

Title: Hwy 825:02 – Grade Widening, Asphalt Concrete Pavement (EPS) and Other Works

Memorandum (or Approval) Date: September 16th, 2014

Design Exception Request Date: August 29th, 2014

Region: North Central

Approval Status: Approved

Project Location					
Highway	Control Section	At km	From km	To km	Existing AADT
825	02		5.05	14.191	3910

Project Type (Mark all that apply with an X)			
Functional Planning:	New Construction: X	Reconstruction:	Paving/Surfacing: X
Bridge:	Operations:	Geotechnical:	Environmental:
Shoulder Widening:	Preliminary Design:		

Summary
<p>As part of the Hwy 825:02 Grade Widening Project, climbing lanes are warranted for both northbound (NB) and southbound (SB) directions in order to improve highway operations and safety. In order to provide climbing lanes that comply with current AT DB #66/2010, the location of the climbing lane would be in conflict with the existing bridge that carries traffic over the Sturgeon River. The proposed climbing lanes would also be in conflict with three intersections along Hwy 825, where section B.5.2.5 of AT's Highway Geometric Design Guide states intersections should be avoided to reduce potential operational issues. As a result, a design exception is for delaying the start point of both climbing lanes, as well as to provide the start of the northbound climbing lane using a 25:1 taper instead of a 60:1 taper.</p>

Rationale for Approval/Rejection
<p>NB Climbing Lane - The climbing lane taper will start on the north side of the bridge at Sta. 9+186 (instead of at Sta. 9+087 as per DB #66/2010) to avoid conflict with the bridge.</p> <p>Twp. Rd. 555 Intersection</p> <ul style="list-style-type: none"> Twp. Rd. 555 intersection is located north of the bridge on the right side at Sta. 9+370 where the climbing lane is proposed. The east leg of this intersection is a 'no exit' road that carries approximately 90 vehicles a day and provides access to several farm operations east of Hwy 825. There is also a farm entrance on the west side of Hwy 825, 25m north of the intersection. The intersection treatment warranted is a Type III (a). In order to reduce operation hazards, relocation of the west farm entrance is also recommended to be coincidental with the Twp. Rd. 555 and therefore a Type III (b) is recommended. Intersection sight distance (ISD) is adequate for the design vehicles that use the intersection daily with the exception of the North ISD for the WB-21/WB-23 design vehicle. The minimum requirement is 565m where only 480m is present. To mitigate this issue, appropriate

warning signage will be provided.

- The distance between the bridge and the treatment at Twp. Rd. 555 intersection requires 222m of climbing lane taper at 60:1, however cannot be met and therefore a 92.5m taper at 25:1 will be used.

Twp. Rd. 560 Intersection

- The NB climbing lane continues north and will pass through the intersection of Twp. Rd. 560 which has a Type I (b) intersection and no further treatment is warranted for the 20 year horizon.
- Collision history indicates that there have been no recorded collisions at this intersection between 1997 and 2011.
- The speed profile for the 180 g/W design vehicle at the intersection indicates that the design vehicle will have a speed of 76 km/h at the intersection, below the merging speed of 80 km/h as per the current design standards. As a result, carrying the NB climbing lane through the intersection is not expected to cause an increase in operational issues due to the low volume of turning movements and therefore will maintain the minimum merging speed of 80 km/h.

SB Climbing Lane - The climbing lane taper will start on the south side of the bridge at Sta. 9+114 (instead of at Sta. 9+087 as per DB #66/2010) and attain a full climbing lane width at Sta. 8+892 to avoid conflict with the bridge.

Twp. Rd. 554 Intersection

- A Type III (b) treatment is warranted at this location to accommodate the forecasted turning movements for the NB direction.
- The design vehicles using the SB climbing lane at this intersection will be operating at a speed of 72 km/h rather than the 80 km/h as stipulated in the design bulletin. Due to the very low collision history at this location, the SB climbing lane will be carried through the intersection to Sta. 7+350 at which point the design vehicle will have attained the minimum merging speed of 80 km/h. This is not expected to increase in operational issues

Additional Information

Intersection relocation options were presented and considered previously, however the high costs associated with extra land acquisition and service road construction make these options unfeasible at this time. Proper signage as per the AT Design Guidelines will be installed at climbing lanes and intersection approaches, to indicate lane usage and turning movements.

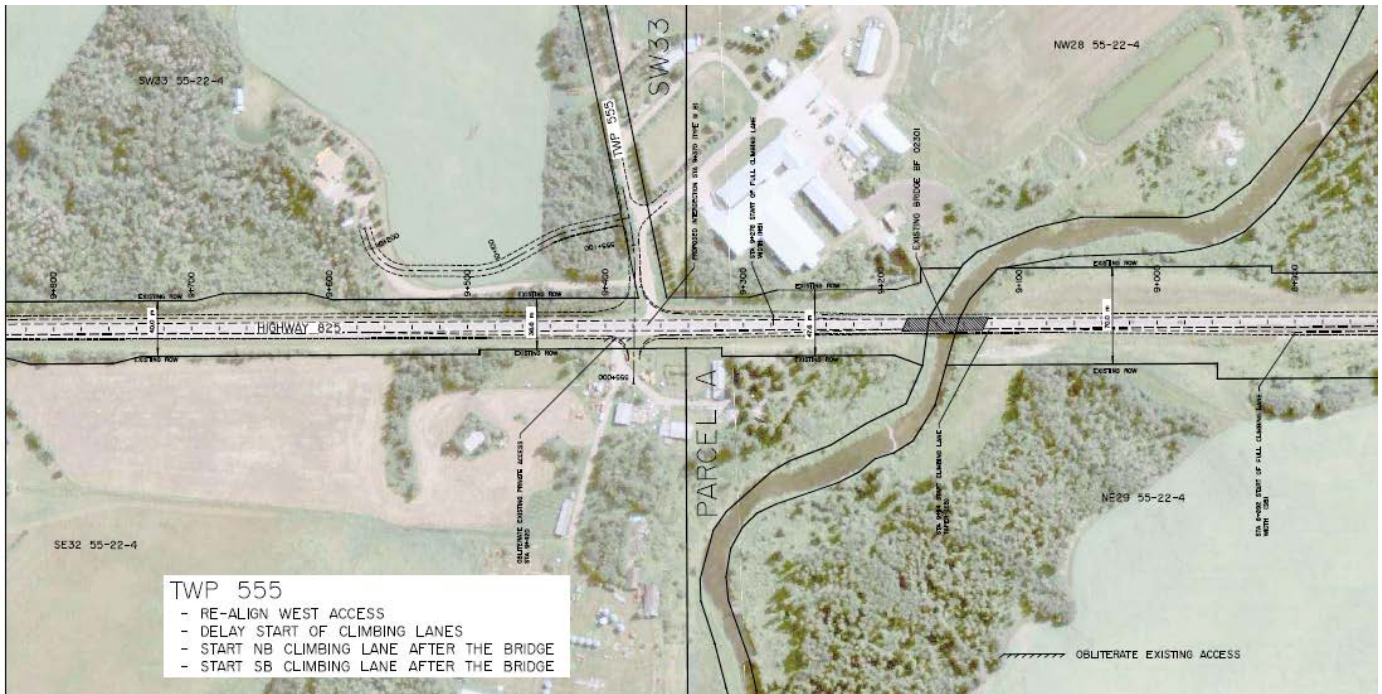
Additional Mitigation Required

Warning signs to warn of a concealed intersection will be provided at Twp. Rd. 555.

Key Words

Climbing lanes, grade widening.

Photograph/Diagram



Twp. Rd. 555



Twp. Rd. 560

