Functional Servicing Report for Gordon Street – Guelph ON

August 11, 2021

Prepared for:

Tricar Developments Inc.

Prepared by:

Stantec Consulting Ltd.
600-171 Queens Avenue
London ON N6A 5J7

This document entitled Functional Servicing Report for Gordon Street – Guelph ON was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Tricar Development Inc. (the "Client") for submission to the City of Guelph for Zoning Bylaw Amendment Approval. Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by _____
(signature)

Derrick Rice, EIT

Reviewed by _____
(signature)

Claire Phelps, EIT

Approved by _____
(signature)

Chris Hendriksen, P.Eng.

Table of Contents

1.0 INTRODUCTION AND BACKGROUND 1.1
1.1 OVERVIEW 1.1
1.2 BACKGROUND INFORMATION 1.1
1.3 EXISTING INFRASTRUCTURE 1.2

2.0 OVERALL GRADING AND DRAINAGE 2.2
2.1 DESIGN CONSTRAINTS AND PROCEDURES 2.2
2.2 PROPOSED ROAD PROFILES AND OVERALL SITE GRADING 2.3

3.0 SANITARY SERVICING 3.3

4.0 WATER DISTRIBUTION 4.3

5.0 STORMWATER MANAGEMENT STRATEGY 5.4
5.1 STORMWATER MANAGEMENT CRITERIA 5.4
5.1.1 HANLON CREEK WATERSHED PLAN (HCWP) 5.4
5.1.2 TORRANCE CREEK SUBWATERSHED STUDY (TCSS) 5.4
5.1.3 CITY OF GUELPH DEVELOPMENT ENGINEERING MANUAL 5.4
5.1.4 Criteria for the Site 5.5
5.2 SOILS INFORMATION 5.5
5.3 HYDROLIC MODELING 5.6
5.4 EXISTING CONDITIONS 5.6
5.5 PROPOSED CONDITIONS 5.6
5.6 WATER QUANTITY CONTROL 5.7
5.7 PERMAVOID SYSTEM 5.7
5.8 TREATMENT TRAIN APPROACH 5.7
5.9 ON-SITE INFILTRATION 5.8
5.10 WATER QUALITY CONTROL 5.10

6.0 CONCLUSIONS AND RECOMMENDATIONS 6.10

1.0 INTRODUCTION AND BACKGROUND

1.1 OVERVIEW

This Functional Servicing Report has been prepared in support of the Zoning and Official Plan amendment and the Site Plan Application for the proposed development located at 1242, 1250 & 1260 Gordon Street (Site) in the City of Guelph (City). The subject property is approximately 3.323 ha in size and is bounded to the northwest by existing residential subdivision, to the northeast by protected woodlot, to the southwest by Gordon Street, and to the southeast existing high-density development.

The conceptual site plan for the proposed development that forms the basis of this servicing assessment includes two 10 story apartment buildings consisting of 9 townhouse units and 368 apartment units. The bulk of site parking will be achieved through underground and at/above grade enclosed parking.

This report outlines how the proposed development can be supplied with adequate services, including sanitary, domestic water, storm drainage and includes the preliminary design of the infiltration and water quality facilities proposed to provide the required water quality and quantity controls and the preliminary erosion and sediment control strategy to be implemented during construction.

1.2 BACKGROUND INFORMATION

A variety of sources have been referenced during the preparation of this report, and the following should be read in conjunction with this Report:

- Geotechnical Engineering Report, Two 12-Storey Apartment Buildings 1242, 1250, 1260 Gordon Street, Guelph, Ontario (CMT Engineering Inc, April 2018)
- Low Impact Development Stormwater Management Planning and Design Guide (Credit Valley Conservation Authority and Toronto and Region Conservation Authority, 2010)
- Erosion & Sediment Control Guideline for Urban Construction, (Greater Golden Horseshoe Area Conservation Authorities, December 2006)
- Stormwater Management Planning and Design Manual (SWMPD Manual), (Ontario Ministry of the Environment, March 2003)
- Development Engineering Manual, City of Guelph (City of Guelph Engineering and Transportation Services, January 2019)
- Groundwater Flow, Figure 14 of 1242, 1250, 1260 Gordon Street and 9 Valley Road Hydrogeological Assessment (Stantec Consulting Ltd., March 2020)
- Hanlon Creek Watershed Plan (Marshal Macklin Monaghan Ltd., LGL Ltd., October 1993)

- Torrance Creek Subwatershed Study- Management Strategy (Totten Sims Hubicki Associates, et al, September 1998)

1.3 EXISTING INFRASTRUCTURE

A summary of the municipal infrastructure that currently exists near the Site is as follows:

- A 200mm sanitary sewer located on Gordon Street.
- A 400mm watermain on Gordon.
- A 575mm storm sewer on Gordon Street.

Fully constructed municipal roads include Gordon Street to the west and Valley Road to the north.

2.0 OVERALL GRADING AND DRAINAGE

2.1 DESIGN CONSTRAINTS AND PROCEDURES

Using existing topographic information provided by BSR&D limited (dated November 2014), the proposed Site grading will be designed to generally meet the following criteria:

- Match existing grades at all site boundaries.
- Match existing grades at existing tree driplines wherever possible to facilitate tree retention.
- Extension of Edinburgh Road and Valley Road to municipal standards and match into existing road grades of Gordon Street and Valley Road.
- Account for future urbanization of adjacent lands.
- Have consideration for future pedestrian connections north of the site towards Valley Road.
- Provide adequate cover over underground services.
- Ensure all building openings are protected from flooding.
- Comply with Municipal standards for minimum and maximum grades.
- Provide major overland flow routes for flows exceeding the storm sewer capacity.
- Maintain drainage from Gordon Street right-of-way and neighboring properties to the north and south.

2.2 PROPOSED ROAD PROFILES AND OVERALL SITE GRADING

Road profiles within the subject site were established based on the proposed street pattern to satisfy the constraints outlined in the previous Section 2.1. The road profiles have been designed to accommodate the constraints set out by the site layout and underground parking limits with grades ranging from 0.5% to 8.0% with 3:1 and 4:1 transition slopes or retaining walls utilized to accommodate the various grade changes within the site and at various perimeter locations. The proposed centerline road elevations for the extension Landsdown Drive and Edinburgh Road and lot grades are illustrated on the Grading plan as well as the plan and profile provided for these extensions (Drawing No. 4 of 7 and 5 of 7) included in Appendix A. Existing grades and cross sections of Gordon Street and Valley Road have been considered fixed constraints in the development of the preliminary grading. The extension of Landsdown Drive and Edinburgh Road will be 8.4m back of curb to back of curb as per City of Guelph's Linear Infrastructure Standard drawing SD-48a. Internal roads, consisting of 6.7m wide asphalt as the building has structured parking not subject to the standard 7.0m minimum width drive aisle.

3.0 SANITARY SERVICING

The City of Guelph is currently completing the Gordon Street Improvements EA and an overall Master Wastewater Servicing Plan that is considering an upgrade to the sanitary service capacity within Gordon Street fronting the site. Through correspondence with the City in 2019 and 2020, the proposed development will be incorporated in the design of the sanitary sewer upgrades. Confirmation of this has been received from Daryush Esmaili via email received June 28, 2019 and Reg Russwurm via email received March 4, 2020 (see email correspondence attached in Appendix A).

A 200mm extension of the municipal sanitary sewer east on the Edinburgh Road extension proposed as part of this redevelopment to provide service to the site. Sewers will be designed in accordance with the requirements of the Ontario Building Code and the City of Guelph. An illustration of the sanitary sewer layout can be found in the Sanitary Area Plan (Sheet No. 3 of 7) included in Appendix A.

4.0 WATER DISTRIBUTION

The existing water distribution system near the Site includes a 400mm watermain on Gordon Street. The primary source for the proposed development will be the Gordon Street watermain. It is anticipated that the following work to the existing municipal infrastructure will be made:

- Tapping sleeve and valve connection to the 400mm Gordon Street watermain (200mm connection).
- Extension of the municipal watermain along the Edinburgh Road extension to provide service to the Site.

Please refer to the Preliminary Servicing plan (Drawing No. 1 of 7) for an illustration of the watermain layout.

Based on building information currently available, a conservative fire flow requirement for the site is 150 L/s, based on typical OBC calculations as provided in Appendix B.

A 200 mm diameter watermain is proposed for the development with 200mm connections provided to each building. They are positioned as illustrated on the Preliminary Servicing plan (Drawing No. 1 of 7).

Fire protection will be provided via onsite hydrants, adequately spaced to ensure proper coverage to all buildings, in conjunction with standpipe connections for building sprinkler systems. The City of Guelph will confirm the pipe sizing proposed provides adequate pressure to meet MOE design criteria. No backflow prevention or pressure reducing valves (PRV) have been proposed for this development.

5.0 STORMWATER MANAGEMENT STRATEGY

5.1 STORMWATER MANAGEMENT CRITERIA

This site is covered by criteria from different documents. The documents and site criteria are discussed below.

5.1.1 HANLON CREEK WATERSHED PLAN (HCWP)

The HCWP states that for upper Hanlon Creek development no urban drainage will be permitted to the headwaters of Tributary E or F, except for lands that already have drainage outlets. All stormwater generated from the area must either infiltrate into the ground or evaporate (100-year infiltration and zero runoff). There is no discussion in the report on requirements for redeveloping lands within the existing development areas where this project is located.

5.1.2 TORRANCE CREEK SUBWATERSHED STUDY (TCSS)

The TCSS states that for Zone 2, where this site is located, the requirement is to detain the post-development flow to pre-development ratees for the 2- to 100-year events and to infiltrate 150 mm/yr.

5.1.3 CITY OF GUELPH DEVELOPMENT ENGINEERING MANUAL

The specific SWM Criteria for the Site from the City of Guelph Development Engineering Manual (January 2019) is outlined below.

Water Quantity Control

- Based on City Guidelines, on-site stormwater control should be sized to attenuate post-development peaks flows to the pre-development (existing) peak flows. This ‘post-to-pre’ control should be provided for the 2-year through to the 100-year storm events.

Water Quality Control

- Based on City guidelines, the feasibility of on-site infiltration should be investigated. All developments are required to provide a minimum of Enhanced water quality level protection (ie, 80% TSS removal). It is recommended for small development sites (approximately 2 ha) a treatment train approach be followed.

5.1.4 Criteria for the Site

The HCWP appears to be more applicable to development in the upper Hanlon Creek areas, with drainage to Tributaries E and F. The project site is located in the 'existing development' area within the study and is not specifically addressed within the plan and drains to Tributary D.

Additionally, the GRCA mapping for the site shows a recharge of 122-199 mm/year and runoff of 118-207 mm/year while sites within the Upper Hanlon Creek area have a recharge of 315-371 mm/year and a runoff of 0 mm/year, showing that the flow regime for the two areas is obviously different.

Based on the above information, it was decided that applying the TCSS criteria to the site was a reasonable approach based on the information available. The SWM criteria for the site are as follows:

- Attenuate post-development peak flows to pre-development rates for the 2-year though 100-year storm events
- Infiltrate, evaporate, or reuse 150 mm/yr
- Minimum of Enhanced Water Quality Protection.

5.2 SOILS INFORMATION

Site soil properties were confirmed using the Geotechnical Investigation Report (XCG Consulting Ltd., April 2018), which outlined soil conditions for the site as per tested boreholes. It was confirmed that site soils can be expected to be sand – silt with traces of clay, with overall good drainage properties. For this analysis, site soils were classified as BC, which was deemed to be a conservative estimate.

Infiltration rates for the site were determined to be approximately 23 mm/hr for the south portion of the site and 32 mm/hr for the east portion of the site. These design rates were calculated by Stantec Consulting Ltd. (Stantec) based on test pit and infiltration testing completed in June 2021.

A hydrogeologic assessment of the Site was completed by Stantec, and is documented in the Hydrogeological Report, 1242, 1250, 1260 Gordon Street, and 9 Valley Road, City of Guelph (Stantec, 2020). In the Site monitoring well MW5 – 18S a high water table elevation of 340.3 m was recorded. The groundwater flow follows a similar divide as surface water, with a portion flowing east as part of the Torrance Creek Watershed, and another portion flowing west as part of the Hanlon Creek Watershed.

5.3 HYDROLIC MODELING

A hydrologic model was prepared to simulate drainage conditions for the subject development. MIDUSS was used to predict flows for the existing and proposed development conditions and to design the SWM system to ensure the previously mentioned criteria were achieved.

To address the criteria, existing and post-development conditions were modeled for the 2 year, 5 year and 100 year 3-hour Chicago design storms, derived using the City of Guelph parameters as provided in Table 1.

Table 1: City of Guelph – Chicago Storm Parameters

Storm Event	a	b	c	Duration (hrs.)	Depth (mm)
2-year	743	6	0.798	3	34
5-year	1593	11	0.879		47
100-year	4688	17	0.925		87

5.4 EXISTING CONDITIONS

The existing 3.05 ha Site includes 3 residential properties with gravel/asphalt driveways. A large portion of the site is a woodlot area, and part of the Torrance Watershed, and generally has steep slopes (approximately 5.0 %). A portion of the properties drain to an existing storm sewer on Gordon Street. The drainage catchments are shown on Figure 1, attached, and are summarized below.

- **Catchment 101** – A 1.33 ha area that includes residential homes, with storm water out-letting to Gordon Street to the west.
- **Catchment 102** – A 1.72 ha undeveloped area, which discharges as shallow overland flow to the woodlot to the east, part of the Torrance Creek Swamp

5.5 PROPOSED CONDITIONS

The proposed site plan includes two 10-storey apartment buildings, one with one level of underground parking and one with one level of underground parking. The proposed drainage catchments are summarized in detail below and shown in Figure 2, attached. Generally, the proposed conditions will increase the area out-letting to Gordon Street to the west and will reduce the area out-letting to the Torrance watershed to the east. The development will also increase the impervious area and will produce an increase in stormwater flows to the downstream Gordon Street storm sewer.

- **Catchment 201** – A 0.09 ha building/landscaped area that will drain uncontrolled to Gordon Street to the west.
- **Catchment 202** – A 0.24 ha roof top area. Runoff from this area will be attenuated by a roof-top control system, and ultimately outlet to the downstream Gordon Street storm sewer. The 25 mm

rainfall event will be directed to a Permavoid infiltration trench, situated south of the developed area. Overflows will be conveyed to the Permavoid storage tank.

- **Catchment 203** – A 0.23 ha rooftop area. Runoff from this area will be attenuated by a roof-top control system and ultimately outlet to the Torrance Watershed, to the east. The 25 mm rainfall event will be directed to a LID infiltration trench, situated east of the developed area. Overflows from the infiltration trench will flow overland to the east.
- **Catchment 204** – A 0.57 ha area, including the parking area, lane-way and small portions of landscape. Runoff will be collected by catchbasins and conveyed via a storm sewer system to a Permavoid storage tank. The first 25 mm of the storm event will flow into the Permavoid infiltration trench, with overflow conveyed to the Permavoid storage.
- **Catchment 205** – A 0.21 ha designated park area draining uncontrolled east to the Torrance Watershed.
- **Catchment 206** – A 1.39 ha undeveloped woodlot area draining uncontrolled east to the Torrance Watershed.
- **Catchment 207** – A 0.14 ha landscaped area that will outlet to the Permavoid storage tank. The first 25 mm of the storm event will flow into the Permavoid infiltration trench, with overflow outletting to the Permavoid storage.
- **Catchment 208** – A 0.12 ha parking area, with minor flows collected via parking lot structure roof drains and conveyed south to the Permavoid infiltration trench, with overflow to the Permavoid storage tank. The major flows will outlet via overland flow to the Gordon Street storm sewer.
- **Catchment 209** – A 0.06 ha amenity area, which will flow uncontrolled to the Gordon Street storm sewer.

5.6 WATER QUANTITY CONTROL

5.7 PERMAVOID SYSTEM

Permavoid is a modular system made of polypropylene material, with a high 90% void ratio, and was selected to provide subsurface stormwater containment for the Site. Other stormwater management options, including subsurface storage and a surface storage pond were considered during the design process. Ultimately, the Permavoid system was selected as the modular feature can be more readily incorporated into the south landscaped area and is compatible with servicing and amenity area constraints. The Permavoid storage system was designed following the Permavoid Technical Manual (Polypipe, 2021).

5.8 TREATMENT TRAIN APPROACH

Stormwater runoff will be provided with water quantity control by a combination of rooftop controls over both the west and east building and a Permavoid storage tank located in the south landscaped area. The rooftop controls will provide flow attenuation to both building areas: Catchment 202 (West Building) and Catchment 203 (East Building). The rooftop controls will allow for 16.0 cm of ponding, and through a 75

mm diameter orifice will direct attenuated flows into a downspout system. The rooftop downspouts of Catchment 203 (East Building) will connect into an on-site infiltration trench in Catchment 206. Overflow from this system will outlet east to the Torrance Watershed. The roof downspouts of the West Building (Catchment 202) will connect to the Permavoid infiltration tank in Catchment 207. Overflow from the Permavoid infiltration tank will be directed into the Permavoid storage tank.

The Permavoid storage tank will also collect runoff from the on-site parking area, including total flows from Catchment 204 (south parking area) and minor flows from Catchment 208 (north parking area). A 75 mm orifice control (CBMH 6) will be provided on the downstream end, prior to discharge to the Gordon Street storm sewer. The Permavoid storage has been sized such that the post-development runoff flow rates to Gordon Street are attenuated to pre-development flow rates.

During the 100-year event a total of 310 m^3 of active storage will be utilized in the Permavoid storage tank, 136 m^3 of active storage will be provided on the West Building rooftop (Catchment 202) and 138 m^3 of active storage will be provided on the East Building rooftop (Catchment 203). As shown in Table 2 below, the pre-development targets are met for the two site outlets in the post-development condition.

Table 2: Pre-Development and Post-Development Flow Rates

Storm Event	Existing Flow Rates to Outlet (m^3/s)	
	Gordon Street (101)	**Torrance Creek Watershed (102)**
2-yr	0.011	0.002
5-yr	0.020	0.006
100-yr	0.051	0.042
Storm Event	**Proposed Flow Rates to Outlet (m^3/s)**	
	Gordon Street (201, 202, 203, 204, 207, 208, 209)	**Torrance Creek Watershed (205, 206)**
2-yr	0.008	0.002
5-yr	0.012	0.006
100-yr	0.045	0.041

For more details of the stormwater management strategy, including model parameters and inputs/outputs data files, please see the attachments.

5.9 ON-SITE INFILTRATION

The east on-site infiltration (rock) trench was sized to capture and infiltrate the 25 mm event over Catchment 203 (East Building roof area). The total controlled area is 2300 m^2 of rooftop and 110 m^2 of landscaped area. This infiltration trench will be located along the east portion of the development, in Catchment 206. The trench was sized to draw-down within 48 hours.

The south Permavoid infiltration trench was sized to capture and infiltrate the 25 mm event over parking areas (Catchment 208 and 204), the west building (Catchment 202) and the Permavoid area (Catchment 207). The total controlled area is 2400 m^2 of rooftop, 6900 m^2 of parking and 1400 m^2 of landscaped area. This Permavoid infiltration trench will be located along the south portion of the development, in Catchment 207. The Permavoid trench was sized to draw-down within 48 hours after roof-top ponding.

The characteristics of the on-site infiltration features are summarized in Table 3, below.

Table 3: Design Characteristics of On-Site Infiltration Features

Characteristic	Existing Flow Rates to Outlet (m^3/s)	
	East Infiltration Trench	South Permavoid Infiltration Trench
Surface Area	110 sq*m	425 sq*m
Subsurface Soil Infiltration Rate	32 mm/hr	23 mm/hr
Porosity	35 %	90 %
Trench Depth	0.40 m of clearstone, wrapped in filter fabric	0.40 m of Permavoid layer, wrapped in filter fabric
Soil Cover	0.30 m	0.30 m
Invert Elevation	340.06 m	340.43 m

Note: Subsurface soil infiltrate rate calculated by Stantec Hydrogeology team, based on on-site Test Pit and Guelph Permeameter Testing completed in June 2021.
The 0.30 m soil cover is minimum allowable cover for soil protection, following the CVC LID SWM Planning and Design Guide, 2010.

As shown in Table 3, the invert of the east infiltration gallery is 340.06 m. The high groundwater elevation in this vicinity is 339.06 m. The invert of the south Permavoid infiltration trench is 340.43 m, and the high groundwater elevation in this vicinity is 338.90 m. Therefore, > 1.0 m separation from the infiltration feature inverts to the reference groundwater elevation is expected to be provided. More details of the on-site infiltration and groundwater are provided in the Infiltration and Groundwater Mounding Assessment, East and South Infiltration Trenches, 1242, 1250 and 1260 Gordon Street and 9 Valley Road, City of Guelph *(*Stantec Consulting Ltd., 2021).

A Hydrogeological Report for this Site was completed by Stantec in 2020. It is noted that a 340.3 m groundwater elevation was the highest groundwater level observed on site at MW5-18(S), and other monitoring wells recorded lower groundwater elevations. The high groundwater elevations on-site generally ranged from 340.0 to 334.0 m across 5 monitoring wells. New monitoring wells will be installed mid-August 2021in the on-site infiltration feature footprints, to confirm high groundwater elevations.

The groundwater elevations were recorded in on-site monitoring well MW5-18(S) by Stantec from approximately July 2018 to January 2020. During this period, the high groundwater elevation exceeded 339.00 m from approximately beginning of April through to the end of June 2019 (a 3-month period). During other times the high groundwater table was consistently below 339.00 m. The groundwater level is shown to be below the invert of the on-site infiltration features, notably during summer periods when urban catchments would experience increased runoff from summer storms. In the event that the East infiltration feature is submerged, water will back up and overflow east to Torrance Watershed. In the event the South Permavoid infiltration tank is submerged, water will overflow to the Permavoid storage tank and ultimately outlet to the Gordon Street storm sewer.

For more details of the on-site infiltration trench, please see the attached calculation sheet.

5.10 WATER QUALITY CONTROL

By infiltrating the first 25 mm of every storm event, it is expected 80% TSS removal (enhanced level protection) will be provided to the runoff directed to the on-site infiltration features.

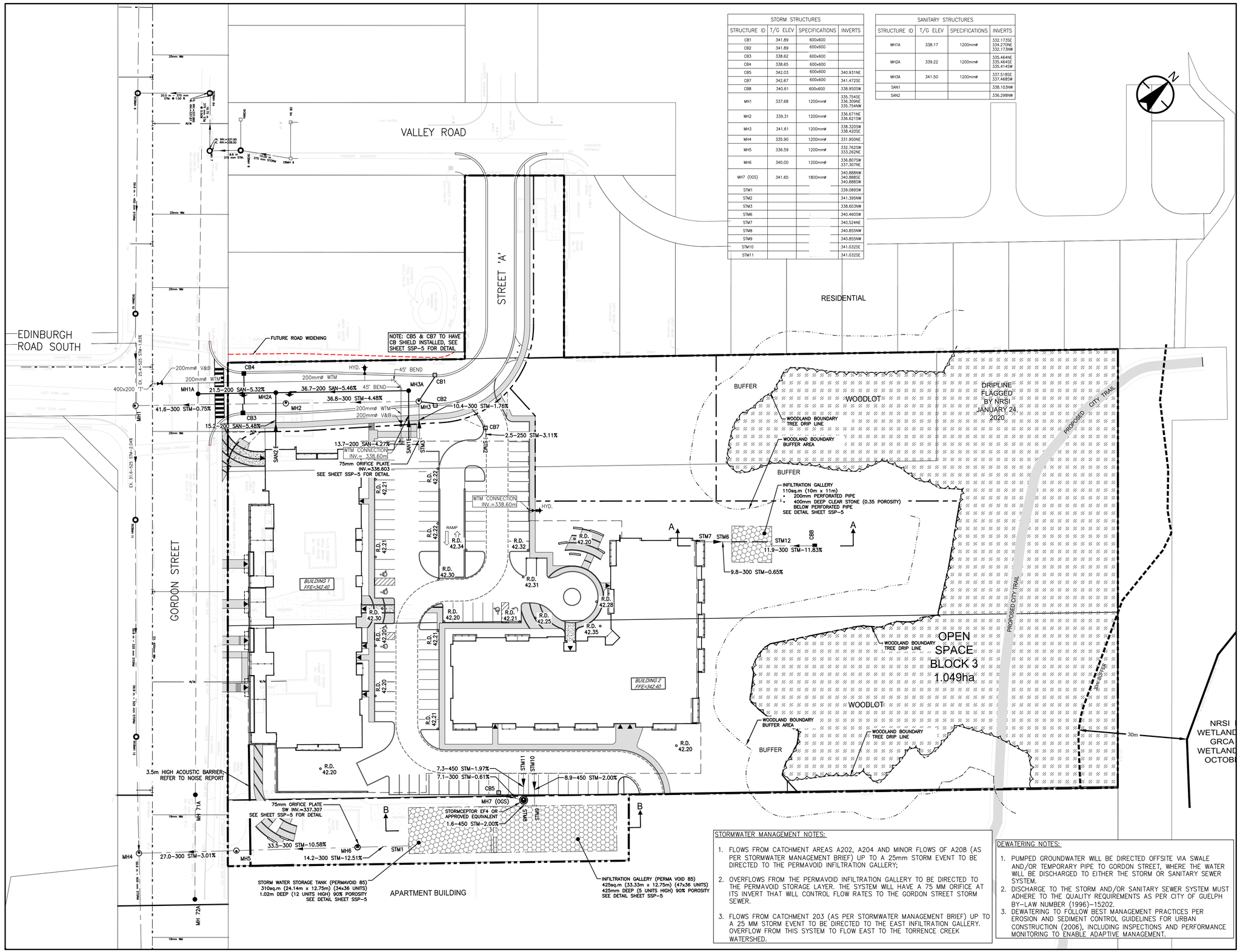
To comply with the City of Guelph 'treatment train' recommendation, an Oil-Grit Separator Unit (Stormceptor EF4) was sized also upstream of the Permavoid storage tank, to treat runoff produced over the parking area (Catchment 204 and 208). In addition, catchbasin shields will be provided on-site. As the Stormceptor EF 4 will provide approximately 90% TSS removal to contributing runoff, this approach will incorporate redundancy into the water quality system and it can be expected that the entire site will have approximately 80% TSS removal. For a detailed sizing report of the Stormceptor EF4, please see the attachment.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the preceding report, the following conclusions can be drawn:

- Sanitary service is provided by the proposed upgrade to the municipal system located on Gordon Street just west of the site access.
- Water service is provided from the existing 400mm watermain on Gordon Street fronting this site.
- Enhanced (Level 1) water quality control will be provided for the site by a combination of OGS unit, and infiltration gallery. Adequate water quality volumes will be provided to meet the MOE water quality requirements associated with infiltration facilities.
- The proposed rooftop storage and Permavoid storage tank will detain the 2- to 100-year peak flows to predevelopment levels prior to discharge to Gordon Street.

PRELIMINARY CIVIL DRAWING PACKAGE



STORM STRUCTURES			
STRUCTURE ID	T/G ELEV	SPECIFICATIONS	INVERTS
CB1	341.89	600x600	
CB2	341.89	600x600	
CB3	338.62	600x600	
CB4	338.65	600x600	
CB5	342.03	600x600	340.931NE
CB7	342.67	600x600	341.472SE
CB8	340.61	600x600	338.950SW
MH1	337.68	1200mmø	335.754SE 336.309NE 335.754NW
MH2	339.31	1200mmø	336.671NE 336.621SW
MH3	341.61	1200mmø	338.320SW 338.420SE
MH4	335.90	1200mmø	331.950NE
MH5	336.59	1200mmø	332.762SW 333.262NE
MH6	340.00	1200mmø	336.807SW 337.307NE
MH7 (OGS)	341.65	1800mmø	340.888NW 340.888SE 340.888SW
STM1			339.089SW
STM2			341.395NW
STM3			338.603NW
STM6			340.460SW
STM7			340.524NE
STM8			340.855NW
STM9			340.855NW
STM10			341.032SE
STM11			341.032SE

SANITARY STRUCTURES			
STRUCTURE ID	T/G ELEV	SPECIFICATIONS	INVERTS
MH1A	338.17	1200mmø	332.173SE 334.270NE 332.173NW
MH2A	339.22	1200mmø	335.464NE 335.464SE 335.414SW
MH3A	341.50	1200mmø	337.518SE 337.468SW
SAN1			338.103NW
SAN2			336.298NW

STORMWATER MANAGEMENT NOTES:

1. FLOWS FROM CATCHMENT AREAS A202, A204 AND MINOR FLOWS OF A208 (AS PER STORMWATER MANAGEMENT BRIEF) UP TO A 25mm STORM EVENT TO BE DIRECTED TO THE PERMAVOID INFILTRATION GALLERY;
2. OVERFLOWS FROM THE PERMAVOID INFILTRATION GALLERY TO BE DIRECTED TO THE PERMAVOID STORAGE LAYER. THE SYSTEM WILL HAVE A 75 MM ORIFICE AT ITS INVERT THAT WILL CONTROL FLOW RATES TO THE GORDON STREET STORM SEWER.
3. FLOWS FROM CATCHMENT 203 (AS PER STORMWATER MANAGEMENT BRIEF) UP TO A 25 MM STORM EVENT TO BE DIRECTED TO THE EAST INFILTRATION GALLERY. OVERFLOW FROM THIS SYSTEM TO FLOW EAST TO THE TORRENCE CREEK WATERSHED.

DEWATERING NOTES:

1. PUMPED GROUNDWATER WILL BE DIRECTED OFFSITE VIA SWALE AND/OR TEMPORARY PIPE TO GORDON STREET, WHERE THE WATER WILL BE DISCHARGED TO EITHER THE STORM OR SANITARY SEWER SYSTEM.
2. DISCHARGE TO THE STORM AND/OR SANITARY SEWER SYSTEM MUST ADHERE TO THE QUALITY REQUIREMENTS AS PER CITY OF GUELPH BY-LAW NUMBER (1996)-15202.
3. DEWATERING TO FOLLOW BEST MANAGEMENT PRACTICES PER EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN CONSTRUCTION (2006), INCLUDING INSPECTIONS AND PERFORMANCE MONITORING TO ENABLE ADAPTIVE MANAGEMENT.

Stantec

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Liability Note:

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Notes

1. CITY OF GUELPH BENCHMARK 225 ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER

Legend

- SITE LIMIT
- EX. STORM SEWER
- PROPOSED STORM SEWER
- EX. SANITARY SEWER
- PROPOSED SANITARY SEWER
- S2 — PROPOSED SANITARY MANHOLE
- R2 — PROPOSED STORM MANHOLE
- CBMH1 — PROPOSED CATCHBASIN MANHOLE
- CB or CICB — PROPOSED CATCHBASIN
- EX. MH — EX. MANHOLE
- EX. CB — EX. CATCHBASIN
- PROPOSED WATERMAIN
- EX. WATERMAIN
- PROPOSED 3-WAY FIRE HYDRANT C/W STORZ CONNECTION
- EX. FIRE HYDRANT
- PROPOSED WATER VALVE
- EX. WATER VALVE
- BULK WATER METER

Revision	By	Appd.	YY.MM.DD
1. ISSUED FOR DRAFT PLAN APPROVAL	JAC	CJH	21.08.24

Issued	By	Appd.	YY.MM.DD

File Name: 161413684_c-ctb	JAC	CJH	JAC	21.07.23
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

LICENSED PROFESSIONAL ENGINEER
C. J. HENDRIKSEN
100125181
Aug 24/21
PROVINCE OF ONTARIO

Client/Project

TRICAR DEVELOPMENTS INC.

