



Stantec Consulting Ltd.
100-300 Hagey Boulevard, Waterloo ON N2L 0A4

November 17, 2017
File: 1614-13551/29

Attention: Ms. Nancy Shoemaker

Black, Shoemaker, Robinson and Donaldson Ltd. Surveyors
351 Speedvale Avenue West
Guelph ON N1H 1C6

Dear Ms. Shoemaker,

**Reference: Ingram Drive/Wideman Boulevard – Blocks 41 & 42, R.P. #61M-173
Stormwater Management Design Brief
Guelph, ON**

The following letter has been prepared to outline the proposed stormwater management (SWM) practices in support of the approval for the above noted project.

1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) has been retained to assist with the engineering services related to a townhouse site in Phase 4 of the Northern Heights Subdivision located in the City of Guelph (City). The following design brief outlines the SWM design for the proposed development.

2.0 BACKGROUND

In preparation of this report, the following documents and reports have been used for reference:

- *Northview – Ingram Environmental Implementation Report*, North-South Environmental Inc., April 11, 2003
- *Final Stormwater Management Design Brief* (included in EIR), Stantec Consulting Ltd., 2003
- *Stormwater Management Planning and Design Manual (SWMPD Manual)*, Ontario Ministry of the Environment and Climate Change, March 2003
- *Erosion & Sediment Control Guideline for Urban Construction*, Greater Golden Horseshoe Area Conservation Authorities, 2006
- *Victoriaview North Subdivision, Final Stormwater Management Report*, Stantec Consulting Ltd., 2006

3.0 STORMWATER MANAGEMENT

3.1 PROPOSED CONDITIONS

The proposed site encompasses two multi-family residential blocks (Blocks 41 and 42) that are approximately 0.35 ha each. Each site consists of 14 townhome units, parking, and a grassed backyard area as shown on the Site Servicing and Grading Plan (attached). Block 41 is generally bounded by Ingram Drive to the north, Victoria Road to the east, Wideman Boulevard to the south, and residential units to the west. Block 42



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is generally bounded by Wideman Boulevard to the north, Victoria Road to the east, Simmonds Drive to the south, and residential units to the west. The surrounding pipe and roadway conveyance systems have been designed to accept both minor system and major system drainage from the site and direct it to the downstream Ingram SWM Facility.

3.2 SWM CRITERIA

The SWM criteria for the proposed development site was established previously in conjunction with the surrounding residential development and summarized in the *Final Stormwater Management Design Brief* (included in the EIR) by Stantec, 2003. The existing SWM Facility was previously approved by the City of Guelph, the Grand River Conservation Authority (GRCA) and the Ministry of the Environment (MOE) in conjunction with the subdivision development and Northview Estates Subdivision. The original design provides water quality and quantity controls for the proposed site in the SWM Facility located in the north edge of the subdivision. The previously established design criteria are:

- Provide Enhanced (Level 1) water quality control
- Provide quantity control to existing levels for all storm events up to and including the 100-year event
- Evaluate infiltration potential and recommend measures to meet the goal of maintaining or enhancing groundwater recharge
- Provide appropriate erosion and sedimentation control during construction to protect neighbouring properties and the downstream receivers from potential siltation

3.3 SWM CONTROL

In the approved *Final Stormwater Management Design Brief* (included in the EIR) by Stantec, 2003, Blocks 41 and 42 were designated as apartment blocks with a runoff coefficient of 0.75 (existing storm catchment area plan is included in the attachments). This corresponds to an impervious level of approximately 75-80%. Based on the current site design, the overall impervious of the property is approximately 50% impervious. As such, major and minor flows generated within the site can be accommodated by the downstream storm sewer connections and the SWM Facility.

The existing downstream Ingram SWM Facility was designed to provide quality and quantity control for the flows from the subject site and will be able to accommodate all of the above noted changes. As a result of the reduction in the average impervious of the site in comparison to the assumed values, water quality and water quantity control within the downstream SWM Facility should not be affected.



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3.5 INFILTRATION ASSESSMENT

In the aforementioned SWM Report, an infiltration assessment was completed. Based on the *Victoria Road North Subdivision Development Geotechnical Investigation* (Naylor Engineering Associates Ltd, August 2000), the subsurface stratigraphy of the site has been identified as compact sandy silt with some clay and gravel deposits. As such, it was determined that infiltration is not feasible for implementation of lot-level soakaway pits on the site. However, roof leaders that discharge to grassed surfaces are recommended as a means of promoting passive infiltration. If suitable soils are discovered during the grading and servicing of the site, soakaway pits sized to accept 25 mm of roof runoff from the associated units will be implemented.

