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Technical Memorandum

To/Attention	Mark Fraser City of Ottawa 110 Laurier Avenue West Ottawa, Ontario K1P 1J1	Date	January 31, 2018
From	James I. Moffatt, P. Eng.	Project No	114326-5.3.1.5
cc	Reagan Chi, Turner Fleischer		
Subject	Municipal Services Buildings 14 & 15 Site Plan Application Tanger Outlets Centre, Ottawa 333 Huntmar Drive City of Ottawa File No. DXX-XX-XX-XXXX		

1. Background

1.1 Existing Conditions

The Tanger Outlets Centre (TOC) in Ottawa consists of a large parking lot that rings a mega pad which includes 13 buildings. The Owners, Riocan Management Inc. received site plan approval for these buildings in 2013 and started construction and opened for business in October 2014.

Part of the development of TOC included construction of municipal infrastructure including watermains and sewers. All the municipal infrastructure on the TOC site is currently in place and in service.

1.2 Proposed Site Plan

The original plan from 2013 indicated a future out building to be located in the south western portion of the site. The original municipal services design included service pipes sized to service the future building. The Owners are now proposing two separate buildings (buildings 14 and 15) for this area and are now planning to submit a Site Plan Approval application for the new development extension. **Figure 1.1** shows the current building development in the vicinity of the proposed buildings 14 and 15.

This Technical Memorandum is in support of the new Site Plan Application for the addition of two new buildings to the TOC in Ottawa. **Figure 1.2** shows the new site plan. The application includes development of buildings 14 and 15. This report will demonstrate how the new buildings can be serviced with a water supply, wastewater disposal and management of storm runoff. The proposal will necessitate minor regrading and the removal of some curb and asphalt in the existing parking lot.

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2. Watermains

2.1 Existing Conditions

The watermain network for the TOC essentially consists of a ring watermain around the mega pad. The ring main includes hydrants and building service connections. **Figure 2.1** shows the existing water plan in the vicinity of the site plan.

As part of the original watermain construction, all buildings, either existing or proposed, are serviced with watermains. The 200 mm diameter water services for the future buildings are presently dropped near the proposed new building footprints. All water service pipes include a shut off valve.

2.2 Proposed Water Plan

The existing water plant designed to service the proposed expansion will remain in place but will have a small portion removed to facilitate the installation of a new hydrant directly off the existing water service. The new hydrant will be installed east of building 14 in order to ensure both buildings' siamese connections are within 45m of a hydrant. **Figure 2.2** shows the distances from the proposed hydrant to the proposed siamese connections. These distances are 16.27 m to Building 14 and 31.36 m to Building 15.

The original ringed watermain around the mega pad is proposed to remain since it is not impacted by the new site plan. **Figure 2.3** schematically shows the proposed water plan. The existing water service will be extended through the site to feed the west sides of both buildings 14 and 15 – near the location of the proposed mechanical rooms. Each building will have its own shut off valve. The design drawing **C-100**, which among other things, shows the proposed water plan, is included for reference in **Appendix A**.

2.3 Hydraulic Analysis

A hydraulic analysis of the watermain system servicing the Tanger site was conducted in the Design Brief, Tanger Outlet Centres, 333 Huntmar Drive by IBI Group, June 2013. In the analysis the water demand for the TOC site was calculated at the conservative value of 50,000 l/gross ha/d. For a site area of 15.5 ha, the average daily water demand used in the 2013 hydraulic analysis was therefore 8.97 l/s. Since the building areas are known, the water demand can now be calculated using the rate of 2,500 l/(1000 m²/d) for shopping centres as indicated in Table 4.2 of the Ottawa Design Guidelines – Water Distribution. The total floor area for all the existing and proposed buildings, including the subject buildings, is 38,395 square meters. Therefore, based on the City's Guidelines, the average daily water demand is calculated to be 1.11 l/s which is significantly less than the 8.97 l/s used in the 2013 hydraulic analysis.

In the 2013 Design Brief, a fire flow analysis was conducted for the TOC with a fire flow demand of 13,000 l/min. The new buildings do not increase the fire demand as they are similar in size, type of construction and use as the existing buildings. The 2013 Design Brief recommends pressure reducing valves for all buildings because the pressures under the maximum pressure check scenario are above 552 kPa (80 psi). The new buildings will have maximum pressures above 552 kPa and therefore will require pressure reducing valves.

Since the 200 mm watermain loop is not altered by the new buildings and the water demands and fire flow demands are not increased, the water hydraulic analysis in the 2013 Design Brief is still valid.

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3. Sanitary Sewers

3.1 Existing Conditions

Similar to the watermain network, there is an existing sanitary sewer system around the mega pad. That sewer system included a 250 mm diameter sanitary sewer that is presently capped near the proposed new building footprints. **Figure 3.1** schematically shows the existing sanitary sewer in the vicinity of the proposed buildings.

3.2 Proposed Sanitary Plan

Buildings 14 and 15 will be serviced with an extension of the existing 250 mm diameter sanitary sewer. It is proposed to install a new sanitary manhole (MH 200A) at the location of the existing 250 mm diameter cap and feed both new buildings with 150 mm diameter sanitary services connecting directly to the new manhole. Proposed new sanitary sewers are schematically indicated on **Figure 3.2**.