1242, 1250, 1260 GORDON STREET & 9 VALLEY ROAD

GUELPH, ON

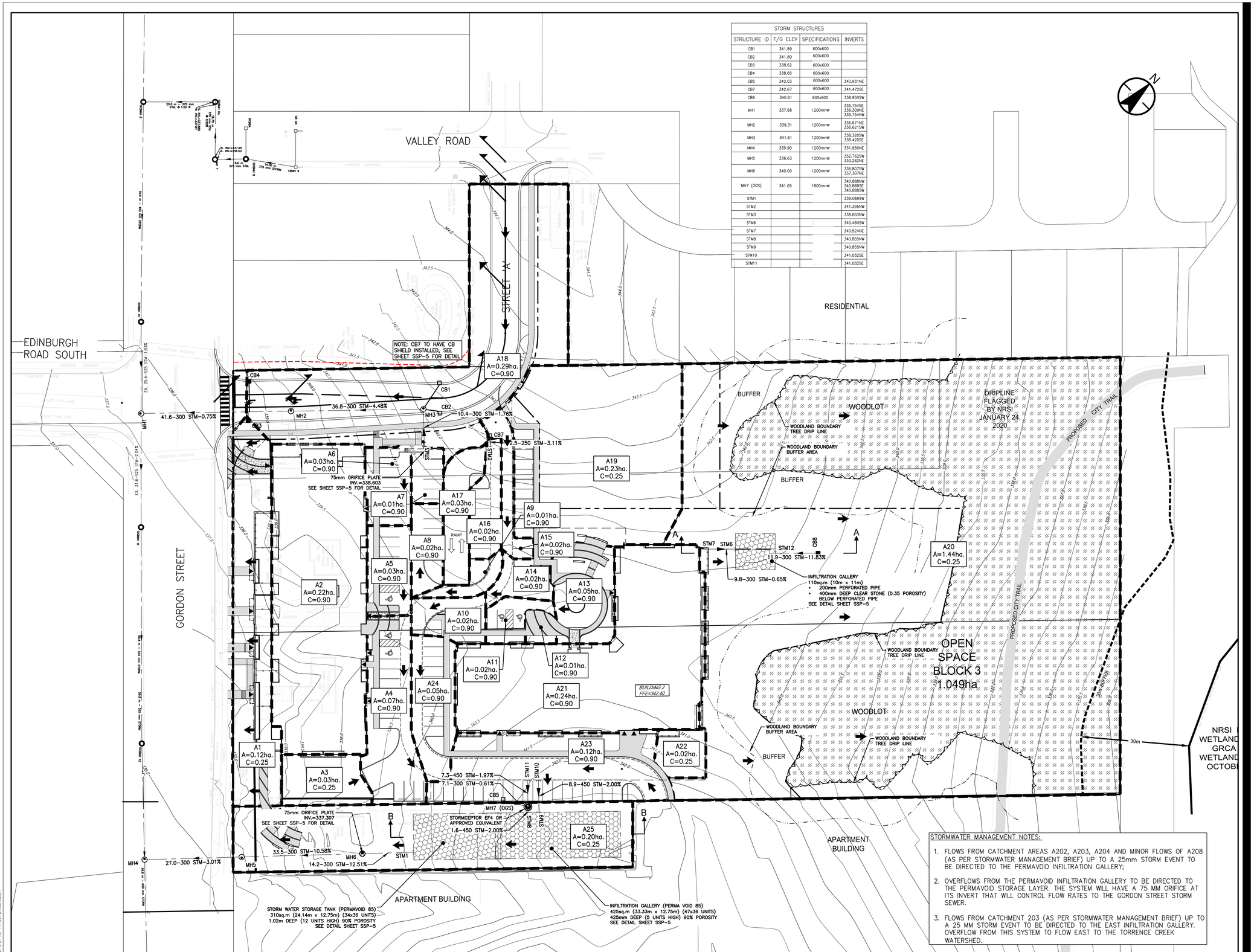
Title

SERVICING PLAN

Project No.	Scale	
161413684	1:500 (0 5 15 25m)	
Drawing No.	Sheet	Revision
SSP-1	1 of 7	0

V:\01416\active\161413684\design\drawing\civil\model_files\pipes\161413684_C-Ctb.dwg
2021-8-24 1:30 PM by: CHiks, cjason

ORIGINAL SHEET - ANSI D



STORM STRUCTURES			
STRUCTURE ID	T/G ELEV	SPECIFICATIONS	INVERTS
CB1	341.89	600x600	
CB2	341.89	600x600	
CB3	338.62	600x600	
CB4	338.65	600x600	
CB5	342.03	600x600	340.931NE
CB7	342.67	600x600	341.472SE
CB8	340.61	600x600	338.950SW
MH1	337.68	1200mmø	335.754SE 336.309NE 335.754NW
MH2	339.31	1200mmø	336.671NE 336.621SW
MH3	341.61	1200mmø	338.320SW 338.420SE
MH4	335.90	1200mmø	331.950NE
MH5	336.63	1200mmø	332.762SW 333.262NE
MH6	340.00	1200mmø	336.807SW 337.307NE
MH7 (OGS)	341.65	1800mmø	340.888NW 340.888SE 340.888SW
STM1			339.089SW
STM2			341.395NW
STM3			338.603NW
STM6			340.460SW
STM7			340.524NE
STM8			340.855NW
STM9			340.855NW
STM10			341.032SE
STM11			341.032SE

STORMWATER MANAGEMENT NOTES:

1. FLOWS FROM CATCHMENT AREAS A202, A203, A204 AND MINOR FLOWS OF A208 (AS PER STORMWATER MANAGEMENT BRIEF) UP TO A 25mm STORM EVENT TO BE DIRECTED TO THE PERMAVOID INFILTRATION GALLERY;
2. OVERFLOWS FROM THE PERMAVOID INFILTRATION GALLERY TO BE DIRECTED TO THE PERMAVOID STORAGE LAYER. THE SYSTEM WILL HAVE A 75 MM ORIFICE AT ITS INVERT THAT WILL CONTROL FLOW RATES TO THE GORDON STREET STORM SEWER.
3. FLOWS FROM CATCHMENT 203 (AS PER STORMWATER MANAGEMENT BRIEF) UP TO A 25 MM STORM EVENT TO BE DIRECTED TO THE EAST INFILTRATION GALLERY. OVERFLOW FROM THIS SYSTEM TO FLOW EAST TO THE TORRENCE CREEK WATERSHED.

Stantec

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Liability Note:

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Notes

1. CITY OF GUELPH BENCHMARK 225 ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER

Legend

A1 A=0.23ha. C=0.25	AREA ID CONTRIBUTING AREA (ha) RUNOFF COEFFICIENT
↑	MAJOR OVERLAND FLOW ROUTE
▬ ▬ ▬	DRAINAGE BOUNDARY

Revision	By	Appd.	YY.MM.DD
1. ISSUED FOR DRAFT PLAN APPROVAL	JAC	CJH	21.08.24

Issued	By	Appd.	YY.MM.DD
File Name: 161413684_c-sd	JAC	CJH	21.07.23
	Dwn.	Chkd.	Dsgn. YY.MM.DD

Permit-Seal

LICENSED PROFESSIONAL ENGINEER
C.J. HENDRIKSEN
100125181
Aug 24/21
PROVINCE OF ONTARIO

Client/Project

TRICAR DEVELOPMENTS INC.

1242, 1250, 1260 GORDON STREET & 9 VALLEY ROAD

GUELPH, ON

Title

STORM DRAINAGE AREA PLAN

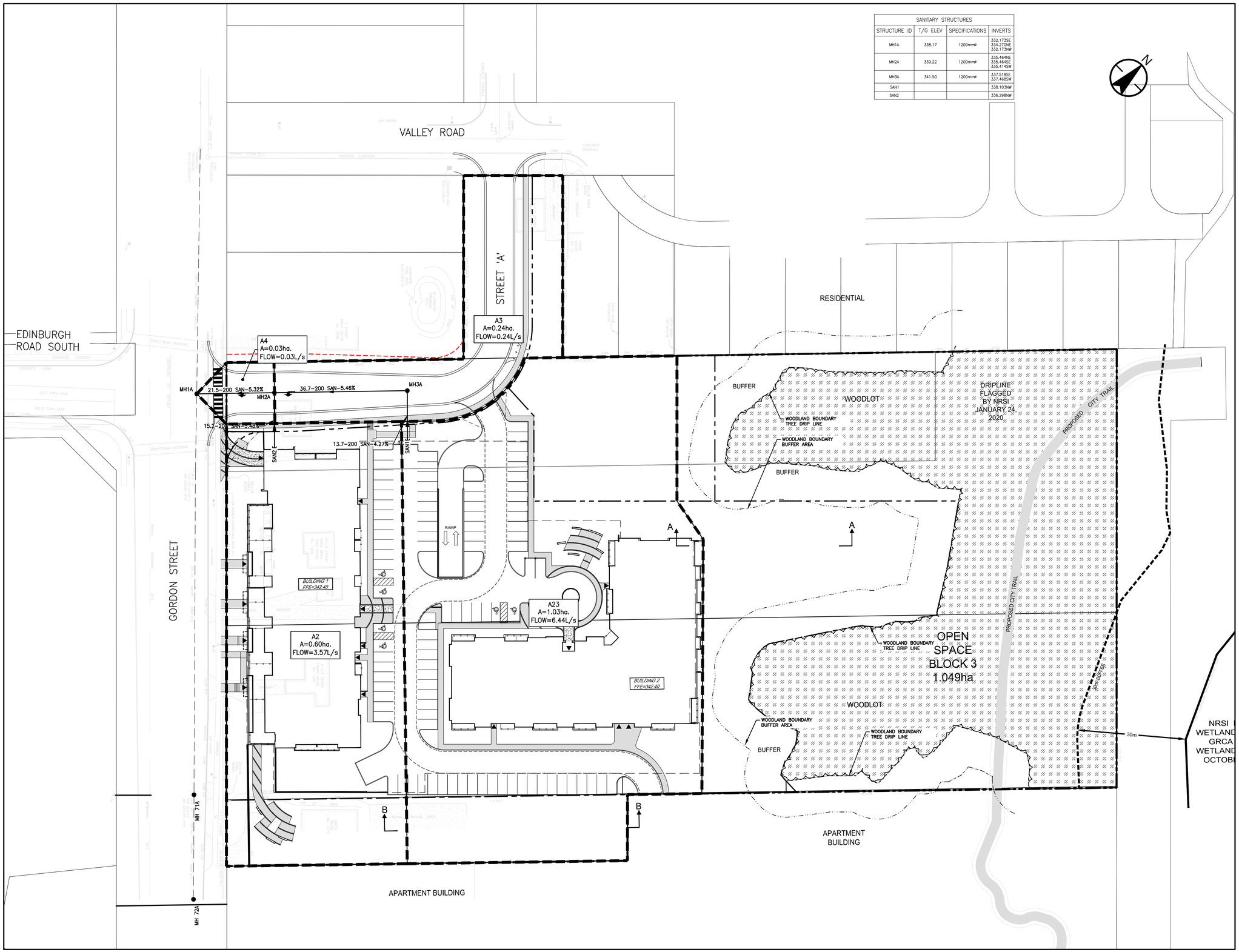
Project No.	Scale
161413684	1:400 (0, 4, 12, 20m)

Drawing No.	Sheet	Revision
SSP-2	2 of 7	0

V:\01614\active\161413684\design\drawing\civil\sheet_files\161413684_C-SD.dwg
2021-8-24 1:51 PM by: CHEN, Jason

ORIGINAL SHEET - ANSI D

SANITARY STRUCTURES			
STRUCTURE ID	T/G ELEV	SPECIFICATIONS	INVERTS
MH1A	338.17	1200mmø	332.173SE 334.270NE 332.173NW
MH2A	339.22	1200mmø	335.464NE 335.464SE 335.414SW
MH3A	341.50	1200mmø	337.518SE 337.468SW
SAN1			338.103NW
SAN2			336.298NW



Stantec

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Liability Note:

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Notes

1. CITY OF GUELPH BENCHMARK 225 ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER

Legend

A1 A=0.92ha. FLOW=6.44L/s	AREA ID CONTRIBUTING AREA (ha) FLOW RATE (7L/s/ha. APARTMENTS–1L/s/ha. RESIDENTIAL)

DRAINAGE BOUNDARY

Revision	By	Appd.	YY.MM.DD
1. ISSUED FOR DRAFT PLAN APPROVAL	JAC	CJH	21.08.24

Issued	By	Appd.	YY.MM.DD
File Name: 161413684_c-ss	JAC	CJH	21.07.23
	Dwn.	Chkd.	Dsgn. YY.MM.DD

Permit-Seal

LICENSED PROFESSIONAL ENGINEER
C. J. HENDRIKSEN
100125181
Aug 24/21
PROVINCE OF ONTARIO

Client/Project

TRICAR DEVELOPMENTS INC.

1242, 1250, 1260 GORDON STREET
& 9 VALLEY ROAD
GUELPH, ON

Title

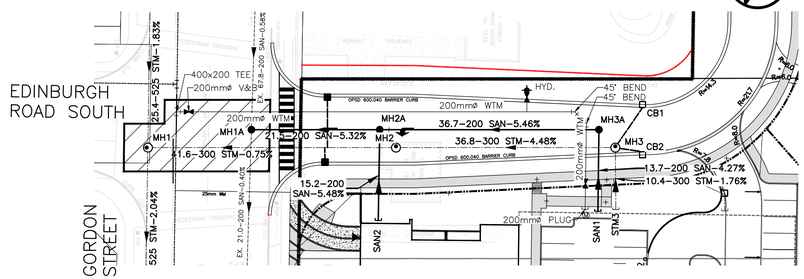
SANITARY DRAINAGE AREA PLAN

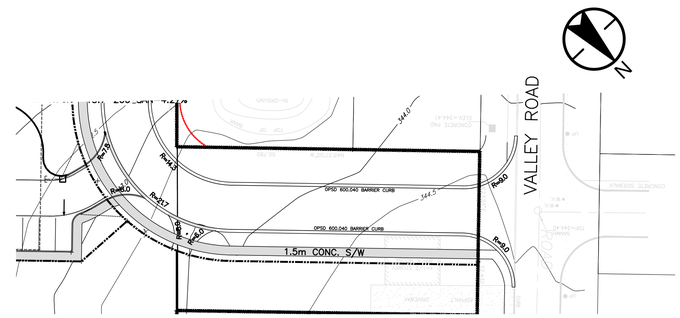
Project No.	Scale
161413684	1:500 (0 5 15 25m)

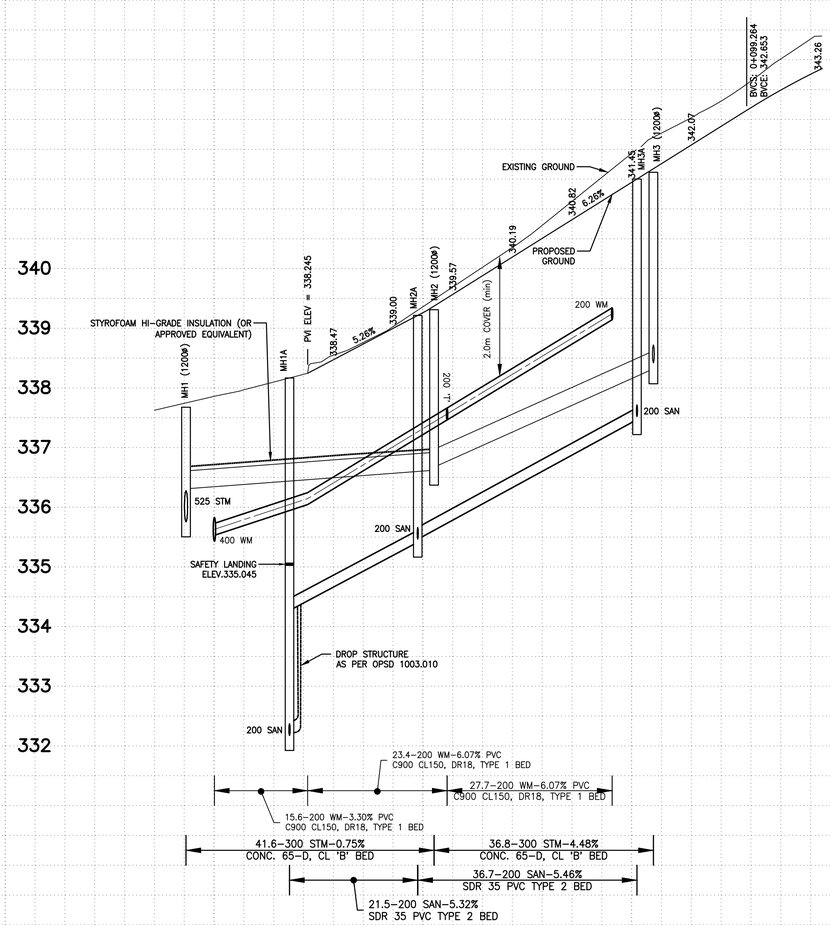
Drawing No.	Sheet	Revision
SSP-3	3 of 7	0

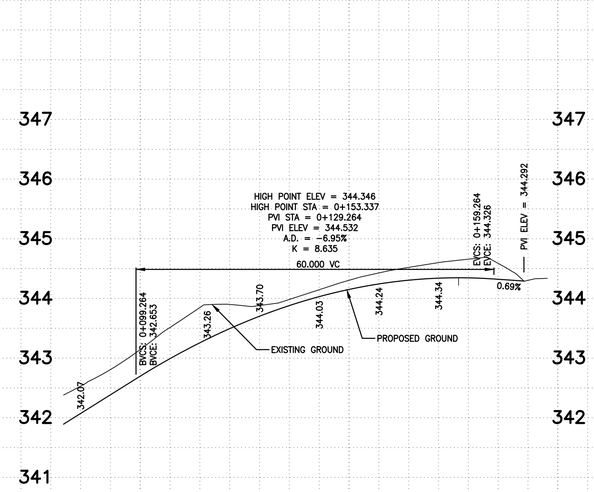
Y:\01614\active\161413684\design\drawing\craft\street_files\161413684_C-SS.dwg
2021-08-24 12:04 by: cchen, dwgsn

ORIGINAL SHEET - ANSI D









STREET 'A'

OPSD 600.040 CONCRETE BARRIED CURB WITH STANDARD GUTTER

V:\01614\active\161413684\design\drawing\civil\sheet_files\161413684_C-ST.dwg
2021-8-24 1:54 PM By: Childs, Jason

ORIGINAL SHEET - ANSI D

Stantec

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Liability Note:

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Notes

1. CITY OF GUELPH BENCHMARK 225 ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER

Legend

▬▬▬	SITE LIMIT
- - ◄ - -	EX. STORM SEWER
━━◄━━	PROPOSED STORM SEWER
──◄──	EX. SANITARY SEWER
━━◄━━	PROPOSED SANITARY SEWER
● S2	PROPOSED SANITARY MANHOLE
⊙ R2	PROPOSED STORM MANHOLE
⊙ CBMH1	PROPOSED CATCHBASIN MANHOLE
☐ CB or CICB	PROPOSED CATCHBASIN
⊙ EX. MH	EX. MANHOLE
☐ EX. CB	EX. CATCHBASIN
━━━━	PROPOSED WATERMAIN
────	EX. WATERMAIN
⋈─⌖	PROPOSED 3-WAY FIRE HYDRANT C/W STORZ CONNECTION
⋈─⌖	EX. FIRE HYDRANT
━━⋈━━	PROPOSED WATER VALVE
──⋈──	EX. WATER VALVE
▨	RESTORATION LIMITS WITH LAP JOINT PER 509.010

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
1. ISSUED FOR DRAFT PLAN APPROVAL	JAC	CJH	21.08.24

File Name: 161413684_c-st	Dwn.	Chkd.	Dsgn.	YY.MM.DD
	JAC	CJH	JAC	21.07.23

Permit-Seal

LICENSED PROFESSIONAL ENGINEER
C.J. HENDRIKSEN
100125181
Aug 24/21
PROVINCE OF ONTARIO

Client/Project

TRICAR DEVELOPMENTS INC.

1242, 1250, 1260 GORDON STREET
& 9 VALLEY ROAD
GUELPH, ON

Title

STREET 'A'
PLAN & PROFILE

Project No. 161413684

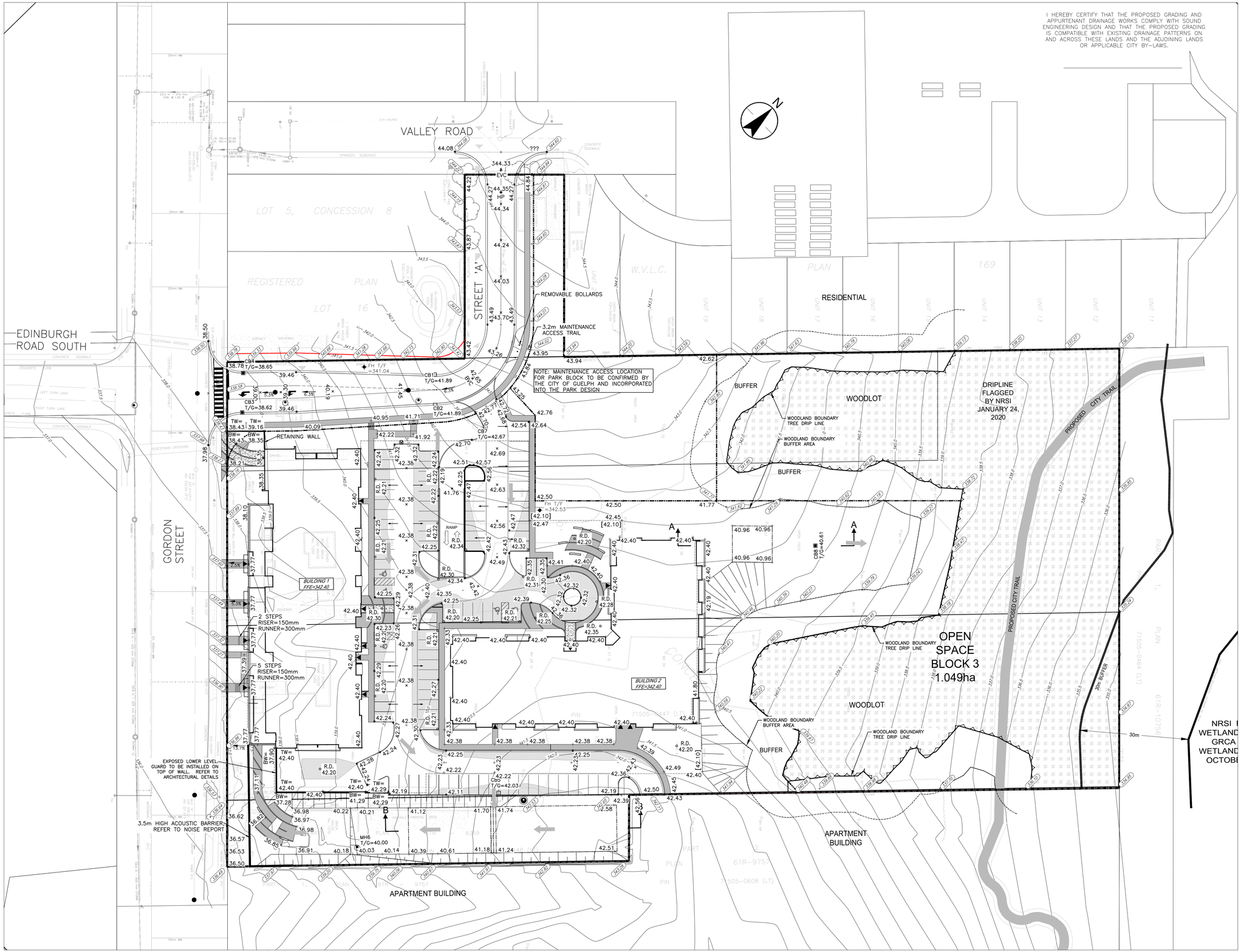
Scale 1:500 0 5 15 25m

Drawing No. SSP-4

Sheet 4 of 7

Revision 0

I HEREBY CERTIFY THAT THE PROPOSED GRADING AND APPURTENANT DRAINAGE WORKS COMPLY WITH SOUND ENGINEERING DESIGN AND THAT THE PROPOSED GRADING IS COMPATIBLE WITH EXISTING DRAINAGE PATTERNS ON AND ACROSS THESE LANDS AND THE ADJOINING LANDS OR APPLICABLE CITY BY-LAWS.



Stantec

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Liability Note:

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Notes

1. CITY OF GUELPH BENCHMARK 225 ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER

Legend

- PROPOSED SWALE
- PROPOSED STORM MANHOLE
- PROPOSED STORM CATCH BASIN MANHOLE
- PROPOSED SANITARY MANHOLE
- EX. STORM MANHOLE
- EX. SANITARY MANHOLE
- PROPOSED CATCH BASIN
- EX. CATCH BASIN
- 75.95 — PROPOSED GRADES
- 75.95 (SP) — PROPOSED OVERLAND FLOW SPILL POINT
- 75.95 — EXISTING GRADES
- MAJOR OVERLAND FLOW ROUTE
- SITE BOUNDARY
- 71.77 (SW) — PROPOSED SWALE GRADE
- 180.5 — EXISTING CONTOURS
- FLOW DIRECTION
- HYDRANTS

Revision	By	Appd.	YY.MM.DD
1. ISSUED FOR DRAFT PLAN APPROVAL	JAC	CJH	21.08.24

Issued	By	Appd.	YY.MM.DD
File Name: 161413684_c-fb	JAC	CJH	21.07.23
	Dwn.	Chkd.	Dsgn. YY.MM.DD

Permit-Seal

LICENSED PROFESSIONAL ENGINEER
C. J. HENDRIKSEN
100125181
Aug 24/21
PROVINCE OF ONTARIO

Client/Project

TRICAR DEVELOPMENTS INC.

1242, 1250, 1260 GORDON STREET & 9 VALLEY ROAD

GUELPH, ON

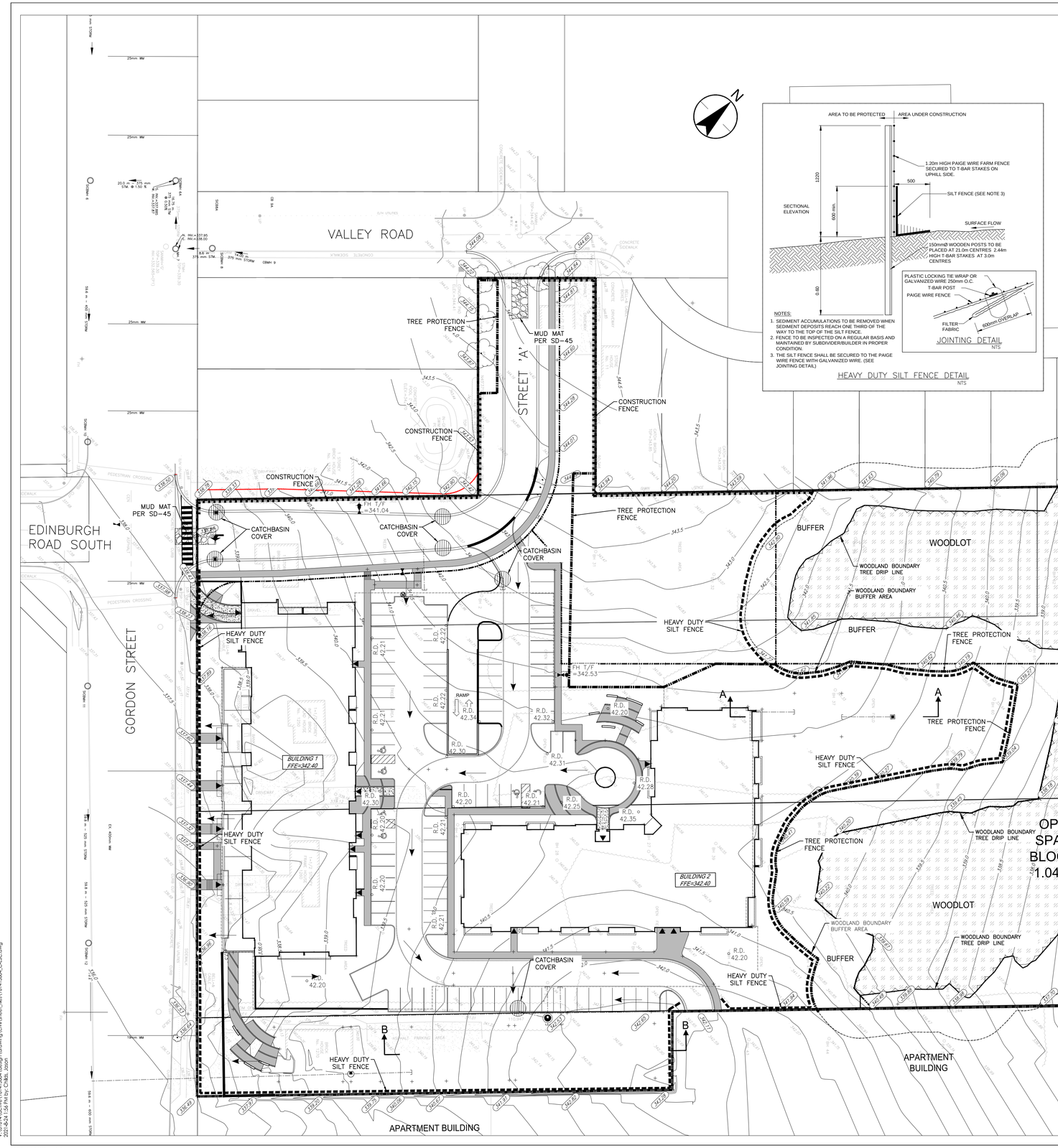
Title

GRADING PLAN

Project No.	Scale	
161413684	1:500 (0 5 15 25m)	
Drawing No.	Sheet	Revision
GP-1	5 of 7	0

Y:\01414\active\161413684\design\drawing\civil\model_files\surfaces\161413684_C-FB.dwg
2021-8-24 1:33 PM by: CHIBG, Jason

ORIGINAL SHEET - ANSI D

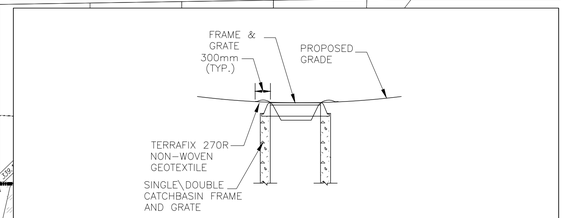


IMPLEMENTATION SCHEDULE AND DETAILS FOR EROSION AND SEDIMENTATION CONTROL MEASURES

PRIOR TO ANY SITE WORKS	– INSTALL ALL SILT FENCE AND PROTECTIVE FENCING AS SHOWN ON THE PLANS AND MAINTAIN DURING CONSTRUCTION. – MONTHLY EROSION AND SEDIMENT CONTROL REPORTS (QUARTERLY DURING PERIODS OF INACTIVITY OR HOUSE CONSTRUCTION) ARE TO BE SUBMITTED TO THE AUTHORITY UNTIL THE SITE HAS BEEN BUILT OUT (90%–100%) AND STABILIZED. REPORTS TO BE BASED ON FREQUENT INSPECTIONS PARTICULARLY AFTER SIGNIFICANT EVENTS.
DURING TOPSOIL STRIPPING	– CONSTRUCT TEMPORARY SEDIMENT CONTROL BASINS, DIVERSION SWALES & BERMS – CONSTRUCT TEMPORARY DIVERSION BERMS/SWALES/ROCK CHECK DAMS – SURPLUS TOPSOIL IS BE STOCKPILED IN LOCATIONS SHOWN
DURING AREA GRADING	– ALL DIVERSION BERMS/SWALES TO BE CHECKED REGULARLY AND AFTER EACH SIGNIFICANT RAINFALL AS GRADING PROCEEDS. DIVERSION BERMS/SWALES TO BE RECONSTRUCTED/RELOCATED AS NECESSARY TO ENSURE THAT THEY DIRECT FLOWS INTO BASINS. – SILT FENCE TO BE CHECKED REGULARLY AND AFTER EACH RAINFALL FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES ONE THIRD OF THE WAY TO THE TOP OF THE BARRIER. – SEDIMENT CONTROL BASINS TO BE CHECKED REGULARLY AND AFTER EACH RAINFALL AND CLEANED OUT WHEN THE LEVEL OF SEDIMENT BUILDUP HAS REDUCED THE VOLUME OF THE DEAD STORAGE BY ONE HALF.
AFTER AREA GRADING	– ALL AREAS (INCLUDING STOCKPILES) WHERE ACTIVE CONSTRUCTION IS NOT EXPECTED FOR 30 DAYS, SHALL BE REVEGETATED WITH 50mm OF TOPSOIL AND HYDROSEEDED IN ACCORDANCE WITH OPSS 572.
DURING SERVICING AND ROADWORKS CONSTRUCTION	– MAINTAIN FUNCTION OF SEDIMENT CONTROLS – ENSURE GRADED AREAS DRAIN TO SEDIMENT BASINS – INSTALL ROCK CHECK DAMS IN LOW POINT OF AREAS CUT OFF BY ROADS AS DIRECTED BY THE ENGINEER. – INSTALL STORM SERVICE OUTLETS AT ALL LOW POINTS (SEE DETAILS) – CATCHBASINS TO BE SEALED UNTIL ROADS ARE PAVED. – INSTALL FILTER FABRIC UNDER CATCHBASIN GRATES
DURING HOUSE CONSTRUCTION	– SEDIMENTATION BASINS CONFLICTING WITH HOUSE CONSTRUCTION ARE TO BE FILLED AND STORM SERVICE OUTLETS ARE TO BE INSTALLED (SEE DETAIL). – STREETS TO BE KEPT CLEAN.
FOLLOWING SITE STABILIZATION	– REMOVAL OF SEDIMENT CONTROL MEASURES AND COLLECTION OF ACCUMULATED SEDIMENT SHALL OCCUR FOLLOWING SUBSTANTIAL COMPLETION OF CONSTRUCTION (90%–100%) AND SITE STABILIZATION.

