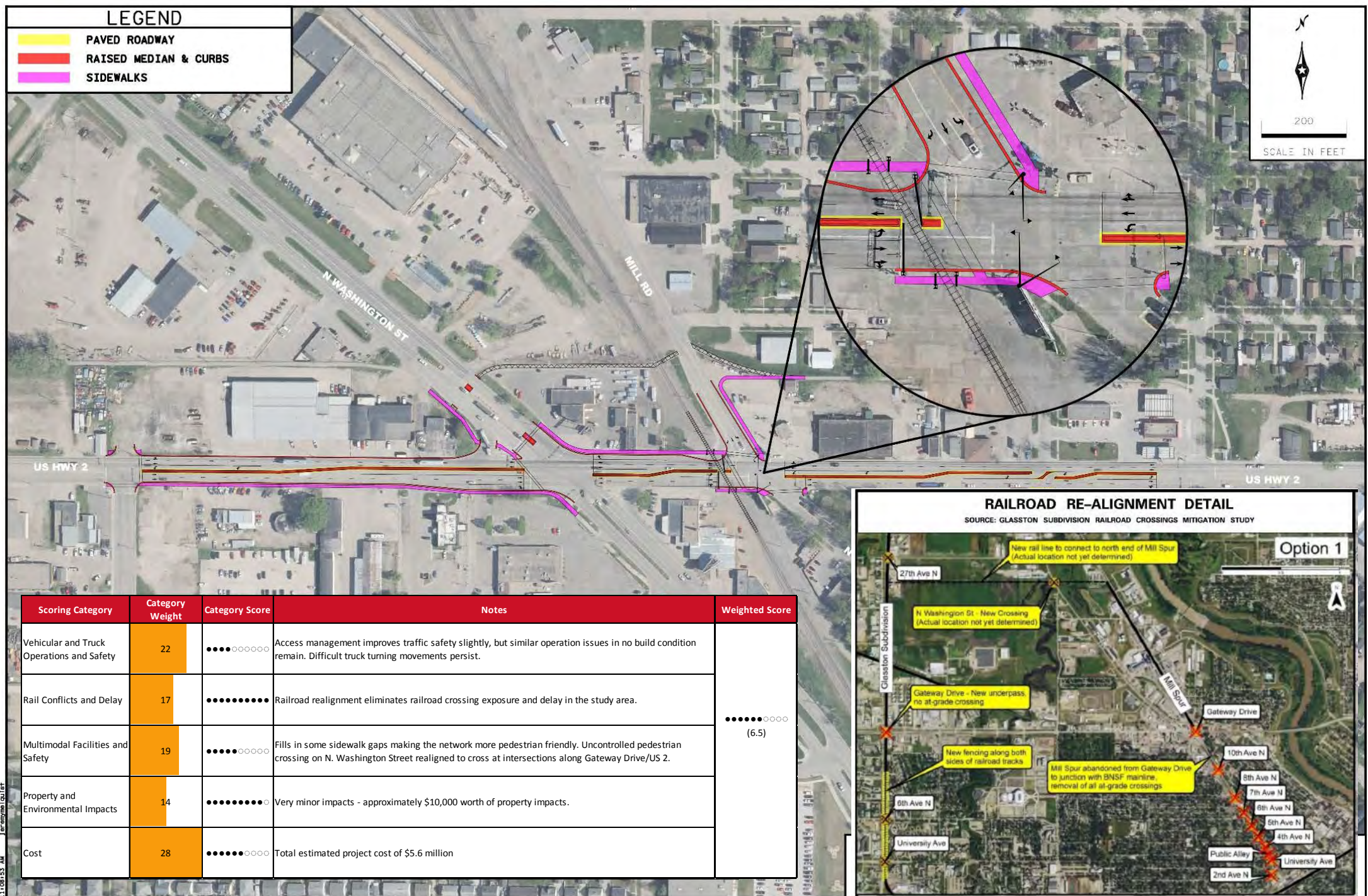


Base Alternatives with Railroad Realignment

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Alt EF+R: Existing Footprint With Realignment



Scoring Category	Category Weight	Category Score	Notes	Weighted Score
Vehicular and Truck Operations and Safety	22	●●●○○○○○	Access management improves traffic safety slightly, but similar operation issues in no build condition remain. Difficult truck turning movements persist.	●●●●○○○○ (6.5)
Rail Conflicts and Delay	17	●●●●●●●●	Railroad realignment eliminates railroad crossing exposure and delay in the study area.	
Multimodal Facilities and Safety	19	●●●●○○○○○	Fills in some sidewalk gaps making the network more pedestrian friendly. Uncontrolled pedestrian crossing on N. Washington Street realigned to cross at intersections along Gateway Drive/US 2.	
Property and Environmental Impacts	14	●●●●●●●●	Very minor impacts - approximately \$10,000 worth of property impacts.	
Cost	28	●●●●○○○○○	Total estimated project cost of \$5.6 million	

