



Est. 1873

## REPORT TO MAYOR AND COUNCIL

<b>PRESENTED:</b>	NOVEMBER 18, 2019 - REGULAR AFTERNOON MEETING	<b>REPORT:</b>	19-180
<b>FROM:</b>	ENGINEERING DIVISION	<b>FILE:</b>	5400-20-030
<b>SUBJECT:</b>	24 AVENUE, 196 STREET TO 200 STREET		

### RECOMMENDATION:

**That** Council refer the matter of funding design and construction of 24 Avenue between 196 to 200 Streets to the 2020 budget process to facilitate opening the road after the required improvements are complete.

### EXECUTIVE SUMMARY:

At its Regular Afternoon Meeting of September 9, 2019, Council passed a resolution directing staff to assess the section of 24 Avenue between 196 Street (Langley-Surrey border) and 200 Street to determine if the road is capable of accommodating the additional traffic anticipated with the opening of 24 Avenue in the City of Surrey. The assessment has now been completed with the determination that the road is capable of accommodating the additional traffic in the short term and can be opened.

As an arterial road, so designated in the Township's Master Transportation Plan and Brookwood-Fernridge Community Plan, 24 Avenue is planned to serve through traffic, connect to other arterial and collector roads within the region and provide enhanced connectivity to points west. This "arterial" designation is consistent with the City of Surrey's Transportation Plan.

As part of the assessment undertaken, staff undertook traffic counts, reviewed existing volumes, as well as traffic distribution patterns to estimate the potential increased traffic volume on 24 Avenue. The existing road width is similar to other rural roads and is sufficient to accommodate the anticipated increased traffic volume, even after opening. The intersections of 196 Street and 198 Street are low volume and are not anticipated to require any upgrades in the short term.

The intersection of 24 Avenue at 200 Street was analyzed to determine the intersection performance and potential need for a traffic signal. With the projected increased in traffic volume, the intersection may be near the threshold of warranting the installation of a traffic signal, based on Transportation Association of Canada (TAC) Guidelines, but is anticipated to operate at an acceptable level of service (LOS) with the existing all-way stop in the short term. The pavement condition, however, is considered poor to fair and may require resurfacing, which can be undertaken following the opening of 24 Avenue and completion of sanitary sewer works in 2021.

Based upon the adequacy of the existing road and intersections to accommodate the anticipated additional traffic, staff recommend proceeding with coordinating the opening of 24 Avenue with the City of Surrey upon 2020 budget approval. Design works will consider changes needed to the intersections in the long term, including immediate installation of signage, as needed, to indicate 24 Avenue is NOT a truck route. Staff will monitor traffic conditions, and re-evaluate the corridor once traffic volumes have stabilized after opening. Funding allocations in both the 2020 and 2021 budgets have been incorporated for design and capital construction of improvements, respectively.

### PURPOSE:

To provide an update on the existing road condition, capacity and intersection control of 24 Avenue between 196 Street and 200 Street in the Brookwood-Fernridge area.

### **BACKGROUND/HISTORY:**

As part of a development project in the City of Surrey, the section of 24 Avenue between 194 Street and 196 Street is being constructed to a four-lane divided cross-section with left turn lanes at intersections.

It is anticipated that construction will be completed by the spring of 2020. A portion of 24 Avenue between 192 Street and 194 Street is currently, and in the short term will remain as one lane per direction. The widening being undertaken is consistent with the City of Surrey transportation plan which designates 24 Avenue as a four lane arterial road. This is also consistent with the Township of Langley's Master Transportation Plan and Brookwood-Fernridge Community Plan.

