

North Mendota Parkway Design

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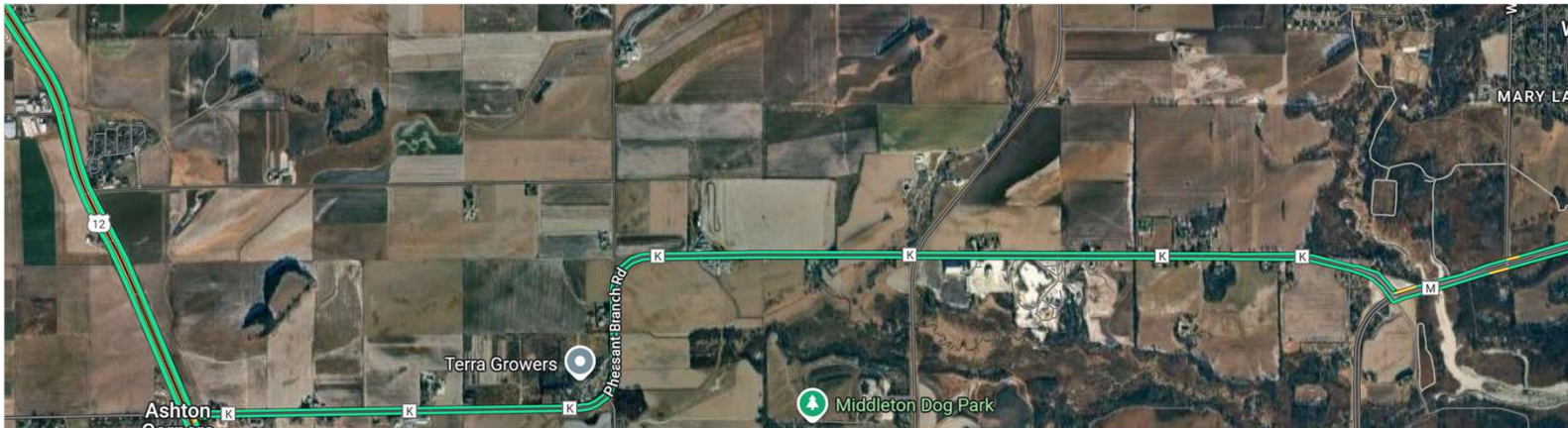
Agenda

- Project Overview
- Context
- Alternative Alignments and proposal
- Vertical and horizontal alignments
- Design standards
- Traffic forecasting
- Intersections
- Final look/Remaining Challenges
- Q&A



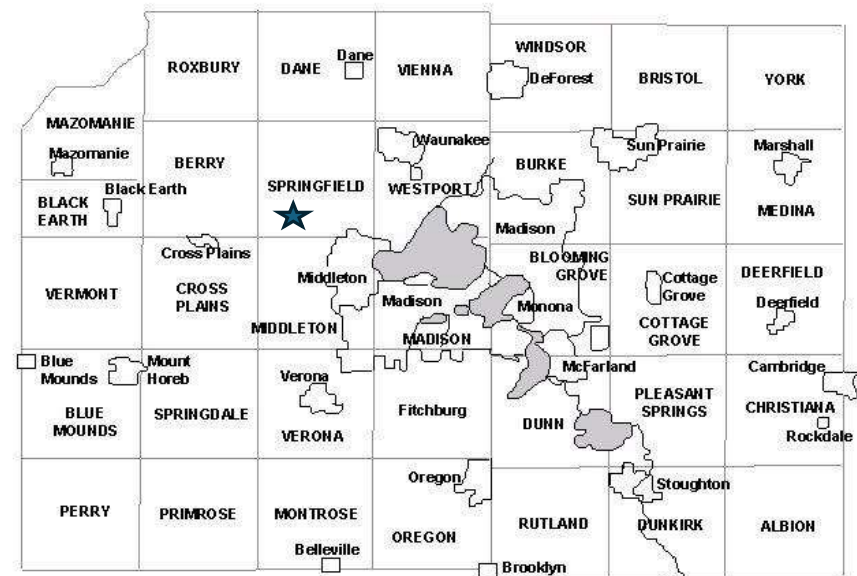
Location

- Dane County
- 4.75 miles long project area
- North of Pre-existing CTH K
- Project connects USH 12 to intersection of CTH K/CTH M



