66-90 RIVER ROAD EAST RESIDENTIAL DEVELOPMENT
BREMONT HOMES
TOWN OF WASAGA BEACH
OPERATIONS AND MAINTENANCE MANUAL

Prepared by:

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1.0 INTRODUCTION

Bremont Homes is constructing a 50-unit four storey residential building at 66-90 River Road East in the Town of Wasaga Beach. The property area is approximately 0.64 hectares (1.59 acres) in size and is legally described as Lots 1 to 5, north side of Watson Street and part of Watson Street, Registered Plan 648, in the Town of Wasaga Beach, County of Simcoe. The development consists of a four-storey building with 50 units and a rooftop patio amenity area. A combination of outdoor surface parking and underground parking will be provided. Access to the development will be provided from Beck Street.

Municipal water and sanitary sewer servicing will be extended to the site from the mains on River Road East south-east of the site. The existing 150mm dia. sanitary service for the site will be utilized for the development. The two existing 38mm dia. water services will be abandoned per Town guidelines. Low impact development practices have been utilized to provide quality control of storm water.

The purpose of this report is to provide design, operation and maintenance details pertaining to the watermain, sanitary and storm water infrastructure proposed for the development.

2.0 WATERMAIN DISTRIBUTION SYSTEM

2.1 Design

Water servicing for the proposed development will be provided by a new service connection to the existing 350mm dia. asbestos cement watermain located within the River Road East ROW. A proposed 200mm dia. PVC DR18 dual domestic and fire service will be extended to the building mechanical room. A 200mm dia. valve and box will be installed in the River Road East right-of-way when the existing watermain is 'live tapped'. The service will be split inside the mechanical room to provide dedicated domestic and fire supply lines. Independent valves will be installed on each line inside the building, in addition to a reduced pressure backflow preventer.

A fire hydrant is proposed onsite near the location of the siamese connection on the building (south-east building corner). The hydrant shall be CSA certified and per the Town's approved material list. The hydrant shall be internally plugged (non self draining), shall be equipped with two hose connections plus a pumper connection, complete with factory installed Storz fitting. The Storz type pumper cap and two hose caps are to be secured with the manufacturer's standard galvanized chain installation. The hydrant should be painted yellow with silver cap and top per Town Standard Dwg. 6. A 1.2m minimum high yellow hydrant marker (FlexStake C800 Canadian Series) must be provided.

The proposed building will be sprinklered in accordance with the Ontario Building Code (OBC). The siamese connection will be provided on the face of the building at the south-east corner of the building.

Depth of bury will be 1.7m minimum and pipe embedment and backfill will be in accordance with OPSD 802.010. A minimum 1.5m horizontal pipe separation will be maintained between sanitary sewers and watermains.

A water meter in accordance with Town Standard Dwg. 14B will be installed in the building mechanical room. Each meter shall be a 'Sensus' type complete with internal strainer and a 'Flexnet' remote touchpad and transmitter. A key for the building mechanical room is to be provided to the Town of Wasaga Beach for meter maintenance.

The system design is shown on DWG - SS1 appended to the manual.

2.2 Watermain Testing Requirements

As stated in the Town of Wasaga Beach Engineering Standards,

- All watermains shall be swabbed, hydrostatic pressure tested, flushed and disinfected in accordance with current OPSS 441 specifications. The procedures for disinfecting watermains shall be in accordance with the latest revision of AWWA C651.

- The Developer shall arrange the watermain test and shall inform the Town Engineer when a section has completed a satisfactory pre-test for leakage testing and is ready for the final leakage testing inspection. A minimum of 48 hours notice is required for the Town Engineer to coordinate testing, operation of valves and connections with the Town and Public Works staff. Any sections failing the test shall be repaired and retested at the Developer's expense.

- Two series of bacteriological tests are to be conducted in accordance with AWWA C651 after residual chlorine level testing and system flushing to reestablish municipal system chlorine levels

- The Developer / contractor is responsible to arrange for a certified technician to obtain water samples for bacteriological testing. Bacteriological testing shall be undertaken by an accredited laboratory and the results shall be in accordance with the Ministry of the Environment Guidelines. Prior to connecting a new watermain to the municipal distribution system, the Developer must provide satisfactory bacteriological test results to the Town Engineer.

- Tracer wire continuity of current must be tested and certified by Public Works staff prior to acceptance and placement of base course asphalt.