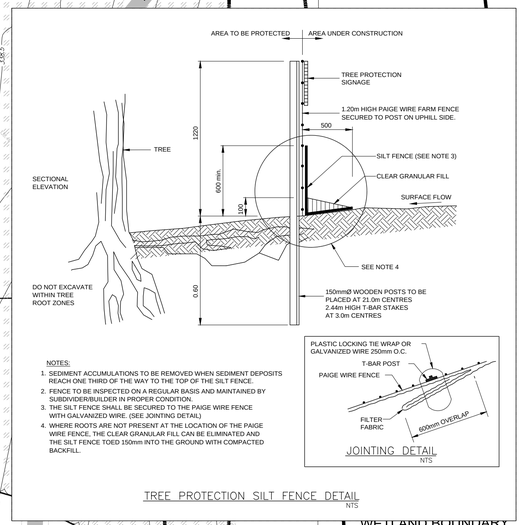
NOTES:
1. SEDIMENT ACCUMULATIONS TO BE REMOVED WHEN SEDIMENT DEPOSITS REACH ONE THIRD OF THE WAY TO THE TOP OF THE SILT FENCE.
2. FENCE TO BE INSPECTED ON A REGULAR BASIS AND MAINTAINED BY SUBDIVIDER/BUILDER IN PROPER CONDITION.
3. THE SILT FENCE SHALL BE SECURED TO THE PAIGE WIRE FENCE WITH GALVANIZED WIRE. (SEE JOINTING DETAIL)

HEAVY DUTY SILT FENCE DETAIL
NTS



SECTION

CATCHBASIN COVERING DETAIL (TYP.)
NTS



NOTES:
1. SEDIMENT ACCUMULATIONS TO BE REMOVED WHEN SEDIMENT DEPOSITS REACH ONE THIRD OF THE WAY TO THE TOP OF THE SILT FENCE.
2. FENCE TO BE INSPECTED ON A REGULAR BASIS AND MAINTAINED BY SUBDIVIDER/BUILDER IN PROPER CONDITION.
3. THE SILT FENCE SHALL BE SECURED TO THE PAIGE WIRE FENCE WITH GALVANIZED WIRE. (SEE JOINTING DETAIL)
4. WHERE ROOTS ARE NOT PRESENT AT THE LOCATION OF THE PAIGE WIRE FENCE, THE CLEAR GRANULAR FILL CAN BE ELIMINATED AND THE SILT FENCE TOED 150mm INTO THE GROUND WITH COMPACTED BACKFILL.

TREE PROTECTION SILT FENCE DETAIL
NTS

Stantec

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Liability Note:

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Notes

1. CITY OF GUELPH BENCHMARK 225 ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER

Legend

- SILT FENCE (SD–74B)
- CONSTRUCTION FENCE
- TREE PROTECTION FENCE (SD–90A)
- SURFACE FLOW DIRECTION
- CATCHBASIN COVERING

Revision	By	Appd.	YY.MM.DD
1. ISSUED FOR DRAFT PLAN APPROVAL	JAC	CJH	21.08.24

Issued	By	Appd.	YY.MM.DD
File Name: 161413684_c-esc	JAC	CJH	21.07.23
	Dwn.	Chkd.	Dsgn. YY.MM.DD

Permit-Seal

LICENSED PROFESSIONAL ENGINEER
C. J. HENDRIKSEN
100125181
Aug 24/21
PROVINCE OF ONTARIO

Client/Project
TRICAR DEVELOPMENTS INC.

1242, 1250, 1260 GORDON STREET & 9 VALLEY ROAD
GUELPH, ON

Title
EROSION & SEDIMENT CONTROL PLAN

Project No.	Scale	
161413684	1:400 (0 4 12 20m)	
Drawing No.	Sheet	Revision
GP-2	6 of 7	0

V:\01614\active\161413684\design\drawing\civil\sheet_files\161413684_C-ESC.dwg
2021-8-24 1:56 PM by: CHiddi, cjason

ORIGINAL SHEET - ANSI D

NOTES AND SPECIFICATIONS:

A. GENERAL:

1. BUILDINGS ARE NOT TO BE SITED WITH THIS DRAWING.
   THIS DRAWING TO BE READ IN CONJUNCTION WITH THE SITE SERVICING PLANS (SSP SERIES) & THE GRADING PLAN (GP SERIES) PREPARED BY STANTEC CONSULTING.
2. THESE PLANS FOR CONSTRUCTION ONLY WHEN APPROVED BY THE CITY OF GUELPH AND SEALED BY THE ENGINEER.
3. 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.
4. ALL WORK WITHIN THE RIGHTS-OF-WAY OR CITY EASEMENTS ARE TO BE INSTALLED BY CITY OF GUELPH AT THE OWNER'S EXPENSE UNLESS OTHERWISE NOTED.
5. ANY PROPOSED CHANGES SHALL BE APPROVED BY THE ENGINEER AND CITY OF GUELPH.
6. ALL UNDERGROUND SERVICING 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.
7. CONTRACTOR SHALL COORDINATE WITH STANTEC AND SHALL CONTACT SAME AT LEAST 48 HOURS PRIOR TO INSTALLATION OF SERVICES.
8. 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).
9. THE PROPERTY OWNER IS RESPONSIBLE FOR RESTORATION OF ALL DAMAGED AND/OR DISTURBED PROPERTY WITHIN THE MUNICIPAL RIGHT-OF-WAY TO CITY OF GUELPH STANDARDS.
10. IN THE UNFORESEEN REASONS, THE OWNER AND/OR HIS/HER REPRESENTATIVE MUST ENCROACH ONTO PRIVATE LANDS TO UNDERTAKE ANY WORKS, HE/SHE MUST OBTAIN WRITTEN PERMISSION FROM THE ADJACENT PROPERTY OWNERS PRIOR TO ENTERING UPON THE PRIVATE PROPERTY TO PERFORM ANY WORKS. COPIES OF THESE LETTERS OF CONSENT MUST BE SUBMITTED TO THE DEVELOPMENT & TECHNICAL SERVICES – ENGINEERING DEVELOPMENT DIVISION, PRIOR TO ANY WORK BEING PERFORMED. FAILURE TO COMPLY WITH THE ABOVE IS AT THE PROPERTY OWNERS OWN RISK.

B. UNDERGROUND SERVICES:

1. CONTRACTOR SHALL VERIFY ELEVATION AND LOCATION OF EXISTING SANITARY AND STORM SEWERS AND WATERMAINS PRIOR TO COMMENCING SITE WORK AND SHALL NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN EXISTING AND PROPOSED SERVICES.
2. THE CONTRACTOR TO MAKE CONNECTIONS TO SERVICES AT STUB LOCATION FOR SANITARY, STORM SEWERS, WATERMAIN AND TO RESTORE ALL OFF-SITE AFFECTED PROPERTY TO ORIGINAL CONDITION.
3. ON-SITE SERVICING SHALL NOT BE UNDERTAKEN PRIOR TO COMPLETION OF SERVICE CONNECTIONS WITHIN THE ROAD R.O.W.'S.
4. ALL UNDERGROUND SERVICES TO BE IN COMPLIANCE WITH THE LATEST REVISED BUILDING CODE, CITY OF GUELPH ENGINEERING STANDARDS, ONTARIO PROVINCIAL STANDARDS (OPSS, OPSD) AND WITH THE LATEST REGULATIONS OF THE ONTARIO PLUMBING CODE AND SUPPLEMENT SPECIFICATION FOR MUNICIPAL SERVICES (DGSSMS) AND INSPECTED BY CITY STAFF/CONSULTANT PRIOR TO BACKFILLING.
5. UNDERGROUND SERVICES TO TERMINATE 1.5m FROM BUILDING LINE, PLUGGED OR CAPPED C/W MARKER EXTENDING FROM INVERT TO 1.0M ABOVE FINISHED GRADE.
6. ALL BEDDING TO BE AS NOTED BELOW. TRENCH BACKFILL TO BE APPROVED NATIVE MATERIAL COMPACTED IN 200mm MAX. LIFTS TO 95% STANDARD PROCTOR DENSITY.
7. ALL SERVICES SHALL BE TESTED AS SPECIFIED IN THE APPLICABLE OPSS (OPSS 410 & 441).
8. 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.
9. ANY UTILITY RELOCATION DUE TO THIS DEVELOPMENT TO BE UNDERTAKEN AT THE EXPENSE OF THE OWNER/DEVELOPER.

C. SEWERS/APPURTENANCES:

4. STORM SEWERS:
   - LESS THAN 200mmø – PVC DR-28
   - 200mmø TO 375mmø – PVC DR-35
     – PVC RIBBED PIPE (ULTRA-RIB OR EQUIVALENT)
     – CL-3 CONCRETE
   - 450mmø TO 600mmø – PVC RIBBED PIPE (ULTRA-RIB OR EQUIVALENT)
     – 65D CONCRETE
   - 450mmø TO 600mmø – 65D CONCRETE
5. SANITARY SEWERS:
   - LESS THAN 200mmø – PVC DR-28
   - 200mmø OR LARGER – PVC DR-35
   - 2.5m MINIMUM COVER FOR SANITARY SEWERS.
3. SEWER BEDDING:
   - CITY OF GUELPH SD-29
   - 150mm (MIN) GRAN 'A' TO 98% S.P.D.
4. STORM MANHOLES:
   - OPSD 701.010 (1200mmø)
   - OPSD 701.011 (1500mmø)
   - OPSD 701.012 (1800mmø)
   - OPSD 701.013 (2400mmø)
   - OPSD 701.014 (3000mmø)
6. SANITARY MAINTENANCE HOLE:
   - OPSD 701.010 (1200mmø)
7. MAINTENANCE HOLE BENCHING:
   - CITY OF GUELPH SD-44
   - CBMH'S WITH AN OUTLET PIPE GREATER THAN 450mmø SHOULD BE BENCHED. 450mmø OR LESS SHALL BE PROVIDED WITH A 600mm SUMP.
8. CATCHBASINS/CATCHBASIN LEADS:
   - OPSD 705.01 (SINGLE)
   - OPSD 705.02 (DOUBLE)
   - OPSD 705.03 (DITCH INLET – 3:1 SLOPE)
   - MINIMUM LEAD DIAMETER. 200mmø FOR SINGLE, 300mmø FOR DOUBLE CATCHBASINS.
9. FRAMES AND GRATES/COVERS:
   - OPSD 400.10 (CB'S & CBMH'S)
   - OPSD 401.01 TYPE 'A' (SANITARY AND STORM MH'S)
   - CITY OF GUELPH SD-15 (RLCB'S)
   - CITY OF GUELPH SD-16 (DICB'S)
   - CITY OF GUELPH SD-9 (SAFETY GRATE FOR MH'S)
   - ALL FRAMES ON STRUCTURES TO BE SET USING PRECAST CONCRETE ADJUSTMENT UNITS

D. WATER SERVICES/APPURTENANCES:

1. WATERMAIN
   - 100mmø TO 300mmø – AWWA C-900 PVC SDR-18
   - 350mmø TO 600mmø – AWWA C905 PVC SDR-25
   - 2.0m MINIMUM COVER
   - FITTINGS TO AWWA C-907
   - WHERE CONFLICT ARISES 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)
6. VALVES:
   - ALL VALVES TO OPEN COUNTER-CLOCKWISE AND COMPLY WITH A.W.W.A. SPEC.
   - CITY OF GUELPH SD-24
7. WATER SERVICES
   - 25mmø 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. MAINTAIN SPATIAL SEPARATION FOR SITE SERVICES PER BUILDING CODE PART 7.3.5.6
10. ALL NEW WATER PIPING INSTALLATIONS AS PER AWWA C651-05
11. CATHODIC PROTECTION IN ACCORDANCE WITH CITY OF GUELPH STANDARDS.
12. A WATERMAIN COMMISSIONING PLAN IN ACCORDANCE WITH DGSSMS WILL BE REQUIRED.

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 MATERIAL OFFSITE.
3. SAWCUT ASPHALT IN NEAT LINES AT ALL MATCH LINES.
4. MATCH EXISTING GRADES AT ADJACENT PROPERTY LINES.
5. TRANSITION SLOPES TO BE MAXIMUM 3:1 (HORIZONTAL TO VERTICAL) UNLESS OTHERWISE NOTED.

F. SURFACE WORKS:

1. CURBS:
   - OPSD 600.040 (CONCRETE BARRIER CURB WITH STANDARD GUTTER)
   - OPSD 600.070 (CONCRETE BARRIER CURB WITH STANDARD GUTTER, TWO STAGE CONSTRUCTION)
   - OPSD 600.080 (CONCRETE BARRIER CURB WITH NARROW GUTTER)
   - OPSD 600.110 (CONCRETE BARRIER CURB)
2. ASPHALT PAVEMENT: (PARKING AREA)
   - 40mm HL 3 (SURFACE ASPHALT) 97% MARSHALL
   - 50mm HL4 (BASE ASPHALT) 97% S.P.D.
   - 150mm GRANULAR 'A' BASE 100% S.P.D.
   - 300mm GRANULAR 'B' SUB-BASE 100% S.P.D.
3. ASPHALT PAVEMENT: (ABOVE PARKING GARAGE)
   - CONCRETE DECK
   - ROOFING MEMBRANE
   - PROTECTION BOARD
   - 40MM HL 3 (SURFACE ASPHALT) 97% MARSHALL
   - 50MM HL4 (BASE ASPHALT) 97% S.P.D.
4. PAVEMENT: (HEAVY DUTY/FIRE ROUTE)
   - 50mm HL-3 SURFACE ASPHALT 97% MARSHALL – (WHERE IN PLACE)
   - 60mm HL-4 BASE ASPHALT 97% MARSHALL
   - 150mm GRANULAR 'A' 100% S.P.D.
   - 400mm GRANULAR 'B' 100% S.P.D.
   - SAW CUT CLEAN EDGES AT ALL MATCH LINES AND APPLY TACK COAT.
5. CONCRETE SIDEWALKS:
   - CITY OF GUELPH SD-2, 1.5m WIDE (CONCRETE SIDEWALK)
   - CITY OF GUELPH SD-4 (SIDEWALK RAMPS)
6. SITE AREAS DISTURBED BY CONSTRUCTION AND NOT INDICATED FOR REMOVAL TO BE RESTORED TO ORIGINAL CONDITIONS.

G. EROSION CONTROL:

1. ALL SILT FENCING TO BE INSTALLED PRIOR TO COMMENCEMENT OF ANY AREA GRADING, EXCAVATION OR DEMOLITION.
2. EROSION CONTROL FENCE TO BE PLACED AROUND THE BASE OF ALL STOCKPILES. ALL STOCKPILES TO BE KEPT A MINIMUM OF 2.5m FROM ALL PROPERTY LINES.
3. P-250 FILTER FABRIC UNDERLYING CONSTRUCTION VEHICLE ENTRANCE TO CONSIST OF CLEANED OR REPLACED 200mm THICK, 50mmø STONE. STONE TO BE TAKEN UP AND WHEN ACCUMULATIONS COVER 50% OF TOP OF STONE (SEE DETAIL).
4. EROSION PROTECTION TO BE PROVIDED AROUND ALL STORM AND SANITARY MANHOLES AND/OR CATCHBASINS.
5. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS SITE DEVELOPMENT PROGRESSES. CONTRACTOR TO PROVIDE ALL ADDITIONAL EROSION CONTROL STRUCTURES.
6. EROSION CONTROL STRUCTURES TO BE MONITORED REGULARLY BY STANTEC CONSULTING LTD. AND ANY DAMAGE REPAIRED IMMEDIATELY. SEDIMENTS TO BE REMOVED WHEN ACCUMULATIONS REACH A MAXIMUM OF ONE THIRD (1/2) THE HEIGHT OF THE SILT FENCE.
7. ALL EROSION CONTROL STRUCTURES TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN RE-STABILIZED 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. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SEDIMENTS FROM THE MUNICIPAL ROAD AND SIDEWALKS AT THE END OF EACH WORK DAY.
10. MUD MATS TO BE PROVIDED ON SITE AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES EXIT THE SITE. MUD MATS SHALL BE A MINIMUM OF 3.0m WIDE, 15.0m LONG (LENGTH MAY VARY DEPENDING ON SITE LAYOUT) AND 0.3m DEEP AND SHALL CONSIST OF 20mm CLEAR STONE MATERIAL OR APPROVED EQUIVALENT. CONTRACTOR TO ENSURE ALL VEHICLES LEAVE THE SITE VIA THE MUD MAT AND THAT THE MAT IS MAINTAINED IN A MANNER TO MAXIMIZE ITS EFFECTIVENESS AT ALL TIMES.
11. STANTEC CONSULTING LTD. TO MONITOR THE SITE DEVELOPMENT TO ENSURE ALL EROSION CONTROLS ARE INSTALLED AND MAINTAINED TO CITY REQUIREMENTS. CONTRACTOR TO COMPLY WITH THE ENGINEER'S INSTRUCTIONS TO INSTALL, MODIFY, OR MAINTAIN EROSION CONTROL WORKS.

H. RETAINING WALLS:

1. RETAINING WALL TO BE CONSTRUCTED AS DESIGNED BY OTHERS. APPROPRIATE CONSTRUCTION DETAILS SHALL BE PROVIDED FOR RETAINING WALLS HIGHER THAN 0.80m. DETAILS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER UPON APPROVAL. GUARD RAIL IS REQUIRED WHEN HEIGHT EXCEEDS 0.80m.
2. CONTRACTOR TO CONTACT GEOTECHNICAL ENGINEER 48 HOURS PRIOR TO CONSTRUCTION OF RETAINING WALL TO ALLOW FOR INSPECTION OF SOIL CONDITIONS.
3. ANY CHANGES IN WALL HEIGHT MUST BE APPROVED BY THE ENGINEER.
4. BUILDING PERMIT MUST BE OBTAINED FOR RETAINING WALL

I. DEWATERING NOTES:

1. PUMPED GROUNDWATER WILL BE DIRECTED OFFSITE VIA SWALE AND/OR TEMPORARY PIPE TO POPPY DRIVE EAST, WHERE THE WATER WILL BE DISCHARGED TO EITHER THE STORM OR SANITARY SEWER SYSTEM.
2. DISCHARGE TO THE STORM AND/OR SANITARY SEWER SYSTEM MUST ADHERE TO THE QUALITY REQUIREMENTS AS PER CITY OF GUELPH BY-LAW NUMBER (1996)-15202.

J. MISCELLANEOUS:

1. WHERE COVER OVER SEWERS IS LESS THAN 1.2m IN PAVED AREAS, OR LESS THAN 0.90m IN GRASSED AREAS INSTALL INSULATION AS PER DETAIL. INSULATION TO BE 60mm THICK x 1860mm WIDE UNLESS OTHERWISE NOTED. INSTALL LONGITUDINALLY OVER CENTERLINE OF PIPE WITH OVERLAPPING JOINTS.
2. IT IS THE SITE OWNERS' RESPONSIBILITY TO ENSURE THAT ALL SEDIMENT CONTROLS ARE IMPLEMENTED AND MAINTAINED IN ACCORDANCE WITH THE ABOVE CRITERIA.

UNDERGROUND STORAGE AND INFILTRATION TRENCHES

1 PRIOR TO INSTALLATION

- EFFORTS SHOULD BE MADE TO AVOID COMPACTION BY NOT USING THE FACILITY LOCATION AS:
- LAYDOWN OR STOCKPILE LOCATIONS;
- EQUIPMENT STORAGE;
- TRAFFIC FLOW OR SITE ACCESS.
- MATERIAL TO BE USED IN THE CONSTRUCTION OF THE FACILITY SHOULD NOT BE BROUGHT ON SITE PRIOR TO IT BEING NEEDED. IF THIS MATERIAL IS ON SITE PRIOR TO FINAL PLACEMENT, IT SHALL BE STOCKPILED SEPARATELY FROM ANY OTHER CONSTRUCTION MATERIALS AND ADEQUATELY PROTECTED (AS DIRECTED BY THE LID INSPECTOR).

2 INSTALLATION

- TRENCH FLOOR TO BE SCARIFIED TO A DEPTH OF 0.15M UNLESS THE LID INSPECTOR DIRECTS GREATER DEPTHS OF SCARIFICATION.
- ONCE THE AREA IS SCARIFIED, AT LEAST 2 LOCATIONS IN EACH FACILITY ARE TO BE TESTED FOR IN-SITU INFILTRATION RATE. ADDITIONAL SCARIFICATION MAY BE REQUIRED FOLLOWING THESE TESTS, AFTER WHICH THE TESTS SHOULD BE COMPLETED AGAIN IN OTHER LOCATIONS.
- SHOULD THE TRENCH WORK BE COMPLETED IN ADVANCE ON THE INSTALLATION OF THE GEOTEXTILE AND STONE, THE TRENCH SHOULD BE PROTECTED IN THE EVENT OF RAIN.
- THE OVERLAP ON THE GEOTEXTILE SHALL BE A MINIMUM OF 0.3M. THE GEOTEXTILE SHALL BE WRAPPED OVERTOP OF THE STONE STORAGE AT THE MINIMUM OVERLAP.
- ALL STONE INSTALLED IS TO BE TRIPLE WASHED TO PREVENT DUST FROM CLOGGING THE FABRIC AND SOIL PORES. STONE IS TO BE INSTALLED IN LIFTS OF 0.3M MAXIMUM. THESE LIFTS SHOULD BE LIGHTLY WORKED TO SETTLE THE STONE BUT MECHANICAL COMPACTION IS NOT TO BE USED.
- ALL UNDERDRAIN PIPES ARE TO BE WRAPPED IN A SEDIMENT SOCK.
- IF THE FACILITY IS COMPLETED PRIOR TO SITE STABILIZATION, RUNOFF SHOULD BE DIRECTED AWAY FROM THE FACILITY TO PREVENT HEAVY SEDIMENTATION. EROSION CONTROLS SHOULD BE INSTALLED AS PER THE DIRECTION OF THE LID INSPECTOR.

3 MAINTENANCE

- REMOVE ANY DEBRIS, GARBAGE, LEAVES, STICKS, OR OTHER ITEMS FROM THE FACILITY INLETS. THIS SHOULD BE DONE BIANNUALLY WITH SPECIAL ATTENTION IN FALL TO REMOVE FALLEN LEAVES;
- REMOVE ACCUMULATED SEDIMENT FROM THE BOTTOM OF THE FACILITY AS NEEDED BY FLUSHING;
- MONITOR PERFORMANCE; OBSERVE WATER DEPTHS IN THE FACILITY DURING RAIN EVENTS BIANNUALLY.

OIL GRIT SEPARATOR

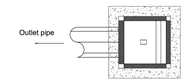
1 INSTALLATION

- ONCE INSTALLED, THE INLET TO THE OGS SHOULD BE SURROUNDED BY A FILTER SOCK RING TO REMOVE THE HEAVIEST SEDIMENT LOADS. THE OGS SHOULD BE INSPECTED BIWEEKLY DURING CONSTRUCTION AND CLEANED BY VACUUM TRUCK WHEN THE SUMP IS 50% FULL OF SILT.
- WHEN CONSTRUCTION IS COMPLETE, THE OGS SHOULD BE CLEANED OF ANY SEDIMENT.

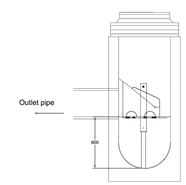
2 MAINTENANCE

- INSPECTION SHOULD BE DONE BIANNUALLY;
- REMOVE ACCUMULATED SEDIMENT FROM THE BOTTOM OF THE FACILITY WHEN 50% FULL BY VACUUM TRUCK;
- REMOVAL OF ANY OILS OR FLOATABLES AS NEEDED, WITH SPECIAL ATTENTION PAID IN THE EVENT OF A DELETERIOUS SPILL.

Notes
1. CB Shield can be installed at any time. In a non frozen condition.
2. The frame and cover should be well aligned with the catchbasin for proper installation
3. The catchbasin sump must be clean before installation
4. The grate should be at the same level as the standing water in the sump.

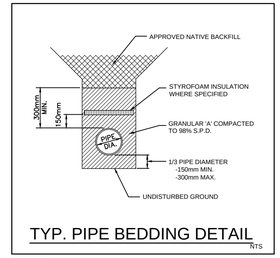


Top view

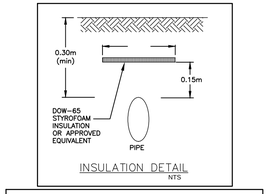


Profile view

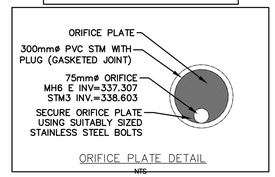
CB Shield (600mm Sump)



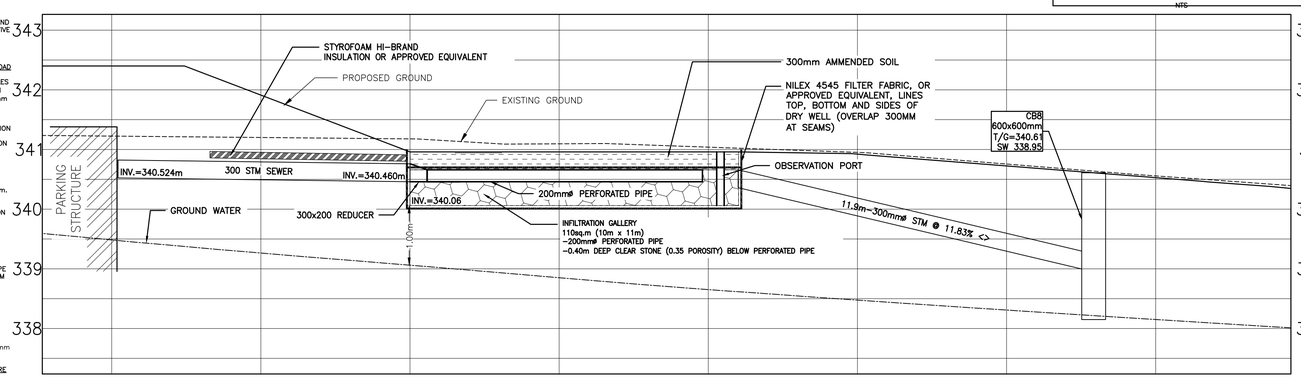
TYP. PIPE BEDDING DETAIL
NTS



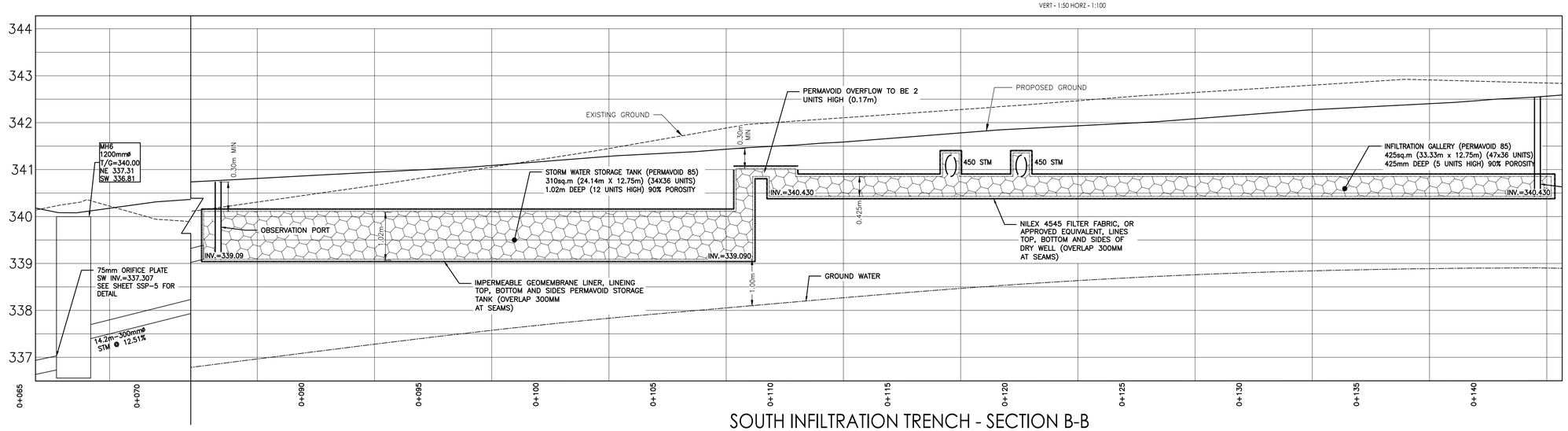
INSULATION DETAIL
NTS



ORIFICE PLATE DETAIL
NTS



EAST INFILTRATION TRENCH - SECTION A-A
VERT - 1:50 HORZ - 1:100



SOUTH INFILTRATION TRENCH - SECTION B-B
VERT - 1:50 HORZ - 1:100

V:\01414\active\161413684\design\drawing\civil\sheet_files\161413684_C-DT.dwg
2021-8-24 1:38 PM by: CHEN, Jason

ORIGINAL SHEET - ANSI D

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Notes
1. CITY OF GUELPH BENCHMARK 225 ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER

Legend

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
1. ISSUED FOR DRAFT PLAN APPROVAL	JAC	CJH	21.08.24

File Name: 161413684_c-dt	JAC	CJH	JAC	21.07.23
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal
LICENSED PROFESSIONAL ENGINEER
C. J. HENDRIKSEN
100125181
Aug 24/21
PROVINCE OF ONTARIO

Client/Project
TRICAR DEVELOPMENTS INC.

