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STATUS UPDATE
JANE STREET AND HIGHWAY 7 EMERGENCY CLOSURE
CITY OF VAUGHAN

The Transportation and Works Committee recommends the adoption of the recommendation contained in the following report, March 17, 2006, from the Commissioner of Transportation and Works:

1. RECOMMENDATION

It is recommended that the following report be received for information and the Regional Clerk forward this report to the Clerk of the City of Vaughan.

2. PURPOSE

This report provides an update on the status of the closure of the intersection of Jane Street and Highway 7, in the City of Vaughan.

3. BACKGROUND

On February 7, 2006, York Region Road Maintenance staff responded to a concern of a sink hole on Highway 7 at Jane Street. Upon attending the site, staff requested York Regional Police to close the intersection of Highway 7 and Jane Street due to a significant failure in the pavement that developed in the northwest corner of the intersection.

Staff from the City of Vaughan and York Region were dispatched to the site to investigate the situation. The first indication was that there was a break in the City of Vaughan's watermain. The City of Vaughan's repair contractor was called to the site to start repairs to the watermain. However, the ground continued to settle causing staff to suspect that there may also be a problem with the two sanitary sewers that converge and join under the northwest corner of the intersection.

An extensive investigation identified that the area settled approximately 1.2 metres and was focused on the sanitary manhole. The surrounding ground, the traffic signal controller cabinet and concrete pad, the curb and gutter, the pavement, and the sanitary manhole had all dropped noticeably. The excavation that followed revealed high ground water conditions and an extensive area of sunken soil. Cracks in the ground and pavement surrounded the sunken area could be seen as far as 15 to 20 metres away from the sunken sanitary manhole.

It was decided that the City of Vaughan would lead the repair and restoration component of this project. The Region managed the traffic component of the project in consultation with City of Vaughan staff.

The City of Vaughan engaged the services of a contractor to carry out the work at this site. As the contractor continued with the excavation, additional damaged infrastructure was located including a large diameter gas main, which had to be worked around and supported, a concrete Bell duct structure that was completely crumbled, and all the underground traffic control signal duct structure was destroyed. It should be noted that the City watermain is approximately six metres deep and the sanitary sewer is about 10 metres deep.

In order to prepare for the replacement of the sanitary sewer, the sewer flow had to be pumped around the failure to the south side of Highway 7. Once this sanitary diversion was in place, dewatering the excavation site started. It was then determined that the ground water was coming from an aquifer. This aquifer would require dewatering wells to lower the water table prior to completing the excavation. A total of 13 water wells were placed and pumped in order to lower the water table to safe levels to complete the excavation and the installation of the new sewers.

The restitution of the infrastructure in the area now includes the replacement of the watermain, the sanitary and storm sewers, the traffic control signal conduits and the complete reconstruction of a significant portion of the intersection. Due to the extensive dewatering required to allow the work to be carried out safely and to minimize the potential for further problems at this site, the City of Vaughan has now advised that the work is not likely to be completed before May 20, 2006.

The closure of the intersection required that through-traffic on Jane Street and Highway 7 would have to be redirected to alternate roads. As a result, the level of traffic and congestion on the affected municipal roads increased considerably. Traffic diverted around the site and increased volumes were noticed on adjacent Regional roads as well, Keele Street, Weston Road, and Rutherford Road. York Regional staff and staff of the City of Vaughan continue to monitor traffic operations and make adjustments to traffic management strategies to improve traffic operations in the affected area, where required.

3.1 Region Involvement

Once the extent of the problem was identified, the Region engaged the services of a Geotechnical Consultant to provide investigation and restoration advice to staff. Since the majority of the work is for the sanitary sewer and watermain, the City of Vaughan is using the services of the same consultant.

The Region also engaged the services of a monitoring engineering firm to record all activities ongoing at the site.

Meetings have been held on site twice per week up to the end of March and once per week to the end of the project. Regional staff has been an active participant at these site meetings.

Since the dewatering is being pumped into the sanitary sewer, which goes to the Black Creek Pumping Station, the Region's Water and Wastewater Branch staff has also been involved in this project.

The traffic management in and around the closure has been managed by the staff from the Region in consultation with the City of Vaughan staff.

4. ANALYSIS AND OPTIONS

4.1 Planned Reconstruction Sequence

At this point in time, the ground water levels have been lowered, the excavation has been stabilized and construction has begun on installing the new sewers. The area of the failure is being grouted to fill any voids under the failed sanitary sewer to eliminate the possibility of future settlement. The watermain is being prepared for the new watermain, ie. removal of the failed pipes and valve chamber, on the west side of Jane Street, and locating the watermain on the east side of Jane Street ready for the new watermain crossing.

A plan showing the intersection and the existing and proposed sewers and watermain is attached (*Attachment 1*).

It is expected that the sanitary sewer installation will be completed by the week of April 16 and the watermain installation by the week of April 23. The restoration of the intersection including the removal of the failed sub grade, asphalt, the replacement of the traffic control signal conduit, the storm sewer, the new signal poles bases, controller cabinet, granular base and asphalt, should be complete by mid May, at which time, it is expected that the intersection can be reopened to traffic.