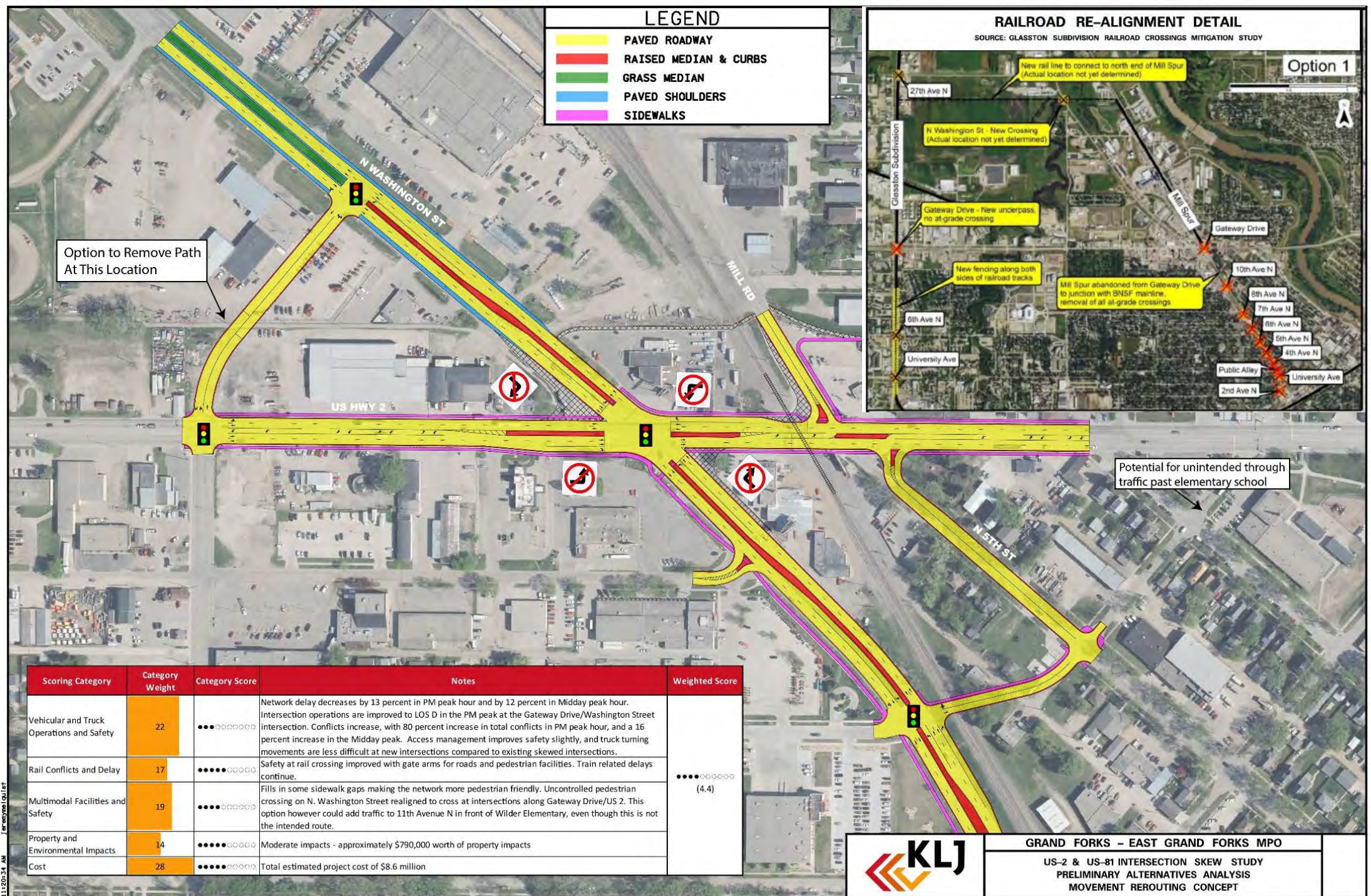


Alt EF+R: Existing Footprint with Realignment

➤ Rankings

Alternative	Category	Category Rank	Overall Rank
EF+R: Railroad Realignment with Existing Footprint Improvement Plan	Vehicular and Truck Operations and Safety	3	1
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	3	
	Property and Environmental Impacts	1	
	Cost	3	

Alt SM+R: Skewed Movement With Roadway Realignment



Scoring Category	Category Weight	Category Score	Notes	Weighted Score
Vehicular and Truck Operations and Safety	22	●●●○○○○○	Network delay decreases by 13 percent in PM peak hour and by 12 percent in Midday peak hour. Intersection operations are improved to LOS D in the PM peak at the Gateway Drive/Washington Street intersection. Conflicts increase, with 80 percent increase in total conflicts in PM peak hour, and a 16 percent increase in the Midday peak. Access management improves safety slightly, and truck turning movements are less difficult at new intersections compared to existing skewed intersections.	●●●○○○○○ (4.4)
Rail Conflicts and Delay	17	●●●●○○○○	Safety at rail crossing improved with gate arms for roads and pedestrian facilities. Train related delays continue.	
Multimodal Facilities and Safety	19	●●●●○○○○	Fills in some sidewalk gaps making the network more pedestrian friendly. Uncontrolled pedestrian crossing on N. Washington Street realigned to cross at intersections along Gateway Drive/US 2. This option however could add traffic to 11th Avenue N in front of Wilder Elementary, even though this is not the intended route.	
Property and Environmental Impacts	14	●●●●○○○○	Moderate impacts - approximately \$790,000 worth of property impacts	
Cost	28	●●●●○○○○	Total estimated project cost of \$8.6 million	

