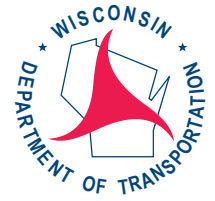


I-94 EAST-WEST CORRIDOR PROJECT

Range of Alternatives Summary



June 2022

Section 2 of the I-94 East-West Project's Supplemental Draft Environmental Impact Statement (EIS) describes the refined range of alternatives WisDOT and FHWA developed to address the deteriorated condition of I-94, obsolete roadway and bridge design, existing and future traffic demand, and high crash rates. This Supplemental Draft EIS focuses on the alternatives analyzed in detail since the conclusion of the 2016 Final EIS. It does not discuss the detailed process of identifying the preferred alternative in the 2016 Final EIS. Updates to the alternatives since the 2016 Final EIS include:

- Refinement of the 8-lane alternative; a 6-lane alternative; and new diverging diamond interchange option at the Stadium Interchange (see configuration on page 2)
- Analysis of the alternatives using updated design year 2050 traffic and predictive safety projections
- Analysis of the alternatives in the context of SEWRPC's most recent regional land use and transportation plan, *VISION 2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin*—SEWRPC Planning Report No. 55

2016 FINAL EIS OVERVIEW

As part of the 2014 Draft EIS and 2016 Final EIS, FHWA and WisDOT developed and evaluated a range of alternatives to improve I-94 between 70th Street and 16th Street. The alternatives were assessed to determine their environmental impacts and the extent to which they fulfill the purpose and need of the project. WisDOT and FHWA also evaluated the alternatives based on public and agency input.

In the 2016 Final EIS, WisDOT and FHWA identified the At-grade alternative with the half interchange at Hawley Road in the west segment and the On-alignment alternative in the east segment as the preferred alternative.

In the 2016 Final EIS, WisDOT and FHWA identified a preferred alternative:

- 8 through lanes (4 lanes in each direction)
- At-grade alternative through the cemetery section with the half interchange at Hawley Road
- A hybrid service/system interchange at the Stadium Interchange
- On-alignment alternative east of the Stadium Interchange

The 2016 Final EIS preferred alternative would replace the existing pavement and bridges and reconfigure I-94 to improve safety, while adding one new through lane in each direction to address congestion.

ALTERNATIVES ANALYZED IN SUPPLEMENTAL DRAFT EIS

For this Supplemental Draft EIS, WisDOT and FHWA are reanalyzing the 8-lane alternative (preferred alternative from the 2016 Final EIS) along with a 6-lane alternative with a similar alignment. The 6-lane alternative has two options at the Hawley Road interchange. One option is a full interchange at Hawley Road, and the other option is a half interchange at Hawley Road with I-94 access to and from the west. The 8-lane alternative is evaluated with only a half interchange at Hawley Road due to the cemetery impacts associated with the full interchange. At the Stadium Interchange, WisDOT and FHWA are analyzing a hybrid interchange¹ (part of the preferred alternative from the 2016 Final EIS) and a diverging diamond interchange for both the 8- and 6-lane alternatives.

8-LANE ALTERNATIVE

The 8-lane alternative would widen I-94 to four through lanes in each direction. In some spots, there would be auxiliary lanes², resulting in more than four lanes. The 8-lane alternative has an interchange at 68th Street/70th Street, a half interchange at Hawley Road (only access to and from the west), reconfigured General Mitchell Boulevard interchange (with access to/from I-94 to General Mitchell Boulevard reestablished via the Stadium Interchange), a hybrid interchange or diverging diamond interchange at the Stadium Interchange, and interchanges at 35th Street and near 27th Street.

¹ The hybrid interchange is a combination of a service interchange and system interchange. A system interchange connects two or more freeways. The traffic within system interchanges moves freely without stopping. A service interchange connects a freeway to arterial or collector roads. A service interchange has an at-grade intersection with the non-freeway crossroad that has stop signs, traffic signals, or roundabout that may require drivers to either stop or yield to other traffic or pedestrians.

² Auxiliary lanes are extra lanes constructed between entrance and exit ramps that allow drivers a safe way to merge into traffic while also preventing bottlenecks caused by drivers attempting to enter or exit.