4.0 EROSION AND SEDIMENT CONTROL

The following onsite erosion and sedimentation control measures will be implemented prior to and during construction:

- Heavy duty silt fencing will be erected along all site boundaries where there is a potential for runoff to discharge offsite and to protect adjacent and/or downstream properties from the migration of sediment in overland flow
- Proposed and existing catchbasins or inlets within work area are to be protected from silt entering them by wrapping their top with filter fabric and/or providing a sediment trap around the structure

The erosion and sedimentation control measures shall be maintained in good repair during the entire construction duration, and shall only be removed when directed by the engineer.

5.0 CONCLUSIONS

Based on the preceding design brief, the following conclusions can be drawn:

- Enhanced (Level 1) water quality control will be provided by the existing Ingram SWM Facility
- Water quantity control will be provided by the existing Ingram SWM Facility for all storm events
- Infiltration is likely not feasible for implementation of lot-level soakaway pits on the site due to poor soil conditions. It is recommended that roof leader discharge to grassed surfaces is recommended as a means of promoting passive infiltration
- The erosion and sediment control measures documented herein are to be implemented during construction

We trust this report is sufficient to address the requirements for the SWM design for the proposed Blocks 41 and 42 Townhome sites.



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Guelph, ON**

Should you have any questions or comments relating to this design, please do not hesitate to contact the undersigned at your convenience.

Regards,

STANTEC CONSULTING LTD.

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jayson.innes@stantec.com

Attachment: Preliminary Site Servicing and Grading Drawing: C-100
Existing Storm Drainage Area Plan: C-102

c. Mr. Jack Ingram / Mr. Dan Clayton, Artifex Construction

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ATTACHMENT

NOTES AND SPECIFICATIONS

A. GENERAL:

1. THESE PLANS FOR CONSTRUCTION ONLY WHEN APPROVED BY THE CITY OF GUELPH AND SEALED BY THE ENGINEER.
2. THE CONTRACTOR MUST CHECK AND VERIFY DIMENSIONS, OBTAIN ALL UTILITY LOCATES AND OBTAIN ALL REQUIRED PERMITS/LICENSES AND VERIFY ELEVATIONS OF EXISTING SERVICES BEFORE PROCEEDING WITH ANY WORK.
3. ANY PROPOSED CHANGES SHALL BE APPROVED BY THE ENGINEER AND CITY OF GUELPH.
4. ALL UNDERGROUND SERVING TO BE INSPECTED BY STANTEC CONSULTING LTD. AND CERTIFIED FOR THE CITY OF GUELPH. CONTRACTOR SHALL COORDINATE WITH STANTEC AND SHALL CONTACT SAME AT LEAST 48 HOURS PRIOR TO INSTALLATION OF SERVICES.
5. ALL CONSTRUCTION WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS (LATEST EDITION).
6. WHERE STORM GRAVITY LATERALS ARE NOT PROVIDED FOUNDATION DRAINS FOR EACH UNIT TO DISCHARGE TO SUMP WITH PUMP DISCHARGES TO GRADE.

B. UNDERGROUND SERVICES:

1. CONTRACTOR SHALL VERIFY ELEVATION AND LOCATION OF EXISTING SANITARY AND STORM SEWERS AND WATERMANS PRIOR TO COMMENCING SITE WORK AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN EXISTING AND PROPOSED SERVICES.
2. ON-SITE SERVICING SHALL NOT BE UNDERTAKEN PRIOR TO COMPLETION OF SERVICE CONNECTIONS WITHIN THE ROAD R.O.W.'s.
3. ALL UNDERGROUND SERVICES TO BE IN COMPLIANCE WITH THE LATEST REVISED BUILDING CODE, CITY OF GUELPH STANDARDS, AND ONTARIO PROVINCIAL STANDARDS (OPSS, OPSD).
4. ALL BEDDING TO BE AS NOTED BELOW. TRENCH BACKFILL TO BE APPROVED NATIVE MATERIAL COMPACTED IN 200mm MAX. LIFTS TO 95% STANDARD PROCTOR DENSITY.
5. ALL SERVICES SHALL BE TESTED AS REQUIRED IN THE APPLICABLE OPSD.
6. ALL SERVICES, UTILITIES AND CATCHBASIN LEADS ARE TO BE SUPPORTED AS PER OPSD 1007.01 DURING TRENCHING ACTIVITIES. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION. LOCATION OF EXISTING UTILITIES TO BE VERIFIED IN THE FIELD.
7. ANY UTILITY RELOCATION DUE TO THIS DEVELOPMENT TO BE UNDERTAKEN AT THE EXPENSE OF THE OWNER/DEVELOPER.