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Alt SM+R: Skewed Movement with Roadway Realignment

➤ Rankings

Alternative	Category	Category Rank	Overall Rank
SM+R: Railroad Realignment with Skewed Movement Rerouting Improvement Plan	Vehicular and Truck Operations and Safety	5	5
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	6	
	Property and Environmental Impacts	4	
	Cost	5	



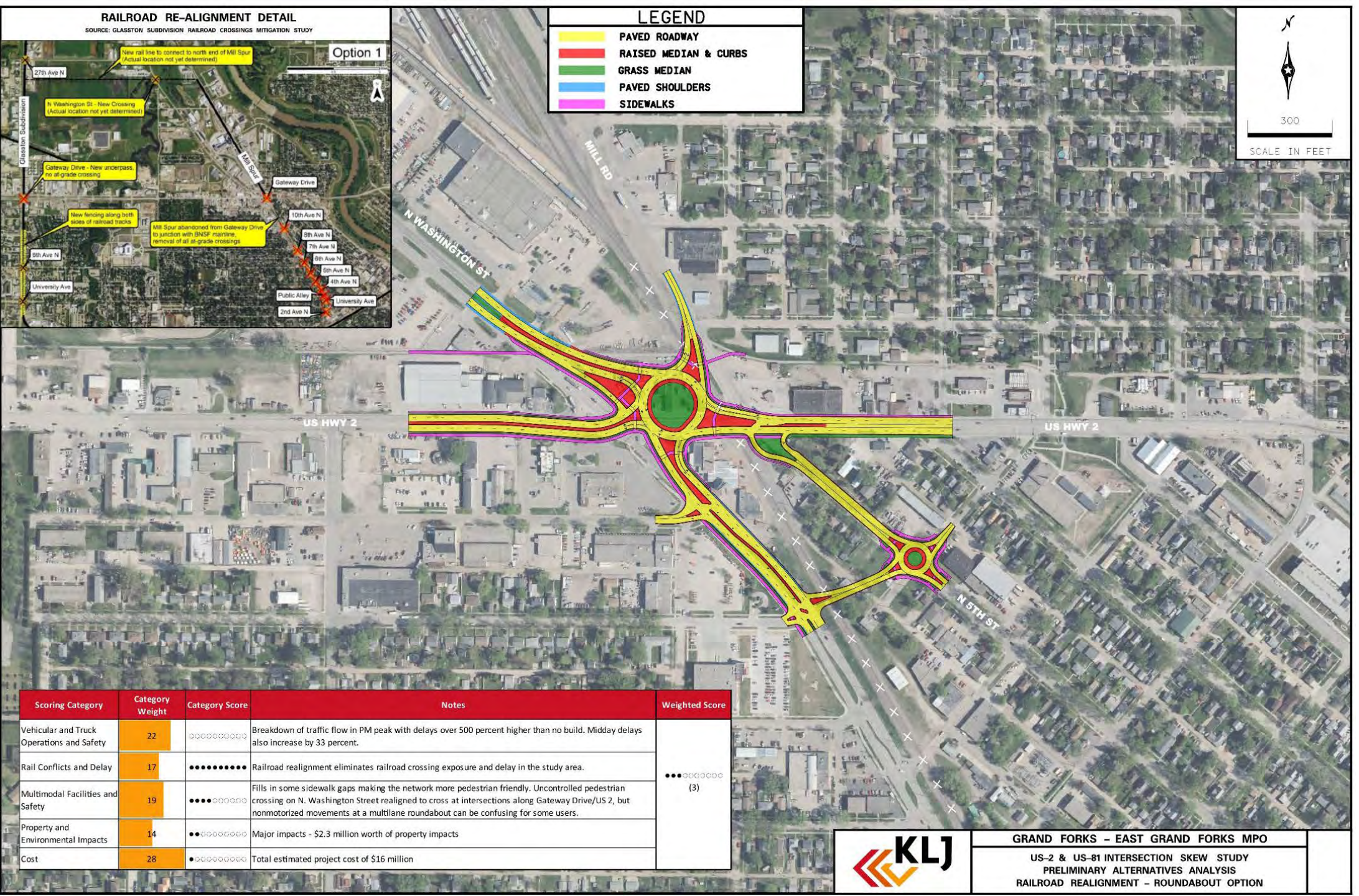
Railroad Realignment with Intersection Consolidation

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Alt R+R: Washington Street and Mill Road Roundabout