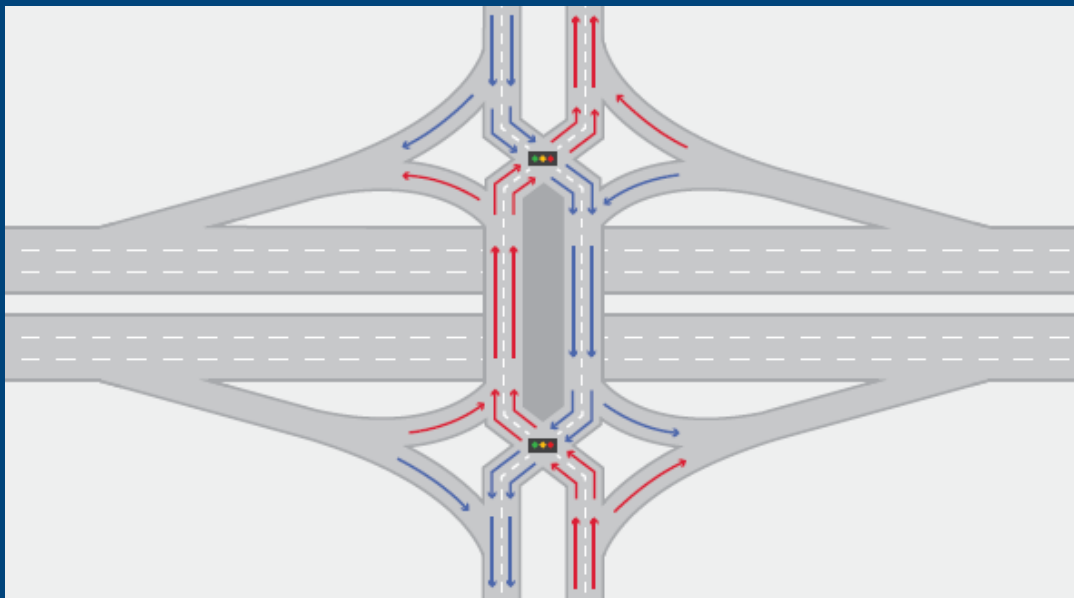
WisDOT would extend Washington Street (approximately 0.6-mile south of I-94 between 70th Street and Hawley Road) to make it easier for drivers on Hawley Road to access the 68th Street/70th Street interchange, mitigating the traffic impacts of partially closing the Hawley Road interchange.



The 8-lane alternative would generally have 12-foot travel lanes and 12-foot inside and outside shoulders, with the exception of the narrow area between Hawley Road and General Mitchell Boulevard where cemeteries are on both sides of I-94. To avoid land acquisition from the cemeteries, the 8-lane alternative would have less than 12-foot driving lanes (11 feet at the narrowest) and narrow shoulders (2 feet at the narrowest) through this area.

To avoid land acquisition from the cemeteries, the 8-lane alternative would have less than 12-foot driving lanes (11 feet at the narrowest) and narrow shoulders (2 feet at the narrowest) through this area.

A diverging diamond Interchange requires traffic to cross over from the right side to the left side of the road at the ramp terminals through traffic signals. Once on the left side of the road, vehicles can turn left onto highway ramps without stopping and without conflicting with through traffic. For high-volume interchanges with substantial left turning movements, like the Stadium Interchange, diverging diamond interchanges are safer, more efficient, and more cost-effective than traditional diamond interchanges. Below is a sample traffic pattern in a typical diverging diamond interchange and not a precise representation of the proposed Stadium Interchange.



8-lane alternative design refinements since 2016 Final EIS

Since the 2016 Final EIS, WisDOT refined the 8-lane alternative:

- The west construction limit was extended about 1,000 feet west of 70th Street to effectively tie into the Zoo Interchange improvements. 70th Street was the east limit of the Zoo Interchange EIS but WisDOT decided to end its Zoo Interchange-related reconstruction of I-94 about 1,000 feet west of 70th Street because the design of the I-94 East-West Corridor reconstruction at 70th Street was not finalized.
- The curve on I-94 near 70th Street was made more gradual to improve safety.
- The eastbound I-94 entrance ramp from 68th Street was refined to avoid displacing two residences.
- Hawley Road would remain on its existing alignment to avoid one commercial and two residential displacements and the American Transmission Company power line corridor (the Final EIS design showed Hawley Road shifted east).

