East Village Subdivision
Stormwater Management Report

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Engage Engineering Ltd.
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1.0 Introduction

1.1 Project Scope

Engage Engineering Limited (Engage) has been retained by JMCD Holdings Inc. to prepare a Stormwater Management Report (SWM) in support of the proposed Plan of Subdivision in the Town of Cobourg (Cobourg). The purpose of this report is to identify the level of impact that a residential Plan of Subdivision will have from a stormwater management (SWM) perspective. This report will quantify the impact that the proposed development will have on runoff rates, and recommend any stormwater management measures required to maintain post-development flows to pre-development levels while providing appropriate quality control.

Recommendations made in this report will be in accordance with the Cobourg and Ganaraska Region Conservation Authority (GRCA) requirements, in addition to current stormwater management best practices and the Credit Valley Conservation Low Impact Development Stormwater Management Planning and Design Guide (CVC LIDSWMPDG).

1.2 Site Description

The East Village Phase 5 residential development is located on the north side of King Street East (County Road #2) in the area of the Maplewood Boulevard and Willmott Street intersections in the Town of Cobourg, County of Northumberland. The site abuts existing residential to the south and west, the CN/CP Railway to the north and existing agricultural to the east. The development will include road connections to both King Street and the existing East Village development to the west.

The proposed development will have a total of 334 units consisting of:

- 30 single detached units
- 26 semi-detached units
- 54 townhouse units
- 122 apartment units in 10-plex buildings
- 102 apartment units in two buildings

The internal subdivision road will include two 4.25m asphalt travel lanes with curb and gutter and a 1.5m concrete sidewalk on both sides. The site is currently unoccupied and consists of grassed open space. The location of the subject development is identified on the Location Plan included as **Figure 1**. A copy of the Draft Plan for the subject site is included as **Figure 2**.

Figure 1 – Location Plan

2.0 Hydrologic Analysis

2.1 Hydrologic Model

As part of this study, a hydrologic model for the site under both existing and proposed conditions was developed using Visual OTTHYMO (VO) software. The model was used to simulate peak flows from the site under both pre and post-development conditions for a variety of storm distributions and durations, as well as to verify stormwater management storage requirements and performance. The model and detailed output are included in **Appendix B**.

Town of Cobourg rainfall data was utilized to develop the storm distributions in the model due to the vicinity to the subject site. The Geotechnical Report prepared by GHD (February 2, 2018) was utilized to determine land use and soil types for the hydrologic model. According to the geotechnical report, the underlying soils are generally characterized as sand and silt till. This type of soil is classified as Hydrologic Soils Group BC for the purposes of this report. This soil group along with the pasture and other unimproved land use suggest a CN value of 71. The geotechnical report is included in **Appendix M** for reference.

2.2 Existing Conditions

The existing site is approximately 11.5ha and is located on the north side of King Street East in the area of the Maplewood Boulevard and Willmott Street intersections. Under the existing condition the site was divided into four existing catchment areas and three external catchment areas for the pre-development hydrologic model. These existing catchment areas are shown on the **Pre-Development Drainage Area Plan**, included as **Figure 3**.

- **EX1**: Existing catchment area EX1 is 9.30ha and includes drainage for the central portion of the site. This area drains from north to south and consists of grassed and wooded areas. This catchment area drains to the King Street storm sewer.

- **EX2**: Existing catchment area EX2 is 0.80ha and includes drainage to the southwest corner of the site. This area drains from northeast to southwest and consists of grassed and wooded areas. This catchment area drains to the King Street storm sewer

- **Ext3**: External catchment area Ext3 is 0.47ha and includes drainage for a grassed area north of the site. This area drains towards EX1 and ultimately contributes to the King Street storm sewer.

- **EX4**: Existing catchment area EX4 is 1.22ha and includes drainage for the southeast corner of the site. This area drains from northeast to southwest and consists of grassed and wooded areas. This catchment area drains to the King Street storm sewer.

- **EX5**: Existing catchment area EX5 is a 0.18ha and includes drainage for a small section on the eastern boundary of the site. This area drains from west to east contributing to EXT7 and eventually into the subject site, consisting of grassed area.

- **Ext6**: Existing external catchment area Ext6 is 38.27ha and includes drainage for a large area north of the site. This area drains from north to south and consists of mostly agricultural and wooded area, in addition to a railway corridor. Flows are conveyed under the railway tracks by a 900mm CSP culvert. The catchment area contributes to drainage area EX3 and EX1 and ultimately to the King Street Sewer.

- **Ext7**: Existing external catchment area Ext7 is 3.08ha and includes drainage for an area to the east of the subject site. This area drains from south to north onto the subject site and consists of grassed, wooded and low lying areas.

The hydrologic parameters for the pre-development model are summarized in **Table 1** below. A complete list of the VO input data is included in **Appendix A**.

Table 1 - Pre-Development Hydrological Parameters

Catchment	Area (ha)	CN*	IA	TP (hr)	VO Command
EX1	9.30	66	5	0.63	NASHYD
EX2	0.80	66	5	0.35	NASHYD
Ext3	0.47	65	5	0.11	NASHYD
EX4	1.22	65	5	0.31	NASHYD
EX5	0.18	65	5	0.16	NASHYD
Ext6	38.27	81	5	0.23	NASHYD
Ext7	3.08	75	5	0.50	NASHYD

See **Appendix A** for details on the time to peak calculations.

2.3 Proposed Conditions

Under proposed conditions, the 11.4ha site will be developed to include 334 units with the stormwater management facility in the south of the site. A road widening of approximately 0.10ha along King Street will decrease the overall site area. Based on the proposed grading, the site was divided into ten (10) proposed catchment areas and three external catchment areas for the post-development hydrologic model. These catchment areas are shown on the **Post-Development Drainage Area Plan** included as **Figure 4**.

- **PR1**: Proposed catchment area PR1 is 2.21ha and includes proposed buildings, roadways and grassed areas. This area will drain towards the storm sewer within the Drewery Road ROW and ultimately to the proposed wet pond.

- **PR2**: Proposed catchment area PR2 is 2.16ha and includes proposed buildings, roadways and grassed areas. A portion of this catchment area will drain towards the rear yard infiltration swale between Drewery Road and Hayward Street. The remainder of this catchment area will drain towards storm sewer within the Hayward Street ROW. All flows from this catchment area will ultimately contribute to the proposed wet pond.

- **PR3**: Proposed catchment area PR3 is 2.71ha and includes proposed buildings, roadways and grassed areas. A portion of this area will drain towards the rear yard infiltration swale between Hayward Street and Street ‘B’. The remainder of this catchment area will drain towards proposed storm sewer within Street ‘D’, Street ‘C’ and Street ‘B’. All flows from this catchment area will ultimately contribute to the proposed wet pond.

- **PR4**: Proposed catchment area PR4 is 0.16ha and includes grassed area. This area will drain from north to south via overland flow to the storm sewer within the King Street East ROW.

- **PR5**: Proposed catchment area PR5 is 1.25ha and includes proposed buildings, roadways, grassed areas and the proposed wet pond. This area will drain into the wet pond via storm sewer within the Street ‘A’ ROW and overland flow. Flows will ultimately be released from the pond to the storm sewer within the King Street East ROW at a controlled rate.

- **PR6**: Proposed catchment area PR6 is 0.35ha and includes the proposed enhanced grassed conveyance swale. This area will drain from north to south via the swale and ultimately outlet to the storm sewer within the King Street East ROW.

- **PR7**: Proposed catchment area PR7 is 1.22ha of future development including proposed buildings, roadways and grassed areas. This area will have its own quality and quantity controls employed subject to site plan approval. Run off quantities from PR7 will match pre-development conditions of EX4 and ultimately outlet to the storm sewer within the King Street East ROW.

- **PR8**: Proposed catchment area PR8 is 0.80ha of high-density development including proposed buildings, roadways and grassed areas. This area will drain from north to south through the storm sewer network and ultimately to the proposed wet pond.

- **PR9**: Proposed catchment area PR9 is 0.37ha consisting of grassed area on the north side of the proposed railway berm. This area will drain from west to east via the existing swale and contribute to the proposed grass swale within catchment area PR6. Ultimately flows will outlet to the storm sewer within the King Street East ROW.

- **PR10**: Proposed catchment area PR10 is 0.18ha and includes grassed area. This area will drain from north west to east off the proposed site into PXT12 and contribute to the swales within catchment area PR9 and PR6. Flows will ultimately outlet the storm sewer within the King Street East ROW.

- **Pxt11**: External catchment area Pxt11 is 38.27ha and includes drainage for a large area north of the site. This area drains from north to south and consists of agricultural and wooded area, in addition to a railway corridor. Flows are conveyed under the railway tracks by a 900mm CSP culvert. The catchment area contributes to the conveyance swale within catchment area PR9 and ultimately outlets to the storm sewer within the King Street ROW as in pre-development conditions.

- **Pxt12**: External catchment area Pxt12 is 3.08ha and includes drainage for an area to the east of the subject site. This area drains from south to north onto the subject site and consists of grassed and wooded areas. Flows from this catchment area contribute to the conveyance swale within catchment areas PR6 and ultimately outlets to the storm sewer within the King Street East ROW as in pre-development conditions.

- **Pxt13**: External catchment area Pxt13 is 0.47ha and includes drainage for an external area just north of the site. Flows from this catchment area contribute to PR9 and ultimately outlet to the King Street storm sewer.

The hydrologic parameters for the post-development model are summarized in **Table 2** below. A complete list of the VO input data is included in **Appendix A**. As requested by GRCA, an impervious area buffer was added to the site to meet the runoff coefficients listed in the GRCA standards. Detailed calculations are included in **Appendix C**.

Table 2 - Post-Development Hydrologic Parameters

Catchment	Area (ha)	TIMP	XIMP	CN*	IA	TP (hr)	VO Command
PR1	2.21	77	50	65	5	0.11	STANDHYD
PR2	2.16	76	22	65	5	0.11	STANDHYD
PR3	2.71	53	36	65	5	0.11	STANDHYD
PR4	0.16	-	-	70	5	0.18	NASHYD
PR5	1.25	77	60	65	5	0.11	STANDHYD
PR6	0.35	-	-	68	5	0.40	NASHYD
PR7	1.22	76	76	65	5	0.11	STANDHYD

PR8	0.80	76	76	65	5	0.11	STANDHYD
PR9	0.37	-	-	65	5	0.45	NASHYD
PR10	0.18	-	-	65	5	0.18	NASHYD
Pxt11	38.27	-	-	81	5	0.23	NASHYD
Pxt12	3.08	-	-	75	5	0.50	NASHYD
Pxt13	0.47	-	-	65	5	0.11	NASHYD

See **Appendix C** for details on the percent impervious calculations and time to peak calculations.

2.4 Existing and Proposed Peak Flows

Various storm distributions were analyzed during the draft plan stage to determine the highest peak flows and ultimately the quantity control storage volumes. The hydrologic model was used to simulate existing and proposed peak flows for the 100-year storm for the following storm distributions:

- 1, 4, 6 hour Chicago
- 1, 6, 12 Hour AES
- 6, 12, 24 Hour SCS

During the draft plan stage the 6Hour SCS storm distribution produced the largest storage volumes and was selected for analysis of the SWM wet pond. The 2 through 100-year storm events were modeled and the results are summarized in **Table 3** and **4** below.

Table 3 - Existing Peak Flows - 6 Hour SCS

STORM	EX1 Peak Flow m^3/s	EX2 Peak Flow m^3/s	EXT3/ PXT13 Peak Flow m^3/s	EX4 Peak Flow m^3/s	EX5 Peak Flow m^3/s	EXT6/ PXT11 Peak Flow m^3/s	EXT7 /PXT12 Peak Flow m^3/s
6SCS 2Yr	0.061	0.008	0.010	0.013	0.003	0.959	0.034
6SCS 5Yr	0.103	0.014	0.016	0.022	0.005	1.561	0.057
6SCS 10Yr	0.143	0.019	0.022	0.030	0.007	2.099	0.078
6SCS 25Yr	0.192	0.025	0.030	0.041	0.009	2.734	0.103
6SCS 50Yr	0.228	0.030	0.036	0.048	0.011	3.195	0.122
6SCS 100Yr	0.256	0.034	0.040	0.054	0.012	3.545	0.136

Table 4 - Proposed Peak Flows - 6 Hour SCS

STORM	PR1 Peak Flow m^3/s	PR2 Peak Flow m^3/s	PR3 Peak Flow m^3/s	PR4 Peak Flow m^3/s	PR5 Peak Flow m^3/s	PR6 Peak Flow m^3/s	PR7 Peak Flow m^3/s	PR8 Peak Flow m^3/s	PR9 Peak Flow m^3/s	PR10 Peak Flow m^3/s
6SCS 2Yr	0.220	0.089	0.172	0.003	0.120	0.003	0.152	0.100	0.003	0.003
6SCS 5Yr	0.295	0.128	0.234	0.005	0.157	0.005	0.199	0.130	0.005	0.005
6SCS 10Yr	0.359	0.173	0.312	0.007	0.191	0.007	0.236	0.154	0.007	0.006
6SCS 25Yr	0.451	0.212	0.380	0.009	0.226	0.010	0.276	0.181	0.009	0.009
6SCS 50Yr	0.505	0.240	0.429	0.011	0.250	0.012	0.305	0.200	0.011	0.010
6SCS 100Yr	0.544	0.261	0.467	0.012	0.268	0.013	0.326	0.214	0.013	0.012

Catchment areas PR1, PR2, PR3, PR5 and PR8 will drain to the south to the proposed stormwater wet pond. Minor flows (up to 5-year storm) will be conveyed in the storm sewer and major flows (up to and including 100-year event) will be conveyed via the proposed road and storm sewer. Catchment areas PR4, PR6 and PR9 were not able to be graded to the pond and therefore the release rate for the pond will be overcontrolled to account for this. Catchment area EXT6/PXT11 and EXT3/PXT13 to the north and EXT7/PXT12 to the east will run through the site via a conveyance swale and enter the storm sewer on King Street as in the pre-development condition and by-pass the proposed pond. Area PR10 will also contribute to the conveyance swale and enter the storm sewer on King Street as in the pre-development condition. When PR10 is compared to area EX5, the peak flows is equal to the pre-development rate and therefore no quantity controls are required for this area. PR7 will have its own quantity controls controlled to the release rate of EX4.

VO model calculations were completed for the SWM facility to determine the storage volumes required to limit post-development flows to pre-development levels. The model outputs are included in **Appendix B**.

The VO analysis determined that 2433m^3 of active storage is required to limit the 100 year post-development flow to pre-development levels as summarized in **Table 5** below.

Table 5 - Combined Peak Flows - 6 Hour SCS

STORM	EX1 Peak Flow m^3/s	PR1 + PR2 + PR3 + PR5 +PR8 Peak Flow m^3/s	Volume (m^3)
6SCS 2Yr	0.061	0.701	1125
6SCS 5Yr	0.103	0.945	1469
6SCS 10Yr	0.143	1.189	1748
6SCS 25Yr	0.192	1.450	2055
6SCS 50Yr	0.228	1.624	2271
6SCS 100Yr	0.256	1.754	2433

3.0 Stormwater Management

3.1 Quantity Control Strategy - Subdivision

A wet pond is proposed to provide control of post-development runoff to pre-development levels for catchment areas PR1, PR2, PR3, PR5 and PR8 as the contributing drainage area is greater than 5 hectares. The pond will be located at the south end of the site. Drawings showing the proposed pond and associated details are included in the detailed design drawings in **Appendix N**.

The wet pond will also act as an amenity feature at the entrance to the subdivision complete with a pathway around the perimeter and landscaping around the top and side slopes of the pond. The gentle side slopes were designed in accordance with GRCA standards to prevent the need for fencing. A landscaping plan will be developed for the pond and surrounding area that details these features.

Runoff from minor and major storm events for catchments PR1, PR2, PR3, PR5 and PR8, will be conveyed to the pond via storm sewer and the road right of way.

The pond has a multi-stage outlet; the first stage consists of a 110 mm orifice plate as part of a perforated hickenbottom riser pipe which will control storms up to the 5-year event and provide the desired draw down time for the pond. The second stage consists of a DICB complete with a 150 mm orifice tube that will release flows at a controlled rate up to the 100-year storm. The pond will discharge to the existing storm sewer on King Street. A 12.0m wide emergency overflow weir has been incorporated into the pond at elevation 87.70 m. The overflow weir will allow for 0.65m of freeboard for the pond. The weir will convey the 100-year peak flows for the site, in case of emergency or should either of the orifices become blocked. The overland flow will be directed onto the King Street right of way and travel west ultimately to Brook Creek.

The proposed stormwater management facility was modeled to determine if it has sufficient capacity to accommodate the flows from the site. A proposed wet pond surface was developed in AutoCAD Civil 3D. This surface was analyzed, and it was determined that the constructed pond has a total capacity of 7319m^3 up to the invert of the overflow weir. The surface was then used to develop a stage storage relationship in 0.05m increments.

The groundwater elevation in the vicinity of the pond is within 1.0m of the bottom of the facility and therefore requires a liner. The wet pond will be lined with a Bentofix Thermal Lock Geosynthetic Clay Liner due to the presence of groundwater. Details regarding the clay liner are included in **Appendix G**.

An abbreviated stage storage discharge (SSD) relationship for the pond is shown in **Table 6** below. The complete SSD table and calculations are included in **Appendix D**.

Table 6 - Pond Stage Storage Discharge *

Description	Stage (m)	Discharge (m^3/s)	Total Storage (m^3)	Active Storage (m^3)	Minimum Active Storage Required (from VO) (m^3)
Bottom of Pond	83.75	-	-	-	-
Bottom of Active Storage	85.70	0	1681.68	0	0
25mm Chicago Storm	86.30	0.019	2764.81	1083.13	1045.00
2-Year Ponding	86.45	0.021	3105.31	1423.63	1408.00
5-Year Ponding	86.70	0.025	3746.31	2064.63	1942.00
10-Year Ponding	86.75	0.087	3885.88	2204.20	2112.00
25-Year Ponding	86.85	0.092	4176.70	2495.02	2469.00
50-Year Ponding	86.95	0.096	4483.35	2801.67	2780.00
100-Year Ponding	87.05	0.100	4806.12	3124.44	3008.00
Overflow Weir	87.70	0.123	7318.76	5637.08	-
Top of Pond	87.90	0.129	8248.34	6566.66	-

**SSD based on 6-Hour SCS storm*

Table 7 below demonstrates that the proposed discharge rates for the SWM facility are below pre-development release rates.

Table 7 - Allowable vs. Proposed Release Rates

Design Storm (years)	Allowable Discharge Rate (EX1) (m^3/sec)	Proposed Discharge Rate Controlled (PR1+PR2+PR3+PR5+PR8) + Uncontrolled (PR4 + PR6+PR9) (m^3/sec)
2	0.061	0.027
5	0.103	0.035
10	0.143	0.095
25	0.192	0.112
50	0.228	0.120
100	0.256	0.126

3.2 Quality Control Strategy - Subdivision

In accordance with GRCA and Cobourg requirements, quality control is provided in the proposed SWM facility to an "Enhanced" level. Per table 3.2 of the MOE SWM Planning & Design Manual, the quality storage volume requirements for a wet pond facility with 69.7% site imperviousness was interpolated to be 224m^3/ha. Of this volume, 40 m^3/ha is extended detention while the remainder represents the permanent pool. For the entire 9.13 ha drainage area, a total of 2047m^3 of storage is required for enhanced quality control, of which 1682 m^3 should be permanent pool and 365 m^3 extended detention. The proposed SWM facility provides a permanent pool volume of 1682 m^3 and an extended detention volume of 1083 m^3. Therefore, the proposed SWM facility provides adequate quality control volume for the proposed site.

The proposed design includes a sediment forebay at the inlet location to improve pollutant removal and allow for proper maintenance of the SWM facility. The forebay was designed using equations 4.5-4.9 of the MOE SWM Planning & Design Manual (MOESWPDM). The forebay will be 28.0m in length, 5.0m in width, and have a depth of 1.95m. Quality control requirements for the SWM pond are compared to what is being provided in **Table 8** below.

Table 8 - Quality Control Requirements

Description	Requirement	Provided
Quality Control Volume	1682 m^3	1682 m^3
Extended Detention	365 m^3	1083 m^3
25mm Chicago Storm	1045 m^3	1083 m^3
Draw Down Time	24 hrs	28 hrs
Settling Length	15.9 m	28.0 m
Dispersion Length	5.1 m	28.0 m
Forebay Width	1.99 m	5.0 m

The SWM facility will provide the site with adequate control measures as set out in the MOE SWMPDM, detailed calculations can be found in **Appendix G**.

3.3 Quantity Control Strategy – High Density Future Development

The high-density development at the south-east corner of the site, drainage area PR7 will provide its own quantity and quality controls as due to the grading and the conveyance swale it was not possible to achieve overland flows to the proposed wet pond. Underground storage chambers are proposed for the high-density development to provide quantity controls.

The StormTech MC-3500 underground storage chamber system has been proposed to provide the required quantity control for the site. The underground storage system will be located at the southwest corner of the development. Drawings detailing the approximate layout of the proposed chambers are included in **Appendix E**. Detailed drawings will be prepared at the Site Plan Application stage for this future development.

Runoff from minor and major storm events from PR7 will be conveyed to the underground storage chambers via the storm sewer and overland flow. The storage chambers will have an underground

footprint of **392m²** and will provide **400m³** of storage. VO model calculations were completed for the site to determine the approximate storage volumes required to limit post-development flows to pre-development levels. The model outputs are included in **Appendix B**. Discharge rates used to calculate the storage requirements were calculated as shown in **Table 9** below to match EX4.

Table 9 - High Density Development Storage Requirements

Design Storm (years)	Contributing Area (ha)	Discharge Rate (m^3/s)	Total Storage Required (m^3)
2	1.22	0.013	203
5	1.22	0.022	257
10	1.22	0.030	300
25	1.22	0.041	345
50	1.22	0.048	375
100	1.22	0.054	398

During the Site Plan Approval stage for the future high-density development a detailed stormwater management report and drawings will be prepared.

3.4 Quality Control Strategy – High Density Future Development

To provide quality control for drainage area PR7 a combination of StormTech underground storage chambers as well as an Oil-Grit Separator (OGS) are proposed.

Quality control for the proposed development will be provided by an OGS located upstream of the underground storage. Catchment area PR7 will be directed to the OGS prior to entering the underground storage chambers. The OGS is proposed to be upstream of the underground storage to facilitate removal of suspended solids and contaminants prior to release into the underground storage system. This configuration will provide for reduced cleanout frequency of the underground storage system.

The proposed OGS has been sized as a Stormceptor STC3000. The OGS was sized based on a contributing area of 1.22ha and impervious area approximation of 76.2%. The proposed Stormceptor STC3000 is specified to provide a net annual TSS removal efficiency of 80% and treat 93% of runoff volume. OGS sizing calculations are included in **Appendix E**.

In addition to the OGS, quality control for the proposed development will be provided by the StormTech storage chambers. The StormTech storage chambers are designed for 60% TSS removal. This is achieved through the isolator row which captures suspended solids and promotes infiltration prior to outletting. This row includes a double layer of geotextile underneath the chamber to prevent sediment from migrating through the stone and into the other chambers in the system. Details for the StormTech chambers are included in **Appendix E.** The soil in the location of the proposed chambers is sandy silt overlaying clayey silt as per the geotechnical assessment included in **Appendix M**. The sandy silt soil has an approximate infiltration rate of 30-50mm/hr as per the correspondence provided by the Geotechnical Consultant.

Flow will enter via the storm sewer into the OGS, then travel through the storage chambers and be released at a controlled rate to the storm sewer on King Street. The storage chambers combined with the 81% TSS removal from the OGS exceeds the MOE SWPDM requirements of 80% TSS removal for Enhanced level protection.

3.5 Low Impact Development Measures

In addition to the wet pond providing quality control for the site, infiltration trenches will be provided to promote infiltration. These infiltration trenches will allow rear yard drainage and rooftop runoff that is essentially clean water to re-charge groundwater on the subject site. The trench locations and details of these infiltration features are included in the **Detailed Design Drawings** included in **Appendix N**. In the event that these trenches become saturated they will have an overflow outlet to the storm sewer system to prevent ponding in rear lot yards. The soils will infiltrate clean water well based on the infiltration rates provided by the Geotechnical Consultant. The range in infiltration rates at the site is between 12-50mm/hr as per the correspondence included in **Appendix M**. The groundwater on the subject site varies from about 1.0-1.5m below grade as per the Geotechnical Report in **Appendix M**. Due to the site being in a large amount of fill, the infiltration trenches will have at least 1.0m of clearance from the bottom of the trench to the groundwater table.

3.6 Stormwater Conveyance

Runoff from the site will be conveyed to the SWM facility in one of two methods: via surface drainage systems (including storm sewers) and major overland flow routes.

Minor Storms
Minor storm events, up to and including the 5-year storm, will be conveyed in the storm sewer system. The storm sewer system was designed in accordance with best practices with all sections of pipe operating below 80% capacity for the 5-year storm. The storm sewer design sheet documenting the flow characteristics, peak flows and pipe capacities is included in **Appendix J**.

Major Storms
Major flows including the 10 through 100-year storms, will be conveyed via overland flow routes to the SWM pond. The overland flow routes are shown on the **Detailed Design Drawings** included in **Appendix N**. The roadway will serve as the major overland flow route for the development as the proposed grading directs the majority of the runoff toward the SWM facility. Calculations demonstrating the sizing and capacity of the internal roadway overland flow route are included in **Appendix H** and summarized in **Table 10** below**.**

Table 10 - Overland Flow Capacity

Swale	Characteristics	Cross Sectional Area (m^2)	Maximum Flow Rate (Q_{100}-Q_5) (m^3/s)	Percent Capacity at 100-Year Flow	Velocity (m/s)
Roadway Overland Flow Route	50:1 side slope, 0.5% long (min) slope; 0.15m deep	0.850	0.809	87%	0.90

3.7 Internal Enhanced Grassed Conveyance Swale

An enhanced grassed swale running north to south through the site will convey flows from drainage areas PR6, PR9, PR10, PXT11, PXT12 and PXT13 to the King Street storm sewer as per the existing condition. The Hurricane Hazel storm event was modelled and only peak flows from approximately the 10-year storm event will be conveyed through the existing culverts under the railway for area PXT11 as per section 4.0. This peak flow was then combined with the Hazel flow from areas PR6, PR9, PR10, PXT12 and PXT13 to calculate the flow rate to be conveyed by the proposed enhanced grassed swale. Calculations demonstrating the sizing and capacity of the swale are included in **Appendix H** and summarized in **Table 11** below**.**

Table 11 - Swale Capacity

Swale	Characteristics	Cross Sectional Area (m^2)	Maximum Flow Rate (m^3/s)	Percent Capacity at 100-Year Flow	Velocity (m/s)
Internal Conveyance Swale – Critical Section	Trapezoidal; 3:1 side slope, 0.8% long slope; 1.0m deep, 0.5m bottom width	3.50	2.572	38%	1.50
Internal Conveyance Swale – Average Section	Trapezoidal; 3:1 side slope, 1.0% long (average) slope; 1.0m deep, 0.5m bottom width	3.50	2.572	34%	1.63

The conveyance swale has 0.30m of freeboard above the max flow depth. To protect against erosion in the swale a Nilex SC 250 permanent turf reinforcement blanket will be provided. In addition, a sub drain will be placed under the length of the enhanced grassed swale to further enhance drainage conveyance.

The goal of the swale is to promote infiltration due to the nature of the soils. Based on the results of the borehole logs, the native soils have been reported as silty sand over clayey silt in the vicinity of the swale. This translates to an approximate hydraulic conductivity of 10^{-4} to 10^{-5} cm/s for the silty sand and an approximate infiltration rate of 30-50mm/hr. The clayey silt has an approximate hydraulic conductivity of 10^{-5} to 10^{-6} cm/s sand and an approximate infiltration rate of 12-30mm/hr. These infiltration rates translate well to infiltrating clean runoff from external drainage areas to the north.

Based on the nearest monitoring well data from well BH-5 groundwater was found at 1.5m below existing grade which is greater than 1.0m below the bottom of the proposed enhanced grassed conveyance swale. Borehole logs and hydraulic conductivity data are included in the geotechnical report included in **Appendix M**.

Maintenance is an important element of a successful enhanced grassed swale facility and details regarding maintenance and the recommended clean out period are included in the separate Operation and Maintenance Manual which is included in **Appendix L**.

3.8 Off Site Overland Flow Routes

In the event that the pond outlet structures become blocked or a large storm event such as the Hurricane Hazel storm occur, an overland flow route is provided from the pond. The overland flow route for the site will travel from the SWM pond via the overflow spillway onto Maplewood Blvd, and flow south onto King Street. Flows will then be conveyed to the west on King Street until they reach the low point in the road and enter Brook Creek.

The overland flow route for drainage area PXT11 and the other contributing areas to the enhanced grassed swale to the north of the site will continue to be south of King Street. In the event of a large storm event, flows will overtop King Street, run parallel with Fitzhugh Lane and then travel west through residential areas and eventually into Brook Creek.

In the existing condition the 1500mm storm sewer to the south of the site is plugged and flows are directed to the south to the Ruttan Terrace storm sewer via a small 200mm PVC pipe. In the event that this storm sewer becomes full, flows would eventually overtop King Street and enter the swale running parallel with Fitzhugh Lane. In the proposed condition flows from the pond and the proposed drainage swale will enter the 1500mm Storm sewer which has been designed to take 5-year flows from the existing site. **Table 12** below compares Hurricane Hazel flows contributing to the south of King Street in the existing condition to the flows in the proposed condition. In the proposed condition, the flows in the 5 year storm event have been subtracted from the Hurricane Hazel flow based on the King Street storm sewer taking these flows.

Table 12 - Overland Flow King Street Comparison

Design Storm (years)	Hazel Flows South of King Street Existing (EX1+EX3+EX4+EX5+EXT6 (Flow through culvert) +EXT7) (m^3/sec)	Hazel Flows South of King Street Proposed (PR6+PR9+PR10+PXT11 (Flow through culvert) +PXT12+PXT13) (Hazel – 5 Year Storm) (m^3/sec)
Hurricane Hazel	3.495	0.923

Table 12 demonstrates that in the event of a Hurricane Hazel storm, the flows overtopping King Street would be significantly less then what would occur in the existing condition. This is due to directing the overland flow route for the site to the west on King Street, and the fact that the capacity of the existing 1500mm storm sewer will be utilized.

4.0 Culvert Sizing

In order to determine the flows entering the site from external drainage area EXT6/PXT11 an analysis was completed for the culverts under the railway tracks. There are two culverts in series, a 900mm CSP and a 1350mm CSP. The 900mm CSP was analyzed as it is the limiting culvert.

The existing culvert under the railway tracks is a 9.2m long, 900mm diameter CSP culvert at 1.7%. An analysis was completed using the Hurricane Hazel flow data to determine the flows that could be conveyed through the culvert. The culvert has sufficient capacity to convey the flows just below the 10-year storm event from drainage area EXT6/PXT11. In the occurrence of the Hurricane Hazel storm event, flows will back up on the north side of the railway tracks due to the larger

available area for ponding. This approach was discussed and supported by both GRCA and the Town.

An additional culvert is proposed under the proposed railway berm at the north of the site. The culvert is proposed to be a 21.5m long, 900mm diameter HDPE culvert at 0.65%. An analysis was completed using the Hurricane Hazel flow data from the contributing areas to the conveyance swale as well as the flows through the railway culvert to determine the flows that could be conveyed through the culvert.

One final crossing is proposed under Mahony Street in the center of the site. The culverts are proposed to be two 39.0m long, 750mm diameter concrete culverts at 0.50%. An analysis was completed using the Hurricane Hazel flow data from the contributing areas to the conveyance swale as well as the flows through the railway culvert to determine the flows that could be conveyed through the culvert.

Calculations supporting the proposed culvert sizing are included in **Appendix I** and are summarized in **Table 13** below:

Table 13 - Culvert Characteristics

Culvert ID	Design Storm	Flow Rate Through Culvert (m^3/s)	High Water Elev. (m)	Outlet Velocity (m/s)
Railway Crossing	Hazel	2.08	90.74	3.33
Berm Crossing	Hazel	2.54	90.66	4.00
Mahony Crossing	Hazel	2.57	88.45	2.96

5.0 Operation and Maintenance

Proper operation and maintenance has an important impact on the long-term performance of stormwater management facilities and features. A separate detailed Operation and Maintenance Manual has been prepared in accordance with GRCA requirements and should be referred to for information on monitoring and maintenance requirements. This manual is included in **Appendix L**.

6.0 Erosion and Sediment Control

The development of the site will result in a large area of exposed native soils which has the potential to erode and contribute sediment to downstream receivers. To mitigate these effects, an erosion and sediment control strategy was developed for the site. This strategy incorporates best practices as outlined in the *Erosion and Sediment Control Guidelines for Urban Construction, GGHCA.*

The proposed erosion and sediment control measures are shown on the **Erosion and Sediment Control Plan** included in **Appendix N**. In preparing the plan, consideration was given to the multi-barrier approach of first reducing erosion where possible and then containing sediment on site.

In order to reduce erosion, the plan incorporates hydroseeding of the topsoil stockpile. Details of this measure are presented in the section below. The ESC plan incorporates several sedimentation control measures including perimeter silt fencing, interceptor swales, straw bale check dams and use of the proposed wet pond as a temporary sediment pond. The pond has been sized to provide the necessary sediment removal for the entire site; the additional measures including sediment traps and straw bale flow checks are to provide a secondary level of control and are part of the treatment train approach for the ESC plan.

6.1 Erosion Controls

The following erosion protection measures have been included in the strategy for the site and are shown on the **Erosion and Sediment Control Plan**:

Hydroseeding of Topsoil Stockpile
Once the topsoil stockpile is completed it will be hydroseeded to prevent erosion. The hydroseed mix will be a standard grass seed mix with mulch to promote growth and reduce erosion.

6.2 Sediment Controls

Silt Fence
Silt fence will be utilized as a perimeter control and will be installed as shown on the **Erosion and Sediment Control Plan** included in **Appendix N**. Silt fence will be installed in accordance with OPSD 219.110 and OPSD 219.130 and may require periodic maintenance during the construction period.

Interceptor Swales
A variety of interceptor swales will be implemented during the construction period. The purpose of these swales is to intercept and convey runoff within the site to the Temporary Sediment Pond. The swales can accommodate the flows from the 25 mm, 4-hour Chicago storm.

Mud Mat
A mud mat will be installed at the construction entrance to the site as shown on the **Erosion and Sediment Control Plan** included in **Appendix N**. The mud mat will reduce the amount of mud and debris that is tracked from the site. The mud mat may require periodic maintenance during construction; if it becomes clogged the contractor can maintain the mat by “turning” it or adding additional rip rap as needed to maintain the effectiveness of the mat.

Straw Bale Check Dams
Straw bales have been included in the proposed conveyance swale as a means of reducing the velocity in the swale. They will be installed in accordance with OPSD 219.180 and the contractor shall maintain the check dams during construction. The straw bale check dam locations are included on the **Erosion and Sediment Control Plan** included in **Appendix N**.

Temporary Sediment Traps
Temporary sediment traps are proposed at strategic locations on the site to collect and treat sediment laden runoff. The location of the basins is shown on the **Erosion and Sediment Control Plan** included in **Appendix N**. These sediment traps are located upstream of the proposed pond and will reduce the amount of sediment loading in the pond, as well as increase

its effectiveness. The traps will outlet via hickenbottom outlets to the storm sewer system once the servicing is installed in the subdivision.

Temporary Sediment Pond

The proposed stormwater management pond will serve as a temporary erosion and sediment control pond during the construction period. This pond will have contributing drainage from drainage areas PR1, PR2, PR3, PR5 and PR8. The minimum storage volume as identified in the *Erosion and Sediment Control Guidelines for Urban Construction, GGHCA* is 125 m^3/ha of disturbed area for active storage. Based on a disturbed area of 9.13 Ha, the minimum volume required is 1141 m^3. This volume was checked against the volume required for the 4-hour Chicago 25 mm storm which was 1100 m^3. The minimum storage volume as identified in the *Erosion and Sediment Control Guidelines for Urban Construction, GGHCA* is 185 m^3/ha of disturbed area for the permanent pool volume as the length to width ratio is less then 4:1. Based on a disturbed area of 9.13Ha, the minimum volume required is 1689 m^3. The temporary erosion and sediment control pond will provide adequate storage as it provides 1248 m^3 of active storage and 1735 m^3 of permanent pool storage.

The pond will function as a wet pond and outlet through the proposed hickenbottom outlet structure with a 90mm orifice. The orifice has been confirmed to provide a maximum drawdown time of 49.9 hours for the active storage volume. An 8.5m wide emergency overflow spillway has been sized to convey flows above the active storage volume towards the conveyance swale and ultimately the storm sewer on King Street. The overflow spillway will only outlet to the swale during the construction period as due to the pre-grade levels of the site, it was not achievable to have a positive overland flow route onto King Street. Calculations demonstrating drawdown time, forebay, weir and stage storage sizing are included in **Appendix K**. The temporary sediment pond details can be found on the **Erosion Control Plan** included in **Appendix N**.

7.0 Summary

The development of the proposed East Village subdivision will increase runoff rates and has the potential to increase sediment/contaminant loading downstream. To mitigate these effects, a stormwater management strategy is proposed that incorporates a wet pond to provide quantity and quality control. The SWM facility will control the post-development release rates to below the pre-development levels for all storm distributions and durations. Sufficient storage is provided in the pond to allow attenuation of the peak flows for up to the 100-year storms. The wet pond will provide an Enhanced level of quality control. The proposed SWM strategy will ensure that the proposed development does not have a negative impact on downstream receivers. In addition to the pond, low impact development measures will be implemented for the site in order to promote groundwater recharge and aide in quality and quantity control for the site.

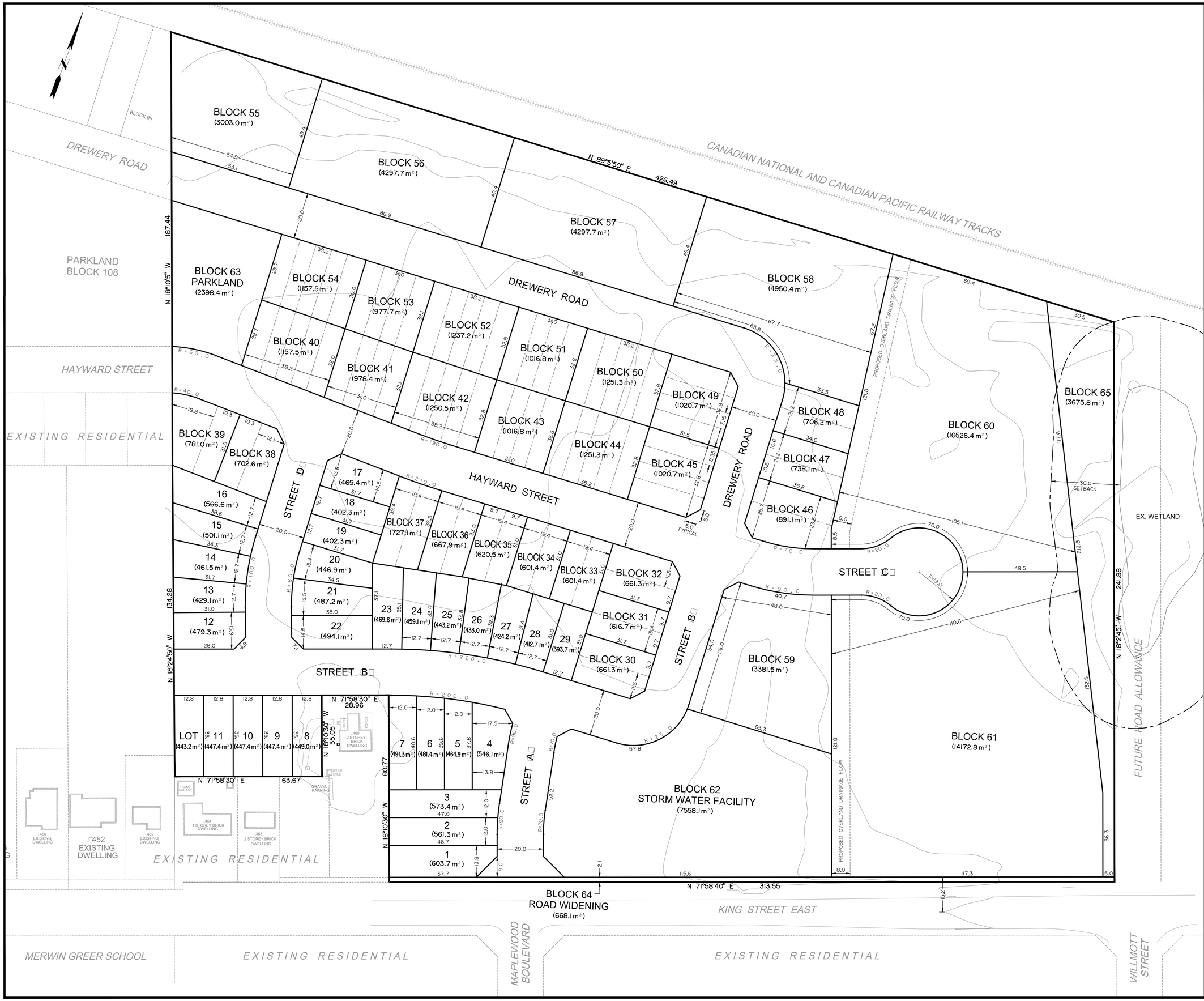
Prepared By:

Brad Parsons, P. Eng
Water Resources Engineer

Reviewed By:

Aaron Hill, P. Eng.
Principal

Figure 2 – Draft Plan



DRAFT PLAN OF SUBDIVISION

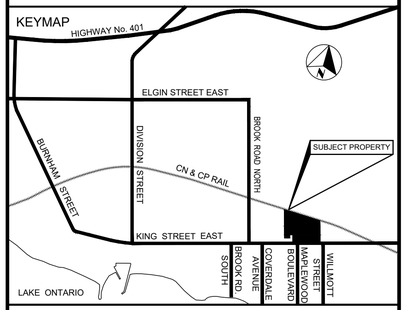
EAST VILLAGE - PHASE 5

PART OF LOTS 11 & 12,
CONCESSION A
GEOGRAPHIC TOWNSHIP OF HAMILTON
TOWN OF COBOURG
COUNTY OF NORTHUMBERLAND

SCALE □ 1:750

0 5 10 15 20 25 50 75m

KEYMAP



LAND USE SUMMARY

LAND USE	AREA(m²)	AREA%	UNITS
LOTS 1-29 + LOT - SINGLE DETACHED LOTS	14127.8	11.9	30
BLOCKS 30-39 & 46-48 - SEMI-DETACHED LOTS	8976.6	7.6	26
BLOCKS 40-45 & 49-54 - FREEHOLD TOWNHOUSES	13336.4	11.2	54
BLOCKS 55-60 - 10 PLEX UNITS	30456.7	25.7	122
BLOCK 61 - APARTMENT BLOCK	14172.8	11.9	102
BLOCK 62 - STORM WATER FACILITY	7558.1	6.4	
BLOCK 63 - PARKLAND	2398.4	2.0	
BLOCK 64 - KING STREET ROAD WIDENING	668.1	0.6	
BLOCK 65 - ROAD WIDENING, WILLMOTT ST. ALLOWANCE	3675.8	3.1	
20.0m MUNICIPAL ROAD ALLOWANCE = 1181.0m (HAYWARD STREET, DREWERY ROAD AND STREETS A, B, C & D)	23334.0	19.6	
TOTAL	**118704.7m²**	**100.0%**	**334**

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17)OF THE PLANNING ACT.

(a) SEE SURVEYORS CERTIFICATE.
(b) AS SHOWN ON DRAFT PLAN.
(c) AS SHOWN ON DRAFT PLAN.
(d) SEE LAND USE SUMMARY
(e) SEE DRAFT PLAN
(f) AS SHOWN ON DRAFT PLAN.
(g) AS SHOWN ON DRAFT PLAN.
(h) MUNICIPAL WATER AND SANITARY SEWER
(i) SAND AND SILT TILL
(j) AS SHOWN ON DRAFT PLAN.
(k) GARBAGE COLLECTION, FIRE PROTECTION AND SCHOOL BUSES
(l) AS SHOWN ON DRAFT PLAN.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ARE CORRECTLY SHOWN.

C. Cranch — Dec 14/18
CRYSTAL CRANCH — DATE
ONTARIO LAND SURVEYOR.

I.B.W. SURVEYORS
ONTARIO LAND SURVEYORS
71 MEARNS COURT, BOWMANVILLE, ONTRIO
1.800.667.0696

No.	REVISION	DATE	APPR'D
2	ADD WETLAND, REVISE STREET NAMES & EXTEND STREET B	APRIL 17/19	R.F.A.
1	SUBMITTED TO MUNICIPALITY	DEC. 14/19	R.F.A.

DRAWN BY: L.B. | CHECKED BY: R.F.A. | DATE: DEC. 14, 2018 | SCALE: 1:750

METRIC NOTE:

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO IMPERIAL BY DIVIDING BY 0.3048.

CONTOURS NOTE:

EXISTING TOPOGRAPHY PROVIDED BY ENGAGE ENGINEERING. CONTOURS DRAWN AT 1.0m INTERVALS.

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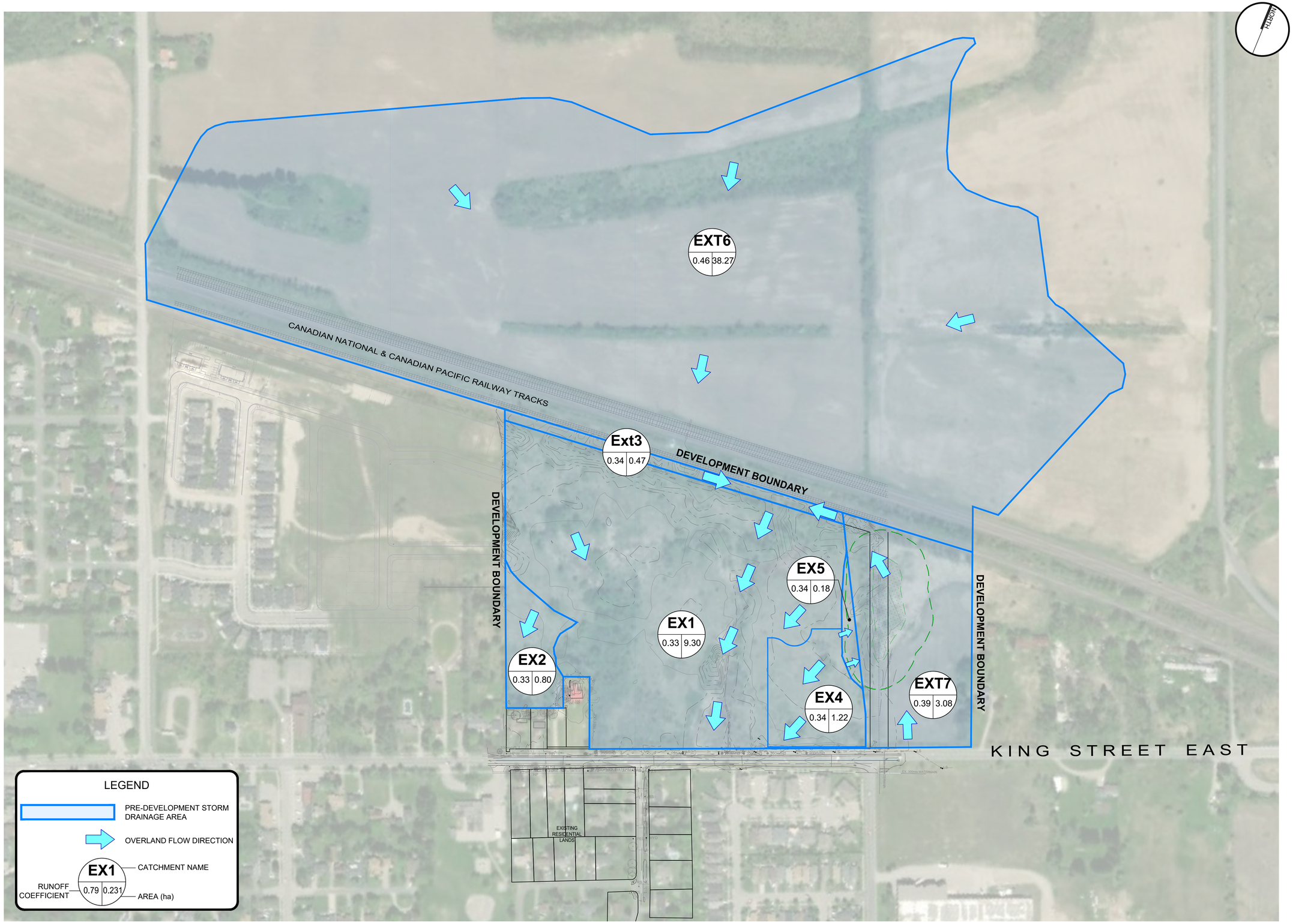
RUTH FERGUSON AULTHOUSE — RPP — REGISTERED PROFESSIONAL PLANNER — 12/14/19

JOB No. 600-DP

RFA PLANNING CONSULTANT INC
211 Dundas Street East, Suite 202,
Belleville, Ontario, K8N 1E2

Figure 3 – Pre Development Drainage Area Plan



SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
   - TOWN OF COBOURG DESIGN STANDARDS
   - ONTARIO PROVINCIAL STANDARD DRAWINGS & SPECIFICATIONS
   - APPLICABLE CONTRACT DOCUMENTS AND ALL SPECIFICATIONS REFERENCED HEREIN.
2. THE CONTRACTOR SHALL CONSTRUCT ALL WORK IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT, HEALTH AND SAFETY REGULATIONS FOR CONSTRUCTION PROJECTS.
3. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL PERMITS OR THIRD PARTY WORKS ASSOCIATED WITH SERVICING CONNECTIONS.
4. THE CONTRACTOR SHALL TAKE EXTREME CARE WHEN WORKING IN PROXIMITY TO EXISTING SERVICES.
5. THE CONTRACTOR SHALL RESTORE OR REPLACE DAMAGED SERVICES TO EXISTING OR BETER CONDITION.
6. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION, OR PER THE ENGINEERING AND LANDSCAPE SPECIFICATIONS REFERENCED HEREIN.
7. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL, BOOK 7, TEMPORARY CONDITIONS.
8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-13
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

EXISTING STORM DRAINAGE AREA PLAN

COBOURG, ONTARIO

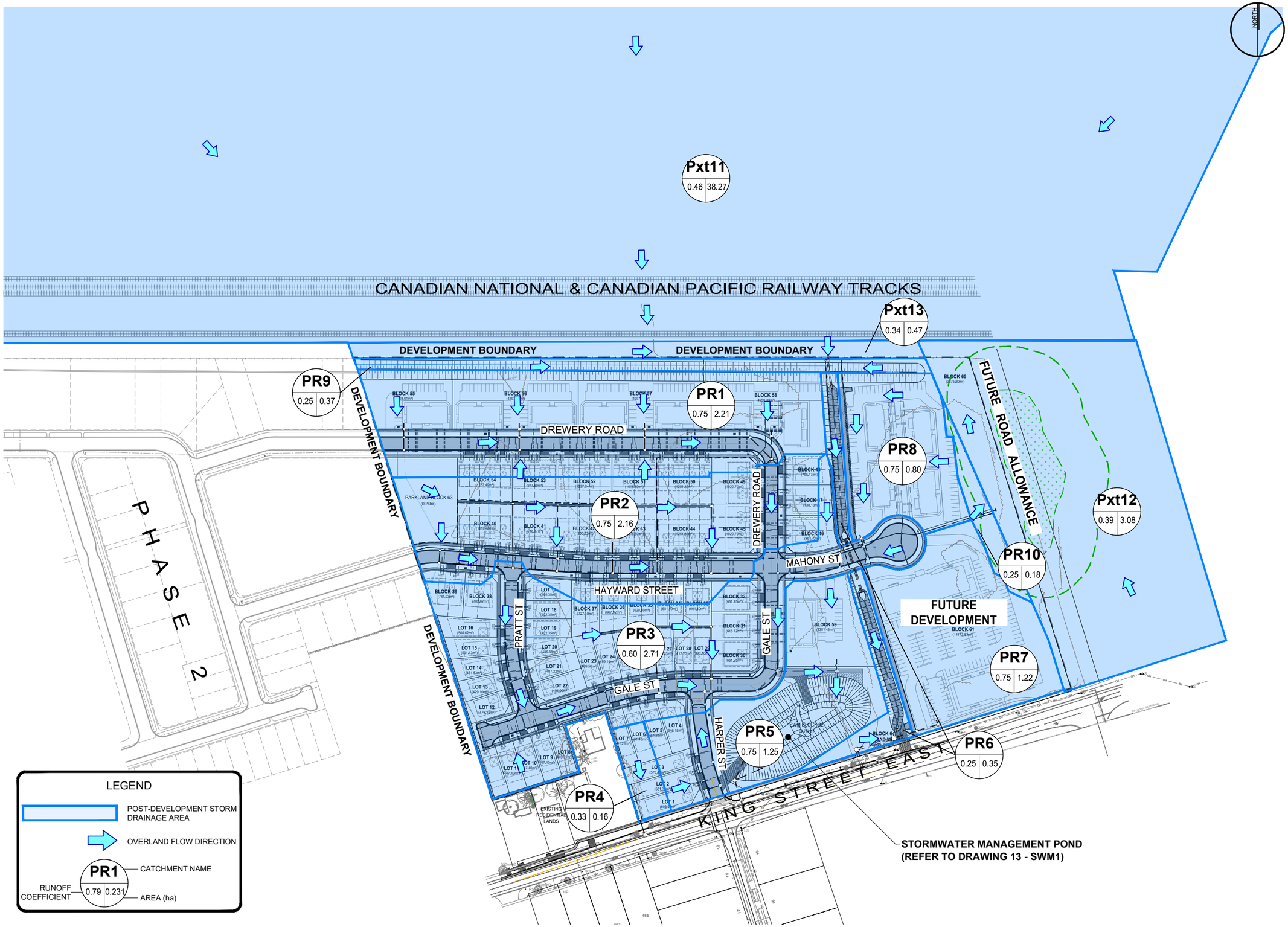
DRAWN BY: J.DUNN	STAMP:
DESIGNED BY: J.DUNN	
APPROVED BY: A.HILL	
DATE: 2019-05-27	
SCALE: 1:4000	

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	ST1	1 of 2

18041-ST1

Date: Dec. 04, 2019 - 7:42 pm Plotted by: bparsons Filename: S:\01 - Projects\18000\18041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\SWM\18041-ST1.dwg

Figure 4 – Post Development Drainage Area Plan



SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
   - TOWN OF COBOURG DESIGN STANDARDS
   - ONTARIO PROVINCIAL STANDARD DRAWINGS & SPECIFICATIONS
   - APPLICABLE CONTRACT DOCUMENTS AND ALL SPECIFICATIONS REFERENCED HEREIN.
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4. THE CONTRACTOR SHALL TAKE EXTREME CARE WHEN WORKING IN PROXIMITY TO EXISTING SERVICES.
5. THE CONTRACTOR SHALL RESTORE OR REPLACE DAMAGED SERVICES TO EXISTING OR BETER CONDITION.
6. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION, OR PER THE ENGINEERING AND LANDSCAPE SPECIFICATIONS REFERENCED HEREIN.
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8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-13
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

POST-DEVELOPMENT STORM DRAINAGE AREAS

COBOURG, ONTARIO

DRAWN BY: B.SANDERS	STAMP:
DESIGNED BY: B.PARSONS	
APPROVED BY: B.PARSONS	
DATE: 2019-06-28	
SCALE: 1:2500	

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	DA2.1	2 of 2

18041-DA-NOV19

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Appendix A: Hydrologic Parameters

Visual OTTHYMO Input Parameters NASHYD Command

Project Name: East Village Subdivison
Project No: 18041

Designed By: BP
Date: 2019-07-03

Parameter	Description	EX1	EX2	EXT3/PXT13	EX4	EX5	EXT6/PXT11	EXT7/PXT12	PR4	PR6	PR9	PR10
Area	Watershed Area (m)	9.30	0.80	0.47	1.22	0.18	38.27	3.08	0.16	0.35	0.37	0.18
DT	Time Step Increment (min)	5										
DWF	Dry Weather Flow (Base Flow)	0										
CN[1,2]	Modified SCS Number	66	66	65	65	65	81	75	70	68	65	65
IA[3]	Initial Abstraction	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5	5	5	5
TP [4,5]	Unit Hydrograph Time to Peak	0.63	0.35	0.11	0.31	0.16	0.23	0.50	0.18	0.40	0.45	0.18
N	Number of Linear Reservior	3										
Rain	Optional Rainfall Intensity (mm/hr)	0 - None										

Notes:

1. CN values based on GRCA Technical and Engineering Guidelines for SWM Submissionsl based on Soil Type BC.
2. CN derived using the Modify CN function in VO5. The modification was completed in accordance with the procedure decribed in the VO5 reference Manual.
3. Initial abstraction values derived from UNESCO Manual on Drainage in Urban Areas, 1987.
4. Time of Concentration calculated using Airport Equation for C<0.4 and Bransby Williams for C>0.4.
5. Time to Peak estimated at 0.67Tc.

Visual OTTHYMO Input Parameters STANDHYD Command

Project Name: East Village Subdivision
Project No: 18041

Designed By: BP
Date: 2018-10-19

Parameter	Description	PR1	PR2	PR3	PR5	PR7	PR8
AREA	Catchment Area (ha)	2.210	2.160	2.710	1.250	1.220	0.800
DT	Time Step Increment (min)	5					
TIMP	Total Impervious Area (%)	77	76	53	77	76	76
XIMP	Directly Connected Impervious Area (%)	50	22	36	60	76	76
DWF	Dry Weather Flow (m^3/s)	0					
LOSS[1]	Modified CN*	65	65	65	65	65	65
SLPP	Average Slope Pervious Area (%)	4	2.8	5	1.4	2	2
LGP	Overland Flow Length Pervious Area (m)	15	200	25	45	12	15
MNP	Manning's Roughness Coefficient (Pervious)	0.25	0.25	0.25	0.25	0.25	0.25
SCP	Storage Coefficient Pervious Area	0					
DPSI	Depression Storage Impervious Area (mm/hr)	1					
SLPI	Average Slope Impervious Area (%)	1.5	0.5	0.5	0.5	2.3	2.1
LGI	Impervious Overland Flow Length (m)	121.4	120.0	122.5	92.4	90.2	73.0
MNI	Manning's Roughness Coefficient (Impervious)	0.013					
SCI	Storage Coefficient Impervious Area	0					
RAIN	Optional Rainfall Intensity (mm/hr)	0					

Notes:

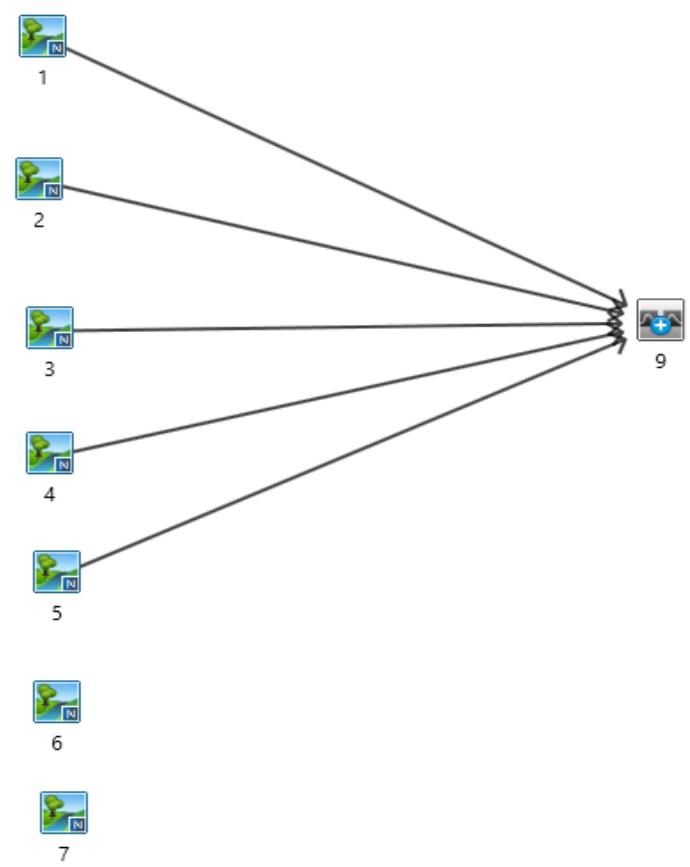
1. CN values based on GRCA Technical and Engineering Guidelines for SWM Submissionsl based on Soil Type BC.
2. CN* derived using the Modify CN function in VO5. The modification was completed in accordance with the procedure decribed in the VO5 reference Manual.
3. Initial abstraction values derived from UNESCO Manual on Drainage in Urban Areas, 1987.

Appendix B: Visual OTTHYMO Results

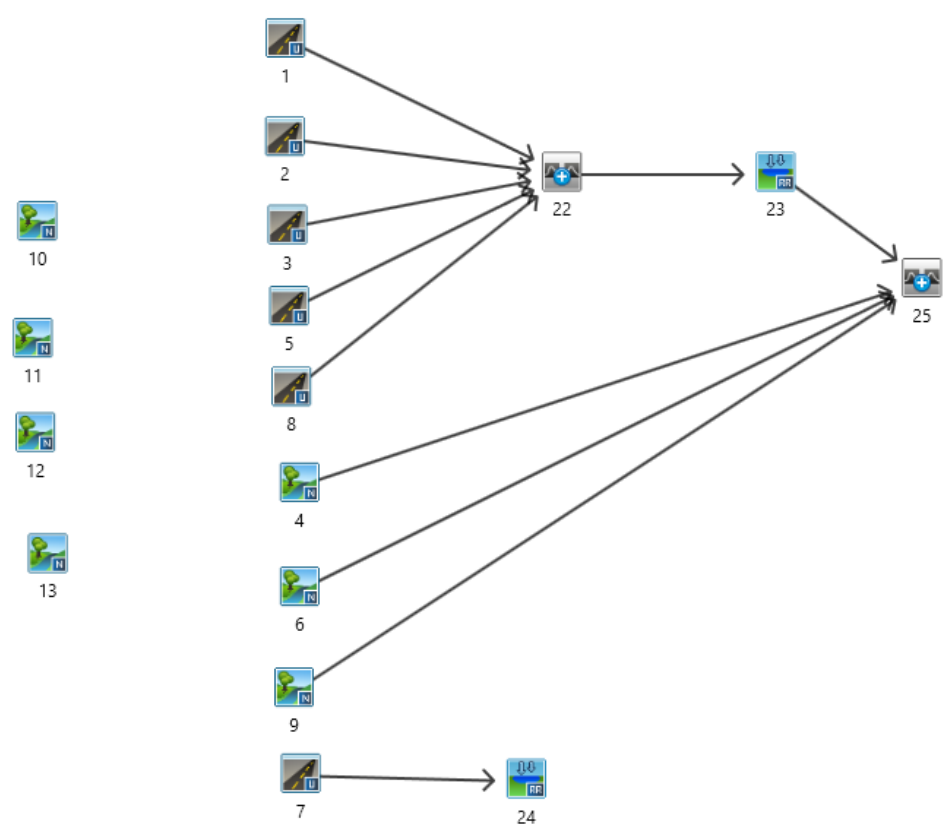
Visual OTTHYMO 5 - Hydrologic Model

Project Name: East Village Subdivision	**Designed By: BP**
Project No.: 18041	**Date: Jul-19**

Pre-Development Model



Post-Development Model



```
*****************************************
** SIMULATION:1 - 2 YR, 6 HR SCS Type II **
*****************************************

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\bf84c9c2
| Ptotal= 31.68 mm |    Comments: 2 YR, 6 HR SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

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--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
               0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
               0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
               0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
               0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
               0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
               0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
               0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
               0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
               0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
               0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
               1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
               1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
               1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
               1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
               1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
               1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
               1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Unit Hyd Qpeak  (cms)=   6.355

     PEAK FLOW       (cms)=   0.959 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=   8.244
     TOTAL RAINFALL   (mm)=  31.682
     RUNOFF COEFFICIENT   =   0.260

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\bf84c9c2
| Ptotal= 31.68 mm |    Comments: 2 YR, 6 HR SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

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--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
               0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
               0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
               0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
               0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
               0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
               0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
               0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
               0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
               0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
               0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
               1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
               1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
               1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
               1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
               1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
               1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
               1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Unit Hyd Qpeak  (cms)=   0.235

     PEAK FLOW       (cms)=   0.034 (i)
     TIME TO PEAK    (hrs)=   3.500
     RUNOFF VOLUME    (mm)=   6.393
     TOTAL RAINFALL   (mm)=  31.682
     RUNOFF COEFFICIENT   =   0.202

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\bf84c9c2
| Ptotal= 31.68 mm |    Comments: 2 YR, 6 HR SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

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--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   9.30   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.63

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
               0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
               0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
               0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
               0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
               0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
               0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
               0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
               0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
               0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
               0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
               1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
               1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
               1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
               1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
```

1.333	2.53	2.833	57.03	4.333	2.53	5.83	1.27
1.417	2.53	2.917	57.03	4.417	2.53	5.92	1.27
1.500	2.53	3.000	57.03	4.500	2.53	6.00	1.27

Unit Hyd Qpeak (cms)= 0.564

PEAK FLOW (cms)= 0.061 (i)
TIME TO PEAK (hrs)= 3.667
RUNOFF VOLUME (mm)= 4.519
TOTAL RAINFALL (mm)= 31.682
RUNOFF COEFFICIENT = 0.143

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\bf84c9c2
Ptotal= 31.68 mm	Comments: 2 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.27	1.75	2.53	3.25	11.41	4.75	2.53
0.50	1.27	2.00	2.53	3.50	5.07	5.00	1.27
0.75	1.27	2.25	3.80	3.75	3.80	5.25	1.27
1.00	1.27	2.50	5.07	4.00	3.80	5.50	1.27
1.25	2.53	2.75	7.60	4.25	2.53	5.75	1.27
1.50	2.53	3.00	57.03	4.50	2.53	6.00	1.27

CALIB NASHYD (0002)	Area (ha)= 0.80	Curve Number (CN)= 66.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.35	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.27	1.583	2.53	3.083	11.41	4.58	2.53
0.167	1.27	1.667	2.53	3.167	11.41	4.67	2.53
0.250	1.27	1.750	2.53	3.250	11.41	4.75	2.53
0.333	1.27	1.833	2.53	3.333	5.07	4.83	1.27
0.417	1.27	1.917	2.53	3.417	5.07	4.92	1.27
0.500	1.27	2.000	2.53	3.500	5.07	5.00	1.27
0.583	1.27	2.083	3.80	3.583	3.80	5.08	1.27
0.667	1.27	2.167	3.80	3.667	3.80	5.17	1.27
0.750	1.27	2.250	3.80	3.750	3.80	5.25	1.27
0.833	1.27	2.333	5.07	3.833	3.80	5.33	1.27
0.917	1.27	2.417	5.07	3.917	3.80	5.42	1.27
1.000	1.27	2.500	5.07	4.000	3.80	5.50	1.27
1.083	2.53	2.583	7.60	4.083	2.53	5.58	1.27
1.167	2.53	2.667	7.60	4.167	2.53	5.67	1.27
1.250	2.53	2.750	7.60	4.250	2.53	5.75	1.27
1.333	2.53	2.833	57.03	4.333	2.53	5.83	1.27
1.417	2.53	2.917	57.03	4.417	2.53	5.92	1.27
1.500	2.53	3.000	57.03	4.500	2.53	6.00	1.27

Unit Hyd Qpeak (cms)= 0.087

PEAK FLOW (cms)= 0.008 (i)
TIME TO PEAK (hrs)= 3.333
RUNOFF VOLUME (mm)= 4.517
TOTAL RAINFALL (mm)= 31.682
RUNOFF COEFFICIENT = 0.143

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\bf84c9c2
Ptotal= 31.68 mm	Comments: 2 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.27	1.75	2.53	3.25	11.41	4.75	2.53
0.50	1.27	2.00	2.53	3.50	5.07	5.00	1.27
0.75	1.27	2.25	3.80	3.75	3.80	5.25	1.27
1.00	1.27	2.50	5.07	4.00	3.80	5.50	1.27
1.25	2.53	2.75	7.60	4.25	2.53	5.75	1.27
1.50	2.53	3.00	57.03	4.50	2.53	6.00	1.27

CALIB NASHYD (0003)	Area (ha)= 0.47	Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.11	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.27	1.583	2.53	3.083	11.41	4.58	2.53
0.167	1.27	1.667	2.53	3.167	11.41	4.67	2.53
0.250	1.27	1.750	2.53	3.250	11.41	4.75	2.53
0.333	1.27	1.833	2.53	3.333	5.07	4.83	1.27
0.417	1.27	1.917	2.53	3.417	5.07	4.92	1.27
0.500	1.27	2.000	2.53	3.500	5.07	5.00	1.27
0.583	1.27	2.083	3.80	3.583	3.80	5.08	1.27
0.667	1.27	2.167	3.80	3.667	3.80	5.17	1.27
0.750	1.27	2.250	3.80	3.750	3.80	5.25	1.27
0.833	1.27	2.333	5.07	3.833	3.80	5.33	1.27
0.917	1.27	2.417	5.07	3.917	3.80	5.42	1.27
1.000	1.27	2.500	5.07	4.000	3.80	5.50	1.27
1.083	2.53	2.583	7.60	4.083	2.53	5.58	1.27
1.167	2.53	2.667	7.60	4.167	2.53	5.67	1.27
1.250	2.53	2.750	7.60	4.250	2.53	5.75	1.27
1.333	2.53	2.833	57.03	4.333	2.53	5.83	1.27
1.417	2.53	2.917	57.03	4.417	2.53	5.92	1.27
1.500	2.53	3.000	57.03	4.500	2.53	6.00	1.27

Unit Hyd Qpeak (cms)= 0.163

PEAK FLOW (cms)= 0.010 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 4.275
TOTAL RAINFALL (mm)= 31.682
RUNOFF COEFFICIENT = 0.135

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\bf84c9c2
Ptotal= 31.68 mm	Comments: 2 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.27	1.75	2.53	3.25	11.41	4.75	2.53
0.50	1.27	2.00	2.53	3.50	5.07	5.00	1.27
0.75	1.27	2.25	3.80	3.75	3.80	5.25	1.27
1.00	1.27	2.50	5.07	4.00	3.80	5.50	1.27
1.25	2.53	2.75	7.60	4.25	2.53	5.75	1.27
1.50	2.53	3.00	57.03	4.50	2.53	6.00	1.27

CALIB NASHYD (0004)	Area (ha)= 1.22	Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.31	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.27	1.583	2.53	3.083	11.41	4.58	2.53
0.167	1.27	1.667	2.53	3.167	11.41	4.67	2.53
0.250	1.27	1.750	2.53	3.250	11.41	4.75	2.53

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                0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Unit Hyd Qpeak  (cms)=   0.150

     PEAK FLOW       (cms)=   0.013 (i)
     TIME TO PEAK    (hrs)=   3.250
     RUNOFF VOLUME    (mm)=   4.354
     TOTAL RAINFALL   (mm)=  31.682
     RUNOFF COEFFICIENT   =   0.137

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\bf84c9c2
| Ptotal= 31.68 mm |    Comments: 2 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                 0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                 0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                 1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                 1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                 1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0005)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.16

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Unit Hyd Qpeak  (cms)=   0.043

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=   4.334
     TOTAL RAINFALL   (mm)=  31.682
     RUNOFF COEFFICIENT   =   0.137

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     9.30   0.061     3.67     4.52
      + ID2= 2 (  0002):     0.80   0.008     3.33     4.52
        ==================================================
        ID = 3 (  0009):    10.10   0.067     3.58     4.52

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):    10.10   0.067     3.58     4.52
      + ID2= 2 (  0003):     0.47   0.010     3.00     4.28
        ==================================================
        ID = 1 (  0009):    10.57   0.068     3.58     4.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0009):    10.57   0.068     3.58     4.51
      + ID2= 2 (  0004):     1.22   0.013     3.25     4.35
        ==================================================
        ID = 3 (  0009):    11.79   0.077     3.50     4.49

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):    11.79   0.077     3.50     4.49
      + ID2= 2 (  0005):     0.18   0.003     3.08     4.33
        ==================================================
        ID = 1 (  0009):    11.97   0.078     3.50     4.49

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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*******************************************
** SIMULATION:2 - 5 YR, 6 HR SCS Type II **
*******************************************

--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                 0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                 0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                 1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                 1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                 1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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```
                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
         0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
         0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
         0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
         0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
         0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
         0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
         0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
         0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
         0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
         0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
         1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
         1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
         1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
         1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
         1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
         1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
         1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Unit Hyd Qpeak  (cms)=   6.355

     PEAK FLOW       (cms)=   1.561 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=  13.117
     TOTAL RAINFALL   (mm)=  40.297
     RUNOFF COEFFICIENT   =   0.326

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\7ce5e994
| Ptotal= 40.30 mm |     Comments: 5 YR, 6 HR SCS Type II
--------------------
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
          0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
          0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
          1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
          1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
          1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
         0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
         0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
         0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
         0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
         0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
         0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
         0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
         0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
         0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
         0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
         1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
         1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
         1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
         1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
         1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
         1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
         1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Unit Hyd Qpeak  (cms)=   0.235

     PEAK FLOW       (cms)=   0.057 (i)
     TIME TO PEAK    (hrs)=   3.500
     RUNOFF VOLUME    (mm)=  10.384
     TOTAL RAINFALL   (mm)=  40.297
     RUNOFF COEFFICIENT   =   0.258

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\7ce5e994
| Ptotal= 40.30 mm |     Comments: 5 YR, 6 HR SCS Type II
--------------------
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
          0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
          0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
          1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
          1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
          1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   9.30   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.63

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
         0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
         0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
         0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
         0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
         0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
         0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
         0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
         0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
         0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
         0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
         1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
         1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
         1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
         1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
         1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
         1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
         1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Unit Hyd Qpeak  (cms)=   0.564

     PEAK FLOW       (cms)=   0.103 (i)
     TIME TO PEAK    (hrs)=   3.667
     RUNOFF VOLUME    (mm)=   7.498
     TOTAL RAINFALL   (mm)=  40.297
     RUNOFF COEFFICIENT   =   0.186

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\7ce5e994
| Ptotal= 40.30 mm |     Comments: 5 YR, 6 HR SCS Type II
--------------------
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
          0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
          0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
          1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
          1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
```

1.50	3.22	3.00	72.53	4.50	3.22	6.00	1.61

```
--------------------
| CALIB            |
| NASHYD   (  0002)|   Area    (ha)=   0.80   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.35
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.61	1.583	3.22	3.083	14.51	4.58	3.22
0.167	1.61	1.667	3.22	3.167	14.51	4.67	3.22
0.250	1.61	1.750	3.22	3.250	14.51	4.75	3.22
0.333	1.61	1.833	3.22	3.333	6.45	4.83	1.61
0.417	1.61	1.917	3.22	3.417	6.45	4.92	1.61
0.500	1.61	2.000	3.22	3.500	6.45	5.00	1.61
0.583	1.61	2.083	4.84	3.583	4.84	5.08	1.61
0.667	1.61	2.167	4.84	3.667	4.84	5.17	1.61
0.750	1.61	2.250	4.84	3.750	4.84	5.25	1.61
0.833	1.61	2.333	6.45	3.833	4.84	5.33	1.61
0.917	1.61	2.417	6.45	3.917	4.84	5.42	1.61
1.000	1.61	2.500	6.45	4.000	4.84	5.50	1.61
1.083	3.22	2.583	9.67	4.083	3.22	5.58	1.61
1.167	3.22	2.667	9.67	4.167	3.22	5.67	1.61
1.250	3.22	2.750	9.67	4.250	3.22	5.75	1.61
1.333	3.22	2.833	72.53	4.333	3.22	5.83	1.61
1.417	3.22	2.917	72.53	4.417	3.22	5.92	1.61
1.500	3.22	3.000	72.53	4.500	3.22	6.00	1.61

Unit Hyd Qpeak (cms)= 0.087

PEAK FLOW (cms)= 0.014 (i)
TIME TO PEAK (hrs)= 3.333
RUNOFF VOLUME (mm)= 7.496
TOTAL RAINFALL (mm)= 40.297
RUNOFF COEFFICIENT = 0.186

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.61	1.75	3.22	3.25	14.51	4.75	3.22
0.50	1.61	2.00	3.22	3.50	6.45	5.00	1.61
0.75	1.61	2.25	4.84	3.75	4.84	5.25	1.61
1.00	1.61	2.50	6.45	4.00	4.84	5.50	1.61
1.25	3.22	2.75	9.67	4.25	3.22	5.75	1.61
1.50	3.22	3.00	72.53	4.50	3.22	6.00	1.61

```
--------------------
| CALIB            |
| NASHYD   (  0003)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.61	1.583	3.22	3.083	14.51	4.58	3.22
0.167	1.61	1.667	3.22	3.167	14.51	4.67	3.22
0.250	1.61	1.750	3.22	3.250	14.51	4.75	3.22
0.333	1.61	1.833	3.22	3.333	6.45	4.83	1.61
0.417	1.61	1.917	3.22	3.417	6.45	4.92	1.61
0.500	1.61	2.000	3.22	3.500	6.45	5.00	1.61
0.583	1.61	2.083	4.84	3.583	4.84	5.08	1.61
0.667	1.61	2.167	4.84	3.667	4.84	5.17	1.61
0.750	1.61	2.250	4.84	3.750	4.84	5.25	1.61
0.833	1.61	2.333	6.45	3.833	4.84	5.33	1.61
0.917	1.61	2.417	6.45	3.917	4.84	5.42	1.61
1.000	1.61	2.500	6.45	4.000	4.84	5.50	1.61
1.083	3.22	2.583	9.67	4.083	3.22	5.58	1.61
1.167	3.22	2.667	9.67	4.167	3.22	5.67	1.61
1.250	3.22	2.750	9.67	4.250	3.22	5.75	1.61
1.333	3.22	2.833	72.53	4.333	3.22	5.83	1.61
1.417	3.22	2.917	72.53	4.417	3.22	5.92	1.61
1.500	3.22	3.000	72.53	4.500	3.22	6.00	1.61

Unit Hyd Qpeak (cms)= 0.163

PEAK FLOW (cms)= 0.016 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 7.107
TOTAL RAINFALL (mm)= 40.297
RUNOFF COEFFICIENT = 0.176

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.61	1.75	3.22	3.25	14.51	4.75	3.22
0.50	1.61	2.00	3.22	3.50	6.45	5.00	1.61
0.75	1.61	2.25	4.84	3.75	4.84	5.25	1.61
1.00	1.61	2.50	6.45	4.00	4.84	5.50	1.61
1.25	3.22	2.75	9.67	4.25	3.22	5.75	1.61
1.50	3.22	3.00	72.53	4.50	3.22	6.00	1.61

```
--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   1.22   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.31
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.61	1.583	3.22	3.083	14.51	4.58	3.22
0.167	1.61	1.667	3.22	3.167	14.51	4.67	3.22
0.250	1.61	1.750	3.22	3.250	14.51	4.75	3.22
0.333	1.61	1.833	3.22	3.333	6.45	4.83	1.61
0.417	1.61	1.917	3.22	3.417	6.45	4.92	1.61
0.500	1.61	2.000	3.22	3.500	6.45	5.00	1.61
0.583	1.61	2.083	4.84	3.583	4.84	5.08	1.61
0.667	1.61	2.167	4.84	3.667	4.84	5.17	1.61
0.750	1.61	2.250	4.84	3.750	4.84	5.25	1.61
0.833	1.61	2.333	6.45	3.833	4.84	5.33	1.61
0.917	1.61	2.417	6.45	3.917	4.84	5.42	1.61
1.000	1.61	2.500	6.45	4.000	4.84	5.50	1.61
1.083	3.22	2.583	9.67	4.083	3.22	5.58	1.61
1.167	3.22	2.667	9.67	4.167	3.22	5.67	1.61
1.250	3.22	2.750	9.67	4.250	3.22	5.75	1.61
1.333	3.22	2.833	72.53	4.333	3.22	5.83	1.61
1.417	3.22	2.917	72.53	4.417	3.22	5.92	1.61
1.500	3.22	3.000	72.53	4.500	3.22	6.00	1.61

Unit Hyd Qpeak (cms)= 0.150

PEAK FLOW (cms)= 0.022 (i)
TIME TO PEAK (hrs)= 3.250
RUNOFF VOLUME (mm)= 7.238
TOTAL RAINFALL (mm)= 40.297
RUNOFF COEFFICIENT = 0.180

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
--------------------
```

```
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\7ce5e994
| Ptotal= 40.30 mm |     Comments: 5 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.61	1.75	3.22	3.25	14.51	4.75	3.22
0.50	1.61	2.00	3.22	3.50	6.45	5.00	1.61
0.75	1.61	2.25	4.84	3.75	4.84	5.25	1.61
1.00	1.61	2.50	6.45	4.00	4.84	5.50	1.61
1.25	3.22	2.75	9.67	4.25	3.22	5.75	1.61
1.50	3.22	3.00	72.53	4.50	3.22	6.00	1.61

```
--------------------
| CALIB              |
| NASHYD   (  0005)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.16
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.61	1.583	3.22	3.083	14.51	4.58	3.22
0.167	1.61	1.667	3.22	3.167	14.51	4.67	3.22
0.250	1.61	1.750	3.22	3.250	14.51	4.75	3.22
0.333	1.61	1.833	3.22	3.333	6.45	4.83	1.61
0.417	1.61	1.917	3.22	3.417	6.45	4.92	1.61
0.500	1.61	2.000	3.22	3.500	6.45	5.00	1.61
0.583	1.61	2.083	4.84	3.583	4.84	5.08	1.61
0.667	1.61	2.167	4.84	3.667	4.84	5.17	1.61
0.750	1.61	2.250	4.84	3.750	4.84	5.25	1.61
0.833	1.61	2.333	6.45	3.833	4.84	5.33	1.61
0.917	1.61	2.417	6.45	3.917	4.84	5.42	1.61
1.000	1.61	2.500	6.45	4.000	4.84	5.50	1.61
1.083	3.22	2.583	9.67	4.083	3.22	5.58	1.61
1.167	3.22	2.667	9.67	4.167	3.22	5.67	1.61
1.250	3.22	2.750	9.67	4.250	3.22	5.75	1.61
1.333	3.22	2.833	72.53	4.333	3.22	5.83	1.61
1.417	3.22	2.917	72.53	4.417	3.22	5.92	1.61
1.500	3.22	3.000	72.53	4.500	3.22	6.00	1.61

```
     Unit Hyd Qpeak  (cms)=   0.043

     PEAK FLOW       (cms)=   0.005 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=   7.207
     TOTAL RAINFALL   (mm)=  40.297
     RUNOFF COEFFICIENT   =   0.179

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):      9.30   0.103     3.67     7.50
      + ID2= 2 (  0002):      0.80   0.014     3.33     7.50
        ==================================================
        ID = 3 (  0009):     10.10   0.113     3.58     7.50

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):     10.10   0.113     3.58     7.50
      + ID2= 2 (  0003):      0.47   0.016     3.00     7.11
        ==================================================
        ID = 1 (  0009):     10.57   0.116     3.58     7.48

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0009):     10.57   0.116     3.58     7.48
      + ID2= 2 (  0004):      1.22   0.022     3.25     7.24
        ==================================================
        ID = 3 (  0009):     11.79   0.131     3.50     7.46

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):     11.79   0.131     3.50     7.46
      + ID2= 2 (  0005):      0.18   0.005     3.08     7.21
        ==================================================
        ID = 1 (  0009):     11.97   0.133     3.50     7.45

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

```
*********************************************
** SIMULATION:3 - 10 YR, 6 HR SCS Type II **
*********************************************

--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\c4d7c19e
| Ptotal= 47.17 mm |     Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