Scoring Category	Category Weight	Category Score	Notes	Weighted Score
Vehicular and Truck Operations and Safety	22	○○○○○○○○	Breakdown of traffic flow in PM peak with delays over 500 percent higher than no build. Midday delays also increase by 33 percent.	●●○○○○○○ (3)
Rail Conflicts and Delay	17	●●●●●●●●	Railroad realignment eliminates railroad crossing exposure and delay in the study area.	
Multimodal Facilities and Safety	19	●●●○○○○○	Fills in some sidewalk gaps making the network more pedestrian friendly. Uncontrolled pedestrian crossing on N. Washington Street realigned to cross at intersections along Gateway Drive/US 2, but nonmotorized movements at a multilane roundabout can be confusing for some users.	
Property and Environmental Impacts	14	●●○○○○○○	Major impacts - \$2.3 million worth of property impacts	
Cost	28	●○○○○○○○	Total estimated project cost of \$16 million	



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 PRELIMINARY ALTERNATIVES ANALYSIS
 RAILROAD REALIGNMENT – ROUNDABOUT OPTION

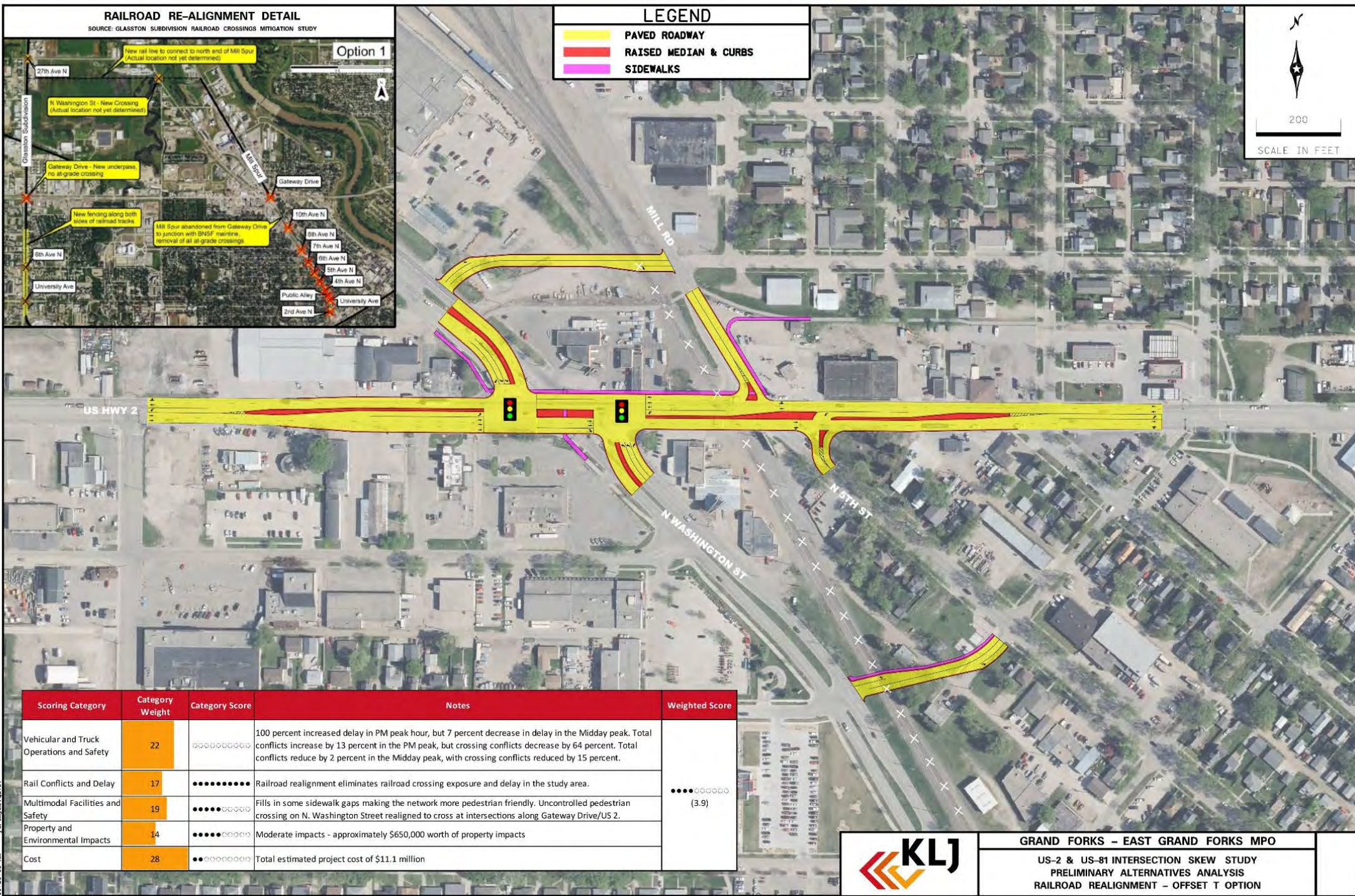
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Alt R+R: Washington Street and Mill Road Roundabout

> Rankings

Alternative	Category	Category Rank	Overall Rank
R+R: Railroad Realignment with Roundabout	Vehicular and Truck Operations and Safety	8	9
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	6	
	Property and Environmental Impacts	7	
	Cost	7	