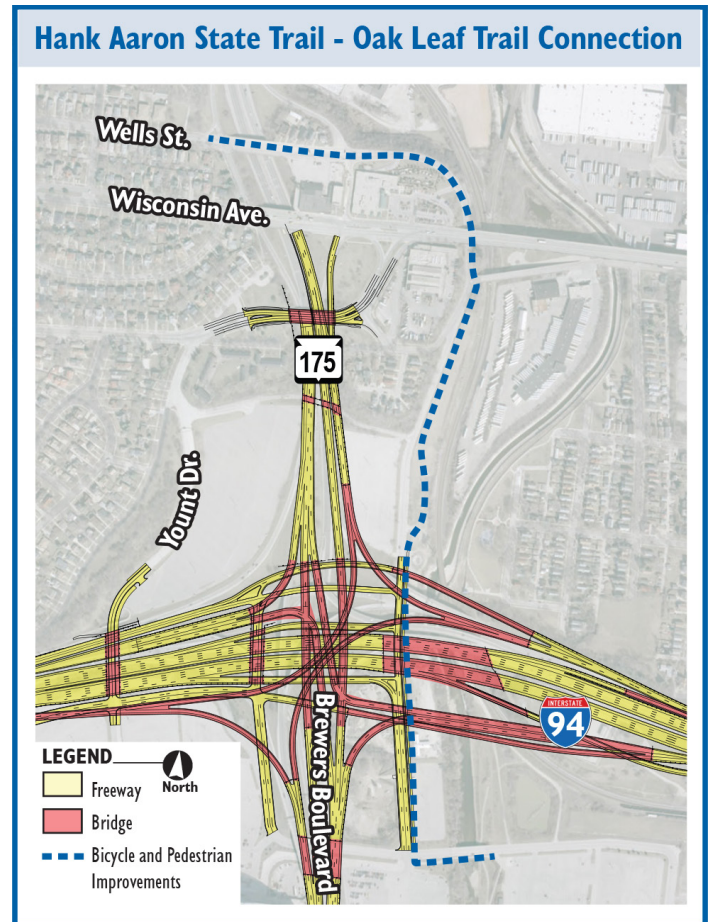
- The I-94 westbound shoulder at the west end of the cemetery area was narrowed to avoid impacting the cemetery maintenance shed on Dana Court on the north side of I-94.
- As part of the off-interstate improvements to mitigate the traffic impacts of partially closing the Hawley Road interchange, the Washington Street extension was realigned to reduce impacts and construction costs.
- The two-lane, one-way westbound frontage road on the north side of I-94 connecting the new local road interchange (44th Street under the Stadium Interchange) to Mitchell Boulevard was redesigned as a three-lane, two-way frontage road on the north side of I-94.³
- The braided ramps along eastbound I-94 between 35th Street and 26th Street were changed to a shared auxiliary lane (entrance and exit merging lane) to reduce project costs while maintaining traffic flow and safety.
- The braided ramps along westbound I-94 between 28th Street and 35th Street were changed to a shared auxiliary lane (entrance and exit merging lane) to reduce project costs while maintaining traffic flow and safety. Note: This is an option under consideration. A decision will be made prior to publication of the Supplemental Draft EIS.
- Improvements along 35th Street north of I-94 were refined to avoid three residential and two business displacements.
- The design was refined to minimize changes to 27th Street north of St. Paul Avenue and modify the alignment of 26th Street and 25th Street between St. Paul Avenue and Clybourn Street. St. Paul Avenue would be modified at the intersection with 25th Street. These changes would reduce right-of-way acquisition and avoid two commercial displacements along 27th Street.

- The 2016 Final EIS shows the alignment of I-94 at the eastern project limit straightened to remove a slight curve between 25th Street and 16th Street. To reduce costs, I-94 will remain on its existing alignment in this section.
- Several bicycle and pedestrian improvements were added to the 8-lane alternative.
 - A connection between the Hank Aaron State Trail and the Oak Leaf Trail along the east side of 44th Street and Wells Street, traveling under I-94 east of the Stadium Interchange
 - A new access point to the Hank Aaron State Trail at 64th Street
 - Contingent on future electrical substation relocation plans in the immediate area, a bicycle and pedestrian connection between 32nd Street and Greves Street to provide better access to the Menomonee Valley
 - A shared use path along 25th Street for bicycles and pedestrians to connect the area north of I-94 to the Menomonee Valley

6-LANE ALTERNATIVE

A 6-lane alternative was analyzed in the 2016 Final EIS, however, WisDOT did not select the 6-lane alternative because it would not accommodate future traffic volumes at an acceptable level of service in 2040. Many areas were projected to operate at level of service E or F. Thus, the 6-lane alternative was eliminated from consideration.