At its Regular Afternoon Meeting of September 9, 2019 Council passed the following resolution:

*Whereas the City of Surrey is in the process of building a very large Industrial Park (Campbell Heights) and is currently in the process of completing construction on the portion of 24 Avenue from 192 Street to the municipal boundary with the Township at 196 Street;*

*Whereas the connection of 24 Avenue will provide a new east/west link between the two communities that is needed to support the FUTURE TRANSPORTATION needs of the Township; and*

*Whereas THE TOWNSHIP OF LANGLEY HAS NOT analyzed the road condition or upgraded 24 Avenue from 196 Street to 200 Street in anticipation of the new connection;*

*Therefore be it resolved that the intersection of 24 Avenue at 196 Street remain closed until the Township of Langley determines the road is sufficiently upgraded to handle new traffic volumes and local truck traffic.*

### **DISCUSSION/ANALYSIS:**

#### Road Classification and Function

Both 24 Avenue and 200 Street are classified as major arterial roads with a four-lane divided cross-section in the Township's 2009 Master Transportation Plan and 2017 Brookwood-Fernridge Community Plan. Both 24 Avenue and 200 Street are identified as bike routes in the Township of Langley 2015 Cycling Plan. Truck routes in the area include 200 Street, 192 Street, 32 Avenue and 16 Avenue, while 24 Avenue is not a designated truck route.

As an arterial road, the function of 24 Avenue is to provide a route for through traffic and to provide connections to other arterial and collector roads. Arterial roads such as 24 Avenue are expected to have higher traffic volumes than collector or local roads. Due to the limited number of routes available and the future growth anticipated in the Brookwood-Fernridge community, 24 Avenue is required to service the Transportation needs of the Township. A consequence of not opening 24 Avenue will be increased traffic volumes on immediately adjacent routes, such as 28 Avenue which is a collector road, and on other arterial roads such as 16 Avenue and 32 Avenue.

#### Existing Condition

Currently, 24 Avenue between 196 Street and 200 Street has a two-lane rural cross-section with ditches on both sides between 198 Street and 200 Street. The paved surface is one lane in each direction with an approximate total width of 7.6 metres contained within a 20 metre road dedication. A portion of 24 Avenue has been widened to approximately 11 metres near a culvert crossing located

approximately 230 metres east of 196 Street. There is a 1.5 metre wide sidewalk between 200 Street and the culvert crossing on the south side of 24 Avenue. Unlike most rural roads, 24 Avenue has a sidewalk on the south side from 200 Street west to approximately 230 metres east of 196 Street. The road width on 200 Street is approximately 11 metres including one travel lane for each direction and marked and signed bike lanes on both sides.

The rural road condition of 24 Avenue is similar to that of other roads in Brookwood-Fernridge, such as 28 Avenue, 32 Avenue and 36 Avenue which also connect the Township and the City of Surrey. A significant portion of 24 Avenue also has a pedestrian facility which is not found on the majority of rural roads in the Brookwood-Fernridge area. The intersection of 24 Avenue and 200 Street is currently controlled by an all-way stop augmented by an overhead flashing beacon.

### Traffic Volumes

Information was gathered on traffic volumes in the area including undertaking traffic volume turning movement counts, reviewing traffic volumes on other routes and reviewing traffic turning movement and approximating traffic distribution patterns. Vehicle turning movement counts were undertaken on Tuesday, October 22, 2019 at the intersection of 24 Avenue and 200 Street during the morning, noon and afternoon peak periods.

Based on the City of Surrey 2018 Traffic Volume Map, the Annual Daily Traffic volume on 24 Avenue west of 192 Street is 5,900 vehicle per day. The majority of this traffic turns north or south at 192 Street to access Highway 10, 32 Avenue or 16 Avenue which are the truck routes connecting the region. For sensitivity analysis purposes, it is conservatively assumed that one third of the current traffic on 24 Avenue west of 192 Street (2,000 vehicles per day) may utilize 24 Avenue between 196 Street and 200 Street.

### Intersection Performance

The width of 24 Avenue is 7.6 metres wide with one lane in each direction, which in terms of capacity, can accommodate 15,000 to 20,000 vehicles per day. As traffic volumes increase, improvements may be needed at intersections or to accommodate pedestrians and cyclists. There is an existing sidewalk on the south side of 24 Avenue from 200 Street to the culvert crossing 230 metres east of 196 Street. Staff observed some pedestrian traffic near 200 Street but did not observe pedestrian traffic near 196 Street. As such, it is not anticipated that pedestrian improvements will be needed in the short term with the opening of 24 Avenue.