Alt ST+R: Separated T-Intersections at Washington Street



Scoring Category	Category Weight	Category Score	Notes	Weighted Score
Vehicular and Truck Operations and Safety	22	○○○○○○○○○○	100 percent increased delay in PM peak hour, but 7 percent decrease in delay in the Midday peak. Total conflicts increase by 13 percent in the PM peak, but crossing conflicts decrease by 64 percent. Total conflicts reduce by 2 percent in the Midday peak, with crossing conflicts reduced by 15 percent.	●●●●○○○○ (3.9)
Rail Conflicts and Delay	17	●●●●●●●●	Railroad realignment eliminates railroad crossing exposure and delay in the study area.	
Multimodal Facilities and Safety	19	●●●●○○○○	Fills in some sidewalk gaps making the network more pedestrian friendly. Uncontrolled pedestrian crossing on N. Washington Street realigned to cross at intersections along Gateway Drive/US 2.	
Property and Environmental Impacts	14	●●●●○○○○	Moderate impacts - approximately \$650,000 worth of property impacts	
Cost	28	●●○○○○○○○○	Total estimated project cost of \$11.1 million	

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 US-2 & US-81 INTERSECTION SKEW STUDY
 PRELIMINARY ALTERNATIVES ANALYSIS
 RAILROAD REALIGNMENT – OFFSET T OPTION

Alt ST+R: Separated T-Intersections at Washington Street

> Rankings

Alternative	Category	Category Rank	Overall Rank
ST+R: Railroad Realignment with Separated T-Intersection	Vehicular and Truck Operations and Safety	8	6
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	3	
	Property and Environmental Impacts	4	
	Cost	5	