The design drawing **C-100**, which also shows the location of the existing 250 mm sanitary sewer, is included in **Appendix A**. Because there is no change needed to the existing sanitary sewer and because the overall drainage area is not changing, it is proposed to leave the existing sanitary sewer between the new MH 200A and MH 22A in place. For reference, a copy of the original sanitary sewer design sheet is also included in **Appendix B** and that sewer section is highlighted. The analysis demonstrates that there is sufficient capacity in the existing sewer to accommodate the new buildings.

4. Storm Sewers

4.1 Existing Conditions

Similar to the watermain and sanitary sewer system, there is an existing storm sewer system around the mega pad. There is a 300 mm diameter storm sewer that is presently capped near the proposed new building footprints. This storm sewer was designed in anticipation of development of the proposed Building 14 & 15 drainage area. **Figure 4.1** schematically shows the existing storm sewer in the vicinity of the new site plan.

4.2 Proposed Storm Sewer Plan

It is proposed to install a new storm manhole (MH 200) at the location of the existing 300 mm diameter cap and extend the sewer to the west in order to service the new proposed buildings and allow for the connection of three proposed catch basins which will drain the drive aisle around building 14. New 200 mm diameter service laterals are proposed for both buildings 14 and 15. All proposed new storm sewers are schematically indicated on **Figure 4.2**.

The design drawing **C-100**, which also shows the location of the existing 300 mm storm sewer, is included in **Appendix A**. Because there is no change needed to the existing storm sewer and because the overall drainage area is not changing, it is proposed to leave the existing storm sewer between the new MH 200A and existing MH 22. For reference, a copy of the original storm sewer design sheet is also included in **Appendix C** and that sewer section is highlighted. The analysis demonstrates that there is sufficient capacity in the existing sewer to accommodate the proposed buildings 14 & 15.

The only change to the existing stormwater system needed to accommodate the expansion is the relocation of existing CB34 because of the reconfiguration of the existing parking lot islands. The catch basin will connect to the same storm sewer so in terms of stormwater management and treatment, the changes are considered minor.

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4.3 Stormwater Management

All surface runoff from the proposed Buildings 14 & 15 is tributary to the local storm sewer system which outlets to an existing stormwater management facility. The treatment facility, known as the Pond 6 East SWM facility provides water quality and water quantity control of stormwater runoff from the tributary drainage area, which includes the Tanger Outlets Centre and the proposed Building 14 & 15 area. The Pond 6 East SWM facility was previously design to accommodate the drainage area for Buildings 14 & 15.

The design and construction of the Tanger site included infiltration galleries to satisfy infiltration targets for the site as outlined within the Kanata West Master Servicing Study (Stantec, June 2006). Those approved and constructed infiltration galleries have been sized to accommodate the entire Tanger development including the proposed Buildings 14 & 15 area. Therefore, no additional infiltration galleries will be required as a result of the development of Buildings 14 & 15.

Additionally, the previous design and construction of the Tanger site included Bioswales incorporated in select areas of the parking lot. The bio-swales were provided as an enhanced feature only, and did not form a functional portion of the stormwater management servicing strategy for the site nor do they serve any infiltration or treatment function requirements. Additionally, due to the layout and construction phasing of the existing parking lot, the proposed bio-swale was not installed at this location as part of the previous works. Therefore, it is proposed that with the development of Buildings 14 & 15 the bio-swale in this location not be installed. The Ministry of the Environment and Climate Change has been consulted on this item. It is understood that an administrative amendment to the existing ECA (8617-AHGRV5) will be required to remove the proposed bio-swale from the ECA.

5. Erosion and Sedimentation Control Plan

Development of a site such as the proposed expansion can potentially create deleterious material which can enter the natural environment and gain access to fish habitat. In order to prevent site generated sediments from entering the environment, a sediment and erosion control plan will be implemented prior to development. The sediment and erosion control drawing **C-900**, is included in **Appendix D**.

The erosion and sedimentation strategy for the subject site will include erection of silt fences around most of the site perimeter where practical. The silt fences will ensure protection of both adjacent developments and the natural environment including Feedmill Creek. Silt sacs placed inside existing CBs and manhole frames and covers and silt socks placed around the existing Bioswale 2 will also help protect the environment. Mud pads can help clean construction vehicles prior to exiting the site.

6. Site Grading

The design drawing **C-100** and the grading drawing **C-200** indicate how the existing site municipal infrastructure can be extended to accommodate the new buildings.

The existing parking lot will not need to be re-graded as the expanded parking lot area will tie into the existing edge of asphalt. As noted earlier, the new site plan does not impact the existing ring road, except for the placement of a Tactile Walking Surface Indicator and a painted crosswalk, providing pedestrian access to the new site. The grading drawing **C-200** shows that the new buildings and site plan can tie into the existing grading and ensure positive drainage for the site. Drawing **C-200** is included in **Appendix E**.

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It is therefore recommended that the proposed changes to the municipal infrastructure as shown on the revised drawings be completed. The proposed changes include the extension of portions of the existing watermain and storm sewers, minor site re-grading, and minor changes to the site drainage system.

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