

Summary of Operational Analysis

To address the access issue to the Big Lake area, the City of Edmonton, along with the City of St. Albert and Alberta Transportation met three times in 2019 to develop an interim solution and build consensus towards a long-term agreement for the construction of future access to the Big Lake area via Ray Gibbon Drive.

On May 9, 2019, the City of Edmonton and the City of St. Albert met to discuss several issues related to our shared north-west boundary, including the Ray Gibbon Drive twinning and potential closure of the 137 Avenue intersection. Based on observations of Ray Gibbon Drive between Anthony Henday Drive and 137 Avenue, operational and safety issues were identified related to the northbound to westbound left turn at the intersection of Ray Gibbon Drive / 137 Avenue. Alberta Transportation also raised concerns about the operations on the westbound Anthony Henday Drive off-ramp and mainline operations due to congestion on Ray Gibbon Drive. Insufficient distance between the northbound to westbound left turn bay at Ray Gibbon Drive / 137 Avenue and the westbound to northbound right turn off-ramp from Anthony Henday Drive was identified as one of the primary issues.

In conjunction with St. Albert's widening of Ray Gibbon Drive, the City of St. Albert, City of Edmonton and Alberta Transportation agreed to explore interim improvements at the 137 Avenue intersection to maintain access to the Big Lake neighbourhoods until the ultimate closure of 137 Avenue and realignment of the intersection at LeClair Way / Ray Gibbon Drive is realized.

In June 2019, the City of Edmonton agreed to complete an operational review of the study area (137 Avenue intersection, Ray Gibbon Drive between the Anthony Henday Drive and 137 Avenue, and related impacts on Anthony Henday Drive mainline operations) to identify the key issues and develop recommendations that would mitigate the operational and safety challenges identified.

The operational review was completed in Fall 2019 and revealed three key issues:

1. Ray Gibbon Drive experiences congestion in the northbound lanes with associated queuing during the evening peak hours.
 - Ray Gibbon Drive reduces to one lane in each direction north of 137 Avenue, which causes queuing in the single northbound lane between 137 Avenue and LeClair Way.
 - During peak congestion, northbound vehicles cannot proceed through the intersection during the entirety of the green phase because two lanes of traffic have to funnel down to one lane north of the intersection. This results in queuing south of 137 Avenue.

- These queues, specifically in the innermost northbound lane on Ray Gibbon Drive south of 137 Avenue, extend south beyond the left turn bay and taper and block access to the left-turn bay.
2. Use of a northbound to westbound “shortcut” or U-turn as an alternative to completing a left turn at the 137 Avenue intersection.
 - This shortcut is used by drivers on Ray Gibbon Drive travelling northbound who wish to travel westbound on 137 Avenue without using the left turn lane. The movement involves northbound vehicles turning eastbound onto 137 Avenue, making a U-turn maneuver and then travelling westbound through the intersection at Ray Gibbon Drive.
 - The U-turn movement is perceived as the path of least resistance for drivers, possibly because the low volume of traffic on the east leg of the intersection presents fewer conflicts in performing this maneuver.
 3. The proximity of the westbound to northbound Anthony Henday Drive merge lane to the northbound left turn bay and taper at 137 Avenue. Vehicles enter Ray Gibbon Drive at speed (60 km/h) via a freeway merge onto an arterial roadway. Making two lane changes within 100 metres to access the left turn bay under these conditions is a challenge, even in non-peak hour conditions.

The operational review findings pointed to the following key barriers that deterred drivers from using the northbound left turn bay and contributed to the congestion and safety concerns at Ray Gibbon Drive / 137 Avenue intersection:

- Queuing in the inside northbound through lanes on Ray Gibbon Drive that make the left turn bay difficult to access;
- Protected-only northbound left turn signal phasing that results in the informal use of the east leg of 137 Avenue as a U-turn to avoid delays; and
- Lack of sufficient distance for drivers to complete two lane changes between the Anthony Henday Drive ramp and the 137 Avenue left turn bay.

Alternative strategies were developed and discussed to address these key operational issues. The final recommended improvement strategy (Attachment 3) involved:

- Closing the westbound to northbound right turn merge from Anthony Henday Drive to Ray Gibbon Drive and reconfiguring the westbound left turn segment to include a dedicated right turn lane and taper added to the ramp and an acceleration lane added to Ray Gibbon Drive.

- The intersection would accommodate a three-lane section on the ramp: two left turn lanes and a single right turn lane designed to include a right turn low-exit angle channelizing island.
- The acceleration lane and taper will allow right-turning traffic to join Ray Gibbon Drive traffic at appropriate speeds without interrupting the flow. Separating slower traffic will improve the safety of the ramp area by allowing merging traffic to adjust to the proper speed before merging into traffic.
- Lengthening the northbound to westbound left turn bay and taper at Ray Gibbon Drive / 137 Avenue intersection to better accommodate variations in traffic during the peak hours and to improve accessibility to the left turn bay.
- Modifying the northbound to eastbound right turn geometry at Ray Gibbon Drive / 137 Avenue to allow only simple right turn movements to mitigate the informal use of the east leg of 137 Avenue as a u-turn. The design would include:
 - Closing the channelized right turn with jersey barriers;
 - Extending jersey barriers along the centerline of the east approach of 137 Avenue, and
 - Adding network Intelligent Transportation Systems to coordinate traffic signals from Anthony Henday Drive to LeClair Way.

In October 2019, the City of Edmonton, City of St. Albert and Alberta Transportation aligned around these recommendations as an interim approach that would allow for the intersection at 137 Avenue to remain open while improving traffic flow on Ray Gibbon Drive. The recommendations from the approved improvement strategy were included in the City of St. Albert's design and construction tender for the Ray Gibbon Drive widening improvements. There was further shared commitment to determining the permanent and ultimate realignment of the intersection to LeClair Way.