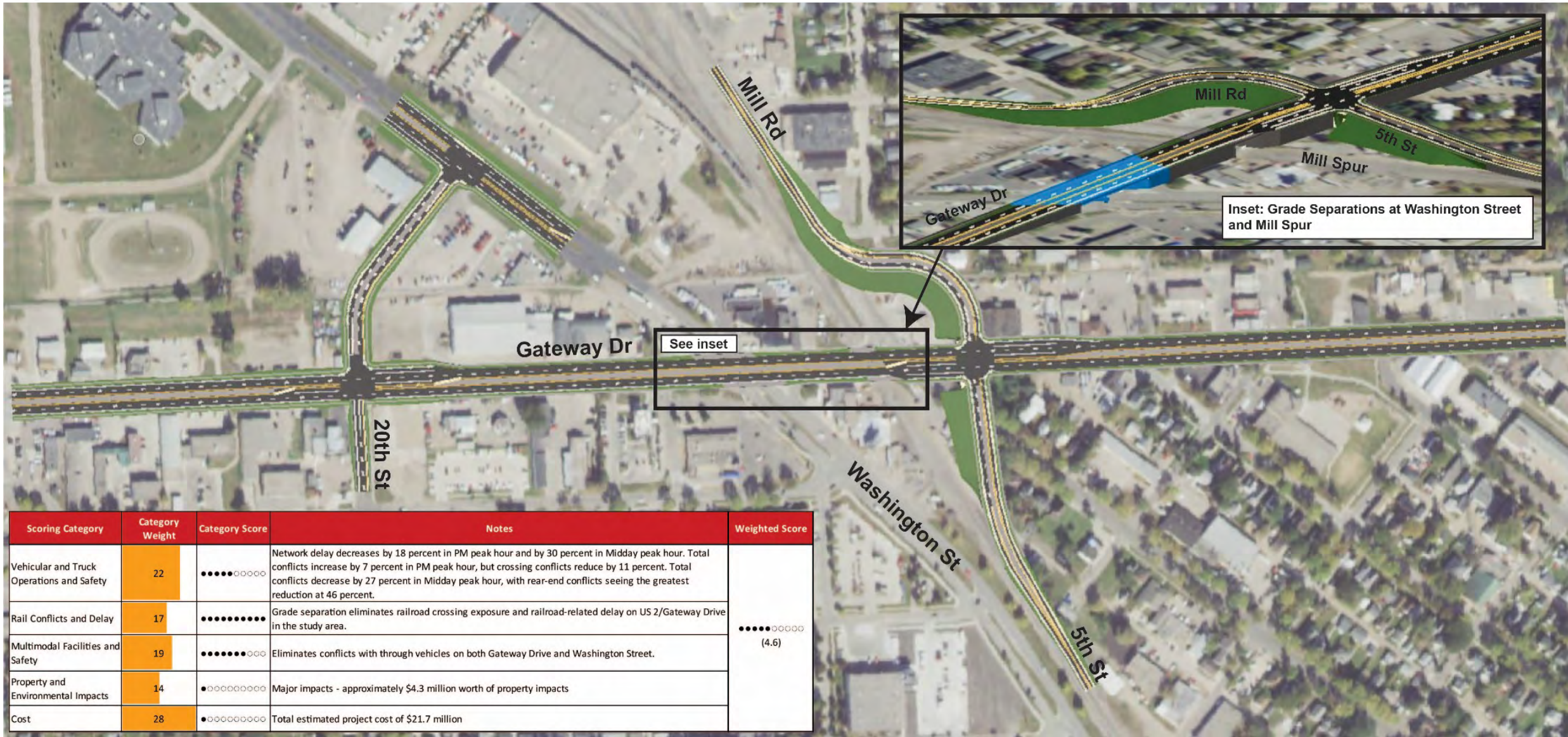


Railroad Grade Separated Alternatives

N 20TH ST

N WASHINGTON ST

Alt GS-1: Grade Separation of Washington St and Mill Spur

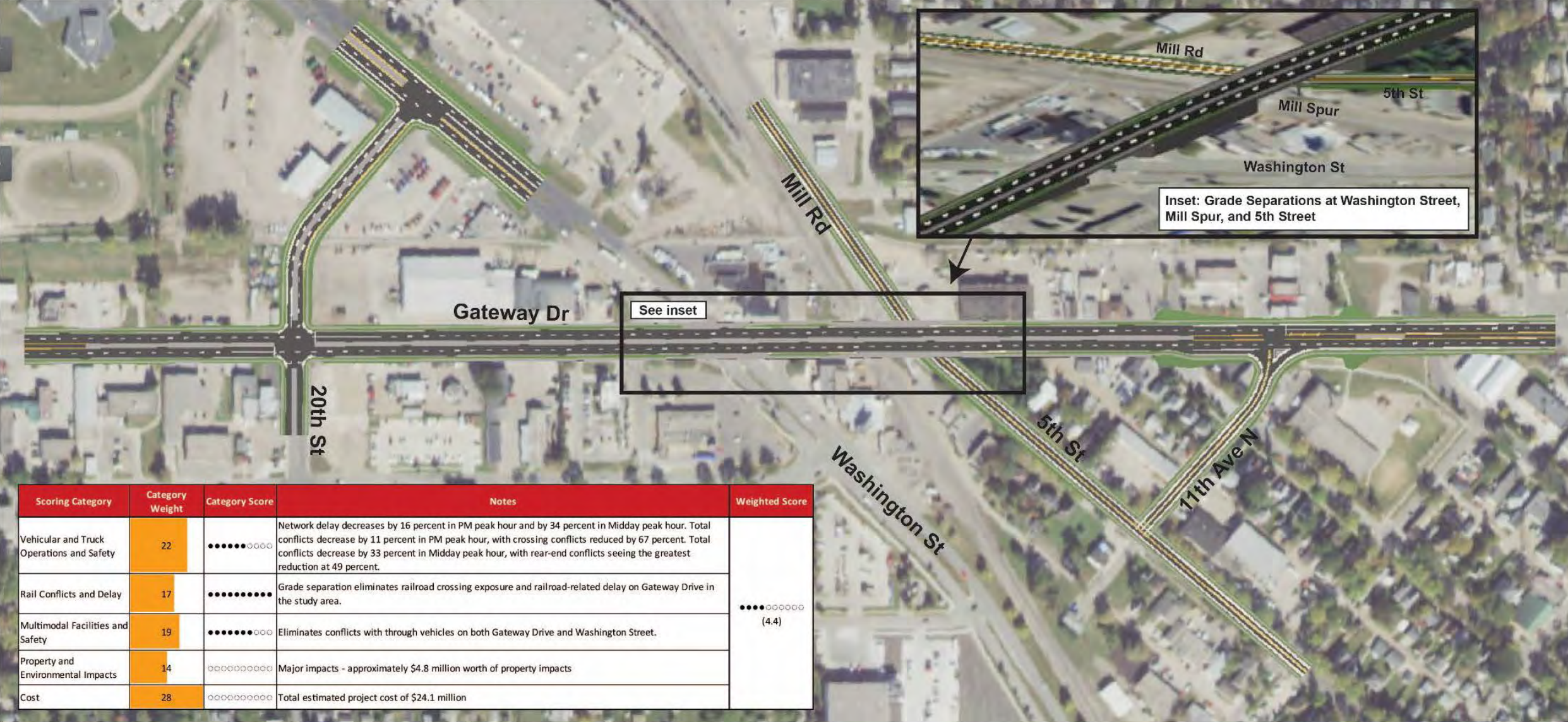


Alt GS-1: Grade Separation of Washington St and Mill Spur

➤ Rankings

Alternative	Category	Category Rank	Overall Rank
GS-1: Grade Separation of US 81/Washington Street and Mill Spur	Vehicular and Truck Operations and Safety	2	3
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	1	
	Property and Environmental Impacts	8	
	Cost	7	

Alt GS-2: Grade Separation of Washington St, Mill Spur and Mill Road



Scoring Category	Category Weight	Category Score	Notes	Weighted Score
Vehicular and Truck Operations and Safety	22	●●●●●○○○○	Network delay decreases by 16 percent in PM peak hour and by 34 percent in Midday peak hour. Total conflicts decrease by 11 percent in PM peak hour, with crossing conflicts reduced by 67 percent. Total conflicts decrease by 33 percent in Midday peak hour, with rear-end conflicts seeing the greatest reduction at 49 percent.	●●●●○○○○○ (4.4)
Rail Conflicts and Delay	17	●●●●●●●●	Grade separation eliminates railroad crossing exposure and railroad-related delay on Gateway Drive in the study area.	
Multimodal Facilities and Safety	19	●●●●●○○○	Eliminates conflicts with through vehicles on both Gateway Drive and Washington Street.	
Property and Environmental Impacts	14	○○○○○○○○○○	Major impacts - approximately \$4.8 million worth of property impacts	
Cost	28	○○○○○○○○○○	Total estimated project cost of \$24.1 million	