C. SEWERS/APPERTENANCES:

1. STORM SEWERS:
 - LESS THAN 200mm - PVC SDR-28
 - 200mm & LARGER - PVC SDR-35
 - 250mm & LARGER - PVC RIBBED PIPE (ULTRA-RIB OR EQUIVALENT)
 - CL-3 CONCRETE
 - 450mm & 600mm - PVC RIBBED PIPE (ULTRA-RIB OR EQUIVALENT)
 - 65-D CONCRETE
 - 65-D CONCRETE
 - GREATER THAN 600mm - 1.2m MINIMUM COVER
2. SANITARY SEWERS
 - LESS THAN 200mm - PVC SDR-28
 - 200mm & LARGER - PVC SDR-35
 - 2.5m MINIMUM COVER
3. SEWER BEDDING:
 - CITY OF GUELPH SD-29
 - 150mm (MIN) GRAN 'A' TO 98% S.P.D.
4. MANHOLES:
 - CITY OF GUELPH SD-5 (1200mm MH)
 - CITY OF GUELPH SD-6 (1500mm MH)
5. MANHOLE BENCHING:
 - CITY OF GUELPH SD-44
6. CATCHBASINS:
 - CITY OF GUELPH SD-11 (SINGLE)-200mm LEAD
 - CITY OF GUELPH SD-12 (DOUBLE)-250mm LEAD
 - CITY OF GUELPH SD-13 (DCB)
7. FRAMES AND GRATES/COVERS:
 - CITY OF GUELPH SD-8 (MH'S)
 - OPSD 400.02 (CB'S)
 - CITY OF GUELPH SD-15 (RLCB'S)
 - CITY OF GUELPH SD-16 (DCB'S)
 - ALL FRAMES ON STRUCTURES TO BE SET USING PRECAST CONCRETE ADJUSTMENT UNITS

D. WATERMAIN/SERVICES:

1. WATERMAIN/SERVICES
 - 100mm AND LARGER - AWWA C-900 PVC SDR-18 CLASS 150
 - 2.0m MINIMUM COVER
 - FITTINGS TO AWWA C-307
 - WHERE CONFLICT ARISE AT WATERMAIN/SERVICE CROSSING OTHER UNDERGROUND SERVICES, WATERMAIN/SERVICES SHALL BE LOWERED TO MAINTAIN 0.50m VERTICAL SEPARATION.
2. PIPE BEDDING:
 - CITY OF GUELPH SD-29
 - 150mm (MIN) GRANULAR 'A' 98% S.P.D.
3. THRUST BLOCKING:
 - CITY OF GUELPH SD-27
4. TRACER WIRE:
 - CITY OF GUELPH SD-54A
5. HYDRANTS:
 - CITY OF GUELPH SD-25A (OPEN RIGHT)
 - PRIVATE HYDRANTS TO BE PAINTED RED.
6. VALVES AND BOXES:
 - AWWA C509 (OPEN LEFT)
 - CITY OF GUELPH SD-24
7. WATER SERVICES:
 - 25mm TYPE K COPPER PIPING WET TAPPED TO PVC WATERMAIN WITH APPROVED SADDLE
 - CITY OF GUELPH SD-54B
8. WATER METERS:
 - BUILDING UNITS TO HAVE INDIVIDUAL WATER METERS TO THE SATISFACTION OF CITY OF GUELPH WATERWORKS DEPARTMENT
9. ALL NEW WATER PIPING INSTALLATIONS AS PER AWWA C651-05