This Supplemental Draft EIS reconsiders the previously dismissed 6-lane alternative using the most recent data and public input. The 6-lane alternative would reconstruct I-94 and maintain six through travel lanes (three in each direction). Currently, westbound I-94 from the Marquette Interchange to the Stadium Interchange is four lanes. As part of the 6-lane



Note: This figure illustrates the hybrid interchange at the Stadium Interchange. The Hank Aaron State Trail-Oak Leaf Trail Connection would be the same for the diverging diamond interchange

³ Applies to the hybrid interchange only.

alternative, westbound I-94 in this area would remain four lanes. The 6-lane alternative would have the same alignment as the 8-lane alternative with one less through travel lane in each direction. In some locations there would be auxiliary lanes, resulting in more than three lanes. The design refinements and bicycle and pedestrian improvements noted for the 8-lane alternative are also part of the 6-lane alternative.

The key design difference between the two alternatives, beyond the number of lanes, is that the 6-lane alternative could accommodate a full interchange at Hawley Road without impacting the cemeteries east of Hawley Road. Therefore, the 6-lane alternative was analyzed having either a full or half interchange at Hawley Road.

The full interchange at Hawley Road would eliminate the need for the off-interstate improvements and would require auxiliary lanes between Hawley Road and the Stadium Interchange due to the close proximity between the interchanges. The 6-lane alternative with full interchange at Hawley Road would have 11-foot driving lanes and narrow shoulders in the segment between the cemeteries similar to the 8-lane alternative.

The half interchange at Hawley Road option was retained because it would maintain 12-foot lanes through the cemetery area. However, to avoid encroachment on the cemeteries, the reconstructed I-94 would have narrow shoulders between Hawley Road and Zablocki Drive.

STADIUM INTERCHANGE

At the Stadium Interchange, WisDOT and FHWA are analyzing a hybrid interchange (a hybrid between a system interchange and service interchange) and a diverging diamond interchange for both the 8- and 6-lane alternatives. The hybrid interchange was part of the preferred alternative from the 2016 Final EIS.

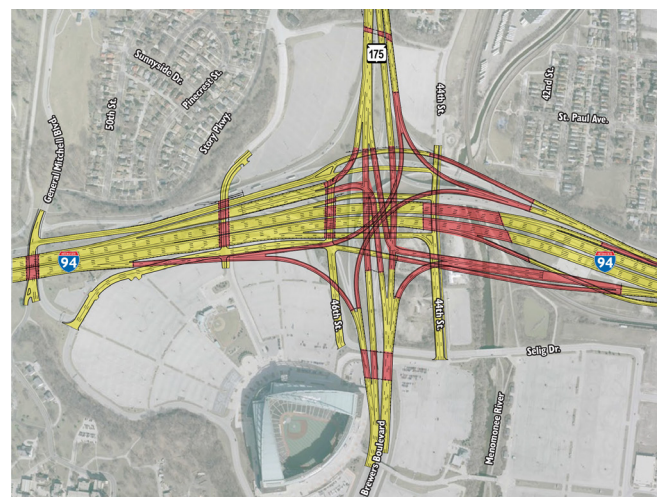
Hybrid Interchange

For the hybrid interchange, all the exit ramps from I-94 to WIS 175/Brewers Boulevard would be free-flow ramps (no traffic signals). All entrance and exit ramps would be located on the righthand side of traffic. A traffic signal on WIS 175/Brewers Boulevard would control through traffic and left turns onto I-94. The reconstructed interchange would have a smaller footprint than the existing Stadium Interchange, however, it would be a 3-level interchange (not counting the local streets at the lowest level) and be approximately 25 feet higher and slightly wider than the existing interchange.

To avoid impacting the cemeteries and improve the short and unsafe merge distances entering and exiting I-94, access to General Mitchell Boulevard would change. For the hybrid interchange, new entrance and exit ramps to and from 44th Street and a new north-south local street (tentatively referred to as 46th Street) would be constructed beneath the Stadium Interchange. All entrance and exit ramps are located on the righthand side of traffic. 44th and 46th Streets would connect to Selig Drive and the new 3-lane frontage road north of I-94. The new frontage road would pass over Yount Drive and connect to General Mitchell Boulevard near the existing westbound I-94 exit ramp at General Mitchell Boulevard. These connections would provide access to American Family Field parking, the VA campus, and the Story Hill neighborhood.