1242, 1250, 1260 GORDON STREET
& 9 VALLEY ROAD
GUELPH, ON

Title
NOTES & DETAILS

Project No. 161413684
Scale 1:100 (0 1 3 5m)
Drawing No. SSP-5
Sheet 7 of 7
Revision 0

FIGURE 1 – EXISTING STORM DRAINAGE CONDITIONS

Stantec

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Liability Note:

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Notes

1. CITY OF GUELPH BENCHMARK 225
   ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER
4. SITE PLAN PREPARED BY STANTEC, DATED JANUARY, 2020.

101 — AREA ID
A=1.73 — CONTRIBUTING AREA (ha)

MAJOR OVERLAND FLOOD ROUTE

DRAINAGE BOUNDARY

Revision	By	Appd.	YY.MM.DD
1. SITE PLAN REVISIONS	JAC	CJH	21.05.14

Issued	By	Appd.	YY.MM.DD
2. FOR SITE PLAN APPROVAL	JAC	CJH	21.05.14
1. FOR SITE PLAN APPROVAL	JAC	CJH	20.03.24

File Name: 161413684_c-sd_ex	Dwn.	Chkd.	Dsgn.	YY.MM.DD
	JAC	CJH	JAC	19.05.31

Permit-Seal

Client/Project
TRICAR DEVELOPMENTS INC.

1250 GORDON STREET

GUELPH, ON

Title
EXISTING STORM DRAINAGE CONDITIONS

Project No. 161413684

Scale 1:400 (0 4 12 20m)

Drawing No. 1

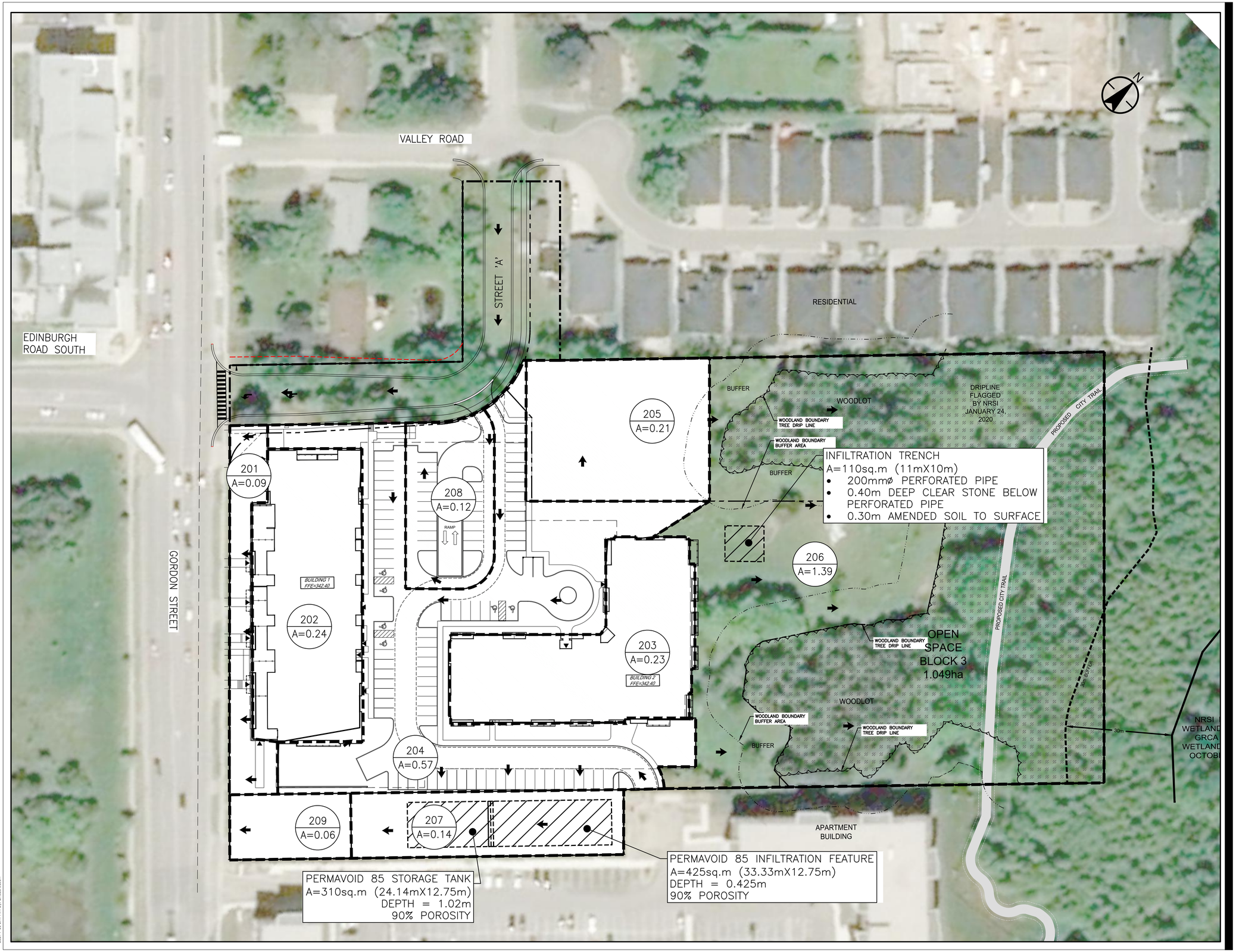
Sheet 1 of 2

Revision 1

V:\01614\active\161413684\design\drawing\report figures\mxm\161413684_C-SD_ex.dwg
2021-04-13 07 PM by: Childs, Jason

ORIGINAL SHEET - ANSI D

FIGURE 2 - PROPOSED STORM DRAINAGE CONDITIONS



Stantec

Stantec
600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Liability Note:

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

Notes

1. CITY OF GUELPH BENCHMARK 225 ELEVATION 338.665 LOCATION: 1221 GORDON STREET
2. EXISTING SURVEY COMPLETED BY BSR&D (NOVEMBER, 4 2014)
3. THE CONTRACTOR IS TO VERIFY ALL EXISTING ELEVATIONS AND EXISTING CONDITIONS AND TO REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER
4. SITE PLAN PREPARED BY STANTEC, DATED JANUARY, 2020.

Legend

201 — AREA ID
A=0.12 — CONTRIBUTING AREA (ha)
MAJOR OVERLAND FLOOD ROUTE
DRAINAGE BOUNDARY

Revision	By	Appd.	YY.MM.DD
2. SITE PLAN REVISIONS	JAC	CJH	21.07.30
1. SITE PLAN REVISIONS	JAC	CJH	21.05.14

File Name: 161413684_c-sd_prop	DRR	CJH	DRR	19.05.31
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
TRICAR DEVELOPMENTS INC.

1250 GORDON STREET

GUELPH, ON

Title
PROPOSED STORM DRAINAGE CONDITIONS

Project No. 161413684

Scale 1:400 (0, 4, 12, 20m)

Drawing No. 2

Sheet 2 of 2

Revision 2

V:\01414\active\161413684\design\drawing\report figures\swm\161413684_C-SD_prop.dwg
2021-7-30 8:19 AM by: CHiltz, Jason

ORIGINAL SHEET - ANSI D

HYDROLOGIC MODELLING PARAMETERS

1250 Gordon Street [161413684]
MIDUSS Parameters

Table 1: CN Values									Source
Land Use		Hydrologic Soil Type							
		A	AB	B	BC	C	CD	D	
Meadow	"Good"	30	44	58	65	71	75	78	USDA
Woodlot	"Fair"	36	48	60	67	73	76	79	USDA
Lawns	"Good"	39	50	61	68	74	77	80	USDA
Pasture/Range		49	55	60	70	79	82	84	USDA
Crop		64	70	74	79	81	84	85	USDA
Gravel		76	81	85	87	89	90	91	USDA
Bare Soil (Fallow)		77	82	86	89	91	93	94	USDA
Impervious		98	98	98	98	98	98	98	USDA

USDA - United States Department of Agriculture (2004), National Engineering Handbook, Part 630 Hydrology,

Table 2: Pre-Development Parameters

Area Description	Catchment Number	Area (ha)	Curve Number	Runoff Coefficient (C)	Flow Path Length (m)	Slope (%)	Imperviousness (%)	Initial Abstraction - Pervious (mm)
To Gordon Street	101	1.330	68	0.27	140.00	3.00	10.0	5.0
To Torrence Watershed	102	1.720	68	0.21	150.00	5.00	1.0	5.0
TOTAL AREA		**3.05**						

Table 3: Post-Development Parameters

Area Description	Catchment Number	Area (ha)	Curve Number	Runoff Coefficient (C)	Flow Path Length (m)	Slope (%)	Imperviousness (%)	Initial Abstraction - Pervious (mm)
Uncontrolled to Gordon	201	0.090	68	0.69	10.00	2.00	70.0	5.0
Building West	202	0.240	68	0.89	80.00	0.50	99.0	5.0
Building East	203	0.230	68	0.89	70.00	0.50	99.0	5.0
Main Parking	204	0.570	68	0.83	100.00	2.00	90.0	5.0
Park Area	205	0.210	68	0.21	70.00	1.00	1.0	5.0
East Woodlot Area	206	1.390	68	0.21	130.00	4.00	1.0	5.0
South Landscaped Area	207	0.140	68	0.21	60.00	2.00	2.0	5.0
North Parking Area	208	0.120	68	0.83	50.00	2.00	90.0	5.0
West Amenity Area	209	0.060	68	0.21	40.00	2.00	2.0	5.0
TOTAL AREA		**3.05**						

Notes:
Slope measure from topographic contours and pre-development drainage plan
Imperviousness estimated from development plan (existing buildings imperviousness estimated to be 99%)
Assume graded areas have a slope of 1.5 - 2.0%
Curve Number is for Pervious Area, as per MIDUSS modelling requirements
Manning n for parking lot surface taken as 0.010; 0.05 for brush areas; and 0.03 for lawn areas; from Manning n for Channels
R.C assumed to be 0.2 for undeveloped areas, where Impervious is 2.0 %. This follows Guelph Development Engineering Manual Table 5.5.1.3.
R.C assumed to be 0.9 for developed areas, where Impervious is > 98 %. This follows Guelph Development Engineering Manual Table 5.5.1.3.
The RC value assinged to each catchment is weighted between impervious and pervious percent coverage

1250 Gordon Street [161413684]
SWM Storage Tank Stage-Storage-Discharge

West Building - Catchment 202 **Building Area** **0.240** **ha**
2,400 **m^2**

	Rating Curve for MIDUSS						Volume Estimation				Outlet Controls				
	Elevation	Discharge	Active Storage	Active Storage	Drawdown (hrs)		Elevation	Total Pond Area	Total Pond Act Vol	Total Act Vol	Elevation	Orifice 1	Total Flow	Parameters	
	(m)	(m³/s)	(m³)	(ha*m)	Increment	Total	(m)	(m²)	(m³)	(m³)	(m)	(m³/s)	(m³/s)		
							0.00	2100	0.00	0	0.00			Orifce 1 in Junction Box	
							0.02	2100	42.00	42	0.02	0.000	0.000	Orifice Invert Elev. (m) 0.02	Orifice Coeff. 0.60
							0.04	2100	42.00	84	0.04	0.000	0.000	Orifice Mid-point Elev. (m) 0.06	Perimeter (m) 0.24
Orifice Elev.	0.06	0.001	0	0.0000			0.06	2100	42.00	126	0.06	0.001	0.001		
	0.08	0.002	42	0.0042	9.9	0.0	0.08	2100	42.00	168	0.08	0.002	0.002	Orifice Diam.(mm) 75	Area (m^2) 0.004
	0.10	0.002	84	0.0084	5.6	0.0	0.10	2100	42.00	210	0.10	0.002	0.002		
	0.12	0.003	126	0.0126	4.4	0.0	0.12	2100	42.00	252	0.12	0.003	0.003	Weir Coeff. (semi-circular) 1.62	Orientation Vertical
	0.14	0.003	168	0.0168	3.7	0.0	0.14	2100	42.00	294	0.14	0.003	0.003		
Top of Tank Elev.	0.16	0.004	210	0.0210	3.3	0.0	0.16	2100	42.00	336	0.16	0.004	0.004		

East Building - Catchment 203 **Building Area** **0.230** **ha**
2,300 **m^2**

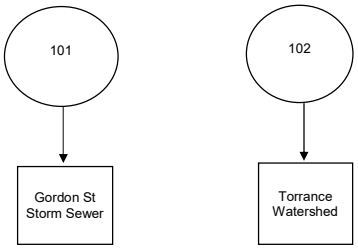
	Rating Curve for MIDUSS						Volume Estimation				Outlet Controls				
	Elevation	Discharge	Active Storage	Active Storage	Drawdown (hrs)		Elevation	Total Pond Area	Total Pond Act Vol	Total Act Vol	Elevation	Orifice 1	Total Flow	Parameters	
	(m)	(m³/s)	(m³)	(ha*m)	Increment	Total	(m)	(m²)	(m³)	(m³)	(m)	(m³/s)	(m³/s)		
							0.00	2300	0.00	0	0.00			Orifce 1 in Junction Box	
							0.02	2300	46.00	46	0.02	0.000	0.000	Orifice Invert Elev. (m) 0.02	Orifice Coeff. 0.60
							0.04	2300	46.00	92	0.04	0.000	0.000	Orifice Mid-point Elev. (m) 0.06	Perimeter (m) 0.24
Orifice Elev.	0.06	0.000	0	0.0000			0.06	2300	46.00	138	0.06	0.000	0.000		
	0.08	0.000	46	0.0046	96.9	0.0	0.08	2300	46.00	184	0.08	0.000	0.000	Orifice Diam.(mm) 75	Area (m^2) 0.004
	0.10	0.001	92	0.0092	22.9	0.0	0.10	2300	46.00	230	0.10	0.001	0.001		
	0.12	0.002	138	0.0138	9.7	0.0	0.12	2300	46.00	276	0.12	0.002	0.002	Weir Coeff. (semi-circular) 1.62	Orientation Vertical
	0.14	0.003	184	0.0184	5.4	0.0	0.14	2300	46.00	322	0.14	0.003	0.003		
Top of Tank Elev.	0.16	0.004	230	0.0230	3.4	0.0	0.16	2300	46.00	368	0.16	0.004	0.004		

368

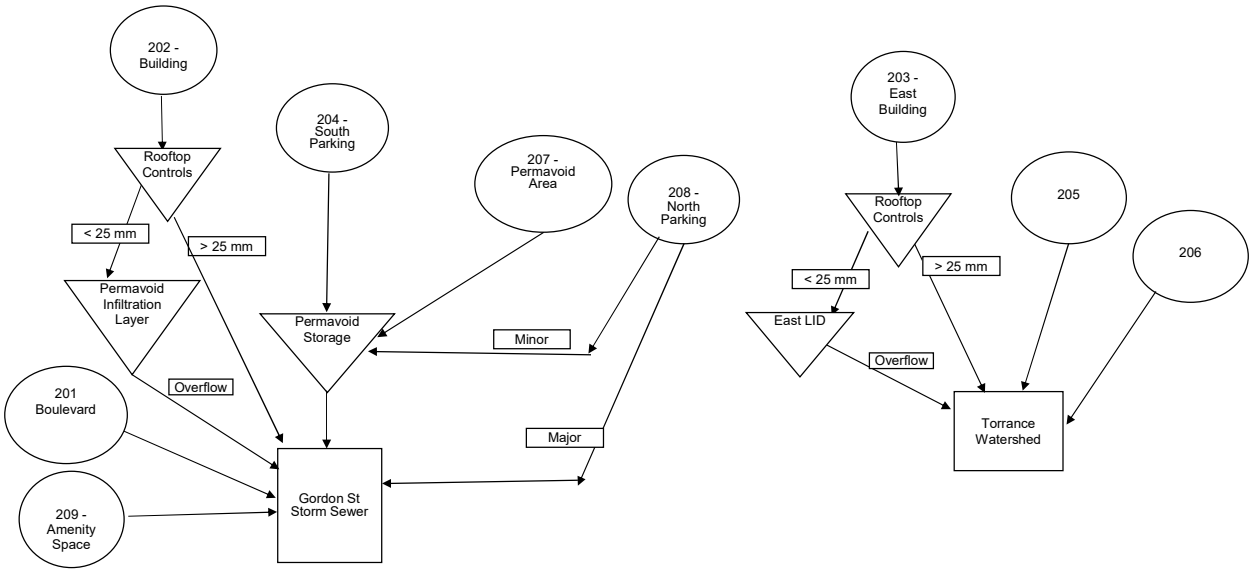
Storage

	Rating Curve for MIDUSS						Volume Estimation				Outlet Controls				
	Elevation	Discharge	Active Storage	Active Storage	Drawdown (hrs)		Elevation	Total Pond Area	Total Pond Act Vol	Total Act Vol	Elevation	Orifice 1	Total Flow	Parameters	
	(m)	(m³/s)	(m³)	(ha*m)	Increment	Total	(m)	(m²)	(m³)	(m³)	(m)	(m³/s)	(m³/s)		
														Orifce 1 in Junction Box	
														Orifice Invert Elev. (m) 339.09	Orifice Coeff. 0.60
														Orifice Mid-point Elev. (m) 339.13	Perimeter (m) 0.24
Orifice Elev.	339.09	0.003	0	0.0000			339.09	308	0.00	0	339.09	0.003	0.003		
	339.29	0.005	62	0.0062	4.6	4.6	339.29	308	61.56	62	339.29	0.005	0.005	Orifice Diam.(mm) 75	Area (m^2) 0.004
	339.49	0.007	123	0.0123	2.9	7.5	339.49	308	61.56	123	339.49	0.007	0.007		
	339.69	0.009	185	0.0185	2.2	9.7	339.69	308	61.56	185	339.69	0.009	0.009	Weir Coeff. (semi-circular) 1.62	Orientation Vertical
	340.11	0.012	314	0.0314	3.5	13.2	340.11	308	129.27	314	340.11	0.012	0.012		