```
--------------------
| CALIB              |
| NASHYD   (  0006)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

```
     Unit Hyd Qpeak  (cms)=   6.355

     PEAK FLOW       (cms)=   2.099 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=  17.457
     TOTAL RAINFALL   (mm)=  47.169
```

```
     RUNOFF COEFFICIENT   =   0.370

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.89 |  1.75    3.77 |  3.25   16.98 |  4.75    3.77
                 0.50    1.89 |  2.00    3.77 |  3.50    7.55 |  5.00    1.89
                 0.75    1.89 |  2.25    5.66 |  3.75    5.66 |  5.25    1.89
                 1.00    1.89 |  2.50    7.55 |  4.00    5.66 |  5.50    1.89
                 1.25    3.77 |  2.75   11.32 |  4.25    3.77 |  5.75    1.89
                 1.50    3.77 |  3.00   84.90 |  4.50    3.77 |  6.00    1.89

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.89 | 1.583    3.77 | 3.083   16.98 |  4.58    3.77
                0.167    1.89 | 1.667    3.77 | 3.167   16.98 |  4.67    3.77
                0.250    1.89 | 1.750    3.77 | 3.250   16.98 |  4.75    3.77
                0.333    1.89 | 1.833    3.77 | 3.333    7.55 |  4.83    1.89
                0.417    1.89 | 1.917    3.77 | 3.417    7.55 |  4.92    1.89
                0.500    1.89 | 2.000    3.77 | 3.500    7.55 |  5.00    1.89
                0.583    1.89 | 2.083    5.66 | 3.583    5.66 |  5.08    1.89
                0.667    1.89 | 2.167    5.66 | 3.667    5.66 |  5.17    1.89
                0.750    1.89 | 2.250    5.66 | 3.750    5.66 |  5.25    1.89
                0.833    1.89 | 2.333    7.55 | 3.833    5.66 |  5.33    1.89
                0.917    1.89 | 2.417    7.55 | 3.917    5.66 |  5.42    1.89
                1.000    1.89 | 2.500    7.55 | 4.000    5.66 |  5.50    1.89
                1.083    3.77 | 2.583   11.32 | 4.083    3.77 |  5.58    1.89
                1.167    3.77 | 2.667   11.32 | 4.167    3.77 |  5.67    1.89
                1.250    3.77 | 2.750   11.32 | 4.250    3.77 |  5.75    1.89
                1.333    3.77 | 2.833   84.90 | 4.333    3.77 |  5.83    1.89
                1.417    3.77 | 2.917   84.90 | 4.417    3.77 |  5.92    1.89
                1.500    3.77 | 3.000   84.90 | 4.500    3.77 |  6.00    1.89

     Unit Hyd Qpeak  (cms)=   0.235

     PEAK FLOW       (cms)=   0.078 (i)
     TIME TO PEAK    (hrs)=   3.500
     RUNOFF VOLUME    (mm)=  14.019
     TOTAL RAINFALL   (mm)=  47.169
     RUNOFF COEFFICIENT   =   0.297

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.89 |  1.75    3.77 |  3.25   16.98 |  4.75    3.77
                 0.50    1.89 |  2.00    3.77 |  3.50    7.55 |  5.00    1.89
                 0.75    1.89 |  2.25    5.66 |  3.75    5.66 |  5.25    1.89
                 1.00    1.89 |  2.50    7.55 |  4.00    5.66 |  5.50    1.89
                 1.25    3.77 |  2.75   11.32 |  4.25    3.77 |  5.75    1.89
                 1.50    3.77 |  3.00   84.90 |  4.50    3.77 |  6.00    1.89

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   9.30   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.63

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.89 | 1.583    3.77 | 3.083   16.98 |  4.58    3.77
                0.167    1.89 | 1.667    3.77 | 3.167   16.98 |  4.67    3.77
                0.250    1.89 | 1.750    3.77 | 3.250   16.98 |  4.75    3.77
                0.333    1.89 | 1.833    3.77 | 3.333    7.55 |  4.83    1.89
                0.417    1.89 | 1.917    3.77 | 3.417    7.55 |  4.92    1.89
                0.500    1.89 | 2.000    3.77 | 3.500    7.55 |  5.00    1.89
                0.583    1.89 | 2.083    5.66 | 3.583    5.66 |  5.08    1.89
                0.667    1.89 | 2.167    5.66 | 3.667    5.66 |  5.17    1.89
                0.750    1.89 | 2.250    5.66 | 3.750    5.66 |  5.25    1.89
                0.833    1.89 | 2.333    7.55 | 3.833    5.66 |  5.33    1.89
                0.917    1.89 | 2.417    7.55 | 3.917    5.66 |  5.42    1.89
                1.000    1.89 | 2.500    7.55 | 4.000    5.66 |  5.50    1.89
                1.083    3.77 | 2.583   11.32 | 4.083    3.77 |  5.58    1.89
                1.167    3.77 | 2.667   11.32 | 4.167    3.77 |  5.67    1.89
                1.250    3.77 | 2.750   11.32 | 4.250    3.77 |  5.75    1.89
                1.333    3.77 | 2.833   84.90 | 4.333    3.77 |  5.83    1.89
                1.417    3.77 | 2.917   84.90 | 4.417    3.77 |  5.92    1.89
                1.500    3.77 | 3.000   84.90 | 4.500    3.77 |  6.00    1.89

     Unit Hyd Qpeak  (cms)=   0.564

     PEAK FLOW       (cms)=   0.143 (i)
     TIME TO PEAK    (hrs)=   3.667
     RUNOFF VOLUME    (mm)=  10.277
     TOTAL RAINFALL   (mm)=  47.169
     RUNOFF COEFFICIENT   =   0.218

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.89 |  1.75    3.77 |  3.25   16.98 |  4.75    3.77
                 0.50    1.89 |  2.00    3.77 |  3.50    7.55 |  5.00    1.89
                 0.75    1.89 |  2.25    5.66 |  3.75    5.66 |  5.25    1.89
                 1.00    1.89 |  2.50    7.55 |  4.00    5.66 |  5.50    1.89
                 1.25    3.77 |  2.75   11.32 |  4.25    3.77 |  5.75    1.89
                 1.50    3.77 |  3.00   84.90 |  4.50    3.77 |  6.00    1.89

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0002)|   Area    (ha)=   0.80   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.35

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.89 | 1.583    3.77 | 3.083   16.98 |  4.58    3.77
                0.167    1.89 | 1.667    3.77 | 3.167   16.98 |  4.67    3.77
                0.250    1.89 | 1.750    3.77 | 3.250   16.98 |  4.75    3.77
                0.333    1.89 | 1.833    3.77 | 3.333    7.55 |  4.83    1.89
                0.417    1.89 | 1.917    3.77 | 3.417    7.55 |  4.92    1.89
                0.500    1.89 | 2.000    3.77 | 3.500    7.55 |  5.00    1.89
                0.583    1.89 | 2.083    5.66 | 3.583    5.66 |  5.08    1.89
                0.667    1.89 | 2.167    5.66 | 3.667    5.66 |  5.17    1.89
                0.750    1.89 | 2.250    5.66 | 3.750    5.66 |  5.25    1.89
                0.833    1.89 | 2.333    7.55 | 3.833    5.66 |  5.33    1.89
                0.917    1.89 | 2.417    7.55 | 3.917    5.66 |  5.42    1.89
                1.000    1.89 | 2.500    7.55 | 4.000    5.66 |  5.50    1.89
                1.083    3.77 | 2.583   11.32 | 4.083    3.77 |  5.58    1.89
```

1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 0.087

PEAK FLOW (cms)= 0.019 (i)
TIME TO PEAK (hrs)= 3.333
RUNOFF VOLUME (mm)= 10.274
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.218

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

```
--------------------
| CALIB            |
| NASHYD   (  0003)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 0.163

PEAK FLOW (cms)= 0.022 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 9.754
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.207

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

```
--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   1.22   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.31
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 0.150

PEAK FLOW (cms)= 0.030 (i)
TIME TO PEAK (hrs)= 3.250
RUNOFF VOLUME (mm)= 9.934
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.211

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

```
--------------------
| CALIB            |
| NASHYD   (  0005)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.16
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77

0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 0.043

PEAK FLOW (cms)= 0.007 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 9.891
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.210

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
-------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):      9.30   0.143     3.67    10.28
      + ID2= 2 (  0002):      0.80   0.019     3.33    10.27
        ==================================================
        ID = 3 (  0009):     10.10   0.157     3.58    10.28
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):     10.10   0.157     3.58    10.28
      + ID2= 2 (  0003):      0.47   0.022     3.00     9.75
        ==================================================
        ID = 1 (  0009):     10.57   0.160     3.58    10.25
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0009):     10.57   0.160     3.58    10.25
      + ID2= 2 (  0004):      1.22   0.030     3.25     9.93
        ==================================================
        ID = 3 (  0009):     11.79   0.182     3.50    10.22
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):     11.79   0.182     3.50    10.22
      + ID2= 2 (  0005):      0.18   0.007     3.08     9.89
        ==================================================
        ID = 1 (  0009):     11.97   0.184     3.50    10.22
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
*********************************************
** SIMULATION:4 - 25 YR, 6 HR SCS Type II **
*********************************************
```

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-------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
-------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

```
-------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.23
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 6.355

PEAK FLOW (cms)= 2.734 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 22.563
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.413

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
-------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

```
-------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.50
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.235

PEAK FLOW (cms)= 0.103 (i)
TIME TO PEAK (hrs)= 3.500
RUNOFF VOLUME (mm)= 18.369
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.336

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\1c24e181
Ptotal= 54.68 mm	Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB	
NASHYD (0001)	Area (ha)= 9.30 Curve Number (CN)= 66.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.63

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.564

PEAK FLOW (cms)= 0.192 (i)
TIME TO PEAK (hrs)= 3.667
RUNOFF VOLUME (mm)= 13.670
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.250

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\1c24e181
Ptotal= 54.68 mm	Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB	
NASHYD (0002)	Area (ha)= 0.80 Curve Number (CN)= 66.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.35

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.087

PEAK FLOW (cms)= 0.025 (i)
TIME TO PEAK (hrs)= 3.333
RUNOFF VOLUME (mm)= 13.667
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.250

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\1c24e181
Ptotal= 54.68 mm	Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19

1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB	
NASHYD (0003)	Area (ha)= 0.47 Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.11

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.163

PEAK FLOW (cms)= 0.030 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 12.993
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.238

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\1c24e181
Ptotal= 54.68 mm	Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB	
NASHYD (0004)	Area (ha)= 1.22 Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.31

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.150

PEAK FLOW (cms)= 0.041 (i)
TIME TO PEAK (hrs)= 3.250
RUNOFF VOLUME (mm)= 13.231
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.242

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\1c24e181
Ptotal= 54.68 mm	Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB	
NASHYD (0005)	Area (ha)= 0.18 Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.16

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.043

PEAK FLOW (cms)= 0.009 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 13.175
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.241

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):      9.30   0.192     3.67    13.67
      + ID2= 2 (  0002):      0.80   0.025     3.33    13.67
        ====================================================
        ID = 3 (  0009):     10.10   0.211     3.58    13.67

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):     10.10   0.211     3.58    13.67
      + ID2= 2 (  0003):      0.47   0.030     3.00    12.99
        ====================================================
        ID = 1 (  0009):     10.57   0.215     3.58    13.64

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0009):     10.57   0.215     3.58    13.64
      + ID2= 2 (  0004):      1.22   0.041     3.25    13.23
        ====================================================
        ID = 3 (  0009):     11.79   0.244     3.50    13.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):     11.79   0.244     3.50    13.60
      + ID2= 2 (  0005):      0.18   0.009     3.08    13.17
        ====================================================
        ID = 1 (  0009):     11.97   0.247     3.50    13.59

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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*********************************************
** SIMULATION:5 - 50 YR, 6 HR SCS Type II **
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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   6.355

     PEAK FLOW       (cms)=   3.195 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=  26.268
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.439

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.235

     PEAK FLOW       (cms)=   0.122 (i)
     TIME TO PEAK    (hrs)=   3.500
```

```
     RUNOFF VOLUME    (mm)=  21.568
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.360

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3e74ea47
| Ptotal= 59.86 mm |     Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   9.30   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.63

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.564

     PEAK FLOW       (cms)=   0.228 (i)
     TIME TO PEAK    (hrs)=   3.583
     RUNOFF VOLUME    (mm)=  16.205
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.271

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3e74ea47
| Ptotal= 59.86 mm |     Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0002)|   Area    (ha)=   0.80   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.35

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.087

     PEAK FLOW       (cms)=   0.030 (i)
     TIME TO PEAK    (hrs)=   3.250
     RUNOFF VOLUME    (mm)=  16.201
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.271

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3e74ea47
| Ptotal= 59.86 mm |     Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0003)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
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                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.163

     PEAK FLOW       (cms)=   0.036 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=  15.415
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.258

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3e74ea47
| Ptotal= 59.86 mm |     Comments: 50 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                  0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                  0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                  1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                  1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                  1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   1.22   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.31

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                 0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                 0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                 0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                 0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                 0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                 0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                 0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                 0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                 0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                 0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                 1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                 1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                 1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                 1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                 1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                 1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                 1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.150

     PEAK FLOW       (cms)=   0.048 (i)
     TIME TO PEAK    (hrs)=   3.250
     RUNOFF VOLUME    (mm)=  15.699
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.262

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3e74ea47
| Ptotal= 59.86 mm |     Comments: 50 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                  0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                  0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                  1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                  1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                  1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0005)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.16

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                 0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                 0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                 0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                 0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                 0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                 0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                 0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                 0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                 0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                 0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                 1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                 1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                 1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                 1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                 1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                 1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                 1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.043

     PEAK FLOW       (cms)=   0.011 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  15.631
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.261

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     9.30   0.228     3.58    16.20
      + ID2= 2 (  0002):     0.80   0.030     3.25    16.20
        ===================================================
        ID = 3 (  0009):    10.10   0.251     3.58    16.20

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):    10.10   0.251     3.58    16.20
      + ID2= 2 (  0003):     0.47   0.036     3.00    15.42
        ===================================================
        ID = 1 (  0009):    10.57   0.256     3.58    16.17

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
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|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0009):    10.57   0.256     3.58    16.17
     + ID2= 2 (  0004):     1.22   0.048     3.25    15.70
       ==================================================
       ID = 3 (  0009):    11.79   0.291     3.50    16.12

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0009):    11.79   0.291     3.50    16.12
     + ID2= 2 (  0005):     0.18   0.011     3.08    15.63
       ==================================================
       ID = 1 (  0009):    11.97   0.294     3.50    16.11

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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**********************************************
** SIMULATION:6 - 100 YR, 6 HR SCS Type II **
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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Unit Hyd Qpeak  (cms)=   6.355

     PEAK FLOW       (cms)=   3.545 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=  29.083
     TOTAL RAINFALL   (mm)=  63.677
     RUNOFF COEFFICIENT   =   0.457

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Unit Hyd Qpeak  (cms)=   0.235

     PEAK FLOW       (cms)=   0.136 (i)
     TIME TO PEAK    (hrs)=   3.417
     RUNOFF VOLUME    (mm)=  24.018
     TOTAL RAINFALL   (mm)=  63.677
     RUNOFF COEFFICIENT   =   0.377

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               d770222c-0069-4d63-9cc7-f91168d8e5bb\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   9.30   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
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--------------------   U.H. Tp(hrs)=   0.63
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.55	1.583	5.09	3.083	22.92	4.58	5.09
0.167	2.55	1.667	5.09	3.167	22.92	4.67	5.09
0.250	2.55	1.750	5.09	3.250	22.92	4.75	5.09
0.333	2.55	1.833	5.09	3.333	10.19	4.83	2.55
0.417	2.55	1.917	5.09	3.417	10.19	4.92	2.55
0.500	2.55	2.000	5.09	3.500	10.19	5.00	2.55
0.583	2.55	2.083	7.64	3.583	7.64	5.08	2.55
0.667	2.55	2.167	7.64	3.667	7.64	5.17	2.55
0.750	2.55	2.250	7.64	3.750	7.64	5.25	2.55
0.833	2.55	2.333	10.19	3.833	7.64	5.33	2.55
0.917	2.55	2.417	10.19	3.917	7.64	5.42	2.55
1.000	2.55	2.500	10.19	4.000	7.64	5.50	2.55
1.083	5.09	2.583	15.28	4.083	5.09	5.58	2.55
1.167	5.09	2.667	15.28	4.167	5.09	5.67	2.55
1.250	5.09	2.750	15.28	4.250	5.09	5.75	2.55
1.333	5.09	2.833	114.62	4.333	5.09	5.83	2.55
1.417	5.09	2.917	114.62	4.417	5.09	5.92	2.55
1.500	5.09	3.000	114.62	4.500	5.09	6.00	2.55

Unit Hyd Qpeak (cms)= 0.564

PEAK FLOW (cms)= 0.256 (i)
TIME TO PEAK (hrs)= 3.583
RUNOFF VOLUME (mm)= 18.166
TOTAL RAINFALL (mm)= 63.677
RUNOFF COEFFICIENT = 0.285

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.55	1.75	5.09	3.25	22.92	4.75	5.09
0.50	2.55	2.00	5.09	3.50	10.19	5.00	2.55
0.75	2.55	2.25	7.64	3.75	7.64	5.25	2.55
1.00	2.55	2.50	10.19	4.00	7.64	5.50	2.55
1.25	5.09	2.75	15.28	4.25	5.09	5.75	2.55
1.50	5.09	3.00	114.62	4.50	5.09	6.00	2.55

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--------------------
| CALIB            |
| NASHYD   (  0002)|   Area    (ha)=   0.80   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.35
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.55	1.583	5.09	3.083	22.92	4.58	5.09
0.167	2.55	1.667	5.09	3.167	22.92	4.67	5.09
0.250	2.55	1.750	5.09	3.250	22.92	4.75	5.09
0.333	2.55	1.833	5.09	3.333	10.19	4.83	2.55
0.417	2.55	1.917	5.09	3.417	10.19	4.92	2.55
0.500	2.55	2.000	5.09	3.500	10.19	5.00	2.55
0.583	2.55	2.083	7.64	3.583	7.64	5.08	2.55
0.667	2.55	2.167	7.64	3.667	7.64	5.17	2.55
0.750	2.55	2.250	7.64	3.750	7.64	5.25	2.55
0.833	2.55	2.333	10.19	3.833	7.64	5.33	2.55
0.917	2.55	2.417	10.19	3.917	7.64	5.42	2.55
1.000	2.55	2.500	10.19	4.000	7.64	5.50	2.55
1.083	5.09	2.583	15.28	4.083	5.09	5.58	2.55
1.167	5.09	2.667	15.28	4.167	5.09	5.67	2.55
1.250	5.09	2.750	15.28	4.250	5.09	5.75	2.55
1.333	5.09	2.833	114.62	4.333	5.09	5.83	2.55
1.417	5.09	2.917	114.62	4.417	5.09	5.92	2.55
1.500	5.09	3.000	114.62	4.500	5.09	6.00	2.55

Unit Hyd Qpeak (cms)= 0.087

PEAK FLOW (cms)= 0.034 (i)
TIME TO PEAK (hrs)= 3.250
RUNOFF VOLUME (mm)= 18.162
TOTAL RAINFALL (mm)= 63.677
RUNOFF COEFFICIENT = 0.285

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.55	1.75	5.09	3.25	22.92	4.75	5.09
0.50	2.55	2.00	5.09	3.50	10.19	5.00	2.55
0.75	2.55	2.25	7.64	3.75	7.64	5.25	2.55
1.00	2.55	2.50	10.19	4.00	7.64	5.50	2.55
1.25	5.09	2.75	15.28	4.25	5.09	5.75	2.55
1.50	5.09	3.00	114.62	4.50	5.09	6.00	2.55

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--------------------
| CALIB            |
| NASHYD   (  0003)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.55	1.583	5.09	3.083	22.92	4.58	5.09
0.167	2.55	1.667	5.09	3.167	22.92	4.67	5.09
0.250	2.55	1.750	5.09	3.250	22.92	4.75	5.09
0.333	2.55	1.833	5.09	3.333	10.19	4.83	2.55
0.417	2.55	1.917	5.09	3.417	10.19	4.92	2.55
0.500	2.55	2.000	5.09	3.500	10.19	5.00	2.55
0.583	2.55	2.083	7.64	3.583	7.64	5.08	2.55
0.667	2.55	2.167	7.64	3.667	7.64	5.17	2.55
0.750	2.55	2.250	7.64	3.750	7.64	5.25	2.55
0.833	2.55	2.333	10.19	3.833	7.64	5.33	2.55
0.917	2.55	2.417	10.19	3.917	7.64	5.42	2.55
1.000	2.55	2.500	10.19	4.000	7.64	5.50	2.55
1.083	5.09	2.583	15.28	4.083	5.09	5.58	2.55
1.167	5.09	2.667	15.28	4.167	5.09	5.67	2.55
1.333	5.09	2.833	114.62	4.333	5.09	5.83	2.55
1.417	5.09	2.917	114.62	4.417	5.09	5.92	2.55
1.500	5.09	3.000	114.62	4.500	5.09	6.00	2.55

Unit Hyd Qpeak (cms)= 0.163

PEAK FLOW (cms)= 0.040 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 17.292
TOTAL RAINFALL (mm)= 63.677
RUNOFF COEFFICIENT = 0.272

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.55	1.75	5.09	3.25	22.92	4.75	5.09

```
                0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   1.22   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.31

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
               0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
               0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
               0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
               0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
               0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
               0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
               0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
               0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
               0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
               0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
               1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
               1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
               1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
               1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
               1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
               1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
               1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Unit Hyd Qpeak  (cms)=   0.150

     PEAK FLOW       (cms)=   0.054 (i)
     TIME TO PEAK    (hrs)=   3.250
     RUNOFF VOLUME    (mm)=  17.610
     TOTAL RAINFALL   (mm)=  63.677
     RUNOFF COEFFICIENT   =   0.277

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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| CALIB            |
| NASHYD   (  0005)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.16

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
               0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
               0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
               0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
               0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
               0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
               0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
               0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
               0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
               0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
               0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
               1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
               1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
               1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
               1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
               1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
               1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
               1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Unit Hyd Qpeak  (cms)=   0.043

     PEAK FLOW       (cms)=   0.012 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  17.536
     TOTAL RAINFALL   (mm)=  63.677
     RUNOFF COEFFICIENT   =   0.275

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):      9.30   0.256     3.58    18.17
      + ID2= 2 (  0002):      0.80   0.034     3.25    18.16
        ==================================================
        ID = 3 (  0009):     10.10   0.282     3.58    18.17

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):     10.10   0.282     3.58    18.17
      + ID2= 2 (  0003):      0.47   0.040     3.00    17.29
        ==================================================
        ID = 1 (  0009):     10.57   0.288     3.58    18.13

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0009):     10.57   0.288     3.58    18.13
      + ID2= 2 (  0004):      1.22   0.054     3.25    17.61
        ==================================================
        ID = 3 (  0009):     11.79   0.327     3.50    18.07

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):     11.79   0.327     3.50    18.07
      + ID2= 2 (  0005):      0.18   0.012     3.08    17.54
        ==================================================
        ID = 1 (  0009):     11.97   0.331     3.50    18.07

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
*********************************
** SIMULATION:Hazel            **
*********************************

--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
```

```
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
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```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

```
--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

```
     Unit Hyd Qpeak  (cms)=   6.355

     PEAK FLOW       (cms)=   5.100 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 160.559
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.757

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

```
--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

```
     Unit Hyd Qpeak  (cms)=   0.235

     PEAK FLOW       (cms)=   0.341 (i)
     TIME TO PEAK    (hrs)=  10.250
     RUNOFF VOLUME    (mm)= 146.903
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.693

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

```
--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   9.30   Curve Number   (CN)= 66.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.63
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.564

PEAK FLOW (cms)= 0.865 (i)
TIME TO PEAK (hrs)= 10.583
RUNOFF VOLUME (mm)= 126.826
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.598

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\2a8f3d54
Ptotal=212.00 mm	Comments: Hazel

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB NASHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 0.80 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.35	Curve Number (CN)= 66.0 # of Linear Res.(N)= 3.00

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.087

PEAK FLOW (cms)= 0.085 (i)
TIME TO PEAK (hrs)= 10.083
RUNOFF VOLUME (mm)= 126.802
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.598

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ d770222c-0069-4d63-9cc7-f91168d8e5bb\2a8f3d54
Ptotal=212.00 mm	Comments: Hazel

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB NASHYD (0003) ID= 1 DT= 5.0 min	Area (ha)= 0.47 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.11	Curve Number (CN)= 65.0 # of Linear Res.(N)= 3.00

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00

1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.163

PEAK FLOW (cms)= 0.052 (i)
TIME TO PEAK (hrs)= 10.000
RUNOFF VOLUME (mm)= 122.351
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.577

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

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--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   1.22   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.31
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.150

PEAK FLOW (cms)= 0.131 (i)
TIME TO PEAK (hrs)= 10.083
RUNOFF VOLUME (mm)= 124.602
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.588

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              d770222c-0069-4d63-9cc7-f91168d8e5bb\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

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--------------------
| CALIB            |
| NASHYD   (  0005)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.16
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00

```
                2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
                2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
                2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
                2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
                2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
                3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.043

     PEAK FLOW       (cms)=   0.020 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 124.081
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.585

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     9.30   0.865    10.58   126.83
      + ID2= 2 (  0002):     0.80   0.085    10.08   126.80
        ====================================================
        ID = 3 (  0009):    10.10   0.940    10.50   126.82

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):    10.10   0.940    10.50   126.82
      + ID2= 2 (  0003):     0.47   0.052    10.00   122.35
        ====================================================
        ID = 1 (  0009):    10.57   0.979    10.58   126.63

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0009):    10.57   0.979    10.58   126.63
      + ID2= 2 (  0004):     1.22   0.131    10.08   124.60
        ====================================================
        ID = 3 (  0009):    11.79   1.092    10.50   126.42

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0009)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0009):    11.79   1.092    10.50   126.42
      + ID2= 2 (  0005):     0.18   0.020    10.00   124.08
        ====================================================
        ID = 1 (  0009):    11.97   1.107    10.42   126.38

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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********************************
** SIMULATION:0 - 25mm CHI    **
********************************
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

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--------------------
| CALIB            |
| NASHYD   (  0012)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

```
     Unit Hyd Qpeak  (cms)=   0.235

     PEAK FLOW       (cms)=   0.017 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   3.789
     TOTAL RAINFALL   (mm)=  24.906
     RUNOFF COEFFICIENT   =   0.152

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

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--------------------
| CALIB            |
| NASHYD   (  0010)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

```
     Unit Hyd Qpeak  (cms)=   0.038

     PEAK FLOW       (cms)=   0.001 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   2.520
     TOTAL RAINFALL   (mm)=  24.906
     RUNOFF COEFFICIENT   =   0.101

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

```
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0011)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

```
     Unit Hyd Qpeak  (cms)=   6.355

     PEAK FLOW       (cms)=   0.459 (i)
     TIME TO PEAK    (hrs)=   1.583
     RUNOFF VOLUME    (mm)=   4.980
```

```
     TOTAL RAINFALL   (mm)=  24.906
     RUNOFF COEFFICIENT   =   0.200

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.17    1.76 |  1.17   11.75 |  2.17    3.88 |  3.17    2.07
                  0.33    2.00 |  1.33   57.66 |  2.33    3.35 |  3.33    1.93
                  0.50    2.32 |  1.50   15.20 |  2.50    2.96 |  3.50    1.81
                  0.67    2.81 |  1.67    8.31 |  2.67    2.66 |  3.67    1.71
                  0.83    3.61 |  1.83    5.91 |  2.83    2.42 |  3.83    1.62
                  1.00    5.28 |  2.00    4.66 |  3.00    2.23 |  4.00    1.54


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   1.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.93          0.29
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       2.30          2.00
     Length            (m)=      90.18         12.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
                 0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
                 0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
                 0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
                 0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
                 0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
                 0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
                 0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
                 0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
                 0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
                 0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
                 1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Max.Eff.Inten.(mm/hr)=      57.66         3.79
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.33 (ii)    5.02 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.30         0.16
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.00         0.149 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42          1.33
     RUNOFF VOLUME    (mm)=      23.91         2.53         18.77
     TOTAL RAINFALL   (mm)=      24.91        24.91         24.91
     RUNOFF COEFFICIENT   =       0.96         0.10          0.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0024)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0410      0.0345
                           0.0130     0.0202   |   0.0480      0.0373
                           0.0220     0.0260   |   0.0540      0.0395
                           0.0300     0.0299   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK        R.V.
                                 (ha)     (cms)     (hrs)        (mm)
   INFLOW : ID= 2 (  0007)      1.220      0.149      1.33       18.77
   OUTFLOW: ID= 1 (  0024)      1.220      0.010      2.25       18.45

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.72
                    TIME SHIFT OF PEAK FLOW         (min)= 55.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.0155

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.17    1.76 |  1.17   11.75 |  2.17    3.88 |  3.17    2.07
                  0.33    2.00 |  1.33   57.66 |  2.33    3.35 |  3.33    1.93
                  0.50    2.32 |  1.50   15.20 |  2.50    2.96 |  3.50    1.81
                  0.67    2.81 |  1.67    8.31 |  2.67    2.66 |  3.67    1.71
                  0.83    3.61 |  1.83    5.91 |  2.83    2.42 |  3.83    1.62
                  1.00    5.28 |  2.00    4.66 |  3.00    2.23 |  4.00    1.54


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.16   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
                 0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
                 0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
                 0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
                 0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
                 0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
                 0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
                 0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
                 0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
                 0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
                 0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
                 1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Unit Hyd Qpeak  (cms)=   0.034

     PEAK FLOW       (cms)=   0.001 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   3.066
     TOTAL RAINFALL   (mm)=  24.906
     RUNOFF COEFFICIENT   =   0.123

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
```

0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

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--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=   0.35   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.40

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

```
     Unit Hyd Qpeak  (cms)=   0.033

     PEAK FLOW       (cms)=   0.001 (i)
     TIME TO PEAK    (hrs)=   1.833
     RUNOFF VOLUME    (mm)=   2.526
     TOTAL RAINFALL   (mm)=  24.906
     RUNOFF COEFFICIENT   =   0.101

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                          B=   3.000
--------------------                          C=   0.760
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

```
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0009)|   Area    (ha)=   0.37   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.45

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

```
     Unit Hyd Qpeak  (cms)=   0.031

     PEAK FLOW       (cms)=   0.001 (i)
     TIME TO PEAK    (hrs)=   1.917
     RUNOFF VOLUME    (mm)=   2.526
     TOTAL RAINFALL   (mm)=  24.906
     RUNOFF COEFFICIENT   =   0.101

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                          B=   3.000
--------------------                          C=   0.760
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

```
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.21
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  50.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.70          0.51
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       1.50          4.00
     Length            (m)=     121.38         15.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

```
     Max.Eff.Inten.(mm/hr)=      57.66        24.60
                over (min)       5.00        10.00
     Storage Coeff.  (min)=       3.17 (ii)    6.07 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.27         0.15
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.17         0.03        0.192 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42         1.33
     RUNOFF VOLUME    (mm)=      23.91         5.98        14.94
     TOTAL RAINFALL   (mm)=      24.91        24.91        24.91
     RUNOFF COEFFICIENT   =       0.96         0.24         0.60

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
```

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    1.76 |  1.17   11.75 |  2.17    3.88 |  3.17    2.07
                 0.33    2.00 |  1.33   57.66 |  2.33    3.35 |  3.33    1.93
                 0.50    2.32 |  1.50   15.20 |  2.50    2.96 |  3.50    1.81
                 0.67    2.81 |  1.67    8.31 |  2.67    2.66 |  3.67    1.71
                 0.83    3.61 |  1.83    5.91 |  2.83    2.42 |  3.83    1.62
                 1.00    5.28 |  2.00    4.66 |  3.00    2.23 |  4.00    1.54


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.64         0.52
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         2.80
     Length            (m)=     120.00       200.00
     Mannings n          =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
                0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
                0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
                0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
                0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
                0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
                0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
                0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
                0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
                0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
                0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
                1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Max.Eff.Inten.(mm/hr)=      57.66        29.87
                over (min)        5.00        35.00
     Storage Coeff.  (min)=       4.37 (ii)   31.55 (ii)
     Unit Hyd. Tpeak (min)=       5.00        35.00
     Unit Hyd. peak  (cms)=       0.23         0.03
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.02        0.074 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.83         1.33
     RUNOFF VOLUME    (mm)=      23.91         8.34        11.76
     TOTAL RAINFALL   (mm)=      24.91        24.91        24.91
     RUNOFF COEFFICIENT   =       0.96         0.33         0.47

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
```

```
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    1.76 |  1.17   11.75 |  2.17    3.88 |  3.17    2.07
                 0.33    2.00 |  1.33   57.66 |  2.33    3.35 |  3.33    1.93
                 0.50    2.32 |  1.50   15.20 |  2.50    2.96 |  3.50    1.81
                 0.67    2.81 |  1.67    8.31 |  2.67    2.66 |  3.67    1.71
                 0.83    3.61 |  1.83    5.91 |  2.83    2.42 |  3.83    1.62
                 1.00    5.28 |  2.00    4.66 |  3.00    2.23 |  4.00    1.54


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44         1.27
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         5.00
     Length            (m)=     134.41        25.00
     Mannings n          =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
                0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
                0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
                0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
                0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
                0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
                0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
                0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
                0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
                0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
                0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
                1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Max.Eff.Inten.(mm/hr)=      57.66         7.03
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       4.68 (ii)   16.38 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.22         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.01        0.145 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.58         1.33
     RUNOFF VOLUME    (mm)=      23.91         3.71        10.97
     TOTAL RAINFALL   (mm)=      24.91        24.91        24.91
     RUNOFF COEFFICIENT   =       0.96         0.15         0.44

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    1.76 |  1.17   11.75 |  2.17    3.88 |  3.17    2.07
                 0.33    2.00 |  1.33   57.66 |  2.33    3.35 |  3.33    1.93
                 0.50    2.32 |  1.50   15.20 |  2.50    2.96 |  3.50    1.81
```

```
                0.67    2.81 |  1.67    8.31 |  2.67    2.66 |  3.67    1.71
                0.83    3.61 |  1.83    5.91 |  2.83    2.42 |  3.83    1.62
                1.00    5.28 |  2.00    4.66 |  3.00    2.23 |  4.00    1.54


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         1.40
     Length            (m)=      91.29        45.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
               0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
               0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
               0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
               0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
               0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
               0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
               0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
               0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
               0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
               0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
               1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Max.Eff.Inten.(mm/hr)=      57.66         8.06
                over (min)        5.00        30.00
     Storage Coeff.  (min)=       3.71 (ii)   26.80 (ii)
     Unit Hyd. Tpeak (min)=       5.00        30.00
     Unit Hyd. peak  (cms)=       0.25         0.04
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.00        0.114 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.75         1.33
     RUNOFF VOLUME    (mm)=      23.91         4.07        15.96
     TOTAL RAINFALL   (mm)=      24.91        24.91        24.91
     RUNOFF COEFFICIENT   =       0.96         0.16         0.64

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    1.76 |  1.17   11.75 |  2.17    3.88 |  3.17    2.07
                0.33    2.00 |  1.33   57.66 |  2.33    3.35 |  3.33    1.93
                0.50    2.32 |  1.50   15.20 |  2.50    2.96 |  3.50    1.81
                0.67    2.81 |  1.67    8.31 |  2.67    2.66 |  3.67    1.71
                0.83    3.61 |  1.83    5.91 |  2.83    2.42 |  3.83    1.62
                1.00    5.28 |  2.00    4.66 |  3.00    2.23 |  4.00    1.54


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
```

```
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.10         2.00
     Length            (m)=      73.03        15.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
               0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
               0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
               0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
               0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
               0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
               0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
               0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
               0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
               0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
               0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
               1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Max.Eff.Inten.(mm/hr)=      57.66         3.79
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.11 (ii)    5.19 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.16
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.00        0.098 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42         1.33
     RUNOFF VOLUME    (mm)=      23.91         2.53        18.77
     TOTAL RAINFALL   (mm)=      24.91        24.91        24.91
     RUNOFF COEFFICIENT   =       0.96         0.10         0.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):      2.21    0.192     1.33    14.94
      + ID2= 2 (  0002):      2.16    0.074     1.33    11.76
        ==================================================
        ID = 3 (  0022):      4.37    0.266     1.33    13.37

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):      4.37    0.266     1.33    13.37
      + ID2= 2 (  0003):      2.71    0.145     1.33    10.97
        ==================================================
        ID = 1 (  0022):      7.08    0.411     1.33    12.45

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):      7.08    0.411     1.33    12.45
      + ID2= 2 (  0005):      1.25    0.114     1.33    15.96
        ==================================================
        ID = 3 (  0022):      8.33    0.525     1.33    12.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

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--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     8.33   0.525     1.33    12.98
      + ID2= 2 (  0008):     0.80   0.098     1.33    18.77
        ==================================================
        ID = 1 (  0022):     9.13   0.623     1.33    13.49

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0870      0.2110
                           0.0190     0.1038   |   0.0920      0.2465
                           0.0210     0.1395   |   0.0960      0.2789
                           0.0250     0.1950   |   0.1000      0.2990

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      0.623      1.33      13.49
   OUTFLOW: ID= 1 (  0023)      9.130      0.019      4.08      13.33

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.05
                   TIME SHIFT OF PEAK FLOW       (min)=165.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1045

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0023):     9.13   0.019     4.08    13.33
      + ID2= 2 (  0004):     0.16   0.001     1.50     3.07
        ==================================================
        ID = 3 (  0025):     9.29   0.019     4.00    13.16

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0025):     9.29   0.019     4.00    13.16
      + ID2= 2 (  0006):     0.35   0.001     1.83     2.53
        ==================================================
        ID = 1 (  0025):     9.64   0.020     4.00    12.77

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0025):     9.64   0.020     4.00    12.77
      + ID2= 2 (  0009):     0.37   0.001     1.92     2.53
        ==================================================
        ID = 3 (  0025):    10.01   0.020     3.92    12.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                           B=   3.000
--------------------                           C=   0.760
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  4.00 hrs
                        Storm time step    = 10.00 min
                        Time to peak ratio =  0.33
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

```
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0013)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

          NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

```
     Unit Hyd Qpeak  (cms)=   0.163

     PEAK FLOW       (cms)=   0.004 (i)
     TIME TO PEAK    (hrs)=   1.417
     RUNOFF VOLUME    (mm)=   2.482
     TOTAL RAINFALL   (mm)=  24.906
     RUNOFF COEFFICIENT   =   0.100

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
*****************************************
** SIMULATION:1 - 2 YR, 6 HR SCS Type II **
*****************************************

--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |    Comments: 2 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.27	1.75	2.53	3.25	11.41	4.75	2.53
0.50	1.27	2.00	2.53	3.50	5.07	5.00	1.27
0.75	1.27	2.25	3.80	3.75	3.80	5.25	1.27
1.00	1.27	2.50	5.07	4.00	3.80	5.50	1.27
1.25	2.53	2.75	7.60	4.25	2.53	5.75	1.27
1.50	2.53	3.00	57.03	4.50	2.53	6.00	1.27

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--------------------
| CALIB            |
| NASHYD   (  0012)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

          NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.27	1.583	2.53	3.083	11.41	4.58	2.53
0.167	1.27	1.667	2.53	3.167	11.41	4.67	2.53
0.250	1.27	1.750	2.53	3.250	11.41	4.75	2.53
0.333	1.27	1.833	2.53	3.333	5.07	4.83	1.27

0.417	1.27	1.917	2.53	3.417	5.07	4.92	1.27
0.500	1.27	2.000	2.53	3.500	5.07	5.00	1.27
0.583	1.27	2.083	3.80	3.583	3.80	5.08	1.27
0.667	1.27	2.167	3.80	3.667	3.80	5.17	1.27
0.750	1.27	2.250	3.80	3.750	3.80	5.25	1.27
0.833	1.27	2.333	5.07	3.833	3.80	5.33	1.27
0.917	1.27	2.417	5.07	3.917	3.80	5.42	1.27
1.000	1.27	2.500	5.07	4.000	3.80	5.50	1.27
1.083	2.53	2.583	7.60	4.083	2.53	5.58	1.27
1.167	2.53	2.667	7.60	4.167	2.53	5.67	1.27
1.250	2.53	2.750	7.60	4.250	2.53	5.75	1.27
1.333	2.53	2.833	57.03	4.333	2.53	5.83	1.27
1.417	2.53	2.917	57.03	4.417	2.53	5.92	1.27
1.500	2.53	3.000	57.03	4.500	2.53	6.00	1.27

Unit Hyd Qpeak (cms)= 0.235

PEAK FLOW (cms)= 0.034 (i)
TIME TO PEAK (hrs)= 3.500
RUNOFF VOLUME (mm)= 6.393
TOTAL RAINFALL (mm)= 31.682
RUNOFF COEFFICIENT = 0.202

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM
Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
Ptotal= 31.68 mm
Comments: 2 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.27	1.75	2.53	3.25	11.41	4.75	2.53
0.50	1.27	2.00	2.53	3.50	5.07	5.00	1.27
0.75	1.27	2.25	3.80	3.75	3.80	5.25	1.27
1.00	1.27	2.50	5.07	4.00	3.80	5.50	1.27
1.25	2.53	2.75	7.60	4.25	2.53	5.75	1.27
1.50	2.53	3.00	57.03	4.50	2.53	6.00	1.27

CALIB
NASHYD (0010)
ID= 1 DT= 5.0 min
Area (ha)= 0.18 Curve Number (CN)= 65.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.18

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.27	1.583	2.53	3.083	11.41	4.58	2.53
0.167	1.27	1.667	2.53	3.167	11.41	4.67	2.53
0.250	1.27	1.750	2.53	3.250	11.41	4.75	2.53
0.333	1.27	1.833	2.53	3.333	5.07	4.83	1.27
0.417	1.27	1.917	2.53	3.417	5.07	4.92	1.27
0.500	1.27	2.000	2.53	3.500	5.07	5.00	1.27
0.583	1.27	2.083	3.80	3.583	3.80	5.08	1.27
0.667	1.27	2.167	3.80	3.667	3.80	5.17	1.27
0.750	1.27	2.250	3.80	3.750	3.80	5.25	1.27
0.833	1.27	2.333	5.07	3.833	3.80	5.33	1.27
0.917	1.27	2.417	5.07	3.917	3.80	5.42	1.27
1.000	1.27	2.500	5.07	4.000	3.80	5.50	1.27
1.083	2.53	2.583	7.60	4.083	2.53	5.58	1.27
1.167	2.53	2.667	7.60	4.167	2.53	5.67	1.27
1.250	2.53	2.750	7.60	4.250	2.53	5.75	1.27
1.333	2.53	2.833	57.03	4.333	2.53	5.83	1.27
1.417	2.53	2.917	57.03	4.417	2.53	5.92	1.27
1.500	2.53	3.000	57.03	4.500	2.53	6.00	1.27

Unit Hyd Qpeak (cms)= 0.038

PEAK FLOW (cms)= 0.003 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 4.341
TOTAL RAINFALL (mm)= 31.682
RUNOFF COEFFICIENT = 0.137

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM
Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
Ptotal= 31.68 mm
Comments: 2 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.27	1.75	2.53	3.25	11.41	4.75	2.53
0.50	1.27	2.00	2.53	3.50	5.07	5.00	1.27
0.75	1.27	2.25	3.80	3.75	3.80	5.25	1.27
1.00	1.27	2.50	5.07	4.00	3.80	5.50	1.27
1.25	2.53	2.75	7.60	4.25	2.53	5.75	1.27
1.50	2.53	3.00	57.03	4.50	2.53	6.00	1.27

CALIB
NASHYD (0011)
ID= 1 DT= 5.0 min
Area (ha)= 38.27 Curve Number (CN)= 81.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.23

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.27	1.583	2.53	3.083	11.41	4.58	2.53
0.167	1.27	1.667	2.53	3.167	11.41	4.67	2.53
0.250	1.27	1.750	2.53	3.250	11.41	4.75	2.53
0.333	1.27	1.833	2.53	3.333	5.07	4.83	1.27
0.417	1.27	1.917	2.53	3.417	5.07	4.92	1.27
0.500	1.27	2.000	2.53	3.500	5.07	5.00	1.27
0.583	1.27	2.083	3.80	3.583	3.80	5.08	1.27
0.667	1.27	2.167	3.80	3.667	3.80	5.17	1.27
0.750	1.27	2.250	3.80	3.750	3.80	5.25	1.27
0.833	1.27	2.333	5.07	3.833	3.80	5.33	1.27
0.917	1.27	2.417	5.07	3.917	3.80	5.42	1.27
1.000	1.27	2.500	5.07	4.000	3.80	5.50	1.27
1.083	2.53	2.583	7.60	4.083	2.53	5.58	1.27
1.167	2.53	2.667	7.60	4.167	2.53	5.67	1.27
1.250	2.53	2.750	7.60	4.250	2.53	5.75	1.27
1.333	2.53	2.833	57.03	4.333	2.53	5.83	1.27
1.417	2.53	2.917	57.03	4.417	2.53	5.92	1.27
1.500	2.53	3.000	57.03	4.500	2.53	6.00	1.27

Unit Hyd Qpeak (cms)= 6.355

PEAK FLOW (cms)= 0.959 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 8.244
TOTAL RAINFALL (mm)= 31.682
RUNOFF COEFFICIENT = 0.260

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM
Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
Ptotal= 31.68 mm
Comments: 2 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.27	1.75	2.53	3.25	11.41	4.75	2.53
0.50	1.27	2.00	2.53	3.50	5.07	5.00	1.27
0.75	1.27	2.25	3.80	3.75	3.80	5.25	1.27
1.00	1.27	2.50	5.07	4.00	3.80	5.50	1.27
1.25	2.53	2.75	7.60	4.25	2.53	5.75	1.27
1.50	2.53	3.00	57.03	4.50	2.53	6.00	1.27

CALIB
STANDHYD (0007)
ID= 1 DT= 5.0 min
Area (ha)= 1.22
Total Imp(%)= 76.00 Dir. Conn.(%)= 76.00

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                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.93         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.30         2.00
     Length            (m)=      90.18        12.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Max.Eff.Inten.(mm/hr)=      57.03         9.05
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.34 (ii)    5.05 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.30         0.16
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.01         0.152 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.08          3.00
     RUNOFF VOLUME    (mm)=      30.68         4.36         24.36
     TOTAL RAINFALL   (mm)=      31.68        31.68         31.68
     RUNOFF COEFFICIENT   =       0.97         0.14          0.77

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0024)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000    |   0.0410      0.0345
                         0.0130     0.0202    |   0.0480      0.0373
                         0.0220     0.0260    |   0.0540      0.0395
                         0.0300     0.0299    |   0.0000      0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)     1.220     0.152      3.00      24.36
   OUTFLOW: ID= 1 (  0024)     1.220     0.013      3.50      24.04

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  8.65
                  TIME SHIFT OF PEAK FLOW         (min)= 30.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0203

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |     Comments: 2 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                 0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                 0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                 1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                 1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                 1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

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| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.16   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Unit Hyd Qpeak  (cms)=   0.034

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=   5.235
     TOTAL RAINFALL   (mm)=  31.682
     RUNOFF COEFFICIENT   =   0.165

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |     Comments: 2 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                 0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                 0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                 1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                 1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                 1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

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--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=   0.35   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.40

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
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                0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Unit Hyd Qpeak  (cms)=   0.033

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   3.417
     RUNOFF VOLUME    (mm)=   4.352
     TOTAL RAINFALL   (mm)=  31.682
     RUNOFF COEFFICIENT   =   0.137

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |     Comments: 2 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                  0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                  0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                  1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                  1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                  1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

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--------------------
| CALIB            |
| NASHYD   (  0009)|   Area    (ha)=   0.37   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.45

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                 0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                 0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                 0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                 0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                 0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                 0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                 0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                 0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                 0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                 0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                 1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                 1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                 1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                 1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                 1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                 1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                 1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Unit Hyd Qpeak  (cms)=   0.031

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   3.417
     RUNOFF VOLUME    (mm)=   4.352
     TOTAL RAINFALL   (mm)=  31.682
     RUNOFF COEFFICIENT   =   0.137

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |     Comments: 2 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                  0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                  0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                  1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                  1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                  1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

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--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.21
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  50.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.70          0.51
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       1.50          4.00
     Length            (m)=     121.38         15.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                 0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                 0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                 0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                 0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                 0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                 0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                 0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                 0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                 0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                 0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                 1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                 1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                 1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                 1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                 1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                 1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                 1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Max.Eff.Inten.(mm/hr)=      57.03        43.10
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       3.18 (ii)    6.10 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.27         0.15
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.17         0.05         0.220 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.08          3.00
     RUNOFF VOLUME    (mm)=      30.68        9.35          20.02
     TOTAL RAINFALL   (mm)=      31.68        31.68         31.68
     RUNOFF COEFFICIENT   =       0.97         0.30          0.63

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |     Comments: 2 YR, 6 HR SCS Type II
```

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--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                  0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                  0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                  1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                  1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                  1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27
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--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.64          0.52
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          2.80
     Length            (m)=     120.00        200.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                 0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                 0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                 0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                 0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                 0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                 0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                 0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                 0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                 0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                 0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                 1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                 1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                 1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                 1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                 1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                 1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                 1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Max.Eff.Inten.(mm/hr)=      57.03        54.77
                over (min)        5.00        30.00
     Storage Coeff.  (min)=       4.39 (ii)   25.71 (ii)
     Unit Hyd. Tpeak (min)=       5.00        30.00
     Unit Hyd. peak  (cms)=       0.23         0.04
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.05       0.089 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.42        3.00
     RUNOFF VOLUME    (mm)=      30.68        12.58       16.56
     TOTAL RAINFALL   (mm)=      31.68        31.68       31.68
     RUNOFF COEFFICIENT   =       0.97         0.40        0.52

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |    Comments: 2 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                  0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                  0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                  1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                  1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                  1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27
--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44          1.27
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          5.00
     Length            (m)=     134.41         25.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                 0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                 0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                 0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                 0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                 0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                 0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                 0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                 0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                 0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                 0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                 1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                 1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                 1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                 1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                 1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                 1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                 1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Max.Eff.Inten.(mm/hr)=      57.03        17.47
                over (min)        5.00        15.00
     Storage Coeff.  (min)=       4.70 (ii)   12.83 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.22         0.08
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.03       0.172 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.17        3.00
     RUNOFF VOLUME    (mm)=      30.68         6.11       14.95
     TOTAL RAINFALL   (mm)=      31.68        31.68       31.68
     RUNOFF COEFFICIENT   =       0.97         0.19        0.47

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |    Comments: 2 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                  0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                  0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                  1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                  1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                  1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27
--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
```

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--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         1.40
     Length            (m)=      91.29        45.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Max.Eff.Inten.(mm/hr)=      57.03        16.90
                over (min)        5.00        25.00
     Storage Coeff.  (min)=       3.73 (ii)   20.89 (ii)
     Unit Hyd. Tpeak (min)=       5.00        25.00
     Unit Hyd. peak  (cms)=       0.25         0.05
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.12         0.01        0.120 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.33         3.00
     RUNOFF VOLUME    (mm)=      30.68         6.58        21.03
     TOTAL RAINFALL   (mm)=      31.68        31.68        31.68
     RUNOFF COEFFICIENT   =       0.97         0.21         0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |    Comments: 2 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                 0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                 0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                 1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                 1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                 1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.10         2.00
     Length            (m)=      73.03        15.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Max.Eff.Inten.(mm/hr)=      57.03         9.05
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.12 (ii)    5.21 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.16
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.00        0.100 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.08         3.00
     RUNOFF VOLUME    (mm)=      30.68         4.36        24.36
     TOTAL RAINFALL   (mm)=      31.68        31.68        31.68
     RUNOFF COEFFICIENT   =       0.97         0.14         0.77

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     2.21   0.220     3.00    20.02
      + ID2= 2 (  0002):     2.16   0.089     3.00    16.56
        ==================================================
        ID = 3 (  0022):     4.37   0.309     3.00    18.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     4.37   0.309     3.00    18.31
      + ID2= 2 (  0003):     2.71   0.172     3.00    14.95
        ==================================================
        ID = 1 (  0022):     7.08   0.481     3.00    17.02

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):     7.08   0.481     3.00    17.02
      + ID2= 2 (  0005):     1.25   0.120     3.00    21.03
        ==================================================
        ID = 3 (  0022):     8.33   0.601     3.00    17.62

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):      8.33   0.601     3.00    17.62
      + ID2= 2 (  0008):      0.80   0.100     3.00    24.36
        ===================================================
        ID = 1 (  0022):      9.13   0.701     3.00    18.21

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0870      0.2110
                           0.0190     0.1038   |   0.0920      0.2465
                           0.0210     0.1395   |   0.0960      0.2789
                           0.0250     0.1950   |   0.1000      0.2990

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      0.701      3.00      18.21
   OUTFLOW: ID= 1 (  0023)      9.130      0.021      6.00      18.06

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.01
                   TIME SHIFT OF PEAK FLOW         (min)=180.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1408

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--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0023):      9.13   0.021     6.00    18.06
      + ID2= 2 (  0004):      0.16   0.003     3.08     5.24
        ===================================================
        ID = 3 (  0025):      9.29   0.021     6.00    17.84

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0025):      9.29   0.021     6.00    17.84
      + ID2= 2 (  0006):      0.35   0.003     3.42     4.35
        ===================================================
        ID = 1 (  0025):      9.64   0.024     3.33    17.35

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0025):      9.64   0.024     3.33    17.35
      + ID2= 2 (  0009):      0.37   0.003     3.42     4.35
        ===================================================
        ID = 3 (  0025):     10.01   0.027     3.33    16.87

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\bf84c9c2
| Ptotal= 31.68 mm |     Comments: 2 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.27 |  1.75    2.53 |  3.25   11.41 |  4.75    2.53
                 0.50    1.27 |  2.00    2.53 |  3.50    5.07 |  5.00    1.27
                 0.75    1.27 |  2.25    3.80 |  3.75    3.80 |  5.25    1.27
                 1.00    1.27 |  2.50    5.07 |  4.00    3.80 |  5.50    1.27
                 1.25    2.53 |  2.75    7.60 |  4.25    2.53 |  5.75    1.27
                 1.50    2.53 |  3.00   57.03 |  4.50    2.53 |  6.00    1.27

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--------------------
| CALIB            |
| NASHYD   (  0013)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.27 | 1.583    2.53 | 3.083   11.41 |  4.58    2.53
                0.167    1.27 | 1.667    2.53 | 3.167   11.41 |  4.67    2.53
                0.250    1.27 | 1.750    2.53 | 3.250   11.41 |  4.75    2.53
                0.333    1.27 | 1.833    2.53 | 3.333    5.07 |  4.83    1.27
                0.417    1.27 | 1.917    2.53 | 3.417    5.07 |  4.92    1.27
                0.500    1.27 | 2.000    2.53 | 3.500    5.07 |  5.00    1.27
                0.583    1.27 | 2.083    3.80 | 3.583    3.80 |  5.08    1.27
                0.667    1.27 | 2.167    3.80 | 3.667    3.80 |  5.17    1.27
                0.750    1.27 | 2.250    3.80 | 3.750    3.80 |  5.25    1.27
                0.833    1.27 | 2.333    5.07 | 3.833    3.80 |  5.33    1.27
                0.917    1.27 | 2.417    5.07 | 3.917    3.80 |  5.42    1.27
                1.000    1.27 | 2.500    5.07 | 4.000    3.80 |  5.50    1.27
                1.083    2.53 | 2.583    7.60 | 4.083    2.53 |  5.58    1.27
                1.167    2.53 | 2.667    7.60 | 4.167    2.53 |  5.67    1.27
                1.250    2.53 | 2.750    7.60 | 4.250    2.53 |  5.75    1.27
                1.333    2.53 | 2.833   57.03 | 4.333    2.53 |  5.83    1.27
                1.417    2.53 | 2.917   57.03 | 4.417    2.53 |  5.92    1.27
                1.500    2.53 | 3.000   57.03 | 4.500    2.53 |  6.00    1.27

     Unit Hyd Qpeak  (cms)=   0.163

     PEAK FLOW       (cms)=   0.010 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=   4.275
     TOTAL RAINFALL   (mm)=  31.682
     RUNOFF COEFFICIENT   =   0.135

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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*******************************************
** SIMULATION:2 - 5 YR, 6 HR SCS Type II **
*******************************************

--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |     Comments: 5 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                 0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                 0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                 1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                 1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                 1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0012)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
```

0.250	1.61	1.750	3.22	3.250	14.51	4.75	3.22
0.333	1.61	1.833	3.22	3.333	6.45	4.83	1.61
0.417	1.61	1.917	3.22	3.417	6.45	4.92	1.61
0.500	1.61	2.000	3.22	3.500	6.45	5.00	1.61
0.583	1.61	2.083	4.84	3.583	4.84	5.08	1.61
0.667	1.61	2.167	4.84	3.667	4.84	5.17	1.61
0.750	1.61	2.250	4.84	3.750	4.84	5.25	1.61
0.833	1.61	2.333	6.45	3.833	4.84	5.33	1.61
0.917	1.61	2.417	6.45	3.917	4.84	5.42	1.61
1.000	1.61	2.500	6.45	4.000	4.84	5.50	1.61
1.083	3.22	2.583	9.67	4.083	3.22	5.58	1.61
1.167	3.22	2.667	9.67	4.167	3.22	5.67	1.61
1.250	3.22	2.750	9.67	4.250	3.22	5.75	1.61
1.333	3.22	2.833	72.53	4.333	3.22	5.83	1.61
1.417	3.22	2.917	72.53	4.417	3.22	5.92	1.61
1.500	3.22	3.000	72.53	4.500	3.22	6.00	1.61

Unit Hyd Qpeak (cms)= 0.235

PEAK FLOW (cms)= 0.057 (i)
TIME TO PEAK (hrs)= 3.500
RUNOFF VOLUME (mm)= 10.384
TOTAL RAINFALL (mm)= 40.297
RUNOFF COEFFICIENT = 0.258

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
Ptotal= 40.30 mm	Comments: 5 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.61	1.75	3.22	3.25	14.51	4.75	3.22
0.50	1.61	2.00	3.22	3.50	6.45	5.00	1.61
0.75	1.61	2.25	4.84	3.75	4.84	5.25	1.61
1.00	1.61	2.50	6.45	4.00	4.84	5.50	1.61
1.25	3.22	2.75	9.67	4.25	3.22	5.75	1.61
1.50	3.22	3.00	72.53	4.50	3.22	6.00	1.61

CALIB	
NASHYD (0010)	Area (ha)= 0.18 Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.18

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.61	1.583	3.22	3.083	14.51	4.58	3.22
0.167	1.61	1.667	3.22	3.167	14.51	4.67	3.22
0.250	1.61	1.750	3.22	3.250	14.51	4.75	3.22
0.333	1.61	1.833	3.22	3.333	6.45	4.83	1.61
0.417	1.61	1.917	3.22	3.417	6.45	4.92	1.61
0.500	1.61	2.000	3.22	3.500	6.45	5.00	1.61
0.583	1.61	2.083	4.84	3.583	4.84	5.08	1.61
0.667	1.61	2.167	4.84	3.667	4.84	5.17	1.61
0.750	1.61	2.250	4.84	3.750	4.84	5.25	1.61
0.833	1.61	2.333	6.45	3.833	4.84	5.33	1.61
0.917	1.61	2.417	6.45	3.917	4.84	5.42	1.61
1.000	1.61	2.500	6.45	4.000	4.84	5.50	1.61
1.083	3.22	2.583	9.67	4.083	3.22	5.58	1.61
1.167	3.22	2.667	9.67	4.167	3.22	5.67	1.61
1.250	3.22	2.750	9.67	4.250	3.22	5.75	1.61
1.333	3.22	2.833	72.53	4.333	3.22	5.83	1.61
1.417	3.22	2.917	72.53	4.417	3.22	5.92	1.61
1.500	3.22	3.000	72.53	4.500	3.22	6.00	1.61

Unit Hyd Qpeak (cms)= 0.038

PEAK FLOW (cms)= 0.005 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 7.217
TOTAL RAINFALL (mm)= 40.297
RUNOFF COEFFICIENT = 0.179

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
Ptotal= 40.30 mm	Comments: 5 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.61	1.75	3.22	3.25	14.51	4.75	3.22
0.50	1.61	2.00	3.22	3.50	6.45	5.00	1.61
0.75	1.61	2.25	4.84	3.75	4.84	5.25	1.61
1.00	1.61	2.50	6.45	4.00	4.84	5.50	1.61
1.25	3.22	2.75	9.67	4.25	3.22	5.75	1.61
1.50	3.22	3.00	72.53	4.50	3.22	6.00	1.61

CALIB	
NASHYD (0011)	Area (ha)= 38.27 Curve Number (CN)= 81.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.23

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.61	1.583	3.22	3.083	14.51	4.58	3.22
0.167	1.61	1.667	3.22	3.167	14.51	4.67	3.22
0.250	1.61	1.750	3.22	3.250	14.51	4.75	3.22
0.333	1.61	1.833	3.22	3.333	6.45	4.83	1.61
0.417	1.61	1.917	3.22	3.417	6.45	4.92	1.61
0.500	1.61	2.000	3.22	3.500	6.45	5.00	1.61
0.583	1.61	2.083	4.84	3.583	4.84	5.08	1.61
0.667	1.61	2.167	4.84	3.667	4.84	5.17	1.61
0.750	1.61	2.250	4.84	3.750	4.84	5.25	1.61
0.833	1.61	2.333	6.45	3.833	4.84	5.33	1.61
0.917	1.61	2.417	6.45	3.917	4.84	5.42	1.61
1.000	1.61	2.500	6.45	4.000	4.84	5.50	1.61
1.083	3.22	2.583	9.67	4.083	3.22	5.58	1.61
1.167	3.22	2.667	9.67	4.167	3.22	5.67	1.61
1.250	3.22	2.750	9.67	4.250	3.22	5.75	1.61
1.333	3.22	2.833	72.53	4.333	3.22	5.83	1.61
1.417	3.22	2.917	72.53	4.417	3.22	5.92	1.61
1.500	3.22	3.000	72.53	4.500	3.22	6.00	1.61

Unit Hyd Qpeak (cms)= 6.355

PEAK FLOW (cms)= 1.561 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 13.117
TOTAL RAINFALL (mm)= 40.297
RUNOFF COEFFICIENT = 0.326

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
Ptotal= 40.30 mm	Comments: 5 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.61	1.75	3.22	3.25	14.51	4.75	3.22
0.50	1.61	2.00	3.22	3.50	6.45	5.00	1.61
0.75	1.61	2.25	4.84	3.75	4.84	5.25	1.61
1.00	1.61	2.50	6.45	4.00	4.84	5.50	1.61
1.25	3.22	2.75	9.67	4.25	3.22	5.75	1.61
1.50	3.22	3.00	72.53	4.50	3.22	6.00	1.61

CALIB

```
| STANDHYD (  0007)|   Area    (ha)=   1.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.93          0.29
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       2.30          2.00
     Length            (m)=      90.18         12.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Max.Eff.Inten.(mm/hr)=      72.53         15.18
                over (min)        5.00          5.00
     Storage Coeff.  (min)=       2.13 (ii)     4.58 (ii)
     Unit Hyd. Tpeak (min)=       5.00          5.00
     Unit Hyd. peak  (cms)=       0.31          0.23
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.19          0.01        0.199 (iii)
     TIME TO PEAK    (hrs)=       3.00          3.00         3.00
     RUNOFF VOLUME    (mm)=      39.30          7.24        31.60
     TOTAL RAINFALL   (mm)=      40.30         40.30        40.30
     RUNOFF COEFFICIENT   =       0.98          0.18         0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0024)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0410      0.0345
                           0.0130     0.0202   |   0.0480      0.0373
                           0.0220     0.0260   |   0.0540      0.0395
                           0.0300     0.0299   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)      1.220      0.199      3.00      31.60
   OUTFLOW: ID= 1 (  0024)      1.220      0.022      3.33      31.28

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 10.85
                   TIME SHIFT OF PEAK FLOW         (min)= 20.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0257

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.16   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Unit Hyd Qpeak  (cms)=   0.034

     PEAK FLOW       (cms)=   0.005 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=   8.614
     TOTAL RAINFALL   (mm)=  40.297
     RUNOFF COEFFICIENT   =   0.214

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=   0.35   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.40

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
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                0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Unit Hyd Qpeak  (cms)=   0.033

     PEAK FLOW       (cms)=   0.005 (i)
     TIME TO PEAK    (hrs)=   3.333
     RUNOFF VOLUME    (mm)=   7.237
     TOTAL RAINFALL   (mm)=  40.297
     RUNOFF COEFFICIENT   =   0.180

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                 0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                 0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                 1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                 1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                 1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| NASHYD   (  0009)|   Area    (ha)=   0.37   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.45

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Unit Hyd Qpeak  (cms)=   0.031

     PEAK FLOW       (cms)=   0.005 (i)
     TIME TO PEAK    (hrs)=   3.417
     RUNOFF VOLUME    (mm)=   7.237
     TOTAL RAINFALL   (mm)=  40.297
     RUNOFF COEFFICIENT   =   0.180

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                 0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                 0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                 1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                 1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                 1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.21
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  50.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.70          0.51
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       1.50          4.00
     Length            (m)=     121.38         15.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Max.Eff.Inten.(mm/hr)=      72.53        66.11
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.89 (ii)    5.54 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.28         0.16
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.07         0.295 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00          3.00
     RUNOFF VOLUME    (mm)=      39.30        14.31         26.80
     TOTAL RAINFALL   (mm)=      40.30        40.30         40.30
     RUNOFF COEFFICIENT   =       0.98         0.36          0.67

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
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|                    |              9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                  0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                  0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                  1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                  1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                  1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.64          0.52
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          2.80
     Length            (m)=     120.00        200.00
     Mannings n          =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                 0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                 0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                 0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                 0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                 0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                 0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                 0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                 0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                 0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                 0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                 1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                 1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                 1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                 1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                 1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                 1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                 1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Max.Eff.Inten.(mm/hr)=      72.53        94.28
                over (min)        5.00        25.00
     Storage Coeff.  (min)=       3.99 (ii)   21.15 (ii)
     Unit Hyd. Tpeak (min)=       5.00        25.00
     Unit Hyd. peak  (cms)=       0.24         0.05
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.08         0.128 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.33          3.00
     RUNOFF VOLUME    (mm)=      39.30        18.58         23.13
     TOTAL RAINFALL   (mm)=      40.30        40.30         40.30
     RUNOFF COEFFICIENT   =       0.98         0.46          0.57

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                  0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                  0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                  1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                  1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                  1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44          1.27
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          5.00
     Length            (m)=     134.41         25.00
     Mannings n          =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                 0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                 0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                 0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                 0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                 0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                 0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                 0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                 0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                 0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                 0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                 1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                 1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                 1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                 1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                 1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                 1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                 1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Max.Eff.Inten.(mm/hr)=      72.53        28.14
                over (min)        5.00        15.00
     Storage Coeff.  (min)=       4.27 (ii)   10.99 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.23         0.09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.19         0.06         0.234 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.17          3.00
     RUNOFF VOLUME    (mm)=      39.30         9.79         20.41
     TOTAL RAINFALL   (mm)=      40.30        40.30         40.30
     RUNOFF COEFFICIENT   =       0.98         0.24          0.51

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                  0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                  0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                  1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                  1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                  1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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| CALIB            |
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| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         1.40
     Length            (m)=      91.29        45.00
     Mannings n          =       0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                 0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                 0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                 0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                 0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                 0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                 0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                 0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                 0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                 0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                 0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                 1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                 1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                 1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                 1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                 1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                 1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                 1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Max.Eff.Inten.(mm/hr)=      72.53        32.94
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       3.39 (ii)   16.53 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.26         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.01        0.157 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.25         3.00
     RUNOFF VOLUME    (mm)=      39.30        10.39        27.73
     TOTAL RAINFALL   (mm)=      40.30        40.30        40.30
     RUNOFF COEFFICIENT   =       0.98         0.26         0.69

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |    Comments: 5 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                 0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                 0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                 1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                 1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                 1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.10         2.00
     Length            (m)=      73.03        15.00
     Mannings n          =       0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                 0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                 0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                 0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                 0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                 0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                 0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                 0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                 0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                 0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                 0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                 1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                 1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                 1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                 1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                 1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                 1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                 1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Max.Eff.Inten.(mm/hr)=      72.53        15.18
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.93 (ii)    4.74 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.31         0.22
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.12         0.01        0.130 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00         3.00
     RUNOFF VOLUME    (mm)=      39.30         7.24        31.60
     TOTAL RAINFALL   (mm)=      40.30        40.30        40.30
     RUNOFF COEFFICIENT   =       0.98         0.18         0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     2.21   0.295     3.00    26.80
      + ID2= 2 (  0002):     2.16   0.128     3.00    23.13
        ==================================================
        ID = 3 (  0022):     4.37   0.424     3.00    24.99

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     4.37   0.424     3.00    24.99
      + ID2= 2 (  0003):     2.71   0.234     3.00    20.41
        ==================================================
        ID = 1 (  0022):     7.08   0.658     3.00    23.24

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):     7.08   0.658     3.00    23.24
      + ID2= 2 (  0005):     1.25   0.157     3.00    27.73
        ==================================================
        ID = 3 (  0022):     8.33   0.815     3.00    23.91
```

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     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     8.33   0.815     3.00    23.91
      + ID2= 2 (  0008):     0.80   0.130     3.00    31.60
        ==================================================
        ID = 1 (  0022):     9.13   0.945     3.00    24.58

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0870     0.2110
                           0.0190     0.1038   |   0.0920     0.2465
                           0.0210     0.1395   |   0.0960     0.2789
                           0.0250     0.1950   |   0.1000     0.2990

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      0.945      3.00      24.58
   OUTFLOW: ID= 1 (  0023)      9.130      0.025      6.00      24.43

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  2.64
                   TIME SHIFT OF PEAK FLOW         (min)=180.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1942

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0023):     9.13   0.025     6.00    24.43
      + ID2= 2 (  0004):     0.16   0.005     3.08     8.61
        ==================================================
        ID = 3 (  0025):     9.29   0.025     6.00    24.16

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0025):     9.29   0.025     6.00    24.16
      + ID2= 2 (  0006):     0.35   0.005     3.33     7.24
        ==================================================
        ID = 1 (  0025):     9.64   0.030     3.33    23.54

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0025):     9.64   0.030     3.33    23.54
      + ID2= 2 (  0009):     0.37   0.005     3.42     7.24
        ==================================================
        ID = 3 (  0025):    10.01   0.035     3.33    22.94

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\7ce5e994
| Ptotal= 40.30 mm |     Comments: 5 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.61 |  1.75    3.22 |  3.25   14.51 |  4.75    3.22
                  0.50    1.61 |  2.00    3.22 |  3.50    6.45 |  5.00    1.61
                  0.75    1.61 |  2.25    4.84 |  3.75    4.84 |  5.25    1.61
                  1.00    1.61 |  2.50    6.45 |  4.00    4.84 |  5.50    1.61
                  1.25    3.22 |  2.75    9.67 |  4.25    3.22 |  5.75    1.61
                  1.50    3.22 |  3.00   72.53 |  4.50    3.22 |  6.00    1.61

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--------------------
| CALIB            |
| NASHYD   (  0013)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                                ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.61 | 1.583    3.22 | 3.083   14.51 |  4.58    3.22
                 0.167    1.61 | 1.667    3.22 | 3.167   14.51 |  4.67    3.22
                 0.250    1.61 | 1.750    3.22 | 3.250   14.51 |  4.75    3.22
                 0.333    1.61 | 1.833    3.22 | 3.333    6.45 |  4.83    1.61
                 0.417    1.61 | 1.917    3.22 | 3.417    6.45 |  4.92    1.61
                 0.500    1.61 | 2.000    3.22 | 3.500    6.45 |  5.00    1.61
                 0.583    1.61 | 2.083    4.84 | 3.583    4.84 |  5.08    1.61
                 0.667    1.61 | 2.167    4.84 | 3.667    4.84 |  5.17    1.61
                 0.750    1.61 | 2.250    4.84 | 3.750    4.84 |  5.25    1.61
                 0.833    1.61 | 2.333    6.45 | 3.833    4.84 |  5.33    1.61
                 0.917    1.61 | 2.417    6.45 | 3.917    4.84 |  5.42    1.61
                 1.000    1.61 | 2.500    6.45 | 4.000    4.84 |  5.50    1.61
                 1.083    3.22 | 2.583    9.67 | 4.083    3.22 |  5.58    1.61
                 1.167    3.22 | 2.667    9.67 | 4.167    3.22 |  5.67    1.61
                 1.250    3.22 | 2.750    9.67 | 4.250    3.22 |  5.75    1.61
                 1.333    3.22 | 2.833   72.53 | 4.333    3.22 |  5.83    1.61
                 1.417    3.22 | 2.917   72.53 | 4.417    3.22 |  5.92    1.61
                 1.500    3.22 | 3.000   72.53 | 4.500    3.22 |  6.00    1.61

     Unit Hyd Qpeak  (cms)=   0.163

     PEAK FLOW       (cms)=   0.016 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=   7.107
     TOTAL RAINFALL   (mm)=  40.297
     RUNOFF COEFFICIENT   =   0.176

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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*******************************************
** SIMULATION:3 - 10 YR, 6 HR SCS Type II **
*******************************************

--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |     Comments: 10 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.89 |  1.75    3.77 |  3.25   16.98 |  4.75    3.77
                  0.50    1.89 |  2.00    3.77 |  3.50    7.55 |  5.00    1.89
                  0.75    1.89 |  2.25    5.66 |  3.75    5.66 |  5.25    1.89
                  1.00    1.89 |  2.50    7.55 |  4.00    5.66 |  5.50    1.89
                  1.25    3.77 |  2.75   11.32 |  4.25    3.77 |  5.75    1.89
                  1.50    3.77 |  3.00   84.90 |  4.50    3.77 |  6.00    1.89

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| CALIB            |
| NASHYD   (  0012)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                                ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
```

0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 0.235

PEAK FLOW (cms)= 0.078 (i)
TIME TO PEAK (hrs)= 3.500
RUNOFF VOLUME (mm)= 14.019
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.297

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
Ptotal= 47.17 mm | Comments: 10 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

CALIB
NASHYD (0011) | Area (ha)= 0.18 Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.18

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 0.038

PEAK FLOW (cms)= 0.006 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 9.907
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.210

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
Ptotal= 47.17 mm | Comments: 10 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

CALIB
NASHYD (0011) | Area (ha)= 38.27 Curve Number (CN)= 81.0
ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.23

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 6.355

PEAK FLOW (cms)= 2.099 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 17.457
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.370

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
Ptotal= 47.17 mm | Comments: 10 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

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| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   1.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.93          0.29
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       2.30          2.00
     Length            (m)=      90.18         12.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.89 | 1.583    3.77 | 3.083   16.98 |  4.58    3.77
                0.167    1.89 | 1.667    3.77 | 3.167   16.98 |  4.67    3.77
                0.250    1.89 | 1.750    3.77 | 3.250   16.98 |  4.75    3.77
                0.333    1.89 | 1.833    3.77 | 3.333    7.55 |  4.83    1.89
                0.417    1.89 | 1.917    3.77 | 3.417    7.55 |  4.92    1.89
                0.500    1.89 | 2.000    3.77 | 3.500    7.55 |  5.00    1.89
                0.583    1.89 | 2.083    5.66 | 3.583    5.66 |  5.08    1.89
                0.667    1.89 | 2.167    5.66 | 3.667    5.66 |  5.17    1.89
                0.750    1.89 | 2.250    5.66 | 3.750    5.66 |  5.25    1.89
                0.833    1.89 | 2.333    7.55 | 3.833    5.66 |  5.33    1.89
                0.917    1.89 | 2.417    7.55 | 3.917    5.66 |  5.42    1.89
                1.000    1.89 | 2.500    7.55 | 4.000    5.66 |  5.50    1.89
                1.083    3.77 | 2.583   11.32 | 4.083    3.77 |  5.58    1.89
                1.167    3.77 | 2.667   11.32 | 4.167    3.77 |  5.67    1.89
                1.250    3.77 | 2.750   11.32 | 4.250    3.77 |  5.75    1.89
                1.333    3.77 | 2.833   84.90 | 4.333    3.77 |  5.83    1.89
                1.417    3.77 | 2.917   84.90 | 4.417    3.77 |  5.92    1.89
                1.500    3.77 | 3.000   84.90 | 4.500    3.77 |  6.00    1.89

     Max.Eff.Inten.(mm/hr)=      84.90        20.92
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       2.00 (ii)    4.30 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.31         0.23
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.02         0.236 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00          3.00
     RUNOFF VOLUME    (mm)=      46.17         9.94         37.47
     TOTAL RAINFALL   (mm)=      47.17        47.17         47.17
     RUNOFF COEFFICIENT   =       0.98         0.21          0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0024)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0410      0.0345
                           0.0130     0.0202   |   0.0480      0.0373
                           0.0220     0.0260   |   0.0540      0.0395
                           0.0300     0.0299   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)      1.220      0.236      3.00      37.47
   OUTFLOW: ID= 1 (  0024)      1.220      0.030      3.33      37.15

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 12.75
                   TIME SHIFT OF PEAK FLOW         (min)= 20.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0300

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.89 |  1.75    3.77 |  3.25   16.98 |  4.75    3.77
                 0.50    1.89 |  2.00    3.77 |  3.50    7.55 |  5.00    1.89
                 0.75    1.89 |  2.25    5.66 |  3.75    5.66 |  5.25    1.89
                 1.00    1.89 |  2.50    7.55 |  4.00    5.66 |  5.50    1.89
                 1.25    3.77 |  2.75   11.32 |  4.25    3.77 |  5.75    1.89
                 1.50    3.77 |  3.00   84.90 |  4.50    3.77 |  6.00    1.89

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| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.16   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.89 | 1.583    3.77 | 3.083   16.98 |  4.58    3.77
                0.167    1.89 | 1.667    3.77 | 3.167   16.98 |  4.67    3.77
                0.250    1.89 | 1.750    3.77 | 3.250   16.98 |  4.75    3.77
                0.333    1.89 | 1.833    3.77 | 3.333    7.55 |  4.83    1.89
                0.417    1.89 | 1.917    3.77 | 3.417    7.55 |  4.92    1.89
                0.500    1.89 | 2.000    3.77 | 3.500    7.55 |  5.00    1.89
                0.583    1.89 | 2.083    5.66 | 3.583    5.66 |  5.08    1.89
                0.667    1.89 | 2.167    5.66 | 3.667    5.66 |  5.17    1.89
                0.750    1.89 | 2.250    5.66 | 3.750    5.66 |  5.25    1.89
                0.833    1.89 | 2.333    7.55 | 3.833    5.66 |  5.33    1.89
                0.917    1.89 | 2.417    7.55 | 3.917    5.66 |  5.42    1.89
                1.000    1.89 | 2.500    7.55 | 4.000    5.66 |  5.50    1.89
                1.083    3.77 | 2.583   11.32 | 4.083    3.77 |  5.58    1.89
                1.167    3.77 | 2.667   11.32 | 4.167    3.77 |  5.67    1.89
                1.250    3.77 | 2.750   11.32 | 4.250    3.77 |  5.75    1.89
                1.333    3.77 | 2.833   84.90 | 4.333    3.77 |  5.83    1.89
                1.417    3.77 | 2.917   84.90 | 4.417    3.77 |  5.92    1.89
                1.500    3.77 | 3.000   84.90 | 4.500    3.77 |  6.00    1.89

     Unit Hyd Qpeak  (cms)=   0.034

     PEAK FLOW       (cms)=   0.007 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  11.738
     TOTAL RAINFALL   (mm)=  47.169
     RUNOFF COEFFICIENT   =   0.249

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.89 |  1.75    3.77 |  3.25   16.98 |  4.75    3.77
                 0.50    1.89 |  2.00    3.77 |  3.50    7.55 |  5.00    1.89
                 0.75    1.89 |  2.25    5.66 |  3.75    5.66 |  5.25    1.89
                 1.00    1.89 |  2.50    7.55 |  4.00    5.66 |  5.50    1.89
                 1.25    3.77 |  2.75   11.32 |  4.25    3.77 |  5.75    1.89
                 1.50    3.77 |  3.00   84.90 |  4.50    3.77 |  6.00    1.89

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--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=   0.35   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.40

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
```

0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 0.033

PEAK FLOW (cms)= 0.007 (i)
TIME TO PEAK (hrs)= 3.333
RUNOFF VOLUME (mm)= 9.933
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.211

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

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--------------------
| CALIB            |
| NASHYD   (  0009)|   Area    (ha)=   0.37   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.45
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Unit Hyd Qpeak (cms)= 0.031

PEAK FLOW (cms)= 0.007 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 9.934
TOTAL RAINFALL (mm)= 47.169
RUNOFF COEFFICIENT = 0.211

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

```
--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.21
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  50.00
--------------------
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.70	0.51
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	4.00
Length	(m)=	121.38	15.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

Max.Eff.Inten.(mm/hr)=		84.90	86.40	
over (min)		5.00	10.00	
Storage Coeff. (min)=		2.71 (ii)	5.20 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.29	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.26	0.10	0.359 (iii)
TIME TO PEAK	(hrs)=	3.00	3.00	3.00
RUNOFF VOLUME	(mm)=	46.17	18.68	32.42
TOTAL RAINFALL	(mm)=	47.17	47.17	47.17
RUNOFF COEFFICIENT	=	0.98	0.40	0.69

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 65.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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```
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

```
--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.64         0.52
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         2.80
     Length            (m)=     120.00       200.00
     Mannings n          =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                             ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

```
     Max.Eff.Inten.(mm/hr)=      84.90       149.01
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       3.75 (ii)   18.03 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.25         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.11        0.173 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.25         3.00
     RUNOFF VOLUME    (mm)=      46.17        23.74        28.67
     TOTAL RAINFALL   (mm)=      47.17        47.17        47.17
     RUNOFF COEFFICIENT   =       0.98         0.50         0.61

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```


```
--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89


```
--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44         1.27
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         5.00
     Length            (m)=     134.41        25.00
     Mannings n          =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                             ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.89	1.583	3.77	3.083	16.98	4.58	3.77
0.167	1.89	1.667	3.77	3.167	16.98	4.67	3.77
0.250	1.89	1.750	3.77	3.250	16.98	4.75	3.77
0.333	1.89	1.833	3.77	3.333	7.55	4.83	1.89
0.417	1.89	1.917	3.77	3.417	7.55	4.92	1.89
0.500	1.89	2.000	3.77	3.500	7.55	5.00	1.89
0.583	1.89	2.083	5.66	3.583	5.66	5.08	1.89
0.667	1.89	2.167	5.66	3.667	5.66	5.17	1.89
0.750	1.89	2.250	5.66	3.750	5.66	5.25	1.89
0.833	1.89	2.333	7.55	3.833	5.66	5.33	1.89
0.917	1.89	2.417	7.55	3.917	5.66	5.42	1.89
1.000	1.89	2.500	7.55	4.000	5.66	5.50	1.89
1.083	3.77	2.583	11.32	4.083	3.77	5.58	1.89
1.167	3.77	2.667	11.32	4.167	3.77	5.67	1.89
1.250	3.77	2.750	11.32	4.250	3.77	5.75	1.89
1.333	3.77	2.833	84.90	4.333	3.77	5.83	1.89
1.417	3.77	2.917	84.90	4.417	3.77	5.92	1.89
1.500	3.77	3.000	84.90	4.500	3.77	6.00	1.89

```
     Max.Eff.Inten.(mm/hr)=      84.90        37.90
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       4.01 (ii)    8.81 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.24         0.12
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.23         0.09         0.312 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.08         3.00
     RUNOFF VOLUME    (mm)=      46.17        13.14        25.03
     TOTAL RAINFALL   (mm)=      47.17        47.17        47.17
     RUNOFF COEFFICIENT   =       0.98         0.28         0.53

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```