Alt GS-2: Grade Separation of Washington St, Mill Spur and Mill Road

➤ Rankings

Alternative	Category	Category Rank	Overall Rank
GS-2: Grade Separation of US 81/Washington Street, Mill Spur, and Mill Road/5th Street	Vehicular and Truck Operations and Safety	1	4
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	1	
	Property and Environmental Impacts	9	
	Cost	9	



Summary

N WASHINGTON ST

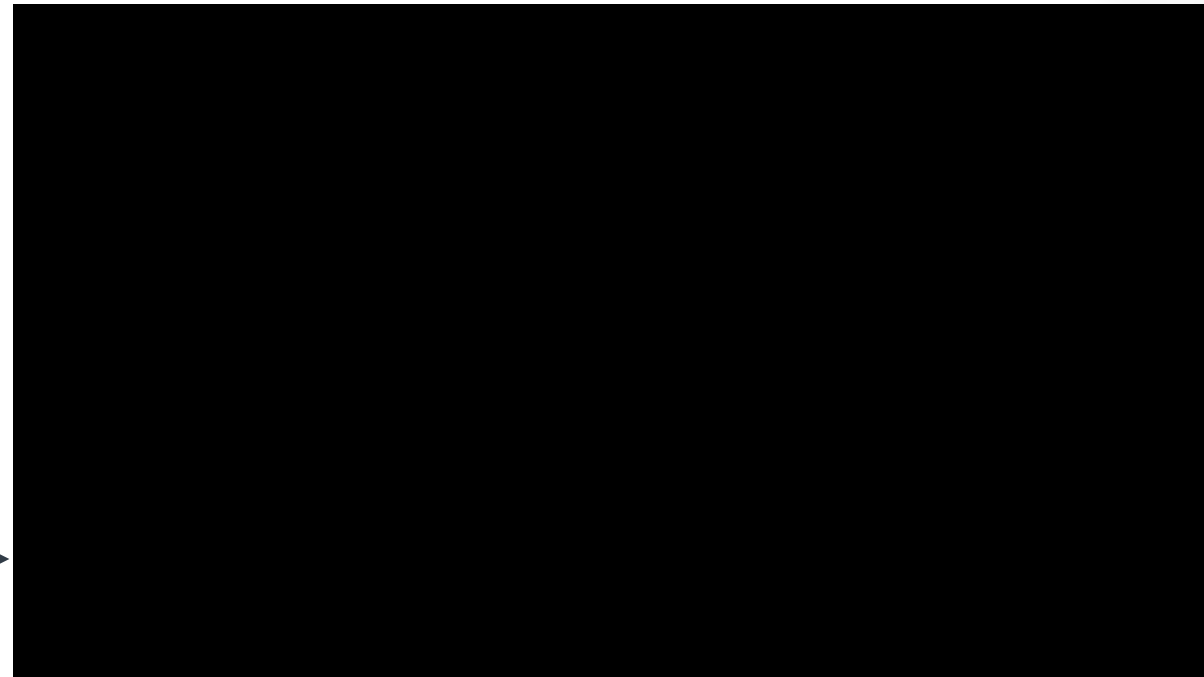
2

N 20TH ST



> Do Nothing
> Lowest Benefits

> Grade Separation
> Highest Benefits



> Railroad
Realignment
> 2nd Highest
Benefits

Alternatives Summary – Technical Score

Alternative	Scoring Category	Category Weight	Category Score	Weighted Score
EF: Existing Footprint Improvement Plan	Vehicular and Truck Operations and Safety	22	●●●●○○○○○○	●●●●●○○○○○ (6.2)
	Rail Conflicts and Delay	17	●●●●●○○○○○	
	Multimodal Facilities and Safety	19	●●●●●○○○○○	
	Property and Environmental Impacts	14	●●●●●●●○○○	
	Cost	28	●●●●●●●○○○	
NRC: New Roadway Connection Improvement Plan	Vehicular and Truck Operations and Safety	22	●●○○○○○○○○	●●●●●○○○○○ (5)
	Rail Conflicts and Delay	17	●●●●●○○○○○	
	Multimodal Facilities and Safety	19	●●●●●○○○○○	
	Property and Environmental Impacts	14	●●●●●●●○○○	
	Cost	28	●●●●●●●○○○	
SM: Skewed Movement Rerouting Improvement Plan	Vehicular and Truck Operations and Safety	22	●●●○○○○○○○	●●●●○○○○○○○ (4.4)
	Rail Conflicts and Delay	17	●●●●●○○○○○	
	Multimodal Facilities and Safety	19	●●●●●○○○○○	
	Property and Environmental Impacts	14	●●●●●○○○○○	
	Cost	28	●●●●●○○○○○	
EF+R: Railroad Realignment with Existing Footprint Improvement Plan	Vehicular and Truck Operations and Safety	22	●●●●○○○○○○	●●●●●○○○○○ (6.5)
	Rail Conflicts and Delay	17	●●●●●●●○○○	
	Multimodal Facilities and Safety	19	●●●●●○○○○○	
	Property and Environmental Impacts	14	●●●●●●●○○○	
	Cost	28	●●●●●●●○○○	
SM+R: Railroad Realignment with Skewed Movement Rerouting Improvement Plan	Vehicular and Truck Operations and Safety	22	●●●○○○○○○○	●●●●○○○○○○○ (4.4)
	Rail Conflicts and Delay	17	●●●●●●●○○○	
	Multimodal Facilities and Safety	19	●●●●●○○○○○	
	Property and Environmental Impacts	14	●●●●●○○○○○	
	Cost	28	●●○○○○○○○○	