4.2 Traffic Management

4.2.1 Emergency Road Closures

On Tuesday, February 7, 2006, York Regional Police closed Highway 7 at Edgeley Boulevard to the west and at Creditstone Road to the east. Jane Street was closed at Portage Parkway, formerly Applewood Crescent to the north and at Doughton Road to the south (*Attachment 2*).

The intersection of Highway 7 and Jane Street carries on average 100,000 vehicles per day. The emergency closure points were selected in conjunction with the City of Vaughan staff in order to allow traffic to bypass the intersection closure using the most

appropriate municipal roads that could accommodate the expected increase in traffic, especially truck traffic (*Attachment 3*).

The closure points on Highway 7 and Jane Street were controlled by York Regional Police officers until Friday, February 10, 2006. Thereafter the closure points were controlled by personnel from a traffic control contractor hired by the City of Vaughan.

By February 8, 2006, a total of 13 variable message board signs were deployed on Regional roads, Highway 400 and Highway 407 to inform drivers of the intersection closure and to advise them to use alternative routes. Additionally, City of Vaughan staff implemented detour signs on local roads to provide guidance to drivers.

York Region staff issued a press release on February 7, 2006 informing residents of the intersection closure and requesting them to make alternative travel arrangements to avoid the intersection and the affected area.

4.2.2 Monitoring and Adjustment

Regional staff has been working closely with staff from the City of Vaughan to monitor traffic operations in the affected area and address concerns from the public and business owners. A number of opportunities to improve traffic operations were identified and implemented. These included signal timing and phasing adjustments on Regional and local roads, double left-turn lanes at key intersections, modifications to the messages displayed on the variable message board signs to indicate “local businesses open”, and improving access to local businesses where possible. These adjustments were made considering the construction activity at the intersection and motorists trying to get around the closure to other destinations.

Public access along Jane Street southbound to the plaza on the northwest corner of the intersection was restored on Monday, February 13, 2006. Changeable message boards on Jane Street indicate that there is access to the local plaza only and one lane is open southbound. Additionally, businesses in the plaza were permitted to place signs on the Regional road allowance to promote their business. On March 31, 2006, the road closure at Portage Parkway was relocated to just south of the north entrance to the plaza. In addition, the “Road Closed” message on the changeable message board was changed to “Hwy 7/ Jane Intersection Closed”.

Also, on February 13, 2006 one lane was opened northbound on Jane Street north of Doughton Road to increase public access to the plaza on the southeast corner along Jane Street between Doughton Road and Highway 7.

On February 22, 2006, the eastbound lanes of Highway 7 between Maplecrete Road and Creditstone Road were opened to provide more access to the Furniture store and Garden Centre via Maplecrete Road and Doughton Road. To provide full access to both these businesses the road closure at Creditstone Road was relocated to Maplecrete Road on March 20, 2006.

The business located on the south side of Highway 7 at Millway Avenue had access via the detour and Millway Avenue for their employees and deliveries. To further improve access to this business and to accommodate large delivery trucks, York Regional staff, in cooperation with City of Vaughan staff, agreed to relocate the road closure from Edgeley Boulevard/Interchange Way to Millway Avenue on March 20, 2006.

The decisions on March 20, 2006 to relocate the closure points on Highway 7 and Jane Street were made after it became evident that drivers in general were getting accustomed to the detour routes along Creditstone Road and Edgeley Boulevard/Interchange Way, and after it became known that the intersection of Highway 7 and Jane Street would remain closed until mid May for construction.

Attachment 4 shows the locations of current road closures on Highway 7 and Jane Street while *Attachment 5* shows the current detour routes available to drivers.

4.2.3 Next Steps

To further improve traffic operations in the affected area, Regional staff will work with the City of Vaughan staff to facilitate the staged opening of Jane Street northbound and Highway 7 eastbound, if feasible.

5. FINANCIAL IMPLICATIONS

All costs associated with this emergency repair are being tracked. The normal operating and maintenance costs are not accommodated in the approved 2006 budgets. The City of Vaughan is now bearing all costs of reconstruction.

6. LOCAL MUNICIPAL IMPACT

Staff from the Region and the City of Vaughan has worked together and cooperatively from the start of this project. The City of Vaughan has taken the lead on this repair and Region staff are involved to lend support.

7. CONCLUSION

The emergency closure of the intersection of Highway 7 and Jane Street resulted from a significant settlement in the northwest corner of the intersection. The settlement included broken sanitary sewers, broken watermain, damaged traffic signal conduits and controller, broken storm sewers and a significant area of the intersection settled. Steps have been taken to repair this intersection and associated infrastructure which is expected to be complete by May 20, 2006.

Because of the closure of the intersection, major traffic management and detours were set up. Access to all businesses has been maintained and traffic continues to be monitored to maximize the traffic flow and minimize the impacts.

(The attachments referred to in this clause were included in the agenda for the April 5, 2006 Committee meeting.)