```
--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |    Comments: 10 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.89	1.75	3.77	3.25	16.98	4.75	3.77
0.50	1.89	2.00	3.77	3.50	7.55	5.00	1.89
0.75	1.89	2.25	5.66	3.75	5.66	5.25	1.89
1.00	1.89	2.50	7.55	4.00	5.66	5.50	1.89
1.25	3.77	2.75	11.32	4.25	3.77	5.75	1.89
1.50	3.77	3.00	84.90	4.50	3.77	6.00	1.89

```
--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         1.40
     Length            (m)=      91.29        45.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                             ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.89 | 1.583    3.77 | 3.083   16.98 |  4.58    3.77
                0.167    1.89 | 1.667    3.77 | 3.167   16.98 |  4.67    3.77
                0.250    1.89 | 1.750    3.77 | 3.250   16.98 |  4.75    3.77
                0.333    1.89 | 1.833    3.77 | 3.333    7.55 |  4.83    1.89
                0.417    1.89 | 1.917    3.77 | 3.417    7.55 |  4.92    1.89
                0.500    1.89 | 2.000    3.77 | 3.500    7.55 |  5.00    1.89
                0.583    1.89 | 2.083    5.66 | 3.583    5.66 |  5.08    1.89
                0.667    1.89 | 2.167    5.66 | 3.667    5.66 |  5.17    1.89
                0.750    1.89 | 2.250    5.66 | 3.750    5.66 |  5.25    1.89
                0.833    1.89 | 2.333    7.55 | 3.833    5.66 |  5.33    1.89
                0.917    1.89 | 2.417    7.55 | 3.917    5.66 |  5.42    1.89
                1.000    1.89 | 2.500    7.55 | 4.000    5.66 |  5.50    1.89
                1.083    3.77 | 2.583   11.32 | 4.083    3.77 |  5.58    1.89
                1.167    3.77 | 2.667   11.32 | 4.167    3.77 |  5.67    1.89
                1.250    3.77 | 2.750   11.32 | 4.250    3.77 |  5.75    1.89
                1.333    3.77 | 2.833   84.90 | 4.333    3.77 |  5.83    1.89
                1.417    3.77 | 2.917   84.90 | 4.417    3.77 |  5.92    1.89
                1.500    3.77 | 3.000   84.90 | 4.500    3.77 |  6.00    1.89

     Max.Eff.Inten.(mm/hr)=      84.90        44.37
                over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.18 (ii)   14.85 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.27         0.08
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.18         0.02        0.191 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.17         3.00
     RUNOFF VOLUME    (mm)=      46.17        13.85        33.23
     TOTAL RAINFALL   (mm)=      47.17        47.17        47.17
     RUNOFF COEFFICIENT   =       0.98         0.29         0.70

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |     Comments: 10 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    1.89 |  1.75    3.77 |  3.25   16.98 |  4.75    3.77
                 0.50    1.89 |  2.00    3.77 |  3.50    7.55 |  5.00    1.89
                 0.75    1.89 |  2.25    5.66 |  3.75    5.66 |  5.25    1.89
                 1.00    1.89 |  2.50    7.55 |  4.00    5.66 |  5.50    1.89
                 1.25    3.77 |  2.75   11.32 |  4.25    3.77 |  5.75    1.89
                 1.50    3.77 |  3.00   84.90 |  4.50    3.77 |  6.00    1.89

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--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.10         2.00
     Length            (m)=      73.03        15.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                             ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.89 | 1.583    3.77 | 3.083   16.98 |  4.58    3.77
                0.167    1.89 | 1.667    3.77 | 3.167   16.98 |  4.67    3.77
                0.250    1.89 | 1.750    3.77 | 3.250   16.98 |  4.75    3.77
                0.333    1.89 | 1.833    3.77 | 3.333    7.55 |  4.83    1.89
                0.417    1.89 | 1.917    3.77 | 3.417    7.55 |  4.92    1.89
                0.500    1.89 | 2.000    3.77 | 3.500    7.55 |  5.00    1.89
                0.583    1.89 | 2.083    5.66 | 3.583    5.66 |  5.08    1.89
                0.667    1.89 | 2.167    5.66 | 3.667    5.66 |  5.17    1.89
                0.750    1.89 | 2.250    5.66 | 3.750    5.66 |  5.25    1.89
                0.833    1.89 | 2.333    7.55 | 3.833    5.66 |  5.33    1.89
                0.917    1.89 | 2.417    7.55 | 3.917    5.66 |  5.42    1.89
                1.000    1.89 | 2.500    7.55 | 4.000    5.66 |  5.50    1.89
                1.083    3.77 | 2.583   11.32 | 4.083    3.77 |  5.58    1.89
                1.167    3.77 | 2.667   11.32 | 4.167    3.77 |  5.67    1.89
                1.250    3.77 | 2.750   11.32 | 4.250    3.77 |  5.75    1.89
                1.333    3.77 | 2.833   84.90 | 4.333    3.77 |  5.83    1.89
                1.417    3.77 | 2.917   84.90 | 4.417    3.77 |  5.92    1.89
                1.500    3.77 | 3.000   84.90 | 4.500    3.77 |  6.00    1.89

     Max.Eff.Inten.(mm/hr)=      84.90        20.92
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.81 (ii)    4.45 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.32         0.23
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.01        0.154 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00         3.00
     RUNOFF VOLUME    (mm)=      46.17         9.94        37.47
     TOTAL RAINFALL   (mm)=      47.17        47.17        47.17
     RUNOFF COEFFICIENT   =       0.98         0.21         0.79

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):      2.21   0.359     3.00    32.42
      + ID2= 2 (  0002):      2.16   0.173     3.00    28.67
        ================================================
        ID = 3 (  0022):      4.37   0.532     3.00    30.57

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):      4.37   0.532     3.00    30.57
      + ID2= 2 (  0003):      2.71   0.312     3.00    25.03
        ================================================
        ID = 1 (  0022):      7.08   0.844     3.00    28.45

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):      7.08   0.844     3.00    28.45
      + ID2= 2 (  0005):      1.25   0.191     3.00    33.23
        ================================================
```

```
        ID = 3 (  0022):     8.33   1.035     3.00    29.17

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     8.33   1.035     3.00    29.17
      + ID2= 2 (  0008):     0.80   0.154     3.00    37.47
        ===================================================
        ID = 1 (  0022):     9.13   1.189     3.00    29.89

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0870      0.2110
                           0.0190     0.1038   |   0.0920      0.2465
                           0.0210     0.1395   |   0.0960      0.2789
                           0.0250     0.1950   |   0.1000      0.2990

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      1.189      3.00      29.89
   OUTFLOW: ID= 1 (  0023)      9.130      0.087      4.25      29.74

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  7.32
                   TIME SHIFT OF PEAK FLOW         (min)= 75.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.2112

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--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0023):     9.13   0.087     4.25    29.74
      + ID2= 2 (  0004):     0.16   0.007     3.08    11.74
        ===================================================
        ID = 3 (  0025):     9.29   0.088     4.17    29.43

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0025)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0025):     9.29   0.088     4.17    29.43
      + ID2= 2 (  0006):     0.35   0.007     3.33     9.93
        ===================================================
        ID = 1 (  0025):     9.64   0.091     4.17    28.72

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0025):     9.64   0.091     4.17    28.72
      + ID2= 2 (  0009):     0.37   0.007     3.42     9.93
        ===================================================
        ID = 3 (  0025):    10.01   0.095     4.08    28.03

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\c4d7c19e
| Ptotal= 47.17 mm |     Comments: 10 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    1.89 |  1.75    3.77 |  3.25   16.98 |  4.75    3.77
                  0.50    1.89 |  2.00    3.77 |  3.50    7.55 |  5.00    1.89
                  0.75    1.89 |  2.25    5.66 |  3.75    5.66 |  5.25    1.89
                  1.00    1.89 |  2.50    7.55 |  4.00    5.66 |  5.50    1.89
                  1.25    3.77 |  2.75   11.32 |  4.25    3.77 |  5.75    1.89
                  1.50    3.77 |  3.00   84.90 |  4.50    3.77 |  6.00    1.89

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--------------------
| CALIB            |
| NASHYD   (  0013)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.89 | 1.583    3.77 | 3.083   16.98 |  4.58    3.77
                 0.167    1.89 | 1.667    3.77 | 3.167   16.98 |  4.67    3.77
                 0.250    1.89 | 1.750    3.77 | 3.250   16.98 |  4.75    3.77
                 0.333    1.89 | 1.833    3.77 | 3.333    7.55 |  4.83    1.89
                 0.417    1.89 | 1.917    3.77 | 3.417    7.55 |  4.92    1.89
                 0.500    1.89 | 2.000    3.77 | 3.500    7.55 |  5.00    1.89
                 0.583    1.89 | 2.083    5.66 | 3.583    5.66 |  5.08    1.89
                 0.667    1.89 | 2.167    5.66 | 3.667    5.66 |  5.17    1.89
                 0.750    1.89 | 2.250    5.66 | 3.750    5.66 |  5.25    1.89
                 0.833    1.89 | 2.333    7.55 | 3.833    5.66 |  5.33    1.89
                 0.917    1.89 | 2.417    7.55 | 3.917    5.66 |  5.42    1.89
                 1.000    1.89 | 2.500    7.55 | 4.000    5.66 |  5.50    1.89
                 1.083    3.77 | 2.583   11.32 | 4.083    3.77 |  5.58    1.89
                 1.167    3.77 | 2.667   11.32 | 4.167    3.77 |  5.67    1.89
                 1.250    3.77 | 2.750   11.32 | 4.250    3.77 |  5.75    1.89
                 1.333    3.77 | 2.833   84.90 | 4.333    3.77 |  5.83    1.89
                 1.417    3.77 | 2.917   84.90 | 4.417    3.77 |  5.92    1.89
                 1.500    3.77 | 3.000   84.90 | 4.500    3.77 |  6.00    1.89

     Unit Hyd Qpeak  (cms)=   0.163

     PEAK FLOW       (cms)=   0.022 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=   9.754
     TOTAL RAINFALL   (mm)=  47.169
     RUNOFF COEFFICIENT   =   0.207

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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*******************************************
** SIMULATION:4 - 25 YR, 6 HR SCS Type II **
*******************************************

--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
| Ptotal= 54.68 mm |     Comments: 25 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    2.19 |  1.75    4.37 |  3.25   19.68 |  4.75    4.37
                  0.50    2.19 |  2.00    4.37 |  3.50    8.75 |  5.00    2.19
                  0.75    2.19 |  2.25    6.56 |  3.75    6.56 |  5.25    2.19
                  1.00    2.19 |  2.50    8.75 |  4.00    6.56 |  5.50    2.19
                  1.25    4.37 |  2.75   13.12 |  4.25    4.37 |  5.75    2.19
                  1.50    4.37 |  3.00   98.42 |  4.50    4.37 |  6.00    2.19

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0012)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.235

PEAK FLOW (cms)= 0.103 (i)
TIME TO PEAK (hrs)= 3.500
RUNOFF VOLUME (mm)= 18.369
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.336

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
Ptotal= 54.68 mm | Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB
NASHYD (0010) | Area (ha)= 0.18 Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.18

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.038

PEAK FLOW (cms)= 0.009 (i)

TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 13.196
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.241

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
Ptotal= 54.68 mm | Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB
NASHYD (0011) | Area (ha)= 38.27 Curve Number (CN)= 81.0
ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.23

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 6.355

PEAK FLOW (cms)= 2.734 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 22.563
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.413

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM | Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
Ptotal= 54.68 mm | Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

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| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   1.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.93         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.30         2.00
     Length            (m)=      90.18        12.00
     Mannings n          =       0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.19 | 1.583    4.37 | 3.083   19.68 |  4.58    4.37
                0.167    2.19 | 1.667    4.37 | 3.167   19.68 |  4.67    4.37
                0.250    2.19 | 1.750    4.37 | 3.250   19.68 |  4.75    4.37
                0.333    2.19 | 1.833    4.37 | 3.333    8.75 |  4.83    2.19
                0.417    2.19 | 1.917    4.37 | 3.417    8.75 |  4.92    2.19
                0.500    2.19 | 2.000    4.37 | 3.500    8.75 |  5.00    2.19
                0.583    2.19 | 2.083    6.56 | 3.583    6.56 |  5.08    2.19
                0.667    2.19 | 2.167    6.56 | 3.667    6.56 |  5.17    2.19
                0.750    2.19 | 2.250    6.56 | 3.750    6.56 |  5.25    2.19
                0.833    2.19 | 2.333    8.75 | 3.833    6.56 |  5.33    2.19
                0.917    2.19 | 2.417    8.75 | 3.917    6.56 |  5.42    2.19
                1.000    2.19 | 2.500    8.75 | 4.000    6.56 |  5.50    2.19
                1.083    4.37 | 2.583   13.12 | 4.083    4.37 |  5.58    2.19
                1.167    4.37 | 2.667   13.12 | 4.167    4.37 |  5.67    2.19
                1.250    4.37 | 2.750   13.12 | 4.250    4.37 |  5.75    2.19
                1.333    4.37 | 2.833   98.42 | 4.333    4.37 |  5.83    2.19
                1.417    4.37 | 2.917   98.42 | 4.417    4.37 |  5.92    2.19
                1.500    4.37 | 3.000   98.42 | 4.500    4.37 |  6.00    2.19

     Max.Eff.Inten.(mm/hr)=      98.42        27.95
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.88 (ii)    4.06 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.32         0.24
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.25         0.02         0.276 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00          3.00
     RUNOFF VOLUME    (mm)=      53.68        13.24         43.97
     TOTAL RAINFALL   (mm)=      54.68        54.68         54.68
     RUNOFF COEFFICIENT   =       0.98         0.24          0.80

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0024)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0410     0.0345
                           0.0130     0.0202   |   0.0480     0.0373
                           0.0220     0.0260   |   0.0540     0.0395
                           0.0300     0.0299   |   0.0000     0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)       1.220     0.276      3.00      43.97
   OUTFLOW: ID= 1 (  0024)       1.220     0.041      3.33      43.65

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 14.67
                   TIME SHIFT OF PEAK FLOW         (min)= 20.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0345

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.19 |  1.75    4.37 |  3.25   19.68 |  4.75    4.37
                 0.50    2.19 |  2.00    4.37 |  3.50    8.75 |  5.00    2.19
                 0.75    2.19 |  2.25    6.56 |  3.75    6.56 |  5.25    2.19
                 1.00    2.19 |  2.50    8.75 |  4.00    6.56 |  5.50    2.19
                 1.25    4.37 |  2.75   13.12 |  4.25    4.37 |  5.75    2.19
                 1.50    4.37 |  3.00   98.42 |  4.50    4.37 |  6.00    2.19

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| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.16   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.19 | 1.583    4.37 | 3.083   19.68 |  4.58    4.37
                0.167    2.19 | 1.667    4.37 | 3.167   19.68 |  4.67    4.37
                0.250    2.19 | 1.750    4.37 | 3.250   19.68 |  4.75    4.37
                0.333    2.19 | 1.833    4.37 | 3.333    8.75 |  4.83    2.19
                0.417    2.19 | 1.917    4.37 | 3.417    8.75 |  4.92    2.19
                0.500    2.19 | 2.000    4.37 | 3.500    8.75 |  5.00    2.19
                0.583    2.19 | 2.083    6.56 | 3.583    6.56 |  5.08    2.19
                0.667    2.19 | 2.167    6.56 | 3.667    6.56 |  5.17    2.19
                0.750    2.19 | 2.250    6.56 | 3.750    6.56 |  5.25    2.19
                0.833    2.19 | 2.333    8.75 | 3.833    6.56 |  5.33    2.19
                0.917    2.19 | 2.417    8.75 | 3.917    6.56 |  5.42    2.19
                1.000    2.19 | 2.500    8.75 | 4.000    6.56 |  5.50    2.19
                1.083    4.37 | 2.583   13.12 | 4.083    4.37 |  5.58    2.19
                1.167    4.37 | 2.667   13.12 | 4.167    4.37 |  5.67    2.19
                1.250    4.37 | 2.750   13.12 | 4.250    4.37 |  5.75    2.19
                1.333    4.37 | 2.833   98.42 | 4.333    4.37 |  5.83    2.19
                1.417    4.37 | 2.917   98.42 | 4.417    4.37 |  5.92    2.19
                1.500    4.37 | 3.000   98.42 | 4.500    4.37 |  6.00    2.19

     Unit Hyd Qpeak  (cms)=   0.034

     PEAK FLOW       (cms)=   0.009 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  15.520
     TOTAL RAINFALL   (mm)=  54.678
     RUNOFF COEFFICIENT   =   0.284

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.19 |  1.75    4.37 |  3.25   19.68 |  4.75    4.37
                 0.50    2.19 |  2.00    4.37 |  3.50    8.75 |  5.00    2.19
                 0.75    2.19 |  2.25    6.56 |  3.75    6.56 |  5.25    2.19
                 1.00    2.19 |  2.50    8.75 |  4.00    6.56 |  5.50    2.19
                 1.25    4.37 |  2.75   13.12 |  4.25    4.37 |  5.75    2.19
                 1.50    4.37 |  3.00   98.42 |  4.50    4.37 |  6.00    2.19

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--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=   0.35   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.40

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.033

PEAK FLOW (cms)= 0.010 (i)
TIME TO PEAK (hrs)= 3.333
RUNOFF VOLUME (mm)= 13.232
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.242

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
Ptotal= 54.68 mm	Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB	
NASHYD (0009)	Area (ha)= 0.37 Curve Number (CN)= 65.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.45

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

Unit Hyd Qpeak (cms)= 0.031

PEAK FLOW (cms)= 0.009 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 13.233
TOTAL RAINFALL (mm)= 54.678
RUNOFF COEFFICIENT = 0.242

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
Ptotal= 54.68 mm	Comments: 25 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.19	1.75	4.37	3.25	19.68	4.75	4.37
0.50	2.19	2.00	4.37	3.50	8.75	5.00	2.19
0.75	2.19	2.25	6.56	3.75	6.56	5.25	2.19
1.00	2.19	2.50	8.75	4.00	6.56	5.50	2.19
1.25	4.37	2.75	13.12	4.25	4.37	5.75	2.19
1.50	4.37	3.00	98.42	4.50	4.37	6.00	2.19

CALIB	
STANDHYD (0001)	Area (ha)= 2.21
ID= 1 DT= 5.0 min	Total Imp(%)= 77.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.70	0.51
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	4.00
Length	(m)=	121.38	15.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.19	1.583	4.37	3.083	19.68	4.58	4.37
0.167	2.19	1.667	4.37	3.167	19.68	4.67	4.37
0.250	2.19	1.750	4.37	3.250	19.68	4.75	4.37
0.333	2.19	1.833	4.37	3.333	8.75	4.83	2.19
0.417	2.19	1.917	4.37	3.417	8.75	4.92	2.19
0.500	2.19	2.000	4.37	3.500	8.75	5.00	2.19
0.583	2.19	2.083	6.56	3.583	6.56	5.08	2.19
0.667	2.19	2.167	6.56	3.667	6.56	5.17	2.19
0.750	2.19	2.250	6.56	3.750	6.56	5.25	2.19
0.833	2.19	2.333	8.75	3.833	6.56	5.33	2.19
0.917	2.19	2.417	8.75	3.917	6.56	5.42	2.19
1.000	2.19	2.500	8.75	4.000	6.56	5.50	2.19
1.083	4.37	2.583	13.12	4.083	4.37	5.58	2.19
1.167	4.37	2.667	13.12	4.167	4.37	5.67	2.19
1.250	4.37	2.750	13.12	4.250	4.37	5.75	2.19
1.333	4.37	2.833	98.42	4.333	4.37	5.83	2.19
1.417	4.37	2.917	98.42	4.417	4.37	5.92	2.19
1.500	4.37	3.000	98.42	4.500	4.37	6.00	2.19

				TOTALS
Max.Eff.Inten.(mm/hr)=		98.42	110.13	
over (min)		5.00	5.00	
Storage Coeff.	(min)=	2.56 (ii)	4.90 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	5.00	
Unit Hyd. peak	(cms)=	0.29	0.22	
PEAK FLOW	(cms)=	0.30	0.15	0.451 (iii)
TIME TO PEAK	(hrs)=	3.00	3.00	3.00
RUNOFF VOLUME	(mm)=	53.68	23.80	38.74
TOTAL RAINFALL	(mm)=	54.68	54.68	54.68
RUNOFF COEFFICIENT	=	0.98	0.44	0.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 65.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    2.19 |  1.75    4.37 |  3.25   19.68 |  4.75    4.37
                0.50    2.19 |  2.00    4.37 |  3.50    8.75 |  5.00    2.19
                0.75    2.19 |  2.25    6.56 |  3.75    6.56 |  5.25    2.19
                1.00    2.19 |  2.50    8.75 |  4.00    6.56 |  5.50    2.19
                1.25    4.37 |  2.75   13.12 |  4.25    4.37 |  5.75    2.19
                1.50    4.37 |  3.00   98.42 |  4.50    4.37 |  6.00    2.19

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| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.64          0.52
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          2.80
     Length            (m)=     120.00        200.00
     Mannings n          =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.19 | 1.583    4.37 | 3.083   19.68 |  4.58    4.37
               0.167    2.19 | 1.667    4.37 | 3.167   19.68 |  4.67    4.37
               0.250    2.19 | 1.750    4.37 | 3.250   19.68 |  4.75    4.37
               0.333    2.19 | 1.833    4.37 | 3.333    8.75 |  4.83    2.19
               0.417    2.19 | 1.917    4.37 | 3.417    8.75 |  4.92    2.19
               0.500    2.19 | 2.000    4.37 | 3.500    8.75 |  5.00    2.19
               0.583    2.19 | 2.083    6.56 | 3.583    6.56 |  5.08    2.19
               0.667    2.19 | 2.167    6.56 | 3.667    6.56 |  5.17    2.19
               0.750    2.19 | 2.250    6.56 | 3.750    6.56 |  5.25    2.19
               0.833    2.19 | 2.333    8.75 | 3.833    6.56 |  5.33    2.19
               0.917    2.19 | 2.417    8.75 | 3.917    6.56 |  5.42    2.19
               1.000    2.19 | 2.500    8.75 | 4.000    6.56 |  5.50    2.19
               1.083    4.37 | 2.583   13.12 | 4.083    4.37 |  5.58    2.19
               1.167    4.37 | 2.667   13.12 | 4.167    4.37 |  5.67    2.19
               1.250    4.37 | 2.750   13.12 | 4.250    4.37 |  5.75    2.19
               1.333    4.37 | 2.833   98.42 | 4.333    4.37 |  5.83    2.19
               1.417    4.37 | 2.917   98.42 | 4.417    4.37 |  5.92    2.19
               1.500    4.37 | 3.000   98.42 | 4.500    4.37 |  6.00    2.19

     Max.Eff.Inten.(mm/hr)=      98.42       187.30
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       3.53 (ii)   16.57 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.26         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.13         0.14        0.212 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.25         3.00
     RUNOFF VOLUME    (mm)=      53.68        29.66        34.94
     TOTAL RAINFALL   (mm)=      54.68        54.68        54.68
     RUNOFF COEFFICIENT   =       0.98         0.54         0.64

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    2.19 |  1.75    4.37 |  3.25   19.68 |  4.75    4.37
                0.50    2.19 |  2.00    4.37 |  3.50    8.75 |  5.00    2.19
                0.75    2.19 |  2.25    6.56 |  3.75    6.56 |  5.25    2.19
                1.00    2.19 |  2.50    8.75 |  4.00    6.56 |  5.50    2.19
                1.25    4.37 |  2.75   13.12 |  4.25    4.37 |  5.75    2.19
                1.50    4.37 |  3.00   98.42 |  4.50    4.37 |  6.00    2.19

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44          1.27
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          5.00
     Length            (m)=     134.41         25.00
     Mannings n          =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.19 | 1.583    4.37 | 3.083   19.68 |  4.58    4.37
               0.167    2.19 | 1.667    4.37 | 3.167   19.68 |  4.67    4.37
               0.250    2.19 | 1.750    4.37 | 3.250   19.68 |  4.75    4.37
               0.333    2.19 | 1.833    4.37 | 3.333    8.75 |  4.83    2.19
               0.417    2.19 | 1.917    4.37 | 3.417    8.75 |  4.92    2.19
               0.500    2.19 | 2.000    4.37 | 3.500    8.75 |  5.00    2.19
               0.583    2.19 | 2.083    6.56 | 3.583    6.56 |  5.08    2.19
               0.667    2.19 | 2.167    6.56 | 3.667    6.56 |  5.17    2.19
               0.750    2.19 | 2.250    6.56 | 3.750    6.56 |  5.25    2.19
               0.833    2.19 | 2.333    8.75 | 3.833    6.56 |  5.33    2.19
               0.917    2.19 | 2.417    8.75 | 3.917    6.56 |  5.42    2.19
               1.000    2.19 | 2.500    8.75 | 4.000    6.56 |  5.50    2.19
               1.083    4.37 | 2.583   13.12 | 4.083    4.37 |  5.58    2.19
               1.167    4.37 | 2.667   13.12 | 4.167    4.37 |  5.67    2.19
               1.250    4.37 | 2.750   13.12 | 4.250    4.37 |  5.75    2.19
               1.333    4.37 | 2.833   98.42 | 4.333    4.37 |  5.83    2.19
               1.417    4.37 | 2.917   98.42 | 4.417    4.37 |  5.92    2.19
               1.500    4.37 | 3.000   98.42 | 4.500    4.37 |  6.00    2.19

     Max.Eff.Inten.(mm/hr)=      98.42        49.63
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       3.78 (ii)    8.31 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.25         0.13
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.26         0.12        0.380 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.08         3.00
     RUNOFF VOLUME    (mm)=      53.68        17.18        30.32
     TOTAL RAINFALL   (mm)=      54.68        54.68        54.68
     RUNOFF COEFFICIENT   =       0.98         0.31         0.55

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    2.19 |  1.75    4.37 |  3.25   19.68 |  4.75    4.37
                0.50    2.19 |  2.00    4.37 |  3.50    8.75 |  5.00    2.19
                0.75    2.19 |  2.25    6.56 |  3.75    6.56 |  5.25    2.19
                1.00    2.19 |  2.50    8.75 |  4.00    6.56 |  5.50    2.19
                1.25    4.37 |  2.75   13.12 |  4.25    4.37 |  5.75    2.19
                1.50    4.37 |  3.00   98.42 |  4.50    4.37 |  6.00    2.19
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--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         1.40
     Length            (m)=      91.29        45.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    2.19 | 1.583    4.37 | 3.083   19.68 |  4.58    4.37
                 0.167    2.19 | 1.667    4.37 | 3.167   19.68 |  4.67    4.37
                 0.250    2.19 | 1.750    4.37 | 3.250   19.68 |  4.75    4.37
                 0.333    2.19 | 1.833    4.37 | 3.333    8.75 |  4.83    2.19
                 0.417    2.19 | 1.917    4.37 | 3.417    8.75 |  4.92    2.19
                 0.500    2.19 | 2.000    4.37 | 3.500    8.75 |  5.00    2.19
                 0.583    2.19 | 2.083    6.56 | 3.583    6.56 |  5.08    2.19
                 0.667    2.19 | 2.167    6.56 | 3.667    6.56 |  5.17    2.19
                 0.750    2.19 | 2.250    6.56 | 3.750    6.56 |  5.25    2.19
                 0.833    2.19 | 2.333    8.75 | 3.833    6.56 |  5.33    2.19
                 0.917    2.19 | 2.417    8.75 | 3.917    6.56 |  5.42    2.19
                 1.000    2.19 | 2.500    8.75 | 4.000    6.56 |  5.50    2.19
                 1.083    4.37 | 2.583   13.12 | 4.083    4.37 |  5.58    2.19
                 1.167    4.37 | 2.667   13.12 | 4.167    4.37 |  5.67    2.19
                 1.250    4.37 | 2.750   13.12 | 4.250    4.37 |  5.75    2.19
                 1.333    4.37 | 2.833   98.42 | 4.333    4.37 |  5.83    2.19
                 1.417    4.37 | 2.917   98.42 | 4.417    4.37 |  5.92    2.19
                 1.500    4.37 | 3.000   98.42 | 4.500    4.37 |  6.00    2.19

     Max.Eff.Inten.(mm/hr)=      98.42        66.13
                over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.00 (ii)   12.94 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.28         0.08
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.20         0.03        0.226 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.17         3.00
     RUNOFF VOLUME    (mm)=      53.68        17.99        39.40
     TOTAL RAINFALL   (mm)=      54.68        54.68        54.68
     RUNOFF COEFFICIENT   =       0.98         0.33         0.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.25    2.19 |  1.75    4.37 |  3.25   19.68 |  4.75    4.37
                  0.50    2.19 |  2.00    4.37 |  3.50    8.75 |  5.00    2.19
                  0.75    2.19 |  2.25    6.56 |  3.75    6.56 |  5.25    2.19
                  1.00    2.19 |  2.50    8.75 |  4.00    6.56 |  5.50    2.19
                  1.25    4.37 |  2.75   13.12 |  4.25    4.37 |  5.75    2.19
                  1.50    4.37 |  3.00   98.42 |  4.50    4.37 |  6.00    2.19

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--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.10         2.00
     Length            (m)=      73.03        15.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    2.19 | 1.583    4.37 | 3.083   19.68 |  4.58    4.37
                 0.167    2.19 | 1.667    4.37 | 3.167   19.68 |  4.67    4.37
                 0.250    2.19 | 1.750    4.37 | 3.250   19.68 |  4.75    4.37
                 0.333    2.19 | 1.833    4.37 | 3.333    8.75 |  4.83    2.19
                 0.417    2.19 | 1.917    4.37 | 3.417    8.75 |  4.92    2.19
                 0.500    2.19 | 2.000    4.37 | 3.500    8.75 |  5.00    2.19
                 0.583    2.19 | 2.083    6.56 | 3.583    6.56 |  5.08    2.19
                 0.667    2.19 | 2.167    6.56 | 3.667    6.56 |  5.17    2.19
                 0.750    2.19 | 2.250    6.56 | 3.750    6.56 |  5.25    2.19
                 0.833    2.19 | 2.333    8.75 | 3.833    6.56 |  5.33    2.19
                 0.917    2.19 | 2.417    8.75 | 3.917    6.56 |  5.42    2.19
                 1.000    2.19 | 2.500    8.75 | 4.000    6.56 |  5.50    2.19
                 1.083    4.37 | 2.583   13.12 | 4.083    4.37 |  5.58    2.19
                 1.167    4.37 | 2.667   13.12 | 4.167    4.37 |  5.67    2.19
                 1.250    4.37 | 2.750   13.12 | 4.250    4.37 |  5.75    2.19
                 1.333    4.37 | 2.833   98.42 | 4.333    4.37 |  5.83    2.19
                 1.417    4.37 | 2.917   98.42 | 4.417    4.37 |  5.92    2.19
                 1.500    4.37 | 3.000   98.42 | 4.500    4.37 |  6.00    2.19

     Max.Eff.Inten.(mm/hr)=      98.42        27.95
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.70 (ii)    4.19 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.32         0.24
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.17         0.02          0.181 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00           3.00
     RUNOFF VOLUME    (mm)=      53.68        13.24          43.97
     TOTAL RAINFALL   (mm)=      54.68        54.68          54.68
     RUNOFF COEFFICIENT   =       0.98         0.24           0.80

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):      2.21   0.451     3.00    38.74
      + ID2= 2 (  0002):      2.16   0.212     3.00    34.94
        ==================================================
        ID = 3 (  0022):      4.37   0.663     3.00    36.86

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):      4.37   0.663     3.00    36.86
      + ID2= 2 (  0003):      2.71   0.380     3.00    30.32
        ==================================================
        ID = 1 (  0022):      7.08   1.044     3.00    34.35

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):      7.08   1.044     3.00    34.35
```

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      + ID2= 2 (  0005):     1.25   0.226     3.00    39.40
        ====================================================
        ID = 3 (  0022):     8.33   1.269     3.00    35.11

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     8.33   1.269     3.00    35.11
      + ID2= 2 (  0008):     0.80   0.181     3.00    43.97
        ====================================================
        ID = 1 (  0022):     9.13   1.450     3.00    35.89

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0870      0.2110
                           0.0190     0.1038   |   0.0920      0.2465
                           0.0210     0.1395   |   0.0960      0.2789
                           0.0250     0.1950   |   0.1000      0.2990

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      1.450      3.00      35.89
   OUTFLOW: ID= 1 (  0023)      9.130      0.092      4.58      35.73

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.35
                   TIME SHIFT OF PEAK FLOW         (min)= 95.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.2469

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--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0023):     9.13   0.092     4.58    35.73
      + ID2= 2 (  0004):     0.16   0.009     3.08    15.52
        ====================================================
        ID = 3 (  0025):     9.29   0.093     4.08    35.39

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0025)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0025):     9.29   0.093     4.08    35.39
      + ID2= 2 (  0006):     0.35   0.010     3.33    13.23
        ====================================================
        ID = 1 (  0025):     9.64   0.103     3.33    34.58

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0025):     9.64   0.103     3.33    34.58
      + ID2= 2 (  0009):     0.37   0.009     3.42    13.23
        ====================================================
        ID = 3 (  0025):    10.01   0.112     3.33    33.79

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\1c24e181
| Ptotal= 54.68 mm |    Comments: 25 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.19 |  1.75    4.37 |  3.25   19.68 |  4.75    4.37
                 0.50    2.19 |  2.00    4.37 |  3.50    8.75 |  5.00    2.19
                 0.75    2.19 |  2.25    6.56 |  3.75    6.56 |  5.25    2.19
                 1.00    2.19 |  2.50    8.75 |  4.00    6.56 |  5.50    2.19
                 1.25    4.37 |  2.75   13.12 |  4.25    4.37 |  5.75    2.19
                 1.50    4.37 |  3.00   98.42 |  4.50    4.37 |  6.00    2.19

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--------------------
| CALIB            |
| NASHYD   (  0013)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.19 | 1.583    4.37 | 3.083   19.68 |  4.58    4.37
                0.167    2.19 | 1.667    4.37 | 3.167   19.68 |  4.67    4.37
                0.250    2.19 | 1.750    4.37 | 3.250   19.68 |  4.75    4.37
                0.333    2.19 | 1.833    4.37 | 3.333    8.75 |  4.83    2.19
                0.417    2.19 | 1.917    4.37 | 3.417    8.75 |  4.92    2.19
                0.500    2.19 | 2.000    4.37 | 3.500    8.75 |  5.00    2.19
                0.583    2.19 | 2.083    6.56 | 3.583    6.56 |  5.08    2.19
                0.667    2.19 | 2.167    6.56 | 3.667    6.56 |  5.17    2.19
                0.750    2.19 | 2.250    6.56 | 3.750    6.56 |  5.25    2.19
                0.833    2.19 | 2.333    8.75 | 3.833    6.56 |  5.33    2.19
                0.917    2.19 | 2.417    8.75 | 3.917    6.56 |  5.42    2.19
                1.000    2.19 | 2.500    8.75 | 4.000    6.56 |  5.50    2.19
                1.083    4.37 | 2.583   13.12 | 4.083    4.37 |  5.58    2.19
                1.167    4.37 | 2.667   13.12 | 4.167    4.37 |  5.67    2.19
                1.250    4.37 | 2.750   13.12 | 4.250    4.37 |  5.75    2.19
                1.333    4.37 | 2.833   98.42 | 4.333    4.37 |  5.83    2.19
                1.417    4.37 | 2.917   98.42 | 4.417    4.37 |  5.92    2.19
                1.500    4.37 | 3.000   98.42 | 4.500    4.37 |  6.00    2.19

    Unit Hyd Qpeak  (cms)=   0.163

    PEAK FLOW       (cms)=   0.030 (i)
    TIME TO PEAK    (hrs)=   3.000
    RUNOFF VOLUME    (mm)=  12.993
    TOTAL RAINFALL   (mm)=  54.678
    RUNOFF COEFFICIENT   =   0.238

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
*******************************************
** SIMULATION:5 - 50 YR, 6 HR SCS Type II **
*******************************************

--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0012)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                    ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.39	1.583	4.79	3.083	21.55	4.58	4.79
0.167	2.39	1.667	4.79	3.167	21.55	4.67	4.79
0.250	2.39	1.750	4.79	3.250	21.55	4.75	4.79
0.333	2.39	1.833	4.79	3.333	9.58	4.83	2.39
0.417	2.39	1.917	4.79	3.417	9.58	4.92	2.39
0.500	2.39	2.000	4.79	3.500	9.58	5.00	2.39
0.583	2.39	2.083	7.18	3.583	7.18	5.08	2.39
0.667	2.39	2.167	7.18	3.667	7.18	5.17	2.39
0.750	2.39	2.250	7.18	3.750	7.18	5.25	2.39
0.833	2.39	2.333	9.58	3.833	7.18	5.33	2.39
0.917	2.39	2.417	9.58	3.917	7.18	5.42	2.39
1.000	2.39	2.500	9.58	4.000	7.18	5.50	2.39
1.083	4.79	2.583	14.37	4.083	4.79	5.58	2.39
1.167	4.79	2.667	14.37	4.167	4.79	5.67	2.39
1.250	4.79	2.750	14.37	4.250	4.79	5.75	2.39
1.333	4.79	2.833	107.74	4.333	4.79	5.83	2.39
1.417	4.79	2.917	107.74	4.417	4.79	5.92	2.39
1.500	4.79	3.000	107.74	4.500	4.79	6.00	2.39

```
Unit Hyd Qpeak  (cms)=   0.235

PEAK FLOW       (cms)=   0.122 (i)
TIME TO PEAK    (hrs)=   3.500
RUNOFF VOLUME    (mm)=  21.568
TOTAL RAINFALL   (mm)=  59.858
RUNOFF COEFFICIENT   =   0.360

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.39	1.75	4.79	3.25	21.55	4.75	4.79
0.50	2.39	2.00	4.79	3.50	9.58	5.00	2.39
0.75	2.39	2.25	7.18	3.75	7.18	5.25	2.39
1.00	2.39	2.50	9.58	4.00	7.18	5.50	2.39
1.25	4.79	2.75	14.37	4.25	4.79	5.75	2.39
1.50	4.79	3.00	107.74	4.50	4.79	6.00	2.39

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-------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0010)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```


```
                    ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.39	1.583	4.79	3.083	21.55	4.58	4.79
0.167	2.39	1.667	4.79	3.167	21.55	4.67	4.79
0.250	2.39	1.750	4.79	3.250	21.55	4.75	4.79
0.333	2.39	1.833	4.79	3.333	9.58	4.83	2.39
0.417	2.39	1.917	4.79	3.417	9.58	4.92	2.39
0.500	2.39	2.000	4.79	3.500	9.58	5.00	2.39
0.583	2.39	2.083	7.18	3.583	7.18	5.08	2.39
0.667	2.39	2.167	7.18	3.667	7.18	5.17	2.39
0.750	2.39	2.250	7.18	3.750	7.18	5.25	2.39
0.833	2.39	2.333	9.58	3.833	7.18	5.33	2.39
0.917	2.39	2.417	9.58	3.917	7.18	5.42	2.39
1.000	2.39	2.500	9.58	4.000	7.18	5.50	2.39
1.083	4.79	2.583	14.37	4.083	4.79	5.58	2.39
1.167	4.79	2.667	14.37	4.167	4.79	5.67	2.39
1.250	4.79	2.750	14.37	4.250	4.79	5.75	2.39
1.333	4.79	2.833	107.74	4.333	4.79	5.83	2.39
1.417	4.79	2.917	107.74	4.417	4.79	5.92	2.39
1.500	4.79	3.000	107.74	4.500	4.79	6.00	2.39


```
Unit Hyd Qpeak  (cms)=   0.038

PEAK FLOW       (cms)=   0.010 (i)
TIME TO PEAK    (hrs)=   3.083
RUNOFF VOLUME    (mm)=  15.657
TOTAL RAINFALL   (mm)=  59.858
RUNOFF COEFFICIENT   =   0.262

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.39	1.75	4.79	3.25	21.55	4.75	4.79
0.50	2.39	2.00	4.79	3.50	9.58	5.00	2.39
0.75	2.39	2.25	7.18	3.75	7.18	5.25	2.39
1.00	2.39	2.50	9.58	4.00	7.18	5.50	2.39
1.25	4.79	2.75	14.37	4.25	4.79	5.75	2.39
1.50	4.79	3.00	107.74	4.50	4.79	6.00	2.39

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--------------------
| CALIB            |
| NASHYD   (  0011)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```


```
                    ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.39	1.583	4.79	3.083	21.55	4.58	4.79
0.167	2.39	1.667	4.79	3.167	21.55	4.67	4.79
0.250	2.39	1.750	4.79	3.250	21.55	4.75	4.79
0.333	2.39	1.833	4.79	3.333	9.58	4.83	2.39
0.417	2.39	1.917	4.79	3.417	9.58	4.92	2.39
0.500	2.39	2.000	4.79	3.500	9.58	5.00	2.39
0.583	2.39	2.083	7.18	3.583	7.18	5.08	2.39
0.667	2.39	2.167	7.18	3.667	7.18	5.17	2.39
0.750	2.39	2.250	7.18	3.750	7.18	5.25	2.39
0.833	2.39	2.333	9.58	3.833	7.18	5.33	2.39
0.917	2.39	2.417	9.58	3.917	7.18	5.42	2.39
1.000	2.39	2.500	9.58	4.000	7.18	5.50	2.39
1.083	4.79	2.583	14.37	4.083	4.79	5.58	2.39
1.167	4.79	2.667	14.37	4.167	4.79	5.67	2.39
1.250	4.79	2.750	14.37	4.250	4.79	5.75	2.39
1.333	4.79	2.833	107.74	4.333	4.79	5.83	2.39
1.417	4.79	2.917	107.74	4.417	4.79	5.92	2.39
1.500	4.79	3.000	107.74	4.500	4.79	6.00	2.39


```
Unit Hyd Qpeak  (cms)=   6.355

PEAK FLOW       (cms)=   3.195 (i)
TIME TO PEAK    (hrs)=   3.167
RUNOFF VOLUME    (mm)=  26.268
TOTAL RAINFALL   (mm)=  59.858
RUNOFF COEFFICIENT   =   0.439

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.39	1.75	4.79	3.25	21.55	4.75	4.79
0.50	2.39	2.00	4.79	3.50	9.58	5.00	2.39
0.75	2.39	2.25	7.18	3.75	7.18	5.25	2.39
1.00	2.39	2.50	9.58	4.00	7.18	5.50	2.39
1.25	4.79	2.75	14.37	4.25	4.79	5.75	2.39

```
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   1.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.93         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.30         2.00
     Length            (m)=      90.18        12.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Max.Eff.Inten.(mm/hr)=     107.74        33.22
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.82 (ii)    3.91 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.32         0.25
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.28         0.03        0.305 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00         3.00
     RUNOFF VOLUME    (mm)=      58.86        15.70        48.50
     TOTAL RAINFALL   (mm)=      59.86        59.86        59.86
     RUNOFF COEFFICIENT   =       0.98         0.26         0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0024)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0410     0.0345
                          0.0130     0.0202   |   0.0480     0.0373
                          0.0220     0.0260   |   0.0540     0.0395
                          0.0300     0.0299   |   0.0000     0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)      1.220     0.305      3.00      48.50
   OUTFLOW: ID= 1 (  0024)      1.220     0.048      3.25      48.18

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 15.75
                   TIME SHIFT OF PEAK FLOW         (min)= 15.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0375

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```
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.16   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.034

     PEAK FLOW       (cms)=   0.011 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  18.326
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.306

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=   0.35   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.40

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
         0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
         0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
         0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
         0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
         0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
         0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
         0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
         0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
         0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
         0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
         1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
         1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
         1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
         1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
         1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
         1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
         1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.033

     PEAK FLOW       (cms)=   0.012 (i)
     TIME TO PEAK    (hrs)=   3.333
     RUNOFF VOLUME    (mm)=  15.700
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.262

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |     Comments: 50 YR, 6 HR SCS Type II
--------------------
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
          0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
          0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
          1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
          1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
          1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0009)|   Area    (ha)=   0.37   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.45

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
         0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
         0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
         0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
         0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
         0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
         0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
         0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
         0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
         0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
         0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
         1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
         1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
         1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
         1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
         1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
         1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
         1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.031

     PEAK FLOW       (cms)=   0.011 (i)
     TIME TO PEAK    (hrs)=   3.417
     RUNOFF VOLUME    (mm)=  15.700
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.262

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |     Comments: 50 YR, 6 HR SCS Type II
--------------------
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
          0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
          0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
          1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
          1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
          1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.21
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  50.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.70          0.51
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       1.50          4.00
     Length            (m)=     121.38         15.00
     Mannings n          =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
         0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
         0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
         0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
         0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
         0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
         0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
         0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
         0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
         0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
         0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
         1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
         1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
         1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
         1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
         1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
         1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
         1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Max.Eff.Inten.(mm/hr)=     107.74       127.27
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       2.47 (ii)    4.73 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.30         0.22
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.33         0.17        0.505 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00         3.00
     RUNOFF VOLUME    (mm)=      58.86        27.50        43.18
     TOTAL RAINFALL   (mm)=      59.86        59.86        59.86
     RUNOFF COEFFICIENT   =       0.98         0.46         0.72

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.39	1.75	4.79	3.25	21.55	4.75	4.79
0.50	2.39	2.00	4.79	3.50	9.58	5.00	2.39
0.75	2.39	2.25	7.18	3.75	7.18	5.25	2.39
1.00	2.39	2.50	9.58	4.00	7.18	5.50	2.39
1.25	4.79	2.75	14.37	4.25	4.79	5.75	2.39
1.50	4.79	3.00	107.74	4.50	4.79	6.00	2.39

```
--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.64          0.52
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          2.80
     Length            (m)=     120.00        200.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.39	1.583	4.79	3.083	21.55	4.58	4.79
0.167	2.39	1.667	4.79	3.167	21.55	4.67	4.79
0.250	2.39	1.750	4.79	3.250	21.55	4.75	4.79
0.333	2.39	1.833	4.79	3.333	9.58	4.83	2.39
0.417	2.39	1.917	4.79	3.417	9.58	4.92	2.39
0.500	2.39	2.000	4.79	3.500	9.58	5.00	2.39
0.583	2.39	2.083	7.18	3.583	7.18	5.08	2.39
0.667	2.39	2.167	7.18	3.667	7.18	5.17	2.39
0.750	2.39	2.250	7.18	3.750	7.18	5.25	2.39
0.833	2.39	2.333	9.58	3.833	7.18	5.33	2.39
0.917	2.39	2.417	9.58	3.917	7.18	5.42	2.39
1.000	2.39	2.500	9.58	4.000	7.18	5.50	2.39
1.083	4.79	2.583	14.37	4.083	4.79	5.58	2.39
1.167	4.79	2.667	14.37	4.167	4.79	5.67	2.39
1.250	4.79	2.750	14.37	4.250	4.79	5.75	2.39
1.333	4.79	2.833	107.74	4.333	4.79	5.83	2.39
1.417	4.79	2.917	107.74	4.417	4.79	5.92	2.39
1.500	4.79	3.000	107.74	4.500	4.79	6.00	2.39

```
     Max.Eff.Inten.(mm/hr)=     107.74       214.66
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       3.41 (ii)   15.75 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.26         0.07
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.17        0.240 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.17         3.00
     RUNOFF VOLUME    (mm)=      58.86        33.88        39.37
     TOTAL RAINFALL   (mm)=      59.86        59.86        59.86
     RUNOFF COEFFICIENT   =       0.98         0.57         0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```


```
--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.39	1.75	4.79	3.25	21.55	4.75	4.79
0.50	2.39	2.00	4.79	3.50	9.58	5.00	2.39
0.75	2.39	2.25	7.18	3.75	7.18	5.25	2.39
1.00	2.39	2.50	9.58	4.00	7.18	5.50	2.39
1.25	4.79	2.75	14.37	4.25	4.79	5.75	2.39
1.50	4.79	3.00	107.74	4.50	4.79	6.00	2.39


```
--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44          1.27
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          5.00
     Length            (m)=     134.41         25.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.39	1.583	4.79	3.083	21.55	4.58	4.79
0.167	2.39	1.667	4.79	3.167	21.55	4.67	4.79
0.250	2.39	1.750	4.79	3.250	21.55	4.75	4.79
0.333	2.39	1.833	4.79	3.333	9.58	4.83	2.39
0.417	2.39	1.917	4.79	3.417	9.58	4.92	2.39
0.500	2.39	2.000	4.79	3.500	9.58	5.00	2.39
0.583	2.39	2.083	7.18	3.583	7.18	5.08	2.39
0.667	2.39	2.167	7.18	3.667	7.18	5.17	2.39
0.750	2.39	2.250	7.18	3.750	7.18	5.25	2.39
0.833	2.39	2.333	9.58	3.833	7.18	5.33	2.39
0.917	2.39	2.417	9.58	3.917	7.18	5.42	2.39
1.000	2.39	2.500	9.58	4.000	7.18	5.50	2.39
1.083	4.79	2.583	14.37	4.083	4.79	5.58	2.39
1.167	4.79	2.667	14.37	4.167	4.79	5.67	2.39
1.250	4.79	2.750	14.37	4.250	4.79	5.75	2.39
1.333	4.79	2.833	107.74	4.333	4.79	5.83	2.39
1.417	4.79	2.917	107.74	4.417	4.79	5.92	2.39
1.500	4.79	3.000	107.74	4.500	4.79	6.00	2.39

```
     Max.Eff.Inten.(mm/hr)=     107.74        58.29
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       3.65 (ii)    8.01 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.25         0.13
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.29         0.15        0.429 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.08         3.00
     RUNOFF VOLUME    (mm)=      58.86        20.16        34.09
     TOTAL RAINFALL   (mm)=      59.86        59.86        59.86
     RUNOFF COEFFICIENT   =       0.98         0.34         0.57

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```


```
--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.39	1.75	4.79	3.25	21.55	4.75	4.79
0.50	2.39	2.00	4.79	3.50	9.58	5.00	2.39
0.75	2.39	2.25	7.18	3.75	7.18	5.25	2.39
1.00	2.39	2.50	9.58	4.00	7.18	5.50	2.39
1.25	4.79	2.75	14.37	4.25	4.79	5.75	2.39

```
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         1.40
     Length            (m)=      91.29        45.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Max.Eff.Inten.(mm/hr)=     107.74        77.41
                over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.89 (ii)   12.23 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.28         0.09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.04        0.250 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.17         3.00
     RUNOFF VOLUME    (mm)=      58.86        21.04        43.72
     TOTAL RAINFALL   (mm)=      59.86        59.86        59.86
     RUNOFF COEFFICIENT   =       0.98         0.35         0.73

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |     Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.10         2.00
     Length            (m)=      73.03        15.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Max.Eff.Inten.(mm/hr)=     107.74        33.22
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.64 (ii)    4.04 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.32         0.24
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.18         0.02         0.200 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00         3.00
     RUNOFF VOLUME    (mm)=      58.86        15.70        48.50
     TOTAL RAINFALL   (mm)=      59.86        59.86        59.86
     RUNOFF COEFFICIENT   =       0.98         0.26         0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     2.21   0.505     3.00    43.18
      + ID2= 2 (  0002):     2.16   0.240     3.00    39.37
        ==================================================
        ID = 3 (  0022):     4.37   0.745     3.00    41.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     4.37   0.745     3.00    41.29
      + ID2= 2 (  0003):     2.71   0.429     3.00    34.09
        ==================================================
        ID = 1 (  0022):     7.08   1.174     3.00    38.54

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
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```
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):     7.08   1.174     3.00    38.54
      + ID2= 2 (  0005):     1.25   0.250     3.00    43.72
        ====================================================
        ID = 3 (  0022):     8.33   1.424     3.00    39.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     8.33   1.424     3.00    39.31
      + ID2= 2 (  0008):     0.80   0.200     3.00    48.50
        ====================================================
        ID = 1 (  0022):     9.13   1.624     3.00    40.12

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0870      0.2110
                           0.0190     0.1038   |   0.0920      0.2465
                           0.0210     0.1395   |   0.0960      0.2789
                           0.0250     0.1950   |   0.1000      0.2990

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      1.624      3.00      40.12
   OUTFLOW: ID= 1 (  0023)      9.130      0.096      4.75      39.97

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.90
                   TIME SHIFT OF PEAK FLOW         (min)=105.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.2780

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--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0023):     9.13   0.096     4.75    39.97
      + ID2= 2 (  0004):     0.16   0.011     3.08    18.33
        ====================================================
        ID = 3 (  0025):     9.29   0.098     3.25    39.59

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0025)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0025):     9.29   0.098     3.25    39.59
      + ID2= 2 (  0006):     0.35   0.012     3.33    15.70
        ====================================================
        ID = 1 (  0025):     9.64   0.109     3.33    38.73

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0025):     9.64   0.109     3.33    38.73
      + ID2= 2 (  0009):     0.37   0.011     3.42    15.70
        ====================================================
        ID = 3 (  0025):    10.01   0.120     3.33    37.88

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\3e74ea47
| Ptotal= 59.86 mm |    Comments: 50 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.39 |  1.75    4.79 |  3.25   21.55 |  4.75    4.79
                 0.50    2.39 |  2.00    4.79 |  3.50    9.58 |  5.00    2.39
                 0.75    2.39 |  2.25    7.18 |  3.75    7.18 |  5.25    2.39
                 1.00    2.39 |  2.50    9.58 |  4.00    7.18 |  5.50    2.39
                 1.25    4.79 |  2.75   14.37 |  4.25    4.79 |  5.75    2.39
                 1.50    4.79 |  3.00  107.74 |  4.50    4.79 |  6.00    2.39

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--------------------
| CALIB            |
| NASHYD   (  0013)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.39 | 1.583    4.79 | 3.083   21.55 |  4.58    4.79
                0.167    2.39 | 1.667    4.79 | 3.167   21.55 |  4.67    4.79
                0.250    2.39 | 1.750    4.79 | 3.250   21.55 |  4.75    4.79
                0.333    2.39 | 1.833    4.79 | 3.333    9.58 |  4.83    2.39
                0.417    2.39 | 1.917    4.79 | 3.417    9.58 |  4.92    2.39
                0.500    2.39 | 2.000    4.79 | 3.500    9.58 |  5.00    2.39
                0.583    2.39 | 2.083    7.18 | 3.583    7.18 |  5.08    2.39
                0.667    2.39 | 2.167    7.18 | 3.667    7.18 |  5.17    2.39
                0.750    2.39 | 2.250    7.18 | 3.750    7.18 |  5.25    2.39
                0.833    2.39 | 2.333    9.58 | 3.833    7.18 |  5.33    2.39
                0.917    2.39 | 2.417    9.58 | 3.917    7.18 |  5.42    2.39
                1.000    2.39 | 2.500    9.58 | 4.000    7.18 |  5.50    2.39
                1.083    4.79 | 2.583   14.37 | 4.083    4.79 |  5.58    2.39
                1.167    4.79 | 2.667   14.37 | 4.167    4.79 |  5.67    2.39
                1.250    4.79 | 2.750   14.37 | 4.250    4.79 |  5.75    2.39
                1.333    4.79 | 2.833  107.74 | 4.333    4.79 |  5.83    2.39
                1.417    4.79 | 2.917  107.74 | 4.417    4.79 |  5.92    2.39
                1.500    4.79 | 3.000  107.74 | 4.500    4.79 |  6.00    2.39

     Unit Hyd Qpeak  (cms)=   0.163

     PEAK FLOW       (cms)=   0.036 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=  15.415
     TOTAL RAINFALL   (mm)=  59.858
     RUNOFF COEFFICIENT   =   0.258

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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**********************************************
** SIMULATION:6 - 100 YR, 6 HR SCS Type II **
**********************************************

--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| NASHYD   (  0012)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.55	1.583	5.09	3.083	22.92	4.58	5.09
0.167	2.55	1.667	5.09	3.167	22.92	4.67	5.09
0.250	2.55	1.750	5.09	3.250	22.92	4.75	5.09
0.333	2.55	1.833	5.09	3.333	10.19	4.83	2.55
0.417	2.55	1.917	5.09	3.417	10.19	4.92	2.55
0.500	2.55	2.000	5.09	3.500	10.19	5.00	2.55
0.583	2.55	2.083	7.64	3.583	7.64	5.08	2.55
0.667	2.55	2.167	7.64	3.667	7.64	5.17	2.55
0.750	2.55	2.250	7.64	3.750	7.64	5.25	2.55
0.833	2.55	2.333	10.19	3.833	7.64	5.33	2.55
0.917	2.55	2.417	10.19	3.917	7.64	5.42	2.55
1.000	2.55	2.500	10.19	4.000	7.64	5.50	2.55
1.083	5.09	2.583	15.28	4.083	5.09	5.58	2.55
1.167	5.09	2.667	15.28	4.167	5.09	5.67	2.55
1.250	5.09	2.750	15.28	4.250	5.09	5.75	2.55
1.333	5.09	2.833	114.62	4.333	5.09	5.83	2.55
1.417	5.09	2.917	114.62	4.417	5.09	5.92	2.55
1.500	5.09	3.000	114.62	4.500	5.09	6.00	2.55

Unit Hyd Qpeak (cms)= 0.235

PEAK FLOW (cms)= 0.136 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 24.018
TOTAL RAINFALL (mm)= 63.677
RUNOFF COEFFICIENT = 0.377

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
Ptotal= 63.68 mm	Comments: 100 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.55	1.75	5.09	3.25	22.92	4.75	5.09
0.50	2.55	2.00	5.09	3.50	10.19	5.00	2.55
0.75	2.55	2.25	7.64	3.75	7.64	5.25	2.55
1.00	2.55	2.50	10.19	4.00	7.64	5.50	2.55
1.25	5.09	2.75	15.28	4.25	5.09	5.75	2.55
1.50	5.09	3.00	114.62	4.50	5.09	6.00	2.55

CALIB NASHYD (0010) ID= 1 DT= 5.0 min	Area (ha)= 0.18 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.18	Curve Number (CN)= 65.0 # of Linear Res.(N)= 3.00

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.55	1.583	5.09	3.083	22.92	4.58	5.09
0.167	2.55	1.667	5.09	3.167	22.92	4.67	5.09
0.250	2.55	1.750	5.09	3.250	22.92	4.75	5.09
0.333	2.55	1.833	5.09	3.333	10.19	4.83	2.55
0.417	2.55	1.917	5.09	3.417	10.19	4.92	2.55
0.500	2.55	2.000	5.09	3.500	10.19	5.00	2.55
0.583	2.55	2.083	7.64	3.583	7.64	5.08	2.55
0.667	2.55	2.167	7.64	3.667	7.64	5.17	2.55
0.750	2.55	2.250	7.64	3.750	7.64	5.25	2.55
0.833	2.55	2.333	10.19	3.833	7.64	5.33	2.55
0.917	2.55	2.417	10.19	3.917	7.64	5.42	2.55
1.000	2.55	2.500	10.19	4.000	7.64	5.50	2.55
1.083	5.09	2.583	15.28	4.083	5.09	5.58	2.55
1.167	5.09	2.667	15.28	4.167	5.09	5.67	2.55
1.250	5.09	2.750	15.28	4.250	5.09	5.75	2.55
1.333	5.09	2.833	114.62	4.333	5.09	5.83	2.55
1.417	5.09	2.917	114.62	4.417	5.09	5.92	2.55
1.500	5.09	3.000	114.62	4.500	5.09	6.00	2.55

Unit Hyd Qpeak (cms)= 0.038

PEAK FLOW (cms)= 0.012 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 17.563
TOTAL RAINFALL (mm)= 63.677
RUNOFF COEFFICIENT = 0.276

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
Ptotal= 63.68 mm	Comments: 100 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.55	1.75	5.09	3.25	22.92	4.75	5.09
0.50	2.55	2.00	5.09	3.50	10.19	5.00	2.55
0.75	2.55	2.25	7.64	3.75	7.64	5.25	2.55
1.00	2.55	2.50	10.19	4.00	7.64	5.50	2.55
1.25	5.09	2.75	15.28	4.25	5.09	5.75	2.55
1.50	5.09	3.00	114.62	4.50	5.09	6.00	2.55

CALIB NASHYD (0011) ID= 1 DT= 5.0 min	Area (ha)= 38.27 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.23	Curve Number (CN)= 81.0 # of Linear Res.(N)= 3.00

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.55	1.583	5.09	3.083	22.92	4.58	5.09
0.167	2.55	1.667	5.09	3.167	22.92	4.67	5.09
0.250	2.55	1.750	5.09	3.250	22.92	4.75	5.09
0.333	2.55	1.833	5.09	3.333	10.19	4.83	2.55
0.417	2.55	1.917	5.09	3.417	10.19	4.92	2.55
0.500	2.55	2.000	5.09	3.500	10.19	5.00	2.55
0.583	2.55	2.083	7.64	3.583	7.64	5.08	2.55
0.667	2.55	2.167	7.64	3.667	7.64	5.17	2.55
0.750	2.55	2.250	7.64	3.750	7.64	5.25	2.55
0.833	2.55	2.333	10.19	3.833	7.64	5.33	2.55
0.917	2.55	2.417	10.19	3.917	7.64	5.42	2.55
1.000	2.55	2.500	10.19	4.000	7.64	5.50	2.55
1.083	5.09	2.583	15.28	4.083	5.09	5.58	2.55
1.167	5.09	2.667	15.28	4.167	5.09	5.67	2.55
1.250	5.09	2.750	15.28	4.250	5.09	5.75	2.55
1.333	5.09	2.833	114.62	4.333	5.09	5.83	2.55
1.417	5.09	2.917	114.62	4.417	5.09	5.92	2.55
1.500	5.09	3.000	114.62	4.500	5.09	6.00	2.55

Unit Hyd Qpeak (cms)= 6.355

PEAK FLOW (cms)= 3.545 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 29.083
TOTAL RAINFALL (mm)= 63.677
RUNOFF COEFFICIENT = 0.457

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
Ptotal= 63.68 mm	Comments: 100 YR, 6 HR SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.55	1.75	5.09	3.25	22.92	4.75	5.09
0.50	2.55	2.00	5.09	3.50	10.19	5.00	2.55
0.75	2.55	2.25	7.64	3.75	7.64	5.25	2.55

```
                1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55
-------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   1.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.93          0.29
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       2.30          2.00
     Length            (m)=      90.18         12.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Max.Eff.Inten.(mm/hr)=     114.62         37.30
                over (min)        5.00          5.00
     Storage Coeff.  (min)=       1.77 (ii)     3.82 (ii)
     Unit Hyd. Tpeak (min)=       5.00          5.00
     Unit Hyd. peak  (cms)=       0.32          0.25
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.30          0.03        0.326 (iii)
     TIME TO PEAK    (hrs)=       3.00          3.00         3.00
     RUNOFF VOLUME    (mm)=      62.68         17.62        51.86
     TOTAL RAINFALL   (mm)=      63.68         63.68        63.68
     RUNOFF COEFFICIENT   =       0.98          0.28         0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0024)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0410     0.0345
                          0.0130     0.0202   |   0.0480     0.0373
                          0.0220     0.0260   |   0.0540     0.0395
                          0.0300     0.0299   |   0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)      1.220     0.326      3.00      51.86
   OUTFLOW: ID= 1 (  0024)      1.220     0.054      3.25      51.55

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 16.60
                   TIME SHIFT OF PEAK FLOW         (min)= 15.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0398

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.16   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Unit Hyd Qpeak  (cms)=   0.034

     PEAK FLOW       (cms)=   0.012 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  20.489
     TOTAL RAINFALL   (mm)=  63.677
     RUNOFF COEFFICIENT   =   0.322

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| NASHYD   (  0006)|   Area    (ha)=   0.35   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.40
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NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                         ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
             0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
             0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
             0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
             0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
             0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
             0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
             0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
             0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
             0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
             0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
             1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
             1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
             1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
             1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
             1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
             1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
             1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Unit Hyd Qpeak  (cms)=   0.033

     PEAK FLOW       (cms)=   0.013 (i)
     TIME TO PEAK    (hrs)=   3.333
     RUNOFF VOLUME    (mm)=  17.612
     TOTAL RAINFALL   (mm)=  63.677
     RUNOFF COEFFICIENT   =   0.277

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
             0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
             0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
             1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
             1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
             1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| NASHYD   (  0009)|   Area    (ha)=   0.37   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.45

NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                         ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
             0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
             0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
             0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
             0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
             0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
             0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
             0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
             0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
             0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
             0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
             1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
             1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
             1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
             1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
             1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
             1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
             1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Unit Hyd Qpeak  (cms)=   0.031

     PEAK FLOW       (cms)=   0.013 (i)
     TIME TO PEAK    (hrs)=   3.417
     RUNOFF VOLUME    (mm)=  17.612
     TOTAL RAINFALL   (mm)=  63.677
     RUNOFF COEFFICIENT   =   0.277

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
             0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
             0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
             1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
             1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
             1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.21
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  50.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.70         0.51
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.50         4.00
     Length            (m)=     121.38        15.00
     Mannings n          =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                                 ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
             0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
             0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
             0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
             0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
             0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
             0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
             0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
             0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
             0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
             0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
             1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
             1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
             1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
             1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
             1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
             1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
             1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Max.Eff.Inten.(mm/hr)=     114.62       140.25
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       2.41 (ii)    4.61 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.30         0.22
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.35         0.19        0.544 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.00         3.00
     RUNOFF VOLUME    (mm)=      62.68        30.31        46.49
     TOTAL RAINFALL   (mm)=      63.68        63.68        63.68
     RUNOFF COEFFICIENT   =       0.98         0.48         0.73

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
```

```
          THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.64          0.52
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          2.80
     Length            (m)=     120.00        200.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Max.Eff.Inten.(mm/hr)=     114.62       235.25
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       3.32 (ii)   15.22 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.26         0.07
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.19        0.261 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.17         3.00
     RUNOFF VOLUME    (mm)=      62.68        37.05        42.68
     TOTAL RAINFALL   (mm)=      63.68        63.68        63.68
     RUNOFF COEFFICIENT   =       0.98         0.58         0.67

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44          1.27
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          5.00
     Length            (m)=     134.41         25.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Max.Eff.Inten.(mm/hr)=     114.62        64.95
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       3.56 (ii)    7.82 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.26         0.13
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.31         0.17        0.467 (iii)
     TIME TO PEAK    (hrs)=       3.00         3.08         3.00
     RUNOFF VOLUME    (mm)=      62.68        22.44        36.92
     TOTAL RAINFALL   (mm)=      63.68        63.68        63.68
     RUNOFF COEFFICIENT   =       0.98         0.35         0.58

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
```

```
                1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96          0.29
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       0.50          1.40
     Length            (m)=      91.29         45.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                             ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Max.Eff.Inten.(mm/hr)=     114.62         86.06
                over (min)        5.00         15.00
     Storage Coeff.  (min)=       2.82 (ii)   11.77 (ii)
     Unit Hyd. Tpeak (min)=       5.00         15.00
     Unit Hyd. peak  (cms)=       0.28          0.09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.24          0.04       0.268 (iii)
     TIME TO PEAK    (hrs)=       3.00          3.17        3.00
     RUNOFF VOLUME    (mm)=      62.68         23.37       46.95
     TOTAL RAINFALL   (mm)=      63.68         63.68       63.68
     RUNOFF COEFFICIENT   =       0.98          0.37        0.74

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-------------------------------------------------------------------------------

--------------------
|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

-------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61          0.19
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       2.10          2.00
     Length            (m)=      73.03         15.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                             ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Max.Eff.Inten.(mm/hr)=     114.62         37.30
                over (min)        5.00          5.00
     Storage Coeff.  (min)=       1.60 (ii)    3.94 (ii)
     Unit Hyd. Tpeak (min)=       5.00          5.00
     Unit Hyd. peak  (cms)=       0.32          0.24
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.19          0.02       0.214 (iii)
     TIME TO PEAK    (hrs)=       3.00          3.00        3.00
     RUNOFF VOLUME    (mm)=      62.68         17.62       51.86
     TOTAL RAINFALL   (mm)=      63.68         63.68       63.68
     RUNOFF COEFFICIENT   =       0.98          0.28        0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     2.21   0.544     3.00    46.49
      + ID2= 2 (  0002):     2.16   0.261     3.00    42.68
        ==================================================
        ID = 3 (  0022):     4.37   0.806     3.00    44.61

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     4.37   0.806     3.00    44.61
      + ID2= 2 (  0003):     2.71   0.467     3.00    36.92
        ==================================================
        ID = 1 (  0022):     7.08   1.272     3.00    41.67

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):      7.08   1.272     3.00    41.67
      + ID2= 2 (  0005):      1.25   0.268     3.00    46.95
        ==================================================
        ID = 3 (  0022):      8.33   1.540     3.00    42.46

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):      8.33   1.540     3.00    42.46
      + ID2= 2 (  0008):      0.80   0.214     3.00    51.86
        ==================================================
        ID = 1 (  0022):      9.13   1.754     3.00    43.28

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0870      0.2110
                           0.0190     0.1038   |   0.0920      0.2465
                           0.0210     0.1395   |   0.0960      0.2789
                           0.0250     0.1950   |   0.1000      0.2990

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      1.754      3.00      43.28
   OUTFLOW: ID= 1 (  0023)      9.130      0.100      4.75      43.13

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.72
                  TIME SHIFT OF PEAK FLOW         (min)=105.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3008

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0023):      9.13   0.100     4.75    43.13
      + ID2= 2 (  0004):      0.16   0.012     3.08    20.49
        ==================================================
        ID = 3 (  0025):      9.29   0.102     4.75    42.74

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0025):      9.29   0.102     4.75    42.74
      + ID2= 2 (  0006):      0.35   0.013     3.33    17.61
        ==================================================
        ID = 1 (  0025):      9.64   0.114     3.33    41.83

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0025):      9.64   0.114     3.33    41.83
      + ID2= 2 (  0009):      0.37   0.013     3.42    17.61
        ==================================================
        ID = 3 (  0025):     10.01   0.126     3.33    40.93

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\3c8b998e
| Ptotal= 63.68 mm |    Comments: 100 YR, 6 HR SCS Type II
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.25    2.55 |  1.75    5.09 |  3.25   22.92 |  4.75    5.09
                 0.50    2.55 |  2.00    5.09 |  3.50   10.19 |  5.00    2.55
                 0.75    2.55 |  2.25    7.64 |  3.75    7.64 |  5.25    2.55
                 1.00    2.55 |  2.50   10.19 |  4.00    7.64 |  5.50    2.55
                 1.25    5.09 |  2.75   15.28 |  4.25    5.09 |  5.75    2.55
                 1.50    5.09 |  3.00  114.62 |  4.50    5.09 |  6.00    2.55

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| CALIB            |
| NASHYD   (  0013)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.55 | 1.583    5.09 | 3.083   22.92 |  4.58    5.09
                0.167    2.55 | 1.667    5.09 | 3.167   22.92 |  4.67    5.09
                0.250    2.55 | 1.750    5.09 | 3.250   22.92 |  4.75    5.09
                0.333    2.55 | 1.833    5.09 | 3.333   10.19 |  4.83    2.55
                0.417    2.55 | 1.917    5.09 | 3.417   10.19 |  4.92    2.55
                0.500    2.55 | 2.000    5.09 | 3.500   10.19 |  5.00    2.55
                0.583    2.55 | 2.083    7.64 | 3.583    7.64 |  5.08    2.55
                0.667    2.55 | 2.167    7.64 | 3.667    7.64 |  5.17    2.55
                0.750    2.55 | 2.250    7.64 | 3.750    7.64 |  5.25    2.55
                0.833    2.55 | 2.333   10.19 | 3.833    7.64 |  5.33    2.55
                0.917    2.55 | 2.417   10.19 | 3.917    7.64 |  5.42    2.55
                1.000    2.55 | 2.500   10.19 | 4.000    7.64 |  5.50    2.55
                1.083    5.09 | 2.583   15.28 | 4.083    5.09 |  5.58    2.55
                1.167    5.09 | 2.667   15.28 | 4.167    5.09 |  5.67    2.55
                1.250    5.09 | 2.750   15.28 | 4.250    5.09 |  5.75    2.55
                1.333    5.09 | 2.833  114.62 | 4.333    5.09 |  5.83    2.55
                1.417    5.09 | 2.917  114.62 | 4.417    5.09 |  5.92    2.55
                1.500    5.09 | 3.000  114.62 | 4.500    5.09 |  6.00    2.55

     Unit Hyd Qpeak  (cms)=   0.163

     PEAK FLOW       (cms)=   0.040 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=  17.292
     TOTAL RAINFALL   (mm)=  63.677
     RUNOFF COEFFICIENT   =   0.272

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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*********************************
** SIMULATION:Hazel            **
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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                 2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                 3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| NASHYD   (  0012)|   Area    (ha)=   3.08   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.50

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
         0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
         0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
         0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
         0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
         0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
         0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
         0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
         0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
         0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
         0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
         1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
         1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
         1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
         1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
         1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
         1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
         1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
         1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
         1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
         1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
         1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
         1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
         2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
         2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
         2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
         2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
         2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
         2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
         2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
         2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
         2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
         2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
         2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
         2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
         3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.235

     PEAK FLOW       (cms)=   0.341 (i)
     TIME TO PEAK    (hrs)=  10.250
     RUNOFF VOLUME    (mm)= 146.903
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.693

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
          2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
          3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| NASHYD   (  0010)|   Area    (ha)=   0.18   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
         0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
         0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
         0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
         0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
         0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
         0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
         0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
         0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
         0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
         0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
         1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
         1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
         1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
         1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
         1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
         1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
         1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
         1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
         1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
         1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
         1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
         1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
         2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
         2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
         2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
         2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
         2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
         2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
         2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
         2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
         2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
         2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
         2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
         2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
         3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.038

     PEAK FLOW       (cms)=   0.020 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 124.285
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.586

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
          2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
          3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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--------------------
| CALIB            |
| NASHYD   (  0011)|   Area    (ha)=  38.27   Curve Number   (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.23

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
         0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
         0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
         0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
         0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
         0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
         0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
         0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
         0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
         0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
         0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
         1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
         1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
```

1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

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     Unit Hyd Qpeak  (cms)=   6.355

     PEAK FLOW       (cms)=   5.100 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 160.559
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.757

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

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| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   1.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.93          0.29
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       2.30          2.00
     Length            (m)=      90.18         12.00
     Mannings n          =       0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

```
     Max.Eff.Inten.(mm/hr)=      53.00        41.07
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.41 (ii)    5.20 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.30         0.16
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.03         0.170 (iii)
     TIME TO PEAK    (hrs)=       9.67        10.00        10.00
     RUNOFF VOLUME    (mm)=     211.00       124.64       190.27
     TOTAL RAINFALL   (mm)=     212.00       212.00       212.00
     RUNOFF COEFFICIENT   =       1.00         0.59         0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR(  0024)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |
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OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0410	0.0345
0.0130	0.0202	0.0480	0.0373
0.0220	0.0260	0.0540	0.0395
0.0300	0.0299	0.0000	0.0000

```
                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)      1.220     0.170     10.00     190.27
   OUTFLOW: ID= 1 (  0024)      1.220     0.122     11.00     189.96

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 71.95
                   TIME SHIFT OF PEAK FLOW         (min)= 60.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0645

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

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| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.16   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.18

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.034

PEAK FLOW (cms)= 0.019 (i)
TIME TO PEAK (hrs)= 10.000
RUNOFF VOLUME (mm)= 135.268
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.638

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
Ptotal=212.00 mm	Comments: Hazel

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB NASHYD (0006) ID= 1 DT= 5.0 min	Area (ha)= 0.35 Curve Number (CN)= 65.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.40

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.033

PEAK FLOW (cms)= 0.036 (i)
TIME TO PEAK (hrs)= 10.167
RUNOFF VOLUME (mm)= 124.627
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.588

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

READ STORM	Filename: C:\Users\bparsons\AppD ata\Local\Temp\ 9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
Ptotal=212.00 mm	Comments: Hazel

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
1.00	6.00	4.00	13.00	7.00	23.00	10.00	53.00
2.00	4.00	5.00	17.00	8.00	13.00	11.00	38.00
3.00	6.00	6.00	13.00	9.00	13.00	12.00	13.00

CALIB NASHYD (0009) ID= 1 DT= 5.0 min	Area (ha)= 0.37 Curve Number (CN)= 65.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.45

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00

```
                1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
                1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
                1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
                1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
                1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
                1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
                1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
                1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
                1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
                1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
                2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
                2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
                2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
                2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
                2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
                2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
                2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
                2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
                2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
                2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
                2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
                2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
                3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.031

     PEAK FLOW       (cms)=   0.037 (i)
     TIME TO PEAK    (hrs)=  10.250
     RUNOFF VOLUME    (mm)= 124.632
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.588

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                  2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                  3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.21
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  50.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.70         0.51
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.50         4.00
     Length            (m)=     121.38        15.00
     Mannings n          =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
                 0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
                 0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
                 0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
                 0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
                 0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
                 0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
                 0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
                 0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
                 0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
                 0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
                 1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
                 1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
                 1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
                 1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
                 1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
                 1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
                 1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
                 1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
                 1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
                 1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
                 1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
                 1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
                 2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
                 2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
                 2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
                 2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
                 2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
                 2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
                 2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
                 2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
                 2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
                 2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
                 2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
                 2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
                 3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Max.Eff.Inten.(mm/hr)=      53.00       105.55
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       3.28 (ii)    6.28 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.27         0.15
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.16         0.15         0.311 (iii)
     TIME TO PEAK    (hrs)=       9.83        10.00         10.00
     RUNOFF VOLUME    (mm)=     211.00       161.31        186.15
     TOTAL RAINFALL   (mm)=     212.00       212.00        212.00
     RUNOFF COEFFICIENT   =       1.00         0.76          0.88

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |     Filename: C:\Users\bparsons\AppD
|                  |               ata\Local\Temp\
|                  |               9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                  2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                  3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.64         0.52
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         2.80
     Length            (m)=     120.00       200.00
     Mannings n          =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
                 0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
                 0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
                 0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
                 0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
                 0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
                 0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
                 0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
                 0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
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                0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
                0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
                1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
                1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
                1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
                1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
                1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
                1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
                1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
                1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
                1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
                1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
                1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
                1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
                2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
                2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
                2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
                2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
                2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
                2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
                2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
                2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
                2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
                2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
                2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
                2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
                3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Max.Eff.Inten.(mm/hr)=      53.00       164.21
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       4.52 (ii)   18.27 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.23         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.22         0.293 (iii)
     TIME TO PEAK    (hrs)=      10.00        10.08         10.00
     RUNOFF VOLUME    (mm)=     211.00       175.39        183.22
     TOTAL RAINFALL   (mm)=     212.00       212.00        212.00
     RUNOFF COEFFICIENT   =       1.00         0.83          0.86

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                  2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                  3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44         1.27
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         5.00
     Length            (m)=     134.41        25.00
     Mannings n          =       0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
                 0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
                 0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
                 0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
                 0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
                 0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
                 0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
                 0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
                 0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
                 0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
                 0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
                 1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
                 1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
                 1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
                 1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
                 1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
                 1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
                 1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
                 1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
                 1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
                 1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
                 1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
                 1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
                 2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
                 2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
                 2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
                 2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
                 2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
                 2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
                 2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
                 2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
                 2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
                 2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
                 2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
                 2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
                 3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Max.Eff.Inten.(mm/hr)=      53.00        60.82
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       4.84 (ii)    9.78 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.22         0.11
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.21          0.356 (iii)
     TIME TO PEAK    (hrs)=      10.00        10.00          10.00
     RUNOFF VOLUME    (mm)=     211.00       140.56         165.92
     TOTAL RAINFALL   (mm)=     212.00       212.00         212.00
     RUNOFF COEFFICIENT   =       1.00         0.66           0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                  2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                  3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         1.40
     Length            (m)=      91.29        45.00
     Mannings n          =       0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
         0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
         0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
         0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
         0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
         0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
         0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
         0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
         0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
         0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
         0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
         1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
         1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
         1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
         1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
         1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
         1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
         1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
         1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
         1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
         1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
         1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
         1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
         2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
         2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
         2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
         2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
         2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
         2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
         2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
         2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
         2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
         2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
         2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
         2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
         3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Max.Eff.Inten.(mm/hr)=      53.00        78.31
                over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.84 (ii)   13.13 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.25         0.08
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.06         0.171 (iii)
     TIME TO PEAK    (hrs)=       9.92        10.00         10.00
     RUNOFF VOLUME    (mm)=     211.00       142.69        183.67
     TOTAL RAINFALL   (mm)=     212.00       212.00        212.00
     RUNOFF COEFFICIENT   =       1.00         0.67          0.87

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
          2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
          3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

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| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.10         2.00
     Length            (m)=      73.03        15.00
     Mannings n          =       0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                    ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
         0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
         0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
         0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
         0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
         0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
         0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
         0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
         0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
         0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
         0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
         1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
         1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
         1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
         1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
         1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
         1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
         1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
         1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
         1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
         1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
         1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
         1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
         2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
         2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
         2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
         2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
         2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
         2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
         2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
         2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
         2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
         2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
         2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
         2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
         3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Max.Eff.Inten.(mm/hr)=      53.00        41.07
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.18 (ii)    5.37 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.16
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.02         0.111 (iii)
     TIME TO PEAK    (hrs)=       9.58        10.00         10.00
     RUNOFF VOLUME    (mm)=     211.00       124.64        190.27
     TOTAL RAINFALL   (mm)=     212.00       212.00        212.00
     RUNOFF COEFFICIENT   =       1.00         0.59          0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):      2.21   0.311    10.00   186.15
      + ID2= 2 (  0002):      2.16   0.293    10.00   183.22
        ===================================================
        ID = 3 (  0022):      4.37   0.604    10.00   184.70

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
```

```
--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     4.37   0.604    10.00   184.70
      + ID2= 2 (  0003):     2.71   0.356    10.00   165.92
        ==================================================
        ID = 1 (  0022):     7.08   0.960    10.00   177.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):     7.08   0.960    10.00   177.51
      + ID2= 2 (  0005):     1.25   0.171    10.00   183.67
        ==================================================
        ID = 3 (  0022):     8.33   1.131    10.00   178.44

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     8.33   1.131    10.00   178.44
      + ID2= 2 (  0008):     0.80   0.111    10.00   190.27
        ==================================================
        ID = 1 (  0022):     9.13   1.242    10.00   179.47

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0870      0.2110
                           0.0190     0.1038   |   0.0920      0.2465
                           0.0210     0.1395   |   0.0960      0.2789
                           0.0250     0.1950   |   0.1000      0.2990

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      1.242     10.00     179.47
   OUTFLOW: ID= 1 (  0023)      9.130      0.274     12.00     179.32

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.09
                   TIME SHIFT OF PEAK FLOW         (min)=120.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  1.1762

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0023):     9.13   0.274    12.00   179.32
      + ID2= 2 (  0004):     0.16   0.019    10.00   135.27
        ==================================================
        ID = 3 (  0025):     9.29   0.279    12.00   178.56

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0025)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0025):     9.29   0.279    12.00   178.56
      + ID2= 2 (  0006):     0.35   0.036    10.17   124.63
        ==================================================
        ID = 1 (  0025):     9.64   0.309    11.08   176.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
```

```
--------------------
| ADD HYD  (  0025)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0025):     9.64   0.309    11.08   176.60
      + ID2= 2 (  0009):     0.37   0.037    10.25   124.63
        ==================================================
        ID = 3 (  0025):    10.01   0.342    11.08   174.68

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
|    READ STORM    |    Filename: C:\Users\bparsons\AppD
|                  |              ata\Local\Temp\
|                  |              9727ec42-3d64-4149-b2df-265eb5378c1e\2a8f3d54
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 1.00    6.00 |  4.00   13.00 |  7.00   23.00 | 10.00   53.00
                 2.00    4.00 |  5.00   17.00 |  8.00   13.00 | 11.00   38.00
                 3.00    6.00 |  6.00   13.00 |  9.00   13.00 | 12.00   13.00

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0013)|   Area    (ha)=   0.47   Curve Number   (CN)= 65.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
                0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
                0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
                0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
                0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
                0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
                0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
                0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
                0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
                0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
                0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
                1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
                1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
                1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
                1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
                1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
                1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
                1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
                1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
                1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
                1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
                1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
                1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
                2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
                2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
                2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
                2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
                2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
                2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
                2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
                2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
                2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
                2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
                2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
                2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
                3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.163