Alternative	Scoring Category	Category Weight	Category Score	Weighted Score
R+R: Railroad Realignment with Roundabout	Vehicular and Truck Operations and Safety	22	○○○○○○○○○○	●●●○○○○○○○ (3)
	Rail Conflicts and Delay	17	●●●●●●●○○○	
	Multimodal Facilities and Safety	19	●●●●○○○○○○	
	Property and Environmental Impacts	14	●○○○○○○○○○	
	Cost	28	●○○○○○○○○○	
ST+R: Railroad Realignment with Separated T-Intersection	Vehicular and Truck Operations and Safety	22	○○○○○○○○○○	●●●●○○○○○○○ (3.9)
	Rail Conflicts and Delay	17	●●●●●●●○○○	
	Multimodal Facilities and Safety	19	●●●●●○○○○○	
	Property and Environmental Impacts	14	●●●●●○○○○○	
	Cost	28	●●○○○○○○○○	
GS-1: Grade Separation of US 81/Washington Street and Mill Spur	Vehicular and Truck Operations and Safety	22	●●●●●○○○○○	●●●●○○○○○○○ (4.6)
	Rail Conflicts and Delay	17	●●●●●●●○○○	
	Multimodal Facilities and Safety	19	●●●●●○○○○○	
	Property and Environmental Impacts	14	●○○○○○○○○○	
	Cost	28	●○○○○○○○○○	
GS-2: Grade Separation of US 81/Washington Street, Mill Spur, and Mill Road/5th Street	Vehicular and Truck Operations and Safety	22	●●●●●○○○○○	●●●●○○○○○○○ (4.4)
	Rail Conflicts and Delay	17	●●●●●●●○○○	
	Multimodal Facilities and Safety	19	●●●●●○○○○○	
	Property and Environmental Impacts	14	○○○○○○○○○○	
	Cost	28	○○○○○○○○○○	

Alternatives Summary – Rankings

Alternative	Category	Category Rank	Overall Rank
EF: Existing Footprint Improvement Plan	Vehicular and Truck Operations and Safety	3	2
	Rail Conflicts and Delay	7	
	Multimodal Facilities and Safety	3	
	Property and Environmental Impacts	1	
	Cost	1	
NRC: New Roadway Connection Improvement Plan	Vehicular and Truck Operations and Safety	7	7
	Rail Conflicts and Delay	7	
	Multimodal Facilities and Safety	6	
	Property and Environmental Impacts	3	
	Cost	2	
SM: Skewed Movement Rerouting Improvement Plan	Vehicular and Truck Operations and Safety	5	8
	Rail Conflicts and Delay	7	
	Multimodal Facilities and Safety	6	
	Property and Environmental Impacts	4	
	Cost	4	
EF+R: Railroad Realignment with Existing Footprint Improvement Plan	Vehicular and Truck Operations and Safety	3	1
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	3	
	Property and Environmental Impacts	1	
	Cost	3	
SM+R: Railroad Realignment with Skewed Movement Rerouting Improvement Plan	Vehicular and Truck Operations and Safety	5	5
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	6	
	Property and Environmental Impacts	4	
	Cost	5	

Alternative	Category	Category Rank	Overall Rank
R+R: Railroad Realignment with Roundabout	Vehicular and Truck Operations and Safety	8	9
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	6	
	Property and Environmental Impacts	7	
	Cost	7	
ST+R: Railroad Realignment with Separated T-Intersection	Vehicular and Truck Operations and Safety	8	6
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	3	
	Property and Environmental Impacts	4	
	Cost	5	
GS-1: Grade Separation of US 81/Washington Street and Mill Spur	Vehicular and Truck Operations and Safety	2	3
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	1	
	Property and Environmental Impacts	8	
	Cost	7	
GS-2: Grade Separation of US 81/Washington Street, Mill Spur, and Mill Road/5th Street	Vehicular and Truck Operations and Safety	1	4
	Rail Conflicts and Delay	1	
	Multimodal Facilities and Safety	1	
	Property and Environmental Impacts	9	
	Cost	9	



N WASHINGTON ST

Worksheets



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Next Steps



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Next Steps

Present Concepts
to the Public



Develop
Implementation
Plan and Draft
Report



Review Draft
Report with
Steering
Committee



Present and
Review Draft
Report with the
Public

