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MEMO

RE:	Lauzon Parkway Improvements Environmental Assessment
OUR FILE:	3211012
MTO G.W.P.	3117-09-00
PREPARED BY:	Heather Templeton
DATE:	July 27, 2012
SUBJECT:	County Road 42 – Banwell Road to Manning Road Consideration of Context Sensitive Design

The Lauzon Parkway Environmental Assessment (EA) Study includes County Road (CR) 42 from Walker Road to CR25/Puce Road. It is noted that the surrounding environment of CR42 varies as it passes through the City of Windsor, the Town of Tecumseh (Essex County) and the Town of Lakeshore (Essex County). Through the City from Walker Road to Banwell Road, CR42 is primarily bounded by the airport lands to the north and by the Secondary Plan lands to the south and is being planned as a limited access four-lane urban arterial under the City's jurisdiction. Through the Town of Tecumseh, from Banwell Road to Manning Road, CR42 is bounded by a mix of commercial/industrial/residential subdivisions and is being planned as a limited access four-lane urban arterial under the County's jurisdiction. Through the Town of Lakeshore, from Manning Road to Puce Road, CR42 is bounded by rural residential and agricultural lands and is being planned as a limited access four-lane rural arterial under the County's jurisdiction.

This Technical Memo focuses on CR42 from Banwell Road to Manning Road through the Town of Tecumseh. Presently the environment of the roadway through Tecumseh is a mix of residential, agricultural/rural residential and commercial/industrial. The Town of Tecumseh is currently completing a Secondary Plan for the Tecumseh Hamlet, which envisions a compact pedestrian-oriented community, with a mix of land uses to support the residential lands.

The existing CR42 is a two-lane rural county arterial with a posted speed of 60 km/h between Banwell Road and Manning Road (Tecumseh) and then east of Manning Road (Lakeshore) and west of Banwell Road (Windsor) the posted speed is 80 km/h. This EA is recommending improvements to CR42 to meet future traffic demands. It is recognized that CR42, as part of the regional transportation system, must continue to serve inter-regional transportation, while at the same time support the surrounding existing and planned local land uses.

FUTURE LANE REQUIREMENTS

The proposed development in the Sandwich South Secondary Plan and other growth in the County of Essex will result in increased traffic demand on the CR42. It is noted that CR22 to the north cannot solely support the future increases in traffic demand in Tecumseh and Lakeshore and some amount of the traffic from CR22 is expected to divert on CR42. The "*Technical*

Report TR2: Determination of 'Area Transportation System' Needs, October 2011 (Draft)" identifies the need for lane widening on CR42 (2 lanes in each directions). Likewise, the intersection capacity analyses conducted with 3 lanes (1 lane each way plus a median two-way left turn lane) indicate that major intersections on CR42 would not able to operate with an acceptable level-of-service with 3-lane configuration and would result in poor traffic operations with high delay. Therefore, CR42 is recommended to be widened from 2 to 4 lanes from Walker Road in the City of Windsor and Puce Road in the Town of Lakeshore.

For the segment of CR42 between Banwell Road and Manning Road a 5-lane configuration was also considered recognizing the presence of multiple local road intersections and accesses along CR42. The need for a median continuous two-way left turn lanes (TWLTL) with 4 lanes was assessed considering the forecasted AADT, the frequency of accesses, and the availability of property. From Banwell Road to Manning Road, the forecasted 2031 AADT is 20,500. For the segment from Shiff Drive to Manning Road, there are 5 local roads intersections and a number of residential driveways. It is noted that the ROW along CR42 is very constrained in this segment and the addition of a TWLTL may result in significant property impacts. However, existing closely spaced intersections at Lesperance Road, Strawberry Drive, and Shiff Drive currently have left turning lanes on CR42 and will need to be maintained with the proposed 4-lane widening, leaving only short segments of CR42 in between. Therefore, it is recommended the roadway design examine providing the median TWLTL with a reduced cross-section where property is limited.

For the segment of CR42 from Banwell Road to Shiff Drive with higher volumes of left-turning traffic accessing the adjacent commercial/industrial lands at the 15 access points, Odessa Drive, and a future proposed local road, a TWLTL would support the adjacent commercial/industrial land uses while maintaining operation for through traffic along CR42. Therefore, it is recommended a median TWLTL be provided with the typical section where property permits, as the benefit to traffic operations and adjacent land uses would outweigh the edge impacts to adjacent properties.

CROSS-SECTION REQUIREMENTS

The recommended improvements for CR42 from Banwell Road to Manning Road include widening from two to four lanes with an undivided urban cross-section with bike lanes and sidewalks in both directions. The road right-of-way (ROW) must also accommodate illumination, municipal utilities, and landscaping. The Project Team have agreed that the ROW will include 1.5 m wide bike lanes plus 0.5 m buffer in both directions and 1.8m wide sidewalks on both sides of the road. The County standard lane width is 3.75 m; however, Tecumseh requested consideration for narrower lane widths of 3.5 m and a reduced posted speed of 50 km/h within the Hamlet of Tecumseh, as well as consideration for other context sensitive design elements.