E. GRADING:

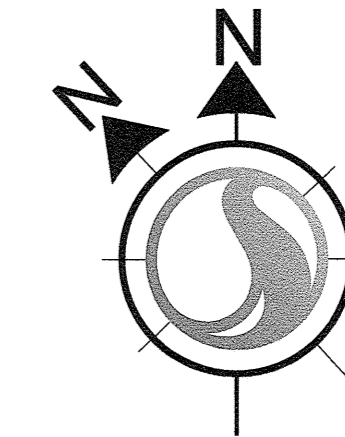
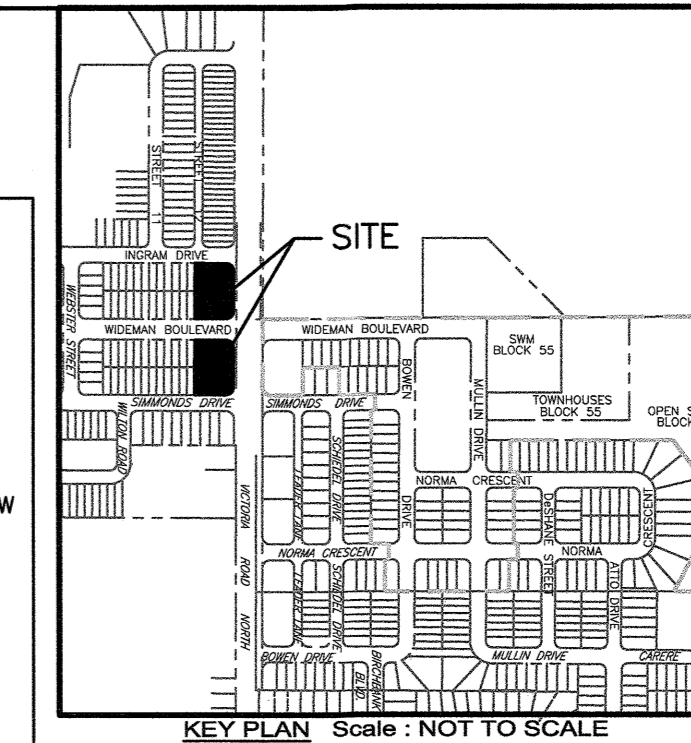
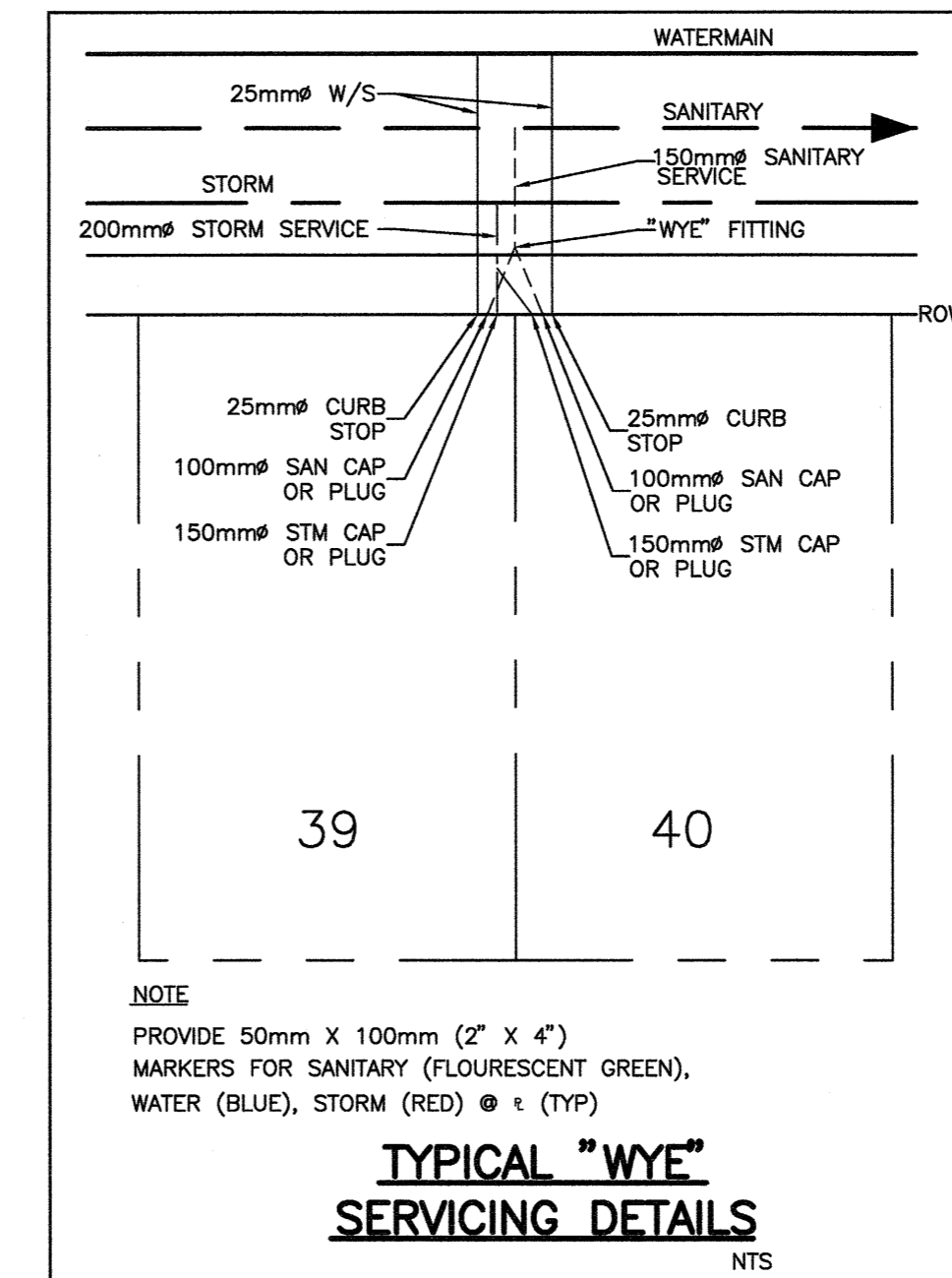
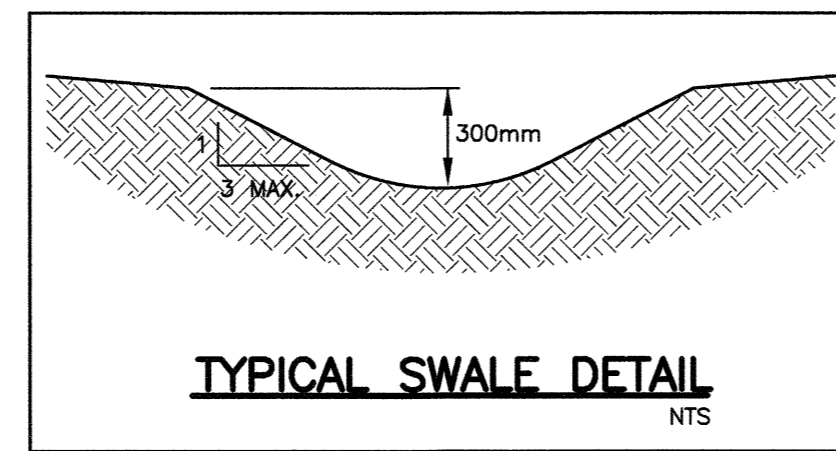
1. COMPLETE ALL EXCAVATION, GRADING, TRIMMING AND COMPACTION AS REQUIRED TO FACILITATE THE WORK. ALL SUBGRADE AREAS SHALL BE PROOF ROLLED TO 98% S.D.P. PRIOR TO GRANULAR SUBBASE PLACEMENT.
2. DISPOSE OF ALL SURPLUS AND UNSUITABLE MATERIALS OFF SITE.
3. SAWCUT ASPHALT IN NEAT LINES AT ALL MATCH LINES.
4. MATCH EXISTING GRADES AT ADJACENT PROPERTY LINES.
5. TRANSITION SLOPES TO BE MAXIMUM 2:1 (HORIZONTAL TO VERTICAL)