1250 Gordon Street [161413684]
Pre-Development Drainage Schematic



Post-Development Drainage Schematic



MIDUSS MODELING FILES

```
      Output File (4.7) GORPR2.out   opened 2021-08-04  15:27
      Units used are defined by G =    9.810
         300   600    15.000        are MAXDT MAXHYD & DTMIN values
      Licensee: Paragon Engineering Limited
35    COMMENT
     5     line(s) of comment
      ******************************
      1250 Gordon Street - 1614-13684
      Stormwater Management Modelling
      July 2021 - C. Phelps
      ******************************
35    COMMENT
     5     line(s) of comment
      *********************


      2-yr STORM

14    START
     1     1=Zero; 2=Define
 2    STORM
          1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
    743.000     Coefficient  a
      6.000     Constant  b    (min)
       .799     Exponent  c
       .400     Fraction to peak  r
    180.000     Duration ó 4500 min
               34.242 mm     Total depth
 3    IMPERVIOUS
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .015     Manning "n"
     98.000     SCS Curve No or C
       .100     Ia/S Coefficient
      1.500     Initial Abstraction
35    COMMENT
     3     line(s) of comment
      *********************
      To Gordon Street
      *********************
 4    CATCHMENT
    101.000     ID No.ó 99999
      1.330     Area in hectares
    140.000     Length (PERV) metres
      3.000     Gradient (%)
     10.000     Per cent Impervious
      5.000     Length (IMPERV)
       .000     %Imp. with Zero Dpth
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
```

```
      .030     Manning "n"
    67.000     SCS Curve No or C
      .100     Ia/S Coefficient
     5.000     Initial Abstraction
         1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
            .011       .000       .000       .000 c.m/s
            .009       .182       .026     C perv/imperv/total
15   ADD RUNOFF
            .011       .011       .000       .000 c.m/s
35   COMMENT
    3     line(s) of comment
     *********************
     To Torrance Watershed
     *********************
 4   CATCHMENT
   102.000     ID No.ó 99999
     1.720     Area in hectares
   150.000     Length (PERV) metres
     5.000     Gradient (%)
     1.000     Per cent Impervious
     1.000     Length (IMPERV)
      .000     %Imp. with Zero Dpth
         1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .030     Manning "n"
    68.000     SCS Curve No or C
      .100     Ia/S Coefficient
     5.000     Initial Abstraction
         1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
            .002       .011       .000       .000 c.m/s
            .010       .164       .011     C perv/imperv/total
15   ADD RUNOFF
            .002       .013       .000       .000 c.m/s
20   MANUAL
```

```
      Output File (4.7) GORPR5.out   opened 2021-07-29  10:56
      Units used are defined by G =    9.810
         300   600    15.000        are MAXDT MAXHYD & DTMIN values
      Licensee: Paragon Engineering Limited
35    COMMENT
     5     line(s) of comment
      ******************************
      1250 Gordon Street - 1614-13684
      Stormwater Management Modelling
      July 2021 - C. Phelps
      ******************************
35    COMMENT
     5     line(s) of comment
      *********************


      5-yr STORM

14    START
     1     1=Zero; 2=Define
 2    STORM
          1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
   1593.000     Coefficient  a
     11.000     Constant  b    (min)
       .879     Exponent  c
       .400     Fraction to peak  r
    180.000     Duration ó 4500 min
               47.219 mm     Total depth
 3    IMPERVIOUS
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .015     Manning "n"
     98.000     SCS Curve No or C
       .100     Ia/S Coefficient
      1.500     Initial Abstraction
35    COMMENT
     3     line(s) of comment
      *********************
      To Gordon Street
      *********************
 4    CATCHMENT
    101.000     ID No.ó 99999
      1.330     Area in hectares
    140.000     Length (PERV) metres
      3.000     Gradient (%)
     10.000     Per cent Impervious
      5.000     Length (IMPERV)
       .000     %Imp. with Zero Dpth
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
```

```
      .030     Manning "n"
    67.000     SCS Curve No or C
      .100     Ia/S Coefficient
     5.000     Initial Abstraction
         1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
            .020       .000       .000       .000 c.m/s
            .018       .206       .037     C perv/imperv/total
15   ADD RUNOFF
            .020       .020       .000       .000 c.m/s
35   COMMENT
    3     line(s) of comment
     **********************
     To Torrance Watershed
     **********************
 4   CATCHMENT
   102.000     ID No.ó 99999
     1.730     Area in hectares
   150.000     Length (PERV) metres
     5.000     Gradient (%)
     1.000     Per cent Impervious
     1.000     Length (IMPERV)
      .000     %Imp. with Zero Dpth
         1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .030     Manning "n"
    68.000     SCS Curve No or C
      .100     Ia/S Coefficient
     5.000     Initial Abstraction
         1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
            .006       .020       .000       .000 c.m/s
            .019       .190       .020     C perv/imperv/total
15   ADD RUNOFF
            .006       .023       .000       .000 c.m/s
20   MANUAL
```

```
      Output File (4.7) GORPR1.out   opened 2021-08-04  15:26
      Units used are defined by G =    9.810
         300   600    15.000        are MAXDT MAXHYD & DTMIN values
      Licensee: Paragon Engineering Limited
35    COMMENT
     5     line(s) of comment
      ******************************
      1250 Gordon Street - 1614-13684
      Stormwater Management Modelling
      July 2021 - C. Phelps
      ******************************
35    COMMENT
     5     line(s) of comment
      *********************


      100-yr STORM

14    START
     1     1=Zero; 2=Define
 2    STORM
          1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
   4688.000     Coefficient  a
     17.000     Constant  b    (min)
       .963     Exponent  c
       .400     Fraction to peak  r
    180.000     Duration ó 4500 min
               86.766 mm     Total depth
 3    IMPERVIOUS
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .015     Manning "n"
     98.000     SCS Curve No or C
       .100     Ia/S Coefficient
      1.500     Initial Abstraction
35    COMMENT
     3     line(s) of comment
      *********************
      To Gordon Street
      *********************
 4    CATCHMENT
    101.000     ID No.ó 99999
      1.330     Area in hectares
    140.000     Length (PERV) metres
      3.000     Gradient (%)
     10.000     Per cent Impervious
      5.000     Length (IMPERV)
       .000     %Imp. with Zero Dpth
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
```

```
      .030     Manning "n"
    67.000     SCS Curve No or C
      .100     Ia/S Coefficient
     5.000     Initial Abstraction
         1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
            .051       .000       .000       .000 c.m/s
            .044       .237       .063     C perv/imperv/total
15   ADD RUNOFF
            .051       .051       .000       .000 c.m/s
35   COMMENT
    3     line(s) of comment
     *********************
     To Torrance Watershed
     *********************
 4   CATCHMENT
   102.000     ID No.ó 99999
     1.720     Area in hectares
   150.000     Length (PERV) metres
     5.000     Gradient (%)
     1.000     Per cent Impervious
     1.000     Length (IMPERV)
      .000     %Imp. with Zero Dpth
         1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
      .030     Manning "n"
    68.000     SCS Curve No or C
      .100     Ia/S Coefficient
     5.000     Initial Abstraction
         1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
            .042       .051       .000       .000 c.m/s
            .046       .229       .048     C perv/imperv/total
15   ADD RUNOFF
            .042       .077       .000       .000 c.m/s
20   MANUAL
```

```
      Output File (4.7) GORPO2.out   opened 2021-08-05   9:30
      Units used are defined by G =    9.810
         300   600    15.000        are MAXDT MAXHYD & DTMIN values
      Licensee: Paragon Engineering Limited
35    COMMENT
     5     line(s) of comment
      ******************************
      1250 Gordon Street - 1614-13884
      Stormwater Management Modelling
      June 2021 - C. Phelps
      ******************************
14    START
     1     1=Zero; 2=Define
35    COMMENT
     5     line(s) of comment
      **********************


      2-yr STORM - PROPOSED CONDITIONS

 2    STORM
          1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
    743.000     Coefficient  a
      6.000     Constant  b    (min)
       .799     Exponent  c
       .400     Fraction to peak  r
    180.000     Duration ó 4500 min
               34.242 mm     Total depth
 3    IMPERVIOUS
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .010     Manning "n"
     98.000     SCS Curve No or C
       .100     Ia/S Coefficient
      1.500     Initial Abstraction
14    START
     1     1=Zero; 2=Define
35    COMMENT
     3     line(s) of comment
      **********************************
      Uncontrolled Flow to Gordon Street - from West
      **********************************
 4    CATCHMENT
    201.000     ID No.ó 99999
       .090     Area in hectares
      1.000     Length (PERV) metres
      2.000     Gradient (%)
     70.000     Per cent Impervious
     10.000     Length (IMPERV)
```

```
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .005       .000       .000       .000 c.m/s
              .009       .185       .132     C perv/imperv/total
15     ADD RUNOFF
              .005       .005       .000       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************************
       Uncontrolled Flow to Gordon Street- from South
       **********************************
 4     CATCHMENT
     209.000     ID No.ó 99999
        .060     Area in hectares
       1.000     Length (PERV) metres
       2.000     Gradient (%)
       2.000     Per cent Impervious
      40.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .000       .005       .000       .000 c.m/s
              .009       .187       .013     C perv/imperv/total
15     ADD RUNOFF
              .000       .005       .000       .000 c.m/s
 9     ROUTE
        .000     Conduit Length
        .000     No Conduit defined
        .000     Zero lag
        .000     Beta weighting factor
        .000     Routing timestep
           0     No. of sub-reaches
              .000       .005       .005       .000 c.m/s
17     COMBINE
    500     Junction Node No.
              .000       .005       .005       .005 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
```

```
      3     line(s) of comment
       ***************************
       West Building - Roof Area
       ***************************
 4     CATCHMENT
     202.000     ID No.ó 99999
        .240     Area in hectares
       2.000     Length (PERV) metres
        .500     Gradient (%)
      99.000     Per cent Impervious
      80.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .015       .000       .005       .005 c.m/s
              .009       .187       .185     C perv/imperv/total
15     ADD RUNOFF
              .015       .015       .005       .005 c.m/s
35     COMMENT
      3     line(s) of comment
       *********************************
       West Building - Rooftop Control
       *********************************
10     POND
      4 Depth - Discharge - Volume sets
          .000        .000          .0
          .080      .00200        42.0
          .120      .00300       126.0
          .160      .00400       210.0
       Peak Outflow    =      .002 c.m/s
       Maximum Depth   =      .063 metres
       Maximum Storage =       33. c.m
              .015       .015       .002       .005 c.m/s
17     COMBINE
    500     Junction Node No.
              .015       .015       .002       .005 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       ***************************
       East Building - Roof Area
       ***************************
 4     CATCHMENT
```

```
     203.000     ID No.ó 99999
        .230     Area in hectares
       2.000     Length (PERV) metres
        .500     Gradient (%)
      99.000     Per cent Impervious
      70.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .014       .000       .002       .005 c.m/s
              .009       .188       .186     C perv/imperv/total
15     ADD RUNOFF
              .014       .014       .002       .005 c.m/s
35     COMMENT
      3     line(s) of comment
       ********************************
       East Building - Rooftop Control
       ********************************
10     POND
      4 Depth - Discharge - Volume sets
          .000        .000          .0
          .100      .00100        92.0
          .120      .00200       138.0
          .160      .00400       230.0
       Peak Outflow    =      .000 c.m/s
       Maximum Depth   =      .043 metres
       Maximum Storage =       40. c.m
              .014       .014       .000       .005 c.m/s
35     COMMENT
      3     line(s) of comment
       ********************************************
       East Roof-top Flow to Torrence Watershed
       ********************************************
17     COMBINE
    600     Junction Node No.
              .014       .014       .000       .000 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       **********************
       North Parking Area
       **********************
 4     CATCHMENT
```

```
     208.000     ID No.ó 99999
        .120     Area in hectares
       2.000     Length (PERV) metres
       2.000     Gradient (%)
      90.000     Per cent Impervious
      90.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .007       .000       .000       .000 c.m/s
              .009       .189       .171     C perv/imperv/total
15     ADD RUNOFF
              .007       .007       .000       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************
       MOVE DOWNSTREAM
       **********************
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       **********************
       South Parking Area
       **********************
 4     CATCHMENT
     204.000     ID No.ó 99999
        .570     Area in hectares
       2.000     Length (PERV) metres
       2.000     Gradient (%)
      90.000     Per cent Impervious
     100.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .033       .000       .000       .000 c.m/s
              .009       .190       .172     C perv/imperv/total
15     ADD RUNOFF
              .033       .033       .000       .000 c.m/s
35     COMMENT
```

```
      3     line(s) of comment
       **********************
       South Landscaped Area
       **********************
 4     CATCHMENT
     207.000     ID No.ó 99999
        .140     Area in hectares
      60.000     Length (PERV) metres
       2.000     Gradient (%)
       2.000     Per cent Impervious
       2.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
          1      Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
          1      Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .000       .033       .000       .000 c.m/s
              .010       .167       .013     C perv/imperv/total
15     ADD RUNOFF
              .000       .033       .000       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       **************************
       Storage - Permavoid
       **************************
10     POND
      4 Depth - Discharge - Volume sets
       339.090        .000          .0
       339.290      .00500        62.0
       339.690      .00900       185.0
       340.110       .0120       314.0
       Peak Outflow    =      .005 c.m/s
       Maximum Depth   =   339.303 metres
       Maximum Storage =       66. c.m
              .000       .033       .005       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       ************************************
       Total Flow to Gordon St. Storm Sewer
       ************************************
17     COMBINE
    500     Junction Node No.
              .000       .033       .005       .008 c.m/s
18     CONFLUENCE
    500     Junction Node No.
              .000       .008       .005       .000 c.m/s
```

```
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       *********************************************
       Undeveloped Area - Flow to Torrance Watershed
       *********************************************
 4     CATCHMENT
     206.000     ID No.ó 99999
       1.390     Area in hectares
     130.000     Length (PERV) metres
       4.000     Gradient (%)
       1.000     Per cent Impervious
       1.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .001       .000       .005       .000 c.m/s
              .010       .163       .011     C perv/imperv/total
15     ADD RUNOFF
              .001       .001       .005       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       *********************************************
       Park Area - to Torrance Watershed
       *********************************************
 4     CATCHMENT
     205.000     ID No.ó 99999
        .210     Area in hectares
      70.000     Length (PERV) metres
       1.000     Gradient (%)
       1.000     Per cent Impervious
       1.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .000       .001       .005       .000 c.m/s
              .010       .165       .011     C perv/imperv/total
15     ADD RUNOFF
              .000       .002       .005       .000 c.m/s
```

```
35     COMMENT
      3     line(s) of comment
       *********************************************
       Total to Torrence
       *********************************************
 9     ROUTE
        .000     Conduit Length
        .000     No Conduit defined
        .000     Zero lag
        .000     Beta weighting factor
        .000     Routing timestep
           0     No. of sub-reaches
              .000       .002       .002       .000 c.m/s
17     COMBINE
    600     Junction Node No.
              .000       .002       .002       .002 c.m/s
18     CONFLUENCE
    600     Junction Node No.
              .000       .002       .002       .000 c.m/s
14     START
      1     1=Zero; 2=Define
20     MANUAL
```

```
      Output File (4.7) GORPO5.out   opened 2021-08-05   9:31
      Units used are defined by G =    9.810
         300   600    15.000        are MAXDT MAXHYD & DTMIN values
      Licensee: Paragon Engineering Limited
35    COMMENT
     5     line(s) of comment
      ******************************
      1250 Gordon Street - 1614-13884
      Stormwater Management Modelling
      June 2021 - C. Phelps
      ******************************
14    START
     1     1=Zero; 2=Define
35    COMMENT
     5     line(s) of comment
      **********************


      5-yr STORM - PROPOSED CONDITIONS

 2    STORM
          1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
   1593.000     Coefficient  a
     11.000     Constant  b    (min)
       .879     Exponent  c
       .400     Fraction to peak  r
    180.000     Duration ó 4500 min
               47.219 mm     Total depth
 3    IMPERVIOUS
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .010     Manning "n"
     98.000     SCS Curve No or C
       .100     Ia/S Coefficient
      1.500     Initial Abstraction
14    START
     1     1=Zero; 2=Define
35    COMMENT
     3     line(s) of comment
      **********************************
      Uncontrolled Flow to Gordon Street - from West
      **********************************
 4    CATCHMENT
    201.000     ID No.ó 99999
       .090     Area in hectares
      1.000     Length (PERV) metres
      2.000     Gradient (%)
     70.000     Per cent Impervious
     10.000     Length (IMPERV)
```

```
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .009       .000       .000       .000 c.m/s
              .018       .212       .154     C perv/imperv/total
15     ADD RUNOFF
              .009       .009       .000       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************************
       Uncontrolled Flow to Gordon Street- from South
       **********************************
 4     CATCHMENT
     209.000     ID No.ó 99999
        .060     Area in hectares
       1.000     Length (PERV) metres
       2.000     Gradient (%)
       2.000     Per cent Impervious
      40.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .001       .009       .000       .000 c.m/s
              .018       .218       .022     C perv/imperv/total
15     ADD RUNOFF
              .001       .010       .000       .000 c.m/s
 9     ROUTE
        .000     Conduit Length
        .000     No Conduit defined
        .000     Zero lag
        .000     Beta weighting factor
        .000     Routing timestep
           0     No. of sub-reaches
              .001       .010       .010       .000 c.m/s
17     COMBINE
    500     Junction Node No.
              .001       .010       .010       .010 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
```

```
      3     line(s) of comment
       ***************************
       West Building - Roof Area
       ***************************
 4     CATCHMENT
     202.000     ID No.ó 99999
        .240     Area in hectares
       2.000     Length (PERV) metres
        .500     Gradient (%)
      99.000     Per cent Impervious
      80.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .027       .000       .010       .010 c.m/s
              .018       .221       .219     C perv/imperv/total
15     ADD RUNOFF
              .027       .027       .010       .010 c.m/s
35     COMMENT
      3     line(s) of comment
       *********************************
       West Building - Rooftop Control
       *********************************
10     POND
      4 Depth - Discharge - Volume sets
          .000        .000          .0
          .080      .00200        42.0
          .120      .00300       126.0
          .160      .00400       210.0
       Peak Outflow    =      .002 c.m/s
       Maximum Depth   =      .087 metres
       Maximum Storage =       57. c.m
              .027       .027       .002       .010 c.m/s
17     COMBINE
    500     Junction Node No.
              .027       .027       .002       .010 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       ***************************
       East Building - Roof Area
       ***************************
 4     CATCHMENT
```

```
     203.000     ID No.ó 99999
        .230     Area in hectares
       2.000     Length (PERV) metres
        .500     Gradient (%)
      99.000     Per cent Impervious
      70.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .025       .000       .002       .010 c.m/s
              .018       .221       .219     C perv/imperv/total
15     ADD RUNOFF
              .025       .025       .002       .010 c.m/s
35     COMMENT
      3     line(s) of comment
       ********************************
       East Building - Rooftop Control
       ********************************
10     POND
      4 Depth - Discharge - Volume sets
          .000        .000          .0
          .100      .00100        92.0
          .120      .00200       138.0
          .160      .00400       230.0
       Peak Outflow    =      .001 c.m/s
       Maximum Depth   =      .071 metres
       Maximum Storage =       65. c.m
              .025       .025       .001       .010 c.m/s
35     COMMENT
      3     line(s) of comment
       ***********************************************
       East Roof-top Flow to Torrence Watershed
       ***********************************************
17     COMBINE
    600     Junction Node No.
              .025       .025       .001       .001 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       **********************
       North Parking Area
       **********************
 4     CATCHMENT
```

```
     208.000     ID No.ó 99999
        .120     Area in hectares
       2.000     Length (PERV) metres
       2.000     Gradient (%)
      90.000     Per cent Impervious
      90.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .012       .000       .001       .001 c.m/s
              .018       .216       .196     C perv/imperv/total
15     ADD RUNOFF
              .012       .012       .001       .001 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************
       MOVE DOWNSTREAM
       **********************
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       **********************
       South Parking Area
       **********************
 4     CATCHMENT
     204.000     ID No.ó 99999
        .570     Area in hectares
       2.000     Length (PERV) metres
       2.000     Gradient (%)
      90.000     Per cent Impervious
     100.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .059       .000       .001       .001 c.m/s
              .018       .217       .198     C perv/imperv/total
15     ADD RUNOFF
              .059       .059       .001       .001 c.m/s
35     COMMENT
```

```
      3     line(s) of comment
       **********************
       South Landscaped Area
       **********************
 4     CATCHMENT
     207.000     ID No.ó 99999
        .140     Area in hectares
      60.000     Length (PERV) metres
       2.000     Gradient (%)
       2.000     Per cent Impervious
       2.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .001       .059       .001       .001 c.m/s
              .019       .192       .022     C perv/imperv/total
15     ADD RUNOFF
              .001       .059       .001       .001 c.m/s
35     COMMENT
      3     line(s) of comment
       **************************
       Storage - Permavoid
       **************************
10     POND
      4 Depth - Discharge - Volume sets
       339.090        .000          .0
       339.290      .00500        62.0
       339.690      .00900       185.0
       340.110       .0120       314.0
       Peak Outflow    =      .007 c.m/s
       Maximum Depth   =   339.465 metres
       Maximum Storage =      116. c.m
              .001       .059       .007       .001 c.m/s
35     COMMENT
      3     line(s) of comment
       ************************************
       Total Flow to Gordon St. Storm Sewer
       ************************************
17     COMBINE
    500     Junction Node No.
              .001       .059       .007       .012 c.m/s
18     CONFLUENCE
    500     Junction Node No.
              .001       .012       .007       .000 c.m/s
```

```
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       *********************************************
       Undeveloped Area - Flow to Torrance Watershed
       *********************************************
 4     CATCHMENT
     206.000     ID No.ó 99999
       1.390     Area in hectares
     130.000     Length (PERV) metres
       4.000     Gradient (%)
       1.000     Per cent Impervious
       1.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .005       .000       .007       .000 c.m/s
              .019       .190       .020     C perv/imperv/total
15     ADD RUNOFF
              .005       .005       .007       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       *********************************************
       Park Area - to Torrance Watershed
       *********************************************
 4     CATCHMENT
     205.000     ID No.ó 99999
        .210     Area in hectares
      70.000     Length (PERV) metres
       1.000     Gradient (%)
       1.000     Per cent Impervious
       1.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .001       .005       .007       .000 c.m/s
              .019       .191       .020     C perv/imperv/total
15     ADD RUNOFF
              .001       .005       .007       .000 c.m/s
```

```
35     COMMENT
      3     line(s) of comment
       *********************************************
       Total to Torrence
       *********************************************
 9     ROUTE
        .000     Conduit Length
        .000     No Conduit defined
        .000     Zero lag
        .000     Beta weighting factor
        .000     Routing timestep
           0     No. of sub-reaches
              .001       .005       .005       .000 c.m/s
17     COMBINE
    600     Junction Node No.
              .001       .005       .005       .006 c.m/s
18     CONFLUENCE
    600     Junction Node No.
              .001       .006       .005       .000 c.m/s
14     START
      1     1=Zero; 2=Define
20     MANUAL
```

```
      Output File (4.7) GORPO1_2.out opened 2021-08-05   9:28
      Units used are defined by G =    9.810
         300   600    15.000        are MAXDT MAXHYD & DTMIN values
      Licensee: Paragon Engineering Limited
35    COMMENT
     5     line(s) of comment
      ******************************
      1250 Gordon Street - 1614-13884
      Stormwater Management Modelling
      June 2021 - C. Phelps
      ******************************
14    START
     1     1=Zero; 2=Define
35    COMMENT
     5     line(s) of comment
      **********************


      100-yr STORM - PROPOSED CONDITIONS

 2    STORM
         1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
   4688.000     Coefficient  a
     17.000     Constant  b    (min)
       .963     Exponent  c
       .400     Fraction to peak  r
    180.000     Duration ó 4500 min
               86.766 mm     Total depth
 3    IMPERVIOUS
         1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .010     Manning "n"
     98.000     SCS Curve No or C
       .100     Ia/S Coefficient
      1.500     Initial Abstraction
14    START
     1     1=Zero; 2=Define
35    COMMENT
     3     line(s) of comment
      **********************************
      Uncontrolled Flow to Gordon Street - from West
      **********************************
 4    CATCHMENT
    201.000     ID No.ó 99999
       .090     Area in hectares
      1.000     Length (PERV) metres
      2.000     Gradient (%)
     70.000     Per cent Impervious
     10.000     Length (IMPERV)
```

```
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .023       .000       .000       .000 c.m/s
              .043       .247       .186     C perv/imperv/total
15     ADD RUNOFF
              .023       .023       .000       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************************
       Uncontrolled Flow to Gordon Street- from South
       **********************************
 4     CATCHMENT
     209.000     ID No.ó 99999
        .060     Area in hectares
       1.000     Length (PERV) metres
       2.000     Gradient (%)
       2.000     Per cent Impervious
      40.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .003       .023       .000       .000 c.m/s
              .043       .262       .047     C perv/imperv/total
15     ADD RUNOFF
              .003       .025       .000       .000 c.m/s
 9     ROUTE
        .000     Conduit Length
        .000     No Conduit defined
        .000     Zero lag
        .000     Beta weighting factor
        .000     Routing timestep
           0     No. of sub-reaches
              .003       .025       .025       .000 c.m/s
17     COMBINE
    500     Junction Node No.
              .003       .025       .025       .025 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
```

```
      3     line(s) of comment
       ***************************
       West Building - Roof Area
       ***************************
 4     CATCHMENT
     202.000     ID No.ó 99999
        .240     Area in hectares
       2.000     Length (PERV) metres
        .500     Gradient (%)
      99.000     Per cent Impervious
      80.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .063       .000       .025       .025 c.m/s
              .046       .261       .258     C perv/imperv/total
15     ADD RUNOFF
              .063       .063       .025       .025 c.m/s
35     COMMENT
      3     line(s) of comment
       *********************************
       West Building - Rooftop Control
       *********************************
10     POND
      4 Depth - Discharge - Volume sets
          .000        .000          .0
          .080      .00200        42.0
          .120      .00300       126.0
          .160      .00400       210.0
       Peak Outflow    =      .003 c.m/s
       Maximum Depth   =      .125 metres
       Maximum Storage =      136. c.m
              .063       .063       .003       .025 c.m/s
17     COMBINE
    500     Junction Node No.
              .063       .063       .003       .026 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       ***************************
       East Building - Roof Area
       ***************************
 4     CATCHMENT
```

```
     203.000     ID No.ó 99999
        .230     Area in hectares
       2.000     Length (PERV) metres
        .500     Gradient (%)
      99.000     Per cent Impervious
      70.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .060       .000       .003       .026 c.m/s
              .046       .258       .256     C perv/imperv/total
15     ADD RUNOFF
              .060       .060       .003       .026 c.m/s
35     COMMENT
      3     line(s) of comment
       ********************************
       East Building - Rooftop Control
       ********************************
10     POND
      4 Depth - Discharge - Volume sets
          .000        .000          .0
          .100      .00100        92.0
          .120      .00200       138.0
          .160      .00400       230.0
       Peak Outflow    =      .002 c.m/s
       Maximum Depth   =      .120 metres
       Maximum Storage =      138. c.m
              .060       .060       .002       .026 c.m/s
35     COMMENT
      3     line(s) of comment
       ********************************************
       East Roof-top Flow to Torrence Watershed
       ********************************************
17     COMBINE
    600     Junction Node No.
              .060       .060       .002       .002 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       **********************
       North Parking Area
       **********************
 4     CATCHMENT
```

```
     208.000     ID No.ó 99999
        .120     Area in hectares
       2.000     Length (PERV) metres
       2.000     Gradient (%)
      90.000     Per cent Impervious
      90.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .028       .000       .002       .002 c.m/s
              .045       .261       .240     C perv/imperv/total
15     ADD RUNOFF
              .028       .028       .002       .002 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************
       DIVERSION OF FLOW TO SOUTH PERMAVOID
       **********************
12     DIVERT
         208     U/S Node No.ó 99999
        .012     Threshold Discharge
        .012     Max. Outflow reqd.
            Qmax & Vol.Diverted =      .016 c.m/s        27.7 c.m
               35     COMMENT
              .028       .028       .012       .002 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************
       MINOR TO PERMAVOID
       **********************
17     COMBINE
    400     Junction Node No.
              .028       .028       .012       .012 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************
       MOVE DOWNSTREAM
       **********************
18     CONFLUENCE
    400     Junction Node No.
              .028       .012       .012       .000 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
```

```
      3     line(s) of comment
       **********************
       South Parking Area
       **********************
 4     CATCHMENT
     204.000     ID No.ó 99999
        .570     Area in hectares
       2.000     Length (PERV) metres
       2.000     Gradient (%)
      90.000     Per cent Impervious
     100.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .136       .000       .012       .000 c.m/s
              .045       .260       .239     C perv/imperv/total
15     ADD RUNOFF
              .136       .136       .012       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       **********************
       South Landscaped Area
       **********************
 4     CATCHMENT
     207.000     ID No.ó 99999
        .140     Area in hectares
      60.000     Length (PERV) metres
       2.000     Gradient (%)
       2.000     Per cent Impervious
       2.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .004       .136       .012       .000 c.m/s
              .046       .229       .049     C perv/imperv/total
15     ADD RUNOFF
              .004       .140       .012       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       **************************
```

```
       Storage - Permavoid
       **************************
10     POND
      4 Depth - Discharge - Volume sets
       339.090        .000          .0
       339.290      .00500        62.0
       339.690      .00900       185.0
       340.110       .0120       314.0
       Peak Outflow    =      .012 c.m/s
       Maximum Depth   =   340.041 metres
       Maximum Storage =      293. c.m
              .004       .140       .012       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       ************************************
       Total Flow to Gordon St. Storm Sewer
       ************************************
17     COMBINE
    500     Junction Node No.
              .004       .140       .012       .031 c.m/s
22     FILE HYDROGRAPH
      1     1=READ: 2=WRITE
     12     DIV00208.5YR         is Filename
      3     1=Overland: 2=Inflow: 3=Outflow: 4=Temp'ary
              .004       .140       .016       .031 c.m/s
17     COMBINE
    500     Junction Node No.
              .004       .140       .016       .045 c.m/s
18     CONFLUENCE
    500     Junction Node No.
              .004       .045       .016       .000 c.m/s
14     START
      1     1=Zero; 2=Define
35     COMMENT
      3     line(s) of comment
       *********************************************
       Undeveloped Area - Flow to Torrance Watershed
       *********************************************
 4     CATCHMENT
     206.000     ID No.ó 99999
       1.390     Area in hectares
     130.000     Length (PERV) metres
       4.000     Gradient (%)
       1.000     Per cent Impervious
       1.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
```

```
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .035       .000       .016       .000 c.m/s
              .046       .230       .048     C perv/imperv/total
15     ADD RUNOFF
              .035       .035       .016       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       ********************************************
       Park Area - to Torrance Watershed
       ********************************************
 4     CATCHMENT
     205.000     ID No.ó 99999
        .210     Area in hectares
      70.000     Length (PERV) metres
       1.000     Gradient (%)
       1.000     Per cent Impervious
       1.000     Length (IMPERV)
        .000     %Imp. with Zero Dpth
           1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
        .030     Manning "n"
      68.000     SCS Curve No or C
        .100     Ia/S Coefficient
       5.000     Initial Abstraction
           1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
              .005       .035       .016       .000 c.m/s
              .046       .228       .048     C perv/imperv/total
15     ADD RUNOFF
              .005       .040       .016       .000 c.m/s
35     COMMENT
      3     line(s) of comment
       ********************************************
       Total to Torrence
       ********************************************
 9     ROUTE
        .000     Conduit Length
        .000     No Conduit defined
        .000     Zero lag
        .000     Beta weighting factor
        .000     Routing timestep
           0     No. of sub-reaches
              .005       .040       .040       .000 c.m/s
17     COMBINE
    600     Junction Node No.
              .005       .040       .040       .041 c.m/s
18     CONFLUENCE
```

```
    600     Junction Node No.
              .005       .041       .040       .000 c.m/s
14     START
      1     1=Zero; 2=Define
20     MANUAL
```

ROCK TRENCH SIZING CALCULATIONS

Month #	Month	Days	Monthly Evap (mm)
1	Jan	31	
2	Feb	28	
3	Mar	31	
4	Apr	30	
5	May	31	
6	Jun	30	
7	Jul	31	
8	Aug	31	
9	Sep	30	
10	Oct	31	
11	Nov	30	
12	Dec	31	

		Roof Area			Infiltration Gallery 2 (South)		
		Impervious area	2400	sq.m	Roof area	2400	sq.m
					Grassed Area	1400	sq.m
					Directly to Tench	6900	sq.m
Area Check (m^2)	9300	Total area:	2400	sq.m	Total area:	10700	sq.m
Developed area					Trench surf. area:	425	sq.m
					Trench depth:	0.4	m
					Trench porosity:	0.9	
					Trench full:	153	cu.m
Developed area (ha)	0.21				Trench initial vol:	0	cu.m
	0.23				Subsoil exfil. rate:	23	mm/hr
	0.85				Soil depth:		mm
	1.29				Soil porosity:		
					Soil field cap:		
					Soil wilt point:		
					Soil infil. rate		mm/hr
					Soil wilt point vol:		cu.m
		depth of rain	0.023		Soil porosity vol:		cu.m
		Rain Volume	56.0		Soil field cap vol:		cu.m
		P volume	391.2		Soil initial vol:		cu.m
		Ponding	0.163	m	Ponding		m
		Orifice	75.00	mm	I/P	16.2	
		max ponding	0.019	m	Safety Factor		
		P volume	45.43	sq.m	Area with SF		

9300

Summary		Roof (1+5)	IG 2
Total evaporation			0.0
Total exfiltration			232.7
Total drainflow		60.1	0.0
Total runoff		0.0	0.0
Total Reused			
	Sum	60.1	232.7
Total rainfall		60.1	327.8
% Treated		100%	100%
% untreated		0%	0%
% Captured		0%	100%
EIA		100%	0%

					0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
					15.0	15.0	44.9	0.019	0.5	0.0	23.7	43.5	23.7	0.0	0.0	23.7	0.0	0.0	0.0	0.0	150.7	0.8	0.00	0.0
					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
					Roof Area						**Infiltration Gallery 2 (South)**													
					All in cubic metres						All in cubic metres													
							Beginning	Depth						Beginning				Beginning			Beginning			
		25.02			Rain Water	Rain into	Ponding Vol	Ponding	out	Overflow	Rain Wate	Rain Water	Rain into	Ponding Vol	out	Unsaturated	Rain into	Soil Water	Water from Soil	Water that	Trench Water	Trench	Underdrain	
			Kitchener		onto roof	Ponding			ponding		into Swale	Directly to trench	Ponding		ponding	Runoff	Soil	Volume	to Trench	Stays in Soil	Volume	Exfiltration	Drainflow	Evaporation
Month	30-06-1964 23:55	rin (mm)	ETO			0.00000	0.00000		0.00000	0.00000			0.00000	0.00000	0.00000		0.00000	0.00000	0.00000	0.00000	0.00000		0.00000	0.00000
7	01-07-1964 00:00	0.12		0.000	0.29329	0.29329	0.00000	0.00012	0.04026	0.00000	0.46437	0.88345	0.46437	0.00000	0.00000	0.46437	0.00000	0.00000	0.00000	0.00000	0.00000	0.81458	0.00000	0.00000
7	01-07-1964 00:05	0.13		0.000	0.30836	0.30836	0.25303	0.00023	0.05570	0.00000	0.48824	0.94223	0.48824	0.00000	0.00000	0.48824	0.00000	0.00000	0.00000	0.00000	0.06887	0.81458	0.00000	0.00000
7	01-07-1964 00:10	0.14		0.000	0.32528	0.32528	0.50569	0.00035	0.06776	0.00000	0.51502	1.00293	0.51502	0.00000	0.00000	0.51502	0.00000	0.00000	0.00000	0.00000	0.19652	0.81458	0.00000	0.00000
7	01-07-1964 00:15	0.14		0.000	0.34440	0.34440	0.76321	0.00046	0.07823	0.00000	0.54530	1.06839	0.54530	0.00000	0.00000	0.54530	0.00000	0.00000	0.00000	0.00000	0.38486	0.81458	0.00000	0.00000
7	01-07-1964 00:20	0.15		0.000	0.36622	0.36622	1.02938	0.00058	0.08782	0.00000	0.57984	1.14069	0.57984	0.00000	0.00000	0.57984	0.00000	0.00000	0.00000	0.00000	0.63867	0.81458	0.00000	0.00000
7	01-07-1964 00:25	0.16		0.000	0.39135	0.39135	1.30778	0.00071	0.09690	0.00000	0.61963	1.22202	0.61963	0.00000	0.00000	0.61963	0.00000	0.00000	0.00000	0.00000	0.96477	0.81458	0.00000	0.00000
7	01-07-1964 00:30	0.18		0.000	0.42064	0.42064	1.60223	0.00084	0.10572	0.00000	0.66601	1.31505	0.66601	0.00000	0.00000	0.66601	0.00000	0.00000	0.00000	0.00000	1.37220	0.81458	0.00000	0.00000
7	01-07-1964 00:35	0.19		0.000	0.45525	0.45525	1.91714	0.00099	0.11449	0.00000	0.72081	1.42333	0.72081	0.00000	0.00000	0.72081	0.00000	0.00000	0.00000	0.00000	1.87267	0.81458	0.00000	0.00000
7	01-07-1964 00:40	0.21		0.000	0.49681	0.49681	2.25789	0.00115	0.12338	0.00000	0.78662	1.55171	0.78662	0.00000	0.00000	0.78662	0.00000	0.00000	0.00000	0.00000	2.48142	0.81458	0.00000	0.00000
7	01-07-1964 00:45	0.23		0.000	0.54772	0.54772	2.63133	0.00132	0.13254	0.00000	0.86723	1.70724	0.86723	0.00000	0.00000	0.86723	0.00000	0.00000	0.00000	0.00000	3.21854	0.81458	0.00000	0.00000
7	01-07-1964 00:50	0.25		0.000	0.61161	0.61161	3.04651	0.00152	0.14217	0.00000	0.96838	1.90055	0.96838	0.00000	0.00000	0.96838	0.00000	0.00000	0.00000	0.00000	4.11120	0.81458	0.00000	0.00000
7	01-07-1964 00:55	0.29		0.000	0.69427	0.69427	3.51595	0.00175	0.15253	0.00000	1.09926	2.14855	1.09926	0.00000	0.00000	1.09926	0.00000	0.00000	0.00000	0.00000	5.19716	0.81458	0.00000	0.00000
7	01-07-1964 01:00	0.34		0.000	0.80557	0.80557	4.05769	0.00203	0.16393	0.00000	1.27549	2.47995	1.27549	0.00000	0.00000	1.27549	0.00000	0.00000	0.00000	0.00000	6.53113	0.81458	0.00000	0.00000
7	01-07-1964 01:05	0.40		0.000	0.96370	0.96370	4.69934	0.00236	0.17689	0.00000	1.52586	2.94753	1.52586	0.00000	0.00000	1.52586	0.00000	0.00000	0.00000	0.00000	8.19649	0.81458	0.00000	0.00000
7	01-07-1964 01:10	0.50		0.000	1.20620	1.20620	5.48614	0.00279	0.19230	0.00000	1.90982	3.66013	1.90982	0.00000	0.00000	1.90982	0.00000	0.00000	0.00000	0.00000	10.32944	0.81458	0.00000	0.00000
7	01-07-1964 01:15	0.68		0.000	1.62433	1.62433	6.50004	0.00339	0.21188	0.00000	2.57186	4.88183	2.57186	0.00000	0.00000	2.57186	0.00000	0.00000	0.00000	0.00000	13.17499	0.81458	0.00000	0.00000
7	01-07-1964 01:20	1.04		0.000	2.50764	2.50764	7.91250	0.00434	0.23995	0.00000	3.97043	7.44942	3.97043	0.00000	0.00000	3.97043	0.00000	0.00000	0.00000	0.00000	17.24223	0.81458	0.00000	0.00000
7	01-07-1964 01:25	2.27		0.000	5.44487	5.44487	10.18018	0.00651	0.29383	0.00000	8.62104	15.94782	8.62104	0.00000	0.00000	8.62104	0.00000	0.00000	0.00000	0.00000	23.87707	0.81458	0.00000	0.00000
7	01-07-1964 01:30	6.24		0.000	14.98563	14.98563	15.33121	0.01263	0.40929	0.00000	######	43.49298	23.72725	0.00000	0.00000	23.72725	0.00000	0.00000	0.00000	0.00000	39.01031	0.81458	0.00000	0.00000
7	01-07-1964 01:35	2.62		0.000	6.28811	6.28811	29.90755	0.01508	0.44722	0.00000	9.95617	18.52552	9.95617	0.00000	0.00000	9.95617	0.00000	0.00000	0.00000	0.00000	81.68870	0.81458	0.00000	0.00000
7	01-07-1964 01:40	1.40		0.000	3.36703	3.36703	35.74844	0.01630	0.46491	0.00000	5.33113	10.14511	5.33113	0.00000	0.00000	5.33113	0.00000	0.00000	0.00000	0.00000	99.39964	0.81458	0.00000	0.00000
7	01-07-1964 01:45	0.95		0.000	2.27363	2.27363	38.65056	0.01705	0.47553	0.00000	3.59991	7.01221	3.59991	0.00000	0.00000	3.59991	0.00000	0.00000	0.00000	0.00000	108.73017	0.81458	0.00000	0.00000
7	01-07-1964 01:50	0.71		0.000	1.71421	1.71421	40.44866	0.01757	0.48268	0.00000	2.71417	5.41103	2.71417	0.00000	0.00000	2.71417	0.00000	0.00000	0.00000	0.00000	114.92779	0.81458	0.00000	0.00000
7	01-07-1964 01:55	0.57		0.000	1.37767	1.37767	41.68019	0.01794	0.48777	0.00000	2.18131	4.44857	2.18131	0.00000	0.00000	2.18131	0.00000	0.00000	0.00000	0.00000	119.52424	0.81458	0.00000	0.00000
7	01-07-1964 02:00	0.48		0.000	1.15392	1.15392	42.57009	0.01822	0.49153	0.00000	1.82704	3.80906	1.82704	0.00000	0.00000	1.82704	0.00000	0.00000	0.00000	0.00000	123.15822	0.81458	0.00000	0.00000
7	01-07-1964 02:05	0.41		0.000	0.99472	0.99472	43.23248	0.01843	0.49435	0.00000	1.57497	3.35416	1.57497	0.00000	0.00000	1.57497	0.00000	0.00000	0.00000	0.00000	126.15270	0.81458	0.00000	0.00000
7	01-07-1964 02:10	0.36		0.000	0.87573	0.87573	43.73284	0.01859	0.49648	0.00000	1.38658	3.01421	1.38658	0.00000	0.00000	1.38658	0.00000	0.00000	0.00000	0.00000	128.69227	0.81458	0.00000	0.00000
7	01-07-1964 02:15	0.33		0.000	0.78346	0.78346	44.11210	0.01871	0.49807	0.00000	1.24047	2.75051	1.24047	0.00000	0.00000	1.24047	0.00000	0.00000	0.00000	0.00000	130.89190	0.81458	0.00000	0.00000
7	01-07-1964 02:20	0.30		0.000	0.70979	0.70979	44.39749	0.01879	0.49925	0.00000	1.12383	2.53988	1.12383	0.00000	0.00000	1.12383	0.00000	0.00000	0.00000	0.00000	132.82783	0.81458	0.00000	0.00000
7	01-07-1964 02:25	0.27		0.000	0.64959	0.64959	44.60803	0.01886	0.50008	0.00000	1.02851	2.36764	1.02851	0.00000	0.00000	1.02851	0.00000	0.00000	0.00000	0.00000	134.55312	0.81458	0.00000	0.00000
7	01-07-1964 02:30	0.25		0.000	0.59945	0.59945	44.75754	0.01890	0.50063	0.00000	0.94913	2.22405	0.94913	0.00000	0.00000	0.94913	0.00000	0.00000	0.00000	0.00000	136.10618	0.81458	0.00000	0.00000
7	01-07-1964 02:35	0.23		0.000	0.55703	0.55703	44.85636	0.01892	0.50094	0.00000	0.88197	2.10240	0.88197	0.00000	0.00000	0.88197	0.00000	0.00000	0.00000	0.00000	137.51564	0.81458	0.00000	0.00000
7	01-07-1964 02:40	0.22		0.000	0.52066	0.52066	44.91246	0.01893	0.50105	0.00000	0.82438	1.99794	0.82438	0.00000	0.00000	0.82438	0.00000	0.00000	0.00000	0.00000	138.80346	0.81458	0.00000	0.00000
7	01-07-1964 02:45	0.20		0.000	0.48911	0.48911	44.93207	0.01893	0.50098	0.00000	0.77442	1.90716	0.77442	0.00000	0.00000	0.77442	0.00000	0.00000	0.00000	0.00000	139.98682	0.81458	0.00000	0.00000
7	01-07-1964 02:50	0.19		0.000	0.46147	0.46147	44.92020	0.01891	0.50076	0.00000	0.73066	1.82749	0.73066	0.00000	0.00000	0.73066	0.00000	0.00000	0.00000	0.00000	141.07940	0.81458	0.00000	0.00000
7	01-07-1964 02:55	0.18		0.000	0.43705	0.43705	44.88091	0.01888	0.50041	0.00000	0.69200	1.75693	0.69200	0.00000	0.00000	0.69200	0.00000	0.00000	0.00000	0.00000	142.09231	0.81458	0.00000	0.00000
7	01-07-1964 03:00	0.173		0	0.41530	0.41530	44.81755	0.01885	0.49994	0.00000	0.65756	1.69394	0.65756	0.00000	0.00000	0.65756	0.00000	0.00000	0.00000	0.00000	143.03465	0.81458	0.00000	0.00000
7	01-07-1964 03:05	0.165		0	0.39581	0.39581	44.73292	0.01880	0.49936	0.00000	0.62670	1.63732	0.62670	0.00000	0.00000	0.62670	0.00000	0.00000	0.00000	0.00000	143.91401	0.81458	0.00000	0.00000
7	01-07-1964 03:10	0.158		0	0.37823	0.37823	44.62936	0.01875	0.49869	0.00000	0.59887	1.58612	0.59887	0.00000	0.00000	0.59887	0.00000	0.00000	0.00000	0.00000	144.73675	0.81458	0.00000	0.00000
7	01-07-1964 03:15	0.151		0	0.36229	0.36229	44.50891	0.01870	0.49794	0.00000	0.57363	1.53953	0.57363	0.00000	0.00000	0.57363	0.00000	0.00000	0.00000	0.00000	145.50828	0.81458	0.00000	0.00000
7	01-07-1964 03:20	0.145		0	0.34777	0.34777	44.37326	0.01863	0.49710	0.00000	0.55064	1.49695	0.55064	0.00000	0.00000	0.55064	0.00000	0.00000	0.00000	0.00000	146.23323	0.81458	0.00000	0.00000