Hybrid Interchange



Hybrid Interchange

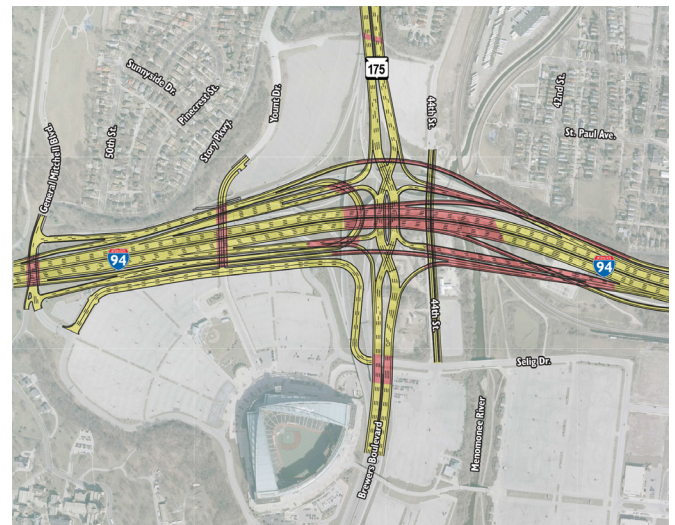
Diverging Diamond Interchange

For the diverging diamond interchange, northbound and southbound WIS 175/Brewers Boulevard traffic would cross to the opposite side of the roadway at two signalized intersections north and south of I-94. Traffic on WIS 175/Brewers Boulevard would drive on the opposite side of the roadway than what is customary through the interchange. This allows left turns entering I-94 to occur without stopping or crossing oncoming traffic. The diverging diamond interchange would be a 2-level interchange (not counting the local streets at the lowest level) approximately the same height as the existing interchange but slightly wider.

Access to and from General Mitchell Boulevard is via ramps within the Stadium Interchange. All entrance and exit ramps would be located on the righthand side of traffic. These connections would provide direct access to American Family Field parking, the VA campus, and the Story Hill neighborhood without traveling through new intersections. The total width of I-94 and its entrance/exit ramps between General Mitchell Boulevard and WIS 175 would be slightly wider than the hybrid interchange. The additional width is shifted south and has a slightly greater impact on American Family Field parking.