     PEAK FLOW       (cms)=   0.052 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 122.351
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.577
```

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

Appendix C: Percent Impervious and Time to Peak Calculations

Weighted CN Calculations

Project Name: East Village Phase 5
Project No: 10841
Rain Gauge: Peterborough

Designed By: BS
Date: 2019-06-27

Catchment Name and Description		Land Use and Areas (Ha)						Land Use and Areas (Ha)							Catchment Characteristics									
Name	Description	Fallow	Crop & other improved land	Pasture & other unimproved land	Woodlots and forests	Impervious	**Total**	Wetland(0.05)	Woods (0.30)	Grass (0.25)	Crop (0.45)	Pasture (0.34)	Impervious (0.90)	**Total**	CN Weighted	% Imperviousness	Soils Group	Composite Runoff Coefficient	Length (m)	Average Slope (%)	Calculated Time of Concentration (min)	Minimum Time of Concentration (min)	Time to Peak (min)	Time to Peak (hr)
EX1				7.53	1.77		**9.30**		1.77			7.53		**9.30**	68.8	0.00%	BC	0.33	400.0	0.7	56.3	10.0	37.6	0.63
EX2				0.59	0.21		**0.80**		0.21			0.59		**0.80**	69.1	0.00%	BC	0.33	95.0	0.5	31.7	10.0	21.1	0.35
Ext3				0.47			**0.47**					0.47		**0.47**	68.0	0.00%	BC	0.34	11.8	5.0	5.0	10.0	6.7	0.11
EX4				1.15	0.07		**1.22**		0.07			1.15		**1.22**	68.2	0.00%	BC	0.34	150.0	1.3	27.9	10.0	18.6	0.31
EX5				0.18			**0.18**					0.18		**0.18**	68.0	0.00%	BC	0.34	15.0	0.3	14.3	10.0	9.5	0.16
Ext6			30.95		4.81	2.51	**38.27**		4.81		30.95		2.51	**38.27**	81.0	6.56%	BC	0.46	670.0	3.5	20.6	10.0	13.8	0.23
Ext7			1.61	0.95	0.52		**3.08**		0.52		1.61	0.95		**3.08**	75.5	0.00%	BC	0.39	235.0	0.5	44.6	10.0	29.7	0.50
EX1+EX2+EX4+EX5	Site Total						**11.50**							**11.50**										
PR1				0.61		1.60	**2.21**			0.51			1.70	**2.21**	89.7	76.92%	BC	0.75	36.0	6.0	1.3	10.0	6.7	0.11
PR2				1.12		1.04	**2.16**			0.51			1.65	**2.16**	82.4	76.39%	BC	0.75	28.4	0.8	1.6	10.0	6.7	0.11
PR3				1.33		1.38	**2.71**			1.27			1.44	**2.71**	83.3	53.14%	BC	0.60	52.0	2.5	2.2	10.0	6.7	0.11
PR4				0.14		0.02	**0.16**			0.14			0.02	**0.16**	71.7	12.49%	BC	0.33	65.4	2.0	16.1	10.0	10.8	0.18
PR5				0.43		0.82	**1.25**			0.29			0.96	**1.25**	87.7	76.80%	BC	0.75	51.1	0.4	3.4	10.0	6.7	0.11
PR6				0.35			**0.35**			0.35				**0.35**	68.0	0.00%	BC	0.25	261.5	2.0	35.6	10.0	23.8	0.40
PR7				0.37		0.85	**1.22**			0.29			0.93	**1.22**	88.9	76.23%	BC	0.75	131.0	1.1	7.1	10.0	6.7	0.11
PR8				0.30		0.50	**0.80**			0.19			0.61	**0.80**	86.7	76.25%	BC	0.75	100.0	0.9	6.0	10.0	6.7	0.11
PR9				0.37			**0.37**			0.37				**0.37**	68.0	0.00%	BC	0.25	330.8	2.0	40.1	10.0	26.7	0.45
PR10				0.18			**0.18**			0.18				**0.18**	68.0	0.00%	BC	0.25	15.0	0.3	16.0	10.0	10.7	0.18
Pxt11			30.95		4.81	2.51	**38.27**		4.81		30.95		2.51	**38.27**	81.0	6.56%	BC	0.46	670.0	3.5	20.6	10.0	13.8	0.23
Pxt12			1.61	0.95	0.52		**3.08**		0.52		1.61	0.95		**3.08**	75.5	0.00%	BC	0.39	235.0	0.5	44.6	10.0	29.7	0.50
Pxt13				0.47			**0.47**					0.47		**0.47**	68.0	0.00%	BC	0.34	11.8	5.0	5.0	10.0	6.7	0.11
	Site Total						**11.40**							**11.40**										
To Pond	PR1+PR2+PR3+PR5+PR8			3.791		5.334	**9.13**			2.770			6.360	**9.13**		69.66%		0.70						

Notes:

Runoff Coefficients

1. Runoff coefficients, and CN values taken from GRCA Technical and Engineering Guidelines for SWM Submissions
2. Runoff coefficients have been adjusted for storms exceeding the 10-year return period as follows: 25 Year - 1.10; 50-Year: 1.20; 100-Year: 1.25

Time of Concentration

1.Tc calculcated using Airport equation for C<0.4 and Bransby Willisams for C>0.4
2. Tp calculated as 0.67Tc.

PERCENT IMPERVIOUS AREA CALCULATIONS PR1

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	0			166.12	0.00
Semi-Detatched Units	0			269.43	0.00
Townhouse Blocks (5 units)	1.5			493.18	739.76
Townhouse Blocks (4 units)	1.2			395.79	474.95
10-Plex	7			499.82	3498.77
Sidewalk (both sides)		245.45	3		736.35
Road		278.71	8.5		2369.04
Driveways	12	10.7	6		770.40
Parking Lots					3753.31
Impervious Buffer per GRCA					4657.42
Directly Connected Impervious					11127.86
Subtotal Impervious					17000.00
Pervious					5132.73
Drainage Area Total					22132.72
% Impervious	77%				
% Directly Connected	50%				

Notes: Impervious buffer added to calculated impervious area to reach reccomended runoff coeffcient from GRCA standards (0.75 in PR1)

PERCENT IMPERVIOUS AREA CALCULATIONS PR2

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	0.17			166.12	27.74
Semi-Detatched Units	5.50			269.43	1481.89
Townhouse Blocks (5 units)	4.50			493.18	2219.29
Townhouse Blocks (4 units)	4.80			395.79	1899.79
10-Plex	0			499.82	0.00
Sidewalk (both sides)		275.55	3		826.65
Road		275.55	8.5		2342.17
Driveways	24.5	10.7	6		1572.90
Parking Lots					0.00
Impervious Buffer per GRCA *					6130
Directly Connected Impervious					4741.72
Subtotal Impervious					16500.43
Pervious					5099.57
Drainage Area Total					21600.00
% Impervious	76%				
% Directly Connected	22%				

* Notes: Impervious buffer added to calculated impervious area to reach reccomended runoff coeffcient from GRCA standards (0.75 in PR2)

PERCENT IMPERVIOUS AREA CALCULATIONS PR3

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	24.83			166.12	4124.67
Semi-Detatched Units	7.33			269.43	1974.95
Townhouse Blocks (5 units)	0.00			493.18	0.00
Townhouse Blocks (4 units)	0.00			395.79	0.00
10-Plex	0			499.82	0.00
Sidewalk (both sides)		490.14	3		1470.42
Road		545.12	8.5		4633.50
Driveways	27	10.20	5.1		1404.54
Driveways	3	10.7	6		192.60
Parking Lots					0.00
Impervious Buffer per GRCA					600
Directly Connected Impervious					9676.02
Subtotal Impervious					14400.69
Pervious					12709.97
Drainage Area Total					27110.66
% Impervious	53%				
% Directly Connected	36%				

Notes: Impervious buffer added to calculated impervious area to reach reccomended runoff coeffcient from GRCA standards (0.60 in PR3)

PERCENT IMPERVIOUS AREA CALCULATIONS PR4

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	1.2			166.12	199.34
Semi-Detatched Units	0.00			269.43	0.00
Townhouse Blocks (5 units)	0.00			493.18	0.00
Townhouse Blocks (4 units)	0.00			395.79	0.00
10-Plex	0			499.82	0.00
SWM Facility	0			5181.31	0.00
Sidewalk (both sides)		0	3		0.00
Road		0.00	8.5		0.00
Driveways	0	10.20	5.1		0.00
Driveways		10.7	6		0.00
Parking Lots					0.00
Directly Connected Impervious					0.00
Subtotal Impervious					199.34
Pervious					1365.66
Drainage Area Total					1565.00
% Impervious	13%				
% Directly Connected	0%				

PERCENT IMPERVIOUS AREA CALCULATIONS PR5

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	3.80			166.12	631.24
Semi-Detatched Units	0.00			269.43	0.00
Townhouse Blocks (5 units)	0.00			493.18	0.00
Townhouse Blocks (4 units)	0.00			395.79	0.00
10-Plex	1			499.82	499.82
SWM Facility	1			5181.31	5181.31
Sidewalk (both sides)		200.47	3		601.41
Road		59.30	8.5		504.05
Driveways	4.42	10.20	5.1		229.93
Driveways		10.7	6		0.00
Parking Lots					536.79
Impervious Buffer per GRCA					1415.45
Directly Connected Impervious					7553.31
Subtotal Impervious					9600.00
Pervious					2904.85
Drainage Area Total					12504.85
% Impervious	77%				
% Directly Connected	60%				

Notes: Impervious buffer added to calculated impervious area to reach reccomended runoff coeffcient from GRCA standards (0.75 in PR5)

PERCENT IMPERVIOUS AREA CALCULATIONS PR6

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	0.00			166.12	0.00
Semi-Detatched Units	0.00			269.43	0.00
Townhouse Blocks (5 units)	0.00			493.18	0.00
Townhouse Blocks (4 units)	0.00			395.79	0.00
10-Plex	0			499.82	0.00
SWM Facility	0			5181.31	0.00
Sidewalk (both sides)		0	3		0.00
Road		0.00	8.5		0.00
Driveways	0	10.20	5.1		0.00
Driveways		10.7	6		0.00
Parking Lots					0.00
Directly Connected Impervious					0.00
Subtotal Impervious					0.00
Pervious					3455.65
Drainage Area Total					3455.65
% Impervious	0%				
% Directly Connected	0%				

PERCENT IMPERVIOUS AREA CALCULATIONS PR7

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	0.00			166.12	0.00
Semi-Detatched Units	0.00			269.43	0.00
Townhouse Blocks (5 units)	0.00			493.18	0.00
Townhouse Blocks (4 units)	0.00			395.79	0.00
10-Plex	0			499.82	0.00
5-Storey Buildings	2			1166.54	2333.08
Sidewalk (trail)		427.71	2		855.42
Road			8.5		0.00
Driveways		10.20	5.1		0.00
Driveways		10.7	6		0.00
Parking Lots					5344.02
Impervious Buffer per GRCA					767.5
Directly Connected Impervious					9300.02
Subtotal: Impervious					9300.02
Pervious					2923.33
Drainage Area Total					12223.34
% Impervious	76%				
% Directly Connected	76%				

Notes: Impervious buffer added to calculated impervious area to reach reccomended runoff coeffcient from GRCA standards (0.75 in PR7)

PERCENT IMPERVIOUS AREA CALCULATIONS PR8

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	0.00			166.12	0.00
Semi-Detatched Units	0.00			269.43	0.00
Townhouse Blocks (5 units)	0.00			493.18	0.00
Townhouse Blocks (4 units)	0.00			395.79	0.00
10-Plex	4			499.82	1999.30
5-Storey Buildings	0			1166.54	0.00
Sidewalk (trail)		0	2		0.00
Road		0.00	8.5		0.00
Driveways		10.20	5.1		0.00
Driveways		10.7	6		0.00
Parking Lots					2993.06
Impervious Buffer per GRCA					1107.6
Directly Connected Impervious					6099.96
Subtotal Impervious					6099.96
Pervious					1891.85
Drainage Area Total					7991.81
% Impervious	76%				
% Directly Connected	76%				

Notes: Impervious buffer added to calculated impervious area to reach reccomended runoff coeffcient from GRCA standards (0.75 in PR8)

PERCENT IMPERVIOUS AREA CALCULATIONS PR9

Project Name: East Village Phase 5

Project No.: 18041

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2)	Total Area (m^2)
Single Family	0.00			166.12	0.00
Semi-Detatched Units	0.00			269.43	0.00
Townhouse Blocks (5 units)	0.00			493.18	0.00
Townhouse Blocks (4 units)	0.00			395.79	0.00
10-Plex	0			499.82	0.00
5-Storey Buildings	0			1166.54	0.00
Sidewalk (trail)		0	2		0.00
Road		0.00	8.5		0.00
Driveways		10.20	5.1		0.00
Driveways		10.7	6		0.00
Parking Lots					0.00
Directly Connected Impervious					0.00
Subtotal Impervious					0.00
Pervious					3660.08
Drainage Area Total					3660.08
% Impervious	0%				
% Directly Connected	0%				

Appendix D: Stage Storage Calculations

Stormwater Management Facility Outlet Sizing

Project Name: East Village Subdivision
Project No: 18041

Designed By: BP
Date: 2019-07-09

Pond Outlet Configuration

Description	Stage 1	Stage 2	Emergency Overflow
Control Type	Orifice Plate	Orifice Tube	Broad Crested Weir
Orifice Diameter/Weir Height (m)	0.11	0.15	12.00
Invert Elevations (m)	85.70	85.70	87.70

Stage Storage Discharge

Description	Elevation[4] (m)	Storage (m^3)	Controlled Discharge Rate (m^3/s)			
			Orifice[1]	Orifice[1]	Emergency Spillway[3]	Total
Top of Permanent Pool	85.70	0.00	0.000	0.000	0	0.000
	85.75	76.63	0.000	0.000	0	0.000
	85.80	155.57	0.005	0.000	0	0.005
	85.85	236.82	0.008	0.000	0	0.008
	85.90	320.41	0.010	0.000	0	0.010
	85.95	406.35	0.011	0.000	0	0.011
	86.00	494.65	0.013	0.000	0	0.013
	86.05	585.34	0.014	0.000	0	0.014
	86.10	678.44	0.015	0.000	0	0.015
	86.15	774.45	0.016	0.000	0	0.016
	86.20	873.87	0.017	0.000	0	0.017
	86.25	976.75	0.018	0.000	0	0.018
25mm CHI	86.30	1083.13	0.019	0.000	0	0.019
	86.35	1193.04	0.020	0.000	0	0.020
	86.40	1306.53	0.021	0.000	0	0.021
2-Year Ponding	86.45	1423.63	0.021	0.000	0	0.021
	86.50	1544.38	0.022	0.000	0	0.022
	86.55	1668.81	0.023	0.000	0	0.023
	86.60	1796.97	0.024	0.000	0	0.024
	86.65	1928.90	0.024	0.000	0	0.024
5-Year Ponding	86.70	2064.63	0.025	0.000	0	0.025
10-Year Ponding	86.75	2204.20	0.026	0.062	0	0.087
	86.80	2347.65	0.026	0.063	0	0.090
25-Year Ponding	86.85	2495.02	0.027	0.065	0	0.092
	86.90	2646.35	0.027	0.066	0	0.094
50-Year Ponding	86.95	2801.67	0.028	0.068	0	0.096
	87.00	2961.02	0.029	0.069	0	0.098
100-Year Ponding	87.05	3124.44	0.029	0.071	0	0.100
	87.10	3291.98	0.030	0.072	0	0.102
	87.15	3463.66	0.030	0.073	0	0.104
	87.20	3639.52	0.031	0.075	0	0.106
	87.25	3819.61	0.031	0.076	0	0.107
	87.30	4003.97	0.032	0.077	0	0.109
	87.35	4192.62	0.032	0.079	0	0.111
	87.40	4385.62	0.033	0.080	0	0.113
	87.45	4582.99	0.033	0.081	0	0.114
	87.50	4784.78	0.034	0.082	0	0.116
	87.55	4991.04	0.034	0.083	0	0.118
	87.60	5201.78	0.035	0.085	0	0.119
	87.65	5417.06	0.035	0.086	0	0.121
Overflow Weir	87.70	5637.08	0.036	0.087	0	0.123
	87.75	5861.94	0.036	0.088	0	0.124
	87.80	6091.75	0.037	0.089	0	0.126
	87.85	6326.62	0.037	0.090	0	0.127
Top of Pond	87.90	6566.66	0.038	0.091	0	0.129

Notes:

1. Orifice plate discharge calculated according to Q=0.61A(2gh)1/2
1. Orifice Tube discharge calculated according to Q=0.8A(2gh)1/2
2. Weir discharge calculated according to Q=1.705LH1.5
3. Emergency weir calculations included on separate sheet.

Appendix E: High Density Quantity and Quality Control Calculations

ADVANCED DRAINAGE SYSTEMS, INC.

18041 East Village Subdivison
Future High Density Development
Cobourg, Ontario

SiteASSIST™ by StormTech

FOR STORMTECH INSTRUCTIONS, DOWNLOAD THE INSTALLATION APP

STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500 OR APPROVED EQUAL.
2. CHAMBERS SHALL BE MADE FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS.

   STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm) MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING..
10. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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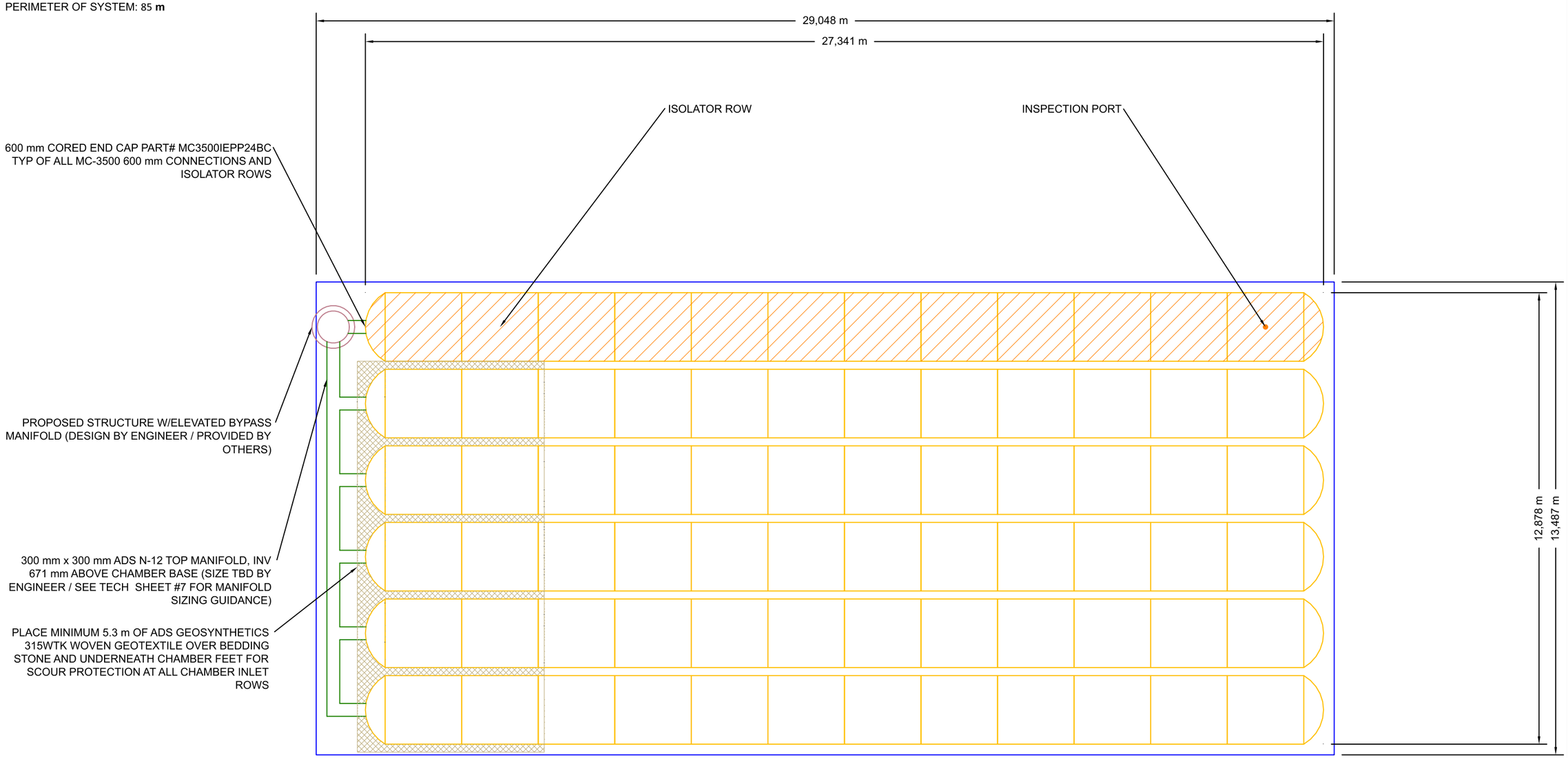
CONCEPTUAL LAYOUT

(72) STORMTECH MC-3500 CHAMBERS
(12) STORMTECH MC-3500 END CAPS
INSTALLED WITH 305 mm COVER STONE, 229 mm BASE STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 400 m³
AREA OF SYSTEM: 392 **m²**
PERIMETER OF SYSTEM: 85 **m**

COMPUTER GENERATED CONCEPTUAL LAYOUT - NOT FOR CONSTRUCTION



18041
Peterborough, Ontario

DATE: 08/26/2019 | DRAWN: BP
PROJECT #: Tool | CHECKED: ---

REV	DRW	CHK	DESCRIPTION

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NOT TO SCALE

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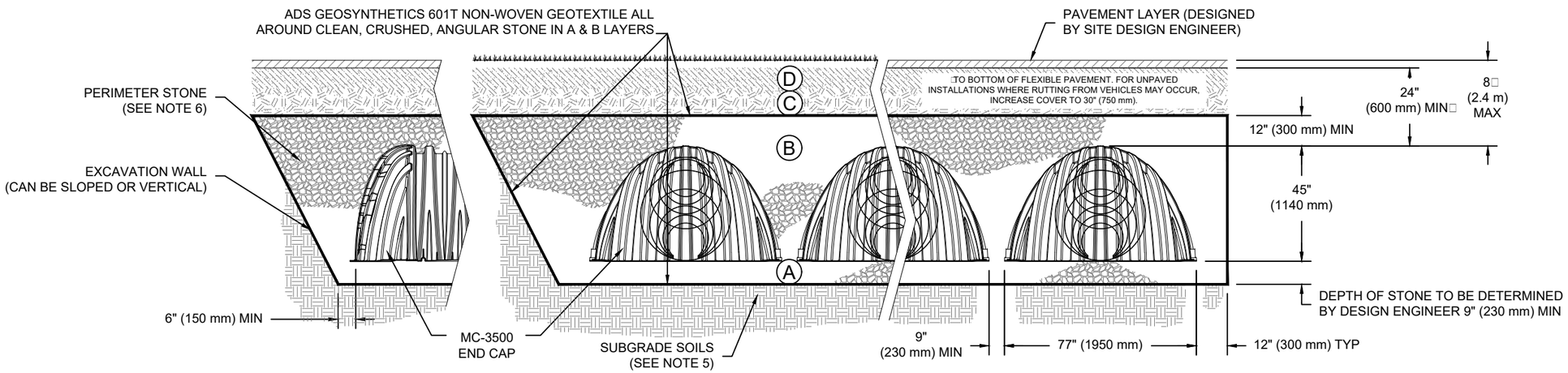
ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION □DENSITY RE□UIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER □D□STARTS FROM THE TOP OF THE □C□LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE □D□LAYER	ANY SOIL□ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER□S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE RE□UIREMENTS.	N□A	PREPARE PER SITE DESIGN ENGINEER□S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION RE□UIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER □C□ STARTS FROM THE TOP OF THE EMBEDMENT STONE (□B□LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE □C□LAYER.	GRANULAR WELL-GRADED SOIL□AGGREGATE MIXTURES, □35□ FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95□ PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95□ RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (□A□ LAYER) TO THE □C□LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SI□E DISTRIBUTION BETWEEN 3□4-2 INCH (20-50 mm)	AASHTO M43[1] 3, 4	NO COMPACTION RE□UIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SI□E DISTRIBUTION BETWEEN 3□4-2 INCH (20-50 mm)	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2 3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR □4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION RE□UIREMENTS ARE MET FOR □A□LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION E□UIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION RE□UIREMENTS.



NOTES:

1. MC-3500 CHAMBERS SHALL CONFORM TO THE RE□UIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION RE□UIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
5. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
6. PERIMETER STONE MUST BE EXTENDED HORI□ONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
7. ONCE LAYER □C□IS PLACED, ANY SOIL□MATERIAL CAN BE PLACED IN LAYER □D□UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL RE□UIREMENTS OF LAYER □C□ OR □D□AT THE SITE DESIGN ENGINEER□S DISCRETION.

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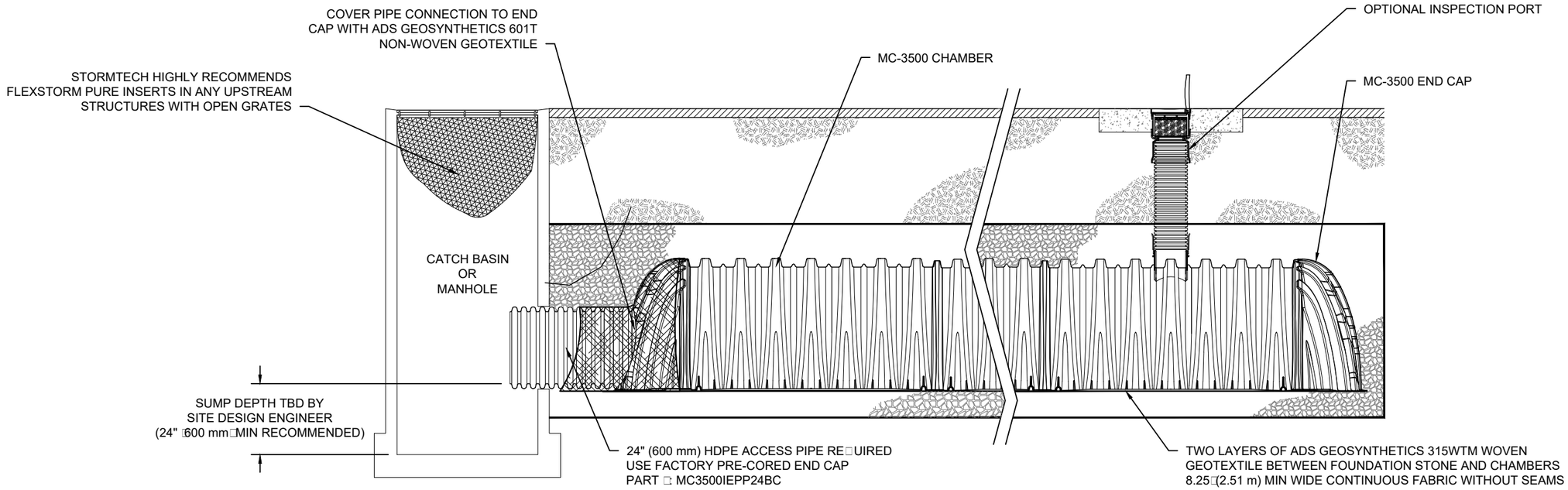


MC-3500 ISOLATOR ROW DETAIL

NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

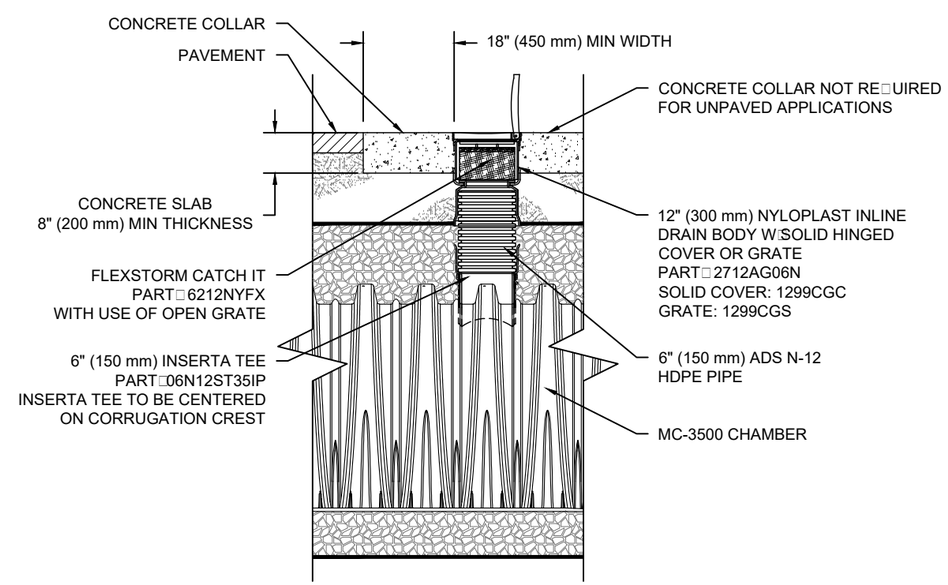
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



MC-3500 6" INSPECTION PORT DETAIL

NTS

18041
Peterborough, Ontario

DATE: 08/26/2019 DRAWN: BP
PROJECT # Tool CHECKED: ---

REV	DRW	CHK	DESCRIPTION

StormTech® Detention•Retention•Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

ADS® ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
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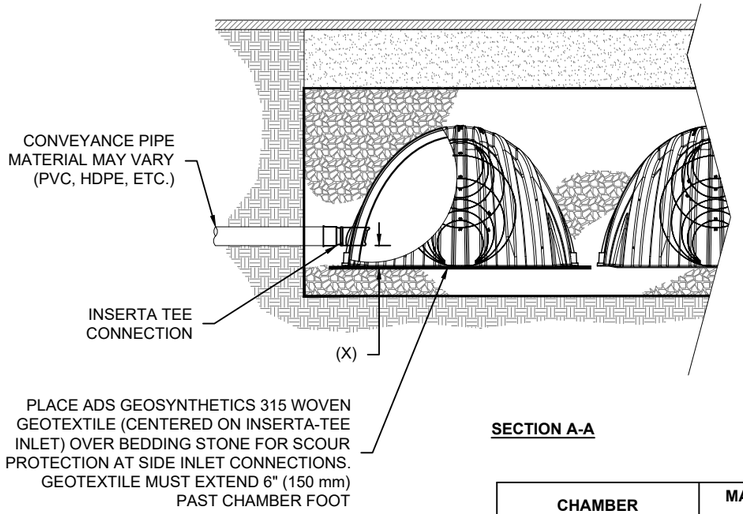
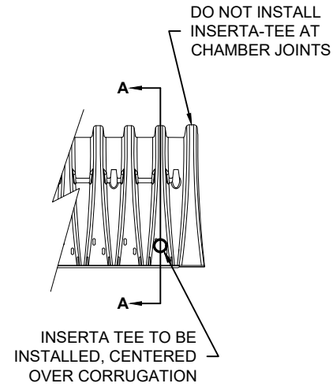
INSERTA TEE DETAIL

NTS



SECTION A-A



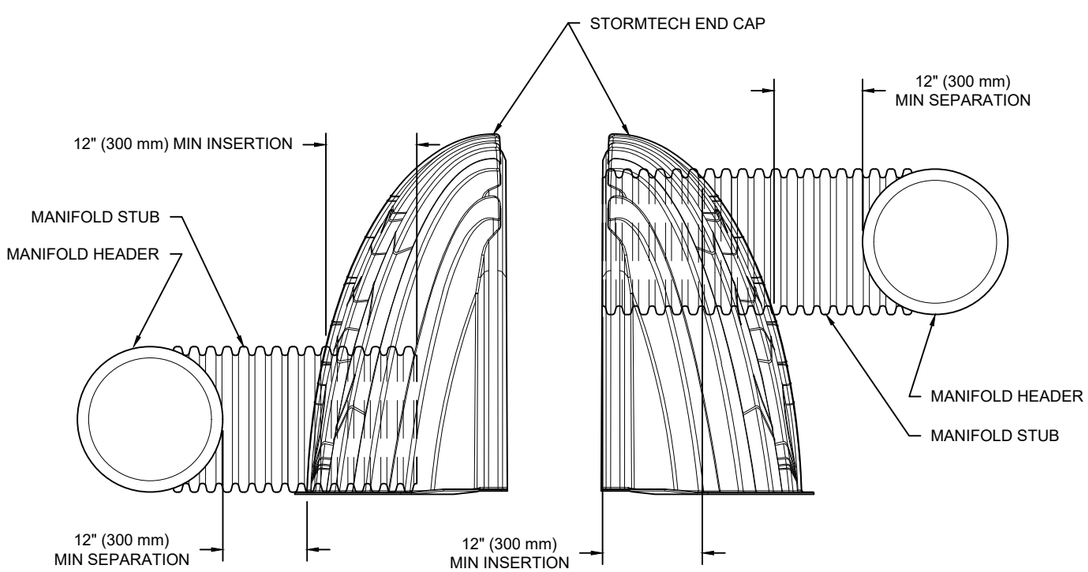
SIDE VIEW

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS.
CONTACT STORMTECH FOR MORE INFORMATION.

MC-SERIES END CAP INSERTION DETAIL

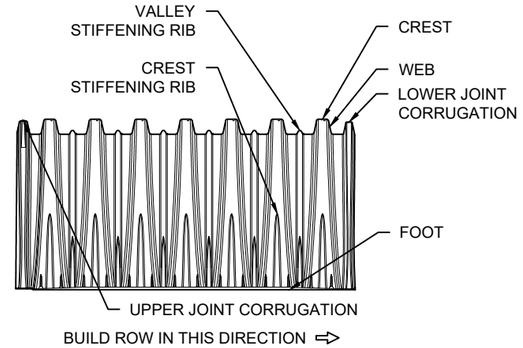
NTS

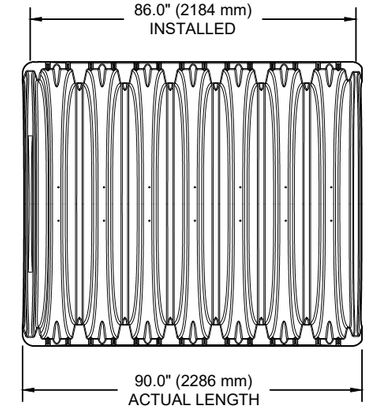


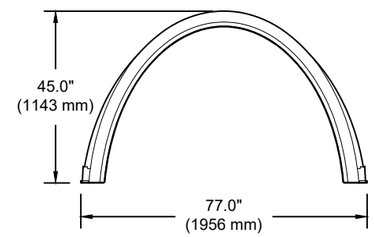
NOTE: MANIFOLD STUB MUST BE LAID HORI□ONTAL
FOR A PROPER FIT IN END CAP OPENING.

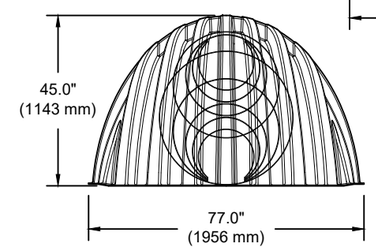
MC-3500 TECHNICAL SPECIFICATION

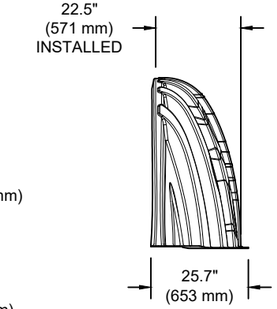
NTS











NOMINAL CHAMBER SPECIFICATIONS

SI□E (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE□	178.9 CUBIC FEET	(5.06 m³)
WEIGHT	135.0 lbs.	(61.2 □g)

NOMINAL END CAP SPECIFICATIONS

SI□E (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 22.5"	(1956 mm X 1143 mm X 571 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE□	46.0 CUBIC FEET	(1.30 m³)
WEIGHT	50.0 lbs.	(22.7 □g)

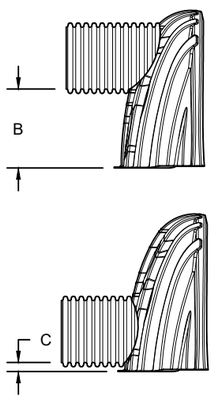
□ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40□ STONE POROSITY

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP30BC	30" (750 mm)	---	

NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PRECORED INVERTS ARE AVAILABLE UPON RE□UEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SI□E ON SI□E AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS.
CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SI□ES GREATER THAN 10" (250 mm)
THE INVERT LOCATION IN COLUMN □B□ARE THE HIGHTEST POSSIBLE FOR THE PIPE SI□E.



18041
Peterborough, Ontario

DATE: 08/26/2019 | DRAWN: BP
PROJECT □: Tool | CHECKED: ---

REV	DRW	CHK	DESCRIPTION

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Brief Stormceptor Sizing Report - East Village Future High Density

Project Information & Location			
Project Name	East Village Future High Density	**Project Number**	18041
City	Cobourg	**State/ Province**	Ontario
Country	Canada	**Date**	7/23/2019
Designer Information		**EOR Information (optional)**	
Name	Brad Parsons	**Name**	
Company	Engage Engineering	**Company**	
Phone #	705-744-0427	**Phone #**	
Email	brad@engageeng.ca	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	
Target TSS Removal (%)	80
TSS Removal (%) Provided	80
Recommended Stormceptor Model	STC 3000

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary		
Stormceptor Model	**% TSS Removal Provided**	**% Runoff Volume Captured Provided**
STC 300	61	71
STC 750	73	86
STC 1000	74	86
STC 1500	75	86
STC 2000	78	93
STC 3000	80	93
STC 4000	83	97
STC 5000	84	97
STC 6000	86	99
STC 9000	90	100
STC 10000	90	100
STC 14000	92	100
StormceptorMAX	Custom	Custom

Stormceptor®

FORTERRA

Sizing Details

Drainage Area	
Total Area (ha)	1.22
Imperviousness %	76.23

Rainfall	
Station Name	PETERBOROUGH A
State/Province	Ontario
Station ID #	6418
Years of Records	32
Latitude	44°14'N
Longitude	78°22'W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	90.00
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	
Water Quality Flow Rate (L/s)	

Up Stream Storage	
Storage (ha-m)	Discharge (cms)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cms)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

Appendix F: Overflow Weir Calculations

Emergency Overflow Weir - SWM Inlet

Project Name:	East Village Subdivision	**Designed By:**	BP
Project No:	18041	**Date:**	2019-06-15

Weir Parameters					
Type:[1]	Broad Crested Rectangular		Weir Invert:	87.9	m
Peak Flow:	1.754	m^3/s	Weir Height:	0.31	m
			Width:	6	m

Stage Discharge

Elevation (m)	Weir Flow (m^3/s)
87.90	0.000
87.93	0.040
87.95	0.114
87.98	0.210
88.00	0.324
88.03	0.452
88.05	0.594
88.08	0.749
88.10	0.915
88.13	1.092
88.15	1.279
88.18	1.475
88.20	1.681
88.23	1.895

Weir Overflow Results

Pond Elevation at Peak Flow:	88.209	m
Freeboard:	0.001	m
Velocity:	0.947	m/s

Notes:

1. Flows over rectangular broad crested weir calculated based on weir equations in MTO Drainage Manual Chapter 8, Section Flow Over Weirs and Notches.

Emergency Overflow Weir - SWM Outlet

ENGAGE ENGINEERING

Project Name:	East Village Subdivision	**Designed By:**	BP
Project No:	18041	**Date:**	2019-06-15

Weir Parameters					
Type:[1]	Broad Crested Rectangular		Weir Invert:	87.7	m
Peak Flow:	1.754	m^3/s	Weir Height:	0.2	m
			Width:	12	m

Stage Discharge

Elevation (m)	Weir Flow (m^3/s)
87.70	0.000
87.73	0.081
87.75	0.229
87.78	0.420
87.80	0.647
87.83	0.904
87.85	1.189
87.88	1.498
87.90	1.830

Weir Overflow Results

Pond Elevation at Peak Flow:	87.894	m
Freeboard:	0.006	m
Velocity:	0.752	m/s

Notes:

1. Flows over rectangular broad crested weir calculated based on weir equations in MTO Drainage Manual Chapter 8, Section Flow Over Weirs and Notches.

Emergency Weir - Drainage Channel

Project Name:	East Village Subdivision	**Designed By:**	BP
Project No:	18041	**Date:**	2019-06-15

Weir Parameters					
Type:[1]	Broad Crested Rectangular		Weir Invert:	87.68	m
Peak Flow:	2.548	m^3/s	Weir Height:	0.3	m
			Width:	9.5	m

5

Elevation (m)	Weir Flow (m^3/s)
87.68	0.000
87.71	0.064
87.73	0.181
87.76	0.333
87.78	0.512
87.81	0.716
87.83	0.941
87.86	1.186
87.88	1.449
87.91	1.729
87.93	2.025
87.96	2.336
87.98	2.662

Weir Overflow Results		
Pond Elevation at Peak Flow:	87.971	m
Freeboard:	0.009	m
Velocity:	0.920	m/s

Notes:

1. Flows over rectangular broad crested weir calculated based on weir equations in MTO Drainage Manual Chapter 8, Section Flow Over Weirs and Notches.

Appendix G: Drawdown Time, Forebay and Water Quality Calculations

Water Quality Sizing Criteria

ENGAGE ENGINEERING

Project Name: East Village Phase 5 **Designed By:** BP
Project No: 18041 **Date:** 2019-07-09

Site Data			
Protection Level:		Enhanced	
Facility Type:		Wet Pond	
Area	=	9.13	ha
% Impervious Calculated	=	69.66	%
Impervious Area	=	6.36	ha
Required Extended Detention Volume (Ved)			
Ved	=	40	m^3/ha
	=	365	m^3
Ved_{25mm}	=	1045	m^3
Required Storage Volume (Vs)			
Vs	=	224	m^3/ha
	=	2047	m^3
Required Permanent Pool Volume (Vpp)			
Vpp	=	184	m^3/ha
	=	1682	m^3
Pernanent Pool Volume Provided	=	1682	m^3
Final Volumes			
Quantity Control Volume Required	=	2433.0	m^3
Quantity Control Volume Provided	=	3124.0	m^3
Total Pond Volume Required	=	4115	m^3
Total Pond Volume Provided	=	4806	m^3

Notes:

Table 3.2: Water Quality Storage Requirements based on Receiving Waters (MOE SWMPD Manual)

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level				
		0%	35%	55%	70%	85%
Enhanced 80% long-term S.S. removal	Infiltration	16.25	25	30	35	40
	Wetlands	36.25	80	105	120	140
	Hybrid Wet Pond/Wetland	40	110	150	175	195
	Wet Pond	52.5	140	190	225	250
Normal 70% long-term S.S. removal	Infiltration	20	20	20	25	30
	Wetlands	42.5	60	70	80	90
	Hybrid Wet Pond/Wetland	48.75	75	90	105	120
	Wet Pond	55	90	110	130	150
Basic 60% long-term S.S. removal	Infiltration	20	20	20	20	20
	Wetlands	60	60	60	60	60
	Hybrid Wet Pond/Wetland	42.5	60	70	75	80
	Wet Pond	33.75	60	75	85	95
	Dry Pond (Continuous Flow)	0	90	150	200	240

Drawdown Time Calculations Design Sheet

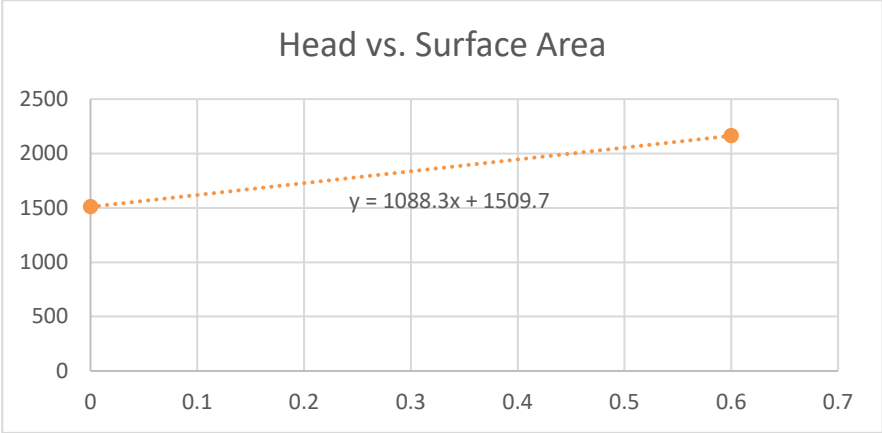
Project Name:	East Village Phase 5	**Designed By:**	BP
Project No:	18041	**Date:**	2018-11-15

Design Criteria			**Design Storms**	
Quality Volume:[1]	40	m^3/ha	Volume:	Chicago 25
Disturbed Area:	9.13	ha	Conveyance:	100-Year
Volume Required:	365	m^3		

Peak Flow Calculations		
Chicago 25 mm:	0.623	m^3/s
100-Year:	1.754	m^3/s

Storage Volume					
Req'd Quality Volume:	365	m^3	Active Storage Bottom:	85.70	m
Req'd Volume (Chicago 25 mm):	1045	m^3	Top of Active Storage:	86.30	m
Volume Provided:	1083	m^3	Top of Pond:	87.90	m

Drawdown Time Calculation



Outlet Configuration		
Outlet Type:	Orifice	
Diameter:	110	mm
Invert:	85.70	mm
Peak Dischage:[3]	0.019	m^3/s

Drawdown Time[2]

$t = (0.66C_1h^{1.5} + 2C_2h^{0.5})/2.75A$

where

C_1 =	1088	slope coefficient (from regression)
C_2 =	1510	intercept (from regression)
h =	0.600	maximum water elevation (m)
A =	0.010	cross sect. area orifice (m^2)
t =	102266.5	seconds
=	**28**	**hours**

Notes:

1. From ESC Design Guidelines for Urban Construction, GGHCA
2. From MOE SWMPDM Section 4.6.
3. Orifice plate discharge calculated according to Q=0.61A(2gh)1/2

Forebay Calculations

Project Name: East Village

Designed By BP

Project No.: 18041

Date: Sep-18

Forebay Requirements Phase 2

Settling Length

(MOE SWMPDM Section 4.5)

D =	(rQ/V)^0.5	(settling length)
r =	4	(length to width ratio)
Q =	0.019	(peak outlfow)
V =	0.0003	(desired velocity in forebay)
Req'd D =	**15.9**	**m**
Forebay Length Provided:	**28.00**	

Min Forebay Width =	Dist/8
Dist =	15.9
Width =	1.99
Provided Forebay Width =	**5.00**

Dispersion Length

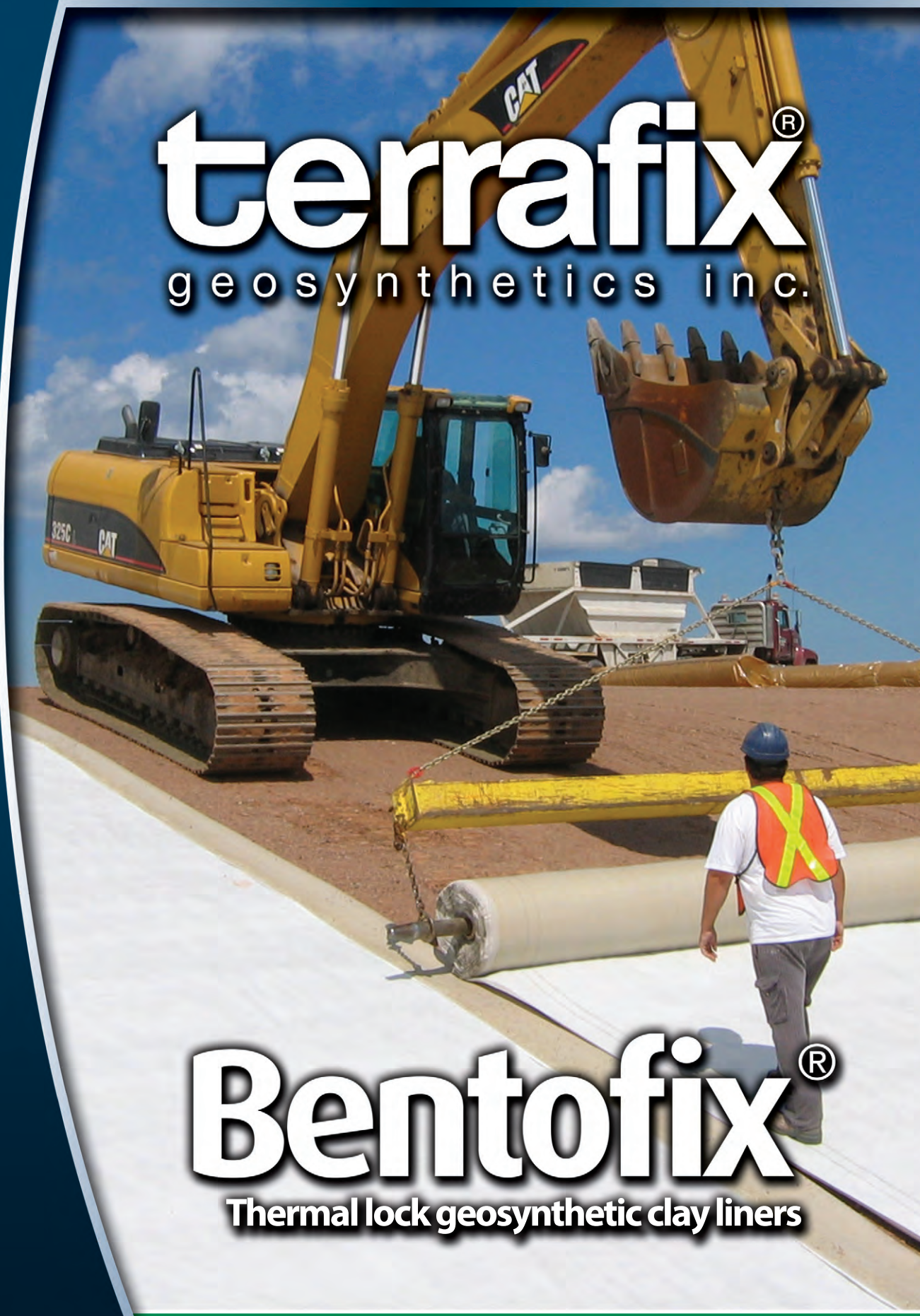
(MOE SWMPDM Section 4.6)

D =	8Q/dV	(dispersion length)
Q =	0.623	(peak inflow from VHYMO)
d =	1.95	(permanent pool depth)
V =	0.5	(desired velocity in forebay)
Req'd D =	**5.1**	**m**

Notes:

1. From MOE SWMPDM Section 4.5-4.7.

Canada's leader of complete geosynthetic solutions



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To view our complete product line visit us at www.terrafixgeo.com

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Bentofix® Thermal Lock Geosynthetic Clay Liners (GCLs) are needle-punched reinforced composites which combine two durable geotextile outer layers with a uniform core of natural sodium bentonite clay to form a hydraulic barrier.

The sodium bentonite clay utilized in Bentofix® Thermal Lock GCL is a naturally occurring clay mineral that swells as water enters between its clay platelets. When hydrated under confinement, the bentonite swells to form a low permeability clay layer with the equivalent hydraulic protection of several feet of compacted clay.

Bentofix® GCLs are produced by distributing a uniform layer of the sodium bentonite between two geotextiles. Fibers from the non-woven geotextile are then needle-punched through the layer of bentonite and incorporated into the other geotextile (either a woven or a non-woven). This process results in a strong mechanical bond between the fabrics. A proprietary heat treating process - the Thermal Lock process - is then used to modify and more permanently lock the needle-punched fibres into place. Properties include increased internal shear resistance and long term creep resistance.

Superior GCL Performance

Since the late 1980s, GCLs have been specified and used by design engineers, contractors, agencies, and owners as an alternative to soil barriers in various applications.

The growing interest in these products stems from the unique properties and advantages they offer. They are very effective as a hydraulic barrier even under high gradient conditions; they are easy to install; more robust against installation stresses and can withstand elongation as well as settlement stresses without significant impact on hydraulic performance.

The wide range of GCL uses include landfill caps and base liner applications, dams, canals, ponds, rivers and lakes, and even waterproofing of buildings and similar structures. Numerous laboratory studies have shown the excellent performance capable with natural sodium bentonite GCLs.

Multi-Functional

By needle-punching fibres through the sodium bentonite clay layer, a completely uniform, reinforced GCL is produced - with shear strength and stability advantages important to any application, such as:

- Golf course ponds.
- Stormwater management ponds.
- Recreational ponds.
- Landfill cap closures / base liner.
- Dams/dikes.
- Vertical trench cutoff Barrier.
- Groundwater protection cover.
- Environmental protection barrier under roads and railways.
- Secondary containment for above ground tanks.

nal Lock Clay Liners

Efficient

Bentofix® Thermal Lock GCLs represent a cost effective solution, which is both simple and economical. To install, a core bar is inserted through the core, and the roll is suspended from a spreader bar. Ease of installation using a spreader bar allows the contractor to roll out the Bentofix® rolls with a minimal amount of labour. Please contact our technical team for detailed installation recommendations.

One truckload of GCL can carry over 6,000 m^2 compared to a truckload of native clay which will only cover an area of 40 m^2 (based on a 50 cm compacted clay layer).

Conclusion

Simple, cost-effective installation techniques make Bentofix® Thermal Lock GCL a practical alternative to a compacted clay liner or other lining systems. GCLs do not require an experienced installation contractor and can be installed by a local general contractor. Site supervision is offered by either your local geosynthetic representative and/or provided by our technical staff.

Bentofix®

Thermal Lock Clay Liners

- The industry's only Thermal Lock Geosynthetic Clay Liner
- The industry's only Scrim-Reinforced Geosynthetic Clay Liner
- The only Canadian made Geosynthetic Clay Liner
- Now available as a geomembrane

Features and Benefits

As a replacement for thick clay liners or as a replacement to geomembranes, whether as part of a composite liner or as a stand-alone liner, GCLs offer several advantages:

- Installation is relatively simple, requiring unrolling and lapping of adjacent panels, as opposed to the placement, compaction, and detailed testing of multiple lifts of clay materials comprising a clay liner.
- Due to the significantly reduced thickness, GCL's either require less excavation to develop a given containment volume, or consume a significantly reduced portion of the available containment volume.
- No welding or seaming required.
- Due to the simplified installation process, it is possible to place the covering layer immediately upon placement of the GCL, whereas multi-lift clay layers could take several days or weeks to install, during which time the liner is susceptible to the elements, especially precipitation and freezing temperatures, which can usually lead to considerable rework or repair.
- No additional protective layers such as additional textiles are required for GCLs due to its self healing characteristics, whereas other geomembranes will require protective layers such as thick textiles to avoid punctures.

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Thermal lock geosynthetic clay liners. Made in Canada

terrafix® geosynthetics inc.

455 Horner Avenue
Toronto, Ontario • M8W 4W9

Telephone (416) 674-0363
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Sept 2010 • 1446

Appendix H: Roadway Overland Flow and Swale Capacity Calculations

Channel Design Sheet

ENGAGE ENGINEERING

Project Name: East Village Phase 5
Project No: 18041

Designed By: BP
Date: 2018-07-25

Location	Contributing Area and Flow		Channel Properties						Hydraulics					
Channel Description	Description	Flow (m3/s)	Bed Slope	Side Slope (X:1)	Bottom Width	Depth	Lining Material	Mannings n	Channel Capacity	% Capacity	Cross Sectional Area	Wetted Perimter	Flow Depth	Velocity
Conveyance Swale - Critical Section		2.572	0.008	3.000	0.5	1.00	Grass	0.03	6.69	38%	3.500	6.82	0.68	1.50
Conveyance Swale - Average Section		2.572	0.01	3.000	0.5	1.00	Grass	0.03	7.48	34%	3.500	6.82	0.65	1.63

Notes:

1. Flow through swale calculated as per Flow through Railway Culvert from Pxt11/EXT6 (2.086m^3/s) + Hurricane Hazel Flows from PR6 (0.036m^3/s) + PR9 (0.037m^3/s) + PR10(0.02m^3/s) + Pxt12/EXT7 (0.341m^3/s) + PXT13/EXT3 (0.052m3/s).

Roadway Overland Flow Capacity

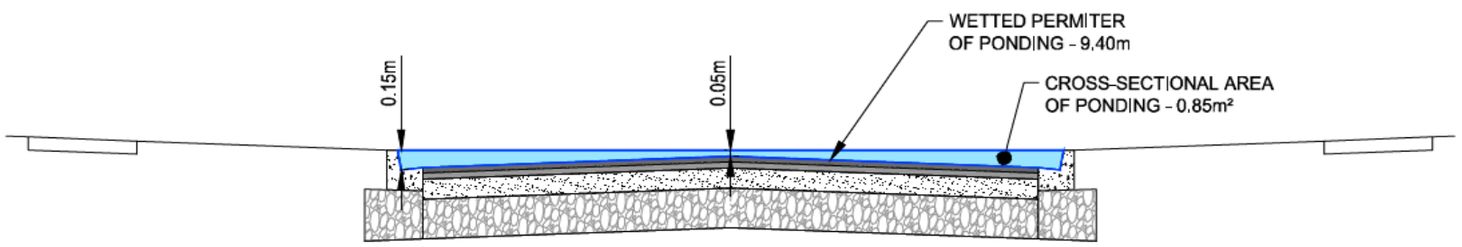
Project Name: East Village Phase 5
Project No: 18041

Designed By: BP
Date: 2019-04-15

Location	Contributing Area and Flow		Channel Properties						Hydraulics					
Channel Description	Description	Flow (m3/s) [2]	Bed Slope	Side Slope (X:1)	Bottom Width	Depth	Lining Material	Mannings n	Channel Capacity	% Capacity	Cross Sectional Area [1]	Wetted Perimter [1]	Flow Depth	Velocity
Roadway Overland Flow	PR1	0.809	0.005	50.000	0.0	0.15	Grass	0.013	0.93	87%	0.850	9.40	0.13	0.90

Notes:

1. Cross Sectional Area and Wetted Perimeter taken from cross section of roadway as per Detail 1 below.
2. Flow calculated as per Section 7.5 of the GRCA Technical and Engineering Guidelines for SWM Submissions. $Q_{overland} = Q_{100}-Q_5 = 1.754 - 0.945 = 0.809m^3/s$



1 OVERLAND FLOW - ROADWAY SECTION

SCALE: N.T.S.

Appendix I: Culvert Sizing Calculations

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Dec 4 2019

Circular Culvert

Invert Elev Dn (m)	=	88.1600
Pipe Length (m)	=	9.2000
Slope (%)	=	1.6999
Invert Elev Up (m)	=	88.3164
Rise (mm)	=	900.0
Shape	=	Circular
Span (mm)	=	900.0
No. Barrels	=	1
n-Value	=	0.024
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Projecting
Coeff. K,M,c,Y,k	=	0.034, 1.5, 0.0553, 0.54, 0.9

Embankment

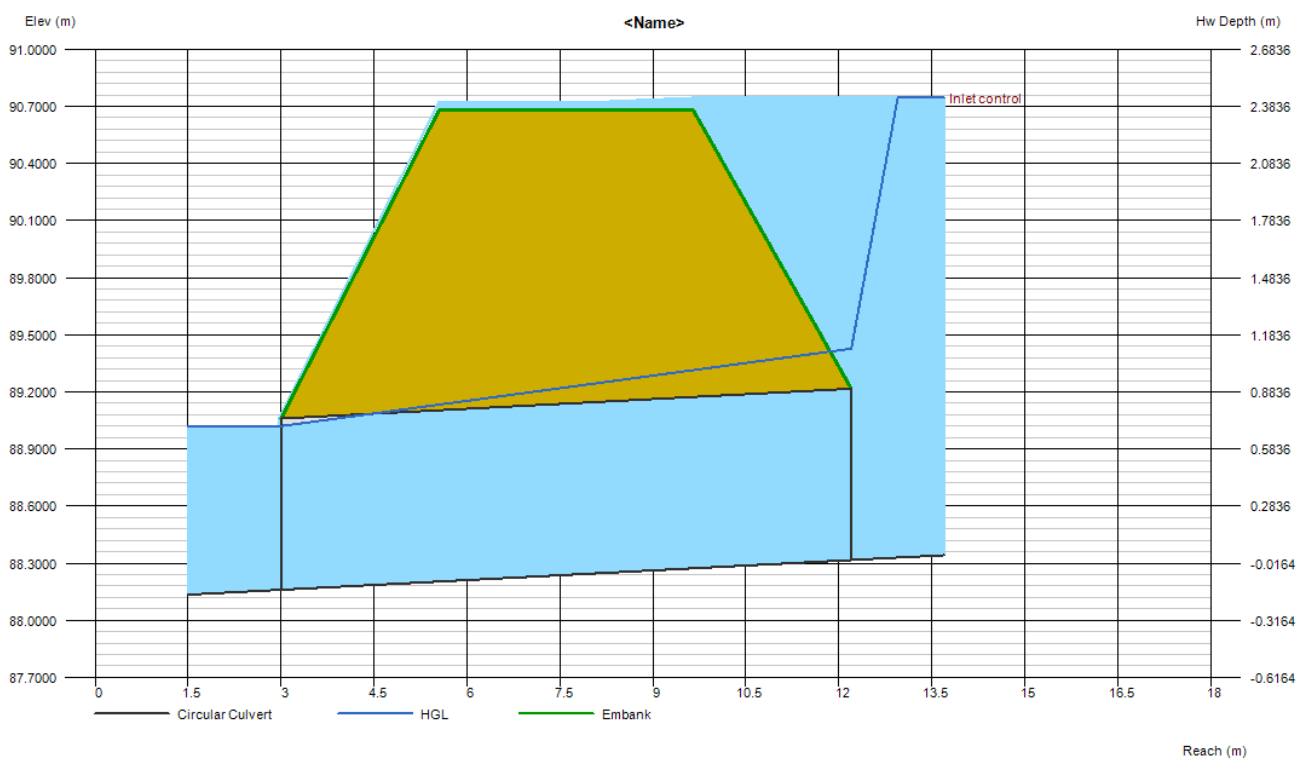
Top Elevation (m)	=	90.6800
Top Width (m)	=	4.1000
Crest Width (m)	=	100.0000

Calculations

Qmin (cms)	=	5.1000
Qmax (cms)	=	5.1000
Tailwater Elev (m)	=	(dc+D)/2

Highlighted

Qtotal (cms)	=	5.1000
Qpipe (cms)	=	2.0858
Qovertop (cms)	=	3.0142
Veloc Dn (m/s)	=	3.3302
Veloc Up (m/s)	=	3.2786
HGL Dn (m)	=	89.0204
HGL Up (m)	=	89.4267
Hw Elev (m)	=	90.7450
Hw/D (m)	=	2.6984
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Dec 11 2019

Concrete Berm Culvert

Invert Elev Dn (m)	=	87.8500
Pipe Length (m)	=	21.5000
Slope (%)	=	0.6503
Invert Elev Up (m)	=	87.9898
Rise (mm)	=	900.0
Shape	=	Circular
Span (mm)	=	900.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

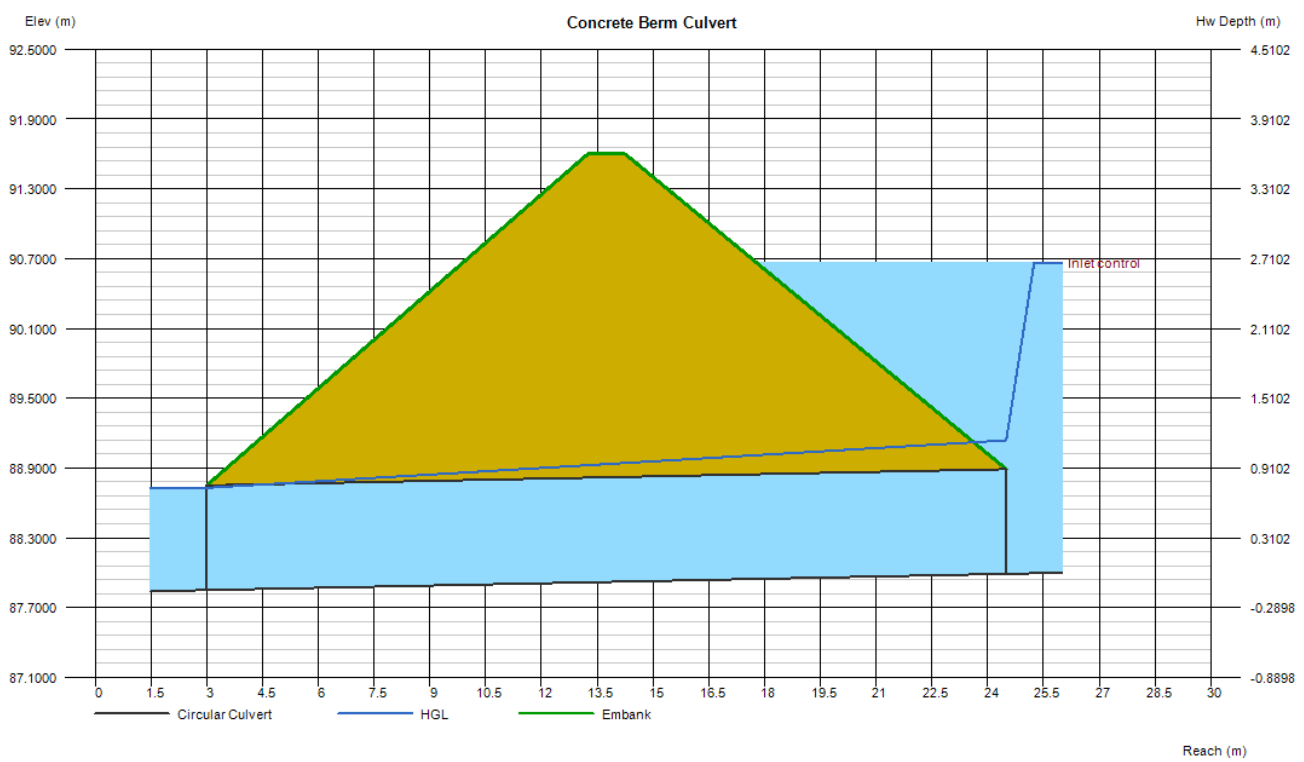
Top Elevation (m)	=	91.6000
Top Width (m)	=	1.0000
Crest Width (m)	=	30.0000

Calculations

Qmin (cms)	=	2.5360
Qmax (cms)	=	2.5360
Tailwater Elev (m)	=	(dc+D)/2

Highlighted

Qtotal (cms)	=	2.5360
Qpipe (cms)	=	2.5360
Qovertop (cms)	=	0.0000
Veloc Dn (m/s)	=	4.0096
Veloc Up (m/s)	=	3.9863
HGL Dn (m)	=	88.7295
HGL Up (m)	=	89.1378
Hw Elev (m)	=	90.6649
Hw/D (m)	=	2.9723
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Dec 11 2019

Mahony Street - Concrete Culverts

Invert Elev Dn (m)	=	86.7000
Pipe Length (m)	=	30.0000
Slope (%)	=	0.5000
Invert Elev Up (m)	=	86.8500
Rise (mm)	=	750.0
Shape	=	Circular
Span (mm)	=	750.0
No. Barrels	=	2
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

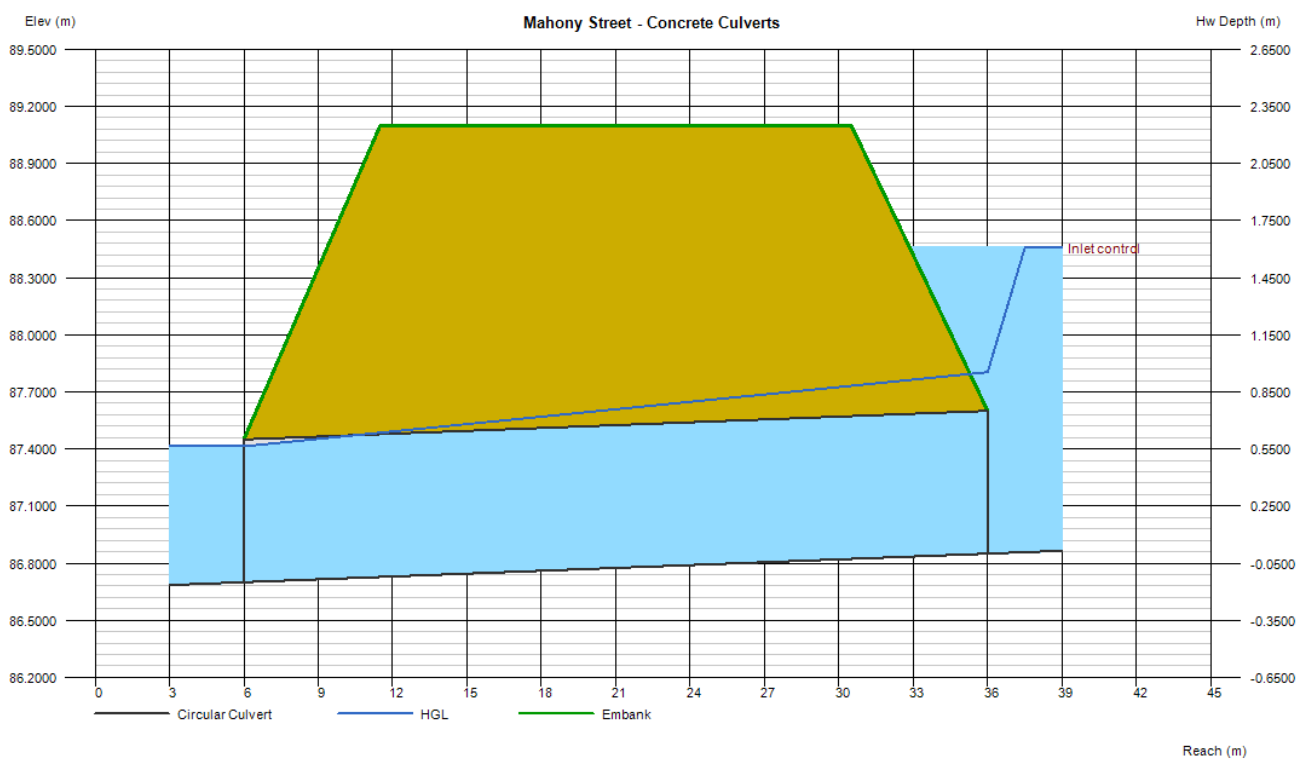
Top Elevation (m)	=	89.1000
Top Width (m)	=	19.0000
Crest Width (m)	=	25.0000

Calculations

Qmin (cms)	=	2.5720
Qmax (cms)	=	2.5720
Tailwater Elev (m)	=	(dc+D)/2

Highlighted

Qtotal (cms)	=	2.5720
Qpipe (cms)	=	2.5720
Qovertop (cms)	=	0.0000
Veloc Dn (m/s)	=	2.9629
Veloc Up (m/s)	=	2.9109
HGL Dn (m)	=	87.4140
HGL Up (m)	=	87.8034
Hw Elev (m)	=	88.4571
Hw/D (m)	=	2.1427
Flow Regime	=	Inlet Control



Appendix J: Storm Sewer Design Sheet

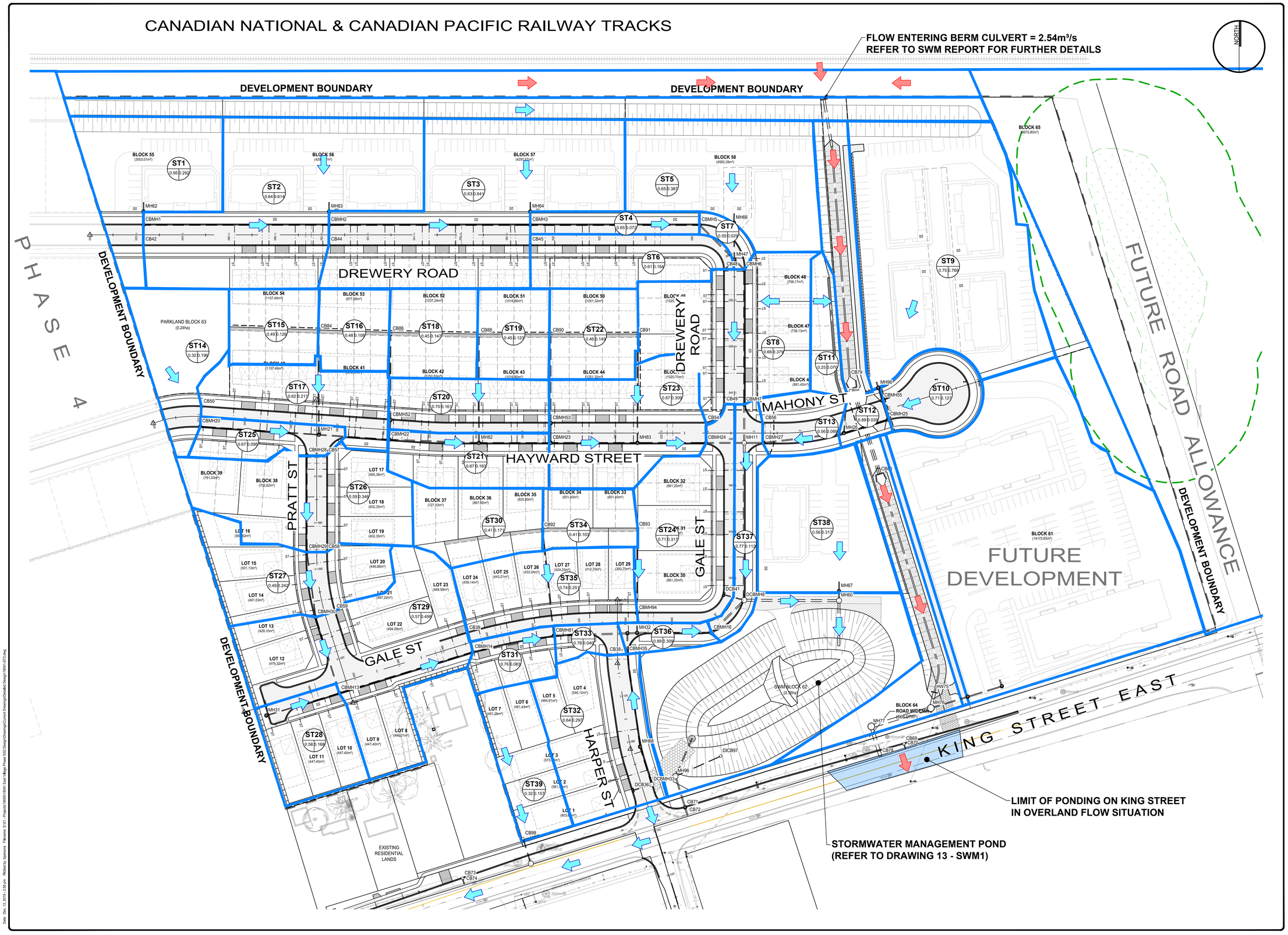
STORM SEWER DESIGN SHEET

Project Name: East Village Phase 5
Project Number: 18041
Designed By: BS

Design Storm: 5 Year
Rain Station: Cobourg
Initial ToC: 15

Location			Hydrologic Parameters						Peak Flow			Pipe Properties					Hydraulics			
Location/Description	From Structure	To Structure	Area (ha)	Runoff Coefficient	A * C	Cumulative AC	Time of Concentration (minutes)	Intensity (mm/hr)*	Extraneous Flow (m3/s)	Cumulative Extraneous Flow (m3/s)	Flow (m3/s)	Pipe Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Pipe Material	Roughness Coefficient	Full Velocity in Sewer (m/s)	Pipe Capacity (m3/s)	% Capacity	Actual Velocity in Sewer (m/s)
ST1	CBMH1	CBMH2	0.292	0.56	0.16	0.16	15.00	79.5	0.00	0.00	**0.036**	300	0.56	80.1	PVC	0.013	1.02	0.072	50.0%	1.02
ST2	CBMH2	CBMH3	0.614	0.64	0.39	0.56	16.30	76.3	0.00	0.00	**0.118**	450	0.60	86.9	Concrete	0.013	1.39	0.221	53.4%	1.41
ST3	CBMH3	CBMH5	0.641	0.63	0.40	0.96	17.35	73.9	0.00	0.00	**0.197**	525	0.70	73.1	Concrete	0.013	1.66	0.360	54.8%	1.70
ST4	CBMH5	MH47	0.072	0.65	0.05	1.01	18.08	72.3	0.00	0.00	**0.202**	450	1.00	21.2	Concrete	0.013	1.79	0.285	71.0%	1.94
ST5+ST6	MH47	CBMH6	0.570	0.63	0.36	1.37	18.28	71.9	0.00	0.00	**0.273**	450	2.02	6.0	Concrete	0.013	2.55	0.405	67.4%	2.73
ST7	CBMH6	CBMH7	0.029	0.59	0.02	1.38	18.32	71.8	0.00	0.00	**0.276**	525	0.69	58.4	Concrete	0.013	1.65	0.357	77.3%	1.82
ST8	CBMH7	MH11	0.379	0.66	0.25	1.63	18.91	70.6	0.00	0.00	**0.321**	525	2.61	16.5	Concrete	0.013	3.21	0.695	46.1%	3.14
ST9	CBMH55	CBMH25	0.769	0.75	0.58	0.58	15.00	79.5	0.00	0.00	**0.127**	450	1.00	8.5	Concrete	0.013	1.79	0.285	44.7%	1.74
ST10	CBMH25	CBMH26	0.127	0.71	0.09	0.67	15.08	79.3	0.00	0.00	**0.147**	450	0.50	21.6	Concrete	0.013	1.27	0.202	72.9%	1.38
ST11	CB95	CBMH26	0.070	0.25	0.02	0.02	15.00	79.5	0.00	0.00	**0.004**	300	2.88	15.8	PVC	0.013	2.32	0.164	2.3%	0.96
ST12	CBMH26	CBMH27	0.039	0.89	0.03	0.72	15.11	79.2	0.00	0.00	**0.158**	450	0.59	35.1	Concrete	0.013	1.38	0.219	72.3%	1.50
ST13	CBMH27	MH11	0.089	0.56	0.05	0.77	15.54	78.1	0.00	0.00	**0.167**	450	1.50	8.2	Concrete	0.013	2.20	0.349	47.8%	2.17
ST14	CBMH20	MH21	0.196	0.32	0.06	0.06	15.00	79.5	0.00	0.00	**0.014**	300	0.97	51.3	PVC	0.013	1.35	0.095	14.5%	0.96
ST15	CB84	MH21	0.126	0.49	0.06	0.06	15.00	79.5	0.00	0.00	**0.014**	300	1.92	44.5	PVC	0.013	1.90	0.134	10.2%	1.22
	MH21	CBMH22	0.000	0.00	0.00	0.12	15.63	77.9	0.00	0.00	**0.027**	375	0.89	30.5	PVC	0.013	1.50	0.165	16.3%	1.10
ST16	CB86	CBMH52	0.108	0.48	0.05	0.05	15.00	79.5	0.00	0.00	**0.011**	300	1.37	37.2	PVC	0.013	1.60	0.113	10.1%	1.02
	CBMH52	CBMH22	0.000	0.00	0.00	0.05	15.39	78.5	0.00	0.00	**0.011**	300	2.00	8.5	PVC	0.013	1.93	0.137	8.3%	1.16
ST17	CBMH22	MH82	0.217	0.62	0.13	0.31	15.97	77.1	0.00	0.00	**0.067**	375	0.55	38.7	PVC	0.013	1.18	0.130	51.2%	1.18
ST18	CB88	MH82	0.147	0.45	0.07	0.07	15.00	79.5	0.00	0.00	**0.015**	300	1.65	46.3	PVC	0.013	1.76	0.124	11.8%	1.17
	MH82	CBMH23	0.000	0.00	0.00	0.38	16.52	75.8	0.00	0.00	**0.079**	375	0.86	31.0	PVC	0.013	1.47	0.163	48.8%	1.46
ST19	CB90	CBMH53	0.123	0.45	0.06	0.06	15.00	79.5	0.00	0.00	**0.012**	300	1.38	37.8	PVC	0.013	1.61	0.114	10.8%	1.05
ST20	CBMH53	CBMH23	0.161	0.70	0.11	0.17	15.39	78.5	0.00	0.00	**0.037**	300	2.00	8.5	PVC	0.013	1.93	0.137	26.8%	1.64
ST21	CBMH23	MH83	0.163	0.67	0.11	0.65	16.87	75.0	0.00	0.00	**0.136**	450	0.49	37.5	Concrete	0.013	1.26	0.200	68.3%	1.35
ST22	CB91	MH83	0.149	0.46	0.07	0.07	15.00	79.5	0.00	0.00	**0.015**	300	1.29	46.3	PVC	0.013	1.55	0.110	13.8%	1.09
	MH83	CBMH24	0.000	0.00	0.00	0.72	17.37	73.8	0.00	0.00	**0.148**	450	0.49	29.6	Concrete	0.013	1.26	0.200	74.3%	1.37
ST23	CBMH24	MH11	0.309	0.67	0.21	0.93	17.76	73.0	0.00	0.00	**0.189**	450	2.25	16.5	Concrete	0.013	2.69	0.428	44.1%	2.60
	MH11	DCBMH8	0.000	0.00	0.00	3.33	18.99	70.4	0.00	0.00	**0.652**	825	0.50	67.9	Concrete	0.013	1.90	1.015	64.3%	2.02
ST24	DCB41	DCBMH8	0.317	0.71	0.23	0.23	15.00	79.5	0.00	0.00	**0.050**	300	2.00	9.2	PVC	0.013	1.93	0.137	36.4%	1.78
ST25	CBMH28	CBMH29	0.095	0.67	0.06	0.06	15.00	79.5	0.00	0.00	**0.014**	300	0.63	41.7	PVC	0.013	1.09	0.077	18.4%	0.83
ST26	CBMH29	CBMH30	0.346	0.59	0.20	0.27	15.64	77.9	0.00	0.00	**0.058**	300	1.00	28.4	PVC	0.013	1.37	0.097	60.0%	1.43
ST27	CBMH30	CBMH13	0.242	0.49	0.12	0.39	15.99	77.0	0.00	0.00	**0.083**	375	0.50	34.3	PVC	0.013	1.12	0.124	66.7%	1.20
ST28	CBMH13	CBMH14	0.168	0.58	0.10	0.48	16.50	75.8	0.00	0.00	**0.102**	450	0.50	60.3	Concrete	0.013	1.27	0.202	50.6%	1.27
ST29	CBMH14	CBMH81	0.498	0.57	0.28	0.77	17.29	74.0	0.00	0.00	**0.158**	450	0.50	35.7	Concrete	0.013	1.27	0.202	78.4%	1.40
ST30	CB92	CBMH81	0.171	0.41	0.07	0.07	15.00	79.5	0.00	0.00	**0.015**	300	1.90	45.8	PVC	0.013	1.89	0.133	11.6%	1.26
ST31	CBMH81	MH32	0.083	0.76	0.06	0.90	17.76	73.0	0.00	0.00	**0.183**	525	0.49	31.8	Concrete	0.013	1.39	0.301	60.7%	1.46
ST32	DCBMH33	MH68	0.297	0.64	0.19	0.19	15.00	79.5	0.00	0.00	**0.042**	300	0.50	17.1	PVC	0.013	0.97	0.068	61.4%	1.02
	MH68	CBMH35	0.000	0.00	0.00	0.19	15.29	78.7	0.00	0.00	**0.042**	300	0.50	40.3	PVC	0.013	0.97	0.068	60.8%	1.01
ST33	CBMH35	MH32	0.040	0.78	0.03	0.22	15.99	77.0	0.00	0.00	**0.047**	375	0.50	9.0	PVC	0.013	1.12	0.124	38.2%	1.05
ST34	CB93	CBMH94	0.103	0.41	0.04	0.04	15.00	79.5	0.00	0.00	**0.009**	300	1.18	36.0	PVC	0.013	1.49	0.105	8.9%	0.91
ST35	CBMH94	MH32	0.251	0.74	0.19	0.23	15.40	78.5	0.00	0.00	**0.050**	300	2.00	8.6	PVC	0.013	1.93	0.137	36.4%	1.78
	MH32	CBMH16	0.000	0.00	0.00	1.35	18.14	72.2	0.00	0.00	**0.271**	600	0.50	32.2	Concrete	0.013	1.54	0.434	62.4%	1.62
ST36	CBMH16	DCBMH8	0.309	0.89	0.28	1.63	18.49	71.4	0.00	0.00	**0.323**	600	0.50	19.9	Concrete	0.013	1.54	0.434	74.4%	1.68
ST37	DCBMH8	MH60	0.112	0.77	0.09	5.27	19.59	69.2	0.00	0.00	**1.014**	900	0.60	40.9	Concrete	0.013	2.20	1.402	72.3%	2.40
ST38	MH60	POND	0.317	0.56	0.18	5.45	19.90	68.6	0.00	0.00	**1.039**	900	0.52	19.5	Concrete	0.013	2.05	1.306	79.6%	2.28
ST39	CB99	OUTLET	0.157	0.32	0.05	0.05	15.00	79.5	0.00	0.00	**0.011**	300	5.00	11.3	PVC	0.013	3.06	0.216	5.1%	1.60
Swale Outlet	HW75	MH76	0.000	0.00	0.00	0.00	15.00	79.5	2.57	0.00	**2.572**	1200	1.00	7.0	Concrete	0.013	3.45	3.899	66.0%	3.68
Swale Outlet	MH76	MH77	0.000	0.00	0.00	0.00	15.03	79.4	2.57	0.00	**2.572**	1350	0.40	26.9	Concrete	0.013	2.36	3.376	76.2%	2.60
Swale Outlet	MH77	OUTLET	0.000	0.00	0.00	0.00	15.22	78.9	2.57	0.00	**2.572**	1350	0.50	13.3	Concrete	0.013	2.64	3.775	68.1%	2.84

NOTE:
**The rainfall intesnsity was determined from Yarnell's 5-Year Storm Curve I = 2464/(t + 16)*



SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
   - TOWN OF COBOURG DESIGN STANDARDS
   - ONTARIO PROVINCIAL STANDARD DRAWINGS & SPECIFICATIONS
   - APPLICABLE CONTRACT DOCUMENTS AND ALL SPECIFICATIONS REFERENCED HEREIN.
2. THE CONTRACTOR SHALL CONSTRUCT ALL WORK IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT, HEALTH AND SAFETY REGULATIONS FOR CONSTRUCTION PROJECTS.
3. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL PERMITS OR THIRD PARTY WORKS ASSOCIATED WITH SERVICING CONNECTIONS.
4. THE CONTRACTOR SHALL TAKE EXTREME CARE WHEN WORKING IN PROXIMITY TO EXISTING SERVICES.
5. THE CONTRACTOR SHALL RESTORE OR REPLACE DAMAGED SERVICES TO EXISTING OR BETER CONDITION.
6. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION, OR PER THE ENGINEERING AND LANDSCAPE SPECIFICATIONS REFERENCED HEREIN.
7. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL, BOOK 7, TEMPORARY CONDITIONS.
8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-13
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

ENGAGE ENGINEERING
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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

STORM DRAINAGE AREA PLAN

COBOURG, ONTARIO

DRAWN BY: J.DUNN	STAMP:
DESIGNED BY: J.DUNN	
APPROVED BY: B.PARSONS	
DATE: 2019-07-31	
SCALE: 1:750	

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	ST1	23 of 27

18041-ST2
Date: Dec. 13, 2019 - 2:55 pm Plotted by: bjoparsons Filename: S:\01 - Projects\18000\18041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-ST2.dwg

Appendix K: Erosion Control Facility Sizing

Sediment Control Pond Drawdown Time Calculations

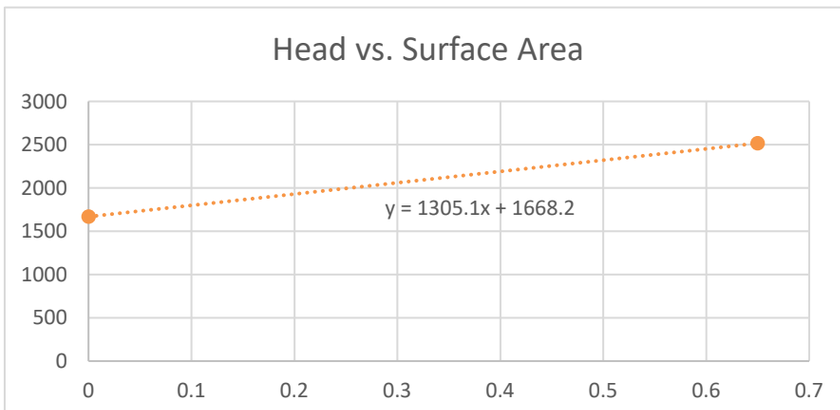
Project Name: East Village - Temporary E&S Control Pond
Project No: 18041
Designed By: BP
Date: 2019-07-17

Design Criteria			Design Storms	
Active Storage Volume:[1]	125	m^3/ha	Volume:	Chicago 25
Disturbed Area:	9.13	ha	Conveyance:	100-Year
Active Storage Volume Required:	1141	m^3		
Permanent Pool Storage Volume:[1]	185	m^3/ha		
Permanent Pool Volume Required:	1689	m^3		

Peak Flow Calculations		
Chicago 25 mm:	0.571	m^3/s
100-Year:	1.514	m^3/s

Storage Volume					
Req'd Active Storage Volume:	1141	m^3	Active Storage Bottom:	85.95	m
Req'd Volume (Chicago 25 mm):	1100	m^3	Top of Active Storage:	86.60	m
Active Storage Volume Provided:	1248	m^3	Top of Pond:	87.30	m
Permanent Pool Volume Provided:	1735	m^3			

Drawdown Time Calculation



Outlet Configuration		
Outlet Type:	Orifice	
Diameter:	90	mm
Invert:	85.95	mm
Peak Dischage:[3]	0.013	m^3/s

Drawdown Time[2]

$t = (0.66C_1h^{1.5} + 2C_2h^{0.5})/2.75A$

where

C_1 =	1305	slope coefficient (from regression)
C_2 =	1668	intercept (from regression)
h =	0.650	maximum water elevation (m)
A =	0.006	cross sect. area orifice (m^2)
t =	179537.8	seconds
=	**49.9**	**hours**

Notes:

1. From ESC Design Guidelines for Urban Construction, GGHCA
2. From MOE SWMPDM Section 4.6.
3. Orifice plate discharge calculated according to Q=0.61A(2gh)1/2

Temporary Erosion and Sediment Control Pond Stage Storage

Project Name: East Village Subdivision
Project No: 18041

Designed By BP
Date: 2019-07-09

Pond Outlet Configuration			
Description	Stage 1	Stage 2	Emergency Overflow
Control Type	Orifice Plate	Orifice	Broad Crested Weir
Orifice Diameter/Weir Height (m)	0.09	0.00	8.50
Invert Elevations (m)	85.95	0.00	87.50

Stage Storage Discharge

Description	Elevation[4] (m)	Storage (m^3)	Controlled Discharge Rate (m^3/s)			
			Orifice[1]	Orifice[1]	Emergency Spillway[3]	Total
Bottom of Active Storage	85.95	0.00	0.000	0.000	0	0.000
	86.00	84.56	0.001	0.000	0	0.001
	86.05	171.51	0.004	0.000	0	0.004
	86.10	215.58	0.006	0.000	0	0.006
	86.15	262.54	0.007	0.000	0	0.007
	86.20	358.11	0.008	0.000	0	0.008
	86.25	457.09	0.009	0.000	0	0.009
	86.30	559.53	0.009	0.000	0	0.009
	86.35	665.45	0.010	0.000	0	0.010
	86.40	774.89	0.011	0.000	0	0.011
	86.45	887.90	0.012	0.000	0	0.012
	86.50	1004.51	0.012	0.000	0	0.012
	86.55	1124.76	0.013	0.000	0	0.013
Top of Active Storage	86.60	1248.69	0.013	0.000	0	0.013
	86.65	1376.34	0.014	0.000	0	0.014
	86.70	1507.74	0.014	0.000	0	0.014
	86.75	1642.94	0.015	0.000	0	0.015
	86.80	1781.97	0.015	0.000	0	0.015
	86.85	1924.86	0.016	0.000	0	0.016
	86.90	2071.67	0.016	0.000	0	0.016
	86.95	2222.42	0.017	0.000	0	0.017
	87.00	2377.16	0.017	0.000	0	0.017
Overflow Weir	87.05	2535.92	0.018	0.000	0	0.018
	87.10	2698.74	0.018	0.000	0	0.018
	87.15	2865.67	0.018	0.000	0	0.018
	87.20	3036.73	0.019	0.000	0	0.019
	87.25	3211.96	0.019	0.000	0	0.019
Top of Pond	87.30	3391.42	0.020	0.000	0	0.020

Notes:

1. Orifice plate discharge calculated according to Q=0.61A(2gh)1/2
1. Orifice Tube discharge calculated according to Q=0.8A(2gh)1/2
2. Weir discharge calculated according to Q=1.705LH1.5
3. Emergency weir calculations included on separate sheet.

Emergency Overflow Weir: Temporary Erosion and Sediment Control Pond

Project Name:	East Village Subdivision	**Designed By:**	BP
Project No:	18041	**Date:**	2019-06-15

Weir Parameters

Type:[1]	Broad Crested Rectangular		Weir Invert:	87.05	m
Peak Flow:	1.754	m^3/s	Weir Height:	0.25	m
			Width:	8.5	m

Stage Discharge

Elevation (m)	Weir Flow (m^3/s)
87.05	0.000
87.08	0.057
87.10	0.162
87.13	0.298
87.15	0.458
87.18	0.640
87.20	0.842
87.23	1.061
87.25	1.296
87.28	1.547
87.30	1.812

Weir Overflow Results

Pond Elevation at Peak Flow:	87.295	m
Freeboard:	0.005	m
Velocity:	0.843	m/s

Notes:

1. Flows over rectangular broad crested weir calculated based on weir equations in MTO Drainage Manual Chapter 8, Section Flow Over Weirs and Notches.

Forebay Calculations Temporary E&S Pond

Project Name: East Village

Designed By: BP

Project No.: 18041

Date: Sep-18

Forebay Requirements Phase 2

Settling Length

(MOE SWMPDM Section 4.5)

D =	(rQ/V)^0.5	(settling length)
r =	4.0	(length to width ratio)
Q =	0.013	(peak outlfow)
V =	0.0003	(desired velocity in forebay)
Req'd D =	**13.2**	**m**
Forebay Length Provided:	**28.00**	

Min Forebay Width =	Dist/8
Dist =	13.2
Width =	1.65
Provided Forebay Width =	**5.00**

Dispersion Length

(MOE SWMPDM Section 4.6)

D =	8Q/dV	(dispersion length)
Q =	0.571	(peak inflow from VHYMO)
d =	1.95	(permanent pool depth)
V =	0.5	(desired velocity in forebay)
Req'd D =	**4.7**	**m**

Notes:

1. From MOE SWMPDM Section 4.5-4.7.

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********************************
** SIMULATION:0 - 25mm CHI    **
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--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                          B=   3.000
--------------------                          C=   0.760
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  4.00 hrs
                        Storm time step    = 10.00 min
                        Time to peak ratio =  0.33
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

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--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.21
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  50.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.70         0.51
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.50         4.00
     Length            (m)=     121.38        15.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