2.3 Operation and Maintenance

All valves should be exercised twice annually to ensure they remain accessible and operational. Inspection and operation of valves (valve and boxes / hydrant valves / backflow prevention valves / curb stop valves, etc) shall be undertaken by a qualified operator certified by the Ministry of the Environment (MOE) and a copy of the inspection provided to the Public Works Department.

Alternatively, arrangements can be made with the Town to have certified operators of the Public Works Department undertake the inspection and maintenance of hydrants and valves, at the Owner's expense.

Backflow prevention valves shall be inspected and certified annually to verify conformance with the Ontario Building Code (OBC). An annual report prepared by a certified inspector must be submitted to the Wasaga Beach Public Works department confirming that all backflow prevention devices have been inspected, tested and certified in accordance with MOE and OBC requirements.

Fire hydrants shall be inspected annually and after each use. Hydrant and valve inspection and maintenance to be completed in accordance with Subsection 6.6.5 of the Fire Code. Prior to winter, the hydrant ports and barrel should be checked to ensure no water is present.

The owner is responsible for their service and associated maintenance from their site to the trunk watermain within the River Road East right-of-way.

3.0 SANITARY COLLECTION SYSTEM

3.1 Design

The development will be serviced by extending the existing 150mm dia. sanitary service lateral at the south-east property line to the building. A sanitary manhole will be required to be installed in the parking lot due to the length of the sewer service (greater than 30m) and location of the building mechanical room. The proposed 150mm dia. PVC SDR35 sanitary sewer will be installed at a minimum gradient of 1% per Town requirements. A vertical cleanout port will be installed at the property line per the Town of Wasaga Beach standard drawing No. 12.

The system design is shown on DWG - SS1 appended to the manual.

3.2 Sanitary Sewer Testing Requirements

As stated in the Town of Wasaga Beach Engineering Standards,

- Sanitary sewers shall be cleaned, flushed and tested for soundness and deflection in accordance with the current OPSS 410 specifications.

- The complete system shall be flushed and inspected by an approved video camera testing company and the Town Engineer shall be provided with a copy of the appropriate data.

- CCTV inspection shall be undertaken per OPSD 409 as directed by the Town following the installation of all utilities. CCTV inspections are to be conducted:

  - Prior to the issuance of the Certificate of Substantial Completion (Basic Services), and;
  - Prior to the placement of surface course asphalt.

3.3 Operation and Maintenance

All sanitary maintenance holes should be inspected twice annually. In the event of a blockage, a CCTV inspection should be undertaken by a plumber or mechanical contractor to determine the cause and location of the blockage and subsequent cleaning / flushing / repair required.

The property line cleanout can be utilized as an access for inspection and cleanout as well.

The owner is responsible for their service and associated maintenance from their site to the trunk sanitary sewer within the River Road East right-of-way.

4.0 STORM WATER MANAGEMENT FACILITY

4.1 Design

The proposed storm water management plan for the site consists of utilizing low impact development infiltration techniques for storm water quality control. A soakaway pit will be utilized to infiltrate all roof water providing quality control and peak flow reduction as well. The soakaway pit will be constructed in the rear yard landscape amenity area adjacent to the building (river side). Roof drainage will be directed to the soakway pit via roof leaders, and will have an overflow disconnection to surface. The pit will have a footprint of 81m^2 (3.0m wide x 27.0m long x 2.0m deep). The soakaway pit will be lined with geotextile fabric and is filled with clean granular stone that receives runoff via a perforated pipe inlet and allows it to infiltrate into the native soil.

A bioretention cell will be constructed north-west of the parking lot and will receive runoff from the driveway and parking area via a curb cut. The bioretention cell will provide reduction of peak flow rates and quality control through evapotranspiration and infiltration of runoff. The bioretention cell will be 54.0m^2 (3.0m wide x 18.0m long). The primary component of the bioretention cell is the filter bed which is a mixture of sand, fines and organic material. Mulch ground cover and plants adapted to the conditions of storm water are also important.

A maximum ponding depth of 150mm will be permitted in the cell. A 200mm dia. overflow pipe will be installed in the cell and will be connected to a 200mm dia. perforated underdrain. The drain will be installed at 0.5% and will discharge to the landscaped vegetated slope adjacent to the river. A level spreader will be constcruted at the pipe outlet to dissipate flow and promote sheet flow over downgradient vegetation.

The design is shown on DWG - GP1 appended to this manual.

4.2 Operation and Maintenance

During construction, the location of the soakaway pit and bioretention cell should be clearly identified to ensure no vehicular traffic is allowed near the facilities. Minimizing compaction of the soil is important. Sediment control fencing should be placed around the pit and cell until the pit and cell are completed and vegetation has been established on the surface to ensure sediment does not clog the pit/cell.