7	01-07-1964 03:25	0.139	0	0.33448	0.33448	44.22393	0.01857	0.49620	0.00000	0.52959	1.45783	0.52959	0.00000	0.00000	0.52959	0.00000	0.00000	0.00000	0.00000	146.91559	0.81458	0.00000	0.00000
7	01-07-1964 03:30	0.134	0	0.32227	0.32227	44.06221	0.01849	0.49523	0.00000	0.51025	1.42174	0.51025	0.00000	0.00000	0.51025	0.00000	0.00000	0.00000	0.00000	147.55884	0.81458	0.00000	0.00000
7	01-07-1964 03:35	0.130	0	0.31100	0.31100	43.88925	0.01842	0.49420	0.00000	0.49242	1.38833	0.49242	0.00000	0.00000	0.49242	0.00000	0.00000	0.00000	0.00000	148.16600	0.81458	0.00000	0.00000
7	01-07-1964 03:40	0.125	0	0.30057	0.30057	43.70605	0.01834	0.49312	0.00000	0.47591	1.35727	0.47591	0.00000	0.00000	0.47591	0.00000	0.00000	0.00000	0.00000	148.73974	0.81458	0.00000	0.00000
7	01-07-1964 03:45	0.121	0	0.29090	0.29090	43.51351	0.01825	0.49198	0.00000	0.46059	1.32831	0.46059	0.00000	0.00000	0.46059	0.00000	0.00000	0.00000	0.00000	149.28242	0.81458	0.00000	0.00000
7	01-07-1964 03:50	0.117	0	0.28188	0.28188	43.31242	0.01816	0.49080	0.00000	0.44632	1.30122	0.44632	0.00000	0.00000	0.44632	0.00000	0.00000	0.00000	0.00000	149.79615	0.81458	0.00000	0.00000
7	01-07-1964 03:55	0.114	0	0.27347	0.27347	43.10350	0.01807	0.48958	0.00000	0.43300	1.27581	0.43300	0.00000	0.00000	0.43300	0.00000	0.00000	0.00000	0.00000	150.28278	0.81458	0.00000	0.00000
7	01-07-1964 04:00		0	0.00000	0.00000	42.88740	0.01787	0.48681	0.00000	0.00000	0.48681	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	150.74401	0.81458	0.00000	0.00000
7	01-07-1964 04:05		0	0.00000	0.00000	42.40060	0.01767	0.48403	0.00000	0.00000	0.48403	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	150.41623	0.81458	0.00000	0.00000
7	01-07-1964 04:10		0	0.00000	0.00000	41.91656	0.01747	0.48126	0.00000	0.00000	0.48126	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	150.08569	0.81458	0.00000	0.00000
7	01-07-1964 04:15		0	0.00000	0.00000	41.43530	0.01726	0.47849	0.00000	0.00000	0.47849	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	149.75237	0.81458	0.00000	0.00000
7	01-07-1964 04:20		0	0.00000	0.00000	40.95681	0.01707	0.47572	0.00000	0.00000	0.47572	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	149.41628	0.81458	0.00000	0.00000
7	01-07-1964 04:25		0	0.00000	0.00000	40.48108	0.01687	0.47295	0.00000	0.00000	0.47295	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	149.07742	0.81458	0.00000	0.00000
7	01-07-1964 04:30		0	0.00000	0.00000	40.00813	0.01667	0.47018	0.00000	0.00000	0.47018	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	148.73578	0.81458	0.00000	0.00000
7	01-07-1964 04:35		0	0.00000	0.00000	39.53795	0.01647	0.46741	0.00000	0.00000	0.46741	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	148.39138	0.81458	0.00000	0.00000
7	01-07-1964 04:40		0	0.00000	0.00000	39.07054	0.01628	0.46464	0.00000	0.00000	0.46464	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	148.04421	0.81458	0.00000	0.00000
7	01-07-1964 04:45		0	0.00000	0.00000	38.60590	0.01609	0.46187	0.00000	0.00000	0.46187	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	147.69426	0.81458	0.00000	0.00000
7	01-07-1964 04:50		0	0.00000	0.00000	38.14404	0.01589	0.45910	0.00000	0.00000	0.45910	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	147.34155	0.81458	0.00000	0.00000
7	01-07-1964 04:55		0	0.00000	0.00000	37.68494	0.01570	0.45633	0.00000	0.00000	0.45633	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	146.98606	0.81458	0.00000	0.00000
7	01-07-1964 05:00		0	0.00000	0.00000	37.22861	0.01551	0.45355	0.00000	0.00000	0.45355	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	146.62780	0.81458	0.00000	0.00000
7	01-07-1964 05:05		0	0.00000	0.00000	36.77506	0.01532	0.45078	0.00000	0.00000	0.45078	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	146.26677	0.81458	0.00000	0.00000
7	01-07-1964 05:10		0	0.00000	0.00000	36.32428	0.01514	0.44801	0.00000	0.00000	0.44801	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	145.90297	0.81458	0.00000	0.00000
7	01-07-1964 05:15		0	0.00000	0.00000	35.87627	0.01495	0.44524	0.00000	0.00000	0.44524	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	145.53640	0.81458	0.00000	0.00000
7	01-07-1964 05:20		0	0.00000	0.00000	35.43103	0.01476	0.44247	0.00000	0.00000	0.44247	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	145.16706	0.81458	0.00000	0.00000
7	01-07-1964 05:25		0	0.00000	0.00000	34.98856	0.01458	0.43970	0.00000	0.00000	0.43970	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	144.79494	0.81458	0.00000	0.00000
7	01-07-1964 05:30		0	0.00000	0.00000	34.54886	0.01440	0.43693	0.00000	0.00000	0.43693	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	144.42005	0.81458	0.00000	0.00000
7	01-07-1964 05:35		0	0.00000	0.00000	34.11194	0.01421	0.43415	0.00000	0.00000	0.43415	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	144.04240	0.81458	0.00000	0.00000
7	01-07-1964 05:40		0	0.00000	0.00000	33.67778	0.01403	0.43138	0.00000	0.00000	0.43138	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	143.66197	0.81458	0.00000	0.00000
7	01-07-1964 05:45		0	0.00000	0.00000	33.24640	0.01385	0.42861	0.00000	0.00000	0.42861	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	143.27877	0.81458	0.00000	0.00000
7	01-07-1964 05:50		0	0.00000	0.00000	32.81779	0.01367	0.42584	0.00000	0.00000	0.42584	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	142.89279	0.81458	0.00000	0.00000
7	01-07-1964 05:55		0	0.00000	0.00000	32.39195	0.01350	0.42307	0.00000	0.00000	0.42307	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	142.50405	0.81458	0.00000	0.00000
7	01-07-1964 06:00		0	0.00000	0.00000	31.96888	0.01332	0.42029	0.00000	0.00000	0.42029	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	142.11253	0.81458	0.00000	0.00000
7	01-07-1964 06:05		0	0.00000	0.00000	31.54859	0.01315	0.41752	0.00000	0.00000	0.41752	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	141.71824	0.81458	0.00000	0.00000
7	01-07-1964 06:10		0	0.00000	0.00000	31.13107	0.01297	0.41475	0.00000	0.00000	0.41475	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	141.32118	0.81458	0.00000	0.00000
7	01-07-1964 06:15		0	0.00000	0.00000	30.71631	0.01280	0.41198	0.00000	0.00000	0.41198	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	140.92135	0.81458	0.00000	0.00000
7	01-07-1964 06:20		0	0.00000	0.00000	30.30434	0.01263	0.40921	0.00000	0.00000	0.40921	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	140.51875	0.81458	0.00000	0.00000
7	01-07-1964 06:25		0	0.00000	0.00000	29.89513	0.01246	0.40643	0.00000	0.00000	0.40643	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	140.11337	0.81458	0.00000	0.00000
7	01-07-1964 06:30		0	0.00000	0.00000	29.48869	0.01229	0.40366	0.00000	0.00000	0.40366	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	139.70522	0.81458	0.00000	0.00000
7	01-07-1964 06:35		0	0.00000	0.00000	29.08503	0.01212	0.40089	0.00000	0.00000	0.40089	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	139.29430	0.81458	0.00000	0.00000
7	01-07-1964 06:40		0	0.00000	0.00000	28.68414	0.01195	0.39812	0.00000	0.00000	0.39812	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	138.88061	0.81458	0.00000	0.00000
7	01-07-1964 06:45		0	0.00000	0.00000	28.28602	0.01179	0.39535	0.00000	0.00000	0.39535	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	138.46414	0.81458	0.00000	0.00000
7	01-07-1964 06:50		0	0.00000	0.00000	27.89068	0.01162	0.39257	0.00000	0.00000	0.39257	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	138.04490	0.81458	0.00000	0.00000
7	01-07-1964 06:55		0	0.00000	0.00000	27.49811	0.01146	0.38980	0.00000	0.00000	0.38980	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	137.62289	0.81458	0.00000	0.00000
7	01-07-1964 07:00		0	0.00000	0.00000	27.10831	0.01130	0.38703	0.00000	0.00000	0.38703	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	137.19811	0.81458	0.00000	0.00000
7	01-07-1964 07:05		0	0.00000	0.00000	26.72128	0.01113	0.38425	0.00000	0.00000	0.38425	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	136.77055	0.81458	0.00000	0.00000
7	01-07-1964 07:10		0	0.00000	0.00000	26.33702	0.01097	0.38148	0.00000	0.00000	0.38148	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	136.34022	0.81458	0.00000	0.00000
7	01-07-1964 07:15		0	0.00000	0.00000	25.95554	0.01081	0.37871	0.00000	0.00000	0.37871	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	135.90712	0.81458	0.00000	0.00000
7	01-07-1964 07:20		0	0.00000	0.00000	25.57683	0.01066	0.37594	0.00000	0.00000	0.37594	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	135.47125	0.81458	0.00000	0.00000
7	01-07-1964 07:25		0	0.00000	0.00000	25.20090	0.01050	0.37316	0.00000	0.00000	0.37316	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	135.03260	0.81458	0.00000	0.00000
7	01-07-1964 07:30		0	0.00000	0.00000	24.82773	0.01034	0.37039	0.00000	0.00000	0.37039	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	134.59118	0.81458	0.00000	0.00000
7	01-07-1964 07:35		0	0.00000	0.00000	24.45734	0.01019	0.36762	0.00000	0.00000	0.36762	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	134.14699	0.81458	0.00000	0.00000

7	01-07-1964 07:40	0	0.00000	0.00000	24.08973	0.01004	0.36484	0.00000	0.00000	0.36484	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	133.70002	0.81458	0.00000	0.00000
7	01-07-1964 07:45	0	0.00000	0.00000	23.72488	0.00989	0.36207	0.00000	0.00000	0.36207	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	133.25028	0.81458	0.00000	0.00000
7	01-07-1964 07:50	0	0.00000	0.00000	23.36281	0.00973	0.35930	0.00000	0.00000	0.35930	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	132.79777	0.81458	0.00000	0.00000
7	01-07-1964 07:55	0	0.00000	0.00000	23.00352	0.00958	0.35652	0.00000	0.00000	0.35652	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	132.34248	0.81458	0.00000	0.00000
7	01-07-1964 08:00	0	0.00000	0.00000	22.64700	0.00944	0.35375	0.00000	0.00000	0.35375	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	131.88442	0.81458	0.00000	0.00000
7	01-07-1964 08:05	0	0.00000	0.00000	22.29325	0.00929	0.35098	0.00000	0.00000	0.35098	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	131.42359	0.81458	0.00000	0.00000
7	01-07-1964 08:10	0	0.00000	0.00000	21.94227	0.00914	0.34820	0.00000	0.00000	0.34820	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	130.95998	0.81458	0.00000	0.00000
7	01-07-1964 08:15	0	0.00000	0.00000	21.59407	0.00900	0.34543	0.00000	0.00000	0.34543	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	130.49360	0.81458	0.00000	0.00000
7	01-07-1964 08:20	0	0.00000	0.00000	21.24864	0.00885	0.34265	0.00000	0.00000	0.34265	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	130.02444	0.81458	0.00000	0.00000
7	01-07-1964 08:25	0	0.00000	0.00000	20.90599	0.00871	0.33988	0.00000	0.00000	0.33988	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	129.55251	0.81458	0.00000	0.00000
7	01-07-1964 08:30	0	0.00000	0.00000	20.56611	0.00857	0.33711	0.00000	0.00000	0.33711	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	129.07781	0.81458	0.00000	0.00000
7	01-07-1964 08:35	0	0.00000	0.00000	20.22900	0.00843	0.33433	0.00000	0.00000	0.33433	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	128.60033	0.81458	0.00000	0.00000
7	01-07-1964 08:40	0	0.00000	0.00000	19.89467	0.00829	0.33156	0.00000	0.00000	0.33156	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	128.12008	0.81458	0.00000	0.00000
7	01-07-1964 08:45	0	0.00000	0.00000	19.56311	0.00815	0.32878	0.00000	0.00000	0.32878	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	127.63705	0.81458	0.00000	0.00000
7	01-07-1964 08:50	0	0.00000	0.00000	19.23433	0.00801	0.32601	0.00000	0.00000	0.32601	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	127.15125	0.81458	0.00000	0.00000
7	01-07-1964 08:55	0	0.00000	0.00000	18.90832	0.00788	0.32323	0.00000	0.00000	0.32323	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	126.66268	0.81458	0.00000	0.00000
7	01-07-1964 09:00	0	0.00000	0.00000	18.58508	0.00774	0.32046	0.00000	0.00000	0.32046	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	126.17133	0.81458	0.00000	0.00000
7	01-07-1964 09:05	0	0.00000	0.00000	18.26463	0.00761	0.31768	0.00000	0.00000	0.31768	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	125.67721	0.81458	0.00000	0.00000
7	01-07-1964 09:10	0	0.00000	0.00000	17.94694	0.00748	0.31491	0.00000	0.00000	0.31491	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	125.18031	0.81458	0.00000	0.00000
7	01-07-1964 09:15	0	0.00000	0.00000	17.63203	0.00735	0.31213	0.00000	0.00000	0.31213	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	124.68063	0.81458	0.00000	0.00000
7	01-07-1964 09:20	0	0.00000	0.00000	17.31990	0.00722	0.30936	0.00000	0.00000	0.30936	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	124.17818	0.81458	0.00000	0.00000
7	01-07-1964 09:25	0	0.00000	0.00000	17.01054	0.00709	0.30658	0.00000	0.00000	0.30658	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	123.67296	0.81458	0.00000	0.00000
7	01-07-1964 09:30	0	0.00000	0.00000	16.70395	0.00696	0.30381	0.00000	0.00000	0.30381	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	123.16496	0.81458	0.00000	0.00000
7	01-07-1964 09:35	0	0.00000	0.00000	16.40015	0.00683	0.30103	0.00000	0.00000	0.30103	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	122.65419	0.81458	0.00000	0.00000
7	01-07-1964 09:40	0	0.00000	0.00000	16.09911	0.00671	0.29826	0.00000	0.00000	0.29826	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	122.14064	0.81458	0.00000	0.00000
7	01-07-1964 09:45	0	0.00000	0.00000	15.80085	0.00658	0.29548	0.00000	0.00000	0.29548	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	121.62431	0.81458	0.00000	0.00000
7	01-07-1964 09:50	0	0.00000	0.00000	15.50537	0.00646	0.29271	0.00000	0.00000	0.29271	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	121.10521	0.81458	0.00000	0.00000
7	01-07-1964 09:55	0	0.00000	0.00000	15.21267	0.00634	0.28993	0.00000	0.00000	0.28993	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	120.58333	0.81458	0.00000	0.00000
7	01-07-1964 10:00	0	0.00000	0.00000	14.92274	0.00622	0.28715	0.00000	0.00000	0.28715	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	120.05868	0.81458	0.00000	0.00000
7	01-07-1964 10:05	0	0.00000	0.00000	14.63558	0.00610	0.28438	0.00000	0.00000	0.28438	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	119.53125	0.81458	0.00000	0.00000
7	01-07-1964 10:10	0	0.00000	0.00000	14.35121	0.00598	0.28160	0.00000	0.00000	0.28160	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	119.00104	0.81458	0.00000	0.00000
7	01-07-1964 10:15	0	0.00000	0.00000	14.06960	0.00586	0.27882	0.00000	0.00000	0.27882	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	118.46806	0.81458	0.00000	0.00000
7	01-07-1964 10:20	0	0.00000	0.00000	13.79078	0.00575	0.27605	0.00000	0.00000	0.27605	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	117.93230	0.81458	0.00000	0.00000
7	01-07-1964 10:25	0	0.00000	0.00000	13.51473	0.00563	0.27327	0.00000	0.00000	0.27327	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	117.39377	0.81458	0.00000	0.00000
7	01-07-1964 10:30	0	0.00000	0.00000	13.24146	0.00552	0.27049	0.00000	0.00000	0.27049	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	116.85246	0.81458	0.00000	0.00000
7	01-07-1964 10:35	0	0.00000	0.00000	12.97097	0.00540	0.26772	0.00000	0.00000	0.26772	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	116.30837	0.81458	0.00000	0.00000
7	01-07-1964 10:40	0	0.00000	0.00000	12.70325	0.00529	0.26494	0.00000	0.00000	0.26494	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	115.76150	0.81458	0.00000	0.00000
7	01-07-1964 10:45	0	0.00000	0.00000	12.43831	0.00518	0.26216	0.00000	0.00000	0.26216	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	115.21186	0.81458	0.00000	0.00000
7	01-07-1964 10:50	0	0.00000	0.00000	12.17614	0.00507	0.25939	0.00000	0.00000	0.25939	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	114.65944	0.81458	0.00000	0.00000
7	01-07-1964 10:55	0	0.00000	0.00000	11.91676	0.00497	0.25661	0.00000	0.00000	0.25661	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	114.10424	0.81458	0.00000	0.00000
7	01-07-1964 11:00	0	0.00000	0.00000	11.66015	0.00486	0.25383	0.00000	0.00000	0.25383	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	113.54626	0.81458	0.00000	0.00000
7	01-07-1964 11:05	0	0.00000	0.00000	11.40632	0.00475	0.25105	0.00000	0.00000	0.25105	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	112.98551	0.81458	0.00000	0.00000
7	01-07-1964 11:10	0	0.00000	0.00000	11.15527	0.00465	0.24827	0.00000	0.00000	0.24827	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	112.42198	0.81458	0.00000	0.00000
7	01-07-1964 11:15	0	0.00000	0.00000	10.90700	0.00454	0.24550	0.00000	0.00000	0.24550	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	111.85567	0.81458	0.00000	0.00000
7	01-07-1964 11:20	0	0.00000	0.00000	10.66150	0.00444	0.24272	0.00000	0.00000	0.24272	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	111.28658	0.81458	0.00000	0.00000
7	01-07-1964 11:25	0	0.00000	0.00000	10.41878	0.00434	0.23994	0.00000	0.00000	0.23994	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	110.71471	0.81458	0.00000	0.00000
7	01-07-1964 11:30	0	0.00000	0.00000	10.17885	0.00424	0.23716	0.00000	0.00000	0.23716	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	110.14007	0.81458	0.00000	0.00000
7	01-07-1964 11:35	0	0.00000	0.00000	9.94169	0.00414	0.23438	0.00000	0.00000	0.23438	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	109.56264	0.81458	0.00000	0.00000
7	01-07-1964 11:40	0	0.00000	0.00000	9.70731	0.00404	0.23160	0.00000	0.00000	0.23160	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	108.98244	0.81458	0.00000	0.00000
7	01-07-1964 11:45	0	0.00000	0.00000	9.47571	0.00395	0.22882	0.00000	0.00000	0.22882	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	108.39946	0.81458	0.00000	0.00000
7	01-07-1964 11:50	0	0.00000	0.00000	9.24689	0.00385	0.22604	0.00000	0.00000	0.22604	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	107.81370	0.81458	0.00000	0.00000

7	01-07-1964 11:55	0	0.00000	0.00000	9.02084	0.00376	0.22326	0.00000	0.00000	0.22326	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	107.22515	0.81458	0.00000	0.00000
7	01-07-1964 12:00	0	0.00000	0.00000	8.79758	0.00367	0.22048	0.00000	0.00000	0.22048	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	106.63383	0.81458	0.00000	0.00000
7	01-07-1964 12:05	0	0.00000	0.00000	8.57710	0.00357	0.21770	0.00000	0.00000	0.21770	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	106.03973	0.81458	0.00000	0.00000
7	01-07-1964 12:10	0	0.00000	0.00000	8.35940	0.00348	0.21492	0.00000	0.00000	0.21492	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	105.44285	0.81458	0.00000	0.00000
7	01-07-1964 12:15	0	0.00000	0.00000	8.14448	0.00339	0.21214	0.00000	0.00000	0.21214	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	104.84319	0.81458	0.00000	0.00000
7	01-07-1964 12:20	0	0.00000	0.00000	7.93234	0.00331	0.20936	0.00000	0.00000	0.20936	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	104.24074	0.81458	0.00000	0.00000
7	01-07-1964 12:25	0	0.00000	0.00000	7.72298	0.00322	0.20658	0.00000	0.00000	0.20658	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	103.63552	0.81458	0.00000	0.00000
7	01-07-1964 12:30	0	0.00000	0.00000	7.51640	0.00313	0.20380	0.00000	0.00000	0.20380	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	103.02751	0.81458	0.00000	0.00000
7	01-07-1964 12:35	0	0.00000	0.00000	7.31261	0.00305	0.20101	0.00000	0.00000	0.20101	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	102.41672	0.81458	0.00000	0.00000
7	01-07-1964 12:40	0	0.00000	0.00000	7.11159	0.00296	0.19823	0.00000	0.00000	0.19823	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	101.80316	0.81458	0.00000	0.00000
7	01-07-1964 12:45	0	0.00000	0.00000	6.91336	0.00288	0.19545	0.00000	0.00000	0.19545	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	101.18680	0.81458	0.00000	0.00000
7	01-07-1964 12:50	0	0.00000	0.00000	6.71791	0.00280	0.19267	0.00000	0.00000	0.19267	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	100.56767	0.81458	0.00000	0.00000
7	01-07-1964 12:55	0	0.00000	0.00000	6.52524	0.00272	0.18988	0.00000	0.00000	0.18988	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	99.94575	0.81458	0.00000	0.00000
7	01-07-1964 13:00	0	0.00000	0.00000	6.33536	0.00264	0.18710	0.00000	0.00000	0.18710	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	99.32105	0.81458	0.00000	0.00000
7	01-07-1964 13:05	0	0.00000	0.00000	6.14826	0.00256	0.18432	0.00000	0.00000	0.18432	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	98.69357	0.81458	0.00000	0.00000
7	01-07-1964 13:10	0	0.00000	0.00000	5.96394	0.00248	0.18153	0.00000	0.00000	0.18153	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	98.06331	0.81458	0.00000	0.00000
7	01-07-1964 13:15	0	0.00000	0.00000	5.78241	0.00241	0.17875	0.00000	0.00000	0.17875	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	97.43026	0.81458	0.00000	0.00000
7	01-07-1964 13:20	0	0.00000	0.00000	5.60366	0.00233	0.17597	0.00000	0.00000	0.17597	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	96.79442	0.81458	0.00000	0.00000
7	01-07-1964 13:25	0	0.00000	0.00000	5.42769	0.00226	0.17318	0.00000	0.00000	0.17318	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	96.15580	0.81458	0.00000	0.00000
7	01-07-1964 13:30	0	0.00000	0.00000	5.25451	0.00219	0.17039	0.00000	0.00000	0.17039	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	95.51440	0.81458	0.00000	0.00000
7	01-07-1964 13:35	0	0.00000	0.00000	5.08412	0.00212	0.16761	0.00000	0.00000	0.16761	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	94.87021	0.81458	0.00000	0.00000
7	01-07-1964 13:40	0	0.00000	0.00000	4.91651	0.00205	0.16482	0.00000	0.00000	0.16482	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	94.22324	0.81458	0.00000	0.00000
7	01-07-1964 13:45	0	0.00000	0.00000	4.75169	0.00198	0.16204	0.00000	0.00000	0.16204	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	93.57348	0.81458	0.00000	0.00000
7	01-07-1964 13:50	0	0.00000	0.00000	4.58965	0.00191	0.15925	0.00000	0.00000	0.15925	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	92.92093	0.81458	0.00000	0.00000
7	01-07-1964 13:55	0	0.00000	0.00000	4.43040	0.00185	0.15646	0.00000	0.00000	0.15646	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	92.26560	0.81458	0.00000	0.00000
7	01-07-1964 14:00	0	0.00000	0.00000	4.27394	0.00178	0.15368	0.00000	0.00000	0.15368	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	91.60748	0.81458	0.00000	0.00000
7	01-07-1964 14:05	0	0.00000	0.00000	4.12026	0.00172	0.15089	0.00000	0.00000	0.15089	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	90.94657	0.81458	0.00000	0.00000
7	01-07-1964 14:10	0	0.00000	0.00000	3.96937	0.00165	0.14810	0.00000	0.00000	0.14810	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	90.28288	0.81458	0.00000	0.00000
7	01-07-1964 14:15	0	0.00000	0.00000	3.82127	0.00159	0.14531	0.00000	0.00000	0.14531	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	89.61639	0.81458	0.00000	0.00000
7	01-07-1964 14:20	0	0.00000	0.00000	3.67596	0.00153	0.14252	0.00000	0.00000	0.14252	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	88.94712	0.81458	0.00000	0.00000
7	01-07-1964 14:25	0	0.00000	0.00000	3.53344	0.00147	0.13973	0.00000	0.00000	0.13973	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	88.27505	0.81458	0.00000	0.00000
7	01-07-1964 14:30	0	0.00000	0.00000	3.39371	0.00141	0.13694	0.00000	0.00000	0.13694	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	87.60020	0.81458	0.00000	0.00000
7	01-07-1964 14:35	0	0.00000	0.00000	3.25677	0.00136	0.13415	0.00000	0.00000	0.13415	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	86.92256	0.81458	0.00000	0.00000
7	01-07-1964 14:40	0	0.00000	0.00000	3.12263	0.00130	0.13136	0.00000	0.00000	0.13136	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	86.24212	0.81458	0.00000	0.00000
7	01-07-1964 14:45	0	0.00000	0.00000	2.99127	0.00125	0.12856	0.00000	0.00000	0.12856	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	85.55889	0.81458	0.00000	0.00000
7	01-07-1964 14:50	0	0.00000	0.00000	2.86271	0.00119	0.12577	0.00000	0.00000	0.12577	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	84.87287	0.81458	0.00000	0.00000
7	01-07-1964 14:55	0	0.00000	0.00000	2.73694	0.00114	0.12298	0.00000	0.00000	0.12298	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	84.18406	0.81458	0.00000	0.00000
7	01-07-1964 15:00	0	0.00000	0.00000	2.61396	0.00109	0.12018	0.00000	0.00000	0.12018	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	83.49246	0.81458	0.00000	0.00000
7	01-07-1964 15:05	0	0.00000	0.00000	2.49378	0.00104	0.11739	0.00000	0.00000	0.11739	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	82.79805	0.81458	0.00000	0.00000
7	01-07-1964 15:10	0	0.00000	0.00000	2.37639	0.00099	0.11459	0.00000	0.00000	0.11459	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	82.10086	0.81458	0.00000	0.00000
7	01-07-1964 15:15	0	0.00000	0.00000	2.26180	0.00094	0.11179	0.00000	0.00000	0.11179	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	81.40087	0.81458	0.00000	0.00000
7	01-07-1964 15:20	0	0.00000	0.00000	2.15001	0.00090	0.10900	0.00000	0.00000	0.10900	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	80.69808	0.81458	0.00000	0.00000
7	01-07-1964 15:25	0	0.00000	0.00000	2.04101	0.00085	0.10620	0.00000	0.00000	0.10620	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	79.99249	0.81458	0.00000	0.00000
7	01-07-1964 15:30	0	0.00000	0.00000	1.93481	0.00081	0.10340	0.00000	0.00000	0.10340	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	79.28410	0.81458	0.00000	0.00000
7	01-07-1964 15:35	0	0.00000	0.00000	1.83142	0.00076	0.10060	0.00000	0.00000	0.10060	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	78.57292	0.81458	0.00000	0.00000
7	01-07-1964 15:40	0	0.00000	0.00000	1.73082	0.00072	0.09779	0.00000	0.00000	0.09779	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	77.85893	0.81458	0.00000	0.00000
7	01-07-1964 15:45	0	0.00000	0.00000	1.63302	0.00068	0.09499	0.00000	0.00000	0.09499	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	77.14214	0.81458	0.00000	0.00000
7	01-07-1964 15:50	0	0.00000	0.00000	1.53803	0.00064	0.09219	0.00000	0.00000	0.09219	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	76.42255	0.81458	0.00000	0.00000
7	01-07-1964 15:55	0	0.00000	0.00000	1.44584	0.00060	0.08938	0.00000	0.00000	0.08938	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	75.70015	0.81458	0.00000	0.00000
7	01-07-1964 16:00	0	0.00000	0.00000	1.35646	0.00057	0.08658	0.00000	0.00000	0.08658	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	74.97495	0.81458	0.00000	0.00000
7	01-07-1964 16:05	0	0.00000	0.00000	1.26989	0.00053	0.08377	0.00000	0.00000	0.08377	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	74.24695	0.81458	0.00000	0.00000