```
     Max.Eff.Inten.(mm/hr)=      57.66        24.60
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       3.17 (ii)    6.07 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.27         0.15
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.17         0.03         0.192 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42          1.33
     RUNOFF VOLUME    (mm)=      23.91         5.98         14.94
     TOTAL RAINFALL   (mm)=      24.91        24.91         24.91
     RUNOFF COEFFICIENT   =       0.96         0.24          0.60

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| CHICAGO STORM    |    IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                          B=   3.000
--------------------                          C=   0.760
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  4.00 hrs
                        Storm time step    = 10.00 min
```

Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

```
| CALIB              |
| STANDHYD (  0002)|   Area    (ha)=   2.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  22.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.64	0.52
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	0.50	2.80
Length	(m)=	120.00	200.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.76	1.083	11.75	2.083	3.88	3.08	2.07
0.167	1.76	1.167	11.75	2.167	3.88	3.17	2.07
0.250	2.00	1.250	57.66	2.250	3.35	3.25	1.93
0.333	2.00	1.333	57.66	2.333	3.35	3.33	1.93
0.417	2.32	1.417	15.20	2.417	2.96	3.42	1.81
0.500	2.32	1.500	15.20	2.500	2.96	3.50	1.81
0.583	2.81	1.583	8.31	2.583	2.66	3.58	1.71
0.667	2.81	1.667	8.31	2.667	2.66	3.67	1.71
0.750	3.61	1.750	5.91	2.750	2.42	3.75	1.62
0.833	3.61	1.833	5.91	2.833	2.42	3.83	1.62
0.917	5.28	1.917	4.66	2.917	2.23	3.92	1.54
1.000	5.28	2.000	4.66	3.000	2.23	4.00	1.54

				TOTALS
Max.Eff.Inten.(mm/hr)=		57.66	29.87	
	over (min)	5.00	35.00	
Storage Coeff.	(min)=	4.37 (ii)	31.55 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	35.00	
Unit Hyd. peak	(cms)=	0.23	0.03	
PEAK FLOW	(cms)=	0.07	0.02	0.074 (iii)
TIME TO PEAK	(hrs)=	1.33	1.83	1.33
RUNOFF VOLUME	(mm)=	23.91	8.34	11.76
TOTAL RAINFALL	(mm)=	24.91	24.91	24.91
RUNOFF COEFFICIENT	=	0.96	0.33	0.47

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 65.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| CHICAGO STORM    |    IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                          B=   3.000
```
C= 0.760

used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	1.76	1.17	11.75	2.17	3.88	3.17	2.07
0.33	2.00	1.33	57.66	2.33	3.35	3.33	1.93
0.50	2.32	1.50	15.20	2.50	2.96	3.50	1.81
0.67	2.81	1.67	8.31	2.67	2.66	3.67	1.71
0.83	3.61	1.83	5.91	2.83	2.42	3.83	1.62
1.00	5.28	2.00	4.66	3.00	2.23	4.00	1.54

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   2.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  53.00   Dir. Conn.(%)=  36.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.44         1.27
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         5.00
     Length            (m)=     134.41        25.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                                ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
                0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
                0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
                0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
                0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
                0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
                0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
                0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
                0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
                0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
                0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
                1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Max.Eff.Inten.(mm/hr)=      57.66         7.03
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       4.68 (ii)   16.38 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.22         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.01         0.145 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.58          1.33
     RUNOFF VOLUME    (mm)=      23.91         3.71         10.97
     TOTAL RAINFALL   (mm)=      24.91        24.91         24.91
     RUNOFF COEFFICIENT   =       0.96         0.15          0.44

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                          B=   3.000
--------------------                          C=   0.760
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  4.00 hrs
                        Storm time step    = 10.00 min
                        Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    1.76 |  1.17   11.75 |  2.17    3.88 |  3.17    2.07
                 0.33    2.00 |  1.33   57.66 |  2.33    3.35 |  3.33    1.93
                 0.50    2.32 |  1.50   15.20 |  2.50    2.96 |  3.50    1.81
                 0.67    2.81 |  1.67    8.31 |  2.67    2.66 |  3.67    1.71
                 0.83    3.61 |  1.83    5.91 |  2.83    2.42 |  3.83    1.62
                 1.00    5.28 |  2.00    4.66 |  3.00    2.23 |  4.00    1.54


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--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   1.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  77.00   Dir. Conn.(%)=  60.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.96         0.29
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       0.50         1.40
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     Length            (m)=      91.29        45.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
                0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
                0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
                0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
                0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
                0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
                0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
                0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
                0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
                0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
                0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
                1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Max.Eff.Inten.(mm/hr)=      57.66         8.06
                over (min)        5.00        30.00
     Storage Coeff.  (min)=       3.71 (ii)   26.80 (ii)
     Unit Hyd. Tpeak (min)=       5.00        30.00
     Unit Hyd. peak  (cms)=       0.25         0.04
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.00          0.114 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.75           1.33
     RUNOFF VOLUME    (mm)=      23.91         4.07          15.96
     TOTAL RAINFALL   (mm)=      24.91        24.91          24.91
     RUNOFF COEFFICIENT   =       0.96         0.16           0.64

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  60.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| CHICAGO STORM    |    IDF curve parameters: A= 405.000
| Ptotal= 24.91 mm |                          B=   3.000
--------------------                          C=   0.760
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  4.00 hrs
                        Storm time step    = 10.00 min
                        Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    1.76 |  1.17   11.75 |  2.17    3.88 |  3.17    2.07
                 0.33    2.00 |  1.33   57.66 |  2.33    3.35 |  3.33    1.93
                 0.50    2.32 |  1.50   15.20 |  2.50    2.96 |  3.50    1.81
                 0.67    2.81 |  1.67    8.31 |  2.67    2.66 |  3.67    1.71
                 0.83    3.61 |  1.83    5.91 |  2.83    2.42 |  3.83    1.62
                 1.00    5.28 |  2.00    4.66 |  3.00    2.23 |  4.00    1.54


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.80
|ID= 1 DT= 5.0 min |   Total Imp(%)=  76.00   Dir. Conn.(%)=  76.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.61         0.19
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       2.10         2.00
     Length            (m)=      73.03        15.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    1.76 | 1.083   11.75 | 2.083    3.88 |  3.08    2.07
                0.167    1.76 | 1.167   11.75 | 2.167    3.88 |  3.17    2.07
```

```
                0.250    2.00 | 1.250   57.66 | 2.250    3.35 |  3.25    1.93
                0.333    2.00 | 1.333   57.66 | 2.333    3.35 |  3.33    1.93
                0.417    2.32 | 1.417   15.20 | 2.417    2.96 |  3.42    1.81
                0.500    2.32 | 1.500   15.20 | 2.500    2.96 |  3.50    1.81
                0.583    2.81 | 1.583    8.31 | 2.583    2.66 |  3.58    1.71
                0.667    2.81 | 1.667    8.31 | 2.667    2.66 |  3.67    1.71
                0.750    3.61 | 1.750    5.91 | 2.750    2.42 |  3.75    1.62
                0.833    3.61 | 1.833    5.91 | 2.833    2.42 |  3.83    1.62
                0.917    5.28 | 1.917    4.66 | 2.917    2.23 |  3.92    1.54
                1.000    5.28 | 2.000    4.66 | 3.000    2.23 |  4.00    1.54

     Max.Eff.Inten.(mm/hr)=      57.66         3.79
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.11 (ii)    5.19 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.16
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.00          0.098 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42           1.33
     RUNOFF VOLUME    (mm)=      23.91         2.53          18.77
     TOTAL RAINFALL   (mm)=      24.91        24.91          24.91
     RUNOFF COEFFICIENT   =       0.96         0.10           0.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  65.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     2.21   0.192     1.33    14.94
      + ID2= 2 (  0002):     2.16   0.074     1.33    11.76
        ====================================================
        ID = 3 (  0022):     4.37   0.266     1.33    13.37

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     4.37   0.266     1.33    13.37
      + ID2= 2 (  0003):     2.71   0.145     1.33    10.97
        ====================================================
        ID = 1 (  0022):     7.08   0.411     1.33    12.45

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0022):     7.08   0.411     1.33    12.45
      + ID2= 2 (  0005):     1.25   0.114     1.33    15.96
        ====================================================
        ID = 3 (  0022):     8.33   0.525     1.33    12.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0022)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0022):     8.33   0.525     1.33    12.98
      + ID2= 2 (  0008):     0.80   0.098     1.33    18.77
        ====================================================
        ID = 1 (  0022):     9.13   0.623     1.33    13.49

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
```

```
--------------------
| RESERVOIR(  0023)|
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |      OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0130      0.1094

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)      9.130      0.623      1.33      13.49
   OUTFLOW: ID= 1 (  0023)      9.130      0.013      4.08      13.25

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  2.10
                   TIME SHIFT OF PEAK FLOW         (min)=165.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.1100

--------------------------------------------------------------------------------
```

Appendix L: Operation and Maintenance Manual

East Village Phase 5 – Operation & Maintenance Manual

December 2019

Engage Engineering Ltd.
File No. 18041

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Appendix ii: SWM Pond Inspection Manual
Appendix iii: LID Homeowners Manual

1.0 Introduction

1.1 Purpose

Engage Engineering Limited (Engage) has been retained by JMCD Holdings Inc. to prepare an Operation and Maintenance Manual (Manual) to support the proposed Site Plan of Subdivision in the Town of Cobourg (Cobourg). This manual is being prepared to provide guidance and recommendations to monitor and maintain the proposed stormwater management (SWM) features that have been implemented to control stormwater runoff.

1.2 Site Description

The existing site is a vacant parcel of land consisting of grassed and treed areas. The subject site is bounded to the CN/CP Railway to the north, existing residential to the south and west, and existing agriculture to the east. The location of the subject property is identified in the **Location Plan** included as **Figure 1**.

Figure 1 - Location Plan

2.0 Operation and Maintenance

Proper operation and maintenance has an important impact on the long-term performance of the Stormwater Management (SWM) pond and enhanced grass swale that have been constructed to control stormwater.

These features need to be monitored and maintained on a consistent basis in order to ensure proper form and function. Neglecting the required monitoring and maintenance can result in the facilities not operating as intended and result in costly repairs in the future.

2.1 Stormwater Management Pond

Inspections of the SWM facility should be conducted to confirm the facility performance as well as to identify the type and frequency of additional maintenance activities. During the first two years of operation, inspections should be made after each significant rainfall event to ensure proper functioning of the system; this will average between 6 to10 inspections per year. After this initial period, inspection frequency can be reduced to bi-annual inspections.

Below is a checklist of items that should be monitored during the facility inspection:

1. Ensure the water level in the pond is not higher than the permanent pool level 48 hours after a storm. If so, inspect the outlet for debris/clogging.
2. Is the pond level lower than the normal permanent pool level? This could indicate a blockage at the inlet. Visually inspect the inlet structures for debris or blockage.
3. Is the vegetation around the pond dead? Is the pond all open water (no bulrushes or vegetation in the water)? Are there areas around the pond with easy access to open water?
4. Is there an oily sheen on the water near the inlet or outlet? Is the water frothy? Is there an unusual colouring of the water? This will indicate the occurrence of an oil or industrial spill and the need for clean-up.
5. Check the sediment depth in the pond. This will indicate the need for sediment removal. A visual inspection on the pond depth can also be made if the pond is shallow and a staff gauge is located in the pond.

Maintenance of the SWM facility should be conducted on an as required basis based on the monitoring program for the site. Maintenance will be more frequent during the first two years of operation while the site is developing, and the vegetation is maturing. After this initial period, maintenance frequency can be standardized based on the findings of the facility monitoring.

Below is a checklist of maintenance items that should be performed as required by the monitoring schedule above:

- **Debris Removal** - trash/debris removal will be required for the SWM facility in the spring of each year, to remove debris that has accumulated over the winter season. Apart from “spring cleaning”, trash removal should be completed on a periodic basis throughout the year, in conjunction with other routine maintenance activities such as grass cutting.

- **Sediment Removal** - Sediment will need to be removed periodically from the forebay in the wet pond in order to maintain SWM performance. The rate of accumulation of sediment is dependent on several factors including:

    - Characteristics of upstream areas (level of imperviousness)
    - Upstream land use and activities, especially during the construction phase of the development prior to sodding of all yards
    - Winter control practices (e.g. level of sand used)

    In general, sediment should be removed from the sediment forebay when the accumulated depth reaches 0.85m. Sediment loading calculations were completed in order to assess the anticipated frequency of sediment removal. The sediment loading calculations are included in **Appendix i**. Based on these calculations, it is estimated that the pond will require cleanout every 3.3 years.

    Semi-annual inspections during the first two years and annual inspections thereafter should be used to confirm the rate of accumulation of sediment and when it will need to be removed. The most effective means of removing sediment is with a vacuum excavation truck. Access to the pond inlet, outlet and the forebay is via the maintenance access road to the SWM facility. Sediment will need to be removed from the forebay once construction is complete.

- **Grass Cutting** - It is preferable to maintain the facility in as natural a state as possible; longer grass and natural vegetation tend to enhance water quality and SWM performance. Grass cutting around the top perimeter of the pond can be completed on an as-required basis for aesthetic reasons but the vegetation on the side slopes above the permanent pool elevation should be left in a natural state. If the grass above the permanent pool elevation needs to be cut due to aesthetic concerns, it should be cut as infrequently as possible to maintain an acceptable aesthetic standard.

- **Plantings and Vegetation** - Vegetation is an important aspect to the performance of the SWM facility. A planting plan has been prepared for the pond, with specific species planted at specific locations depending on water level at the location. The vegetation should be inspected once annually to ensure it is healthy. Dead or dying vegetation should be replaced with same or similar species. Planting should be carried out in May or June.

- **Orifice Clean Out** - the outlet structures have been outfitted with orifices to control the release of stormwater. The orifices may periodically become clogged or partially blocked. The orifice plate should be manually cleaned and cleared of any debris as required.

A SWM facility maintenance inspection report template has been included in **Appendix ii**. Additional information regarding the monitoring and maintenance of a wet pond can be found in the MOE Stormwater Planning & Design Manual.

2.2 Enhanced Grass Swale

Inspections of the enhanced grassed swale are conducted to confirm the facility performance as well as to identify the type and frequency of additional maintenance activities. During the first year, inspections should be made after each significant rainfall event to ensure proper functioning of the system; this will average between 3 to 6 inspections per year. After this initial period, inspection frequency can be reduced to a single annual inspection.

Below is a checklist of items that should be inspected/reviewed during the facility inspection:

1. Observe water level in basin – standing water could indicate blockage of outlet. If standing water is observed, inspect the swale for built up sediment.

2. Observe and measure sediment levels in the bottom of the swale, around the culverts and outlet storm sewer. If significant sediment is observed (greater than 0.3m depth) it should be removed.

3. Observe and measure vegetation density (at least 80% coverage), damage by foot or vehicular traffic

Maintenance of the enhanced grass swale should be conducted on an as required basis based on the monitoring program for the site. Maintenance will be more frequent during the first two years of operation while the site is developing, and the vegetation is maturing. After this initial period, maintenance frequency can be standardized based on the findings of the facility monitoring.

- **Grass Cutting** - It is preferable to maintain the facility in as natural a state as possible; longer grass and natural vegetation tend to enhance water quality and SWM performance. Grass cutting around the top perimeter of the basin can be completed on an as-required basis for aesthetic reasons but the vegetation within the swale/basin should be left in a natural state. Grass height should be maintained between 75mm-150mm and the lightest available mowing equipment should be utilized to reduce soil compaction surrounding the facility. Should the grass in the basin need to be cut due to aesthetic concerns, it should be cut as infrequently as possible to maintain an acceptable aesthetic standard.

- **Trash/Debris Removal** - Trash/debris removal will be required for the swale in the spring of each year, to remove debris that has accumulated over the winter season. Apart from “spring cleaning”, trash removal should be completed on a periodic basis throughout the year, in conjunction with other routine maintenance activities such as grass cutting.

- **Sediment Removal -** Sediment will need to be removed periodically from the swale in order to maintain SWM performance. The rate of accumulation of sediment is dependent on several factors including:

- Characteristics of upstream areas (level of imperviousness)
- Upstream land use and activities, especially during the construction phase of the development prior to sodding
- Winter control practices (e.g. level of sand used)

In general, sediment should be removed from the swale when the accumulated depth reaches 0.30m. Sediment loading calculations were completed in order to assess the anticipated frequency of sediment removal. The sediment loading calculations are included in **Appendix i**. Based on these calculations, it is estimated that the swale will require cleanout every 6 years. The most effective means of removing sediment is with a vacuum excavation truck.

Refer to Table 4.8.6 of the LID-SWM Guide for additional inspection and maintenance activities for enhanced grass swales.

A LID Homeowner's manual has been prepared to assist homeowners with an understanding of what an infiltration trench is and how it is meant to perform. The manual also recommends a few maintenance items and is included in **Appendix iii**.

Submitted by,

Brad Parsons, P. Eng
Water Resources Engineer

Aaron Hill, P. Eng.
Principal

Appendix i: Sediment Loading Calculations

Sediment Removal Calculations
Wet Pond

Project Name:	East Village Subdivision	**Designed By:**	BP
Project No:	18041	**Date:**	2019-06-11

Site Data			
Area	=	9.13	ha
% Impervious	=	69.70	%
Impervious Area	=	6.36	ha
Annual Sediment Loading			
	=	2.8	m^3/ha
Annual Load	=	25.4	m^3
Final Volumes			
Area of Facility	=	100.0	m^2
Critical Depth of Sediment	=	0.85	m
Sediment Removal Volume	=	85	m^3
Sediment Removal Period	=	3.3	Years

Notes:

Table 6.3: Annual Sediment Loadings (MOE SWMPD Manual)

		Annual Loading (m^3/ha) for Impervious Level				
		0%	35%	55%	70%	85%
	Annual Sediment Loading (m^3/ha)	0	0.6	1.9	2.8	3.8

Sediment Removal Calculations
Enhanced Grassed Swale

Project Name:	East Village Subdivision	**Designed By:**	BP
Project No:	18041	**Date:**	2019-06-11

Site Data			
Area	=	42.72	ha
% Impervious	=	35.00	%
Impervious Area	=	14.95	ha
Annual Sediment Loading			
	=	0.6	m^3/ha
Annual Load	=	25.6	m^3
Final Volumes			
Area of Facility	=	496.0	m^2
Critical Depth of Sediment	=	0.3	m
Sediment Removal Volume	=	149	m^3
Sediment Removal Period	=	6	Years

Notes: 1. Impervious area is conservative as contributing area is mainly grassed and wooded area.

Table 6.3: Annual Sediment Loadings (MOE SWMPD Manual)

		Annual Loading (m^3/ha) for Impervious Level				
		0%	35%	55%	70%	85%
	Annual Sediment Loading (m^3/ha)	0	0.6	1.9	2.8	3.8

Appendix ii: SWM Pond Inspection Manual

Project No:	**Contractor:**	**Weather:**
Project Name:	**Owner:**	**Date:**

ENGAGE ENGINEERING

SWM FACILITY MAINTENANCE INSPECTION REPORT			
Location	**Observation**	**Comments**	**Maintenance Req'd**
Embankment / Spillway			
Vegetation			
Erosion			
Animal Burrows			
Rip Rap			
Seepage / Soft Spots			
Outfall			
Headwall			
Manhole			
Control Devices			
Outlet Pipe			
Rodent Grates (All)			
Control Valves / Pond Drain			
Pond Bottom			
Vegetation			
Sediment			
Standing Water (Dry Pond)			
Low Flow Channel			
Water Colour / Quality			
Water Level			
Inlet			
Overland Flow Route			
Inlet Pipe			
Headwall			
Forebay			
Forebay Weir			
Sediment			
Other			
Maintenance Access			
Fence			

Offsite / Downstream Comments:			Photo Inventory:
	Type of Pond:		
	Last Inspection:		
	Last Rainfall Event:		
	Last Snowmelt Event:		
	Amount:		
	OGS Inspected:		
	OGS Notes:		

Inspector

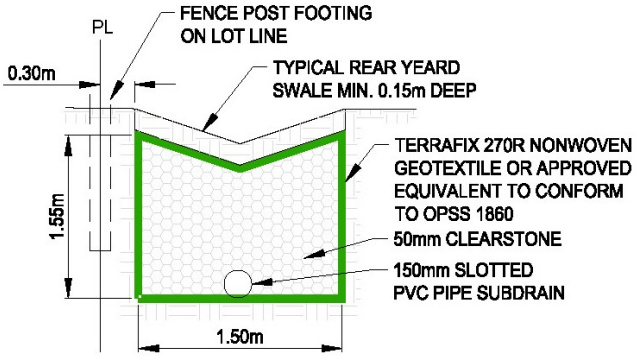
Appendix iii: LID Homeowners Manual

LID Homeowners Manual

What is an Infiltration Trench?
An infiltration trench is a stone filled trench complete with a perforated underdrain pipe that is designed to infiltrate clean surface runoff from rooftops and rear yards.

How does it function?
Stormwater runoff is directed to the trench which then promotes infiltrating of the runoff back into the ground. The runoff being captured and infiltrated by the trenches is generally from downspouts from roof runoff and rear yard drainage and is considered relatively clean water with minimal suspended solids. They provide groundwater recharge and quality treatment for runoff and act similar to the natural hydrologic cycle. Trenches are designed to infiltrate smaller rain events and have overflow catchbasins that are designed to take large storm events out to the storm sewer system and eventually to the wet pond.

What does the trench look like?
A typical detail of the infiltration trench is included below:



TRENCH SECTION

REAR-YARD INFILTRATION TRENCH

SCALE: N.T.S.

Inspection and Maintenance:
Homeowners are encouraged to regularly inspect and maintain trenches to ensure they are functioning properly by doing the following:

- Cleaning out leaves, debris and accumulated sediment caught in the trench or catchbasin inlets and outlets annually or as needed.
- Inspection via the outlet catchbasin lead to ensure flows are successfully draining during a larger storm event.

Appendix M: Geotechnical Report

Geotechnical Investigation Report

Proposed Residential Development
460 King Street East
Cobourg, Ontario

Report for Stalwood Homes

GHD | 65 Sunray Street, Whitby, Ontario, Canada L1N 8Y3

11148584 | 02 | Report No. 3 | February 2, 2018

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Enclosure

Figure 1 Test Hole Location Plan

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1. Introduction

This report presents the results of a Geotechnical Investigation conducted in support of a proposed residential subdivision development to be constructed on the property located at 460 King Street East in the Town of Cobourg, Ontario (the Site or Property). GHD Limited (GHD) was retained by Stalwood Homes (the Client), to complete this geotechnical investigation. The work conducted for this investigation was carried out under the authorization of Mr. Bob Lafontaine, of Stalwood Homes, in accordance with our proposal PD-976 dated December 22, 2017.

It is GHD's expectations that this project shall include design and construction of a new residential development containing typical 1- and 2-storey homes, with asphalt-paved roadways, and servicing. Proposed final grading for the development and service invert elevations were not available to GHD at the time of writing this report nor was there a concept plan.

2. Purpose and Scope

The purpose of the geotechnical investigation is to define and characterize the underlying soil and groundwater conditions at the test hole locations, and to develop geotechnical engineering recommendations relevant to earthwork construction, reuse of existing soil as backfill material, foundation and slab-on-grade design, service installation, and pavement design. The information contained herein must in no way be construed as an opinion of this site's chemical, environmental, or hydrogeological status.

The following scope of work was performed in order to accomplish the foregoing purposes.

1. A site-specific health and safety plane (SS-HASP) was prepared.
2. Underground services were cleared prior to advancing the boreholes. The boreholes were located as shown on the Test Hole Location Plan (Figure 1).
3. The subsurface soils conditions were explored by advancing, sampling and logging a total of eight (8) boreholes to a depths ranging from 4.6 to 5.2 metres (m) below existing grade.
4. The ground at the test hole locations was reinstated as close as possible to its original condition upon completion of the fieldwork. A mixture of bentonite and soil cuttings was used to backfill the boreholes, and excess cuttings were distributed evenly around the vicinity of each borehole location.
5. Groundwater monitoring wells were installed in three (3) boreholes. Groundwater level measurements were obtained from each borehole following completion of drilling operations, and stabilized groundwater measurements were obtained from the monitoring wells on January 19 and 29, 2018.
6. Physical laboratory analysis of the encountered material was carried out including grain size analysis and moisture content tests.
7. A total of four (4) soil samples, were submitted for chemical testing for volatile organic compounds (VOCs), petroleum hydrocarbons (PHCs, F1 to F4) and a suite of metals.

8. Geotechnical engineering analysis of acquired field and laboratory data have been compiled in this report outlining our findings, conclusions, and geotechnical engineering recommendations.

3. Field and Laboratory Procedures

A field investigation was conducted under the supervision of GHD staff on January 18, 2018. The work consisted of subsurface exploration by means of advancing and sampling eight (8) exploratory boreholes to depths ranging from 4.6 to 5.2 m. The location of each borehole is illustrated on the attached Test Hole Plan (Figure 1).

A detailed log of each borehole was maintained and representative samples of the materials encountered in the boreholes were collected. These logs are presented graphically in Appendix A.

The boreholes were advanced using a track mounted drill rig equipped with continuous flight, solid stem augers. Representative, disturbed samples of the strata penetrated were obtained using a split-barrel, 50 mm outer-diameter (OD) sampler advanced by a 63.5 kg hammer dropping approximately 760 mm. The results of these standard penetration tests (SPT's) are reported as "N" values on borehole logs at the corresponding depths.

Groundwater measurements and observations were obtained from the open test holes during the drilling operations. Groundwater monitoring wells were installed in three (3) of the boreholes, to depths of 4.5m, with sand pack around the screened interval, and bentonite sealant above the screened interval. The monitoring wells were recorded and registered as wells with the Ministry of Environment and Climate Change (MOECC).

Upon completion, the test holes in which wells were not installed were backfilled with soil cuttings and bentonite pellets, and sealed at the top with auger cuttings.

Soil samples obtained from the boreholes were inspected in the field immediately upon retrieval for type, texture, and colour. All soil samples were sealed in clean plastic containers and transported to the GHD laboratory for further visual-tactile examination, and to select appropriate samples for laboratory analysis.

Physical laboratory testing was completed on the soil samples, consisting of moisture content tests on all samples recovered, and gradation analyses on five (5) representative soil samples (including three (3) hydrometers). The analytical results of the moisture content tests are plotted on the attached logs. The results of the gradation testing are incorporated into the borehole logs, and are also presented graphically in Appendix B.

A total of four (4) soil samples were submitted to Caduceon Environmental Laboratories (CEL) for chemical testing of O.Reg 153 parameters; for VOCs, PHCs (F1 to F4) and a suite of metals. CEL's Certificates of Analysis for the testing are included in Appendix C.

Groundwater measurements and observations were obtained from the open test holes during drilling operations, and again on January 19 and January 29, 2018 from the monitoring wells. Groundwater data is presented on individual borehole logs.

4. Site Location and Surface Conditions

The investigated site is located along the northern side of King Street East in the Town of Cobourg, Ontario. The property consists of a generally open, naturalized area with well-established grass cover and mature trees, and a generally flat topography. The site is bordered on the western side by additional naturalized area and residential properties, on the eastern side by agricultural land, and on the northern side by an active railway corridor.

5. Subsurface Conditions

5.1 General

Details of the subsurface conditions encountered at the Site are graphically presented on the test hole logs (Appendix A). It should be noted that the boundaries between the strata have been inferred from the borehole observations and non-continuous samples. They generally represent a transition from one soil type to another, and should not be inferred to represent an exact plane of geological change. Further, conditions may vary between and beyond the test hole locations.

The boreholes generally encountered a layer of topsoil or fill, underlain by loose to compact sandy silt and/or firm to very stiff clayey silt, underlain in most boreholes by compact to very dense till consisting with variable amount of gravel, sand, silt and clay. Groundwater seepage and/or accumulation was observed in all boreholes, with the exception of borehole BH-3, during the drilling operations at depths ranging from 1.5 to 4.4 m. Stabilized groundwater measurements obtained from the monitoring wells on January 19 and January 29, 2018 yielded water levels ranging between 0.6 and 1.6 m.

The following sections describe the major soil strata and subsurface conditions encountered during this investigation in more detail.

5.2 Topsoil

A layer of surficial topsoil was encountered in boreholes BH-1 through BH-5 and ranged from approximately 300 to 600mm in thickness. This soil was observed to be composed mainly of humus, with a moderate amount of inorganic silt, in a damp, loose state. As such, it is expected to be devoid of any structural engineering properties.

5.3 Fill

A surficial layer of fill was encountered in boreholes BH-6, BH-7 and BH-8 (which correspond to existing stockpiles near the southeast corner) and extended to depths of about 1.5 m in all three (3) boreholes. This material was brown in colour and generally consisted of clayey sandy silt containing trace to some amounts of gravel, occasional rootles and brick fragments. The fill was noted to exist in a moist, loose to compact in-situ state.

Moisture content test conducted on samples of the fill yielded values ranging from 15 to 35 % moisture by weight. Grain size distribution analyses conducted on representative samples of the fill suggests the following compositional range: 4 to 21 % gravel, 50 to 53 % sand, and 26 to 46 % silt and clay-sized particles.

5.4 Sandy Silt

A layer of sandy silt was encountered beneath the topsoil or fill in boreholes BH-1, BH-5, BH-6 and BH-7 and extended to depths ranging from 2.3 to 3.0 m. This sandy silt ranged in colour from brown to grey, and contained traces to some amount of clay and gravel, occasional organic matter such as rootles and wood fragments, and existed in a generally moist in-situ state. SPT N values obtained from within the sandy silt layer varied from 5 blows/300mm to 30 blows/300mm, indicating a loose to compact in-situ state of relative density. Moisture content tests conducted on samples of the sandy silt yielded values ranging from approximately 9 to 31 % moisture by weight.

5.5 Clayey Silt

A layer of clayey silt was encountered in all boreholes with the exception of borehole BH-1 and extended to the full depth of the investigation in borehole BH-6 and to depths ranging from 1.5 to 4.4m in the remaining boreholes. The clayey silt ranged from brown to grey in colour and consisted of clayey silt, containing trace to some amounts of sand. The clayey silt was encountered in a generally moist in-situ state. SPT N values obtained from within the clayey silt layer varied from 4 blows/300mm to 23 blows/300mm, indicating a firm to very stiff consistency.

Moisture content tests conducted on samples of the clayey silt yielded values ranging from approximately 18 to 38 % moisture by weight. Grain size distribution analysis conducted on representative samples of the clayey silt suggest the following compositional range: 0 to 1 % gravel, 4 to 6 % sand, and 94 to 95 % silt and clay. Hydrometer analysis conducted on these samples suggests it contain 32 to 40 % particles between 5 and 75 μm in size.

5.6 Till

A basal layer of till was encountered in all boreholes with the exception of BH-6 and extended to the full depth of the investigation. The till ranged from brown to grey in colour and generally consisted of sandy silt, containing variable amounts of gravel and clay, with occasional cobbles. The till was encountered in a generally damp to moist in-situ state. SPT N values obtained from within the till layer varied from 10 blows/300mm to over 100 blows/300mm, indicating a compact to very dense in-situ state of relative density.

Moisture content tests conducted on samples of the till yielded values ranging from approximately 4 to 17 % moisture by weight. A grain size distribution analyses conducted on a representative sample of the till suggest the following composition: 13 % gravel, 25 % sand, and 62 % silt and clay. A hydrometer analysis conducted on this sample suggests it contain 32 % particles between 5 and 75 μm in size.

5.7 Groundwater

Groundwater observations and measurements were recorded during and upon completing drilling operations at each test hole. Groundwater seepage and/or accumulation was observed in all boreholes, with the exception of borehole BH-3, during the drilling operations at depths ranging from 1.5 to 4.4 m. Stabilized groundwater measurements obtained from the monitoring wells on January 19 and January 29, 2018 yielded water levels ranging between 0.6 and 1.6m.

It must be noted that groundwater levels are transient and tend to fluctuate with the seasons, periods of precipitation, and temperature.

5.8 Chemical Analysis

A total of four (4) soil samples were submitted to CEL for chemical testing of O.Reg 153 parameters for VOCs, PHCs (F1 to F4) and a suite of metals. This testing was done to support assessing the handling and disposal options available for excess soils generated during construction. The chemical results generally characterize the soils. However, the number of samples, or the analytical parameters tested, may not be sufficient to meet the requirements of the intended receiving site. Additional testing may be required depending on the handling option and/or receiving site(s) selected. CEL's Certificates of Analysis for the testing are included in Appendix C.

The results of the chemical analyses are presented in Tables 5.1 and 5.2 and are compared to Ministry of the Environment and Climate Change (MOECC) Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, coarse textured soil ("Soil, Groundwater and Sediment Standards for use Under Part XV.1 of the Environmental Protection Act", April 15, 2011), Residential / Parkland / Institutional (RPI) Property Use.

Table 5.1 Summary of O.Reg 153 for Metals in Soil

Parameter	Sample Identification				MOECC Table 2[1]
	BH-2, SS-2 (0.7 – 1.4m) 01/18/2018	BH-6, SS-2 (0.0 – 0.6m) 01/18/2018	BH-7, SS-1 (0.0 – 0.6m) 01/18/2018	BH-8, SS-1 (0.0 – 0.6m) 01/18/2018	
Antimony	< 0.5	< 0.5	< 0.5	< 0.5	7.5
Arsenic	1.7	1.6	2.0	1.5	18
Barium	171	94	172	69	390
Beryllium	0.5	0.4	0.7	0.3	4
Boron	7.3	4.6	7.2	5.9	120
Boron (HWS)	0.02	0.13	0.24	0.13	1.5
Cadmium	< 0.5	< 0.5	< 0.5	< 0.5	1.2
Chromium Total	26	19	29	15	160
Chromium (VI)	< 0.5	< 0.5	< 0.5	< 0.5	8
Cobalt	9	6	8	4	22
Copper	18	11	23	11	140
Lead	6	11	26	12	120
Mercury	0.005	0.050	0.053	0.024	0.27
Molybdenum	< 1	< 1	< 1	< 1	6.9
Nickel	20	10	18	9	100
Selenium	0.6	0.7	0.9	< 0.5	2.4

Table 5.1 Summary of O.Reg 153 for Metals in Soil

Parameter	Sample Identification				MOECC Table 2(1)
	BH-2, SS-2 (0.7 – 1.4m) 01/18/2018	BH-6, SS-2 (0.0 – 0.6m) 01/18/2018	BH-7, SS-1 (0.0 – 0.6m) 01/18/2018	BH-8, SS-1 (0.0 – 0.6m) 01/18/2018	
Silver	0.2	< 0.2	< 0.2	< 0.2	20
Thallium	0.2	< 0.1	0.1	< 0.1	1
Uranium	0.5	0.5	0.6	0.4	23
Vanadium	40	27	43	19	86
Zinc	52	46	81	37	340

Notes: all values in ug/g, unless otherwise noted. (<) denotes less than laboratory detection limits

(1) Table 2: Generic Site Condition Standards in a Potable Ground Water Condition. Soil Standards for Residential/Parkland/Institutional (RPI) Property Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

Table 5.2 Summary of O.Reg 153 for PHCs and VOCs in Soil

Parameter	Sample Identification				MOECC Table 2(1)
	BH-2, SS-2 (0.7 – 1.4m) 01/18/2018	BH-6, SS-2 (0.0 – 0.6m) 01/18/2018	BH-7, SS-1 (0.0 – 0.6m) 01/18/2018	BH-8, SS-1 (0.0 – 0.6m) 01/18/2018	
PHC F1 (C_6 to C_{10})	< 10	< 10	< 10	< 10	55
PHC F2 (C_{10} to C_{16})	< 5	< 5	< 5	< 5	98
PHC F3 (C_{16} to C_{34})	<10	20	11	< 10	300
PHC F4 (C_{34} to C_{50})	< 10	22	< 10	< 10	2800
Acetone	< 0.5	< 0.5	< 0.5	< 0.5	16
Benzene	< 0.02	< 0.02	< 0.02	< 0.02	0.21
Bromodichloromethane	< 0.02	< 0.02	< 0.02	< 0.02	1.5
Bromoform	< 0.02	< 0.02	< 0.02	< 0.02	0.27
Bromomethane	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Carbon Tetrachloride	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Chlorobenzene	< 0.02	< 0.02	< 0.02	< 0.02	2.4
Chloroform	< 0.02	< 0.02	< 0.02	< 0.02	0.05
Dibromochloromethane	< 0.02	< 0.02	< 0.02	< 0.02	2.3
Dichlorobenzene,1,2-	< 0.05	< 0.05	< 0.05	< 0.05	1.2
Dichlorobenzene,1,3-	< 0.05	< 0.05	< 0.05	< 0.05	4.8
Dichlorobenzene,1,4-	< 0.05	< 0.05	< 0.05	< 0.05	0.083
Dichlorodifluoromethane	< 0.05	< 0.05	< 0.05	< 0.05	16
Dichloroethane,1,1-	< 0.02	< 0.02	< 0.02	< 0.02	0.47
Dichloroethane,1,2-	< 0.02	< 0.02	< 0.02	< 0.02	0.05
Dichloroethylene,1,1-	< 0.02	< 0.02	< 0.02	< 0.02	0.05
Dichloroethylene, cis-1,2-	< 0.02	< 0.02	< 0.02	< 0.02	1.9
Dichloroethylene, trans-1,2-	< 0.02	< 0.02	< 0.02	< 0.02	0.084
Dichloropropane,1,2-	< 0.02	< 0.02	< 0.02	< 0.02	0.05
Dichloropropene 1,3- cis+trans	< 0.02	< 0.02	< 0.02	< 0.02	0.05
Ethylbenzene	< 0.05	< 0.05	< 0.05	< 0.05	1.1
Ethylene Dibromide	< 0.02	< 0.02	< 0.02	< 0.02	0.05
Hexane	< 0.02	< 0.02	< 0.02	< 0.02	2.8
Methyl Ethyl Ketone	< 0.5	< 0.5	< 0.5	< 0.5	16
Methyl Isobutyl Ketone	< 0.5	< 0.5	< 0.5	< 0.5	1.7

Table 5.1 Summary of O.Reg 153 for Metals in Soil

Parameter	Sample Identification				MOECC Table 2(1)
	BH-2, SS-2 (0.7 – 1.4m) 01/18/2018	BH-6, SS-2 (0.0 – 0.6m) 01/18/2018	BH-7, SS-1 (0.0 – 0.6m) 01/18/2018	BH-8, SS-1 (0.0 – 0.6m) 01/18/2018	
Methyl-t-butyl Ether	< 0.05	< 0.05	< 0.05	< 0.05	0.75
Methylene Chloride	< 0.05	< 0.05	< 0.05	< 0.05	0.1
Styrene	< 0.05	< 0.05	< 0.05	< 0.05	0.7
Tetrachloroethane,1,1,1,2-	< 0.02	< 0.02	< 0.02	< 0.02	0.058
Tetrachloroethane,1,1,2,2-	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Tetrachloroethylene	< 0.05	< 0.05	< 0.05	< 0.05	0.28
Toluene	< 0.2	< 0.2	< 0.2	< 0.2	2.3
Trichloroethane,1,1,1-	< 0.02	< 0.02	< 0.02	< 0.02	0.38
Trichloroethane,1,1,2-	< 0.02	< 0.02	< 0.02	< 0.02	0.05
Trichloroethylene	< 0.05	< 0.05	< 0.05	< 0.05	0.061
Trichlorofluoromethane	< 0.02	< 0.02	< 0.02	< 0.02	4
Vinyl Chloride	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Xylene, m,p-	< 0.03	< 0.03	< 0.03	< 0.03	NS
Xylene, o-	< 0.03	< 0.03	< 0.03	< 0.03	NS
Xylene Total	< 0.03	< 0.03	< 0.03	< 0.03	3.1

Notes: all values in ug/g, unless otherwise noted. (<) denotes less than laboratory detection limits

(1) Table 2: Generic Site Condition Standards in a Potable Ground Water Condition. Soil Standards for Residential/Parkland/Institutional (RPI) Property Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011.

All tested parameters meet Table 2 Provincial Site Condition Standards (SCS) for Agricultural (Ag), and Residential/Parkland/Institutional (RPI) land use. See Section 6.7 of this report for commentary on handling and disposal options available for excess soils generated during construction based on the samples tested.

6. Discussion and Recommendations

Supporting data upon which our recommendations are based have been presented in the foregoing sections of this report. The following recommendations are governed by the physical properties of the subsurface materials that were encountered at the site and assume that they are representative of the overall site conditions. It should be noted that these conclusions and recommendations are intended for use by the designers only. Contractors bidding on or undertaking any work at the Site should examine the factual results of the assessment, satisfy themselves as to the adequacy of the information for construction, and make their own interpretation of this factual data as it affects their proposed construction techniques, equipment capabilities, costs, sequencing, and the like. Comments, techniques, or recommendations pertaining to construction should not be construed as instructions to the contractor.

The boreholes generally encountered a layer of topsoil or fill, underlain by loose to compact sandy silt and/or firm to very stiff clayey silt, underlain in most boreholes by compact to very dense till consisting variable amount of gravel, sand, silt and clay. Groundwater seepage and/or accumulation was observed in all boreholes, with the exception of borehole BH-3, during the drilling operations at depths ranging from 1.5 to 4.4 m. Stabilized groundwater measurements obtained from the monitoring wells on January 19 and January 29, 2018 yielded water levels ranging between 0.6 and 1.6 m.

Details regarding our conclusions and recommendations are outlined in the following sections.

6.1 Site Preparation, Excavation and Dewatering

It is recommended that any and all topsoil and existing fill, vegetation, organic and organic-bearing materials be stripped and removed from the proposed roadway and building areas (including floor slab areas) prior to commencing earthwork construction. The sub-excavated surfaces must be proof rolled and/or approved by a member of GHD prior to placement of fill or foundations.

Excavations should be carried out to conform to the manner specified in Ontario Regulation 213/91 and the Occupational Health and Safety Act and Regulations for Construction Projects (OHSA). All excavations above the water table not exceeding 1.2 m in depth may be constructed with unsupported slopes. The fill and native sandy silt soils encountered during this investigation above the groundwater table are generally classed by OHSA as Type 3. As such, unsupported / unshored excavation walls in these soils must maintain a gradient of 1 horizontal to 1 vertical (1H:1V) or flatter, to the base of the excavation. The native clayey silt and till soils encountered above the groundwater table during this investigation are generally classed by OHSA as Type 2. As such, unsupported / unshored walls of excavations in these soils must be sloped to within a maximum of 1.2 m of the bottom of the excavation, with a slope having a gradient of 1 horizontal to 1 vertical (1H:1V) or flatter, or be retained using a suitably designed shoring system.

Based on groundwater-related observations and the depth of excavations expected for this development, it is anticipated that groundwater seepage will be encountered. Any groundwater or surficial water infiltration into open excavations above the groundwater table is expected to be controlled by pumping from sump(s) to an acceptable outlet. Where excavations extend below the groundwater table and encounter more intensive zones of groundwater infiltration, the use of filtered pumps, sheet piling, or other forms of groundwater control may be required Based on the laboratory's gradation results (see Appendix B), and applying the Hazen method, K values for hydraulic conductivity of the native clayey silt and till soils are estimated to be in the order of 10^{-6} to 10^{-7} cm/sec or slower.

If short-term pumping of groundwater at volumes greater than 50,000 L/day and less than 400,000 L/day is required during the construction stage, the Environmental Activity Sector Registry (EASR) must be completed. The EASR streamlines the process and water pumping may begin once the EASR registration is completed, the fee paid and supporting document prepared. If water taking in excess of 400,000 litres/day is required, a Permit to Take Water (PTTW) must be obtained in advance.

6.2 Service Installation

The materials encountered during this investigation at the anticipated service invert elevations (3 to 4 m) typically consist of clayey silt or till. As such, normal compacted bedding material, placed in the Class “B” or Class “C” arrangement, is recommended for all underground services. The recommended bedding material is Granular “A” or 19 mm crusher run (angular) limestone, as per Ontario Provincial Standard Specifications (OPSS). The minimum recommended bedding thickness for the underground services is 150 mm. All bedding materials should be compacted to 98% of their Standard Proctor Maximum Dry Density (SPMDD).

Prior to placement of bedding, the exposed subgrade should be inspected by an experienced geotechnical engineer and any identified soft or loose areas should be subexcavated and replaced with suitably compacted fill. If the subgrade warrants, a woven geotextile (Terrafix 200W or approximate equivalent) may be required on the subgrade prior to bedding material, to protect soft and/or sensitive areas. Thickening of the bedding material could also be considered where the subgrade is sufficiently loose to warrant.

It is recommended that cover backfilling of the underground services be accomplished using Granular “A”, sand, or other suitable material as allowed by the Municipality’s standards, to a minimum of 300 mm above the pipe. Compaction of this material should attain 100 % SPMDD. It is expected that the excavated, inorganic soils may be suitable for reuse as trench and road subgrade backfill, conditional upon suitable moisture content (within 2 % of optimum) and final review and approval by an experienced geotechnical engineer, at the beginning, and throughout the duration of construction. Compaction of any native soil in service trenches is recommended to be a minimum of 98% of its SPMDD. The soils observed may require processing (such as aeration) to lower their moisture content to appropriate levels prior to being considered as backfill material.

Trench plugs are recommended to minimize the potential for drainage through the granular bedding materials and subsequent lowering of the water table. When the sewer profiles are completed, the most suitable areas for the trench plugs should be established.

It is recommended that the service bedding subgrade be inspected and approved by a member GHD’s geotechnical group prior to placing the bedding fill, to ensure its suitability and consistency with conditions encountered during this investigation. Embedment and backfill materials, and compaction, should also be inspected and tested during placement.

6.3 Roadway Construction

Based on the results of this investigation, we would recommend the following procedures be implemented to prepare the proposed new roadways for construction.

1. Remove any free organic topsoil, fill, disturbed earth, organics and organic-bearing materials, loam, frozen earth, and boulders larger than 150 mm in diameter encountered at subgrade elevation for the full width of construction.

2. Proof roll the subgrade for the purpose of detecting possible zones of overly wet or soft subgrade. Any deleterious areas thus delineated should be replaced with approved earth fill or granular material compacted to a minimum of 98 % of its SPMDD. Approved excavated soils can be reused as road subgrade backfill provided the soil is workable and at a moisture content that will permit adequate compaction. Saturated silts, organics and wet clay should not be reused. A final review and approval to reuse any soils must be made during construction.
3. If further stabilization of the pavement subgrade is deemed necessary, place woven geotextile such as Terrafix 200W or Mirafi HP270 on the exposed pavement subgrade surface, after its approval and prior to placement of any subsequent fill.
4. Contour the subgrade surface to prevent ponding of water during the construction and to promote rapid drainage of the sub-base and base course materials.
5. To maximize drainage potential, and ensure satisfactory pavement performance, 150 mm diameter perforated pipe subdrains should be installed along any curb lines. The pipe should be encased in filter fabric and surrounded by clear stone aggregate. It is recommended that the subdrains outlet to the storm sewer system.
6. Construct transitions between varying depths of granular subbase materials at a rate of 1:25 minimum.

The subgrade soils encountered in these areas consisted of soils possessing generally high frost susceptibility. In this regard, the following minimum flexible pavement structure is recommended for the construction of the new roadway areas.

Table 6.1 Pavement Structure

Profile	Material	Minimum Thickness (mm)		In Conformance with OPSS Form
		Local Residential	Collectors & Arterial	
Asphalt Surface	H.L.3	40	40	1150
Asphalt Base	H.L.8	50	50	
			50	
Granular Base	Granular “A”	150	150	1010
Granular Subbase	Granular “B”	300	450	

The following steps are recommended for optimum construction of paved areas.

1. The Granular “A” and “B” courses should be compacted to a minimum 100 percent of their respective SPMDD’s.
2. All asphaltic concrete courses should be placed, spread and compacted conforming to OPSS Form 310 or equivalent. All asphaltic concrete should be compacted to a minimum 92.0 percent of their respective laboratory Maximum Relative Densities (MRD’s).
3. Adequate drainage should be provided to ensure satisfactory pavement performance.

It is recommended that all fill material be placed in uniform lifts not exceeding 200 mm in thickness before compaction. It is suggested that all granular material used as fill should have an in-situ moisture content within 2 % of their optimum moisture content. All granular materials should be compacted to 100 % SPMDD. Granular materials should consist of Granular "A" and "B" conforming to the requirements of OPSS Form 1010 or equivalent.

It is noted that the above recommended pavement structure is for the end use of the project. During construction of the project, the recommended granular depths may not be sufficient to support loadings encountered.

6.4 Foundation Design

It is GHD's understanding that the proposed buildings will consist of 1 to 2 storey residences with or without basement areas. It is expected that structural loading for such buildings will be supported on reinforced, spread and continuous strip footings for column and load bearing walls, respectively. The footings should be placed on competent native soils consisting of stiff to very stiff clayey silt or compact to very dense till soil or on engineered fill placed directly on the competent native soil.

The following table summarizes the minimum depths at which such suitably competent soils were first encountered in each borehole.

Table 6.2 Depth to Competent Bearing Soil

Borehole ID	Minimum Depth (m)	Borehole ID	Minimum Depth (m)
BH-1	2.3	BH-5	4.6
BH-2	0.8	BH-6	3.0
BH-3	1.5	BH-7	3.0
BH-4	1.5	BH-8	1.8

For design purposes, it is recommended that footings constructed on the competent native soils consisting of stiff to very stiff clayey silt or compact to very dense till or on engineered fill placed directly on such soils be proportioned using the following bearing capacities.

Table 6.3 Bearing Pressures for Footing Design

Parameter	Bearing Pressure			
	Compact to Very Dense Undisturbed Native Soils	Engineered Fill		
		Rock-based Fill (2)	Granular Fill (2)	Earth Borrow Fill (2)
Factored Bearing Capacity at ULS (1)	215 kPa	255 kPa	205 kPa	155 kPa
Bearing Capacity at SLS	120 kPa	150 kPa	120 kPa	90 kPa

Notes:

(1) Resistance factor Φ =0.5 applied to the ULS bearing pressure for design purposes.
(2) At least 1.0m of Rock-based fill, or at least 0.3m of Granular or Earth Borrow fill. Quality of material is to be approved prior to use as engineered fill.

Any engineered fill upon which footings are placed must be a minimum thickness corresponding to the notes that accompany the aforementioned table. Rock-based fill that does not have a relatively even distribution of particle sizes (e.g.: clear stone), must be completely encapsulated with suitable non-woven geotextile to minimize any migration of fine-grained particles from surrounding soils into the voids within the rock fill. Footings (and foundation walls) placed on engineered fill must be suitably reinforced; as a minimum, and where not already specified in the structural design drawings, this reinforcing should use continuous runs of two (2) 15M rebar throughout the footings, and continuous runs of two (2) 15M rebar throughout the foundation walls. Reinforcing for foundation walls should contain one run in the upper half, and one run in the lower half of the wall.

The following is recommended for the construction of any engineered fill for the footings.

1. Remove any and all existing vegetation, topsoil, fill, disturbed earth, organics, and organic-bearing soils to the competent, undisturbed native soil from within the area of the proposed engineered fill.
2. The area of the engineered fill should extend horizontally 1m beyond the outside edge of the proposed building foundations and then extend downward at a 1:1 slope to the competent native soil.
3. The base of the engineered fill area must be approved by a member of GHD prior to placement of any fill, to ensure that all unsuitable materials have been removed, that the materials encountered are similar to those observed, and that the subgrade is suitable for the engineered fill.
4. All engineered fill material is to be approved by GHD at the time of construction.
5. Place approved engineered fill, in maximum 300 mm lifts, compacted to 100% of its SPMDD. Any fill material placed under sufficiently wet conditions should consist of an approved, rock-based fill, with the inclusion of appropriate geotextile fabric around the rock-based fill should the rock fill contain enough voids to warrant.
6. Full time testing and inspection of the engineered fill will be required, to ensure compliance with material and compaction specifications.

Should any larger buildings (i.e., larger that the anticipated one to two-storey residential dwellings) be proposed, it is recommended that a specific geotechnical review be conducted to assess any need for further subsurface exploration to be conducted to assess the soil properties in that area.

All exterior footings or footings in unheated areas, should be founded at least 1.2 m below the final adjacent grade for frost protection, or be treated with an equivalent frost protection (such as suitable insulation). Footings and walls exposed to frost action should be backfilled with non-frost susceptible granular material.

Should basements, or other below-grade areas, be incorporated into any of the buildings' designs, it is recommended that for drainage purposes, drainage pipes (subdrains) be installed about the perimeter of the structure, at footing elevation. The subdrains would serve to drain seepage water that infiltrates the backfill, intersect the groundwater, and help relieve hydrostatic pressures due to high groundwater levels. The drains should consist of a perforated pipe, at least 150 mm in diameter, surrounded by clear, crushed stone and suitable filter protection. The drain should discharge to a positive sump or other permanent frost free outlet. It is also strongly recommended that the building's foundation walls be sealed and waterproofed.

Under no circumstances should the foundations be placed above organic materials, loose, frozen subgrade, construction debris, or within ponded water. Prior to forming, all foundation excavations must be inspected and approved by a member of GHD. This will ensure that the foundation bearing material has been adequately prepared at the foundation subgrade level and that the soils exposed are similar to those encountered during this investigation.

For design purposes this site is classed as Site Class D for Seismic Site Response, in accordance with the Ontario Building Code (OBC).

For foundations constructed in accordance with the foregoing manner, total and differential settlements are estimated to be less than 25 mm.

6.5 Slab on Grade

Floors may generally be constructed as normal slabs-on-grade, on granular material or 19 mm clear stone over native, inorganic soils. The floor slab should be formed over a base course consisting of at least 150 mm of either Granular "A" backfill as per OPSS, or where basement areas exist, then use 19 mm clear stone, either material compacted to a minimum of 100 % of its SPMDD. All grade increases or infilling below the granular or clearstone should utilize well graded, free draining Granular "B", Type 1 backfill as per OPSS 1010, placed in lifts no thicker than 200 mm before compaction, and compacted to a minimum of 100 % of its SPMDD. If the groundwater table is intersected by any basement excavations, the floor slabs should incorporate under slab drains. A vapour barrier should be installed beneath the slabs to prevent migration of moisture vapour. All fill placed as engineered fill must be inspected, approved and compaction verified by personnel from GHD.

6.6 Basement and Retaining Walls

It is recommended that free draining backfill to walls be provided. Earth retaining walls located above the groundwater table may be designed for lateral earth pressures using the following equation:

$p = k (w h + q)$, where:

p	= the lateral earth pressure in kPa acting on the subsurface wall at depth h;
k_a	= the coefficient of active earth pressure;
	(= 0.3 for walls restrained from the bottom only);
	(= 0.5 for walls restrained at the top and bottom*);

k_p = the coefficient of passive earth pressure, (= 3.0);

w = the granular or native soil bulk density in kN/m^3;

(= 21.0 kN/m^3 for well compacted, OPSS-approved Granular "B");

(= 20.0 kN/m^3 for native soils);

h = the depth (in metres) below the exterior grade at which the earth pressure is being calculated; and

q = the equivalent value of any surcharge (in kN/m^3) acting on the ground surface adjacent to the walls.

(*) This value is recommended for rigid walls retaining compacted backfill.

The recommended value for the coefficient for sliding friction between the soil and the concrete is 0.4. In addition to the above, hydrostatic forces must be taken into account in the design where the walls extend below the groundwater table. Also, any additional surcharge loading that will influence the wall must be taken into account in its design.

6.7 Excess Soil Generated During Construction – Handling Options

Based on the chemical test results, the following handling options are recommended for excess soils excavated at this site during the proposed construction for this project:

a. Remain on-site (i.e.: appropriately reused as trench or road subgrade backfill), under the guidance of a Qualified Person (QP) as defined by the MOECC. Note that additional chemical testing is recommended during the proposed works for quality control purposes;
b. Moved to a Table 2 or 3 Agricultural (Ag), Residential/Parkland/Institutional (RPI) or Industrial / Commercial / Community (ICC) property under the guidance of a QP as defined by the MOECC;
c. Disposed of at a waste disposal landfill appropriately certified by the MOECC. This option would require further chemical testing to ensure compliance with the landfill's Certificate of Approval (C of A).

Note that the chemical results generally characterize the soils. However, the number of samples, or the analytical parameters tested, may not be sufficient to meet the requirements of the intended receiving site. Additional testing may be required depending on the handling option and/or receiving site(s) selected.

6.8 General Recommendations

6.8.1 Wells

Any decommissioning of wells on-site must be performed by an appropriately- licensed well contractor in compliance with O.Reg. 903.

6.8.2 Test Pits During Tendering

It is strongly recommended that test pits be excavated at representative locations of this Site during the tendering phase, with mandatory attendance of interested contractors. This will allow them to make their own assessments of the groundwater and soil conditions at the Site and how these will affect their proposed construction methods, techniques and schedules.

6.8.3 Subsoil Sensitivity

The native subsoils are susceptible to strength loss or deformation if saturated or disturbed by construction traffic. Therefore, where the subgrade consists of approved soil, care must be taken to protect the exposed subgrade from excess moisture and from construction traffic.

6.8.4 Winter Construction

The subsoils encountered across the site are frost-susceptible and freezing conditions could cause problems to the structures. As preventive measures, the following recommendations are presented:

1. During winter construction, exposed surfaces intended to support foundations must be protected against freezing by means of loose straw, insulated tarpaulins, heating, etc.
2. Care must be exercised so that any sidewalks and/or asphalt pavements do not interfere with the opening of doors during the winter when the soils are subject to frost heave. This problem may be minimized by any one of several means, such as keeping the doors well above outside grade, installing structural slabs at the doors, and by using well-graded backfill and positive drainage, etc.
3. Because of the frost heave potential of the soils during winter, it is recommended that the trenches for exterior underground services be excavated with shallow transition slopes in order to minimize the abrupt change in density between the granular backfill, which is relatively non-frost susceptible, and the more frost-susceptible native soils.

6.8.5 Design Review and Inspection

Due to the preliminary nature of the design details at the time of this report, it is strongly recommended that GHD's geotechnical group be allowed to review the foundation design and proposed final grading plans, prior to their finalization. In addition, we strongly recommend that our firm be retained to review the related earthworks specifications when they are available.

Geotechnical inspection and review of foundation excavations and compaction procedures must be carried out to ensure compliance with our recommendations.

7. Statement of Limitations

The attached Statement of Limitations is an integral part of this report. Should questions arise regarding any aspect of this report, please contact our office.

Sincerely,

GHD

Leandro Ramos, P.Eng.

Nyle McIlveen, P.Eng.

/lr/nm

STATEMENT OF LIMITATIONS

This report is intended solely for Stalwood Homes, and other parties explicitly identified in the report and is prohibited for use by others without GHD's prior written consent. This report is considered GHD's professional work product and shall remain the sole property of GHD. Any unauthorized reuse, redistribution of or reliance on the report shall be at the Client and recipient's sole risk, without liability to GHD. Client shall defend, indemnify and hold GHD harmless from any liability arising from or related to Client's unauthorized distribution of the report. No portion of this report may be used as a separate entity; it is to be read in its entirety and shall include all supporting drawings and appendices.

The recommendations made in this report are in accordance with our present understanding of the project, the current site use, ground surface elevations and conditions, and are based on the work scope approved by the Client and described in the report. The services were performed in a manner consistent with that level of care and skill ordinarily exercised by members of geotechnical engineering professions currently practicing under similar conditions in the same locality. No other representations, and no warranties or representations of any kind, either expressed or implied, are made. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.

All details of design and construction are rarely known at the time of completion of a geotechnical study. The recommendations and comments made in the study report are based on our subsurface investigation and resulting understanding of the project, as defined at the time of the study. We should be retained to review our recommendations when the drawings and specifications are complete. Without this review, GHD will not be liable for any misunderstanding of our recommendations or their application and adaptation into the final design.

By issuing this report, GHD is the geotechnical engineer of record. It is recommended that GHD be retained during construction of all foundations and during earthwork operations to confirm the conditions of the subsoil are actually similar to those observed during our study. The intent of this requirement is to verify that conditions encountered during construction are consistent with the findings in the report and that inherent knowledge developed as part of our study is correctly carried forward to the construction phases.

It is important to emphasize that a soil investigation is, in fact, a random sampling of a site and the comments included in this report are based on the results obtained at the eight (8) borehole locations only. The subsurface conditions confirmed at the 8 test hole locations may vary at other locations. The subsurface conditions can also be significantly modified by construction activities on site (e.g. excavation, dewatering and drainage, blasting, pile driving, etc.). These conditions can also be modified by exposure of soils or bedrock to humidity, dry periods or frost. Soil and groundwater conditions between and beyond the test locations may differ both horizontally and vertically from those encountered at the test locations and conditions may become apparent during construction which could not be detected or anticipated at the time of our investigation. Should any conditions at the site be encountered which differ from those found at the test locations, we request that we be notified immediately in order to permit a reassessment of our recommendations. If changed conditions are identified during construction, no matter how minor, the recommendations in this report shall be considered invalid until sufficient review and written assessment of said conditions by GHD is completed.

Source: Google Earth (2018) Image taken April 17, 2017. © 2018 Google

Scale:
Refer to Scale Bar
Coordinate System:
NAD 1989 UTM Zone 17

Stalwood Homes
460 King St. East, Cobourg, ON
Geotechnical Investigation

11148584-02
January 2018

Test Hole Plan

FIGURE 1

Attachment A
Borehole Logs

REFERENCE No.: 11148584-02

ENCLOSURE No.: A-1

BOREHOLE No.: BH-1

ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Stalwood Homes

PROJECT: 460 King St. East, Cobourg, Ontario

LOGGED BY: J. Bigioni DATE: 18 January 2018

DRILLING COMPANY: Landshark Drilling Inc. METHOD: Track Mounted Rig, Solid Stem Augers

NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Shear test (Cu) △ Field; Sensitivity (S) □ Lab; ○ Water content (%); W_p W_l Atterberg limits (%); × "N" Value (blows / 0.3 m); ◆ RQD; ◎ CONE

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (600 mm)	SS-1	19	38	4 12 50/4"	100+	
	0.5	0.6		**SANDY SILT** - Grey Sandy Silt, Occasional Organics (Rootlets, Wood Fragments), Moist, Compact	SS-2	29	9	12 8 22 8	30	
	1.0									
	1.5	1.5		Grading Clayey, Firm	SS-3a	85	17	3 2 3 5	5	WL - 1.5 m January 18, 2018 (open hole, on completion)
	2.0				SS-3b	100	31			
		2.3		**TILL** - Brown Clayey Sandy Silt, Little Gravel, Wet, Compact	SS-4	100	10	6 7 12 16	19	SS-4: 13% Gravel 25% Sand 62% Silt and Clay 32% between 5-75 µm
	2.5									
	3.0	3.0		Very Dense	SS-5	75	8	15 26 32 30	58	
	3.5	3.5		Moist						
	4.0									
		4.3		Grey, Wet, Dense	SS-6	13	10	14 16 15 15	31	Borehole open upon completion
	4.5									
	5.0									
		5.2		END OF BOREHOLE						
	5.5									
	6.0									

BOREHOLE LOG GEOTECH 11148484-02, 18-01-26, BOREHOLE LOGS GEOTECH, JB,SS,LR.GPJ GEOLOGIC.GDT 1/2/18

REFERENCE No.: 11148584-02

ENCLOSURE No.: A-2

BOREHOLE No.: BH-2

ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Stalwood Homes

PROJECT: 460 King St. East, Cobourg, Ontario

LOGGED BY: J. Bigioni

DATE: 18 January 2018

DRILLING COMPANY: Landshark Drilling Inc.

METHOD: Track Mounted Rig, Solid Stem Augers

NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery (%)	Moisture Content (%)	Blows per 6 in. / 15 cm	Penetration Index (N)	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (600 mm)	SS-1	29	35	12 20 13 10	33	
		0.6		**CLAYEY SILT** - Brown Clayey Silt, Some Sand, Moist, Very Stiff	SS-2	100	25	5 7 11 14	18	W/L - 1.1 m January 19, 2018 WL - 1.2 m January 29, 2018
		1.5		Trace Gravel	SS-3	100	23	6 8 10 12	18	W/L - 4.4 m January 18, 2018
					SS-4	100	20	6 8 9 11	17	
		3.0		Stiff	SS-5	42	24	7 7 7 14	14	
		4.4		**TILL** - Grey Sandy Silt, Some Clay, Some Gravel, Damp, Very Dense	SS-6	71	6	36 30 50/5"	100+	Borehole open upon completion - 50 mm Monitoring well installed to 4.5 m
		5.0		END OF BOREHOLE						

Shear test (Cu) △ Field; Sensitivity (S) □ Lab; ○ Water content (%); W_p W_l Atterberg limits (%); × "N" Value (blows / 0.3 m); ◆ RQD; ◎ CONE

10 20 30 40 50 60 70 80 90

— 0.7 m

REFERENCE No.: 11148584-02

ENCLOSURE No.: A-3

BOREHOLE No.: BH-3

ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Stalwood Homes

PROJECT: 460 King St. East, Cobourg, Ontario

LOGGED BY: J. Bigioni DATE: 18 January 2018

DRILLING COMPANY: Landshark Drilling Inc. METHOD: Track Mounted Rig, Solid Stem Augers

NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Shear test (Cu) △ Field; Sensitivity (S) □ Lab; ○ Water content (%); W_p W_l Atterberg limits (%); × "N" Value (blows / 0.3 m); ◆ RQD; ◎ CONE

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (600 mm)	SS-1	42	27	10 5 5 4	10	
		0.6		**CLAYEY SILT** - Brown Clayey Silt, Trace Sand, Moist, Very Stiff	SS-2	100	18	6 10 13 16	23	SS-2: 0% Gravel 6% Sand 94% Silt and Clay 40% between 5-75 µm
		1.5		**TILL** - Light Brown Sandy Silt, Some Gravel, Damp, Dense	SS-3	83	9	10 14 18 22	32	
		3.0		Grading Grey, Very Dense	SS-4	54	4	21 50/5"	100+	
		4.6		Dense	SS-5	75	6	12 18 22 50/5"	40	Borehole open and dry upon completion
		5.2		END OF BOREHOLE						

REFERENCE No.: 11148584-02 ENCLOSURE No.: A-3

BOREHOLE No.: BH-4
ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Stalwood Homes
PROJECT: 460 King St. East, Cobourg, Ontario
LOGGED BY: J. Bigioni DATE: 18 January 2018
DRILLING COMPANY: Landshark Drilling Inc. METHOD: Track Mounted Rig, Solid Stem Augers
NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (300 mm)				2 2 2 2		
1		0.3		**CLAYEY SILT** - Brown Clayey Silt, Some Sand, Moist, Firm	SS-1	75	42		4	
2	0.5									WL - 0.6 m January 29, 2018
3	1.0									
4										W/L - 0.7 m January 19, 2018
5	1.5	1.5		Very Stiff						W/L - 4.4 m January 18, 2018
6					SS-2	100	20	6 9 14 16	23	
7	2.0									
8	2.5									
9		2.7		**TILL** - Light Brown Sandy Silt, Some Gravel, Damp, Very Dense						
10	3.0				SS-3	100	5	50/5"	100+	
11	3.5									
12										
13	4.0									
14		4.3		Grey						
15	4.5				SS-4	100	5	50/4"	100+	
		4.7		END OF BOREHOLE						Borehole open upon completion 50 mm Monitoring well installed to 4.5 m
16										
17	5.0									
18	5.5									
19										
	6.0									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m)
◆ RQD
◎ CONE

10 20 30 40 50 60 70 80 90

— 0.6 m

BOREHOLE LOG GEOTECH 11148484-02, 18-01-26, BOREHOLE LOGS GEOTECH, JB,SS,LR.GPJ GEOLOGIC.GDT 1/2/18

REFERENCE No.: 11148584-02 ENCLOSURE No.: A-5

BOREHOLE No.: BH-5
ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Stalwood Homes
PROJECT: 460 King St. East, Cobourg, Ontario
LOGGED BY: J. Bigioni DATE: 18 January 2018
DRILLING COMPANY: Landshark Drilling Inc. METHOD: Track Mounted Rig, Solid Stem Augers
NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (300 mm)				3 4 4 3		
1	0.5	0.3		**SANDY SILT** - Grey Sandy Silt, Occasional Organics (Rootlets, Wood Fragments), Moist, Loose	SS-1	54	12		8	
2										
3	1.0									
4										
5	1.5							2 4 3 7		WL - 1.6 m January 29, 2018
6					SS-2	75	10		7	
7	2.0									W/L - 1.5 m January 18, 2018
8	2.5									W/L - 1.6 m January 19, 2018
9		2.7		**ORGANIC SILT** - Dark Brown Organic Silt, Wet, Loose						
10	3.0							1 2 4 6		
11		3.2		**CLAYEY SILT** - Dark Grey Clayey Silt, Some Sand, Wet, Firm	SS-3	83	38		6	
12	3.5									
13	4.0	4.0		**TILL** - Grey Sandy Silt, Some Gravel, Wet, Compact						
14										
15	4.5							5 5 5 15		Borehole open upon completion 50 mm Monitoring well installed to 4.5 m
16	5.0				SS-4	75	17		10	
17		5.2		END OF BOREHOLE						
18	5.5									
19										
	6.0									

Shear test (Cu) △ Field; Sensitivity (S) □ Lab; ○ Water content (%); W_p W_l Atterberg limits (%); × "N" Value (blows / 0.3 m); ◆ RQD; ◎ CONE

10 20 30 40 50 60 70 80 90

— 0.7 m

BOREHOLE LOG GEOTECH 11148484-02, 18-01-26, BOREHOLE LOGS GEOTECH, JB,SS,LR.GPJ GEOLOGIC.GDT 1/2/18

REFERENCE No.: 11148584-02

ENCLOSURE No.: A-6

BOREHOLE No.: BH-6

ELEVATION: Existing Grade

BOREHOLE REPORT

CLIENT: Stalwood Homes

PROJECT: 460 King St. East, Cobourg, Ontario

LOGGED BY: J. Bigioni DATE: 18 January 2018

DRILLING COMPANY: Landshark Drilling Inc. METHOD: Track Mounted Rig, Solid Stem Augers

NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Shear test (Cu) △ Field; Sensitivity (S) □ Lab; ○ Water content (%); W_p W_l Atterberg limits (%); × "N" Value (blows / 0.3 m); ◆ RQD; ◎ CONE

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				FILL - Dark Brown Clayey Sandy Silt, Occasional Organics (Rootlets), Occasional Brick Fragments, Moist, Compact	SS-1	42	20	3 4 6 3	10	
	0.5	0.6		Loose						
	1.0				SS-2	63	23	2 3 5 4	8	
	1.5	1.5		**SANDY SILT** - Brown Sandy Silt, Some Gravel, Occasional Organics (Rootlets), Moist, Compact	SS-3	29	16	1 4 7 20	11	
	2.0									
	2.5									
	3.0	3.0		**CLAYEY SILT** - Brown Clayey Silt, Some Sand, Wet, Stiff	SS-4	100	29	3 4 10 12	14	SS-4: 1% Gravel 4% Sand 95% Silt and Clay 32% between 5-75 µm
	3.5									
	4.0									
	4.5									WL - 4.4 m January 18, 2018 (open hole, on completion)
	5.0				SS-5	100	25	4 5 7 10	12	Borehole open upon completion
		5.2		END OF BOREHOLE						
	5.5									
	6.0									

BOREHOLE LOG GEOTECH 11148484-02, 18-01-26, BOREHOLE LOGS GEOTECH, JB,SS,LR.GPJ GEOLOGIC.GDT 1/2/18

REFERENCE No.: 11148584-02

ENCLOSURE No.: A-7

BOREHOLE No.: BH-7

ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Stalwood Homes

PROJECT: 460 King St. East, Cobourg, Ontario

LOGGED BY: J. Bigioni

DATE: 18 January 2018

DRILLING COMPANY: Landshark Drilling Inc.