For the soakaway pit, maintenance should include cleaning out leaves, debris and accumulated sediment caught in eavestrough and inlet pipes twice annually or as needed. Two monitoring wells are required in the soakaway pit. It is a vertical non-perforated pipe with a cap which is connected to the inlet pipe and provides a means of inspecting and flushing them out as part of routine maintenance. It also allows for monitoring of the length of time required to fully drain the pit. Inspection via the well should be performed at least annually and following every major storm event (>25mm) to ensure the facility drains within the maximum acceptable time (72 hours). If the drain time exceeds 72 hours, the pit should be drained via pumping and the perforated pipe should be cleaned out. If slow drainage persists, system replacement may be required. It is expected that the life of a soakaway pit is greater than 30 years if regular maintenance is performed. The typical detail for the soakaway pit is appended to this report.

Dependent on the plantings selected, bioretention cells require routine inspection and maintenance of the landscaping including weeding, pruning and litter removal. The facility should be inspected after major storms (>25mm) and twice annually. Inspection should include assessing the vegetation density (80% minimum), damage from foot or vehicle traffic, channelization, trash/debris, sediment and structural damage.

The “Low Impact Development Storm Water Management Planning and Design Guide” prepared by the Credit Valley Conservation Authority (CVC) and the Toronto and Region Conservation Authority (TRCA), lists the following routine and annual inspection / maintenance activities for the continued operation of bioretention areas.

Suggested Routine Inspection & Maintenance Activities for Bioretention

Activity	Schedule
Inspect for vegetation density (min. 80% coverage), damage by foot or vehicle traffic, channelization, accumulation of debris, trash and sediment, and structural damage to pretreatment devices	After every major rainfall (>25mm), quarterly for first two years, and twice annually thereafter.
Regular watering during first two years as required until vegetation is established	As needed for first two years.
Removal of trash and debris from pretreatment devices, the bioretention area surface and inlet and outlet areas	Twice annually at minimum. More frequently if desired for aesthetic reasons.
- Removal of accumulated sediment from pretreatment devices, inlets and outlets - Trim trees and shrubs - Replace dead vegetation, remove invasive growth - Repair eroded or sparsely vegetated areas -Remove accumulated sediment on the bioretention area surface when dry and exceeds 25mm depth - If gullies are observed along the surface, regrading and revegetating may be required	Annually or as needed.

Suggested Annual Spring Inspection & Corrective Actions for Bioretention

Inspection Item	Corrective Actions
Vegetation health, diversity and density	- Remove dead and diseased plants - Add reinforcement planting to maintain desired vegetation density - Prune woody matter - Check soil pH for specific vegetation - Add mulch to maintain 75mm layer
Sediment build up and clogging at inlets	- Remove sand that may accumulate at the inlets or on the filter bed surface following snow melt - Examine drainage area for bare soil and stabilize. Apply erosion control devices (silt fence) until area is stabilized - Check that the pre-treatment (if provided) is functioning properly
Ponding for more than 48 hours	- Check underdrain for clogging and flush out - Apply core aeration or deep tilling - Mix amendments into the soil - Remove the top 75mm of bioretention soil - Replace bioretention soil

The typical detail for the bioretention cell is appended to this report.

5.0 SNOW STORAGE / REMOVAL

The owner is responsible to provide snow clearing operations for the parking facilities, pathways, around hydrants and all accesses. Snow storage must be on the subject property and must not encroach the municipal right-of-way or adjacent properties. It must not conflict with the operation of drainage systems.

In the event that there is insufficient space on site for snow storage in accordance with the accepted Site Plan, snow accumulation will be required to be removed off-site at the owner's expense.

6.0 PAVEMENT MARKINGS

Site pavement markings including parking stalls and symbols are required to be re-painted at minimum once a year and / or as required to maintain adequate information for vehicles and pedestrians. It is expected that the cost to complete this would be minimal (approximately $600).

7.0 RECOMMENDATIONS AND CONCLUSIONS

It is recommended that this manual be utilized during construction by the contractor(s) and kept on site once construction has been completed to be utilized by maintenance personnel. Regular preventative maintenance is vital in maintaining the effectiveness of the site servicing infrastructure and site features. It is recommended that the owner utilize the guidelines presented in this manual and undertake regular operation and maintenance of the site infrastructure.

All of which is respectfully submitted,

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