Important Context of the region

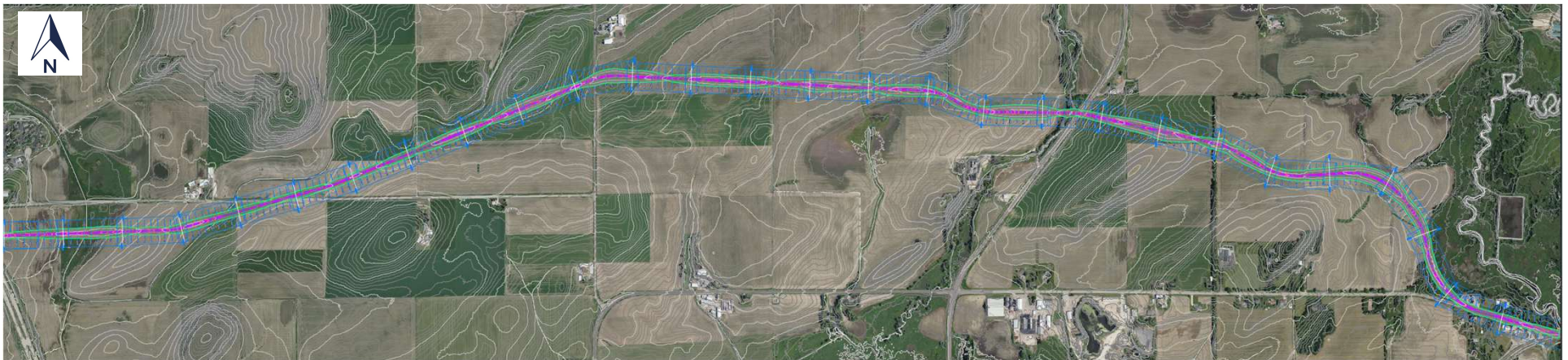
- Springfield township in Dane County
- Population-599,930
- Primarily agricultural community (older population)



Constraints of the region

- Hydrologic
 - Various streams/rivers that flow through this region
- Farmland
 - A large amount of land use in this region is large-scale or small-scale farming
- Terrain
 - The land in this region is rolling and has areas of higher elevations which was taken into consideration when designing alignments.

Alignment 1



Alignment 2



Proposed alignment

- Alignment 1 overall has a better overall score than alignment 2
- The factors taken into consideration in this phase:
- Elevation variability
- Interferences
- Guideline variability



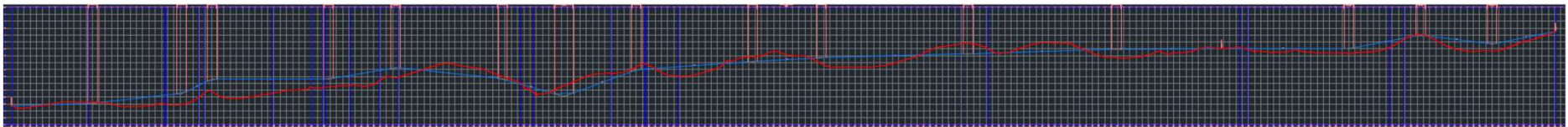
Alignment choice details

- 2 lane roadway (1 in each direction)
- 12 feet per lane
- Shoulder width is 10 feet
- Clear zone is 30 feet
- Based on design speed 6% max of superelevation



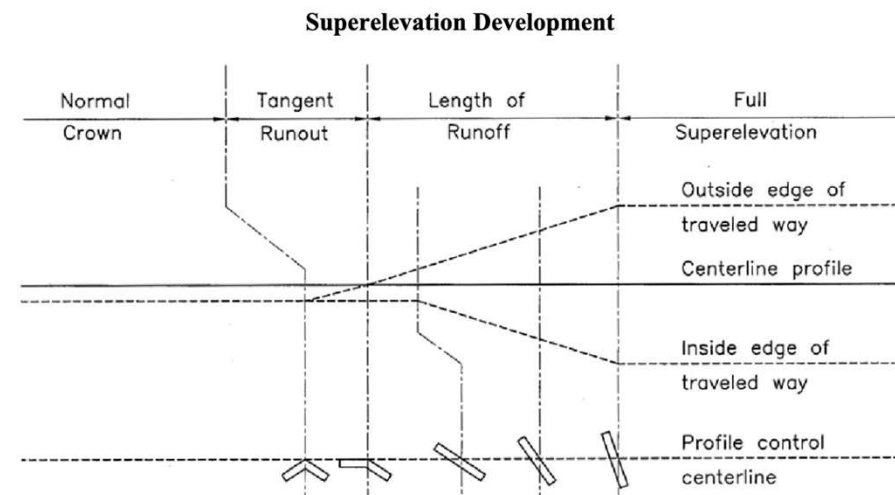
Vertical Alignments

- The maximum allowable grade is 5% for a project of this type (Table 7-4a in the GreenBook).
- Certain areas are cut/fill heavy based on an interference or design requirement.
- Alignment navigates around large changes of elevation in the area