METHOD: Track Mounted Rig, Solid Stem Augers

NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Shear test (Cu) △ Field; Sensitivity (S) □ Lab; ○ Water content (%); W_p W_l Atterberg limits (%); × "N" Value (blows / 0.3 m); ◆ RQD; ◎ CONE

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
1	0.5	0.8		**FILL** - Dark Brown Clayey Silty Sand, Occasional Organics (Rootlets), Occasional Brick Fragments, Moist, Loose	SS-1	100	29	3 5 3 6	8	SS-1: 4% Gravel 50% Sand 46% Silt and Clay
3	1.0	1.5		Compact	SS-2	21	32	11 10 3 4	13	
6	2.0	3.0		**SANDY SILT** - Brown Sandy Silt, Some Gravel, Moist, Compact	SS-3	54	14	4 5 6 8	11	
11	3.5	4.3		**CLAYEY SILT** - Light Brown Clayey Silt, Some Sand, Trace Gravel, Moist, Stiff	SS-4	100	18	5 6 7 11	13	
15	4.5	4.6		**TILL** - Light Brown Sandy Silt, Some Clay, Some Gravel, Occasional Cobble, Moist, Very Dense	SS-5	100	12	50/2"	100+	WL - 4.4 m January 18, 2018 (open hole, on completion)
				END OF BOREHOLE						Borehole open upon completion

REFERENCE No.: 11148584-02 ENCLOSURE No.: A-8

BOREHOLE No.: BH-8
ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Stalwood Homes
PROJECT: 460 King St. East, Cobourg, Ontario
LOGGED BY: J. Bigioni DATE: 18 January 2018
DRILLING COMPANY: Landshark Drilling Inc. METHOD: Track Mounted Rig, Solid Stem Augers
NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- WATER LEVEL

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m)
◆ RQD
◎ CONE

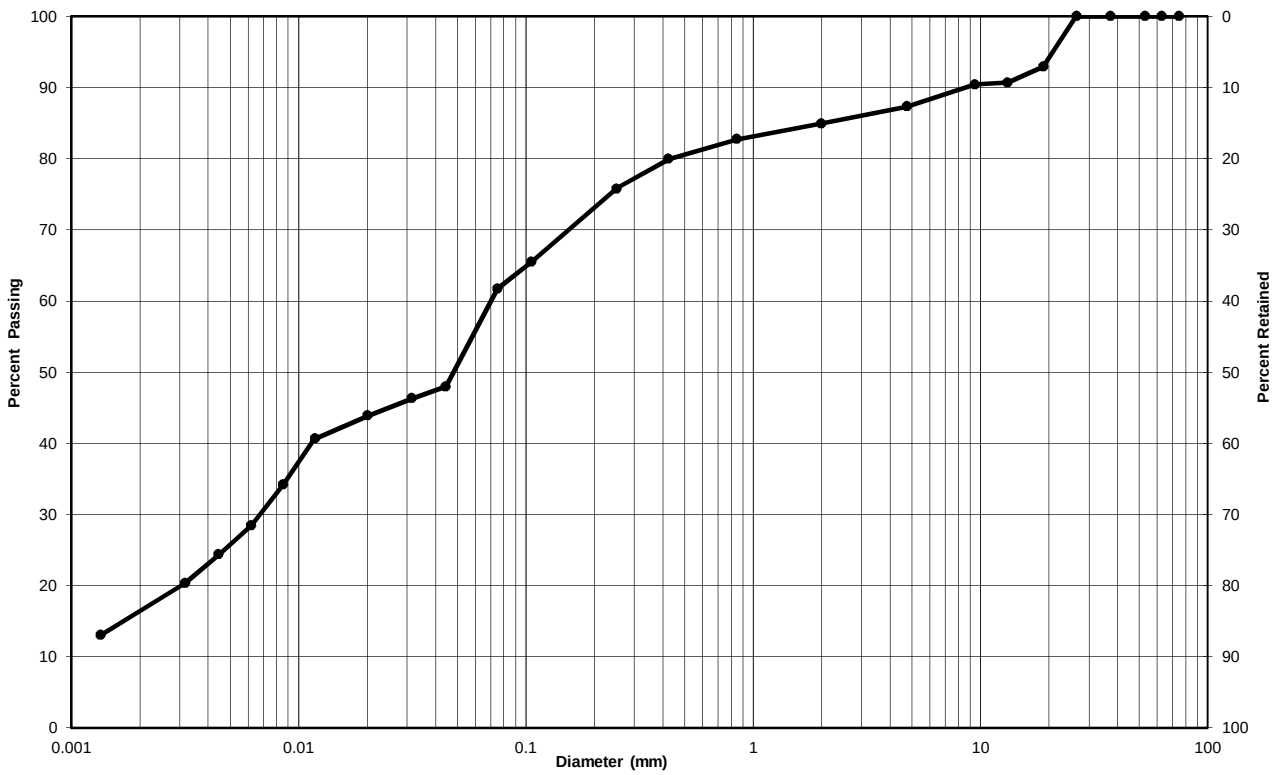
Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
1	0.5			**FILL** - Dark Brown Clayey Silty Sand, Some Gravel, Occasional Organics (Rootlets), Occasional Brick Fragments, Moist, Loose	SS-1	100	15	2 3 3 4	6	SS-1: 21% Gravel 53% Sand 26% Silt and Clay
3	1.0				SS-2	8	35	2 3 6 5	9	
5	1.5	1.5		**CLAYEY SILT** - Brown Clayey Silt, Some Sand, Trace Gravel, Damp, Firm	SS-3	100	25	2 3 6 10	9	
10	3.0	3.0		**TILL** - Light Brown Sandy Silt, Some Clay, Some Gravel, Occasional Cobble, Damp, Compact	SS-4	63	4	6 10 13 20	23	
14		4.3		Very Dense						WL - 4.3 m January 18, 2018 (open hole, on completion)
15	4.5	4.8		END OF BOREHOLE	SS-5	57	7	24 50/1"	100+	Borehole open upon completion
16	5.0									
18	5.5									
19	6.0									

Attachment B
Physical Laboratory Data

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Stalwood Homes	**Lab no.:**	SS-D-18-2
Project/Site:	460 King Street E., Cobourg	**Project no.:**	11148584-02

Borehole no.:	BH-1	Sample no.:	SS-4
Depth:	2.3 - 2.9 m	Enclosure:	B-1



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
BH1 SS4	13	25	62

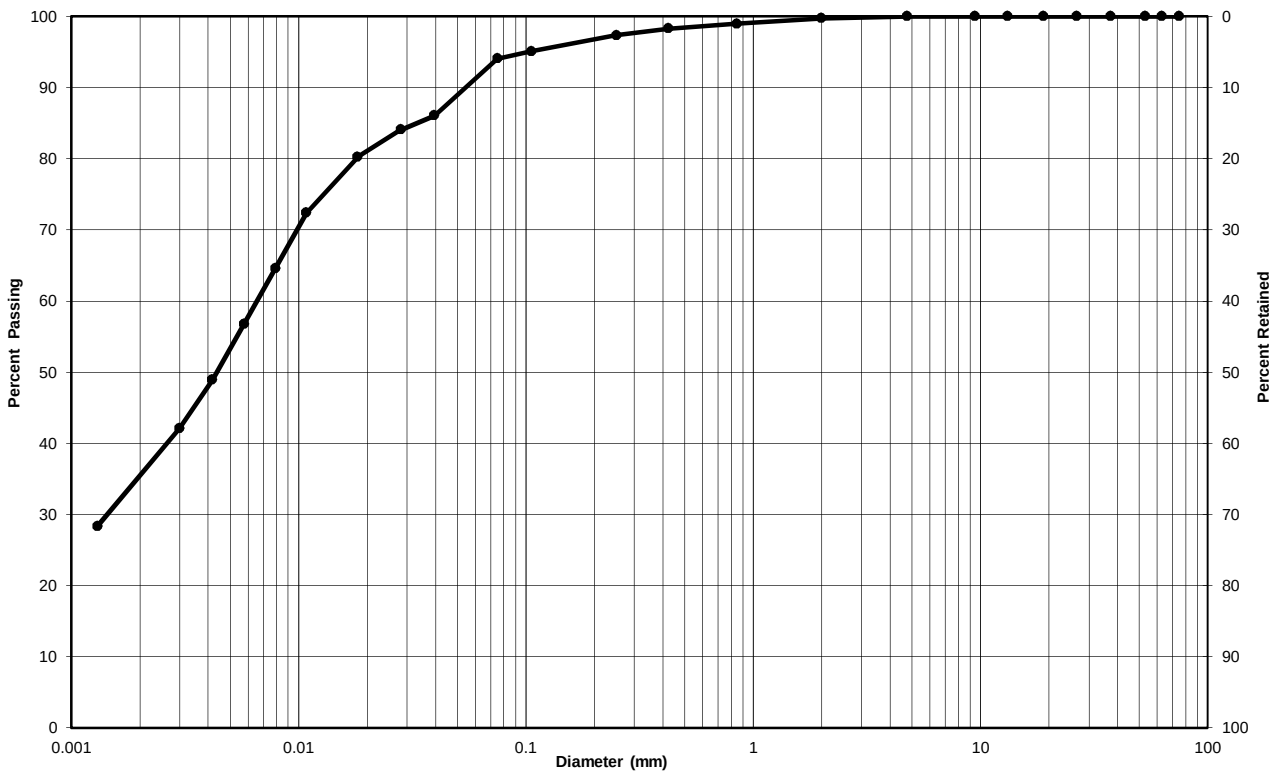
Remarks:

Performed by:	T. Watkins	**Date:**	January 30, 2018
Verified by:		**Date:**	January 31, 2018

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Stalwood Homes	**Lab no.:**	SS-D-18-2
Project/Site:	460 King Street E., Cobourg	**Project no.:**	11148584-02

Borehole no.:	BH-3	Sample no.:	SS-2
Depth:	0.8 - 1.4 m	Enclosure:	B-2



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
BH3 SS2	0	6	94

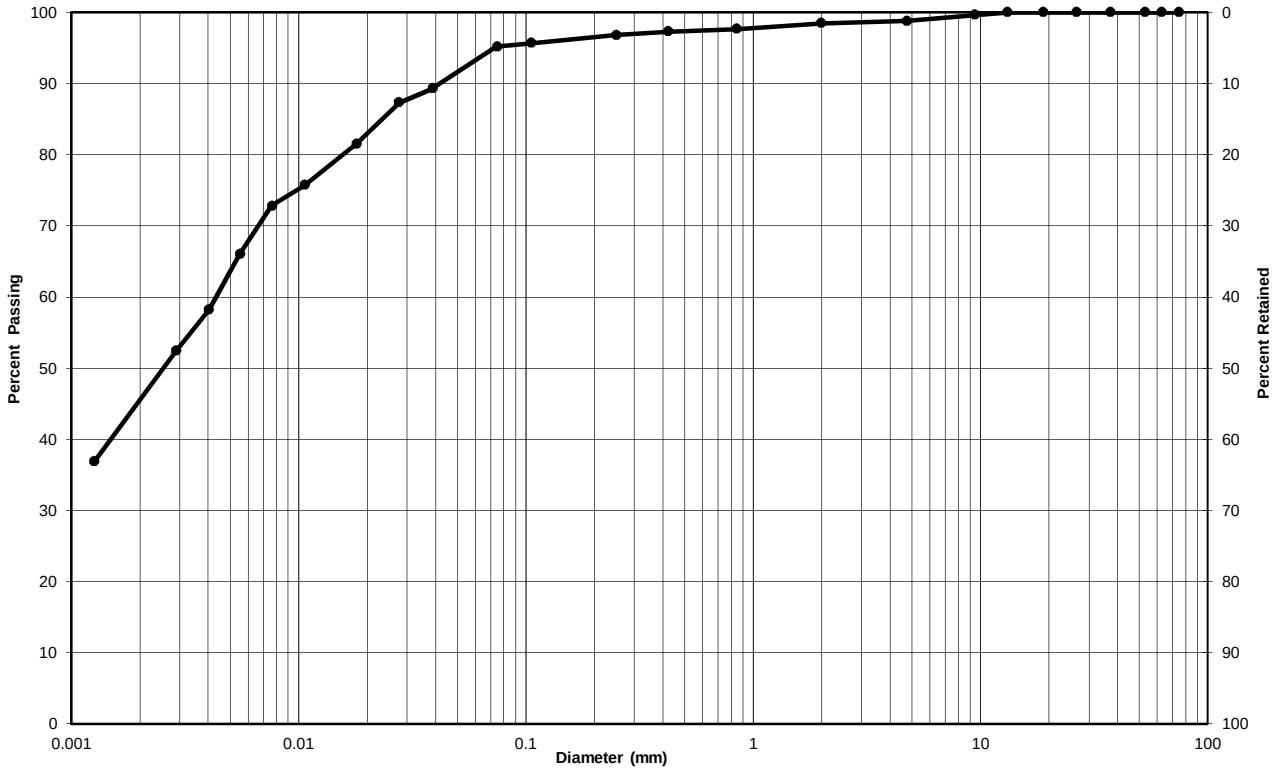
Remarks:

Performed by:	T. Watkins	**Date:**	January 30, 2018
Verified by:		**Date:**	January 31, 2018

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Stalwood Homes	**Lab no.:**	SS-D-18-2
Project/Site:	460 King Street E., Cobourg	**Project no.:**	11148584-02

Borehole no.:	BH-6	Sample no.:	SS-4
Depth:	3.0 - 3.7 m	Enclosure:	B-3



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
BH6 SS4	1	4	95

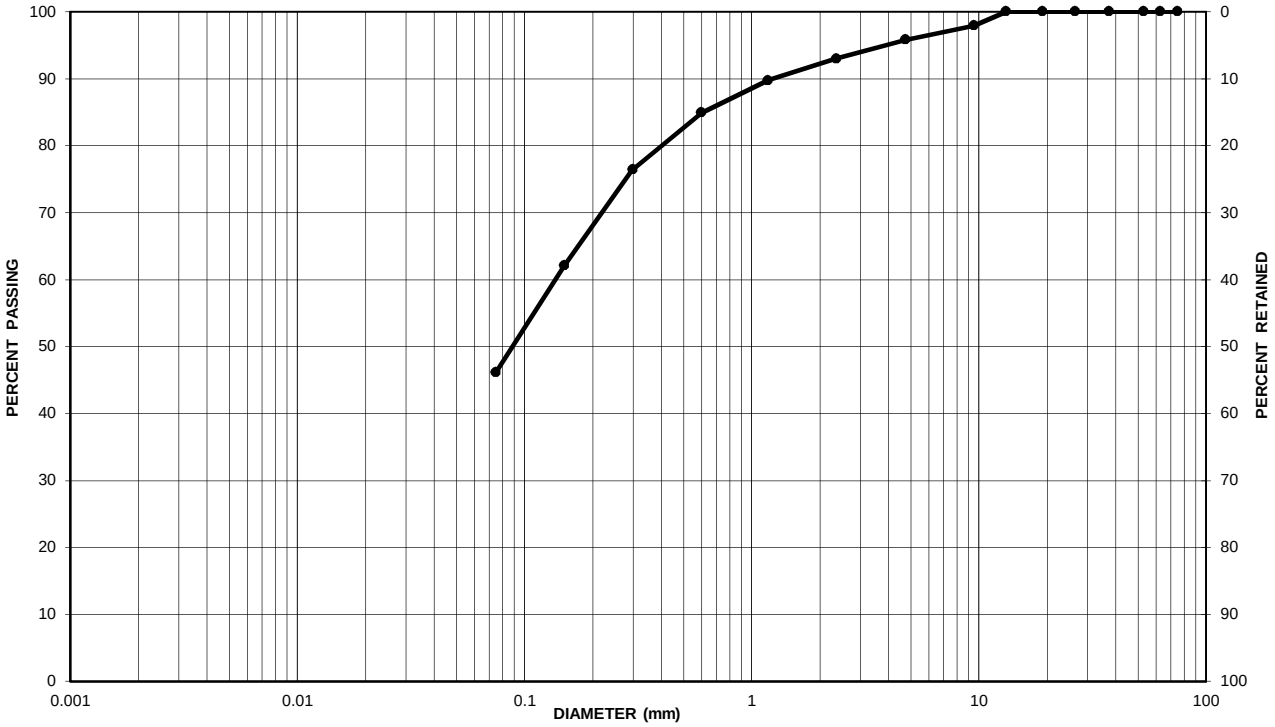
Remarks:

Performed by:	T. Watkins	**Date:**	January 30, 2018
Verified by:		**Date:**	January 31, 2018

INVESTIGATIVE SIEVE ANALYSIS OF AGGREGATES (LS-602)

CLIENT:	Stalwood Homes	**LAB No.:**	SS-D-18-2
PROJECT/ SITE:	460 King St. E Cobourg	**PROJECT No.:**	11148584-02

Borehole No.:	BH-7	Sample No.:	SS-1
Depth:	0 - 0.6 m	Enclosure:	B-4



CLAY & SILT	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE
UNIFIED SOIL CLASSIFICATION SYSTEM					

Soil Description	Gravel	Sand	Clay & Silt
BH-7 SS-1	4	50	46

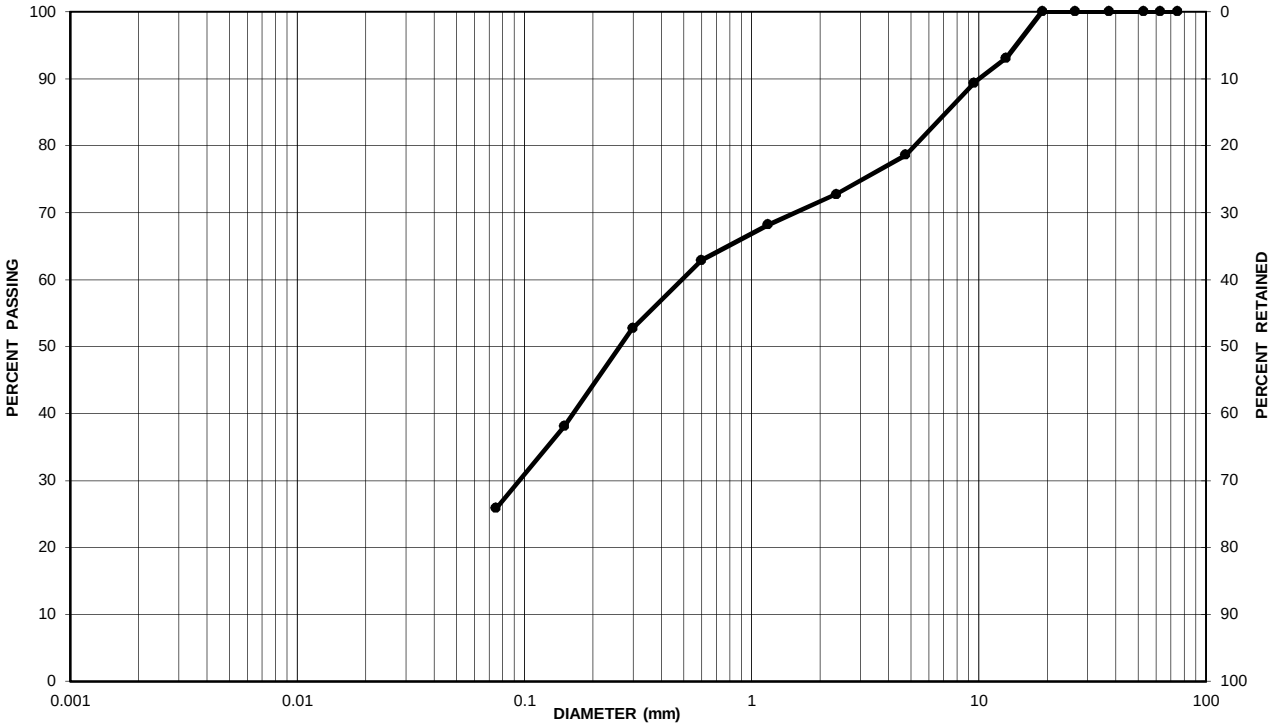
REMARKS:

PERFORMED BY:	T.Watkins	**DATE:**	29-Jan-18
VERIFIED BY:		**DATE:**	31-Jan-18

INVESTIGATIVE SIEVE ANALYSIS OF AGGREGATES (LS-602)

CLIENT:	Stalwood Homes	**LAB No.:**	SS-D-18-2
PROJECT/ SITE:	460 King St. E Cobourg	**PROJECT No.:**	11148584-02

Borehole No.:	BH-8	Sample No.:	SS-1
Depth:	0 - 0.6 m	Enclosure:	B-5



CLAY & SILT	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE
UNIFIED SOIL CLASSIFICATION SYSTEM					

Soil Description	Gravel	Sand	Clay & Silt
BH-8 SS-1	21	53	26

REMARKS:

PERFORMED BY:	T.Watkins	**DATE:**	29-Jan-18
VERIFIED BY:		**DATE:**	31-Jan-18

Attachment C
Chemical Laboratory Data

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G74575 **REPORT No. B18-01950 (i)**

Report To:

GHD Limited
651 Colby Drive,
Waterloo Ontario N2V 1C2 Canada
Attention: Joshua Bigioni

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 19-Jan-18
DATE REPORTED: 26-Jan-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 460 King St East/11148584-02
P.O. NUMBER: 73510330
WATERWORKS NO.

			Client I.D.		BH-2, SS-2	BH-6, SS-1	BH-7, SS-1	BH-8, SS-1
			Sample I.D.		B18-01950-1	B18-01950-2	B18-01950-3	B18-01950-4
			Date Collected		18-Jan-18	18-Jan-18	18-Jan-18	18-Jan-18
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
pH @25°C	pH Units		MOEE 3137	25-Jan-18/R				
Antimony	µg/g	0.5	EPA 6020	25-Jan-18/O	< 0.5	< 0.5	< 0.5	< 0.5
Arsenic	µg/g	0.5	EPA 6020	25-Jan-18/O	1.7	1.6	2.0	1.5
Barium	µg/g	1	EPA 6010	24-Jan-18/O	171	94	172	69
Beryllium	µg/g	0.2	EPA 6010	24-Jan-18/O	0.5	0.4	0.7	0.3
Boron	µg/g	0.5	EPA 6010	24-Jan-18/O	7.3	4.6	7.2	5.9
Boron (HWS)	µg/g	0.02	MOE3470	24-Jan-18/O	0.02	0.13	0.24	0.13
Cadmium	µg/g	0.5	EPA 6010	24-Jan-18/O	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	µg/g	1	EPA 6010	24-Jan-18/O	26	19	29	15
Chromium (VI)	µg/g	0.5	EPA3060A	22-Jan-18/R	< 0.5	< 0.5	< 0.5	< 0.5
Cobalt	µg/g	1	EPA 6010	24-Jan-18/O	9	6	8	4
Copper	µg/g	1	EPA 6010	24-Jan-18/O	18	11	23	11
Lead	µg/g	5	EPA 6010	24-Jan-18/O	6	11	26	12
Mercury	µg/g	0.005	EPA7471A	25-Jan-18/R	0.005	0.050	0.053	0.024
Molybdenum	µg/g	1	EPA 6010	24-Jan-18/O	< 1	< 1	< 1	< 1
Nickel	µg/g	1	EPA 6010	24-Jan-18/O	20	10	18	9

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

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Client committed. Quality assured.

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Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 19-Jan-18
DATE REPORTED: 26-Jan-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 460 King St East/11148584-02
P.O. NUMBER: 73510330
WATERWORKS NO.

			Client I.D.		BH-2, SS-2	BH-6, SS-1	BH-7, SS-1	BH-8, SS-1
			Sample I.D.		B18-01950-1	B18-01950-2	B18-01950-3	B18-01950-4
			Date Collected		18-Jan-18	18-Jan-18	18-Jan-18	18-Jan-18
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Selenium	µg/g	0.5	EPA 6020	25-Jan-18/O	0.6	0.7	0.9	< 0.5
Silver	µg/g	0.2	EPA 6010	24-Jan-18/O	0.2	< 0.2	< 0.2	< 0.2
Thallium	µg/g	0.1	EPA 6020	25-Jan-18/O	0.2	< 0.1	0.1	< 0.1
Uranium	µg/g	0.1	EPA 6020	25-Jan-18/O	0.5	0.5	0.6	0.4
Vanadium	µg/g	1	EPA 6010	24-Jan-18/O	40	27	43	19
Zinc	µg/g	3	EPA 6010	24-Jan-18/O	52	46	81	37

Christine Burke
Lab Manager

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DATE REPORTED: 26-Jan-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 460 King St East/11148584-02
P.O. NUMBER: 73510330
WATERWORKS NO.

			Client I.D.		BH-1, SS-4	BH-3, SS-2		
			Sample I.D.		B18-01950-5	B18-01950-6		
			Date Collected		18-Jan-18	18-Jan-18		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
pH @25°C	pH Units		MOEE 3137	25-Jan-18/R	7.74	7.76		
Antimony	µg/g	0.5	EPA 6020	25-Jan-18/O				
Arsenic	µg/g	0.5	EPA 6020	25-Jan-18/O				
Barium	µg/g	1	EPA 6010	24-Jan-18/O				
Beryllium	µg/g	0.2	EPA 6010	24-Jan-18/O				
Boron	µg/g	0.5	EPA 6010	24-Jan-18/O				
Boron (HWS)	µg/g	0.02	MOE3470	24-Jan-18/O				
Cadmium	µg/g	0.5	EPA 6010	24-Jan-18/O				
Chromium	µg/g	1	EPA 6010	24-Jan-18/O				
Chromium (VI)	µg/g	0.5	EPA3060A	22-Jan-18/R				
Cobalt	µg/g	1	EPA 6010	24-Jan-18/O				
Copper	µg/g	1	EPA 6010	24-Jan-18/O				
Lead	µg/g	5	EPA 6010	24-Jan-18/O				
Mercury	µg/g	0.005	EPA7471A	25-Jan-18/R				
Molybdenum	µg/g	1	EPA 6010	24-Jan-18/O				
Nickel	µg/g	1	EPA 6010	24-Jan-18/O				

Christine Burke
Lab Manager

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SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 460 King St East/11148584-02
P.O. NUMBER: 73510330
WATERWORKS NO.

			Client I.D.		BH-1, SS-4	BH-3, SS-2		
			Sample I.D.		B18-01950-5	B18-01950-6		
			Date Collected		18-Jan-18	18-Jan-18		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Selenium	µg/g	0.5	EPA 6020	25-Jan-18/O				
Silver	µg/g	0.2	EPA 6010	24-Jan-18/O				
Thallium	µg/g	0.1	EPA 6020	25-Jan-18/O				
Uranium	µg/g	0.1	EPA 6020	25-Jan-18/O				
Vanadium	µg/g	1	EPA 6010	24-Jan-18/O				
Zinc	µg/g	3	EPA 6010	24-Jan-18/O				

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

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Christine Burke
Lab Manager

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SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 460 King St East/11148584-02
P.O. NUMBER: 73510330
WATERWORKS NO.

			Client I.D.		BH-2, SS-2	BH-6, SS-1	BH-7, SS-1	BH-8, SS-1
			Sample I.D.		B18-01950-1	B18-01950-2	B18-01950-3	B18-01950-4
			Date Collected		18-Jan-18	18-Jan-18	18-Jan-18	18-Jan-18
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acetone	µg/g	0.5	EPA 8260	22-Jan-18/R	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Bromodichloromethane	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Bromoform	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Bromomethane	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Carbon Tetrachloride	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Monochlorobenzene (Chlorobenzene)	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Chloroform	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dibromochloromethane	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dichlorobenzene,1,2-	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Dichlorobenzene,1,3-	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Dichlorobenzene,1,4-	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Dichlorodifluoromethane	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Dichloroethane,1,1-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dichloroethane,1,2-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02

Christine Burke
Lab Manager

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			Client I.D.		BH-2, SS-2	BH-6, SS-1	BH-7, SS-1	BH-8, SS-1
			Sample I.D.		B18-01950-1	B18-01950-2	B18-01950-3	B18-01950-4
			Date Collected		18-Jan-18	18-Jan-18	18-Jan-18	18-Jan-18
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Dichloroethylene,1,1-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dichloroethene, cis-1,2-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dichloroethene, trans-1,2-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dichloropropane,1,2-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dichloropropene, cis-1,3-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dichloropropene, trans-1,3-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Dichloropropene 1,3- cis+trans	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Ethylbenzene	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Dibromoethane,1,2- (Ethylene Dibromide)	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Hexane	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Methyl Ethyl Ketone	µg/g	0.5	EPA 8260	22-Jan-18/R	< 0.5	< 0.5	< 0.5	< 0.5
Methyl Isobutyl Ketone	µg/g	0.5	EPA 8260	22-Jan-18/R	< 0.5	< 0.5	< 0.5	< 0.5
Methyl-t-butyl Ether	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05

Christine Burke
Lab Manager

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WATERWORKS NO.

			Client I.D.		BH-2, SS-2	BH-6, SS-1	BH-7, SS-1	BH-8, SS-1
			Sample I.D.		B18-01950-1	B18-01950-2	B18-01950-3	B18-01950-4
			Date Collected		18-Jan-18	18-Jan-18	18-Jan-18	18-Jan-18
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Dichloromethane (Methylene Chloride)	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Styrene	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Tetrachloroethane,1,1,1,2-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Tetrachloroethane,1,1,2,2-	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Tetrachloroethylene	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Toluene	µg/g	0.2	EPA 8260	22-Jan-18/R	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethane,1,1,1-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Trichloroethane,1,1,2-	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Trichloroethylene	µg/g	0.05	EPA 8260	22-Jan-18/R	< 0.05	< 0.05	< 0.05	< 0.05
Trichlorofluoromethane	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Vinyl Chloride	µg/g	0.02	EPA 8260	22-Jan-18/R	< 0.02	< 0.02	< 0.02	< 0.02
Xylene, m,p-	µg/g	0.03	EPA 8260	22-Jan-18/R	< 0.03	< 0.03	< 0.03	< 0.03
Xylene, o-	µg/g	0.03	EPA 8260	22-Jan-18/R	< 0.03	< 0.03	< 0.03	< 0.03
Xylene, m,p,o-	µg/g	0.03	EPA 8260	22-Jan-18/R	< 0.03	< 0.03	< 0.03	< 0.03
PHC F1 (C6-C10)	µg/g	10	CWS Tier 1	22-Jan-18/R	< 10	< 10	< 10	< 10

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Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

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CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G74575 **REPORT No. B18-01950 (ii)**

Report To:

GHD Limited
651 Colby Drive,
Waterloo Ontario N2V 1C2 Canada
Attention: Joshua Bigioni

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 19-Jan-18
DATE REPORTED: 26-Jan-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 460 King St East/11148584-02
P.O. NUMBER: 73510330
WATERWORKS NO.

			Client I.D.		BH-2, SS-2	BH-6, SS-1	BH-7, SS-1	BH-8, SS-1
			Sample I.D.		B18-01950-1	B18-01950-2	B18-01950-3	B18-01950-4
			Date Collected		18-Jan-18	18-Jan-18	18-Jan-18	18-Jan-18
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
PHC F2 (>C10-C16)	µg/g	5	CWS Tier 1	23-Jan-18/K	< 5	< 5	< 5	< 5
PHC F3 (>C16-C34)	µg/g	10	CWS Tier 1	23-Jan-18/K	< 10	20	11	< 10
PHC F4 (>C34-C50)	µg/g	10	CWS Tier 1	23-Jan-18/K	< 10	22	< 10	< 10
% moisture	%			23-Jan-18/R	19.5	16.5	22.5	11.5

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

Christine Burke
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G74575 **REPORT No. B18-01950 (iii)**

Report To:

GHD Limited
651 Colby Drive,
Waterloo Ontario N2V 1C2 Canada
Attention: Joshua Bigioni

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 19-Jan-18
DATE REPORTED: 26-Jan-18
SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 460 King St East/11148584-02
P.O. NUMBER: 73510330
WATERWORKS NO.

			Client I.D.		BH-2, SS-2			
			Sample I.D.		B18-01950-1			
			Date Collected		18-Jan-18			
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acenaphthene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Acenaphthylene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Anthracene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Benzo(a)anthracene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Benzo(a)pyrene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Benzo(b)fluoranthene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Benzo(b+k)fluoranthene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Benzo(g,h,i)perylene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Benzo(k)fluoranthene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Chrysene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Dibenzo(a,h)anthracene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Fluoranthene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Fluorene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Indeno(1,2,3,-cd)pyrene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Methylnaphthalene,1-	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Methylnaphthalene,2-	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

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SAMPLE MATRIX: Soil

JOB/PROJECT NO.: 460 King St East/11148584-02
P.O. NUMBER: 73510330
WATERWORKS NO.

			Client I.D.		BH-2, SS-2			
			Sample I.D.		B18-01950-1			
			Date Collected		18-Jan-18			
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Methylnaphthalene 2-(1-)	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Naphthalene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Phenanthrene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			
Pyrene	µg/g	0.05	EPA 8270	23-Jan-18/K	< 0.05			

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
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This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

Christine Burke
Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

November 21, 2019 Reference No. 11148584-03

Mr. Jason Armstrong
Engage Engineering Ltd.
171 King Street, Suite 120
Peterborough, Ontario
K9J 2R8

Re: Groundwater Monitoring Report
Proposed Residential Development, 460 King Street East, Cobourg

The following report presents a summary of groundwater measurements completed at the above captioned site. Reference is made to our "Geotechnical Investigation Report" dated February 2, 2018 regarding background information pertaining to the site and the subsurface conditions. The investigation had included the installation of three (3) monitoring wells. Details of the monitoring wells are presented in the Geotechnical Report. A summary of the groundwater measurements that have been completed to date is provided in the following table.

Water Level Summary

Location	Water Level (m) Below Ground Surface						
	Jan, 18, 2018	Jan. 19, 2018	Jan. 29, 2018	Mar. 20, 2019	Apr. 25, 2019	Sept. 16, 2019	Nov. 11, 2019
BH-2	4.4	1.1	1.2	0.8	0.70	1.86	0.83
BH-4	4.4	0.7	0.6	frozen	0.28	0.66	0.52
BH-5	1.5	1.6	1.6	1.5	1.31	2.73	1.80

The conclusions and recommendations presented in our Geotechnical Report have not changed. We trust that this brief report meets with your immediate requirements. Should you have any questions, please contact our office.

Sincerely,

GHD

David Workman, P.Geo.

Nyle McIlveen, P.Eng.
/dw/nm
E-mail to Jason Armstrong (jason@engageeng.ca)
c: Christopher Donegan (chruan@hotmail.com)
Jeff Mycyk (jmycyk@gmail.com)
Brad Parsons (brad@engageeng.ca)

From:	David.Workman@ghd.com
To:	Jason Armstrong
Cc:	Brad Parsons
Subject:	RE: 18041: East Village Phase 5 Cobourg
Date:	June 26, 2019 10:44:37 AM
Attachments:	image014.png image015.png image016.png image017.png image018.png image006.png image007.png image009.png image011.png

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Hi Jason:

Unfortunately, hydraulic conductivity testing was not part of the geotechnical investigation. Nevertheless, I have reviewed the subsurface information that was revealed and provide you with the following commentary.

Reference is made to our "Geotechnical Investigation Report, Proposed Residential Development, 460 King Street East, Cobourg, Ontario" dated February 3, 2018 for details related to the previous work. The subsurface conditions encountered at the Site are graphically presented on the test hole logs (Appendix A). The boreholes generally encountered a layer of topsoil or fill, underlain by loose to compact sandy silt and/or firm to very stiff clayey silt, underlain (in most boreholes) by compact to very dense till consisting with variable amount of gravel, sand, silt and clay.

The K values for the hydraulic conductivity would typically range from on the order of 10^{-4} to 10^{-5} cm/sec for sandy silt and 10^{-5} to 10^{-6} cm/sec for clayey silt. Based on Low Impact Development Stormwater Management Planning and Design Guide, this correlates to infiltration rates on the order of 30 to 50 mm/hr and 12 to 30 mm/hr, respectively for these soil units.

You will need to review Appendix A of the aforementioned report to determine where the soil units were encountered on-site.

Hope this helps.

Regards,
David Workman, P.Geo.
Senior Environmental Specialist/Hydrogeologist

GHD
Proudly employee owned
T: +1 905 215 0247 | M: +1 289 927 2657 | E: david.workman@ghd.com
1801 Wentworth Street, Unit 10, Whitby, Ontario L1N 8R6 Canada | www.ghd.com
Connect

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

Please consider our environment before printing this email

From: David Workman
Sent: Tuesday, June 25, 2019 9:37 AM
To: 'Jason Armstrong' <jason@engageeng.ca>
Cc: Brad Parsons <brad@engageeng.ca>
Subject: RE: 18041: East Village Phase 5 Cobourg

Hi Jason:

I will take a look and get to you. Give me a couple of days to do so.

Regards,
David Workman, P.Geo.
Senior Environmental Specialist/Hydrogeologist

GHD
Proudly employee owned
T: +1 905 215 0247 | M: +1 289 927 2657 | E: david.workman@ghd.com
1801 Wentworth Street, Unit 10, Whitby, Ontario L1N 8R6 Canada | www.ghd.com
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WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

Please consider our environment before printing this email

From: Jason Armstrong <jason@engageeng.ca>
Sent: Tuesday, June 25, 2019 9:34 AM
To: David Workman <David.Workman@ghd.com>
Cc: Brad Parsons <brad@engageeng.ca>
Subject: 18041: East Village Phase 5 Cobourg

Hi David,

Further to our conversation we are looking for preliminary/approximate infiltration rates for the site. You prepared a Geotechnical Report in February 2018, your project # is 11148584.

We're working through the detailed design on this project and are evaluating what LID features can be incorporated. Currently looking at rear yard infiltration trenches.

Anything you can provide based on your soils testing would be appreciated.

Thanks,

Jason Armstrong
Engage Engineering Ltd.
171 King Street · Peterborough, ON · K9J 2R8
P: 705.755.0427 x203 C: 705.760.1006

This e-mail has been scanned for viruses

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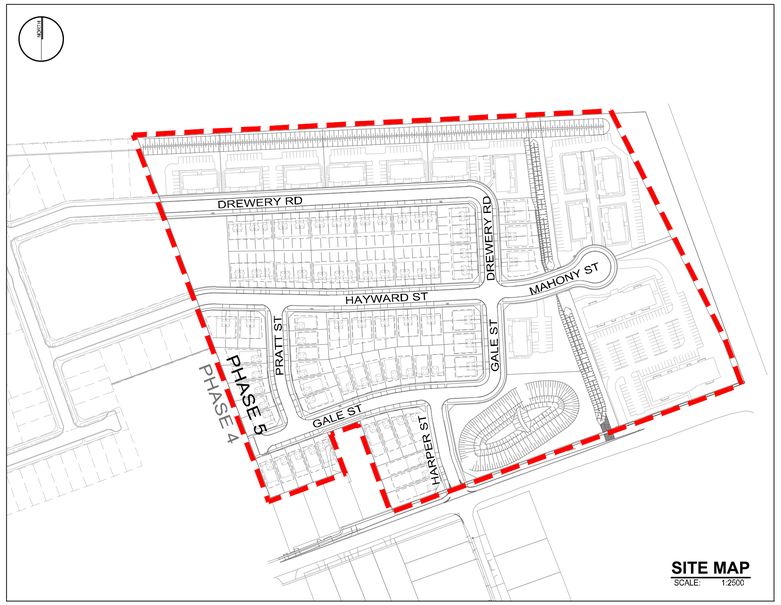
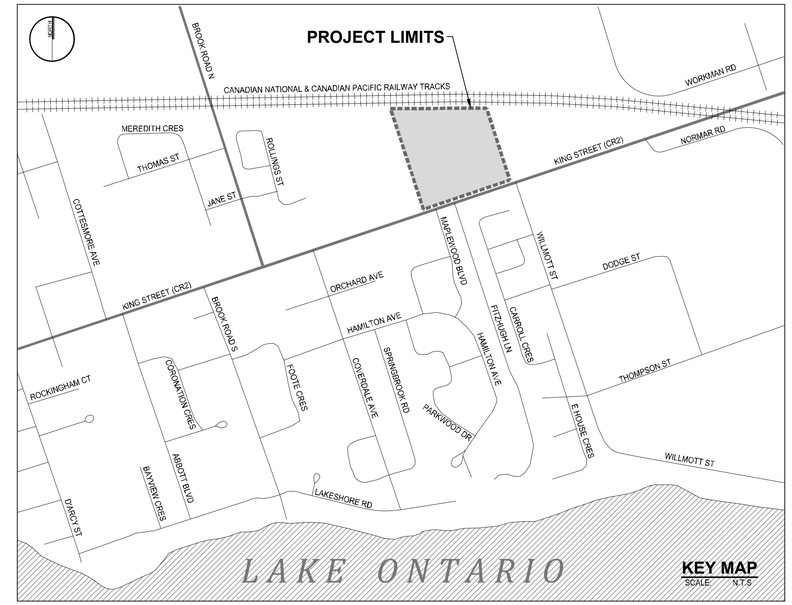
Appendix N: Detailed Design Drawings

EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG - NORTHUMBERLAND COUNTY

ENGAGE PROJECT No: 18041 ISSUED FOR 2nd SUBMISSION





DRAWING INDEX

No.	NAME	DESCRIPTION
0	CS1	COVER SHEET
1	CS2	STANDARD NOTES AND LEGEND
2	PH1	CONSTRUCTION PHASING PLAN
3	OP1	GENERAL PLAN OF SERVICES - WEST
4	OP2	GENERAL PLAN OF SERVICES - EAST
5	GP1	PROPOSED GRADING PLAN - WEST
6	GP2	PROPOSED GRADING PLAN - EAST
7	PP1.1	PROPOSED PLAN & PROFILE - DREWERY ROAD STA: 1+000 TO 1+275
8	PP1.2	PROPOSED PLAN & PROFILE - DREWERY ROAD/GALE STREET STA: 1+275 TO 1+440
9	PP1.3	PROPOSED PLAN & PROFILE - GALE STREET STA: 1+440 TO 1+660
10	PP2.1	PROPOSED PLAN & PROFILE - HAYWARD STREET/MAHONY STREET STA: 2+000 TO 2+350
11	PP3.1	PROPOSED PLAN & PROFILE - HARPER STREET STA: 3+000 TO 3+140
12	PP4.1	PROPOSED PLAN & PROFILE - PRATT STREET STA: 4+000 TO 4+150
13	PP5.1	PROPOSED PLAN & PROFILE - MAPLEWOOD BOULEVARD STA: 2+900 TO KING ST
14	SWM1	PROPOSED STORMWATER MANAGEMENT PLAN
15	SWM2	PROPOSED DRAINAGE CHANNEL PLAN
16	EC1	EXISTING CONDITIONS AND REMOAVALS
17	SW1	KING STREET AT MAPLEWOOD & HARPER STREET IMPROVEMENTS
18	PM1	KING STREET AT MAPLEWOOD & HARPER STREET PAVEMENT MARKINGS
19	XS1	KING STREET CROSS SECTIONS
20	XS2	KING STREET CROSS SECTIONS
21	XS3	KING STREET CROSS SECTIONS
22	SA1	SANITARY DRAINAGE AREA PLAN
23	ST1	STORM DRAINAGE AREA PLAN
24	ES1	EROSION & SEDIMENT CONTROL PLAN
25	DT1	STANDARD DETAILS 1
26	DT2	STANDARD DETAILS 2
27	DT3	RETAINING WALL SECTIONS

ENGAGE ENGINEERING
www.engageeng.ca • 171 King Street, Suite 120, Peterborough, ON • Phone: (705) 755-0427

"Ontario's Feel Good Town" Cobourg Ontario, Canada

JMCD HOLDINGS

JMCD HOLDINGS
EAST VILLAGE SUBDIVISION - PHASE 5
TOWN OF COBOURG - NORTHUMBERLAND COUNTY
ENGAGE PROJECT No: 18041
ISSUED FOR 2nd SUBMISSION
ENGAGE ENGINEERING
www.engageeng.ca • 171 King Street, Suite 120, Peterborough, ON • Phone: (705) 755-0427

LEGEND

REMOVAL AND ADJUSTMENTS

- (A) APPURTENANCE ADJUSTMENT BY CONTRACTOR (CB,MH,WV etc.)
- (B) ADJUSTMENT BY OTHERS
- (C) RELOCATE EXISTING CATCHBASIN
- (EX) EXCAVATE/BACKFILL EXIST. CATCHBASIN/MANHOLE
- (S) REMOVE, SALVAGE AND REINSTALL
- (E) TO BE EXPOSED BY CONTRACTOR

FENCE REMOVAL

MH — MAINTENANCE HOLE AND SEWER REMOVAL

VC — VALVE CHAMBER AND WATERMAIN REMOVAL

UNDERGROUND SERVICES

SEWERS:

PROP 90.0m-200mm Ø SAN @ 1.00% — MH — PROPOSED SANITARY SEWER MAIN AND MANHOLE

100.5m-200mm Ø SAN @ 2.12% — MH — EXISTING SANITARY SEWER MAIN AND MANHOLE

PROP 90.0m-300mm Ø STM @ 0.50% — MH — PROPOSED STORM SEWER MAIN AND MANHOLE

65.3m-300mm Ø STM @ 4.27% — MH — EXISTING STORM SEWER MAIN AND MANHOLE

CBMH — PROPOSED CATCH BASIN MANHOLE

DCBMH — PROPOSED DOUBLE CATCH BASIN MANHOLE

CB — PROPOSED CATCH BASIN

DCB — PROPOSED DOUBLE CATCH BASIN

CBMH — EXISTING CATCH BASIN MANHOLE

CB — EXISTING CATCH BASIN

DCB — EXISTING DOUBLE CATCH BASIN

WATER:

PROP 300mm Ø WM — VC — PROPOSED WATER MAIN AND VALVE CHAMBER

300mm Ø WM — VC — EXISTING WATER MAIN AND VALVE CHAMBER

HYD — WV — PROPOSED HYDRANT SET

HYD — WV — EXISTING HYDRANT SET

WV — PROPOSED WATER VALVE

WV — EXISTING WATER VALVE

CURB STOP VALVE

LAWN SPRINKLER HEAD

NATURAL GAS:

100mm Ø GAS — EXISTING GAS MAIN

EXISTING GAS VALVE

VP — EXISTING VENT PIPE

UTILITIES:

ELECTRICAL:

- HP — HYDRO POLE
- HPLS — HYDRO POLE LIGHT STANDARD
- HPLS — HYDRO POLE LIGHT STANDARD WITH TRANSFORMER
- LS — LIGHT STANDARD
- TS — TRAFFIC SIGNAL POLE
- HW — HANDWELL
- GUY ANCHOR

TELECOMMUNICATIONS:

- BHP — BELL HYDRO POLE
- BP — BELL POLE
- BRP — BELL ROGERS POLE
- PED — PEDESTAL

ROAD SURFACE FEATURES:

RET. WALL — EXISTING RETAINING WALL

EXISTING FENCE

CONC. SWK — CONCRETE SIDEWALK

CONCRETE BARRIER CURB (OPSD 600.110)

CONCRETE CURB AND GUTTER (OPSD 600.040)

RESIDENTIAL DRIVEWAY ENTRANCES / DROP CURB

PROPOSED CONCRETE DRIVEWAY RAMP

PROPOSED LIGHT-DUTY ASPHALT

PROPOSED ASHPALT DRIVEWAY

LEGAL AND CONTROL SYMBOLS:

- IB — IRON BAR
- RIB — ROUND IRON BAR
- IP — IRON PIPE
- CC — CUT CROSS
- HCM — HORIZONTAL CONTROL MONUMENT
- VCM — VERTICAL CONTROL MONUMENT
- TBM — TEMPORARY BENCHMARK
- BM — BENCHMARK
- 1+000 — STATION CHAINAGE

MISCELLANEOUS:

- BH — BOREHOLE
- TP — TEST PIT
- WATER DATUM LINE
- PST — POST
- PM — PARKING METER
- MB — MAILBOX
- RK — BOULDER / ROCK
- BOLLARD
- PILLAR
- POLE — POLE
- CANADA POST MAILBOX
- OVERHEAD DOOR
- MAN DOOR
- ACCESSIBLE MAN DOOR
- OVERLAND FLOW ROUTE
- 100-YEAR PONDING LIMIT
- RWL — ROOF DRAIN

VEGETATION:

- HEDGE
- TREE CONIFEROUS
- SHRUB CONIFEROUS
- TREE DECIDUOUS
- SHRUB DECIDUOUS
- STUMP

ROADS:

1. ALL ROADS PAVEMENT WIDTH WILL BE 8.50m.
2. THICKNESS OF PAVEMENT STRUCTURE WILL BE AS FOLLOWS:

	LOCAL ROADS	COLLECTORS (KING STREET)
- HL3 SURFACE COURSE	40mm	40mm
- HL8 BINDER COURSE	50mm	100mm
- GRANULAR A BASE	150mm	150mm
- GRANULAR B SUBBASE	300mm	450mm

3. THE PAVEMENT STRUCTURE FOR THE ROADWAYS WITHIN THE SUBDIVISION HAS BEEN DESIGNED TO ACCOMMODATE HIGHWAY VEHICLE LOADING FOR WASTE COLLECTION VEHICLES.
4. THE GRANULAR SUBBASE AND BASE MATERIALS SHOULD BE UNIFORMLY COMPACTED TO 100% AND THE GRANULAR B SHALL BE TYPE 1.
5. THE ASPHALT MATERIALS SHALL BE COMPACTED TO 92%.
6. CONTINUOUS SUBDRAINS SHALL BE PLACED ALONG BOTH SIDES OF THE ROADS. THE INVERT OF THE SUBDRAINS SHOULD BE AT LEAST 300mm BELOW THE BOTTOM OF THE GRANULAR B SUBBASE AND SHOULD BE SLOPED TO DRAIN TO THE CATCHBASINS.
7. SUBDRAINS SHALL BE 100mm Ø PERFORATED PIPE SURROUNDED ON ALL SIDES WITH CLEAR STONE AND GEOTEXTILE
8. ALL CURB AND GUTTER SHALL BE AS PER OPSD 600.040.
9. ROAD SUBGRADE SHALL BE COMPACTED TO 95%, PROOFROLLED AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING THE GRANULAR B SUBBASE.
10. WHENEVER IT IS NECESSARY TO CUT THROUGH AN EXISTING TOWN ROAD, THE CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING A ROAD OCCUPANCY PERMIT AND PROPERLY COMPACTING THE BACKFILL MATERIAL AND RESTORING THE SURFACE PAVEMENT TO ORIGINAL OR BETTER CONDITIONS IMMEDIATELY UPON COMPLETION OF BACKFILL OPERATION.
11. THE PROPOSED BERM ALONG THE NORTHERN BOUNDARY OF THE SITE MAY BE CONSTRUCTED USING LOCAL BORROW MATERIAL.
12. THE BERM FILLS SHOULD BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO AT LEAST 95% OF THE MATERIALS SPMDD.
13. THE IMPORTED BACKFILL MATERIAL TO BE USED TO BUILD THE ROAD AND TO FILL THE TRENCHES IS TO BE ENGINEERED FILL, THE BACKFILL MATERIAL SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.

WATERMAIN:

1. THE CONTRACTOR SHALL PROVIDE 48HR NOTICE TO LUSI'S ENGINEER PRIOR TO COMMENCING WATERMAIN CONSTRUCTION.
2. ONLY REPRESENTATIVES OF LAKEFRONT UTILITY SERVICES INC. (LUSI) ARE AUTHORIZED TO OPERATE VALVES OR HYDRANTS OF THE EXISTING WATER DISTRIBUTION SYSTEM.
3. THE CONTRACTOR SHALL INSTALL TRACER WIRE ON ALL NEW PVC WATERMAIN.
4. THE CONTRACTOR SHALL INSTALL CATHODIC PROTECTION AS PER OPSD 1109.0110.
5. THE CONTRACTOR SHALL INSTALL RETAINING GLAND RINGS ON ALL WATERMAIN FITTINGS AND CONNECTIONS WHERE THRUST BLOCKS CANNOT BE CONSTRUCTED ON SOLID GROUND.
6. THE CONTRACTOR SHALL INSTALL BEDDING AND BACKFILL AS PER OPSD 802.010.
7. THE CONTRACTOR SHALL INSTALL ALL WATERMAIN AND SERVICES AT A MINIMUM DEPTH OF 1.85 METRES FROM THE PROPOSED FINISH GRADE TO THE TOP OF PIPE.
8. THE CONTRACTOR SHALL MAINTAIN A MINIMUM VERTICAL CLEARANCE BETWEEN WATERMAIN AND SEWER OF 0.50 METRES BELOW OR 0.15 METRES ABOVE.
9. THE CONTRACTOR SHALL INSTALL WATER SERVICES AS PER OPSD 1104.0100, AND AT RIGHT ANGLES TO THE WATERMAIN WHERE POSSIBLE.
10. THE CONTRACTOR SHALL INSTALL ANODE PROTECTION ON ALL WATER SERVICES.
11. THE CONTRACTOR SHALL INSTALL 19mmØ TYPE 'K' COPPER SERVICE CONNECTIONS.
12. THE CONTRACTOR SHALL INSTALL WATER SERVICE BOXES ON ALL WATER SERVICES. WATER SERVICE BOXES SHALL BE LOCATED BETWEEN PROPERTY LINE AND 0.30 METRES TOWARD THE CENTERLINE OF ROAD. SERVICE BOXES SHALL UNDER NO CIRCUMSTANCES BE LOCATED ON PRIVATE PROPERTY.
13. THE CONTRACTOR SHALL INSTALL A 2x4 AT THE END OF THE SERVICE THAT IS VISIBLE, CLEARLY LABELED, PAINTED BLUE, AND IDENTIFIES THE DEPTH TO THE SERVICE INVERT.
14. THE CONTRACTOR SHALL INSTALL ALL WATER SERVICES WITH A MINIMUM OFFSET OF 0.30 METRES FROM THE PROPOSED DRIVEWAY. SERVICE BOXES SHALL UNDER NO CIRCUMSTANCES BE LOCATED WITHIN THE PROPOSED DRIVEWAY.
15. THE CONTRACTOR SHALL INSTALL THRUST BLOCKS FOR VERTICAL BENDS AS PER OPSD 1103.020. THE CONTRACTOR SHALL INSTALL THRUST BLOCKS FOR HORIZONTAL BENDS AS PER OPSD 1103.010.
16. THE CONTRACTOR SHALL INSTALL HYDRANTS AS PER OPSD 1105.010.
17. THE CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE TO THE LUSI'S ENGINEER PRIOR TO CONDUCTING WATERMAIN TESTING.
18. THE CONTRACTOR SHALL COMPLETE FLUSHING AND DISINFECTING OPERATIONS IN ACCORDANCE WITH MECP WATERMAIN DISINFECTION PROCEDURES. PRIOR TO FILLING THE NEW WATERMAIN FROM THE EXISTING WATER DISTRIBUTION SYSTEM THE SUBDIVIDER'S CONSULTING ENGINEER SHALL MEET WITH LUSI STAFF AND THE LUSI ENGINEER TO REVIEW THE MECP PROCEDURES AND THE MANDATORY BACKFLOW PROTECTION MEASURES OF ANSI/AWWA STANDARD C651 TO BE IMPLEMENTED TO COORDINATE THE COMPLETION OF THE FILLING, TESTING, WITNESSING, FLUSHING AND DISINFECTION OF THE NEW WATERMAIN CONSTRUCTION.
19. THE CONTRACTOR SHALL COMPLETE HYDROSTATIC TESTING OF THE NEW WATERMAIN IN ACCORDANCE WITH OPSS 441.07.24.01 AND OPSS 441.07.24.03 AND WITNESSED BY A REPRESENTATIVE OF LUSI. IF THE WATERMAIN IS FILLED FROM THE EXISTING WATER DISTRIBUTION SYSTEM THE BACKFLOW PROTECTION MEASURES OF ANSI/AWWA STANDARD C651 SHALL BE IMPLEMENTED TO THE SATISFACTION OF LUSI'S CERTIFIED OPERATOR WITHIN THE MEANING OF O.REG. 170/03. THE SUBDIVIDER'S CONSULTING ENGINEER SHALL DOCUMENT ALL TESTING CALCULATIONS AND SHALL HAVE A LUSI REPRESENTATIVE PRESENT TO WITNESS ALL TEST RESULTS UNTIL A SATISFACTORY RESULT IS ACHIEVED.
20. THE CONTRACTOR SHALL PROVIDE ALL WATERMAIN TESTING RESULTS (INCLUDING CHLORINATION, BACTERIOLOGICAL, PRESSURE AND FLOW) IN ACCORDANCE WITH LUSI SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE 2 COPIES OF ALL TEST RESULTS.

STORM SEWER:

1. THE CONTRACTOR SHALL INSTALL BEDDING, BACKFILL AND COVER PER ONTARIO PROVINCIAL STANDARD DRAWING (OPSD) 802.010 FOR FLEXIBLE PIPE (PVC) AND SERVICES, AND OPSD 802.030 FOR RIGID PIPE (CONCRETE).
2. THE CONTRACTOR SHALL INSTALL PRECAST CONCRETE MANHOLES AS PER OPSD 701.010, 701.011, 701.012, 401.010, 404.020, 405.010 AND 405.020, UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS. CONCRETE MANHOLES SHALL NOT BE BENCHED.
3. THE CONTRACTOR SHALL INSTALL CONCRETE CATCHBASIN MANHOLES AS PER OPSD 701.010, 701.011, 701.012, 401.020, 404.020, 405.010 AND 405.020, UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.
4. THE CONTRACTOR SHALL INSTALL CONCRETE CATCHBASINS COMPLETE WITH FRAME, GRATE AND 300mm PVC LEAD AS PER OPSD 705.010 AND OPSD 401.081, UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS. CATCHBASINS SHALL BE PROVIDED WITH A 600mm SUMP.
5. THE CONTRACTOR SHALL INSTALL 100mm SUBDRAIN PIPE UNDER CONCRETE CURB AND PAVEMENT STRUCTURE AS PER OPSD 216.021, UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.
6. THE CONTRACTOR SHALL INSTALL 150mmØ PVC STORM SERVICES. SERVICES SHALL BE WHITE IN COLOR AND INSTALLED PER OPSD 1006.010.
7. THE HOME BUILDER SHALL PROVIDE A SUMP PUMP FOR ALL SINGLE FAMILY, SEMI-DETACHED AND TOWNHOUSE UNITS. ALL SERVICES FOR THESE UNITS ARE TO BE CONNECTED EXTERNALLY PER DETAIL ON SHEET 25.
8. THE CONTRACTOR SHALL INSTALL A 2X4 AT THE END OF THE STORM SERVICE, LOCATED AT THE PROPERTY LINE. THE 2X4 SHALL BE VISIBLE, CLEARLY LABELLED, IDENTIFY THE DEPTH TO THE SERVICE INVERT, AND BE PAINTED WHITE. ALL STORM SERVICES ARE TO BE LOCATED OUTISDE OF THE DRIVEWAY
9. THE CONTRACTOR SHALL PERFORM AIR AND DEFLECTION TESTING ON ALL STORM SEWERS IN ACCORDANCE WITH MUNICIPAL STANDARDS AND OPSS 410 RESPECTIVELY.
10. THE CONTRACTOR SHALL CLEAN AND PERFORM CCTV INSPECTION ON ALL STORM SEWERS IN ACCORDANCE WITH OPSS 409. THE SUBDIVIDERS CONSULTING ENGINEER SHALL REPORT ALL IDENTIFIED DEFECTS IN THE NEW STORM SEWER SYSTEM AND PROVIDE PROPOSED CORRECTIVE ACTIONS TO THE TOWN ENGINEER FOR REVIEW AND APPROVAL. ALL DEFECTS SHALL BE CORRECTED TO THE SATISFACTION OF THE TOWN ENGINEER PRIOR TO PUTTING THE SEWERS INTO OPERATION.
11. THE CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE TO THE TOWN'S ENGINEER PRIOR TO CONDUCTING PIPE AIR AND DEFLECTION TESTING, CCTV INSPECTIONS AND/OR CLEANING OF THE STORM SEWER.
12. THE CONTRACTOR SHALL PROVIDE 3 COPIES OF PIPE AIR AND DEFLECTION TESTING RESULTS AND CCTV INSPECTION REPORTS.
13. ALL PVC STORM SEWER SHALL BE DR-35.

SANITARY SEWER:

1. THE CONTRACTOR SHALL INSTALL BEDDING, BACKFILL AND COVER PER ONTARIO PROVINCIAL STANDARD DRAWING (OPSD) 802.010 FOR PVC PIPE AND SERVICES.
2. THE CONTRACTOR SHALL INSTALL PRECAST CONCRETE MANHOLES AS PER OPSD 701.010, 401.010, 404.020, 405.010 AND 405.020, UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.
3. THE CONTRACTOR SHALL BENCH ALL SANITARY MANHOLES AS PER OPSD 701.021.
4. THE CONTRACTOR SHALL INSTALL 150mmØ PVC SANITARY SERVICES. SERVICES SHALL BE GREEN IN COLOR AND INSTALLED IN ACCORDANCE WITH OPSD 1006.010.
5. NO SANITARY SERVICES ARE TO BE CONNECTED TO MANHOLES.
6. THE CONTRACTOR SHALL INSTALL A 2X4 AT THE END OF THE SANITARY SERVICE, LOCATED AT THE PROPERTY LINE. THE 2X4 SHALL BE VISIBLE, CLEARLY LABELLED, IDENTIFY THE DEPTH TO THE SERVICE INVERT, AND BE PAINTED RED. ALL SANITARY SERVICES SHALL BE LOCATED OUTSIDE OF THE DRIVEWAY.
7. THE CONTRACTOR SHALL PERFORM AIR AND DEFLECTION TESTING ON ALL SANITARY SEWERS IN ACCORDANCE WITH MUNICIPAL STANDARDS AND OPSS 410 RESPECTIVELY.
9. THE CONTRACTOR SHALL CLEAN AND PERFORM CCTV INSPECTION ON ALL SANITARY SEWERS IN ACCORDANCE WITH OPSS 409. THE SUBDIVIDERS CONSULTING ENGINEER SHALL REPORT ALL IDENTIFIED DEFECTS IN THE NEW SANITARY SEWER SYSTEM AN PROVIDE PROPOSED CORRECTIVE ACTIONS TO THE TOWN'S ENGINEER FOR REVIEW AND APPROVAL. ALL DEFECTS SHALL BE CORRECTED TO THE SATISFACTION OF THE TOWN'S ENGINEER PRIOR TO PUTTING THE SEWERS INTO OPERATION.
10. THE CONTRACTOR SHALL PERFORM DEFLECTION TESTING OF ALL FLEXIBLE SANITARY SEWERS SHALL BE COMPLETED IN ACCORDANCE WITH OPSS MUNI 410.07.16.05. THE SUBDIVIDER'S CONSULTING ENGINEER SHALL PREPARE AND SUBMIT A RECORD OF THE TEST RESULTS TO THE TOWN'S ENGINEER PRIOR TO PUTTING THE SANITARY SEWER INTO OPERATION.
11. THE CONTRACTOR SHALL PERFORM LEAKAGE TESTING OF ALL SANITARY SEWERS SHALL BE COMPLETED IN ACCORDANCE WITH OPSS MUNI 410.07.16.04, EXFILTRATION TEST. THE SUBDIVIDER'S CONSULTING ENGINEER SHALL PREPARE AND SUBMIT A RECORD OF THE TEST RESULTS TO THE TOWN'S ENGINEER PRIOR TO PUTTING THE SANITARY SEWERS INTO SERVICE.
12. THE CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE TO THE TOWN'S ENGINEER PRIOR TO CONDUCTING PIPE AIR AND DEFLECTION TESTING, CCTV INSPECTIONS AND/OR CLEANING OF THE SANITARY SEWER.
13. THE CONTRACTOR SHALL PROVIDE 3 COPIES OF PIPE AIR AND DEFLECTION TESTING RESULTS AND CCTV INSPECTION REPORTS.

SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATION OF:

ELEV: 87.510m

NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
   - TOWN OF COBOURG DESIGN STANDARDS
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3. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL PERMITS OR THIRD PARTY WORKS ASSOCIATED WITH SERVICING CONNECTIONS.
4. THE CONTRACTOR SHALL TAKE EXTREME CARE WHEN WORKING IN PROXIMITY TO EXISTING SERVICES.
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6. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION, OR PER THE ENGINEERING AND LANDSCAPE SPECIFICATIONS REFERENCED HEREIN.
7. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL, BOOK 7, TEMPORARY CONDITIONS.
8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.
9. THE CONTRACTOR SHALL BE AWARE OF WILDLIFE INCLUDING TURTLES AND BANK SWALLOWS. ALTHOUGH TURTLES WERE NOT FOUND IN THE AREA THEY CAN TRAVEL GREAT DISTANCES AND ARE ACTIVE FROM MAY 15TH TO AUGUST 15TH. IF BANK SWALLOWS OR ANY OTHER SAR ARE ENCOUNTERED THE MECP MUST BE CONTACTED.
10. THE CONTRACTOR SHALL BE AWARE THAT NO VEGETATION CLEARING OR GRUBBING SHALL OCCUR DURING THE MAIN BREEDING BIRD SEASON (APRIL 15TH TO AUGUST 15TH) AS PER THE ENVIRONMENT AND CLIMATE CHANGE CANADA GUIDELINES.
11. THE CONTRACTOR SHALL CLEAN EXISTING DEBRIS FROM PREVIOUS LOCATIONS AND WHEN LEAVING THE SITE TO REDUCE THE RISK OF SPREADING INVASIVE SPECIES INTO THE WATERCOURSE. PLEASE CONSULT THE CLEAN EQUIPMENT PROTOCOL FOR INDUSTRY.

No.	REVISION	BY	DATE
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5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

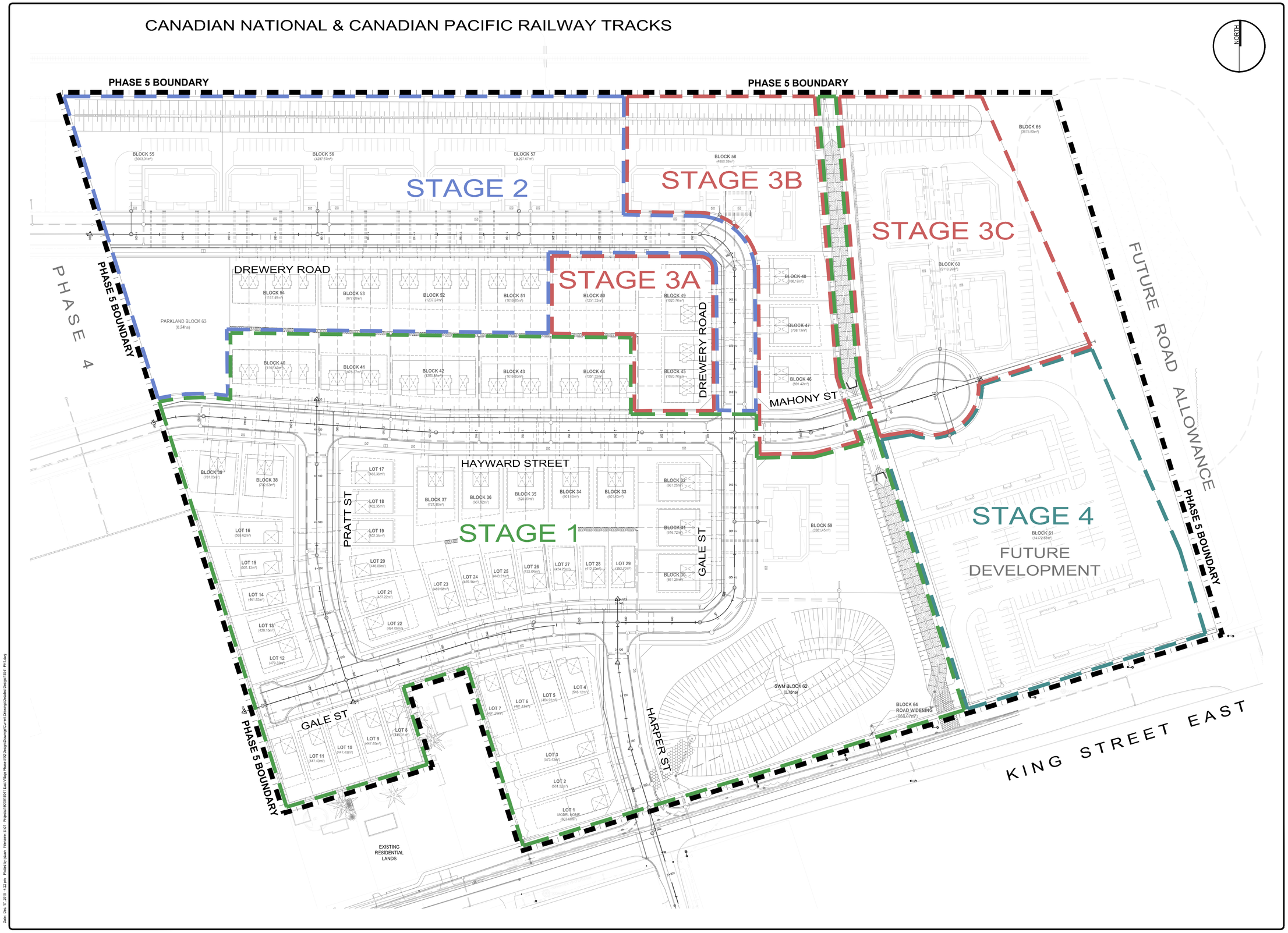
STANDARD NOTES AND LEGEND

COBOURG, ONTARIO

DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-05-28
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL 100164289 2019-12-18 — PROVINCE OF ONTARIO
SCALE: AS NOTED

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	CS2	1 of 27

18041-CS1
Date: Dec 17, 2019 - 4:22 pm Plotted by jdunn Filename: S:\01 - Projects\18\18041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-CS1.dwg



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BENCHMARK

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ELEV: 87.510m

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2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PHASE 5 CONSTRUCTION STAGING PLAN

COBOURG, ONTARIO

DRAWN BY: J.DUNN

DESIGNED BY: J.DUNN

APPROVED BY: A.HILL

DATE: 2019-05-27

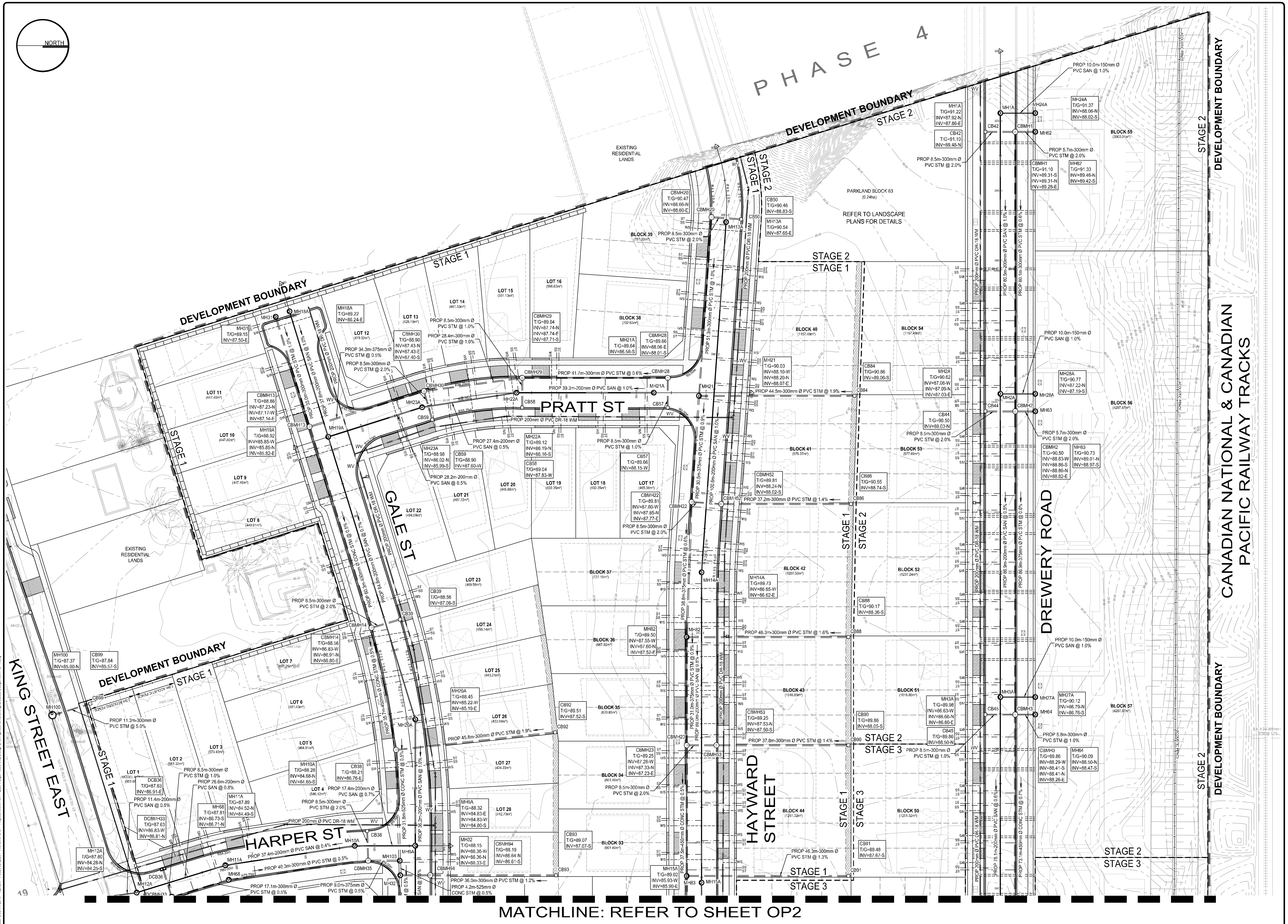
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

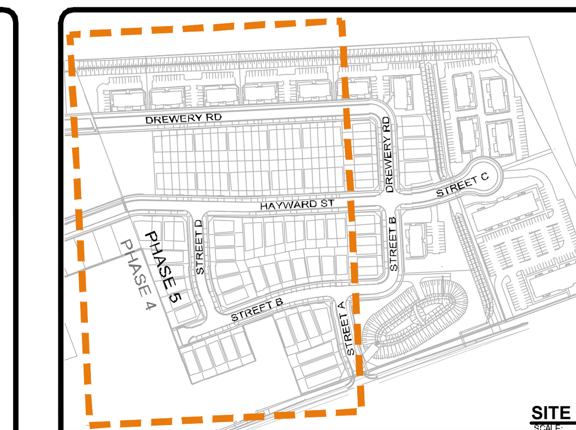
SCALE: 1:750

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PH1	2 of 27

18041-PH1

Date: Dec 17, 2019 - 4:22 pm Plotted by: jdunn Filename: S-01 - Projects\18041\18041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-PH1.dwg





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1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

GENERAL PLAN OF SERVICES - WEST

COBOURG, ONTARIO

DRAWN BY: J.DUNN

DESIGNED BY: J.DUNN

APPROVED BY: A.HILL

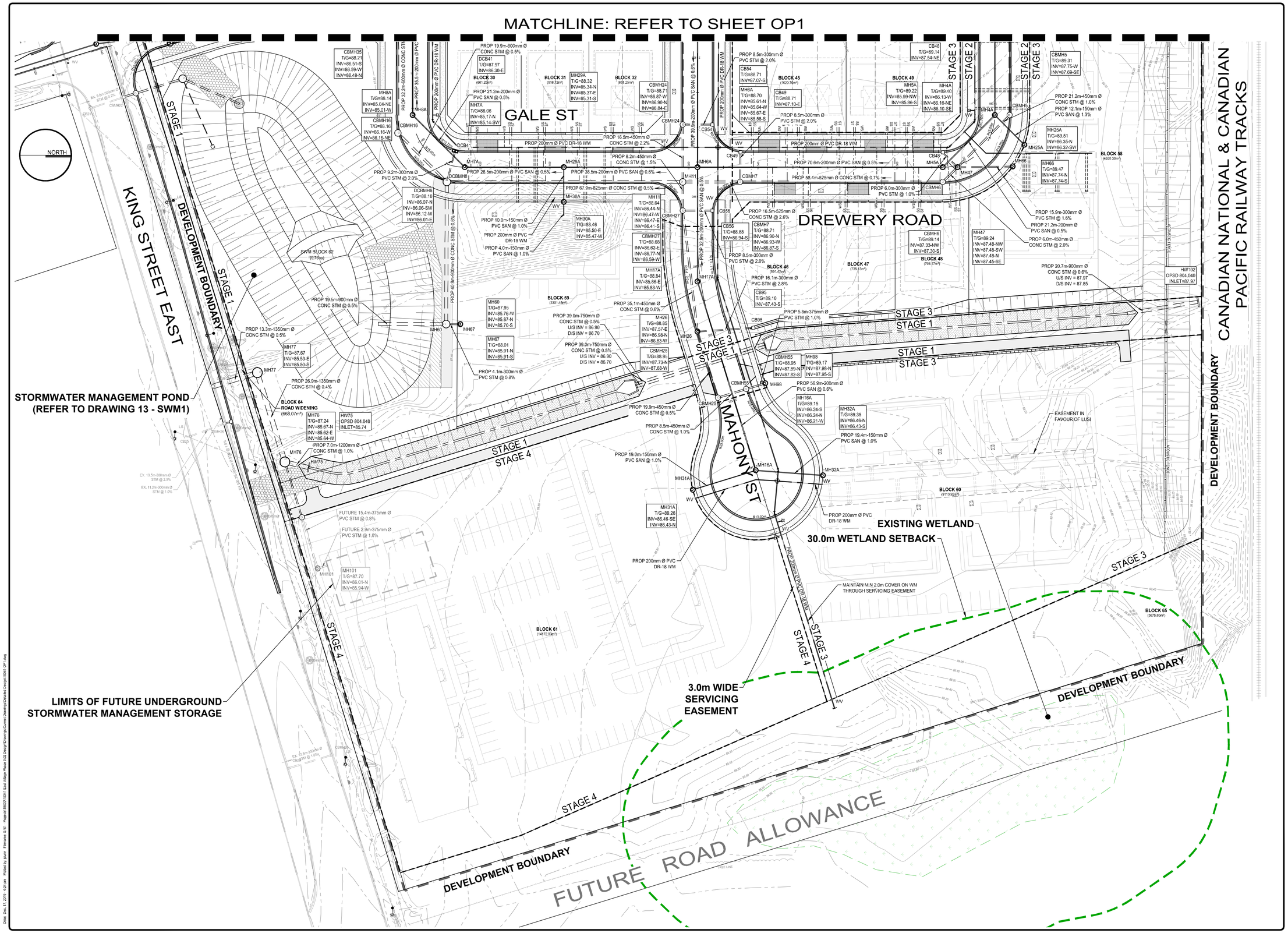
DATE: 2019-05-27

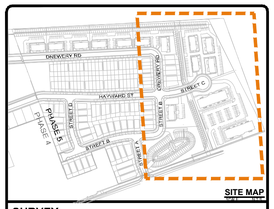
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

SCALE: 1:500

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	OP1	3 of 27

18041-OP1





SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

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ELEV: 87.510m

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8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.

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2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

GENERAL PLAN OF SERVICES - EAST

COBOURG, ONTARIO

DRAWN BY: J.DUNN	STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO
DESIGNED BY: J.DUNN	
APPROVED BY: A.HILL	
DATE: 2019-05-27	
SCALE: 1:500	

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	OP2	4 of 27

18041-OP1

GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
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8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.
9. A 0.6m STRIP SHALL BE LEFT UNDISTURBED ALONG THE BOUNDARY OF THE SUBDIVISION, NEXT TO ADJACENT PROPERTIES.

   THAT HYDRO VAULTS AND OTHER STREET FURNITURE ARE A MINIMUM 1.0m FROM THE PROJECTIONS OF THE OUTSIDE GARAGE WALLS.
8. THE MAXIMUM SLOPE IN THE BACKYARD ADJACENT TO THE BUILDING FOR A DISTANCE EQUAL TO THE REQUIRED BACKYARD SHALL BE 6.0%.
9. WHEN THE ROOF LEADERS ARE NOT CONNECTED TO A STORM SEWER, THE ROOF LEADERS SHALL DISCHARGE ONTO SPLASH PADS, SATISFACTORY TO THE CITY ENGINEER AND THEN TO A GRASSED OR LANDSCAPED AREA AT A MINIMUM DISTANCE OF 0.60m AWAY FROM THE BUILDING FACE.
10. REAR LOT CATCHBASIN EASEMENTS MUST BE A MINIMUM OF 3.0m WIDE. ANY VARIATION MUST BE APPROVED BY THE TOWN ENGINEER.
11. WHEN MATCHING TO EXISTING PROPERTIES WHERE 2.0% SLOPE CANNOT BE ACHIEVED THEN A 1.0% SLOPE IS PERMITTED PROVIDED A 100mm SUBDRAIN IS INSTALLED BELOW THE BOTTOM OF THE SWALE AND DRAINED TO A SUITABLE OUTLET WITH A MINIMUM OF 0.50m COVER OVER THE SUBDRAIN OR OTHER MITIGATION MEASURES.
12. THE MAXIMUM DISTANCE FROM THE CENTRELINE OF A SWALE AT ANY POINT, TO THE NEAREST PROPERTY LINE SHALL NOT EXCEED 1.50m.

GRADING NOTES:

1. THE FRONT YARDS OF ALL RESIDENTIAL LOTS SHALL BE GRADED TO DRAIN TOWARD THE STREET.
2. DRIVEWAY SLOPES SHALL NOT BE LESS THAN 2.0% AND NOT MORE THAN 8.0%.
3. MINIMUM SLOPES FOR AN APRON SWALE IN THE BACK YARD SHALL BE 2.0%, MINIMUM SLOPES FOR INFILTRATION SWALE SHALL BE 1.0%.
4. CONTINUOUS SUBDRAINS SHOULD BE PLACED ALONG BOTH SIDES OF THE ROADS AS SHOWN ON THE DETAILS DRAWING. THE INVERT OF THE SUBDRAINS SHOULD BE AT LEAST 300mm BELOW THE BOTTOM OF THE GRANULAR B SUBBASE AND SHOULD BE SLOPED TO DRAIN TO THE CATCHBASINS.
5. ALL SIDE SWALES SHALL HAVE A MINIMUM LONGITUDINAL SLOPE OF 2.0%.
6. ALL DRAINAGE SWALES SHALL BE LOCATED ON ONE SIDE OF THE COMMON LOT LINE BETWEEN ADJACENT LOTS AND NOT ALONG THE PROPERTY LINE.
7. DRIVEWAYS AND/OR DRIVEWAY APPROACHES SHALL BE LOCATED SUCH

SURVEY

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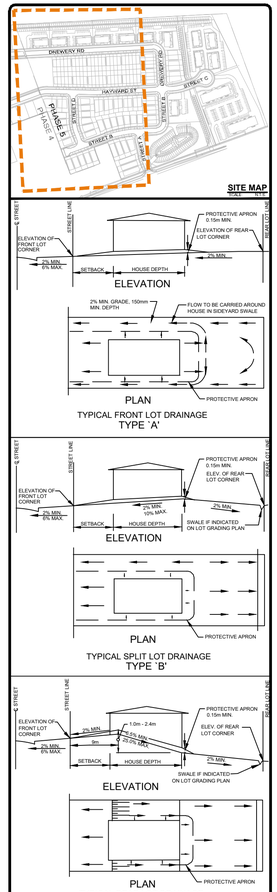
BENCHMARK: 87.510m

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:



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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED GRADING PLAN - WEST

COBOURG, ONTARIO

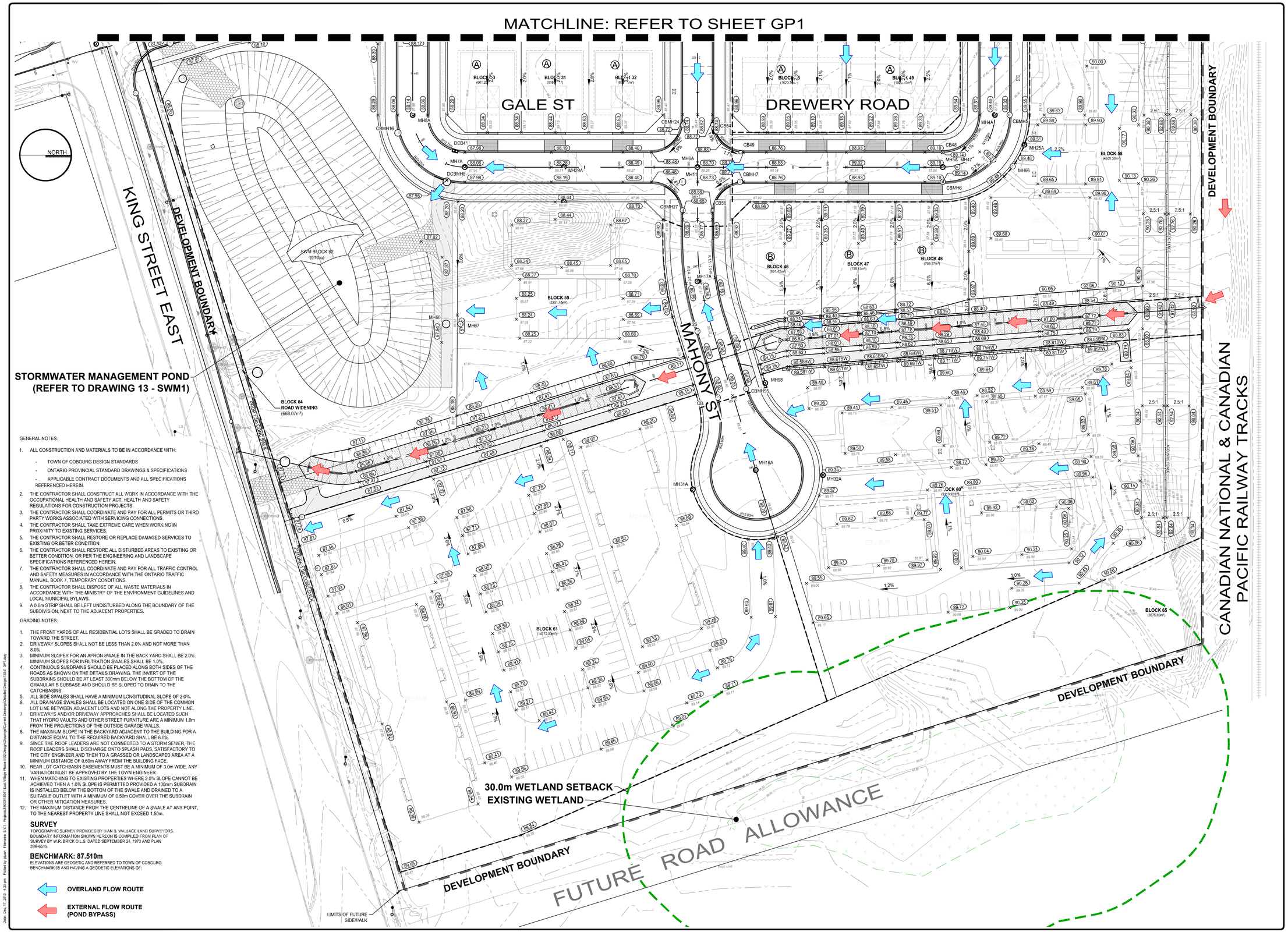
DRAWN BY:	J.DUNN
DESIGNED BY:	J.DUNN
APPROVED BY:	A.HILL
DATE:	2019-05-27
SCALE:	1:500

STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	GP1	5 of 27

18041-GP1

Date: Dec 17, 2019 - 4:22 pm Plotted by: jdunn Filename S:\01 - Projects\18\0335\1\01 East Village Phase 5\02 Design\Drawings\Current Drawings\Grades Design\18041-GP1.dwg



GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
   - TOWN OF COBOURG DESIGN STANDARDS
   - ONTARIO PROVINCIAL STANDARD DRAWINGS & SPECIFICATIONS
   - APPLICABLE CONTRACT DOCUMENTS AND ALL SPECIFICATIONS REFERENCED HEREIN.
2. THE CONTRACTOR SHALL CONSTRUCT ALL WORK IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT, HEALTH AND SAFETY REGULATIONS FOR CONSTRUCTION PROJECTS.
3. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL PERMITS OR THIRD PARTY WORKS ASSOCIATED WITH SERVICING CONNECTIONS.
4. THE CONTRACTOR SHALL TAKE EXTREME CARE WHEN WORKING IN PROXIMITY TO EXISTING SERVICES.
5. THE CONTRACTOR SHALL RESTORE OR REPLACE DAMAGED SERVICES TO EXISTING OR BETER CONDITION.
6. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION, OR PER THE ENGINEERING AND LANDSCAPE SPECIFICATIONS REFERENCED HEREIN.
7. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL, BOOK 7, TEMPORARY CONDITIONS.
8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.
9. A 0.6m STRIP SHALL BE LEFT UNDISTURBED ALONG THE BOUNDARY OF THE SUBDIVISION, NEXT TO THE ADJACENT PROPERTIES.

GRADING NOTES:

1. THE FRONT YARDS OF ALL RESIDENTIAL LOTS SHALL BE GRADED TO DRAIN TOWARD THE STREET.
2. DRIVEWAY SLOPES SHALL NOT BE LESS THAN 2.0% AND NOT MORE THAN 8.0%.
3. MINIMUM SLOPES FOR AN APRON SWALE IN THE BACK YARD SHALL BE 2.0%. MINIMUM SLOPES FOR INFILTRATION SWALES SHALL BE 1.0%.
4. CONTINUOUS SUBDRAINS SHOULD BE PLACED ALONG BOTH SIDES OF THE ROADS AS SHOWN ON THE DETAILS DRAWING. THE INVERT OF THE SUBDRAINS SHOULD BE AT LEAST 300mm BELOW THE BOTTOM OF THE GRANULAR B SUBBASE AND SHOULD BE SLOPED TO DRAIN TO THE CATCHBASINS.
5. ALL SIDE SWALES SHALL HAVE A MINIMUM LONGITUDINAL SLOPE OF 2.0%.
6. ALL DRAINAGE SWALES SHALL BE LOCATED ON ONE SIDE OF THE COMMON LOT LINE BETWEEN ADJACENT LOTS AND NOT ALONG THE PROPERTY LINE.
7. DRIVEWAYS AND/OR DRIVEWAY APPROACHES SHALL BE LOCATED SUCH THAT HYDRO VAULTS AND OTHER STREET FURNITURE ARE A MINIMUM 1.0m FROM THE PROJECTIONS OF THE OUTSIDE GARAGE WALLS.
8. THE MAXIMUM SLOPE IN THE BACKYARD ADJACENT TO THE BUILDING FOR A DISTANCE EQUAL TO THE REQUIRED BACKYARD SHALL BE 6.0%.
9. SINCE THE ROOF LEADERS ARE NOT CONNECTED TO A STORM SEWER, THE ROOF LEADERS SHALL DISCHARGE ONTO SPLASH PADS, SATISFACTORY TO THE CITY ENGINEER AND THEN TO A GRASSED OR LANDSCAPED AREA AT A MINIMUM DISTANCE OF 0.60m AWAY FROM THE BUILDING FACE.
10. REAR LOT CATCHBASIN EASEMENTS MUST BE A MINIMUM OF 3.0m WIDE. ANY VARIATION MUST BE APPROVED BY THE TOWN ENGINEER.
11. WHEN MATCHING TO EXISTING PROPERTIES WHERE 2.0% SLOPE CANNOT BE ACHIEVED THEN A 1.0% SLOPE IS PERMITTED PROVIDED A 100mm SUBDRAIN IS INSTALLED BELOW THE BOTTOM OF THE SWALE AND DRAINED TO A SUITABLE OUTLET WITH A MINIMUM OF 0.50m COVER OVER THE SUBDRAIN OR OTHER MITIGATION MEASURES.
12. THE MAXIMUM DISTANCE FROM THE CENTRELINE OF A SWALE AT ANY POINT, TO THE NEAREST PROPERTY LINE SHALL NOT EXCEED 1.50m.