7	01-07-1964 16:10	0	0.00000	0.00000	1.18612	0.00049	0.08096	0.00000	0.00000	0.08096	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	73.51613	0.81458	0.00000	0.00000
7	01-07-1964 16:15	0	0.00000	0.00000	1.10516	0.00046	0.07815	0.00000	0.00000	0.07815	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	72.78250	0.81458	0.00000	0.00000
7	01-07-1964 16:20	0	0.00000	0.00000	1.02702	0.00043	0.07533	0.00000	0.00000	0.07533	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	72.04606	0.81458	0.00000	0.00000
7	01-07-1964 16:25	0	0.00000	0.00000	0.95169	0.00040	0.07252	0.00000	0.00000	0.07252	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	71.30681	0.81458	0.00000	0.00000
7	01-07-1964 16:30	0	0.00000	0.00000	0.87917	0.00037	0.06970	0.00000	0.00000	0.06970	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	70.56475	0.81458	0.00000	0.00000
7	01-07-1964 16:35	0	0.00000	0.00000	0.80947	0.00034	0.06688	0.00000	0.00000	0.06688	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	69.81986	0.81458	0.00000	0.00000
7	01-07-1964 16:40	0	0.00000	0.00000	0.74259	0.00031	0.06406	0.00000	0.00000	0.06406	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	69.07216	0.81458	0.00000	0.00000
7	01-07-1964 16:45	0	0.00000	0.00000	0.67853	0.00028	0.06123	0.00000	0.00000	0.06123	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	68.32163	0.81458	0.00000	0.00000
7	01-07-1964 16:50	0	0.00000	0.00000	0.61730	0.00026	0.05840	0.00000	0.00000	0.05840	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	67.56828	0.81458	0.00000	0.00000
7	01-07-1964 16:55	0	0.00000	0.00000	0.55890	0.00023	0.05557	0.00000	0.00000	0.05557	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	66.81210	0.81458	0.00000	0.00000
7	01-07-1964 17:00	0	0.00000	0.00000	0.50333	0.00021	0.05274	0.00000	0.00000	0.05274	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	66.05309	0.81458	0.00000	0.00000
7	01-07-1964 17:05	0	0.00000	0.00000	0.45059	0.00019	0.04990	0.00000	0.00000	0.04990	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	65.29124	0.81458	0.00000	0.00000
7	01-07-1964 17:10	0	0.00000	0.00000	0.40069	0.00017	0.04705	0.00000	0.00000	0.04705	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	64.52656	0.81458	0.00000	0.00000
7	01-07-1964 17:15	0	0.00000	0.00000	0.35364	0.00015	0.04420	0.00000	0.00000	0.04420	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	63.75903	0.81458	0.00000	0.00000
7	01-07-1964 17:20	0	0.00000	0.00000	0.30943	0.00013	0.04135	0.00000	0.00000	0.04135	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	62.98865	0.81458	0.00000	0.00000
7	01-07-1964 17:25	0	0.00000	0.00000	0.26808	0.00011	0.03849	0.00000	0.00000	0.03849	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	62.21542	0.81458	0.00000	0.00000
7	01-07-1964 17:30	0	0.00000	0.00000	0.22960	0.00010	0.03562	0.00000	0.00000	0.03562	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	61.43932	0.81458	0.00000	0.00000
7	01-07-1964 17:35	0	0.00000	0.00000	0.19398	0.00008	0.03274	0.00000	0.00000	0.03274	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	60.66035	0.81458	0.00000	0.00000
7	01-07-1964 17:40	0	0.00000	0.00000	0.16124	0.00007	0.02985	0.00000	0.00000	0.02985	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	59.87851	0.81458	0.00000	0.00000
7	01-07-1964 17:45	0	0.00000	0.00000	0.13139	0.00005	0.02694	0.00000	0.00000	0.02694	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	59.09378	0.81458	0.00000	0.00000
7	01-07-1964 17:50	0	0.00000	0.00000	0.10444	0.00004	0.02402	0.00000	0.00000	0.02402	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	58.30614	0.81458	0.00000	0.00000
7	01-07-1964 17:55	0	0.00000	0.00000	0.08042	0.00003	0.02108	0.00000	0.00000	0.02108	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	57.51558	0.81458	0.00000	0.00000
7	01-07-1964 18:00	0	0.00000	0.00000	0.05934	0.00002	0.01811	0.00000	0.00000	0.01811	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	56.72207	0.81458	0.00000	0.00000
7	01-07-1964 18:05	0	0.00000	0.00000	0.04123	0.00002	0.01509	0.00000	0.00000	0.01509	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	55.92560	0.81458	0.00000	0.00000
7	01-07-1964 18:10	0	0.00000	0.00000	0.02614	0.00001	0.01202	0.00000	0.00000	0.01202	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	55.12611	0.81458	0.00000	0.00000
7	01-07-1964 18:15	0	0.00000	0.00000	0.01412	0.00001	0.00883	0.00000	0.00000	0.00883	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	54.32354	0.81458	0.00000	0.00000
7	01-07-1964 18:20	0	0.00000	0.00000	0.00529	0.00000	0.00529	0.00000	0.00000	0.00529	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	53.51779	0.81458	0.00000	0.00000
7	01-07-1964 18:25	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	52.70850	0.81458	0.00000	0.00000
7	01-07-1964 18:30	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	51.89392	0.81458	0.00000	0.00000
7	01-07-1964 18:35	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	51.07933	0.81458	0.00000	0.00000
7	01-07-1964 18:40	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	50.26475	0.81458	0.00000	0.00000
7	01-07-1964 18:45	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	49.45016	0.81458	0.00000	0.00000
7	01-07-1964 18:50	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	48.63558	0.81458	0.00000	0.00000
7	01-07-1964 18:55	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	47.82100	0.81458	0.00000	0.00000
7	01-07-1964 19:00	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	47.00641	0.81458	0.00000	0.00000
7	01-07-1964 19:05	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	46.19183	0.81458	0.00000	0.00000
7	01-07-1964 19:10	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	45.37725	0.81458	0.00000	0.00000
7	01-07-1964 19:15	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	44.56267	0.81458	0.00000	0.00000
7	01-07-1964 19:20	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	43.74808	0.81458	0.00000	0.00000
7	01-07-1964 19:25	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	42.93350	0.81458	0.00000	0.00000
7	01-07-1964 19:30	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	42.11891	0.81458	0.00000	0.00000
7	01-07-1964 19:35	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	41.30433	0.81458	0.00000	0.00000
7	01-07-1964 19:40	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	40.48975	0.81458	0.00000	0.00000
7	01-07-1964 19:45	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	39.67516	0.81458	0.00000	0.00000
7	01-07-1964 19:50	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	38.86058	0.81458	0.00000	0.00000
7	01-07-1964 19:55	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	38.04600	0.81458	0.00000	0.00000
7	01-07-1964 20:00	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	37.23142	0.81458	0.00000	0.00000
7	01-07-1964 20:05	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	36.41683	0.81458	0.00000	0.00000
7	01-07-1964 20:10	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	35.60225	0.81458	0.00000	0.00000
7	01-07-1964 20:15	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	34.78766	0.81458	0.00000	0.00000
7	01-07-1964 20:20	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	33.97308	0.81458	0.00000	0.00000

7	01-07-1964 20:25	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	33.15850	0.81458	0.00000	0.00000
7	01-07-1964 20:30	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	32.34391	0.81458	0.00000	0.00000
7	01-07-1964 20:35	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	31.52933	0.81458	0.00000	0.00000
7	01-07-1964 20:40	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	30.71475	0.81458	0.00000	0.00000
7	01-07-1964 20:45	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	29.90017	0.81458	0.00000	0.00000
7	01-07-1964 20:50	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	29.08558	0.81458	0.00000	0.00000
7	01-07-1964 20:55	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	28.27100	0.81458	0.00000	0.00000
7	01-07-1964 21:00	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	27.45641	0.81458	0.00000	0.00000
7	01-07-1964 21:05	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	26.64183	0.81458	0.00000	0.00000
7	01-07-1964 21:10	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	25.82725	0.81458	0.00000	0.00000
7	01-07-1964 21:15	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	25.01266	0.81458	0.00000	0.00000
7	01-07-1964 21:20	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	24.19808	0.81458	0.00000	0.00000
7	01-07-1964 21:25	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	23.38350	0.81458	0.00000	0.00000
7	01-07-1964 21:30	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	22.56892	0.81458	0.00000	0.00000
7	01-07-1964 21:35	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	21.75433	0.81458	0.00000	0.00000
7	01-07-1964 21:40	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	20.93975	0.81458	0.00000	0.00000
7	01-07-1964 21:45	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	20.12516	0.81458	0.00000	0.00000
7	01-07-1964 21:50	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	19.31058	0.81458	0.00000	0.00000
7	01-07-1964 21:55	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	18.49600	0.81458	0.00000	0.00000
7	01-07-1964 22:00	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	17.68141	0.81458	0.00000	0.00000
7	01-07-1964 22:05	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	16.86683	0.81458	0.00000	0.00000
7	01-07-1964 22:10	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	16.05225	0.81458	0.00000	0.00000
7	01-07-1964 22:15	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	15.23767	0.81458	0.00000	0.00000
7	01-07-1964 22:20	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	14.42308	0.81458	0.00000	0.00000
7	01-07-1964 22:25	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	13.60850	0.81458	0.00000	0.00000
7	01-07-1964 22:30	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.79391	0.81458	0.00000	0.00000
7	01-07-1964 22:35	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.97933	0.81458	0.00000	0.00000
7	01-07-1964 22:40	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.16475	0.81458	0.00000	0.00000
7	01-07-1964 22:45	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.35016	0.81458	0.00000	0.00000
7	01-07-1964 22:50	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.53558	0.81458	0.00000	0.00000
7	01-07-1964 22:55	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.72100	0.81458	0.00000	0.00000
7	01-07-1964 23:00	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.90642	0.81458	0.00000	0.00000
7	01-07-1964 23:05	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.09183	0.81458	0.00000	0.00000
7	01-07-1964 23:10	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.27725	0.81458	0.00000	0.00000
7	01-07-1964 23:15	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.46266	0.81458	0.00000	0.00000
7	01-07-1964 23:20	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4.64808	0.81458	0.00000	0.00000
7	01-07-1964 23:25	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	3.83350	0.81458	0.00000	0.00000
7	01-07-1964 23:30	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	3.01891	0.81458	0.00000	0.00000
7	01-07-1964 23:35	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	2.20433	0.81458	0.00000	0.00000
7	01-07-1964 23:40	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.38975	0.81458	0.00000	0.00000
7	01-07-1964 23:45	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.57517	0.57517	0.00000	0.00000

mm)

			Roof Area		Infiltration Gallery 1 (East)			
			Impervious area	2300 sq.m	Roof area	2300 sq.m		
					RG Area	110 sq.m		
					Directly to Tench	0 sq.m	2300	
Area Check (m^2)	2300		Total area:	2300 sq.m	Total area:	2410 sq.m		
Developed area					Trench surf. area:	110 sq.m	new SA	
					Trench depth:	0.4 m		
					Trench porosity:	0.35		
					Trench full:	15.4 cu.m		
Developed area (ha)	0.21				Trench initial vol:	0 cu.m		
	0.23				Subsoil exfil. rate:	32 mm/hr		
	0.85				Soil depth:	mm		
	1.29				Soil porosity:			
					Soil field cap:			
					Soil wilt point:			
					Soil infil. rate	mm/hr		
					Soil wilt point vol:	cu.m		
			depth of rain	0.023	Soil porosity vol:	cu.m		
			Rain Volume	53.7	Soil field cap vol:	cu.m		
			P volume	374.9	Soil initial vol:	cu.m		
			Ponding	0.163 m	Ponding	m		
			Orifice	75.00 mm	I/P	0.0		
			max ponding	0.019 m	Safety Factor			
			P volume	43.18 sq.m	Area with SF			

Summary	Roof (1+5)	IG 2
Total evaporation		0.0
Total exfiltration		57.6
Total drainflow	57.6	0.0
Total runoff	0.0	0.0
Total Reused		
Sum	57.6	57.6
Total rainfall	57.6	117.9
% Treated	100%	100%
% untreated	0%	0%
% Captured	0%	100%
EIA	100%	0%

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
14.4	14.4	42.7	0.019	0.5	0.0	15.0	0.5	15.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	12.1	0.3	0.00	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Roof Area						**Infiltration Gallery 1 (East)**													
All in cubic metres						All in cubic metres													
Rain Water onto roof	Rain into Ponding	Beginning Ponding Vol	Depth Ponding	out ponding	Overflow	Rain Water into Swale	Rain Water Directly to trench	Rain into Ponding	Beginning Ponding Vol	out ponding	Unsaturated Runoff	Rain into Soil	Beginning Soil Water Volume	Water from Soil to Trench	Water that Stays in Soil	Beginning Trench Water Volume	Trench Exfiltration	Underdrain Drainflow	Evaporation
	0.00000	0.00000		0.00000	0.00000			0.00000	0.00000	0.00000		0.00000	0.00000	0.00000	0.00000	0.00000		0.00000	0.00000
0.28107	0.28107	0.00000	0.00012	0.04026	0.00000	0.29451	0.04026	0.29451	0.00000	0.00000	0.29451	0.00000	0.00000	0.00000	0.00000	0.00000	0.04026	0.00000	0.00000
0.29551	0.29551	0.24081	0.00023	0.05561	0.00000	0.30964	0.05561	0.30964	0.00000	0.00000	0.30964	0.00000	0.00000	0.00000	0.00000	0.00000	0.05561	0.00000	0.00000
0.31172	0.31172	0.48071	0.00034	0.06759	0.00000	0.32663	0.06759	0.32663	0.00000	0.00000	0.32663	0.00000	0.00000	0.00000	0.00000	0.00000	0.06759	0.00000	0.00000
0.33005	0.33005	0.72484	0.00046	0.07799	0.00000	0.34584	0.07799	0.34584	0.00000	0.00000	0.34584	0.00000	0.00000	0.00000	0.00000	0.00000	0.07799	0.00000	0.00000
0.35096	0.35096	0.97690	0.00058	0.08750	0.00000	0.36774	0.08750	0.36774	0.00000	0.00000	0.36774	0.00000	0.00000	0.00000	0.00000	0.00000	0.08750	0.00000	0.00000
0.37504	0.37504	1.24036	0.00070	0.09651	0.00000	0.39298	0.09651	0.39298	0.00000	0.00000	0.39298	0.00000	0.00000	0.00000	0.00000	0.00000	0.09651	0.00000	0.00000
0.40311	0.40311	1.51889	0.00084	0.10527	0.00000	0.42239	0.10527	0.42239	0.00000	0.00000	0.42239	0.00000	0.00000	0.00000	0.00000	0.00000	0.10527	0.00000	0.00000
0.43628	0.43628	1.81673	0.00098	0.11398	0.00000	0.45714	0.11398	0.45714	0.00000	0.00000	0.45714	0.00000	0.00000	0.00000	0.00000	0.00000	0.11398	0.00000	0.00000
0.47611	0.47611	2.13903	0.00114	0.12279	0.00000	0.49888	0.12279	0.49888	0.00000	0.00000	0.49888	0.00000	0.00000	0.00000	0.00000	0.00000	0.12279	0.00000	0.00000
0.52490	0.52490	2.49235	0.00131	0.13190	0.00000	0.55000	0.13190	0.55000	0.00000	0.00000	0.55000	0.00000	0.00000	0.00000	0.00000	0.00000	0.13190	0.00000	0.00000
0.58612	0.58612	2.88535	0.00151	0.14148	0.00000	0.61416	0.14148	0.61416	0.00000	0.00000	0.61416	0.00000	0.00000	0.00000	0.00000	0.00000	0.14148	0.00000	0.00000
0.66534	0.66534	3.32999	0.00174	0.15178	0.00000	0.69716	0.15178	0.69716	0.00000	0.00000	0.69716	0.00000	0.00000	0.00000	0.00000	0.00000	0.15178	0.00000	0.00000
0.77201	0.77201	3.84356	0.00201	0.16313	0.00000	0.80893	0.16313	0.80893	0.00000	0.00000	0.80893	0.00000	0.00000	0.00000	0.00000	0.00000	0.16313	0.00000	0.00000
0.92355	0.92355	4.45243	0.00234	0.17606	0.00000	0.96772	0.17606	0.96772	0.00000	0.00000	0.96772	0.00000	0.00000	0.00000	0.00000	0.00000	0.17606	0.00000	0.00000
1.15594	1.15594	5.19992	0.00276	0.19143	0.00000	1.21123	0.19143	1.21123	0.00000	0.00000	1.21123	0.00000	0.00000	0.00000	0.00000	0.00000	0.19143	0.00000	0.00000
1.55665	1.55665	6.16443	0.00336	0.21099	0.00000	1.63110	0.21099	1.63110	0.00000	0.00000	1.63110	0.00000	0.00000	0.00000	0.00000	0.00000	0.21099	0.00000	0.00000
2.40316	2.40316	7.51008	0.00431	0.23908	0.00000	2.51809	0.23908	2.51809	0.00000	0.00000	2.51809	0.00000	0.00000	0.00000	0.00000	0.00000	0.23908	0.00000	0.00000
5.21800	5.21800	9.67416	0.00647	0.29303	0.00000	5.46755	0.29303	5.46755	0.00000	0.00000	5.46755	0.00000	0.00000	0.00000	0.00000	0.00000	0.29303	0.00000	0.00000
14.36123	14.36123	14.59913	0.01259	0.40863	0.00000	15.04807	0.40863	######	0.00000	0.00000	15.04807	0.00000	0.00000	0.00000	0.00000	0.00000	0.29333	0.00000	0.00000
6.02610	6.02610	28.55172	0.01503	0.44651	0.00000	6.31431	0.44651	6.31431	0.00000	0.00000	6.31431	0.00000	0.00000	0.00000	0.00000	0.11530	0.29333	0.00000	0.00000
3.22674	3.22674	34.13131	0.01624	0.46411	0.00000	3.38106	0.46411	3.38106	0.00000	0.00000	3.38106	0.00000	0.00000	0.00000	0.00000	0.26848	0.29333	0.00000	0.00000
2.17889	2.17889	36.89393	0.01699	0.47465	0.00000	2.28310	0.47465	2.28310	0.00000	0.00000	2.28310	0.00000	0.00000	0.00000	0.00000	0.43926	0.29333	0.00000	0.00000
1.64278	1.64278	38.59818	0.01750	0.48169	0.00000	1.72135	0.48169	1.72135	0.00000	0.00000	1.72135	0.00000	0.00000	0.00000	0.00000	0.62057	0.29333	0.00000	0.00000
1.32027	1.32027	39.75928	0.01786	0.48668	0.00000	1.38341	0.48668	1.38341	0.00000	0.00000	1.38341	0.00000	0.00000	0.00000	0.00000	0.80892	0.29333	0.00000	0.00000
1.10584	1.10584	40.59286	0.01813	0.49034	0.00000	1.15873	0.49034	1.15873	0.00000	0.00000	1.15873	0.00000	0.00000	0.00000	0.00000	1.00227	0.29333	0.00000	0.00000
0.95327	0.95327	41.20837	0.01833	0.49305	0.00000	0.99886	0.49305	0.99886	0.00000	0.00000	0.99886	0.00000	0.00000	0.00000	0.00000	1.19928	0.29333	0.00000	0.00000
0.83925	0.83925	41.66859	0.01848	0.49507	0.00000	0.87938	0.49507	0.87938	0.00000	0.00000	0.87938	0.00000	0.00000	0.00000	0.00000	1.39899	0.29333	0.00000	0.00000
0.75081	0.75081	42.01276	0.01859	0.49656	0.00000	0.78672	0.49656	0.78672	0.00000	0.00000	0.78672	0.00000	0.00000	0.00000	0.00000	1.60073	0.29333	0.00000	0.00000
0.68021	0.68021	42.26702	0.01867	0.49762	0.00000	0.71274	0.49762	0.71274	0.00000	0.00000	0.71274	0.00000	0.00000	0.00000	0.00000	1.80395	0.29333	0.00000	0.00000
0.62252	0.62252	42.44960	0.01873	0.49835	0.00000	0.65229	0.49835	0.65229	0.00000	0.00000	0.65229	0.00000	0.00000	0.00000	0.00000	2.00824	0.29333	0.00000	0.00000
0.57447	0.57447	42.57378	0.01876	0.49879	0.00000	0.60195	0.49879	0.60195	0.00000	0.00000	0.60195	0.00000	0.00000	0.00000	0.00000	2.21325	0.29333	0.00000	0.00000
0.53382	0.53382	42.64947	0.01878	0.49899	0.00000	0.55935	0.49899	0.55935	0.00000	0.00000	0.55935	0.00000	0.00000	0.00000	0.00000	2.41871	0.29333	0.00000	0.00000
0.49897	0.49897	42.68430	0.01878	0.49899	0.00000	0.52283	0.49899	0.52283	0.00000	0.00000	0.52283	0.00000	0.00000	0.00000	0.00000	2.62436	0.29333	0.00000	0.00000
0.46873	0.46873	42.68428	0.01876	0.49881	0.00000	0.49115	0.49881	0.49115	0.00000	0.00000	0.49115	0.00000	0.00000	0.00000	0.00000	2.83001	0.29333	0.00000	0.00000
0.44224	0.44224	42.65420	0.01874	0.49849	0.00000	0.46339	0.49849	0.46339	0.00000	0.00000	0.46339	0.00000	0.00000	0.00000	0.00000	3.03549	0.29333	0.00000	0.00000
0.41884	0.41884	42.59795	0.01870	0.49803	0.00000	0.43887	0.49803	0.43887	0.00000	0.00000	0.43887	0.00000	0.00000	0.00000	0.00000	3.24065	0.29333	0.00000	0.00000
0.39800	0.39800	42.51877	0.01866	0.49745	0.00000	0.41703	0.49745	0.41703	0.00000	0.00000	0.41703	0.00000	0.00000	0.00000	0.00000	3.44534	0.29333	0.00000	0.00000
0.37932	0.37932	42.41932	0.01861	0.49676	0.00000	0.39746	0.49676	0.39746	0.00000	0.00000	0.39746	0.00000	0.00000	0.00000	0.00000	3.64945	0.29333	0.00000	0.00000
0.36247	0.36247	42.30188	0.01855	0.49598	0.00000	0.37981	0.49598	0.37981	0.00000	0.00000	0.37981	0.00000	0.00000	0.00000	0.00000	3.85288	0.29333	0.00000	0.00000
0.34720	0.34720	42.16837	0.01849	0.49512	0.00000	0.36380	0.49512	0.36380	0.00000	0.00000	0.36380	0.00000	0.00000	0.00000	0.00000	4.05553	0.29333	0.00000	0.00000
0.33328	0.33328	42.02046	0.01841	0.49417	0.00000	0.34922	0.49417	0.34922	0.00000	0.00000	0.34922	0.00000	0.00000	0.00000	0.00000	4.25731	0.29333	0.00000	0.00000
0.32054	0.32054	41.85957	0.01834	0.49316	0.00000	0.33587	0.49316	0.33587	0.00000	0.00000	0.33587	0.00000	0.00000	0.00000	0.00000	4.45815	0.29333	0.00000	0.00000
0.30884	0.30884	41.68695	0.01826	0.49208	0.00000	0.32361	0.49208	0.32361	0.00000	0.00000	0.32361	0.00000	0.00000	0.00000	0.00000	4.65797	0.29333	0.00000	0.00000
0.29804	0.29804	41.50371	0.01817	0.49094	0.00000	0.31230	0.49094	0.31230	0.00000	0.00000	0.31230	0.00000	0.00000	0.00000	0.00000	4.85672	0.29333	0.00000	0.00000
0.28805	0.28805	41.31081	0.01809	0.48975	0.00000	0.30183	0.48975	0.30183	0.00000	0.00000	0.30183	0.00000	0.00000	0.00000	0.00000	5.05432	0.29333	0.00000	0.00000
0.27878	0.27878	41.10911	0.01799	0.48850	0.00000	0.29211	0.48850	0.29211	0.00000	0.00000	0.29211	0.00000	0.00000	0.00000	0.00000	5.25074	0.29333	0.00000	0.00000
0.27014	0.27014	40.89938	0.01790	0.48721	0.00000	0.28306	0.48721	0.28306	0.00000	0.00000	0.28306	0.00000	0.00000	0.00000	0.00000	5.44591	0.29333	0.00000	0.00000
0.26208	0.26208	40.68231	0.01780	0.48588	0.00000	0.27461	0.48588	0.27461	0.00000	0.00000	0.27461	0.00000	0.00000	0.00000	0.00000	5.63979	0.29333	0.00000	0.00000
0.00000	0.00000	40.45851	0.01759	0.48299	0.00000	0.00000	0.48299	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.83234	0.29333	0.00000	0.00000
0.00000	0.00000	39.97552	0.01738	0.48010	0.00000	0.00000	0.48010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.02199	0.29333	0.00000	0.00000
0.00000	0.00000	39.49542	0.01717	0.47721	0.00000	0.00000	0.47721	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.20876	0.29333	0.00000	0.00000
0.00000	0.00000	39.01822	0.01696	0.47431	0.00000	0.00000	0.47431	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.39263	0.29333	0.00000	0.00000
0.00000	0.00000	38.54390	0.01676	0.47142	0.00000	0.00000	0.47142	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.57361	0.29333	0.00000	0.00000
0.00000	0.00000	38.07248	0.01655	0.46853	0.00000	0.00000	0.46853	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.75170	0.29333	0.00000	0.00000
0.00000	0.00000	37.60395	0.01635	0.46564	0.00000	0.00000	0.46564	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.92690	0.29333	0.00000	0.00000
0.00000	0.00000	37.13831	0.01615	0.46275	0.00000	0.00000	0.46275	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.09920	0.29333	0.00000	0.00000
0.00000	0.00000	36.67556	0.01595	0.45985	0.00000	0.00000	0.45985	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.26862	0.29333	0.00000	0.00000
0.00000	0.00000	36.21571	0.01575	0.45696	0.00000	0.00000	0.45696	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.43514	0.29333	0.00000	0.00000
0.00000	0.00000	35.75875	0.01555	0.45407	0.00000	0.00000	0.45407	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.59877	0.29333	0.00000	0.00000
0.00000	0.00000	35.30468	0.01535	0.45118	0.00000	0.00000	0.45118	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.75950	0.29333	0.00000	0.00000
0.00000	0.00000	34.85350	0.01515	0.44829	0.00000	0.00000	0.44829	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.91735	0.29333	0.00000	0.00000
0.00000	0.00000	34.40521	0.01496	0.44539	0.00000	0.00000	0.44539	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.07230	0.29333	0.00000	0.00000
0.00000	0.00000	33.95982	0.01477	0.44250	0.00000	0.00000	0.44250	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.22436	0.29333	0.00000	0.00000
0.00000	0.00000	33.51732	0.01457	0.43961	0.00000	0.00000	0.43961	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.37353	0.29333	0.00000	0.00000
0.00000	0.00000	33.07771	0.01438	0.43672	0.00000	0.00000	0.43672	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.51981	0.29333	0.00000	0.00000
0.00000	0.00000	32.64099	0.01419	0.43382	0.00000	0.00000	0.43382	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.66319	0.29333	0.00000	0.00000
0.00000	0.00000	32.20717	0.01400	0.43093	0.00000	0.00000	0.43093	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.80368	0.29333	0.00000	0.00000
0.00000	0.00000	31.77623	0.01382	0.42804	0.00000	0.00000	0.42804	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.94128	0.29333	0.00000	0.00000
0.00000	0.00000	31.34820	0.01363	0.42515	0.00000	0.00000	0.42515	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.07598	0.29333	0.00000	0.00000
0.00000	0.00000	30.92305	0.01344	0.42225	0.00000	0.00000	0.42225	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.20780	0.29333	0.00000	0.00000
0.00000	0.00000	30.50080	0.01326	0.41936	0.00000	0.00000	0.41936	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.33672	0.29333	0.00000	0.00000
0.00000	0.00000	30.08143	0.01308	0.41647	0.00000	0.00000	0.41647	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.46274	0.29333	0.00000	0.00000
0.00000	0.00000	29.66497	0.01290	0.41357	0.00000	0.00000	0.41357	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.58588	0.29333	0.00000	0.00000
0.00000	0.00000	29.25139	0.01272	0.41068	0.00000	0.00000	0.41068	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.70612	0.29333	0.00000	0.00000
0.00000	0.00000	28.84071	0.01254	0.40779	0.00000	0.00000	0.40779	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.82347	0.29333	0.00000	0.00000
0.00000	0.00000	28.43292	0.01236	0.40490	0.00000	0.00000	0.40490	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.93792	0.29333	0.00000	0.00000
0.00000	0.00000	28.02803	0.01219	0.40200	0.00000	0.00000	0.40200	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.04949	0.29333	0.00000	0.00000
0.00000	0.00000	27.62602	0.01201	0.39911	0.00000	0.00000	0.39911	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.15816	0.29333	0.00000	0.00000
0.00000	0.00000	27.22692	0.01184	0.39622	0.00000	0.00000	0.39622	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.26393	0.29333	0.00000	0.00000
0.00000	0.00000	26.83070	0.01167	0.39332	0.00000	0.00000	0.39332	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.36681	0.29333	0.00000	0.00000
0.00000	0.00000	26.43738	0.01149	0.39043	0.00000	0.00000	0.39043	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.46680	0.29333	0.00000	0.00000
0.00000	0.00000	26.04695	0.01132	0.38753	0.00000	0.00000	0.38753	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.56390	0.29333	0.00000	0.00000
0.00000	0.00000	25.65941	0.01116	0.38464	0.00000	0.00000	0.38464	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.65810	0.29333	0.00000	0.00000
0.00000	0.00000	25.27477	0.01099	0.38175	0.00000	0.00000	0.38175	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.74941	0.29333	0.00000	0.00000
0.00000	0.00000	24.89303	0.01082	0.37885	0.00000	0.00000	0.37885	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.83782	0.29333	0.00000	0.00000
0.00000	0.00000	24.51417	0.01066	0.37596	0.00000	0.00000	0.37596	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.92334	0.29333	0.00000	0.00000
0.00000	0.00000	24.13821	0.01049	0.37307	0.00000	0.00000	0.37307	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.00597	0.29333	0.00000	0.00000
0.00000	0.00000	23.76515	0.01033	0.37017	0.00000	0.00000	0.37017	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.08570	0.29333	0.00000	0.00000
0.00000	0.00000	23.39498	0.01017	0.36728	0.00000	0.00000	0.36728	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.16254	0.29333	0.00000	0.00000
0.00000	0.00000	23.02770	0.01001	0.36438	0.00000	0.00000	0.36438	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.23648	0.29333	0.00000	0.00000
0.00000	0.00000	22.66332	0.00985	0.36149	0.00000	0.00000	0.36149	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.30753	0.29333	0.00000	0.00000
0.00000	0.00000	22.30183	0.00970	0.35859	0.00000	0.00000	0.35859	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.37568	0.29333	0.00000	0.00000
0.00000	0.00000	21.94324	0.00954	0.35570	0.00000	0.00000	0.35570	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.44094	0.29333	0.00000	0.00000
0.00000	0.00000	21.58754	0.00939	0.35280	0.00000	0.00000	0.35280	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.50331	0.29333	0.00000	0.00000
0.00000	0.00000	21.23473	0.00923	0.34991	0.00000	0.00000	0.34991	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.56278	0.29333	0.00000	0.00000
0.00000	0.00000	20.88482	0.00908	0.34701	0.00000	0.00000	0.34701	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.61935	0.29333	0.00000	0.00000
0.00000	0.00000	20.53781	0.00893	0.34412	0.00000	0.00000	0.34412	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.67304	0.29333	0.00000	0.00000
0.00000	0.00000	20.19369	0.00878	0.34122	0.00000	0.00000	0.34122	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.72382	0.29333	0.00000	0.00000
0.00000	0.00000	19.85247	0.00863	0.33833	0.00000	0.00000	0.33833	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.77171	0.29333	0.00000	0.00000
0.00000	0.00000	19.51414	0.00848	0.33543	0.00000	0.00000	0.33543	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.81671	0.29333	0.00000	0.00000
0.00000	0.00000	19.17870	0.00834	0.33254	0.00000	0.00000	0.33254	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.85881	0.29333	0.00000	0.00000
0.00000	0.00000	18.84616	0.00819	0.32964	0.00000	0.00000	0.32964	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.89801	0.29333	0.00000	0.00000