Horizontal Alignments

- Green Book Table 3-7 & 3-16a
 - Minimum Curve Radius
 - Limiting values of superelevation and friction factor
- 1060 feet
- SSD – 495 feet
- Superelevation Runoff – 153 feet
- Tangent Runout – 51 feet



Design standards

- Function classification- Rural Principal Arterial
- Design Vehicle-WB 67
- Design Speed- 55 mph

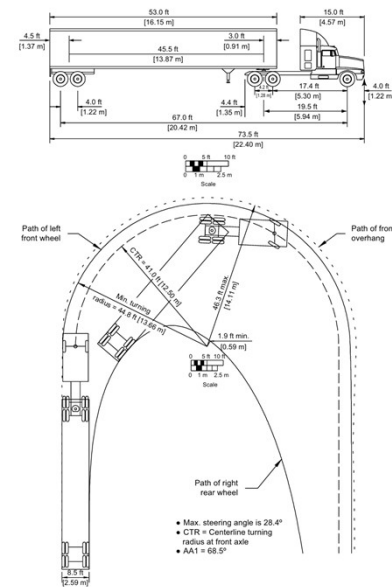


Figure 2-24. Minimum Turning Path for Interstate Semitrailer (WB-67 [WB-20]) Design Vehicle

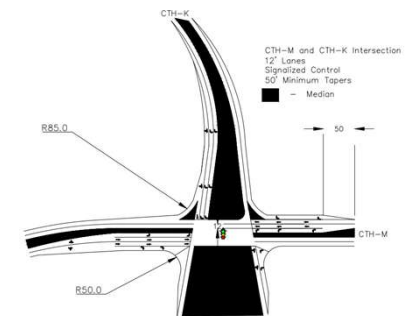
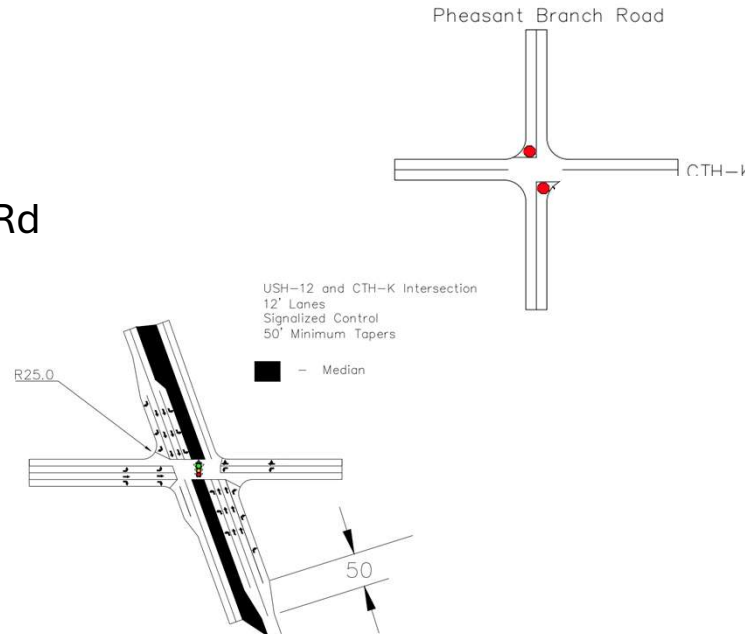
Traffic forecasting

- Average AADT values along existing CTH-K and CTH-Q
 - 2006-2022
 - Design life: 20 years
 - 11800 AADT
- Growth Rate – 0.4%
- Considerations
 - Population growth rate
 - Existing roadway

