



December 21, 2022

David Dorland, Project Planner
D. S. Dorland Ltd.
289 Larch Street
Sudbury, ON, P3B 1M1

Re: SUD-00020081-IC Bancroft Drive Fourplex, Bravo Construction
2131 Bancroft Drive, Sudbury, Ontario
Preliminary Stormwater Management Design Brief

Dear Mr. Dorland:

As requested, EXP Services Inc. (EXP) has carried out a documentation review and preliminary civil investigation for the proposed new building development at 2131 Bancroft Drive, in order to provide civil-related design considerations, to help in identifying potential issues at the schematic stage in the design, and to provide a preliminary basis for costing. Currently, the intention is to build a new one-story fourplex dwelling and a two-storey three unit dwelling building on the subject site.

It is beneficial to review this information in concert with the Sketch for Planning Act Application prepared by D.S. Dorland, dated December 21, 2022.

Introduction

The proposed site development is located at municipal address 2131 Bancroft Drive in Sudbury, Ontario, at the southside of the intersection of Third Avenue and Bancroft Drive (approximately 46°49'02.6"N latitude, 80°93'06.5"W latitude). Currently, the site is undeveloped, containing grass, gravel, and forested areas.

The existing irregularly shaped site property is owned by Bravo Construction and is of approximate dimensions 62.25m (east-west) x 68.95m (north-south) on the west side and 57.67m (north-south) on the east side, with a total area of 0.404 ha. The surrounding properties in the area are of mixed zoned usage (both residential and institutional), and bounded by one paved municipal right-of-way road:

- to north – Bancroft Drive (two-lane, 10.8m-width collector road running east-west), running along north side of subject site

The nearest waterbody of note is Frobisher Creek, which flows southward along the west side of the subject property, and eastward along the south side of the subject property. Furthermore, per a review of the local conservation authority's area reference mapping, the subject property is an area of land regulated by Conservation Sudbury.

The currently-proposed future site development (layout as of December 21, 2022) includes a new paved driveway access lane running north-south through the middle of the property, with seven parking stalls, a new 3-unit, two-storey (with crawlspace) residential building with a gross footprint of approximately 178 sq.m on the west side, and a 4-unit, one-storey (no basement) residential building with a gross footprint of approximately 458 sq.m on the east side. The rest of the site will be landscaped accordingly.

Site Access

Currently there is no access route to the undeveloped site. Vehicular site access into the existing site will be restricted to Bancroft Drive. All other sides of the property are bounded by watercourses and existing residential developments.

The currently proposed future site development indicates that entry to the site is proposed to be available from one access point:

- Bancroft Drive (collector road) – 6.0m-wide two-way driveway intended for general entry, provides access to dwellings and parking areas from the north.

Table 1 provides further descriptions of the local roads:

Table 1 – Roads at 2131 Bancroft Drive

Type	Road Name	Road Class, Type	Road Width (m)	Road Description and Condition
Municipal Right-of-Way Roads	Bancroft Drive	Collector Urban Section (storm sewers)	10.8	Two-lane paved; curb-and-gutter on both sides of road, sidewalk and asphalt boulevard on south side of road only; road surface in poor condition.

Site Servicing: Stormwater Management and Drainage

A review of the site topography from the recent site survey indicates that the area within the property is currently a mixture of surfaces, including grass (approximately 25.2%), gravel (3.2%), and forest (71.5%), with an overall grade of approximately 1.0% from the north (around elevation 260.3) towards the south (around elevation 259.5). The road elevation at the proposed Bancroft Drive access point is 260.10. Elevation changes are not severe on the site, except for the embankment at the Frobisher Creek, and it is anticipated that a workable grading design can be prepared.

Based on the topography and elevations, the majority of the site drains in an overland sheet flow pattern directly into Frobisher Creek. There is no existing infrastructure within the subject site, however there is an existing municipal catch basin manhole in the street curb immediately west of the proposed development driveway, currently receiving surface drainage from Bancroft Drive. This drainage structure was originally intended to be the tie-in location for the proposed site drainage infrastructure, however after further comment and consultation with City of Greater Sudbury (CGS) staff it is now our professional opinion that this option is less feasible than draining directly to the Frobisher Creek.