In considering context sensitive design, a number of guiding documents are referenced: Geometric Design Guideline for Canadian Roadways (TAC, 1999); Geometric Design Standards for Ontario Highways; Canadian Guidelines for Establishing Posted Speed Limits (TAC, 2009); NCHRP Report 480, A Guide to Best Practices for Achieving Context Sensitive Solutions; Essex-Windsor Regional Transportation Master Plan (October 2005); and County Wide Active Transportation Study (CWATS).

The goal of a context sensitive design for CR42 is to:

- provide capacity for higher inter-regional traffic volumes, including commercial vehicles;
- provide access for local traffic to frequent driveways (residential and commercial)
- provide access to local areas via local side streets;
- address all road users (drivers, cyclists, pedestrians); and
- influence safe driving behaviours at moderate speeds.

In principle, operating speeds are influenced through the geometric design, which is based on a selected design speed. The design of the roadway is based on the roadway classification, the design speed, traffic conditions, design vehicles, and considerations for other road users. The elements of the cross-section take into consideration both the driver's needs and the needs of all other roadway users, i.e., pedestrians and cyclists. The recommended posted speed limit for a roadway is a function of the road classification, function, physical characteristics and engineering factors (i.e., design speed). Establishing the design and posted speeds of a roadway should be selected consistent with the road users, road classification, adjacent land use, character of terrain.

The cross-section of an urban roadway is the primary influence for driver behavior and the specific factors that influence are:

- the adjacent land uses;
- the level of traffic congestion;
- intersection and driveway impediments;
- presence of vulnerable road users;
- the posted speed;
- the width of lanes; and
- degree of manoeuvring restriction

POSTED SPEED

The TAC Guideline Table 1.3.4.2 provides the general characteristics of urban roads for various road classifications. For minor and major arterials, traffic movement is the primary consideration with land access of secondary consideration with a range of access control, with design speeds ranging from 50 to 100 km/h and average running speeds of 40 to 90 km/h.

The existing and proposed horizontal and vertical alignment along CR42 is relatively straight and flat with approximately 2 km between major intersections at Banwell Road and Manning Road. The recommended plan proposes roundabouts at both intersections with Banwell Road and Manning Road. These roundabouts will help to serve as a traffic calming measure by reducing speeds through the roundabout and also provide a landmark to drivers signifying of the change in the surrounding land use. From Banwell Road to Shiff Drive, there are approximately 15 commercial accesses and then from Shiff Drive to Manning Road, there are 5 intersections with collector/local roads. In the future one of these intersections, at Lesperance Road is recommended to be signalized. All other local road intersections will remain stop-controlled for side-street traffic only. Therefore, based on these proposed conditions for CR42 from Banwell Road to Manning Road it is recommended the posted speed remain at 60 km/h, with a design speed of 70km/h. A posted speed of 60 km/h achieves a balance between the need to facilitate inter-regional longer distance traffic, and provide for local traffic and other road users.

Recognizing the presence of regional road traffic and the long sight distance available (i.e., roadway alignment is straight and flat), the operating speed for most drivers is not expected to be lower than 60 km/h.

LANE WIDTH

The TAC Guideline Table 2.2.2.3 presents lane widths of 3.5 m to 3.7 m for urban arterial roadways. The guideline also notes that a number of agencies currently use land widths up to 3.75 m for high speed, high volume roadways. Lane widths are a function of the design speed and have an influence on safety and capacity of the roadway. In general, wider lanes have the ability to carry a larger volume of traffic than narrower lanes and in general safety increases with wider lanes up to a width of 3.7 m; however with little safety benefit by widening lanes beyond 3.3 m.

In considering all the road users, CWATS provides guidance for enhancing safety for pedestrians and cyclists. Section 6.5.1.2 presents a discussion on the effect of lane widths for new cycling facilities, which is consistent with TAC. In general lane widths can influence driver speed with motorists driving more cautiously. Therefore, recognizing the need for the roadway design to accommodate pedestrians/cyclists as well as a regional commercial traffic and consistent with CR42 west of Banwell in the City of Windsor, lane widths of 3.65 m are recommended.

Therefore, in considering the specific site considerations and literature, CR42 is recommended to have a basic cross-section of 4 - 3.65 m wide lanes with a median TWLTL (4.0 m) and 1.5 m bike lanes plus 0.5 m buffer.

OTHER CONTEXT SENSITIVE CONSIDERATIONS

In addition to the traffic lanes, cycling and pedestrian facilities, additional context sensitive considerations for the roadway cross-section include streetscaping.

It is recognized that placing landscaping and trees closer to the roadway within the boulevards can also encourage slower operating speeds. However, the location of landscaping and trees must take into considered driver sight lines, as well as required illumination and hydro clearances. It is recommended the feasibility of locating landscaping and trees closer to the roadway be reviewed in context with the illumination recommendations and hydro requirements.