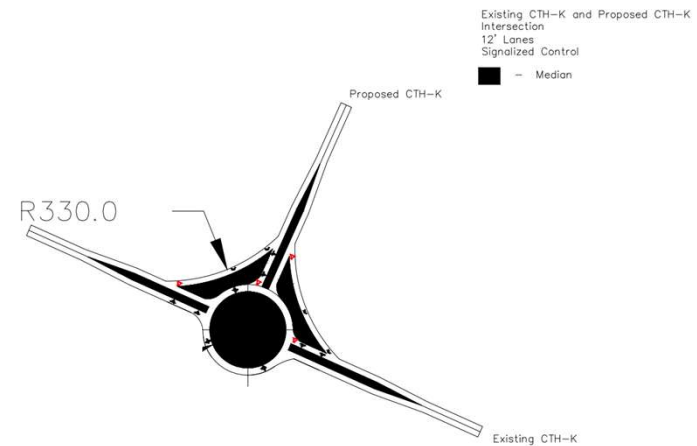
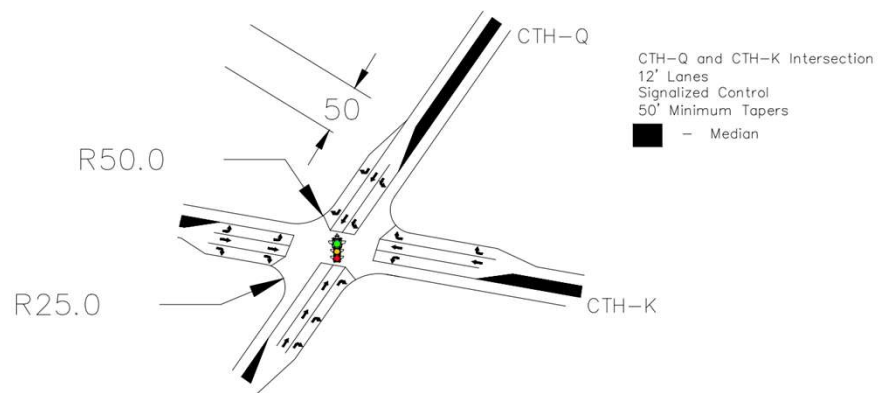


Intersections

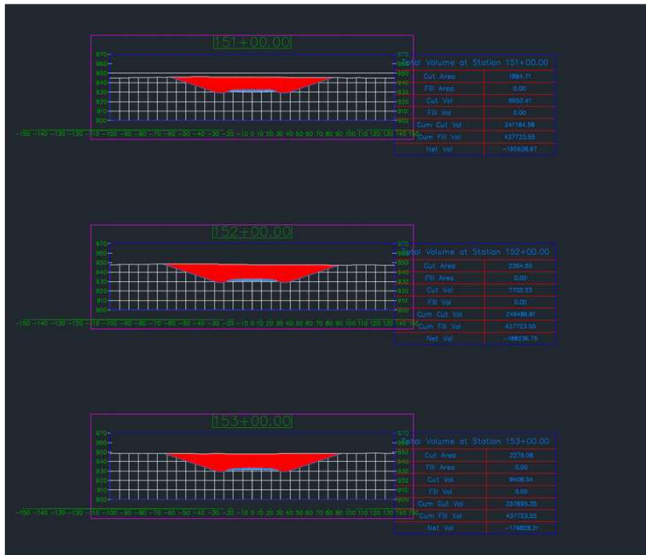
- 6 intersections
- New Intersections
 - CTH-K and Fisher Rd
 - CTH-K and Pheasant Branch Rd
 - CTH-K and CTH-Q
 - CTH-K and Existing CTH-K
- Tie-in intersections
 - CTH-K and USH-12
 - CTH-K and CTH-M



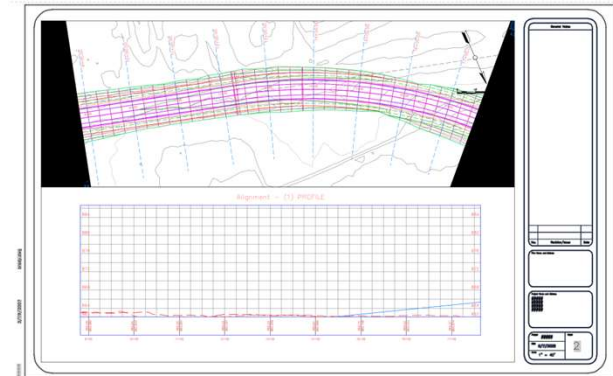
Intersections



Final Look/Remaining issues



Point of intersection (needed large cut to follow existing road elevation)



Sources

- [1]iENGINEERING Admin, "AASHTO Journal - AASHTO Releases 7th Edition of its Highway & Street Design 'Green Book,'" *AASHTO Journal*, Sep. 28, 2018. <https://aashtojournal.transportation.org/aashto-releases-7th-edition-of-its-highway-street-design-green-book/>
- [2] S. Washburn and L. Washburn, "Highway Capacity Manual -6 th Edition Overview Course No: C03-065 Credit: 3 PDH." Accessed: Apr. 29, 2025. [Online]. Available: <https://www.cedengineering.com/userfiles/Highway%20Capacity%20Manual%20-%206th%20Edition%20Overview%20-%20R2.pdf>
- [3]"Wisconsin Department of Transportation Facilities Development Manual (FDM)," *wisconsindot.gov*. <https://wisconsindot.gov/pages/doing-bus/eng-consultants/cnslt-rsrcs/rdwy/fdm.aspx>
- [4]"Manual on Uniform Traffic Control Devices (MUTCD) - FHWA," *mutcd.fhwa.dot.gov*. <https://mutcd.fhwa.dot.gov/>