SURVEY

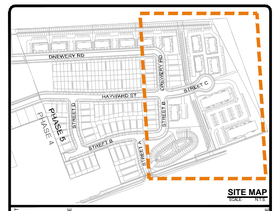
TOPOGRAPHIC SURVEY PROVIDED BY IVAN S. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

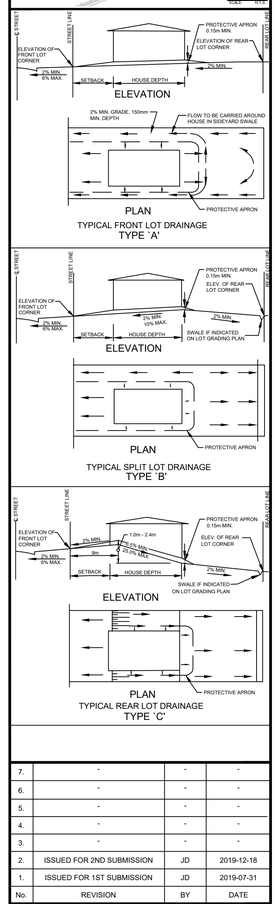
BENCHMARK: 87.510m

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

OVERLAND FLOW ROUTE

EXTERNAL FLOW ROUTE (POND BYPASS)





No.	REVISION	BY	DATE
7.	-	-	-
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5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

ENGAGE ENGINEERING
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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED GRADING PLAN - EAST

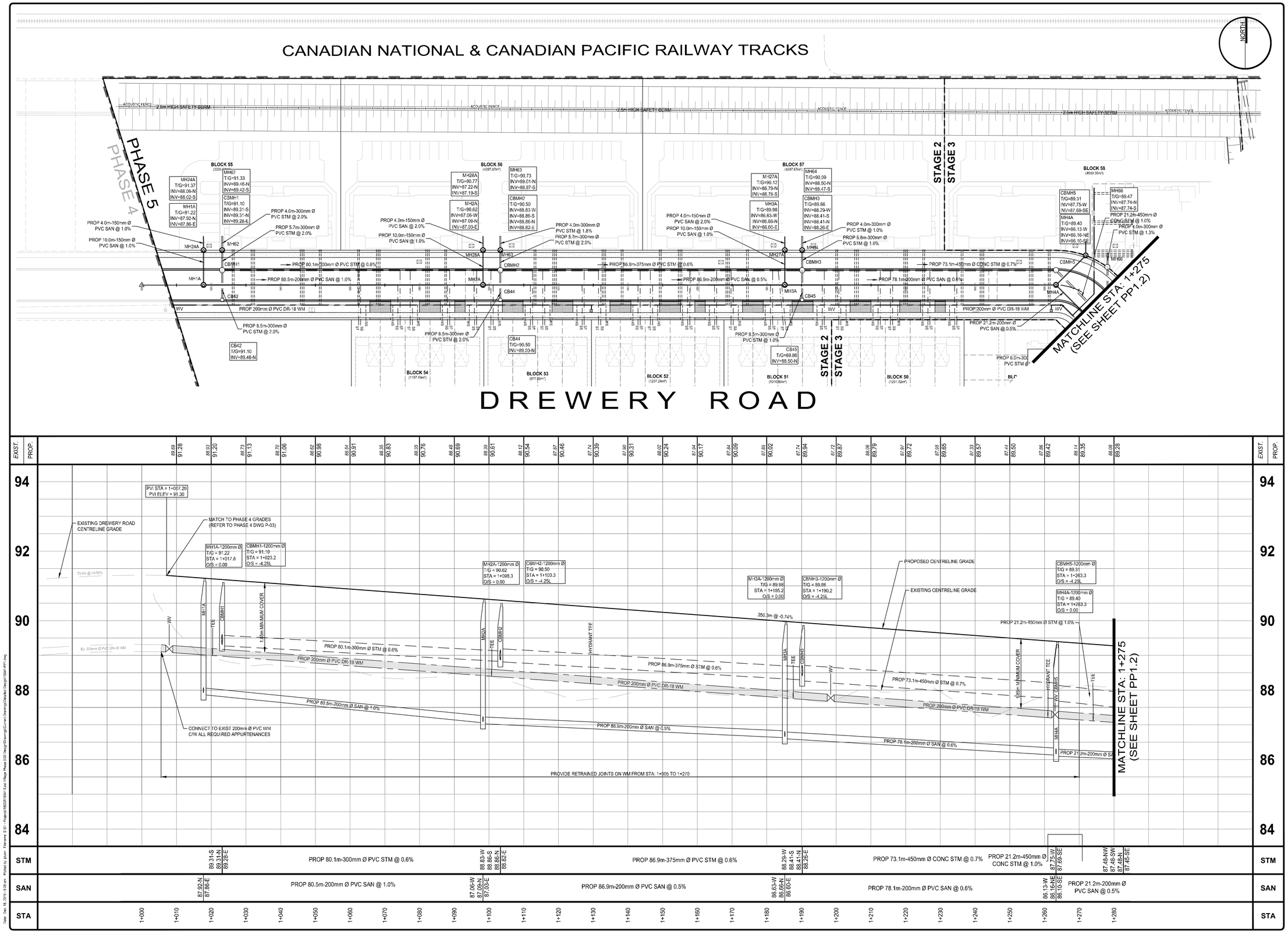
COBOURG, ONTARIO

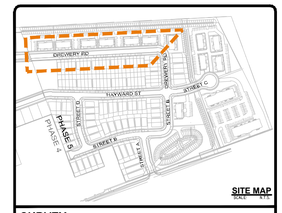
DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-05-27
SCALE: 1:500

STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	GP2	6 of 27

18041-GP1
Date: Dec. 17, 2019 - 4:23 pm Plotted by: jason Filename: S:\01 - Projects\18000\18041 East Village Phase 5\02-Design\Drawings\Current\2-Drawings\Details\Design\18041-GP1.dwg





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BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

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3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED PLAN & PROFILE - DREWERY ROAD STA: 1+000 TO 1+275

COBOURG, ONTARIO

DRAWN BY: J.DUNN

DESIGNED BY: J.DUNN

APPROVED BY: A.HILL

DATE: 2019-05-31

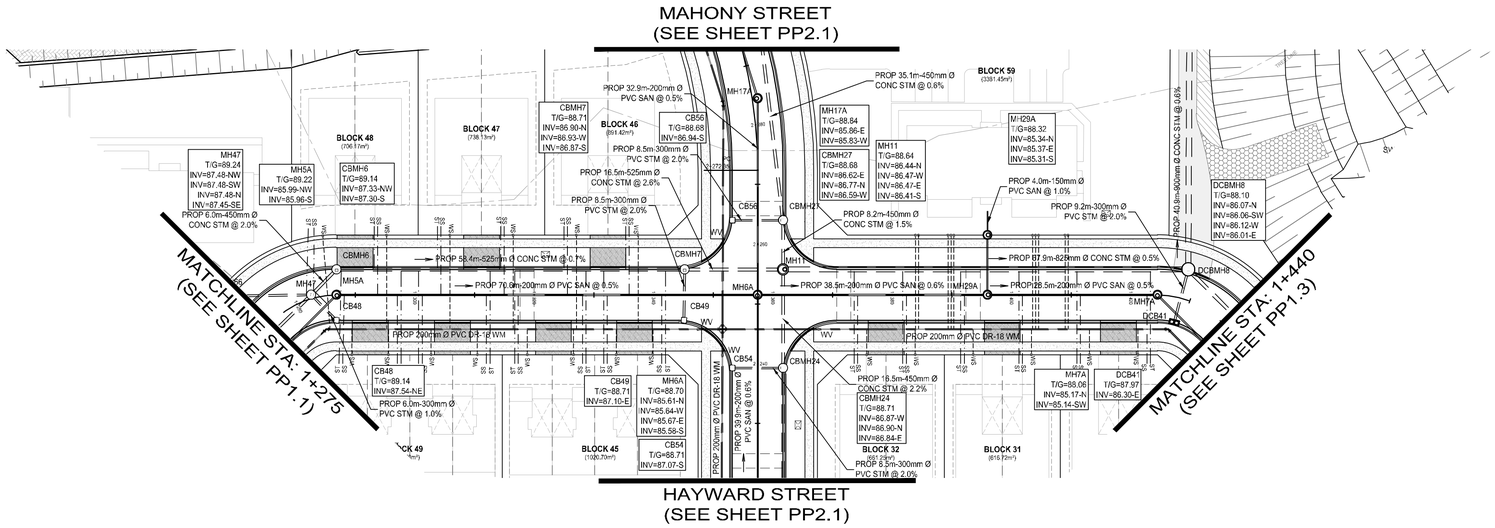
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

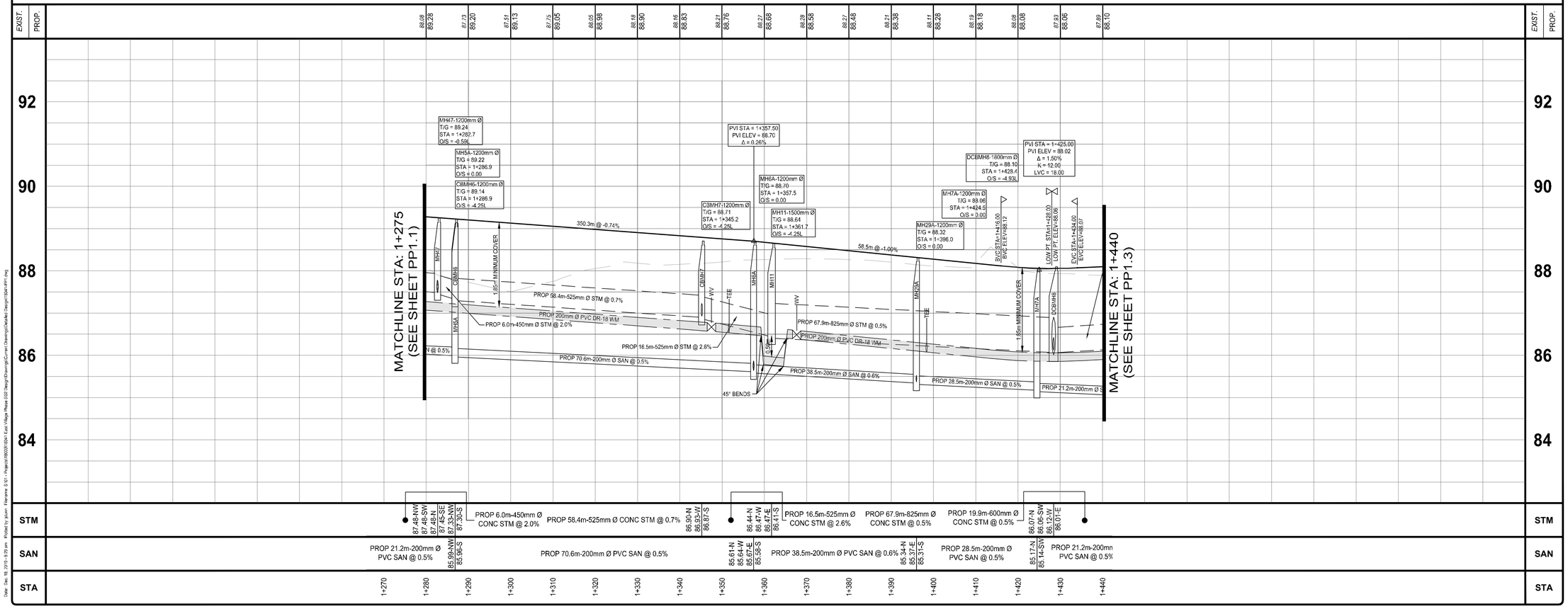
SCALE: 1:500H 1:50V

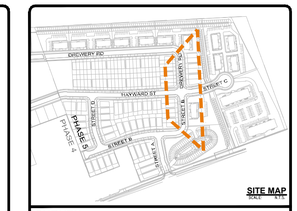
PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PP1.1	7 of 27

18041-PP1

Date: Dec 18, 2019 - 3:08 pm Plotted by: jdunn Filename: S:\01 - Projects\18\0018\041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-PP1.dwg







SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 95 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

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3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED PLAN & PROFILE - DREWERY ROAD / GALE STREET STA: 1+275 TO 1+440

COBOURG, ONTARIO

DRAWN BY: J.DUNN

DESIGNED BY: J.DUNN

APPROVED BY: A.HILL

DATE: 2019-05-31

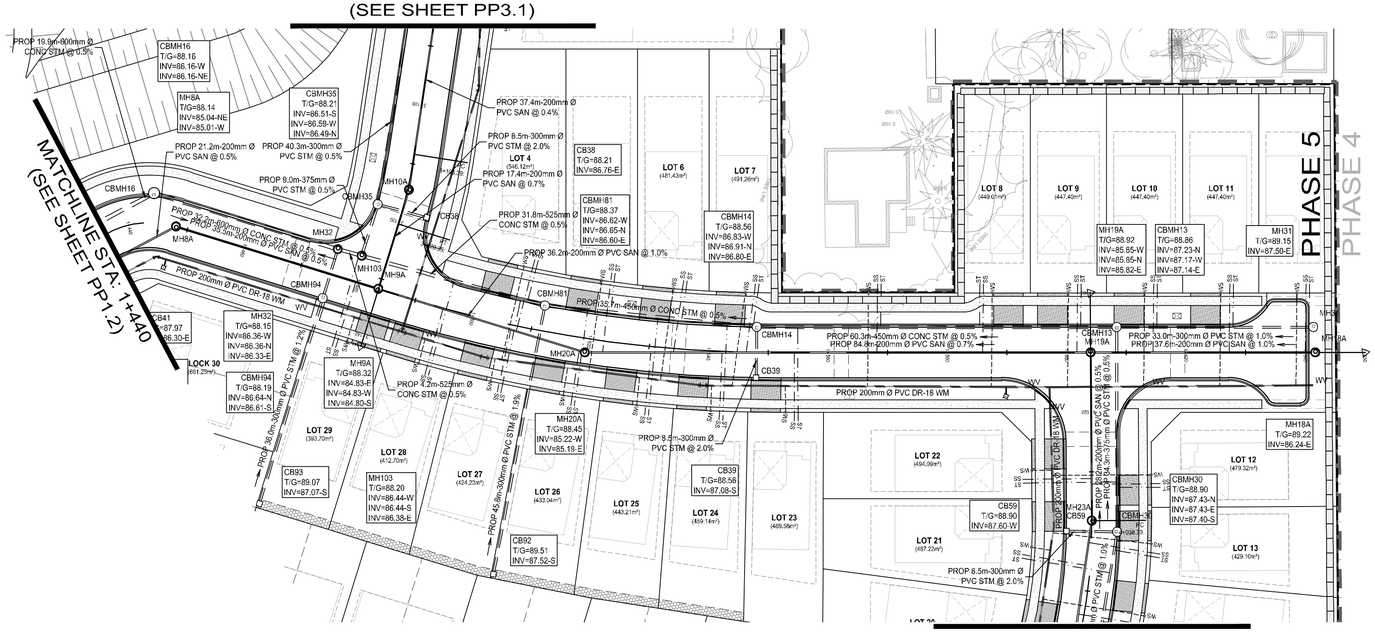
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

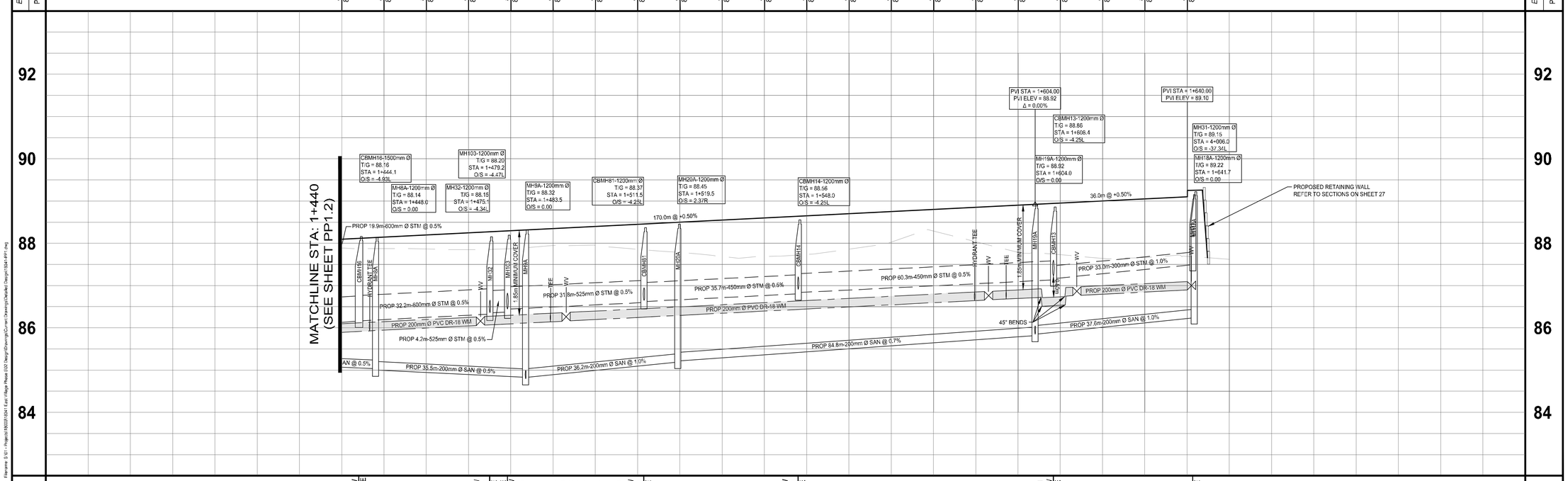
SCALE: 1:500H 1:50V

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PP1.2	8 of 27

18041-PP1

Date: Dec 18, 2019 - 3:29 pm Plotted by jdunn Filename: S:\01 - Projects\18\0018\041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-PP1.dwg





SITE MAP

SURVEY

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BENCHMARK

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ELEV: 87.510m

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2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED PLAN & PROFILE - GALE STREET STA: 1+440 TO 1+660

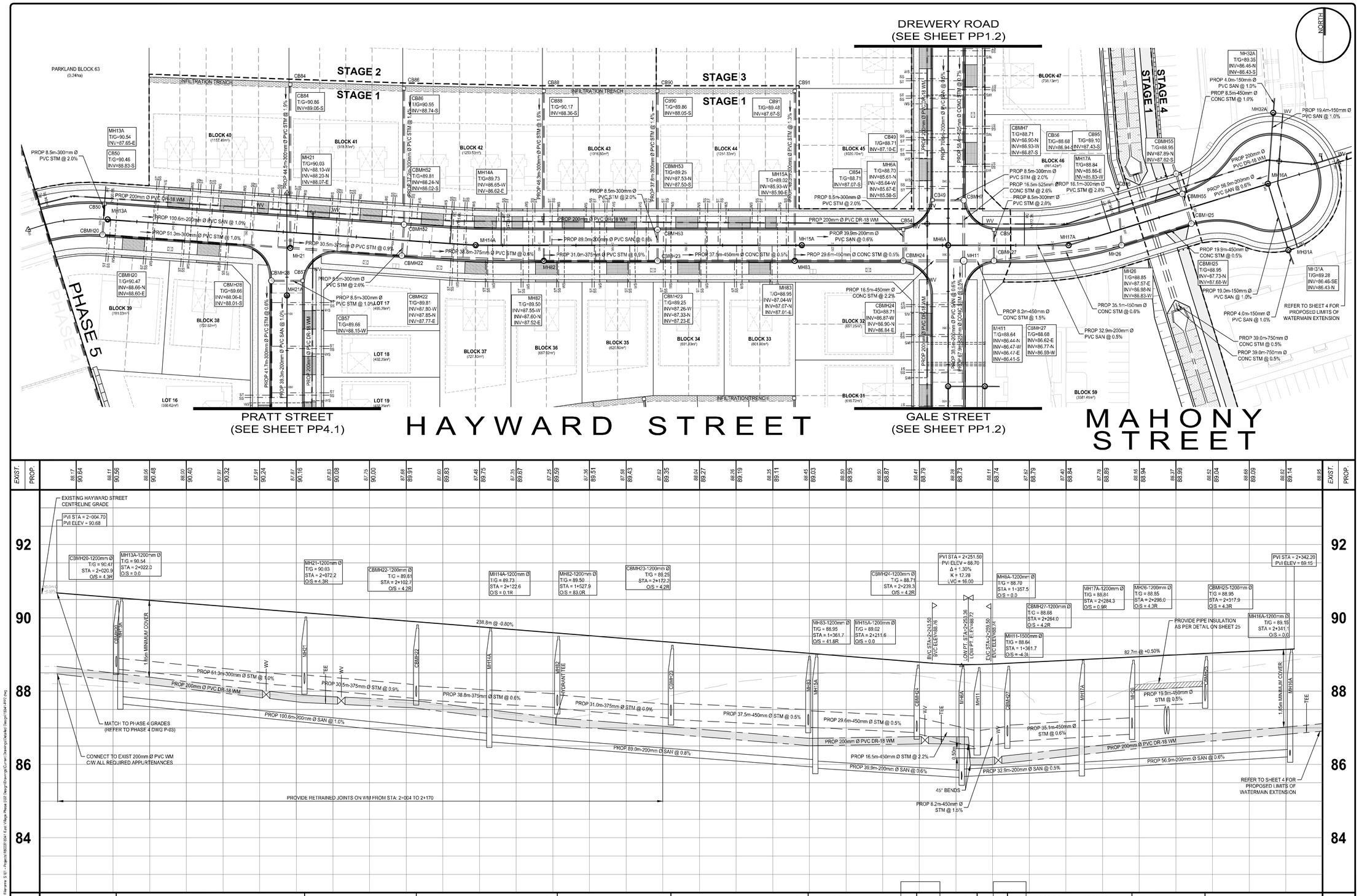
COBOURG, ONTARIO

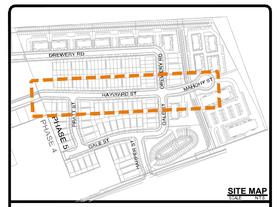
DRAWN BY:	J.DUNN
DESIGNED BY:	J.DUNN
APPROVED BY:	A.HILL
DATE:	2019-05-31
SCALE:	1:500H 1:50V

STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PP1.3	9 of 27

18041-PP1
Date: Dec 19, 2019 - 9:30 am Plotted by: jdunn Filename: S:\01 - Projects\18\0291\0241 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\1024-PP1.dwg





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BENCHMARK

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ELEV: 87.510m

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1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED PLAN & PROFILE - HAYWARD STREET STA: 2+000 TO 2+350

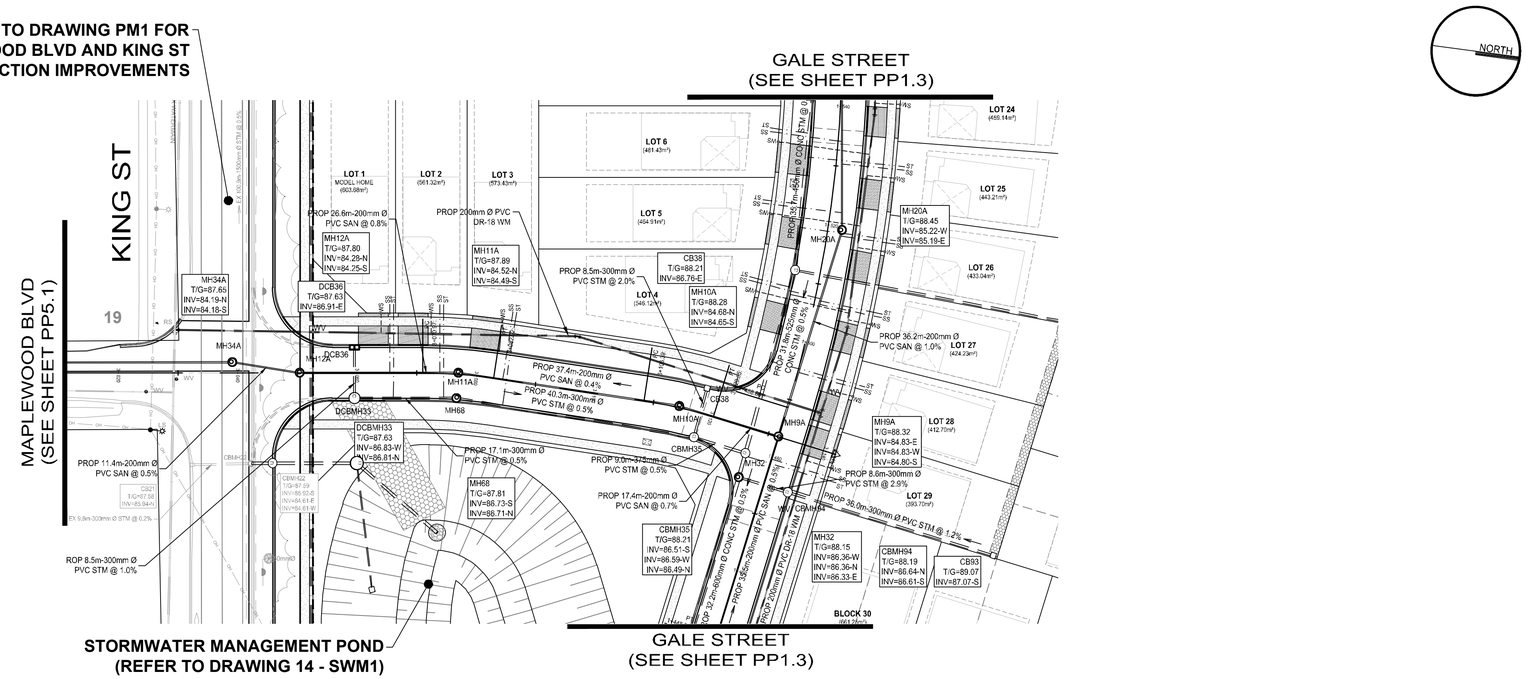
COBOURG, ONTARIO

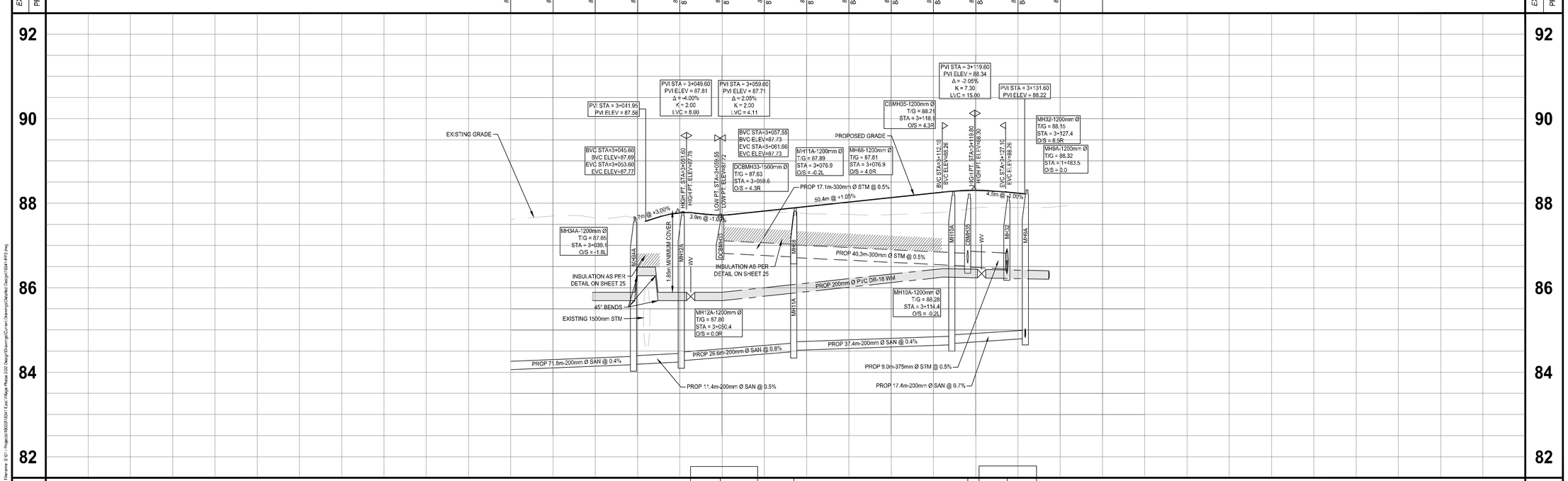
DRAWN BY:	J.DUNN
DESIGNED BY:	J.DUNN
APPROVED BY:	A.HILL
DATE:	2019-05-31
SCALE:	1:500H 1:50V

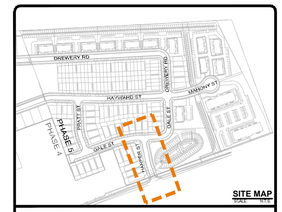
STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PP2.1	10 of 27

18041-PP2
Date: Dec 18, 2019 - 3:33 pm Plotted by: jdunn Filename: S:\01 - Projects\18\0238 East Village Phase 5\02 Design\Engineering\Current Drawings\Details\ Design\18041-PP2.dwg







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BENCHMARK

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ELEV: 87.510m

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7.	-	-	-
6.	-	-	-
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4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED PLAN & PROFILE - HARPER STREET STA: 3+010 TO 3+140

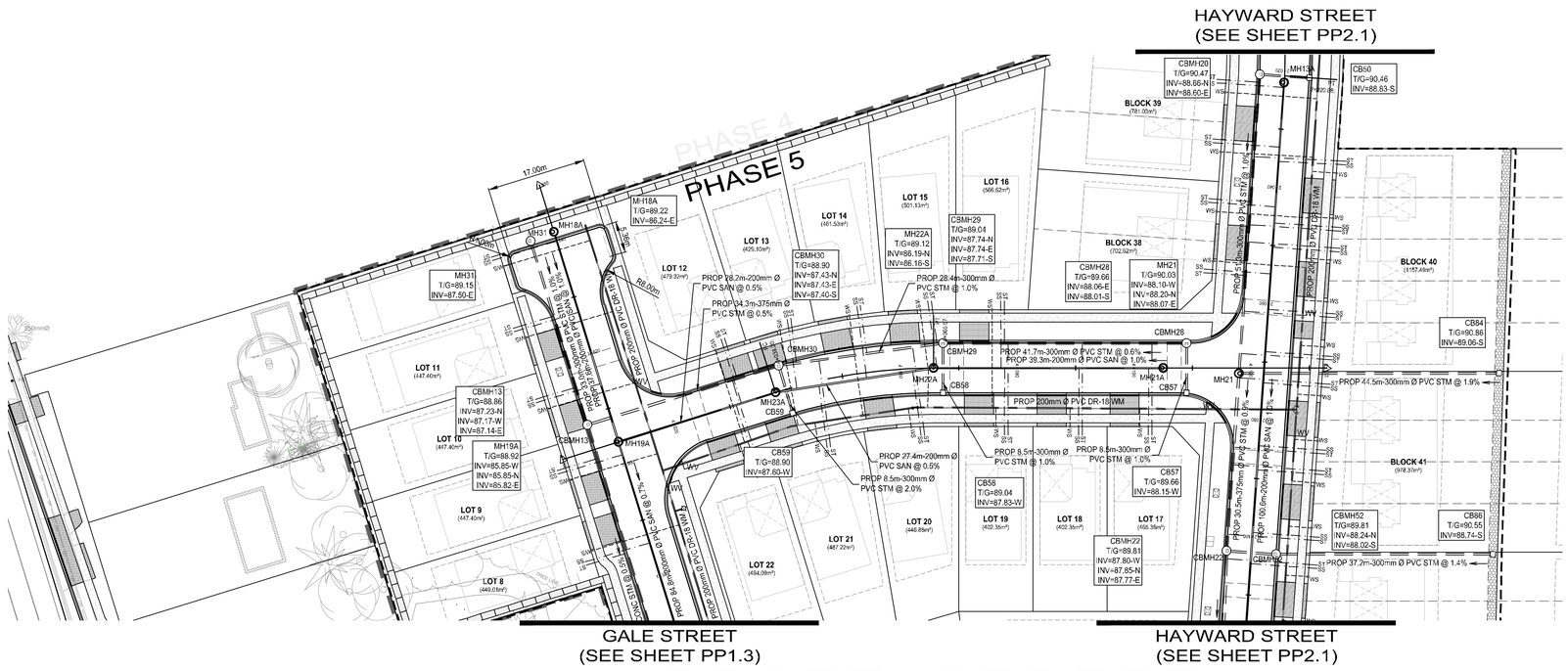
COBOURG, ONTARIO

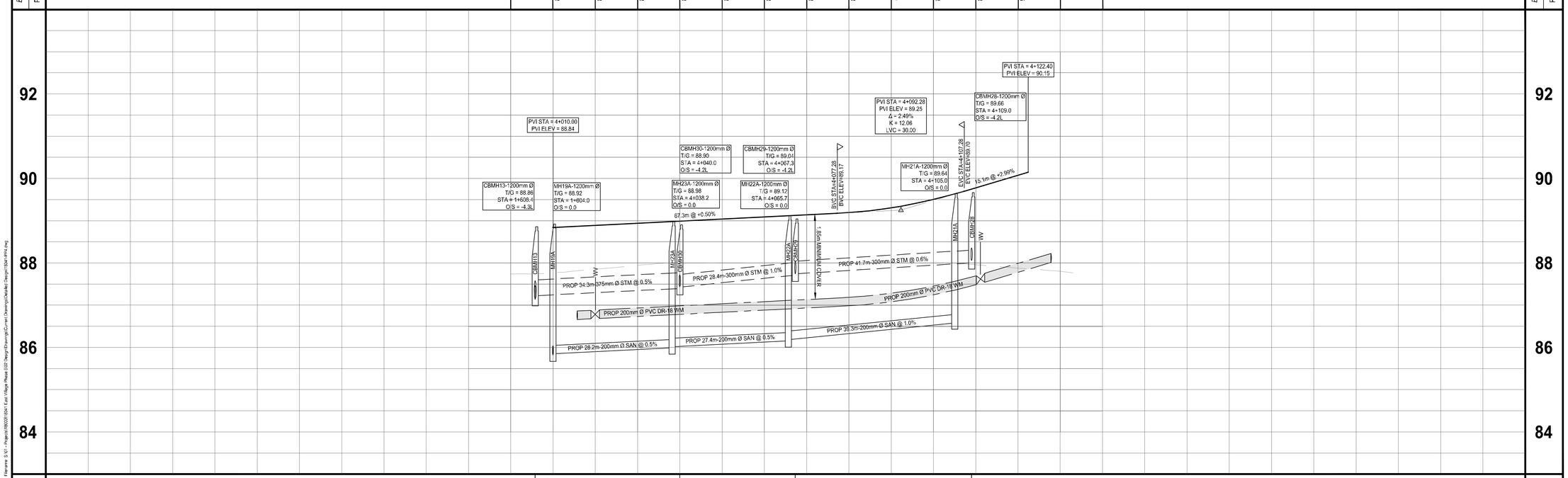
DRAWN BY:	J.DUNN
DESIGNED BY:	J.DUNN
APPROVED BY:	A.HILL
DATE:	2019-05-31
SCALE:	1:500H 1:50V

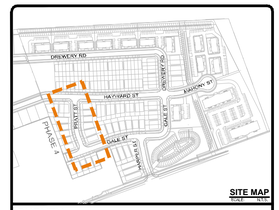
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PP3.1	11 of 27

18041-PP3
Date: Dec 18, 2019 - 9:33 am Plotted by: jdunn Filename: S:\01 - Projects\18\02\01\04\1 East Village Phase 5\02 Design\Drawings\Current Drawings\Details\Design\18041-PP3.dwg







SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY 'B1' W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATION OF:

ELEV: 87.510m

NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
   - TOWN OF COBOURG DESIGN STANDARDS
   - ONTARIO PROVINCIAL STANDARD DRAWINGS & SPECIFICATIONS
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6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED PLAN & PROFILE - PRATT STREET STA: 4+000 TO 4+150

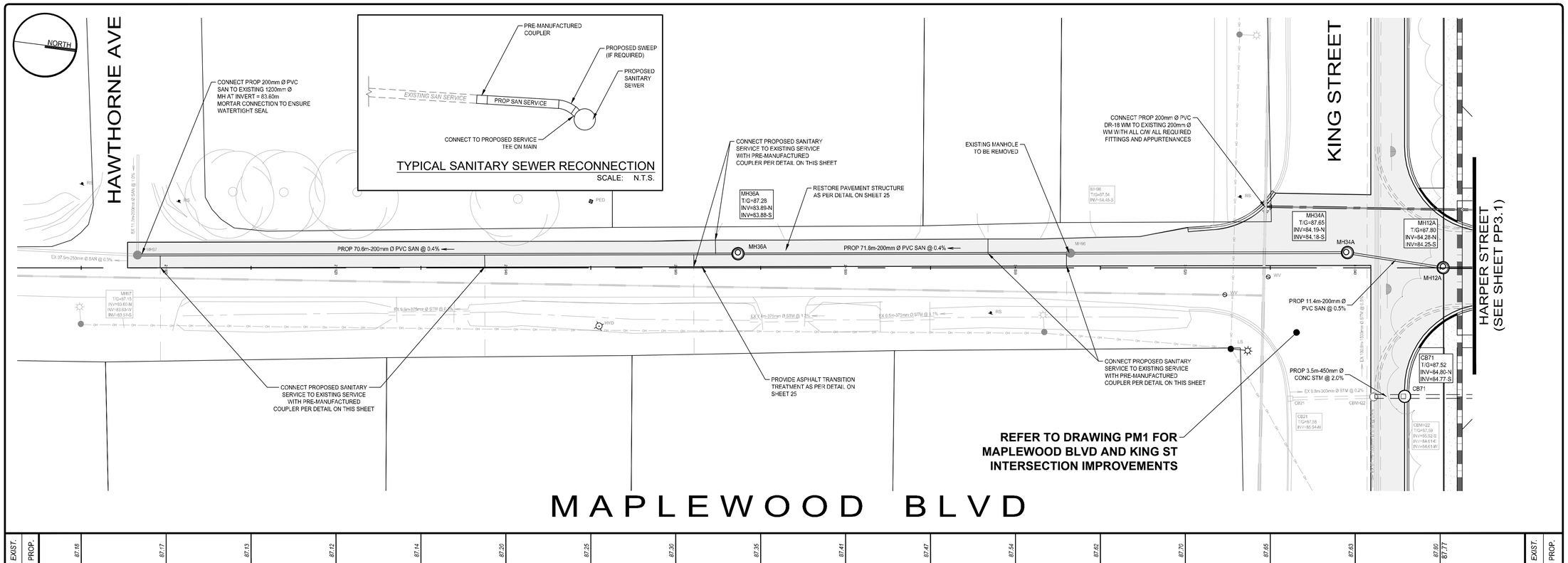
COBOURG, ONTARIO

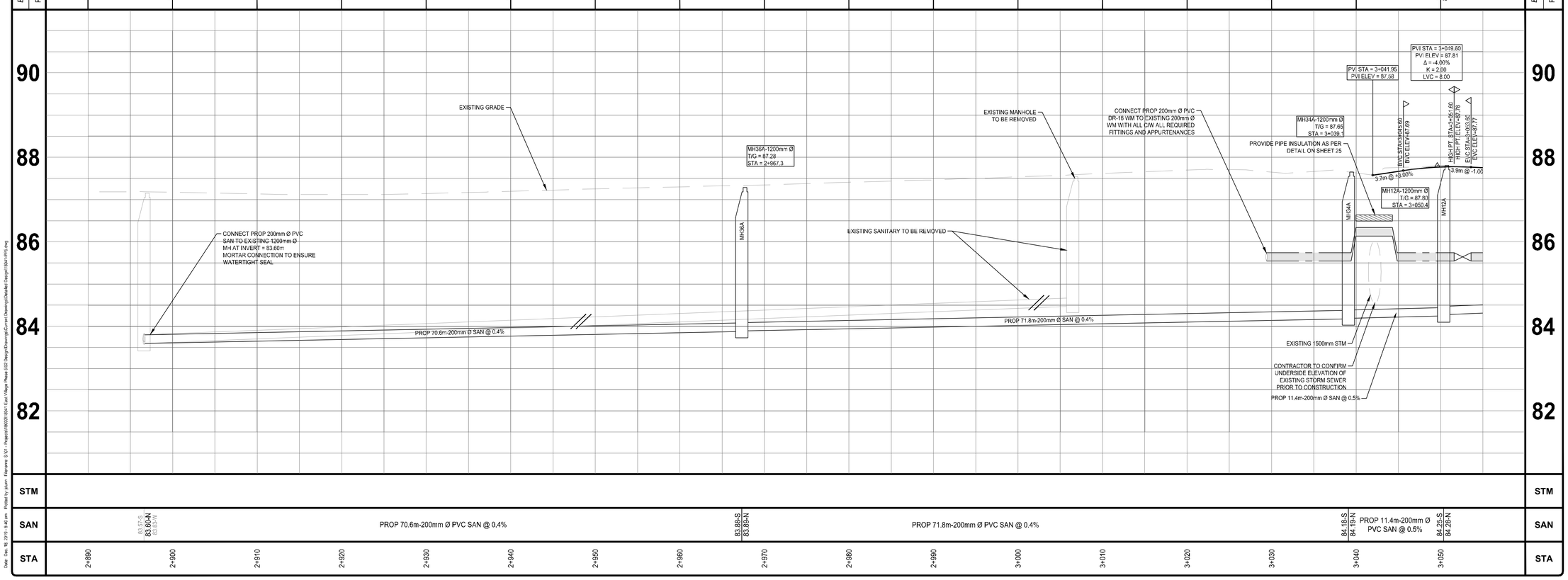
DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-05-31
SCALE: 1:500H 1:50V

STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PP4.1	12 of 27

18041-PP4
Date: Dec 18, 2019 - 3:38 pm Plotted by: jdunn Filename: S:\01 - Projects\18\0018\04 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-PP4.dwg





SURVEY

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BENCHMARK

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ELEV: 87.510m

NOTES:

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1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED PLAN & PROFILE - MAPLEWOOD BOULEVARD STA: 2+900 TO KING ST

COBOURG, ONTARIO

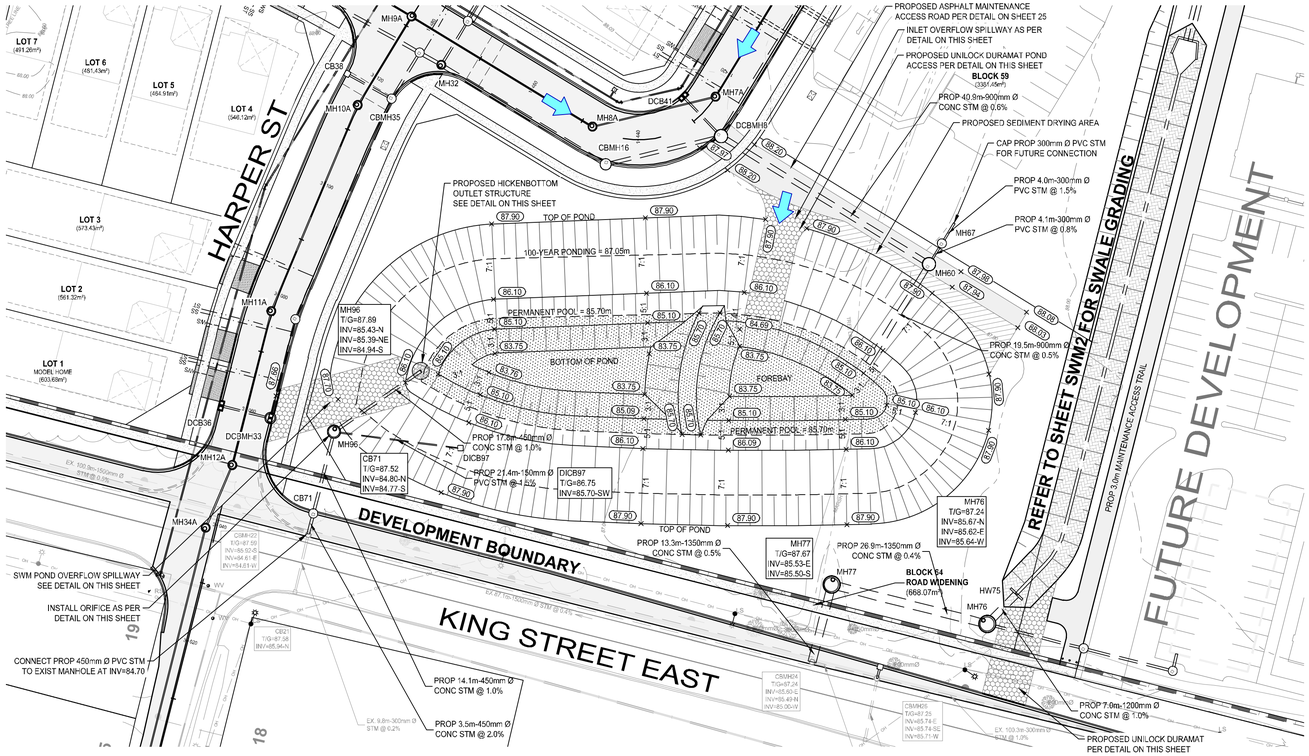
DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-05-31
SCALE: 1:250H 1:50V

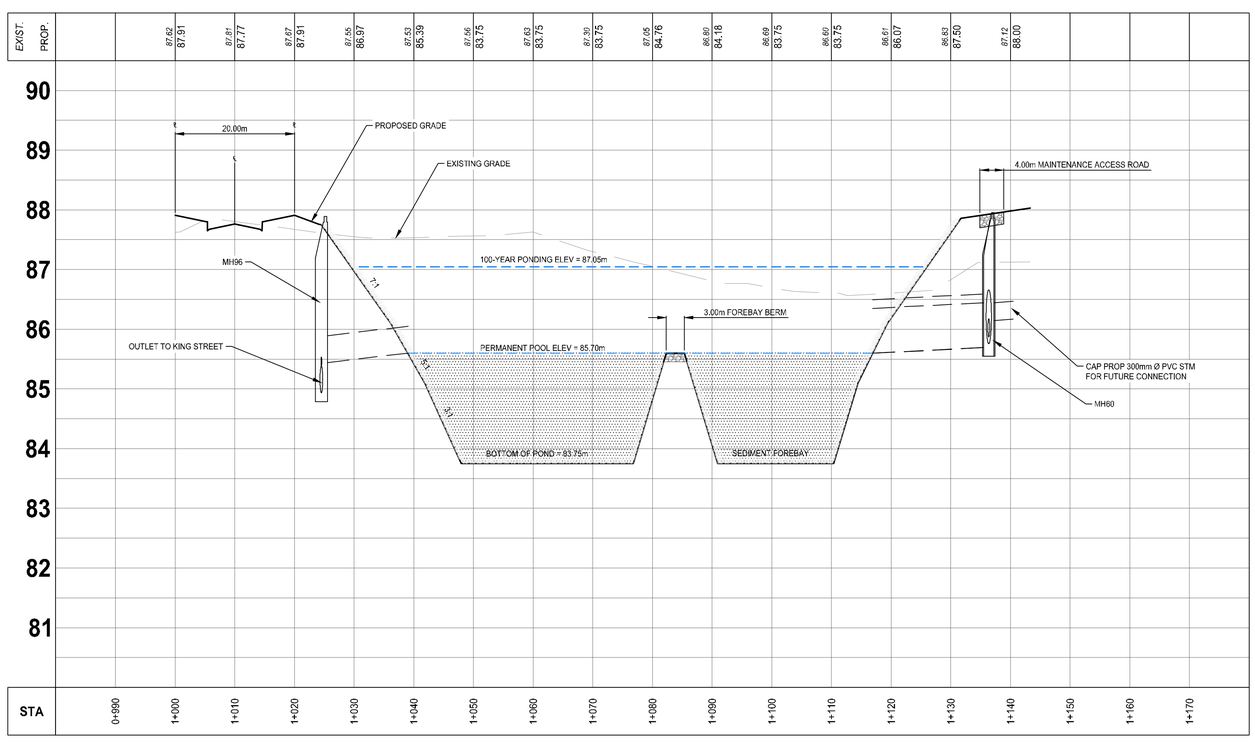
STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO

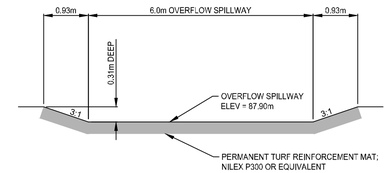
PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PP5.1	13 of 27

18041-PP5

Date: Dec 18, 2019 - 9:40 am Plotted by: jdunn Filename: S:\01 - Projects\18\0291\18041 East Village Phase 5\02 - Design\Drawings\Current Drawings\Detailed Design\18041-PP5.dwg

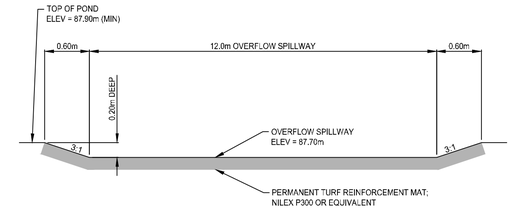






INLET OVERFLOW SPILLWAY

SCALE: N.T.S.



OVERFLOW SPILLWAY

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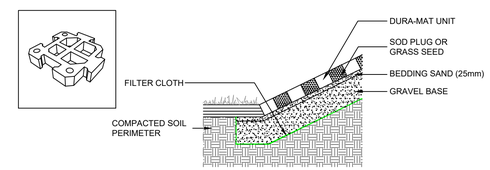
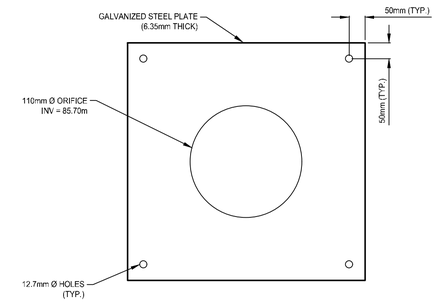


NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

UNILOCK DURA-MAT

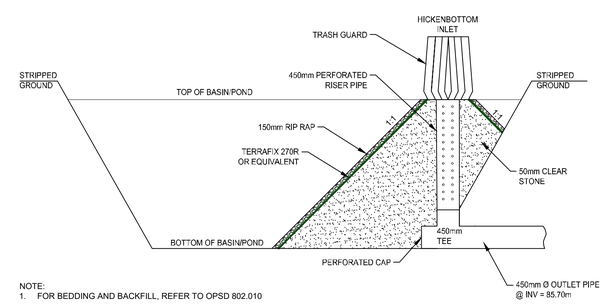
SCALE: N.T.S.



NOTE
1. INSTALL A NEOPRENE GASKET BETWEEN CONCRETE MANHOLE AND ORIFICE PLATE TO ENSURE A WATERTIGHT SEAL.
2. INSTALL ORIFICE PLATE ON THE INSIDE OF MH96 OVER THE NORTH INLET (450mm PVC FROM HICKENBOTTOM).

MH96 ORIFICE PLATE

SCALE: N.T.S.



NOTE:
1. FOR BEDDING AND BACKFILL, REFER TO OPSD 802.010

HICKENBOTTOM OUTLET

SCALE: N.T.S

SURVEY
TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

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2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED STORMWATER MANAGEMENT PLAN

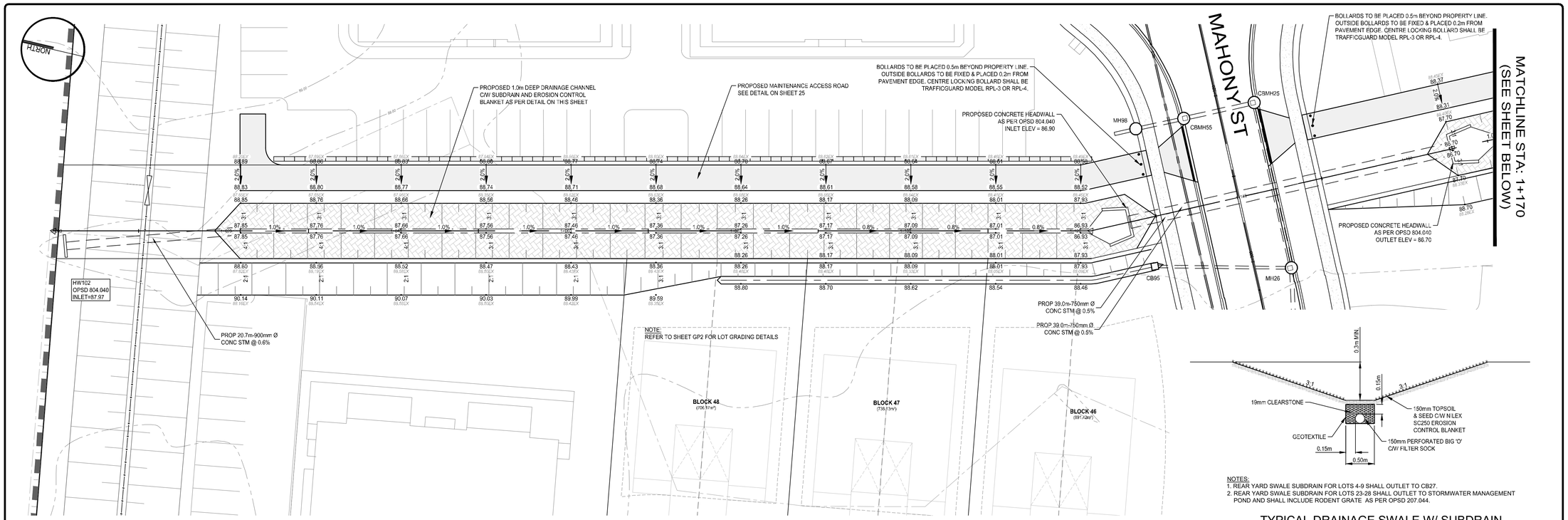
COBOURG, ONTARIO

DRAWN BY:	J.DUNN
DESIGNED BY:	J.DUNN
APPROVED BY:	A.HILL
DATE:	2019-05-27
SCALE:	1:500

STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	SWM1	14 of 27

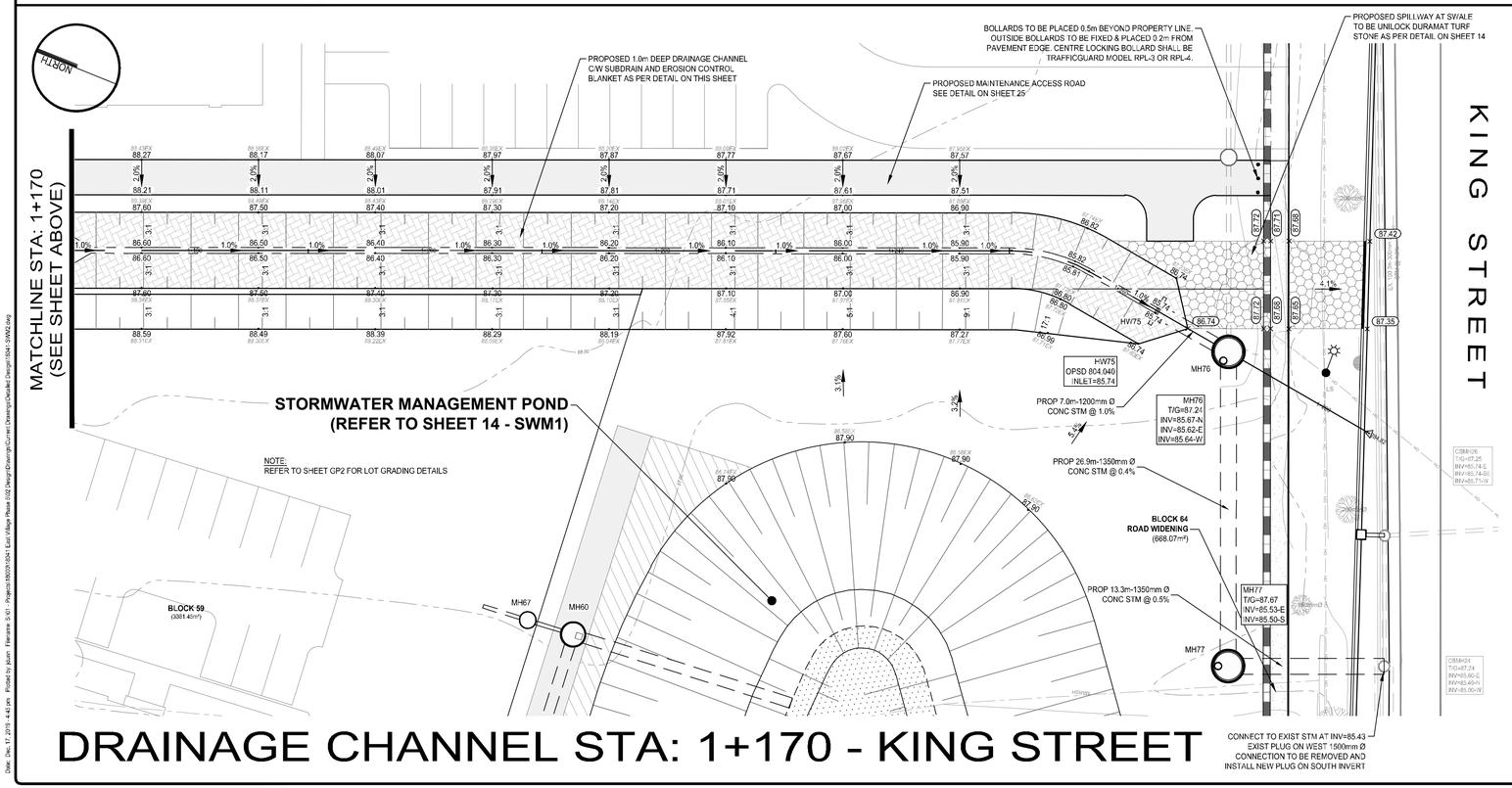
18041-SWM1
Date: Dec. 17, 2019 - 4:43 pm Plotted by: jdunn Filename: S:\01 - Projects\18\18041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-SWM1.dwg



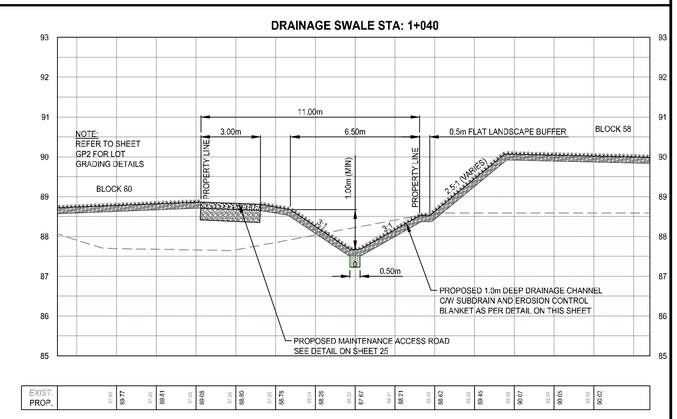
NOTES:
1. REAR YARD SWALE SUBDRAIN FOR LOTS 4-9 SHALL OUTLET TO CB27.
2. REAR YARD SWALE SUBDRAIN FOR LOTS 23-28 SHALL OUTLET TO STORMWATER MANAGEMENT POND AND SHALL INCLUDE RODENT GRATE AS PER OPSD 207.044.

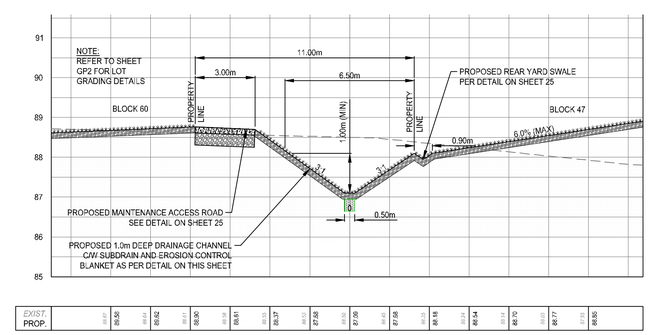
TYPICAL DRAINAGE SWALE W/ SUBDRAIN
SCALE: N.T.S.

DRAINAGE CHANNEL STA: 1+000 - 1+170



DRAINAGE CHANNEL STA: 1+170 - KING STREET





SURVEY
TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK
ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATION OF:

ELEV: 87.510m

NOTES:

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2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

PROPOSED DRAINAGE CHANNEL PLAN

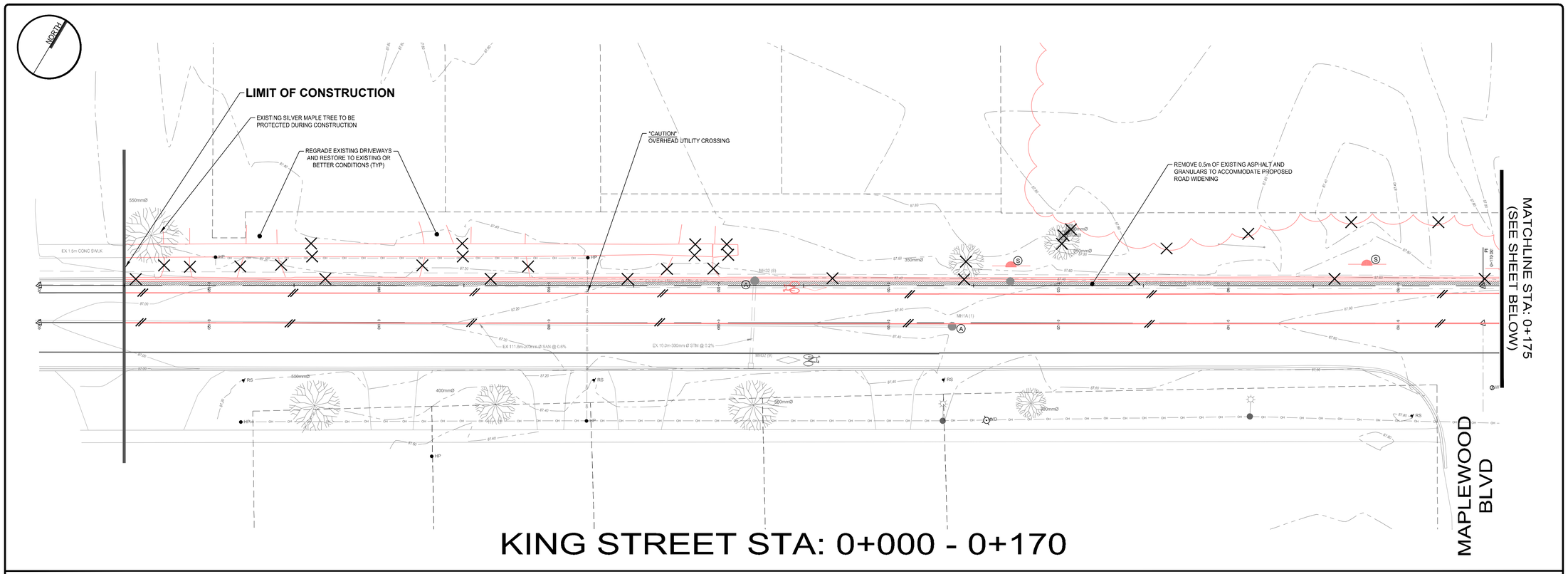
COBOURG, ONTARIO

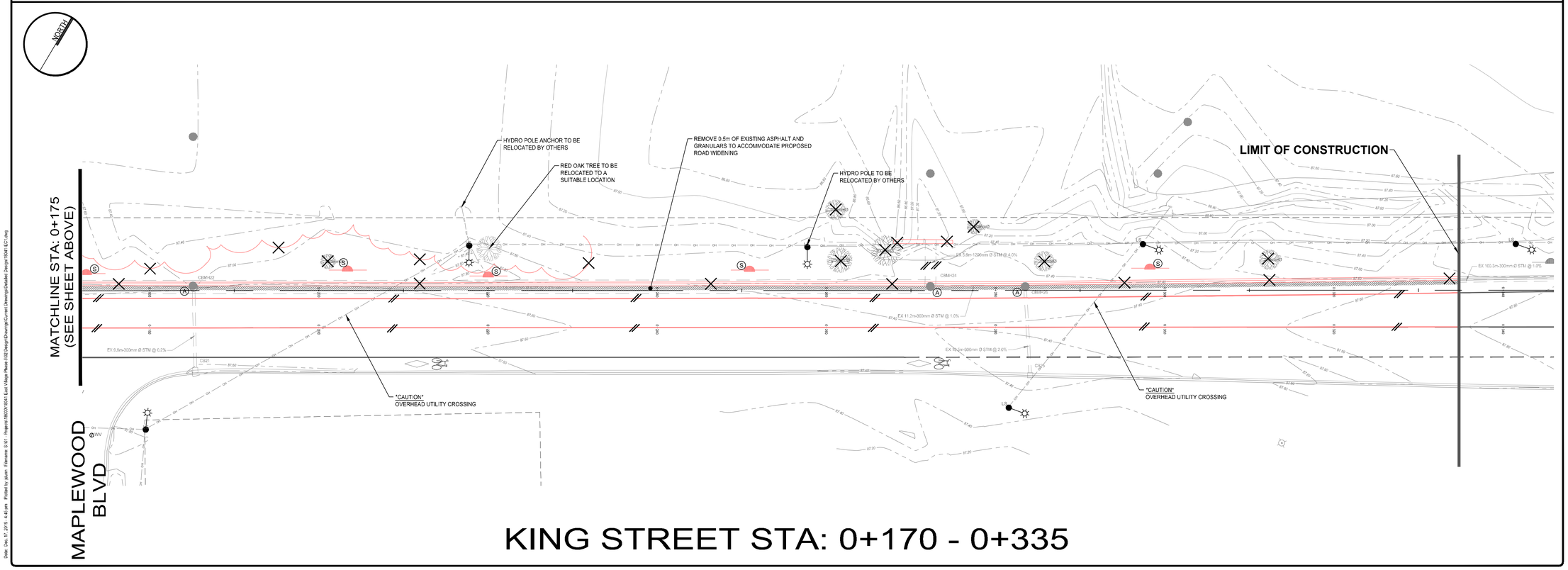
DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-05-27
SCALE: 1:250

STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	SWM2	15 of 27

18041-SWM2
Date: Dec. 17, 2019 - 4:45 pm Plotted by: jdunn Filename: S:\01 - Projects\18\0018\0041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-SWM2.dwg





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BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

- (A) APPURTENANCE ADJUSTMENT BY CONTRACTOR (CB,MH,WV etc.)
- (B) ADJUSTMENT BY OTHERS
- (C) RELOCATE EXISTING CATCHBASIN
- (EX) EXCAVATE EXIST. CATCHBASIN/MANHOLE
- (S) REMOVE, SALVAGE AND REINSTALL
- (E) TO BE EXPOSED BY CONTRACTOR
- TYPICAL ITEM REMOVAL
- LINE PAINTING REMOVAL
- MH — MAINTENANCE HOLE AND SEWER REMOVAL
- VC — VALVE CHAMBER AND WATERMAIN REMOVAL

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
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4.	-	-	-
3.	-	-	-
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1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

KING STREET @ MAPLEWOOD & HARPER ST EXISTING CONDITIONS AND REMOVALS

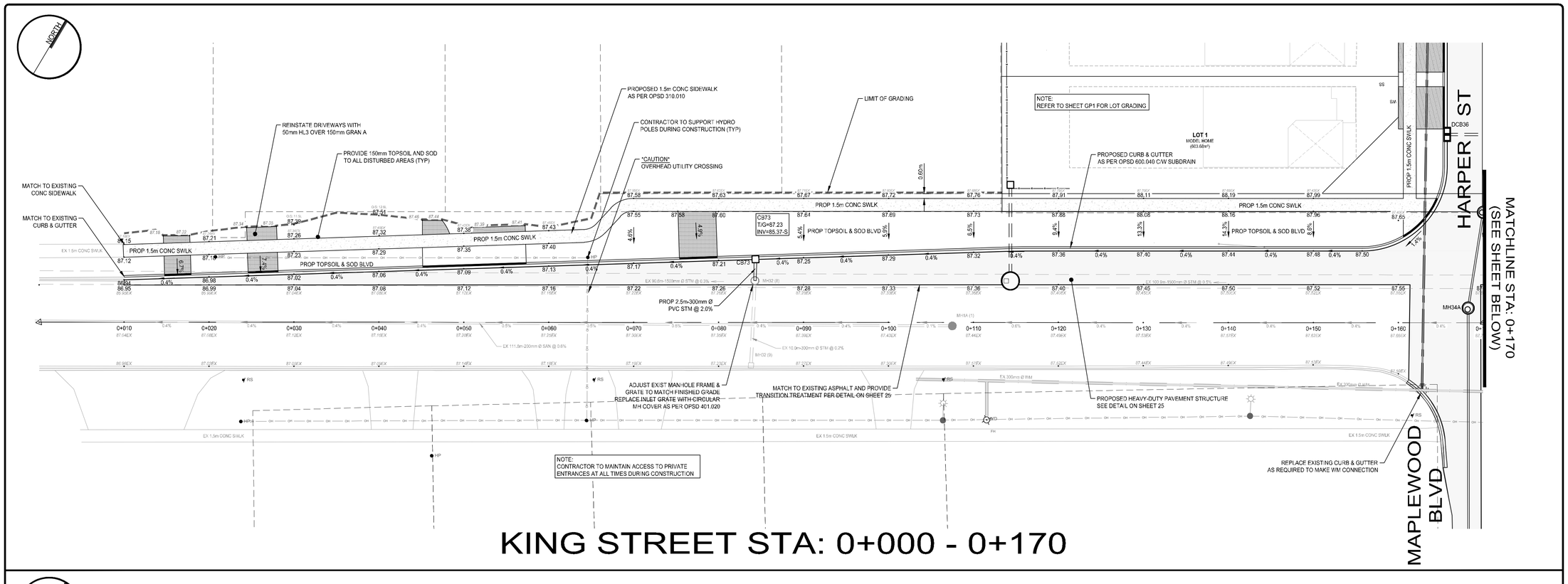
COBOURG, ONTARIO

DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-06-25
SCALE: 1:250

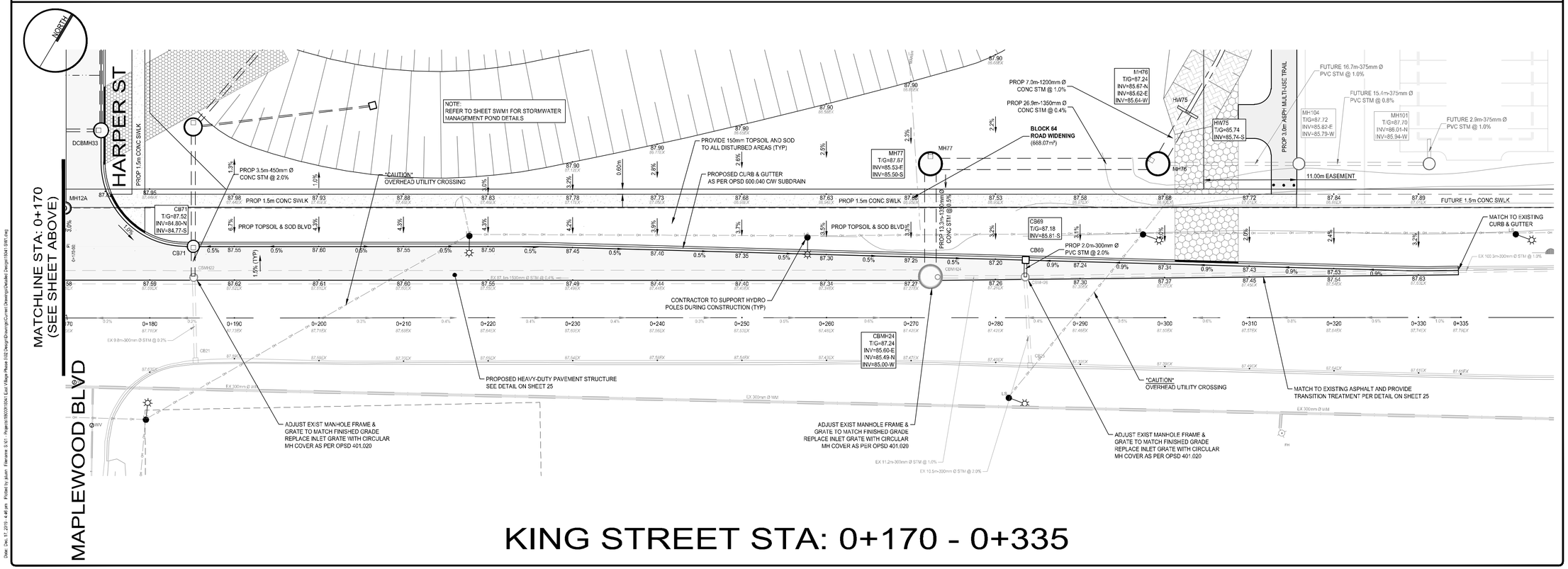
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	EC1	16 of 27

18041-EC1
Date: Dec. 17, 2019 - 4:40 pm Plotted by jduun Filename: 8.5X11 Plotted:\18041\18041 East Village Phase 5\02 Design\Drawing\Current Drawings\Detailed Design\18041-EC1.dwg



KING STREET STA: 0+000 - 0+170



KING STREET STA: 0+170 - 0+335

SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
   - TOWN OF COBOURG DESIGN STANDARDS
   - ONTARIO PROVINCIAL STANDARD DRAWINGS & SPECIFICATIONS
   - APPLICABLE CONTRACT DOCUMENTS AND ALL SPECIFICATIONS REFERENCED HEREIN.
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No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

KING STREET @ MAPLEWOOD BOULEVARD & HARPER STREET IMPROVEMENTS

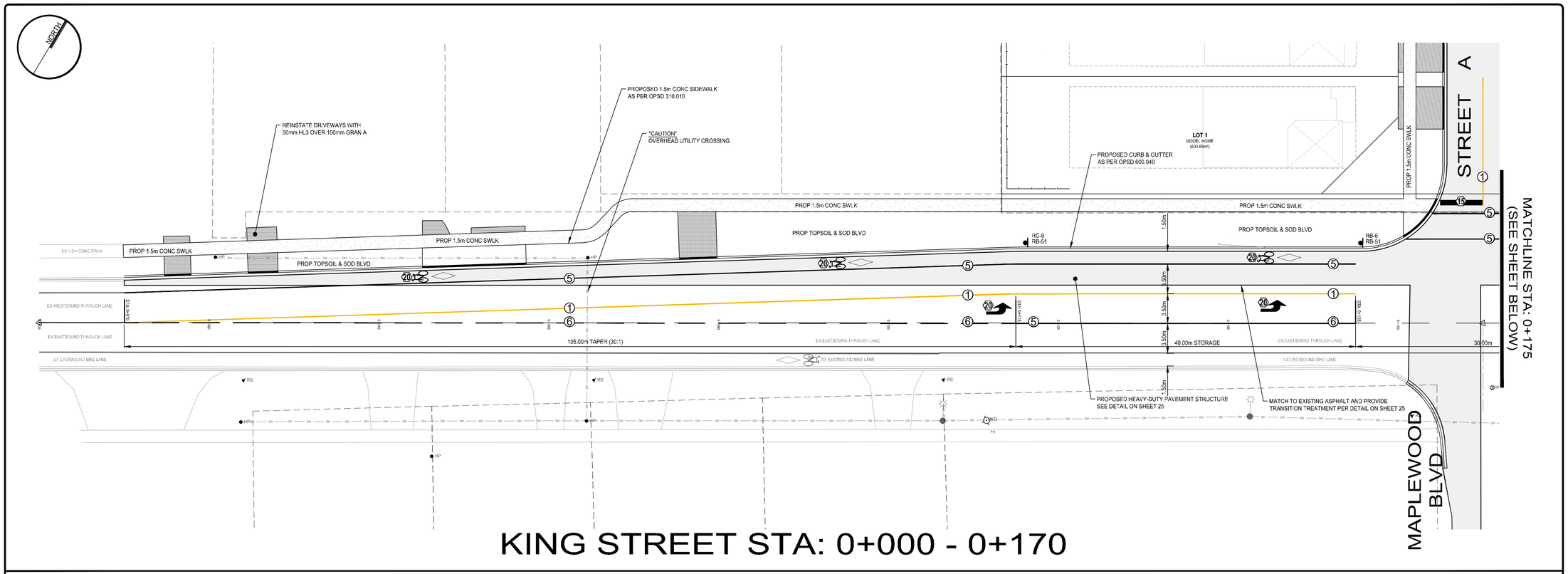
COBOURG, ONTARIO

DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-06-25
SCALE: 1:250

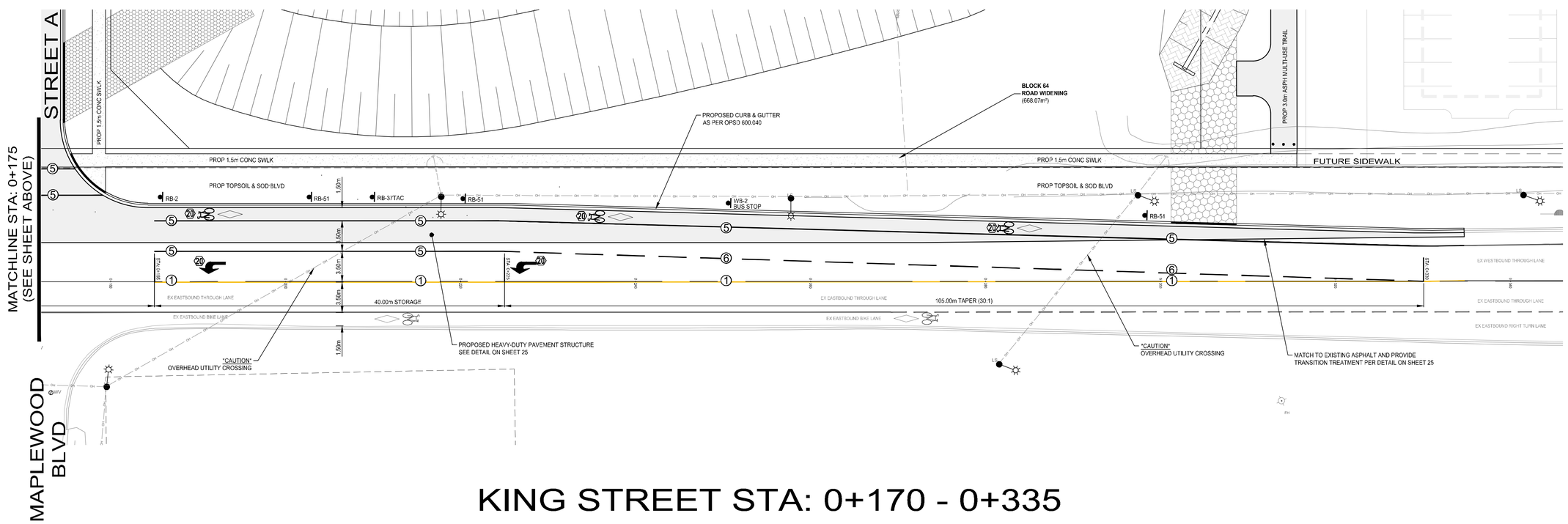
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	SW1	17 of 27

18041-SW1
Date: Dec. 17, 2019 - 4:46 pm Plotted by jdunn Filename: S:\51 - Projects\18000\18041 East Village Phase 5\02 Design\Drawings\Civil\Site\Site Design\18041SW1.dwg



KING STREET STA: 0+000 - 0+170



KING STREET STA: 0+170 - 0+335

SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

PAVEMENT MARKING LEGEND	
1	SOLID YELLOW, 10cm
2	SOLID DOUBLE YELLOW, 10cm
3	363 BROKEN YELLOW, 10cm
4	SOLID YELLOW, 20cm
5	SOLID WHITE, 10cm
6	333 BROKEN WHITE, 10cm
7	363 BROKEN WHITE, 10cm
9	SOLID WHITE, 20cm
10	111 BROKEN WHITE, 10cm
11	333 BROKEN WHITE, 20cm
13	333 BROKEN WHITE, 30cm
14	SOLID WHITE, 30cm
15	SOLID WHITE, 60cm
16	111 BROKEN WHITE, 45cm
20	SOLID WHITE, SYMBOLS AND ARROWS

NOTES

1. 333, 363, 393, DENOTES PAVEMENT MARKING SPACING (IE., 3m LINE, 3m GAP, 3m LINE)
2. USE (1) TO DENOTE PAVEMENT MARKING
3. USE (1) TO DENOTE PAVEMENT MARKING, DURABLE
4. USE (1) TO DENOTE PAVEMENT MARKING, TEMPORARY-REMOVABLE
5. USE [1] TO DENOTE PAVEMENT MARKING, TEMPORARY

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
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1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

KING STREET @ MAPLEWOOD BOULEVARD & HARPER STREET PAVEMENT MARKINGS

COBOURG, ONTARIO

DRAWN BY: J.DUNN

DESIGNED BY: J.DUNN

APPROVED BY: A.HILL

DATE: 2019-06-25

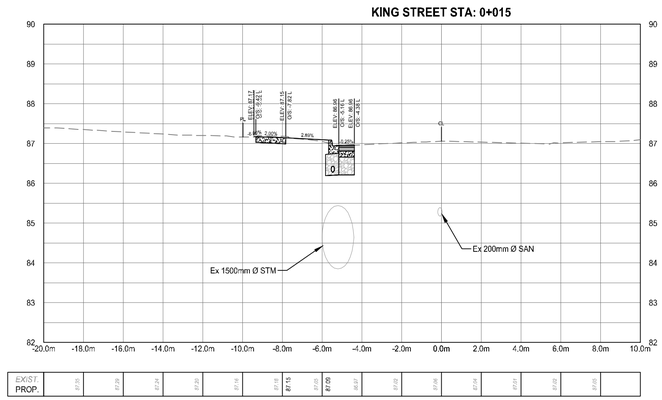
STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO

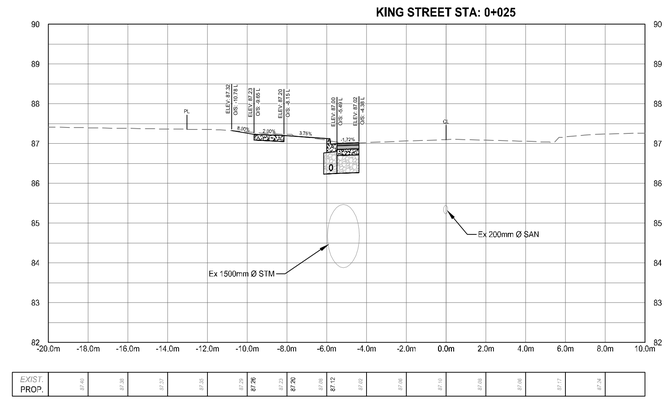
SCALE: 1:250

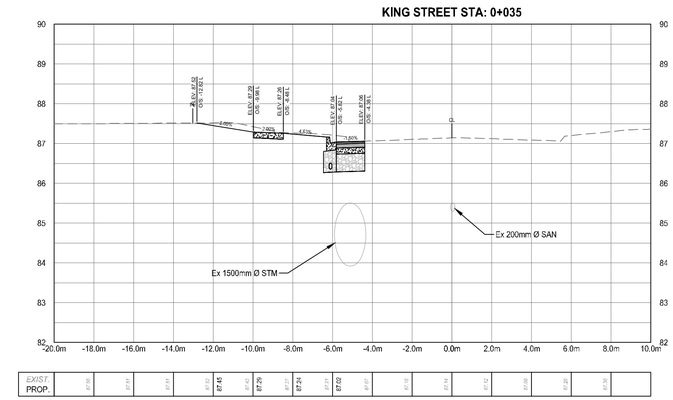
PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	PM1	18 of 27

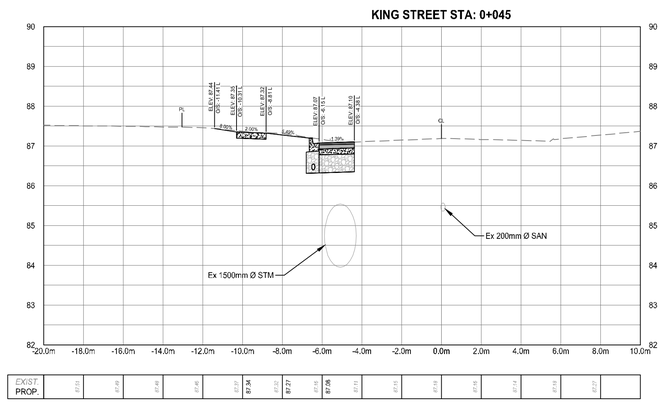
18041-PM1

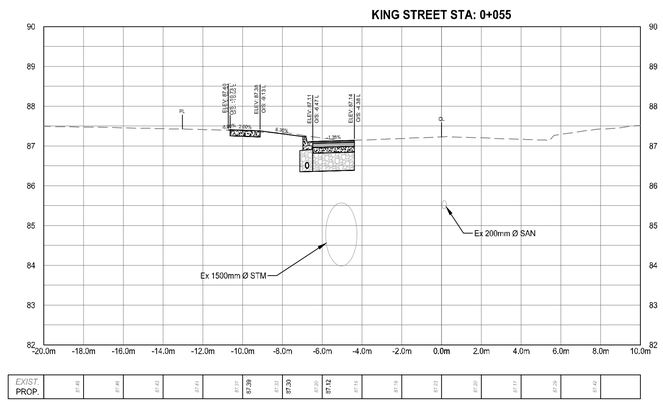
Date: Dec. 17, 2019 - 4:47 pm Plotted by jdunn Filename: S:\51 - Projects\18000\1834 East Village Phase 5\02 Design\Drawings\Civil\Site\Design\1834 PM1.dwg

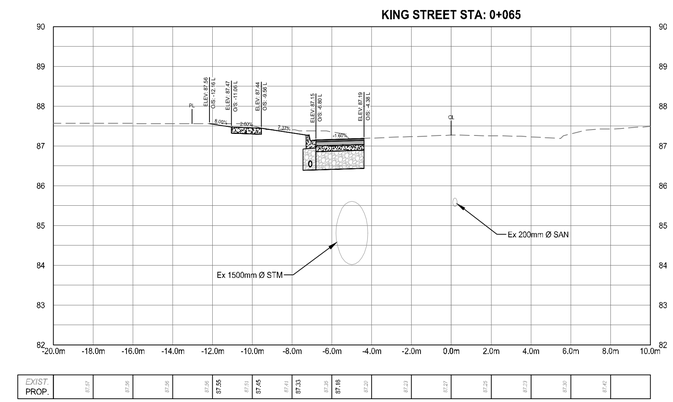


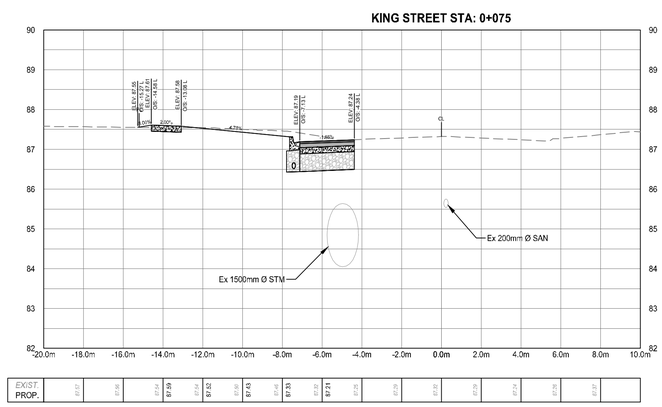


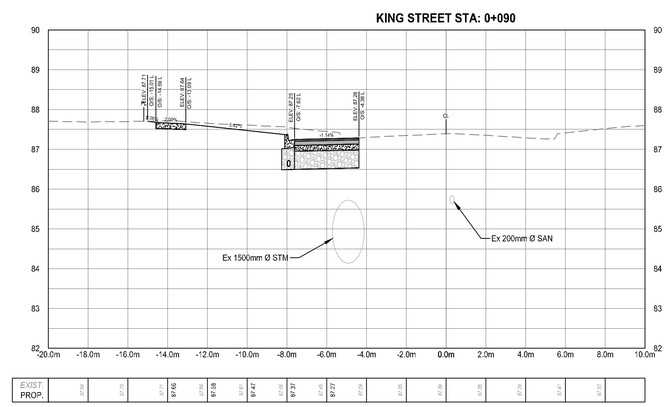


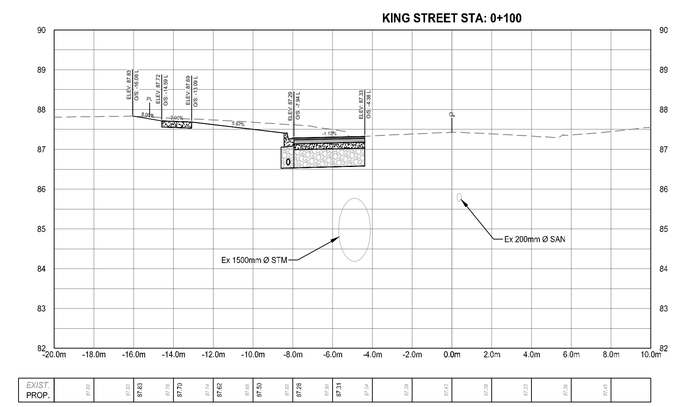












SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

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No.	REVISION	BY	DATE
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6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