0.00000	0.00000	18.51652	0.00805	0.32675	0.00000	0.00000	0.32675	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.93432	0.29333	0.00000	0.00000
0.00000	0.00000	18.18977	0.00791	0.32385	0.00000	0.00000	0.32385	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.96774	0.29333	0.00000	0.00000
0.00000	0.00000	17.86592	0.00777	0.32096	0.00000	0.00000	0.32096	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.99826	0.29333	0.00000	0.00000
0.00000	0.00000	17.54497	0.00763	0.31806	0.00000	0.00000	0.31806	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.02588	0.29333	0.00000	0.00000
0.00000	0.00000	17.22691	0.00749	0.31516	0.00000	0.00000	0.31516	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.05060	0.29333	0.00000	0.00000
0.00000	0.00000	16.91174	0.00735	0.31227	0.00000	0.00000	0.31227	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.07243	0.29333	0.00000	0.00000
0.00000	0.00000	16.59948	0.00722	0.30937	0.00000	0.00000	0.30937	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.09137	0.29333	0.00000	0.00000
0.00000	0.00000	16.29011	0.00708	0.30647	0.00000	0.00000	0.30647	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.10741	0.29333	0.00000	0.00000
0.00000	0.00000	15.98363	0.00695	0.30358	0.00000	0.00000	0.30358	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.12055	0.29333	0.00000	0.00000
0.00000	0.00000	15.68005	0.00682	0.30068	0.00000	0.00000	0.30068	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.13079	0.29333	0.00000	0.00000
0.00000	0.00000	15.37937	0.00669	0.29778	0.00000	0.00000	0.29778	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.13814	0.29333	0.00000	0.00000
0.00000	0.00000	15.08159	0.00656	0.29489	0.00000	0.00000	0.29489	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.14259	0.29333	0.00000	0.00000
0.00000	0.00000	14.78670	0.00643	0.29199	0.00000	0.00000	0.29199	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.14414	0.29333	0.00000	0.00000
0.00000	0.00000	14.49471	0.00630	0.28909	0.00000	0.00000	0.28909	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.14280	0.29333	0.00000	0.00000
0.00000	0.00000	14.20562	0.00618	0.28620	0.00000	0.00000	0.28620	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.13856	0.29333	0.00000	0.00000
0.00000	0.00000	13.91942	0.00605	0.28330	0.00000	0.00000	0.28330	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.13142	0.29333	0.00000	0.00000
0.00000	0.00000	13.63613	0.00593	0.28040	0.00000	0.00000	0.28040	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.12139	0.29333	0.00000	0.00000
0.00000	0.00000	13.35573	0.00581	0.27750	0.00000	0.00000	0.27750	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.10845	0.29333	0.00000	0.00000
0.00000	0.00000	13.07823	0.00569	0.27460	0.00000	0.00000	0.27460	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.09262	0.29333	0.00000	0.00000
0.00000	0.00000	12.80362	0.00557	0.27171	0.00000	0.00000	0.27171	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.07389	0.29333	0.00000	0.00000
0.00000	0.00000	12.53192	0.00545	0.26881	0.00000	0.00000	0.26881	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.05226	0.29333	0.00000	0.00000
0.00000	0.00000	12.26311	0.00533	0.26591	0.00000	0.00000	0.26591	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.02774	0.29333	0.00000	0.00000
0.00000	0.00000	11.99720	0.00522	0.26301	0.00000	0.00000	0.26301	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	12.00031	0.29333	0.00000	0.00000
0.00000	0.00000	11.73419	0.00510	0.26011	0.00000	0.00000	0.26011	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.96999	0.29333	0.00000	0.00000
0.00000	0.00000	11.47408	0.00499	0.25721	0.00000	0.00000	0.25721	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.93677	0.29333	0.00000	0.00000
0.00000	0.00000	11.21687	0.00488	0.25431	0.00000	0.00000	0.25431	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.90065	0.29333	0.00000	0.00000
0.00000	0.00000	10.96255	0.00477	0.25141	0.00000	0.00000	0.25141	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.86162	0.29333	0.00000	0.00000
0.00000	0.00000	10.71114	0.00466	0.24851	0.00000	0.00000	0.24851	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.81970	0.29333	0.00000	0.00000
0.00000	0.00000	10.46263	0.00455	0.24561	0.00000	0.00000	0.24561	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.77488	0.29333	0.00000	0.00000
0.00000	0.00000	10.21701	0.00444	0.24271	0.00000	0.00000	0.24271	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.72717	0.29333	0.00000	0.00000
0.00000	0.00000	9.97430	0.00434	0.23981	0.00000	0.00000	0.23981	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.67655	0.29333	0.00000	0.00000
0.00000	0.00000	9.73449	0.00423	0.23691	0.00000	0.00000	0.23691	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.62303	0.29333	0.00000	0.00000
0.00000	0.00000	9.49757	0.00413	0.23401	0.00000	0.00000	0.23401	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.56661	0.29333	0.00000	0.00000
0.00000	0.00000	9.26356	0.00403	0.23111	0.00000	0.00000	0.23111	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.50728	0.29333	0.00000	0.00000
0.00000	0.00000	9.03245	0.00393	0.22821	0.00000	0.00000	0.22821	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.44506	0.29333	0.00000	0.00000
0.00000	0.00000	8.80424	0.00383	0.22531	0.00000	0.00000	0.22531	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.37994	0.29333	0.00000	0.00000
0.00000	0.00000	8.57893	0.00373	0.22241	0.00000	0.00000	0.22241	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.31191	0.29333	0.00000	0.00000
0.00000	0.00000	8.35652	0.00363	0.21951	0.00000	0.00000	0.21951	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.24099	0.29333	0.00000	0.00000
0.00000	0.00000	8.13702	0.00354	0.21660	0.00000	0.00000	0.21660	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.16716	0.29333	0.00000	0.00000
0.00000	0.00000	7.92042	0.00344	0.21370	0.00000	0.00000	0.21370	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.09043	0.29333	0.00000	0.00000
0.00000	0.00000	7.70672	0.00335	0.21080	0.00000	0.00000	0.21080	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	11.01080	0.29333	0.00000	0.00000
0.00000	0.00000	7.49592	0.00326	0.20790	0.00000	0.00000	0.20790	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.92826	0.29333	0.00000	0.00000
0.00000	0.00000	7.28802	0.00317	0.20499	0.00000	0.00000	0.20499	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.84282	0.29333	0.00000	0.00000
0.00000	0.00000	7.08303	0.00308	0.20209	0.00000	0.00000	0.20209	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.75448	0.29333	0.00000	0.00000
0.00000	0.00000	6.88094	0.00299	0.19918	0.00000	0.00000	0.19918	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.66324	0.29333	0.00000	0.00000
0.00000	0.00000	6.68176	0.00291	0.19628	0.00000	0.00000	0.19628	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.56909	0.29333	0.00000	0.00000
0.00000	0.00000	6.48548	0.00282	0.19338	0.00000	0.00000	0.19338	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.47204	0.29333	0.00000	0.00000
0.00000	0.00000	6.29210	0.00274	0.19047	0.00000	0.00000	0.19047	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.37208	0.29333	0.00000	0.00000
0.00000	0.00000	6.10163	0.00265	0.18757	0.00000	0.00000	0.18757	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.26922	0.29333	0.00000	0.00000
0.00000	0.00000	5.91406	0.00257	0.18466	0.00000	0.00000	0.18466	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.16345	0.29333	0.00000	0.00000
0.00000	0.00000	5.72940	0.00249	0.18176	0.00000	0.00000	0.18176	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	10.05478	0.29333	0.00000	0.00000
0.00000	0.00000	5.54765	0.00241	0.17885	0.00000	0.00000	0.17885	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.94320	0.29333	0.00000	0.00000
0.00000	0.00000	5.36880	0.00233	0.17594	0.00000	0.00000	0.17594	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.82872	0.29333	0.00000	0.00000
0.00000	0.00000	5.19285	0.00226	0.17304	0.00000	0.00000	0.17304	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.71133	0.29333	0.00000	0.00000
0.00000	0.00000	5.01982	0.00218	0.17013	0.00000	0.00000	0.17013	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.59103	0.29333	0.00000	0.00000
0.00000	0.00000	4.84969	0.00211	0.16722	0.00000	0.00000	0.16722	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.46782	0.29333	0.00000	0.00000
0.00000	0.00000	4.68247	0.00204	0.16431	0.00000	0.00000	0.16431	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.34171	0.29333	0.00000	0.00000
0.00000	0.00000	4.51816	0.00196	0.16140	0.00000	0.00000	0.16140	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.21269	0.29333	0.00000	0.00000
0.00000	0.00000	4.35675	0.00189	0.15849	0.00000	0.00000	0.15849	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	9.08076	0.29333	0.00000	0.00000
0.00000	0.00000	4.19826	0.00183	0.15558	0.00000	0.00000	0.15558	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.94592	0.29333	0.00000	0.00000
0.00000	0.00000	4.04268	0.00176	0.15267	0.00000	0.00000	0.15267	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.80817	0.29333	0.00000	0.00000
0.00000	0.00000	3.89000	0.00169	0.14976	0.00000	0.00000	0.14976	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.66751	0.29333	0.00000	0.00000
0.00000	0.00000	3.74024	0.00163	0.14685	0.00000	0.00000	0.14685	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.52394	0.29333	0.00000	0.00000
0.00000	0.00000	3.59338	0.00156	0.14394	0.00000	0.00000	0.14394	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.37746	0.29333	0.00000	0.00000
0.00000	0.00000	3.44944	0.00150	0.14103	0.00000	0.00000	0.14103	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.22807	0.29333	0.00000	0.00000
0.00000	0.00000	3.30842	0.00144	0.13812	0.00000	0.00000	0.13812	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	8.07576	0.29333	0.00000	0.00000
0.00000	0.00000	3.17030	0.00138	0.13520	0.00000	0.00000	0.13520	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.92055	0.29333	0.00000	0.00000
0.00000	0.00000	3.03510	0.00132	0.13229	0.00000	0.00000	0.13229	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.76241	0.29333	0.00000	0.00000
0.00000	0.00000	2.90281	0.00126	0.12937	0.00000	0.00000	0.12937	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.60137	0.29333	0.00000	0.00000
0.00000	0.00000	2.77344	0.00121	0.12646	0.00000	0.00000	0.12646	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.43741	0.29333	0.00000	0.00000
0.00000	0.00000	2.64698	0.00115	0.12354	0.00000	0.00000	0.12354	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.27053	0.29333	0.00000	0.00000
0.00000	0.00000	2.52344	0.00110	0.12062	0.00000	0.00000	0.12062	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	7.10074	0.29333	0.00000	0.00000
0.00000	0.00000	2.40282	0.00104	0.11770	0.00000	0.00000	0.11770	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.92803	0.29333	0.00000	0.00000
0.00000	0.00000	2.28511	0.00099	0.11479	0.00000	0.00000	0.11479	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.75240	0.29333	0.00000	0.00000
0.00000	0.00000	2.17033	0.00094	0.11187	0.00000	0.00000	0.11187	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.57385	0.29333	0.00000	0.00000
0.00000	0.00000	2.05846	0.00089	0.10894	0.00000	0.00000	0.10894	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.39238	0.29333	0.00000	0.00000
0.00000	0.00000	1.94952	0.00085	0.10602	0.00000	0.00000	0.10602	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.20799	0.29333	0.00000	0.00000
0.00000	0.00000	1.84350	0.00080	0.10310	0.00000	0.00000	0.10310	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	6.02068	0.29333	0.00000	0.00000
0.00000	0.00000	1.74040	0.00076	0.10017	0.00000	0.00000	0.10017	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.83045	0.29333	0.00000	0.00000
0.00000	0.00000	1.64022	0.00071	0.09725	0.00000	0.00000	0.09725	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.63729	0.29333	0.00000	0.00000
0.00000	0.00000	1.54298	0.00067	0.09432	0.00000	0.00000	0.09432	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.44120	0.29333	0.00000	0.00000
0.00000	0.00000	1.44865	0.00063	0.09139	0.00000	0.00000	0.09139	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.24219	0.29333	0.00000	0.00000
0.00000	0.00000	1.35726	0.00059	0.08846	0.00000	0.00000	0.08846	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	5.04025	0.29333	0.00000	0.00000
0.00000	0.00000	1.26880	0.00055	0.08553	0.00000	0.00000	0.08553	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4.83538	0.29333	0.00000	0.00000
0.00000	0.00000	1.18327	0.00051	0.08260	0.00000	0.00000	0.08260	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4.62758	0.29333	0.00000	0.00000
0.00000	0.00000	1.10067	0.00048	0.07966	0.00000	0.00000	0.07966	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4.41685	0.29333	0.00000	0.00000
0.00000	0.00000	1.02100	0.00044	0.07673	0.00000	0.00000	0.07673	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4.20318	0.29333	0.00000	0.00000
0.00000	0.00000	0.94428	0.00041	0.07379	0.00000	0.00000	0.07379	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	3.98657	0.29333	0.00000	0.00000
0.00000	0.00000	0.87049	0.00038	0.07085	0.00000	0.00000	0.07085	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	3.76702	0.29333	0.00000	0.00000
0.00000	0.00000	0.79964	0.00035	0.06790	0.00000	0.00000	0.06790	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	3.54454	0.29333	0.00000	0.00000
0.00000	0.00000	0.73174	0.00032	0.06495	0.00000	0.00000	0.06495	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	3.31910	0.29333	0.00000	0.00000
0.00000	0.00000	0.66679	0.00029	0.06200	0.00000	0.00000	0.06200	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	3.09073	0.29333	0.00000	0.00000
0.00000	0.00000	0.60478	0.00026	0.05905	0.00000	0.00000	0.05905	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	2.85940	0.29333	0.00000	0.00000
0.00000	0.00000	0.54573	0.00024	0.05609	0.00000	0.00000	0.05609	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	2.62512	0.29333	0.00000	0.00000
0.00000	0.00000	0.48964	0.00021	0.05313	0.00000	0.00000	0.05313	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	2.38788	0.29333	0.00000	0.00000
0.00000	0.00000	0.43650	0.00019	0.05017	0.00000	0.00000	0.05017	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	2.14768	0.29333	0.00000	0.00000
0.00000	0.00000	0.38633	0.00017	0.04720	0.00000	0.00000	0.04720	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.90451	0.29333	0.00000	0.00000
0.00000	0.00000	0.33914	0.00015	0.04422	0.00000	0.00000	0.04422	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.65838	0.29333	0.00000	0.00000
0.00000	0.00000	0.29492	0.00013	0.04124	0.00000	0.00000	0.04124	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.40926	0.29333	0.00000	0.00000
0.00000	0.00000	0.25368	0.00011	0.03825	0.00000	0.00000	0.03825	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1.15717	0.29333	0.00000	0.00000
0.00000	0.00000	0.21544	0.00009	0.03524	0.00000	0.00000	0.03524	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.90208	0.29333	0.00000	0.00000
0.00000	0.00000	0.18019	0.00008	0.03223	0.00000	0.00000	0.03223	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.64399	0.29333	0.00000	0.00000
0.00000	0.00000	0.14796	0.00006	0.02921	0.00000	0.00000	0.02921	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.38289	0.29333	0.00000	0.00000
0.00000	0.00000	0.11875	0.00005	0.02617	0.00000	0.00000	0.02617	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.11876	0.14493	0.00000	0.00000
0.00000	0.00000	0.09258	0.00004	0.02310	0.00000	0.00000	0.02310	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.02310	0.00000	0.00000
0.00000	0.00000	0.06948	0.00003	0.02002	0.00000	0.00000	0.02002	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.02002	0.00000	0.00000
0.00000	0.00000	0.04946	0.00002	0.01689	0.00000	0.00000	0.01689	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01689	0.00000	0.00000
0.00000	0.00000	0.03258	0.00001	0.01371	0.00000	0.00000	0.01371	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01371	0.00000	0.00000
0.00000	0.00000	0.01887	0.00001	0.01043	0.00000	0.00000	0.01043	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01043	0.00000	0.00000
0.00000	0.00000	0.00844	0.00000	0.00698	0.00000	0.00000	0.00698	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00698	0.00000	0.00000
0.00000	0.00000	0.00146	0.00000	0.00146	0.00000	0.00000	0.00146	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00146	0.00000	0.00000

STORMCEPTOR SIZING REPORT

Stormceptor®

FORTERRA

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

07/30/2021

Province:	Ontario
City:	Guelph
Nearest Rainfall Station:	WATERLOO WELLINGTON AP
NCDC Rainfall Station Id:	9387
Years of Rainfall Data:	34

Project Name:	1250 Gordon Street
Project Number:	161413684
Designer Name:	Claire Phelps
Designer Company:	Stantec
Designer Email:	Claire.Phelps@stantec.com
Designer Phone:	519-575-4125
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Site Name:	1250 Gordon Street
Drainage Area (ha):	0.69
% Imperviousness:	98.00

Runoff Coefficient 'c': 0.88

Particle Size Distribution:	>75 micron
Target TSS Removal (%):	80.0
Required Water Quality Runoff Volume Capture (%):	
Estimated Water Quality Flow Rate (L/s):	
Oil / Fuel Spill Risk Site?	No
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EF4	96
EF6	98
EF8	99
EF10	99
EF12	99

Recommended Stormceptor EF Model: EF4

Estimated Net Annual Sediment (TSS) Load Reduction (%): 96

imbrium

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

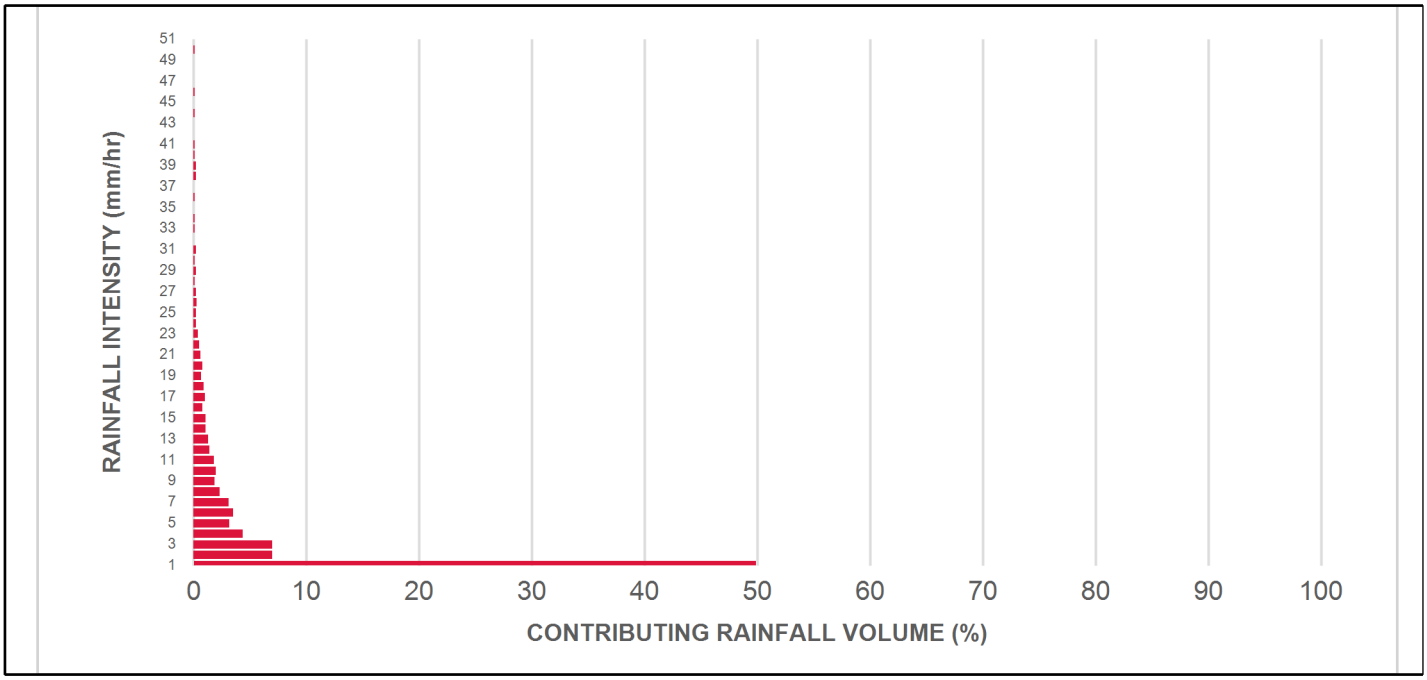
►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (μm)	Percent Less Than	Particle Size Fraction (μm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

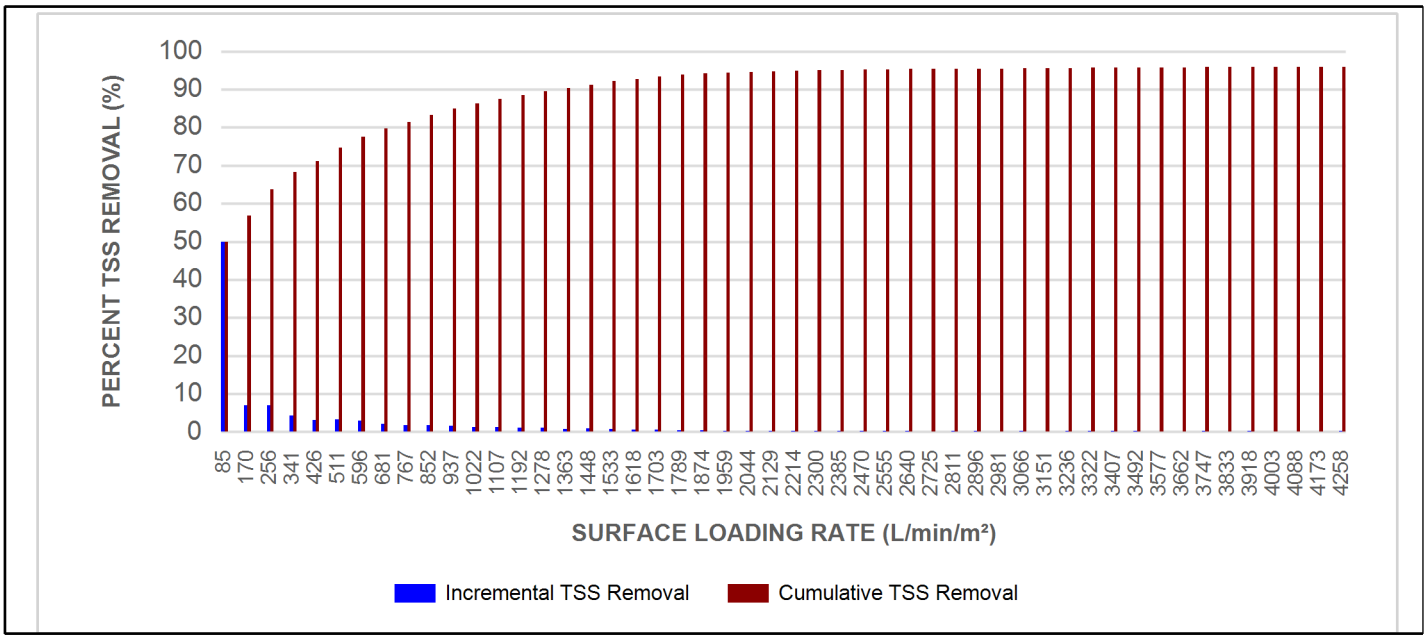
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
1	49.9	49.9	1.70	102.0	85.0	100	49.9	49.9
2	7.0	56.9	3.41	204.0	170.0	100	7.0	56.9
3	7.0	63.9	5.11	307.0	256.0	99	6.9	63.8
4	4.4	68.3	6.81	409.0	341.0	98	4.3	68.2
5	3.2	71.5	8.52	511.0	426.0	97	3.1	71.2
6	3.5	75.0	10.22	613.0	511.0	95	3.3	74.6
7	3.1	78.1	11.92	715.0	596.0	94	2.9	77.5
8	2.3	80.4	13.63	818.0	681.0	93	2.1	79.7
9	1.9	82.3	15.33	920.0	767.0	93	1.8	81.4
10	2.0	84.3	17.03	1022.0	852.0	92	1.8	83.3
11	1.8	86.1	18.74	1124.0	937.0	92	1.6	84.9
12	1.4	87.5	20.44	1226.0	1022.0	91	1.3	86.2
13	1.3	88.8	22.14	1329.0	1107.0	93	1.2	87.4
14	1.1	89.9	23.85	1431.0	1192.0	95	1.0	88.4
15	1.1	91.0	25.55	1533.0	1278.0	96	1.1	89.5
16	0.8	91.8	27.25	1635.0	1363.0	98	0.8	90.3
17	1.0	92.8	28.96	1737.0	1448.0	96	1.0	91.2
18	0.9	93.7	30.66	1840.0	1533.0	91	0.8	92.1
19	0.7	94.4	32.36	1942.0	1618.0	86	0.6	92.7
20	0.8	95.2	34.07	2044.0	1703.0	82	0.7	93.3
21	0.6	95.8	35.77	2146.0	1789.0	78	0.5	93.8
22	0.5	96.3	37.47	2248.0	1874.0	74	0.4	94.2
23	0.4	96.7	39.18	2351.0	1959.0	71	0.3	94.4
24	0.2	96.9	40.88	2453.0	2044.0	68	0.1	94.6
25	0.2	97.1	42.58	2555.0	2129.0	65	0.1	94.7

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
26	0.3	97.4	44.29	2657.0	2214.0	63	0.2	94.9
27	0.2	97.6	45.99	2759.0	2300.0	60	0.1	95.0
28	0.1	97.7	47.69	2862.0	2385.0	58	0.1	95.1
29	0.2	97.9	49.40	2964.0	2470.0	56	0.1	95.2
30	0.1	98.0	51.10	3066.0	2555.0	54	0.1	95.2
31	0.2	98.2	52.80	3168.0	2640.0	53	0.1	95.3
32	0.0	98.2	54.51	3270.0	2725.0	51	0.0	95.3
33	0.1	98.3	56.21	3373.0	2811.0	50	0.1	95.4
34	0.1	98.4	57.91	3475.0	2896.0	50	0.1	95.4
35	0.0	98.4	59.62	3577.0	2981.0	48	0.0	95.4
36	0.1	98.5	61.32	3679.0	3066.0	46	0.0	95.5
37	0.0	98.5	63.02	3781.0	3151.0	45	0.0	95.5
38	0.2	98.7	64.73	3884.0	3236.0	43	0.1	95.6
39	0.2	98.9	66.43	3986.0	3322.0	42	0.1	95.7
40	0.1	99.0	68.13	4088.0	3407.0	41	0.0	95.7
41	0.1	99.1	69.84	4190.0	3492.0	41	0.0	95.7
42	0.0	99.1	71.54	4292.0	3577.0	40	0.0	95.7
43	0.0	99.1	73.24	4395.0	3662.0	39	0.0	95.7
44	0.1	99.2	74.95	4497.0	3747.0	37	0.0	95.8
45	0.0	99.2	76.65	4599.0	3833.0	36	0.0	95.8
46	0.1	99.3	78.35	4701.0	3918.0	36	0.0	95.8
47	0.0	99.3	80.06	4803.0	4003.0	35	0.0	95.8
48	0.0	99.3	81.76	4906.0	4088.0	35	0.0	95.8
49	0.0	99.3	83.46	5008.0	4173.0	34	0.0	95.8
50	0.1	99.4	85.17	5110.0	4258.0	33	0.0	95.8
Estimated Net Annual Sediment (TSS) Load Reduction =								**96 %**

RAINFALL DATA FROM WATERLOO WELLINGTON AP RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

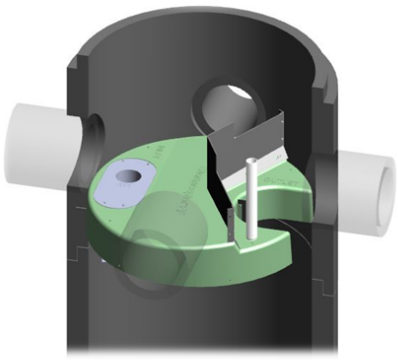
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

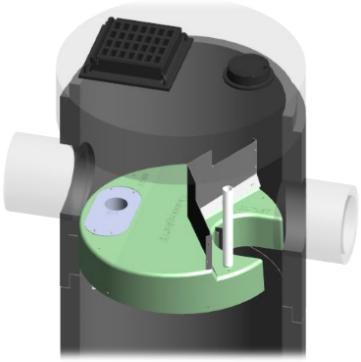
DESIGN FLEXIBILITY

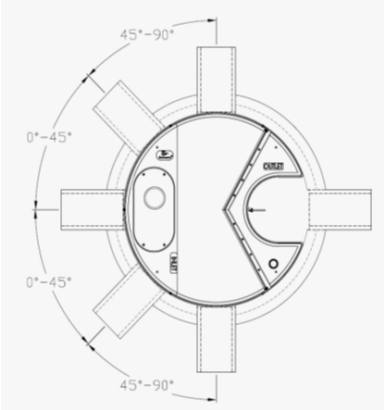
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft³)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity

** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft³)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The **minimum** sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.