F. SURFACE WORKS:

1. CURBS
 - OPSD 600.040 (STANDARD CURB & GUTTER)
2. SIDEWALKS
 - CITY OF GUELPH SD-2, 1.2m WIDE (CONCRETE SIDEWALK)
 - CITY OF GUELPH SD-4 (SIDEWALK RAMPS)
3. ASPHALT PAVEMENT (MIN)
 - 30mm HL-3 SURFACE ASPHALT (97% MARSHALL)
 - 60mm HL-4 BASE ASPHALT (97% MARSHALL)
 - 150mm GRANULAR 'A' (100% S.P.D.)
 - 350mm GRANULAR 'B' SUB-BASE (100% S.P.D.)
4. RESTORATION
 - REFER TO LANDSCAPE PLAN.
5. SITE AREAS DISTURBED BY CONSTRUCTION AND NOT INDICATED FOR REMOVAL TO BE RESTORED TO ORIGINAL CONDITION

G. EROSION AND SEDIMENTATION:

1. ALL SILT FENCING TO BE INSTALLED PRIOR TO ANY GRADING, EXCAVATING, OR DEMOLITION COMMENCING.
2. EROSION CONTROL FENCING TO BE INSTALLED AROUND THE BASE OF ALL STOCKPILES.
3. EROSION PROTECTION TO BE PROVIDED AROUND ALL STORM AND SANITARY MH'S AND CP'S.
4. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS SITE DEVELOPMENT PROGRESSES. CONTRACTOR TO PROVIDE ALL ADDITIONAL EROSION CONTROL STRUCTURES.
5. STANTEC CONSULTING LTD. TO MONITOR EROSION CONTROL STRUCTURES TO ENSURE FENCING IS INSTALLED AND MAINTENANCE IS PERFORMED TO CITY REQUIREMENTS.
6. EROSION CONTROL STRUCTURES TO BE MONITORED REGULARLY AND ANY DAMAGE REPAIRED IMMEDIATELY. SEDIMENTS TO BE REMOVED WHEN ACCUMULATIONS REACH A MAXIMUM OF 1/2 THE HEIGHT OF THE FENCE.
7. ALL EROSION CONTROL STRUCTURES TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN RESTABILIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE GROUND COVER.
8. NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY STANTEC CONSULTING LTD. AND THE CITY OF GUELPH'S WORKS DEPARTMENT.
9. CONTRACTOR IS RESPONSIBLE FOR MUNICIPAL ROADWAY AND SIDEWALK TO BE CLEANED OF ALL SEDIMENTS FROM VEHICULAR TRACKING, ETC. AT THE END OF EACH WORK DAY.



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Notes

1. BENCHMARK: GUELPH BENCHMARK #91, #493 VICTORIA ROAD NORTH ELEVATION=51.00m
2. TOPOGRAPHICAL SURVEY BY STANTEC CONSULTING LTD. DATED MAY 2000. ADDITIONAL TOPOGRAPHICAL SURVEY BY STANTEC CONSULTING LTD. DATED JUNE 2002, DECEMBER 2005, MARCH 2006 AND FEBRUARY 2007.
3. LEGAL INFORMATION TAKEN FROM BLACK, SHOEMAKER, ROBINSON & DONALDSON LIMITED PROJECT # 16-14-206-0-A DATED JUNE 07, 2017.
4. SITE PLAN DRAWINGS PREPARED BY BLACK, SHOEMAKER, ROBINSON & DONALDSON LIMITED DATED NOVEMBER, 2017.
5. ALL WORK WITHIN THE CITY RIGHT-OF-WAY TO BE COMPLETED BY CITY FORCES UPON APPLICATION

Legend

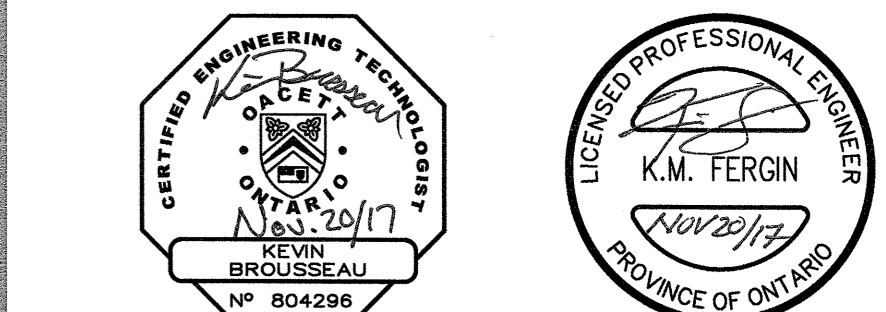
- STORM MANHOLE
- CATCHBASIN MANHOLE
- CATCHBASIN
- SANITARY MANHOLE
- VALVE & BOX
- HYDRANT
- WATER SERVICE VALVE
- FENCE
- TRANSFORMER
- APPROXIMATE LOCATION OF EX ROGERS PEDESTAL
- APPROXIMATE LOCATION OF EX BELL PEDESTAL
- APPROXIMATE LOCATION OF EX BELL FLUSH-TO-GRADE BOX
- UNIT REFERENCE NUMBER
- DRAINAGE SWALE
- REMOVALS
- EXISTING ELEVATION
- PROPOSED ELEVATION
- FLOW DIRECTION
- PROPOSED DRAINAGE SWALE
- OVERLAND FLOW DIRECTION
- HYDRANT
- VALVE & BOX
- STORM MANHOLE
- SANITARY MANHOLE
- CATCHBASIN
- FENCE
- HYDRO POLE
- CURB AND STANDARD GUTTER (OPSD 600.040)