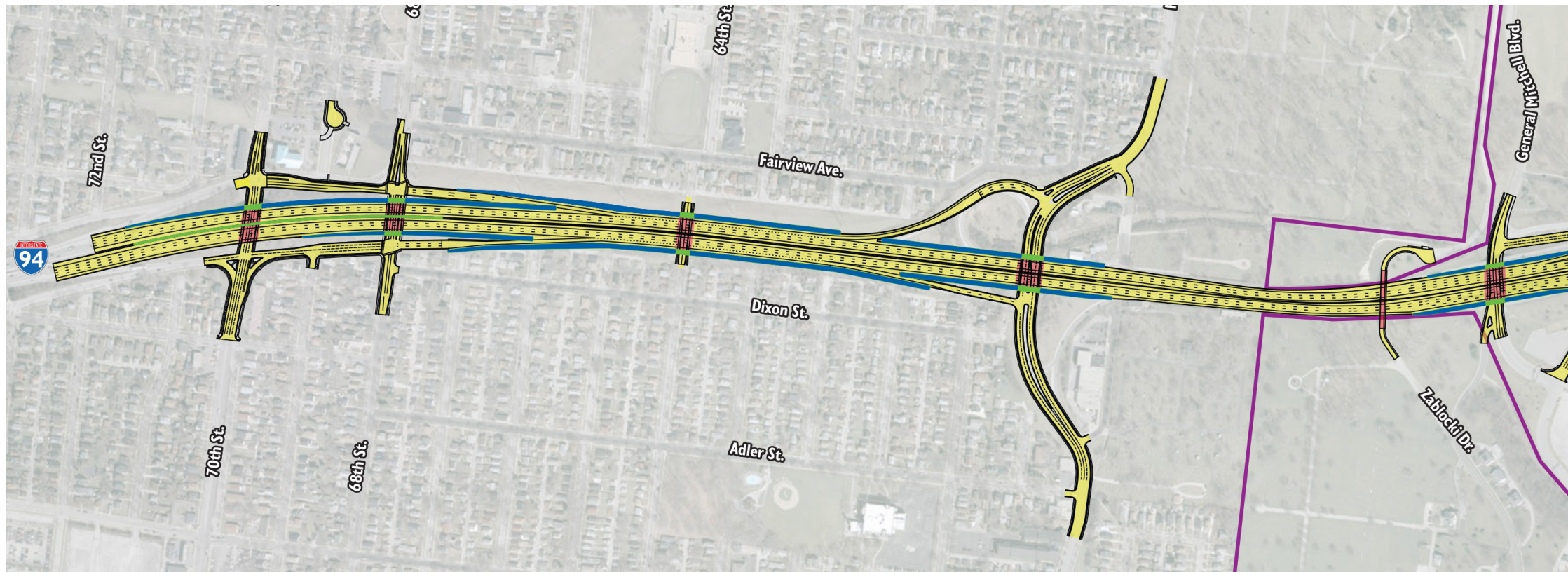
Diverging Diamond Interchange






Diverging Diamond Interchange

COMPARISON OF 8- AND 6-LANE ALTERNATIVE IMPACTS

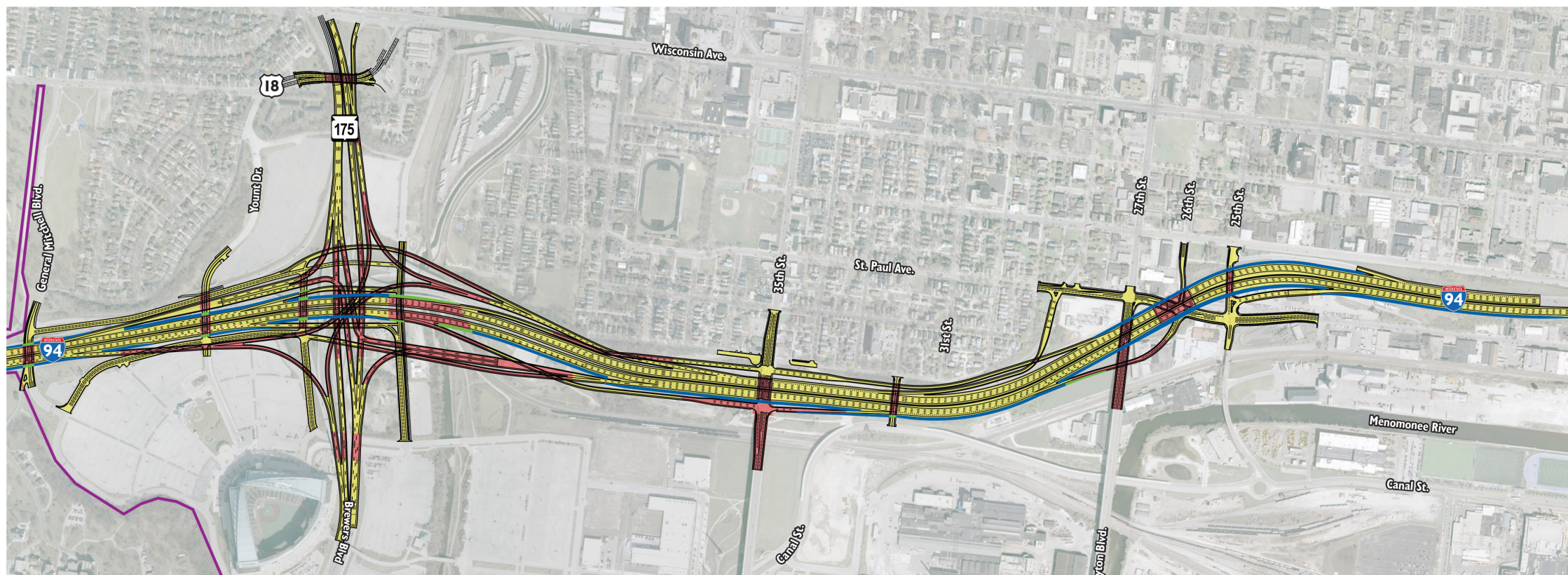
Difference between 8- and 6-Lane Alternatives, 70th Street to General Mitchell Boulevard









BOTH 6-LANE ALTERNATIVES AND THE 8-LANE ALTERNATIVE:

- 75% built in the existing right-of-way (ROW) 
- 20% built on land currently owned by public utilities and stadium district. 
- 5% built on land which is currently owned by private entities 

Difference between 8- and 6-Lane Alternatives, General Mitchell Boulevard to 16th Street (Hybrid Interchange)



Note: The diverging diamond interchange option would have the same impacts east and west of the Stadium Interchange. Within the Stadium Interchange, the difference in impacts between the 6-lane and 8-lane diverging diamond interchanges would be minimal, much like the hybrid interchange shown.