KING STREET @ MAPLEWOOD & HARPER ST CROSS SECTIONS STA: 0+000 TO 0+100

COBOURG, ONTARIO

DRAWN BY: J.DUNN

DESIGNED BY: J.DUNN

APPROVED BY: A.HILL

DATE: 2019-06-25

SCALE: 1:150

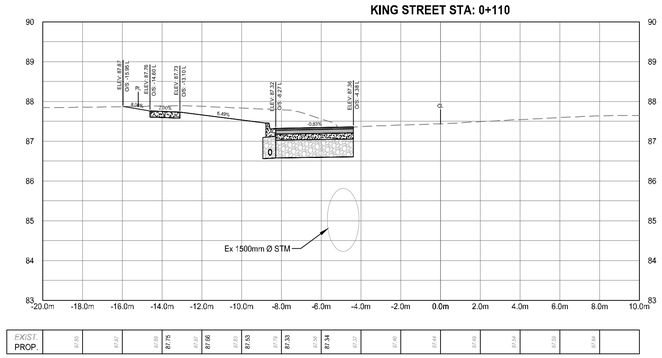
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	XS1	19 of 27

18041-XS1

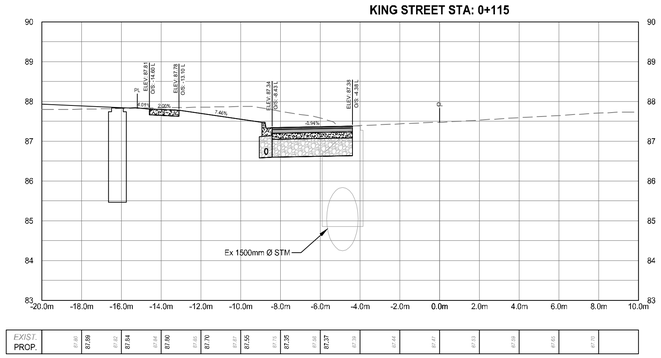
Date: Dec. 17, 2019 4:48 pm Plotted by: jdunn Filename: S:\01 - Projects\18\XX\1041 East Village Phase 5\02 Design\Drawings\Current Drawings\details\ Design\1041-XS1.dwg

KING STREET STA: 0+110



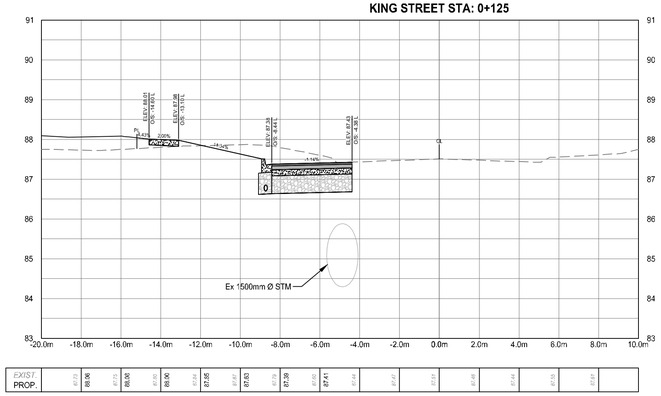
EXIST.																					
PROP.	87.92	87.82	87.89	87.75	87.87	87.86	87.85	87.83	87.79	87.79	87.34	87.32	87.40	87.44	87.49	87.54	87.59	87.64			

KING STREET STA: 0+115



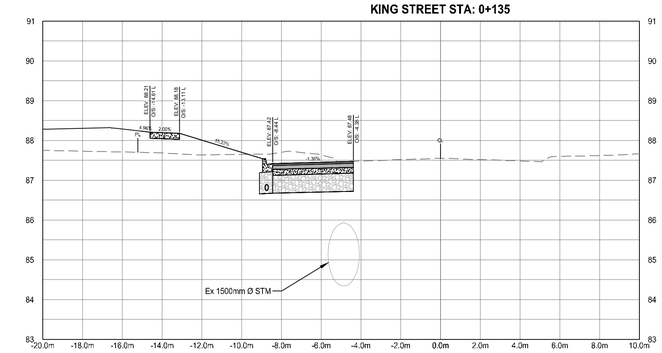
EXIST.																					
PROP.	87.92	87.89	87.84	87.84	87.86	87.80	87.70	87.67	87.65	87.75	87.55	87.58	87.37	87.39	87.42	87.41	87.43	87.59	87.60	87.70	

KING STREET STA: 0+125



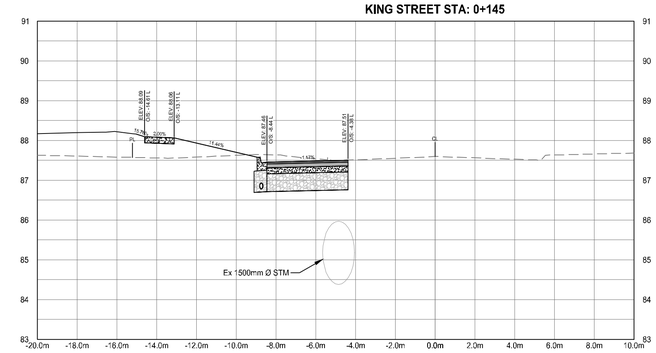
EXIST.																					
PROP.	87.83	86.96	87.75	86.95	87.90	86.90	87.95	87.98	87.83	87.95	87.39	87.65	87.41	87.54	87.47	87.51	87.49	87.54	87.55	87.51	

KING STREET STA: 0+135



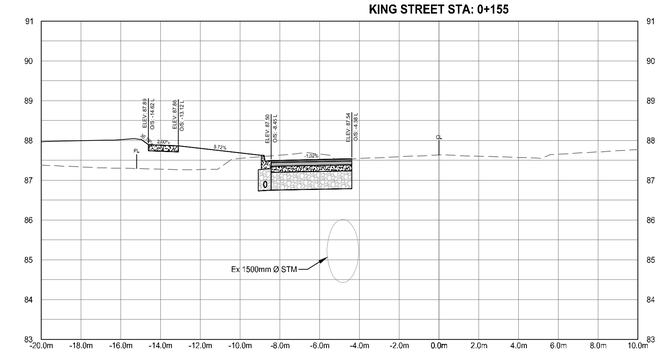
EXIST.																					
PROP.	87.92	88.82	87.91	88.28	87.89	88.25	87.84	88.01	87.69	87.71	87.49	87.43	87.44	87.45	87.40	87.43	87.35	87.32	87.46	87.50	87.52

KING STREET STA: 0+145



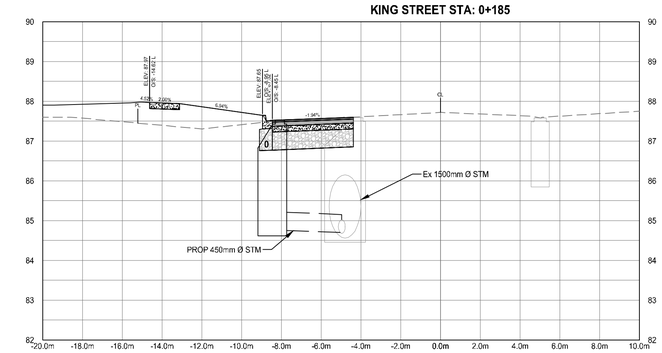
EXIST.																					
PROP.	87.91	88.13	87.89	88.22	87.86	88.08	87.84	87.93	87.72	87.70	87.44	87.42	87.43	87.43	87.41	87.46	87.50	87.50	87.52	87.52	

KING STREET STA: 0+155



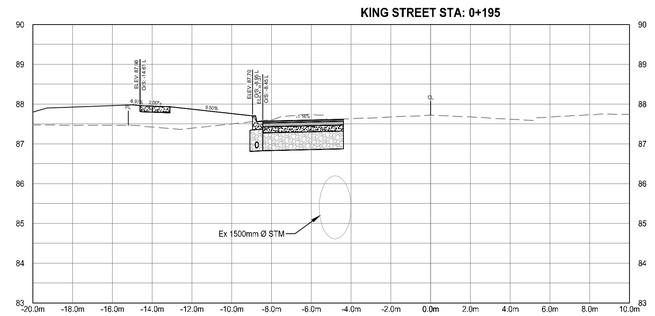
EXIST.																					
PROP.	87.93	87.89	87.92	88.02	87.89	87.92	87.85	87.87	87.83	87.86	87.50	87.52	87.52	87.52	87.51	87.56	87.54	87.56	87.56	87.57	

KING STREET STA: 0+185



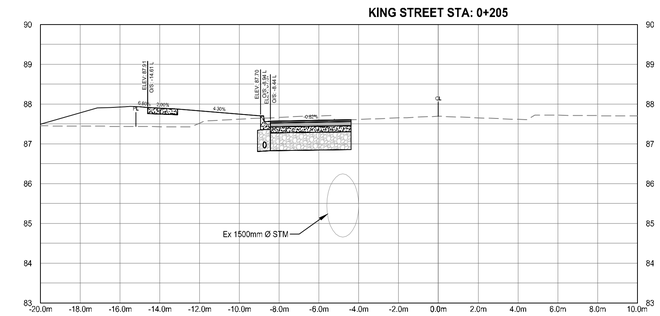
EXIST.																					
PROP.	87.95	87.95	87.96	87.95	87.96	87.98	87.91	87.72	87.91	87.53	87.50	87.57	87.61	87.67	87.72	87.66	87.64	87.65	87.66	87.66	

KING STREET STA: 0+195



EXIST.																					
PROP.	87.97	87.93	87.97	87.96	87.95	87.95	87.86	87.87	87.80	87.78	87.91	87.58	87.73	87.50	87.53	87.61	87.66	87.62	87.67	87.73	

KING STREET STA: 0+205



EXIST.																					
PROP.	87.95	87.75	87.94	87.93	87.92	87.93	87.90	87.74	87.90	87.56	87.59	87.61	87.66	87.60	87.60	87.72	87.66	87.66	87.71	87.71	

SURVEY

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ELEV: 87.510m

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6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

KING STREET @ MAPLEWOOD & HARPER ST CROSS SECTIONS STA: 0+110 TO 0+205

COBOURG, ONTARIO

DRAWN BY: J.DUNN

DESIGNED BY: J.DUNN

APPROVED BY: A.HILL

DATE: 2019-06-25

STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

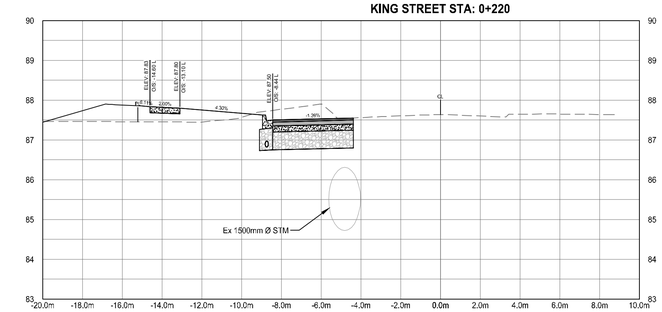
SCALE: 1:150

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	XS2	20 of 27

18041-XS1

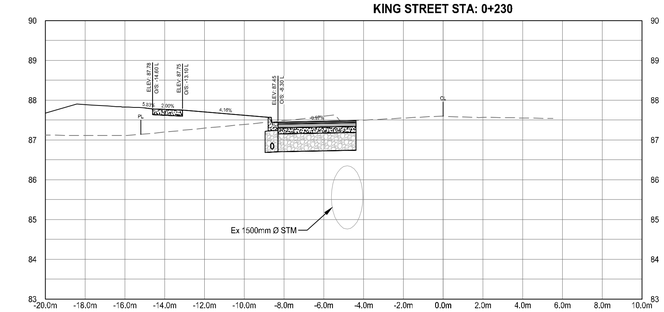
Date: Dec. 17, 2019 - 4:46 pm Plotted by Jquinn Filename: S 51 - Pages\18000\1041 East Village Phase 5\02 Design\Drawings\Current Drawings\detailed Design\1041-XS1.Dwg

KING STREET STA: 0+220



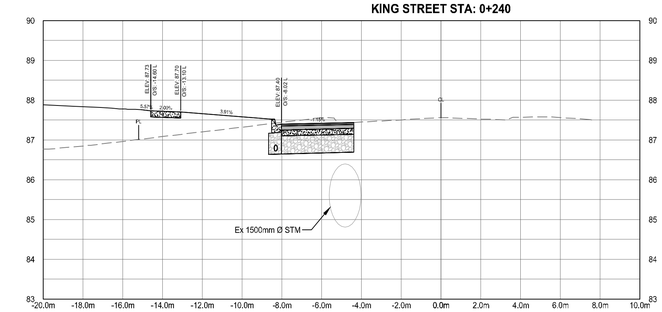
EXIST.																				
PROP.		87.75		87.68		87.62		87.75		87.67		87.50		87.53						

KING STREET STA: 0+230



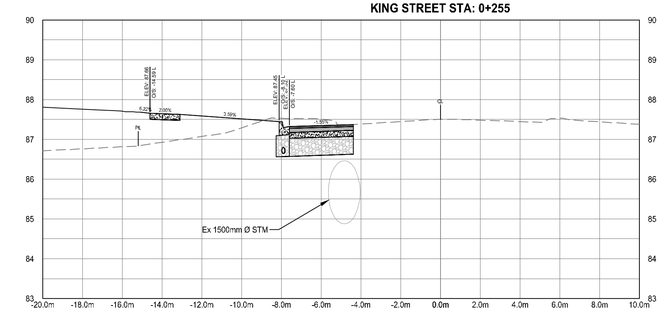
EXIST.																				
PROP.		87.89		87.83		87.77		87.71		87.62		87.49		87.47						

KING STREET STA: 0+240



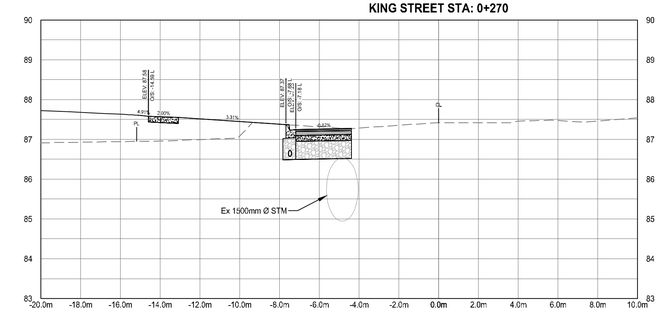
EXIST.																				
PROP.		87.94		87.78		87.75		87.72		87.66		87.56		87.43		87.42				

KING STREET STA: 0+255



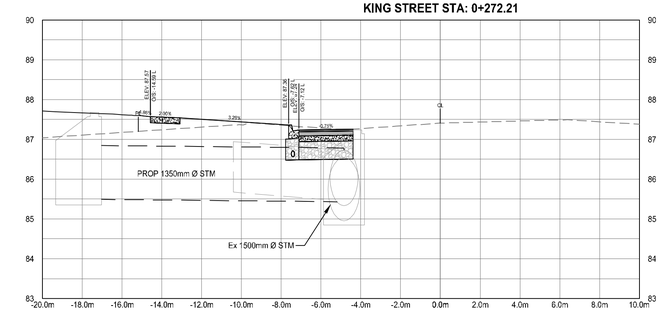
EXIST.																				
PROP.		87.75		87.71		87.63		87.59		87.52		87.45		87.35						

KING STREET STA: 0+270



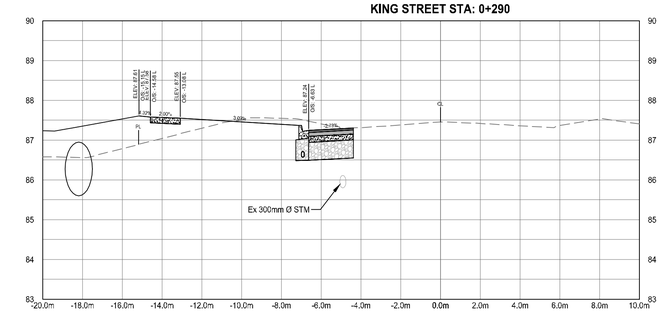
EXIST.																				
PROP.		87.65		87.63		87.57		87.52		87.45		87.38		87.26						

KING STREET STA: 0+272.21

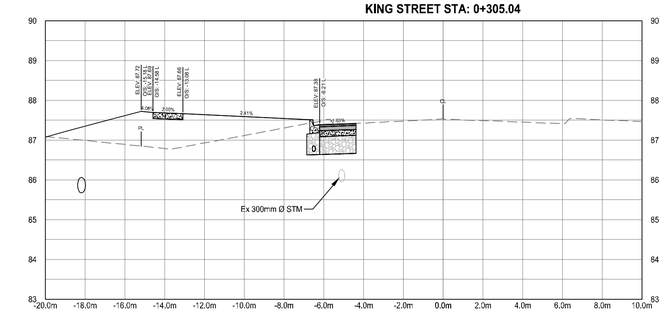


EXIST.																				
PROP.		87.67		87.62		87.55		87.51		87.44		87.35		87.25						

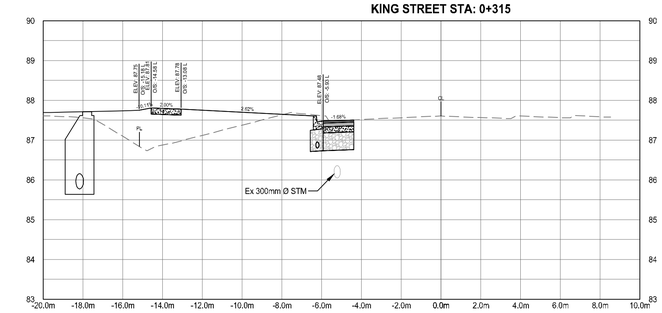
KING STREET STA: 0+290



KING STREET STA: 0+305.04



KING STREET STA: 0+315



SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH:
   - TOWN OF COBOURG DESIGN STANDARDS
   - ONTARIO PROVINCIAL STANDARD DRAWINGS & SPECIFICATIONS
   - APPLICABLE CONTRACT DOCUMENTS AND ALL SPECIFICATIONS REFERENCED HEREIN.
2. THE CONTRACTOR SHALL CONSTRUCT ALL WORK IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT, HEALTH AND SAFETY REGULATIONS FOR CONSTRUCTION PROJECTS.
3. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL PERMITS OR THIRD PARTY WORKS ASSOCIATED WITH SERVICING CONNECTIONS.
4. THE CONTRACTOR SHALL TAKE EXTREME CARE WHEN WORKING IN PROXIMITY TO EXISTING SERVICES.
5. THE CONTRACTOR SHALL RESTORE OR REPLACE DAMAGED SERVICES TO EXISTING OR BETER CONDITION.
6. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION, OR PER THE ENGINEERING AND LANDSCAPE SPECIFICATIONS REFERENCED HEREIN.
7. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL, BOOK 7, TEMPORARY CONDITIONS.
8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

KING STREET @ MAPLEWOOD & HARPER ST CROSS SECTIONS STA: 0+220 TO 0+310

COBOURG, ONTARIO

DRAWN BY: J.DUNN

DESIGNED BY: J.DUNN

APPROVED BY: A.HILL

DATE: 2019-06-25

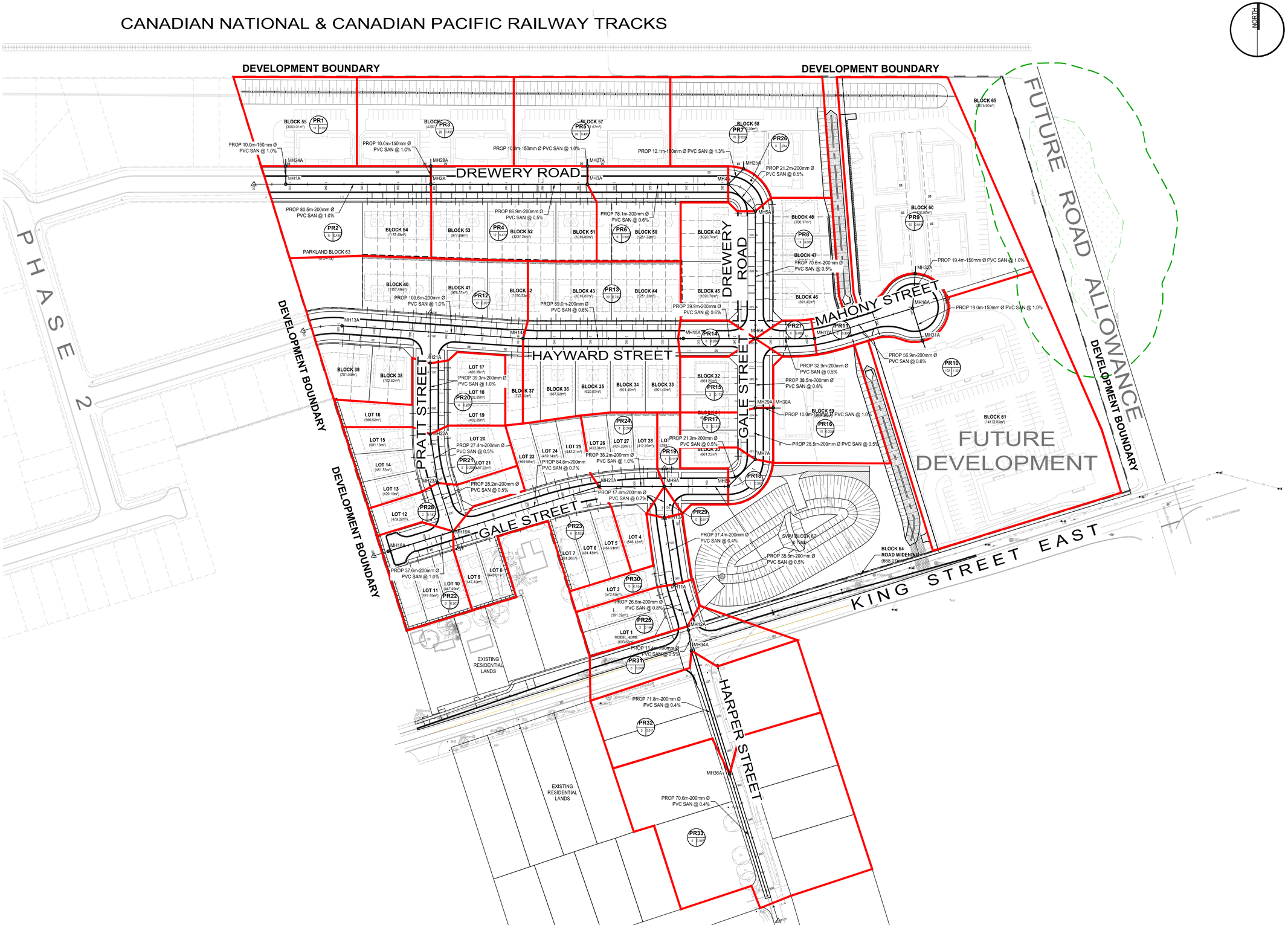
STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

SCALE: 1:150

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	XS3	21 of 27

18041-XS1

Date: Dec. 17, 2019 - 4:46 pm Plotted by jkuen Filename: S 51 - Pages\18000\18041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-XS1.dwg



SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

LEGEND

- PROPOSED SANITARY MANHOLE
- PROPOSED SANITARY SEWER
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY SEWER
- SANITARY DRAINAGE AREA
- PR1 — CATCHMENT NAME; No. OF UNITS — 4; 0.231 — AREA (ha)
- PIPE FLOW DIRECTION

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

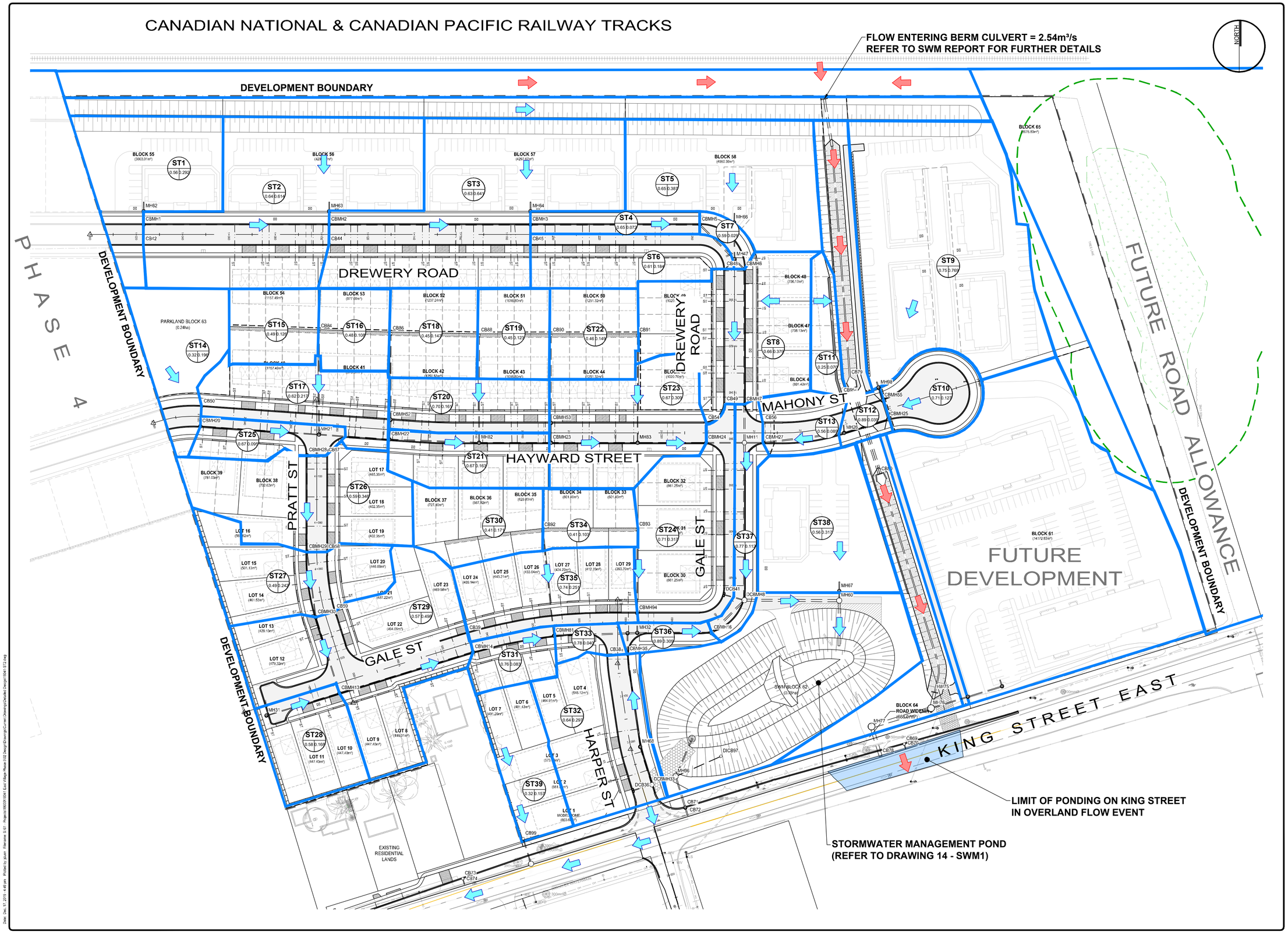
SANITARY DRAINAGE AREA PLAN

COBOURG, ONTARIO

DRAWN BY: J.DUNN	STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO
DESIGNED BY: J.DUNN	
APPROVED BY: A.HILL	
DATE: 2019-05-27	
SCALE: 1:750	

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	SA1	22 of 27

18041-SA1



SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

NOTES:

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8. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT GUIDELINES AND LOCAL MUNICIPAL BYLAWS.

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

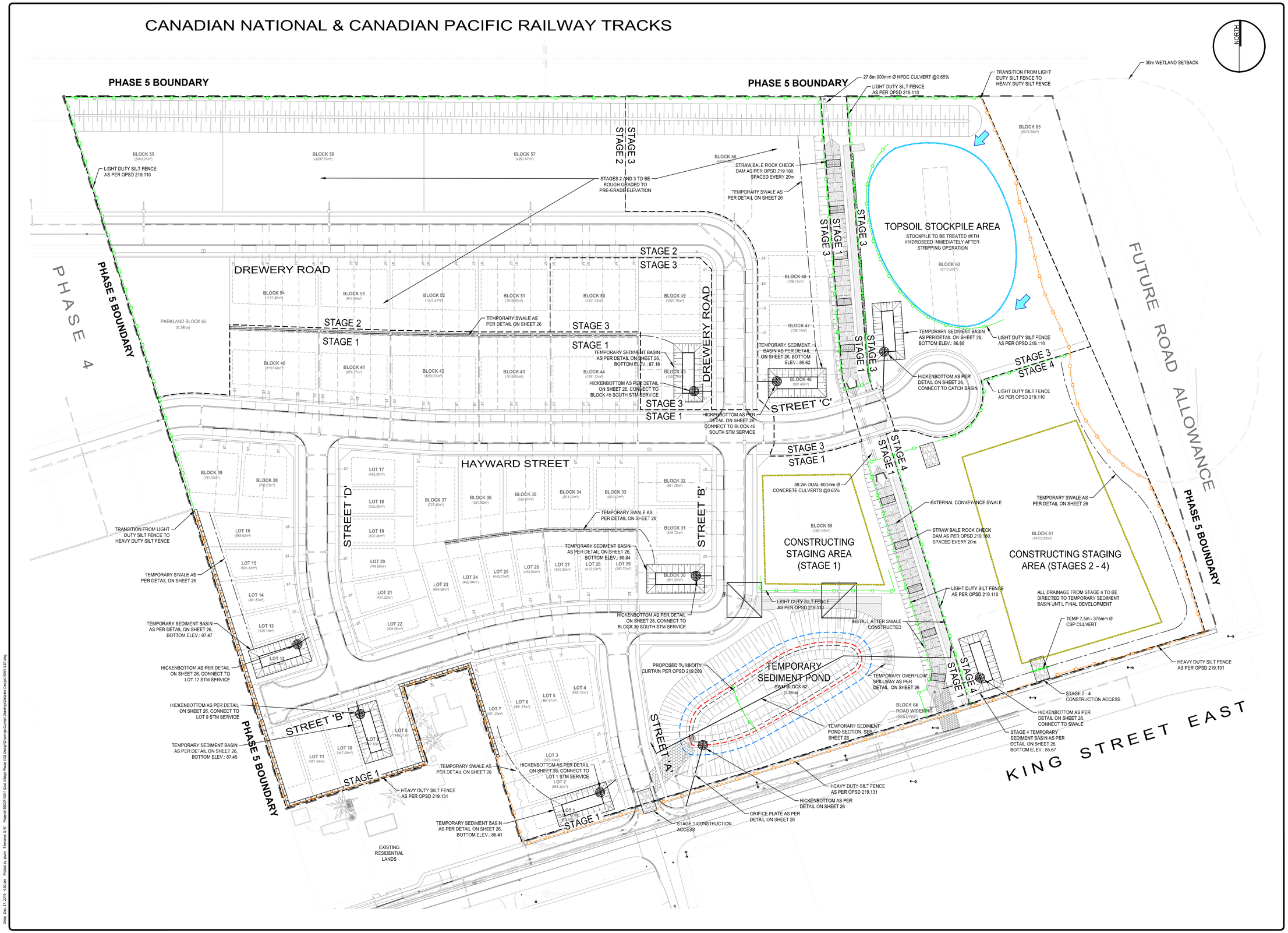
STORM DRAINAGE AREA PLAN

COBOURG, ONTARIO

DRAWN BY: J.DUNN	STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO
DESIGNED BY: J.DUNN	
APPROVED BY: B.PARSONS	
DATE: 2019-07-31	
SCALE: 1:750	

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	ST1	23 of 27

18041-ST2



SURVEY

TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

BENCHMARK

ELEVATIONS ARE GEODETIC AND REFERRED TO TOWN OF COBOURG BENCHMARK 05 AND HAVING A GEODETIC ELEVATIONS OF:

ELEV: 87.510m

EROSION CONTROL & CONSTRUCTION STAGING NOTES

CONTRACTOR TO MINIMIZE THE IMPACTS ASSOCIATED WITH SEDIMENT TRANSFER BY COMPLETING THE FOLLOWING MEASURES IN THE FOLLOWING ORDER:

1. CONSTRUCT MUD MAT AT THE CONSTRUCTION ENTRANCE AS INDICATED ON THIS PLAN. CONSTRUCTION ENTRANCE FOR STAGE 1 WILL BE LOCATED OFF KING STREET ON STREET A. CONSTRUCTION ENTRANCE FOR STAGES 2 THORUGH 4 WILL BE LOCATED OFF KING STREET THROUGH BLOCK 61.
2. COMPLETE CLEARING AND GRUBBING OF STAGES 1 TO 3 TO THE LIMITS INDICATED ON THIS PLAN. INSTALLATION OF PERMITER LIGHT DUTY SILT FENCE(OPSD 219.110) AND HEAVY DUTY SILT FENCE(OPSD 219.131).
3. CONSTRUCTION OF THE NORTH TO SOUTH EXTERNAL CONVEYANCE SWALE INCLUDING ALL ASSOCIATED CULVERT AND STORM SEWER WORK. UPON COMPLETION OF SWALE, STRAW BALE CHECK DAMS AND ISOLATION SILT FENCE(OPSD 219.110) ARE TO BE INSTALLED AS INDICATED ON THIS PLAN.
4. EXCAVATION AND CONSTRUCTION OF STORMWATER MANAGEMENT POND, TO FUNCTION AS A TEMPORARY SEDIMENT POND DURING CONSTRUCTION, INCLUDING TEMPORARY HICKENBOTTOM OUTLET AND OVERFLOW WIER TO BE COMPLITED PRIOR TO ANY TOPSOIL STRIPPING AND/OR SITE EARTHWORKS. ANY EXCESS TOPSOIL OR FILL MATERIAL GENERATED FROM POND CONSTRUCTION SHALL BE PLACED IN STOCKPILE LOCATIONS AS INDICATED ON THIS PLAN. LIGHT DUTY SILT FENCE(OPSD 219.110) SHALL BE INSTALLED AROUND STOCKPILE LOCATIONS AS REQUIRED.
5. TOPSOIL STRIPPING AND SITE EARTHWORKS TO BE COMPLETED WHEN ALL EROSION AND SEDIMENT CONTROL FEATURES INDICATED ON THIS PLAN ARE IN PLACE AND FUNCTIONING. ANY EXCESS TOPSOIL OR FILL MATERIAL SHALL BE PLACED IN STOCKPILE LOCATIONS AS INDICATED ON THIS PLAN. LIGHT DUTY SILT FENCE(OPSD 219.110) SHALL BE INSTALLED AROUND STOCKPILE LOCATIONS AS REQUIRED. ALL DISTURBED AREAS ARE TO BE SEEDED WITHIN 60 DAYS IF NO FURTHER SERVICING ACTIVITIES ARE TO OCCUR.
6. PRIOR TO SERVICING CONSTRUCTION OF STAGE 1, SEDIMENT BASINS MUST BE CONSTRUCTED ON LOTS/BLOCKS 9, 12, 30, 45, 46, AND 60 AS INDICATED ON THIS PLAN. A SEDIMENT BASIN SHALL BE CONSTRUCTED ON BLOCK 61 PRIOR TO SERVICING OF STAGE 2.
7. HICKENBOTTOM OUTLETS FOR SEDIMENT BASINS TO BE CONSTRUCTED AND CONNECTED TO STORM SERVICE LATERALS THROUGHOUT STORM SEWER CONSTRUCTION.
8. TEMPORARY CUT-OFF DRAINAGE SWALES MUST BE CONSTRUCTED AS INDICATED ON THIS PLAN TO CAPTURE AND DIRECT SHEET FLOW TOWARDS SEDIMENT BASINS.
9. CONSTRUCTION STAGING AREA SHALL BE SET UP ON BLOCK 59 FOR STAGE 1 CONSTRUCTION. FOR STAGES 2 THROUGH 4 THE CONSTRUCTION STAGING AREA SHALL BE SET UP ON BLOCK 61 AS INDICATED ON THIS PLAN
10. UPON COMPLETION OF SERVICING CONSTRUCTION ALL ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE STORMWATER MANAGEMENT POND. THE HICKENBOTTOM SHALL BE REPLACED WITH THE ULTIMATE POND OUTLET CONFIGURATION FOLLOWING SEDIMENT REMOVAL.
11. REMOVE SILT FENCES, MUD MAT, FILTER FABRIC AND ANY OTHER EROSION/SILTATION CONTROL MEASURES ONCE ALL CONSTRUCTION HAS BEEN COMPLETED, ALL VEGETATION HAS BEEN ESTABLISHED AND AT THE DIRECTION OF THE ENGINEER/TOWN.

No.	REVISION	BY	DATE
7.	-	-	-
6.	-	-	-
5.	-	-	-
4.	-	-	-
3.	-	-	-
2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

EROSION & SEDIMENT CONTROL PLAN

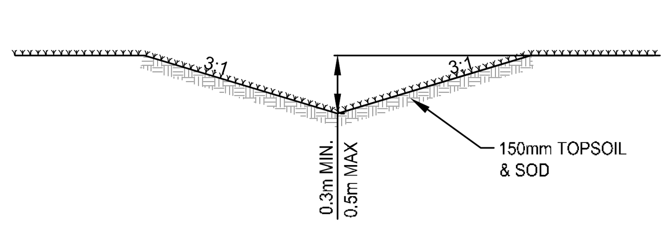
COBOURG, ONTARIO

DRAWN BY: A. LAUTENBACH	STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO
DESIGNED BY: A. LAUTENBACH	
APPROVED BY: A.HILL	
DATE: 2019-05-27	
SCALE: 1:750	

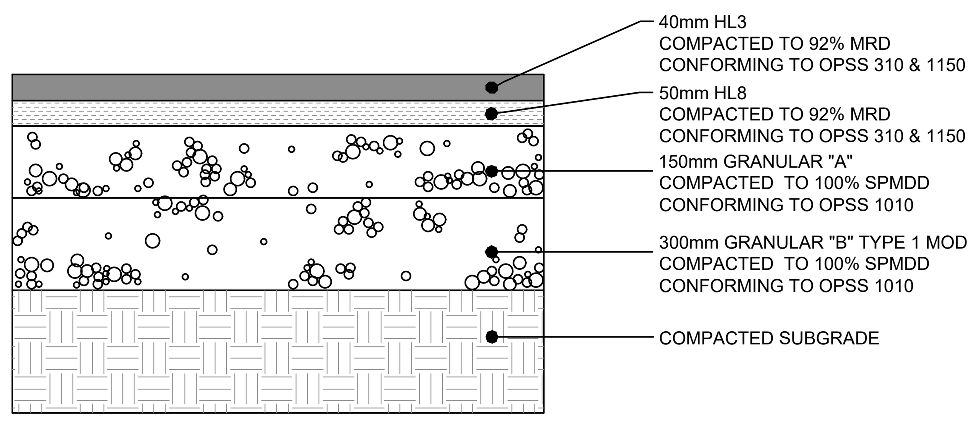
PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	ES1	24 of 27

18041-ES1

Date: Dec 17, 2019 - 4:06 pm Plotted by: pam Filename & XR: - Projects\18000\18041 East Village Phase 5\02 Design\Drawings\Current\Drawings\Grading Design\18041-ES1.dwg

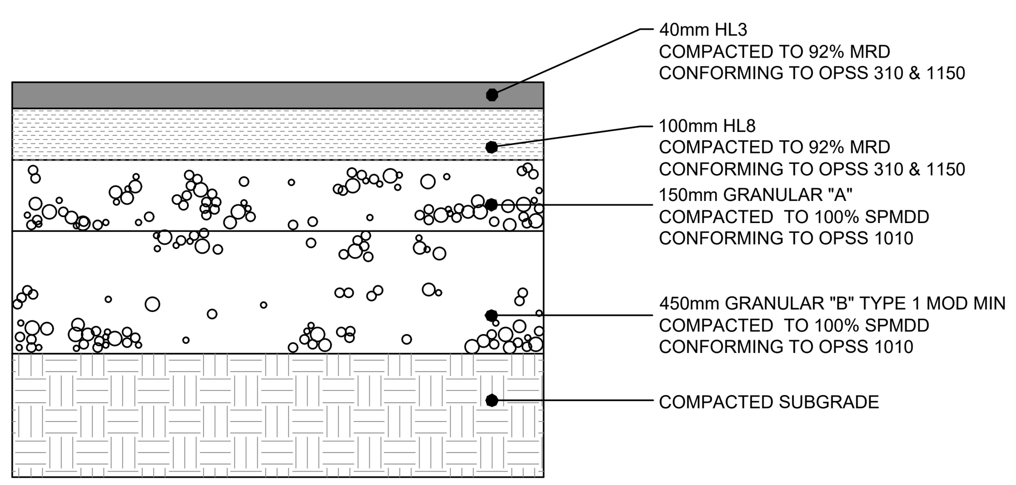


TYPICAL REAR YARD SWALE
SCALE: N.T.S.



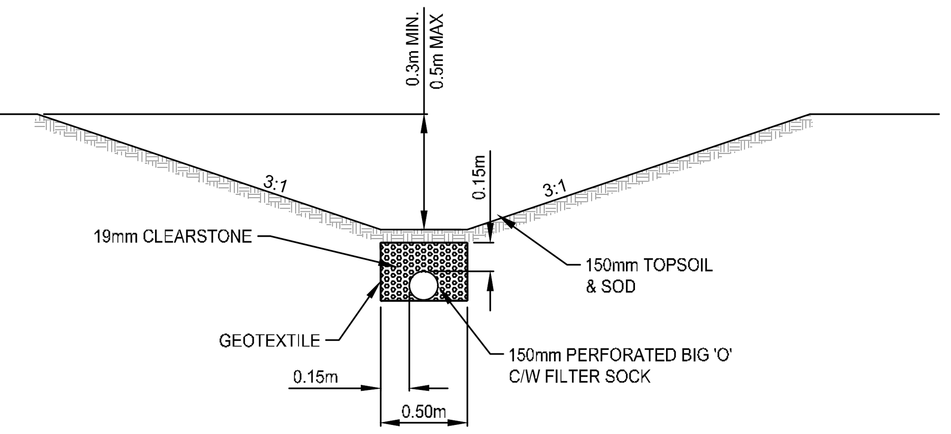
NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

LOCAL ROADS PAVEMENT STRUCTURE
SCALE: N.T.S.



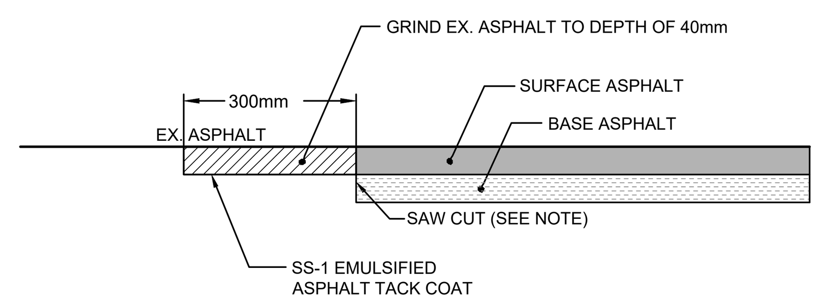
NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. MINIMUM 450mm GRANULAR 'B' DEPTH TO MATCH EXISTING ROAD STRUCTURE IF DEEPER THAN 450mm.

KING STREET PAVEMENT STRUCTURE
SCALE: N.T.S.



NOTES:
1. REAR YARD SWALE SUBDRAIN FOR LOTS 4-9 SHALL OUTLET TO CB27.
2. REAR YARD SWALE SUBDRAIN FOR LOTS 23-28 SHALL OUTLET TO STORMWATER MANAGEMENT POND AND SHALL INCLUDE RODENT GRATE AS PER OPSD 207.044.

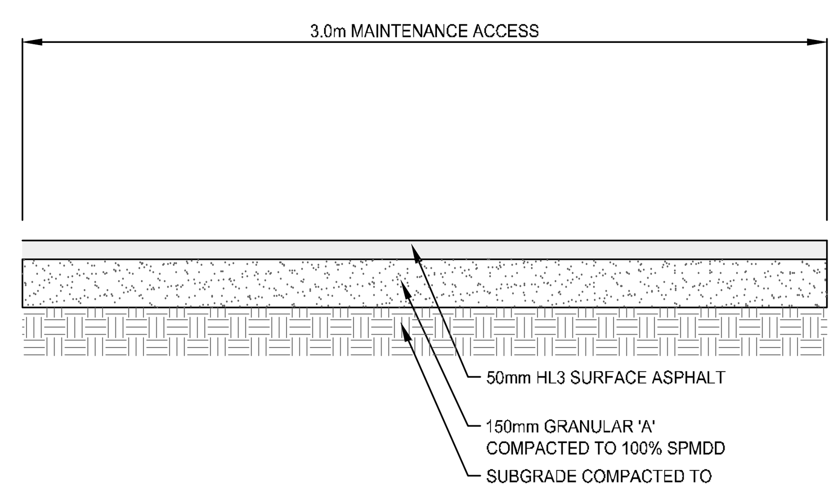
TYPICAL DRAINAGE SWALE W/ SUBDRAIN
SCALE: N.T.S.



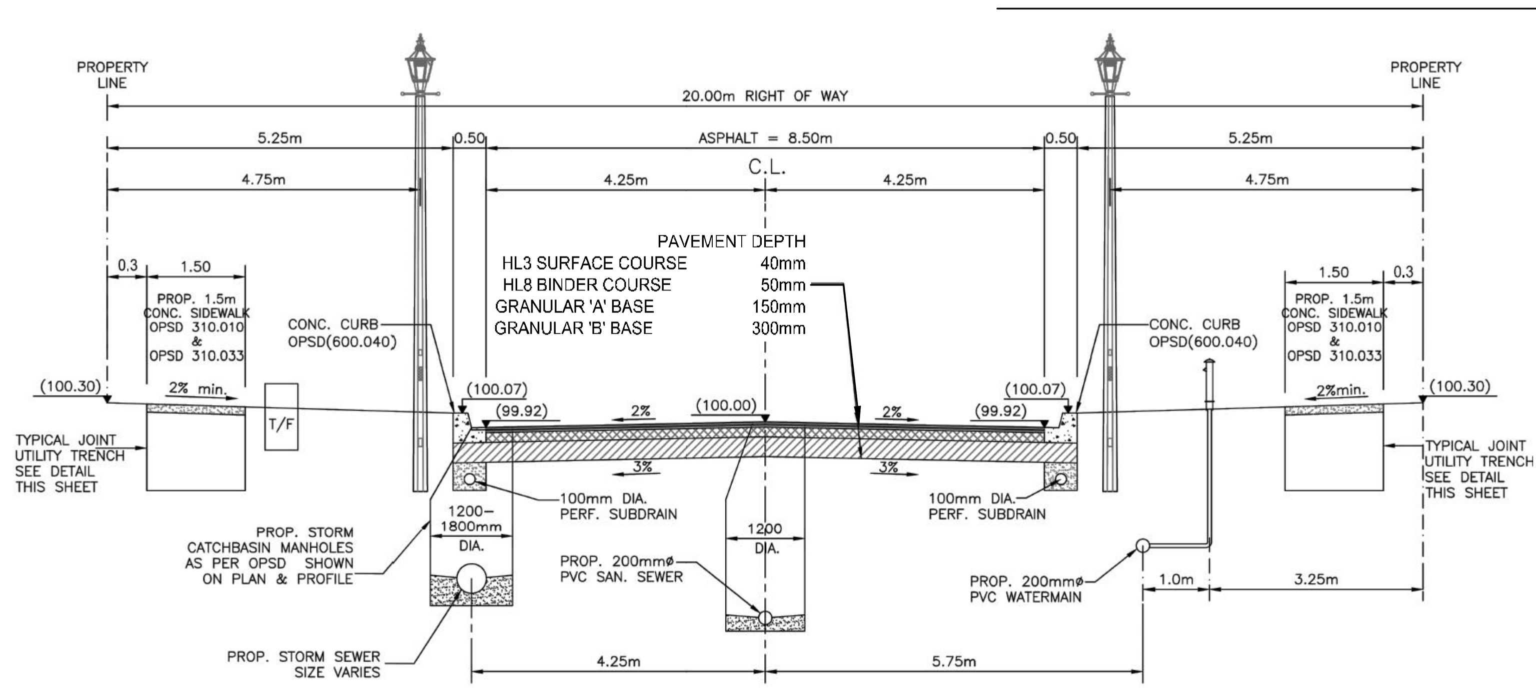
NOTES:

1. TRANSITION TREATMENT REQUIRED AT ALL BUTT JOINTS. THE EXISTING PAVEMENT EDGES SHALL BE "SAW CUT" TO FORM A STRAIGHT, CLEAN VERTICAL FACE.
2. APPLY UNIFORM COATING OF SS-1 EMULSIFIED TACK COAT TO EXISTING ASPHALT EXISTING ASPHALT AT THE TRANSITION TREATMENT AREA.

ASPHALT TRANSITION TREATMENT
SCALE: N.T.S.



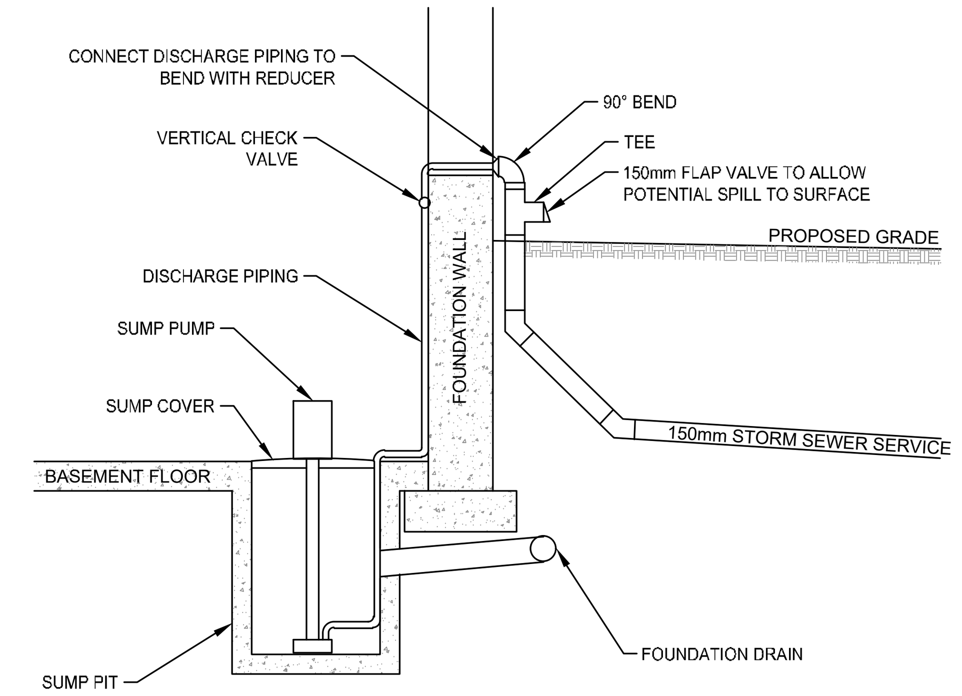
COMBINED MULTI-USE TRAIL AND MAINTENANCE ACCESS ROAD
SCALE: N.T.S



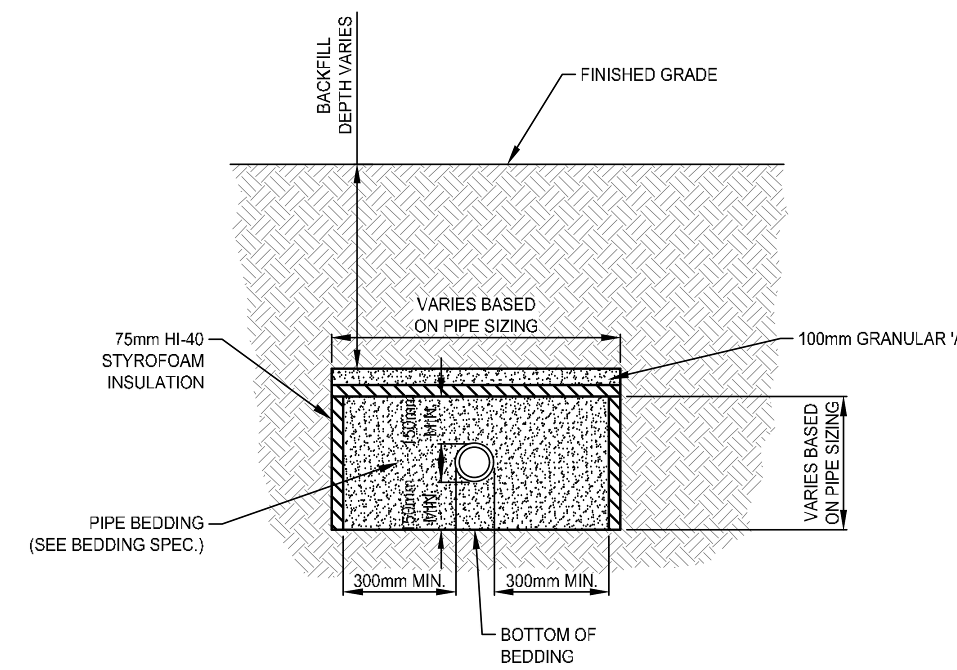
TYPICAL ROAD SECTION
SCALE: N.T.S.

ONTARIO PROVINCIAL STANDARDS

SUBDRAIN PIPE CONNECTION AND OUTLET	OPSD-216.021	1200mm PRECAST MANHOLE-NO SUMP	OPSD-701.010
LIGHT DUTY SILT FENCE	OPSD-219.110	1500mm PRECAST MANHOLE-NO SUMP	OPSD-701.011
HEAVY DUTY WIRE-BACKED SILT FENCE	OPSD-219.131	1800mm PRECAST MANHOLE-NO SUMP	OPSD-701.012
STRAW BALE FLOW CHECK DAM	OPSD-219.180	SANITARY MANHOLE BENCHING DETAILS	OPSD-701.021
CONCRETE SIDEWALK	OPSD-310.010	PRECAST CONCRETE CATCH BASIN	OPSD-705.010
CONCRETE SIDEWALK ADJACENT TO CURB AND GUTTER	OPSD-310.020	FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION	OPSD-802.010
CATCH BASIN AND CATCH BASIN MANHOLE FRAME AND GRATE	OPSD-400.020	RIGID PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION TYPE 1 OR 2 SOIL	OPSD-802.030
MAINTENANCE HOLE, SQUARE FRAME, CIRCULAR COVER	OPSD-401.010	GENERAL RIP RAP TREATMENT FOR SEWER AND CULVERT OUTLETS	OPSD-810.010
CAST IRON, CIRCULAR FRAME WITH CIRCULAR 745mm COVER FOR MAINTENANCE HOLES	OPSD-401.020	SEWER SERVICE CONNECTIONS FOR RIGID PIPE	OPSD-1006.010
ALUMINUM SAFETY PLATFORM FOR CIRCULAR MAINTENANCE HOLES	OPSD-404.020	CONCRETE THRUST BLOCKS FOR TEES, PLUGS, AND HORIZONTAL BENDS	OPSD-1103.010
MAINTENANCE HOLE STEPS	OPSD-405.010	CONCRETE THRUST BLOCKS FOR VERTICAL BENDS	OPSD-1103.020
MAINTENANCE HOLE STEPS SOLID ALUMINUM	OPSD-405.020	WATER SERVICE CONNECTION	OPSD-1104.010
CONCRETE BARRIER CURB AND GUTTER	OPSD-600.040	HYDRANT INSTALLATION	OPSD-1105.010
		CATHODIC PROTECTION FOR PVC WATERMAIN SYSTEMS	OPSD-1109.011
		1500mm SINGLE INLET FLAT CAP	OPSD-703.011
		1800mm SINGLE INLET FLAT CAP	OPSD-703.012
		1500mm TWIN INLET FLAT CAP	OPSD-703.021
		1800mm TWIN INLET FLAT CAP	OPSD-703.022

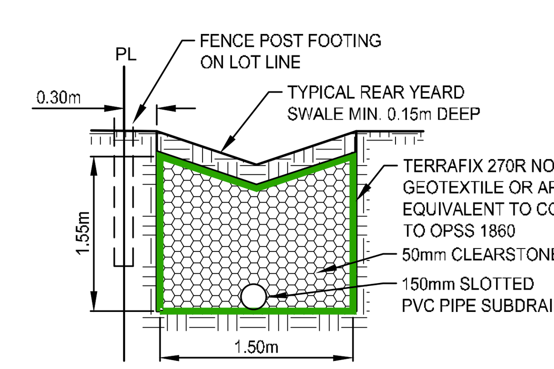


SUMP PUMP - EXTERNAL STORM SERVICE CONNECTION
SCALE: N.T.S.



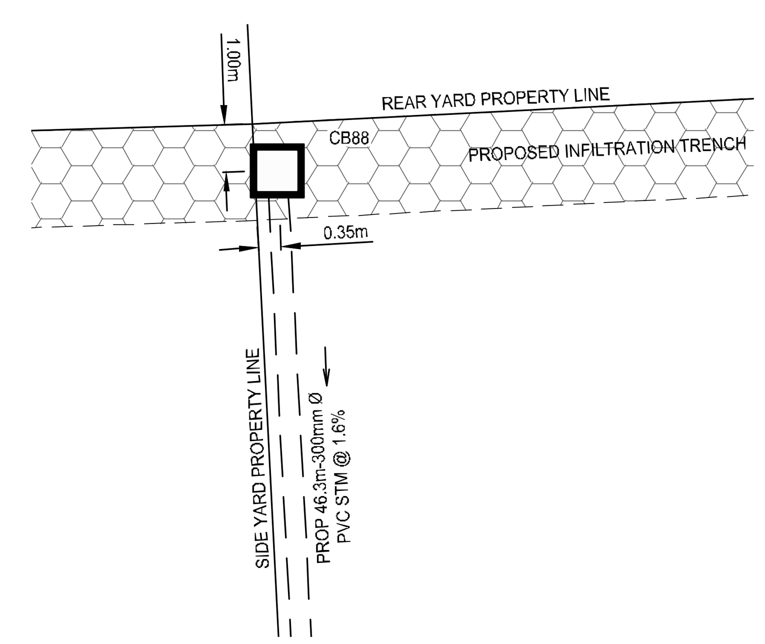
NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
2. THIS DETAIL TO BE READ IN CONJUNCTION WITH OPSD 802.010 (MODIFIED)

PIPE INSULATION DETAIL
SCALE: N.T.S.

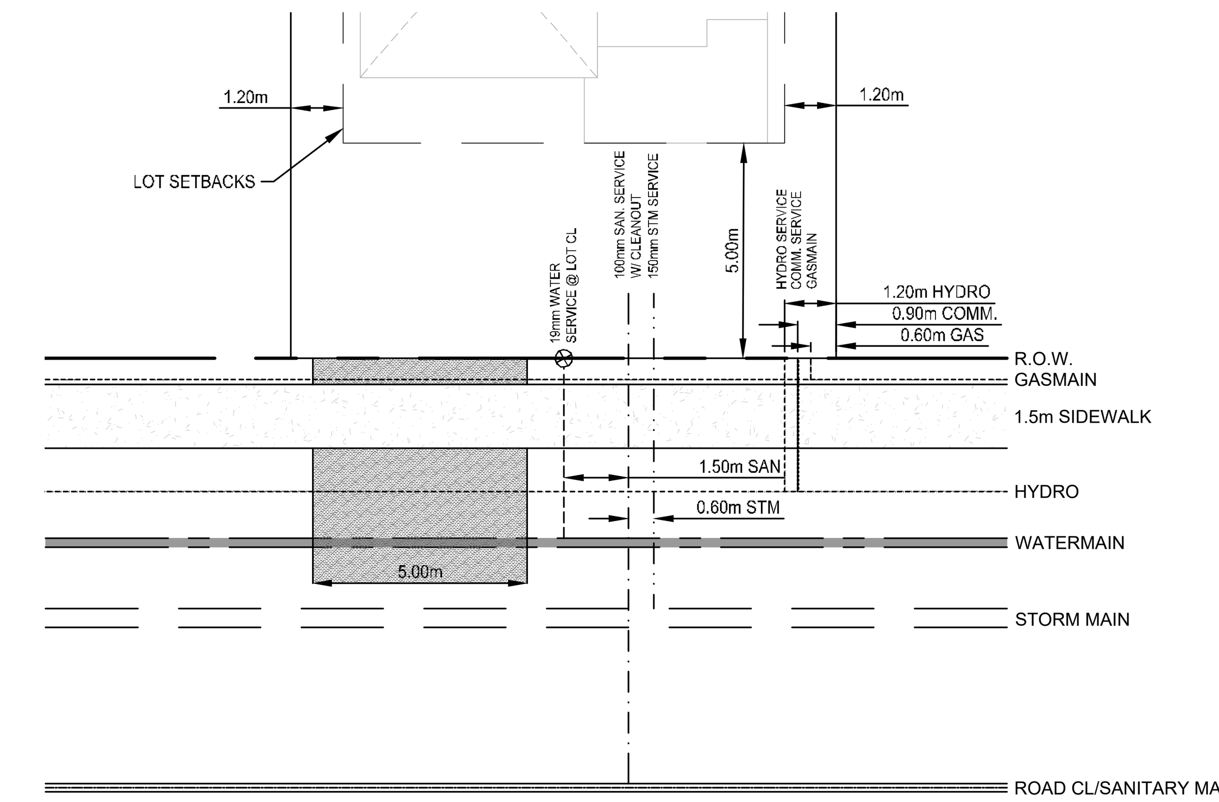


TRENCH SECTION

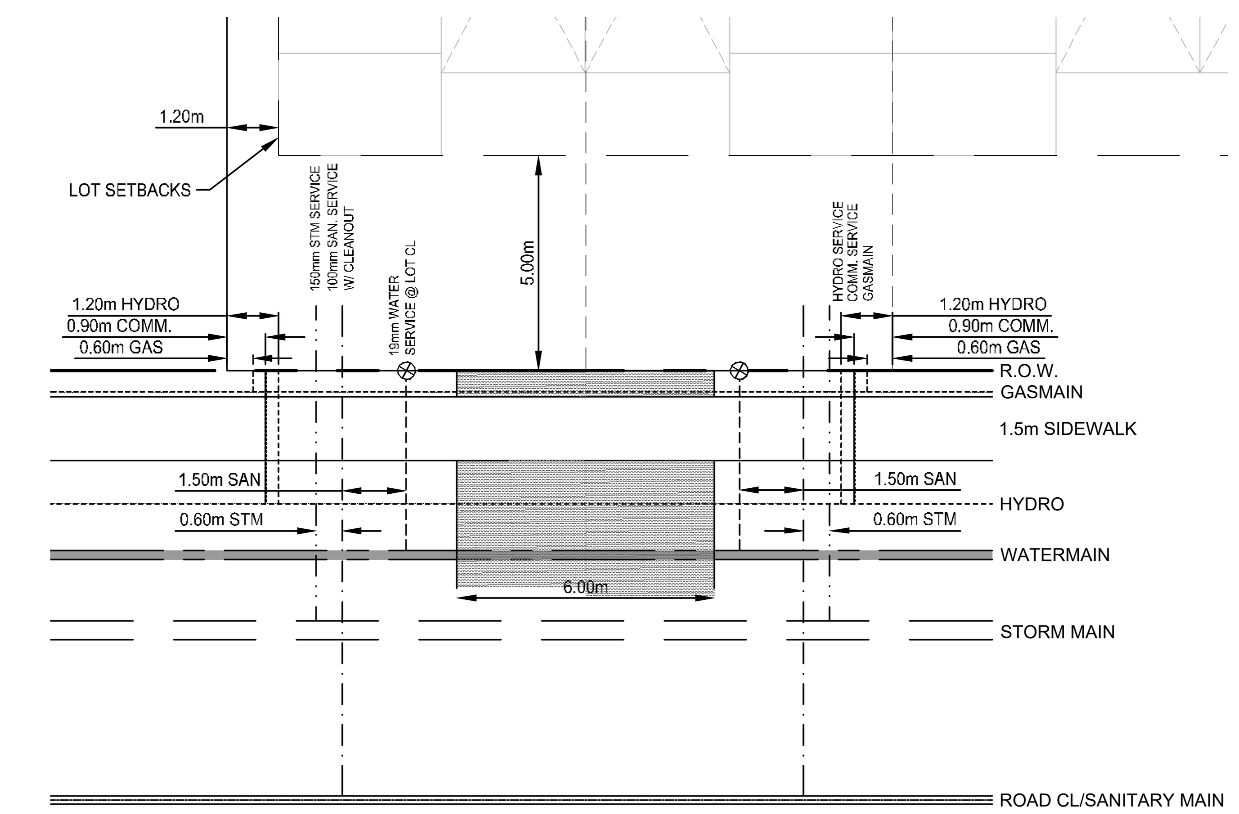
REAR-YARD INFILTRATION TRENCH
SCALE: N.T.S.



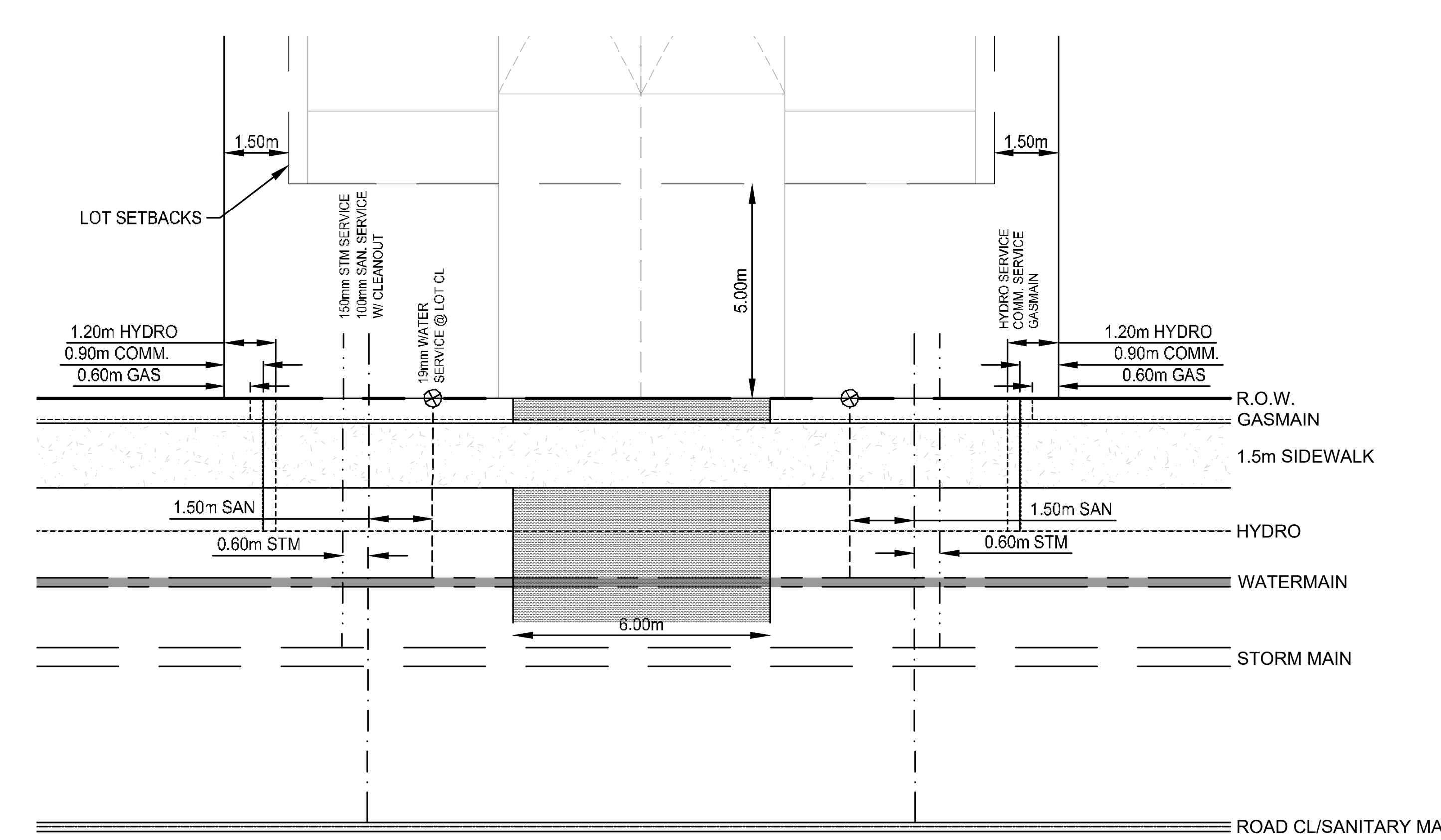
TYPICAL REAR-YARD CATCHBASIN LAYOUT
SCALE: 1:100



TYPICAL SINGLE DETACHED DWELLING LOT SERVICE CONNECTIONS
SCALE: 1:150



TYPICAL TOWNHOUSE DWELLING LOT SERVICE CONNECTIONS
SCALE: 1:150



TYPICAL SEMI-DETACHED DWELLING LOT SERVICE CONNECTIONS
SCALE: 1:150

SURVEY
TOPOGRAPHIC SURVEY PROVIDED BY IVAN B. WALLACE LAND SURVEYORS. BOUNDARY INFORMATION SHOWN HEREON IS COMPILED FROM PLAN OF SURVEY BY W.R. BRICK O.L.S. DATED SEPTEMBER 24, 1973 AND PLAN 39R-6519.

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2.	ISSUED FOR 2ND SUBMISSION	JD	2019-12-18
1.	ISSUED FOR 1ST SUBMISSION	JD	2019-07-31

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

STANDARD DETAILS

COBOURG, ONTARIO

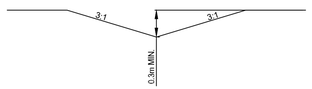
DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-05-27

STAMP: LICENSED PROFESSIONAL ENGINEER A.M. HILL 100164289 2019-12-18 PROVINCE OF ONTARIO

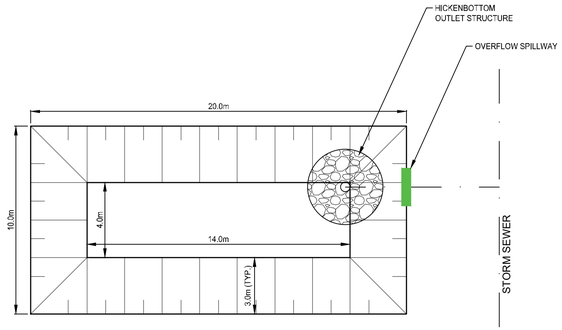
SCALE: AS NOTED

PROJECT NUMBER: **18041** SHEET NAME: **DT1** SHEET: **25 of 27**

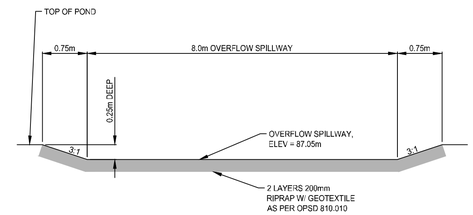
18041-DT1
Date: Dec. 17, 2019 - 4:52 pm Plotted by: jdunn Filename: S:\01 - Projects\18000\18041 East Village Phase 5\02 Design\Drawings\Current Drawings



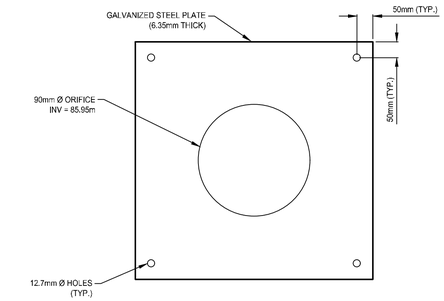
TYPICAL TEMPORARY SWALE
SCALE: N.T.S.



TEMPORARY SEDIMENT BASIN
SCALE: N.T.S.



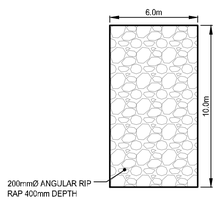
TEMPORARY OVERFLOW SPILLWAY
SCALE: N.T.S.



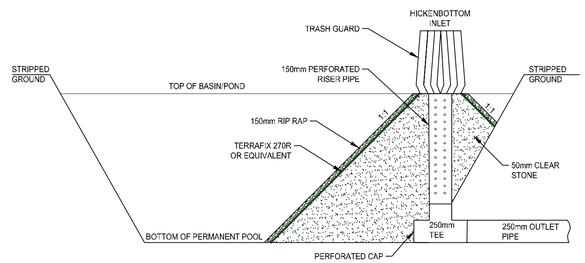
NOTE

1. ORIFICE PLATE SHALL BE INSTALLED ON INLET SIDE OF CONCRETE WEIR AS SHOWN ON DETAIL 7.
2. INSTALL A NEOPRENE GASKET BETWEEN CONCRETE WEIR AND ORIFICE PLATE TO ENSURE A WATERTIGHT SEAL.

TEMPORARY ORIFICE PLATE
SCALE: N.T.S.

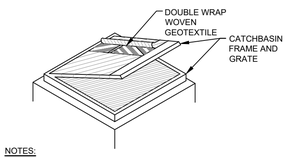


MUD MAT
SCALE: N.T.S.



NOTE:
1. FOR BEDDING AND BACKFILL, REFER TO OPSD 802.010

TEMPORARY HICKENBOTTOM OUTLET
SCALE: N.T.S



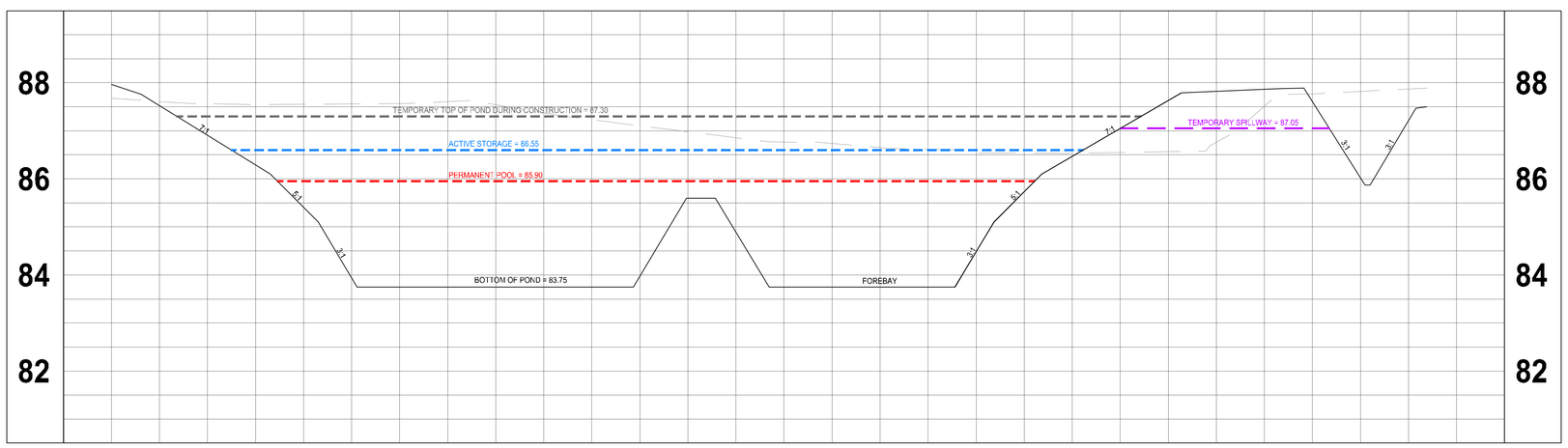
NOTES:

1. TO BE INSTALLED ON ALL CATCHBASINS AND MAINTAINED DURING CONSTRUCTION.
2. WOVEN GEOTEXTILE TO HAVE EQUIVALENT OPENING SIZE BETWEEN 0.15mm AND 0.25mm.
3. WOVEN GEOTEXTILE TO BE REPLACED PERIODICALLY WHEN ACCUMULATED SEDIMENT INTERFERES WITH DRAINAGE.

CATCHBASIN SEDIMENT PROTECTION
SCALE: N.T.S.

REAR YARD INFILTRATION TRENCH INSTALLATION & MAINTENANCE CONSIDERATIONS

1. PRIOR TO CONSTRUCTION ACTIVITIES, AREAS IDENTIFIED FOR INFILTRATION SHOULD BE DEMARCATED ON-SITE AND AVOIDED WITH HEAVY MACHINERY TO LIMIT EXCESSIVE COMPACTION OF NATIVE SOILS.
2. TRENCH CONSTRUCTION/INSTALLATION OF SUBDRAIN AND CLEAR STONE SHOULD NOT OCCUR UNTIL AFTER ALL SERVICING IS COMPLETE. TEMPORARY SWALES IN THE LOCATION OF TRENCHES SHOULD BE USED AS A TEMPORARY MEASURE.
3. IT WOULD ULTIMATELY BE PREFERABLE TO CONSTRUCT INFILTRATION TRENCHES AFTER HOUSE CONSTRUCTION IS COMPLETE, THIS MAY NOT HOWEVER BE FEASIBLE. THEREFORE, AFTER SERVICING AND FILLING/ROUGH GRADING IS COMPLETE THE TRENCHES CAN BE CONSTRUCTED WITH PERIMETER SILT FENCE FULLY ENCASING THE TRENCH. SILT FENCE SHOULD BE MAINTAINED AND ONLY REMOVED AFTER HOMES ARE CONSTRUCTED AND THE LOTS ARE STABILIZED WITH SOD OR SEED.



TEMPORARY SEDIMENT CONTROL POND SECTION
SCALE: 1:300 H, 1:60 V

EROSION CONTROL NOTES

1. THE PROPOSED WORKS SHALL BE CARRIED OUT IN SUCH A MANNER THAT A MINIMUM AMOUNT OF EROSION OCCURS AND SUCH THAT SEDIMENTATION FACILITIES CONTROL ANY EROSION THAT DOES OCCUR.
2. ALL TEMPORARY SILTATION CONTROL DEVICES ARE TO BE CONSTRUCTED BEFORE CONSTRUCTION STARTS AND MAINTAINED FOR THE DURATION OF CONSTRUCTION UNTIL REMOVAL.
3. SEDIMENT ACCUMULATION OF MORE THAN 0.3 METRES IS TO BE REMOVED IMMEDIATELY.
4. INSPECT SILT FENCING AFTER EVERY SIGNIFICANT RAINFALL EVENT AND MAINTAIN AS REQUIRED, OR AT THE DIRECTION OF THE ENGINEER.
5. ADDITIONAL EROSION AND SEDIMENT CONTROL MATERIALS (SILT FENCE, CLEAR STONE, ETC.) ARE TO BE KEPT ON SITE FOR EMERGENCIES AND REPAIRS.
6. EROSION AND SEDIMENT CONTROL METHODS ARE TO BE CONTINUOUSLY EVALUATED AND UPGRADES ARE TO BE IMPLEMENTED, WHEN NECESSARY.
7. ENSURE THAT APPROPRIATE RESPONSE IS TAKEN FOR SPILLS AND ANY INCIDENTS ARE PROPERLY DOCUMENTED AND REPORTED.
8. AT THE COMPLETION OF CONSTRUCTION, ANY EXCESS MATERIAL SHALL BE REMOVED FROM THE SITE.
9. ALL DISTURBED AREAS ARE TO BE SEEDED WITHIN 30 DAYS IF NO FURTHER SERVICING ACTIVITIES ARE TO OCCUR.
10. REMOVE SILT FENCES, MUD MAT, FILTER FABRIC AND ANY OTHER EROSION/SILTATION CONTROL MEASURES ONCE ALL CONSTRUCTION HAS BEEN COMPLETED AND ALL VEGETATION HAS BEEN ESTABLISHED AND AT THE DIRECTION OF THE ENGINEER.
11. TOPSOIL STOCKPILE IS TO BE HYDRO-SEEDED IF NOT WORKED WITHIN 60 DAYS.

INSTALLATION & MAINTENANCE CONSIDERATIONS

1. POND BANKS MUST BE STABILIZED WITH VEGETATION ONCE THE EXCAVATION OF THE POND IS COMPLETE.
2. SEDIMENT ACCUMULATION IN THE PONDS MUST BE MEASURED A MINIMUM OF ONCE EVERY SIX (6) MONTHS. THE POND WILL REQUIRE CLEANING WHEN SEDIMENT ACCUMULATION REACHES 50% OF THE FOREBAY DESIGN CAPACITY.
3. SEDIMENT POND EMBANKMENTS, OUTLET, AND SPILLWAY SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAINFALL AND SIGNIFICANT SNOW MELT EVENTS.

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

COBOURG, ONTARIO

DRAWN BY: J.DUNN
DESIGNED BY: J.DUNN
APPROVED BY: A.HILL
DATE: 2019-05-27
SCALE: AS NOTED

STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
18041	DT2	26 of 27

18041-DT1
Date: Dec. 17, 2019 - 4:52 pm Plotted by: jdunn Filename: S:\01 - Projects\18\0018\1044 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\1044 (DT1.dwg)

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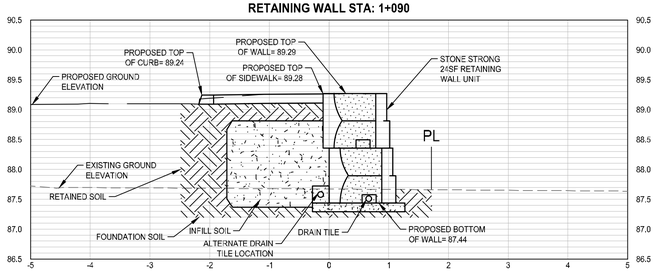

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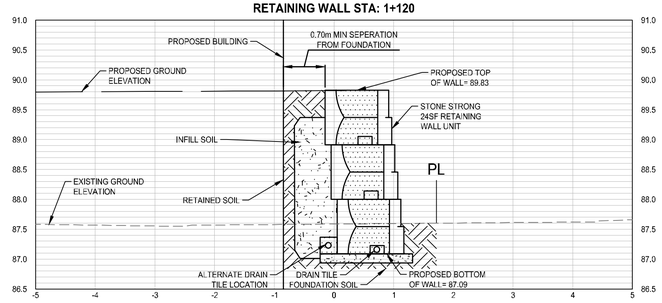

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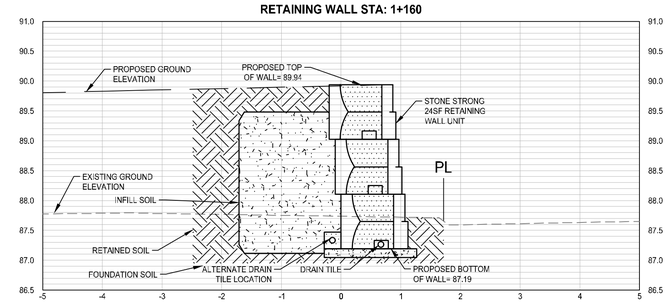

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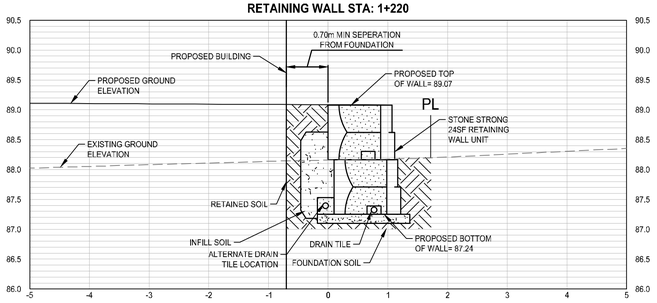

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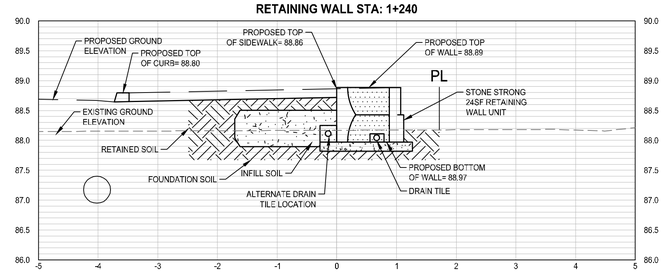

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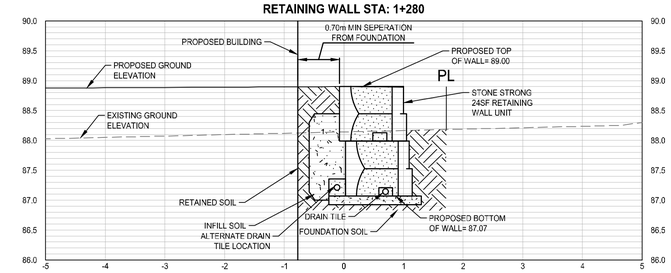

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EAST VILLAGE SUBDIVISION - PHASE 5

TOWN OF COBOURG

RETAINING WALL SECTIONS

COBOURG, ONTARIO

DRAWN BY:	J.DUNN
DESIGNED BY:	J.DUNN
APPROVED BY:	A.HILL
DATE:	2019-05-27
SCALE:	AS NOTED

STAMP: LICENSED PROFESSIONAL ENGINEER — A.M. HILL — 100164289 — 2019-12-18 — PROVINCE OF ONTARIO

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18041-DT1

Date: Dec. 17, 2019 - 4:53 pm Plotted by: jdunn Filename: S:\01 - Projects\18\0018\18041 East Village Phase 5\02 Design\Drawings\Current Drawings\Detailed Design\18041-DT1.dwg