BUILDING ELEVATION REFERENCE:

DESCRIPTION	ELEVATION RELATIVE TO UNDERSIDE OF FOOTING
FINISHED FLOOR	2.84m
TOP OF FOUNDATION	2.54m
UNDERSIDE OF FOOTING	0.00m

Revision	By	Appd.	YY/MM/DD
0. PRELIMINARY SUBMISSION FOR ZONE CHANGE APPLICATION	MHH	KRB	17.11.17
File Name: 161413551_C-UP-GP.dwg	MHH	KRB	17.11.17
	Dwn.	Chkd.	Dgn.
			YY/MM/DD

Permit-Seal



Client/Project

ARTIFEX CONSTRUCTION LIMITED

BLOCK 41 & BLOCK 42, 61M-173

SITE PLAN: SP

Guelph ON Canada

Title

PRELIMINARY SITE SERVICING AND GRADING PLAN

Project No. 161413551

Scale 1:300

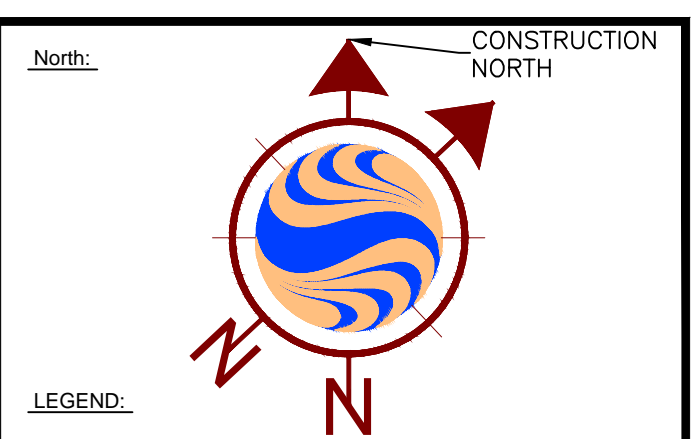
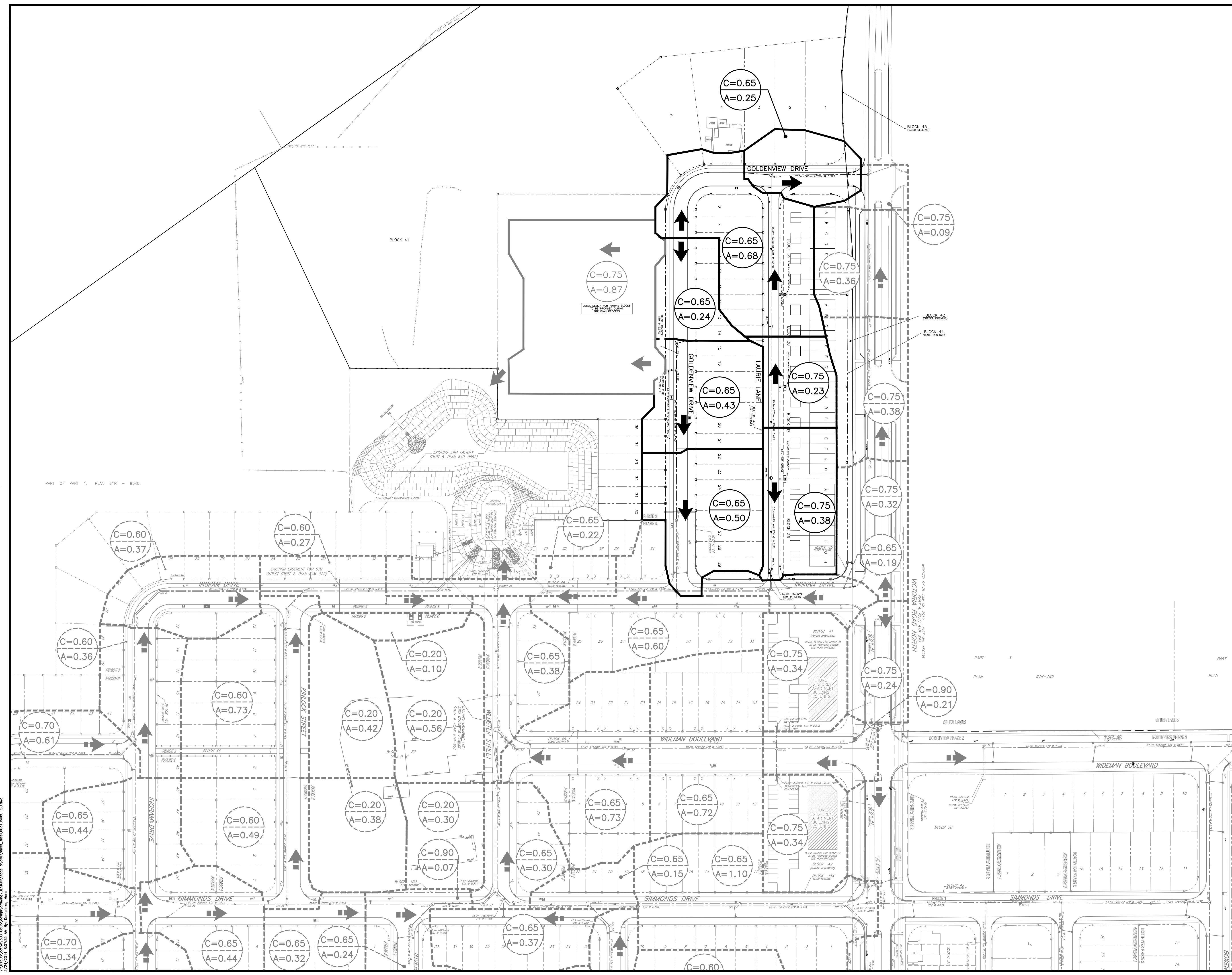
Drawing No. Sheet