- LEGEND**
-  Freeway
 -  Bridge
 -  Difference between 8-lane and 6-lane Pavement
 -  Difference between 8-lane and 6-lane Bridges
 -  Northwestern Branch National Home for Disabled Volunteer Soldiers National Historic Landmark
-  North

	8-lane alternative*		6-lane alternative			
	Hybrid Interchange	Diverging Diamond Interchange	Hybrid Interchange		Diverging Diamond Interchange	
			Hawley Road full interchange	Hawley Road half interchange	Hawley Road full interchange	Hawley Road half interchange
Total cost (2021 dollars)**	1.28 billion	1.19-1.21 billion	1.21 billion	1.24 billion	1.12-1.14 billion	1.15-1.17 billion
New right of way (acres)	49	49	42	48	42	48
Residential Displacements	1	1	1	1	1	1
Commercial Displacements	6	6	6	6	6	6
WisDOT Southeast Region Service Facility Displacement	Yes	Yes	No	Yes	No	Yes

* The 8-lane alternative has a half interchange at Hawley Road

**Preliminary cost

For all alternatives, the diverging diamond interchange would cost about \$70-90 million less than the hybrid interchange.

As a result of these design refinements since the 2016 Final EIS, under all alternatives there would be 6 business displacements and 1 residential displacement. The 8-lane alternative and 6-lane alternative with a half interchange at Hawley Road would displace WisDOT’s Southeast Region Service Facility building (a maintenance building on 60th Street) due to the Washington Street extension. This is compared with 11 business displacements, 8 residential displacements, and the displacement of the WisDOT Southeast Region Service Facility noted in the 2016 Final EIS.

In the 2016 Final EIS, there were 11 business displacements and 8 residential displacements. Due to design refinements since then, there are 6 business displacements and 1 residential displacement.

EVALUATION OF ALTERNATIVES IN RELATION TO PURPOSE AND NEED

WisDOT and FHWA evaluated the 8- and 6-lane alternatives based on their ability to satisfy the project’s purpose and need factors:

1. Does the alternative upgrade I-94 to current nationally-accepted design criteria, where appropriate, allowing for a minimal number of design exceptions due to environmental constraints?

For all alternatives, WisDOT strives to follow the most recent nationally-accepted design criteria and I-94 would be upgraded to current design criteria in most locations. However, in some locations, meeting current design criteria would significantly increase impacts and cost or unacceptably alter access. As part of developing the alternatives, WisDOT balanced safety and traffic operations improvements with cost and impacts. Based on this, all the alternatives would require an exception to standards in some locations.

Design exceptions for inadequate sight distance in the cemetery area and inadequate stopping sight distance on the eastbound exit ramp to 26th Street and westbound entrance ramp from 28th Street would be required for all alternatives.

The 8-lane alternative and the 6-lane alternative with a full interchange at Hawley Road would both require a design exception for the less than 12-foot lanes (as narrow as 11 feet) and minimum 2-foot shoulders between the cemeteries.

The 6-lane alternative with a half interchange at Hawley Road would require a design exception for less than standard shoulders (as narrow as 4.5 feet) between the cemeteries. Additionally, FHWA guidelines call for either no interchanges or full interchanges at crossroads. FHWA does offer some flexibility to justify not meeting interchange standards if there are no reasonable alternatives to meeting standards. As part of the 2016 Final EIS, FHWA gave preliminary approval for the half interchange at Hawley Road because of the constraint posed by the cemeteries combined with extensive public and local government input indicating that removing the entire Hawley Road interchange would negatively impact businesses and residents currently using the Hawley Road interchange. Constructing the Washington Street extension and improvements to three local road intersections would help mitigate for the reduced access at the Hawley Road interchange.

2. Does the alternative address safety on I-94?

The 8- and 6-lane alternatives would improve safety along I-94 largely due to upgrading I-94 to current design standards in most locations, removing the left-hand ramps at General Mitchell Boulevard and the Stadium Interchange, and improving ramp spacing.

Along mainline I-94 (not including ramps and intersections), the 8-lane alternative would reduce crashes by 18 percent (with hybrid Stadium Interchange) to 19 percent (with diverging diamond Stadium Interchange) compared with the No-build alternative. The 6-lane alternative with a half interchange at Hawley Road would reduce crashes on I-94 by 21 percent compared with the No-build alternative. The 6-lane alternative with a full interchange at Hawley Road would have more crashes than the half interchange alternative. Due to the 8-lane alternative having higher traffic volumes than the 6-lane alternatives, the 8-lane alternative has the lowest crash rate (crashes per VMT) of all the alternatives.

At the Stadium Interchange, including I-94, between 2025 and 2034 (a 10-year analysis period), the 8-lane alternative with the hybrid interchange is predicted to have 5 percent less crashes than the No-build alternative. Meanwhile, the 8-lane alternative with the diverging diamond interchange is predicted to have 14 percent more crashes than the No-build alternative. While the diverging diamond interchange is predicted to have slightly less fatal crashes than the hybrid interchange, the diverging diamond would have more injury and property damage only crashes. Both Stadium Interchange build alternatives downgrade the current system (free flow) interchange, introducing more vehicle conflict points through added intersections; however, they remain safe and are suitable for their intended use of moving traffic in a constrained urban corridor.