The intersections on 24 Avenue at 196 Street and 198 Street have low cross street volumes, and as such, it is not anticipated that improvements will not be needed at these locations with the opening of 24 Avenue. The intersection of 24 Avenue at 200 Street was analyzed to determine the projected performance and the need for upgrades with the opening of 24 Avenue, assuming that traffic volumes increased by 2,000 vehicles per day. The anticipated intersection level of service and the potential need for a traffic signal was reviewed.

Operations of roadway facilities are described in terms of Level of Service (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom of maneuver. Six service levels are defined, ranging from LOS A, the best operating condition, to LOS F, the worst conditions. LOS E corresponds to "at or near the capacity" operations. When volumes exceed capacity, generating stop and go conditions, the operations are designated LOS F.

The Synchro traffic analysis software was used to evaluate the intersection LOS and average delays at 24 Avenue and 200 Street. The results indicated that the overall intersection LOS would be LOS C under the current all-way stop control and lane configuration with the additional anticipated traffic volumes following the opening of 24 Avenue. As such, the projected LOS indicates that no immediate action is required at the intersection with the anticipated opening of 24 Avenue.

The Township applies the Transportation Association of Canada (TAC) Traffic Signal Warrant Guidelines when determining the need for a traffic signal at intersections. With the additional traffic anticipated with the opening of 24 Avenue, the intersection at 200 Street is at the threshold where a traffic signal may be warranted. However, a warrant calculation alone is generally not sufficient background for making a decision on the installation of traffic signals. The traffic signal warrant analysis should only serve a priority indicator or installation justification indicator. Other factors such as intersection operations, intersection safety, intersection geometry and overall traffic flow should also be considered before a traffic signal is introduced. Given that the LOS of the intersection, with the anticipated traffic volumes resulting from the opening of 24 Avenue, is at a LOS of C, the installation of a traffic signal would not be required.

#### Pavement Condition

A pavement condition evaluation of 24 Avenue was undertaken that found the existing pavement condition ranges from poor to fair and would require resurfacing within two years based on current use and volume. With the additional traffic after the opening of 24 Avenue at 196 Street, resurfacing may be required next year. There is an option to resurface this section of 24 Avenue with a 75mm Grind and Pave at a cost of approximately \$150,000 that would last approximately 10 years. Alternatively, a full Remove & Replace, at a cost of approximately \$500,000 could be undertaken and may be sufficient for the next 15 years and bring the road structure to existing standards.

The area in question may undergo redevelopment in the near future, at which time the development would be required to undertake a full upgrade and expansion of the roadway. In addition, the Township is also planning on the construction of a sanitary sewer line on 24 Avenue between 196 Street and 200 Street in 2021. As such, it would be more appropriate to resurface the road following the construction of the sanitary sewer line in 2021.

#### Future Actions

Based upon the review of 24 Avenue, including an evaluation of the anticipated intersection performance and pavement condition, the road connection at the City of Surrey boundary could be opened at any time. As such, staff recommending proceeding with coordinating the opening with the City of Surrey including any changes needed to the intersection of 24 Avenue at 196 Street, unless otherwise directed by Council.

The City of Surrey and the Township do not designate 24 Avenue as a truck route, however, local truck traffic may still use the corridor. In order to address concerns with truck traffic, similar to other non-truck roads such as 36 Avenue, staff recommend installing the standard “No Heavy Trucks Over 10,000 KG Licenced GVW” signs at 196 and 200 Street for eastbound and westbound traffic respectively. Once the road is opened, staff will monitor the traffic volumes in the area and conduct another review after traffic volume patterns in the area have stabilized.

Funding in the amount of \$400,000 and \$4,000,000 in the 2020 and 2021 budgets respectively for the design and construction of potential upgrades to the corridor, particularly at intersections, for Council’s consideration of approval. Additional funding in the amount of \$150,000 can be included in the 2021 budget to undertake resurfacing of 24 Avenue between 196 Street and 200 Street following the completion of the sanitary works, as an interim measure until such time as the road is widened as part of development in the area.

Respectfully submitted,

Paul Cordeiro  
MANAGER, TRANSPORTATION ENGINEERING  
for  
ENGINEERING DIVISION