Revision

C-100 0

- 000

- 000



- LEGEND:**
- C=0.20 RUNOFF COEFFICIENT
 - A=0.56 DRAINAGE AREA (HECTARES)
 - DRAINAGE BOUNDARY
 - MAJOR OVERLAND FLOOD ROUTE
 - EXISTING DRAINAGE BOUNDARY
 - EXISTING MAJOR OVERLAND FLOOD ROUTE
 - FUTURE DRAINAGE BOUNDARY
 - FUTURE MAJOR OVERLAND FLOOD ROUTE
- 0.75 FOR TOWNHOUSES
 0.70 FOR SEMI-DETACHED
 0.65 FOR SINGLES <12m FRONTAGE
 0.60 FOR SINGLES 12-18m FRONTAGE
 0.55 FOR SINGLES >18m FRONTAGE
 0.20 FOR PARKS

ALL DIMENSIONS AND ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
 PIPE SIZES ARE IN MILLIMETRES.

The position of existing above ground and underground utilities and facilities are not necessarily shown on the drawings, and where shown, the accuracy of the position of such utilities and facilities is not guaranteed. Before starting work, the contractor shall confirm the exact location of all existing utilities and facilities, and shall assume all liability for damage to them. Drawings shall not be used for construction unless sealed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

- GENERAL NOTES:**
- BENCHMARK: GUELPH BENCHMARK #91, 493 VICTORIA ROAD NORTH, ELEVATION=351.060m
 - LEGAL INFORMATION TAKEN FROM BLACK, SHOEMAKER, ROBINSON & DONALDSON INC. PROJECT #11-8995-1 DATED OCTOBER 9, 2012.
 - TOPOGRAPHICAL SURVEY BY STANTEC CONSULTING LTD. DATED MAY 2000. ADDITIONAL TOPOGRAPHICAL SURVEY BY STANTEC CONSULTING LTD. DATED JUNE 2002, SEPTEMBER 2005, AND MAY 2012

No.	DATE	DESCRIPTION	BY:	CHKD.
3.	14.03.13	AS RECORDED	MAD	SGP
2.	13.02.08	SECOND SUBMISSION COMMENTS	KRB	SGP
1.	12.11.02	FIRST SUBMISSION COMMENTS	KRB	SGP
0.	12.08.29	FIRST SUBMISSION	KRB	SGP



ENGINEERING SERVICES
STORM DRAINAGE AREA PLAN

NORTHERN HEIGHTS SUBDIVISION - PHASE 5

DESIGNED BY: APPROVED BY:

Stantec Consulting Limited
 49 Front Street East
 Kitchener, Ont. N2H 6M7
 Phone: (519) 579-4430 Fax: (519) 579-8804

SCALES: 1:1000	CHECKED BY: KRB
DATE DRAWN: JUNE 2012	CONTRACT No: 2-1303
DRAWN BY: MH	DRAWING No: C-102