Due to the nature of the existing site and the currently proposed layout, it is assumed at this time that site grading design would aim to drain the impervious areas of the site toward the south to minimize the amount of earth fill required to reverse the natural grade of the site. The intent would be to provide site drainage by way of surface drainage as well as subsurface drainage infrastructure to a single control point at the south side of the site before outletting into Frobisher Creek. The conveyance of stormwater would be through a system of curb and gutter, low-grade enhanced swales, as well as a localized storm sewer system which will function independently with no tie-in to the municipal system on Bancroft Drive. It is assumed that on-site enhanced stormwater quality control (80% TSS removal) can be achieved through the implementation of low-grade enhanced swales and a Stormceptor OGS Structure, with enhanced swales providing treatment of overland flow and the OGS providing treatment for storm sewer flow. The location, configuration, and sizing of treatment facilities will be determined in the detailed design of the stormwater management facilities.

The site’s drainage design will be prepared per the standard stormwater management (SWM) requirements that the CGS requires for new multi-residential site developments, which includes



accounting for storms from 2-year to 100-year intensity, and a comparison of flows between the pre-development and post-development site finishes. As this site falls in the Ramsey Lake watershed, CGS requires an overcontrol of 20% for peak flows from post-development to pre-development.

The SWM design of the site will address anticipated changes in site drainage via standard retention and flow control practices before outletting to Frobisher Creek. Potential solutions may include oversized pipe storage or subsurface storage chambers, in conjunction with an orifice plate for control of flow release rates. The initial design would aim to include a subsurface storage chamber system under the paved driveway at the south end of the site, which would restrict flows and provide adequate storage volume before outletting into Frobisher Creek and through ground infiltration. The viability of such a stormwater management facility will be determined during the detailed design.

It is anticipated that on-site stormwater quantity control will be required due to the existing natural state of the subject site and the 20% overcontrol required by CGS for developments within the Ramsey Lake watershed. Table 2, below, provides a comparison of the proportions of the various surface finishes in the different site layouts within the 4,038.1 sq.m property area.

**Table 2 – Site Surface Finishes
 (within site property limits)**

Phase	Building	Permeable			Impermeable			Overall Impermeable Proportion
		Grass	Gravel	Woodland	Brick	Asphalt/Concrete	Building	
Current	Vacant Site	25.2%	3.2%	71.5	0.0%	0.0%	0.0%	0.0%
Future (“Post-Development”)	Housing Development	62.6%	0.0%	7.4	0.0%	12.4%	17.6%	30.0%

Detailed SWM calculations are subject to times of concentration, drainage feature locations, catchment areas, site distances, and site grades, but based on the above cursory examination of the site finishes, it is anticipated that drainage flow rates and volumes from the site will increase in comparison with the pre-development site with the greater proportion of impervious site finishes that are proposed.

Stormwater Management Design Brief - Input References

- City of Greater Sudbury *Engineering Design Manual*, November 2012
- City of Greater Sudbury *Lot Grading Design Guidelines*, January 27, 2005
- City of Greater Sudbury drawings:
 - Bancroft Drive at Wilfred Street, As-Built, 2009-12-18
 - Bancroft Drive at Third Avenue and Grace Street, As-Built, 2009-12-18
- Existing Conditions survey (completed November 25, 2020 by D.S. Dorland Ltd.)
- Site Photographs (December 2020), Aerial Imagery from Google/City
- Site Plan Sketch for Planning Act Application (D.S. Dorland Site Drawing, dated December 21, 2022)
- Geotechnical Investigation and Design Report by EXP (Project # SUD-00020081-IC) dated February 8, 2021 for 2131 Bancroft Drive, Sudbury, ON

Closure

The design recommendations made in this report should be considered preliminary in nature in order to guide the preliminary site and layout design. They are made in accordance with our present understanding of the project and are provided solely for the design team responsible for the project. If



new information is discovered pertaining to the civil aspects of the site development, this civil design brief report may require an update.

We trust the information in this report provide you with sufficient information for your present requirements. Should you have any questions, please do not hesitate to contact this office.

Respectfully submitted:

EXP. SERVICES INC.

Prepared by:



Jules Stillman, P.Eng.
Civil Engineer, Infrastructure