3. Does the alternative improve I-94 operational efficiency to level of service D (overall) and provide for more predictable travel time?

Under the 8-lane alternative in 2050, I-94 would generally operate at level of service C or D during the morning and afternoon peak periods in both directions. Congestion would occur in some areas on I-94 by the year 2050, but speeds generally would not drop below 40 mph in these areas. In comparison, under the No-build alternative in 2050, increased traffic volumes will generally cause I-94 eastbound to operate at level of service E or F during the morning and afternoon peak periods, while westbound I-94 will generally operate at level of service F during the morning and afternoon peak periods.

For both 6-lane alternatives in 2050, I-94 will generally operate at level of service E or F for most of the corridor in the morning and afternoon peak periods in both directions. Congestion in these locations generally impact I-94 traffic operations for 3 to 4 hours of each weekday peak period with speeds dropping to less than 20 mph in these areas. This suggests that design modernization alone would not fully accommodate forecast demand along I-94. Traffic modeling also suggests that the congestion along I-94 would negatively impact peak period traffic operations on I-41, I-43, I-894, and WIS 175.

Peak period travel times for the length of the corridor vary widely for the 6-lane alternatives (5-14 minutes), whereas the 8-lane alternative travel times are generally consistently around 5 minutes. This is indicative of less congestion and more operational consistency along I-94 for the 8-lane alternative. In comparison, peak period travel times for the No-build alternative range from 9-14 minutes.

The 8-lane alternative would address the operational issues observed for the 6-lane alternatives by providing additional

capacity. Based on SEWRPC traffic forecasts, in the year 2050, 12,000 to 16,000 more vehicles would use I-94 on a weekday with 8-lane alternative than with the 6-lane alternatives. This additional traffic on I-94 would come from a combination of current local road users and those currently using other interstates who would now use I-94 because of improved travel time.

WisDOT analyzed the interchange movement operations for both the diverging diamond interchange and hybrid interchange options at the Stadium Interchange. The diverging diamond interchange operates at level of service D or better in the 2050 peak period for all interchange movements while the hybrid interchange operates at level of service C or better for all interchange movements. For both options, the queues on the I-94 exit ramps would not backup onto I-94 and thus would not impact I-94 traffic.

4. Does the alternative provide system continuity and maintain function as an important commuter route, a link in the National System of Interstate and Defense Highways, a WisDOT Connections 2030 “backbone” route, and a federal and state “long truck route”?

The 8- and 6-lane alternatives would maintain I-94 as a continuous 8- or 6-lane roadway, an important commuter route, a link in the National System of Interstate and Defense Highways, a WisDOT Connections 2030 “backbone” route, and a federal and state “long truck route.” However, increased congestion under the 6-lane alternative would decrease I-94’s ability to serve as a key transportation route.

For the 8-lane alternative and 6-lane alternative with full interchange at Hawley Road, the narrow lanes between the cemeteries would not match driver expectations and would not meet criteria for a Federally Designated Long Truck Route.

5. Does the alternative replace deteriorated pavement?

The 8- and 6-lane alternatives would replace the deteriorating pavement and bridges on I-94.

PUBLIC AND AGENCY INPUT ON ALTERNATIVES

Since the completion of the 2016 Final EIS, WisDOT and FHWA have continued to solicit and receive comments on the alternatives for this project. On March 16, 2021, a virtual Public Information Meeting (PIM) took place via YouTube Live. Comments on the alternatives ranged from wanting to modernize I-94 by adding lanes, to modernizing I-94 without adding lanes, to using a replace-in-kind alternative.

In-person PIMs took place on December 8 and 9, 2021. A total of 601 comments were submitted and some focused on the alternatives. Most comments supported repairing I-94 in some manner (replace-in-kind, spot improvement, 6-lane alternative, 8-lane alternative). About 66 percent expressed support for the 8-lane alternative, with the remainder split between the 6-lane alternatives, spot improvements for safety, or simple replacement of the existing I-94 as is. Of those who supported a 6-lane alternative, many expressed support for spending the excess money on transit, bike/pedestrian, or local road improvements instead of spending the money on I-94.

PREFERRED ALTERNATIVE IDENTIFICATION

As part of the Supplemental Draft EIS, FHWA and WisDOT will identify the preferred alternative based on engineering factors; impacts to the human and natural environment; cost; and input from the public, local, state, and federal resource agencies, tribes, and local officials.